CHCNAV

CGI-230

HIGH-PRECISION COMBINED INERTIAL GUIDANCE SYSTEM

NAVIGATION & INFRASTRUCTURE

CHCNAV

HIGH-PRECISION COMBINED INERTIAL GUIDANCE SYSTEM

CGI-230 is a new generation of automotive-grade high-precision tight combination inertial guidance system launched by CHCNAV. Based on the full-system full-frequency point GNSS module and 6-axis tactical IMU, the product adopts CHCNAV's new generation of closely coupled algorithm engine, and through the fusion and solution of GNSS, INS, DR information, it can still provide continuous and high-precision navigation information such as position, speed and attitude in urban canyons, urban overpass, tree-shade, high-speed, park and other satellite signal occlusion or multipath scenarios, which has a higher fixed rate and robustness than the loosely coupled algorithm.

The product supports serial port, 100Base-T1 automotive Ethernet, CANFD and other communication methods; based on Autosar software architecture development, it supports fault messages, UDS diagnosis, gPTP\CanTsyn, PPS time synchronization scheme, and supports general vehicle, low-speed carrier and other modes.

Provide stable and reliable high-precision PVAT solutions for logistics and distribution, park cleaning, low-speed robots, RoboTaxi, trunk line logistics, intelligent agricultural machinery and other industries.

AREAS OF APPLICATION

Park Logistics

Agricultural farmland

Autonomous Vehicle Driving

Dry logistics

SPECIFICATIONS

GNSS Performance Indicators

Signal tracking	BDS: B1/B2/B3 GPS: L1/L2/L5 GLONASS: L1/L2 Galileo: E1/E5a/E5b QZSS: L1/L2/L5
Positioning accuracy (RMS)	Single: L1/L2: 1.2 m DGPS: 0.4 m RTK: 1 cm+1 ppm (Horizontal), 2 cm+1 ppm (Altitude)
Heading accuracy (RMS)	0.1°/2 m baseline
RTK solution frequency	20 Hz (max)[1]
Speed accuracy (RMS)	0.03 m/s
PPS time synchronization accuracy (RMS)	20 ns
Cold start time (RMS)	≤35 s

IMU Performance Specifications

IMU type	MEMS
Gyro output operating range	±300 °/s
Gyro bias instability (Allan 1σ)	1.8 °/h
Accelerometer output operating range (Allan 1σ)	±6 g

IMU Performance Specifications

Accelerometer bias instability (Allan 1σ)	≤15 ug
Accelerometer angular random walk (Allan 1σ)	0.035 m/s/√hr
Fusion output frequency	100 Hz

Communication Interface

External interface	Primary connector: 1×power, 3×RS232,1×PPS,2×CANFD, 1×100Base-T1,2×Antenna RF interface

Environmental

Operating temperature	-40°C ～ +75°C
Storage temperature	-40°C ～ +85°C
Humidity	95% non-condensing
Protection class	IP52

Physical Dimensions and Electrical Characteristics

Power input	9～32 V DC (Standard Adaptation 12 V DC)
Power consumption	＜4 W (typical)
Physical dimensions	154×105×35 mm
Weight	＜400 g (without antenna and cable)

Performance during GNSS outages RMS [2]

GNSS outage duration	Positioning mode	Location accuracy (m)		Velocity accuracy (m/s)		Attitude accuracy (°)	
		Horizontal	Vertical	Horizontal	Vertical	Heading	Attitude
0s	RTK	0.02	0.03	0.02	0.01	0.08	0.08
10s	RTK	0.2	0.1	0.05	0.02	0.12	0.09

Note 1: 20Hz RTK data output, need to use GNSS special RS232_B port.

Note 2: The GNSS interruption and loss of lock test is conducted based on typical urban tunnel test scenarios for passenger vehicles and is for reference only. The test results may vary depending on the type of carrier, carrier speed, and application environment. Please refer to the actual test scenarios for accurate results. The parameter values listed in this document are either theoretical values or values measured by CHCNAV personnel under specific controlled test conditions. Due to individual product differences, firmware versions, and usage conditions, the actual values during usage may vary. Please refer to the actual usage conditions. To provide the most accurate product information and parameter values,CHCNAV may make real-time adjustments and corrections to the text, parameter values, and other content in this document to match the actual product performance, specifications, and other information. Due to real-time changes in product batches and production supply factors, we may not notify you of such modifications and adjustments. Please refer to the real-time information on the official website.

* All specifications are subject to change without notice.

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