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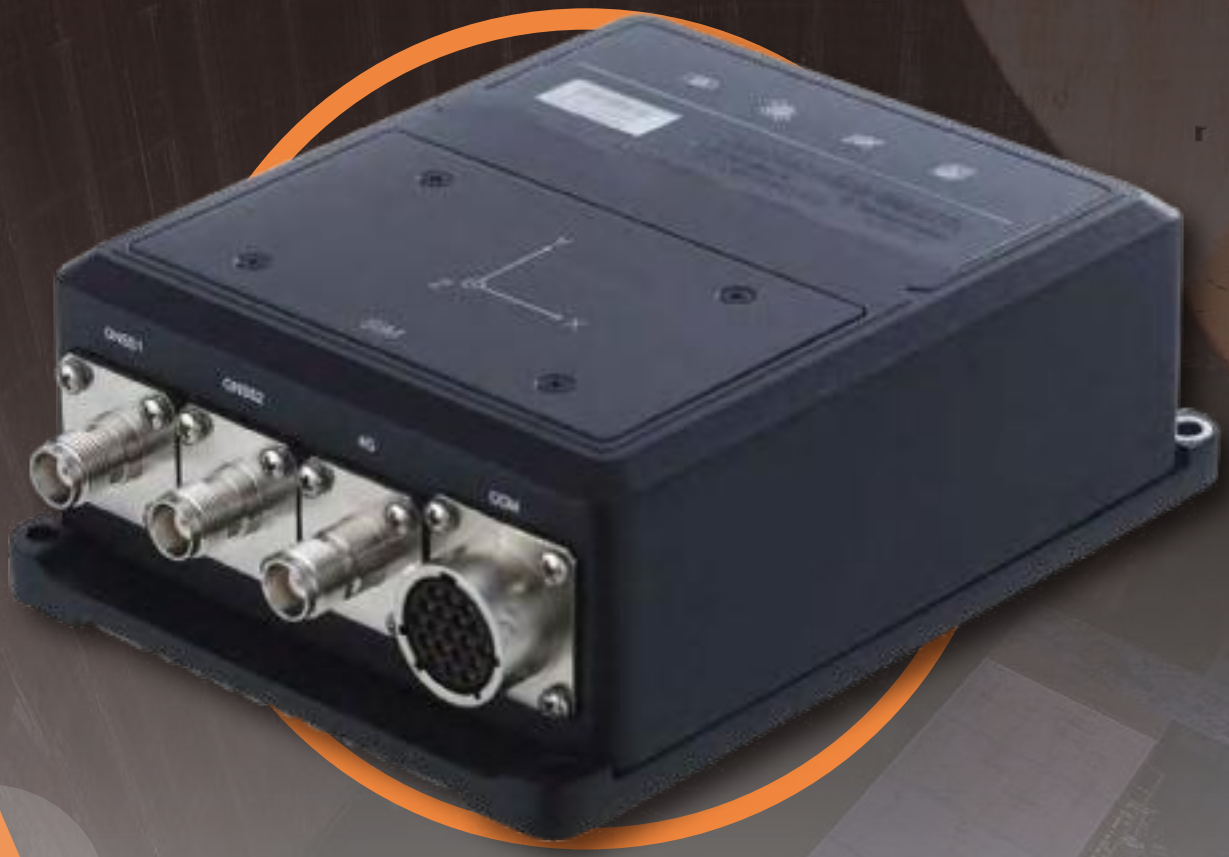
# CGI-610

## GNSS/INS SENSOR



NAVIGATION &
INFRASTRUCTURE

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# TIGHTLY COUPLED HIGH-PERFORMANCE GNSS/INS SYSTEM

The CGI-610 GNSS/INS sensor is a high-precision dual-antenna receiver providing reliable and accurate navigation and positioning solutions for demanding ground, marine or aerial applications. Specifically designed to meet the requirements of 3D control and autonomous vehicle guidance applications, the CGI-610 is particularly efficient in urban canyons, when GNSS signals are lost and in other harsh environments where navigation results are easily degraded.

The tight fusion of the latest GNSS technology with an industrial-grade MEMS IMU is powered by CHCNAV algorithms to provide accurate hybrid position, attitude and velocity data up to 100 Hz. With its extremely rugged and lightweight enclosure, the CGI-610 GNSS/INS sensor is built to meet the highest protection standards and ensure uninterrupted performance.

## ROBUST POSITIONING AND ATTITUDE

**555-channel GNSS + MEMS IMU**

Tightly integrated dual-antenna GNSS technology with industrial MEMS IMU provides continuous, reliable and high-precision real-time positioning and orientation data, even in complex and obstructed environments where GNSS outages occur.

