

GPS/GNSS Mouse User's Manual for BU-353N5 and BR-355N5 V1.0



USB GNSS Receiver: BU-353N5



RS-232 GNSS Receiver: BR-355N5

© 2022 GlobalSat WorldCom Corporation/USGlobalSat, Inc. All rights reserved. The GlobalSat logo is a trademark of GlobalSat WorldCom Corporation. Windows is a register trademark of Microsoft Corporation. Acrobat is a registered trademark of Adobe Systems Incorporated. Mac is a registered trademark of the Apple Corporation. All other trademarks or registered trademarks are acknowledged as the exclusive property of their respective owners.

All rights reserved. No part of this manual may be reproduced, transmitted, copied, or stored in any storage medium, for any purpose, without prior written consent from GlobalSat WorldCom Corporation or USGlobalSat, Inc. GlobalSat/USGlobalSat hereby grants the right to download one (1) copy of this manual onto a hard drive for personal use. This manual is copyrighted and may contain proprietary information that is subject to change without notice.

Table of Contents

PACKAGE CONTENTS	3
SYSTEM REQUIREMENTS.....	3
WELCOME	3
1. GETTING STARTED.....	3
2. INSTALLING THE USB DRIVER TO YOUR LAPTOP.....	4
3. COM PORT VERIFICATION.....	6
4. INITIALIZING YOUR GPS RECEIVER.....	7
5. USING / TESTING YOUR GPS RECEIVER	8
6. UN-INSTALL THE USB DRIVER	10
7. FAQ's.....	10
8. CONTACT INFORMATION.....	11
9. SAFETY AND LEGAL NOTICES.....	12
10. LIMITED WARRANTY.....	13
11. BU-353N5 SPECIFICATIONS.....	15
12. BR-355N5 SPECIFICATIONS.....	16
13. BU-353N5 / BR-355N5 Product Pin Description.....	17

PACKAGE CONTANT

- GNSS Receiver
- Simple guide

•Please download the User Manual and driver installation guide at <https://www.globalsat.com.tw/>

SYSTEM REQUIREMENTS

The GlobalSat GPS receiver requires a Windows or Macintosh laptop with a USB port and NMEA compatible navigation software. 3rd party map/navigation software may have its own system requirements, please consult the software supplier for details.

WELCOME

Thank you for purchasing the GlobalSat GPS receiver! This product allows you to use your laptop for real-time street navigation. Simply load the GPS driver, plug the GPS receiver into your computer and install your own personal mapping software, then you are free to enjoy the real-time GPS services.

1. GETTING STARTED

These are only a few simple steps that you need to follow before using your GPS receiver:

- **Download Driver & GpsInfo utility from Globalsat website support page, <https://www.globalsat.com.tw/>**

NOTE:

Within your mapping, or navigation software (including the supplied GPS Information utility), you will need to manually select the correct COM port which has been assigned to the GPS receiver.

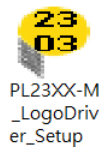
IMPORTANT:

1. Set Baud Rate 4800, Data Bit: 8, Parity: None, Stop Bit: 1, Flow Control: None.
2. You must check the default Baud rate of your mapping software in order to communicate with the GPS receiver.

