

CHC® LT500T Handheld GNSS Receiver User Manual



This manual is for use with CHC LT500T receivers sold by iGage Mapping Corporation.

Receivers purchased from other sources (other dealers or the factory) with similar model numbers/names may not match devices provisioned by iGage.

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Copyright

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GNSS Safety Warning

The LT500T GNSS receivers tracks and utilizes signals from many space based satellite navigation systems:

The Global Positioning System (GPS) is operated by the US Government which is solely responsible for the accuracy and maintenance of the GPS network. Accuracy can also be affected by bad satellite geometry and obstructions including buildings and tree canopy.

The GLONASS (GLObal Navigation Satellite System), is a satellite navigation system operated by the Russian Aerospace Defense Forces.

The Galileo System is the global navigation satellite system (GNSS) that is operated by the European Union (EU) and European Space Agency (ESA)

BeiDou Navigation Satellite System (BDS) (also known as COMPASS or BeiDou-2) is a system operated by CNSA (China National Space Administration.)

SBAS (Satellite Based Augmentation Services) including WAAS (USA), MSAS (Japan), EGNOS (Europe), QZSS (Asia), and GAGAN (India) may also be utilized by the X91+ / X900+for carrier-phase corrections, in addition to differential corrections.

Neither iGage Mapping Corporation nor CHC are responsible for nor warrant the viability of the space segment portion of the GNSS system. The user is cautioned that they alone are responsible for determining the suitability of the receivers to their task at hand.

Any of the GNSS system components can fail at any time. Be prepared for down time and failures.

FCC Compliance

FCC Notice: CHC LT500T receivers comply with the limits for a Class B digital device, pursuant to the Part 15 of the FCC rules when it is used in the Portable Mode.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. this device must accept any interference received, including interference that may cause undesired operation



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Introduction

Thank you very much for choosing to purchase and use a LT500T Handheld GNSS receiver!

This guide is designed to help you familiarize yourself with your new equipment and successfully use it in the field.

If you have questions or suggestions, don't hesitate to contact us:



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Your input is extremely valuable to us and we will listen to your suggestions to improve our products and support.

Support is also available directly from the CHC Factory. You can reach factory support by email:

support@chcnave.com.

Software updates and news are available from:

www.x9gps.com

Click on 'Tools' then the 'LT500T' link for firmware, FAQs and other information.

SurvCE Manual

An electronic copy of the manual for SurvCE can be found on the Carlson website:

www.survce.com

Click on 'Software Download', then choose the version number of the software loaded on your data collector, then click on 'Show Files'. A link to the latest manual version will be shown:

5

SurvCE_V5_Manual.pdf	30,882,498	
Download	Apr-08-2016	

Figure 1 Downloading the latest SurvCE Manual as a PDF file.

There are a variety of excellent SurvCE training videos available at the Carlson Software website:

www.carlsonsw.com

Click on the 'Videos' link on the right side of the page.

The LT500T Device



Front View



Buttons and Indicators

Power Button: ON: Press and hold the power button for 2 seconds to turn ON the LT500T. The device will take at least 45 seconds to fully boot, and the screen will go dark for a few seconds during the process.

STANDBY: When the device is ON, you can click (short press) the power button to put the LT500T in a partial standby state. When in standby the screen is turned off and both the 3G and Wi-Fi modems are disconnected and powered off. When in standby the touch screen is active and the GPS receiver continues to run. To exit the standby mode, click the ON/OFF button.

OFF: To turn off the LT500T, push and hold the power button for 4 seconds. The power select button will be displayed:



Click on the center OFF button to fully power down the LT500T. We recommend that you remove the battery pack if the device will be left for more than a few days or when you are traveling. If the device is placed in a padded case and transported in a 'bumpy' environment, there is a chance that the power key will be depressed and the unit will turn on and completely run down the battery during transport.

Windows Button: Click this button to display the 'Windows' menu (this is the same action as clicking the start button:



In the lower left corner.

Reset Key: Use the stylus or a pen to press this recessed button and force-reboot Windows. Existing closed files will not be deleted, however open files will not be closed and there is a risk of data loss for active jobs.

OK Key: The OK key is equivalent to 'Enter'. In Carlson SurvCE, it will store a shot when in the 'Store' menu.

Left and Right Function Keys: activate the on screen function. May be overridden in the settings menu.

Power Indicator (Red): Turns on when the device is ON.

Satellite LED (Blue): Turns on when satellites are tracked. May not work in all applications.

Wi-Fi Indicator (Yellow): Turns on when the device is connected to Wi-Fi.



Back View



Bottom View

LT500T Battery

Battery Warnings

The battery is composed of Lithium-Ion type cells.

WARNING - Do not damage the rechargeable Lithium-ion battery. A damaged battery can cause an explosion or fire, and can result in personal injury and property damage.