## EXTENDED CONNECTIVITY AND WEB CONFIGURATION

**Rich hardware interfaces make the integration seamless in all applications**

The CGI-610 GNSS/INS offers high connectivity integration to achieve accurate positioning and attitude from GNSS NTRIP/TCP corrections. RTK centimeter initialization is fast and reliable to ensure that you can get started in a fraction of time. With its serial ports, CAN and low latency PPS output, the CGI-610 GNSS/INS sensor offers unsurpassed compatibility for a wide range of industrial and machine applications.

## EXTERNAL SENSOR INPUT

**Odometer sensor supports for ultimate results**

When longer GNSS outages are likely to be encountered (tunnels, bridges,...), an external odometer sensor for terrestrial vehicles can provide an additional independent measurement of displacement and velocity, which is fused with the GNSS/INS navigation solution.

## HIGH-FREQUENCY OUTPUTS

**Up to 100 Hz data**

The CGI-610 is a powerful GNSS/INS system supporting data output up to 100 Hz to meet the requirements of highly dynamic applications (airplane, train, car, ...). Its versatile design allows a perfect integration in many applications where uninterrupted performance is required, such as marine, industrial automation, robotics, machine control, port automation...

## HIGH-RELIABILITY INDUSTRIAL DESIGN

**Secure your investment in any machine control application**

IP67 dust and water resistant certification and industrial-grade power management integrated circuit guarantee reliable and consistent operation in the harshest environments. The CGI-610 is vibration and shock resistant and is protected against electrostatic discharge.

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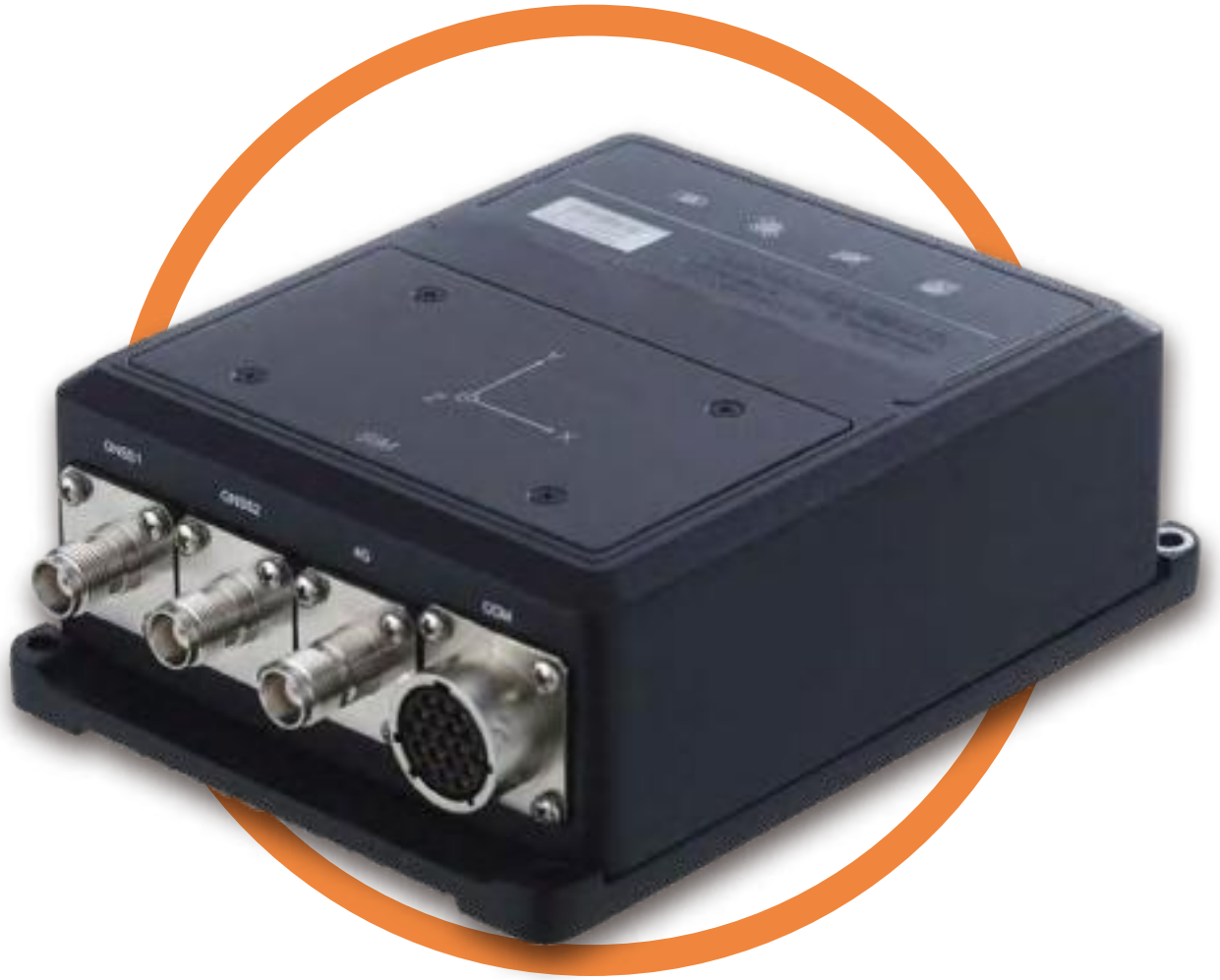
RUGGED
GNSS/INS FUSION



