

UM980

GPS/BDS/GLONASS/Galileo/QZSS
All-Constellation Multi-Frequency
High-Precision RTK Positioning
Module



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
- » Heading2 technology to provide orientation information
- » STANDALONE single-station high-precision positioning technology
- » Supports B2b-PPP, E6-HAS and QZSS L6E (MADOCA) PPP

Applications



Surveying and Mapping



Precision Agriculture

UM980 is Unicore's new-generation proprietary high-precision RTK positioning module based on the GNSS SoC NebulasIV which integrates RF, baseband and high-precision algorithm. The module supports GPS, BDS, GLONASS, Galileo, QZSS, NavIC and SBAS. The built-in multi-frequency anti-jamming technology enhances RTK calculation on multiple modes and frequencies, which significantly improves RTK initialization time, measurement accuracy and reliability in complex environments such as city blocks and tree shades. UM980 is well suited for high-precision navigation and positioning applications such as precision agriculture, surveying and mapping and so on.

Physical Characteristics

Packaging	54 pin LGA
Dimension	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 ² C*
1 × CAN* (shared with UART3)

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

Performance Specifications

Channel	1408 channels, based on NebulasIV			
Frequency	GPS L1C/A, L1C, L2C, L2P(Y), L5 BDS B1I, B3I, B1C, B2a, B2b GLONASS G1, G2, G3 Galileo E1, E5a, E5b, E6 QZSS L1C/A, L1C/B, L1C, L2C, L5, L6 NavIC L5 SBAS L1C/A			
Single Point Positioning(RMS)	Horizontal: 1.5 m Vertical: 2.5 m			
DGPS (RMS)	Horizontal: 0.4 m 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	< 12 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/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
Differential Data	RTCM V3.X			
Data Format	NMEA 0183, Unicore			