

# 1...100MHz Distribution Amplifier

- Exhibits low 1/f AM & PM noise



The Quartzlock A5-8 Distribution Amplifier is a precision distribution amplifier for use with Frequency Standards or other signals where a need for multiple outputs from a single generator is required. Available in 8 outputs. The A5-8 replaces previous A5 models; the specification has improved isolation and other parametrics. *NB This specification is provisional at time of going to press, final specification due June 2012, ask Quartzlock.*

## Features

- High Isolation between inputs and outputs
- Ultra low phase noise
- Ultra high stability
- Very low harmonic distortion
- Bipolar Junction Amplifiers 24Vdc BBU &/or 90 ... 240Vac operation

## Benefits

- Hydrogen Maser compatible performance
- Retains original input signal characteristics
- 8 outputs
- May be supplied with two or three channel inputs
- No cross channel interference between outputs for mission critical applications

## Applications

- Frequency Distribution where the highest levels of stability and lowest levels of phase noise are required
- National Standards Laboratories
- Calibration Laboratories
- Research and Development
- Production Test

**Typical Characteristics \***

No of outputs	8
No of inputs	1 to 4 (Note mixed frequencies are permitted in one unit)
Input characteristics	
Impedance:	50 Ohm nominal
Level:	0dBm to +13dBm adjustable, sine wave
Input SWR:	<1.3:1 at 10MHz <2:1 at 100MHz
Output Characteristics	
Impedance:	50 Ohm nominal
Level:	13dBm nominal into 50 Ohms (1 volt RMS)
Output SWR:	<1.2:1 d) Maximum Output: 17dBm at 10MHz typical
Frequency Response	2MHz to 100 MHz +/-1.5dB 500kHz to 100MHz+/-3dB
Harmonics	(at nominal output, 10MHz) (Source harmonics less than -60dBc) Second Harmonic <-38dBc Third Harmonic <-48dBc
Isolation	
a) Output to output:	>90dB (adjacent outputs) at 10MHz 130dB at 5MHz (non adjacent outputs) typ. >70dB (adjacent outputs) at 100MHz Typically >110dB at 10MHz and >90dBm at 100MHz
b) Output to input:	>110dB at 10MHz >90dB at 100 MHz >90dB at 5MHz >80dB at 10MHz
c) Input to input (crosstalk):	>55dB at 100MHz
Phase Noise @ 10MHz	dBc/Hz
1Hz	-140 -
10Hz	150 -
100Hz	160
1kHz	-165
>100kHz	-168
Short term stability @ 10MHz	
1s	<10 <sup>-13</sup>
10s	<3x10 <sup>-14</sup>
100s	<10 <sup>-14</sup>
Spurious Outputs	< -110dBc (above 1MHz) (typically <-120dBc) (Spurious outputs are exclusively from the switch mode power supply)
Broadband Noise	<-148dBm/Hz
Delay match between outputs	<2ns (within group of 4 outputs <0.3ns)
Temp stability of delay	10ps/deg C
Phase change at output	Due to open or short at any other output (Calculated from isolation): 0.5ps (at 10MHz)

**Measurement Results \***

Input characteristics	
Impedance:	50 ohm +13dBm,
Level:	1V RMS
Level max:	1.2VRMS, 5MHz
Output characteristics	
Impedance:	50 ohm
Level:	1V into 50 Ohms (RMS)
Maximum:	1.1V into 50 Ohms
Frequency Response	800kHz – 100MHz ± 1dB
Harmonics	5MHz source harmonics less than -60dBc
Isolation	
Output to output:	>110dB 5–
Non-adjacent o/p typ @ 5MHz:	60MHz 130dB
Output to Input:	>70dB 70–100MHz
Stability AVAR	1s tba
Phase noise (5MHz) offset	
1Hz	
10Hz	
1kHz Noise	
Floor	-170dBc
Phase stability	10ps/°C (5MHz)
Supply	90 ... 240Vac &/or 24Vdc BBU Battery Input
Size	International 2U Rack Mount
Warranty	1 year (ask Quartzlock about low cost extended warranty)

**\* Provisional Specification**  
(Final spec due June 2012, contact Quartzlock)