To prevent injury or damage:

- Do not use or charge the battery if it appears to be discolored, warped, or leaking battery fluid.
- Do not expose the battery to fire, high temperature, or direct sunlight.
- Do not immerse the battery in water.
- Do not store the battery inside a vehicle during hot weather.
- Do not drop or puncture the battery.
- Do not open the battery or short-circuit its contacts.
- Do not charge the batteries in aftermarket chargers, use only the supplied charger module.
- **WARNING** - Avoid contact with the rechargeable Lithium-ion battery if it appears to be leaking. The battery fluid is extremely corrosive, and contact with it will result in personal injury and/or property damage.
- If battery fluid gets into your eyes, immediately rinse your eyes with clean water and seek medical attention. Do not rub your eyes!
- If battery fluid gets onto your skin or clothing, immediately use clean water to wash off the battery fluid.

Checking the Battery Status

Because of transportation regulations, shipped batteries supplied with the TM500T will arrive at 30% charge or less.

You can check the battery status by removing the battery pack and pressing on the status button:



The relative charge of the battery will be shown by the four green LEDs:

< 25% Charge	1 Green LED
~ 50% Charge	2 Green LED
> 75% Charge	3 Green LED
> 95% Charge	4 Green LED
100% Charge	1 Green LED BLINKS

Battery status can also be determined by the battery icon at the top of the main menu screen:



Charging the Battery

Use the supplied wall transformer to charge the battery by plugging it into the charging hole on the bottom of the cell pack:



The Red or Green LED above the status button will light when power is applied (battery pack is plugged in.)

Red indicates charging

Green indicates 'fully charged'

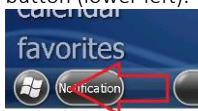
The battery when fully charged will provide up to 12-hours of use (depending on backlight settings.) It typically will charge to 90% of full charge in 4-hours if the battery is removed from the device.

The cells can be charged when inserted into the LT500T device, with the device OFF. If you attempt to charge the battery while the device is ON, the device will be powered by the charger and the battery will charge very slowly.

Initial Settings

We recommend the following settings be made to the LT500T for initial setup (for example, after a Factory Clear.)

1. Configure the 'Home Screen'. From the main menu, click on the 'Start' button (lower left):



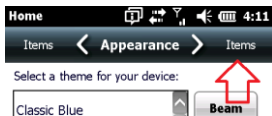
2. Click on 'Settings':



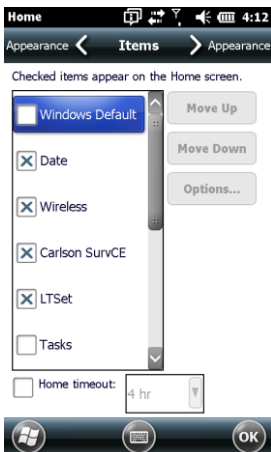
3. Click on 'Home':



4. Select the 'Items' tab:



5. The "Home: Items" menu is shown:

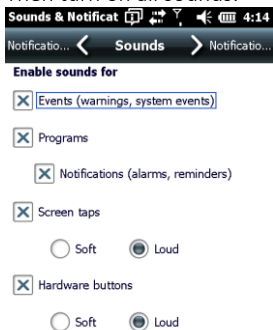


Uncheck 'Home timeout', check 'Date, Wireless, Carlson SurvCE (optionally if you have it) and LTSet'.

6. Finally click on 'OK' to return to 'Settings'.
7. Click on 'Sounds and Notifications':



8. Then turn on all sounds:



then click on 'OK'.

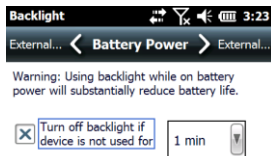
9. Click on 'the "System" button:



10. From the 'System' menu, click on 'Backlight':



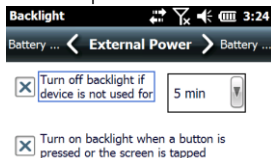
11. Set the backlight to turn off after 1 minute on Battery:



Adjust [power](#) settings to conserve power.



and 5-minutes when on external power:



Adjust [power](#) settings to conserve power.



click on 'OK' to return to the 'System' menu.

12. Click on the 'BL Light' button:



13. Set the backlight as bright as it can go:

10



Click on the 'OK' button to return to the 'System' menu.

Memory ‘Spaces’ on the LT500T

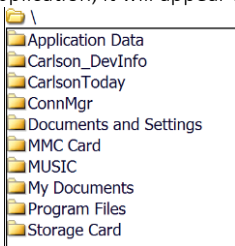
The LT500T has four possible memory ‘spaces’

Name	Description	Mount Point	Available
Storage	Primary location for programs and data	<i>‘My Device’ ‘/’</i>	402.11 Mbyte (512 Mbyte less system)
Program	Run-time memory, used by running programs	-na-	391.78 Mbyte (512 MBbyte less system)
MMC Card	Secondary location for programs and program data. Non-removable flash	<i>‘MMC Card’</i>	15,180.56 Mbyte (16 Gbytes)
Storage Card	Removable uSD card located under power switch behind rubber door	<i>‘Storage Card’</i>	Up to 32 GB

Only the ‘Storage Card’ can be physically accessed/removed/changed by the user, it can be found under the rubber door below the power switch.



