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FTS500 Xenith TBR GPS Disciplined Clock

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General Description

In a world where precise timing is critical, the FTS500 Xenith TBR (Time Base Reference) is the ultimate partner for your DVB/DAB, wireless communications, time-stamping or any other timing vital application.

The Xenith TBR module is a GPS driven, mixed-signal phase lock loop, providing a 1 PPS CMOS output and generating a 10 MHz SINE output from an intrinsically low jitter voltage controlled crystal oscillator (VCXO). The 10 MHz output is disciplined from an on-board GPS receiver, which drives the long term frequency stability. The on board GPS receiver at the core of the Xenith TBR is the highly successful and well established CW25 timing receiver. This GPS engine along with a dual oven system provides the highest quality timing and synchronization signals combined with superb holdover characteristics.

The unit is housed in a 106x125x56mm stylishly designed, strong aluminum enclosure. The 10 MHz and 1 PPS signal are available on BNC connectors. The antenna input is also a BNC connector and will operate a 5V active antenna. The Xenith TBR requires this antenna to be placed outdoors for best stability and consistent performance. The Xenith TBR communicates via RS232 and can be operated and monitored through NMEA or TSIP protocol. The user can observe the status of the unit, time of day, position and satellite quality information via either of the two protocols. The unit has a wide DC power input range, between 8 and 28VDC, via a secure 2 pin Molex type connector. Accessories such as: AC Mains adaptor (all regions), antenna cable, high performance outdoor antenna and serial cable are available as a kit or can be individually purchased as needed.

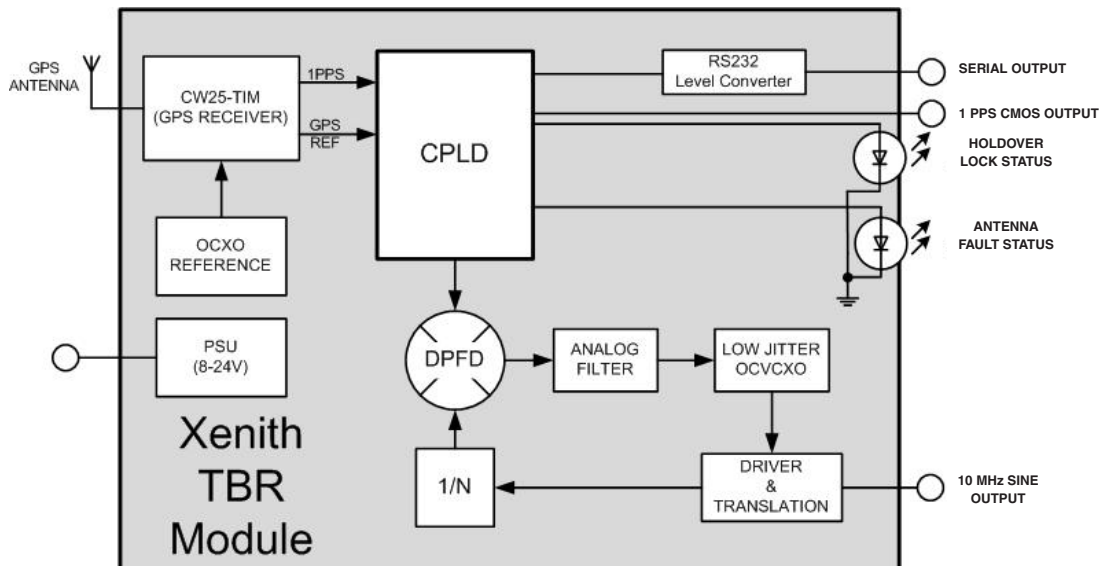


Features

- Stratum 1 Time Source
- G.811 Compliant (GPS Locked)
- Meets ESTI PRC Wander Generation Mask (GPS Locked)
- Phase Locked 10 MHz Output
- Low Phase Noise
- Precise 1 PPS Output
- Serial Input/Output Port (GPS Receiver)
- Master Reset
- 8V-28V Power Supply
- Commercial Temp (0-70° C)
- Mechanical Dimensions 106 x 125 x 56mm (not including connectors)
- Aluminum Housing
- Fixed Position Unit

