



## **HORNET SERIES (ORG14XX)**

# **FULLY INTEGRATED GPS MODULE**

Datasheet

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[OriginGPS.com](http://OriginGPS.com)

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## INDEX

1.	SCOPE.....	3
2.	DISCLAIMER .....	3
3.	SAFETY INFORMATION .....	3
4.	ESD SENSITIVITY .....	3
5.	CONTACT INFORMATION .....	3
6.	RELATED DOCUMENTATION.....	3
7.	REVISION HISTORY .....	3
8.	GLOSSARY .....	4
9.	ABOUT HORNET FAMILY.....	5
10.	ABOUT ORIGINGPS.....	5
11.	PACKAGING LIST.....	6
12.	SETUP.....	6
12.1.	Open CD. Select ORG14XX Series from the main menu.....	6
12.2.	Install FTDI USB-UART driver by pressing Driver button. ....	6
12.3.	Install SiRFLive software by pressing SiRF Live Setup button. ....	7
12.4.	Connect FTDI USB to UART cable between the Demo Board and the PC. ....	7
13.	SiRFLive ESSENTIALS.....	8
13.1.	Open SiRFLive by clicking desktop icon.....	8
13.2.	Press Receiver Settings button on the main toolbar.....	8
13.3.	Press Connect button on the main toolbar.....	9
14.	EVALUATION KIT ESSENTIALS .....	10
14.1.	PATCH ANTENNA .....	10
14.2.	TACTILE SWITCH FUNCTION .....	10

## TABLE INDEX

TABLE 1 – RELATED DOCUMENTATION .....	3
TABLE 2 – REVISION HISTORY.....	3

## FIGURE INDEX

FIGURE 1 .....	6
FIGURE 2 .....	7
FIGURE 3 .....	8
FIGURE 4 .....	8
FIGURE 5 .....	9



## 1. SCOPE

This document is a quick start guide for the Hornet Series ORG14XX Evaluation Kits.

## 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](mailto:info@origingps.com) or [Online Form](#)

Marketing and sales - [marketing@origingps.com](mailto:marketing@origingps.com)

Web – [www.origingps.com](http://www.origingps.com)

## 6. RELATED DOCUMENTATION

No	DOCUMENT NAME
1	Micro Spider – ORG4475 Evaluation Kit Datasheet
2	Micro Spider – ORG4475 Product Change Notification
3	Spider and Hornet - Software User Manual for CSR® based receivers
4	Spider and Hornet - NMEA Protocol Reference Manual for CSR® based receivers
5	Spider and Hornet - One Socket Protocol Reference Manual for CSR® based receivers
6	Spider and Hornet - Host Interface Application Note
7	Spider and Hornet - Low Power Modes Application Note
8	Spider and Hornet - Jammer Detector and Remover Application Note
9	Spider and Hornet - Client Generated Extended Ephemeris Application Note
10	Spider and Hornet - Server Generated Extended Ephemeris Application Note
11	Spider and Hornet - Ephemeris Push Application Note

TABLE 1 – RELATED DOCUMENTATION

## 7. REVISION HISTORY

REVISION	DATE	CHANGE DESCRIPTION
A00	January 12, 2011	First release
2.0	January 14, 2015	Format update, content update according to PCN

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  
**I<sup>2</sup>C** 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

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 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.



## 11. PACKAGING LIST

The ORG14XX series Evaluation Kit contains:

- + ORG14XX Series GPS Antenna module mounted on the Demo Board
- + FTDI USB to UART cable
- + Support CD

## 12. SETUP

### 12.1. Open CD. Select ORG14XX Series from the main menu.



FIGURE 1 –

### 12.2. Install FTDI USB-UART driver by pressing Driver button.

The driver setup is done in silent mode.

The presence of the Virtual COM port can be verified via Control Panel-System-Device Manager.



### 12.3. Install SiRFLive software by pressing SiRF Live Setup button.

Follow on-screen instructions during SiRFLive setup process.

Uninstall any previous SiRFLive version before current setup attempt.