When you view the root directory in SurvCE or another application, it will appear as a listing:

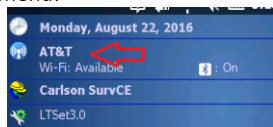


Be sure to note the difference between '*Storage Card*' (which is the removable uSD card) and the internal '*MMC Card*'. If a uSD card is not installed, then the '*Storage Card*' will not be shown. All of the other files and folders listed in the root ("/") folder are stored in the '*My Device*' memory space.

Connecting the LT500T to Wi-Fi

To connect the LT500T to a Wi-Fi access point, from the main menu:

1. Click on the 'Wireless Manager' icon on the main menu:

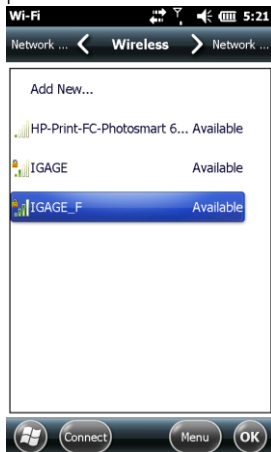


2. Click on 'Menu'



Then 'Wi-Fi Settings'

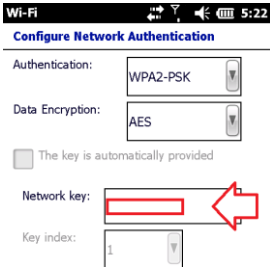
3. Click on the correct access point:



4. The 'Configure Wireless Network' dialog is shown:



5. Click on 'Next'



The 'Authentication' and 'Data Encryptions' settings should automatically be set for the selected access point.

Enter the wireless access point's Network Key (password.) Then click 'Next' and finally click on 'Finish'. After a few moments the LT500T will connect to your access point.

6. From the Wi-Fi dialog, click on 'Menu':

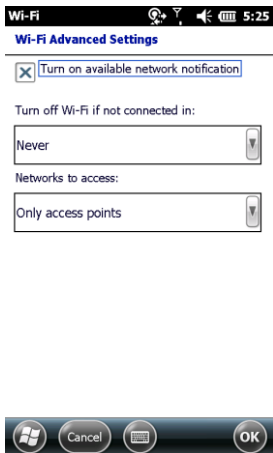


7. A menu will be shown:



Then click on 'Advanced'

8. On the 'Advanced Settings' dialog



Uncheck 'Turn on available

network notification', then click on OK.

This setting will prevent the data collector from asking you to connect to every Wi-Fi network that you pass by

Connecting the LT500T to your Computer with a USB Cable

1. The first time you connect your LT500T to your computer you should be logged in with full administrator rights and the computer should be connected to the internet so that updated components and drivers can automatically be applied.
2. Turn on your LT500T.
3. Insert the USB cable small end into the LT500T:

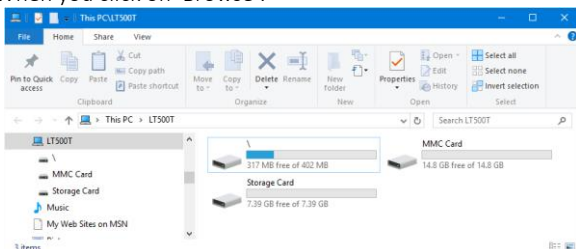


- and the large end into an open USB port on your PC.
4. If your computer operating system is Windows XP you may need to manually install 'ActiveSync'. If your computer is Windows 7, 8 or 10 then 'Windows Mobile Device Center' is already installed on your computer. If this is the first mobile device that you have connected to your computer, it may be installed, but not fully activated.
 5. The first time you connect the device, it may take 30 minutes for your computer to install and activate all of the required components. Remember that if your computer operating system is Windows 7, 8 or 10 then all required components already are loaded and available on your computer. Be patient.

6. After some wait ‘Windows Mobile Device Center’ will be shown on your screen



7. If you hover your mouse cursor over ‘File Management’, you can click on ‘Browse the contents of your device’ as shown above.
8. When you click on ‘Browse’:



The three storage areas will be shown (if you don't have a uSD card inserted 'Storage Card' will not be shown.) From this explorer window you can browse the contents of the entire device.

Difficulty Starting Windows Mobile Device Center

On some PC's the Mobile Device Center can have difficulty automatically starting when the LT500T (and other Windows Mobile devices) is attached.

Often manually starting the 'Windows Mobile Device Center' before plugging in the LT500T will improve the connection process.

