ashtech™

Getting Started Guide

Handheld Platform for
MobileMapper 100, ProMark 100
& ProMark 200

(Complete Version)

limitation of incidental or consequential damages may not apply.

For further information concerning this limited warranty, please call or write:

Ashtech LLC, El Camino Real 451, Suite 210, CA 95050, Santa Clara, USA, Phone: +1 408 572 1103, Fax: +1 408 572 1199 or

Ashtech - ZAC La Fleuriaye - BP 433 - 44474 Carquefou Cedex - France Phone: +33 (0)2 28 09 38 00, Fax: +33 (0)2 28 09 39 39.

Ashtech Products Limited Warranty (Europe, Middle East, Africa)

All Ashtech global positioning system (GPS) receivers are navigation aids, and are not intended to replace other methods of navigation. Purchaser is advised to perform careful position charting and use good judgment. READ THE USER GUIDE CAREFULLY BEFORE USING THE PRODUCT.

1. ASHTECH WARRANTY

Ashtech warrants their GPS receivers and hardware accessories to be free of defects in material and workmanship and will conform to our published specifications for the product for a period of one year from the date of original purchase or such longer period as required by law. THIS WARRANTY APPLIES ONLY TO THE ORIGINAL PURCHASER OF THIS PRODUCT.

In the event of a defect, Ashtech will, at its option, repair or replace the hardware product with no charge to the purchaser for parts or labor. The repaired or replaced product will be warranted for 90 days from the date of return shipment, or for the balance of the original warranty, whichever is longer. Ashtech warrants that software products or software included in hardware products will be free from defects in the media for a period of 30 days from the date of shipment and will substantially conform to the then-current user documentation provided with the software (including updates thereto). Ashtech's sole obligation shall be the correction or replacement of the media or the software so that it will substantially conform to the then- current user documentation. Ashtech does not warrant the software will meet purchaser's requirements or that its operation will be uninterrupted, error-free or virus-free. Purchaser assumes the entire risk of using the software.

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PURCHASER'S EXCLUSIVE REMEDY UNDER THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT, AT ASHTECH'S OPTION, OF ANY DEFECTIVE PART OF THE RECEIVER OR ACCESSORIES WHICH ARE COVERED BY THIS WARRANTY. REPAIRS UNDER THIS WARRANTY SHALL ONLY BE MADE AT AN AUTHORIZED ASHTECH SERVICE CENTER. ANY REPAIRS BY A SERVICE CENTER NOT AUTHORIZED BY ASHTECH WILL VOID THIS WARRANTY.

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To obtain service, contact and return the product with a copy of the original sales receipt to the dealer from whom you purchased the product.

Ashtech reserves the right to refuse to provide service free-of-charge if the sales receipt is not provided or if the information contained in it is incomplete or illegible or if the serial number is altered or removed. Ashtech will not be responsible for any losses or dam-

age to the product incurred while the product is in transit or is being shipped for repair. Insurance is recommended. Ashtech suggests using a trackable shipping method such as UPS or FedEx when returning a product for service.

4. LIMITATION OF IMPLIED WARRANTIES

EXCEPT AS SET FORTH IN ITEM 1 ABOVE, ALL OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING THOSE OF FITNESS FOR ANY PARTICULAR PURPOSE OR MERCHANTABILITY, ARE HEREBY DISCLAIMED AND IF APPLICABLE, IMPLIED WARRANTIES UNDER ARTICLE 35 OF THE UNITED NATIONS CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS.

Some national, state, or local laws do not allow limitations on implied warranty or how long an implied warranty lasts, so the above limitation may not apply to you.

5. EXCLUSIONS

The following are excluded from the warranty coverage:

(1) periodic maintenance and repair or replacement of parts due to normal wear and tear;

(2) batteries;

(3) finishes;

(4) installations or defects resulting from installation;

(5) any damage caused by (i) shipping, misuse, abuse, negligence, tampering, or improper use; (ii) disasters such as fire, flood, wind, and lightning; (iii) unauthorized attachments or modification;

(6) service performed or attempted by anyone other than an authorized Ashtechs Service Center;

(7) any product, components or parts not manufactured by Ashtech,

(8) that the receiver will be free from any claim for infringement of any patent, trademark, copyright or other proprietary right, including trade secrets

(9) any damage due to accident, resulting from inaccurate satellite transmissions. Inaccurate transmissions can occur due to changes in the position, health or geometry of a satellite or modifications to the receiver that may be required due to any change in the GPS. (Note: Ashtech GPS receivers use GPS or GPS+GLONASS to obtain position, velocity and time information. GPS is operated by the U.S. Government and GLONASS is the Global Navigation Satellite System of the Russian Federation, which are solely responsible for the accuracy and maintenance of their systems. Certain conditions can cause inaccuracies which could require modifications to the receiver. Examples of such conditions include but are not limited to changes in the GPS or GLONASS transmission.).

Opening, dismantling or repairing of this product by anyone other than an authorized Ashtech Service Center will void this warranty.

6. EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES

ASHTECH SHALL NOT BE LIABLE TO PURCHASER OR ANY OTHER PERSON FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DAMAGES RESULTING FROM DELAY OR LOSS OF USE, LOSS OF OR DAMAGES ARISING OUT OF BREACH OF THIS WARRANTY OR ANY IM-

PLIED WARRANTY EVEN THOUGH CAUSED BY NEGLIGENCE OR OTHER FAULT OFASHTECH OR NEGLIGENT USAGE OF THE PRODUCT. IN NO EVENT WILL ASHTECH BE RESPONSIBLE FOR SUCH DAMAGES, EVEN IF ASHTECH HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

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7. COMPLETE AGREEMENT

This written warranty is the complete, final and exclusive agreement between Ashtech and the purchaser with respect to the quality of performance of the goods and any and all warranties and representations. THIS WARRANTY SETS FORTH ALL OF Ashtech'S RESPONSIBILITIES REGARDING THIS PRODUCT.

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8. CHOICE OF LAW.

This limited warranty is governed by the laws of France, without reference to its conflict of law provisions or the U.N. Convention on Contracts for the International Sale of Goods, and shall benefit Ashtech, its successors and assigns.

THIS WARRANTY DOES NOT AFFECT THE CUSTOMER'S STATUTORY RIGHTS UNDER APPLICABLE LAWS IN FORCE IN THEIR LOCALITY, NOR THE CUSTOMER'S RIGHTS AGAINST THE DEALER ARISING FROM THEIR SALES/PURCHASE CONTRACT (such as the guarantees in France for latent defects in accordance with Article 1641 et seq of the French Civil Code).

For further information concerning this limited warranty, please call or write:

Ashtech SAS - ZAC La Fleuriaye - BP 433 - 44474 Carquefou Cedex - France.

Phone: +33 (0)2 28 09 38 00, Fax: +33 (0)2 28 09 39 39

CE

a. Caution:

- **CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer**.

- **Dispose of used batteries according to the manufacturer instructions.**

b. Please make sure the temperature for adapter will not be higher than 40 ˚C.

FCC

FCC Regulations:

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.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation if this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

RF Exposure Information (SAR)

This device meets the government's requirements for exposure to radio waves.

This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless devices employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value. This is because the device is designed to operate at multiple power levels so as to use only the poser required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

The highest SAR value for the device as reported to the FCC when worn on the body, as described in this user guide, is 0.39 W/kg for GSM850 / 1.23 W/kg for PCS1900 (Body-worn measurements differ among device models, depending upon available accessories and FCC requirements.)

While there may be differences between the SAR levels of various devices and at various positions, they all meet the government requirement.

