

UM621

Industrial-Grade Multi-GNSS
Dual-Frequency Integrated Positioning
Module



16.0 x 12.2 x 2.4 mm



Features

- » industrial-grade dual-frequency GNSS+MEMS integrated navigation and positioning module
- » Supports GPS L1 C/A, L5; BDS B1I, B1C, B2a; GLONASS G1; Galileo E1B/C, E5a; NavIC L5*; QZSS and SBAS
- » Supports multi-system dual-frequency positioning, multi-system single-frequency or positioning single-system standalone positioning
- » Built-in MEMS to output integrated positioning results with a single module
- » Supports odometer pulse input/vehicle speed input
- » Supports the output of integrated positioning results and GNSS-only positioning results through one serial port
- » 100% continuous navigation even in tunnels or underground parking lots
- » Algorithm adaptable to low-dynamic application scenarios

Applications



Industrial
Applications

UM621 is a GNSS dual-frequency + MEMS integrated navigation module developed by Unicore Communications. Based on the proprietary multi-system dual-frequency high-performance SoC-UC6580I, and equipped with a 6-axis MEMS device, the module supports multi-system dual-frequency joint positioning or single-system standalone positioning, and can directly output GNSS + MEMS integrated positioning results, which ensures the continuity of positioning even in tunnels or underground parking lots.

| | | | |
|-------|---------------|------------|----|
| 13 | GND | GND | 12 |
| 14 | LAN_EN | RF_IN | 11 |
| 15 | FWD | GND | 10 |
| 16 | NC | VCC_RF | 9 |
| 17 | NC | nRESET | 8 |
| UM621 | | | |
| 18 | SDA/SPI CS_N | NC | 7 |
| 19 | SCL/SPI CLK | TXD2 | 6 |
| 20 | TXD1/SPI MISO | RXD2 | 5 |
| 21 | RXD1/SPI MOSI | WHEELTICK | 4 |
| 22 | V_BCKP | TIME PULSE | 3 |
| 23 | VCC | DEL | 2 |
| 24 | GND | nRESET | 1 |

Ordering Information

Supply at multiples of 500 pieces

Physical Specifications

| | |
|-----------------------|----------------------|
| Dimensions | 16.0 x 12.2 x 2.4 mm |
| Package | 24 pin, LCC |
| Operating Temperature | -40 °C ~ +85 °C |
| Storage Temperature | -40 °C ~ +85 °C |

Electrical Specifications

| | |
|--------------------------------|------------------------|
| Voltage | 2.7 V ~ 3.6 V DC |
| LNA | 2.7 V ~ 3.3 V, <100 mA |
| Power Consumption ³ | 168 mW |

Interfaces

- 2 x UART (LVTTL)
- 1 x I²C*
- 1 x SPI*
- 1 x SPEED
- 1 x FWD
- 1 x 1PPS (LVTTL)

Functional Characteristics

Passive Antenna, Active Antenna, AGNSS

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

Performance Specifications

| | |
|--|--|
| Channel | 96 channels, based on UFirebird II GPS L1C/A, L5 BDS B1I, B1C, B2a GLONASS G1 |
| Frequency | Galileo E1B/C, E5a NavIC L5* QZSS L1C/A, L1S, L5 SBAS L1C/A |
| Positioning Mode | Single-System Standalone Positioning Multi-System Joint Positioning |
| Time to First Fix (TTFF) ¹ | Cold Start: < 26 s Hot Start: < 2 s Reacquisition: < 2 s |
| Positioning Accuracy(CEP) ¹ | Horizontal: 1.5 m (Dual-frequency quad-system, open sky) |
| Positioning Error of INS only | < 2% of the distance traveled without GNSS signals |
| Velocity Accuracy(RMS) ² | 0.05 m/s |
| 1PPS | 20 ns GNSS |
| Sensitivity | Tracking -162 dBm Cold Start -148 dBm Hot Start -156 dBm Reacquisition -160 dBm |
| GNSS Data Update Rate | 1 Hz / 5 Hz / 10 Hz |
| INS Data Update Rate | 50 Hz / 100 Hz |
| Data Format | NMEA 0183, Unicore |