ProductBulletin

Copernicus II

This document will explain the principle differences between the v3.02 Copernicus and the new Copernicus II receiver. The new receiver is part number 63530-00.

Modified Features Overview

- Modified pin assignments.
- Simplified battery backup circuitry.
- Increased internal LNA gain for improved passive antenna performance.
- Deleted TSIP command.
- Deleted NMEA command.
- New version of PC software – Trimble GPS Studio.
- New Copernicus II Reference Manual.

Key Performance Figures

Parameter	Copernicus II
Part Number	63530-00
Tracking Sensitivity	-160dBm
Acquisition Sensitivity (High "Indoor" Sensitivity Mode) *	-148dBm
Acquisition Sensitivity (Standard Sensitivity Mode)**	-142dBm
Internal LNA Gain (typical)	20dB
Hot Start	3s
Hot Start without battery backup***	8s
Warm Start	35s
Cold Start	38s
Re-acquisition	2s
Horizontal Accuracy @50% (@90%)	<2.5m (<5m)
Horizontal with SBAS Accuracy @50% (@90%)	<2.0m (<4m)
Altitude Accuracy @50% (@90%)	<5m (<8m)
Altitude with SBAS Accuracy @50% (@90%)	<3m (<5m)
Velocity	0.06m/s
PPS (Static)	+/-60ns rms
PPS (Stationary Mode "indoor" @ -145dBm)	+/-350ns rms
Receiver Dynamics Limit @ -144 dBm	2G****

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

*** Standard Acquisition Sensitivity is the default setting. High mode should be enabled for indoor applications.*

**** Ephemeris is not older than 4 hours.*

***** Receiver Dynamic Limit is 4G in open sky, Air Mode*

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Created on 12/10/2008 10:03:00 AM

Modified Features Overview

Full RTC Functionality

The requirement for “18 Hour Rollover” has been removed. While in standby, the Copernicus II does not need to be momentarily put into run mode every 18 hours.

The RTC on Copernicus II will be maintained if power is applied to either the backup or main supply pins.

XSTANDBY operation

If the XSTANDBY pin is asserted on the Copernicus II, it turns off a MOSFET switch that cuts off main power to the GPS module. There is no longer a requirement to first place the module in run mode in order to detect that the standby pin is asserted.

Upon activating the XSTANBY pin there is no longer a 200ms delay before switching from full operating current to standby current.

When sending the standby command through the serial port, the receiver will still draw full operating current for up to 200ms before reducing to the specified standby figure.

Modified pin out requirements

Reserved pins

Pins 9 and 10 are now “Do not connect”. Since there is no internal connection for these pins in the Copernicus II, using it to replace a Copernicus design which has the pins at Vcc will not change the operation of the customer design.

Short pin

When not used for short circuit protection pin 8 no longer needs to pulled high to avoid any unnecessary alarm messages. The pin maybe left disconnected.

Backup supply pin

The Copernicus II has its own dedicated pin (6) for a backup power supply. If a backup supply is not required, pin 6 can be left disconnected.

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The original Copernicus design for an external diode circuit to apply voltage to the single power pin (12) for either main or backup is not required.

Deleted TSIP Commands

The table below identifies the command codes that have been deleted in Copernicus II.

Input ID	Packet Description	Output ID
0xC1	Set Bit Mask for GPIOs in Standby Mode	0xC1

Command Packet 0xC1 - Set Bit Mask for GPIOs in Standby Mode

Users may designate individual pins for pull-down and pull-up while the unit is in Standby Mode. This allows the user to select external pull-down or pull-up resistors to suit their application. THIS PACKET HAS BEEN DELETED. All the pins are pull-down.

Deleted NMEA Commands

The table below identifies the command codes that have been deleted in Copernicus II.

Input ID	Packet Description
SG	Set Bit Mask for GPIOs in Standby Mode

Command Packet SG - Set Bit Mask for GPIOs in Standby Mode

Users may designate individual pins for pull-down and pull-up while the unit is in Standby Mode. This allows the user to select external pull-down or pull-up resistors to suit their application. THIS PACKET HAS BEEN DELETED. All the pins are pull-down.

New Tools

Download the new Reference Manual and Trimble GPS Studio (TGS) from the Trimble support web site.

http://www.trimble.com/embeddedsystems/copernicus.aspx?dtID=support

If you have any further questions please call your local Trimble sales representative.

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