NAC1 Series – Rubidium Frequency Standard

bliley technologies

FEATURES

- ✓ Long Term Stability 3E-10/month
- ✓ -150 dBc/Hz noise floor
- ✓ 2e-11 ADEV @ 100sec
- ✓ <1.2W steady-state power
- ✓ 41.1mm x 35.8mm x 22mm package

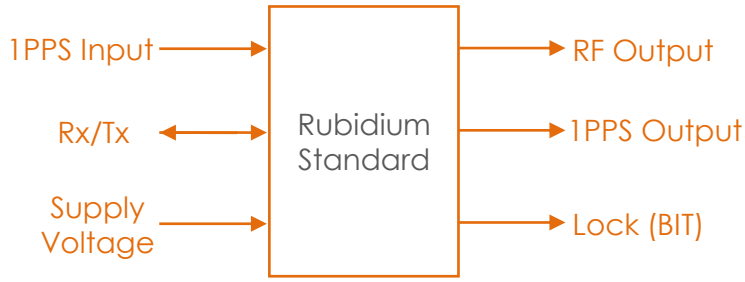
Rubidium Time and Frequency Standard

#blileytakesyoufurther

Description

The Bliley NAC1 Series is a compact atomic clock designed to provide precision timing and reference frequency.
It is one of the smallest atomic standards available without sacrificing performance.

Block Diagram



NAC1 _____

Configuration
*See table options

*See Ordering Table for all options

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Performance Specifications

Parameter	Conditions	Values			Unit
Frequency Stability		MIN	TYP	MAX	
Frequency			10		MHz
Warmup	Time to BIT		180		Sec
Frequency Stability	Referenced to +25°C				
vs. Temperature	-20°C to +65°C			±1	ppb
ADEV (short term stability)	τ = 1 second		2E-10		
	τ = 10 second		8E-11		
	τ = 100 second		2E-11		
Aging (per month)	After 30 Days Operation			±0.3	ppb
Time Accuracy (1PPS)	Disciplined to external 1PPS (RMS)		±100		nSec
	Holdover (for 30 days)			100	µSec
Input Power	Conditions	MIN	TYP	MAX	
Supply Voltage		3.2	3.3	3.4	Vdc
Power Dissipation					
Start-up	@ 25°C			2.4	W
Steady-state	@ 25°C			1.2	W

Parameter	Conditions	Values			Unit
Phase Noise	Tested at +25°C	MIN	TYP	MAX	
	10Hz			-86	dBc/Hz
	100Hz			-120	dBc/Hz
	1kHz			-138	dBc/Hz
	10kHz			-143	dBc/Hz
	100kHz			-148	dBc/Hz
	Floor			-150	dBc/Hz

Performance Specifications

Parameter	Conditions	Values			Unit
RF Output Characteristics (CMOS)		MIN	TYP	MAX	
High Output Level			3.3		Vdc
Low Output Level			0		Vdc
Load			1		MΩ
BIT Output Characteristics (CMOS)					
Normal Operation	'0'				
Alarm	'1'				
1PPS Output Characteristics (CMOS)		MIN	TYP	MAX	
Output Level			3.3		Vdc
Rise/Fall				10	nSec
Pulse Width			20		µSec
Load			1		MΩ
1PPS Input Characteristics		MIN	TYP	MAX	
Format	CMOS – 3.3V				
Impedance			1		MΩ
Monitor & Control					
Format	RS232				
Protocol	115200BPS				
Interface	ID, Status, Frequency adjust				
Digital Frequency Adjust	7.6E-13 steps over 2E-8 range				

Environmental Compliance

Parameter	Conditions	Values			Unit
Environmental & Reliability		MIN	TYP	MAX	
Operating Temperature		-20		+65	°C
	No Damage[1]	-40		+85	°C
Storage Temperature		-40		+90	°C

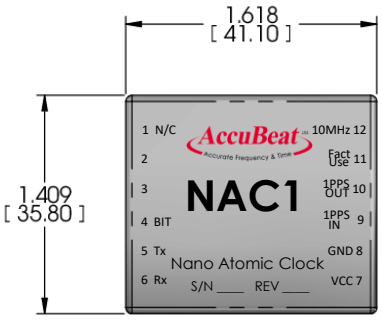
Ordering Options

Bliley P/N	Output Frequency	Waveform	Special Features
NAC1004	10MHz	Square	Standard
NAC1C04	10MHz	Square	Without pin 11
Please contact the factory for other customized configurations			

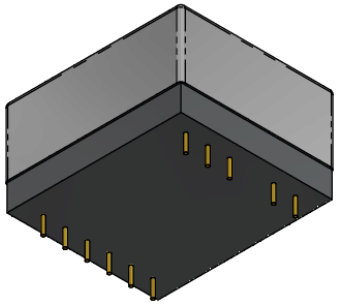
Development Kit	
AA50766	Evaluation Kit for NAC1 Series

[1] Clock is locked at -20°C to 65°C only

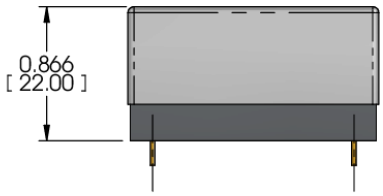
Physical Specifications



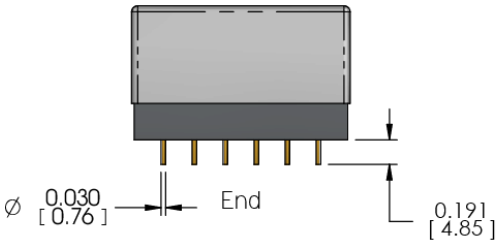
Top



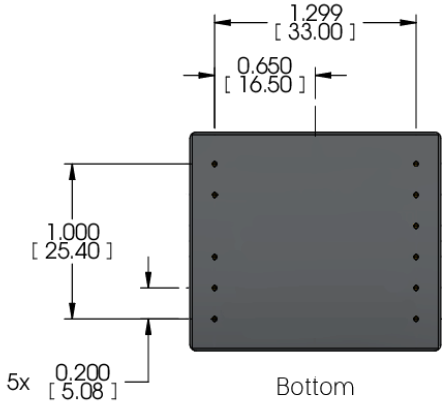
Iso Bottom



Side



End



Bottom

PIN	FUNCTION	PIN	FUNCTION
1	N.C.	7	Supply Voltage
2	Ground	8	Ground
3		9	1PPS In
4	BIT	10	1PPS Out
5	Tx	11	Factory Use
6	Rx	12	RF Output

Tolerances (mm) .X = ± 0.5, .XX = ±0.2 unless otherwise specified

AS9100:2016
ISO 9001:2015
CERTIFIED

Notes:
- Weight is ≤ 75 grams