

# 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
- » 16.0 × 21.0 × 2.6 mm SMD
- » Supports all-constellation multi-frequency on-chip RTK positioning and dual-antenna heading solution
- » Supports GPS L1/L2/L5 + BDS B1/B2/B31 + GLONASS G1/G2 + Galileo E1/E5a/E5b + QZSS L1/L2/L5 + SBAS
- » Dual-RTK technology
- » Adaptive recognition of RTCM format differential data

## 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
Dimension	16.0 × 21.0 × 2.6 mm
Weight	1.82 ± 0.03 g

## Environmental Specifications

Working 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 × I2C\*

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/L2P (Y)/L2C/L5 BDS B1/B2/B31 GLONASS G1/G2 Galileo E1/E5a/E5b QZSS L1/L2/L5			
Single point positioning(RMS)	Horizontal: 1.5 m	Heading accuracy (RMS)	0.1°/1 m baseline	
	Vertical: 2.5 m	Time accuracy (RMS)	20 ns	
DGPS (RMS)	Horizontal: 0.4 m	Velocity accuracy (RMS)	0.03 m/s	
	Vertical: 0.8 m	Cold start	< 30 s	
RTK (RMS)	Horizontal: 0.8 cm + 1 ppm	Initialization time	< 5 s (typical)	
	Vertical: 1.5cm + 1 ppm	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/ESb Code	10 cm	10 cm	10 cm	10 cm
B2I/L5/E5a/ESb 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 20 Hz raw data output			
Differential data	RTCM V3.X			
Data format	NMEA-0183, Unicore			