

ISSUE 5; September 2021

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 +3.0V
- Note: The device will operate over the Supply Voltage Range 12V to 15V
- Start-up Current ($V_s = 12V$, @ 25°C): 2.5A max
- Steady State Current ($V_s = 12V$, 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

Frequency Adjustment

- Pulling: ± 2 ppb min
- Control Voltage: 2.5V $\pm 2.5V$
- Input Impedance: 10k Ω 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

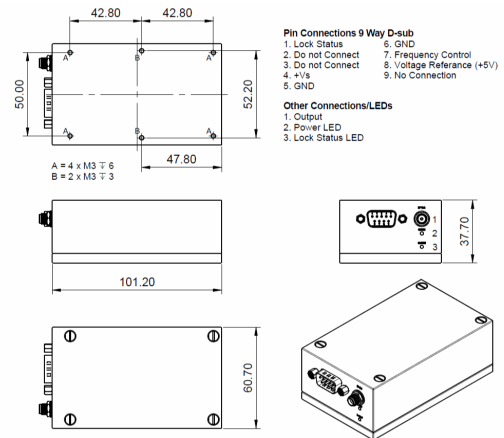
Operating Temperature Ranges

- -20 to 60°C

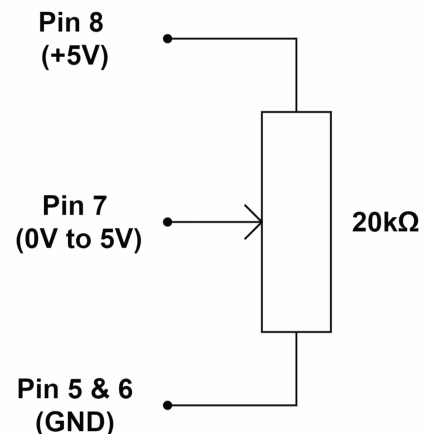
Output Details

- Output Compatibility: Sine
- Drive Capability: 50 Ω
- Output Level: +7dBm ± 2 dBm
- Output Connector Type: SMA

Outline (mm)



Frequency Control & Voltage Reference Circuit



Sales Office Contact Details:

UK: +44 (0)1460 270200
Germany: 0800 1808 443

France: 0800 901 383
USA: +1.760.318.2824

Email: info@iqdfrequencyproducts.com
Web: www.iqdfrequencyproducts.com

Noise Parameters

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

Environmental Parameters

- Storage Temperature Range: -40 to 85°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: -60m to 4000m: 1E-16 bar max
- EMI: Compliant to FCC Part 15, Class B
- Magnetic Field Sensitivity: $\pm 2E-11$ /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 >1mm 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

Sales Office Contact Details:

UK: +44 (0)1460 270200
Germany: 0800 1808 443

France: 0800 901 383
USA: +1.760.318.2824

Email: info@iqdfrequencyproducts.com
Web: www.iqdfrequencyproducts.com