Connecting to a Cellular Network

The LT500T has an internal GSM cellular modem. The modem can be used with a SIM card activated for data only or phone and data.

Activating the modem is not required for operation, however it can be used for NTRIP corrections.

1. To activate the modem, turn off the receiver and remove the battery. Insert your SIM card (full sized) in the small slot at the top of the battery hole. There is a small icon embossed on the case that shows the correct alignment:



2. Turn on the receiver, wait 45-seconds for it to fully boot.
3. Click on the wireless icon on the main menu:



4. If the Phone bar is not blue, click on the bar to turn on the cell phone modem:



5. Click the 'X' to return to the main menu. Then click on the 'Start' icon (the flag) in

the lower left corner:



6. Click on the Settings gear icon:



7. Click on Connections:



8. Click on Connections:



9. Under 'My ISP' click on 'Manage Existing Connections', if there are no existing connections, click on 'Add a new modem connection':

My ISP

[Add a new modem connection](#)

[Manage existing connections](#)

10. If there is one or more existing connections, click and hold on them, then click

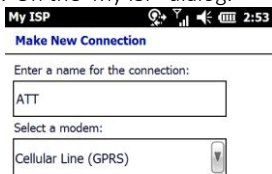
on 'Delete':



11. Click on 'New':

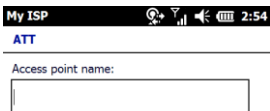


12. On the 'My ISP' dialog:

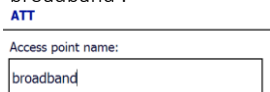


enter a name and choose 'Cellular Line (GPRS)'. Click Next.

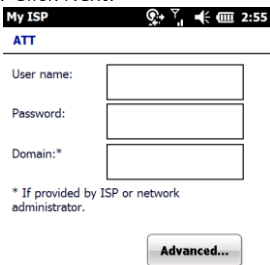
13. Typically you can leave the 'Access Point Name' blank:



Alternatively enter 'broadband'.

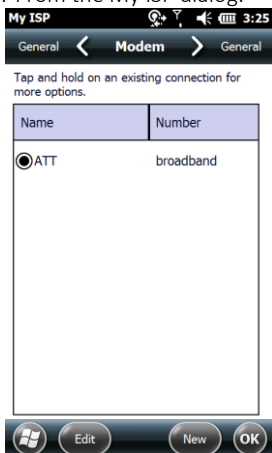


14. Click Next:



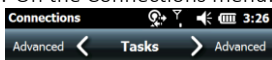
Leave the 'User Name', 'Password' and 'Domain' blank. Click on Finish.

15. From the My ISP dialog:



Click the 'OK' button in the lower right corner.

16. On the Connections menu:



My ISP

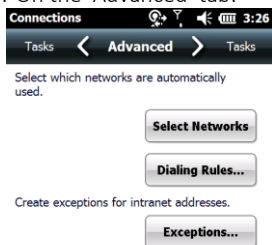
[Add a new modem connection](#)

[Manage existing connections](#)



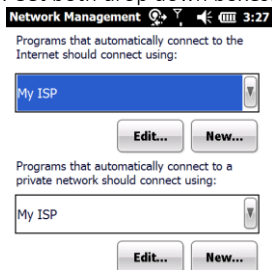
click on the 'Advanced' tab on the top.

17. On the 'Advanced' tab:



Click on 'Select Networks'.

18. Set both drop down boxes:



to 'My ISP'. Then click 'OK' to return to the 'Advanced' tab. Then click 'OK' to return to the main menu.

19. Verify that your LT500T is connected by turning off Wi-

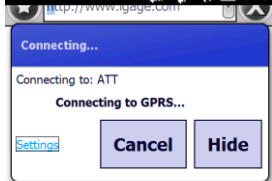
Fi:

Wireless Manager 3:43



Then browse to a web site using Internet Explorer:

IE Mobile Home 3:43



20. After the connection is made, the correct web page should be displayed:



Success! You are connected to the internet via the cellular modem.

Connecting Software to the Internal GPS

The internal GPS receiver has two serial ports which connect to the LT500T's internal COM1 and COM6 ports. Both ports are always active. Commands can be sent to either port, and NMEA strings can be streamed from either/both ports.

By default, the baud rate for each of the ports (COM1 and COM6) is set to 38,400. If you connect SurvCE to the internal receiver using the 'CHC' 'LT500T' driver, SurvCE will set the baud rate to 9600 baud. We strongly recommend that you don't use the SurvCE internal driver and instead use the NMEA driver.

You can control which NMEA sentences are sent to each port using LTSet.