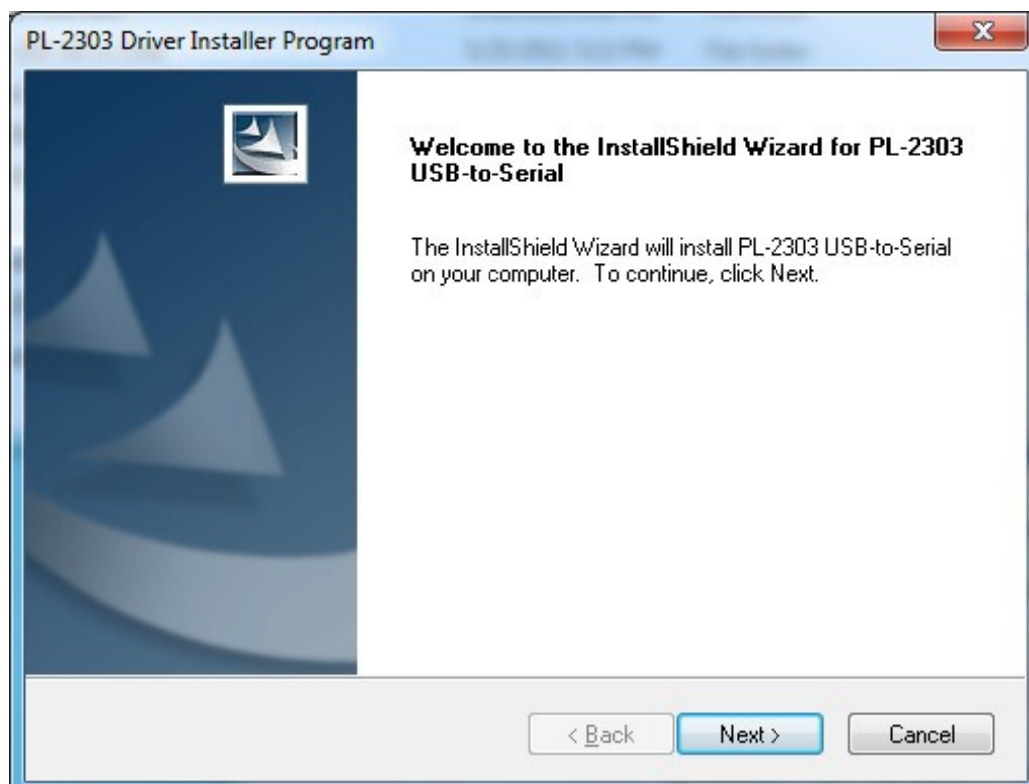
2. INSTALLING THE USB DRIVER TO YOUR LAPTOP

The following steps will show how to install the device under Windows 64-bit OS. The procedures are the same and straight-forward for all other supported Windows operating system versions.

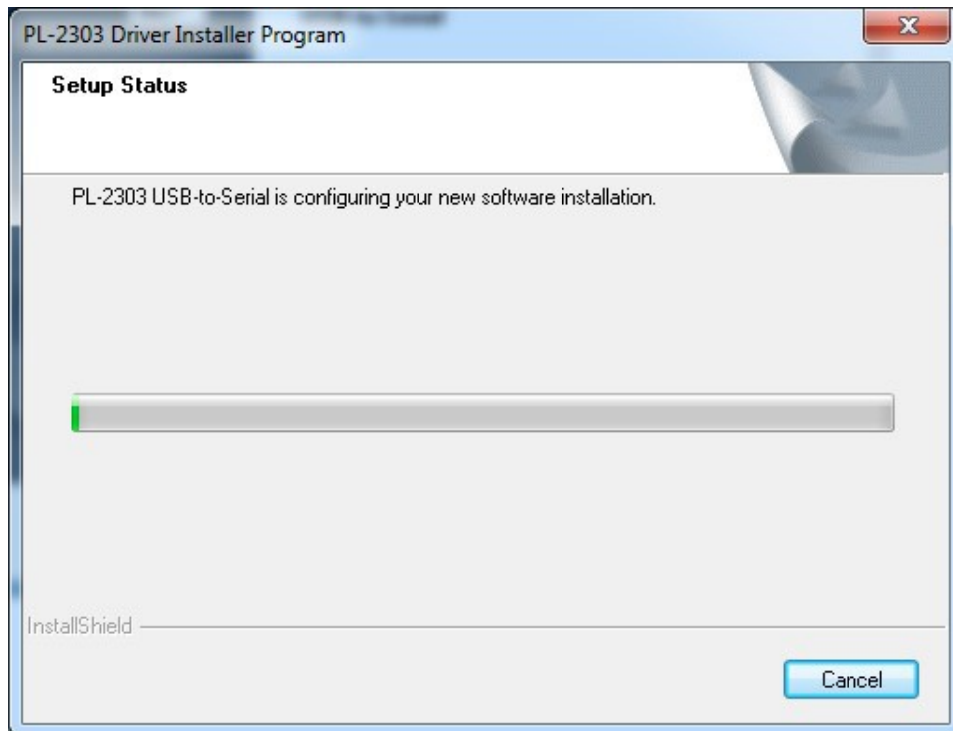
1. Power on your computer and boot to Windows. Run or double-click the PL-2303 Windows DriverInstaller program.



