

125 Series FTS375

Disciplined Reference and Synchronous Clock Generator

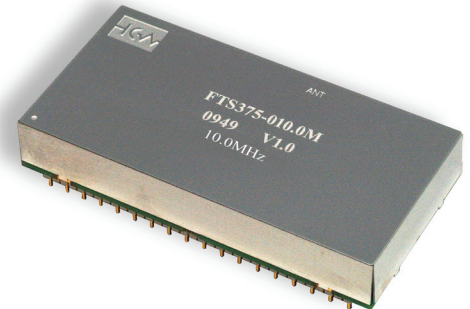


2111 Comprehensive Drive
Aurora, Illinois 60505
Phone: 630-851-4722
Fax: 630-851-5040
www.conwin.com

P
R
O
D
U
C
T
B
R
I
E
F

General Description

The FTS375 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 FTS375 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.



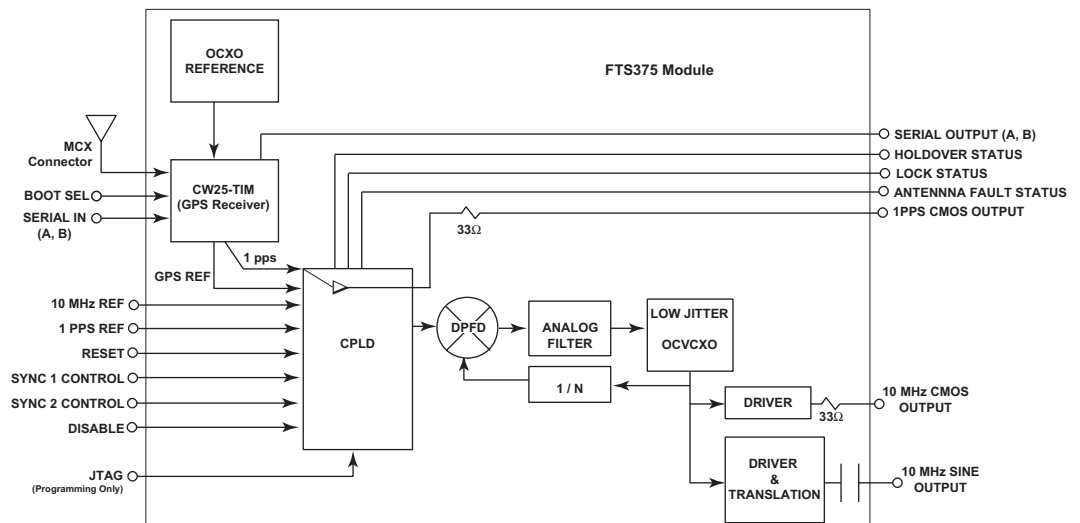
The mode control inputs are used to manually switch between references and/or holdover. The user application should monitor the alarm outputs and manually switch modes as needed.

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
- Commercial Temp (0-70° C)
- Mechanical Dimensions: 3.937" x 1.969" x 0.708" (100mm x 50mm x 17.98mm)
- Fixed Position Unit

Block Diagram



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 _{CC1}	Supply Voltage 1	3.135	3.3	3.465	V	
I _{CC1}	Supply Current 1		.480	1.2	A	
V _{CC2}	Supply Voltage 2	3.135	3.3	3.465	V	2
I _{CC2}	Supply Current 2		.380	1.0	A	
T _O	Temperature Range	0		70	°C	
t _{JTOL}	Input Jitter Tolerance	30			ns	
t _{AQ_GPS}	GPS Input Acquisition Time		150		sec	3
t _{AQ_EXT}	External Input Acquisition Time		120		sec	3
Oscillator Performance						
F _{CAP}	Capture/Pull-in Range		±45 ppb			
F _{BW}	Jitter Filter Bandwidth		0.1 Hz Typ.			
DC	Duty Cycle		45/55%			
RMS	RMS Phase Noise					
	10Hz - 2MHz		1 ps Typ.			
	12kHz - 2MHz		0.6 ps Typ.			
Holdover/Wander Generation Performance						
T _{STA}	Temperature Stability		±20 ppb			4
V _{STA}	Vcc Stability		±5 ppb			
A _{DAILY}	Daily Aging		2 ppb			
A _{YEARLY}	Yearly Aging		80 ppb			
	Wander Generation Specification		ETSI-PRC			

NOTES:

- 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.
- Requires external regulation and supply decoupling
- Cold Power-up
- Holdover will be re-calculated with each successful lock. Yearly aging represents 1 continuous year in Holdover.

