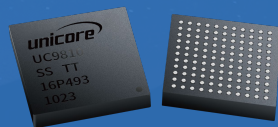


NebulasIV UC9810

All-constellation

All-frequency RF Baseband and High-precision Algorithm
Integrated GNSS SoC



NebulasIV UC9810 is Unicore’s new generation proprietary GNSS SoC that integrates RF, baseband, and high precision algorithm. By leveraging advanced process node architecture, high-performance multi-mode baseband GNSS processor and embedded microprocessor, the chip delivers superb performance and maintains low power consumption. UC9810 supports 1408 channels and tracks multiple signals, including GPS, BDS, GLONASS, Galileo, QZSS, NavIC, SBAS, and L-band. The integrated RTK matrix processing technology allows the chip to deliver an enhanced all-constellation all-frequency centimeter-level RTK positioning and orientation.

NebulasIV features high integration, high performance, low power consumption and compact form factor. It is an ideal solution for technically demanding high-precision applications, such as drones, robotic lawn mowers, precision agriculture, surveying and mapping, intelligent driving and timing.

NebulasIV supports various external interfaces that cover almost all common application interfaces, including RTC power supply, PPS, EVENT, CAN, network, UART, SPI, I2C, odometer, configurable GPIOs, etc.

Applications



UAV



Surveying and Mapping



Robot



Telecom Timing



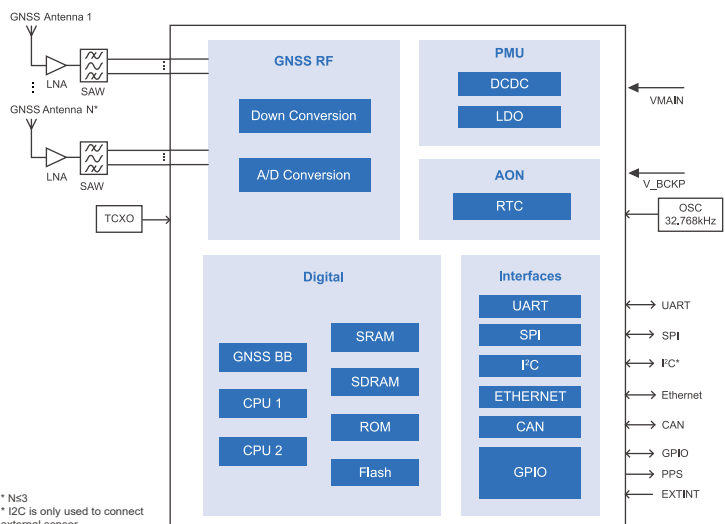
Deformation Monitoring



Autonomous Driving



Precision Agriculture



Key Technologies

- » Dual-processor primary-secondary asynchronous architecture
- » Dedicated RTK matrix processor
- » UPF low-power technology
- » All-constellation and all-frequency joint acquisition and tracking algorithm
- » Anti-jamming capability (JamShield)
- » RTKKEEP technology

Features

- » All-constellation all-frequency RF, baseband and high-precision algorithm integrated GNSS SoC
- » Completely independent intellectual property right
- » Supports GPS L1C/A, L1C, L2C, L2P(Y), L5; BDS B1I, B2I, B3I, B1C, B2a, B2b; GLONASS G1, G2, G3; Galileo E1, E5a, E5b, E6; QZSS L1, L2, L5; NavIC L5; SBAS; L-band
- » Ultra-small size of 7 × 7 mm with a minimum PCB layout area of only 12×16 mm
- » Ultra-low power consumption of 300mW
- » 1408 channels and up to 100 Hz data update rate
- » All-constellation all-frequency on-chip RTK positioning and dual-antenna heading solution

Performance

Channel	1408 channels
Frequency	GPS L1C/A, L1C, L2C, L2P(Y), L5 BDS B1I, B2I, B3I, B1C, B2a, B2b GLONASS G1, G2, G3 Galileo E1, E5a, E5b, E6 QZSS L1, L2, L5 NavIC L5 SBAS L-band
Dimensions	7 × 7 mm
Cold Start	< 12 s
RTK Initialization Time	< 5 s
Single Point Positioning (RMS)	Horizontal: 1.5 m Vertical: 2.5 m
DGPS (RMS)	Horizontal: 0.4 m Vertical: 0.8 m
RTK (RMS)	Horizontal: 0.8 cm + 1 ppm Vertical: 1.5 cm + 1 ppm
Initialization Reliability	> 99.9%
Differential Data	RTCM V3.X
Data Update Rate	100 Hz
Timing Accuracy	2.5 ns (1σ)
Power Consumption	300 mW (single antenna)
Heading Accuracy	0.1°/1 m baseline