



# HD9300 SERIES PRECISE POSITIONING CYNOSURE III GNSS CHIP

## INTRODUCTION

ALLYSTAR HD9300 series is highly integrated GNSS receiver chip based on the state of art CYNOSURE III architecture integrating multi-band multi-system GNSS RF and baseband. It is the World's 1st multi-band multi-system SoC chip which supports BDS-3. It is capable of tracking all global civil navigation systems (GPS, BDS, GALILEO, GLONASS, IRNSS, QZSS and SBAS) in all bands (L1, L2, L5, L6).

The HD9300 series comes with built-in support for standard RTCM Protocol, supporting multi-band multi-system high precision raw data output for any kind of 3rd party integration and application.

It is also integrated RTK technology for centimeter-level navigation accuracy with correction data input from base stations.

## HIGHLIGHTS

- Concurrent multi-band GNSS reception
- Support BDS-3 signal
- Support all civil GNSS signals
- Multi-band multi-constellation raw data output
- Multi-band multi-constellation RTK
- Smart jammer detection and suppression
- Support CAN interface

## APPLICATIONS

- Smart driving
- Unmanned aerial vehicle
- Precise agriculture
- Mechanical equipment control



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## GENERAL SPECIFICATIONS

### GNSS Engine

Cynosure III GNSS Engine  
 136 channels & DSP accelerator

### Update Rate

GNSS Max. 20Hz

### GNSS Reception

GPS/QZSS: L1 C/A, L1C, L2C, L5, L6  
 BDS: B1C, B1I, B2a, B2I, B3I  
 GLONASS: L1, L2  
 Galileo: E1, E5, E6  
 IRNSS: L5  
 SBAS: WAAS, EGNOS, MSAS, GAGAN, SDCM

### Position Accuracy

GNSS	2.5m CEP
SBAS	2.0m CEP
D-GNSS	<1.0m CEP
RTK <sup>[1]</sup>	2cm+1ppm (baseline) 5cm+1ppm (elevation)

### Velocity & Time Accuracy

GNSS	0.1m/s CEP
SBAS	0.05m/s
D-GNSS	0.05m/s
1PPS	25ns

### Time to First Fix(TTFF)

Cold start	28 secs
Hot start	1 sec

### Sensitivity

Reacquisition	-160dBm
Tracking & Navigation	-167dBm

### Operation Limit

Velocity	515 m/s
Altitude	18,000 m

### Operation Condition

Main voltage	1.62 ~ 3.63V
Digital I/O voltage	1.62 ~ 3.63V
Backup voltage	1.62 ~ 3.63V

### Power Consumption

L1 band <sup>[2]</sup>	16 ~ 40mA
Multi band <sup>[2]</sup>	30 ~ 47mA
Standby	1.2uA

### Serial Interface

USB (FS, 12Mbps)	1
UART	2
SPI (master/slave)	2
SQI(master mode)	1
I2C	1

### Peripheral

PWM	4
INCP	2
Ext. interrupt	7
Digital I/O	16

### Clock

Main clock oscillator	Crystal or TCXO
Sub clock oscillator	32768Hz(optional)

## PACKAGE

Format	QFN40
Size	5.0mm x 5.0mm

## ENVIRONMENT DATA

Operation temperature	-40 to +85°C
Storage temperature	-40 to +125°C
Certification	RoHS & REACH

## ORDERING INFORMATION

HD9300	L1 band/Raw data
HD9301	L1 band/Raw data/RTK
HD9310	Multi-band/Raw data
HD9311	Multi-band/Raw data/RTK

## CONTACT US

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[1] Depends on baseline length, Antenna, satellite visibility, the status of correction data from base station, multipath conditions, and geometry.  
 [2] Depends on system constellation

