

# 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 year warranty
- Custom Frequency outputs
- -120dBc/Hz @ 10Hz phase noise

## Benefits

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

<b>Outputs</b> See options	10MHz, +7dBm into 50Ω, 0.5VRMS	
<b>Adjustment</b>		
Mechanical Range	2x10 <sup>-9</sup> min	
Electrical Range	2x10 <sup>-9</sup> min	
Control Voltage	0 ~ 5V	
Factory Setting	±5x10 <sup>-11</sup> 1x10 <sup>-11</sup>	
<b>Frequency Stability</b>		
	1s	3x10 <sup>-11</sup>
	10s	1x10 <sup>-11</sup>
	100s	3x10 <sup>-12</sup>
	1day	8x10 <sup>-12</sup>
<b>Ageing</b>		
	1 day	3x10 <sup>-12</sup>
	1 month	4x10 <sup>-11</sup>
	1 year	5x10 <sup>-10</sup>
<b>Phase Noise</b>	<b>dBc/Hz in 1Hz BW</b>	<b>Standard</b>
	1Hz	-70
	10Hz	-100
	100Hz	-120
	1kHz	-140
	10kHz	-145
<b>Harmonics</b>	<40dBc	
<b>Spurious</b>	<80dBc	
<b>Warm Time</b> to 1 x 10 <sup>-9</sup>	5 minutes	
<b>Retrace</b> after 24h off & 1h on, same temp	<3x10 <sup>-13</sup>	
<b>Power Supply</b>	90 .... 245V ac	
Power at steady state at 25C	Battery Back Up option 13W @ 24V (22–30Vdc) @ 25C, Max 2A	
<b>Frequency Offset</b> over output voltage range	<2x10 <sup>-11</sup>	
<b>Temperature</b>		
Operating	-20C ~ +50C	
Storage	-40C ~ +70C	
Freq offset over operating temperature range	<3x10 <sup>-10</sup>	

## Magnetic Field

Sensitivity	<2x10 <sup>-11</sup> /Gauss
Atmospheric Pressure	-60m ~ 4000m <1x10 <sup>-13</sup> /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