

# Rubidium Time & Frequency Reference

- ❑ Low phase noise
- ❑ Ageing  $<4 \times 10^{-10}$  / year
- ❑ High Precision Atomic Clock



The A1000 exhibits extraordinarily low ageing/drift and very high stability per hour and per day. These characteristics along with our three year warranty make the A1000 suitable for mission critical applications. The A1000 can be highly customised with multiple outputs and frequencies.

## Features

- Multiple Output options
- 3 Years warranty
- Custom Frequency outputs
- $<-135\text{dB/Hz}$  @ 10Hz phase noise

## Benefits

- Stability to  $2 \times 10^{-12}$
- 10MHz Standard Output (available up to 100MHz)
- 1-40MHz Optional
- 100MHz option ( $-170\text{dBc/Hz}$  NF)
- 5MHz option ( $-123\text{dBc/Hz}$  @ 1Hz)

## Applications

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

## Specification

Outputs <small>See options</small>	10MHz, +7dBm into 50,0.5VRMS		
Adjustment	2x10 <sup>-9</sup> min		
Mechanical Range	2x10 <sup>-9</sup> min		
Electrical Range	0 ~ 5V		
Control Voltage	±5x10 <sup>-11</sup>		
Factory Setting	1x10 <sup>-11</sup>		
Frequency Stability	1s	2x10 <sup>-12</sup>	
	10s	5x10 <sup>-12</sup>	
	100s	8x10 <sup>-13</sup>	
	1day	8x10 <sup>-12</sup>	
Ageing	1 day	3x10 <sup>-12</sup>	
	1 month	4x10 <sup>-11</sup>	
	1 year	5x10 <sup>-10</sup>	
Phase Noise	dBc/Hz in 1Hz	Option A	Option B
	1Hz	-108	-113
	10Hz	-135	-138
	100Hz	-150	-152
	1kHz	-155	-155
	10kHz	-158	-158
Harmonics	<-40dBc		
Spurious	<-80dBc		
Warm Time to 1 x 10 <sup>-9</sup>	5 minutes		
Retrace after 24h off & 1h on, same temp	<3x10 <sup>-13</sup>		
Power Supply	90 .... 245V ac		
Power at steady state at 25C	Battery Back Up option 13W @ 24V (22-30Vdc) @ 25C, Max 2A		
Frequency Offset over output voltage range	<2x10 <sup>-11</sup>		
Temperature Operating	-20C ~ +50C		
Storage	-40C ~ +70C		
Freq offset over operating temperature range	<1x10 <sup>-10</sup>		

Magnetic Field <2x10<sup>-7</sup> /Gauss  
-60m ~ 4000m <1x10<sup>-7</sup> /mbar

Sensitivity	Approx MTBF over 100,000 hours
Atmospheric	
Pressure Approx	88mm (3.5") 2U x 19" rack mounted
MTBF, Stationary	
Mechanical	

### Options

- 0** Seamless Battery Back-up Switch
- 1** Add 5MHz output
- 2** E1 Output 2048KHz
- 3** T1 Output 1544KHz
- 4** 13MHz Output
- 5** TTL Output
- 7** 10.24MHz Output
- 8** 10.23MHz Output
- 9** Add 6 Output Distribution Card
- 10** Upgrade short term stability to 5x10<sup>-13</sup> at 1 second
- 11** Redundancy switch For External input DC
  
- 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
  - 10MHz** -115dBc/Hz @ 1Hz
  - 100MHz** -130dBc/Hz @ 100Hz  
-160dBc/Hz @ 1kHz  
-170dBc/Hz @ 100kHz

Revision date: May 2017