ULTRA-THIN, LOW POWER, SURFACE MOUNT GPS MODULE

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

The Copernicus II is compatible with all applications using the previous generation of Copernicus module*. The Copernicus II 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 Copernicus II 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 II 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 II 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 II 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.

KEY FEATURES

- 2.54 mm T x 19 mm W x 19 mm L
- –160 dBm tracking sensitivity
- 132 mW typical continuous tracking
- Fast TTFF (cold start): 38 sec
- Supports SBAS (WAAS, EGNOS, MSAS)
- Active or passive antennas
- NMEA, TSIP, TAIP protocols
- RoHS-Compliant (Pb-free)
- 2G dynamics
- Stable indoor PPS in Stationary Mode
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
- Static PPs: ±60ns RMS
- PPS (Stationary Mode “indoor” @ –145dBm): ±350ns

Acquisition (Autonomous, –130dBm, 50%)
- Reacquisition: 2 s
- Hot Start: 3 s
- Hot Start without battery backup: 8 s*
- Warm Start: 35 s
- Cold Start: 38 s

Receiver Dynamics
- Tracking: –160 dBm
- Acquisition: –148 dBm
- Ephemeral
- Receiver Dynamics: 2G

INTERFACE CHARACTERISTICS

Connections: 28 surface-mount edge castellations
- Serial Port: 2 serial ports
- PPS: 3.0 V CMOS-compatible 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.) 44 mA (132 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 to 5 Hz to 20 Hz
- 0.05 g/Hz to 20 Hz to 100 Hz
- 3 dB/octave to 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 in W x 0.75 in L x 0.1 in H)
Weight: <2 g (0.07 oz) including shield

ORDERING INFORMATION & ACCESSORIES

Module is available as a 20-piece module package for evaluation
Tape on reel (100 pieces)
Reference Board: Copernicus II 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 II Reference Board mounted on an interface motherboard in a durable metal enclosure, 3 additional Copernicus II modules (63530-00), AC/DC power converter, compact 3V magnetic-mount GPS antenna with MCX connector and 5m cable. Also comes with USB interface cable, cigarette lighter adapter, TSIP, NMEA, and TAIP protocols. Software Tool Kit is available from the Trimble Support page.

ORDERING INFORMATION & ACCESSORIES

 RAF 6  3  20  Reserved
 RS 5  24  XDD-A
 RXD 5  22  XDD-B
 Short 9  21  Reserved
 RXD 2  18  RXD-B
 Reserved 10  17  RXD-A
 Xstandby 11  16  TXD-A
 VCC 12  15  TXD-B
 GND 13  14  GND

FEATURE DIFFERENCE TABLE

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>PART NUMBER</th>
<th>MOQ PACKAGING OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copernicus II</td>
<td>63530-00</td>
<td>20 piece tray, 100 or 500 piece reels</td>
</tr>
<tr>
<td>Copernicus II with Soft Shutdown feature supported</td>
<td>63530-10</td>
<td>20 piece tray, 100 or 500 piece reels</td>
</tr>
<tr>
<td>Copernicus II reference board</td>
<td>63531-00</td>
<td>1 reference board</td>
</tr>
<tr>
<td>Copernicus II Starter Kit</td>
<td>63532-05</td>
<td>1 starter kit</td>
</tr>
<tr>
<td>3V Magnetic Mount Antenna, MCX</td>
<td>66800-50</td>
<td>20, 80 or 400 antennas</td>
</tr>
<tr>
<td>3V Magnetic Mount Antenna, SMA</td>
<td>66800-52</td>
<td>20, 80 or 400 antennas</td>
</tr>
</tbody>
</table>

Parts of this product are patent protected.
Trimble Navigation Limited is not responsible for the operation or failure of GPS satellite signals or the availability of GPS satellite signals.

*63530-10 version

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