

PDI Headend Electronics



PDI-60CM

Fixed Frequency 860MHz SAW Filtered Television Modulator

PDI-60CMS

Fixed Frequency 860MHz SAW Filtered Stereo Television Modulator

PDI-60CMS-SAP

Fixed Frequency 860MHz SAW Filtered Stereo Television Modulator with Stereo and SAP Generator

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INDIVIDUAL TEST REPORT WITH EACH UNIT AVAILABLE ON REQUEST

OPERATING INSTRUCTIONS

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

TECHNICAL SUPPORT

CALL PDI ENGINEERING
1-800-242-1606



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PDI-60CM **Fixed Frequency SAW Filtered Television Modulator**

INTRODUCTION

PDI Communications Inc. "**PDI-60CM**" is a synthesized, SAW filtered, 60dBmV high performance fixed frequency modulator. This unit is manufactured and thoroughly tested, to comply and in most cases exceed, all FCC recommended parameters. The PDI-60CM provides fixed channel selection for any cable channel from channel 2 through 134 (54-860MHz).

FEATURES

- +60dBmV RF output level
- Frequency range: 54-860MHz plus sub frequencies channels T-7 through T-13
- FCC offset factory set.
- -60dB spurious performance at full output Level.
- Professional grade SAW vestigial sideband filter for true adjacent channel operation
- Separate audio, video and composite IF loops
- BTSC stereo compatible, encoded baseband or 4.5MHz audio Input.
- HRC available
- Brushed aluminum face plate
- 5 year warranty
- UL Listed Canada/U.S.
- ISO 9002 Certified
- OPTION 1: Internal Stereo Encoder
- OPTION 2: Internal Stereo Encoder and SAP Generator
- OPTION 3: -48 V DC Powering
- Also Available In All PAL Configurations

AUDIO/ VIDEO/COMPOSITE IF LOOPS

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SPECIFICATIONS

PDI-60CM

RF Section

Output Frequency	2-134 (54-860MHz) plus sub frequencies T-7 through T-13
Output Level	+60dBmV Typical (Peak Video Carrier)
Output Level Adjustment	20dB Range
Output Impedance	75ohms (Unbalanced)
Spurious Output (@ +60dBmV Output with Aural Carrier 15dB Down)	At least 60dB Below Video Carrier
Broadband Noise (@ +60dBmV Output)	>80dB Below Video Carrier
Frequency Stability	±5kHz Maximum (±2kHz Typical)
Vestigial Sideband Response	-20dB at IF Channel Edge; -60dB at Adjacent Video and Aural Carrier Frequencies and Frequencies Further Removed

Video Section

Input Type	Composite Video, Negative Sync
Input Level	0.5 Vp-p Min. for 87.5% Modulation
Frequency Response	±0.75dB (10 Hz to 4.2MHz)
Differential Gain	3% Typical at 87.5% Mod. Depth
Differential Phase	3 Deg. Typical at 87.5% Mod.
Hum and Noise	-60dB Min. at 87.5% Modulation
Tilt	1.1% Maximum on 60Hz, 50% Square Wave
Group Delay Response	Meets FCC Predistortion Requirements for Color Transmission

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SPECIFICATIONS

PDI-60CM

Audio Section

Input Type Unbalanced (Balanced Optional)
 Input Impedance 600ohms
 Input Level 250mV Min. for 25kHz Peak Deviation

Frequency Response ± 1 dB (50Hz- 15kHz)
 FM Hum and Noise -60dB @ ± 25 kHz Deviation
 Subcarrier Frequency 4.5MHz ± 500 Hz

Stereo Specifications

60CMS ONLY

Frequency Responses 20Hz to 14kHz ± 1 dB
 Separation 27dB (20Hz to 14kHz) Typical
 Pilot Rejection 50dB
 Signal to Noise Ratio 65dB, Overall Through Expander and Receiver
 Audio Input Impedance 600 ohms unbalanced (600ohms balanced optional)
 Nominal Input Level (APL) 0dBm, Adjustable + 10dB
 Distortion 0.5% Maximum THD

Operational Characteristics

AC Line and Power 108-125V AC 60Hz, 25 Watts
 -48 V DC Powering (Optional)

Operational Temperature 0 to 50 degrees C

Rear Panel Connections

RF Output	F Female
Video Input	F Female
Audio Input	Screw Terminal (stereo units RCA)
4.5MHz IF Input	F Female

