

Holdover Time (NO GNSS)	<u>MAX. TIME ERROR WHEN BASIS ON OSCILLATOR</u>		
	<i>Rubidium</i>	<i>OCXO</i>	<i>TCXO</i>
1 second	0,1 [ns]	5 [ns]	900 [ns]
1 minute	0,01 [μs]	0,3 [μs]	54 [μs]
1 hour	0,03 [μs]	0,5 [μs]	3 240 [μs]
1 day	0,76 [μs]	47 [μs]	77 760 [μs]
1 week	0,01 [ms]	2,2 [ms]	544 [ms]
1 month	0,15 [ms]	39 [ms]	2 000 [ms]
6 months	5 [ms]	400 [ms]	14 000 [ms]
1 year	0,016 [s]	1,6 [s]	28 [s]

Rubidium PRS-10

Output

Output frequency	10 MHz sine wave
Amplitude	0.5 V _{rms} , ±10 %
Phase noise (SSB)	<-130 dBc/Hz (10 Hz) <-140 dBc/Hz (100 Hz)
Spurious	<-130 dBc (100 kHz BW)
Harmonic distortion	<-25 dBc
Return loss	>25 dB (at 10 MHz)
Accuracy at shipment	±5 × 10 ⁻¹¹
Aging (after 30 days)	
Monthly	<5 × 10 ⁻¹¹ (<2.5 × 10 ⁻¹¹ with opt. C)
Yearly	<5 × 10 ⁻¹⁰
Short-term stability	<2 × 10 ⁻¹¹ (1 s)
(Allan variance)	<1 × 10 ⁻¹¹ (10 s) <2 × 10 ⁻¹² (100 s)
Holdover	72 hour Stratum 1 level
Frequency retrace	±5 × 10 ⁻¹¹ (72 hrs. off, then 72 hrs. on)
Settability	<5 × 10 ⁻¹²
Trim range	±2 × 10 ⁻⁹ (0 to 5 VDC) ±1 ppm (via RS-232)
Warm-up time	<6 minutes (time to lock) <7 minutes (time to 1 × 10 ⁻⁹)
Voltage sensitivity	<2 × 10 ⁻¹¹ (1 VDC supply change)

Electrical

Input voltage	+24 VDC (nom.), +22 VDC (min.), +30 VDC (max.)
Current	2.2 A (warm-up), 0.6 A (steady-state)

	at 25 °C (Note 1)
Protection	±30 VDC to any pin except rf out
RF protection	100 mA (stable w/ any termination)
Cal reference out	5.00 ± 0.05 VDC
RS-232	9600 baud, 8 bits, no parity, 1 stop bit, 0 to 5 V levels with X-on/X-off protocol
1 pps measurement	±10 ns (accuracy), ±1 ns (resolution)
1 pps output set	±10 ns (accuracy), ±1 ns (resolution)

Environmental

Operating temperature	-20 °C to +65 °C (baseplate)
Temperature stability	±1 × 10 ⁻¹⁰ (-20 °C to +65 °C baseplate)
Storage temperature	-55 °C to +85 °C
Magnetic field	<2 × 10 ⁻¹⁰ for 1 Gauss field reversal
Relative humidity	95 % (non-condensing)

Miscellaneous

Design life ²	20 yrs.
Size	2.00" × 3.00" × 4.00" (HWD)
Weight	1.32 lbs.
Baseplate threads	4-40 (4 places)
Connector	Mates with ITT/Cannon DAM11W1S series
Warranty	One year parts and labor on defects in materials and workmanship

1. Low power warm-up option is available. Contact factory for details.
2. Lamp lifetime is the dominant consideration in the design life estimate. The estimate is based on the measured reduction of lamp intensity and the elevation of lamp start voltage with time.

HQ OCXO

Parameters description	Units	
Frequency	MHz	10.0
Oscillator type		MV197
Supply Voltage	V	5
	+/- %	5
Operating temperature range	C	-30...+60
Frequency stability vs. operating temperature range	+/-10 ⁻⁹	<5.0
Short term stability, typical	per 1 sec, 10 ⁻¹¹	<1.0
Average aging	per day, +/-10 ⁻¹⁰	<5.0
	per year, +/-10 ⁻⁸	<5.0
Output signal		HCMOS
Level	"0"	<0.5 V
	"1"	>4.0 V
Load	Ohm/pF	10/30
Frequency stability vs. voltage supply change	+/-, 10 ⁻¹⁰	<5.0
	+/-, %	5
Steady state current consumption (still air) at	mA	<400
Temperature	C	+25
Peak power consumption after switch-on	mA	<1000
Warm-up time @ +25 °C with accuracy of +/-2x10 ⁻⁸	min	<3.0
Phase noise, typical		
@ 1 Hz	dBc/Hz	<-90
@ 10 Hz	dBc/Hz	<-120
@ 100 Hz	dBc/Hz	<-135
@ 1 kHz	dBc/Hz	<-145
@ 10 kHz	dBc/Hz	<-150
Frequency pulling range	+/-, 10 ⁻⁷	>4.0
Reference voltage	V	+4.5
Control voltage range	V	0...+4.5
Case dimensions	mm, max	36.1x27.2x16
Storage temperature range	C	-55...+90
Shock		
Acceleration	g	100
Duration	ms	3.0 +/-1.0
Vibrations with		
frequency range	Hz	10-500
Acceleration	g	10