

UM681A

Automotive-grade Multi-GNSS
Dual-frequency High-precision
RTK & INS Integrated Position-
ing Module



22.0 x 17.0 x 2.6 mm

Automotive
Grade



Product Characteristics

- » Supports concurrent operation of GPS, BDS, GLONASS and Galileo
- » Provides high-precision positioning service via standard interface
- » Centimeter-level positioning accuracy & raw data output
- » GNSS chip qualified according to AEC-Q100 and 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



Intelligent
Driving



V2X



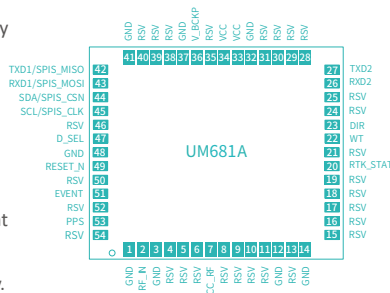
T-BOX

Ordering Information

Supply at multiples of 250 pieces

Brief Introduction

UM681A is a high-precision dual-frequency GNSS & INS integrated navigation module developed by Unicore for the intelligent driving market. Based on the proprietary multi-system dual-frequency high-performance SoC - UC6580A, the module supports multi-system dual-frequency joint positioning or single system standalone positioning with centimeter-level accuracy.



Physical Specifications

Dimensions	22.0 x 17.0 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 (LVTTTL)

1 × I²C*

1 × SPI*

1 × 1PPS (LVTTTL)

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
	BDS+GPS+GLONASS+Galileo
	Tracking -162 dBm
Sensitivity	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