

### FEATURES

- Accuracy
  - Time: <50 ns Peak (UTC)
  - <50 ns RMS
  - Frequency: 1E-12
  
- GPS Receivers
  - Standard Civil C/A Code (L1) Frequency
  - SAASM Military C/A-P(Y)-Codes (L1, L2)
  
- User interface
  - Standard RS-232
  - Keypad/display
  - Ethernet I/O (Telnet, SNMP)
  - Zyfer Monitor™ GUI
  
- Time Server
  - SNTP, NTP
  - PTPv2 IEEE 1588-2008
  
- Standard Outputs
  - 1 PPS
  - 10 MHz
  - 4 output module slots for flexibility
  
- External sync input (for distribution systems)
  
- All systems are calibrated with an in-house standard traceable to UTC



**GSync Model 391**

**GSync®** is the 1U compact chassis version of the popular and versatile CommSync II. The heart of the GSync is the GTF (GPS Time and Frequency) module within the unit. It is self-contained with a Quartz or Rubidium oscillator, and a commercial C/A GPS receiver or a military SAASM GPS receiver (Rockwell-Collins MPE-S GB-GRAM or Trimble Force 22E MRU).

If a system needs a Primary Reference Source (PRS), the GSync provides either Standard Positioning Service (SPS) GPS (the civil C/A signal) or the very latest in GPS military technology - SAASM Precision Positioning Service (PPS) GPS receivers (for approved users only). With GPS as the reference source, the GSync provides a frequency accuracy of 1E-12 and a time accuracy of <50 ns Peak to UTC, for calibrated units.

The GSync is also designed to take external inputs to provide internal frequency synchronization to the accuracy of the external source.

There are two choices of disciplined oscillator selection. Depending on holdover requirements, an Ovenized Quartz Crystal Oscillator (OCXO) or a Rubidium Atomic Oscillator can be specified. The GSync can be populated with up to (4) option modules.

There are a wide variety of output option modules available: Low-Phase Noise sine wave, T1/E1, Time Code, and Network Time Protocol (NTP). The full line of common GSync and CommSync II option modules are shown in the option module listing on our web site.

For Monitor and Control functions there is an RS-232 communication port on the rear panel of the chassis and a standard Ethernet port providing Telnet, SNMP, and Network Time Protocol (NTP), as well as PTPv2 IEEE 1588-2008.

FEI-Zyfer products come with a standard 2 year factory warranty (parts & labor).

### Rear Panel View



Antenna/Comm  
1 PPS/10 MHz  
RJ-45 Ethernet

4 Hot-Swappable Option Module Slots

Power Supply  
AC or DC Options

**FEI-Zyfer, Inc.**

7321 Lincoln Way

Garden Grove CA 92841

Toll-free: 888-886-7465

E-mail: sales@fei-zyfer.com

www.fei-zyfer.com

391-8003 B



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



### Output Specifications

After 24 hours of GPS locked operation, fixed antenna location, antenna delays entered.

Frequency Accuracy - 24 Hour average<sup>(a)</sup>

	Rubidium OSC	Quartz OSC
Locked to GPS:	<1E-12	<1E-12
Holdover <sup>(a)</sup> – first 24 hours:	<5E-11	<1E-10

Time Accuracy to UTC, for calibrated units<sup>(b)</sup>

	Rubidium OSC	Quartz OSC
Locked to GPS:	<50 ns Peak	<50 ns Peak
Holdover <sup>(a)</sup> – first 24 hours:	<3 us	<7 us

Short-Term Stability<sup>(c)</sup> typical (Allan Deviation)

	Rubidium OSC	Quartz OSC
1 sec:	<3E-11	<1E-11
10 sec:	<1E-11	<1E-11
100 sec:	<3E-12	<1E-10

Phase Noise<sup>(c)</sup> typical

	Standard	Low Noise 5 MHz
1 Hz:	<-90 dBc/Hz	<-100 dBc/Hz
10 Hz:	<-105 dBc/Hz	<-130 dBc/Hz
100 Hz:	<-125 dBc/Hz	<-150 dBc/Hz
1 kHz:	<-135 dBc/Hz	<-158 dBc/Hz