Configuring SurvCE

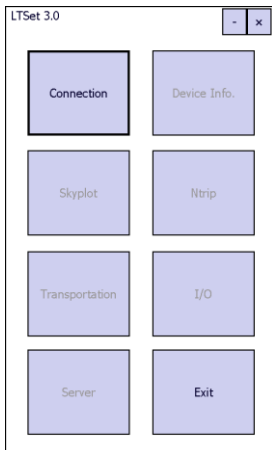
After installing SurvCE and activating your SurvCE license:

1. Make sure that NMEA data is being output on COM1.

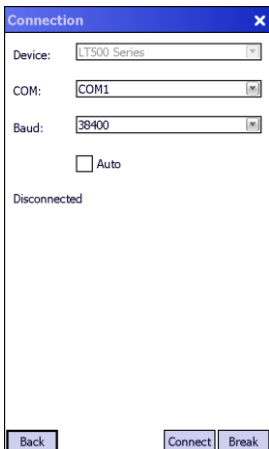
From the main menu, click on the LTSet3.0 icon:



2. LTSet will run:

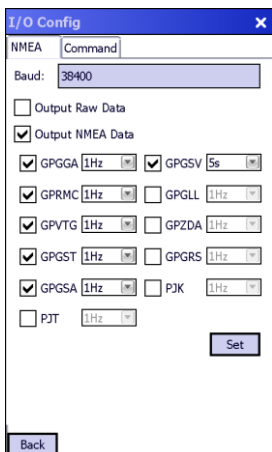


3. Click on 'Connection':



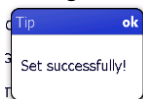
Set COM: to 'COM1', set Baud to '38,400'. Click on the 'Connect' button, wait a few moments for the connection status to change to 'Connected'.

4. Click on the 'Back' button, then click on the 'I/O' button:



Enable messages as required for your application. The settings above work great for SurvCE and most other applications.

- Click on the 'Set' button, wait for the 'Success message':

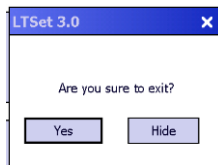


- Click on 'ok' to close the tip, then click on the 'Command' tab on the top of the screen:



If you are connected to the GPS, then NMEA messages should be streaming through the top gray display box. NMEA strings are enabled on COM1 at 38,400 baud.

- Click 'Back' then click 'Exit':

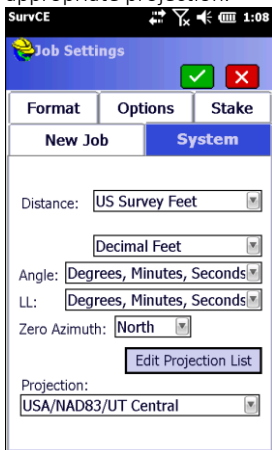


- Click on 'Yes' to return to the main menu.

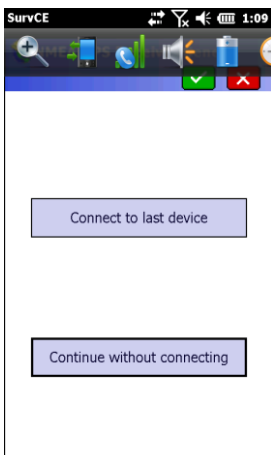
9. From the main menu, click on SurvCE:



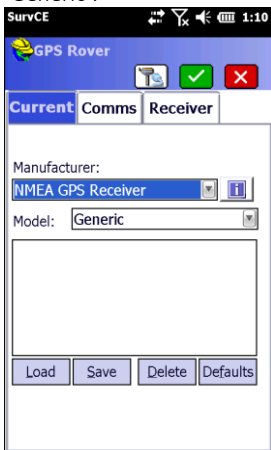
10. Click on 'Select New/Existing Job' and make an appropriate job, with an appropriate projection.



11. Click the green check mark to continue:



- If asked, click on 'Continue without connecting'.
12. On the 'Equip' tab, choose 'Manufacturer: NMEA GPS Receiver' with Model = 'Generic':



13. Click on the 'Comms' tab:

SurvCE 1:21

GPS Rover

Current **Comms** Receiver

Type: Cable

Port: COM 1 Defaults

Baud: 38400 Parity: None

Stop Bits: 1 Data Bits: 8

Configure as shown above,
COM1 – 38,400 baud.

14. Click on the 'Receiver' tab:

SurvCE 1:22

GPS Rover

Current Comms **Receiver**

[NONE] Abs. 0.0mm

☒ Vertical ☐ Slant

Antenna Height: 4 ft

Advanced

Choose a reasonable
antenna height.

