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IMS-GPS: Clock Module with GPS Satellite Receiver

This product is only compatible with Meinberg's line of modular **IMS LANTIME** systems.

Visit the [1][IMS Information Page](#) to learn more.

The IMS-GPS is a clock module with an integrated GPS receiver for Meinberg's IMS platform. This GPS receiver is capable of receiving and decoding GPS satellite signals using the included Meinberg [2] [GPSANTv2 antenna](#) and decoding them to synchronize the integrated clock.

This latest generation of the IMS-GPS module has been developed on the basis of Meinberg's new common technology platform to allow all users to benefit from new features in the future. Find out more [3][here](#).

Key Features

- 12 channel GPS C/A code receiver with wide selection of oscillators
- Highly configurable pulse signals, including pulse-per-second and pulse-per-minute
- RS-232 interface for time string output and also for synchronization using time string input and PPS signal
- Included GPSANTv2 antenna uses downconverter technology to enable long transmission routes of up to 1100 m (1200 yards) -- with Ultraflex H2010 cable

Description

The IMS-GPS is a 12-channel satellite clock module with GPS technology that has been developed from the ground up specifically for time and frequency synchronization purposes. The IMS-GPS provides a high-precision, high-accuracy time and frequency reference for your Meinberg IMS system and is designed to receive signals from the U.S. Global Positioning System (GPS), allowing your Meinberg system to be used anywhere in the world.

How It Works

The integrated GPS receiver requires an externally connected GPSANTv2 antenna to receive signals from GPS satellites.

Once the IMS-GPS is successfully initialized and synchronized, it distributes a 1PPS (pulse-per-second) reference clock signal and a 10 MHz reference frequency. These are then used by the IMS output modules to generate a wide variety of specific output signals used in a diverse range of applications. The precision and accuracy of the two aforementioned reference signals are critical in determining the corresponding precision and accuracy of the output signals.

The module also supports the IMS platform's MRS functionality (Multi Reference Source) to utilize all available reference sources for synchronization beyond the GNSS signals.

The IMS-GPS module is hot-swappable and is automatically detected and utilized when installed, even while the system is still in operation.

Use of Two IMS Receiver Modules

In systems equipped with two redundant IMS receiver modules, an RSC switchover module is used to switch between the two reference sources. The RSC serves to switch over the pulse and frequency outputs and serial interfaces of the connected reference clocks.

Characteristics

Receiver	12-channel GPS L1 C/A code receiver
Input Frequency	35.4 MHz (intermediate frequency of GPSANTv2)
Status Indicators	Status indicated by 4 LEDs * Fail: Clock synchronization state * Ant: Antenna connection state * Nav: GNSS geolocation state * Init: Initialization of module firmware and communication with IMS software
Type of Antenna	Included [2] GPSANTv2 antenna with innovative downconverter technology that allows transmission routes of up to 300 m using RG58 cable, 700 m using RG213 cable, and 1100 m using H2010 Ultraflex cable
Synchronization Time	Max. 1 minute in normal operating conditions Max. 25 minutes (average 12 minutes) upon first initialization or in the absence of saved satellite data
Frequency Outputs	Frequency Synthesizer for arbitrary frequencies between 0.125 Hz and 10 MHz, adjustable phase, output via external modules such as [4] IMS-BPE modules
Accuracy of Frequency Outputs	Accuracy dependent on oscillator (Standard: OCXO-SQ), see [5] oscillator list
Pulse Outputs	Various programmable pulse signals (TTL levels), including pulse-per-second and pulse-per-minute, outputs over four discrete channels, delivery via external output modules (e.g., [4] IMS-BPE).
Accuracy of Pulse Outputs	< ±50 ns (OCXO SQ, OCXO HQ, OCXO DHQ)
Interface	RS-232 interface for time string output and also for synchronization using time string input and PPS signal
Serial Time String Output	Baud Rates: 300, 600, 1200, 2400, 4800, 9600, 19200 Baud Framing: 7E1, 7E2, 7N2, 7O1, 7O2, 8E1, 8N1, 8N2, 8O1 Time String Formats: [6] Meinberg Standard Time String , SAT, Uni Erlangen (NTP), SPA, Sysplex, RACAL, NMEA0183 (RMC,GGA,ZDA), Meinberg GPS, COMPUTIME, ION, [7] Capture String
Output Control Options	Pulse, string, and frequency outputs can all either be enabled or disabled depending on clock sync state or left permanently enabled

Supported Timecode Formats

Dedicated timecode output (DCLS/AM) via output module (e.g., [4][IMS-BPE](#)) and input capability via appropriate module (e.g., [8][IMS-MRI-Modul](#))

IRIG B002 (DCLS) / IRIG B122 (AM, 1 kHz carrier): 100pps, BCD time-of-year

IRIG B003 (DCLS) / IRIG B123 (AM, 1 kHz carrier): 100pps, BCD time-of-year, SBS time-of-day

IRIG B006 (DCLS) / IRIG B126 (AM, 1 kHz carrier): 100pps, BCD time-of-year, year

IRIG B007 (DCLS) / IRIG B127 (AM, 1 kHz carrier): 100pps, BCD time-of-year, year, SBS time-of-day

IEEE1344 (AM, 1 kHz carrier): Code as per IEEE1344-1995, 100pps, BCD time-of-year, SBS time-of-day, IEEE1344 extensions for date, timezone, DST and leap seconds in "control functions" segment

C37.118: as with IEEE1344, but with inverted prefix bit for UTC offset

AFNOR NFS-87500 (AM with 1 kHz carrier/DCLS): Code as per AFNOR NFS-87500, 100pps, BCD time-of-year, full date, SBS time-of-day

Antenna Connector	BNC connector
Backup Battery Type	CR2032 (lithium button cell) In the event of loss of power to the main system, this battery powers the real-time clock and also ensures that GNSS almanac data is properly buffered in RAM. Lifetime of lithium battery: Min. 10 years
Operating Voltage	+5 V DC
Current Draw	1.1 A to 1.4 A (depends on oscillator option)
Mixing Frequency	10 MHz (from receiver)
Supported Temperature	Operation: 0 to 55 °C (32 to 131 °F) Storage: -20 to 70 °C (-4 to 158 °F)
Supported Humidity	Max. 85 % (non-condensing) at 40 °C
Warranty	Three-year warranty
RoHS Status of Product	This product is fully RoHS-compliant.
WEEE Status of Product	This product is handled as a B2B (Business to Business) category product. To ensure that the product is disposed of in a WEEE-compliant fashion, it can be returned to the manufacturer. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will bear the costs for the waste disposal itself.

Manual

The English manual is available as a PDF file: [9][Download \(PDF\)](#)

Links:

- [1] <https://www.meinbergglobal.com/english/products/modular-sync-system.htm>
- [2] <https://www.meinbergglobal.com/english/products/gps-antenna-converter.htm>
- [3] <https://www.meinbergglobal.com/english/news/meinberg-security-advisory-mbgas-2023-04-lantime-firmware-v7-08-002.htm>
- [4] <https://www.meinbergglobal.com/english/products/ims-output-modules.htm>
- [5] <https://www.meinbergglobal.com/english/specs/gpsopt.htm>
- [6] <https://www.meinbergglobal.com/english/specs/timestr.htm>
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