Symmetricom

DATA SHEET

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)

The Symmetricom® 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

Specifications

ELECTRICAL SPECIFICATIONS

Frequency outputs*	
Output 1:	10 MHz or 5 MHz Sine Wave (Factory configurable)
Output 2:	10 MHz or 5 MHz ACMOS (Must be the same frequency as Output 1)*
Output 3:	1 PPS

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

Phase noise (10 MHz):	Low Noise
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
Unlock:	4.2 to 4.7V

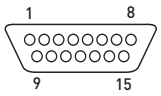
ENVIRONMENTAL SPECIFICATIONS

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)

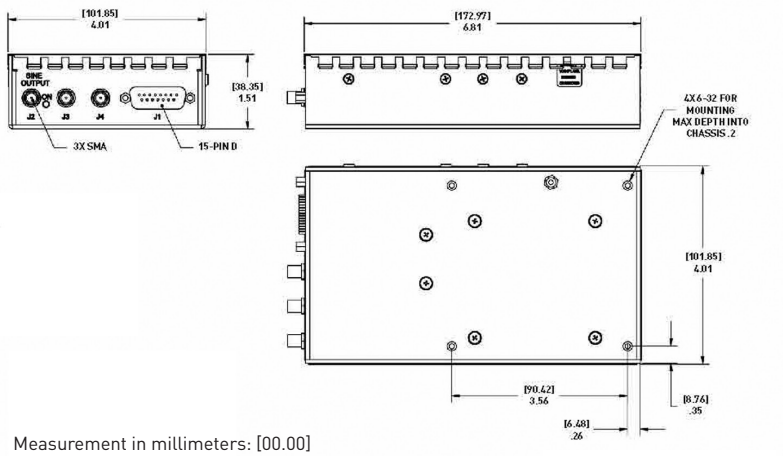
PHYSICAL SPECIFICATIONS

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	1PPS 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		10 or 5 MHz ACMOS Output or Input (Same frequency as J2) or 1PPS Input (Factory Configurable)
J4 - SMA	Output		1PPS Output



Measurement in millimeters: [00.00]
Measurement in inches: 0.00

Symmetricom

2300 Orchard Parkway
San Jose, California 95131-1017
tel: 408.433.0910 fax: 408.428.7896
www.symmetricom.com