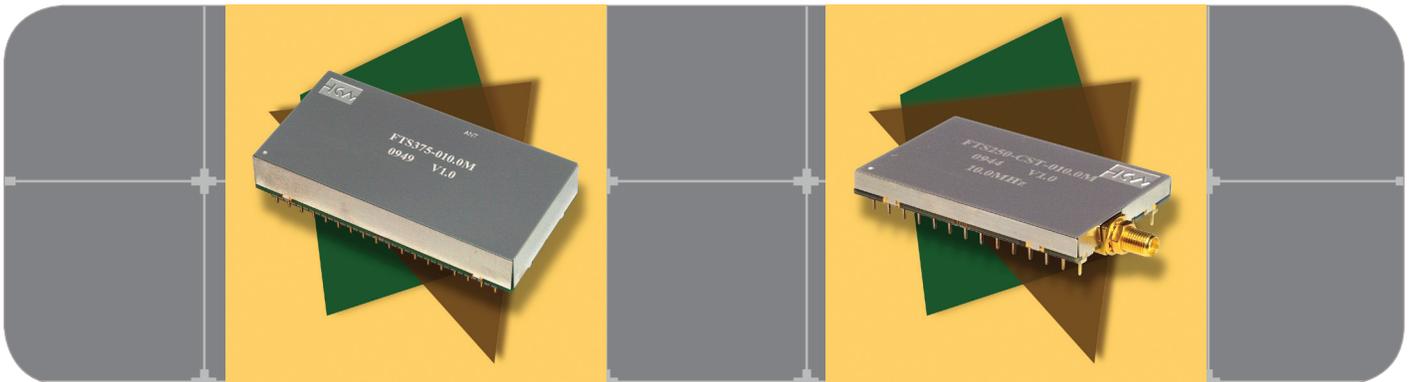
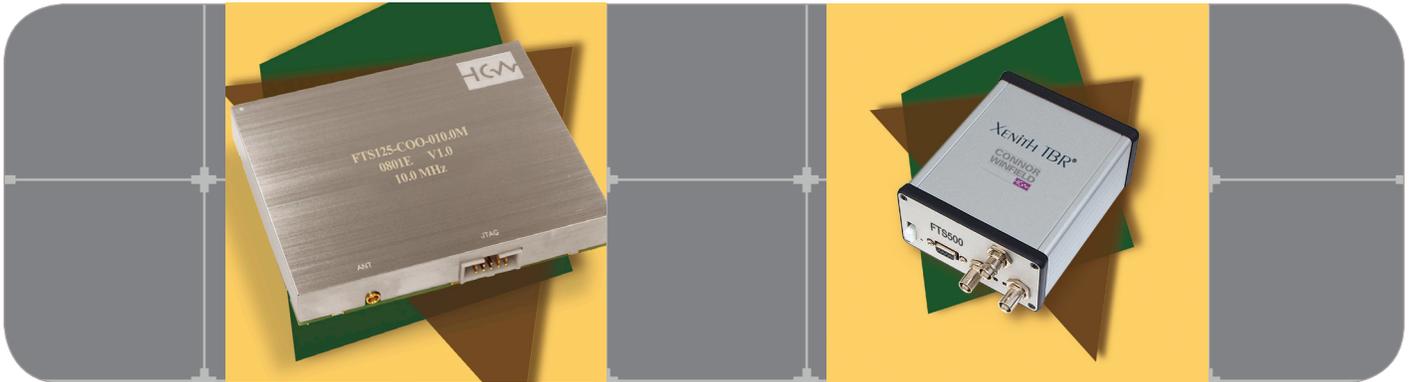


125 SERIES

GPS Disciplined Oscillators

PRODUCT GUIDE

THE CONNOR-WINFIELD CORPORATION



GPS Timing & Synchronization Solutions



Global Timing
Solutions for
Over 50 Years



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CONNOR WINFIELD



Global Timing Solutions

Connor-Winfield, a pioneer in the design and manufacture of leading edge timing and synchronization products, continues to provide advanced technology to meet the changing needs of the electronic equipment marketplace. Our products have a strong history of reliability in wireless applications from CDMA WiMax base stations to paging towers to e-commerce, across all areas of test and measurement equipment, and in advanced military applications. Connor-Winfield's timing and synchronization solutions stand apart offering unsurpassed reliability and quality. You can depend on Connor-Winfield to continue to lead the way for your GPS timing needs.

Connor-Winfield's Global Timing Solutions Group offers a wide variety of GPS disciplined references specifically designed for applications requiring standard and high precision timing and synchronization.