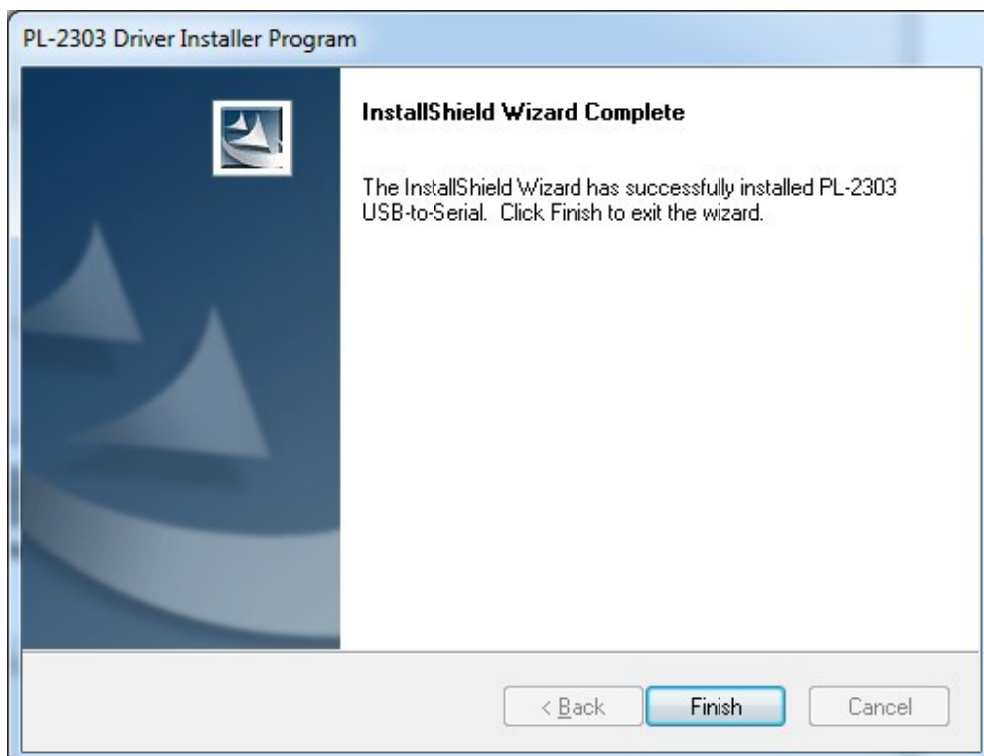
2. The InstallShield Wizard will be displayed to inform you that the PL-2303 USB-to-Serial driver will be installed on your computer. Click Next to continue.



3. The PL-2303 Driver Installer program will then start to install the drivers needed.



4. Click the Finish button to close the Install Shield program. If you have plugged the cable into the PC while running the setup installation, please unplug and replug the cable for the system to detect the device.

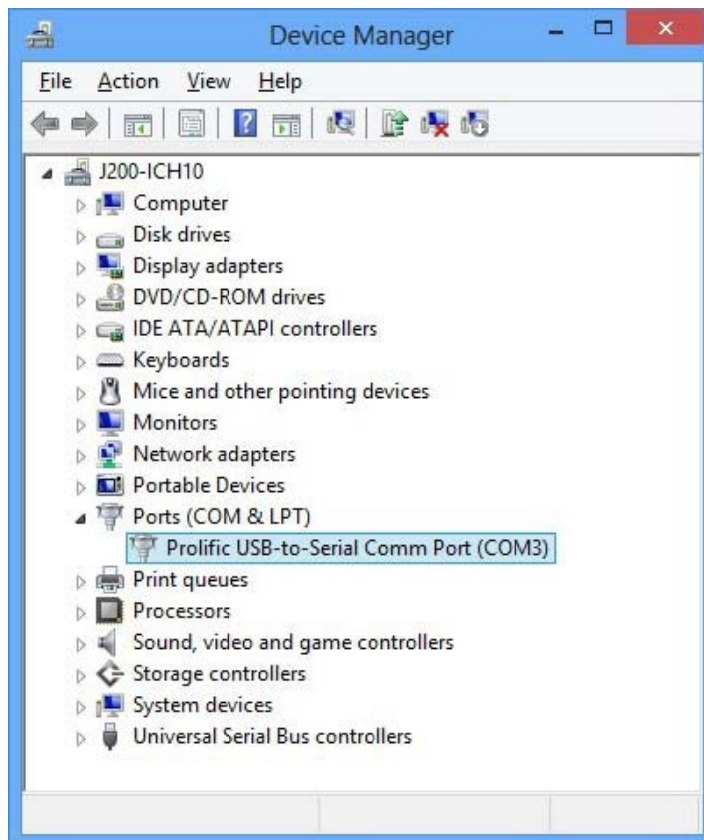


3. COM PORT VERIFICATION

1. Once your USB Driver has been installed, you will need to confirm which COM Port your PC has assigned to it in order to properly configure any software that will be utilizing the GPS data being received.
2. Your receiver must be plugged into your USB port at this time.
3. Using Window's **Control Panel**, select **System>Hardware>Device Manager**
4. Then look under the heading of: **PORTS (Com & LPT)**
5. There should be a listing for: **Prolific PL2303XX USB Serial COM Port (COMx)** ("x" will actually be the number your PC has assigned the USB GPS receiver).
6. Once you have identified the COM port number, any software that you utilize must be configured to read GPS data from this COM port.

