GPS Disciplined Oscillator (OCXO) & Time Reference

Features

- Sine wave or CMOS/TTL output
- Short term stability <5 x10^{-12} at 1sec
- Accuracy to 25ns RMS UTC
- Ultra Low phase noise -115dBc at 1Hz
- National & International Traceable Reference consumption

Description

The E8000 provides a stable and accurate calibration free GPS time & frequency with multiple outputs signal formats is a cost effective solution for applications require frequency reference. This reference maintains high time and frequency accuracy required for demanding applications.
The E8000 provides low noise, traceable, calibration free time & frequency reference. These time & frequency standards maintain high time & frequency accuracy required for demanding applications. The E8000 may be considered as a primary reference clock.

Features

- RS232, USB & Ethernet interface
- Remote access & software interface
- 50ns 1PPS accuracy to UTC
- Optional upgrade to NTP server
- Available frequencies 1Hz to 100MHz
- Built-in self calibration
- UKAS calibration certificate available
- Excellent holdover performance
- Battery back up and redundancy switchover
- Time and frequency standard for calibration & RF laboratories

Related frequency reference products

- **E8-Y:** Low cost and Low Noise Desktop Frequency reference 1 to 4 outputs
- **E8010**: Low Noise 1U 19” rack mount GPS disciplined rubidium up to 12 output, 1 to 100MHz
- **E80-GPS**: Low cost and Low Noise Desktop GPS disciplined OCXO 1 to 4 outputs
- **E8-X**: Low cost Desktop GPS disciplined TCXO 1 to 4 outputs

E8000 Specification

Outputs *See options*	
10MHz	+9dBm (±2dBm) into 50 Ohms, 0.56V_{rms} (Specify for 75Ω load)
Connector	BNC standard (SMA available)
No. outputs	1-16
Standard outputs	**1 x 10MHz, 1 x 1PPS**

Frequency Stability *Allan Deviation*	Options A	Options B	Options C
Frequency	**10MHz**	**10MHz**	**10MHz**
τ =1s	≤$1x10^{-11}$	≤$2x10^{-12}$	≤$8x10^{-13}$
τ =10s	≤$5x10^{-11}$	≤$4x10^{-12}$	≤$3x10^{-12}$
τ =100s	≤$2x10^{-11}$	≤$6x10^{-12}$	≤$5x10^{-12}$

Phase Noise (SSB)	Options 1	Options 2	Options 3
Frequency	**10MHz**	**10MHz**	**10MHz**
1Hz	-100 dBc	-110 dBc	-115 dBc
10Hz	-125 dBc	-136 dBc	-140 dBc
100Hz	-145 dBc	-150 dBc	-154 dBc
1 kHz	-150 dBc	-155 dBc	-155 dBc
10KHz	-155 dBc	-157 dBc	-160 dBc

Frequency accuracy		
10MHz	<$1x10^{-12}$	
Harmonics	**Standard**	**Options C**
	<-30dBc	<-45dBc
Spurious		
100 KHz BW	<-100dBc	<-100dBc
1PPS Output		
Accuracy	<+12ns	
Pulse Width	10 millisecond	
Output level	CMOS 0-3.3V	
Timing accuracy at Holdover		
Per 24 hours	6µ sec.	
Frequency aging at Holdover mode		
Per day	$2x10^{-10}$	No GPS lock[1]
Per month	$20x10^{-10}$	
Warm-up time		

<15 minutes, time to lock at room temperature 25°C

1. In the event of GPS signal loss the E8000 automatically switch to holdover mode.

Included with shipment: *Calibration certificate, Certificate of Conformance, product test sheet and 24 month warranty.*

Environmental			
Temperature :		Operating	-40°C +70°C
		Storage	-40°C +90°C
Temp stability :	No GPS Lock	-20°C +70°C	$0.1x10^{-9}$
	Locked to GPS	-20°C +60°C	<$1x10^{-10}$
Relative humidity :		92% non-condensing	
Magnetic Field sensitivity :		$2x10^{-11}$ Gauss	
Atmospheric pressure :		$1x10^{-13}$ Per mbar	
Approximate MTBF :		100,000 Hrs, Stationary	
Dimensions without cover		44 x 250 x 444mm LWH	

Power supply	
AC power:	90 to 240V
Power consumption:	22W Max at start (25°C) 6W at steady state

Data output & monitoring	Options D	
RS232, 9600 baud rate	USB	Ethernet

NMEA output sentences: GPGLL, GPGGA, GPGSA, GPGSV & GPRMC

GPS data output in TSIP forma.

Processor data output, unit status.

Built-in options

Option 01: Redundant switchover for external power back-up
Option 02: Output 2.048MHz (2048kHz)
Option 03: Output 1544kHz
Option 04: 13MHz Output
Option 05: TTL Output
Option 07: 10.24MHz Output
Option 08: 10.23MHz Output
Option 09: Add 6 Output Distribution Card
Option 10: 26MHz Output
Option 11: 1MHz Output
Option 12: 5MHz Output
Option 18: Extended warranty to 3 years
Option 20: Discipline to external GPS 1PPS or 10MHz input
Option 42: Low noise floor -170dBc at 10KHz
Option 47: High gain GPS antenna, up to 50meters of cable
Option 52: Rack Mount 19" 2U
Option 62: AC Input 110V
Option 64: DC input: Specify +12V, +24V, +48V or +60V
Option 75: Add internal battery, up to 4 hours of battery life.

Contact us to configure this product to meet your requirement.
Designed and manufactured in the U.K.

Typical configuration

The E8000 can be configured to frequencies between 1 to 100MHz of your preferred signal format. Standard connectors are BNC and SMA but E8000 can be configured with any output connector to suit your application.

Included with the shipment

All Quartzlock GPS frequency references are supplied with our standard GPS Antenna, Manual, Test sheet, Calibration certificate and Certificate of conformance.

Standard GPS antenna with 5 meters of cable

Optional upgrade

The High Gain GPS Antenna is designed for stationary application and all weather and harsh environment to provide a strong signal. This antenna is also a high-quality solution for adding GPS RF signals to marine GPS navigation systems. The high gain GPS antenna can be setup with up to 50 meters of cable. The high gain GPS antenna is supplied with stainless steel antenna mount.

High Gain GPS antenna

High Gain GPS Antenna specifications:
Waterproof, weatherproof
Operating Temp -40°C to +85°C
Gain: 35dB ±3dB
Voltage: +5V
Connector: TNC
L1 GPS, 1575.42MHz ±1.023MHz
ROHS compliant


Antenna mount & coaxial cable