



SA.22c-LN

Low Noise Rubidium Oscillator

KEY FEATURES

- Very Low Phase Noise
- Disciplines to a 1PPS Input
- Suitable Form Factor for a Wide Range of Applications

APPLICATIONS

- DTTB Application Performance Level
- Delivers GSM and UMTS Level Stability In Free Run (Without Need for Re-calibration)

Symmetricom's SA.22c-LN is designed for rubidium controlled time and frequency systems requiring low phase noise. The form factor is optimized to accommodate a 2-slot VME application. It is easy to integrate into a system. Low temperature sensitivity allows its use in a wide variety of applications.

The SA.22c-LN technology is an incremental step from the well established LN72. A complete range of output frequencies is available to meet the needs of a large set of synchronization applications. The SA.22c-LN can be disciplined to a precision 1PPS reference input (such as GPS) or it can operate by itself as a precision stand-alone reference.

The SA.22c-LN is designed for long operating periods without maintenance with a long-life rubidium lamp. The design provides a stable frequency with good short and long-term stability, and excellent spur performance. This delivers an excellent value to the market for a wide range of applications.



SA.22c-LN Low Noise Rubidium Oscillator

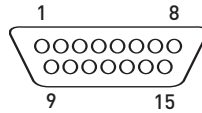
SA.22c-LN Performance Specifications

ELECTRONIC SPECIFICATIONS

- Frequency outputs:
 - Output 1: 10 MHz or 5 MHz Sine Wave (Factory configurable)
 - Output 2: 10 MHz or 5 MHz AC MOS (Must be the same frequency as Output 1)*
 - Output 3: 1 PPS
- Input: Disciplining to 1 PPS input signal available as a factory-configurable option
- Phase noise (10 Mhz)
 - 1 Hz <-100 dBc/Hz
 - 10 Hz <-130 dBc/Hz
 - 100 Hz <-145 dBc/Hz
 - 1000 Hz <-150 dBc/Hz
 - 10 kHz <-155 dBc/Hz
- Phase noise (5MHz), Contact factory
- Output level: +9 dBm ±1.5 dBm into 50Ω
- Spurs
 - Harmonic: <-60 dBc
 - Non-Harmonic: <-80 dBc
- Aging
 - Monthly (after 1 month): <5E-11/month
 - Yearly: <5E-10/year
- Stability: (Allan deviation)
 - t = 1 sec <1.4E-11
 - t = 10 sec <0.8E-11
 - t = 100 sec <0.25E-11
- Accuracy at shipment: <±5E-11 (25°C)
- Retrace: <±2.5E-11 (on-off-on: 24 h, 48 h, 12 h @ 25°C)
- Control range
 - With digital input: ±1E-6 with granularity of 1E-12.
 - With analog input: ±6.0E-9, 0-5V into 5 k ohms
- 1PPS output
 - Pulse width: 400 ns
 - Amplitude: VL<0.5V, VH>4.5V, Load 15pf
 - Rise/Fall time: 10 ns, 15pf load
- Warm-up time: (at 25°C); time to Rubidium Lock: <6 min
- Input voltage range: +18 to 32 Vdc
- Voltage Sensitivity: +0.72E-11/V (over input voltage range)
- Input power, quiescent: +24Vdc<18W @ 25°C; 32 W max.. at turn-on
- Status Monitor
 - Analog: VCXO volts, lamp volts, (20 k ohm impedance, filtered)
 - Digital: LOCK monitor: 5v CMOS load
 - Lock: 0V to 50mV (within ±5E-08)
 - Unlock: 4.2 to 4.7V

Low Noise

- Physical
 - Weight: 963gms (34.0 oz)
 - Size: 101.6 mm W x 170.0 mm L x 38.1 mm H (4.0" W x 6.7" L x 1.50" H)
 - Volume: 639.1cm³ (39.0 in³)
- Connector

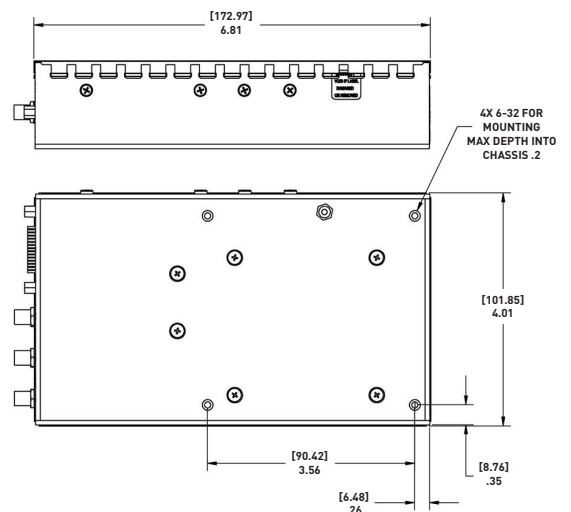
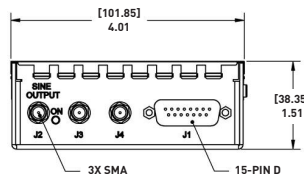


Connector	Type	Pin	Description
J1 - 15 pin D-sub (Filtered)	Input	1, 2	24 VDC
	Input	3, 4	GND
	Input	5	RX
	Output	6	TX
	Input	7	1PPS In
	Output	8	Lock (Signal is low when locked)
	Output	9	Service (Signal is low when unit is operating within normal spec. range)
	Output	10	IPPS Out
	N/A	11	Not used
	N/A	12	Not used
	N/A	13	Frequency Control
	Input	14	Not used
	Output	15	ACMOS frequency Out
J2 - SMA	Output		10 or 5 MHz Sine Output (Factory Configurable)
J3 - SMA	Output or Input		10 or 5 MHz AC MOS Output (Same frequency as J2) or 1PPS Input (Factory Configurable)
J4 - SMA	Output		1PPS Output

* If the 1 PPS disciplining option is chosen, Output 2 becomes the 1PPS input connector

ENVIRONMENTAL SPECIFICATIONS

- Operating temperature: -20°C to 65°C
- Temperature coefficient: (0°C to 50°C) <3E-10
- Storage temperature: -55°C to 85°C
- Magnetic field sensitivity, dc (<2 GAUSS): <±6E-11/GAUSS
- EMI: Compliant to FCC Part 15 Class B (conducted and radiated emissions) and complies with EN55022B emissions (radiated and conducted) and EN50082-1 (immunity)



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