The FCC has granted an Equipment Authorization for this device with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this device is on file with the FCC and can be found under the Display Grant section of

www.fcc.gov/oet/ea/fccid after searching on FCC ID:
NZI802111A.

This device is compliant with SAR for general popu-
lation /uncontrolled exposure limits in ANSI/IEEE
C95.1-1999 and had been tested in accordance with
the measurement methods and procedures specified
in OET Bulletin 65 Supplement C.

For body worn operation, this device has been tested
and meets the FCC RF exposure guidelines for use
with an accessory that contains no metal and the po-
sitions the handset a minimum of 0.5 cm from the
body. Use of other accessories may not ensure com-
pliance with FCC RF exposure guidelines. If you do
not use a body-worn accessory and are not holding
the device at the ear, position the handset a mini-
mum of 0.5 cm from your body when the device is
switched on.

IC

Operation is subject to the following two conditions:
(1) this device may not cause interference, and (2)
this device must accept any interference, including
interference that may cause undesired operation of
the device.

This Class B digital apparatus complies with Canadi-
an ICES-003.

Cet appareil numérique de la classe B est conforme
à la norme NMB-003 du Canada.

This Category II radio communication device com-
plies with Industry Canada Standard RSS-310.

Ce dispositif de radiocommunication de catégorie II
respecte la norme CNR-310 d'Industrie Canada.

IMPORTANT NOTE:

IC Radiation Exposure Statement

This EUT is compliant with SAR for general popula-
tion/uncontrolled exposure limits in IC RSS-102 and
had been tested in accordance with the measure-
ment methods and procedures specified in IEEE
1528. This equipment should be installed and oper-
ated with minimum distance 0.5 cm between the ra-
diator & your body.

This device and its antenna(s) must not be co-locat-
ed or operating in conjunction with any other antenna
or transmitter.

The County Code Selection feature is disabled for
products marketed in the US/Canada.

Table of Contents

First-Time Use

Unpacking Open the receiver box and unpack the following items:
- Receiver
- Battery
- Docking station
- Universal AC adapter
- USB cable

Inserting the Battery Into the Receiver

Follow the instructions below:
- Turn over the receiver and rotate the finger screw counter-clockwise a quarter turn and pull the trap door open.
- Insert the battery as shown. The label must be outwards and the right way up.

- Put the trap door back into place by first inserting the two clips located at the top of the trap door.
- Then push the door against the case and rotate the finger screw clockwise by one-quarter turn for a secure and sealed closure.

Charging the Battery for the First Time

The fastest way to charge the battery before first use is to keep the receiver off until the battery is charged. In these conditions, it will take less than 4 hours to fully charge the battery. Follow the instructions below.
- Prepare the AC adapter:

– Remove the protective cover **[1]** by pushing the button then sliding the cover forward.

– Choose the plug that fits your country's AC outlet standard (see **[2]**) and slide it into the AC adapter **[3}**. (A "click" must be heard when fully inserted.)
– Connect the AC adapter to an electric outlet.

• Put the docking station **[4]** on a horizontal plane.
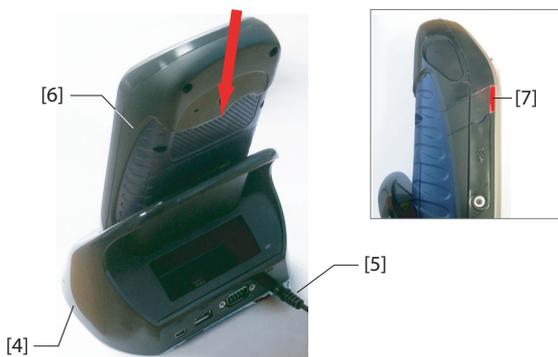
• Connect the output cable **[5]** of the AC adapter to the back of the docking station.
• Insert the receiver **[6]** vertically, into the docking station. The light indicator **[7]** turns steady red, meaning the receiver is properly connected to the station and battery charging is in progress.
The light indicator **[7]** will turn green when the battery is fully charged.

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Turning the Receiver On

Take the receiver from the docking station and press the Power button **[8]** until the screen lights up.

Let the receiver run its boot sequence. Wait until the screen displays the Windows Mobile Today screen. At this stage, you may be asked to initialize the receiver (screen alignment, etc.). Just follow the instructions on the screen to complete this step.

The operating system used in the receiver is Microsoft Windows Mobile Professional version 6.5. For more information on how to use the different applications, you can visit the Microsoft web site at:

http://www.microsoft.com/windowsmobile/en-us/help/v6-5/Basics.aspx

Note that although made extremely visible on the Today screen, the Phone function inherited from Windows Mobile 6.5 CANNOT be used in voice mode on this Ashtech platform. The Phone function should however be activated in some differential modes such as Direct IP or NTRIP (GPRS connection required) or CSD (GSM connection required). See *Differential Mode on page 29*).

Adjusting Backlight Level

The screen backlight may be adjusted to match the ambient light for optimized visibility. You don't need the same level of screen backlight in dark areas than in hot sun.

- On the Today screen, tap successively on **Start**, **Settings**, **System** and **Brightness**.
- Drag the cursor to the right or left to set the screen backlight to the desired level (between 0 and 10). The resulting brightness is obtained when you release the cursor.
- Tap **OK** to save your setting and return to the Today screen.

Setting Backlight Idle Time

One way of saving the battery is to avoid those periods of time during which the screen backlight is unnecessarily on.
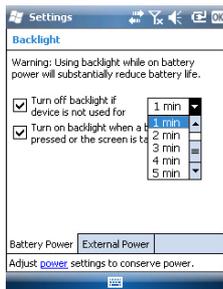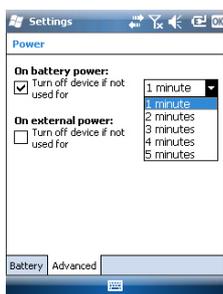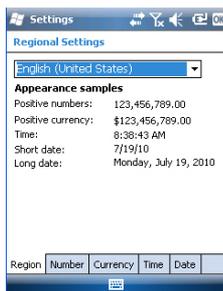
As the receiver automatically counts the time during which neither the keypad nor the touch screen is active, you can set the receiver to turn off the backlight automatically after a certain idle time.

- On the Today screen, tap successively on **Start**, **Settings**, **System** and **Backlight**.

- Choose the idle time before the backlight is turned off (10 seconds, 30 seconds or 1 to 5 minutes). For maximum power saving, you may clear the option that re-activates the screen backlight on touching the screen or pressing a key.

  Different settings may be made for these two parameters depending on the power source used (battery or external).

- Tap **OK** to save the settings and return to the Today screen.

Power Management

A better way of saving the battery is to allow the receiver to switch to Suspend mode automatically after a certain period of inactivity.

- On the Today screen, tap successively on **Start**, **Settings** and **Power**.

- Tap on the **Advanced** tab. This tab allows you to ask for the receiver to switch automatically to Suspend mode if it stays idle for the period of time you choose. You may choose a different setting depending on whether the receiver is powered from the internal battery or from an external power source.

- Tap **OK** to save the settings and return to the Today screen.

Regional Settings

It's a good idea to customize your receiver so that it complies with a number of local preferences, such as country's currency, decimal point representation, time and date formats, etc.

- On the Today screen, tap successively on **Start**, **Settings**, **System** and **Regional Settings**.

- On the **Region** tab, select your country.

- Use the other tabs to set your local settings:
  - Number format
  - Currency choice
  - Time and date formats

- Tap **OK** to save the settings and return to the Today screen.

