

## Rubidium Clock

### AR81A - 00

### 6 Outputs

### Key Features

- Ultra high stability:  $2E-12@10,000$  Sec
- Ultra low phase noise:  $-94\text{dBc}@1\text{Hz}$ ,  $-150\text{dBc}@1\text{kHz}$
- Aging:  $5E-11/\text{month}$
- 6 outputs of 10MHz sine wave
- High MTBF:  $> 500,000$  Hrs @  $25^\circ\text{C}$
- Supply Voltage: 90-260 VAC



### Description

The AR-81A is a 1U, 19" rack-mount ultra high stability and ultra low phase noise Rubidium Frequency Standard.

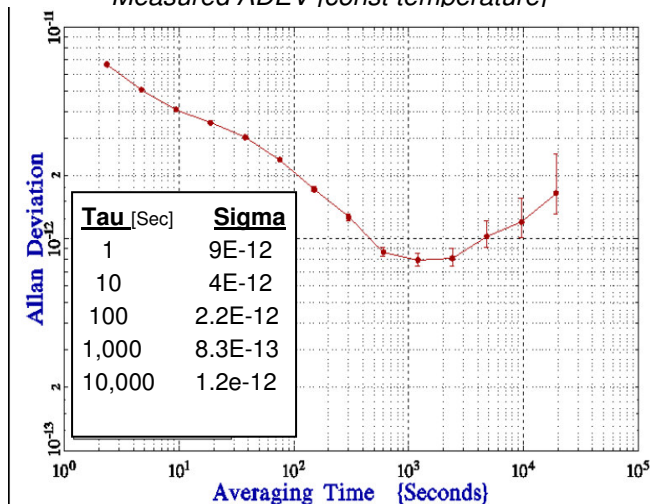
The unit offers six 10MHz outputs.

The unit includes two hot redundant power supplies for high MTBF ( $>500,000$  Hrs @  $25^\circ\text{C}$ ).

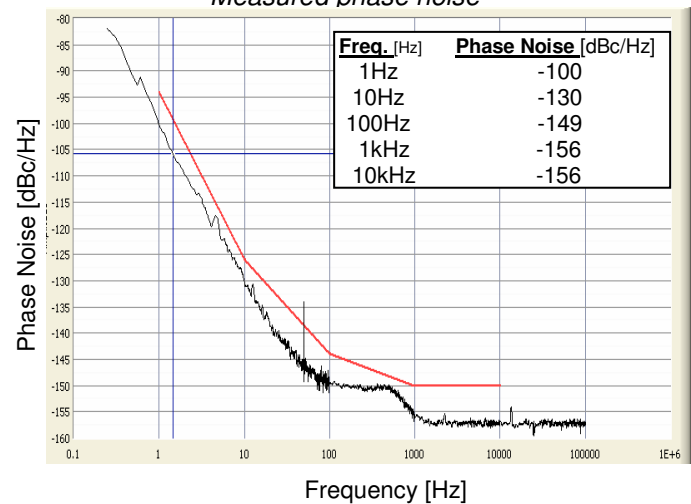
BIT status showed by the front panel LEDs and via RS-232 communication port.

Frequency calibration available via RS-232.

Measured ADEV [const temperature]



Measured phase noise



### Applications

- ❖ Ground segment clock for Satellite Navigation Programs like Galileo
- ❖ Scientifics & Calibration
- ❖ Wireline & Wireless communication



## SPECIFICATIONS

All specs are at room temperature, quiescent conditions, sea level ambient unless otherwise specified

Input & Outputs		
<b>Outputs</b>	<ul style="list-style-type: none"> <li>○ 6 outputs of 10MHz sine wave</li> </ul>	<p style="text-align: center; font-weight: bold; font-size: 1.2em;">AR-81A</p>
<b>Monitor &amp; Control</b>	<ul style="list-style-type: none"> <li>○ Communication channel for monitoring and frequency adjustment</li> <li>○ Standard: RS-232</li> <li>○ Protocol: 1 start bit, 8 data bits, 1 stop bit</li> <li>○ Rate: 1200 baud</li> </ul>	

