



HORNET AB1 (ORG1415)

FULLY INTEGRATED GPS MODULE

Datasheet

OriginGPS.com

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1. SCOPE

This document describes the features and specifications of Hornet AB1 ORG1415-AB1 GPS Module.

2. DISCLAIMER

All trademarks are properties of their respective owners.

Performance characteristics listed in this document do not constitute a warranty or guarantee of product performance. OriginGPS assumes no liability or responsibility for any claims or damages arising out of the use of this document, or from the use of integrated circuits based on this document.

OriginGPS assumes no liability or responsibility for unintentional inaccuracies or omissions in this document. OriginGPS reserves the right to make changes in its products, specifications and other information at any time without notice.

OriginGPS reserves the right to conduct, from time to time, and at its sole discretion, firmware upgrades. As long as those FW improvements have no material change on end customers, PCN may not be issued. OriginGPS navigation products are not recommended to use in life saving or life sustaining applications.

3. SAFETY INFORMATION

Improper handling and use can cause permanent damage to the product.

4. ESD SENSITIVITY

This product is ESD sensitive device and must be handled with care.



5. CONTACT INFORMATION

Support - info@origingps.com or [Online Form](#)

Marketing and sales - marketing@origingps.com

Web – www.origingps.com

6. RELATED DOCUMENTATION

No	DOCUMENT NAME
1	Spider and Hornet - NMEA Protocol Reference Manual for CSR® based receivers
2	Spider and Hornet - One Socket Protocol Reference Manual for CSR® based receivers
3	Spider and Hornet - Host Interface Application Note
4	Spider and Hornet - Low Power Modes Application Note
5	Spider and Hornet - Jammer Detector and Remover Application Note
6	Spider and Hornet - Client Generated Extended Ephemeris Application Note
7	Spider and Hornet - Server Generated Extended Ephemeris Application Note

TABLE 1 – RELATED DOCUMENTATION

7. REVISION HISTORY

REVISION	DATE	CHANGE DESCRIPTION
A00	December 21, 2010	First release
2.0	January 14, 2015	Format update

TABLE 2 – REVISION HISTORY

8. GLOSSARY

A-GNSS Assisted **GNSS**

BPF Band Pass Filter

CE European Community conformity mark

CGEE™ Client Generated Extended Ephemeris

CMOS Complementary **Metal-Oxide Semiconductor**

COMPASS PRC GNSS (same as **BDS BeiDou-2 Navigation Satellite System**)

EGNOS European **Geostationary Navigation Overlay Service**

EMC Electro-**Magnetic Compatibility**

ESD Electro-**Static Discharge**

EVB Evaluation **Board**

EVK Evaluation **Kit**

FCC Federal **Communications Commission**

GALILEO EU GNSS

GLONASS **Global Navigation Satellite System**

GNSS **Global Navigation Satellite System**

GPS **Global Positioning System**

I²C **Inter-Integrated Circuit**

IC **Integrated Circuit**

ISO **International Organization for Standardization**

LDO **Low Dropout** regulator

LGA **Land Grid Array**

LNA **Low Noise Amplifier**

MSAS **Multi-functional Satellite Augmentation System**

MSL **Moisture Sensitivity Level**

NFZ™ **Noise-Free Zones System**

NMEA **National Marine Electronics Association**

MEMS **MicroElectroMechanical Systems**

PCB **Printed Circuit Board**

PPS **Pulse Per Second**

QZSS **Quasi-Zenith Satellite System**

REACH **Registration, Evaluation, Authorisation and Restriction of Chemical substances**

RF **Radio Frequency**

RHCP **Right-Hand Circular Polarized**

RoHS **Restriction of Hazardous Substances directive**

ROM **Read-Only Memory**

RTC **Real-Time Clock**

SAW **Surface Acoustic Wave**

SBAS **Satellite-Based Augmentation Systems**

SGEE™ **Server Generated Extended Ephemeris**

SIP **System In Package**

SMD **Surface Mounted Device**

SMT **Surface-Mount Technology**

SOC **System On Chip**

SPI **Serial Peripheral Interface**

TCXO **Temperature-Compensated Crystal Oscillator**

TTF **Time To First Fix**

TTL **Transistor-Transistor Logic**

UART **Universal Asynchronous Receiver/Transmitter**

WAAS **Wide Area Augmentation System**



9. ABOUT HORNET FAMILY

OriginGPS' Hornet family is offering the industry's smallest fully-integrated, highly-sensitive GPS and GNSS modules with integrated antennas or on-board RF connectors.

Hornet family features OriginGPS' proprietary NFZ™ technology for high sensitivity and noise immunity even under marginal signal condition, commonly found in urban canyons, under dense foliage or when the receiver's position in space rapidly changes.