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Locking the Screen and the Keypad

At some stage in your work, you may need to lock the receiver to make sure no user intervention from the screen or keypad can affect the work in progress.

- From the Today screen, tap on **Start**.
- At the bottom of the screen, tap **Lock**. As a result, the touch screen and keypad are made inactive.
- To unlock the touch screen and keypad, just drag the on-screen slide button either to the left or right. This will take you back to the Today screen.

How to Hold the Receiver
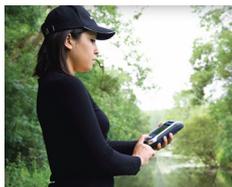
Tracking satellites with your receiver requires that you use the receiver outdoor and hold it in an appropriate manner.

The receiver will have the best view of the sky when you hold it at an angle of 30 to 45 degrees (38° ideally) from horizontal and not too close to your body.

You can check that your receiver is tracking enough satellites by running the GNSS Toolbox, and more particularly the GNSS Status function (see *GNSS Status on page 31*). When enough satellites are tracked, you can start using your receiver and run your application software.

Switching to Suspend Mode

Switching the receiver to Suspend mode is the right thing to do when you need to make a short pause in your work and you want to save the operating time of your battery. You should not however switch the receiver to Suspend mode when it is collecting raw data.

In Suspend mode, GNSS reception and the modem are off. The receiver is idle, using the minimum of energy required to save the use context. The Power & Battery LED flashes green every 5 seconds or so.

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To switch to Suspend mode, just press briefly on the Power button **[8]**.

[8]

To wake up the receiver, hold the same button pressed until the screen wakes up. This will instantly restore the use context in which the receiver was before entering the Suspend mode.

Turning the Receiver Off

After you have finished your field work, turn off your receiver by holding the Power button **[8]** pressed until the message "Saving Parameters" is displayed on the screen. The power shutdown will be effective after about 10 seconds.

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System Description

Receiver Front View

Display Screen

The display screen **[1]** is a 3.5-inch, QVGA, 256-color (18-bit RGB) touch screen (240 x 320 pixels).

Keypad, Scroll and Enter Buttons

The keypad **[2]** consists of the following buttons:

Button	Function
⬭	The keypad includes two of these buttons, one on the right, the other on the left. Each of them is a convenient alternative to tapping on the functions appearing just above in the task bar at the bottom of the screen (e.g. Notifications, Contacts, Menu, Log, etc.).
IN 🔍	Use this button to enlarge the map displayed on the screen (zoom in).
OUT 🔍	Use this button to reduce the map displayed on the screen (zoom out).
ESC ⊗	In some software applications, use this button to cancel the last action performed or return to the previous screen.
⌨	Use this button to show or hide the virtual keyboard on the screen. This is the default function assigned to this button but you are however allowed to define another function for this button through **Start**>**Settings**>**Personal**>**Buttons**.

[5] [1] [6]

[9]

[2]

[3] [7] [8] [4]

The Enter button **[3]** is used to accept highlighted input and initiate various functions.

The Scroll button **[4]** is the ring around the Enter button. It is used to move the cursor on the screen, from one data field to the next on a parameter screen, from one option to another in a menu, from one geographical location to another on a map screen.

Stylus and Stylus Holder

The stylus **[5]** can be used to work directly from the touch screen. When not used, the stylus can conveniently be stored in the receiver by inserting it into the dedicated holder **[5]**.

Built-in GNSS Antenna

The receiver incorporates a built-in antenna **[6]**. The receiver should be held properly to optimize satellite reception.

Microphone

A microphone is used by the voice recorder. Keep the small aperture **[7]** clear when recording a vocal comment.

Built-in GSM Antenna

[8]: Location of the built-in GSM antenna used for mobile communications.

Built-in Bluetooth Antenna

[9]: Location of the built-in Bluetooth antenna for wireless communication with nearby Bluetooth-fitted equipment.

Receiver Rear View

[10] [11]

Camera Lens

Keep the camera lens **[10]** clear when taking pictures or recording videos.

Loudspeaker

As a multi-media device, the receiver includes a high-quality loudspeaker **[11]**, which can be used by any voice-based software application.

Battery Compartment

The receiver makes use of a rechargeable battery pack. Loosen the quarter-turn finger screw **[12]** to access the battery compartment **[13]**,

[12] [13]

Receiver Side View (Left)
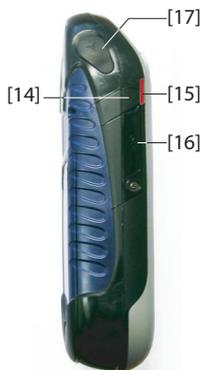
Power Button

- With the receiver off, pressing the Power button **[14]** until the screen wakes up will turn on the receiver.
- After the receiver has completed the boot sequence, another short press on the Power button will put the receiver in Suspend mode. Please refer to *Power Modes on page 13* for more information on the Suspend mode.
- To quit the Suspend mode, hold the Power button pressed for a few seconds until the screen wakes up. The receiver will then restore the context in which it was before being switched to Suspend mode.
- With the receiver on, holding the Power button pressed for about 3 seconds will result in a receiver being turned off after about 10 seconds. In the sequence before effective receiver shutdown, the screen will display the message: "Saving Parameters...".

Power & Battery LED

This LED **[15]** gives indications on the receiver power status, battery charging and Windows Mobile notifications. Please refer to *LED Indicator on page 14* for more information on the LED indications.

LED color	Meaning
Steady Green	Occurs at receiver power-up for a few seconds
Green flashes every 5 sec	Receiver used in Suspend mode
Red flashes every 5 sec	Windows Mobile Notification
Steady red	Internal battery being charged on docking station
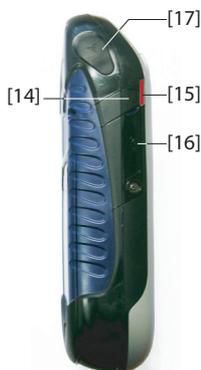
SDIO Interface

The SDIO interface **[16]** is used to insert an SD card.

To open the flap, use a finger nail or the tip of a pen.

Inserting an SD card: Push the SD card in until you hear a "click".

Removing an SD card: Push a bit further in and let go.

While using the receiver in the field, make sure the flap is always close, whether an SD card is used or not. This will efficiently protect the receiver from rain.

The SDIO interface can also be used to connect a WiFi device.

External Antenna Input

Use the external antenna input **[17]** to connect an external antenna to the receiver. When an external antenna is connected, the built-in antenna is automatically disconnected from the receiver input.

The antenna input connector is protected by a rubber flap.

Although a waterproof coaxial connector is used, Ashtech recommends you keep the flap close when no external antenna is used.

Receiver Bottom View

Power/Data Connector

[18]—

This connector (**[18]**) is used to plug the receiver to the docking station. This is achieved by simply inserting the receiver in an almost vertical position into the docking station. A secure connection is obtained once the receiver naturally rests on the docking station.

Using this connector, the receiver can also be powered via the POGO cable or cigarette lighter adapter. However, none of these connections will allow the internal battery to be charged from the external power source then used.

Docking Station

The docking station basically is a holder for the receiver. It may be used at the office for various and combined purposes:

- As a safe and convenient tool for temporary receiver storage. The receiver is held firmly minimizing the risk of fall or scratches.

- As a battery charger once powered by the AC adapter. The docking station can charge the battery inserted in the receiver as well as an additional battery placed at the back of the docking station.

  When two batteries are charged simultaneously, fast charging (< 4 hours) is always for the battery in the turned-off receiver and slow charging (about 11 hours) for the spare battery located at the back of the docking station.

