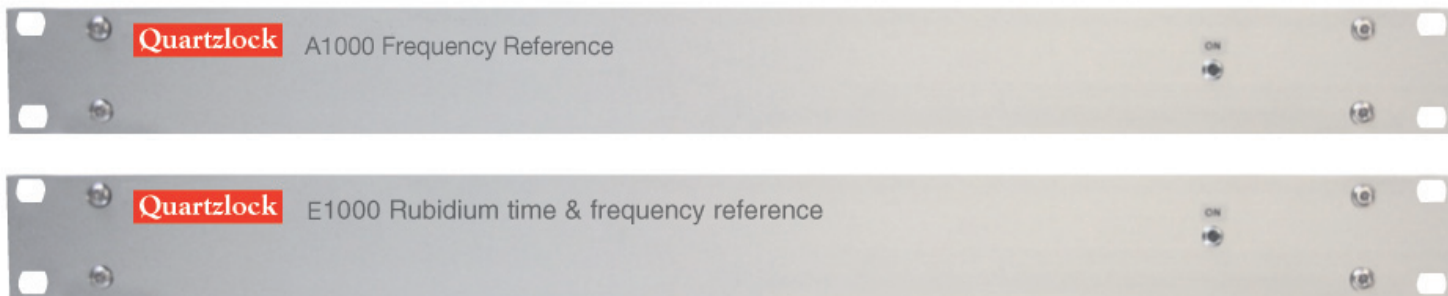


Quartzlock A1000 & E1000

Very Low
Phase Noise – E1000
-110dBc/Hz@1Hz offset as standard
Stability (AVAR) is $8 \times 10^{-13}/s$ typically

Rubidium Frequency References



APPLICATIONS

- Frequency Calibration
- Telecom Network Synchronisation
- Broadcast – Radio & TV
- HDTV
- Production Test Reference for instrumentation
- Microwave Test Bench or Test Solution
- Satellite communications

E1000 uses Quartzlock **Active Noise Filter Clean** Technology

FEATURES & BENEFITS

- Ultra High Performance Reference
- Multiple Output options
- Custom Frequency Outputs
- **High Reliability – 3 year warranty**
- Low Phase Noise Floor -167dBc/Hz (-170dBc/Hz option)
- Aging: $4 \times 10^{-10}/\text{year}$
- Stability to $5 \times 10^{-13}/s$
- 10MHz Standard Output
- 1–40MHz optional
- 100MHz option (-180dBc/Hz NF)
- 5MHz option (-123dBc/Hz @ 1Hz)

Rubidium Frequency References

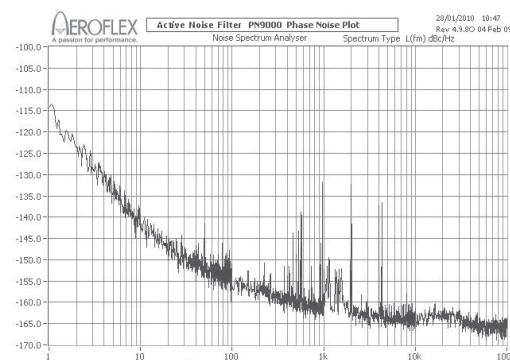


Low phase noise • Low drift • High stability

STANDARD SPECIFICATIONS Typical characteristics			
Output see options	10MHz, +7dBm into 50Ω, 0.5VRMS		
Adjustment	2x10 ⁻⁹ min		
Mechanical Range	2x10 ⁻⁹ min		
Electrical Range	0 ~ 5V		
Control Voltage	±5x10 ⁻¹¹		
Factory Setting	1x10 ⁻¹¹		
1PPS I/O Sync	-	E1000 spec only	
Frequency Stability typical	A1000	E1000	
	Standard spec	Standard spec	ULN option
1s	3x10 ⁻¹²	8x10 ⁻¹³	5x10 ⁻¹³
10s	2x10 ⁻¹²	5x10 ⁻¹²	2x10 ⁻¹³
100s	8x10 ⁻¹³	4x10 ⁻¹³	4x10 ⁻¹³
1 hour	5x10 ⁻¹³		
1day	8x10 ⁻¹³	1x10 ⁻¹²	x10 ⁻¹²
Aging			
1 day	3x10 ⁻¹²	1x10 ⁻¹²	5x10 ⁻¹³
1 month	4x10 ⁻¹¹	4x10 ⁻¹¹	4x10 ⁻¹¹
1 year	5x10 ⁻¹⁰	4x10 ⁻¹⁰	4x10 ⁻¹⁰
Phase Noise dBc/Hz in 1Hz BW	Standard	Standard	ULN option
1Hz	-90	-110	-115
10Hz	-120	-140	-146
100Hz	-135	-145	-156
1kHz	-145	-155	-163
10kHz	-150	-157	-164
100kHz	-150		-167
Harmonics	<40dBc	<-30dBc	<-30dBc
Spurious	<80dBc		
Warm time to 1x10⁻⁹	5min		
Retrace after 24h off & 1h on, same temp	<3x10 ⁻¹¹		
Power Supply Power at steady state at 25C	90 245V ac Battery Back Up option 13W @ 24V (22-30Vdc) @ 25C, Max 2A (12V for E1000)		
Freq offset over output voltage range	<2x10 ⁻¹¹		
Temperature			
Operating	-20C ~ +50C		
Storage	-40C ~ +70C		
Freq offset over operating temperature range	<3x10 ⁻¹⁰		
Magnetic Field			
Sensitivity	<2x10 ⁻¹¹ /Gauss		
Atmospheric Pressure	-60m ~ 4000m <1x10 ⁻¹³ /mbar		
Approx MTBF, Stationary	Approx MTBF, Stationary		
Mechanical	88mm (3.5") 2U x 19" rack mounted		

OPTIONS

- 0 Seamless Battery Back-up Switch
- 1 High Performance Distribution Card 1 Input 4 Outputs
- 2 E1 Output
- 3 T1 Output
- 4 13MHz Output
- 5 TTL Output
- 7 10.24MHz Output
- 8 10.23MHz Output
- 9 Add 6 Output Distribution Card (not available with option 48 – ULN)
- 18 Add Additional 1–5 Years Warranty (18.1 = 1 Year ... 18.5 = 5 Years)
- 40 Reduced Harmonic (<-50dBc) and Spurii
- 48 **ULN Ultra Low Noise Outputs**
5MHz -123dBc/Hz @ 1Hz offset
10MHz -115dBc/Hz @ 1Hz
100MHz -135dBc/Hz @ 100Hz
-162dBc/Hz @ 1kHz
-180dBc/Hz @ 100kHz



E1000 with 10MHz ULN Option. Typical Phase Noise

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