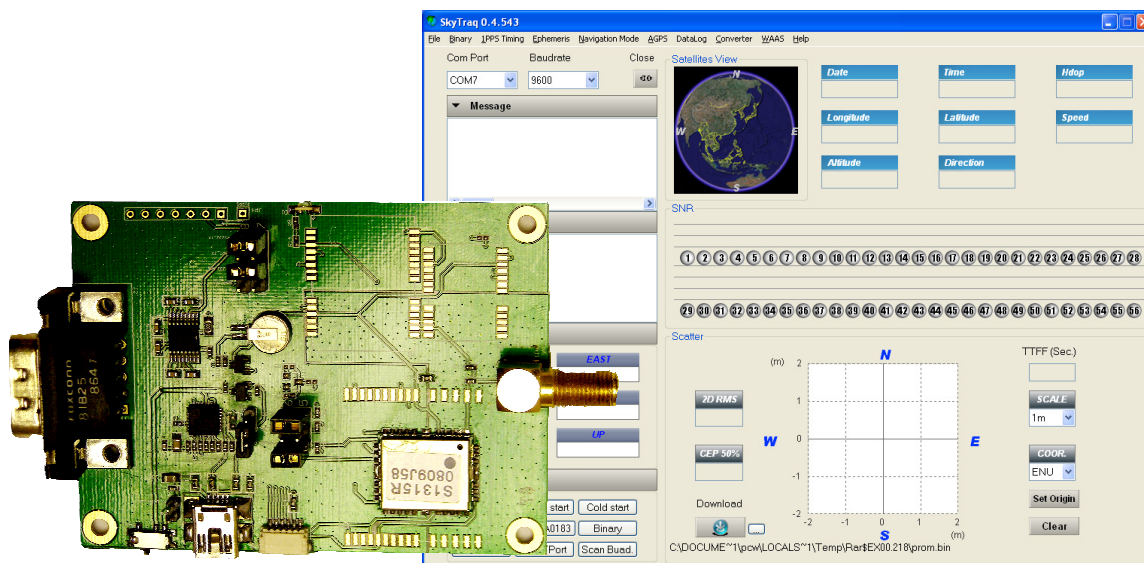# GPS-Evaluation Kit



- **GPS Evaluation Platform**
- **Data In Standard NMEA Format**
- **RS232 & USB Data output**
- **Link Selectable And Programmable Baud Rates**
- **Satellite Viewer Software Supplied**
- **Includes GPS-1513 Module**
- **Can be used as Complete GPS System**

## Description

This kit provides a hardware and software evaluation platform for development of a GPS system. It provides position, velocity and time information in a standard NMEA format that is compatible with a range of GPS driven navigation packages including Microsoft AUTOROUTE.
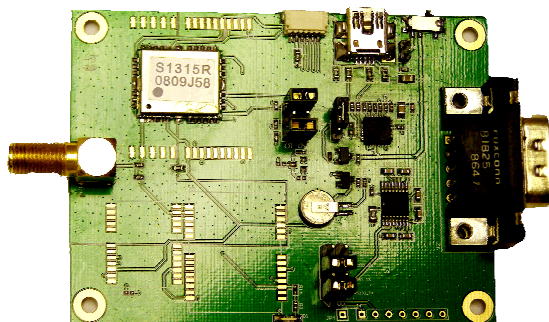Direct PC interface is via 9 way 'D' type connector and mini USB (cables supplied). Signals are also available from pin headers to enable configuration and monitoring of the GPS signals.

# GPS-Evaluation Kit

## 1. Contents



| Item | Description |
|------|-------------|
| GPS Eval board | GPS evaluation board, complete with GPS module 1513 |
| GPS Antenna | GPS Antenna, SMA connection, |
| USB lead. | Standard USB lead for PC connection |
| CD ROM | Containing drivers and documents. |

