The right one.™

CONDOR+ GPS RECEIVER

KEY FEATURES

- -160 dBm tracking sensitivity
- SBAS (WAAS, EGNOS) capable
- Phenomenal acquisition performance:
  Re-acquisition: <1 s
  Hot start: <2 s
  Warm start: 35 s
  Cold start: 38 s
- NMEA output protocol
- PPS timing output
- 3.3 V supply

The Condor™+ GPS receiver is part of the Trimble® family of value-optimized GPS modules. The Condor family includes modules of different form factors and feature sets, allowing you, the system designer, to choose the optimal module solution for your particular application.

All the Condor GPS modules offer top-tier accuracy, sensitivity, and acquisition performance. Whether you are designing a handheld device or a complex fleet management system, Trimble offers a Condor module for optimal system design, cost, and performance:

- The smallest Condor module at 10 x 11 mm.
- At 19 x 19 mm, similar in form factor to the Trimble Copernicus® family of richly featured GPS modules. Two more modules will be added to the Condor family in Q2/2009. Contact Trimble or a Trimble representative to learn more about the current and future modules in the Condor family and to obtain a Condor evaluation kit. Condor+ is a complete, autonomous GPS receiver module that requires a minimum of external components.

Applications

Compatible with active or passive antennas, the Condor+ GPS receiver is perfect for portable hand-held, battery-powered applications The receiver's small size and low power requirement make it ideal for use in portable appliances, sport accessories, personal navigators, cameras, computer, and communication peripherals, as well as vehicle tracking, navigation, and security applications.

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PIN-OUT ASSIGNMENTS

PIN	DEFINITION	DESCRIPTION	INSTRUCTION
1	GND	Ground	
2	GND	Ground	
3	RF_in	RF Input for Antenna	
4	GND	Ground	
5	Reserved	Reserved	No Connect
6	Vbak	Backup Battery Input (2.0 to Vcc)	
7	Reserved	Reserved	No Connect
8	Reserved	Reserved	No Connect
9	Reserved	Reserved	No Connect
10	Reserved	Reserved	No Connect
11	RESET_in	Reset Input	No Connect
12	Vcc	Main System Power (3.0 to 3.6V DC)	
13	GND	Ground	
14	GND	Ground	
15	GND	Ground	
16	Reserved	Reserved	No Connect
17	RTC_out	32 kHz RTC Crystal Output	No Connect
18	Reserved	Reserved	No Connect
19	PPS	PPS Output	
20	RxD	UART Receive (Input)	No Connect
21	Reserved	Reserved	No Connect
22	Reserved	Reserved	No Connect
23	Reserved	Reserved	No Connect
24	TxD	UART Transmit (NMEA Output)	
25	Reserved	Reserved	No Connect
26	Reserved	Reserved	No Connect
27	GND	Ground	
28	GND	Ground	

GND	1		28	GND
GND	2		27	GND
RF-IN	3		26	Reserved
GND	4		25	Reserved
Reserved	5		24	TXD-B
Vbat	6		23	Reserved
Reserved	7		22	Reserved
Reserved	8		21	Reserved
Reserved	9		20	RXD
Reserved	10		19	PPS
RESET_in	11		18	Reserved
Vcc	12		17	RTC_out
GND	13		16	Reserved
GND	14		15	GND

Trimble®

CONDOR+ GPS RECEIVER

PERFORMANCE SPECIFICATIONS

L1 (1575.42 MHz) Frequency, C/A Code (Standard Positioning Service), continuously tracking receiver

Update Rate . . . . . 1 Hz

Accuracy . . . . . Clear view autonomous GPS conditions (outdoors, 24 h static):

Horizontal	<2.5 m (50%), <5 m 90%
SBAS	<2.0 m (50%), <4 m 90%
Altitude	<5 m (50%), <8 m 90%
SBAS	<3 m (50%), <5 m 90%
Velocity	0.06 m/s (steady state)
Static PPS	+/- 25 ns (50%), +/- 100 ns (90%), relative to UTC

Acquisition . . . . . (Autonomous, GPS signal level -130 dBm, 50%)

Reacquisition	<1 s
Hot Start[1]	<2 s
Warm Start[2]	35 s
Cold Start[3]	38 s

Sensitivity (unaided) . . . . . Tracking –160 dBm

Acquisition –146 dBm

Receiver Dynamics . . . . . 2 G

Operational Limits . . . . . COCOM Velocity < 515 m/s

1 *Hot start requires position, time, almanac and ephemeris* stored in memory.*
2 *Warm start requires position, time and almanac stored in memory.*
3 *Cold start requires no initialization information.*

