Series 125 FTS250
Disciplined Reference and Synchronous Clock Generator

CONNOR WINFIELD

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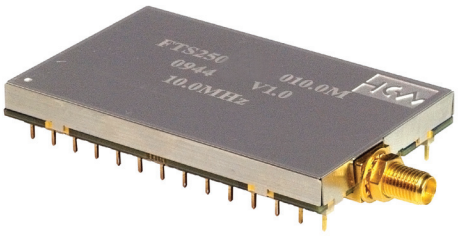
PRODUCT BRIEF

General Description



The FTS250-010.0M Frequency and Time Standard module is a GPS driven, mixed-signal phase lock loop, providing a 1PPS CMOS output from a Connor-Winfield GPS timing receiver and generating a 10MHz CMOS and a 10MHz SINE output from an intrinsically low jitter voltage controlled crystal oscillator. The FTS250 can lock to a 10MHz reference derived from the on-board GPS receiver or an external 10MHz reference or to an external 1PPS reference. Alarms are provided to indicate Loss-of-Lock, Holdover, and Antenna Fault. The on-board GPS receiver requires an outdoor mounted GPS antenna for the best stability and consistent performance.

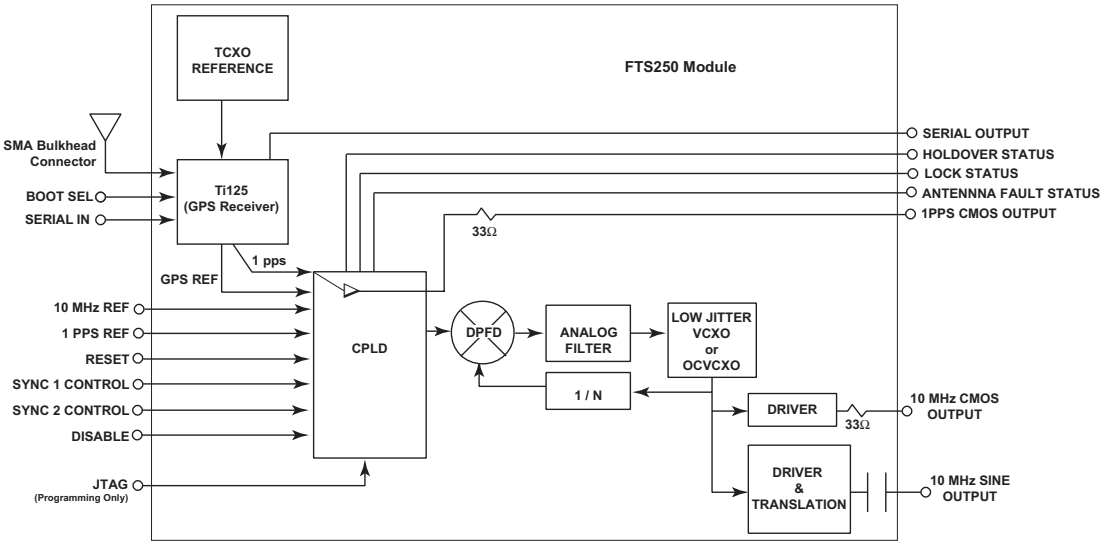
The mode control inputs are used to manually switch between references and/or holdover. The user application should monitor the alarm outputs and manually switch modes as needed.

Serial I/O lines provide access to the NMEA messages from the GPS receiver (referenced in the Connor-Winfield's Wi125 User Manual. Contact Connor-Winfield Sales for a copy). The serial I/O lines can be used to access GPS timestamp information, or to verify that the receiver has recovered from an alarm condition. The reset is used to reset the GPS receiver (if needed).

Features

- Phase locked 10.0 MHz output
- 1 PPS output
- 3 selectable references: GPS, External 10MHz or External 1PPS
- Holdover
- Three alarm outputs. (Loss-of-Lock, Holdover and Antenna Fault)
- Serial input and output ports (GPS receiver)
- Master reset
- +3.3 Volt power supply
- Temperature Range: -40°C to 85°C
- Meets ITU-T G.811 Wander Generation Mask
- SMA Bulkhead GPS Antenna Connection
- Physical Dimensions: 2.8" x 1.725" x 0.368" (71mm x 43.82mm x 9.34mm)
- Fixed Position Unit

Functional Block Diagram



Bulletin	SG176-PB
Revision	00
Date	14 June 2010
Issued By	ENG

Absolute Maximum Rating

Symbol	Parameter	Minimum	Maximum	Units	Notes
V_{CC}	Power Supply Voltage	-0.3	3.7	Volts	1
V_{IN}	Input Voltage	-0.3	4.6	Volts	1
V_{PREAMP}	Antenna Supply Voltage	2.7	13.2	Volts	1
T_S	Storage Temperature	-30	80	°C	1

