UM681

Industrial-Grade Multi-GNSS Dual-Frequency High-Precision RTK & INS Integrated Positioning Module

17.0 x 22.0 x 2.6 mm

Industrial Grade

Features

- Supports concurrent operation of GPS, BDS, GLONASS and Galileo (L1 + L5)
- Provides high-precision positioning service via standard interface
- Centimeter-level positioning accuracy & raw data output
- Production process conforms to IATF16949
- Built-in MEMS, output of integrated navigation results with a single module, continuous positioning even in tunnels and underground parking lots.

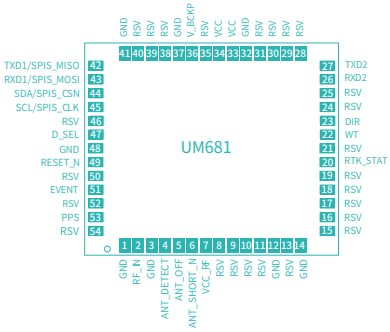
Applications

Industria Applications

Ordering Information

Supply at multiples of 250 pieces

UM681 is a high-precision GNSS + IMU integrated positioning and navigation module developed by Unicore for industrial applications. The module is based on the proprietary multi-system, dual-frequency, high-performance GNSS SoC - UC6580I, and is equipped with a 6-axis IMU. It can achieve centimeter-level positioning and can maintain continuous positioning in environments without satellite signals, such as tunnels and underground garages.



Physical Specifications

Dimensions	17.0 x 22.0 x 2.6 mm
Package	54 pin, LGA
Operating Temperature	-40 °C ~ +85 °C/105 °C
Storage Temperature	-40 °C ~ +85 °C/105 °C

Electrical Specifications

Voltage	2.7 V ~ 3.6 V DC
LNA	2.7 V ~ 3.3 V, < 100 mA
Power Consumption[1]	240 mW

Interfaces

- 2 × UART (LVTTL)
- 1 × I²C*
- 1 × SPI*
- 1 × 1PPS (LVTTL)

Functional Characteristics

Passive Antenna, Active Antenna, AGNSS *

Note: * Supported by specific firmware.
1 Open sky, continuous tracking
2 68% at 30 m/s for dynamic operation,open sky

Performance Specifications

Channel	96 channels, based on UFirebird II	
Frequency	GPS L1C/A, L1C*, L5	
	BDS B1I, B1C*, B2a	
	GLONASS G1*	
	Galileo E1, E5a	
	NavIC L5*	
	QZSS L1, L5	
	SBAS L1C/A	
Modes	Single-system standalone positioning	
	Multi-system joint positioning	
Time to First Fix (TTFF)	Cold Start: < 26 s	
	Hot Start: < 2 s	
	Reacquisition: < 2 s	
Single Point Positioning (RMS)	Horizontal: 1.5 m (open sky)	
	Vertical: 2.5 m (open sky)	
RTK (RMS)	Horizontal: 1 cm + 1 ppm (open sky)	
	Vertical: 2 cm + 1 ppm (open sky)	
Positioning error of INS only	< 1% of the distance traveled without GNSS signals	
Velocity Accuracy(RMS)[2]	0.05 m/s (open sky)	
1PPS	20 ns	
Sensitivity	GNSS	
	Tracking	-162 dBm
	Cold Start	-147 dBm
	Hot Start	-157 dBm
	Reacquisition	-158 dBm
Data Update Rate	1 Hz / 5 Hz / 10 Hz	
Correction	RTCM V3.X	
Data Format	NMEA 0183, Unicore	