

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 engine using master-slave antenna GNSS raw observations for independent positioning solution
- » Excellent anti-jamming and anti-spoofing capabilities, supporting jamming detection and spoofing detection
- » Adaptive recognition of RTCM format differential data
- » STANDALONE single-station high-precision positioning technology
- » Supports B2b-PPP, E6-HAS, QZSS L6E (MADCOCA) PPP and SouthPAN L5 PVS

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-jamming 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	GB/T 28046.3, ISO 16750-3
Shock	GB/T 28046.3, ISO 16750-3

Communication Interfaces

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

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

Performance Specifications

Channel	1408 channels, based on NebulasIV			
Frequency	Master Antenna	Slave Antenna		
	GPS L1C/A, L2P(Y), L2C, L5	GPS L1C/A, L2C		
	BDS B1I, B3I, B1C, B2a, B2b*	BDS B1I, B3I		
	GLONASS G1, G2	GLONASS: G1, G2		
	Galileo E1, E5a, E5b, E6	Galileo E1, E5b		
	QZSS L1C/A, L1C/B, L2C, L5, L6	QZSS L1C/A, L1C/B, L2C		
	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: 1.5 cm + 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/L1C/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	20 Hz (RTK+Heading)			
Differential Data	RTCM V3.X			
Data Format	NMEA 0183, Unicore			