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 10 MHz 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	%	

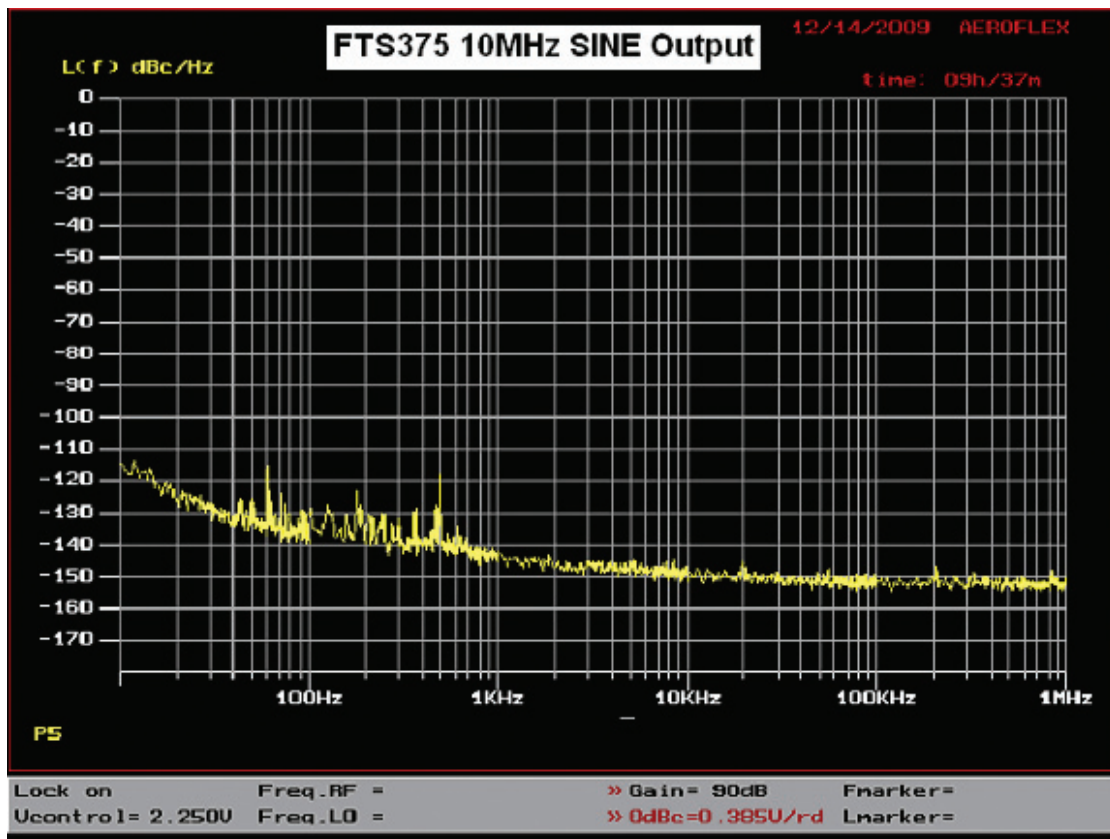
GPS Receiver Specifications

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% confidence)	
Supported Protocols	Network Assist, NMEA 0183	

Reset Generation (I/O pin 11 - RESET)

The power-on-reset for the FTS375 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.

FTS375-COO-010.0M Lock to GPS, Sine Output





Ordering Information

Ex: FTS375-010.0MHz

2111 Comprehensive Drive

Aurora, Illinois 60505

Phone: 630-851-4722

Fax: 630-851-5040

www.conwin.com

US Headquarters:

630-851-4722

European Headquarters:

+353-61-472221

Revision	Revision Date	Note
P00	11/04/09	Preliminary Release
P01	1/06/09	Fixed Unit Reference & Updates to Phase noise plot & Specs
00	06/16/10	125 Series Revisions and revised for release