



# FEI-Zyfer

GPS Time and Frequency Systems



*Designed, Manufactured,  
and Supported in the USA*

## NanoSync II<sup>®</sup>



### NanoSync II Model 380

The NanoSync II<sup>®</sup> is an OEM Time and Frequency module designed specifically for the OEM who requires a high performance Time and Frequency system in a small and economical package.

With a design emphasis on synchronizing remote locations, the NanoSync II is ideal for CDMA, TDMA, GSM, TDOA, WiMAX, WLL, and other telecom and geo-location application technologies.

The NanoSync II has a long history of reliable operation. In case of temporary loss of GPS signals exceptional holdover performance assures continuous system operation. This is achieved through an algorithm that compensates for external temperature changes and aging of the internal OCXO. Status monitoring and control of the NanoSync II is provided via the RS-232 port.

The NanoSync II is also ideal for test equipment and instruments, specialized network synchronization equipment, satellite ground station equipment, Digital Terrestrial Radio and TV, or any application requiring precision time and frequency signals. Optional board-level form factor available.

### System Features:

- ▶ **OCXO:**  
Extended Holdover Performance
- ▶ **Low Phase Noise:**  
Optional Configuration
- ▶ **Output Ports:**  
10MHz, 1PPS
- ▶ **Flash Memory**
- ▶ **User Interface:**  
Standard RS-232
- ▶ **Power Options:**  
12 VDC & 15 VDC

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## NanoSync II® Specifications

### Output Specifications

#### 10 MHz Output:

Waveform: Sine wave  
Connector: (1) SMA Female  
Amplitude:  $13 \pm 2\text{dBm}$  into  $50\Omega$   
Harmonics:  $\leq -70\text{dBc}$

Spurious Level:  $\leq -80\text{dBc}$ , 2MHz to 2GHz;  $\leq -70\text{dBc}$ , < 2MHz

#### 10 MHz Frequency Accuracy:

Locked to GPS:  $\leq 1\text{E-}12$  (24 hr. average)

#### Holdover(a):

3E-10: 8 hours ( $\pm 10^\circ\text{C}$ )

4.5E-10: 8 hours over full temp. range

#### 10 MHz Short-Term Stability (Allan Deviation):

1 sec: 1E-11

10 sec: 2E-11

100 sec: 2E-11

10 MHz Phase Noise Standard  
(dBc/Hz): OXCO: Optional High Stability OXCO (d):

1 Hz:  $\leq -90$   $\leq -90$

10 Hz:  $\leq -120$   $\leq -120$

100 Hz:  $\leq -130$   $\leq -140$

1 kHz:  $\leq -140$   $\leq -145$

10 kHz:  $\leq -145$   $\leq -150$

#### 1 PPS Output:

Connector: (1) SMA Female  
Drive Level: TTL into  $50\Omega$   
Pulse Width: User selectable 10 $\mu\text{s}$ , 20 $\mu\text{s}$ , 1-999ms  
Synchronization: Rising edge on-time  
Option: 1 pulse every even second (1 PP2S)

#### Time Accuracy to UTC:

Locked to GPS: 25ns RMS, 50ns peak (typical)

#### Holdover(a):

9 $\mu\text{s}$ : 8 hours ( $\pm 10^\circ\text{C}$ )

13 $\mu\text{s}$ : 8 hours over full temp. range

### Control Port

Signal Levels: RS-232  
Connector: 9-pin D-sub  
Baud Rate: 19200 Fixed  
Protocol: 1 Start Bit, 8 Data Bits, 1 Stop Bit, No Parity

### GPS Receiver

Standard GPS Receiver - Civil C/A Code:

Type: 8 channel, L1

Frequency: 1575.42MHz (L1)

Antenna Connector: SMB Female

### Chassis Dimensions

Height: 32 mm (1.25")

Width: 109 mm (4.3")

Depth: 88 mm (3.45")

Weight: .33 kg (.70 lbs.) maximum

Contact Factory regarding dimensions/mounting details for the unenclosed product.

### Environmental

Operating Temperature:  $-5^\circ\text{C}$  to  $55^\circ\text{C}$

Operating Temp. w/o case:  $-5^\circ\text{C}$  to  $60^\circ\text{C}$

Rate of Change:  $10^\circ\text{C}$  / Hour maximum

Storage Temperature:  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$

Relative Humidity: 5% to 95%, non-condensing

Altitude, Operating: -60m to 4000m

Altitude, Storage: -60m to 9000m

### Input Power

#### Available with DC Power:

Model 380-510-01: 15 VDC  $\pm 10\%$  (b)

Model 380-510-02: 12 VDC  $\pm 5\%$  (c)

#### Power Consumption:

Warm-Up: 10W maximum

Steady State: 5W maximum @  $25^\circ\text{C}$

Input/Output Isolation: None, input return connected to chassis/signal ground

### Optional Accessories

GPS L1 Antenna Kit  
Antenna Cable

### Notes:

(a) After 72 hours of GPS locked operation, fixed antenna location, antenna delays entered.

(b) No external regulation required.

(c) 0.1V external regulation required.

(d) Only with 15 VDC version.



FEI-Zyfer, Inc. is an ISO 9001 certified company.

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