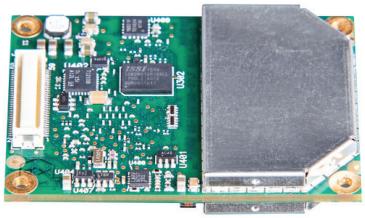
B111A GNSS OEM Board



Reliable, Lightweight Dual-frequency Receiver Board

The B111A GNSS OEM board is a compact positioning engine capable of providing scalable positioning from sub-meter DGPS positioning to sub-centimeter RTK positioning.

Low-power consumption, comprehensive communication interfaces and peripheral support make the B111A extremely flexible and easy to integrate into any precise positioning application.

- Universal Tracking Channels™
- Topnet Live correction services via NTRIP
- Low-power consumption
- High-performance RTK engine
- Dual-frequency tracking of GPS, GLONASS, BeiDou, Galileo, SBAS and QZSS
- Update rate up to 100 Hz
- SD card interface support
- Drop-in replacement for B110 and B111 boards

FEATURES

POSITION

DION™
Active filter reduces disturbances in positional results, leading to smoother, more consistent output in static and dynamic applications; also allows seamless transition between positioning modes

Multipath mitigation
A proprietary signal-processing algorithm mitigates multipath effect on satellite measurements

Quartz-Lock Loop™ (QLL)
Patented technology eliminates satellite tracking failures and positioning degradation caused by vibration and shock

Ion Shield™
Continuously monitor ionospheric conditions and rapidly switch to iono-free combination if ionospheric disturbances have been detected

VELOCITY

Doppler filter
Configure the filter bandwidth to optimize trade-off between noise and dynamic errors, which prevents overshooting velocity output during abrupt changes

Velocity filter
Adaptively reduces noise errors while correcting dynamic errors in raw velocity estimates

HEADING

HD2
The Topcon determination engine allows use of a pair of boards with a pair of antennas to allow a sub-degree 2D attitude determination

Azimuth filter
Kalman-based filtering to deliver smooth heading even for low-speed single antenna vehicles

A development kit is available to help you rapidly explore and evaluate features and performance of B111A.

Ordering Information: PN 1032951-01
Description:
- *Evaluation board and B111A board with firmware and OAF*
- *Power supply and communication cables*

Complete documentation and design resources are available to reduce your development costs and time as well as minimize design risks and test time.
Downloads are available at mytopcon.com.

B111A GNSS OEM Board

TRACKING	
Channels	226 Universal Tracking Channels™
Signals Tracked	GPS: L1, L2, L2C GLONASS: L1, L2, L2C BeiDou: B1, B2 Galileo: E1 ; SBAS L1 QZSS: L1, L2C
ACCURACY[1] (RMS)	
Standalone	H: 1.2 m; V: 1.8 m
DGPS	H: 0.3 m; V: 0.5 m
SBAS	H: 0.8 m; V: 1.2 m
RTK	H: 5 mm + 0.5 ppm x baseline; V: 10 mm + 0.8 ppm x baseline
RTK Initialization	Time: < 10 seconds Reliability: > 99%
Attitude	Heading (HD2 mode) 0.2°/D, where D is the inter-antenna distance in meters Inclination (HD2 mode) 0.3°/D, where D is the inter-antenna distance in meters
Velocity	0.02 m/second
Time	30 nsec
ACQUISITION TIME	
Hot / Cold Start	< 15 sec / < 44 sec
Reacquisition	< 1 sec
COMMUNICATION INTERFACES	
RS232	2x ports up to 460.8 kbps
LVTTL UART	2x ports up to 460.8 kbps
USB 2.0 (client)	1x port up to 480 mbps (High Speed)
CAN	1x port (without transceivers), CAN 2.0 A/B , NMEA2000 compliant
I/O	
PPS	1x output with 5 ns resolution, LVTTL, configurable edge, period, offset, and reference time
EVENT	1x input with 5 ns resolution, LVTTL, configurable edge and reference time
DATA AND MEMORY	
SD card support	Industrial SLC SD card, 20 Hz writing rate, up to 32 GB capacity
Data Update/Output Rate	1 Hz – 100 Hz Selectable
Data Formats	TPS, RTCM SC104 2.x and 3.x, CMR/CMR+[2], BINEX
ASCII Output	NMEA 0183 versions 2.x, 3.x and 4.x

ENVIRONMENTAL	
Temperature	Operating: -40°C to 85°C; Storage: -40°C to 85°C
Vibration	4g Sine Vibe (SAEJ1211); 7.7g Random Vibe (MIL-STD 810F)
Humidity	95%, non-condensing
Shock	Operational IEC68-2-27, 11 ms, 40 g Survival IEC68-2-27, 11 ms, 75 g
Acceleration	20 g
POWER	
Voltage / Power Consumption	3.4 VDC to 4.5 VDC / 1.3 W typical
LNA Power	3.3 V (internal), 5.0 V (external) at 0 – 100 mA
PHYSICAL	
Dimensions / Weight	40 x 55 x 10 mm / < 20 g
Main Connector	60-pin Hirose
Antenna Inputs	2 (to connect internal or external antenna) ESD protected
Antenna Connectors	Hirose H.FL

TOPNET LIVE CORRECTION SERVICES FOR B111A BOARD		
Supported Services	Starpoint Pro (PPP)	Realpoint (RTK)
Service Delivery Method	NTRIP via External Cellular Modem	
Supported Constellations	GPS, GLONASS, GALILEO, BeiDou	
Coverage	Global	Regional
Convergence Time[3]	< 20 min	N/A
Accuracy[1] (95%)	H: 3 cm / V: 5 cm	RTK Level

For more details, see Topnet Live Corrections at www.topconpositioning.com

1. The specifications are based upon field and laboratory testing. Accuracy and convergence time may be affected by user hardware type (antenna/receiver), available GNSS constellation (PDOP), and site conditions.
2. CMR/CMR+ is a third-party proprietary format. Use of this format is not recommended and performance cannot be guaranteed. Use of industry standard RTCM 3.x is always recommended for optimal performance.
3. Performance may be degraded in conditions with high Ionospheric activity, extreme multipath, or under dense foliage. For maximum system accuracy, always follow best practices for GNSS data collections.

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www.topconpositioning.com/b111a