AR60LN series

Low Noise Rubidium Oscillator

Description

Abracon's AR60LN Low Noise Rubidium Oscillator offers exceptional performance including precise frequency tolerance, tight stability over the operating temperature range, and low Allan Deviation for impressive short-term stability. The AR60LN is a miniature rubidium oscillator, fitting in a 101.2 mm x 60.7 mm x 37.7 mm package and powered by +12.5 Vdc, with extended range up to +15 Vdc. The oscillator accurately synchronizes with a 1 pulse-per-second input clock, which is confirmed by a lock status pin and LED, and outputs both a 1 PPS signal and 10 MHz sine wave.

Features

- Sine wave output
- Ultra-tight frequency accuracy ≤5.0E-11
- Frequency stability over OTR ≤5.0E-10
- Low phase noise high precision atomic clock
- Operating supply voltage +12.5 to +15Vdc
- Accurately locks to external 1 PPS input signal
- Low Allan Deviation

Typical Applications

- 4G, 5G, and NTP Time Reference
- CDMA, WiMAX, and LTE base stations
- Satellite Timing and Frequency Communications
- Oil, Gas and Underwater Systems
- Test and Measurement Instrumentation
- Navigation Systems
- Telecommunication Infrastructure

Electrical Specifications [Note 1]

Parameters	Min.	Typ.	Max.	Units	Notes
Supply Voltage (Serial Pin 4 VDD, Serial Pin 5 GND)					
Supply Voltage (VDD)	12.5		15	V	
Power Consumption (start-up)			22	W	
Power Consumption (steady state)			6	W	
RF Output (SMA 1)					
Output Frequency		10		MHz	
Operating Temperature Range	-40		+65	°C	
Storage Temperature Range	-40		+90	°C	Non-operating
Initial Frequency Tolerance	-5E-11		+5E-11		@+25°C, Rb locked
Frequency Stability over Operating Temperature Range	-5E-10		+5E-10		
Allan Deviation			2.0E-12		τ=1s
			5.0E-12		τ=10s
			6.0E-12		τ=100s
			4.0E-12		τ=1000s
Aging per day			5.0E-12		@+25°C, after 30 days
Aging per month			5.0E-11		
Aging per year			5.0E-10		
SSB Phase Noise		-113		dBc/Hz	@1Hz offset
		-138		dBc/Hz	@10Hz offset
		-152		dBc/Hz	@100Hz offset
		-155		dBc/Hz	@1kHz offset
		-158		dBc/Hz	@10kHz offset
Warm up time			7	min	To within 5E-10 @+25°C
			8	min	To DPLL / Rb lock
Frequency Retrace			3E-11		After 1 hour of continuous operation

Note 1: All measurements guaranteed at nominal VDD, nominal load, and at +25°C unless otherwise specified.

Electrical Specifications *continued* [Note 1]

Parameters	Min.	Typ.	Max.	Units	Notes
Sine Wave RF Output (SMA 1)					
Output Signal	6	8	10	dBm	
Output Load		50		Ω	
Harmonics			-30	dBc	
Spurious			-100	dBc	100 kHz BW
1 PPS Output (Serial Pin 7)					
Output Frequency		1		Hz	
High-level Output Voltage (VOH)	2.4			V	
Low-level Output Voltage (VOL)			0.4	V	
Pulse Width		1		ms	
Rise/Fall Time		5	10	ns	
1 PPS Input (Serial Pin 9)					
1PPS Input Frequency		1		Hz	1 PPS Input LED pulses when receiving reference signal
High-level Input Voltage (VIH)	2.0			V	
Low-level Input Voltage (VIL)			0.8	V	
Pulse Width	100			ns	
Rise/Fall Time			20	ns	
Rb Lock Status (Serial Pin 1)					
Lock Status	Logic high = not locked				DPLL / Rb Lock Status LED ON
	Logic low = locked				DPLL / Rb Lock Status LED OFF
1 PPS Lock Status (Serial Pin 6)					
Lock Status	Logic high = not locked				1 PPS Lock Status LED ON
	Logic low = locked				1 PPS Lock Status LED OFF