General Applications

- Telecom
- Test & Measurement
- Military

GPS Disciplined Oscillators

Connor-Winfield's design engineers have extensive experience in customizing products and providing solutions to meet the specific needs of our customers. We can collaborate with you to provide the best product for your timing, synchronization requirements.

GPS Network Timing Products

Connor-Winfield's GPS Disciplined Oscillators (GPSDOs) were created specifically for all precision timing and synchronization applications requiring higher end, cost sensitive solutions. By combining our uniquely designed GPS timing receivers with our high-quality oscillators, Connor-Winfield is able to offer a wide variety of superior, cost-effective GPS timing solutions. The 125 Series modules provide customer applications with the precise timing capabilities needed to optimize critical system performance.

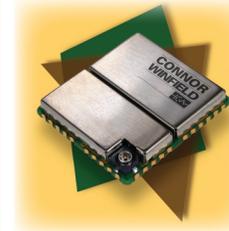
Connor-Winfield applies years of GPS expertise provided by subsidiary NavSync, Ltd. to create our exceptional GPS disciplined oscillators.



NavSync specializes in GPS receivers and receiver products optimized for custom timing and navigation applications. Their unique GPS technology enables tracking and acquisition in areas normally outside standard GPS receiver environments, such as indoors and severe urban canyons; an important attribute in both timing and navigation applications.

By collaborating with NavSync on the design of the 125 Series products, Connor-Winfield is able to provide a high quality, cost-effective GPSDO line of products to meet any application needs. Connor-Winfield remains the only company in the GPS based timing and synchronization products area to control the technology of both the GPS elements and oscillator components of their GPSDO designs, giving our customers extra peace of mind in continuity of products.

Wi125 Modules



The Wi125 is a low cost small OEM surface mount GPS module that is specifically designed for use in synchronization

and timing in WiMax applications.

The Wi125 includes an on-board, programmable NCO oscillator, which outputs a synthesized frequency up to 30 MHz, steered by a GPS receiver.

It also features a self-survey mode of operation, allowing the receiver to enter a position hold mode and continue accurate timing with only one satellite being tracked.

The output frequency is highly accurate, can achieve full PRC MTIE performance, and can track satellites and provide GPS synchronization in weak signal areas such as indoor applications. This reduces the need for high antenna placement typical for many environments.

This module come in an exceptionally small surface mount package (25mm x 27mm x 4mm) with a highly integrated architecture requiring only the minimum external components allowing for easy integrations into host systems.

- 1 PPS/ 10 MHz Phase alignment wire
- Stable Holdover
- Holdover Recovery
- 1 PPS & NCO Frequency Output
- GPS/UTC time/scale synchronization to 25 ns RMS
- Stable proven design with long term availability and multi-year support
- 12 channel hardware correlator processor design
- OEM SM footprint 25 x 27 mm
- Automatic entry into holdover
- Loss-of-lock and entry-into-holdover indication

PRODUCT REFERENCE GUIDE

125 Series — GPS Disciplined Oscillator Solutions

FTS Series Modules — The FTS Series Frequency and Time Standard modules are GPS driven with a mixed-signal phase lock loop. The series provides a 1 PPS CMOS output from a Connor-Winfield GPS timing receiver and generates a 10 MHz CMOS and a 10 MHz SINE output from an intrinsically low jitter voltage controlled crystal oscillator.

The FTS Series can lock to a 10 MHz reference derived from the on-board GPS receiver or an external 10 MHz reference or to an external 1 PPS 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 125 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)