  Charging for the spare battery switches to fast charging once the receiver battery is fully charged or the receiver is removed from the docking station.

- As an interface with a computer for office work, using a serial data line (USB or RS232 port), possibly through Microsoft ActiveSync.

Top View
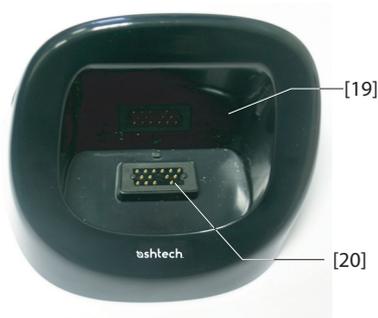
The top view of the docking station shows the slot **[19]** in which to insert the receiver from above the docking station.

At the bottom of the slot is the 16-contact connector **[20]**. When resting on the docking station, the receiver is automatically powered from the AC adapter (if connected) and the charging status of its internal battery tested.

Rear View
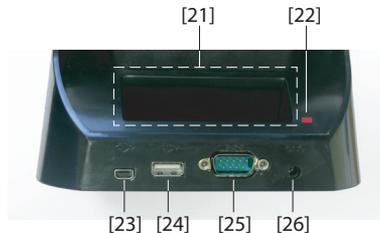
The following elements can be found at the rear of the docking station:

- Back slot **[21]** for charging a second battery
- Charging indicator **[22]** for back slot:
    - Steady red: Battery charging in progress
    - Steady green: Battery fully charged
    - Off: No battery connected
    - Blinking red, every second: Temperature inside battery exceeds upper limit. Charging suspended until temperature is back to normal. If persisting, remove the battery and resume charging later. If this occurs

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several times with the same battery, consider changing the battery. Dispose of the battery according to regulations.

- Mini USB connector **[23]**: Use this connector only to let the receiver communicate with your computer through Microsoft ActiveSync (USB "Device").
- USB connector **[24]**, Use this connector to plug a USB key (USB "Host", mass storage only).
- RS232 SubD 9-C connector **[25]**: Use this port to connect the receiver to a computer or external device.
- Power input **[26]**. Connect the output of the AC adapter to this input.

Advanced Features

Power Modes   The receiver can be powered from one of three different sources:

- Its internal battery (typically for field operations)
- The power line, through the AC adapter and the docking station (typically for office work). These two items are part of the basic supply.
- An external DC source using the POGO cable or the cigarette lighter adapter connected to the bottom of the receiver through its 16-pin connector. The POGO cable and cigarette lighter adapter are optional accessories.

The receiver can be switched to *Suspend* mode. This is a power saving mode typically used in the field to allow a quick restart after a pause. In this mode, only some parts of the receiver are powered for the sole purpose of restoring the context of use in which the receiver was when it was switched to Suspend mode. GNSS reception is not however maintained in this mode. **That is why the receiver should NOT be used in that mode while collecting raw data or/and operating in RTK mode**.

The receiver can also enter the Suspend mode automatically in case of a very low battery after dismissing successively the two "low battery" alerts, or after an idle time that you can set through **Start**, **Settings**, **Power** (**Advanced** tab) (See also *Power Management on page 4*). **When collecting raw data and/or operating in RTK mode, please clear this option so that the receiver can never enter this mode**.

Please note the following points whenever the receiver is connected to a docking station powered by the AC adapter:

- The receiver won't start if you try to power it up from the docking station without having an internal battery previously inserted in the receiver.
- If the receiver is currently on, the power input is switched automatically from the internal battery to the AC adapter.
- Whether the receiver is on or off, the internal battery is tested for its charging status. If it is discharged, a charging sequence is started automatically. The end of charging is also automatically detected, meaning you are allowed to keep the battery and/or the receiver on the docking station without any risk of overcharging.
- The AC adapter and docking station are designed to provide power to the receiver while ensuring the charging

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of two batteries (one in the receiver and the other connected at the back of the docking station).

• The receiver can also be switched to Suspend mode while being connected to the docking station.

⚠

The internal battery cannot be charged from an external power source if applied to the receiver via the POGO cable or cigarette lighter adapter.

LED Indicator

The tables below summarize the different statuses reported by the Power/Charging LED **[1]**:

Table 1. Standalone Receiver

Power Mode	LED Indication
On	Green a few seconds at power on, then off.
Off	Off
Suspend	Green flash every 5 seconds.
Notifica-tions	Red flash every 5 seconds.

Table 2. Receiver on Powered Docking Station, Normal Statuses

—[1]

LED Indication	Power Mode	Internal Battery Status
Steady red	On or off	Charging
Steady red with orange flash every 5 seconds	Suspend	Charging
Steady green	On, off or Suspend	Charge complete

Table 3. Receiver on Powered Docking Station, Abnormal Statuses

LED Indication	Power Mode	Internal Battery Status	Comment
Blinking red at 1-sec. time interval	On or off	Battery charging suspended because battery temperature too high.	This should be a temporary situation. Charging will be resumed as soon as the temperature drops below the upper limit. If a persisting situation, consider using a new battery and disposing of that one.
Blinking green then orange at 1-sec. time interval	On or off	Charge complete, battery temperature too high.	Remove the receiver from the docking station. The battery may be suspect. If this happens later with the same battery, consider using a new battery and disposing of that one.

Internal Battery

The receiver will continuously inform you of the current status of the battery through an icon located in the Windows Mobile title bar (on the right). The different shapes of this icon indicate the current discharging status, as listed below:
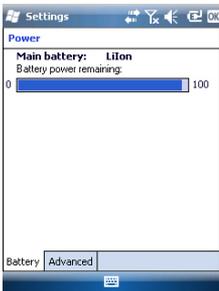
Icon	Meaning
	Battery high: Remaining power ranges between approximately 75 and 100% of full charge.
	Approx. 61-75% remaining
	Approx 47-61% remaining
	Approx. 33-47% remaining
	Battery low: Remaining power is less than 33%.
	Receiver powered from external source (docking station, POGO cable or cigarette lighter adapter)

At any time you can read more in detail the battery status by selecting **Start**, **Settings**, **Power** (see screen example).

When the remaining power drops below 33% of full charge, you will see the message "Main Battery Low" prompting you to replace or recharge the battery. Tap **Dismiss** in the task bar. You should consider replacing the battery for a fresh one but you may still continue to use the receiver for a while.

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About an hour later, with only about 20% of remaining power, a new message will pop up: "Main Battery Very Low". Tap **Dismiss** in the task bar to continue using the receiver. Ashtech however recommends that you turn off the receiver and replace the battery. Place the low battery at the back of the docking station at the office so that it can be quickly recharged.

At this stage, if you persist in using the receiver with its low battery, it won't be long before the receiver switches to Suspend mode, meaning the battery is no longer charged enough to ensure proper operation of the receiver. Ashtech recommends you do not go that far in the use of the internal battery as there is a risk of losing part of your field data.

⚠ In case of long-time storage, remember Li-Ion batteries must always be recharged regularly, about every six months. This is to prevent irreversible damage of the batteries.

Battery Charging Scenarios

As explained in *First-Time Use on page 1*, the docking station will continuously check the charging status of the battery inserted in the receiver and will charge it if necessary.

There is another way of charging the battery, separately from the receiver, which is to use the dedicated slot located at the back of the docking station. In this case the charging speed will be the same as if the battery were charged from within a turned-off receiver.

Follow the instructions below.

• Put the docking station **[1]** on a horizontal plane.