Performance			
		Specification	Measured performance (*)
Frequency	<b>Long Term Stability</b>	<5E-11 / monthly <5E-10 / yearly	
	<b>Short Term Stability</b>	<3E-11 @ 1sec <1E-11 @ 10sec <3E-12 @ 100sec <2.5E-12 @ 1000sec <2E-12 @ 10000sec	9E-12@1Sec 4E-12@10sec 2.2E-12@100Sec 8.3E-13@1,000Sec 1.2E-12@10,000Sec
	<b>Temperature Stability</b>	< 3E-10 / 0°C to +50°C	
	<b>Phase Noise</b>	<-94 dBc/Hz @ 1Hz <-126 dBc/Hz @ 10Hz <-144 dBc/Hz @ 100Hz <-150 dBc/Hz @ 1KHz <-150 dBc/Hz @ 10KHz	-100 dBc/Hz @ 1Hz -130 dBc/Hz @ 10Hz -149 dBc/Hz @ 100Hz -156 dBc/Hz @ 1KHz -156 dBc/Hz @ 10KHz
	<b>Harmonics</b>	< -40 dBc	-44dBc
	<b>Spurious @ 100kHz</b>	< - 60 dBc	-100dBc
	<b>Warm-up</b>	Time to lock : < 5 min	3.2 min
		Time to <1E-9: < 8 min	5 min
	<b>Level</b>	1Vrms (11-14 dBm)	
	<b>Retrace</b>	±5E-11	
	<b>Accuracy @ shipment</b>	< ±5E-11	
	<b>Maximum clock drift</b>	±10E-9 Sec / Sec	
	<b>Magnetic Field</b>	DC (±2 gauss)	
<b>Magnetic Sensitivity</b>	< 4E-11 / gauss		

(\*) AccuBeat commitment is only for the specification not for the measured performance.

Power Supply		
<b>AC</b>	90-260 VAC, 47/63 Hz (standard) – Automatic switching	
<b>Power Consumption</b>	@ steady state	< 25W
	@ start (<5 min)	< 45W

## SPECIFICATIONS (continue)

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### LEDs indicators

<b>LED Indications</b>	3 LEDs on the front panel: Power, overall BIT and Rubidium Status
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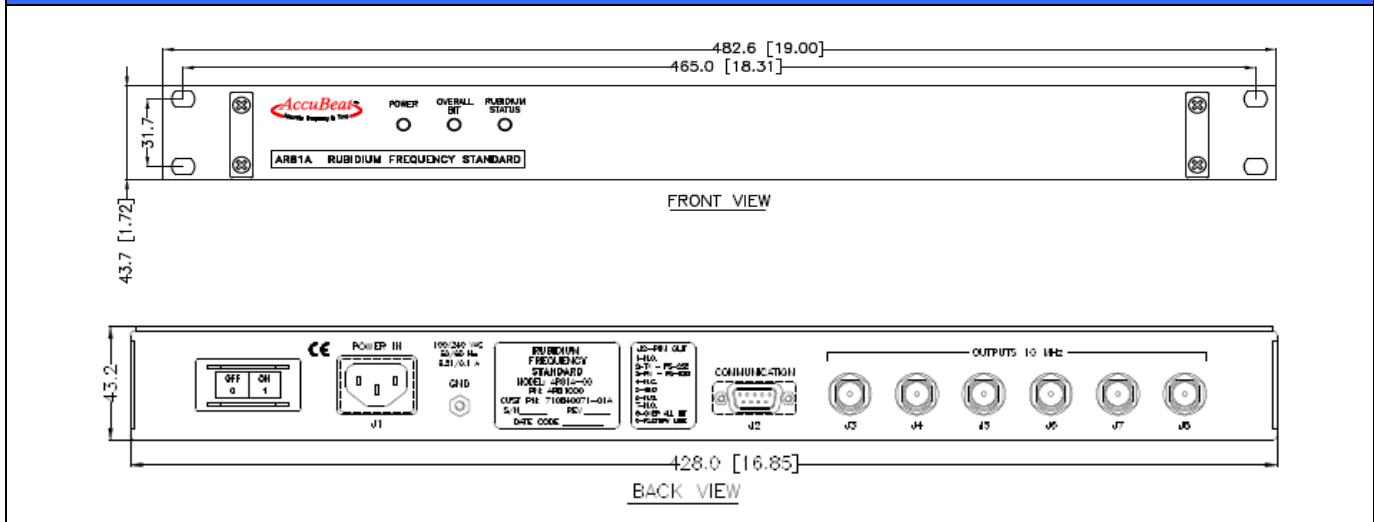
### Dimensions & Weight

<b>19" x 1U Rack Mount</b>	Size	43.7mm (H) x 367mm (L = depth) x 482.6mm (W)
	Weight	< 4 kg

### Environmental

<b>CE Compliance</b>	EN61000-6-3 : 2001 Emission test EN55022 Class B EN61000-6-1 : 2001 Immunity tests (EN55024) EN60950: Safety standard
<b>Operating Temperature</b>	0°C to +50°C
<b>Storage Temperature</b>	-40°C to +70°C
<b>Humidity</b>	Up to 95%, non-condensed
<b>Altitude (Operating)</b>	0 to 6000 m (0 to 19685 feet)
<b>Vibration &amp; Shocks (Non operating)</b>	Transportation Vibration & Shocks
<b>MTBF (GB@25°C)</b>	507,000 Hours
<b>MTBF (GB@33°C)</b>	477,000 Hours

### Mechanical ICD



### Electrical ICD

Connector	Description	Type
J1	Power supply - 110/ 220 VAC	IEC320 C14 Inlet, Male
J2	Communication - RS-232 channel	D-Type, 9 pin, Female
J3-J8	Frequency output - OUT 1~ 6	TNC Female