

Rubidium Frequency Standard Oscillator AR-62A-02

Output Frequency:	2.048 MHz sine wave / 75 ohm
Short-Term-Stability:	<3 x 10 ⁻¹¹ @ 1sec; <3x 10 ⁻¹² @ 100sec
Low Aging	5E-10/year
Wide Temperature :	-40°C to +70°C (OPT)
Stability over Temperature:	±3E-10
Low Power:	10W @ steady state
Fast Warm-up:	< 4 min to lock
Compact:	114x83x83 mm
Digital Freq. Control:	<1x10 ⁻¹² steps / >5 x 10 ⁻⁷ Range (opt.)
Hold-Over Mode:	OCXO hold-over
High Reliability MTBF:	>261,000 hrs @ 25°C, G.B

Description:

AR-62A-02 is an extremely small, very high performance Atomic Rubidium Frequency Standard designed to operate reliably in demanding applications and harsh environment. The unit is a semi-militarized version of the AR-60A model. AR-60A includes a high performance Oven Controlled Crystal Oscillator (OCXO) which is locked to the Rubidium Atomic Resonance thus maintaining its very high stability and accuracy.

The unit contains a micro-processor which optimizes its performance vs. external disturbances. It has a unique hold-over mode which keeps the internal OCXO running with the last memorized frequency when lock is lost. (e.g. at a very high temperature or shock).

In addition, a built-in synthesizer allows a very fine digital frequency control over a wide range (option).



Applications

- Communication
- Telecommunications
- Mobile Radio Base Stations
- Wireless Communication
- Secure Communication
- Calibration

Specifications - AR-62A-02

Specification		
Accuracy	@ Shipment:	5×10^{-11}
	Holdover: (when lock is lost)	OCXO
Long Term Stability	$< 2 \times 10^{-9}$ (1 st Year) $< 5 \times 10^{-10}$ (2 nd Year)	
Short Term Stability	$< 3 \times 10^{-11}$ @ 1sec $< 3 \times 10^{-12}$ @ 100sec	
Phase Noise (10 MHz) Quiescent	<u>From carrier</u> < -100 dBc/Hz @ 10Hz < -130 dBc/Hz @ 100Hz < -144 dBc/Hz @ 1KHz < -148 dBc/Hz @ 10KHz	
Harmonics	< -35 dBc	
Spurious (Non Harmonic)	< -75 dBc	
Temperature Stability	$< \pm 3 \times 10^{-10}$ from -20°C to $+65^{\circ}\text{C}$	
Warm-up Time	< 7.5 min to reach $+ 5 \times 10^{-10}$ @ 25°C	
Outputs		
Output	2.048 MHz sine wave, 0.4 to 1.5 peak to peak / 75 ohm	
Frequency Trim Rang:	Mechanical: +5E-9 Trimmer 10 turns	Electrical (opt.) : $\pm 1.5 \times 10^{-9}$ min/ 0 to 10VDC
		Digital (opt.): $< 1 \times 10^{-12}$ steps / $> 1 \times 10^{-6}$ range (TxD, TTL). Included in this option: a. Interface card for RS232 connection to PC. b. Software.
Built In Test (Bit) Lock Indication	Detects $> 97\%$ of all failures Open Collector: <ul style="list-style-type: none"> • High Impedance=Unlock • Low Impedance "0" = Lock 	
Power Supply		
Input Voltage	18 to 36 VDC	
Power Consumption:	< 10 W @ 25°C Steady State	

* All specifications are at 25°C at quiescent conditions unless specified otherwise.

Specifications - AR-62A-02

Specification (continue)	
Dimensions & Weight	
Dimensions	82.5 x 82.5 x 114.3 mm
Weight	1Kg / 2.2 Pound
Environmental	
Operating Temperature	-40 °C to +70 °C opt. (base plate)
Vibration	Operation: Random: 3.0 g rms 20 to 500Hz
Humidity	95% non-condensing
Others	Conforms to rain, humidity, salt, fog, and dust, requirements per MIL-STD-810
Magnetic Field Sensitivity:	< 4x10 ⁻¹¹ /Gauss
Shock	20g half sine, 11 ms momentary offset < 1x10 ⁻⁹
MTBF	
	>261,000 hrs @ 25 °C, G.B >108,000 hrs @ 60 °C, G.B. per MIL HDBK-217F
Connectors & Electrical ICD	
	<ul style="list-style-type: none"> • J1 Connector (SMA):RF Output • J2 Connector, MIL-C-38999 Series II Shell Size 11, 35 Pins: <ul style="list-style-type: none"> ○ pin 1 - N/C ○ pin 2 - Crystal Control Voltage(Optional) ○ pin 3 - Rb Lamp DC Light (Option) ○ pin 4 - Ground ○ pin 5 - Reserved for Factory Use ○ pin 6 - Reserved for Factory Use ○ pin 7 - Reserved for Factory Use ○ pin 8 - Power ○ pin 9 - BIT ○ pin 10- GND ○ pin 11- Power ○ pin 12- Ground ○ pin 13- Power

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Specifications - AR-62A-02

Mechanical ICD