• Connect the output cable **[2]** of the AC adapter to the docking station.
• Insert the battery **[3]** vertically, label inwards, into the slot located at the back of the docking station.The light

indicator **[4]** turns red, meaning the battery is being charged.

The battery is fully charged when the light indicator **[4]** turns steady green.

Note that the docking station will switch to a lower charging rate if it has to charge two batteries at the same time, one in the turned-off or turned-on receiver, and the other at the back of the docking station.

Port Allocation Table

The receiver uses internally several virtual ports as well as a physical port made available to users via the docking station or the POGO cable.

When setting Bluetooth or the NMEA output function (in GNSS Toolbox), all ports are listed for use but only some of them are truly available. (All the other ones are reserved for internal receiver requirements.)

The table below shows how the ports are allocated and which ones are made available to you.

Port ID	Port Allocation	Available to User?
COM1	Bluetooth: Beam File or Serial Port	See below
COM2	Windows Mobile Application	See below
COM3	Ashtech GNSS Toolbox	See below
COM4	Service Layer (Internal GNSS board)	No
COM5	Available on DB9 connector at the bottom of the receiver (available via docking station or POGO cable)	Yes
COM6	Internal Modem	No
COM7	Bluetooth: DUN (Dial-Up Networking) or Serial Port	See below
COM8	Bluetooth Controller Interface (ACI).	No
COM9	Bluetooth: Serial Port	Yes

COM1: Primarily dedicated to Bluetooth Beam File for file transfer. If not used for this purpose, then COM1 may be used as a Bluetooth Serial Port.

COM2: Dedicated to Ashtech ProMark Field or MobileMapper Field, if running on the platform, or to third-party software, if required by the application.

COM3: Reserved for GNSS Toolbox but available to the user if GNSS Toolbox is not used.

COM7: Primarily dedicated to Bluetooth DUN for a network connection. If no network connection is needed, then COM7 may be used as a Bluetooth Serial Port.

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Inserting a SIM Card

Remove the battery door and the battery to access the SIM card holder. Refer to the figure below to insert the card. The holder should be opened before you can place the SIM card.

[1] [2] [3]

[4]

[5]
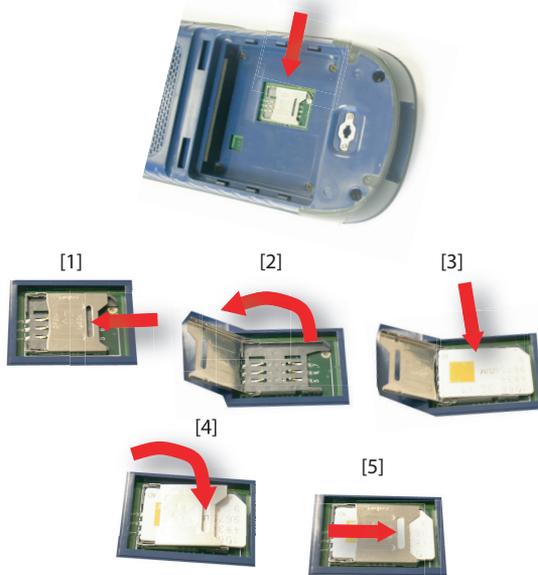
Make sure you properly lock the SIM card holder before putting back the battery and locking the battery door.

Using the Internal Modem

Using the internal modem requires that you purchase a SIM card from a mobile communication provider.

Depending on the type of service you have subscribed to, your provider will provide the appropriate SIM card as well as personal information on your connection profile.

With the SIM card inserted in the receiver and the built-in Phone function enabled, the internal modem will be able to communicate with the outside world.

Two types of connection are possible with the internal modem:

• **GPRS connection**, using the Internet protocol, for acquiring corrections through a Direct IP or NTRIP connection.
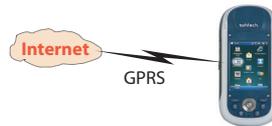
- **GSM connection in CSD ("point-to-point") mode** for acquiring corrections from a base that can be called directly from your receiver and its modem through a phone number.

Enabling the Phone Function

- Tap **Start**, **Settings**, **Connections**, **Wireless Manager**. This opens the Wireless Manager window.
- Tap anywhere on the blue Phone bar. This turns on the Phone function. The color of the Phone bar turns dark blue with a phone icon showing up on the right.
- Tap **Done** (at the bottom of the screen) to close the window. Before the receiver takes you back to the Today screen, you may be asked to enter the pin code, if one is requested. (This request may be removed through **Menu** > **Phone Settings**, **Security** tab when the Wireless Manager window is open.)

Establishing a GPRS Connection

Follow the instructions below to set the GPRS connection:

- Tap **Start**, **Settings**, **Connections** and **Connections**.
- Tap on the hyperlink: **Add a new modem connection**.
- Name the new modem connection you are creating.
- Select "Cellular Line (GPRS)" from the **Select a modem** field.
- Tap **Next** (bottom of the screen).
- Enter the **Access point name**. This information should have been passed on to you by your ISP.
- Tap **Next**.
- Enter the following information, also passed on to you by your ISP when purchasing the SIM card:

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– **User Name**

– **Password**

– **Domain** (if required by your ISP)

- Tap **Finish**. This takes you back to the initial Connections screen on which a new hyperlink is now displayed (**Manage existing connections**).

  You will use this hyperlink to re-access the connection profile you have just created (see below).

Follow the instructions below to activate the Internet connection:

- From the Today screen, tap **Start**, **Settings**, **Connections** and **Connections**.

- Tap on the hyperlink: **Manage existing connections**.

- Tap and hold the name of the connection profile you have just created (e.g. "My Connection") and select **Connect**.

- Take a look at the Start bar and check that the Connect icon looks like this after the GPRS connection has been established:

  A click on this icon will show you the active connection.

Establishing a GSM Connection in CSD Mode

- Launch GNSS Toolbox.

- Launch **Differential Mode**.

- Select "GSM (CSD) Modem".

- Tap on the **Dial** button.

- Enter the phone number of the base.

- Tap **OK**. Let the receiver dial the number and open the connection.

CDMA Connection Using an External Cell Phone

Connecting the receiver to a CDMA network requires the use of an external cell phone compatible with this type of network. The phone is then used as a modem.

Internet — CDMA — Bluetooth

The receiver will communicate with the CDMA network via the cell phone, and a Bluetooth connection will be used between the receiver and the cell phone.

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It is therefore the SIM card inserted in the cell phone that will control the connection to the network, and not the receiver itself. The receiver does not need a SIM card and its phone function can stay off.

Note that this type of network connection cannot be combined with Microsoft ActiveSync used through a USB connection between the receiver and a local computer.

Editing the Default Dialup String

Because your cell phone may be any model, you have to make sure it will be using the right information to initiate an Internet connection. This is the role of the dialup string, which is an internal command allowing the cell phone to successfully connect to the network.

Your ISP will be instrumental in providing you with this string. Once it has been returned to you, the dialup string should be entered in the receiver using the Ashtech **Dialup String** utility. Select **Start** > **File Explorer** and go to *\Program Files\GNSS Service Layer*. Run the *dialupstring.exe* file by simply tapping on its name.

The program shows the default dialup string used. Edit the string to match the one that should be used and then tap on the **Save** button (clicking **OK** directly would not save your edits). Then click **OK** to quit **Dialup String** and close the window. If you start **Dialup String** again, you will now read the newly saved string and the field name above will read "Current dialup string" instead of "Default current string".
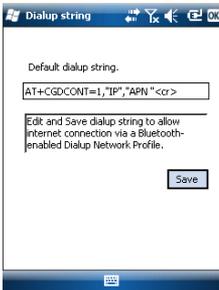
Pairing Bluetooth Between Receiver and External Cell Phone

• Make sure your cell phone is fitted with the SIM card you purchased from your ISP.

