

## **GPS Disciplined Rubidium Frequency & Time Reference**

#### **Features**

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



#### Description

The E80-GPS 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 added advantage of the internal rubidium module is that there is no measurable difference between the stability when locked to GPS or in Holdover mode with measurement times up to 1000s.

#### **Applications**

- 1x10<sup>-12</sup> frequency accuracy
- No Drift
- 50ns 1PPS accuracy to UTC
- RS232 NMEA NTP Time Reference
- Alternative Cesium

- No Calibration
- Excellent holdover performance up to measurement time up to 1000s
- National & International traceable reference
- Microwave Test Bench or Test solution

#### 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
- E8-Y: 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

# Quartzlock

#### **E80-GPS Specification**

Outputs See options			
10MHz	+8dBm (±2dBm) into 50 Ohms, 0.56V <sub>rms</sub> (Specify for 75Ω load)		
Connector	BNC standard (SMA available)		
No. outputs	1-6		

Frequency Stability Allan Deviation				
	Options A	Options B	Options C	
Frequency	10MHz	10MHz	10MHz	
τ=1s	≤1x10 <sup>-11</sup>	≤2x10 <sup>-12</sup>	≤8x10 <sup>-13</sup>	
τ=10s	≤5x10 <sup>-11</sup>	≤4x10 <sup>-12</sup>	≤2x10 <sup>-12</sup>	
τ=100s	≤2x10 <sup>-11</sup>	≤6x10 <sup>-12</sup>	≤4x10 <sup>-12</sup>	

Phase Noise (SSB)				
	Options 1	Options 2	Options 3	Options 3
Frequency	10MHz	10MHz	10MHz	10MHz
1Hz	-67 dBc	-100 dBc	-110 dBc	-115 dBc
1Hz	-95 dBc	-125 dBc	-136 dBc	-140 dBc
100Hz	-127 dBc	-145 dBc	-150 dBc	-154 dBc
1 kHz	-145 dBc	-150 dBc	-155 dBc	-155 dBc
10KHz	-144 dBc	-155 dBc	-157 dBc	-160 dBc

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		
Holdover			
Per 24 hours	1μ sec.		

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

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

Environmental				
Temperature :	Operatin	g	-40°C +60°C	
Temperature.	Storage		-40°C +90°C	
Temp stability:	-20°C +60	)°C	0.1x10 <sup>-9</sup>	
Relative humidity:	92% non-condensing			
Magnetic Field sensitivity :	2x10 <sup>-11</sup> Gauss			
Atmospheric pressure :	1x10 <sup>-13</sup> Per mbar			
Approximate MTBF :	100,000 Hrs, Stationary			
Dimensions without cover	122 x 105 x 60mm LWH			
W-:-La.	Without	Without battery		600gms
Weight:	With internal battery		750gms	
Power supply				
External DC supply:	+12 to 15			
Power consumption:	22W Max at start (25°C) 6W at steady state			
Data output & monitoring	Options D			

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

USB

Ethernet

GPS data output in TSIP forma.

Processor data include unit status.

#### **Built-in options**

RS232, 9600 baud rate

Option 02: Output 2048kHz
Option 03: Output 1544kHz
Option 04: 13MHz Output
Option 05: CMOS/TTL Output
Option 07: 10.24MHz Output
Option 08: 10.23MHz Output

Option 09: Add 6 Output Distribution Card

Option 10: 26MHz Output

Option 18: Extended warranty to 3 years

 ${\it Option~20:}$  Discipline to external GPS 1PPS or 10MHz input

*Option 42:* Low noise floor -170dBc at 10KHz

Option 51: Rack Mount 19" 1U

Option 62: AC Input 110V

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.

Warm-up time



#### **Typical configuration**

The E80-GPS can be configured to frequencies 1 to 100MHz of your preferred signal format. Standard connectors are BNC and SMA, other connectors are available.







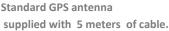


Examples of front and rear panel configuration.

#### Standard accessories supplied with E80-GPS

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







#### Optional upgrade

The High Gain GPS Antenna is designed for stationary application, 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 70 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

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