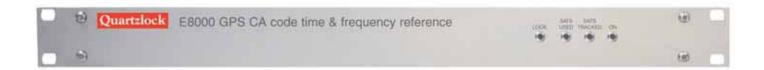
# **GPS Master Clock** Very Low Noise Frequency & Timing Primary Reference Source

- □ Phase Noise is -110dBc/Hz@1Hz offset as standard
- □ Stability (AVAR) is 8x10<sup>-13/s</sup> typically
- Accuracy 25us, 100us/day holdover



The Quartzlock E8000 represents a breakthrough in very low noise, traceable, calibration-free GPS frequency & time standards. These very cost effective references maintain the high frequency and time accuracy required for demanding applications. Low distortion 10MHz Sine & 1PPS outputs. Ultra low noise options are available.

Considerably enhanced surveillance, wired and wireless communications are possible with E8000's much lower noise levels

### **Features**

- 1x10<sup>-12</sup> accuracy
- No Drift
- Highest Stability available
- 1 Year Warranty
- Lowest Cost Available
- Very long production life & support

#### **Benefits**

- No calibration required
- Traceable Reference, nationally & internationally
- External & Internal BBU options
- Many options available including NTP Clock Reference Output
- ULN options: -115dBc/Hz @ 1Hz offset & -170dBc/Hz @ 100kHz 5MHz option has -123dBc/Hz @ 1Hz offset Phase Noise 5x10<sup>-13</sup>/s AVAR short term stability

#### **Applications**

- Frequency Reference for: Satellite Communication Ground Stations, VHF, UHF & PMR TX, CDMA, Tetra, DTV & DAB, Wired & Wireless network synch
- Network Time Protocol use in Financial, Utilities, Security & Communications Timing
- OEM
- Frequency Standard for: Calibration Labs, Radio Workshops, RF Labs & Production Test
- Calibration of: Counters, Frequency Meters, Spectrum & Network/VNA Analysers, Synthesizers
   & Communication Analysers

# **Specification**

E8000 VERY LOW NOISE <b>10MHz</b>		
Outputs	a) Sinewave	10MHz, 12dBm +/- 2dBm into 50 Ohms
	Harmonics Spurii	< -30dBc <-80dBc
	<b>b) TTL</b> 3.3VCMOS	1pulse per second (4ns std dev)
Frequency Accuracy	1x10 <sup>-12</sup> Long Term	
Hold over	100 us/24hrs	
Short Term Stability	tau 1s 10s 100s 1000s 10,000s	Allan Variance <2x10 <sup>-12</sup> <4x10 <sup>-13</sup> <5x10 <sup>-12</sup> <2x10 <sup>-12</sup> <8x10 <sup>-13</sup>
Phase Noise (typ)	1Hz 10Hz 100Hz 1kHz 10kHz	-110 dBc/Hz -136 dBc/Hz -145 dBc/Hz -155 dBc/Hz -157 dBc/Hz
Lock Indicator	On - Not Locked Off - Locked, Low Phase Error Short flash every second - Locked, High Phase Error	
GPS Indicator	Green - Indicates number of satellites used in time solution Amber - Indicates number of satellites tracked but not used in time solution	
Warm Time	<30 minutes to specified accuracy	
Power Supply	100 240V ac (External 12Vdc Battery Back Up seamless switching option)	
	(Internal 12Vdc Lithium Ion battery with charger > 1 hour holdover option)	
Current Consumption	250mA typical  19" x 1 <sup>34</sup> " 1U Rack Mount 483 x 44 x 230mm excl connectors 560 x 340 x 100mm packed	
Size		
GPS Antenna	5m cable and connector supplied	
Option	High gain antenn	a with 20m cable

