

AUTOSWITCH AMPLIFIER, HPDA-15RMi-S



DESCRIPTION

The HPDA-15RMi-S is a high performance frequency distribution amplifier with an autoswitch function that allows the selection of the RF input to be distributed. The selected RF input supplies 10 buffered unity gain outputs. The instrument has a manual mode and autoswitch mode of operation. In manual mode, the RF input can be selected with a toggle switch on the front panel, or by sending a command through the Ethernet interface. In autoswitch mode, the two RF input levels are monitored and compared to a set threshold of +7 dBm. Upon failure of a selected input channel the amplifier switches over to the alternate RF input with a switching time less than 1 μ s.

The selected RF input is buffered and distributed to ten unity gain outputs. The typical cross-channel isolation of the RF distribution is 140 dB and reverse isolation is typically greater than 145 dB. The phase noise of the amplifier is exceptionally low, typically -147 dBc/Hz @ Fourier frequency of 1 Hz and -171 dBc/Hz @ Fourier frequencies 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.

The HPDA-15RMi-S is designed to be powered by a 100 to 240 VAC mains source or by a +12 to +36 VDC power source. The DC power supply may be used as a main power source for the instrument or in conjunction with the AC power supply as a backup in case of loss of the main AC power. The instrument is designed to automatically switch from AC to DC supply operation using a Schottky diode network and charge storage capacitors to avoid any glitches and ensure uninterrupted continuous operation.

FEATURES

- 1-50 MHz
- Unity gain
- Low VSWR
- High isolation
- High output: +18 dBm
- Low phase noise: -147 dBc/Hz @ 1 Hz
-171 dBc/Hz @ 10 kHz
- Low distortion: -45 dBc
- Low temperature coefficient: 1.5 ps/°C

APPLICATIONS

- Atomic frequency standards
- Atomic time scales
- High performance testing facilities
- Laboratory frequency distribution
- Reference frequency distribution

SPECIFICATIONS

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Output power level	1 dB compression	17	18	-	dBm
Minimum input level	No fault	7	8	-	dBm
Bandwidth	+/- 1 dB	1 - 50	0.5- 65	-	MHz
Gain	5 MHz	0	0.2	0.5	dB
Impedance	Output	-	50	-	Ohms
Return loss	Input (S11) 5 MHz	-	-25	-20	dB
	Output (S22) 5 MHz	-	-35	-30	
Distortion	+13 dBm	-	-45	-42	dBc
Isolation	Output to output	130	140	-	dB
	Output to input	140	145	-	
Isolation	Input 1 to input 2	100	110	-	dB
Switching time	Autoswitch mode	-	0.5	1	µs
Phase noise Referred to the Input	1 Hz	-	-147	-145	dBc/Hz
	10 Hz	-	-157	-155	
	1 kHz	-	-167	-166	
	10 kHz	-	-171	-170	
Temperature-delay coefficient	0 - 50 °C	-	1.5	3	ps/°C