### 1.1 Description

**GPS Eval board**: This contains the GPS Engine, and all circuitry for interface to a PC or external electronics.

**GPS Antenna**: this is a Mag Mount GPS antenna with LNA which connects to the main GPS board via the SMA connector please note that the antenna must see the sky
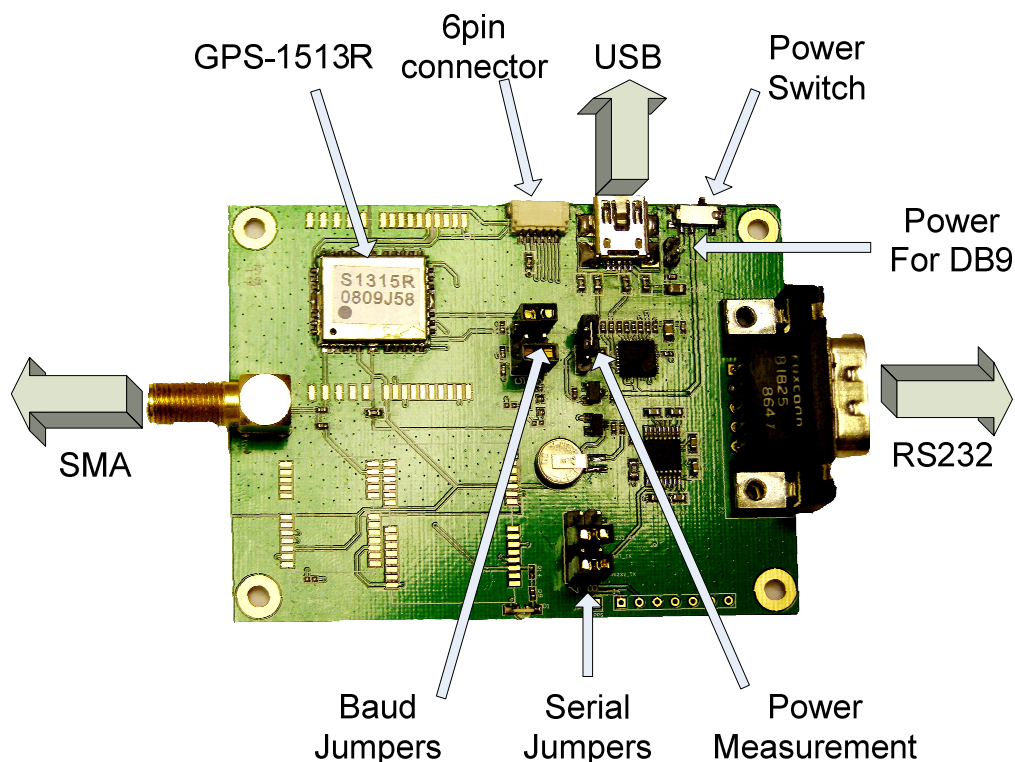
**USB Lead**: Connects the GPS board to the USB port of a PC

**CD Rom**: Contains:
    Prolific USB Driver
    Skytraq GPS viewer software
    Data etc

Following the installation of the USB drivers and Skytraq viewer, you will be able to use the evaluation kit to check the GPS module functions and vie satellites.

## 2. Hardware Description



| Item | Description |
|---|---|
| GPS-1513R | GPS Module mounted on the GPS EVAL (please see GPS Module data) |
| 6 Pin connector | Data output UART / RS232 |
| USB | Standard Mini USB output for connection to USB input pn PC |
| Power Switch | Used to turn Power on / off |
| Power for DB9 | If using RS232 a separate 5V power supply connection is required here. |
| RS232 | This is a standard 9 Way D Type  connector for connecting to a serial port of a PC |
| Power Measurement | Pins to enable measurement of power consumption |
| Serial Jumpers | The status of these Jumper links defines the output to be via UART or RS232 |
| Baud Jumpers | The status of these Jumper links defines the baud Rate of the data output and the number of times the GPS searches per minute |
| SMA | External Antenna Connection. This is a standard SMA (M) connector |

# GPS-Evaluation Kit

### 6 Pin connector
The user can measure the power consumption of the GPS engine through this pin header
Power consumption will vary according to the Modules Status

| Pin | Name | Type | Description |
|-----|------|------|-------------|
| 1 | FTXD0 | o/p | Serial Data output UART |
| 2 | FRXD0 | i/p | Serial Data input UART |
| 3 | TXD0 | o/p | Serial Data output RS-232 |
| 4 | RXD0 | i/p | Serial Data input RS-232 |
| 5 | Vin | i/p | 3.6~6 supply input |
| 6 | GND | o/p | GND |