* *Ephemeris not older than 4 hours.*

INTERFACE CHARACTERISTICS

Connections . . . . . 28 surface-mount edge castellations

Communication Port . . . . . 1 serial port, 3.3 V CMOS-compatible

PPS. . . . . 3.3 V CMOS-compatible, TTL-level pulse, once per second

Protocol. . . . . NMEA 0183 v3.0

Messages. . . . . GPGGA, GPGSA, GPGSV, GPRMC

COM-parameters . . . . 9600 baud, Parity: none, Data bits: 8, Stop bits: 1

ANTENNA CHARACTERISTICS

Support for active and passive GPS L1 antennas

Integrated LNA (19 dB gain)

ELECTRICAL CHARACTERISTICS

Prime Power . . . . . +3.0 V DC to 3.6 V DC

Power Consumption . . . . . ≤ 40 mA (120 mW) @ 3.0 V

Note: Includes onboard LNA, but does not include external, active antenna power consumption)

Backup Power. . . . . +2.0 V DC to Vcc

Backup Consumption. . . . . 10µA (typical at room temperature)

Ripple Noise . . . . . Max 50 mV, peak-to-peak from 1 Hz to 1 MHz

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature. . . . . –40 °C to +85 °C

Storage Temperature. . . . . –55 °C to +105 °C

Vibration

0.008 g^2/Hz	5 Hz to 20 Hz
0.05 g^2/Hz	20 Hz to 100 Hz
–3 dB/octave . . .	100 Hz to 900 Hz

Operating Humidity. . . . . 5% to 95% R.H. non-condensing, at +60 °C

PHYSICAL CHARACTERISTICS

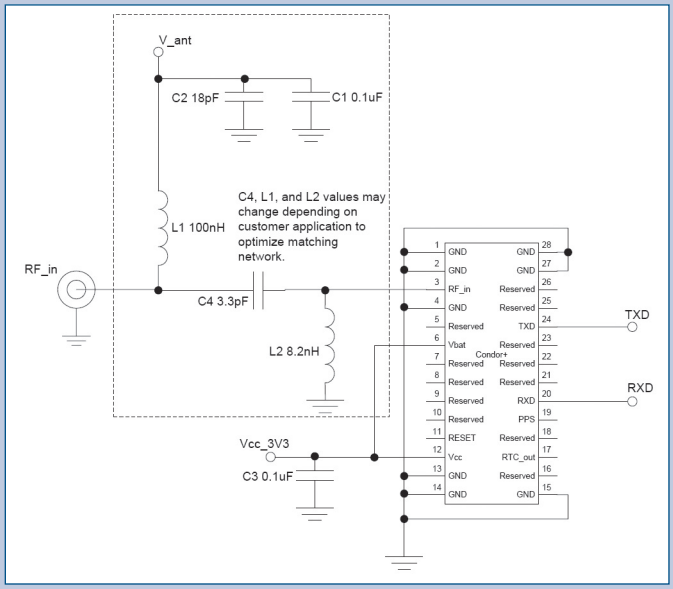
Enclosure. . . . . Metal shield

Dimensions . . . . . 19 mm W × 19 mm L × 2.54 mm H

Weight . . . . . 1.7 g including shield

RECOMMENDED APPLICATION CIRCUIT (ACTIVE ANTENNA SUPPORT):

The diagram below illustrates a typical application circuit for the Condor+ GPS receiver, used with an active antenna.



ORDERING INFORMATION & ACCESSORIES

Condor+ GPS Receiver Module, available as

Sample tray (20 pieces)

Tape on reel (100 pieces)

Tape on reel (500 pieces)

Reference Board: Condor GPS module mounted on a carrier board with I/O and RF connectors, including the RF circuitry with the antenna open detection, as well as antenna short detection and protection.

Starter Kit: Includes Condor Reference Board mounted on interface motherboard in a durable metal enclosure, AC/DC power converter, compact magnetic-mount GPS antenna, ultra-compact embedded antenna, USB interface cable, cigarette lighter adapter, NMEA protocol, software toolkit and manual per Internet download.

Parts of this product are patent protected.

Trimble has relied on representations made by its suppliers in certifying this product as RoHS compliant.

Specifications subject to change without notice.

Trimble Navigation Limited is not responsible for the operation or failure of operation of GPS satellites or the availability of GPS satellite signals.

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