

OEM-1 GNSS Receiver

Original Equipment Manufacturers Board



Small Size . . . Tremendous Capabilities

- 72 CHANNELS FOR "ALL IN VIEW", DUAL-FREQUENCY L1/L2 CODE/CARRIER GPS/GLONASS/SBAS TRACKING
- HEADING DETERMINATION BASED ON DUAL-ANTENNA APPROACH WITH UPDATE RATE UP TO 100HZ
- HIGH PERFORMANCE, HIGH ACCURACY RTK ENGINE WITH POSITION UPDATE RATE UP TO 100HZ
- EXTENDED (ADDITIONAL) CONNECTOR TO EXPAND COMMUNICATION CAPABILITY

Topcon positioning technology allows integrators to take full advantage of state-of-the-art GPS and GPS+GLONASS signal processing. With position update rates of up to 100Hz and centimeter level accuracy, the OEM-1 is the solution for many challenging, high dynamic tracking and positioning problems.

OEM-1 GNSS Board Features & Specifications:

Physical	
Size	60 x 100 x 13 mm
Weight	≤60 grams
Mounting	Six holes to install M3 screws
User Interface Connectors	Two row 24 pin terminal strip of TMM series, Samtec TMM-112-03-L-D Two row, 50 pin receptacle, Molex 52760-0670
Environmental	
Operating Temperature	-30° C to +85° C
Storage Temperature	-40° C to +85° C
Humidity	95%, non-condensing
Vibration	4g Sine Vibe (SAEJ1211) 7.7g Random Vibe (MIL-STD 810F)
Shock	30g (IEC 68-2-27)
Power	
Voltage	+3.3 (+5/-3)%VDC
Voltage Ripple	150 mV p-p max
Power Consumption	1.8W typical, 2.5W max
RF Input/LNA Power Output	
Antenna Connectors	MMCX Female Straight Through Hole, 50 Ω impedance
RF Input Frequencies	GPS: 1575.42 MHz (L1), 1227.60 MHz (L2) GLONASS: 1598.0625-1609.3125 MHz (L1), 1242.9375 - 1251.6875 MHz (L2)
LNA Power	+4.75 to +5.10 VDC @ 0 - 70 mA
Input/Output Strokes/Signals	
PPS (Pulse Per Second Output)	5 ns resolution, ≤30 ns pulse-to-pulse precision, LVTTTL, configurable polarity and period
EVENT (Input Mark)	5 ns resolution, TTL, programmable active edge
Radar Output	Square waveform with a 50% duty cycle
Conversion for Radar Output	94 Hz/m/s, +/- 1Hz tolerance
Input/Output Data Interfaces	
RS-232	one port up to 460.8 kbps
LVTTTL Serial	two ports up to 921.6 kbps
USB 1.1 (device)	one port up to 12 mbps, USB D(+), USB D(-), V_bus support
CAN	two ports (w/o transceivers), NMEA2000 compliant
Performance	
Number of channels for SV tracking	72 GPS L1 C/A, L2C, L2 P(Y), GLONASS L1/L2 code & carrier
Acquisition Time (TTFF)	Hot (almanac & recent ephemeris and approx. position) <10 sec Warm (almanac, approx. position & time, no recent ephemeris) <35 sec Cold (no almanac or ephemeris and no approx. position or time) <60 sec Reacquisition <1 sec
Data formats supported	NMEA 0183 versions 2.1, 2.2, 2.3 and 3.0 Output Proprietary (TPS) data format RTCM SC104 versions 2.1, 2.2, 2.3 and 3.0 Input/Output Geoid and Magnetic Variation models Grid coordinates output
Data Rates	
Raw Measurements	up to 100 Hz
Position	up to 100 Hz
Accuracy (L1/L2)	
Position standalone	Horizontal 2m CEP, Vertical 3m CEP
Position differential (RTCM based)	Horizontal 0.4m CEP, Vertical 0.6m CEP
Position RTK Static	Horizontal 3mm + 0.5ppm x baseline Vertical 5mm + 1.0ppm x baseline
Position RTK Kinematic	Horizontal 10mm + 1.0ppm x baseline Vertical 15mm + 1.0ppm x baseline
Velocity	0.02m/sec CEP
Time	25 nsec CEP
Measurement Precision	
C/A code phase	< 1m
L1/L2 carrier phase differential	< 2mm
Heading Parameters	
Signal sampling period	1 msec
Heading update rate	up to 100 Hz
Inclination for antenna vector, max	+/- 30 deg
Heading Rate of Change, max	4*PUR/L (deg/s), where PUR is Position update rate in Hz and L is antenna separation in meters
Heading Accuracy	0.2 deg / L (Urban) 0.1 deg / L (Field), where L is antenna separation: 0.3m ≤ L ≤ 10m

* For Technical Drawings and additional Technical Specifications go to:
www.topconsolutions.com.



OEM-1 GNSS

The OEM-1 is a Paradigm G3-family, dual-frequency, single board GNSS (GPS + GLONASS + SBAS) receiver (further upgradable for Galileo E1). This is a high-performance, low-cost board with diverse, flexible communication capability (Serial, USB, CAN). This receiver is capable of receiving and tracking different combinations of GPS L1 C/A, L2C, L2 P(Y) code and carrier, GLONASS L1 and L2 code and carrier as well as SBAS satellites on a maximum of 72 universal channels.

Other OEM Boards

TG-3

The economical TG-3 board provides 50 channel GPS+GLONASS single frequency technology with up to 100Hz data and position update capability.

Euro 112T

Small Eurocard format (112mm), provides GPS L1/L2, and GLONASS tracking, reduced power consumption, and many of Topcon's exclusive and advanced GPS+ features.

G3 160T

Standard 160mm Eurocard format is the world's first to track signals from all three satellite positioning system -- GPS-GLONASS-Galileo. GPS signal tracking includes L2C and L5.



Topcon Positioning Systems
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