

# FAST Survey Software



## Getting Started Guide

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- (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;
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- (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.).

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FAST Survey is a software program intended for advanced land surveying. FAST Survey can be used with the following Ashtech GNSS receivers:

- Z-Max, ProMark 3 RTK
- ProMark 500, ProFlex 500
- ProMark 200, ProMark 100

In its standard version, FAST Survey allows you to perform the following types of surveys.

- Logging positions of points in the coordinate system used.
- Staking out points, straight lines and curves, with or without offset, while providing the specific information needed as you do that, including cut and fill information (in 3D).
- Logging GNSS raw data (post-processed projects or as backup to real-time RTK projects).
- Entering attributes, based on feature code lists, as you store new points, in a way much similar to GIS mobile software.

FAST Survey includes various tools to assist surveyors in their projects. Some of these tools are listed below.

- Monitoring GNSS reception and current position status
- Writing notes to be appended to job files
- Creating and saving local coordinate systems through localization
- Setting height references (arbitrary, DTMs, etc.)
- GNSS utilities (Send command, reset RTK)
- Interfacing with total stations. FAST Survey can also support different peripherals as inputs (lasers, depth sounders) or outputs (light bars)

As software options, FAST Survey offers the following functions:

- Set of COGO tools
- ROAD tools, including a map editor to prepare maps for use as visual background information while surveying. This editor operates in a way much similar to an AutoCad editor.

This Getting Started Guide only deals with FAST Survey's basic functions. For more information on this program and its software options, see the *FAST Survey Reference Manual*.

## Installing FAST Survey

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This section describes how to install FAST Survey from the CD provided, using an office computer. The FAST Survey software can also be downloaded from the Ashtech FTP server.

If Windows XP (or older OS version) is used on your computer, you first need to install Microsoft Active Sync on your office computer.

If Windows Vista is used, you don't normally need to install an additional program on your computer. However, if the installation of FAST Survey fails, you will have first to install Windows Mobile Device Center and then resume the installation of FAST Survey.

The latest versions of ActiveSync and Device Center can be downloaded from <http://www.microsoft.com/windowsmobile/activesync/default.mspx> at no cost.

### Installation Procedure

- Connect the field terminal to your office computer using the USB data cable provided. For ProMark 200 or ProMark 100, place the receiver on its docking station and connect the docking station to the computer through the USB cable.
- Turn on the field terminal (or receiver).
- Insert the FAST Survey CD in your office computer. This automatically starts the setup file stored on the CD.
- Click on the **Install FAST Survey for...** option corresponding to your equipment. This starts the FAST Survey Setup Wizard.
- Click **Next>**.
- Check on the **I accept the terms in the License Agreement** option and then click **Install**.
- At the end of this phase, a message appears asking you to check the field terminal (or receiver) screen to see if additional steps are needed to complete the installation.
- Click **OK**, then **Finish** to complete installation on computer side.
- On the field terminal or receiver, the installation phase has automatically started. For ProMark 200 or ProMark 100, a message first appears asking you to choose the location where to install FAST Survey (the default "Device" option is recommended), then tap on **Install** to continue.

When the progress bar disappears from the screen, this means installation is complete. The FAST Survey icon can then be seen on the screen.

For ProMark 200 and ProMark 100, a message indicates that installation has been successful. Tap **OK** to go back to the Today screen where the FAST Survey command line and icon line are now visible.

## Registering as a FAST Survey User

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The first time you start FAST Survey, you will be prompted to register your license of the software. If you do not register, FAST Survey will remain in demo mode, limiting each job file to a maximum of 30 points.

### How to Register

FAST Survey registration is done via the Internet at the following address:

[www.survce.com/Ashtech](http://www.survce.com/Ashtech)

You will be asked to enter the following information:

- User Name
- Company Name
- Serial Number\*
- Email Address
- Phone Number
- Fax Number
- Hardware ID#1\*
- Hardware ID#2\*
- Reason for Install
- Registration Code\*

\*: Select **Equip>About Fast Survey>Change Registration** in FAST Survey to read this information.

