

# UM980C

GPS/BDS/GLONASS/Galileo/QZSS  
All-Constellation Multi-Frequency  
High-Precision RTK Positioning  
Module (L-Band & CLAS Supported)



17.0 × 22.0 × 2.6 mm



## Features

- » Based on Unicore's proprietary GNSS SoC NebulasIV that integrates RF, baseband and high-precision algorithm
- » All-constellation multi-frequency RTK engine and advanced RTK technology
- » Instant RTK initialization technology
- » Excellent anti-jamming and anti-spoofing capabilities, supporting jamming detection and spoofing detection
- » STANDALONE single-station high-precision positioning technology
- » Supports B2b-PPP, E6-HAS and QZSS L6E (MADOCA) PPP
- » Supports QZSS L6D (CLAS) PPP-RTK solution
- » Supports TruePoint|REACH Sat L-band-based PPP-AR service<sup>1</sup>

## Applications



Surveying and Mapping



Precision Agriculture

UM980C is Unicore's new-generation proprietary all-constellation, multi-frequency high-precision RTK positioning module, developed based on the GNSS SoC NebulasIV which integrates RF-baseband and high-precision algorithm. The module supports multiple systems including GPS, BDS, GLONASS, Galileo, QZSS, NavIC, SBAS and L-Band, supports QZSS L6D (CLAS) PPP-RTK solution, and supports TruePoint|REACH Sat L-band-based PPP-AR service. The built-in multi-frequency anti-jamming technology enhances RTK solution on multiple modes and frequencies, which significantly improves RTK initialization speed, measurement accuracy and reliability in challenging environments such as urban canyons and tree shades. UM980C is ideal for surveying and mapping, and precision agriculture.

## Physical Characteristics

Packaging	54 pin LGA
Dimensions	17.0 × 22.0 × 2.6 mm
Weight	1.88 ± 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 <sup>2</sup> C*
1 × CAN* (shared with UART3)

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

1. This is a paid service
2. Under open sky and without jamming

## Performance Specifications

Channel	1408 channels, based on NebulasIV	PPP-AR (RMS) <sup>2</sup>	Horizontal: 3 cm @5min Vertical: 6 cm @5min	
Frequency	GPS L1C/A, L1C, L2C, L2P(Y), L5	CLAS (RMS) <sup>2</sup>	Horizontal: 5 cm @1min Vertical: 10 cm @1min	
	BDS B1I, B3I, B1C, B2a, B2b			
	L5GLONASS G1, G2, G3	Time Accuracy (RMS)	20 ns	
	Galileo E1, E5a, E5b, E6	Velocity Accuracy (RMS)	0.03 m/s	
	QZSS L1C/A, L1C, L2C, L5, L6	TTFF	Cold Start < 12 s	
	NavIC L5	(Time to First Fix)	Hot Start < 4 s	
	SBAS L1C/A	Initialization Time	< 5 s (Typical)	
	L-Band	Initialization Reliability	> 99.9%	
Single Point Positioning(RMS)	Horizontal: 1.5 m Vertical: 2.5 m	Data Update Rate	Up to 50 Hz RTK data output	
DGPS (RMS)	Horizontal: 0.4 m	Differential Data	RTCM V3.X	
	Vertical: 0.8 m	Data Format	NMEA 0183, Unicore	
RTK (RMS)	Horizontal: 0.8 cm + 1 ppm			
	Vertical: 1.5cm + 1 ppm			
PPP (RMS) <sup>2</sup>	Horizontal: 5 cm @20min			
	Vertical: 10 cm @20min			
Observation Accuracy (RMS)	BDS	GPS	GLONASS	Galileo
B1I/B1C/L1C/L1C/A/G1/E1 Code	10 cm	10 cm	10 cm	10 cm
B1I/B1C/L1C/L1C/A/G1/E1 Carrier Phase	1 mm	1 mm	1 mm	1 mm
B2I/B2a/B2b/L5/E5a/E5b Code	10 cm	10 cm	10 cm	10 cm
B2I/B2a/B2b/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