



## Quick Start



# Precis-BX305

## Precise GNSS RTK Board

[www.tersus-gnss.com](http://www.tersus-gnss.com)

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## Quick Start Guide of Precis-BX305

This quick start guide provides the basic information needed to set up and use Precis-BX305 GNSS RTK boards. For detailed information on the installation and operation of Precis-BX305, please refer to the Precis-BX305 User Guide.

(available [www.tersus-gnss.com/pages/document-software](http://www.tersus-gnss.com/pages/document-software))

### 1 Overview of Tersus GNSS RTK System

GNSS RTK is a precise relative positioning technique, which achieves centimeter positioning accuracy. RTK positioning requires a minimum of two sets of Tersus RTK boards, which are used as the base station and the rover station respectively. Normally, the base station is set up on a fixed known point and it consistently transmits differential corrections to the rover station. The rover station receives differential corrections from the base station and calculates very precise RTK solution.

The following figure is an overview of Tersus GNSS RTK system, which demonstrates how it works. We recommend using COM2 to transmit and receive the differential data (in RTCM format) and using COM1 for configuration and logging RTK solution.

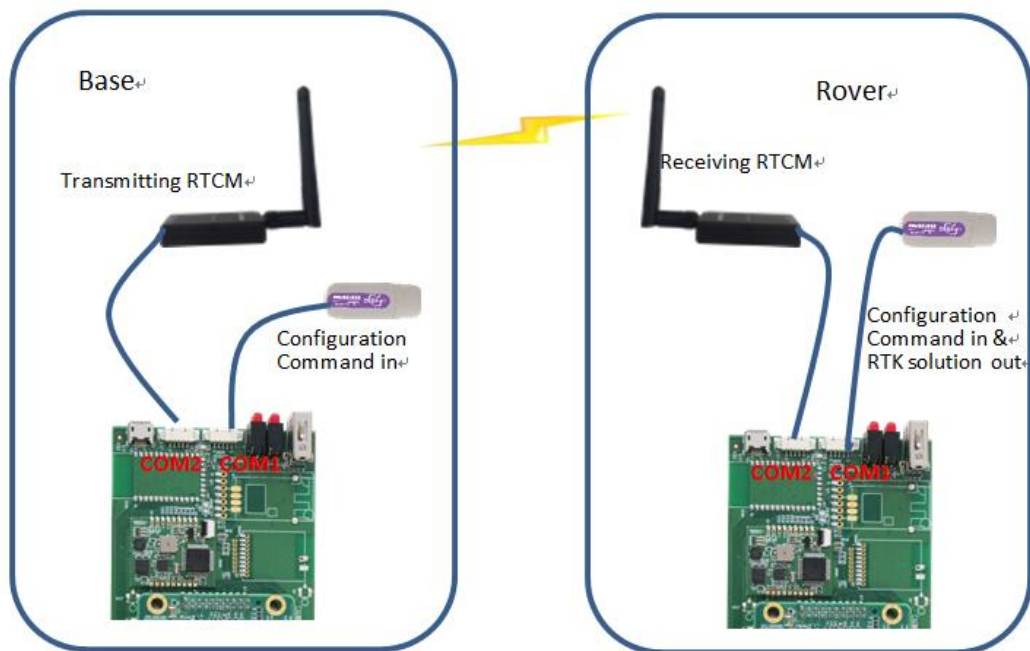


Figure 1 Overview of Tersus GNSS RTK System

## 2 Hardware & Software Requirement

### 2.1 Hardware requirement:

- Precis-BX305 GNSS RTK boards ×2
- Tersus USB connectors ×2
- GNSS antennas ×2
- GNSS antenna cable ×2
- UHF modules ×2
- UHF module cable ×2
- 5V DC power supplier ×2

Precis-BX305 bundle includes all hardware listed above except power supplier. Power supplier can be any portable cellphone charger with USB output. If you only purchased our board, then you need to refer to the electrical specifications in the user guide to choose compatible accessories.

### 2.2 Software requirement

- Tersus USB connector driver
- Tersus GNSS Center

They are distributed for free on our website.

(available [www.ter sus-gnss.com/pages/document-software](http://www.ter sus-gnss.com/pages/document-software))

## 3 Configuration of Precis-BX305

Before starting field work, the first step is to configure the boards to the right mode by connecting the boards to your PC and keying in commands with the Tersus GNSS Center software. The detailed steps are as follows:

### 3.1 Connect the board to you PC with Tersus USB connector.

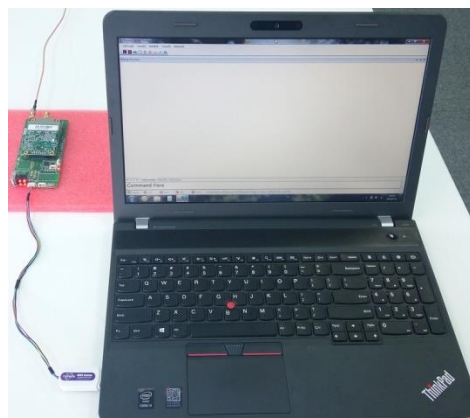


Figure 2 Connect Precis-BX305, Tersus USB Connector and PC



If your PC cannot recognize the USB device, you need install the USB driver first. (available [www.tersus-gnss.com/pages/document-software](http://www.tersus-gnss.com/pages/document-software)). If the USB device is successfully installed on your PC, it will show as a USB Serial Port in the device manager.