After you submit this information, your change key will be displayed and emailed to the address that you submit. Keep this for your permanent records. You may then enter the manufacturer and model of your equipment.

If you do not have access to the Internet, you may fax the above information to (+1) 606-564-9525. Your registration information will be faxed back to you within 48 hours. During this time, you may continue to use the program without restriction. After you receive your Change Key, enter it and tap **OK**. You can then create a new FAST Survey job, as explained further.

### Saving your registration in the Field Terminal

When you register FAST Survey in a MobileMapper CX, a ProMark 100 or ProMark 200, the code is automatically and safely saved at the end of the registration procedure.

With a Juniper Allegro CX, you need to perform a RAM backup or a System Save to be sure your authorization code will not be lost when you next reboot your Allegro CX. If you cannot

find this option on the Allegro CX Start menu, then open the Control Panel and choose RAM backup.

## Getting ProMark 200 or ProMark 100 Ready for Use with FAST Survey



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- Place the receiver in its field bracket and mount the assembly onto the pole at a suitable height.
- Secure the antenna provided at the top of the pole.
- Connect the antenna to the receiver antenna input using the coaxial cable provided.
- Determine the length of the pole. The real height of the antenna will be deduced from this value.

## Creating a New FAST Survey Job

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1. Turn on the receiver and wait until the boot sequence is complete.
2. Make sure the clock is set properly before starting FAST Survey.
3. Tap on “FAST Survey” on the Today screen to launch FAST Survey.
4. Tap the **Select New/Existing Job** button. This opens the Coordinate Files window.
5. Tap on the highlighted “crd” file name located at the bottom of the screen. This opens FAST Survey’s virtual keyboard with the file name now appearing above.
6. Using the keyboard, type in the name of the “crd” file in which FAST Survey will store the data you will collect during your job.
7. Tap . This takes you back to the Coordinate Files window where your file name now appears in the **Name** field.
8. Tap  again. This opens the Job Settings window, which consists of five different tabs on which you can set a large number of parameters pertaining to the job (or future jobs). If installed on a ProMark 200 or ProMark 100, FAST Survey will instantly identify the platform at this stage. Only the parameters that make sense with a GNSS system are presented below. All other parameters should be kept with their default settings.

On the **System** tab:

- **Distance:** Choose the unit in which all measured distances will be expressed (US Survey Feet, Metric or International Feet). Unless “Metric” is selected, you can also choose the units in which distances will be displayed (“Decimal feet” or “Feet and Inches”).  
**Warning! You cannot change this setting after creating the file!**
- **Angle:** Choose the unit in which all measured angles will be expressed (degrees, minutes, seconds or grads)
- **Zero Azimuth Setting:** Choose the direction for which azimuth is arbitrarily set to 0° (North or South)
- **Projection:** Choose a projection from the combo box. To select a different projection, tap the **Edit Projection List** button. The **Add Predefined** button allows you to select an existing projection. The **Add User Defined** button


allows you to create an entirely new projection. The selected or created projection will then be selectable from the combo box.

On the **Stake** tab:

- **Precision:** Choose the number of decimal places (0 to 5) used to express the three coordinates of any stakeout point. “0.000” (3 decimal places) is the best setting to fully benefit from the precision offered by your equipment.

On the **Format** tab:

- **Coordinate Display Order:** Choose the order in which you want FAST Survey to display East and North coordinates (East, North or North, East).
- **Angle Entry and Display:** Choose the type of angle FAST Survey will display (Azimuth or Bearing).

9. Tap . This creates the file, closes the Job Settings window and takes you to the FAST Survey menu.

## Initiating RTK in a ProMark 200 or ProMark 100

### Set Tracking Mode Using GNSS Toolbox


First use the GNSS Toolbox utility to set the tracking mode of the receiver. FAST Survey will only be able to work from the signals selected with this utility.

Running GNSS Toolbox from within FAST Survey is simply done by selecting **Equip > GPS Utilities > GNSS Toolbox > GNSS Settings**. Select the desired tracking mode option. You can also set the elevation mask and enable or disable the use of SBAS.


