Specifications - AR-62A-03

Rubidium Frequency Standard Oscillator

AR-62A-03

Semi- Military

Main Features	
Output Frequency:	10 MHz sine wave
Short-Term-Stability:	<3 x 10-11 @ 1sec; <3x 10-12 @ 100sec
Low Aging	5E-10/year
Wide Temperature :	-40°C to +68°C
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 / $>5 \times 10^{-7}$ Range (opt.)
Hold-Over Mode:	OCXO hold-over
High Reliability MTBF:	> 240,000 hrs. hrs @ 25°C, G.B >100,000 hrs @ 60°C

Description:

AR-62A-03 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-03 model.
AR-60A-03 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**	▪ **Mobile Radio Base Stations**	▪ **Secure Communication**
▪ **Telecommunications**	▪ **Wireless Communication**	▪ **Calibration**

AR-62A-03 Specification 2/1/2006

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Specifications - AR-62A-03

Specification			
Accuracy	@ **Shipment:**	$5x10^{-11}$	
	Holdover: (when lock is lost)	OCXO	
Long Term Stability	< $1x10^{-9}$ (1^{st} Year) < $5x10^{-10}$ (2^{nd} Year)		
Short Term Stability	<3 x 10^{-11} @ 1sec <3x 10^{-12} @ 100sec		
Phase Noise (10 MHz) Quiescent	From carrier <-90 dBc/Hz at 10 Hz <-122 dBc/Hz at 100 Hz <-140 dBc/Hz at 1000 Hz		
Harmonics	<- 35 dBc up to 50 Mhz <- 70 dBc up to 140 Mhz		
Spurious (Non Harmonic)	<- 75 dBc up to 100 Mhz		
Temperature Stability	<±3x10-10 from -40°C to +68°C base plate		
Cold Start at -40°C	Lock within 10 min		
Retrace	< 5 $x10^{-11}$ when measured at the same temperature; power off < 24 hrs		
Warm-up Time	< 5 min to reach + $1x10^{-9}$ @ 25°C		
	< 7.5 min to reach + $5x10^{-10}$ @ 25°C		
Outputs			
Output	10MHz, sine wave, 0.5 Vrms (-10%-+30%) into 50 ohm load		
Frequency Trim Rang:	> 5E-9		
Built In Test (Bit) Lock Indication	Open Collector: • High Impedance=Unlock • Low Impedance = Lock, (< 250 ohm)		
Power Supply			
Input Voltage	22 to 32 Vdc per MIL-STD-704		
Power Consumption:		25 °C	-40 °C
	During Warm-up:	< 30 W	< 30 W
	Steady State:	< 13 W	< 28 W

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

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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 +68°C (base plate)	
Storage Temperature	-40°C to +85°C	
Altitude	Operation:	-1000ft to +10000ft
	Non Operation:	-1000ft to +42000ft
Vibration	Operation:	MIL-STD-810D, Method 514.3 Proc.I Fig 514.3-1-2-3,2.5 g rms 10 to 500Hz Frequency Change:< $\pm 3 \times 10^{-10}$
	Screening (For Production):	4.5 g rms 20 to 2000 Hz 5 Min./ on critical axis-vertical (z), (the unit shall be power on.)
Humidity	MIL-STD-810E, Method 507.3 proc. 94% 50°C	
Magnetic Field Sensitivity:	4×10^{-11}/Gauss	
Shock	MIL-STD-810E, Method 516.3 proc. I, 18 shock , 20g peak 11 msec ramp – 6 shocks/acis, 3 in each direction	
EMI/EMC	MIL-STD-461C: CE03, CE07, CES01, CS02, CS06, RE02, RS02, RS03	
MTBF		
	>240,000 hrs @ 25°C >100,000 hrs @ 60°C, G.B. per MIL HDBK-217F	
Connectors & Electrical ICD		
	• J1 (MS27656T11F35P): Power & Monitors o Pin 1 - Lock Indication o Pin 2 - NU o Pin 3 - NU o Pin 4 - NU o Pin 5 - FU o Pin 6 - NU o Pin 7 - FU o Pin 8 - 22-32V o Pin 9 - Lock Indication o Pin 10- NU o Pin 11- 22-32V o Pin 12- Power Return o Pin 13- 22-32V • J2 (TNC Connector): RF Output 10MHz	

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Mechanical ICD