

PDI HEADEND ELECTRONICS



PDI-50121CM & PDI-50121CMS

12 in 1 MULTI MOD™ SAW Filtered Fixed Channel Modulator System

PAGES	CONTENTS
1	Parts Identification
2	Introduction, Features & Specifications
3	Frequency Agile Demodulator
4	Front Panel Control
5	Rear Panel Control
6	Installation & Adjustments
7	Inspection & Warranty

091504

OPERATING INSTRUCTIONS

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

TECHNICAL SUPPORT

CALL PDI ENGINEERING
1-800-242-1606



PDI HEADEND ELECTRONICS

12 IN 1 MULTIMOD™ FIXED CHANNEL MODULATOR SYSTEM CONSISTS OF:

PDI-50121CM Modulator



PDI-50121CMPS Power Supply



PDI-50121CMPH Housing



1

OPERATING INSTRUCTIONS

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

TECHNICAL SUPPORT

CALL PDI ENGINEERING
1-800-242-1606



PDI HEADEND ELECTRONICS

PDI-50121CM

INTRODUCTION

The PDI-50121CM is a space saving, fixed channel modulator system. It consists of 12 individual, vertically mounted, fixed frequency modulators and an efficient switching type power supply module mounted in one 3-1/2" high housing. It is designed for 19" rack mounting. Each modulator is SAW filtered and is factory set to the desired channel and proper offset. Precise frequency is maintained with PLL circuitry. Recessed front panel controls are preset, at the factory, for 87.5% depth of modulation, $\pm 25\text{kHz}$ audio deviation, and -15dBc video audio ratio. RF is set at maximum. It offers excellent video performance and high reliability in a 2U rack.

FEATURES

- +45dBmV output with very low spurious response
- Precise frequency control with PLL circuitry
- Easy setup
- SAW filtering for true adjacent channel operation
- BTSC stereo compatible
- Also available in All PAL configuration
- Face plates are available in black on special order
- UL listed Canada/U.S.

SPECIFICATIONS

RF SECTION

Frequency Range	Channel 2-134 (54 to 860MHz)
Channels	VHF, CATV (STD, HRC)
Output Level	+45dBmV
Output Impedance	75 ohms
Audio/Video Ratio	Adjustable -12 to -20dBc
Frequency Stability	$\pm 5\text{kHz}$
Spurious Outputs	$> -60\text{dBc}$ (A/V ratio at -15dBc)
Out of Band Noise	-80dBc
In Band C/N Ratio	$> 60\text{dB}$

VIDEO SECTION

Input Level	0.8 to 1.2 Vp-p for 87.5% modulation
Frequency Response	$\pm 1.5\text{dB}$ (30Hz to 4.2MHz)
Differential Phase	< 4 degrees
Differential Gain	4%
Chroma/Luminance Delay	Meets FCC group delay requirement

AUDIO SECTION

Input Level	250mV minimum for 25kHz deviation
Input Impedance	20 Kohms unbalanced
Frequency Response	$\pm 1.0\text{dB}$, (50Hz-1.5KHz)
Pre-emphasis	75 microseconds
Frequency Stability	$\pm 5\text{kHz}$ minimum ($\pm 3\text{kHz}$ typical)

GENERAL

AC Line & Power	85-265Vac, 50,60Hz, 25 watts
Operating Temperature	-10deg. C to +50deg. C
Dimensions	19 L x 9 1/2 x 3 1/2
Weight	18 pounds
Fittings	Video Input "F" RF Output "F" Audio Input "RCA"

OPERATING INSTRUCTIONS

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

TECHNICAL SUPPORT

CALL PDI ENGINEERING
1-800-242-1606

PDI HEADEND ELECTRONICS



PDI-50121CM FRONT PANEL CONTROLS

- 1. 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.
- 2. AURAL CARRIER**
The audio carrier level is controlled by this adjustment. The aural level is usually set 15 to 17dB lower than the video carrier.
- 3. POWER INDICATOR**
Red LED lights when power is applied to the modulator.
- 4. VIDEO MOD**
This control adjusts the video modulation index which is set to 87.5%. A modulator index meter is necessary to monitor.
- 5. AUDIO MOD**
Used to adjust the deviation for audio modulation. Turn control clockwise to increase deviation.
Note: Controls are adjusted for proper operation at the factory ($\pm 25\text{kHz MONO}$)
- 6. POWER SUPPLY**