### 12.4. Connect FTDI USB to UART cable between the Demo Board and the PC.

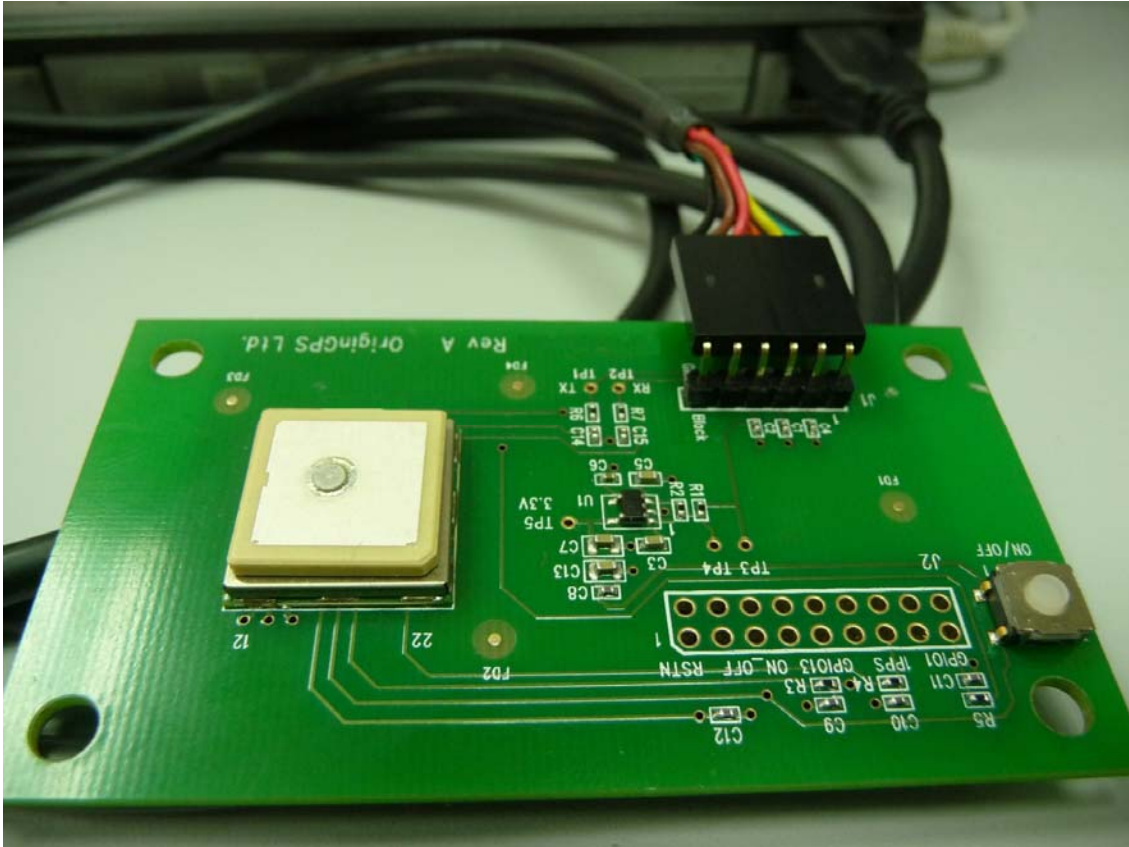


FIGURE 2 –



## 13. SiRFLive ESSENTIALS

### 13.1. Open SiRFLive by clicking desktop icon.

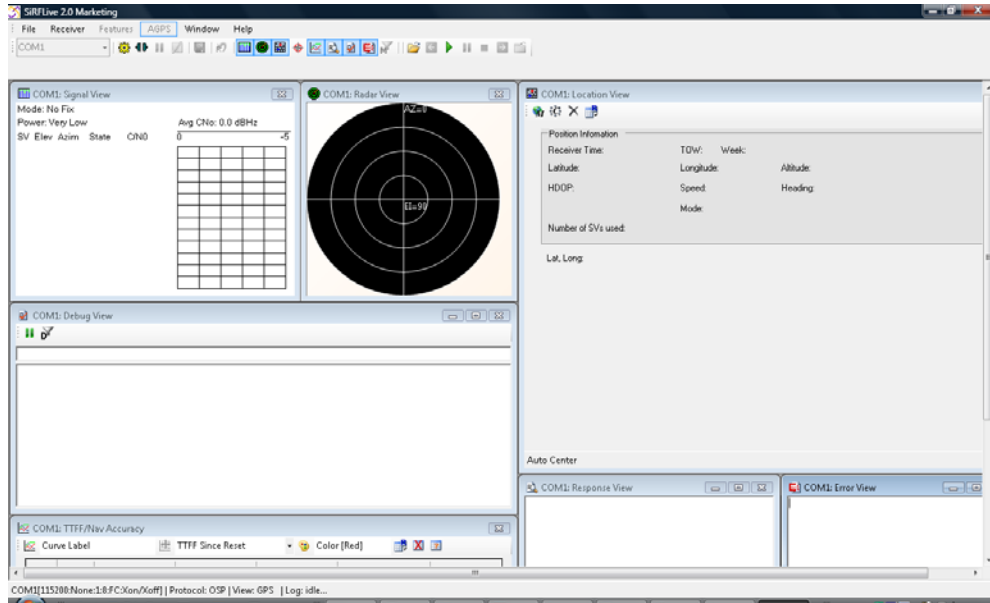


FIGURE 3 –

### 13.2. Press Receiver Settings button on the main toolbar.

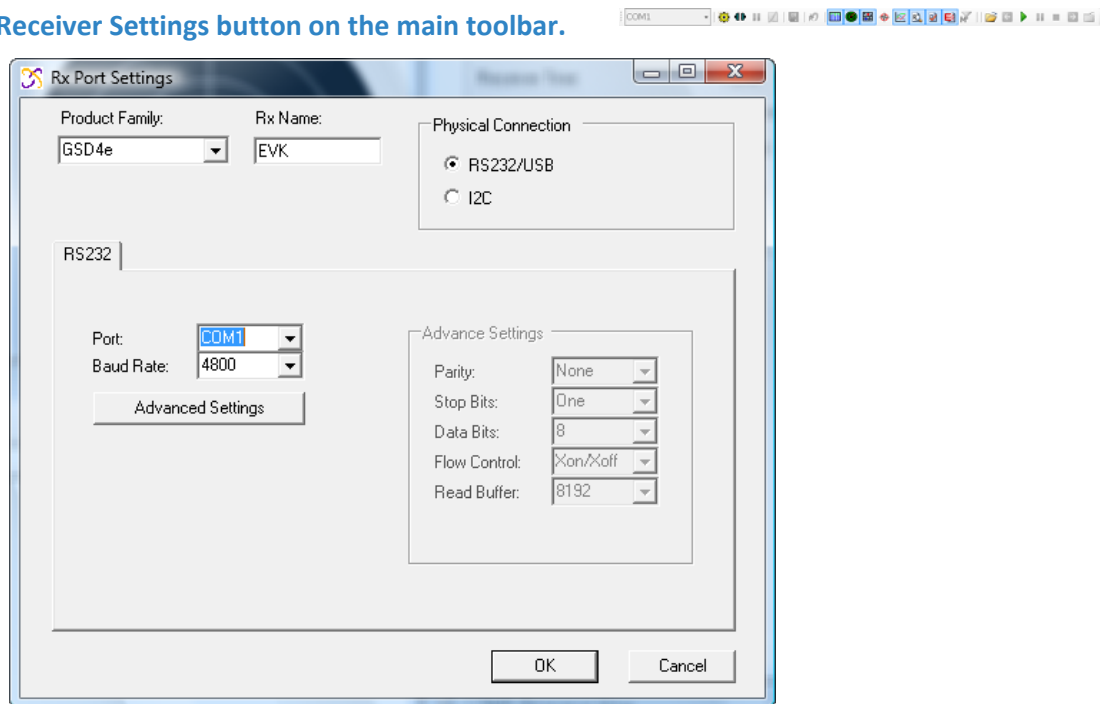


FIGURE 4 –

- Select GSD4e in Product Family box.
- Select RS232/USB for Physical Connection.
- Select the Virtual COM port as assigned by the driver. Typically it would be the highest available.
- Select 4800 for Baud Rate.
- Press OK when finished.





### 13.3. Press Connect button on the main toolbar.

Auto Baud Rate routine will start.

