Low Noise Rubidium Oscillator Module

Features

- Sine wave or CMOS/TTL output
- Short term stability 2 x10^{-12} at 100sec
- Accuracy 5 x10^{-11}
- Phase noise -115dBc at 1Hz
- Phase-locks to external 1PPS
- 1µ sec. holdover per 24hrs
- Compatible with 50Ω or 75Ω load

Description

The E10-LN Low Noise Rubidium Oscillator Module is a sub miniature atomic clock combined with active noise filter technology. This rubidium oscillator has 100x less drift than OCXO's. With short term stability of 2x10-12/s @ 100s this rubidium oscillator provides significant improvement in performance over other rubidium components.

Applications

- Where sizes are restricted this 'breakthrough' low noise rubidium oscillator will enable new applications
- Extended holdover for CDMA, WiMAX and LTE base stations
- Higher stability and low phase noise communication and surveillance applications
- Compact designs and portable and mobile applications
- Production Test Reference forinstrumentation
- Microwave Test Bench or Test solution

Related products

- **E10-Y** : Low Noise Desktop & Bench top Frequency reference 4 or 8 outputs
- **E10-P** : Desktop & Bench top Frequency reference 1 to 4 outputs
- **A1000**: 1U 19" rack mount up to 12 output, frequencies 1 to 100MHz
- **A10-M**: 2U 19" rack mount up to 24 output, frequencies 1 to 100MHz

E10-LN Specification

Outputs *See options*	
10MHz	+8dBm (±2dBm) into 50 Ohms, 0.5V_{rms} (Specify for 75Ω load)
Connector	SMA

Frequency Stability *Allan Deviation*	Options A	Options B
Frequency	10MHz	10MHz
τ =1s	≤2x10^{-12}	≤7x10^{-13}
τ =10s	≤5x10^{-12}	≤3x10^{-12}
τ =100s	≤6x10^{-12}	≤2x10^{-12}
τ =1000s	≤4x10^{-12}	≤1x10^{-12}

Phase Noise (SSB)	Options 1	Options 2	Options 3
Frequency	10MHz	10MHz	10MHz
1Hz	-110 dBc	-113 dBc	-115 dBc
10Hz	-135 dBc	-138 dBc	-140 dBc
100Hz	-145 dBc	-152 dBc	-154 dBc
1 kHz	-155 dBc	-155 dBc	-155 dBc
10KHz	-158 dBc	-158 dBc	-160 dBc

Harmonics		Option C
	<-30dBc	<-45dBc

Spurious		
100 KHz BW	<-100dBc	<-100dBc

Aging (After 30 days)		Option D
Frequency	10MHz	
Per day	5 x 10^{-12}	3 x 10^{-12}
Per Month	5 x 10^{-11}	3 x 10^{-11}
Per Year	5 x 10^{-10}	3 x 10^{-10}

Frequency accuracy

Accuracy at shipping 5 x 10^{-11}

Frequency retrace

After 1 hours of continues operation 3 x 10^{-11}

Frequency Adjustment

Mechanical	±2x10^{-9}	Option H
Electrical	±5x10^{-9}	Control voltage 0 to +5V

Warm up time

<5 minutes, time to lock

<6 minutes to 1x10^{-9} at room temperature 25°C

Environmental			
Temperature :		Operating	-40°C +60°C
		Storage	-40°C +90°C
Temp stability :	Standard	-20°C +60°C	<0.3x10^{-9}
	Option E	-30°C +65°C	0.3x10^{-9}
	Option F	-50°C +65°C	0.5x10^{-9}
Relative humidity :		94% non-condensing	
Magnetic Field sensitivity :		5x10^{-12} Gauss	
Atmospheric pressure :		1x10^{-13} Per mbar	
Approximate MTBF :		100,000 Hrs, Stationary	
Dimensions without cover		101 x 60.5 x 34mm LWH	
Dimensions with cover		101 x 60.5 x 37mm LWH	

Power supply

DC power:	+12 to +15V
Power consumption:	22W Max at start (25°C) 6W at steady state