Functional Block Diagram

Figure 1



Europe Headquarters

Bay 143
Shannon Industrial Estate
Shannon, County Clare
Ireland

Bulletin **SG183-PB**
Revision **A03**
Date **07 July 2011**
Issued By **ENG**

Operating Specifications

Parameter	Minimum	Typical	Maximum	Units	Notes
Mechanical Dimensions		106 x 125 x 56		mm	
Main Supply Voltage	8	24	28	Vdc	
Operating Temperature	0		70	°C	
Power Consumption (initial power up)	-	11.3	12	Watts	
Power Consumption (continuous mode)	-	4.41	5	Watts	
GPS					
Voltage for Active Antenna (Vdc)	4.8	5.0	5.1	V	
Current Draw for Antenna	-	45		mA	
GPS Channels	-	12	-		
Tracking Sensitivity	-	156	-	dBm	
Acquisition Sensitivity	-	155	-	dBm	
GPS Acquisition Time		150		sec	
Update Rate		1		Hz	
I/O Communications					
Protocol		NMEA 0183, TSIP			
Electrical		RS232			
Timing Signals -1PPS CMOS					
Pulse Amplitude		3.3		Vdc	
Pulse Width		100		uS	
Accuracy (RMS)		30		nS	
Timing Signals -10Mhz Sine wave					
Impedance		50		Ohm	
Power		9		dBm	
Total Harmonic Distortion		2.2%			
Compliant Specifications	G.811 Compliant (GPS Locked) G.812 Holdover Compliant ESTI PRC Wander Mask(GPS Locked)				

Absolute Maximum Rating

Parameter	Minimum	Maximum	Units	Notes
Input DC Voltage	-0.3	30.5	V	1
Operating Temperature	-30	80	°C	1

NOTES:

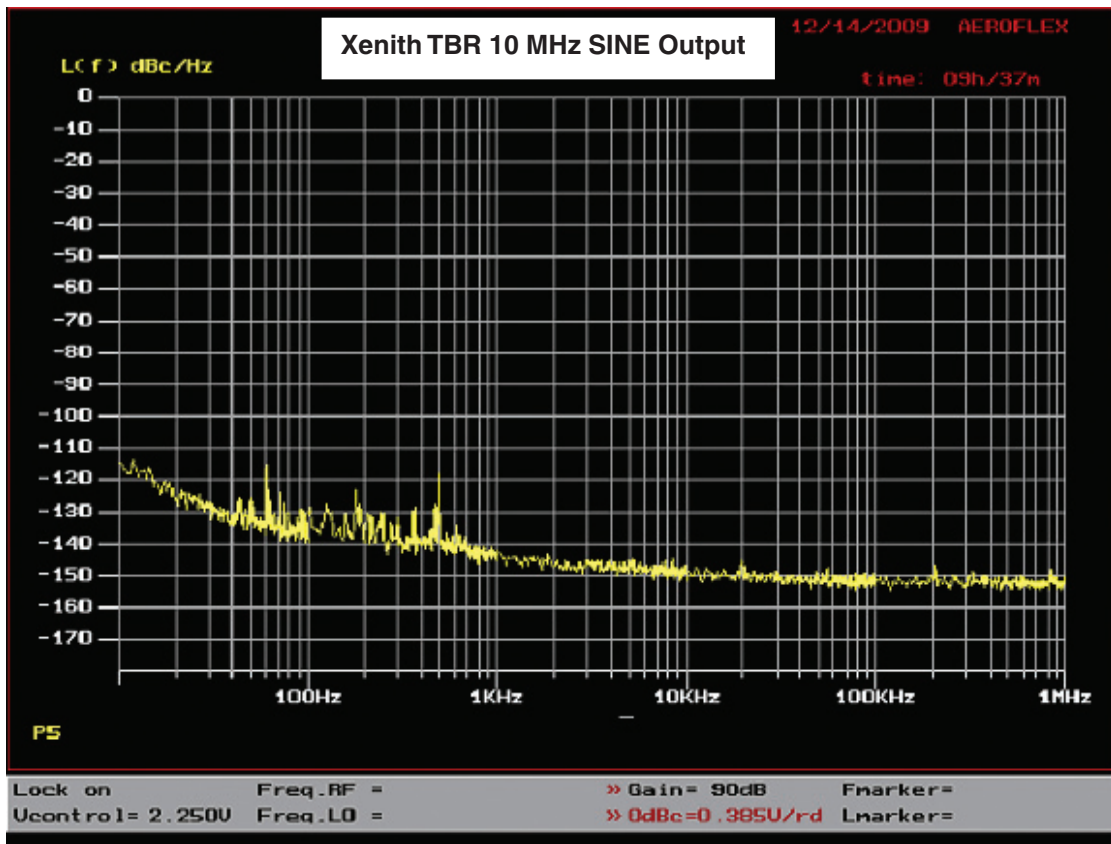
- Stresses beyond those listed under "Absolute Maximum Rating" may cause permanent damage to the module. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under "Operating Specifications" is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

