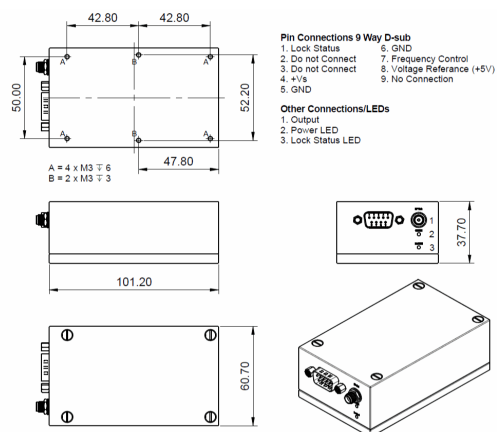


ISSUE 5; July 2022



Outline (mm)



Description

- The IQRB-2 rubidium atomic clock oscillator provides a low noise, tight stability frequency reference.
- Features:
 - Phase noise -108dBc/Hz at 1Hz
 - Short term stability 7.5E-12 at 100s
 - 0.05ppb tolerance
 - Analogue frequency adjustment
- Applications:
 - Precise time and frequency reference in mobile radio stations, as reference signal in test and inspection equipment, broadcasting stations, and various other communication and network infrastructures.

Frequency Parameters

- Frequency 10.0MHz
- Frequency Tolerance ± 0.05 ppb
- Tolerance Condition @ 25°C
- Frequency Stability (Temperature varied across the operating temperature range, measurement referenced to frequency observed with $f_{ref} = (\Delta f_{max}, f_{min})/2$): ± 0.3 ppb typical
- Ageing (after 30days):
 - ± 0.005 ppb max/day
 - ± 0.05 ppb max/month
 - ± 0.5 ppb max/year
- Retrace: ± 0.02 ppb typ
- Note: Operating temperature range of -40 to 60°C is available upon request, please contact an IQD Sales Office

Electrical Parameters

- Supply Voltage 12.0V ± 3.0 V
- Note: The device will operate over the Supply Voltage Range 12V to 15V
- Start-up Current ($V_s = 12$ V, @ 25°C): 2.5A max
- Steady State Current ($V_s = 12$ V, 25°C ambient): 0.5A max
- Warm Up Time: 5mins typ to lock @ 25°C
- Lock Status: Pin 1 is high (3.3V) when out of lock and low (0V) when locked

Sales Office Contact Details:

UK: +44 (0)1460 270200

USA: +1 760 668 8935

Email: info@iqdfrequencyproducts.com

Web: www.iqdfrequencyproducts.com

Frequency Adjustment

- Pulling $\pm 2\text{ppb min}$
- Control Voltage $2.5\text{V} \pm 2.5\text{V}$
- Input Impedance $10\text{k}\Omega \text{ min}$
- Note: If no voltage is applied to the control voltage (Pin 7) it will be internally set to 2.5V. If a voltage is applied (even GND) to Pin 7, the oscillator will accept the external control voltage input

Operating Temperature Ranges

- $-20 \text{ to } 60^\circ\text{C}$

Output Details

- Output Compatibility Sine
- Drive Capability 50Ω
- Output Level: $+7\text{dBm} \pm 2\text{dBm}$
- Output Connector Type: SMA

Noise Parameters

- Short Term Stability (ADEV) typical:
 - 1s $5.5\text{E}-11$
 - 10s $7.1\text{E}-12$
 - 100s $7.5\text{E}-12$
- Phase Noise (typ):
 - $-108\text{dBc/Hz @ } 1\text{Hz}$
 - $-134\text{dBc/Hz @ } 10\text{Hz}$
 - $-152\text{dBc/Hz @ } 100\text{Hz}$
 - $-155\text{dBc/Hz @ } 1\text{kHz}$
 - $-158\text{dBc/Hz @ } 10\text{kHz}$
 - $-157\text{dBc/Hz @ } 100\text{kHz}$
- Harmonics: -30dBc max
- Spurious: -80dBc max

Environmental Parameters

- Storage Temperature Range: $-40 \text{ to } 85^\circ\text{C}$
- Mechanical Shock: IEC 60068-2-27, Test Ea: Acceleration of 50G peak amplitude for 11ms duration
- Vibration: IEC 60068-2-06, Test Fc: 10Hz-55Hz 1.5mm displacement, 55Hz-500Hz 10G acceleration
- Atmospheric Pressure: $-60\text{m to } 4000\text{m}$: $1\text{E}-16 \text{ bar max}$
- EMI: Compliant to FCC Part 15, Class B
- Magnetic Field Sensitivity: $\pm 2\text{E}-11/\text{Gauss}$

Manufacturing Details

- These products need to maintain thermal stability to obtain optimum performance. Mounting the device in direct contact to a chassis may cause detrimental heat sink effect, it is recommend to mount the device with $>1\text{mm}$ clearance from the base. Avoid airflow and do not attempt to mount heat sink to the device.

Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Non-Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

Packaging Details

- Pack Style: Bulk Bulk pack
- Pack Size: 1

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