### Set Receiver and Antenna



- In FAST Survey, tap on the **Equip** tab and then the **GPS Rover** button. A message may appear asking you to confirm your choice of configuring a rover. Tap **Yes**. This opens the **Current** tab of the GPS Rover window.
- The **Manufacturer** and **Model** fields should normally have been set to the right values on launching FAST Survey:
  - **Manufacturer:** “Ashtech”
  - **Model:** “ProMark 100/200”



Note that the  button beside the **Manufacturer** field allows you to read the following information about the connected receiver:

- Firmware version
- Receiver ID
- Power status
- Free memory space
- Firmware options installed.

Tap on  to return to the **Current** tab.


- Tap on the **Receiver** tab.
- Tap on  to define the external antenna used.
- Find the antenna model used (default: ASH111661) in the **Part Number** scroll-down menu.
- Tap  to choose this antenna and close the window. The chosen antenna model can now be seen on the **Receiver** tab. The value in mm on the right refers to the vertical distance between the top of the pole (or the base of the antenna) and the L1 phase center of the selected antenna.

- Select the **Vertical** option for the antenna height measurement.
- Tap within the **Antenna Height** field and enter the value you have measured or read for the range pole length.
- Choose your preferred setting for **Elevation Mask**, (default: 5°)
- **Store Vectors in Raw Data**: Enable this option if you want to save all vectors to the job file (the crd file). Keep it cleared otherwise.
- **Advanced** Button: Provides access to the following settings:
  - **Ambiguity Fixing** (see table below).

Choice	Definition
Float	Choose this option if you only need decimeter accuracy (position status will never go to “Fixed”).
95.0	95% confidence level
99.0	99% confidence level (default and recommended setting)
99.9	99.9 confidence level

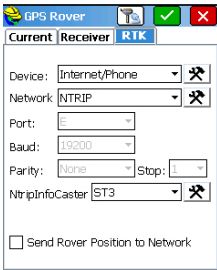
- **Use SBAS, Use GLONASS**: Using SBAS and/or GLONASS satellites helps to maintain the availability of fixed positions in those difficult environments where GPS alone would fail to do so.



**IMPORTANT!** Activating the **Use GLONASS** option will be effective on GLONASS reception only if you have previously set the **Tracking mode** parameter in GNSS Toolbox to “GPS L1+GLONASS L1”. See *Set Tracking Mode Using GNSS Toolbox on page 9*. As for the **Use SBAS** option, only the last setting made is effective, whether you do it from GNSS Toolbox or from FAST Survey.

- The **Virtual Antenna** option is disabled by default. Enabling the virtual antenna, which is defined as the generic “ADVNULLANTENNA” GNSS antenna, allows all collected data to be decorrelated from the GNSS antenna actually used at signal reception level. This may be useful if you wish to post-process the collected raw data using base raw data collected with a base from another manufacturer.
- **Send file after config**: You may have your receiver executing a number of additional commands (proprietary commands of the “\$PASH” type) when later you tap on  to configure the receiver. These

commands must have been saved to a text file, for example to a file created using **Equip > GPS Utility > Send command**. To select the file you want the receiver to execute when being configured, tap on the blue button and highlight the corresponding file name.

## Set Data Link




- Tap on the **RTK** tab. This tab allows you to set the data link on the rover side, in accordance with the base or network you will be working with. Several configurations are possible:
  1. Using the internal cellular modem for a network connection (Direct IP, NTRIP or SpiderNet).
  2. Using the internal cellular modem in CSD mode for a “phone call” type connection with the base (Direct Dial).
  3. Using an external device (for example an external corrections receiver).
  4. Using an external radio receiver (up to five different radio models will be available in future).
- To use the cellular modem, select “Internet/Phone” as the **Device** used.
- Tap on  after the **Device** field to access the modem’s **Auto Dial** setting. With this option enabled, the connection to the last base used (CSD mode), to the last mount point used (NTRIP), or to the last IP address used (Direct IP) will be automatically re-established after a power cycle.
- Tap  to return to the **RTK** tab after making your choice for **Auto Dial**.
- Use the **Network** field to define the type of connection you want to establish through the internal modem.

