



COPERNICUS GPS RECEIVER

KEY FEATURES

- 2.54 mm T x 19 mm W x 19 mm L
- -160 dBm tracking sensitivity
- Tape & reel packaging
- 94 mW typical continuous tracking
- Supports SBAS (WAAS, EGNOS)
- Fast TTFF (cold start): 38 sec
- Active or passive antennas
- NMEA, TSIP, TAIP protocols
- RoHS-Compliant (Pb-free)
- Stable indoor PPS in Stationary Mode



ULTRA-THIN, LOW POWER, SURFACE MOUNT GPS MODULE

Drop-in Performance

The Trimble® Copernicus® GPS receiver delivers proven performance and Trimble quality for a new generation of position-enabled products. It features the Trimble revolutionary TrimCore™ navigation software for extremely fast startup times and high performance in foliage canopy and urban canyon environments.

The Copernicus module is a complete 12-channel GPS receiver in a 19 mm x 19 mm x 2.54 mm thumbnail-sized module. The module is packaged in tape and reel for high speed pick-and-place manufacturing processes; 28 edge castellations provide RF and I/O interface without the need for connectors. Each module is manufactured and tested to Trimble's highest quality standards.

The sensitive Copernicus GPS receiver can autonomously acquire GPS satellite signals and quickly generate reliable position fixes in extremely challenging environments and under poor signal conditions. The unit also accepts aided GPS (A-GPS) data for faster startups in very weak conditions.

In Stationary Mode the Copernicus GPS receiver can produce an accurate and stable PPS with an indoor antenna. Features include:

- Self survey.
- TRAIM on clock and frequency.
- Noise filter to reduce PPS variance.

The Copernicus GPS module is a complete drop-in, ready-to-go receiver that provides position, velocity, and time data in a user's choice of three protocols. Trimble's powerful TSIP protocol offers complete control over receiver operation and provides detailed satellite information. The TAIP protocol is an easy-to-use ASCII protocol designed specifically for track and trace applications. The bi-directional NMEA 0183 v3.0 protocol offers industry-standard data messages and a command set for easy interface to mapping software.

Applications

Compatible with active or passive antennas, the Copernicus 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.

COPERNICUS GPS RECEIVER

PERFORMANCE SPECIFICATIONS

Accuracy* (24 hr 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/sec
	PPS (Static)	+/- 60 ns RMS
	PPS (Stationary Mode "indoor" @-145dBm)	+/-350ns RMS
Acquisition* (Autonomous, -130dBm, 50%)	Reacquisition	2 sec
	Hot Start	3 sec
	Hot Start without battery backup**	8 sec
	Warm Start	35 sec
	Cold Start	38 sec
Sensitivity* (unaided)	Tracking	-160 dBm
	Standard Acquisition	-142 dBm
	High "Indoor" Acquisition	-148 dBm***

* version 3.02 firmware

** Ephemeris is not older than 4 hours

*** For Hot Start with ephemeris, otherwise -146 dBm

INTERFACE CHARACTERISTICS

Connections	28 surface-mount edge castellations
Serial Port	.2 serial ports
PPS	3.0 V CMOS-level pulse, once per second
Protocols	TSIP, TAIP, NMEA 0183 v3.0
	Bi-directional NMEA messages
	Messages selectable by NMEA commands
	Selection stored in flash memory

ELECTRICAL CHARACTERISTICS

Prime Power	+2.7 V DC to 3.3 V DC
Power Consumption	(typ.) 30.7 mA (82.9 mW) @ 2.7 V
	(typ.) 31.3 mA (93.9 mW) @ 3.0 V
Backup Power	+2.7 V DC to +3.3 V DC
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 g2/Hz 5 Hz to 20 Hz
	0.05 g2/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 x 19 mm L x 2.54 mm H
	(0.75" W x 0.75" L x 0.1" H)
Weight	1.7 grams (0.06 ounce) including shield

PINOUT ASSIGNMENTS

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

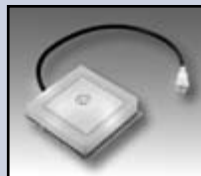
ORDERING INFORMATION & ACCESSORIES

Module Copernicus GPS Receiver Module, available as
 Single modules
 Tape on reel (100 pieces)
 Tape on reel (500 pieces)

Reference Board. Copernicus 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 Copernicus 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, TSIP, NMEA, and TAIP protocols The software toolkit and manual are available from the Trimble support web site at <http://www.trimble.com/support.shtml>.

Ultra-Compact Embedded Antenna
 3.3 V active miniature unpackaged antenna
 Cable length: 8 cm
 Dim: 22 mm W x 21 mm L x 7.5 mm H
 (0.866" x 0.827" x 0.295")
 Connector: HFL



Compact Magnetic-Mount Antenna, MCX or SMA
 3V active micropatch antenna with magnetic mount
 Cable length: 5 m
 Dim: 30.4 mm W x 35.5 mm L x 11.7 mm H
 (1.197" x 1.398" x 0.461")
 Connectors: MCX or SMA



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.

NORTH AMERICA

Trimble Navigation Limited
 Corporate Headquarters
 935 Stewart Drive
 Sunnyvale, CA 94085
 Phone: +1-800-787-4225
 Phone: +1-408-481-7741
 Email: AD_Sales@trimble.com

EUROPE

Trimble Navigation Europe
 Phone: +46-8-622-12-79

KOREA

Trimble Export Ltd, Korea
 Phone: +82-2-555-5361

CHINA

Trimble Navigation Ltd, China
 Phone: +86-21-6391-7814