15. Finally click on the 'Green Checkmark' to configure the rover and return to the main

menu

SurvCE 1:23

JOB: MES001

Survey **COGO** Road

File Equip

1 Total Station 6 Localization

2 GPS Base 7 Monitor/Skyplot

3 GPS Rover 8 Tolerances

4 GPS Utilities 9 Peripherals

5 Configure 0 About SurvCE

16. There are a few settings in Carlson that will make the LT500T work better with 'Real-Time' data. First click on the 'Tolerances' button:

SurvCE 1:27

Tolerances

HRMS Tolerance: 4,000 ft

VRMS Tolerance: 6,000 ft

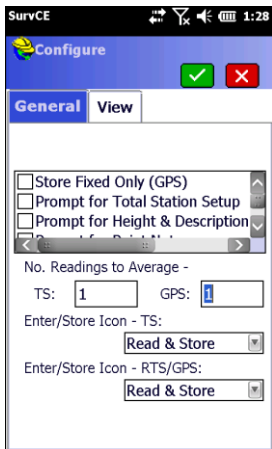
PDOP Tolerance: 3,500

Stakeout Tolerance: 2,000 ft

Set some reasonable

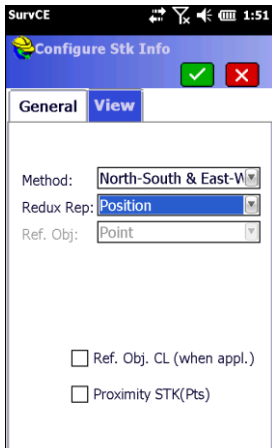
Tolerances (those shown above are reasonable), then click on the 'Green Check Mark'.

17. Click on the 'Configure' button:



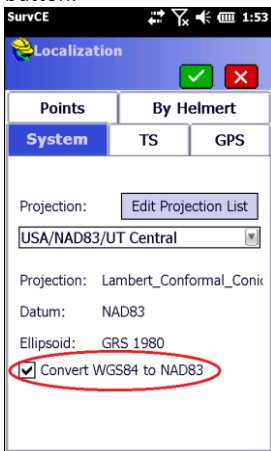
Uncheck the 'Store Fixed Only (GPS)' checkbox.

18. Click on 'View':



Typically you will want to change the Method to 'North-South & East-West' for GPS work.

19. Click on the 'Green Check Mark' to return to the main 'Equip' menu.
20. Click on the 'Localization' button:



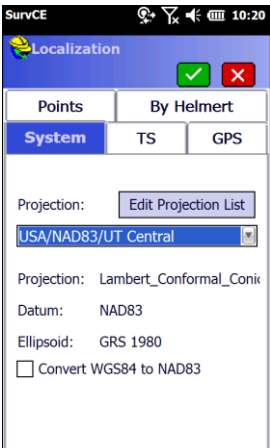
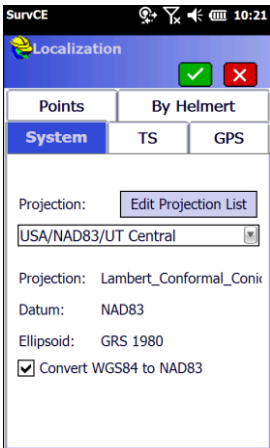
If you are using WAAS corrections (not using Network Corrections) then you will most likely want to click the 'Convert WGS84 to NAD83' check box. This will perform a 14- parameter translation from the WAAS broadcast IGS08 frame to Fixed Tectonic Plate NAD83 2010.0.

Click the 'Green Check Mark' after checking this setting.

Special Note on Reference Frames

If your LT500T is receiving corrections from WAAS, then the raw measurements are 'Current EPOCH, IGS08' framed. If you are receiving corrections from a NTRIP network (in the USA), then the raw measurements are probably 'NAD83 2011 2010.0' framed.

In SurvCE you need to check or uncheck the box that controls frame translation properly. The checkbox can be found under "Equip: Localization: System":

NTRIP NETWORK (NAD83)	WAAS (SBAS) Broadcast Corrections (IGS08)
 <p>SurvCE</p> <p>Localization</p> <p>Points By Helmert</p> <p>System TS GPS</p> <p>Projection: Edit Projection List</p> <p>USA/NAD83/UT Central</p> <p>Projection: Lambert_Conformal_Conic</p> <p>Datum: NAD83</p> <p>Ellipsoid: GRS 1980</p> <p><input type="checkbox"/> Convert WGS84 to NAD83</p>	 <p>SurvCE</p> <p>Localization</p> <p>Points By Helmert</p> <p>System TS GPS</p> <p>Projection: Edit Projection List</p> <p>USA/NAD83/UT Central</p> <p>Projection: Lambert_Conformal_Conic</p> <p>Datum: NAD83</p> <p>Ellipsoid: GRS 1980</p> <p><input checked="" type="checkbox"/> Convert WGS84 to NAD83</p>

Let's work an example to show the transformation process.
Occupy this location:

40 44 10.21560000 -111 51 34.13960000

With the 'Convert WGS84...' box UNCHECKED this will translate into a Utah Central NAD83 coordinate of:

2,266,833.884 Meters N 469,633.929 Meters E 1306.381 UTC NAD83;

With the 'Convert WGS84...' box CHECKED the translated coordinate is:

2,266,833.210 Meters N 469,634.921 Meters E 1307.103 UTC NAD83;

There is a 0.674 M Northing, 0.992 M Easting, 0.722 M Elev shift in the resulting projected coordinates.