Top View

### Power Measurement Pins
The user can measure the power consumption of the GPS engine through this pin header
Power consumption will vary according to the Modules Status

## 3. Jumper Link Settings

| Jumper A | Jumper B | Baud Rate |
|----------|----------|-----------|
| Connected | Open | 4800 |
| Open | Open | 9600 |
| Open | Connected | 38400 |
| Connected | Connected | 115200 |
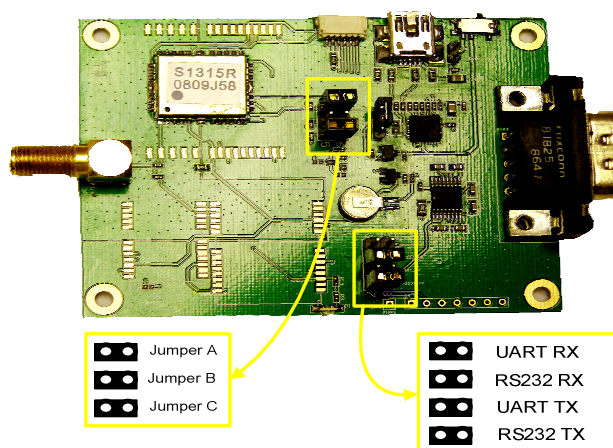


### Jumper C
Enables the GPS chipset to multiply the search function, When jumper link fitted this doubles the chipset search function to increase the searching speed but does increase the power consumption.

### Serial Jumpers
For RS232: Connect the two Jumper links marked as RS232
For USB : Connect the two Jumper links marked as USB
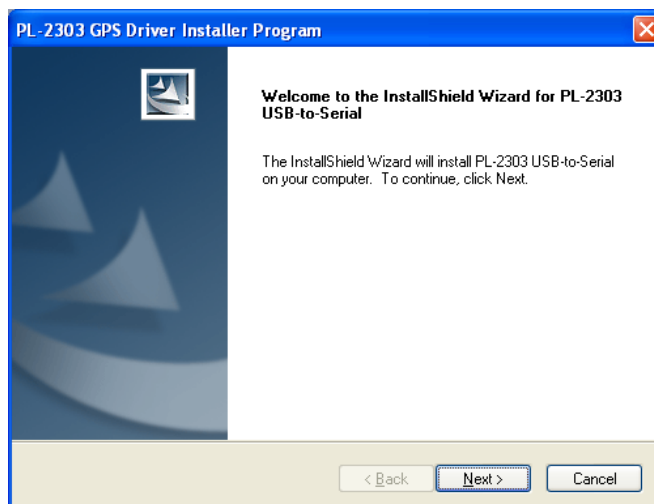
# GPS-Evaluation Kit

## 4. Software Installation

Before connecting the GPS Eval board to the computer install the following USB Driver files: "PL2303_Prolific_GPS_1013_20090319" from the CD.
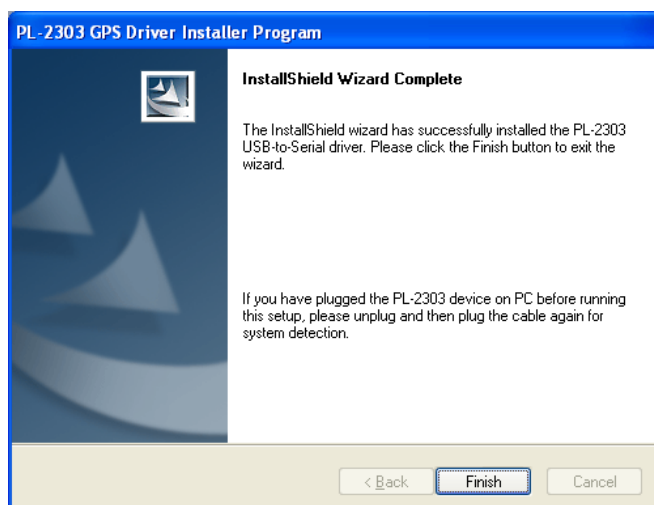
Run USB Driver installation
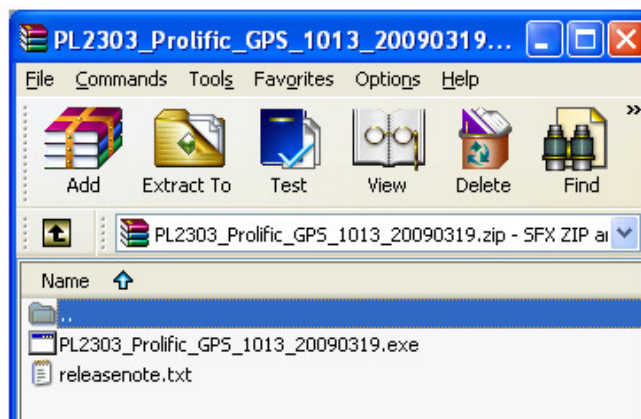
Follow the installation process

