

Rubidium Frequency Standard

AR100C

Low Profile

Key Features

- ❖ Long-term stability: 1E-9/year
- ❖ Short term stability: 6E-11 @ 1s
- ❖ Phase noise: -150dBc/Hz @10kHz
- ❖ Outputs: 10 MHz and 1PPS
- ❖ Supply voltage: 15 VDC
- ❖ Steady state power < 8W
- ❖ Size: 77 x 77 x 18 mm



Description

The AR100C is AccuBeat's new generation *multifunctional Rubidium Frequency Standard*. It is one of the smallest atomic standards available today, where the accuracy and stability are derived from a *quantum energy transition* that occurs in a *free rubidium atom*. The unit utilizes a unique advanced technology which allows a reduction of dimensions without sacrificing performance.

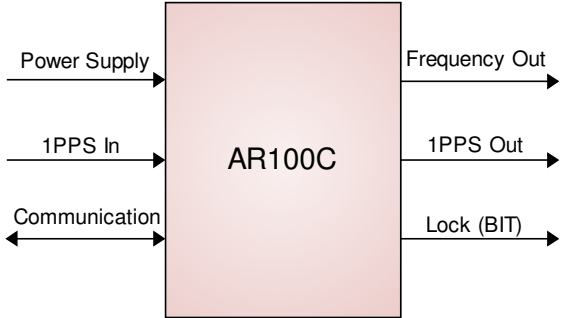
Disciplining to external 1PPS improves the long term stability.

Applications

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|--|---|--|
| <ul style="list-style-type: none"> ❖ Secure Communication | <ul style="list-style-type: none"> ❖ Telecommunication ❖ Software Radio ❖ Test Equipment ❖ Cellular Base Stations | <ul style="list-style-type: none"> ❖ TV Stations, HDTV ❖ Scientific Equipment ❖ Calibration |
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STANDARD PRODUCT SPECIFICATIONS

Input & Outputs

	Standard	Option	
Outputs	10MHz sine wave +12±2 dBm into 50Ω	- 5MHz instead of 10MHz - Square wave instead of sine wave	
	1PPS, 3V TTL into 50Ω Rise time < 5nSec Pulse width <20uSec		
Monitor & Control	RS-232 control and monitor interface provide: ID, Status, frequency adjustment. Protocol: 9600, 1, 8, 1, No parity	CMOS level	
	Digital frequency adjustment: 7.6E-13 steps over > 5E-7 range		

For more information about the communication channel contact factory.

Performance (Rubidium Mode)		
Frequency	Short Term Stability	< 6E-11 @ 1s
	Phase Noise	<-102 dBc/Hz @ 10Hz <-135 dBc/Hz @ 100Hz <-145 dBc/Hz @ 1kHz <-150 dBc/Hz @ 10kHz
	Harmonics	< -44 dBc (up to 70MHz)
	Spurious	< -80 dBc in the range 10Hz to 100kHz from carrier
	Warm-up	< 5E-8 (Lock) within 5 minutes @ 25°C ±5E-10 within 6 minutes @ 25°C (relative to the frequency before turn-off)
	Accuracy @ Shipment	<±8E-11
	Magnetic Field Sensitivity	< 8E-11 / gauss up to 3 gauss DC (worst direction)
	Long Term Stability	< ± 1E-9/year (after 3 month of operation)
	Temperature Stability and Range	≤±2E-10 over -5°C to +50°C
Power Consumption	@ Steady-state	< 8W @ 25°C
	@ Warm-up	< 16W @ 25°C

(*) Unless specified, all parameters relate to 10MHz output at room temperature.

Power Supply, Dimensions & Weight	
DC	15±0.3 VDC
Size	77 mm x 77mm x 18 mm
Weight	< 195 gram

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

BIT and Remote Control	
Built In Test (BIT):	The built in test detects > 95% of all failures. Receive by hardware (pin number 3 in the D Type connector), open collector (10mA max). High impedance = BIT Fail; short to ground = BIT Pass & Lock. BIT result receives also by serial communication.

Environmental	
Operating Temperature	-5°C to +50 °C
Storage Temperature	-40°C to +80°C
Humidity	Up to 95% at 35°C, non-condensed

Mechanical & Electrical ICD	
	<p>D-Type subminiature 9 pins (male):</p> <ul style="list-style-type: none"> Pin 1 – Supply Pin 2 – GND Pin 3 – Lock (BIT) Pin 4 – 1PPS IN Pin 5 – Factory Use Pin 6 – TxD Pin 7 – Factory Use Pin 8 – 1PPS OUT Pin 9 – RxD <p>SMA: RF OUT</p>