• Turn on the cell phone and make sure its Bluetooth is enabled and visible. If necessary, refer to the phone manufacturer's documentation for more information on how to operate Bluetooth in this phone.

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- Keep the cell phone at a distance less than 10 meters from the receiver.
- On the receiver, tap **Start**, **Settings**, **Connections**, **Wireless Manager**. This opens the Wireless Manager window.
- Tap anywhere on the Bluetooth bar. This turns on the receiver's Bluetooth. The color of the Bluetooth bar turns dark blue with a Bluetooth icon showing up on the right.
- Tap **Menu** and select **Bluetooth Settings**.
- Tap on the **Add New Device...** line in the list box. Bluetooth then starts searching.

  At the end of the search sequence, the names of the detected units are listed on the screen. Your cell phone should normally be part of the list.
- Tap on the name of your cell phone and then tap **Next** (bottom right).
- Using the virtual keyboard, enter a passcode of your choice (a two-digit figure for example). This step is for securing the connection with the cell phone. You may not wish to enter a passcode, in which case you can skip this step. For some cell phones however, a passcode is required to secure the pairing.
- Tap **Next**.
- If you entered a passcode in your receiver, the cell phone will now ask you to enter the same passcode. This step will be otherwise simply skipped.

  On the receiver, the name of the cell phone now appears in the list of "Disconnected" devices (meaning it is now paired with your receiver and available for a connection, but not involved yet in any connection).
- Tap on the name of the cell phone. This shows the services available from this cell phone. Make sure only the **Dialup Networking** option is enabled.
- Tap **Save** to complete the Bluetooth settings.
- Tap **OK** to close this window.
- Tap **Done** (at the bottom of the screen) to close the Wireless Manager window and return to the Today screen.

Setting Up the Internet Connection

- Tap **Start**, **Settings**, **Connections**, **Connections**
- Tap on **Add a new modem connection**
- Enter a name identifying the network connection (e.g. "My Network").
- In the field underneath, select "Bluetooth".
- Tap **Next**.
- Tap on the name of the listed device, which is the name of your cell phone (that you made earlier available for a Bluetooth connection)
- Enter the call-in number that incidentally will tell the external cell phone to use the dialup string you entered earlier.

  This number depends on the phone manufacturer. The standard number is "*99#" but the user guide of your cell phone may specify a different number. Please use the one provided.

- Tap **Next** then enter the user name and password, if any.
- Tap **Finish**. This takes you back to the initial Connections window.
- Tap on **Manage existing connections**.
- Tap and hold "My Network" and select **Connect**. Wait until the connection is active. The cell phone may ask you to confirm the connection request.
- Tap **OK** twice to return to the Today screen.
- Take a look at the Start bar. Tapping on the Connect icon will show you the active connection with a message in the form: "My Connection (Dial-up)" followed by the time elapsed since the connection was established (hh:mm:ss).

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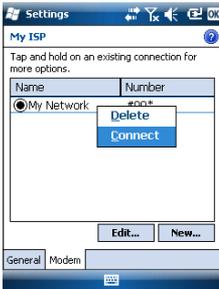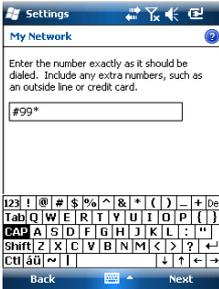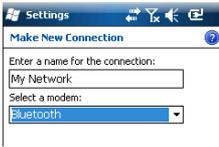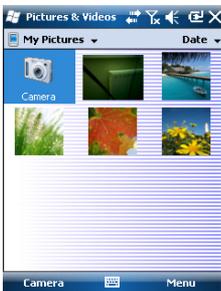
Using the Camera

Taking a Picture

- Tap **Start** and **Pictures & Videos**. This opens the "My Pictures" folder in which you can see the list of existing images and videos. The first item in the list is the Camera, the tool you will now be using to take pictures. The light-blue background means the camera is currently selected.

- Tap **Camera**, or press the Enter button, to turn on the camera. Wait a couple of seconds until the center of the window displays the viewfinder of the camera.

- Now use the receiver as a camera. Look at the viewfinder to frame the picture you want to take.

- When you are ready, stay as still as possible and press the Enter button to take the picture. You can hear the click of the camera.

- Tap **OK** to turn off the camera and close the window. The picture you have taken is now visible in the "My Pictures" folder.

Renaming a Picture

- With the "My Pictures" folder open, tap on the desired picture. This opens a new window showing the picture.

- Tap **Menu** and **Properties**.

- Rename the file and tap **OK**.
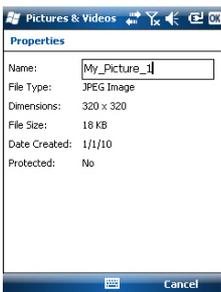
Rotating a Picture

- With the "My Pictures" folder open, tap on the desired picture (or tap on **View** in the task bar). This opens a new window showing the picture.

- Tap **Menu** and **Edit**.

- Tap **Rotate** in the task bar. This rotates the image 90° clockwise. Repeat the operation until the image has the right orientation.

- Tap **OK** to save the image.

Cropping a Picture

- With the "My Pictures" folder open, tap on the desired picture (or tap on **View** in the task bar). This opens a new window showing the picture.

- Tap **Menu** and **Edit**.

- Tap **Menu** again and select **Crop**.

- As instructed, drag a rectangle on the picture representing what the final image should be like, then tap inside the rectangle to complete the crop operation. If you're not

happy with the result, you can always come back to the initial image by selecting **Menu** and **Revert to Saved**.

• Tap **OK** to save the picture.

Auto-correcting a Picture

• With the "My Pictures" folder open, tap on the desired picture (or tap on **View** in the task bar). This opens a new window showing the picture.

• Tap **Menu** and **Edit**.

• Tap **Menu** again and select **Auto Correct**. This refines the picture's brightness, contrast and colors.

• Tap **OK** to save the picture.

Deleting a Picture

• With the "My Pictures" folder open, tap and hold the desired picture.

• Select **Delete** in the context-sensitive menu.

• Tap **Yes** to confirm file deletion.

Changing Picture Settings

• Tap **Start** and **Pictures & Videos**. This opens the "My Pictures" folder.

• Tap **Camera** to turn on the camera. Wait a couple of seconds until the center of the window displays the viewfinder of the camera.

• Tap **Menu**, then **Resolution**. Choose one of the dimensions available (expressed in pixels). The resolution setting impacts the quality and size of the picture you take.

• Tap **Menu**, then **Mode**. Choose between **Normal** (one picture taken), **Burst** (five pictures taken at a one-second interval once you have pressed Enter) and **Timer** (picture taken 5 seconds after pressing Enter).

Making a Video   Setting the Duration of a Video Film

• Tap **Start** and then **Pictures & Videos**. This opens the "My Pictures" folder in which you can see the list of existing images and videos.

• Tap **Menu**, **Tools** and then **Options**.

• Tap on the **Video** tab.

- Tap within the **Time limit for videos.** field and select one of the options below:
  - **No limit**: Choose this option to be able to film a video over an unlimited period of time.
  - **15 seconds**: Choose this option to limit the duration of every video you'll film to 15 seconds.
  - **30 seconds**: Choose this option to limit the duration of every video you'll film to 30 seconds.
- Tap **OK** to accept the changes and close the Options window.

