RCM: Ultra Low Noise 100MHz, 10MHz, and 1PPS Reference Module

Jackson Labs

"the next generation in frequency and timing"

- **2.0 X 4.0 X 1.0 Inches, ruggedized**
- **Dual 10MHz and 100MHz OCXOs**
- **Ultra-Low Noise-Floor -172dBc/Hz**
- **Built-In dual +20.5dBm amplifiers**
- **PRELIMINARY SPECIFICATION**

TYPICAL ELECTRICAL SPECIFICATIONS:

Module Specification:	
Long-Term Oscillator Aging (without ext. reference - zero aging with ref)	Less than 0.3ppb per month in Holdover without GPS
Frequency Stability Over Temperature (in holdover)	Better than ±0.25E-09 -25°C to +75°C)
1 PPS input to output capture resolution	±2.5ns
Frequency Accuracy to external 1 PPS reference	Better than ±3E-010 after 15 minutes after power-on
Holdover Drift (after 7 days with external reference)	<±5us over 24 Hour Period @+25°C
Auto Reference-switchover and Holdover	10MHz priority, 1PPS auto-fallback or manual, OCXO Flywheel Holdover
100MHz ADEV (versus external 10MHz reference)	1s: <1E-12, 10s: <2E-13, 100s <3E-14
100MHz ADEV (versus external 1 PPS reference)	1s: <5E-12, 10s: <3E-11, 100s <3E-11, 1Ks: <8E-12, 10Ks: <1E-12
100MHz to 10MHz phase jitter/wander	<200ps rms
1 PPS Outputs (OCXO Flywheel Generated)	Two outputs, 3.3V CMOS synchronized to 100MHz phase
1 PPS output to 100MHz uncertainty	<±250ps rms
External to internal 1PPS syncronization counter resolution	±2.5ns
1 PPS Output unit to unit uncertainty with common 10MHz ext reference	±2.5ns
10MHz Output	1x 5V CMOS 10MHz
100MHz Outputs	2x Sine Wave +20.5dBm ±1dbm
RS-232 Control	Full SCPI-99 Control Commands at 9.6K, 19.2K, 38.4K, 57.6K, 115.2K
RS-232 NMEA Output Sentences (with time/date preset)	NMEA 0183 rev. 2.3, Sentences: GGA, RMC, ZDA, PASHR
TTL Alarm and Built-In Self-Test (BIT) Output	Oscillator Unlock, Soft- and Hard-Alarm, and Power Supply Failure Alarm
Warm Up Time / Stabilization Time Without ext. reference	<7 min at +25°C to <1ppb accuracy Typ.
Lock time to external 10MHz reference	<3 seconds warm, <5 minutes cold-start at +25°C
Supply Voltage (Vdd)	11.0V to 14VDC (12V nominal)
Power Consumption	<5.8W at +25°C at 12V VDD, 12W warmup for less than 5 minutes
Operating Temperature	-40°C to +85°C (forced air)
g-sensitivity	<0.3ppb per-g per-axis
MTBF	> 500,000 Hours (at +60°C)
Ordering Options	Conformally Coated, standard (non-low-g) DOCXO
Phase Noise	Offset: 1Hz <-90dBc/Hz, 10Hz <-125dBc/Hz, 100Hz <-145dBc/Hz, 1KHz <-150dBc/Hz, 10kHz <-150dBc/Hz, 100kHz <-150dBc/Hz; 10MHz: <-70dBc/Hz, <-98dBc/Hz, <-128dBc/Hz, <-153dBc/Hz, <-160dBc/Hz, <-165dBc/Hz
Connectors	RF: UMCC compatible, Power/Comms: 30-pin Samtec TFM-115 series

10MHz, 100MHz, and 1PPS RCM Reference Module: MADE IN USA

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