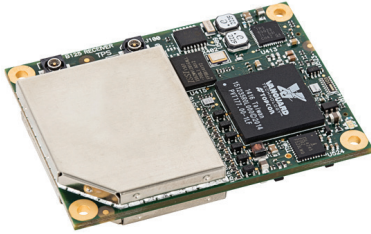![Topcon logo]

B125 GNSS OEM Board

Ultra-compact GNSS Receiver Board

The B125 GNSS OEM board is a compact positioning engine with future-proof signal tracking and scalable positioning from sub-meter DGPS positioning to sub-centimeter RTK positioning.

Low-power consumption and comprehensive communication interfaces, including a high-speed Ethernet port, make the B125 extremely flexible and easy to integrate into any precise positioning application.

- 226 Universal Tracking Channels™
- Future-proof tracking of GPS, GLONASS, BeiDou, Galileo, and QZSS
- Low-power consumption
- Precise RTK positioning with data rates up to 100 Hz
- Serial, USB, CAN, and high-speed Ethernet communications
- Hardware-ready for PPP via L-brand satellite downlink or Internet

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 the B125.

Ordering Information: PN 1008510-01
Description: Evaluation board with 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.

B125 GNSS OEM Board

TRACKING	
Channels	226 Universal Tracking Channels™
Signals Tracked	GPS: L1, L2, L2C, L5 GLONASS: L1, L2, L3 Galileo: E1, E5a, E5b, E5AltBOC BeiDou: B1, B2 QZSS: L1, L2, L1C, L1-SAIF, L2C, L5 SBAS: L1 L-Band

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%
HD2	Heading 0.2°/D, where D is the inter-antenna distance in meters Inclination 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 typical
Reacquisition	< 1 sec

COMMUNICATION INTERFACES	
RS232	2x ports up to 460.8 kbps
LVTTL UART	1x 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
Ethernet	1x port supporting TCP/IP, FTP, Ntrip Server/Client

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 32GB 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, 11ms, 40g Survival IEC68-2-27, 11ms, 75g
Acceleration	20g

POWER	
Voltage / Power Consumption	3.4 VDC to 5.5 VDC / 2.0 W typical
LNA Power	+3.4 V to +5.5 V (internal), +4.8 V to +5.16 V (external) at 0 – 120 mA

PHYSICAL	
Dimensions / Weight	55 mm x 40 mm x 10 mm / 20 g
Main Connector	80-pin Hirose
Antenna Inputs	2 ESD protected
Antenna Connectors	Hirose H.FL

1. These specifications will vary depending on the number of satellites used, obstructions, satellite geometry (PDOP), occupation time, multipath effects, and atmospheric conditions. 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 collection.

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.

www.topconpositioning.com/b125