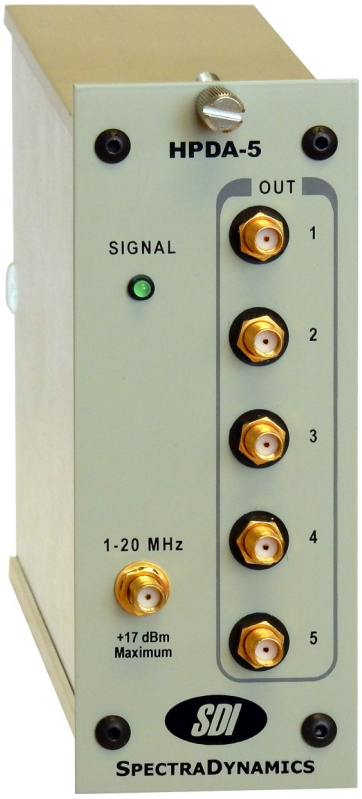
SPECTRADYNAMICS, INC



HPDA-5i
HIGH PERFORMANCE DISTRIBUTION AMPLIFIER
OPERATING MANUAL

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HPDA-5i High Performance Distribution Amplifier Operating Manual

HPDA-5i:R00-2016/LA

Contents

1.0 Introduction

The HPDA-5i is a High Performance Distribution and Isolation Amplifier with performance exceeding that required to distribute state-of-the-art atomic frequency standards. The module is intended to be used with a CMA-13SDI Module Crate.

The HPDA-5i module provides five isolated outputs and an output level monitor LED located on the front panel. All the output power levels are monitored and compared to a preset threshold of +7dBm. If the signal level on any output drops below this threshold, the monitor LED will turn off indicating a fault condition.

CMA Modules list :

Product Name	Number of inputs	Number of outputs	Description
HPDA-5i	1	5	1-50 MHz Distribution Module
HPDA-100i	1	5	80-120 MHz Distribution Module
CMA-13SDI-PWR	NA	NA	Power Module
CMA-13SDI	NA	NA	System Crate

2.0 Safety and Preparation for Use

The HPDA-5i was designed for indoor use only and is not intended for operation outdoors or in a wet environment. The instrument must be installed in a CMA-13SDI Crate for proper operation.

Inspect the instrument for damage before first use.

2.1 Electrical safety and preparation for use

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

2.2 Instrument safety and preparation for use

The HPDA-5i is designed to distribute RF signals with a frequency of 1 to 20 MHz. Input and output levels below +7 dBm will trigger a fault condition which can be monitored from the front panel. The recommended level for the RF input signal is +13 dBm +/- 2 dB.

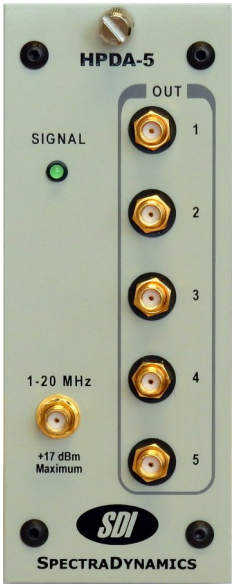
Input signals must be kept below +20 dBm as greater power levels will damage the unit and void all warranties.

The HPDA-5i RF outputs are DC isolated from the chassis ground to prevent ground loops. These outputs are rated to a maximum of 50 V.

Absolute Maximum Ratings

Input RF Power	+20dBm Maximum
Reverse RF Power	+20dBm Maximum
Voltage at the RF Input	50 V Maximum
Voltage at the RF Output	50 V Maximum

3.0 Front Panel



Signal LED

The signal LED will be on if all RF outputs are greater than +7 dBm.

RF signal levels less than +7 dBm will trigger a fault condition and the monitor LED will not light up. However the HPDA-100i will still provide five buffered copies of the RF input signal.