We strongly recommend that you first download the "GpsInfo" utility from the Globalsat official website to test your USB GPS to confirm whether the GPS receiver is working properly on your PC and whether you have successfully configured the correct COM port settings. After completing this operation, close the GPS information program and start the COM port configuration application.

NOTE: By default, your PC will not allow you to run multiple applications from a single COM port. It is important that you close any previously opened GPS application before switching to another GPS application as the GPS receiver and data will not be found by the new program.



4. INITIALIZING YOUR GPS RECEIVER

Before using your GPS receiver for navigation (especially for the first time), the receiver must obtain a local GPS fix (coordinates) of the current position. To do this take your laptop (with your USB driver and the mapping software loaded and configured) to an open area that has a clear view to the sky (such as a park or empty field). Start your software (or the included GPS Info utility program) and wait for initialization of the GPS to complete. This may take a few minutes depending on various factors such as the distance of the current coordinates from the last time the GPS receiver was activated, GPS signal strength and surrounding terrain (tall trees and buildings can block the satellite signals). Once the RAW GPS data is displayed onto the screen, if applicable for your software, a fix has been initialized (red LED on the GPS will also start to flash). In some cases, initialization can take up to several minutes depending on the conditions mentioned above before complete GPS data will be displayed on the screen.

Coordinates scrolling with zero's means that the port connection is complete, but the satellite data is not being received yet (possibly still initializing or in a bad area for satellite reception).

5. USING / TESTING YOUR GPS RECEIVER

Once the GPS receiver's driver and your personal mapping software have been installed and configured properly, you can begin to use your navigation system by plugging the receiver into your laptop. If you don't have a mapping, or navigation software, we've included a GPS test utility called "GPSinfo" for the purpose of confirming your installation and configuration.

This utility can be installed by executing "GPSinfo.exe" file in Windows and can be downloaded from our website, <https://www.globalsat.com.tw/>.

- **LED Status indicator on the USB GPS**

LED OFF: GPS receiver is off (no power).

LED ON (solid): No fix, searching for GPS signals.

LED FLASHING: Position fix established and GPS signals are being received.

- **Recommended installation location of the receiver:**

Always select an area in the vehicle where the GPS unit will be secure and not obstruct normal driving, visibility and safety, but still maintaining a "view to the sky" in order to receive satellite data.

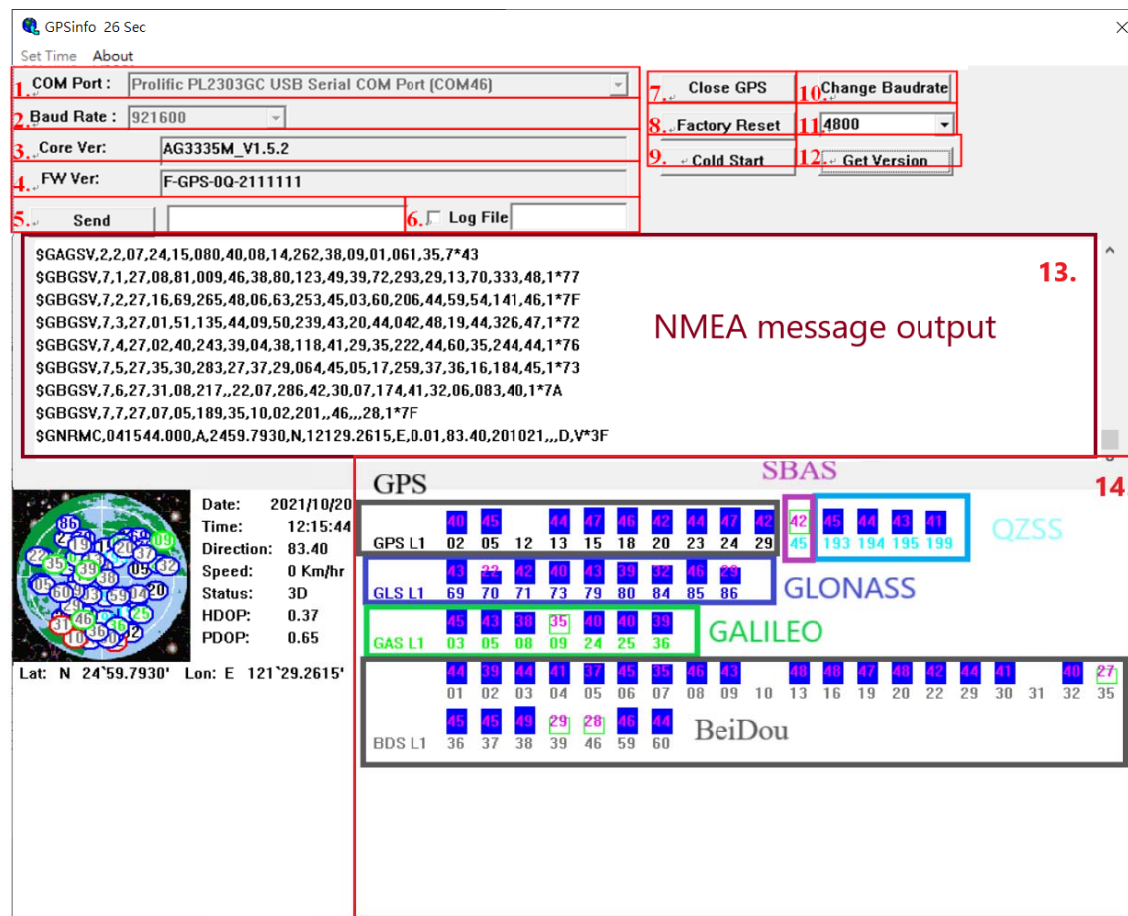
- **GPS information function test setting:**

