

PDI Headend Electronics



PDI-60AP Agile In, Agile Out Processor

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OPERATING INSTRUCTIONS

BEFORE OPERATING PLEASE READ THIS MANUAL
THOROUGHLY AND RETAIN IT FOR FUTURE REFERENCE.

TECHNICAL SUPPORT

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INTRODUCTION

PDI Communications, Inc. PDI-60AP is a professional quality, user friendly, high performance TV signal processor designed primarily for CATV headend operation. Rock solid PLL controlled tuning by advanced microprocessor insures precise UHF, VHF or CATV (STD-HRC) channel access. Careful design of the input achieves a wide dynamic range and a very low noise figure. Input tuning covers the range of 54 to 860MHz with the ability to properly receive CATV channels already offset 12.5 or 25 kHz as in node operation. The agile output ranges from 54 to 860MHz and is controlled by another PLL circuit with 12.5 or 25kHz offsets. Both the input and output channels have non-volatile memories that restore the channels automatically in the event of a power failure. SAW filtering guarantees broadcast quality pictures. A standby oscillator provides a CW video carrier level for system pilot AGC if the input drops below a useable level.

FEATURES

- +60dBmV RF output with very low spurious response
- Microprocessor controlled PLL tuning for precise frequency control
- Non-volatile channel memories
- Externally selectable FCC offsets
- User friendly channel selection
- Wide input AGC holds output constant
- Professional grade SAW filters allow true adjacent channel operation
- Composite IF loop-through for scrambling or IF insertion
- BTSC stereo compatible
- HRC available
- Brushed aluminum faceplate
- 2 year warranty
- UL listed Canada/U.S.
- ISO 9002 certified
- Also available in all PAL configurations

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SPECIFICATIONS

INPUT SECTION

Input Frequency Range	54 to 860MHz
Input Channels	UHF, VHF, CATV (STD, HRC)
Input Level Range	-15 to +20dBmV (0 to 10dBmV recommended)
Noise Figure	7.5dB @ VHF 11dB @ UHF
AGC Range	±20dB
AGC Stability	±0.5dB
Impedance	75ohms

IF SECTION

IF Frequency	45.75MHz Picture 41.25MHz Sound
IF Output Level	+18dBmV ±2dB
IF IN/OUT Impedance	75ohms (14dB return loss min.)
VSB Response	> -60dB typical (at adjacent picture and sound)

OUTPUT SECTION

Output Frequency	54 to 860MHz
Frequency Stability	±5kHz max.
Spurious Output	-60dBc (@ 60dBmV with aural carrier - 15dBc)
Group Delay Response	Meets FCC requirements
Frequency Response	±1dB max. in channel
Output Offsets	0, +12.5kHz and +25kHz

GENERAL

Power Requirements	117 VAC ±10%, 60Hz, 28 W
Temperature Range	0 to +50 degrees C
Rear Panel Connections	RF Input F Female RF Output F Female IF Loop F Female AC Convenience 3 Cond. Polarized w/Ground

Front Panel Controls	RF Output Level Adjust Audio Carrier Level Adjust Output Offset Adjust Input Channel Set Output Channel Set Off Air, CATV, HRC Set
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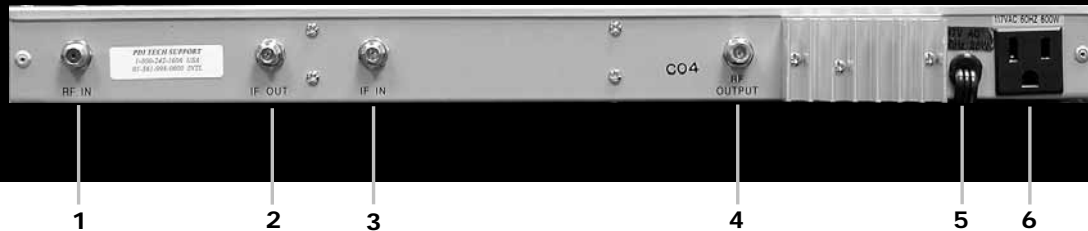