Starting a Video

- Tap **Camera** to turn on the camera. Wait a couple of seconds until the center of the window displays the viewfinder of the camera.
- When you are ready to film, tap **Menu** and then **Video**.
- Press the Enter button to start filming.

Ending a Video

- Depending on the video settings, the video camera will stop filming as explained below:
  - With a preset time limit (15 or 30 seconds), the video camera will stop filming automatically and close the video file after this time has elapsed. A down counter under the viewfinder will keep you informed of the remaining time as you film.
  - With no time limit, the video camera will film indefinitely. A counter under the viewfinder will tell you the current duration of the video. To stop filming and close the video file, press the Enter button again.
- At the end of the video shooting, the viewfinder freezes while the end of the video is being processed.
- When the spinning hourglass disappears, tap **OK** to turn off the camera and close the window. The video file you have created is now listed in the "My Pictures" folder.

Playing Back a Video

- With the "My Pictures" folder open, tap on the desired video file. This will automatically launch the Windows Media player.
- Tap ✕ to close Windows Media player and return to the "My Pictures" folder.

Renaming a Video

- With the "My Pictures" folder open, select the desired video file using the Scroll button.
- Tap **Menu**, **Tools** and then **Properties**.
- Rename the file and tap **OK**.

Deleting a Video

- With the "My Pictures" folder open, tap and hold the desired video file.
- Select **Delete** in the context-sensitive menu.
- Tap **Yes** to confirm file deletion.

Voice Setting

For best quality voice recording, you need to change the default voice sampling setting as follows:

- Tap **Start**, **Notes**
- If this action directly opens a note file, please close it before proceeding.
- Tap **Menu**>**Options**.
- Tap on the **Global Input Options** hyperlink.
- Tap on the **Options** tab.
- Select "44,100 Hz, 16 Bit, Mono (86 KB/s)" from the **Voice recording format** drop-down list.
- Tap **OK** to enter the new setting.
- Tap **OK** then ✕ to return to the Today screen.

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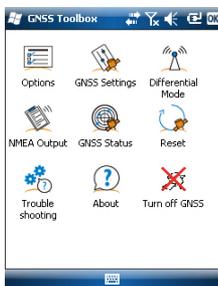
GNSS Toolbox

GNSS Toolbox is used to control and monitor important functions in your receiver. These are listed and detailed below.

- **Options**: Lists the installed firmware options and allows you to install new options.
- **GNSS Settings**: Constellations and frequencies used in the receiver.
- **Differential Mode**: Used to make the necessary settings to allow the receiver to process corrections it acquires from the specified communication means (radio, network, modem or other).
- **NMEA Output**: Used to set the output of standard NMEA messages on a serial port (RS232 or Bluetooth).
- **GNSS Status**: Views GNSS reception monitoring screens.
- **Reset**: Resets the receiver.
- **Troubleshooting**: Allows data to be recorded for debugging purposes.
- **About**: Views versions of installed software and firmware.
- **Turn off GNSS**: Allows you to turn off the GNSS section of the receiver when GNSS reception is temporarily unnecessary for the tasks you are currently running with your receiver. Turning off GNSS reception will significantly save the battery operating time.

Options
- Open the **GNSS Toolbox** and tap on **Options**. This opens a new window listing the currently installed firmware options.
- Use the **Install** button if you want to install new firmware options in the receiver. The **Option** field lists all the firmware options that can still be installed in your receiver.

    To install a new option:
    - Select this option from the **Option** field
    - Enter the activation key in the **Key** field. This key was provided by Ashtech after you purchased this option.
    - Tap **OK** to complete the installation of the option. This option will appear afterwards in the list of installed options.

GNSS Settings
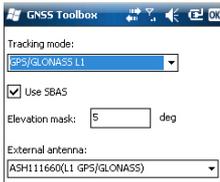
• Open the **GNSS Toolbox** and tap on **GNSS Settings**. This opens a new window where you can make the following settings:

  – **Tracking mode**: Depending on the installed firmware options, one or more combinations of constellations and frequencies may be listed here. **Always choose the option that corresponds exactly to the antenna used**.

  – **Use SBAS** check box: Check this box to enable SBAS reception, clear it otherwise.

  – **Elevation mask**: Any satellite seen from the receiver with an elevation angle less than the specified elevation mask will be rejected. "5 degrees" is the default and recommended value for this parameter.

  – **External antenna**: This field is visible only if an external antenna is connected. In this case, select the model of this antenna from the drop-down list.

• Tap **OK** to confirm your choices and return to the GNSS Toolbox window.

Differential Mode

The table below summarizes the different settings required for each type of communication used to acquire real-time differential corrections.
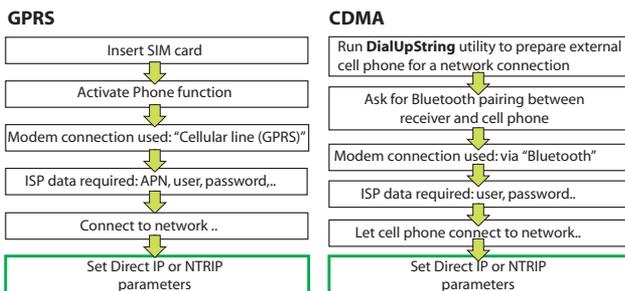
Corrections Source	UHF Radio (1)	GSM Modem (2)	Network Connection (3)		Other External Device
			Direct IP	NTRIP	
Radio Type	•				
Radio Parameters	•				
Phone Number		•			
Host IP Address			•	•	
IP Port			•	•	
Login				•	
Password				•	
Station (Mount Point)				•	
"Send Position to Network" Setting				•	
Port used					•
Baud Rate					•

(1) This feature available in future version.

(2) Internal modem used in CSD mode.

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(3) Using a network connection requires prior steps, illustrated in the two diagrams below, for the receiver to connect to a GPRS or CDMA network. See also *Using the Internal Modem on page 18* (for a GPRS connection), *CDMA Connection Using an External Cell Phone on page 20*.

GPRS

| Insert SIM card |
| Activate Phone function |
| Modem connection used: "Cellular line (GPRS)" |
| ISP data required: APN, user, password,.. |
| Connect to network .. |
| Set Direct IP or NTRIP parameters |

CDMA

| Run **DialUpString** utility to prepare external cell phone for a network connection |
| Ask for Bluetooth pairing between receiver and cell phone |
| Modem connection used: via "Bluetooth" |
| ISP data required: user, password.. |
| Let cell phone connect to network.. |
| Set Direct IP or NTRIP parameters |

When a network connection becomes active (and this option is highlighted in the list of possible data links), the **Connect..** button is changed into a **Disconnect** button.

Note: An active modem connection can only be ended manually. Remember that the connection will NOT be closed automatically when quitting GNSS Toolbox.

NMEA Output
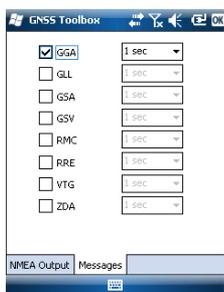
- Open the **GNSS Toolbox** and tap on **NMEA Output**.
- On the NMEA Output tab, select COM5 or COM9 as well as a baud rate for that port. COM1, COM2, COM3 or COM7 may also be used, but only if not already assigned. See *Port Allocation Table on page 17* for more information.
- On the **Messages** tab, select the NMEA messages you want to output. For each message, the output rate can be set to one of the preset values ranging from 1 second to 1 minute. The available NMEA messages are GGA, GLL, GSA, GSV, RMC, RRE, VTG and ZDA.