1. Run **GpsInfo.exe** to load the utility.
2. Enter the proper COM port for your GPS device (see COM Port Verification above)
3. Set COM port to Baud rate: 4800
4. If no errors have been made in configuration, there should be GPS data being displayed in the window, which is the confirmation that the communication between the GPS device and the "GPSinfo" software is working properly.
5. If there is no GPS data displayed (or data with multiple zeros in them), please exit the software and unplug the GPS receiver from USB port and reinsert it after 10 seconds to reset the device.

NOTE: The correct COM port configuration between the GPS Device and your mapping software must be completed before using the software for the first time.

● **GpsInfo user interface description:**

1. **COM Port:** Com port selection.
2. **Baud Rate :** Choose a preset Baud Rate.
3. **Core Ver:** Show Core version location.
4. **FW Ver:** Show FW version location.
5. **Send :** Execute input PAIR command.
6. **Log File:** After entering the file name, check to start NMEA data LOG.
7. **Start GPS :** Start/Stop GPS Date.
8. **Factory Reset:** In addition to Cold start, this command clears the system/user configurations at the start. It resets the GNSS module to the factory default.
9. **Cold Start:** Not using the Position, Almanac and Ephemeris data at the start.
10. **Change Baudrate:** Confirm to replace the selected Baud rate.
11. **4800~921600 :** Select the Baud Rate to switch.
12. **Get Version:** Show Core & FW version.
13. **NMEA message output**
14. **Various satellite signal numbers and sensitivity values**



The above screen shows the available satellites (numbers) and their signal strength.

6. UN-INSTALL THE USB DRIVER

Run the file the **PL-2303 Driver Installer.exe** to uninstall the USB GPS driver.

7. FAQs

I am not getting GPS data into my application.

1. Check your DEVICE MANAGER to confirm the COM Port number assigned to the GPS Receiver (it will be listed under the **PORTS (COM & LPT)** heading as Prolific **Serial-to-USB Comm**. Then be sure this is the same COM port number configured in your application.
2. Be sure your Baud rate is configured correctly at:
Baud Rate: 4800
Data bit: 8
Parity: None
Stop Bit: 1
Flow Control: None
3. Re-boot your computer and then insert the USB GPS into a USB port.
4. Configure the GPS Info utility with the correct COM Port and test your GPS receiver first before using it in your application.

Will the GPS work with other Street Mapping software?

GlobalSat GPS receivers provide standard NMEA data for mapping software to use and convert to coordinates and should work well with most any NMEA compliant software on the market today.

How accurate is the GPS?

The USB GPS is WAAS/EGNOS capable, and for units sold in North America through authorized resellers, these units are WAAS/EGNOS enabled unless otherwise stated. Accuracy can be up to 5 meters 3D RMS with WAAS enabled and 10-15 meters 2D RMS WAAS disabled.

Why do I only see the GPS signal?

