

# UM960

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



12.2 × 16.0 × 2.6 mm



## Features

- » High precision, low power consumption and compact size
- » Based on the new generation GNSS SoC -NebulasIV, which integrates RF, baseband and high-precision algorithm
- » 16.0 × 12.2 × 2.6 mm surface mount device
- » Supports all-constellation multi-frequency on-chip RTK positioning solution
- » All-constellation multi-frequency RTK engine and advanced RTK technology
- » Tracking different frequencies independently
- » Excellent anti-jamming and anti-spoofing capabilities, supporting jamming detection and spoofing detection

## Applications



Drone Light Show



Robotic Lawn Mower



GIS  
Handheld



Robotics

UM960 is Unicore's new generation high-precision RTK positioning module based on the proprietary GNSS SoC-NebulasIV, which integrates RF, baseband and high-precision algorithm. It supports all constellations, including GPS, BDS, GLONASS, Galileo and QZSS, and can track multiple frequencies concurrently.

With its superb performance, UM960 is perfectly suited for high-precision navigation and positioning applications, such as drone light show, robotic lawn mowers, handheld devices, high-precision GIS, robotics, etc.

## Physical Characteristics

Packaging	24 pin LGA
Dimension	12.2 × 16.0 × 2.6 mm
Weight	1.11 g ± 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

## Power Supply

Voltage	3.0 V ~ 3.6 V DC
Power Consumption	450 mW (typical)

## Communication Interfaces

3 × UART (LVTTL)

1 × I<sup>2</sup>C\*

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

## Performance Specifications

Channel	1408 channels, based on NebulasIV			
Frequency	GPS L1C/A, L2C, L2P(Y), L5			
	BDS B1I, B3I, B1C, B2a, B2b			
	GLONASS G1, G2			
	Galileo E1, E5a, E5b, E6			
	QZSS L1C/A, L2C, 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	Data Update Rate	20 Hz positioning	
	Vertical: 0.8 m	Cold Start	< 30 s	
RTK (RMS)	Horizontal: 0.8 cm + 1 ppm	Initialization Time	< 5 s (typical)	
	Vertical: 1.5 cm + 1 ppm	Initialization Reliability	> 99.9%	
Observation Accuracy (RMS)	BDS	GPS	GLONASS	Galileo
B1I/B1C/L1C/A/G1/E1 Code	10 cm	10 cm	10 cm	10 cm
B1I/B1C/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/L2C/L2P(Y)/G2/E6 Code	10 cm	10 cm	10 cm	10 cm
B3I/L2C/L2P(Y)/G2/E6 Carrier Phase	1 mm	1 mm	1 mm	1 mm
Differential Data	RTCM V3.X, RTCM V2.3, CMR			
Data Format	NMEA 0183, Unicore			