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IMS-GNS: Clock Module with Multi-GNSS Receiver for GPS, Galileo, GLONASS, and BeiDou

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-GNS is a clock module with an integrated GPS, Galileo, BeiDou, and GLONASS receiver for Meinberg's IMS platform. This multi-GNSS receiver is capable of receiving and decoding satellite signals from the GPS, Galileo, BeiDou, and GLONASS constellations with the included [2]Multi-GNSS L1 antenna and decoding them to synchronize the integrated clock.

This latest generation of the IMS-GNS 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

- 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
- Allows direct transmission routes of up to 150 m when using Ultraflex H2010 coaxial cable
- 72-channel GPS / Galileo / GLONASS / BeiDou receiver with wide selection of oscillators

Description

The IMS-GNS is a 72-channel satellite clock module with GNSS technology that has been developed from the ground up specifically for time and frequency synchronization purposes. The IMS-GNS 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), the European Galileo system, the Chinese BeiDou system, and the Russian GLONASS system, providing an impressive range of sources for your Meinberg system to be used anywhere in the world.

How It Works

The integrated GNSS receiver requires an external Multi-GNSS L1 antenna to receive signals from GPS, Galileo, BeiDou, and GLONASS satellites.

Once the IMS-GNS 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-GNS 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	72-channel GPS L1 / Galileo E1 / GLONASS L1OF / BeiDou B1I receiver
Input Frequency	1561.098 MHz (BeiDou B1I) 1575.420 MHz (GPS L1 C/A, Galileo E1-B/C) 1602.000 - 1602.563 MHz (GLONASS L1OF)
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 40 dB L1 [2]Multi-GNSS antenna ([4]Data Sheet)
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 [5]IMS-BPE modules
Accuracy of Frequency Outputs	Accuracy dependent on oscillator (Standard: OCXO-SQ), see [6]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., [5]IMS-BPE).
Accuracy of Pulse Outputs	Depends on oscillator option: < ±50ns (OCXO SQ, OCXO MQ, OCXO HQ, OCXO DHQ, Rubidium)
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: [7]Meinberg Standard Time String , SAT, Uni Erlangen (NTP), SPA, Sysplex, RACAL, NMEA0183 (RMC,GGA,ZDA), Meinberg GPS, COMPUTIME, ION, [8]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., [5]IMS-BPE) and input capability via appropriate module (e.g., [9]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	SMA female 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
Cable Type	Belden H155 coaxial cable (max. length 70 m / 230 ft) Ultraflex H2010 coaxial cable (max. length 150 m / 492 ft)
Operating Voltage	+5 V DC
Current Draw	1.1 A to 1.4 A (depends on oscillator option)
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

There is no online manual available for this product.: [10]Contact us

Links:

[1] https://www.meinbergglobal.com/english/products/modular-sync-system.htm
[2] https://www.meinbergglobal.com/english/products/gps-glonass-l1-antenna.htm
[3] https://www.meinbergglobal.com/english/news/meinberg-security-advisory-mbgsa-2023-04-lantime-firmware-v7-08-002.htm
[4] https://www.meinbergglobal.com/english/products/
[5] https://www.meinbergglobal.com/english/products/ims-output-modules.htm
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