GPS Disciplined Oscillator (OCXO) & Time Reference

Features

- Sine wave or CMOS/TTL output
- Short term stability <2 x10^{-12} at 1sec
- Accuracy to 25ns RMS UTC
- Ultra Low phase noise -115dBc at 1Hz
- National & International Traceable Reference consumption

Rear panel

Description

The E8-Y 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 E8-Y provides low noise, traceable, calibration-free time & frequency reference. These time & frequency standards maintain high time & frequency accuracy required for demanding applications. The E8-Y may be considered as a primary reference clock.

Applications

- <1x10^{-12} frequency accuracy
- No Drift
- 50ns 1PPS accuracy to UTC
- RS232 NMEA NTP Time Reference
- Excellent holdover performance
- No Calibration
- Excellent holdover performance up to measurement time up to 1000s
- National & International traceable reference
- Time and frequency standard for calibration & RF laboratories

Standard configuration:
1 x 10MHz sine BNC connector, Phase noise option 1, Short term stability option A x 1PPS BNC connector
Data & Settings: RS232 and USB
See options to add Ethernet port and NTP server

Related frequency reference products

- **E8000**: Low Noise 1U 19" rack mount GPS disciplined OCXO up to 12 output, 1 to 100MHz
- **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

E8-Y Specification

Outputs *See options*	
10MHz	+9dBm (±2dBm) into 50 Ohms, 0.56V_{rms} (Specify for 75Ω load)
Connector	BNC standard (SMA optional)
No. outputs	Maximum 8 outputs
Standard outputs	1 x 10MHz, 1 x 1PPS

Frequency Stability *Allan Deviation*	Standard	Options B	Options C
Frequency	10MHz	10MHz	10MHz
τ =1s	≤1x10^{-11}	≤2x10^{-12}	≤8x10^{-13}
τ =10s	≤2x10^{-11}	≤4x10^{-12}	≤2x10^{-12}
τ =100s	≤1x10^{-11}	≤4x10^{-12}	≤3x10^{-12}
τ =1000s	≤8x10^{-12}	≤2x10^{-12}	≤8x10^{-13}

Phase Noise (SSB)	Standard	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	-158 dBc	-160 dBc	-160 dBc

Frequency accuracy		
10MHz	<1x10^{-12}	

Harmonics	Standard	Options C
	<-30dBc	<-45dBc

Spurious		
100 KHz BW	<-100dBc	<-100dBc

1PPS Output	
Accuracy	±35ns
Jitter	<2ns RMS averaged over 100 seconds
Pulse Width	1 millisecond
Output level	CMOS 0-5V

Timing accuracy in Holdover	
Per 24 hours	6µ sec.

Frequency aging in 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 E8-Y 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		122 x 105 x 60mm LWH	

Power supply	
External DC supply:	+12V
Power consumption:	8W Max at start (25°C) 3W at steady state

Data output & monitoring	Options D
RS232 & USB	Ethernet

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.
Option 90:	Full dual GPS redundancy system.
Option 91:	NTP, PTP server module. Specify
Option 92:	IRIGB003, IRIGB123. Specify

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

GNSS Internal Receiver Specification:

Type: GNSS Position Lock
Number of Channels: 72
GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1 SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN Galileo E1B/C
Frequency Band: L1 (1575.42MHz)
Tracking Code: C/A Code
Tracking Capability: up to 24 Satellites

Sensitivity: Tracking & Navigation
Tracking & Nav: -167 dBm
Cold start (aided): -157 dBm
(autonomous): -148 dBm
Reacquisition: -160 dBm

Acquisition	GPS & GLONASS	GPS & BeiDou
Cold starts:	25sec.	28sec.
Warm Start:	2 sec.	2sec.

Customize outputs & optional configurations

E8-Y is a versatile GPS disciplined Oscillator which can be configured with distribution card (option 09), built-in battery backup to allow to be portable, NTP server module and remote access via Ethernet port (TCP port) for monitoring and control. The E8-Y can be configured to output any frequency between 1 to 100MHz of a preferred signal format. Standard connectors are BNC and SMA. Contact our sales team to specify a different output connector to suit your application.

Examples of configurations

Standard GPS Antenna

All Quartzlock GPS frequency references are supplied with our standard GPS Antenna, Manual, Test sheet, Calibration certificate and Certificate of conformance. The standard GPS antenna has 28dB gain sufficient to provide strong GPS signal to main GPS reference unit when placed near a window or mounted outdoor.

Standard GPS antenna Terminated with 5 meters of RG174 coaxial cable

High Gain GPS Antenna

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 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

MADE IN UK
ISO 9001 Registered
UKAS MANAGEMENT SYSTEMS