



## COPERNICUS GPS RECEIVER

### KEY FEATURES

- 2.54 mm T x 19 mm W x 19 mm L
- Tape & reel packaging
- 94 mW typical continuous tracking
- Supports SBAS (WAAS, EGNOS)
- Fast TTFF (cold start): 39 sec
- Active or passive antennas
- NMEA, TSIP, TAIP protocols
- RoHS-Compliant (Pb-free)

### 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 × 19 mm × 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.

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 <sup>*1</sup> (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	+/- 100 nanosec RMS
Acquisition <sup>*1</sup> (Autonomous, -130dBm, 50%)	Reacquisition	2 sec
	Hot Start	3.1 sec
	Warm Start	35.4 sec
	Cold Start	39.7 sec
Sensitivity (unaided)	Tracking	-150 dBm
	Acquisition	-142 dBm

\*1 version 2.01 firmware

## INTERFACE CHARACTERISTICS

Connections	28 surface-mount edge castellations
Serial Port	2 serial ports
PPS	3.0 V CMOS-compatible, TTL-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 g/Hz . . . . . 5 Hz to 20 Hz
	0.05 g/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, software toolkit and manual on CD-ROM

**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.

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