Phase Noise

Figure 2

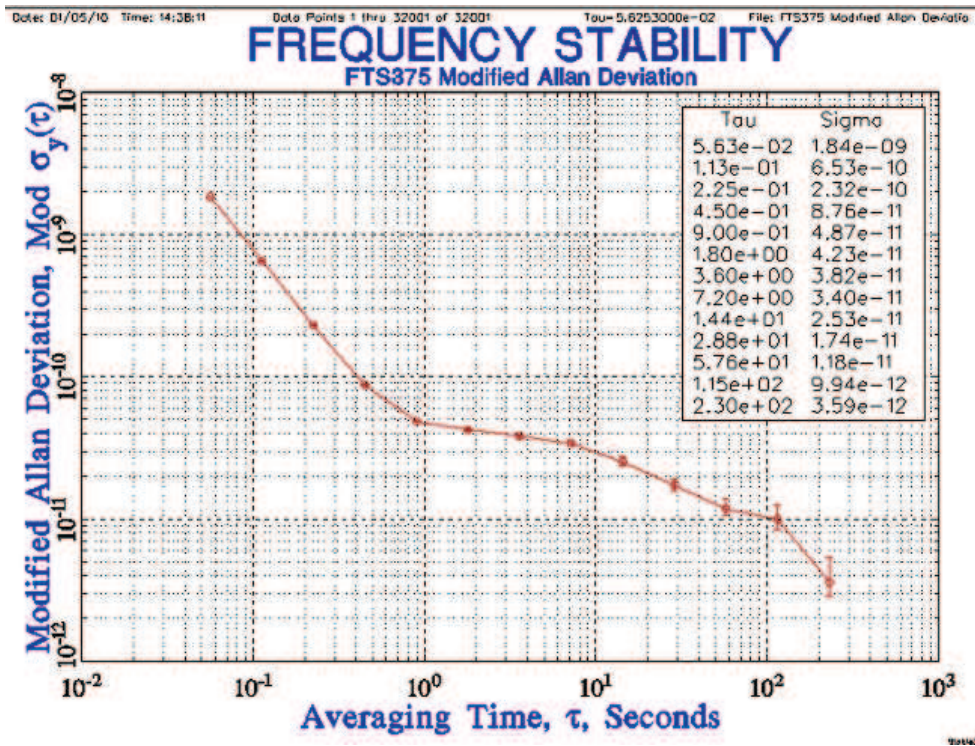
Phase Noise:

Offset Frequency (Hz)	Typical (dBc / Hz)
10	-115
100	-135
1k	-143
10k	-148
100k	-152
1M	-153



