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 the new generation GNSS SoC - NebulasIV, which integrates RF, baseband, and high precision algorithm
- 17.0 x 22.0 x 2.6 mm SMD
- Supports on-chip RTK positioning calculation on all systems and multiple frequencies
- Supports GPS L1C/A/L1C/L2P(Y)/L2C/L5, BDS B1I/B2I/B3I/B1C/B2a/B2b, GLONASS G1/G2/G3, Galileo E1/E5a/E5b/E6, QZSS L1C/A/L1C/L2C/L5, NavIC L5 and SBAS L1C/A
- All-system multi-frequency RTK engine and advanced RTK technology
- Independent tracking of different frequencies and 60dB narrowband anti-jamming technology

Applications

- Surveying and Mapping
- Precision Agriculture

UM980 is Unicore's new-generation proprietary high-precision RTK positioning module based on the NebulasIV SoC which integrates RF, baseband and high-precision algorithm. The module supports GPS L1C/A/L1C/L2P(Y)/L2C/L5, BDS B1I/B2I/B3I/B1C/B2a/B2b, GLONASS G1/G2/G3, Galileo E1/E5a/E5b/E6, QZSS L1C/A/L1C/L2C/L5, NavIC L5 and SBAS L1C/A. 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. Relying on the excellent performance, 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

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 Interface

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/L1C/L2P(Y)/L2C/L5		
	BDS B1I/B2I/B3I/B1C/B2a/B2b		
	GLONASS G1/G2/G3		
	Galileo E1/E5a/E5b/E6		
	QZSS L1C/A/L1C/L2C/L5		
	NavIC L5		
	SBAS L1C/A		
Single Point Positioning(RMS)	Horizontal: 1.5 m	Time Accuracy(RMS)	20 ns
	Vertical: 2.5 m	Velocity Accuracy (RMS)	0.03 m/s
DGPS (RMS)	Horizontal: 0.4 m	Cold start	< 12 s
	Vertical: 0.8 m	Initialization Time	< 5 s (typical)
RTK (RMS)	Horizontal: 0.8 cm + 1 ppm	Initialization Reliability	> 99.9%
	Vertical: 1.5 cm + 1 ppm	Data Update Rate	50 Hz* Positioning

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			