

Ultra Low Noise Rubidium Oscillator

- 10MHz standard version has -110dBc/Hz @ 1Hz phase noise
- Uses Quartzlock Digital PLL DDS Clean-up Loop technology
- 5MHz option has -123dBc/Hz @ 1Hz offset
- 100MHz option has -180dBc/Hz noise floor



Features

- Ageing 5×10^{-10} /year
- Three Year Warranty
- Short Term Stability 3×10^{-12} /100s
- 5×10^{-11} accuracy

Benefits

The use of ULN-Rb Oscillators enables:

- Weak Signal Detection
- Low Error Rates
- Higher Radar Sensitivity
- Higher Definition in MRI Imaging Systems

Applications

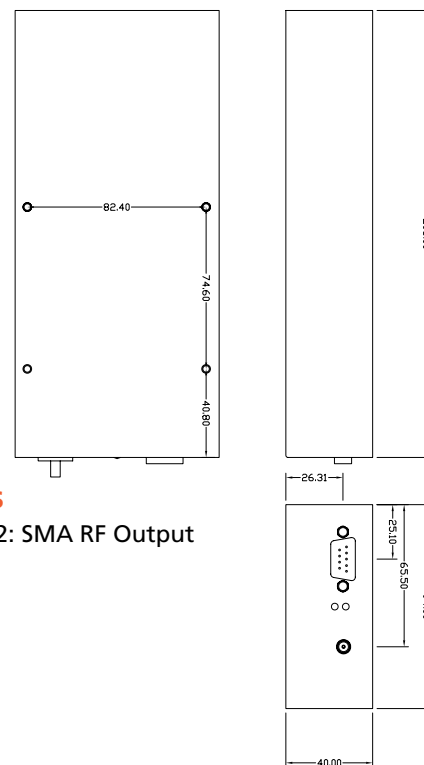
- Security
- Low Noise Instrumentation Reference
- Radar
- Navigation
- RF & Microwave Test Solution Reference
- Secure Communications

Specifications

Output (100MHz ULN option)	10MHz, +7dBm into 50Ω, 0.5VRMS 1MHz to 40MHz output. Option 5MHz output (not using DDS).	
Adjustment	Mechanical Range	2x10 ⁻⁹ min
	Electrical Range	2x10 ⁻⁹ min
	Control Voltage	0 ~ 5V
	Factory Setting	±5x10 ⁻¹¹
Frequency Stability (10MHz)		
	10MHz	5MHz
	1s	<5x10 ⁻¹²
	10s	<5x10 ⁻¹²
	100s	<3x10 ⁻¹²
	1 hour	<6x10 ⁻¹²
Aging		
	1 day	1x10 ⁻¹²
	1 month	4x10 ⁻¹¹
	1 year	5x10 ⁻¹⁰
Phase Noise dBc/Hz		
	10MHz	5MHz Opt
	dBc/Hz	dBc/Hz
	1Hz	<-110
	10Hz	<-140
	100Hz	<-145
	1kHz	<-150
	10kHz	<-155
Harmonics	<30dBc	
Spurious	<80dBc	
Warm time to 1x10⁻⁹	5 minutes	
Retrace	<3x10 ⁻¹¹ after 24h off & 1h on, same temp	
Power Supply	Power at steady state at 25°C: 13W @ 24V (22~30Vdc) @ 25°C, Max 2A Freq offset over output voltage range: <2x10 ⁻¹¹	
Temperature		
	Operating	-20°C ~ +50°C
	Storage	-40°C ~ +70°C
	Freq offset over operating temperature range	<3x10 ⁻¹⁰

Magnetic Field	Sensitivity	<2x10 ⁻¹¹ /Gauss
	Atmospheric Pressure	-60m ~ 4000m <1x10 ⁻¹³ /mbar
	Approx MTBF, Stationary	Approx MTBF, Stationary
Mechanical	40 x 94x 206mm, 1000g approx 1.6" x 3.7" x 8.1", 35oz approx	
Lock Indicator	On - Not Locked Off - Locked, Low Phase Error Short flash every second - Locked, High Phase Error	
Interface	9.6kbaud, RS232, PC compatible	
Interface Codes	See separate document	
Option 42	1MHz to 40MHz output. 5MHz output (not using DDS).	

Outline Drawing



Pin Connections

C1: 'D' 9 Pin Male C2: SMA RF Output

1. Lock
2. GND
3. GND
4. Rx
5. EXT control
6. TX
7. +24V
8. VCXO monitor
9. Lamp monitor