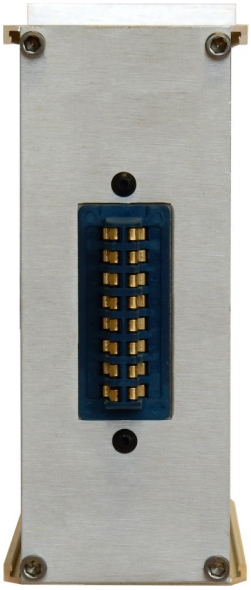
INPUT

A RF Signal within the range of 1 MHz to 20 MHz may be connected to the SMA connector labeled INPUT.

OUTPUTS

Five buffered copies of the RF input signal will be available at the SMA connectors labeled OUTPUTS. Any HPDA-5i output may be used to drive the input of another distribution module.

4.0 Back Panel



CMA Backplane Connector

The HPDA-5i is intended to be used only with a CMA-13SDI crate powered by a CMA-13SDI-PWR power supply module. The pinout for the connector is shown below for reference purposes only.

Pin	Function
5,13	+24VDC Return
4,12	+24VDC
7	Module Status

5.0 Installation

5.1 Installing the Module

The HPDA-5i must be installed in a CMA-13SDI crate. To install the module slide the module into an empty module slot on the CMA-13SDI crate and secure using the thumb screw on the front panel. The CMA-13SDI crate must have at least 1 CMA-13SDI-DPWR power supply module installed in a power slot for power to be applied to the HPDA-100i module. If power supply redundancy is required, up to 2 CMA-13SDI-PWR modules may be installed.

6.0 Operation

The HPDA-5i is designed to distribute signals from 1 MHz to 20 MHz. The RF input has a 50-ohm input impedance. Provide a signal within the mentioned frequency range to the SMA connector on the front panel labeled INPUT. If the RF signal has a power level greater than +7dBm, the status LED located on the front panel will light up.

Five buffered copies of the RF signal provided will be available on the SMA connectors located on the front panel labeled OUTPUTS. All outputs are AC coupled and the grounds are DC isolated to reduce the effect of 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.

7.0 Troubleshooting

Do not attempt to service or adjust the instrument unless another person, capable of providing first aid or resuscitation, is present. If there are problems that cannot be resolved by the troubleshooting steps below please contact technical support.

Technical Support
Tel: +1 (303) 665-1852 , Fax: +1 (303) 604-6088
support@spectradynamics.com, www.spectradynamics.com

Status LED is off.
Check to see if the RF signal provided to the instrument is greater than +7 dBm.

Check to see if a signal is present at all outputs of the HPDA-5i module.

The status LED will remain off with a power lever under +7dBm, but will still provide five copies of the RF input signal. If the instrument is providing the copies of the input signal you may continue using the HPDA-5i.

If the power level of the RF signal provided is greater than +7dBm and the Monitor LED remains off, the instrument will have to be returned for repair.

8.0 Specifications

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Power Level	1 dB compression		18	-	dBm
Bandwidth	+/- 1 dB	1-20	0.5-65	-	MHz
Gain	@ 5 MHz	-	0.2	0.5	dB
Impedance	Input Output	- -	50 50	- -	Ohms
Return Loss	Input (S11) 5MHz Output (S22) 5MHz	- -	-35 -35	-30 -30	dB
Distortion	+13 dBm +17 dBm	- -	-48 -42	-45 -40	dBc
Isolation	Output to output Output to input	130 140	140 145	- -	dB
Phase Noise	1 Hz 10 Hz 1 kHz 10 kHz	- - - -	-155 -165 -170 -171	-150 -160 -168 -170	dBc/Hz
Temperature-delay Coefficient	0 - 50 ºC	- -	1.2	1.5	ps/ºC

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

Storage temperature	-10 to +75 ºC
Operation environment	0 to +50 ºC
Humidity	5% to 95% Non-condensing

9.0 Warranty and Service

The HPDA-5i 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-5i 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.

Service

Do not attempt to service or adjust the instrument unless another person, capable of providing first aid or resuscitation, is present. Please remember that any alteration or repair may void the warranty. Contact SDI with any questions or to request an RMA if a repair is needed.

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