If you see a a caution prompt, select 'continue anyway'
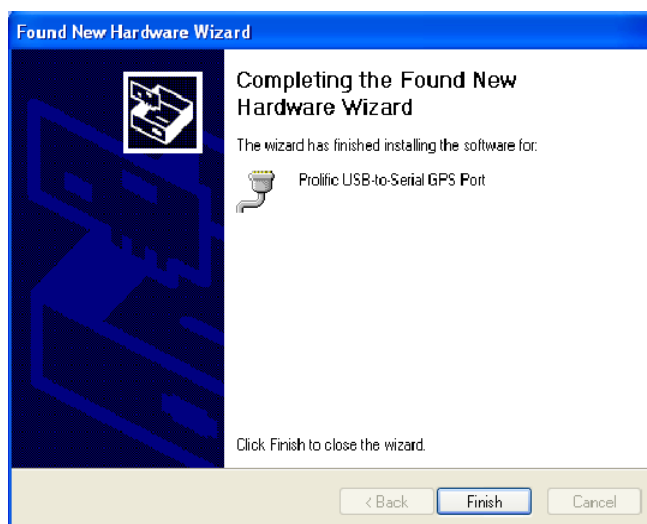
2.3. Installation complete.

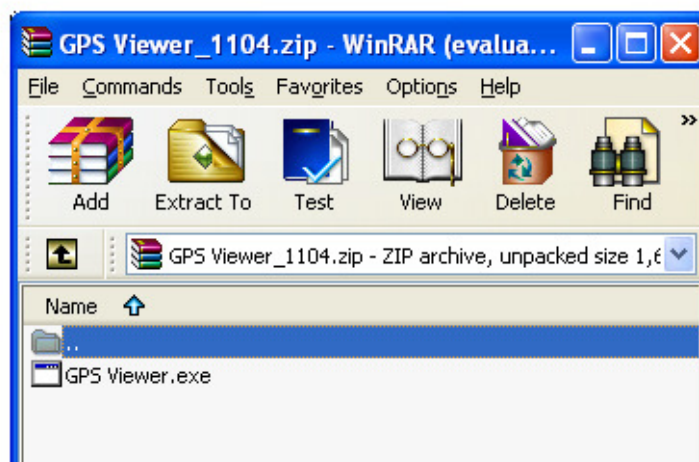After installing the Prolific USB driver, RE-START your computer

# GPS-Evaluation Kit

You can now Plug the USB adapter cable into the computer which will auto find the new device.





Executing the GPS viewer testing programming

# GPS-Evaluation Kit

## 5. GPS Viewer Programming

Identify the correct COM PORT, and select the baud rate, the default rate is 4800.

Clicking the "Connect" ICON, the GPS Eval board will begin to search the satellites, it will get the

