HPDA-15RMe

SpectraDynamics, Inc.

1 MHz to 100 MHz

The HPDA-15RMe is a **High Performance Distribution and Isolation Amplifier** engineered to distribute signals from state-of-the-art optical clocks and atomic frequency standards. This model offers exceptionally low additive phase noise and a residual Allan Deviation of < 2 E-15 at 1 second. The instrument is engineered to distribute signals in the frequency range of 1 to 100 MHz, making it ideal for use in time scale applications where phase stability is critical. The user-provided input signal is buffered and distributed to fifteen outputs ensuring maximum isolation.

The amplifier is equipped with network capabilities that allow for remote monitoring of the instrument via Ethernet. Input and output signal power levels are continuously monitored and compared to a predefined threshold, which is set by factory to +7 dBm and can be adjusted by the user via Ethernet. If the signal level on the input or any of the outputs drop below the threshold an alarm signal will be activated and reported through the Ethernet interface. The amplifier also features visual monitoring via the front panel and will additionally report signals dropping below the predefined threshold by turning off the corresponding monitor LED.

The HPDA-15RMe is offered in a 1U, 19-inch rackmount enclosure and features dual power operation. It can be powered by one 100 to 240 VAC mains source and a +12 to +36 VDC source. In the event that one of the two power sources fails, the instrument will continue to operate with the available power source, and will immediately activate an alarm signal through the Ethernet interface to indicate the power source failure. Additionally the monitor LED of the non-functional power source will turn off to indicate the fault condition.

FEATURES

- 1-100 MHz
- Unity gain
- Low VSWR
- High isolation
- High output
- Low phase noise
- ADEV(1s) < 2E-15
- Low temperature coefficient
- Signal Monitor LEDs
- Ethernet connectivity

APPLICATIONS

- Atomic frequency standards
- Atomic time scales
- High performance testing facilities
- Laboratory frequency distribution
- Optical clocks
- Quantum computing reference distribution
- Reference frequency distribution

HPDA-15RMe

SPECIFICATIONS

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Max Input Level	1 dB compression	-	18	19	dBm
Bandwidth	+/- 1 dB	1-105	1-110	-	MHz
Gain	@ 100 MHz		+0.5	±1dB	dB
Impedance	input output	-	50 50	-	Ohms
Return Loss	input(S_{11})	-	-25	-20	dB
Return Loss	output(S_{22})	-	-26	-20	dB
Distortion (10 MHz)	+12 dBm	-	-47	-40	dBc
Distortion (100 MHz)	+12 dBm	-	-39	-38	dBc
Isolation 10 MHz	output to output output to input	125 135	130 140	- -	dB dB
Isolation 100 MHz	output to output output to input	115 115	120 120	- -	dB dB
Spurious		-	-	-90	dBc
Phase Noise Measured at 10 MHz, +13dBm	1 Hz 10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	- - - - - -	-152 -162 -170 -172 -172 -172	-149 -159 -167 -170 -170 -170	dBc/Hz
Phase Noise Measured at 100 MHz, +13dBm	1 Hz 10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	- - - - - -	-137 -147 -157 -163 -165 -166	-133 -143 -153 -162 -163 -164	dBc/Hz
Allan Deviation (ADEV)	1 s 10 s 100 s 1000 s		1.3 E –15 3.2 E –16 1.3 E –16 7.2 E –17	2 E –15 5 E –16 3 E –16 1 E –16	
Temperature-delay Coefficient	0 - 50 ºC	--	1.5	3	ps/ºC

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