A				
Harmonics < -30dBc Spurii < -80dBc  b) TTL 3,3VCMOS (4ns std dev)  Frequency Accuracy Hold over  100 us/24hrs  tau Allan Variance 1s 55x10-13 100s 4x10-13 100s 5x10-13 100s 5x10-13 100s 2x10-12 10,000s 8x10-13 10,000s 8x10-13 10,000s 8x10-13 10,000s 8x10-13 10Hz 10Hz 10Hz 140 dBc/Hz 10Hz 155 dBc/Hz 10kHz 155 dBc/Hz 10kHz 10kHz 155 dBc/Hz 10kHz 10kHz 158 dBc/Hz 10kHz 10kHz 159 dBc/Hz 10kHz 10kHz 150 dBc/Hz 10kHz 10kHz 150 dBc/Hz 10kHz 10kHz 150 dBc/Hz 10kHz 10	E8000 ULTRA LOW NOISE <b>5MHz</b> OPTION			
Spurii   <-80dBc	Outputs	a) Sinewave	+/- 2dBm into 50	
3.3VCMOS (4ns std dev)				
Hold over  Short Term Stability  tau  Short Term Stability  tau  Short Term Stability  Lock Indicator  GPS Indicator  GPS Indicator  Warm Time  Power Supply  Allan Variance  1s  Sox10-13  100s  Sax10-13  1000s  Sax10-13  1000s  Sax10-13  1000s  Sax10-13  1000s  Sax10-13  1000s  Sax10-13  1000s  Sax10-13  1000c  Sax10-13  100c  Sax10-13  Sax10-1				
Short Term Stability  tau  Allan Variance  1s	Frequency Accuracy	1x10 <sup>-12</sup> Long Term		
1s	Hold over	100 us/24hrs		
10Hz	Short Term Stability	1s 10s 100s 1000s	<5x10 <sup>-13</sup> <4x10 <sup>-13</sup> <5x10 <sup>-13</sup> <2x10 <sup>-12</sup>	
Off - Locked, Low Phase Error Short flash every second - Locked, High Phase Error  Green - Indicates number of satellites used in time solution Amber - Indicates number of satellites tracked but not used in time solution  Warm Time  <30 minutes to specified accuracy  100 240V ac (External 12Vdc Battery Back Up seamless switching option) (Internal 12Vdc Lithium Ion battery with charger > 1 hour holdover option)  Current Consumption  Size  19" x 1¾" 1U Rack Mount 483 x 44 x 230mm excl connectors 560 x 340 x 100mm packed  GPS Antenna  Supplied with 5m cable and connector	Phase Noise (typ)	10Hz 100Hz 1kHz	-140 dBc/Hz -150 dBc/Hz -155 dBc/Hz	
used in time solution Amber - Indicates number of satellites tracked but not used in time solution  Varm Time  <30 minutes to specified accuracy  100 240V ac (External 12Vdc Battery Back Up seamless switching option) (Internal 12Vdc Lithium Ion battery with charger > 1 hour holdover option)  Current Consumption  Size  19" x 1¾" 1U Rack Mount 483 x 44 x 230mm excl connectors 560 x 340 x 100mm packed  GPS Antenna  Supplied with 5m cable and connector	Lock Indicator	Off - Locked, Low Phase Error Short flash every second -		
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483 x 44 x 230mm excl connectors 560 x 340 x 100mm packed  GPS Antenna  Supplied with 5m cable and connector	Current Consumption	250mA typical		
	Size	483 x 44 x 230mm excl connectors		
Option High gain antenna with 20m cable	GPS Antenna	Supplied with 5m cable and connector		
	Option	High gain antenna with 20m cable		

## Interface

GPS	9.6kbaud, Motorola binary format RS232 PC compatible (8bits no parity, no handshake) or NTP Clock Reference Output option
DPLL Tracking	5mHz to 500mHz typical in 8 binary Bandwidths increments default 20mHz
Option 9	See Quartzlock E5-X Specification on page 12 Outputs: 6 x10MHz low distortion, sinewave, isolated, +13dBm 1V rms 50 Ohms

