

## **Serial GPS User's Guide (Mac)**

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BR-355 GPS Receiver



**BR-355**



DOCUMENT REVISIONS

REV NO.	DATE	DESCRIPTION	APPROVED
1.0	02-28-2003	Initial document	BRF
1.2	06-08-2005	New document format	NRG
2.0	04-07-2006	Revision of embedded web inks	AAK

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### PACKAGE CONTENTS

- USB GPS Receiver
  - Driver CD-ROM with User's Guide and test utility for WIN and Mac O/S\*
- **Mac Users** please refer to the Mac directory on the included CD-ROM for installation instructions and drivers **x:\Mac** (The letter "x" represents your CD-ROM drive).

NOTE: You can also download Mac driver and Installation Guides at: [www.usglobalsat.com/mac](http://www.usglobalsat.com/mac)

### SYSTEM REQUIREMENTS

The Globalsat USB GPS receivers requires a Windows, or Macintosh laptop computer, with a CD-ROM\*, USB port, and NMEA compatible navigation software. The 3<sup>rd</sup> party mapping/navigation software may have its own system requirements, please check with software vendor for details.

*\*CD-ROM is required for USB driver installation and access to the User's Guide. If no CD-ROM drive is available, files can be downloaded from the Internet at: [www.usglobalsat.com/mac](http://www.usglobalsat.com/mac)*

### WELCOME

Thank you for purchasing a Globalsat USB GPS receiver! Globalsat USB GPS receivers allow for real-time street navigation by using your laptop for graphical plotting and positioning of your route. Simply load the GPS driver, plug the GPS receiver into your computer's USB port and install your own personal mapping software to begin to view your position in real-time in relation to the surrounding streets in your travel area.

You'll find that almost any NMEA compliant mapping/charting software will be compatible with your USB GPS receiver. Visit our web-site for recommended mapping programs that you can use.

[http://www.usglobalsat.com/faq\\_details/Mapchart.asp](http://www.usglobalsat.com/faq_details/Mapchart.asp) .

## 1. GETTING STARTED

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

- Install the USB driver and onto your laptop from the included CD-ROM or download the files from our web-site [www.usglobalsat.com/mac](http://www.usglobalsat.com/mac)
- Plug-in the GPS receiver into your laptop.

**NOTE:** From within your mapping, or navigation software (including the supplied GPS Information utility), you will need to manually configure the selection of the COM port to what was assigned to the GPS receiver so that proper communication between the GPS receiver and mapping program can occur. Most all software requires that you manually configure the COM port setting for any GPS device you use.

**IMPORTANT:**

1. You must change the default rate setting of your mapping software to 4800 if this is not currently set as such otherwise GPS data cannot be received.
2. Port: /dev/cu.usbserial
3. Set Baud Rate: 4800