PDI-60AP FRONT PANEL CONTROLS

- 1. Power Indicator**
Red LED lights when power is applied to the modulator.
- 2. Test Point**
Output levels read at this point will be down 30dB from actual output.
- 3. RF Output Level**
Adjustment for the output level at RF OUTPUT. The control is adjustable over a 20dB range.
Turn clockwise to increase output level.
- 4. Output Offset Selection**
+12.5kHz or +25kHz offset can be engaged by selecting the proper switch position with a small screwdriver.
- 5. Output Channel Selection**
Any channel from 2 to 134 and A-5 to A-1 can be selected by pushing channel up (^) or channel down (v) button. STANDARD or HRC is selected by the bottom button.

A-1 = 99 on display.
A-5 = 95 on display.
- 6. Audio Carrier**
The audio carrier level can be set by adjusting this control. Adjusting usually is 15 to 17dB lower than the video carrier.
- 7. Input Channel Selection**
Any UHF, VHF, CATV including A-5 to A-1 can be selected by pushing channel up (^) or channel down (v) until the proper number is displayed. Use the accompanying "HEADEND DISPLAY CONVERSION CHART" to select the correct display number for the UHF and "A minus" channels. STANDARD or HRC selection is controlled by the bottom button.
- 8. Instruction Labels**
Handy instruction labels for setting processor input and offsets are affixed to the top of the processor housing.

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PDI-60AP REAR PANEL CONTROLS

- 1. RF Input**
Connect to antenna or other RF source. Ideal operating level is approximately +9dBmV.
- 2. IF Out**
A composite IF signal connection is provided for a scrambling encoder or an emergency alert system. The output level is +18dBmV \pm 2dBmV. Install a jumper cable from this output to IF IN when no external equipment is used.
- 3. IF In**
The IF signal from a scrambling encoder or emergency alert system IF OUTPUT connects to this point. The recommended input level is approximately +18dBmV. A jumper cable must be installed from IF OUT to this input when no external equipment is used.
- 4. RF Output**
A +60dBmV modulated CATV signal in the frequency range of 54 to 860MHz (CH. 2-134) is provided at this connection.
- 5. Power Cord**
Connect this power cord to 117 VAC, 60Hz Power source only.
- 6. AC Power Socket**
An unswitched, AC convenience power source is provided by this socket. Power drain should not exceed 600 watts.

OPERATING INSTRUCTIONS

- 1. Jumper**
Connect the enclosed jumper from IF OUT to IF IN on the rear of the unit.
- 2. AC Power**
Plug the unit in and let it warm up for approximately 40 minutes before setting controls.
- 3. Processor Input**
Set input level to approximately +9 dBmV. All processors are set at the factory to accept STANDARD CATV and OFF AIR signals at the input.

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OPERATING INSTRUCTIONS (CONTINUED)

To change the input frequency to accept CATV and HRC

- a) Press the (CATV/OFF AIR) button on front panel
- b) Press the up down arrow for either b0 (OFF AIR), b1 (CATV), b2 (HRC)
- c) Press the (CATV/OFF AIR) button again
- d) You are now in the mode you have selected.
See conversion chart for proper display settings.

Note: Above instructions are also affixed to the top cover of the processor housing.

4. Processor Output

The processor output frequencies are set at the factory for STANDARD CATV channels 2 to 134 (54 - 860MHz).
Display numbers 95 to 99.
Set channels A-5 to A-1 respectively.

To change the output frequency to HRC

- a) Press the CATV HRC button once on the output section of the front panel.
- b) **b0** appears on the display.
- c) Press either the (^) or (v) arrow until **b1** appears on the display.
- d) Press the CATV HRC button again. All output channels are in HRC mode.

b0 = STD mode

b1 = HRC mode

5. RF and Audio Carrier Level Adjustment

Connect a signal level meter or the measuring device to the RF output on the rear panel. After tuning the meter to the output frequency of the PDI-6OAP, adjust for the desired level using the RF OUTPUT control on the front panel. For optimum performance, we recommend setting the RF OUTPUT control 3dB below maximum and using in-line pads to achieve the desired output level. The RF OUTPUT control can then be used to fine tune to the desired level over a range of 2 to 3dB. Retune the signal level meter to the audio carrier frequency and use the front panel AUDIO CARRIER control to set the desired visual to aural carrier ratio (-12 to -17dB typical).