positioning in 30-40 seconds (Cold start), the user can read the message from TTFF column.
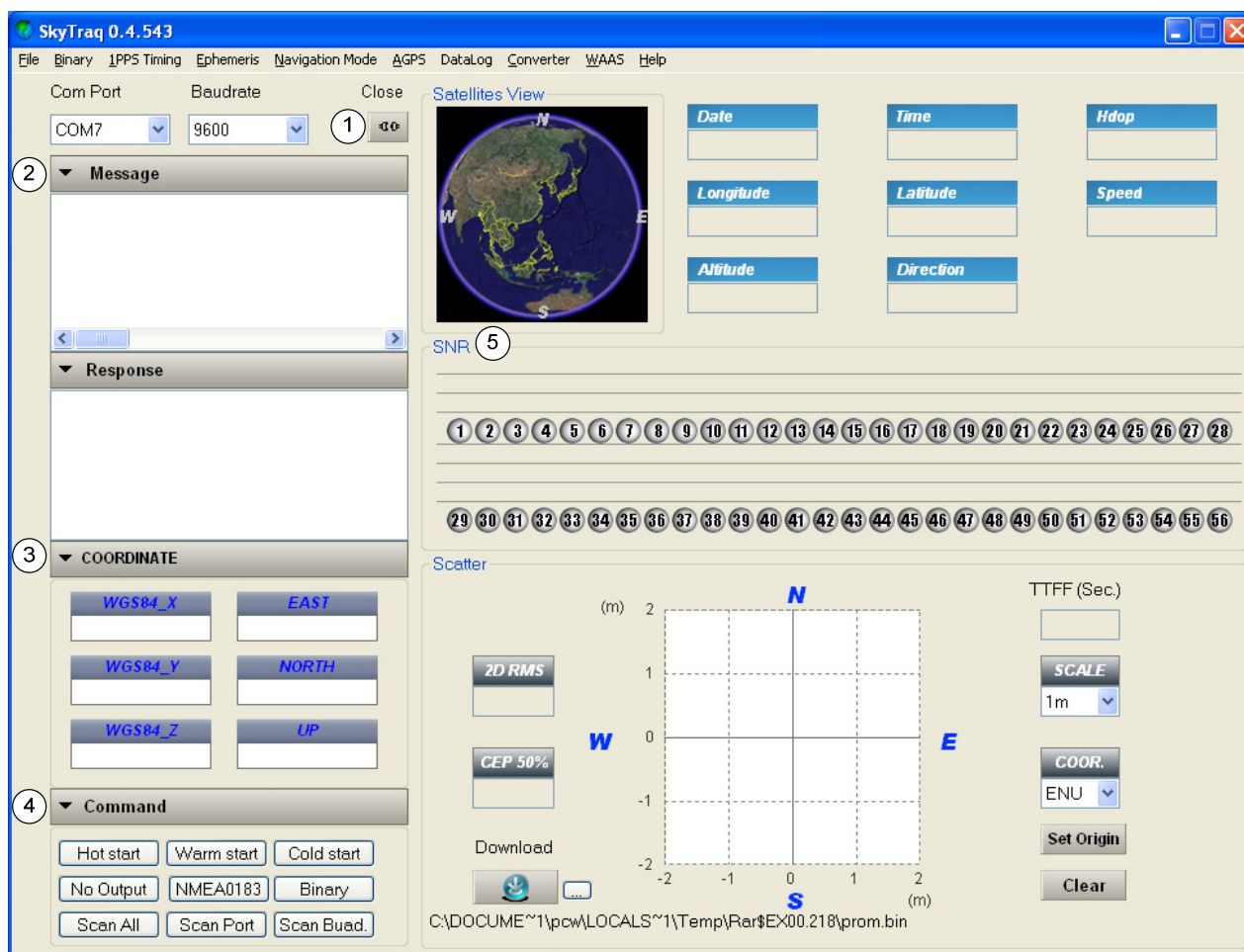


| ① | Connect/disconnect button | ③ | Actual location coordinates | ⑤ | Visual representation of connected satellites. |
|---|---|---|---|---|---|
| ② | GPS Data output | ④ | Pre set command list | | |