Operating Specifications

Symbol	Parameter		Minimum	Nominal	Maximum	Units	Notes
$V_{CC}1$	Supply Voltage 1		3.135	3.3	3.465	V	2
$I_{CC}1$	Supply Current 1			0.200		A	
$V_{CC}2$	Supply Voltage 2		3.135	3.3	3.465	V	2
$I_{CC}2$	Supply Current 2			0.036		A	
T_O	Temperature Range		-40		85	°C	
t_{JTOL}	Input Jitter Tolerance		30			ns	
t_{AQ_GPS}	GPS Input Acquisition Time			100		sec	3
t_{AQ_EXT}	External Input Acquisition Time			100		sec	3
				Oscillator Performance			
F_{CAP}	Capture/Pull-in Range			±10		ppm	
F_{BW}	Jitter Filter Bandwidth			0.8		Hz	
DC	Duty Cycle			45/55		%	
RMS	RMS Phase Noise	10Hz - 2MHz		1.2		ps	
		12kHz - 2MHz		0.6			
				Holdover/Wander Generation Performance			4
	Frequency Stability			±0.72		ppm	5
	Wander Generation Specification			ITU-T G.811			

NOTES:

1. *Stresses beyond those listed under "Absolute Maximum Rating" may cause permanent damage to the module. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under "Operating Specifications" is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.*
2. *Requires external regulation and supply decoupling*
3. *Cold Power-up*
4. *Holdover will be re-calculated with each successful lock. Yearly aging represents 1 continous year in Holdover.*
5. *Includes temperature stability, Vcc stability, and 24 hours of aging.*

Mode Control Table

SYNC 1	SYNC 2	Operating Mode
0	0	Force Holdover
0	1	Lock to External 10MHz reference*
1	0	Lock to External 1PPS reference
1	1	(Default) Lock to GPS Signal

** Note: Holdover is not supported in this mode; loss of the 10MHz reference will rail the PLL output until the reference returns or another mode is selected.*

Input And Output Characteristics

LVCMOS Inputs and Outputs

Symbol	Parameter	Minimum	Maximum	Units	Notes
V_{IH}	High Level Input Voltage	1.7	4.0	V	
V_{IL}	Low Level Input Voltage	-0.5	0.8	V	
V_{OH}	High Level Output Voltage	2.4		V	
V_{OL}	Low Level Output Voltage		0.4	V	
C_O	Output Capacitance		10	pF	

10MHz Sine Output

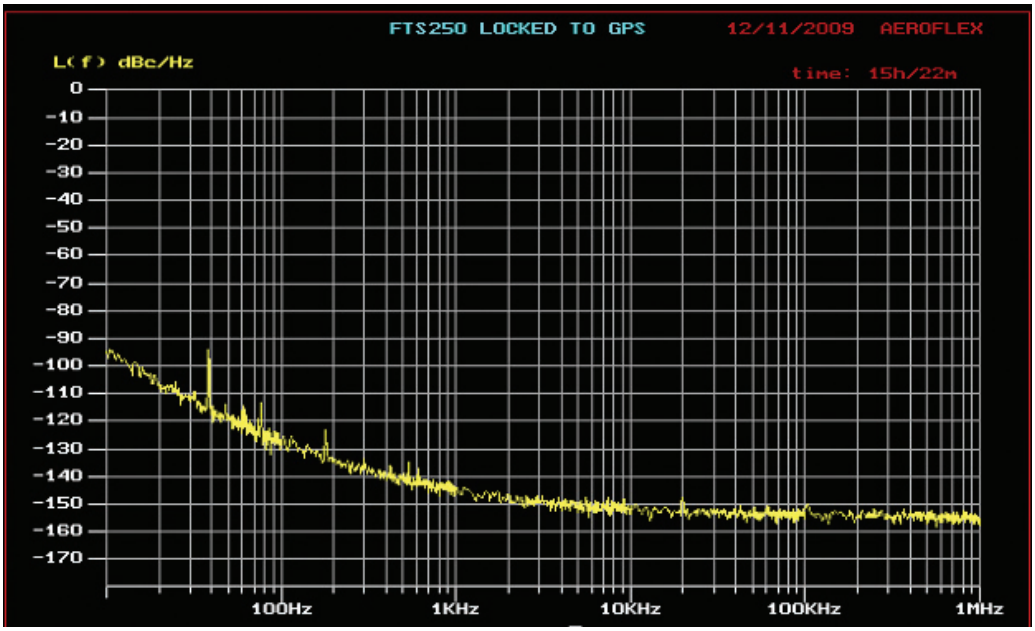
Symbol	Parameter	Typical	Units	Notes
	Load	50	ohms	
	Output Power	9	dB_m	
	Total Harmonic Distortion	2.2	%	

GPS Receiver Specifications

Parameter		Specifications	Notes
Acquisition/Tracking Sensitivity		-155dBm/-156dBm	
Acquisition Time:			
	Hot Start w/ Network Assist	Outdoor: <2 sec Indoor(-148dBm) <5 sec	
	Stand Alone	Cold <45 sec Warm: <38 sec Hot: <5 sec Re-acquisition: <1sec (90% confidendce)	
Supported Protocols		Network Assist, NMEA 0183	

Reset Generation (I/O pin 3 - RESET)

The power-on-reset for the FTS250 is generated on-board. If it is desired to extend the power-on-reset signal or provide a manual reset of the GPS receiver, pull this signal low.



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Ordering Information

Ex: FTS250-010.0M

Revision	Revision Date	Note
P00	01/19/10	Preliminary Release
00	06/14/10	125 Series Update and revise to release