Due to the huge amount of NMEA data for all satellite systems, the default Baud rate 4800 will only support NMEA from GPS and hide others.

How could I see the NMEA from all satellite systems?

You must first launch our "GpsInfo" utility. Start with the default Baud rate 4800, then change the new Baud rate to 460800 or 921600. Make sure you click "Change Baudrate" to execute. **Note: Before changing Baud rate, please confirm whether your equipment and cable support this rate.**

What is ideal GPS environment?

The GPS requires an open, clear view of the sky. Buildings, covered parking areas, tunnels and dense foliage can cause the GPS receiver to be unable to get a location fix.

If you are parked in a covered parking lot or near a tall building, it is recommended that you drive away until you have a clear view of the sky before using. You may need to give the GPS a few minutes to find or get a fix its location.

How do I know if the GPS is ON?

Your USB GPS must be plugged into your laptop's USB port to get power. If your PC is on and the COM port was configured properly, the GPS receiver is on and receiving the streaming GPS data. This can be verified by opening your mapping software program. In addition, the GlobalSat USB GPS has a built-in LED status indicator that shows the following:

LED OFF: GPS receiver is off (no power).

LED ON (solid): No fix, searching for GPS signals.

LED FLASHING: Position fix established and GPS signals are being received.

Why does the GPS not work near buildings and other tall objects?

The GPS uses satellites in the space to find out where it is. Therefore it needs a clear view of the sky. Tall buildings and other objects that block the receiver's view to the sky make it infeasible to determine your location. Sometimes the satellites are not overhead but near the horizon. In these cases the GPS must have a clear view of the horizon.

Other Comments-

Please allow an adequate amount of time for the GPS receiver's boot-up (TTF) to complete before contacting Technical Support.

You can download the latest Driver Installer program from Prolific Support website:
<http://www.prolific.com.tw/US/CustomLogin.aspx>

8. CONTACT INFORMATION

GlobalSat WorldCom Corporation (Taiwan), www.globalsat.com.tw
service@globalsat.com.tw (pre-sales GPS product questions only)

USGlobalSat, Inc.
sales@globalsat.com (pre-sales GPS product questions only)

For technical support, please refer to our website to learn about GPS solutions and driver data updates. <https://www.globalsat.com.tw/Support>

Pre-registration is required before receiving any type of technical support. Support issues submitted via phone, fax or e-mail (any means outside of the recognized "Trouble Ticket" generated from your own USGlobalSat registered account) WILL NOT be answered. Create your account and register your products at:
<https://www.globalsat.com.tw/Contact>

9. SAFETY AND LEGAL NOTICES

Please read this section carefully before using the GPS receiver

GlobalSat WorldCom Corporation / USGlobalSat, Inc. will not accept any responsibility whatsoever for accidents resulting from failure to observe common sense precautions. Your personal judgment, traffic regulations, and common sense must always take precedence over any directions produced by GPS receiver or the mapping software

WARNING: Make sure the GPS receiver is secure and does not interfere with driving visibility and safety.

It is your responsibility as the vehicle operator to securely place the GPS unit and antenna so that they will not interfere with driving and prevent operations of any safety device (such as the Airbag) in your vehicle. Do not mount the devices in a place where the driver or passengers may receive injury during vehicle operation or collision. For your safety, take care to route all cables away from shifters, pedals, accessory controls and mechanisms.

WARNING: Drive safely and use common sense.

It is your responsibility as the vehicle operator to drive safely, observe all traffic rules and above all use your own personal judgment while driving. If you feel that a route suggested by the navigation software instructs you to perform an unsafe or illegal maneuver, places you in an unsafe situation, or routes you into an area which you consider unsafe, do not follow the instructions.

WARNING: Keep your eyes on the road.

It is your responsibility as the vehicle operator to keep your eyes on the road and be an alert driver at all times, especially when the vehicle is moving. The vehicle's operator should not be distracted by the navigation equipment or software. Should there be a distraction with the ability to drive responsibly, please turn off the device. Should you want to look at the display for a prolonged time, park the car safely, while following all traffic regulations before looking at the display.

WARNING: To reduce the risk of fire or shock hazard, do not expose this product to rain or moisture. Do not remove covers or open housings, there are no user serviceable parts inside. Refer servicing to qualified personnel only.

10. LIMITED WARRANTY

GlobalSat/USGlobalSat warrants product hardware against manufacturing defects in material and workmanship under normal use for a period of one (1) year from the original date of purchase (unless the product states otherwise), and only when purchased from a recognized "authorized dealer". Products purchased from any unauthorized source, such as unauthorized e-Bay resellers, will not qualify for free warranty service/support and may require the end-user to pre-pay fees associated with, but not limited to the support, repair, replacement and shipping of the product to and from the service center.

