UM982

GPS/BDS/GLONASS/Galileo/QZSS All-constellation Multi-frequency High-precision Positioning and Heading Module

16.0 × 21.0 × 2.6 mm

Features

- Based on Unicore's proprietary GNSS SoC NebulasIV that integrates RF, baseband and high-precision algorithm
- Supports all-constellation multi-frequency on-chip RTK positioning and dual-antenna heading solution
- Dual-RTK technology
- 60 dB narrowband anti-jamming and jamming detection
- Adaptive recognition of RTCM format differential data
- STANDALONE single-station high-precision positioning technology
- Supports B2b-PPP, E6-HAS and QZSS L6E (MADOCA) PPP

Applications

- UAV
- Autonomous Machine
- Precision Agriculture

UM982 is Unicore's new-generation proprietary high-precision positioning and heading module. Its primary and secondary antennas can simultaneously track multiple frequencies of all GNSS systems, and the module can perform on-chip RTK positioning and dual-antenna heading calculation. The built-in advanced anti-interference unit ensures that the module delivers reliable and accurate positioning data even in complex electromagnetic environments. Featuring the extraordinary positioning performance and reliability, UM982 is a perfect choice for high-precision navigation and positioning applications such as UAV, autonomous machine and precision agriculture.

Physical Characteristics

Packaging	48 pin LGA
Dimensions	16.0 × 21.0 × 2.6 mm
Weight	1.82 ± 0.03 g

Environmental Specifications

Operating Temperature	-40 °C ~ +85 °C
Storage Temperature	-55 °C ~ +95°C
Humidity	95% No condensation
Vibration	MIL-STD-810F
Shock	MIL-STD-810F

Communication Interfaces

3 × UART (LVTTL)
1 × SPI*
1 × I^2C*
1 × CAN* (shared with UART3)

Note: Items marked with * are only supported by specific firmware.

Performance Specifications

Channel	1408 channels, based on NebulasIV			
Frequency	GPS L1C/A, L2C, L2P(Y), L5			
	BDS B1I, B2I, B3I,B1C*,B2b*			
	GLONASS G1, G2			
	Galileo E1, E5a, E5b, E6*			
	QZSS L1C/A, L2C, L5, L6*			
	SBAS L1C/A			
Single Point Positioning(RMS)	Horizontal: 1.5 m			
	Vertical: 2.5 m			
DGPS (RMS)	Horizontal: 0.4 m		Heading Accuracy (RMS)	0.1°/1 m baseline
	Vertical: 0.8 m		Time Accuracy (RMS)	20 ns
RTK (RMS)	Horizontal: 0.8 cm + 1 ppm		Velocity Accuracy (RMS)	0.03 m/s
	Vertical: 1.5cm + 1 ppm		Cold Start	< 30 s
PPP (RMS)	Horizontal: 5 cm		Initialization Time	< 5 s (typical)
	Vertical: 10 cm		Initialization Reliability	> 99.9%

Observation Accuracy (RMS)	BDS	GPS	GLONASS	Galileo
B1I/L1 C/A/G1/E1 Code	10 cm	10 cm	10 cm	10 cm
B1I/L1C/A/G1/E1 Carrier Phase	1 mm	1 mm	1 mm	1 mm
B2I/L5/E5a/E5b Code	10 cm	10 cm	10 cm	10 cm
B2I/L5/E5a/E5b Carrier Phase	1 mm	1 mm	1 mm	1 mm
B3I/L2P(Y)/L2C/G2 Code	10 cm	10 cm	10 cm	10 cm
B3I/L2P(Y)/L2C/G2 Carrier Phase	1 mm	1 mm	1 mm	1 mm

Data Update Rate	Dual antenna 20 Hz (RTK+Heading)
	20 Hz raw data output
Differential Data	RTCM V3.X
Data Format	NMEA 0183, Unicore