## 2. INSTALLING THE USB DRIVER INTO YOUR LAPTOP

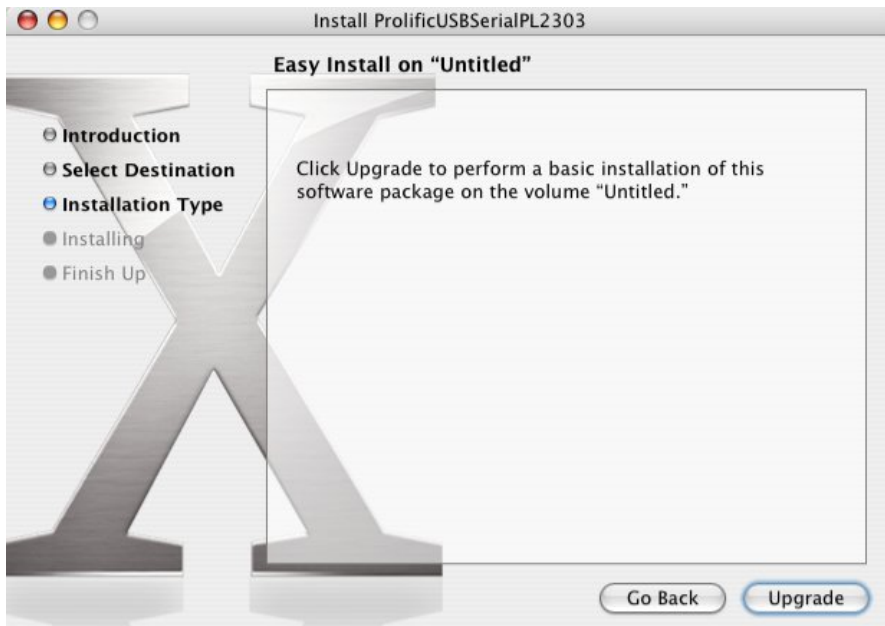
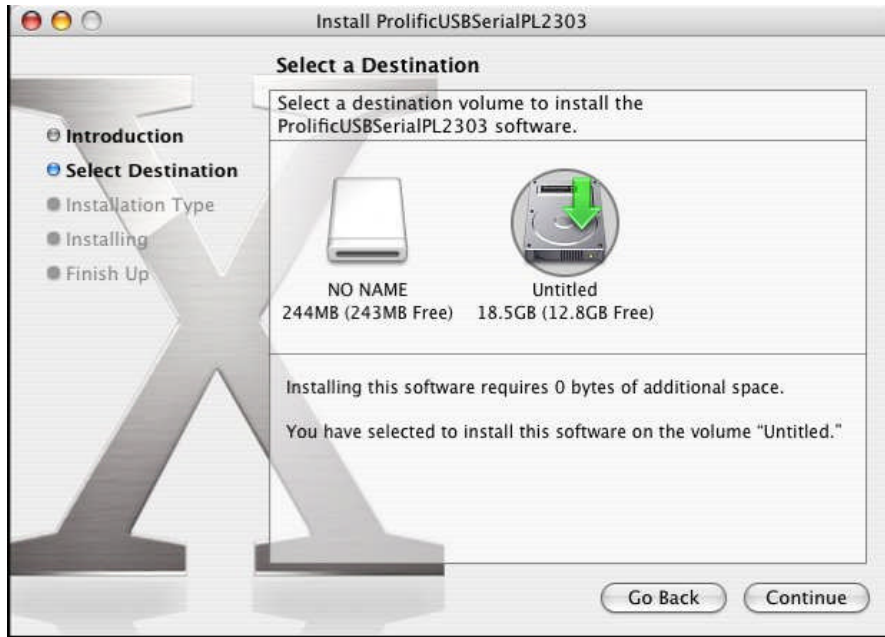
**STEP 1.**

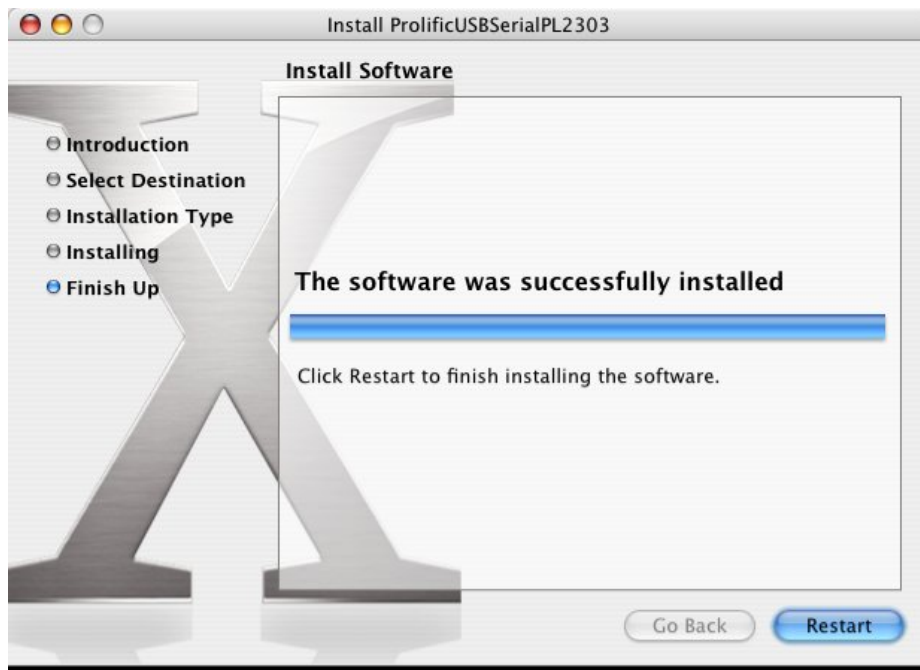
Expand the archive file and then run the installation by double clicking on the **PL2303\_1.0.966.pkg** icon.