At the end, the NMEA messages will start bursting in Debug View window.

It's highly recommended to switch to Binary Protocol by Receiver-Command-Switch Protocols:

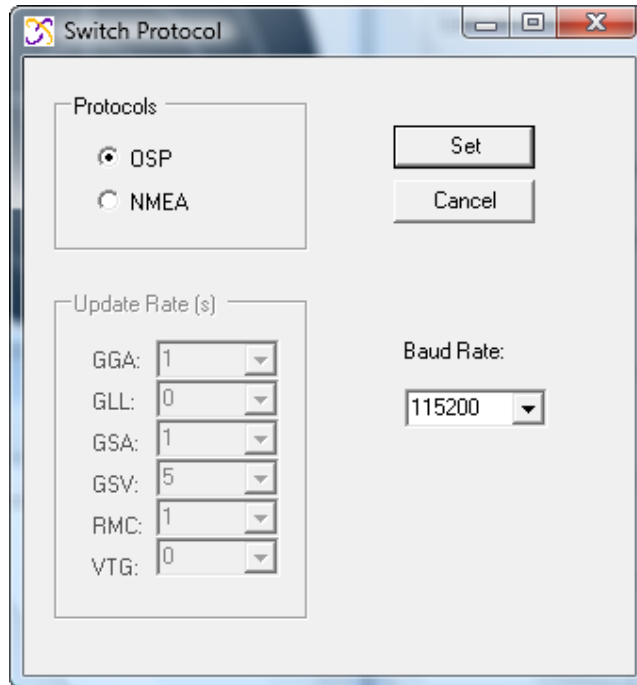


FIGURE 5 –

For extended support for SiRFLive software refer to the SiRF Live Manual on this CD.



## 14. EVALUATION KIT ESSENTIALS

### 14.1. PATCH ANTENNA

GPS antenna is embedded on the top of the module.

GPS antenna upper surface should be placed up towards the sky to keep GPS satellites in view.

### 14.2. TACTILE SWITCH FUNCTION

The tactile switch is used to wake up to GPS module from the Hibernate state of one of the low power modes, typically for triggering Push-To-Fix (PTF™).