Connecting to a Network Correction Source

The LT500T has good accuracy when used with WAAS corrections in North America. It is also possible to connect the LT500T to an NTRIP network for even better performance.

LTSet is used to connect to COM6 at 35,400 baud. LTSet makes an NTRIP connection via Wi-Fi or Cellular connection to the server, sends the GGA position message from the internal GPS receiver on the LT500T to the server which then sends corrections back to the LT500T.

Any Windows Mobile software (like SurvCE) can then connect to COM1 and receive corrected NMEA strings.

1. To begin, use the 'Internet Explorer' on the mobile device to make sure. Click on 'Start' (the flag icon on the lower left corner):



2. Then type the base name of a website to browse to in the address box:



When the full site name is displayed, click on it (www.igage.com in the case shown above.)

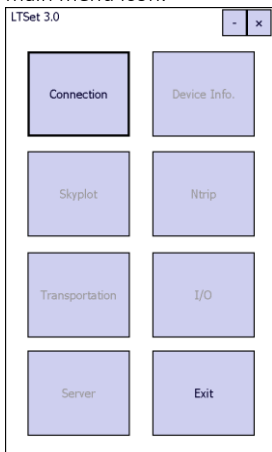
3. If the correct website is shown, then the LT500T is

connected to the internet:

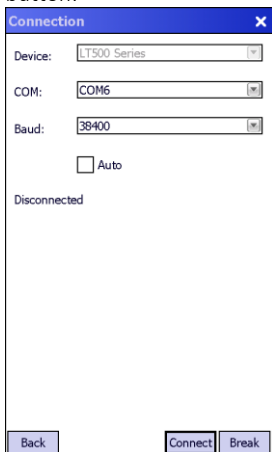


4. Close the Internet Explorer by clicking on the Button (lower right) then click on the "X"

5. Start LTSet by clicking on the main menu icon:

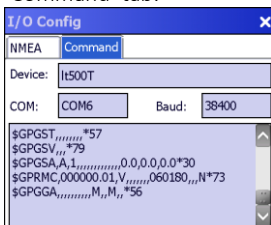


6. Click on the 'Connection' button:



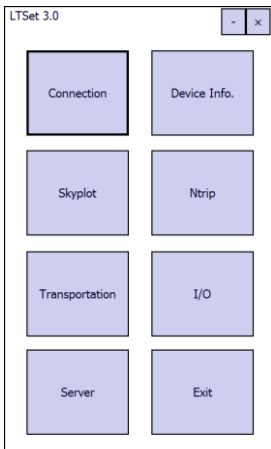
Configure as shown above, then click on 'Connect'. Click on 'Back' after the mode changes to 'Connected'.

7. Optional: You can make sure that you are connected to the receiver by clicking on 'I/O', then selecting the 'Command' tab:



If NMEA sentences are streaming, you are connected and the GPS receiver is working. Click on 'Back' to close the 'I/O Config' window.

8. From the LTSet window:



9. Enter a NTRIP source name, IP address and Port, then click the 'Get' button:

Ntrip

Name: IGAGE

IP: 50.247.53.81

Port: 5000

Get

Mountpoint: MChim_CM RP

Username

Password:

☐ Auto Login

GPFGA:

\$GPFGA,165921.0,4044.17023,N,11151.56997,

Get the source list successfully

Status: Diff

Receive Data: 0

Back Login Logout Save

The mount point list will be retrieved (via the internet) from the server and will populate the 'Mountpoint' drop down list.

10. Select the desired Mountpoint, then enter the Username and Password. Press the 'Save' button, then click on 'Login':

Ntrip

Name: IGAGE

IP: 50.247.53.81

Port: 5000

Get

Mountpoint: MChim_CM RP

Username: igage3

Password: ****

☐ Auto Login

GPFGA:

\$GPFGA,170107.0,4044.17022,N,11151.56969,

Logged

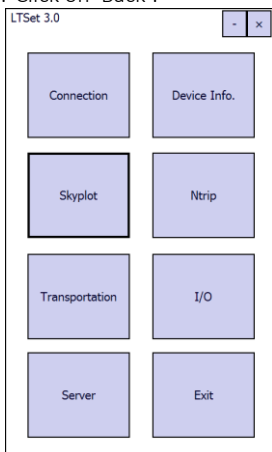
Status: Diff

Receive Data: 912

Back Login Logout Save

If the mount point is a virtual reference server, then the LT500T must be tracking satellites. The GGA message must have a valid Latitude and Longitude. If the 'Receive Data' counter is incrementing, then you have successfully connected to the network.

