

ISSUE 1; April 2021

Description

- The IQRB-3 rubidium atomic clock oscillator provides a low noise, tight stability frequency reference. The IQRB-3 can be synchronised to a 1PPS signal as well as used as a 1PPS output source.
- Features:
 - 1PPS Output
 - Holdover 1µs/24h
 - Phase noise -110dBc/Hz at 1Hz
 - Short term stability 8E-12 at 100s
 - 0.05ppb tolerance
- Applications:
 - With high stability, low phase noise and 1PPS interface ideal as stand-alone frequency and timing reference for communication, broadcasting, financial and industrial applications.



Frequency Parameters

- Frequency 10.0MHz
- Frequency Tolerance (typ) ±0.05ppb
- Tolerance Condition @ 25°C
- Frequency Stability ±0.30ppb
- Ageing (after 30days):
 - ±0.005ppb max/day
 - ±0.05ppb max/month
 - ±0.5ppb max/year
- Retrace (after 1 hour of continuous operation): ±0.03ppb
- 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 12.0V to 15.0V.
- Power Consumption: 30W max at warm-up @ 25°C, 6W @ steady-state
- Warm Up Time: 5 mins typ to lock @ 25°C
- 10MHz Lock Status (Pin 1): High (3.3V) when out of lock and low (0V) when locked
- 1PPS Lock Status (Pin 6): High (1.7V) when out of lock. Low (0V) when synchronised to external 1PPS

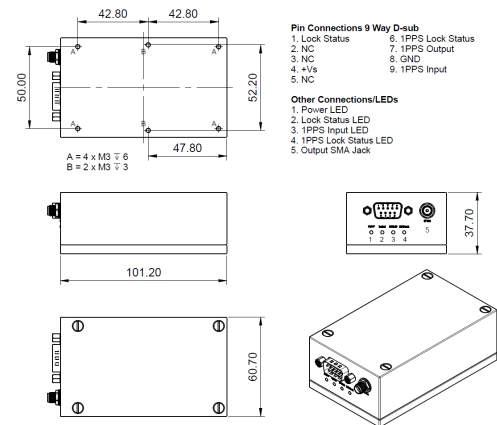
Operating Temperature Ranges

- -20 to 60°C

Output Details

- Output Compatibility Sine
- Drive Capability 50Ω
- Output Level (@ 50Ω): +8dBm ±2dBm
- Output Connector Type: SMA
- Note: CMOS output available on request

Outline (mm)



Sales Office Contact Details:

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Germany: 0800 1808 443

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Noise Parameters

- Short Term Stability (ADEV) typical:
 - 1s 5.0E-11
 - 10s 6.0E-12
 - 100s 8.0E-12
- Phase Noise (typ):
 - 110dBc/Hz @ 1Hz
 - 135dBc/Hz @ 10Hz
 - 145dBc/Hz @ 100Hz
 - 155dBc/Hz @ 1kHz
 - 158dBc/Hz @ 10kHz
- Harmonics: -25dBc max

Environmental Parameters

- Storage Temperature Range: -40 to 90°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: 1E-13/mbar
- Magnetic Field Sensitivity: 5E-12/Gauss

Compliance

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

Packaging Details

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

Status Indication LEDs

| Postion | Name | Colour | Discription | Status | |
|---------|------------------|--------|---|----------|--|
| 1 | Power | Green | Indicates that power is on | Solid | |
| 2 | Lock Status | Red | Not ready: rubidium oscillator not locked | Solid | |
| 2 | Lock Status | Red | Not ready: rubidium locked, PLL fine tuning mode | Flashing | |
| 3 | Lock Status | Red | Ready: rubidium locked, PLL locked | Off | |
| 3 | 1PPS Input | Yellow | Flashes with 1PPS input | Flashing | |
| 4 | 1PPS Lock Status | Orange | Not locked: external 1PPS not found | Solid | |
| 4 | 1PPS Lock Status | Orange | Establishing lock: external 1PPS detected, system locking | Flashing | |
| 4 | 1PPS Lock Status | Orange | Locked to external 1PPS: full lock acquired | Off | |

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