### Input/Output (Rear Panel)

(1) 1 PPS, 50 Ω, TTL level, BNC, External Sync input

(1) RS-232 I/O, DE-9 Connector

(1) GPS Antenna Connector, TNC

(1) 10 MHz, 50 Ω, TTL level, BNC Connector

(1) 1 PPS, 50 Ω, TTL level, BNC Connector

(1) RJ-45 Fast Ethernet

- TCP/IP, Ethernet 2.0/IEEE 802.3, IPv4, IPv6
- Telnet RFC 854, SSHv1, SSHv2
- SNMPv1, SNMPv2c, SNMPv3
- SNTP, NTPv1, NTPv2, NTPv3, NTPv4, PTPv2, IEEE 1588-2008
- Syslog support RFC 5424

- SAASM Option (front panel)

(1) Key Load connector, (1) Hot Start connector, (1) Zeroize button

### Power Options

- AC input (115/230 VAC) 100-120 and 200-240 VAC, 100 Watts max., 47-63 Hz
- DC input (24 VDC) 18-36 VDC, 100 Watts max.
- DC input (48 VDC) 36-76 VDC, 100 Watts max.
- DC input (12 VDC) 11.5-18 VDC, 150 Watts max.
- DC input (28 VDC aircraft bus) 22-29 VDC, 150 Watts max.

### GPS Receiver Options

Standard GPS Receiver - Civil C/A Code

Type:	8 to 12 channel, independent tracking	
Frequency:	1575.42 MHz (L1)	
Code:	C/A only	
Acquisition Time: <sup>(b)</sup>	Warm Start:	<2 minutes
	Cold Start:	<20 minutes

SAASM GPS Receiver - Military P(Y)-Code<sup>(d)</sup>

MPE-S GB-GRAM:	12 channel, independent tracking	
FORCE 22E MRU:	24 channel, independent tracking	
Frequency:	1575.42 MHz and 1227.60 MHz (L1 & L2)	
Code:	C/A and P(Y)	

Acquisition Time<sup>(b)</sup>

Warm start:	<2 minutes	
Hot or Cold Start:	Dependent on accuracy of initialization parameters from PLGR or DAGR handheld military GPS receivers, or other initialization devices	

Keyload Interface: DS-102

### Physical

Height:	44 mm (1.75") (1U)	
Width:	448 mm (17.65") Mounts in 19" EIA rack	
Depth:	381 mm (15") includes connectors	
Weight:	10 lb. maximum	
Panel Color:	Black Satin finish (Front Panel)	

### Environmental

		MIL-STD-810G
Operating Temperature:	0 °C to 50 °C	501.5 & 502.5
Storage Temperature:	-40 °C to +85 °C	501.5 & 502.5
Humidity:	5 % to 95 % non-condensing at 40 °C	507.5
Operating Altitude:	-60 m to 4000 m	500.5
Storage Altitude:	-60 m to 9000 m	500.5
EMC/EMI:	FCC Code of Federal Regulations 47CFR Part 15, Subpart B, Class B	

Notes:

(a) After 48 hours of continuous operation.

(b) 2σ (95.5% probability).

(c) Detailed specifications for various frequency output modules: see "Option Module User Manual".

(d) Note: U.S. Government policy restricts the sale of Precise Positioning Service (PPS) equipment to those authorized by the U.S. Department of Defense. Non-U.S. authorized users must purchase PPS equipment through the Foreign Military Sales (FMS) process.

Specifications subject to change without notice.



Designed, Manufactured, and Supported in the U.S.A.

**Over 100+ Option Modules available. For a complete list contact FEI-Zyfer, Inc.**

FEI-Zyfer, Inc. 7321 Lincoln Way, Garden Grove CA 92841  
Toll-free: 888-886-7465 E-mail: sales@fei-zyfer.com www.fei-zyfer.com