Eclipse P306 and P307 OEM Board

Experience Multi-Frequency Multi-GNSS RTK

key features

- **Uses GPS, GLONASS, and BeiDou; Galileo and QZSS ready**
- **372 Channels**
- **Long-range RTK baselines**
- **Compatible with ROX, RTCM, CMR, CMR+ RTK Sources**
- **COAST and SureTrack maintain sub-meter DGNSS positioning for 40 minutes after correction loss**
- **Fewer cold starts with Head Start**
- **Pin compatible with many Hemisphere and other manufacturer's modules**

P306 and P307
Don't compromise; position with RTK accuracy using multiple satellite systems today! Hemisphere GNSS' new Eclipse™ P306™ and P307™ OEM modules use GPS, GLONASS, and BeiDou, and are Galileo and QZSS ready. Track more signals for unparalleled positioning performance even in challenging environments.

Leverage the compact size and easy integration in your design. The 34-pin P306 module is a drop-in upgrade for many Hemisphere products. P307 is a drop-in upgrade for existing designs using standard 20 pin modules from other manufacturers.

Scalable Eclipse RTK Solutions
With the Eclipse P306 and P307, RTK performance is scalable. Utilize the same centimeter-level accuracy in either single frequency mode, or employ the full performance and fast RTK over long distances with multi-frequency multi-constellation GNSS signals.

DGPS and SBAS with COAST and SureTrack
Patented COAST™ software enables Hemisphere receivers to utilize previous DGPS and SBAS correction data during times of interference, signal blockage and weak signal. The receiver will coast and continue to maintain sub-meter positioning for up to 40 minutes without any DGPS signal. When your corrections are only for one GNSS constellation, for example GPS using SBAS, Hemisphere's patented SureTrack™ goes to work to model all other satellites, helping maintain an accurate solution in challenging environments.

Hemisphere®

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GPS Sensor Specifications

Receiver Type:	GNSS multi-frequency RTK with carrier phase	
Signals Received:	GPS, GLONASS, BeiDou, GALILEO[1] and QZSS[1]	
Channels:	372	
GPS Sensitivity:	-142 dBm	
SBAS Tracking:	3-channel, parallel tracking	
Update Rate:	1 Hz standard, 10 or 20 Hz optional	
Accuracy:	Horizontal (RMS)	Vertical (RMS)
RTK: [2]	10 mm + 1 ppm	20 mm + 2 ppm
SBAS (WAAS): [3]	0.3 m	0.6 m
Autonomous, no SA: [3]	1.2 m	2.5 m
Timing (1PPS) Accuracy:	20 ns	
Cold Start:[4]	< 60 s typical (all unknown)	
Warm Start:	< 30 s typical (no ephemeris)	
Hot Start:	< 10 s typical (all known)	
HeadStart:[5]	Removeable, auto-recharging onboard clock battery	
Maximum Speed:	1,850 kph (999 kts)	
Maximum Altitude:	18,288 m (60,000 ft)	

Communications

Serial Ports:	4 full-duplex 3.3 V CMOS (3 main serial ports, 1 differential-only port), 1 USB Host[6], 1 USB Device
Baud Rates:	4800 - 115200
Correction I/O Protocol:	Hemisphere GNSS proprietary, ROX Format, RTCM v2.3, RTCM v3.2, CMR, CMR+
Data I/O Protocol:	NMEA 0183, Crescent binary [7]
Timing Output:	1PPS, CMOS, active high, rising edge sync, 10 kΩ, 10 pF load
Event Marker Input:	CMOS, active low, falling edge sync, 10 kΩ, 10 pF load

Power

Input Voltage:	3.3 VDC +/- 3%
Power Consumption:	1.5 W nominal L1 GPS 2.3 W nominal dual frequency GPS + GLONASS + BeiDou
Current Consumption:	455 mA nominal L1 GPS 700 mA nominal dual frequency GPS + GLONASS + BeiDou
Antenna Voltage:	15 VDC maximum
Antenna Short Circuit Protection:	Yes
Antenna Gain Input Range:	10 to 40 dB
Antenna Input Impedance:	50 Ω

Power

Input Voltage:	3.3 VDC +/- 5%
Power Consumption:	< 3.2 W at 3.3 V (L1/L2 GPS/GLONASS/ BeiDou) < 3.9W at 3.3V (L1/L2 GPS/GLONASS/ BeiDou; L-Band)
Current Consumption:	< 970 mA at 3.3 V (L1/L2 GPS/GLONASS/ BeiDou) < 1180 mA at 3.3V (L1/L2 GPS/GLONASS/ BeiDou; L-Band)
Antenna Voltage:	15 VDC maximum
Antenna Short Circuit Protection:	Yes
Antenna Gain Input Range:	10 to 40 dB
Antenna Input Impedance:	50 Ω

Environmental

Operating Temperature:	-40°C to +85°C (-40°F to +185°F)
Storage Temperature:	-40°C to +85°C (-40°F to +185°F)
Humidity:	95% non-condensing (when installed in an enclosure)

Mechanical

Dimensions:	15.2 L x 7.1 W x 1.6 H (cm) 6.0 L x 2.8 W x 0.63 H (in)
Weight:	.105 kg (3.70 oz.)
Status Indication (LED):	Power, Primary and Secondary GPS lock, Differential lock, DGPS position, Heading, RTK lock, Atlas L-band lock
Power/Data Connector:	
P306:	34-pin male header 0.05" pitch
P307:	20-pin male header 0.05" pitch
Antenna Connectors:	MCX, female, straight

Aiding Devices

Gyro:	Provides smooth heading, fast heading reacquisition and reliable < 0.5° per min heading for periods up to 3 min. when loss of GNSS has occurred
Tilt Sensors:	Provide pitch and roll data, and assist in fast start-up and reacquisition of heading solution

[1] Firmware update required
[2] Depends on multipath environment, number of satellites in view, satellite geometry baseline length (for local services) and ionospheric activity
[3] Depends on multipath environment, number of satellites in view, satellite geometry and ionospheric activity
[4] Cold start means no approx. position, no approx. time, no almanac, no ephemeris
Warm starts require an approx. position, approx. time, and almanac
Hot starts require an approx. position, approx. time, and valid ephemeris
[5] Maintains time while receiver is powered off, reducing cold start occurences
[6] P306 Only
[7] Hemisphere GNSS proprietary

Authorized Distributor:

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