



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
- Highly sensitive: -152 dBm
- 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

General L1 (1575.42 MHz) frequency, C/A code,
12-channel, continuous tracking receiver
Update rate TSIP @ 1 Hz; NMEA @ 1 Hz; TAIP @ 1 Hz
Accuracy Horizontal: <3 meters (50%), <8 meters (90%)
Altitude: <10 meters (50%), <16 meters (90%)
Velocity: 0.06 m/sec
PPS (static): ± 50 nanoseconds
Acquisition (Autonomous Operation) Reacquisition: 2 sec
Hot Start: 9 sec
Warm Start: 36 sec
Cold Start: 39 sec
Out of the Box: 41 sec
Sensitivity Tracking: -150 dBm
Acquisition: -142 dBm
Operational (COCOM) Limits Velocity 515 m/s

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
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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