**STEP 2.**

Next, a series of installation steps and screens will be provided for completing the driver installation process.







When installation is complete, reboot your Mac and connect your USB GPS receiver at this stage for device detection.

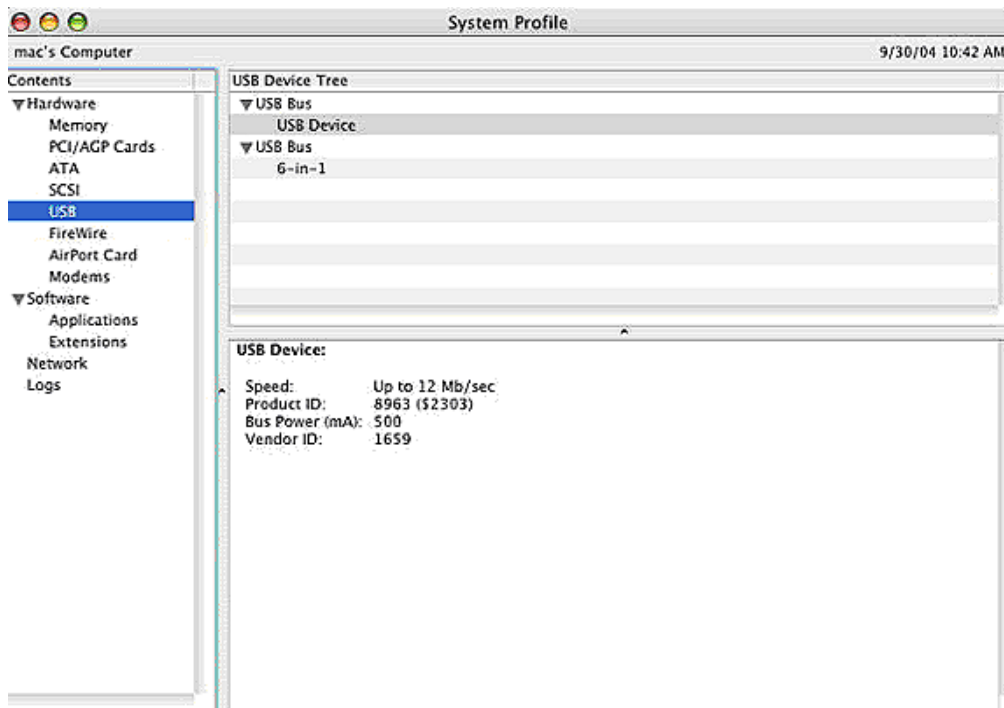
**NOTE:** After completing driver installation under Mac OS 10.2.X, a warning may appear stating that “Prolific USBSerial.kext” has encountered problems. This is due to driver being compiled under OS 10.1.X. Three options will be provided for you to select one; however selecting the “Fix and Use” option will eliminate this conflict.

### 3. VALIDATE USB DRIVER INSTALLATION

To verify that your device is recognized by the Operating System you can open the System Profiler.

To access System Profiler perform the following.

First, place mouse pointer and select the blue apple icon on the top left hand side of the Apple menu. Then, select the following “About This Mac”->“More Info...”-> Hardware->USB to display device’s detection.



Under USB Device Tree, you will view “USB Device” this pertains to your GPS USB receiver. Driver information can be found under USB Device window.

