



SPECTRADYNAMICS, INC.

**HIGH PERFORMANCE DISTRIBUTION AMPLIFIER
HPDA-100RM-C
OPERATING MANUAL**

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HPDA-100RM-C Description



The HPDA-100RM-C is a high performance distribution and isolation amplifier. It contains 2 modules that provides ten unity gain outputs. Typical cross channel isolation and reverse isolation is typically greater than 100 dB. The phase noise of the modules is exceptionally low, typically -145 dBc/Hz @ Fourier frequency of 1 Hz and -173 dBc/Hz @ Fourier frequency greater than 10 kHz. Both the input and output are matched to 50 ohms to obtain better than 20 dB return loss.

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 has been setup to operate on 100 to 120 VAC and a line frequency of 50 to 60 Hz. The unit can be converted to operate on a line voltage of 220 to 240 VAC. **For this option please contact SDI.**

Fuse

A 0.25 Ampere 250V slow-blow fuse is used for 100 to 120 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.

Operation

To operate the unit, locate the AC power entry connector on the rear panel and connect the power cable. When power is applied to the unit, a red led located on the front panel, labeled "on", should light up.

The Front Panel



AC Power LED

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

DC Power LED

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

Monitor LED

The LED will turn on if the input signal to the corresponding module is greater than +7 dBm.

The Back Panel



AC POWER ENTRY MODULE

The HPDA-100RM-C is configured to operate on 100 to 120 VAC.

DC POWER ENTRY CONNECTOR

Optional Battery Backup Connector for +24 VDC Backup power source

SMA INPUTS

There is one SMA input. The signal to be distributed should be connected to the SMA jack labeled input. This input will drive the two amplifier modules, each module provides five outputs.

SMA OUTPUTS

There are ten SMA outputs, any output may be used to drive the input of another distribution module.

Battery Backup Module



Description

The battery backup module allows the HPDA-100RM-C instrument to be powered by a 24 VDC power source in case of loss of the main AC power. The switch from AC to DC supply operation is effected by a schottky diode network and charge storage capacitors to ensure glitch free operation. The +24 VDC power source connector is located on the back panel of the instrument. The +24 VDC ground is not connected to the instrument case ground internally, however both ground connections are available at the DC power connector and may be connected together at this point.

DC Voltage

The + 24 VDC may be used as backup power to prevent loss of signal during power outages. The DC power supply should be able to provide 24VDC at 2A. For optimum performance the following specifications should be used for the power supply.

DC Supply	24 VDC, 2 A
Line regulation	+/- 0.05% for a 10% line change
Load regulation	+/- 0.05% for a 50% load change
Output ripple	< 5mV peak to peak
DC Fuse	2A Slow blow

Fuse

A 2.0 Ampere 250V slow-blow fuse is used for +24 VDC operation. Replace fuses with the same type and specifications.

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.

Operation

To operate the unit, locate the AC power entry connector on the rear panel and connect the power cable. When power is applied to the unit, a red led located on the front panel, labeled "on", should light up. Connection of the +24 VDC supply is optional. If the +24 VDC supply is connected a red led on the front panel labeled DC Power connector will turn on.

DC Connector



WARNING! DO NOT APPLY AC VOLTAGE TO THIS UNIT THROUGH THE 6 PIN CONNECTOR ON THE REAR OF THE UNIT! Failure to follow these directions will cause injury or death to personnel, cause irreparable damage to the instrument and void all warranties.

WARNING! DO NOT REVERSE THE POLARITY OF THE SUPPLY VOLTAGE! Reversing the polarity of the power supply will cause damage to the unit and void all warranties.

WARNING! The chassis of the instrument is internally connected to DC ground.

The front +24VDC connector is wired as follows:

- Pin 1 +V (Internal supply voltage for monitoring purpose **do not use !**)
- Pin 2 GND (Internal supply voltage for monitoring purpose **do not use !**)
- Pin 3 -V (Internal supply voltage for monitoring purpose **do not use !**)
- Pin 4 24VDC GND return
- Pin 5 +24VDC power
- Pin 6 Chassis GND /Earth GND

Operation



This unit is designed to operate only with a 100 to 120 VAC power source. For conversion to a different voltage of operation contact SDI. To operate the unit, locate the power entry module on the rear of the enclosure and connect the power cord. Plug the unit into an appropriate power outlet. A red LED on the front panel labeled "POWER" will turn on. Attach the signal to be distributed to one of the SMA input connectors on the front panel. Any HPDA-100 output may be used to drive the input of another distribution module.

Specifications



HPDA100 Module Specifications

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Max. Input Power	1 dB compression	15	16		dBm
Bandwidth	+/- 1 dB	80 - 120			MHz
Gain	@ 100 MHz			+/- 0.5	dB
Impedance	input output		50 50		Ohms
Return Loss	input(S11) 5MHz output(S22) 5MHz		-22 -30	-20 -25	dB
Distortion	+13 dBm		-40	-48	dBc
Isolation	output to output output to input	95 105	100 110		dB
Phase Noise	10 Hz 100 Hz 1 kHz 10 kHz		-158 -165 -171 -174	-155 -162 -168 -171	dBc/Hz

All tests done at 100 MHz and +13 dBm input unless otherwise specified.

Warranty



The HPDA-100RM-C is warranted to be free of defects under normal operating conditions, as specified, for one year from the 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 an HPDA-100RM-C 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.

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