GT-804, Multi-GNSS DO, w/ 4-Pair (1PPS, 10MHz) Clocks 4 Hours of Holdover Support

Overview

GT-804 is a 1U rackmount GNSS Disciplined Oscillator (GNSSDO) which supports 4 pairs of 1PPS and 10MHz clock outputs on the back panel. Operation status is indicated by LEDs on the front panel. Configurations such as antenna cable delay compensation could be achieved via the console port. I/O interfaces are dual-power input by phoenix connectors, console by USB type-C, GNSS antenna by SMA, 1PPS, 10MHz clocks by BNC connectors, and LEDs for status operation indication.

GT-804 is equipped with the u-blox M8, Multi-GNSS, high-sensitivity timing engine, OCXO, DPLL/DCO, and SoC. Special position-hold timing-mode design makes the 1PPS signal more stable and reliable. Thanks to its ultra-high performance, this GNSSDO provides stable 1PPS and 1PPS synchronized 10MHz clocks. The holdover time of ±1.5us is better than 4 hours.

GT-804 supports positioning of multi-satellite systems – GPS, GLONASS, GALILEO, BEIDOU, QZSS, SBAS. It default works with GPS, GLONASS, GALILEO, and QZSS concurrently. Vast number of visible satellites allows stable and better clock quality of 1PPS/10MHz. Additional filtering design makes clocks even more stable.

Antenna short circuit protection is built-in. Anomalies such as antenna short circuit, antenna open etc. are indicated by 'Alarm' LED and console warning messages. Internal circuit delay of 1PPS is internally calibrated. GNSS antenna cable delay could be compensated to the 1PPS signal output.



Applications

- Mobile network base stations
- Microwave communication systems
- Time synchronization
- Frequency reference

Features

- High sensitivity GNSS
  - -167dBm tracking
  - -148dBm acquisition
- Multi-GNSS concurrent support,
  - GPS/GLONASS/GALILEO/QZSS or
  - GPS/BEIDOU/GALILEO/QZSS
- High accuracy & stability 1PPS synchronized to UTC time (default) or GPS time
- 1PPS synchronized 10MHz clock
- Holdover
  - ±1.5 us, 4 hours, constant temperature
  - Has locked to GNSS for three consecutive days.

NaviSys Technology Corp. https://www.navisys.com.tw/
Tel : +886-3-5632598 Fax: +886-3-5632597
Sales contact: sales@navisys.com.tw Technical support: service@navisys.com.tw
Address: 2F, No.56, Park Ave. II, Hsinchu Science Park, Hsinchu, 30844, Taiwan (R.O.C.)

- CMOS 3.3V square wave 10MHz clocks
- Delay compensation for 1PPS output
  - GNSS 1PPS: cable & circuit delay
- 4 pairs of 1PPS and 10MHz output
- Configuration & message checking via console
- Operation status indication on front panel
- Dual-power input for power fault tolerance
- Built-in low-noise power supply regulator (LDO)
- Anti-spoofing detection
- External active antenna short circuit protection
- Backup power for faster position fix.
- Operating temperature: -40~85℃
- Excellent EMI protection

Technical Specifications

GNSS Receiver Performance Data+

Receiver Type	72-channel u-blox M8 engine GPS & QZSS: L1 C/A,1575.42MHz, GALILEO: E1-B/C,1575.42MHz, GLONASS: L1OF,1598.0625~1605.375MHz BEIDOU: B1 1561.098 MHz SBAS (WAAS, EGNOS, MSAS, GAGAN): L1 C/A
Horizontal Position Accuracy	Autonomous: 2.5 m (Autonomous) (GPS & GLONASS) (CEP, 50%, 24-hour static, -130dBm)
Velocity Accuracy	<0.05 m/s (speed) (GPS & GLONASS) <0.3° (heading) (GPS & GLONASS) (50% @ 30 m/s)
1PPS Accuracy	≤ 20 ns (1-sigma, clear sky) ≤ 500 ns (1-sigma, indoor)
Time To First Fix (TTFF) Hot start Cold start	Autonomous (All at -130dBm) 1 sec (GPS & GLONASS) 25 sec (GPS & GLONASS)
Sensitivity, (Autonomous)	Acquisition: -148 dBm (GPS & GLONASS) Tracking: -167 dBm (GPS & GLONASS)
Navigation. Update Rate	Max. 4Hz (GPS & GLONASS) Default 1Hz
Max. Altitude	50,000 m
Max. Velocity	500 m/s
Protocol Support	NMEA 0183 v2.3 and V4.x GGA, GLL, GSA, GSV, RMC, VTG, TXT
Dynamics	< 4g

Clocks Performance Data

1PPS Output Spec (Fine Lock)

1PPS Accuracy	≤ 20ns (1-sigma, clear sky)
1PPS Jitter	± 11ns

1PPS Output Spec (Holdover)

1PPS Accuracy	< ± 1.5us / 4hr (constant temperature)

10MHz Output Spec (Fine Lock)

Short term stability (Root Allan Variance t = 1sec)	< ± 2E-11
Long term stability (24 hr average)	< ± 1E-12

10MHz Output Spec (Holdover)

Long term stability (24 hr average)	< ± 2E-10

Electrical Data

Power Supply	Dual- 48 VDC
Power Consumption	Warm up: TBD A Steady state: TBD A

Environmental Data

Operating temperature	-40 ~ 85℃
Storage temperature	-40 ~ 85℃

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Mechanical Data –

265mm x 110.9mm x 43.6 box body

482.6mm x 110.9mm x 43.6 rackmount

Interface

Front panel



No	Name	Description	I/O
F1	Console	USB type-C console port	I/O
F2	Power	LED for power status indication	Output
F3	GNSS Fix	LED for GNSS fix status indication	Output
F4	Alarm	LED for abnormal status indication	Output
F5	Lock	LED for 1PPS lock status indication	Output
F6	Holdover	LED for holdover status indication	Output
F7	1PPS	LED for 1PPS status indication	Output
F8	10MHz	LED for 10MHz clock status indication	Output

Back panel



No	Name	Description	I/O
B1	GNSS Antenna	SMA connector (50Ω) for 3.3 V GNSS antenna	Input
B2	1PPS	BNC connector (75Ω) for 1PPS signal, CMOS 3.3V square wave, duty 50%	Output
B3	10MHz	BNC connector (75Ω) for 10MHz clock CMOS 3.3V square wave, duty 50%	Output
B4	Power	Phoenix connector for 48VDC power supply	Input

Ordering Information

GT-804T	Default model

*This document is subject to change without notice.

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