### 4. UN-INSTALL THE USB DRIVER

To uninstall the Prolific USB driver, follow these steps:

1. Open "Applications-> Utilities-> Terminal". You need to create ID & password first on NetInfo Manager.
2. Login to root user and type "su" and enter password.
3. Type "cd /System/Library/Extensions" to go to the "Extensions" folder.
4. Unload the driver (if it had been loaded) by typing "kextunload PL2303.kext" or "kextunload ProlificUsbSerial.kext"
5. Remove the driver by typing "rm -r PL2303.kext" or "rm -r ProlificUsbSerial.kext".

See FAQ below for more on “root users”



## 5. INITIALIZING YOUR GPS RECEIVER

Before using your USB 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 Mac\_GPSutility 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).

## 6. USING YOUR GPS RECEIVER

Once the USB 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 USB GPS into your laptop's USB port and launching your mapping software. If you don't have a mapping, or navigation software, we've included a GPS test utility called "GPS Utility" so that you can test the function of your USB GPS receiver. This utility is located within the Mac directory on the CD-ROM or can be download from our web-site [www.usglobalsat.com/mac](http://www.usglobalsat.com/mac).

### **GPS LED Status indicator:**

**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.

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.

## 7. FAQ's

### **How Do I Enable a Root Account?**

The "root" user (also known as the super user) is the most powerful UNIX account. The root account can do anything to any file or folder, anywhere on the system. For that reason, Globalsat/USGlobalsat cannot recommend, nor support users who attempt modifications of the 'root user' as it's considered quite dangerous, and only needs to be used (occasionally) by advanced users.

Because of the dangers of operating as root, Apple has chosen to hide the root account in OS X Final. However, there are a number of ways to enable it. The easiest is to boot off the install CD, and look under the Install menu for the "Password Reset" option. You can use this to change your own password if you forget it, and to enable the root account. This utility will **not** run if you copy it to your hard drive! It only works when booting from the CD.

Read the rest if you'd like to know how to do this from within OS X, and skip the CD-based reboot.

The second easiest way to enable root is to start a terminal session, and type: `sudo passwd root`  
You will be prompted for a new password to enable root access. Many find this easier than rebooting, but since it involves the command line, newcomers may find it a bit more intimidating.

The hardest way to enable root is to use the NetInfo Manager application (in Applications/Utilities). Here's what you do, courtesy of "anonymous":

- 1) Open NetInfo Manager
- 2) Select "Users" from the second list.
- 3) Select a user you created and know the password for!
- 4) Double-click on the value across from "passwd" and copy it. It is the encoded form of the password for that user.
- 5) Select "root" from the list of users. Find the "passwd" value (default is "\*\*") and paste over it.
- 6) Exit NetInfo Manager.
- 7) Open the Terminal and type "su root".
- 8) Enter the password for the user chosen above.

### **Will the USB GPS work with other Street Mapping software?**

Globalsat USB GPS receivers provides 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

### **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 the BU-303. 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.

### **What driver is needed for Virtual PC?**

For Macintosh Virtual PC applications, you do not need any additional drivers than those already being used for your Mac OS X applications. It is, however recommended that 1-Gigabyte of memory is available to run Virtual PC applications efficiently.

### Other Comments-

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

Driver updates can be found at Prolific's web-site:

<http://www.prolific.com.tw/eng/downloads.asp?ID=31> ([www.prolific.com.tw](http://www.prolific.com.tw))

## 8. CONTACT INFORMATION

**Globalsat Technology Corporation** (Taiwan)

[www.globalsat.com.tw](http://www.globalsat.com.tw)

[service@globalsat.com.tw](mailto:service@globalsat.com.tw) (pre-sales GPS product questions only)

**USGlobalsat, Inc.**

[www.usglobalsat.com](http://www.usglobalsat.com)

[sales@globalsat.com](mailto:sales@globalsat.com) (pre-sales GPS product questions only)

**Technical Support** (North America)

See our DOWNLOADS and FAQ section on our web-site for GPS solutions, driver literature updates.

<http://www.usglobalsat.com/custom.asp?recid=7>

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: [www.usglobalsat.com/support/custadminlogin.asp](http://www.usglobalsat.com/support/custadminlogin.asp)

## 9. SAFETY AND LEGAL NOTICES

### **Please read this section carefully before using the GPS receiver**

Globalsat Technology 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 that 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.



