Rubidium Frequency Standard

AR100C

Low Profile

Key Features

- *Long-term-stability: 1E-9/year*
- *Short term stability: 4E-11 @ 1s*
- *Phase noise: -150dBc/Hz @10kHz*
- *Outputs: 10 MHz and 1PPS*
- *Supply voltage: 15 VDC*
- *Steady state power < 10W*
- *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.

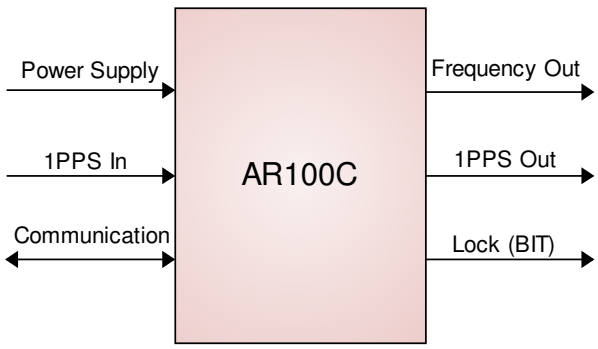
Applications

- Secure Communication
- ELINT
- C4I
- Telecommunication
- Software Radio
- Test Equipment
- Cellular Base Stations
- TV Stations, HDTV
- Scientific Equipment
- Calibration

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	< 4E-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℃ ±5E-10 within 6 minutes @ 25℃	
	Accuracy @ Shipment	<± 5E-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℃ to +50℃	
Power Consumption		@ Steady-state	< 10W @ 25℃
		@ Warm-up	< 20W@ 25℃

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

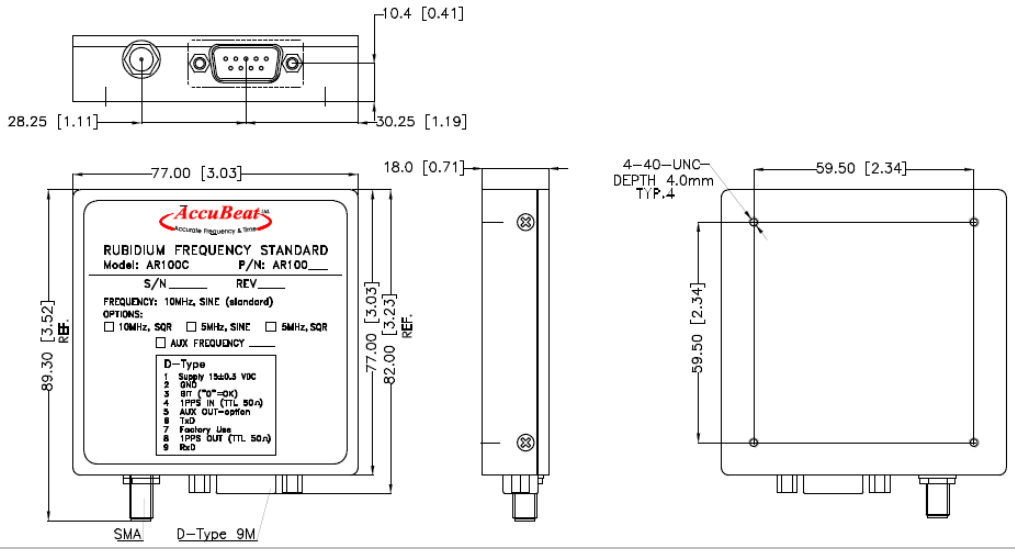
Power Supply, Dimensions & Weight	
DC	15±0.3 VDC
Size	77 mm x 77mm x 18 mm
Weight	< 195 gram

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℃ to +50 ℃
Storage Temperature	-40℃ to +80℃
Humidity	Up to 95% at 35℃, non-condensed

Mechanical & Electrical ICD



D-Type subminiature 9 pins (male):

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

SMA: RF OUT