TRAK Microwave Corporation

Request Pricing

GPS Time & Frequency System
Tactical GPS

Model: 8836

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 < ± 2 μS 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.

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.

Specifications subject to change without notice.
## GPS Time & Frequency System

**Model:** 8836

### Tactical GPS

**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:** &lt;1E-12 24 Hr avg, while locked to GPS &lt;1E-11 in 24 hours during holdover.
  - @ 1 Hz offset: -90 dBc
  - @ 10 Hz offset: -125 dBc
  - @ 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:** &lt; ±30 nS RMS to UTC while locked to GPS
  - &lt; ±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-hours)

**GSSIP Port 2 Output (Com 1)**
- **Function:** Automatically outputs position, velocity and time (PVT) and status data IAW GPS-ICD-153C
- **Message ID 5040** Current Status (once per second)
- **Message ID 5044** Warning Messages
- **Message ID 253** Buffer Box (once per 6-hours)

**NMEA-0183 Port (Com 2)**
- **Function:** Automatically outputs position, velocity and time (PVT) and status data IAW NMEA-0183
- **Message Outputs**
  - **GGA** - Global Positioning Syste
  - **RMC** - Recommended Minimum Specific GNSS Data
- **Output Level:** RS-232
- **Baud Rate & Format:** 4800 Baud
- **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
- **Connector:** Circular JD38999/20WD35SN

Specifications subject to change without notice.

---

**Smiths Microwave**

**TRAK Microwave Corporation**

Request Pricing • [www.trak.com](http://www.trak.com)

Ph: 813-901-7200 • US Toll Free: 1-888-283-8444

4726 Eisenhower Blvd Tampa, FL 33634

©TRAK Microwave Corp.
# GPS Time & Frequency System

## Model: 8836

### Tactical GPS

<table>
<thead>
<tr>
<th><strong>Ethernet Interface</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td>Remote control and status of unit and NTP server</td>
</tr>
<tr>
<td><strong>Supported Protocols</strong></td>
<td>SNTP, NTP v3, v4</td>
</tr>
<tr>
<td></td>
<td>SSH</td>
</tr>
<tr>
<td></td>
<td>SNMP v1, v2, v3</td>
</tr>
<tr>
<td></td>
<td>Telnet</td>
</tr>
<tr>
<td></td>
<td>HTTP</td>
</tr>
<tr>
<td></td>
<td>DHCP</td>
</tr>
</tbody>
</table>

| **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 |

Specifications subject to change without notice.