

Features

- GPS Disciplined Rubidium Oscillator
- Internal or External GPS Reference
- Internal SAASM GB-GRAM GPS Receiver
- Remote Control and Monitor through Ethernet or RS-232
- Network Time Server
- Outputs 10 MHz, 5 MHz, 1 PPS
- Ground Mobile Operating Environment
- Optical IRIG B Time Code
- Low Phase Noise 10 MHz Cleanup Oscillator



Application - Defense (Military) - SatCom-Wireless

- Mobile Radio Synchronization
- Secured Communications

Options

- 1 Hz to 50 MHz Frequency Synthesizer 1 Hz steps

General Description:

The Model 8836 is a tactical GPS Time and Frequency System that incorporates a Selective Availability Anti-Spoofing Module (SAASM) Ground-Based GPS Receiver Module (GB-GRAM) rubidium oscillator, time and frequency signal generation and control/status circuitry in a compact ruggedized enclosure. Standard outputs include 1PPS, 10 MHz Network Time Protocol (NTP) and two IRIG B outputs over multi-mode fiber.

The 8836 can be synchronized from the internal GPS receiver or from an external GPS 1PPS.

When tracking GPS with a TFOM of 3 or better, the discipline algorithm steers the internal oscillator providing 1 PPS time accuracy of < 30 nS to UTC and long term frequency stability of < 1E-12 averaged over 24 hours. In the absence of GPS the unit transitions into holdover mode providing an accumulated time drift of < $\pm 2 \mu\text{S}$ in 24 hours.

An Ethernet interface provides NTP, SNMP v1,v2 and v3, SSH, syslog and telnet. An RS-232 I/O interface is also provided for control and status.

Three GPS Standard Serial Interface Protocol (GSSIP) ports are provided from the GB-GRAM. Two ports are configured to automatically output ICD-GPS-153 messages and the third port is configured to automatically output NMEA-0183 messages.

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

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Specifications subject to change without notice.

Specifications:

SAASM GPS Receiver

Type	12 Channel Parallel Tracking
Frequency	1575.42 MHz (L1) & 1227.60 MHz (L2)
Code	C/A & P(Y)
Keyload Interface	DS-102

Optical Time Code

Format	IRIG-B
Optical Wavelength:	280nm
Optical Cable:	Multimode
Max Cable Length:	2,000 meters
Connector:	ST
Number of Outputs:	Two

Low Noise 10 MHz Output

Waveform	Sinusoidal
Output Level	+11 dBm ± 2dB
Harmonic Distortion	-30 dBc
Spurious	-80 dBc
Frequency Accuracy	<1E-12 24 Hr avg. while locked to GPS <1E-11 in 24 hours during holdover.
	@ 1Hz offset -90 dBc
	@ 10 Hz offset -125 dBc
Phase Noise (static)	@ 100 Hz offset -145 dBc
	@ 1 kHz offset -160 dBc
	@ 10 kHz offset -165 dBc
	@ 100 kHz offset -167 dBc
Connector	SMA female

1 PPS Output

Pulse width	100 µs ± µs positive edge on-time
Output Level	TTL into 50 ohms
Accuracy	< ±30 nS RMS to UTC while locked to GPS < ±2 µs in 24 hours during holdover after three days of oscillator training
Connector	Circular JD38999/20WD35SN

GSSIP Port 1 Output (BDDP)

Function	Automatically outputs position, velocity and time (PVT) and status data IAW GPS-ICD-153C
Message Outputs	Message ID 4 24-CH Time Mark Data (once per second) Message ID 5040 Current Status (once per second) Message ID 5044 Warning Messages Message ID 5101 Time transfer Data (once per second) Message ID 253 Buffer Box (once per 6-seconds)

Output Level	RS-232
Baud Rate & Format	9600 Baud 8-data bits, 1-stop bit, no parity
Connector	Circulator JD38999/20WD35SN
GSSIP Port 2 Output (Com 1)	
Function	Automatically outputs position, velocity and time (PVT) and status data IAW GPS-ICD-153C
Message Outputs	Message ID 3 Time Mark Data (once per second) Message ID 5040 Current Status (once per second) Message ID 5044 Warning Messages Message ID 253 Buffer Box (once per 6-seconds)
Output Levels	RS-422
Baud Rate & Format	9600 Baud 8-data bits, 1-stop bit, no parity
Connector	Circular JD38999/20WD35SN
NMEA-0183 Port (Com 2)	
Function	Automatically outputs position, velocity and time (PVT) and status data IAW NMEA-0183
Message Outputs	GGA - Global Positioning System Fixed Data RMC - Recommended Minimum Specific GNSS Data
Output Level	RS-232
Baud Rate & Format	4800 Baud 8-data bits, 1-stop bit, no parity
Connector	Circular JD38999/20WD35SN
RS-232 Interface	
Function	Remote control and status of unit
Interface protocol	TRAK proprietary interface
Output Level	RS-232
Baud Rate & Format	9600 Baud 8-data bits, 1-stop bit, no parity
Connector	Circulator JD38999/20WD35SN

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Ethernet Interface	
Function	Remote control and status of unit and NTP server
Supported Protocols	SNTP, NTP v3, v4
	SSH
	SNMP v1, v2, v3
	Telnet
	HTTP
	DHCP
Speed	10/100 Base-T
Connector	Circular MS with integrated RJ-45 (amphenol Pt #RJFTV21N)
Environmental	
Operating temperature	-30°C TO +65°C Rate of change 10°C per hour
Storage Temperature	-45°C to +85°C
Humidity:	0 to 95% non-condensing
Operating Vibration:	Wheeled Vehicle per MIL-STD-810F Method 514.5, Procedure 1, Category 20, Figure 514.5C-3 and Table 514.5C-VII Tracked Vehicle per MIL-STD-810F, Method 514, category 20, Figure 514.5C-4
Operational Shock:	Per MIL-STD-810F, Method 516.5, Procedure I, Figure 516.5-10, Table II. Terminal peak sawtooth pulse of 40 g s, 11 mS.
MTBF	47,000 hours @ +25°C, Ground Mobile environment per MIL-HDBK 217 Revision F, Notice 2
Physical	Size:10.5"L x 8.2"W x 1.74"H
	Weight: 5.8 lbs
Power	
Voltage:	+19 - +36 DVC
Current:	38 Watts Warm-up
	25 Watts Steady State
Connector:	D38999/20wA35PA

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