

# Rubidium Time & Frequency Reference

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

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## Features

- Multiple Output options
- 3 Years warranty
- Custom Frequency outputs
- $<-130\text{dB/Hz}$  @ 10Hz phase noise

## Benefits

- Stability to  $5 \times 10^{-13}/\text{s}$
- 10MHz Standard Output
- 1-40MHz Optional
- 100MHz option ( $-180\text{dBc/Hz}$  NF)
- 5MHz option ( $-123\text{dBc/Hz}$  @ 1Hz)

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## Applications

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

Outputs <small>See options</small>	10MHz, +7dBm into 50 $\Omega$ , 0.5VRMS	
Adjustment		
Mechanical Range	2x10 <sup>-9</sup> min	
Electrical Range	2x10 <sup>-9</sup> min	
Control Voltage	0 ~ 5V	
Factory Setting	$\pm 5 \times 10^{-11}$ 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 BW	Standard
	1Hz	-105
	10Hz	-130
	100Hz	-140
	1kHz	-145
	10kHz	-150
Harmonics	<-40dBc	
Spurious	<-80dBc	
Warm Time to 1 x 10 <sup>-9</sup>	5 minutes	
Retrace <small>after 24h off &amp; 1h on, same temp</small>	<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	<3x10 <sup>-10</sup>	

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

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

### 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
  
- 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** -135dBc/Hz @ 100Hz  
-162dBc/Hz @ 1kHz  
-180dBc/Hz @ 100kHz