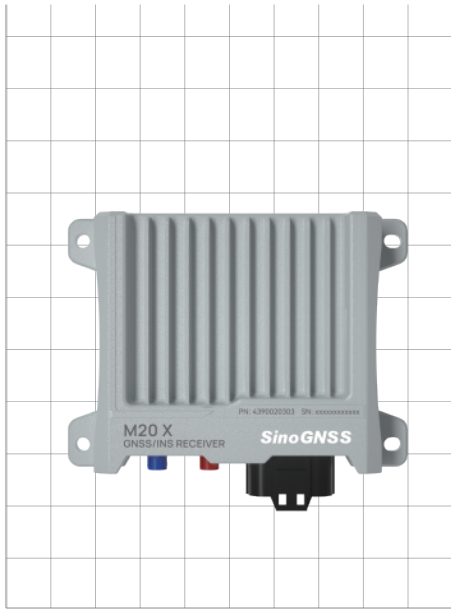


98 mm



134 mm

Size: 134mm×98mm×30.2mm

Weight: 374±20g

## Features

GPS L1/L2/L5, BeiDou B1/B2/B3, GLONASS G1/G2,

Galileo E1/E5a/E5b, QZSS, IRNSS, SBAS

High-reliability Automotive-grade Design

Support GNSS+INS Navigation

High Positioning and Attitude Performance

Up to 100Hz Data Outputs

Support External Odometer

Internal Adaptive Anti-interference Algorithm

# M20 X GNSS/INS Receiver

## AUTOMOTIVE-GRADE DESIGN

The entire system adopts automotive-grade design, complying with IATF16949 and PPAP manufacturing processes. It is equipped with SinoGNSS's self-developed high-precision baseband RF integrated SoC chip, meeting AEC-Q100 certification standards. Additionally, it features a high-precision IMU that meets the functional safety ASIL B level requirements.

## HIGH-PRECISION FUSION ALGORITHM ENGINE

The high-precision RTK/IMU fusion algorithm engine integrates GNSS signal anti-interference and anti-multipath technologies, significantly improving the combined navigation and positioning accuracy in shaded or partially obstructed environments. The IMU raw data is compensated with full-temperature calibration, and combined with years of DR algorithm technology accumulation, it delivers superior positioning performance in fully obstructed scenarios such as tunnels.

## RICH COMMUNICATION INTERFACES

The M20 X GNSS module is equipped with a comprehensive suite of communication interfaces, including Ethernet, CAN/CAN FD, RS232, and PPS, it also supports external wheel speed sensor connection.

## BROADER APPLICATION SCENARIOS

The M20 X delivers continuous high-precision, highly reliable, and robust positioning/navigation in complex scenarios. It serves diverse industries including robobus, robotaxi, logistics vehicles.

## Signal Tracking

GPS	L1C/A, L2P, L2C, L5, L1C*
BDS	B1I, B2I, B3I, B1C*, B2a, B2b*
GLO	G1, G2
GAL	E1, E5b, E5a, E5 AltBoC*, E6C*
QZSS*	L1C/A, L2C, L5, L1C*
SBAS*	L1C/A, L5
IRNSS*	L5

## Performance Specifications

Cold Start	< 20s
Hot Start	< 10s
Signal Reacquisition	< 1s
RTK Initialization Time	5s
Initialization Reliability	99.90%
PPP Convergence Time	20min
Time Accuracy	20ns
Velocity Accuracy	0.02 m/s
Heading Accuracy	0.15°/R <sup>1</sup>

## Positioning Specifications

Standalone	1.5m Horizontal 3m Vertical
Single Baseline RTK	8 mm + 1 ppm Horizontal 15 mm + 1 ppm Vertical
PPP	0.1m Horizontal 0.2m Vertical

## IMU

Gyro <sup>2</sup>	
Range	±300°/s
Zero Bias	0.1°/s
Repeatability	
Zero Bias Over Temperature	0.3°/s
Zero Bias Stability	1.8°/h (XY) 1.4°/h (Z)
Angular Random Walk	0.09°/√h(XY) 0.10°/√h(Z)
Accelerometer <sup>2</sup>	
Range	±300°/s
Zero Bias	0.1°/s
Repeatability	
Zero Bias Over Temperature	0.3°/s
Zero Bias Stability	1.8°/h (XY) 1.4°/h (Z)
Angular Random Walk	0.09°/√h(XY) 0.10°/√h(Z)

### Note:

\*\*upgradeable

1. R(meter) is the length of two GNSS antennas

2. Due to product iterations and technical updates, parameters and specifications may change periodically

3. Odometer not connected

## Integrated Navigation

Loss of Lock Horizontal Position Drift	≤1% @1km/60s <sup>3</sup>
Loss of Lock Heading Drift	0.15°@60s
Fix Recovery Time	≤5s
Data Rate	GNSS Raw Observation: 5Hz RTK Positioning: 5Hz GNSS+INS Positioning: 100Hz (200Hz Optional) IMU Raw Data Rate: 100Hz(200Hz Optional)

## Data Format

NMEA-0183	GPGGA, GPGSV, GPGLL, GPGSA, GPGST, GPHDT, GPRMC, GPVTG, GPZDA
Custom ASCII Format RTCM3.X	INSPVA, INSPVAX, BESTPOS 1004~1008,1012,1019,1020, 1033,1042,1045/1046, 1230
MSM3-MSM7	1073~1077,1083~1087, 1123~1127,1093~1097

## Communication

External Interface	On-board Ethernet*1, CAN/CAN FD*2, RS232 serial port*2, PPS*1
Antenna Interface	2*GNSS antenna interface (Fakra-A, Fakra-C)

## Electrical

Input Voltage	5V~32V
Power Consumption	3W

## Environmental

Working Temperature	-40 °C to + 85 °C
Storage Temperature	-55 °C to + 95 °C
Humidity	100% non-condensing
Waterproof	IEC 60529 IPX2
Dustproof	IEC 60529 IP5X
Vibration	JESD22-B103

## Physical

Size (L × W × H)	134mm×98mm×30.2mm
Weight	374±20g

## Antenna Interface

Impedance Matching	50Ω
LNA Power: External	+3.3V@(0-100) mA
LNA Gain	20 ~ 35dB