

Time and Frequency Frequency and Time Reference Module Model: 8833-11



Application - Defense (Military) ■ SatCom ■ Wireless

- Mobile Radio Synchronization
- Secured Communications Systems

Features:

- GPS Disciplined Frequency and Time Reference
- Internal or External GPS Reference
- Low Phase Noise 10 MHz Reference
- Low g-Sensitivity 10 MHz DOCXO
- Ground Mobile Operating Environment

Description:

The Model 8833-11 is a tactical Frequency and Time Reference Module (FTRM) that incorporates a 12-channel GPS receiver, low g-sensitivity 10 MHz double oven crystal oscillator and time and frequency signal generation in 3U Compact PCI form factor. Outputs include 10 MHz, 1 PPS and Time of Day (TOD).

The FTRM can be synchronized from the onboard C/A code GPS receiver or from an external SAASM GPS 1PPS. Selection of the GPS reference source is automatic, with the external GPS being the primary reference and switching to the internal GPS in the absence of a valid external GPS 1PPS. Electronic override selection of the external or internal GPS is also provided.

While tracking GPS, a propriety discipline algorithm maintains time synchronization to $< \pm 100$ nS to UTC. In the absence of a GPS reference the FTRM transitions into holdover mode providing an accumulated time drift of $< \pm 10$ μ S in 24 hours after being synchronized to GPS for four hours or $< \pm 10$ μ S in 12 hours after being synchronized to GPS for two hours.

Control, status and TOD are available through an RS-232 I/O port.

Specifications

10 MHz Output

Waveform: Sinusoidal

Level: +2dBm, ± 1.5 dB

Frequency accuracy while tracking GPS:

$< \pm 1E-12$ (24 hour average)

Frequency accuracy in holdover: $< \pm 1E-10$ /day

Thermal Stability: $\pm 2E-9$

Phase Noise:	10 Hz	-120 dBc
	100 Hz	-140 dBc
	1 kHz	-153 dBc
	10 kHz	-157 dBc
	100 kHz	-157 dBc
	1 MHz	-157 dBc

Harmonic Distortion: -40 dBc

Spurious: -100 dBc (300 kHz bandwidth)

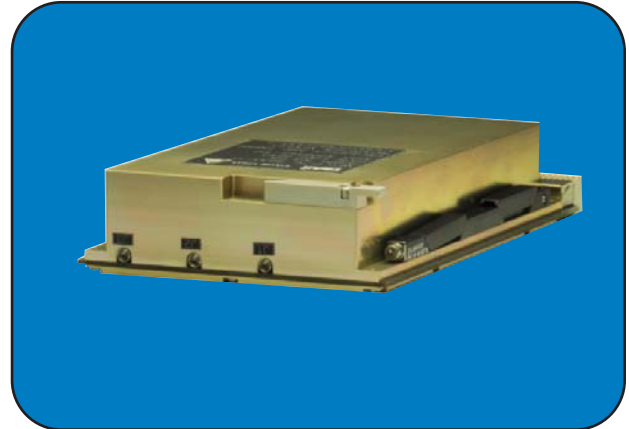
g-Sensitivity (per orthogonal axis): $\pm 2.5E-10$

Number of outputs: Two

Port to Port Isolation: >70 dB

Connector: GPO

Specifications subject to change without notice.



Time and Frequency

Frequency and Time Reference Module

Model: 8833



1PPS Output

Pulse width: 100 μ S positive edge synchronized to UTC
Signal level: Differential RS-422
Accuracy to UTC: $< \pm 100$ nS
Accuracy during Holdover: $< \pm 10$ μ S in 24 hours after being synchronized to GPS for four hours or $< \pm 10$ μ S in 12 hours after being synchronized to GPS for two hours.
Number of outputs: Two
Connector: Compact PCI

Com Port

Signal levels: RS-232
Baud rate: 115,200
Data protocol: 1-start bit, 8-data bits, 1-stop bit, no parity
Connector: Compact PCI

1PPS Input

Function: SAASM GPS 1 PPS reference
Signal level: RS-422
Pulse width: >100 nS positive edge synchronized to UTC
Connector: Compact PCI

GPS Receiver

Frequency: L1 (1575.42 MHz) C/A code
Channels: 12 independent, continuous tracking
Acquisition Time: < 5 minutes cold start
External Gain: 10dB to 50dB
Antenna Power: +5VDC (5 - 80 ma)
Connector: GPO

Power Supply Input

Voltage/Current:
+3.3 ± 0.1 VDC, 450 mA max, 250 mA nominal
+5.1 ± 0.2 VDC, 100 mA max, 35 mA nominal
+12.0 ± 0.75 VDC, 1.2 A max 420 mA nominal
Connector: Compact PCI

Environmental

Operating temperature: -40°C to $+85^{\circ}\text{C}$
Storage temperature: -46°C to $+85^{\circ}\text{C}$
Humidity: 0 to 95% non-condensing
Environment: Ground mobile

MTBF

119,000 hours @ $+75^{\circ}\text{C}$, ground mobile environment per MIL-HDBK 217 Revision F, Notice 2

Physical

Size: 3U Compact PCI (100mm x 160 mm x 31.75 mm)
Weight: < 1.0 lbs
Construction: Conduction cooled Euro-card per VITA 30.1-200

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