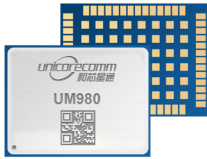# UM980

GPS/BDS/GLONASS/Galileo/QZSS
All-constellation Multi-frequency
High Precision RTK Positioning Module

17.0 × 22.0 × 2.6 mm

Applications

Surveying and Mapping

Lawn Mower

Precision Agriculture

UAV

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 BDS B1I/B2I/B3I/B1C/B2a/B2b* + GPS L1/L2/L5 + GLONASS L1/L2 + Galileo E1/E5a/E5b + QZSS L1/L2/L5 + SBAS

» All-system multi-frequency RTK engine and advanced RTK technology

» Independent tracking of each frequency and 60dB narrowband anti-jamming technology

Brief Introduction

UM980 is Unicore's new-generation proprietary high-precision RTK positioning module. By combining advanced hardware design and exclusive algorithms, UM980 supports BDS B1I/B2I/B3I/B1C/B2a/B2b*, GPS L1/L2/L5, GLONASS L1/L2, Galileo E1/E5a/E5b, QZSS L1/L2/L5, and SBAS.

The built-in multi-frequency anti-jamming technology realizes enhanced RTK engine calculation working on multiple modes and frequencies, which significantly improves RTK initialization speed, 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 UAV, lawn mower, precision agriculture, surveying and mapping and intelligent driving.

Physical Characteristics

Packaging	54 pin LGA
Dimension	17.0 × 22.0 × 2.6 mm
Weight	1.88±0.03g

Environmental Specifications

Working Temperature	-40°C~+85°C
Storage Temperature	-55°C~+95°C
Vibration	GJB150.16A-2009, MIL-STD-810F
Shock	GJB150.18A-2009, MIL-STD-810F
Humidity	95% No condensation

Communication Interface

3 × UART (LVTTL)

1 × I2C*

1 × SPI*

1 × CAN* (shared with UART3)

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

Basic Information

Channel	1408 channels, based on NebulasIV
Frequency	BDS: B1I, B2I, B3I, B1C, B2a, B2b*
	GPS: L1C/A, L1C*, L2P (Y), L2C, L5
	GLONASS: L1, L2
	Galileo: E1, E5a, E5b
	QZSS: L1, L2, L5

Performance Specifications

Single Point Positioning(RMS)	Horizontal: 1.5m	Time Accuracy(RMS)	20 ns
	Vertical: 2.5m	Velocity Accuracy (RMS)	0.03 m/s
DGPS (RMS)	Horizontal: 0.4m	Cold start	<30s
	Vertical: 0.8m	Initialization Time	<5s (typical)
RTK (RMS)	Horizontal: 0.8cm+1ppm	Initialization Reliability	>99.9%
	Vertical: 1.5cm+1ppm	Data Update Rate	50Hz* Positioning

Observation Accuracy (RMS)	BDS	GPS	GLONASS	Galileo
B1I/B1C/L1C*/L1C/A/G1/E1 Code	10cm	10cm	10cm	10cm
B1I/B1C/L1C*/L1C/A/G1/E1 Carrier Phase	1mm	1mm	1mm	1mm
B2I/B2a/B2b*/L5/E5a/E5b Code	10cm	10cm	10cm	10cm
B2I/B2a/B2b*/L5/E5a/E5b Carrier Phase	1mm	1mm	1mm	1mm
B3I/L2P(Y)/L2C/G2 Code	10cm	10cm	10cm	10cm
B3I/L2P(Y)/L2C/G2 Carrier Phase	1mm	1mm	1mm	1mm
Differential Data	RTCM V3.X			
Data Format	NMEA-0183, Unicore			