

# GPS Clock

## Model: 8835-2M and 8835-3M



### Application - Defense (Military) • SatCom • Wireless

- Range Timing
- Base Station Synchronization (GSM & CDMA)
- Simulcast Systems
- DAB / DTV
- Network Time Synchronization
- Test and Measurement Systems

#### Features:

- GPS Referenced Time and Frequency
- Ovenized Crystal or Rubidium oscillator options
- Stratum 1 accuracy
- Compact Form Factor
- 10 / 100 base-T Ethernet Port
- Network Timer Sever
- SNMP
- 24VDC, 48VDC, and AC Power Input Options
- Rack Mountable



#### Description:

The Model 8835 GPS Time and Frequency Clock incorporates a 50-channel GPS receiver, disciplined oven crystal, or rubidium oscillator options, time and frequency signal generation, in compact form factor enclosures. The rubidium oscillator option provides longer holdover capability when no satellites are tracked. Outputs include 1 PPS, 10 MHz, 5 MHz and composite.

While tracking GPS, a propriety discipline algorithm steer oscillators to < 50 nanoseconds RMS accuracy to UTC and, with the rubidium oscillator option, a long term frequency stability of <  $2 \times 10^{-11}$  24-hour average and 1 PPS holdover <  $\pm 2$  microsecond in 24 hours.

Control, status and time are available through RS-232 I/O and Ethernet interfaces. The Ethernet interface provides a variety of network protocols including NTP, SNMP, Telnet, SSH and HTTP.

Two input power options are available to meet a variety of installations. These include 48VDC and 100-240 VAC with an external AC/DC power supply.

Specifications subject to change without notice.

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### Specifications:

Oscillator Parameters	10 MHz DOCXO Standard Models 8835-1 & 2	10 MHz Rubidium Optional Model 8835-3
Frequency accuracy while tracking GPS	<1 X 10 <sup>-12</sup> (24-hour avg)	<1 X 10 <sup>-12</sup> (24-hour avg)
Frequency accuracy in holdover	<1 X 10 <sup>-10</sup> / day	<2 X 10 <sup>-11</sup> / day
1 PPS accuracy while tracking GPS	< 50 nanoseconds RMS to UTC	< 50 nanoseconds RMS to UTC
1 PPS drift in holdover (after 72 hours locked to GPS)	<±10 microseconds in 24 hours	<±2 microseconds in 24 hours
Harmonic distortion	-30 dBc	-30dBc
Spurious	-80 dBc	-80 dBc
Phase noise, 10 Hz offset	-110 dBc	-90 dBc
Phase noise, 100 Hz offset	-135 dBc	-128 dBc
Phase noise, 1 kHz offset	-145 dBc	-140 dBc
Phase noise, 10 kHz offset	-150 dBc	-148 dBc
Phase noise, 100 kHz offset	-150 dBc	-148 dB

#### GPS Receiver

Frequency: L1 (1575.42 MHz) C/A code  
 Channels: 50 independent, continuous tracking  
 Acquisition Time: < 5 minutes cold start  
 External Gain: 15 min, 50 dB max  
 Antenna Power: +5VDC (5 - 50 ma)  
 Connector: TNC

#### 1 PPS Output

Waveform: 400 microseconds, ± 1microseconds pulse, positive edge synchronized to UTC  
 Level: TTL into 50 ohms  
 Accuracy to UTC: < 50 nanoseconds RMS  
 Connector: BNC

#### 10 MHz Output

Waveform: Sinusoidal  
 Level: +13dBm, ± 2dB into 50 ohms  
 Connector: BNC

#### 5 MHz Output

Waveform: 5 MHz TTL 50% duty cycle  
 Level: TTL into 50 ohms  
 Connector: 9-Pin Female D Type

#### Composite Output

Waveform: Combined 5 MHz and 1 PPS Signal 25% Duty Cycle with One 75% Duty Cycle at the 1 PPS epoch  
 Level: TTL into 50 ohms  
 Connector: 9-Pin Female D Type

#### Com Port

Signal levels: RS-232  
 Baud rate: 9600  
 Protocol: 1-start bit, 8-data bits, 1-stop bit, no parity  
 Connector: 9-pin female D type

#### Ethernet Port

Interface: 10 / 100 Base T  
 Protocols: Telnet, SSH, FTP, SNMP and NTP  
 Connector: RJ-45

#### Power Input

48 VDC option: (36 to 72 VDC)  
 DOCXO options: 15 watts at power up  
 7.5 watts steady state  
 Rubidium option: 23 watts at power up  
 12.5 watts steady state

#### AC/DC Power Supply Option

+15 VDC input from an external AC/DC power supply.

#### Environmental Temperature

Operating: -30°C TO +60°C  
 Storage: -45°C TO +85°C  
 Humidity: 95% non-condensing

#### Physical

Dimensions: 5" L x 4.04" W x 1.6" H (crystal oscillators)  
 10.4" L x 4.04" W x 1.6" H (Rb oscillator)  
 Weight: Approximately 1.5 lbs DOCXO; 2.2 lbs Rubidium  
 Mounting: # 6-32 screw holes in base  
 Optional Mounting: 1U rack mounting adapter

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