

## Rubidium Clock

6 Outputs

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



### Key Features

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

### Description

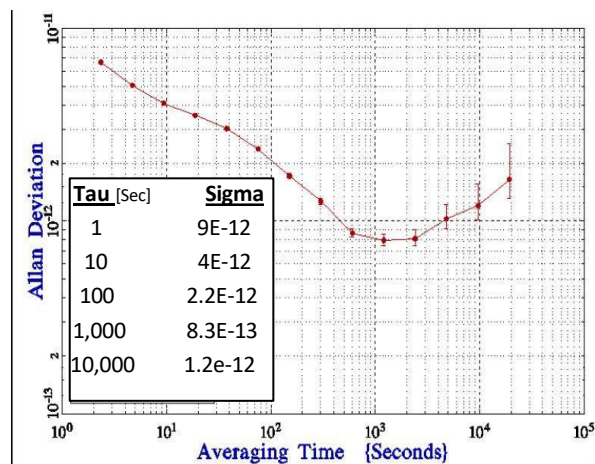
The **AR-81** offers six 10MHz outputs.

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

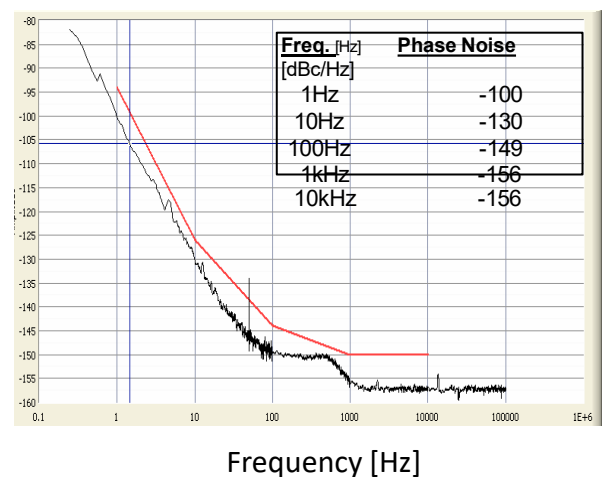
BIT status showed by the front panel LEDs and via RS-232 communication port.

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

All specs are @ 25°C, quiescent conditions and sea level ambient unless otherwise specified

## Specifications

Input & Outputs	
<b>Outputs</b>	<ul style="list-style-type: none"> <li>o 6 outputs of 10MHz sine wave</li> </ul>
<b>Monitor &amp; Control</b>	<ul style="list-style-type: none"> <li>o Communication channel for monitoring and frequency adjustment</li> <li>o Standard: RS-232</li> <li>o Protocol: 1 start bit, 8 data bits, 1 stop bit</li> <li>o Rate: 1200 baud</li> </ul>

Performance			
	Specification	Measured performance (*)	
<b>Frequency</b>	Long Term Stability	<5E-11 / monthly <5E-10 / yearly	
	Short Term Stability	<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
	Temperature Stability	< 3E-10 / 0°C to +50°C	
	Phase Noise	<-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
	Harmonics	< -40 dBc	-44dBc
	Spurious @ 100kHz	< - 60 dBc	-100dBc
	Warm-up	Time to lock : < 5 min	3.2 min
		Time to <1E-9: < 8 min	5 min
	Level	1Vrms (11-14 dBm)	
	Retrace	±5E-11	
	Accuracy @ shipment	< ±5E-11	
	Maximum clock drift	±10E-9 Sec / Sec	
	Magnetic Field	DC (±2 gauss)	
Magnetic Sensitivity	< 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

All specs are @ 25°C, quiescent conditions and sea level ambient unless otherwise specified

**LEDs indicators**

**LED Indications** 3 LEDs on the front panel: Power, overall BIT and Rubidium Status

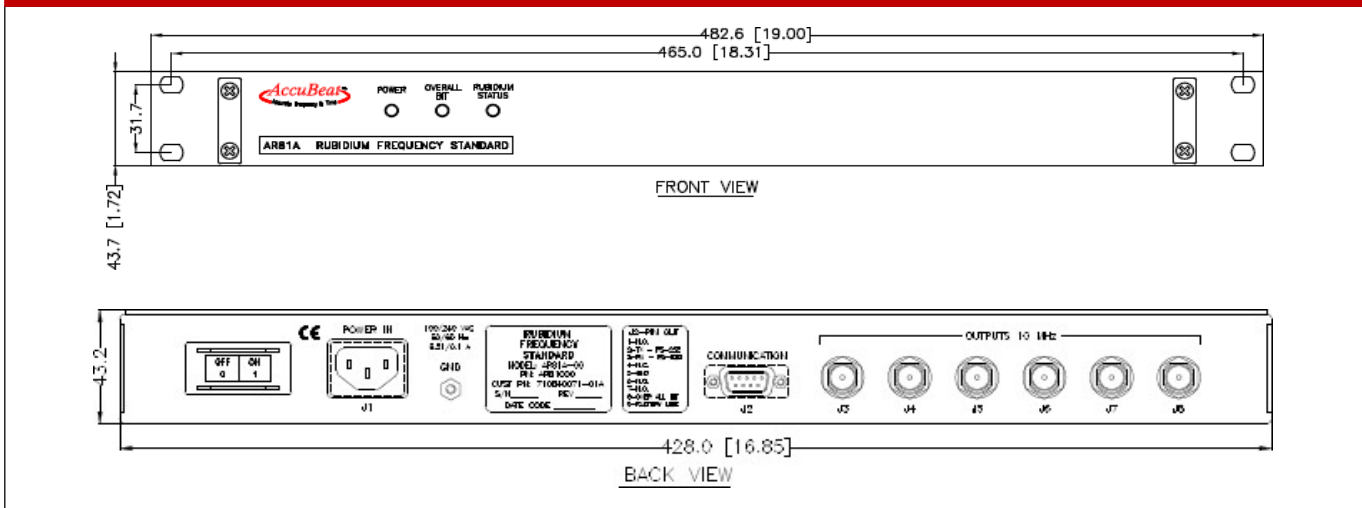
**Dimensions & Weight**

<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

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