

<b>Specification</b>	<b>AXGPS</b>	Issue: 01	Date: 2008-07-30
<b>Oscillator type : GPS Disciplined OCXO Module (GPSDO)</b>			
<b>Preliminary specification</b>			

### Description

The AXGPS is an Oven Controlled Crystal Oscillator (OCXO), whose medium and long-term stability is improved to the  $10^{-12}$  level by disciplining the output frequency to the precision timing of the GPS satellite system.

The module incorporates a low-noise high stability OCXO with a precision SC-cut crystal delivering a 10 MHz output with very low phase-noise and excellent short term stability (Allan deviation). For highest performance Option 02 incorporating a double-oven OCXO (DOCXO) is available. A high-performance GPS receiver in connection with a 32bit processor are controlling the output frequency and provide temperature and aging compensation during holdover.

The module can be controlled and monitored through an RS-232 interface using standard SCPI commands. It is compatible to GPSCon Windows SNTP server software.

Parameter	min.	typ.	max.	Unit	Condition
<b>Output signals</b>					
<b>Sine wave</b>	10.000 000			MHz	BNC connector
Level	+3	+6	+10	dBm	
Load	50			$\Omega$	
Harmonics			-30	dBc	
Phase noise		-105	-95 -125 -145 -155 -160 -160	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	@ 1 Hz @ 10 Hz @ 100 Hz @ 1 kHz @ 10 kHz @ 100 kHz ... 1 MHz
Jitter (r.m.s.)		380		fs	
Short-term stability (Allan deviation)	See chart				Still air, stable temperature
<b>HCMOS</b> (see note 2)	10.000 000			MHz	BNC connector
Level	HCMOS 3.3 V				
Load	10 k $\Omega$    30 pF				
<b>1 PPS</b>	1.000 000			PPS	BNC connector
Level	HCMOS 3.3 V				
Load	50			$\Omega$	
Rise time			2	ns	
Timing accuracy (r.m.s.) to UTC GPS locked (24 hours) Holdover mode		$\pm 20$	$\pm 7$	ns $\mu$ s	over 24 hours
<b>Status LED</b>	Alarm & 1PPS indication				
<b>Serial interface</b>	RS-232				
Data rate	9600 to 115200 Baud				
Protocol	SCPI-99 compatible				
<b>GPS Input</b>	Active or passive antenna				BNC connector
<b>GPS Receiver</b>	12-Channel GPS L1 (1575.42 MHz)				Timing Optimized Receiver

Frequency stability					
Medium term stability		0.5	1	$10^{-12}$	DOCXO (Note 5)
vs. temperature in operating temperature range (holdover mode)		$\pm 5$ $\pm 0.5$	$\pm 10$ $\pm 1$	ppb ppb	Option 01 Option 02
vs. supply voltage variation (pushing)			$\pm 0.5$	ppb	$V_S \pm 5\%$ (Note 4)
vs. load change (pulling)			$\pm 0.5$	ppb	$R_L \pm 10\%$ (Note 4)
Warm-up / disciplining time			5 15 20 30 24	min min min min hours	$\Delta f/f < \pm 100$ ppb (OCXO) $\Delta f/f < \pm 10$ ppb $\Delta f/f < \pm 1$ ppb $\Delta f/f < \pm 0.1$ ppb Full spec (Note 3)
Supply voltage $V_S$	11.4	12	12.6	V	
Current consumption (steady state)		350	400	mA	@ +25°C
Current consumption (warm-up)		450	500	mA	
Operating temperature range	0		+50	°C	
Storage temperature range	-55		+105	°C	
Enclosure (see drawing) (L x W x H)	105 x 130 x 55			mm	
Weight			500	gram	

**Notes:**

1. Terminology and test conditions are according to IEC standard IEC60679-1, unless otherwise stated
2. Performance similar to 10 MHz sine wave output
3. Depends on the number of satellites received ((minimum 4)
4. Short term variation, during holdover operation. Will be regulated out, when locked to GPS
5. 24 hours continuously locked to GPS, averaged over 10 000 sec

**Ordering Code:**

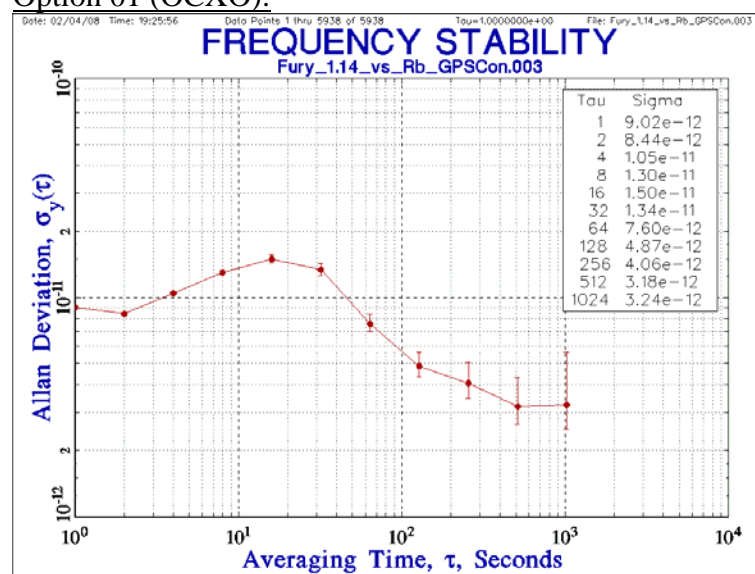
Model (Specification)	Option*	Frequency [MHz]
AXGPS	01	10.000

\* Option 01: OCXO  
Option 02: DOCXO

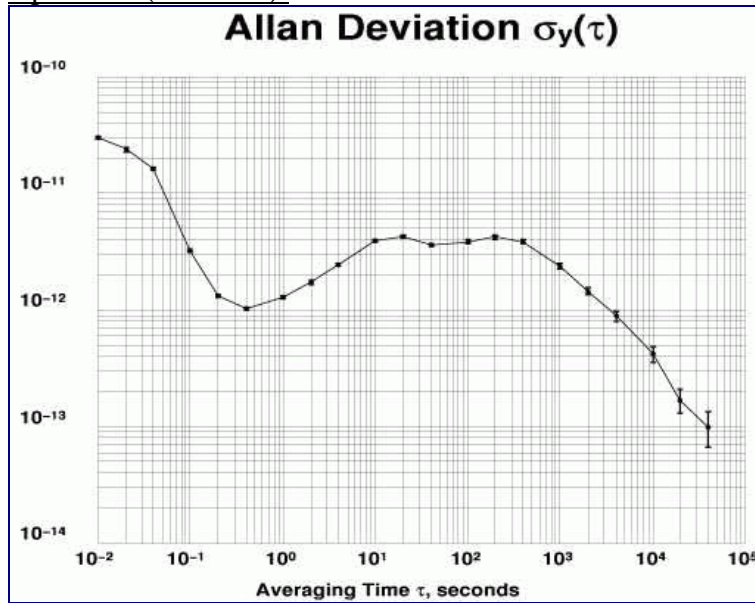
**Example: AXGPS-01-10.000**

**Short term stability (Allan Deviation), typical data**

**Option 01 (OCXO):**



Option 02 (DOCXO):



Front view