# RELIABLE POSITION AND ATTITUDE

# SPECIFICATIONS

| Performance | |
|---|---|
| Channel | 555 Channels |
| **Signal Tracking** | |
| **Position antenna** | |
| GPS | L1C/A, L1C, L2P, L2C, L5 |
| BDS | B1,B2 |
| GLONASS | L1C/A, L2C, L2P, L3, L5 |
| GALILEO | E1, E5a, E5b, E5AltBOC |
| SBAS | L1, L5 |
| QZSS | L1 C/A, L1C, L2C, L5 |
| **Vector antenna** | |
| GPS | L1C/A, L1C, L2P, L2C |
| BDS | B1, B2 |
| GLONASS | L1C/A, L2C/A, L2P |
| GALILEO | E1, E5b |
| QZSS | L1 C/A, L1C, L2C |
| Attitude accuracy | 0.1°(Baseline length ≥ 2 m) |
| Positioning accuracy | Single 1.2 m<br>DGPS 0.4 m<br>RTK 1 cm+1 ppm |
| **Maximum data update rate** | |
| RTK Position | 5 Hz |
| INS Position/Attitude | 100 Hz |
| Initialization time | ＜ 60 seconds |
| Initialization reliability | > 99.9% |
| Signal Reacquisition | ≤ 1 seconds |
| Time to First Fix | Cold start ≤ 45 seconds<br>Hot start ≤ 30 seconds |
| **IMU Performance** | |
| **Gyroscope Performance** | |
| Gyro type | MEMS |
| Gyro range | ±500 deg/s |
| Gyro bias stability | 2.5 deg/s |
| Angular Random Walk | 0.15 deg/s（x-axis and y-axis）<br>0.2 deg/s（z-axis） |
| **Accelerometer Performance** | |
| Accelerometer | ±8 g |
| Accelerometer bias stability | 3.6 μg |
| Velocity Random | 0.012 m/sec/√hr |

| Communication Ports | |
|---|---|
| 1 x RS422 Serial port | up to 921,600 bps |
| 3 x RS232 Serial port | up to 921,600 bps |
| 1 x CAN | Up to 1 Mbps |
| 1x Micro USB | |
| Wi-Fi | 802.11 b/g/n |
| Network modem | LTE:B1 B3 B7 B8 B20<br>3G:B1 B8<br>2G:B3 B8 |
| 1 x 4G Antenna port | TNC |
| 2 x GNSS Antenna connector | TNC |
| 1 x PPS | |
| 1 x Power interface | |
| **Environmental** | |
| Operating Temperature | -40°C to +75°C |
| Storage Temperature | -40°C to +85°C |
| Humidity | 95% non-condensing |
| Water/Dust Rating | IP67 |
| Vibration | MIL-STD-810G |
| Shock | IEC-60068-2-27 |
| Anti-static | ISO10605 Contact±8 kv Air ±15 kv |

| Included Accessories |
|---|
| 1 x Power cable<br>1 x 19 PIN cable<br>2 x GNSS Antenna<br>1 x 4G Antenna<br>2 x Magnetic antenna holder |

| Physical And Electrical | |
|---|---|
| Size | 162 mm × 120 mm × 53 mm |
| Weight | 1.15 kg |
| Input voltage | 9~32 VDC (Standard adaptation 12 VDC) |
| Power | < 5 W (Typical) |

*All specifications are subject to change without notice.



**Performance during GNSS outages**

| Outage duration | Positioning mode | Position accuracy (m) RMS | | Velocity accuracy (m/s) RMS | | Attitude accuracy (degree) RMS | | |
|---|---|---|---|---|---|---|---|---|
| | | Horizontal | Vertical | Horizontal | Vertical | Roll | Pitch | Heading |
| 0s | RTK | 0.02 | 0.03 | 0.03 | 0.02 | 0.10 | 0.10 | 0.10 |
| 10s | RTK | 0.30 | 0.15 | 0.15 | 0.05 | 0.15 | 0.15 | 0.17 |