OPERATING INSTRUCTIONS

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

TECHNICAL SUPPORT

CALL PDI ENGINEERING
1-800-242-1606

PDI HEADEND ELECTRONICS



PDI-50121CM REAR PANEL CONTROLS

- 1. POWER CORD SOCKET**
A power cord with any worldwide AC configuration may be plugged in here.
- 2. VIDEO INPUT**
Feed this F type input with video signal in the range of 0.75-1.5 Vp-p. Input impedance is 75ohms.
- 3. AUDIO INPUT**
The audio signal is connected to this RCA input in the range of -12 to +10dBm.
- 4. RF OUTPUT**
A modulated CATV signal (in the range of channels 2-134 (54-860MHz) at +45dBmV minimum output is provided at this port.
- 5. HARNESS CONNECTORS**
Connect the wire harness from the power supply to this point.

PDI-50121CM

The 5012CM is a fixed channel, PLL controlled, video and audio modulator with SAW filtering. It is available in any cable channel between 2 through 134. It's video AGC circuit insures 87.5% modulation depth over a wide video input range. The vestigial sideband selectivity allows maintenance free adjacent channel configuration. An efficient power supply enables cool and stable operation. The unit offers high performance, low cost and compact design. 2 year warranty.

Frequency Range	Channels 2-134 (54-860MHz)
Video Input Level	0.75 to 1.5 Vp-p for 87.5% modulation
Video C/N	60dB (4MHz BW)
Output Level	+45dBmV (audio RF level is adjustable from 13-20dB below video carrier)
Frequency Stability	±5kHz Maximum (±) 3kHz Typical
Hum and Noise	-60dB min. @ 87.5% modulation
Audio Input Level	250 mV min. for ±25kHz deviation
Audio Input Impedance	20Kohms unbalanced
Spurious Output	-60dBc typical (@ A/V ratio-15dB)
Power Requirement	117 V AC, 60Hz 25 Watts
Dimensions	19" x 3 1/4" x 7 3/4"

5

OPERATING INSTRUCTIONS

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

TECHNICAL SUPPORT

CALL PDI ENGINEERING
1-800-242-1606



PDI HEADEND ELECTRONICS

INSTALLATION

Before applying AC power to the unit, ensure that the wire harness cable is attached from the power supply to each module.

The **50121CM** is designed for indoor 19" rack mounting utilizing a 3 1/4" high housing. Make sure a space (at least one screw-hole) is left between modulators for air circulation. To prevent electric shock, the AC plug must be used with the proper grounded receptacle. Never remove the ground pin. Insure that electrical input cables entering the building are connected to the building ground as close to the entry point as possible.

ADJUSTMENTS

All PDI modulators are heat cycled at the factory and final adjustments are made with the units hot. Thus, allow a 30 minute warmup before attempting any adjustments. You will need a signal level meter and a television set.

1. Connect the video and audio cable from your source to the respective "F" and RCA connectors on the modulator. Connect the RF OUTPUT to the proper combiner. Levels can be read at the test point or output of the combiner. Set the VIDEO RF LEVEL. (Best results can be obtained by setting the modulator video down 3dB from maximum and using inline attenuator pads at the combiner for the desired level).
2. The AURAL RF LEVEL should always be between -15dB to -17dB below the VIDEO RF LEVEL. Once this ratio is set it will track with the VIDEO RF LEVEL control.
3. AUDIO and VIDEO MODULATION LEVELS are set at the factory for plus or minus 25kHz deviation and 87.5% depth of modulation respectively. Although proper test equipment should be used, minor adjustments can be made utilizing a TV set.
 - a. Connect the TV set to the combiner test point so that its signal level input from the modulator is approximately +9dBmV. If the colors look bright and there is sufficient sound with no audio buzz, leave the modulation adjustments alone. If there is occasional audio buzz, turn modulation control down slightly counter-clockwise until audio is clean.
 - b. If the modulator picture is dull, raise the VIDEO MODULATOR control until the picture **just** becomes overly bright and begins to distort. Lower the control approximately 1/8 turn from this point.
 - c. If the modulator audio is low, try and set the TV audio level utilizing an off air signal. Subjectively match this level utilizing the AUDIO MOD control. Check that all audio levels are approximately the same when switching channels.

PDI HEADEND ELECTRONICS

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.

OPERATING INSTRUCTIONS

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

TECHNICAL SUPPORT

CALL PDI ENGINEERING
1-800-242-1606