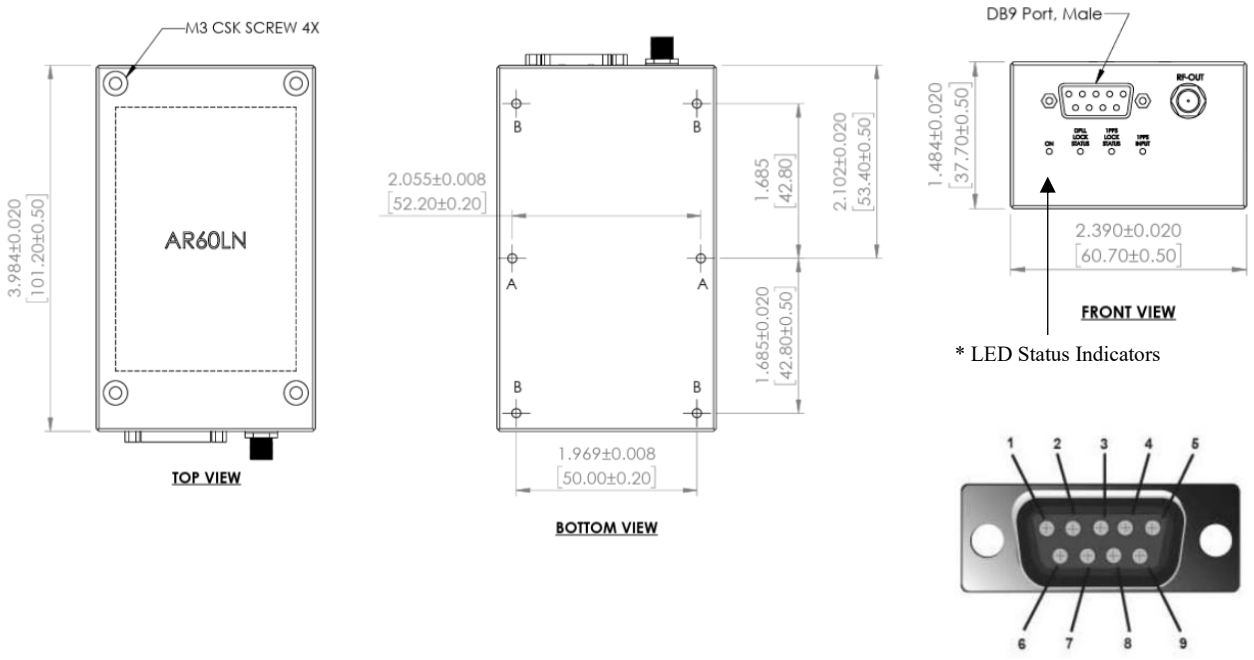
Environmental Parameters

Parameters	Description
Humidity	94% (Non Condensing)
MSL	N/A
ESD	HBM Class 1C
REACH/RoHS II	Compliant, No Exemptions
Magnetic Field Sensitivity	5E-12 Gauss
Atmospheric Pressure	1E-13 per mbar

Part Identification

AR60LN-10.000MHz-SA-BCAAB

Mechanical Dimensions



Pin #	Function	I/O
Serial Pin 1	DPLL / Rb Lock Status	Output
Serial Pin 2	Do not connect	N/A
Serial Pin 3	Do not connect	N/A
Serial Pin 4	VDD	Input
Serial Pin 5	Ground	Input
Serial Pin 6	1 PPS Lock Status	Output
Serial Pin 7	1 PPS Output	Output
Serial Pin 8	Ground	Input
Serial Pin 9	1 PPS input	Input
SMA 1	10 MHz RF Output	Output

Dimensions: mm

Packaging

Bulk, Box, 1 per

Revision: Initial Release
Initial Release 3/9/2026

Disclaimer

Check Inventory
Request Samples