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Embedded GPS & Dead Reckoning Module

WI-GPSDR-XX

RoHS COMPLIANT

2.0 RS232 UART

GPS Protocols:
NMEA 0183, HIPPO

SBAS Support:
WAAS, EGNOS, MSAS

GPS L1 receiver

AGPS Support

PPS Output Signal

Continuous position outputs in tunnels

Tri-axial gyro allows module mounting in any orientation

Form Factor:
2.5" x 2.5"
(63.5mm x 63.5mm)

Operating Temp:
-40°C to +85°C

Operating Humidity:
5% to 95%
non-condensing

Storage Temp:
-55°C to +85°C

MADE IN USA

The WI-GPSDR-XX Embedded GPS & DR Module combines dead reckoning (DR) and GPS to produce accurate and instantaneous positions even under the most difficult conditions. The module allows OEMs to quickly and easily add reliable position tracking to vehicles carrying high-value or perishable cargo.

Powered by the Trimble Aardvark receiver, the Embedded GPS & DR Module features instantaneous and accurate performance in deep urban canyons and dense forests. The module uses dead reckoning (DR) to estimate position based on heading, distance traveled, and the last known position. The more accurate the speed, time and heading inputs, the more accurate the dead reckoning. Direction and Tachometer inputs allow the module to integrate with the vehicle systems. The GPS continuously calibrates the gyro and speed sensors to produce the most accurate position reading possible. Furthermore, the tri-axial gyro allows the module to be mounted in any orientation, simplifying the installation and calibration process normally required for a DR system.

The Embedded GPS & DR Module provides up to three interfaces to the host CPU, allowing OEMs to choose between USB, RS232, or UART. On-board status LEDs provide visual indicators for USB Activity and the GPS Pulse Per Second (PPS) signal. A high density, right angle connector also provides access to all signals allowing easy system integration. Furthermore, the module can be configured to receive power through the USB connector or an external system power source via a terminal block. A backup battery can also be attached which enables the GPS receiver to remain active in the event of main power failure, allowing a fast system recovery.

The WI-GPSDR-XX can be purchased Module only, with a Magnetic-Mount Antenna, a Compact Embedded Antenna, or a Bulkhead Antenna. A Development kit is also available allowing OEMs to quickly evaluate the module and its features.

Software Support

USB Drivers:
- Windows XP/Vista/7 (32/64-bit)
- Windows XP Embedded
- Windows CE 4.2, 5.0, 5.2, 6.0
- Linux (2.6.9 or newer)

Example Software:
- N/A

Development Tools

Trimble Studio

Electrical:

Supply Voltage
- via USB.....+5V DC
- via TB1.....+15V DC > Vin > +5.5VDC
- Vbat.....+3.3VDC

Typical Operating Current.....<220mA
Max Operating Current.....660mA

Acquisition:
(Autonomous, 50%)
- Reacquisition ..... <2s
- Hot Start ..... ≤2s
- Warm Start .....≤35s
- Cold Start ..... ≤38s

Accuracy:
- Horizontal .....<2.0m 50%, <3.5m 90%
- Altitude .....<3m 50%, <6m 90%
- Velocity .....<0.05 m/sec
- PPS ..... ±25ns

Sensitivity:
- Tracking .....-160 dBm
- Acquisition .....-146 dBm

Fix Rate:
- DR .....5 Hz (default)
- GPS .....1 Hz

LEDs:
- PPS (Blue) D1
- USB RX (Yellow) D2
- USB TX (Yellow).....D3
- Power (Green)..... D4

Jumpers:
- Input Power Select.....W1
- USB Enable.....W2, W3
- Comm. Protocol Select.....W4
- LED Enable.....W5
- RS232 Enable.....W6

External Connectors:
- MCX Antenna J1
- USB 2.0 High Speed..... J2
- Reset.....J3
- RS232 (±15kV ESD Protected).....J4
- IO Connector.....J5
  - UART(TTL).....
  - RS232 (±15kV ESD Protected).....
  - Reset.....
  - PPS.....
  - Power (Vin, Vbat, +5V, +3.3V, GND).....
  - Tacho sensor input (5V Tolerant).....
  - FWD/REV direction input (5V Tolerant)...
- Power TB1
  - (Vin, Vbat, GND).....

Magnetic Mount Antenna:

Cable Length.....5m
Weight.....25g
Frequency Range.....1575.42MHZ ±1.023MHz
Gain.....27dbi ±4dbi
Output Impedance.....50Ω
LNA Noise @25°C.....1.5dB Max
LNA Noise @85°C.....2.2dB Max
Typical Operating Current.....15mA
Max Operating Current.....20mA

Compact Embedded Antenna:

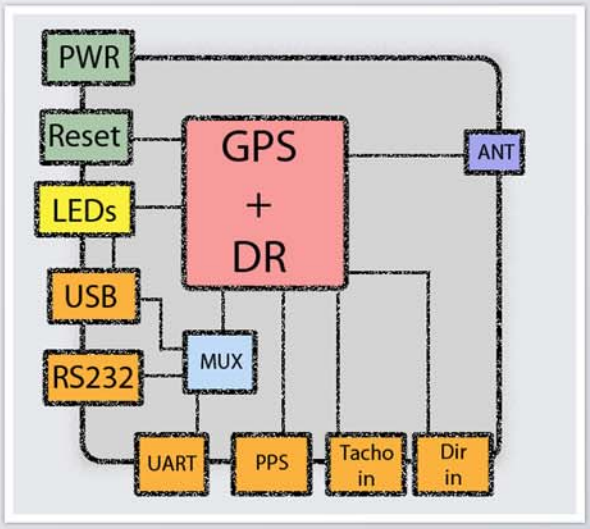
Cable Length.....85mm
Weight.....20g
Frequency Range.....1575.42MHZ ±1.023MHz
Gain.....27dbi ±4dbi
Output Impedance.....50Ω
LNA Noise @25°C.....1.5dB Max
LNA Noise @85°C.....2.2dB Max
Typical Operating Current.....5mA
Max Operating Current.....13mA

Bulkhead Antenna:

Thread Nut Mount (Drill Size).....19mm
Connecting Cable Length..... 5m
Weight.....150g
Frequency Range.....1575.42MHZ ±1.023MHz
Gain.....28dbi ±4dbi
Output Impedance.....50Ω
LNA Noise @25°C.....1.8dB Max
LNA Noise @85°C.....2.3dB Max
Max Operating Current.....35mA

Cable Set
- USB Cable (3ft).....(1)
- RS232 Cable.....(1)
- DB9 Female to DB9 Female (5ft)..... (1)
- Locking IO Cable (1ft).....(1)

Development Kit includes GPS Module, Cable Set, and Magnetic Mount antenna



Ordering Information

WI-GPSDR-00	GPS & DR Module Only
WI-GPSDR-01	GPS & DR Mod /w Magnetic Mount Antenna
WI-GPSDR-02	GPS & DR Mod /w Compact Embedded Antenna
WI-GPSDR-03	GPS & DR Module /w Bulkhead Antenna
WI-GPSDR-CS	Cable Set
WI-GPSDR-DK	Development Kit

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