



SPECTRADYNAMICS, INC.



**HIGH PERFORMANCE DISTRIBUTION AMPLIFIER
HPDA-15RM-A
OPERATING MANUAL**

SPECTRADYNAMICS, INC • 1849 Cherry St. Unit 2. • Louisville, CO 80027
Phone: (303) 665-1852 • Fax: (303) 604-6088
www.spectradynamics.com

Description



The HPDA-15RM-A is a high performance distribution and isolation amplifier. It contains a high performance distribution module that provides five unity gain outputs. Typical cross-channel isolation is 125 dB and reverse isolation is typically greater than 135 dB. The phase noise of the module is exceptionally low, typically -150 dBc/Hz @ Fourier frequency of 1 Hz and -172 dBc/Hz @ Fourier frequency greater than 10 kHz. Both the input and output are matched to 50 ohms to obtain better than 25 dB return loss. All outputs are AC coupled and the grounds are DC isolated to reduce the effect of ground loops.

Safety and Preparation for Use



CAUTION!

Voltages capable of causing injury or death are present in this instrument. Use extreme caution whenever the instrument cover is removed.

Line Voltage

This instrument may be setup to operate on 100-120 or 220-240 VAC and a line frequency of 50 to 60 Hz. **The setup voltage for this HPDA-15RM-A is specified on page 4.**

Fuse

A 0.50 Ampere 250V slow-blow fuse is used for 100-120 VAC operation.
A 0.25 Ampere 250V slow-blow fuse is used for 220-240 VAC operation.
Only replace fuses with the same type and specifications.

Line Cord

The instrument has a detachable, three wire power cord for connection to a grounded power source. The enclosure of the unit is directly connected to the outlet ground to protect against electrical shock. Always use an outlet with a protective ground and do not disable this safety mechanism.

Service

Do not attempt to service or adjust the instrument unless another person, capable of providing first aid or resuscitation, is present. Contact SDI for any questions or repairs.

SpectraDynamics, Inc.
1849 Cherry Street Unit 2.
Louisville, CO 80027
USA

Tel: (303) 665-1852
Fax: (303) 604-6088
support@spectradynamics.com
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The Front Panel



AC Power LED

The LED labeled POWER is on when power is applied to unit and the unit is operating properly.

Signal LED

The LED labeled SIGNAL will turn on when you apply an input signal to the SMA input connector greater than +7 dBm.

The Back Panel



AC POWER ENTRY MODULE

The HPDA-15RM-A is configured to operate on:

100-120 VAC

220-240 VAC

SMA INPUTS

The signal to be distributed should be connected to the SMA jack labeled INPUT.

SMA OUTPUTS

The five outputs of each amplifier module are DC isolated from the chassis ground to prevent ground loops. Make sure that the amplifier ground does not float to a potential greater than 50 VDC from the chassis ground. An output ground potential greater than 50 VDC will damage the amplifier and could cause injury or death to personnel.

Operation



This unit is designed to operate only with the specified voltage on page 4. For conversion to a different voltage of operation contact SDI.

To operate the unit, locate the AC power entry module on the rear of the enclosure and connect the power cord. Plug the unit into an appropriate power outlet. A green LED on the front panel labeled POWER will turn on. Attach the signal to be distributed to the SMA input connector on the back panel. Any HPDA-15RM-A output may be used to drive the input of another distribution module.

Absolute Maximum Ratings

Input power	+20dBm Maximum
Reverse Power	+20dBm Maximum
Input DC Voltage	10 VDC Maximum
Output DC Voltage	50 VDC Maximum
Storage Temperature	-10 to +75 °C
Operation Environment	0 to +50 °C
Rack Mount Chassis	1U H, 19" W, 14" D

Specifications



PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input power	1 dB compression	17	18	-	dBm
Bandwidth	+/- 1 dB	1 - 20	-	-	MHz
Gain	@ 5 MHz	-	-	+/- 0.5	dB
Impedance	input	-	50	-	Ohms
	output	-	50	-	
Return loss	Input (S11) 5MHz	-	-35	-25	dB
	Output (S22) 5MHz	-	-25	-25	
Distortion	+13 dBm	-	-48	-43	dBc
	+17 dBm	-	-40	-	
Isolation	output to output	120	126	-	dB
	output to input	120	135	-	
Phase noise	1 Hz	-	-150	-147	dBc/Hz
	10 Hz	-	-160	-157	
	1 kHz	-	-171	-169	
	10 kHz	-	-172	-170	
Temperature-delay coefficient	0 - 50 °C	-	3	5	ps/°C
	25 - 35 °C	-	1.5	-	

All tests done at 5 MHz and +13 dBm input unless otherwise specified.

Warranty



The HPDA-15RM-A is warranted to be free of defects under normal operating conditions, as specified, for one year from date of original shipment from SpectraDynamics, Inc (SDI). SDI's obligation and liability under this warranty is expressly limited to repairing or replacing, at SDI's option, any product not meeting the said specifications. This warranty shall be in effect for one (1) year from the date a HPDA-15RM-A is sold by SDI. SDI makes no other warranty, express or implied, and makes no warranty of the fitness for any particular purpose. SDI's obligation under this warranty shall not include any transportation charges or costs of installation or any liability for direct, indirect, or consequential damages or delay. Any improper use, operation beyond capacity, substitution of parts not approved by SDI, or any alteration or repair by others in such manner as in SDI's reasonable judgement affects the product materially and adversely shall void this warranty. No employee or representative of SDI is authorized to change this warranty in any way or grant any other warranty.