Data output & monitoring

RS232, 9600 baud rate

Built-in options

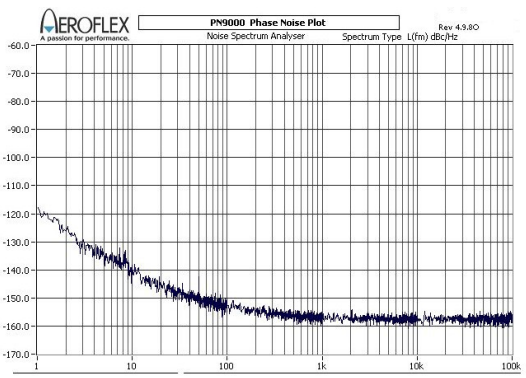
Option 05: TTL Output

Option 06: 1PPS Output

Option 18: Extended warranty to 3 years

Option 42: Low noise floor -170dBc at 10KHz

Option 75: Add internal battery, up to 4 hours of battery life.
See E10-Y

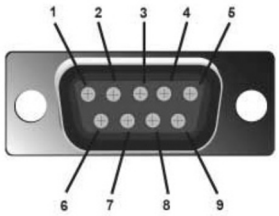


E10-LN Phase Noise at 10MHz

Included with shipment: *Calibration certificate, Certificate of Conformance, product test sheet and 24 month warranty.*

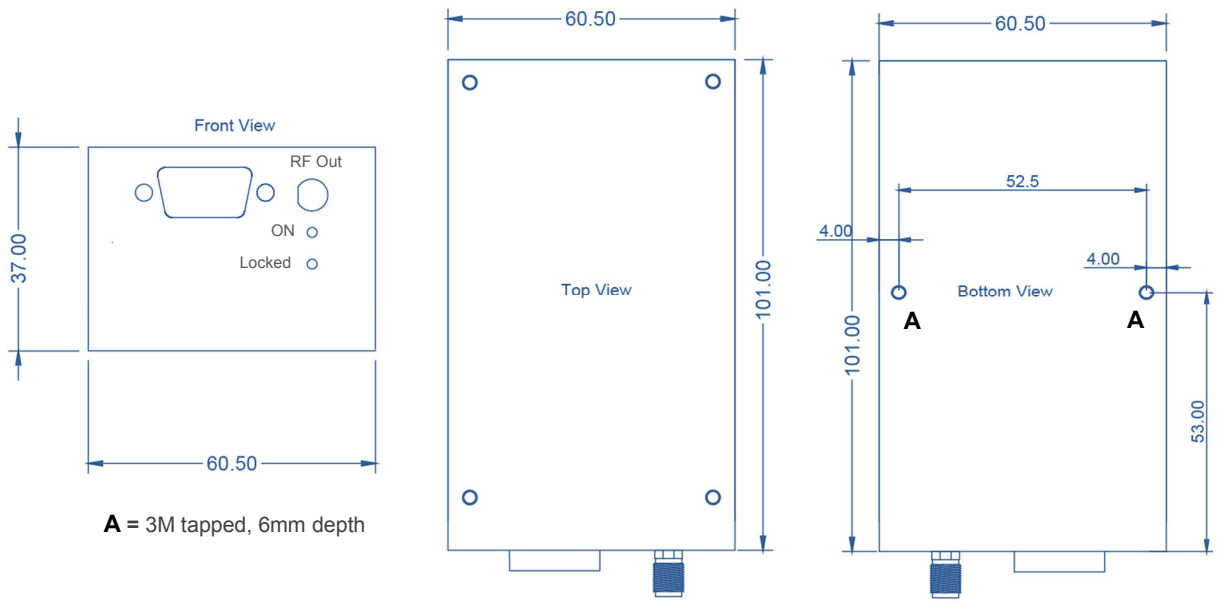
Contact us to configure this product to meet your requirement.
Designed and manufactured in the U.K.

Pin Connections



Pin No.	Function	Description
1	10MHz Lock Status	OFF: locked, ON: not locked
2	RXD (PLL)	Serial data receive
3	TXD (PLL)	Serial data transmit
4	Power Supply	Input power supply between +12V
5	GND (Digital)	Digital Ground
6	1PPS Lock status	1PPS DPLL OFF: locked, ON: not locked
7	1PPS Output	1PPS Output
8	GND (Power)	Analogue & Power Ground
9	1PPS Input	Phase lock to external 1PPS input

Outline Drawing / Enclosure



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