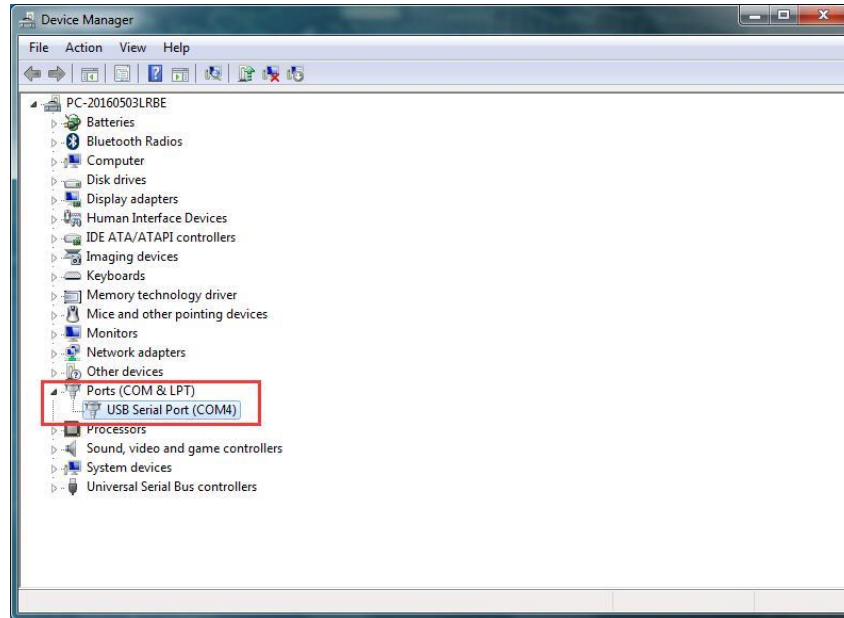


Figure 3 Precis-BX305 is correctly connected to your PC

3.2 Connect the board with Tersus GNSS Center. Launch Tersus GNSS Center. Choose serial as the connection type and choose the right serial port and baud rate (115200 by default). Click 'OK' to establish the serial connection. If the connection is successfully established, the COMM indicator on the status bar will turn to green.