**Note:** If the baud rate is incorrectly selected, NMEA data will read as erroneous data

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# GPS-Evaluation Kit

## 5.1 Your GPS Eval board is now connected.
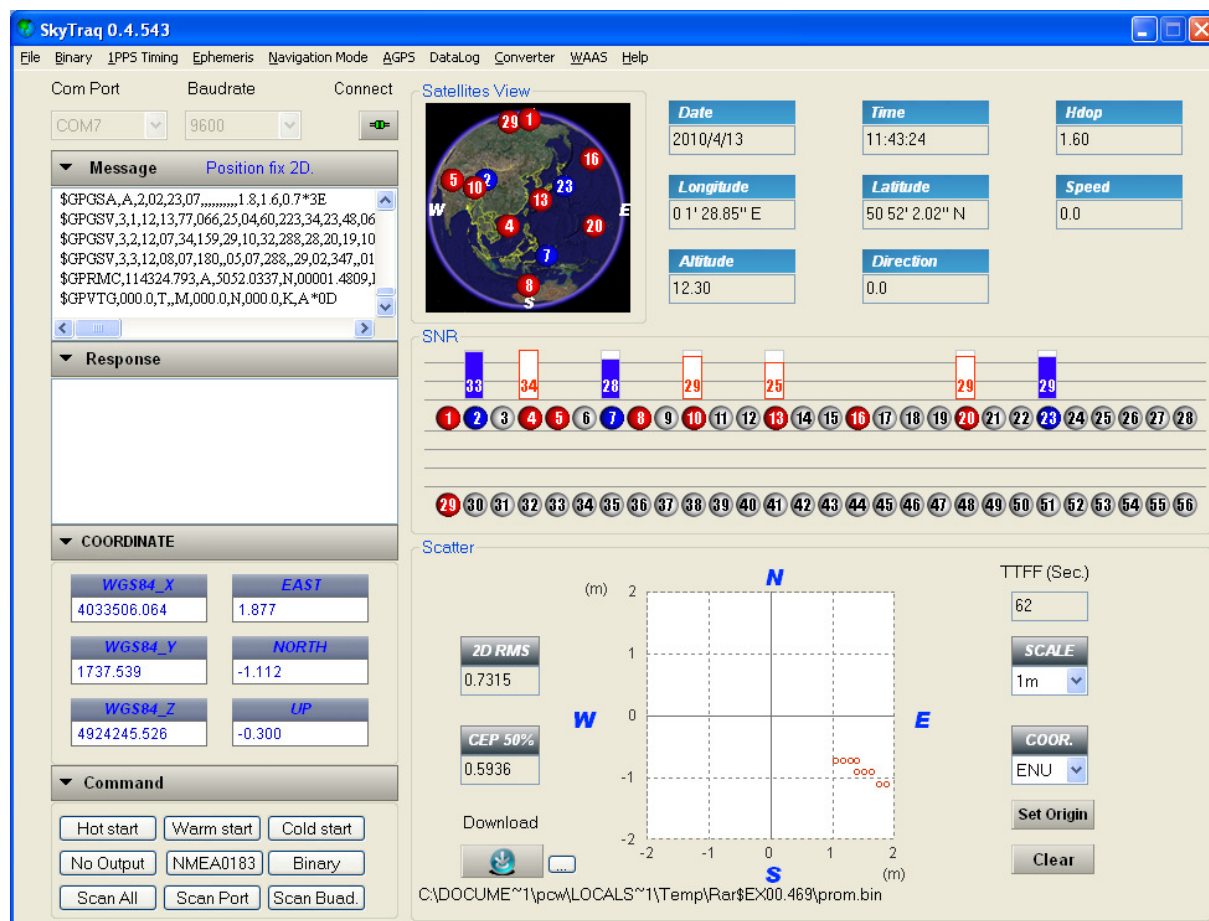
**Technical Specifications**

**For Specification of the GPS-1513R please des Datasheet for this Module**

**GPS Active Antenna**

| | |
|---|---|
| Frequency | 1575.42 +/-1.023MHz |
| Bandwidth | 10MHz min |
| Gain at Zenith | 5.0dBic Typ |
| Gain at 10deg Elevation | -1.0dBic Typ |
| Polarization | RHCP |
| Axial Ratio | 3.0dB Typ |

**LNA / Filter Specification**

| | |
|---|---|
| Frequency | 1575.42 +/-1.023MHz |
| Gain | 28dB Typ |
| Noise Figure | 15dB Typ |
| Filter | DR SAW Filter |
| Output VSWR | 2.0Max |
| Voltage | 2.3-5.5V |
| Current | 2.5V: 6.6mA Typ |
| | 3V:   8.6mA Typ |
| | 4V:   12.6mA Typ |
| | 5V:   16.6mA Typ |

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**Tel: +44 (0)1273 898 000   Fax: +44 (0)1273 480 661**

## 6. Contact Information

We hope this datasheet will be helpful to the user to get the most out of the GPS module, furthermore feedback inputs about errors or mistakable verbalizations and comments or proposals to **RF Solutions Ltd.**. for further improvements are highly appreciated.