Front Panel Controls

RF Output Level Adjust
 Aural Carrier Level Adjust
 Video Modulation Depth Adjust
 Audio FM Deviation Adjust (Disabled on stereo units)

Front Panel Indicators

Power On

Rear Panel Control

Baseband Stereo Switch (Pre-emphasis Defeat) (Disabled on stereo units)
 4.5 Audio Switch

AUDIO/ VIDEO/COMPOSITE IF LOOPS

OPERATING INSTRUCTIONS

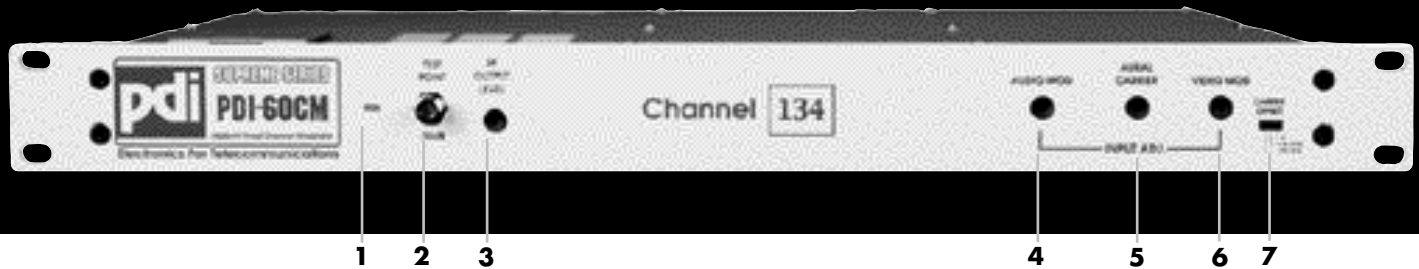
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PDI-60CM FRONT PANEL CONTROLS

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 output level at the RF OUTPUT. The control is adjustable over a 20dB range. Turn clockwise to increase output level.

4. AUDIO MOD

To adjust the deviation for audio modulation, turn clockwise to increase deviation.

Note: Controls are adjusted for proper operation at the factory ($\pm 25\text{kHz}$ MONO, $\pm 50\text{kHz}$ STEREO)

5. AURAL CARRIER

The audio sub carrier level can be controlled by this adjustment. The Aural Level is usually adjusted to 15-17dB lower than the video carrier.

6. VIDEO MOD

This control adjusts the video modulation index which is set to 87.5%. A modulator index meter is necessary to monitor.

7. OFFSET SELECTION

Factory set.

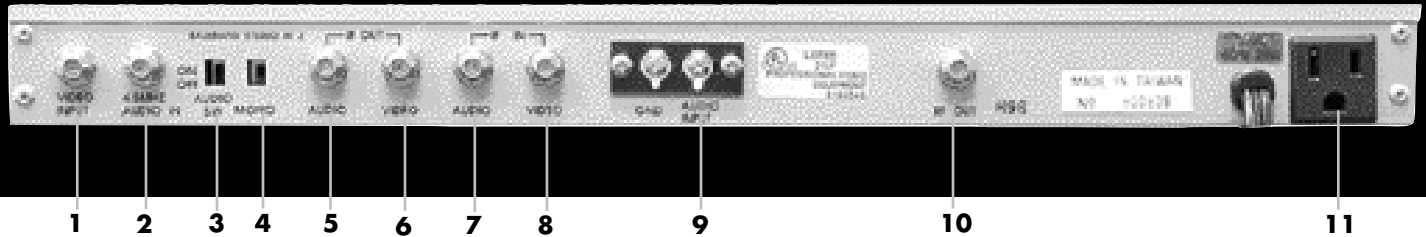
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PDI-60CM REAR PANEL CONTROLS

1. VIDEO INPUT

Feed this F type input with video signal in range of 0.5-1.5 Vp-p. Input impedance is 75ohms.

2. 4.5MHz AUDIO IN

Modulated BTSC stereo signal can be fed to this input for stereo T.V. Make sure to turn off the audio carrier of the modulator by flipping the AUDIO SW (3) down to OFF position.

3. AUDIO SW

Keep this switch at the upper position (ON) for normal TV sound. When an externally encoded stereo signal is injected at the 4.5MHz input, it is necessary to turn off the monaural audio carrier by setting this switch to the lower position (OFF).

4. BASEBAND STEREO/MONO SWITCH (Disabled on stereo units)

Keep this switch in the MONO position. Only when an externally encoded baseband signal is injected at the audio input terminal (9), switch should be set to STEREO HI Z position.