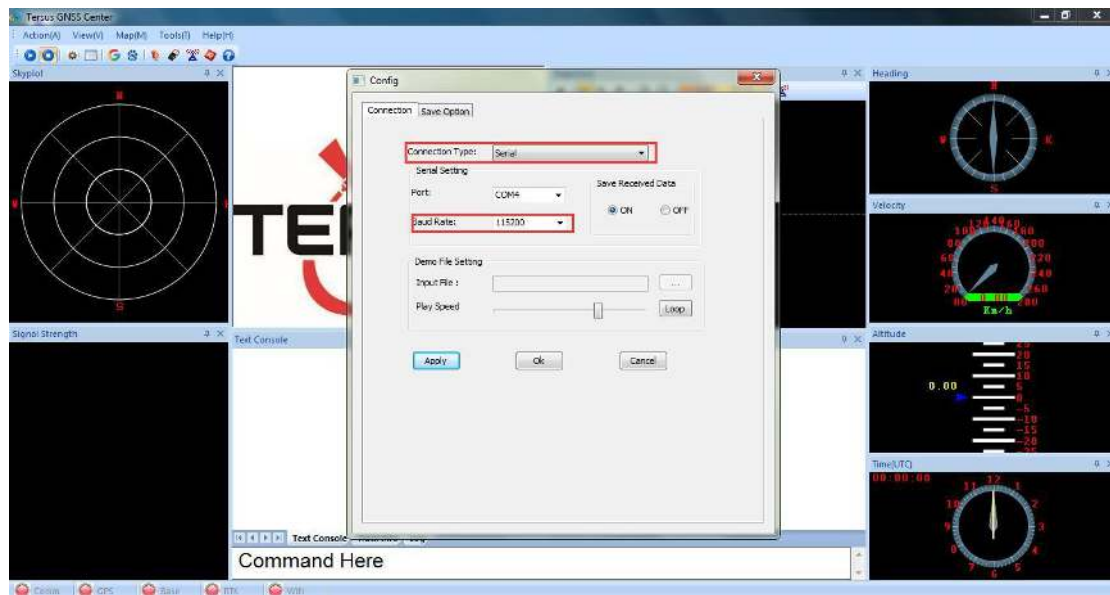


Figure 4 Establishing serial connection with Tersus GNSS Center

### 3.3 Enter commands in the text console window

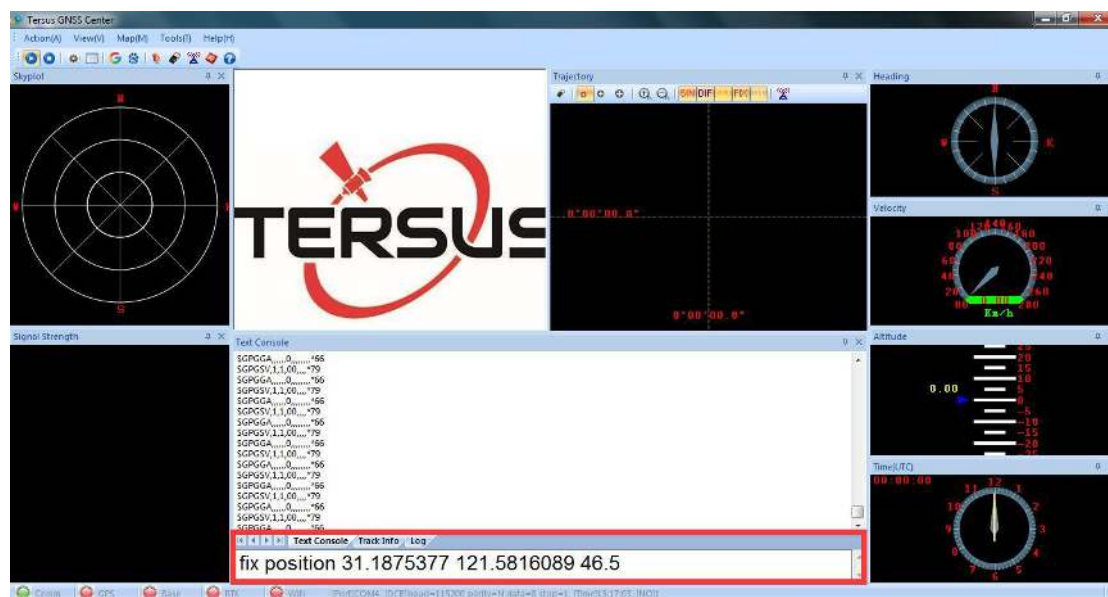


Figure 5 Text console window of Tersus GNSS Center

Commands for the base station board:

```
fix position 31.1874808 121.58111234 41.4618
log com2 rctm1074 ontime 1
log com2 rctm1084 ontime 1
log com2 rctm1124 ontime 1
log com2 rctm1005 ontime 10
saveconfig
```

These commands fix the coordinate of the base station and configures RTCM message to be transmitted. The coordinates are expressed in degree/meter. After each command is sent, the board will automatically acknowledge with a '>OK', which means the configuration is in effect. If no acknowledgement is received, please refer to 'troubleshooting' section in the user guide or contact us. If the base station coordinate is unknown, you can get it by averaging the point position solution for a while.

Commands for the rover station board:

```
fix none
interfacemode com2 automatic automatic on
log com1 GPGGA ontime 1
saveconfig
```

The rover station can automatically recognize the RTCM message and compute RTK solution, so ensure that the rover position is not fixed, the serial port is in right mode and it outputs RTK solution as normal. After configuration, you can see that the board outputs empty NMEA sentences as the GNSS antenna is not connected to the board.

## 4 Set up Base and Rover Stations

With two Precis-BX305 boards configured properly, it is time to go outside. Make sure the GNSS antennas are mounted on a secure, stable structure (such as tripod) with open sky. Then you need to connect the GNSS antennas and UHF radio modules to the boards and power up to the boards.



Figure 6 Set up Base and Rover Stations

Please make sure that the antenna of the base station is mounted on the right place as configured. The baud rate of the UHF module is 115200 by default, which is the same as the COM2 baud rate.

**!** Manually change baud rate may cause data link corruption.

## 5 Check RTK Working Status

If the UHF radio is powered up, the green indicator on the UHF radio turns on. If the red indicator is blinking on both the base and the rover, then the data link works.

If you want to make sure the RTK system works well, then you need to connect the board to Tersus GNSS Center again. There are a group of indicator lights on the status bar of Tersus GNSS Center. If the system is tracking GNSS signals normally, the GPS indicator will turn to green. If the UHF data link is well established, then the base indicator turns to green. If the system gets RTK solution, then the RTK indicator turns to yellow (float solution) or green (fixed solution). If the RTK system is not working properly, please refer the 'Troubleshooting' section in user guide or contact us at [support@tersus-gnss.com](mailto:support@tersus-gnss.com).

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