  NOTE 1: COM2 is a virtual port dedicated to third-party software (e.g. ArcPad) running the receiver. In that case, COM2 should be set to deliver the NMEA message expected by the software (usually GGA or GSV).

NOTE 2: All activated messages stay indefinitely active, even after closing GNSS Toolbox. All unnecessary NMEA messages should be disabled manually.

NOTE 3: Any given NMEA message may be output on several ports at the same time.

GNSS Status • Open the **GNSS Toolbox** and tap on **GNSS Status**.

The default **Position** tab shows the latitude, longitude and altitude of the current position, as computed by the receiver, as well the number of satellites used and the current PDOP value.

If SBAS is used, the screen also shows the position status (DGPS) and the age of corrections.

In RTK mode, the screen additionally shows the HRMS and VRMS, the baseline length and, if the receiver has not fixed the position yet, the estimated time before a new fixed position is available (**Time to FIXED** parameter).

The unit used to express the current altitude, HRMS, VRMS and baseline length (meters or feet) depends on the region (language and country) you selected in **Start**, **Settings**, **System**, **Regional Settings**.

• The **Satellites** tab displays a polar diagram showing the locations in the sky of the tracked satellites. Different colors are used to display the numbers of the visible satellites:

 – Yellow characters: GPS satellites used

 – Green characters: GLONASS satellites used

 – Grey characters: Visible SBAS satellites. Also rejected GPS and GLONASS satellites, because unhealthy or under the elevation mask.

- The **Signal** tab shows the signal level for each of the tracked satellites:
  - Dark blue bars for all GPS and GLONASS satellites used
  - Red bars for all SBAS satellites used
  - Grey bars for all tracked, but not used, GPS and GLONASS satellites

  GPS satellites are numbered from 1 to 32, GLONASS satellites from 65 to 88 and SBAS satellites from 120 to 138.

Reset
- Open the **GNSS Toolbox** and tap on **Reset**. A message then asks you if you want to reset the receiver now. Use this option only if you think the receiver is not working properly.

  Using this function results in a *cold reset* of the receiver. Through a cold reset, all the GNSS settings, including almanac data, are cleared making it necessary for you to restore each of them manually. A few minutes are needed after a cold reset before the receiver is back to work.

  Using the Reset function is recommended when only the GNSS Toolbox (and not other field software) is running on the platform.

Troubleshooting

For some reason, the Ashtech Technical Support may ask you to use this function to help them solve the problem you are reporting (poor GNSS performance, poor accuracy, abnormally long TTFF, etc.). Should this happen, please proceed that way:

- Open the **GNSS Toolbox** and tap on **Troubleshooting**.
- Activate the **Enable debug file output** check box.
- Choose the memory where to store the debug data file ("Internal Memory" or "Storage Card"). If you are simultaneously recording raw data for post-processing, Ashtech recommends you save the debug data on the same medium.
- Tap **OK**.
- Let the receiver record data for the time requested by the Ashtech Technical Support (data recording will continue after quitting **GNSS Toolbox**). When the time is up, you will come back to the Troubleshooting screen to clear the **Enable debug file output** check box and tap **OK**. This will end the recording of data.
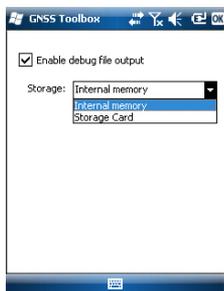
The procedure is then as follows:

• Back at the office, place the receiver on the docking station.

• Connect the docking station to your computer using the USB cable provided.

• Using Microsoft ActiveSync, open one of these folders:
  – "Storage Disk" if "Internal Memory" was selected for data recording.
  – "Storage Card" if "Storage Card" was selected for data recording.

This folder contains a folder named "GNSS Raw Data" in which you will find a file of this type:

ATL_yymmdd_hhmmss.log
(e.g. "ATL_100715_162514.log" for a file logged on July 15, 2010 at UTC time 4:25:14 pm)

• Send an email to Ashtech Technical Support with this file attached to the email. The file uses a proprietary format and so can only be parsed by Ashtech.

Note: If you are using Windows Mobile' E-mail, you can send the file directly from your receiver.

About   In addition to providing the software version of the GNSS Toolbox, this function also reports the following:

• GNSS firmware version
• System firmware version
• Receiver serial number

Turn Off GNSS   In some cases of use, the GNSS reception function of your platform may not be required. Turning it off in those cases will save the battery.

• Open the **GNSS Toolbox** and tap on **Turn off GNSS**. The message "Power off GNSS receiver?" is displayed asking you to confirm or cancel your power-off request.

• Tap **Yes** to confirm. This will instantly turn off the GNSS section of the receiver and take you back to the Today screen.

If you turn off the receiver while GNSS is still off, then GNSS will stay off next time you turn on the receiver.

Conversely, if you launch GNSS Toolbox after turning off GNSS, this will cause GNSS to be turned back on automatically.

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Platform Specifications

GNSS Characteristics	45 parallel all-in-view channels

- GPS
- GLONASS
- SBAS: WAAS/EGNOS/MSAS
- L1 C/A
- L1/L2 P(Y)-code, L2C
- Full wavelength carrier.

Processor
- Marwel PXA 320
- Clock frequency: 806 MHz

Operating System
- Microsoft Windows Mobile Professional version 6.5
- Installed language at delivery: English, French, Spanish, German, Portuguese, Italian, Greek, Simplified & Traditional Chinese, Japanese or Korean.
- Software package includes:
  – GNSS Toolbox
  – Internet Explorer
  – Microsoft Office Mobile
  – ActiveSync
  – Transcriber (handwriting recognition)

Communication
Cellular:
- Built-in GPRS, EDGE class 12 modem
- Quad-band, 850/900 MHz, 1800/1900 MHz

Bluetooth:
- Bluetooth 2.1 (class 2) with EDR
- Profiles: SPP, DUN, FTP, OPP, HSP, A2DP

Other:
- RS232, USB through docking station
- Wireless LAN 802.11b/g (SDIO slot)

Physical Characteristics
- Receiver size: 190 x 90 x 43 mm (7.5 x 3.5 x 1.7")
- Receiver weight (batteries included): 620 g (1.43 lb)
- Receiver weight, alone: 480 g (1.06 lb)

User Interface
Keyboard:

- Alphanumeric virtual keyboard
- 4-way navigation scroll button; OK, Escape, Zoom In/Out keys + context-sensitive keys
- Illuminated keyboard

Display Screen:
- Color TFT, high-resolution display, sunlight readable, with touch screen, LED backlight.
- Size: 3.5", portrait

Memory
- 256-MB SDRAM
- 2-GB NAND Flash (for user data storage)
- SDHC memory card slot

Environmental Characteristics
- Operating temperature: -20° to +60°C (-4 to 140°F)
- Storage temperature: -25° to +70°C (-13 to 158°F)
- Humidity: 10 to 90% non condensing
- Waterproof
- Vibration and Shock: ETS300 019, vibration Mil STD 810 method 514.5
- Free drop: 1.2 m on concrete

Power Requirements
- Removable battery: Li-Ion, 6600mAh
- Battery life: > 8 hours @ 20 ºC, with GNSS on and Bluetooth, WLAN and screen backlight disabled.
- Battery charging time: 3 hours (in standalone or with turned-off receiver)
- External power: 9-28 V DC

Multimedia & Sensors
- 3-Megapixel camera
- E-Compass
- G-Sensor
- Speaker
- Microphone

Standard Accessories
- Integrated stylus
- Docking station
- Universal AC adapter
- USB data cable.

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