

# UM220-INS NL

High-end GNSS+MEMS Integrated Navigation and Positioning Module



16.0 x 12.2 x 2.6 mm

## Product Characteristics

- » Miniaturized All-in-One design
- » Built-in MEMS device, output of integrated navigation and positioning results with one single module
- » 100% positioning continuity even in tunnels or underground parking lots
- » In-dash integrated navigation algorithm, supporting odometer pulse / vehicle speed input
- » Support A-GNSS
- » Compatible with UM220-INS N

## Applications



In-Dash Vehicle Navigation



High-end Navigation

## Brief Introduction

UM220-INS NL is an industrial grade GNSS+MEMS module designed for in-dash vehicle navigation and high-end navigation. Based on Unicore's proprietary low power consumption GNSS SoC - UC6226, and with the built-in 6-axis MEMS, UM220-INS NL can directly output GNSS+MEMS integrated positioning results, which is most suitable for applications requiring high accuracy, high reliability, and high continuity.

## Ordering Information

Supply at multiples of 500 pieces

UM220-INS NL			
13	GND	GND	12
14	RSV	RF_IN	11
15	FWD	GND	10
16	RSV	VCC_RF	9
17	RSV	RSV	8
18	RSV	RXD2	7
19	RSV	TXD2	6
20	TXD1	RSV	5
21	RXD1	WHEEL TICK	4
22	V_BCKP	TIME PULSE	3
23	VCC	RSV	2
24	GND	nRESET	1

## Functional Ports

2 x UART / 1 x SPEED / 1 x FWD1 / 1 x 1PPS  
Data Ports:NMEA 0183 (Compatible with BDS);  
Unicore

## Physical Specifications

Dimensions	16.0 x 12.2 x 2.6 mm
Package	24 pin SMD
Temperature	Operating -40°C~+85°C Storage -45°C~+90°C

## Electrical Specifications

Voltage	3.0V ~ 3.6 VDC
LNA Feed	2.7 V ~ 3.3 V
Power Consumption <sup>2</sup>	90 mW

**NOTE:** The parts marked with \* are optional configurations.  
1 Typical conditions, <30m/s open sky  
2 Open sky, continuous tracking

## Performance Specifications

Channel	64 channels, based on UFirebird				
Frequency	BDS B1 GPS L1 GLONASS L1*				
Modes	Single-System Positioning	Positioning Accuracy (RMS)	2.5m CEP (Dual-System Horizontal)		
	Multi-System Positioning		<5% x driving distance (inertial navigation, without GNSS signal)		
Time to First Fix (TTFF)	Cold Start: 30 s	Velocity Accuracy <sup>1</sup> (RMS)	0.02m/s (GPS+GLONASS+Galileo)		
	Hot Start: 1 s		0.01m/s (GPS+BeiDou+Galileo)		
	Reacquisition: <1 s				
Update Rate	1 Hz/5Hz/10Hz	1PPS	Support		
Sensitivity	GPS+GLO+GA	GPS+BD+GA	BDS	GPS	GLO
Tracking	-161dBm	-161dBm	-159dBm	-161dBm	-158dBm
Acquisition	-147dBm	-147dBm	-144dBm	-147dBm	-142dBm
Hot Start	-154dBm	-154dBm	-149dBm	-154dBm	-148dBm
Reacquisition	-157dBm	-157dBm	-156dBm	-157dBm	-153dBm