## USB GPS (Mac)

**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-303 SPECIFICATIONS

### Electrical Characteristics (Receiver)

GPS Chipset	SiRF Star II e/LP
Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz chip rate
Channels	12 all-in-view tracking
Sensitivity	-147 dBm

### Accuracy

Position Horizontal	10m 2D RMS WAAS enabled 15m 2D RMS WAAS disabled
Velocity	0.1m/sec 95% (SA off),
Time	1 micro-second synchronized to GPS time
WAAS	Enabled for North America products (USGlobalSat, Inc)

### Datum

Datum	WGS-84
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### Acquisition Rate

Hot start	8 sec., average (with ephemeris and almanac valid)
Warm start	38 sec., average (with almanac but not ephemeris)
Cold start	45 sec., average (neither almanac nor ephemeris)
Reacquisition	0.1 sec. average (interruption recovery time)

### Protocol

GPS Protocol	Default: NMEA 0183 (Secondary: SiRF binary) SiRF binary >> position, velocity, altitude, status and control
GPS Output Data	NMEA 0183 MEA0183 V2.2 protocol, and supports command: GGA, GSA, GSV, RMC, VTG, GLL v2.2 (VTG and GLL 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**3

### Temperature

Operating	-40°~ 176°F (-40°~ 80°C)
Storage	-40°~ 176°F (-40°~ 80°C)
Humidity	Up to 95% non-condensing

### Power

Voltage	5V ±5%
Current	90mA typical

### Physical Characteristics

Dimension	2.32" x 1.65" x 0.82" (59mm x 47mm x 12mm)
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
Current	15mA max @ 5VDC

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

#### FCC NOTICE

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. FCC RF Exposure requirements: This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter. NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

## 12. BU-353 SPECIFICATIONS

<b>Electrical Characteristics (Receiver)</b>	
GPS Chipset	SiRF Star III e/LP
Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz chip rate
Channels	20 all-in-view tracking
Sensitivity	-159 dBm
<b>Accuracy</b>	
Position Horizontal	5m 2D RMS WAAS enabled 10m 2D RMS WAAS disabled
Velocity	0.1m/sec 95% (SA off),
Time	1 micro-second synchronized to GPS time
WAAS/EGNOS	Enabled for North America products (USGlobalSat, Inc)
<b>Datum</b>	
Datum	WGS-84
<b>Acquisition Rate</b>	
Hot start	1 sec., average (with ephemeris and almanac valid)
Warm start	38 sec., average (with almanac but not ephemeris)
Cold start	42 sec., average (neither almanac nor ephemeris)
Reacquisition	0.1 sec. average (interruption recovery time)
<b>Protocol</b>	
GPS Protocol	Default: NMEA 0183 (Secondary: SiRF binary) SiRF binary >> position, velocity, altitude, status and control
GPS Output Data	NMEA 0183 MEA0183 V2.2 protocol, and supports command: GGA, GSA, GSV, RMC, VTG, GLL v2.2 (VTG and GLL are optional)
GPS transfer rate	Software command setting (Default : 4800,n,8,1 for NMEA )
<b>Dynamic Condition</b>	
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**3
<b>Temperature</b>	
Operating	-40°~ 185°F (-40°~ 85°C)
Storage	-40°~ 185°F (-40°~ 85°C)
Humidity	Up to 95% non-condensing
<b>Power</b>	
Voltage	4.5 ~ 5.5V DC Input
Current	80mA typical
<b>Physical Characteristics</b>	
Dimension	2.08" diameter x 0.75" (53mm diameter x 19.2mm)
USB Cable Length	60" (152 cm)
<b>Low Noise Amp</b>	
Amplifier Gain w/out cable	27 dB Typical
Filtering	-25dB (+100 MHz)
Output VSWR	2.0 Max.
Voltage	DC 3 ~ 5.0V
Current	15mA max @ 5VDC

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

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(1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. FCC RF Exposure requirements: This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter. NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.