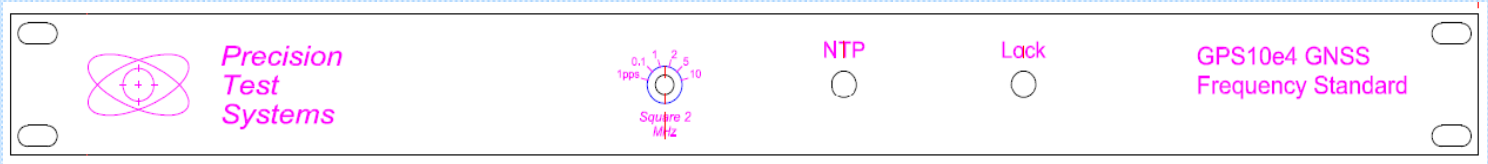




## GPS10e4: GNSS / GPS Disciplined Frequency Standard



### Key Features

- 10 MHz Sine & Square Outputs
- 1 pps Output aligned to UTC
- All outputs locked to GNSS / GPS Satellites
- Accuracy to parts in  $10^{-12}$  (1 week)
- Never needs calibration
- 19" Rack Mount Case
- Low Price and High-Quality Construction
- 1, 5 or 10 sinewave outputs
- NTP Server supplied as standard
- Ethernet, USB or RS232 port
- Many Options Available
- Supplied with GPS Antenna and 5m of cable.

### General Description

The GPS10e4 is a low cost 10 MHz, GPS disciplined, frequency standard. The above picture shows the 19" rack mount version, but a smaller bench mount case is also available. The GPS10e4 receives most of the world's navigation satellite systems to discipline a TXCO or OXCO crystal oscillator. Long-term frequency accuracy of parts in  $10^{-12}$  is achieved.

### Applications

- Calibration of Frequency Counters and other test equipment
- Frequency Reference for DTV, DAB, VHF, UHF, CDMA, Tetra etc
- Production frequency reference
- Network Time Protocol in Banks, Financial companies, utilities, 2 way radio workshops, TV studios.

### Outputs

There are up to ten 10 MHz, sinewave outputs, a squarewave output, and a 1 pps (pulse per second) output. The 1 pps output is aligned to UTC time within  $\pm 20$  ns (typical). There is also a NTP server output.

### Ethernet, RS232 and USB Interface

Ethernet, RS232 or USB interfaces allows monitoring and control of the GPS10e4 via Windows software (supplied).

### Options

- Antenna Amplifier allowing the GPS antenna to be placed up to 350 m away from the GPS10e4.
- Fixed or variables frequency outputs, up to 10 GHz. E.g. 0 – 1640 MHz in 0.01 Hz steps.
- Alarm Relay Output.
- Redundancy. Two units operate together with automatic switchover if one unit fails.
- Higher stability oscillators. TXCO is standard. OXCO or rubidium is optional.

Specifications		
Description	Specification	Remarks
Sine Wave Outputs		
Connector	Rear panel BNC socket	
Frequency	10 MHz	
Accuracy / Allan Variance	Refer to Allan Variance section	
Signal Type / Amplitude	Sine wave @ 10 dBm	
Harmonic Distortion / Spurious	-30 dBc / -50 dBc	
Return Loss	> 20 dB @ 10 MHz	
1 PPS Outputs		
Connector	Rear panel BNC socket	After cable delay taken into account
Frequency	1 pulse per second	
Signal Type	Pulse Output	
Amplitude (open circuit)	0 to 3.2 V, CMOS Compatible	
Accuracy to UTC time (GPS 1 pps)	< 10 ns rms	
Squarewave Outputs		
Output type	Squarewave	
Output Level	> 0 to 3 V TTL into 50 Ω	
Frequency	10, 5, 2, 1, 0.1 MHz & 1 pps	Switchable using front panel knob
Number of Outputs	Three	All outputs at same frequency
Sinewave Output Phase Noise with option 04 (typical)		
1 Hz Offset	-90 dBc/Hz	
10 Hz Offset	-107 dBc/Hz	
100 Hz Offset	-120 dBc/Hz	
1 kHz Offset	-130 dBc/Hz	
10 kHz offset	-130dBc/Hz	
100 kHz Offset	-135 dBc/Hz	
Allan Variance when locked to GPS Satellites (typical)		
Observation Time 1 sec	< 1.5 x 10 <sup>-11</sup>	GPS10e4 in full lock, > 3 satellites in view. Ambient temperature + 0 °C to +40 °C. Temperature change less than 1 °C per hour
Observation Time 10 sec	< 6 x 10 <sup>-12</sup>	
Observation Time 100 sec	< 6 x 10 <sup>-12</sup>	
Observation Time 1 week	< 1.0 x 10 <sup>-12</sup>	
Output drift when GPS10e4 NOT locked to GPS Satellites (Holdover OXCO)		
Drift due to aging:	< 1 x 10 <sup>-8</sup>	
Drift due to temperature	< 5 x 10 <sup>-7</sup>	Relative to 25 °C
GNSS / GPS Receiver		
Number of Channels / Frequency	50 parallel @ 1575.42 MHz	
Sensitivity (typical)	-143 dBm Acquisition	-156 dBm tracking
Acquisition time	< 45 s from cold start	< 5 s from hot start
Satellite systems supported	GPS, GLONASS & Galileo	
NTP Server		
NTP Server Output	From RJ45 10/100 Mb	Dual port with Ethernet
NMEA 0183	Via RS232/422 or USB	
Nena format 0,1,8	Via RS232/422 or USB	

Interfaces		
RS232	RS232/422	
USB	USB 2.0	
Ethernet	RJ45	
Miscellaneous		
Ambient Temperature	0 °C to +40 °C	Rear Panel Usable 90 - 260 VAC 20 mm type. 250 V rating 20 mm type. 250 V rating
AC Power Inlet with switch	IEC320 power cord	
AC Voltage Range	100 - 240 VAC	
Power consumption	40 watts max	
Fuse rating	3.15A Slow Blow	
Dimensions		
Width	482.6 mm	
Depth	300 mm	
Height	44 mm	
Weight	3 kg	
Supplied Accessories		
Antenna	Active type, 5V @ 20 mA	
Power cord	IEC320 type	
Instruction manual		
Options		
Option 01E Multiple Sinewave Outputs		
10 MHz Sinewave Output	Five outputs @ > +10 dBm	Locked to main reference
5 MHz Output	Two outputs @ >+10 dBm	Locked to main reference
Option 04 OXCO		
Option 04 replaced TXCO oscillator		
Option 09 Time Code Output		
Time Code Formats	IRIG-B, SMPTE	
IRIG Mark to Space Ratio	3.3 to 1	
IRIG Output Level (AM)	2 to 7 V pp	600 Ω
IRIG Output Level TTL	> 4V high and < 0.6 V low	
Option 24D		
Frequency Output	100.000 MHz	Locked to 10 MHz signal
Number of Outputs	One	

Consult Precision Test Systems for further details of other options. Not all options can be fitted at the same time.

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Full specifications available from [www.ptsyst.com](http://www.ptsyst.com). Specifications and features subject to change without notice (150222)