Hornet family enables the shortest TTM (Time-To-Market) with minimal design risks.

Just connect power supply on a single layer PCB.

10. ABOUT HORNET AB1 MODULE

Hornet AB1 offers an optimized receiver and antenna combination with unconditional frequency stability, improved noise immunity, higher sensitivity, and enhanced SNR (Signal to Noise) levels. The optimized combination not only decreases the footprint, but also minimizes design risks and reduces time to market.

Measuring only 20x18x5.6mm and weighing 4.3gr., Hornet AB1 is a small fully integrated GPS antenna module. Despite its small size and weight, the Hornet family integrates a patch antenna element, LNA, SAW filter, TCXO, RTC crystal, RF shield and Power Management Unit with SiRFStarIV™ GPS processor.

The Hornet AB1 module offers superior sensitivity and outstanding performance, achieving rapid time to first fix (TTFF) in less than 1sec., accuracy of approximately 1m, and tracking sensitivity down to -163dBm.

11. ABOUT ORIGINGPS

OriginGPS is a world leading designer, manufacturer and supplier of miniature positioning modules, antenna modules and antenna solutions.

OriginGPS modules introduce unparalleled sensitivity and noise immunity by incorporating Noise Free Zone system (NFZ™) proprietary technology for faster position fix and navigation stability even under challenging satellite signal conditions.

Founded in 2006, OriginGPS is specializing in development of unique technologies that miniaturize RF modules, thereby addressing the market need for smaller wireless solutions.

12. MECHANICAL DRAWING

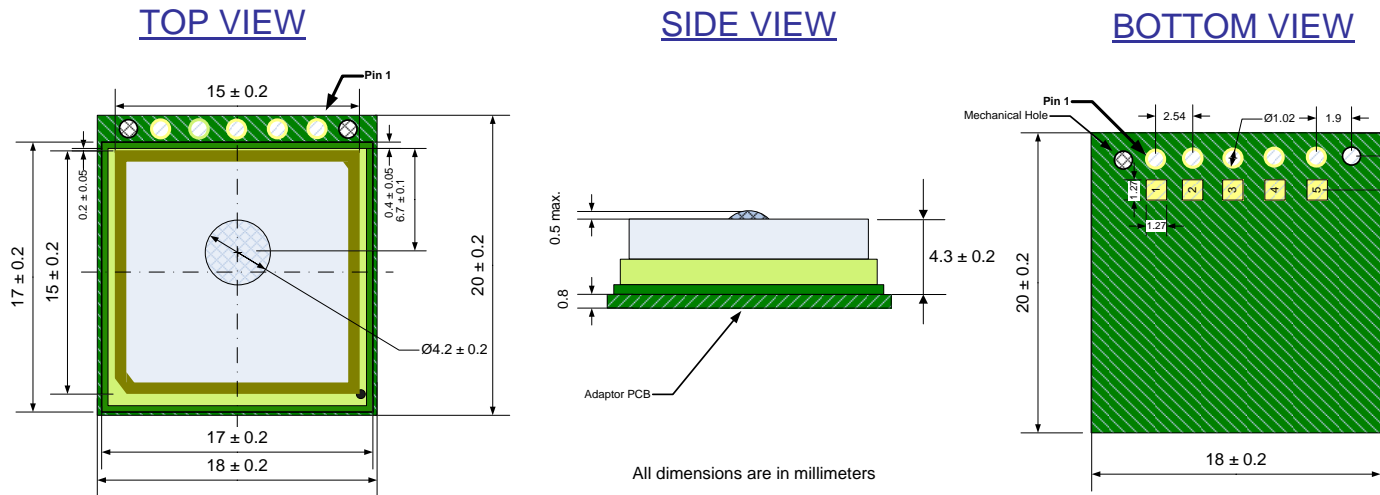


FIGURE 1 –

13. ELECTRICAL INTERFACE

Pin Number	Pin Name	Pin Description	Direction	Default	ORG1415 Pin Number	Notes*
1	GND	System Ground	Power		11	
2	VCC	System Power	Power		8	2-5.5V
3	TX	UART Transmit	Output	Low	2	VOH = VCC - 0.1V
4	RX	UART Receive	Input	High	1	1.3V ≤ VIH ≤ 3.6V
5	ON_OFF	Soft Power On/Hibernate	Input	Low	17	1.0V ≤ VIH ≤ 3.6V

TABLE 3 –

14. DEFAULT CONFIGURATION

Power On State	UART data format	UART settings	Navigation			
			SBAS	Static Filter	Track Smoothing	Internal DR
Full Power	NMEA	4,800 bps 8-N-1	SBAS	Static Filter	Track Smoothing	Internal DR
			OFF	OFF	OFF	OFF

TABLE 4 –

✚ Refer to ORG14XX Series Data Sheet for Electrical Specifications