5. AUDIO IF OUT

A modulated 41.25MHz AUDIO IF signal is provided for a Scrambling Encoder. The output is 26dBmV typical. Install a jumper cable (supplied) for this output to AUDIO IF IN when there is no scrambling.

6. VIDEO IF OUT

A modulated 45.75MHz VIDEO IF signal is provided for a Scrambling Encoder. The output is 38dBmV typical. Install a jumper cable (supplied) from this output VIDEO IF IN when there is no scrambling.

7. AUDIO IF IN

The AUDIO IF OUT jumper cable is connected to this port when there is no scrambling.

8. VIDEO IF IN

The VIDEO IF OUT jumper cable is connected to this port when there is no scrambling.

9. AUDIO INPUT

The audio signal is connected to this input in the range of -12 to +10dBm at 600 ohms impedance (600ohms balanced optional) Stereo units have an RCA connector 10K ohms impedance.

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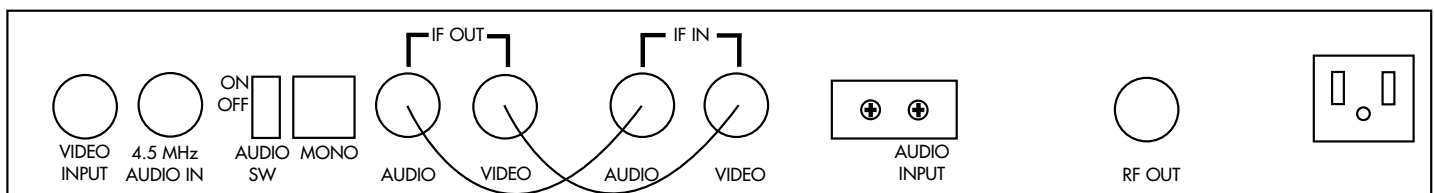
PDI-60CM REAR PANEL CONTROLS (CONTINUED)

10. RF OUTPUT

A modulated CATV signal (in the range of channels 2-134 (54-860MHz) plus sub channels T-7 through T-13 at +60dBmV maximum output is provided at this port.

11. AC CONVENIENCE POWER SOCKET

An unswitched AC power source is provided by this socket. Power consumption should not exceed 600 watts.



ENCLOSED JUMPERS MUST CONNECT
AS SHOWN FOR PROPER OPERATION

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PDI-60CM

GUIDE TO OPERATION

Frequency Selection

Frequency Selection is set with necessary offset at the factory.

Video Modulation Adjust

Connect a video source of the proper characteristics (1Vp-p, negative sync.) to the video input on the rear panel. Monitor the modulation index when adjusting the VIDEO MOD. on the front panel. Set the modulation index to 87.5%. The correct setting may vary slightly with differences in picture content.

Audio Modulation Adjust (Disabled on stereo units)

Connect the audio source of at least 250mV to the audio input on the rear panel. Turn the AUDIO MOD. control clockwise until the audio modulation deviation is 25kHz.

Stereo Operation

1. The PDI-60CM may be used for BTSC stereo by setting the AUDIO SW to off and applying 4.5MHz BTSC signal to the 4.5MHz AUDIO INPUT on the rear panel.
2. An encoded stereo baseband signal may be applied to the regular audio input terminal when the stereo/mono switch is set to stereo.

RF and Aural Carrier Level Adjustment

Connect a signal level meter or other measuring device to the RF output on the rear panel. After tuning the meter to the output frequency of the PDI-60CM, adjust for the desired level using the RF OUTPUT control on the front panel. For optimum performance, we recommend setting the RF OUTPUT control to 3dB below maximum and using in-line pads to achieve the desired output level. The RF OUTPUT control then can be used to fine tune to the desired level over a range of 2 or 3dB. Re-tune the signal level meter to the aural carrier ratio (-15 to -17dBc typical).

Note: The video carrier level should be set with normal modulation applied to the unit.

STEREO UNITS

PDI stereo modulators have all the necessary adjustments for proper stereo operation set at the factory and adjustments are very stable. The audio modulation is set for 50kHz deviation @ 0dBm. If more or less volume is needed, slightly adjust the audio modulation control on the front panel until the desired volume is achieved.

NOTE: Left and right separation is set at the factory to be equal. Adjusting the audio modulation level will not alter this setting. The left and right volume will track together.

AUDIO/ VIDEO/COMPOSITE IF LOOPS

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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 5 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 five 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.