Except as provided herein, GlobalSat/USGlobalSat makes no express warranties, including but not limited to any warranties of merchantability or fitness for particular use, or non-infringement. You acknowledge that your use of the product or service is at your sole risk and you agree that the information provided are without warranty of any kind by GlobalSat/USGlobalSat.

Under no circumstances, including negligence, will GlobalSat/USGlobalSat or any of its affiliates, directors, officers or employees, or any third party be liable for any direct, indirect, incidental, special or consequential damages that results from your use, or your inability to use, or the performance of the product(s) with respect to any liability, loss, or arising out of any breach of this warranty, including, but not limited to any damages resulting from inconvenience, loss of time, data, property, revenue, or profit or any indirect, special incidental or consequential damages. You acknowledge that this limitation applies to all content information or other services available from GlobalSat/USGlobalSat, and whether or not GlobalSat/USGlobalSat has notice of the possibility of such damages, and whether or not to circumstances giving rise to such damages may have been within the control of GlobalSat/USGlobalSat.

Some states do not allow the exclusion of certain warranties, so some of the above exclusions may not apply to you. In those states, liability is limited to the fullest extent allowed by law by using the product(s), you agree to indemnify GlobalSat/USGlobalSat and its parents, subsidiaries, affiliates, officers and employees and hold them harmless from any and all claims and expenses, including reasonable attorney's fees, asserted third party due to, or arising out of your use of the service and the site.

In the event of a product defect during the first 30-days of the warranty period, return product and the sales receipt as proof of purchase date to place of original purchase. Defect discovered after 30-days from date of purchase, you must contact GlobalSat/USGlobalSat's Technical support for a Return Merchandise Authorization (RMA) number for return to manufacturer.

GlobalSat/USGlobalSat will, at its option, unless otherwise provided by law:

- a.) Correct the defect by product repair without charge for parts and labor;
- b.) Replace the product with one of the same or similar design; or Refund the purchase price. All replaced parts and products, and products on which a refund is made, become the property of GlobalSat/USGlobalSat. New or reconditioned parts may be used in the performance of warranty service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the product made after the expiration of the warranty period.

This warranty does not cover:

- a.) Damage or failure caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow the instructions, improper installation or

- maintenance, alteration, lighting or other incidence of excess voltage or current;
- b.)Any repairs other than those provided by Globalsat/USGlobalsat;
- c.)Consumables such as fuses or batteries;
- d.)Cosmetic damage;
- e.)Transportation, shipping or insurance costs;
- f.)Costs of product removal, installation, set-up service adjustment or reinstallation.

This warranty gives you specific legal rights, and you may also have other rights, which may vary from state to state.

Additional products bundled in this package not manufactured by Globalsat/USGlobalsat will hold separate warranties as expressed by the individual manufacturer of that product(s). Product specifications, functions and features are subject to change without notice.

11. BU-353N5 SPECIFICATION

Electrical Characteristics(Receiver)

GPS Chipset	High performance chipset
Frequency	L1 CA/E1 1575.42 MHz , L1 1602 MHz , B1 1561.098 Mhz
C/A Code	1.023 MHz chip rate
Channels	75
Sensitivity	-165dBm

Accuracy

Position Horizontal	<2.5m 2D RMS SBAS Enable
Velocity	0.1m/sec 95% (SA off),
Time	1 micro-second synchronized to GPS time
WAAS	Enable for North America products(USGlobalSat, Inc)

Datum

Datum	WGS-84
-------	--------

Acquisition Rate

Hot start	1 sec., average (with ephemeris and almanac valid)
Warm start	24 sec., average (with almanac but not ephemeris)
Cold start	33 sec., average (neither almanac nor ephemeris)
Reacquisition	0.1 sec. average (interruption recovery time)

Protocol

GPS Protocol	Default: NMEA 0183 (Secondary: AIROHA proprietary PAIR Commands>position, velocity, altitude, status and control.)
GPS Output Data	NMEA 0183 MEA0183 V3.01/V4.10 protocol supports , Command : GGA, GSA, GSV, RMC, VTG, GLL (GLL, VTG, ZDA, GRS, GST are optional)
GPS transfer rate	Software command setting (Default:4800,n,8,1 for NMEA)

Dynamic Condition

Acceleration Limit	Less than 4g
Altitude Limit	18,000 meters (60,000 feet) max.
Velocity Limit	515 meters/sec. (1,000 knots) max.
Jerk Limit	20 m/sec