11. Click on 'Back':

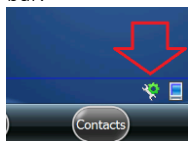


12. Minimize LTSet by clicking the '-' button in the upper

right-hand corner:



13. The LTSet program will be hidden and a small LTSet icon will appear on the task bar:



14. You can now start SurvCE or any other program that accepts NMEA strings, connect to COM1 and enjoy differentially corrected, L1 GNSS accuracy.

Using the Internal Compass and Plummet Laser



The LT500T has an internal compass, level and a pointing laser to indicate the Ground Mark the device is sighted over.

1. To use the 'G Sensor', click on start:



2. Then click on Settings:



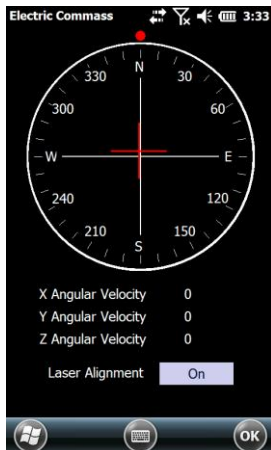
3. Then click on System:



4. Then click on Gsensor:



5. The Compass screen is shown:



Clicking the 'Laser Alignment' 'ON' button will turn on the laser plummet on the bottom of the receiver. If you level the handheld so the red-cross is aligned with the white N-S-E-W axis, then the internal GPS antenna will be directly above the red laser dot.

Warranty

Before you get hung-up with hardware and software problems, please give us (iGage Mapping Corporation) a call. Our goal is to take great care of our customers and be reasonable with everyone.

Our response to issues may exceed your expectations and our written warranty.

IMC is “iGage Mapping Corporation” of Salt Lake City Utah USA.

IMC warrants the LT500T receivers, which we sell, to be free of defects in material and workmanship and will conform to our published specifications for these periods:

GPS receivers: 2-years

Cables and accessories: 1-year

Batteries: 90-days

This warranty applies only to the original purchaser of the product. This warranty applies only to the equipment that iGage sells, equipment sold by other dealers or channels is not covered.

In addition, the CHC factory offers similar warranties and maintains a repair depot in the United States. You can contact the CHC factory at this email address: support@chcnv.com.

Hardware: Purchaser's exclusive remedy under this warranty shall be limited to the repair or replacement, at IMC'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 by IMC at an IMC service center. Any repairs by a service center not authorized by IMC will void this warranty.

In the event of a defect, IMC 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 30-days from the date of return shipment, or for the balance of the original warranty, whichever is longer.

Software: IMC warrants that software products included with hardware products will be free from media defects 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. IMC's sole obligation shall be the correction or replacement of the media so that it will substantially conform to the then-current user documentation. IMC 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.

Exclusions

The following are excluded from the warranty coverage:

Periodic maintenance and repair or replacement of parts due to normal wear and tear.

Product Finishes.

Batteries exposed to heat, cold; or batteries opened or physically damaged.

Installations or defects resulting from installation.

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.

Service performed or attempted by anyone other than an authorized CHC or IMC service center.

That the receiver will be free from any claim for infringement of any patent, trademark, copyright or other proprietary right, including trade secrets.

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. IMC GPS receivers use GPS satellites to obtain position, velocity and time information. GPS is operated by the US government, which is solely responsible for the accuracy and maintenance of the GPS system. OPUS and OPUS-RS is a service of the NGS and IMC shall not be responsible for issues with NGS provided services.

SurvCE is not returnable and non-refundable. Please evaluate SurvCE prior to purchase and activation.

Except as set forth in this limited warranty, all other expressed or implied fitness for any particular purpose, merchantability or non-infringement, are hereby disclaimed.

IMC shall not be liable to the purchaser or any other person for any 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 implied warranty even though caused by negligence or other fault of IMC or negligent usage of the product.

In no event will IMC be responsible for such damages, even if IMC has been advised of the possibility of such damages.

This written warranty is the complete, final and exclusive agreement between IMC and the Purchaser.

RMA

To obtain warranty service from iGage Mapping Corporation the purchaser must obtain a return materials authorization (RMA) number prior to shipping by calling

+1-801-412-0011

Or by email:

info@igage.com

To obtain warranty service from CHC (the Factory) send email to support@chcnv.com

Purchaser's return address and the RMA number must be clearly printed on the outside of the package. IMC reserves the right to refuse to provide free-of-charge service if the date of sale cannot be determined or if the serial number is altered or removed. IMC will not be responsible for any losses or damage to the product incurred while the product is in transit or is being shipped for repair. Insurance is recommended. IMC suggests using a traceable shipping method such as UPS, FedEx or USPS with signature tracking when returning a product for service.

The Purchaser shall always pay shipping to IMC, IMC will return warranty repairs by UPS ground, unless the Purchaser agrees to prepay expedited service costs. IMC will not pay for warranty returns to destination outside of the contiguous 48-states. The purchaser shall always pay any associated duty associated with warranty repairs.

CHC (the Factory) has a separate warranty and RMA process.