6. Input Display Settings

Input setting are achieved by pressing either the (^) channel up or (v) channel down buttons located on the front panel next to the digital input display. Refer to the "HEADEND DISPLAY CONVERSION CHART" enclosed.

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OPERATING INSTRUCTIONS (CONTINUED)

7. Output Display Settings

Output settings are achieved by pressing either the (^) channel up or (v) channel down button located on the front panel next to the digital output display. Numbers 2 through 134 and 95 through 99 are all CATV channels.

8. Offset Switch Settings

Please note the following when setting the Offset switch.

- a) CATV Channels 2 through 13 & 17 through 24 & 54 through 134 set to 0
- b) CATV Channels 14 through 16 & 25 through 41 & 43 through 53 set to 12.5kHz
- c) CATV Channel 42 set to 25kHz
- d) CATV Channels 95 through 97 (A-5 through A-3) set to 0
- e) CATV Channels 98 & 99 (A-2 & A-1) set to 25kHz
- f) All HRC Channels set to 0

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PDI-60AP

INSPECTION

When the unit is delivered, immediately inspect the unopened box for signs of obvious damage. Note any problem on the carrier's delivery tickets before signing. If later inspection reveals concealed damage, a claim must be filed with the carrier within 10 days. Save all packing materials for inspection by the carrier or in case the unit should ever need to be returned to the factory for service. In case of obvious physical damage do not attempt to operate the modulator as further damage could result. Contact your distributor or the factory if you need assistance. The unit should be allowed to warm up for at least an hour before testing to assure that it meets specifications. Any unused port should be terminated after the setup procedure is completed.

WARRANTY 2 years

PDI Communications, Inc..equipment has been thoroughly tested and found to be in proper operating condition when shipped from the factory and is warranted to be free from defects in materials or workmanship that may develop within two years of the date of purchase.

PDI agrees to remedy such or furnish a new part, or at its option an entire unit, or any part of a unit that discloses such defect, provided that the unit or part is returned to PDI or a PDI authorized service facility according to the terms listed below.

Prior authorization with a return authorization number issued by PDI or its representative is required for all returns. The purchaser shall be responsible for all freight charges on shipment to PDI unless otherwise authorized. Charges to return a unit or part to a purchaser will be paid by PDI. Claims for damage in shipment to the purchaser must be filed by the purchaser with the carrier in accordance with the carrier's regulations. All PDI shipping containers meet the requirements of the consolidated freight classification standard.

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HEADEND DISPLAY CONVERSION CHART INPUT b0 OFF AIR

Channel	Carrier Freq. (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
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

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HEADEND DISPLAY CONVERSION CHART INPUT b0 OFF AIR

Channel	Carrier Freq. (MHz)
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

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HEADEND DISPLAY CONVERSION CHART INPUT b1 CATV

Channel	Carrier Freq. (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
14	121.2625
15	127.2625
16	133.2625
17	139.25
18	145.25
19	151.25
20	157.25
21	163.25
22	169.25
23	217.25
24	223.25
25	229.2625
26	235.2625
27	241.2625
28	247.2625
29	253.2625
30	259.2625
31	265.2625
32	271.2625
33	277.2625
34	283.2625
35	289.2625
36	295.2625
37	301.2625
38	307.2625
39	313.2625
40	319.2625
41	325.2625
42	331.2750
43	337.2625
44	343.2625

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HEADEND DISPLAY CONVERSION CHART INPUT b1 CATV