FTS125 Features

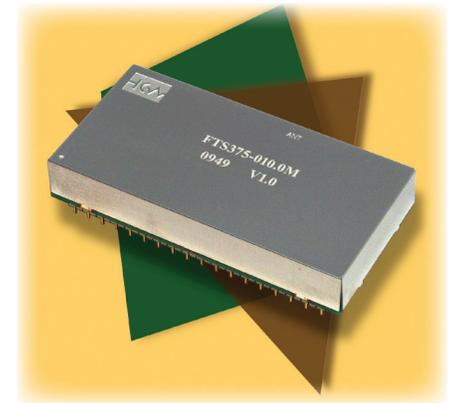
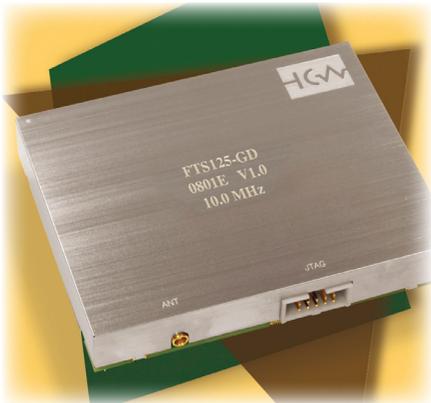
- Oscillator Selectable
- Phase locked 10.0 MHz output
- 1 PPS output
- 3 selectable references: GPS, External 10 MHz or External 1 PPS
- Holdover
- Three alarm outputs. (Loss-of-Lock, Hold over and Antenna Fault)
- Serial input and output ports (GPS receiver)
- Master reset
- +3.3 Volt power supply
- Commercial Temp (0-70° C)
- Meets ITU-T G.811 Wander Generation Mask
- Meets ETSI PRC Wander Generation Mask (w/OEXO reference)
- Physical Dimensions: 4.20" x 3.30" x 0.72" (106.68mm x 83.82mm x 18.29mm)
- Fixed Position Unit; Mobile positioning available. Contact Connor-Winfield for options

FTS250 Features

- TCXO Based
- Phase locked 10.0 MHz output
- 1 PPS output
- 3 selectable references: GPS, External 10 MHz or External 1 PPS
- Holdover
- Three alarm outputs. (Loss-of-Lock, Hold over 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; Mobile positioning available. Contact Connor-Winfield for options

FTS375 Features

- OCXO/TCXO Based
- Phase locked 10.0 MHz output
- 1 PPS output
- 3 selectable references: GPS, External 10 MHz or External 1 PPS
- Holdover
- Three alarm outputs. (Loss-of-Lock, Hold over 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; Mobile positioning available. Contact Connor-Winfield for options



Oscillator Interchangeability



The 125 Series of GPS based timing and synchronization modules leverages Connor-Winfield's 50 years of oscillator design experience to offer a broad variety of highly flexible and functional products.

The 125 Series was originally developed with the varied needs of our end customers in mind. Based on your application requirements, we can easily customize a module with the appropriate oscillators to meet your precise design requirements.

Whatever your design and cost objectives, we will excel at creating the exact product to meet your needs.

125 SERIES PRODUCT GUIDE

125 Series GPSDO Product Comparison

Model Number	1PPS	Holdover (excludes aging)	Jitter (@10Hz)	Voltage	Temp Range	Lock to External 1PPS	Lock to External 10MHz	Wander Generation
Wi125	Yes	≤ 600 PPB	N/A	3.3 Vdc	-30 to 80°C	No	No	N/A
FTS125-CTV	Yes	≤ 600 PPB	-70dBc	3.3 Vdc	0 to 70°C	Yes	Yes	ITU-T G.811
FTS125-COV	Yes	≤ 25 PPB	-70dBc	3.3 Vdc	0 to 70°C	Yes	Yes	ETSI-PRC
FTS125-COO	Yes	≤ 25 PPB	-105dBc	3.3 Vdc	0 to 70°C	Yes	Yes	ETSI-PRC
FTS250	Yes	≤ 320 PPB	-90dBc	3.3 VDC	-40 to 85°C	Yes	Yes	ITU-T-G.811
FTS375	Yes	≤ 25 PPB	-115dBc	3.3 VDC	0 to 70°C	Yes	Yes	ETSI-PRC
FTS500	Yes	≤ 25 PPB	-115dBc	8 - 24 VDC	0 to 70°C	Yes	Yes	ETSI-PRC

All Units are Fixed Position. Contact Connor-Winfield Sales for mobile application models.

FTS500 Xenith TRB Module

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 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.

For additional information on the **Xenith TBR** module, visit our website to view the advanced product brief, or for a quick product comparison, check out the product comparison on this back page.

ISO 9001:2000 Certification

Connor-Winfield has been ISO 9001 certified since 1995, and is currently certified under ISO's newest ISO 9001:2000 standard which ensures superior quality and repeatability in the manufacturing process.



We believe that quality begins well before our product is ever assembled. By maintaining our ISO 9001:2000 Quality System certification, continuous

improvement to our processes is a commitment we make to constantly go beyond the expectations of our customers. For us, quality is not just a technique or system. It is an all encompassing and uncompromising philosophy to produce products that not only precisely meet our customers' quality requirements, but also surpass them in every way.

07/11

For specific product data, performance specifications, dimensions and ordering information, please refer to our website at www.conwin.com



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Connor-Winfield – Ireland

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