

# 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 the new generation GNSS SoC -NebulasIV, which 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 and E6-HAS

## Applications



UAV



Autonomous Machine



Precision Agriculture

UM982 is Unicore's new-generation proprietary high-precision positioning and heading module. Its main 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 environment. 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 <sup>2</sup> 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	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 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			