Channel	Carrier Freq. (MHz)
45	349.2625
46	355.2625
47	361.2625
48	367.2625
49	373.2625
50	379.2625
51	385.2625
52	391.2625
53	397.2625
54	403.25
55	409.25
56	415.25
57	421.25
58	427.25
59	433.25
60	439.25
61	445.25
62	451.25
63	457.25
64	463.25
65	469.25
66	475.25
67	481.25
68	487.25
69	493.25
70	499.25
71	505.25
72	511.25
73	517.25
74	523.25
75	529.25
76	535.25
77	541.25
78	547.25
79	553.25
80	559.25
81	565.25
82	571.25
83	577.25
84	583.25
85	589.25
86	595.25
87	601.25
88	607.25
89	613.25

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HEADEND DISPLAY CONVERSION CHART INPUT b1 CATV

Channel	Carrier Freq. (MHz)
90	619.25
91	625.25
92	631.25
93	637.25
94	643.25
95	91.25
96	97.25
97	103.25
98	109.2750
99	115.2750
100	649.25
101	655.25
102	661.25
103	667.25
104	673.25
105	679.25
106	685.25
107	691.25
108	697.25
109	703.25
110	709.25
111	715.25
112	721.25
113	727.25
114	733.25
115	739.25
116	745.25
117	751.25
118	757.25
119	763.25
120	769.25
121	775.25
122	781.25
123	787.25
124	793.25
125	799.25
126	805.25
127	811.25
128	817.25
129	823.25
130	829.25
131	835.25
132	841.25
133	847.25
134	853.25

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HEADEND DISPLAY CONVERSION CHART INPUT b2 HRC

Channel	Carrier Freq. (MHz)
2	55.0027
3	60.0030
4	66.0060
5	78.0039
6	84.0042
7	174.0087
8	180.0090
9	186.0093
10	192.0096
11	198.0099
12	204.0102
13	210.0105
14	120.0060
15	126.0063
16	132.0066
17	138.0069
18	144.0072
19	150.0075
20	156.0078
21	162.0081
22	168.0084
23	216.0108
24	222.0084
25	228.0114
26	234.0117
27	240.0120
28	246.0123
29	252.0126
30	258.0129
31	264.0132
32	270.0135
33	276.0138
34	282.0141
35	288.0144
36	294.0147
37	300.0150
38	306.0153
39	312.0156
40	318.0159
41	324.0162
42	330.0165
43	336.0168
44	342.0171

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HEADEND DISPLAY CONVERSION CHART INPUT b2 HRC

Channel	Carrier Freq. (MHz)
45	348.0174
46	354.0177
47	360.0180
48	366.0183
49	372.0186
50	378.0189
51	384.0192
52	390.0195
53	396.0198
54	402.0201
55	408.0204
56	414.0207
57	420.0210
58	426.0213
59	432.0216
60	438.0219
61	444.0222
62	450.0225
63	456.0228
64	462.0231
65	468.0234
66	474.0237
67	480.0240
68	486.0243
69	492.0246
70	498.0249
71	504.0252
72	510.0255
73	516.0258
74	522.0261
75	528.0264
76	534.0267
77	540.0270
78	546.0273
79	552.0276
80	558.0279
81	564.0282
82	570.0285
83	576.0288
84	582.0291
85	588.0294
86	594.0297
87	600.0300
88	606.0303
89	612.0306

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HEADEND DISPLAY CONVERSION CHART INPUT b2 HRC

Channel	Carrier Freq. (MHz)
90	618.0309
91	624.0282
92	630.0315
93	636.0318
94	642.0321
95	90.0045
96	96.0048
97	102.0051
98	108.0250
99	114.0250
100	648.0324
101	654.0327
102	660.0330
103	666.0333
104	672.0336
105	678.0339
106	684.0342
107	690.0345
108	696.0348
109	702.0351
110	708.0354
111	714.0357
112	720.0360
113	726.0363
114	732.0366
115	738.0369
116	744.0372
117	750.0375
118	756.0378
119	762.0381
120	768.0384
121	774.0396
122	780.0390
123	786.0393
124	792.0396
125	798.0399

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