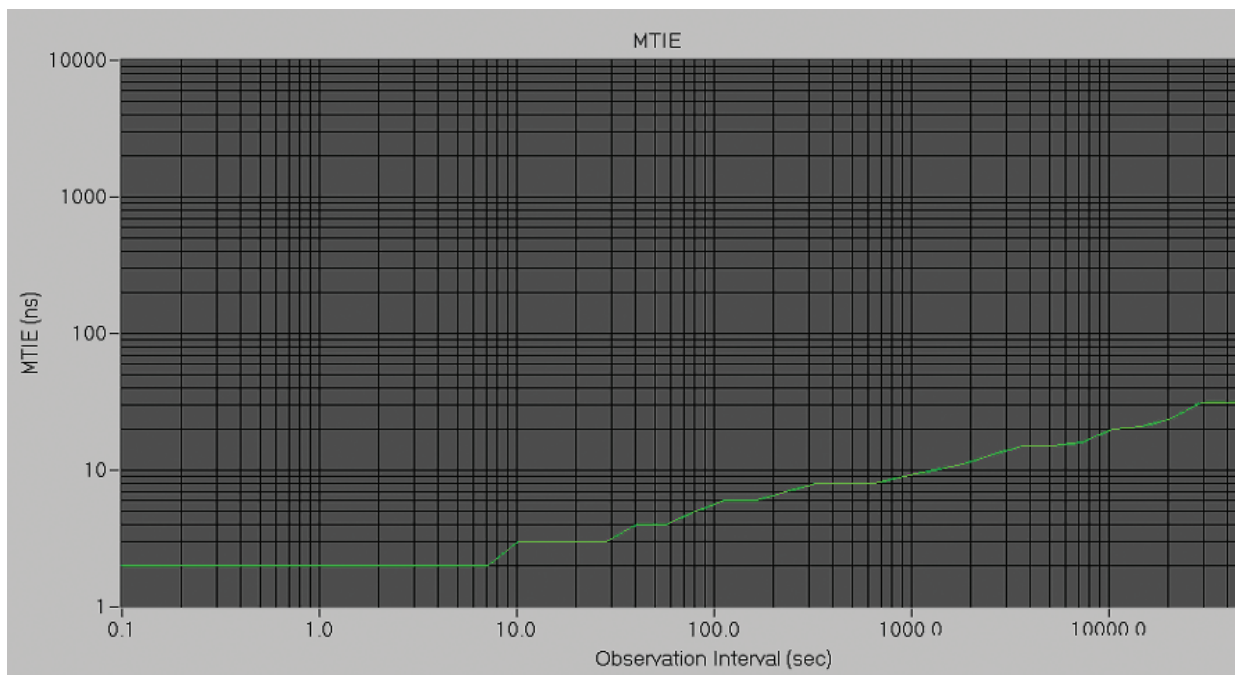
Xenith TBR Modified Allan Deviation

Figure 3



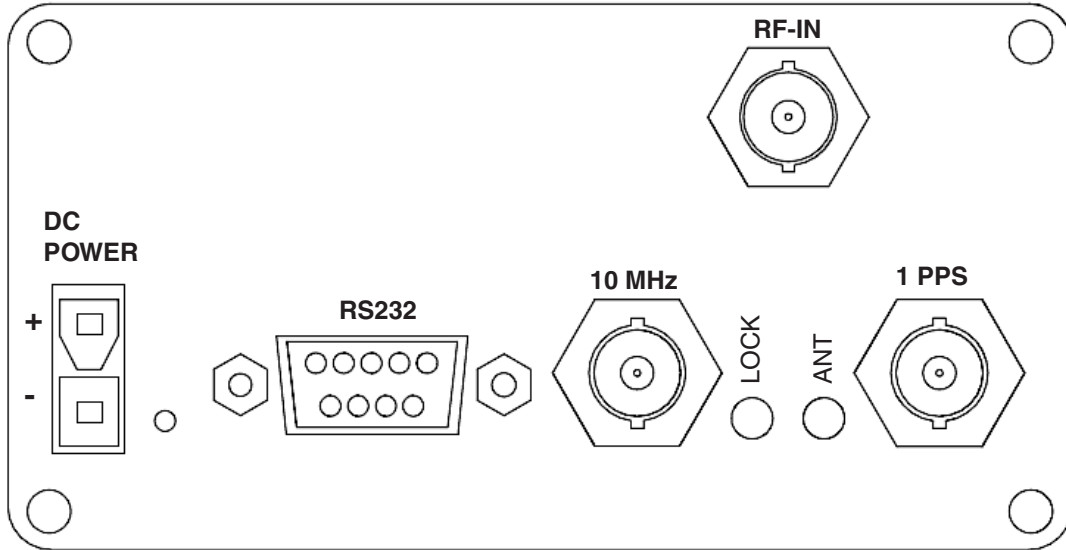
Xenith TBR Wander Generation Plot

Figure 4



FTS500 Xenith TBR Front Panel

Figure 5



FTS500 Xenith TBR Connector Information

Connector	Name	Description
BNC	RF-IN	Antenna input, Provides 5Vdc for active antenna (Max current draw 45mA)
	10 MHz	High performance 10 MHz reference signal
	1 PPS	High accuracy 1 pulse per second signal
DB9-F	RS232	ASCII/NMEA or TSIP for monitoring and configuration
Molex	Power	8-28vdc Input, mates with 2-Way Mini-Fit Jr Molex connector, Mating PN: 39-01-3022

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Revision	Revision Date	Note
A00	08/24/10	Advanced Release
A01	10/04/10	Updated Connector Information & Ordering Information
A02	11/17/10	Updated Features
A03	07/07/11	Updated Model Number