Temperature

Operating	-40°~ 85°C
Storage	-40°~ 85°C
Humidity	Up to 95% non-condensing

Power

Voltage	5V ±5%
Current	42mA typical

Physical Characteristics

Dimension	2.08" diameter x 0.75" (53mm dia. x 19.2mm)
USB Cable Length	60" (152 cm)

Low Noise Amp

Amplifier Gain w/out cable	27 dB Typical
Filtering	-25dB (+100 MHz)
Output VSWR	2.0 Max.
Voltage	DC 3 ~ 5.0V
Voltage	DC 3 ~ 5.0V

Due to continuous product improvements, all specifications are subject to change without notice.

12. BR-355S4 SPECIFICATION

Electrical Characteristics(Receiver)

GPS Chipset	High performance chipset
Frequency	L1 CA/E1 1575.42 MHz , L1 1602 MHz , B1 1561.098 Mhz
C/A Code	1.023 MHz chip rate
Channels	75
Sensitivity	-165dBm

Accuracy

Position Horizontal	<2.5m 2D RMS SBAS Enable
Velocity	0.1m/sec 95% (SA off),
Time	1 micro-second synchronized to GPS time
WAAS	Enable for North America products(USGlobalSat, Inc)

Datum

Datum	WGS-84
-------	--------

Acquisition Rate

Hot start	1 sec., average (with ephemeris and almanac valid)
Warm start	24 sec., average (with almanac but not ephemeris)
Cold start	35 sec., average (neither almanac nor ephemeris)
Reacquisition	0.1 sec. average (interruption recovery time)

Protocol

GPS Protocol	Default: NMEA 0183 (Secondary: AIROHA proprietary PAIR Commands>position, velocity, altitude, status and control.)
GPS Output Data	NMEA 0183 MEA0183 V3.01/V4.10 protocol supports , Command : GGA, GSA, GSV, RMC, VTG, GLL (GLL, VTG, ZDA, GRS, GST are optional)
GPS transfer rate	Software command setting (Default:4800,n,8,1 for NMEA)

Dynamic Condition

Acceleration Limit	Less than 4g
Altitude Limit	18,000 meters (60,000 feet) max.
Velocity Limit	515 meters/sec. (1,000 knots) max.
Jerk Limit	20 m/sec

Temperature

Operating	-40°~ 85°C
Storage	-40°~ 85°C
Humidity	Up to 95% non-condensing

Power

Voltage	5V ±5%
Current	35mA typical

Physical Characteristics

Dimension	2.08" diameter x 0.75" (53mm dia. x 19.2mm)
Cable Length	60" (152 cm)

Low Noise Amp

Amplifier Gain w/out cable	27 dB Typical
Filtering	-25dB (+100 MHz)
Output VSWR	2.0 Max.
Voltage	DC 3 ~ 5.0V
Voltage	DC 3 ~ 5.0V

Due to continuous product improvements, all specifications are subject to change without notice.

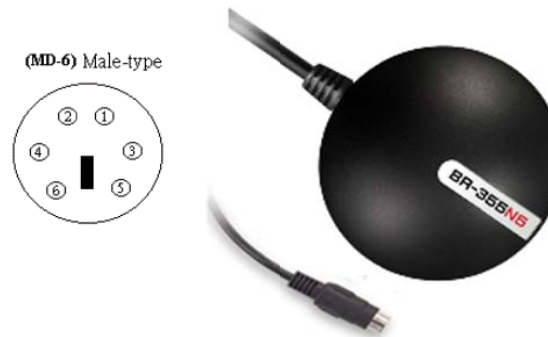
13.BU-353N5 / BR-355N5 Product Pin Description

BU-353N5



PIN Number(s)	Name	Type	Description
1	Vin	P	Main power supply.
2,3	USB IF		USB IF to transmits channel for outputting navigation and measurement data to user's navigation software or user written software.
4	GND	P	Ground.

BR-355N5



PIN Number(s)	Name	Type	Description
1	GND	P	Ground.
2	VCC	P	Main power supply.
3,6	NC		Reverse PIN.
4	RX	I	This is the main receive channel for receiving software commands to the engine board from SiRFdemo software or from user written software.
5	TX	O	This is the main transmits channel for outputting navigation and measurement data to user's navigation software or user written software.
LED	RED		LED OFF: Receiver switch off LED ON: Receiver switch on No fixed, Signal searching LED Flashing: Position Fixed