Then use the visible  buttons accordingly.

The tables below summarize all the settings required for each type of connection:

Parameters	TCP/IP Direct	NTRIP	SpiderNet	Direct Dial
<b>Base ID</b> (See sub-parameters below)	•		•	•
<b>Broadcaster Name</b> (See sub-parameters below)		•		
<b>Station Name</b> (from source table)		•		
<b>Send Rover Pos?</b>		•		

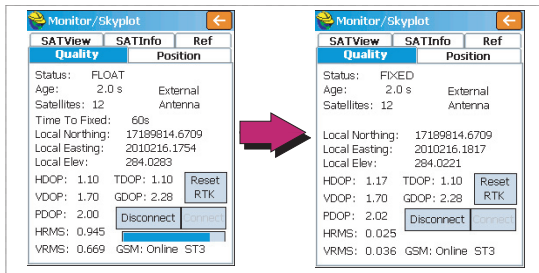
Sub-Parameters	Base ID (Direct IP)	Base ID (SpiderNet)	Base ID (Direct Dial)	Broadcaster Name
<b>Name</b>	•	•	•	•
<b>IP Address</b>	•	•		•
<b>Port</b>	•	•		•
<b>User Name</b>		•		•
<b>Password</b>		•		•
<b>Phone Number</b>			•	
<b>Send Rover Pos?</b>	•	•	•	

- Tap  to initiate the connection. Use the **Monitor/Skyplot** function to check that the receiver is set to operate in RTK mode. See *Checking For a “Fixed” Position Solution Before Starting on page 13*.

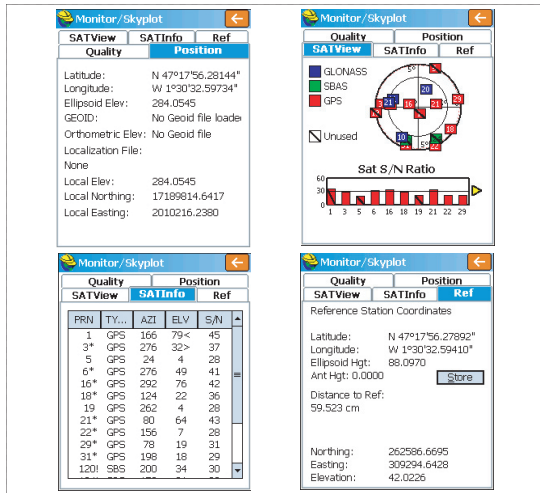
# Checking For a “Fixed” Position Solution Before Starting

After the data link has been established, the rover starts acquiring corrections data from the selected source. Note that the rover will automatically recognize the format of the received data (ATOM, RTCM2.3, RTCM 3, CMR, CMR+, DBEN). Do the following before starting your survey:

- In the **Equip** menu, tap on the **Monitor/Skyplot** button
- Read the different parameters displayed on the screen. You should see the HRMS and VRMS rapidly decrease from a few meters to less than 10 to 20 mm, while the position status switches from “AUTO” to “FLOAT” and finally “FIXED”.




Other screens are available from within the **Monitor/Skyplot** function showing the details of the constellation, of the base position and of the RTK position solution:



In NTRIP and Direct IP modes, a **Disconnect/Connect** button is available on the **Quality** tab to easily control the network connection. There is also a horizontal bar showing the GSM signal level.

In Direct Dial mode, a **Hang up** button is available on the same tab to terminate the connection with the base.

- Tap  after you have made sure the FIXED position status is settled. This takes you back to the FAST Survey menu from which you can start your survey.

## Uploading Stakeout Points to the Field Terminal

In your office, do the following:

- Connect the receiver or field terminal to your office computer using the USB data cable. For ProMark 200 or ProMark 100, place the receiver on its docking station and connect the docking station to the computer via the USB cable.
- Make sure ActiveSync is installed on your computer and is allowed to perform USB connections. If you do not have ActiveSync installed, download the latest version from the following web page:

<http://www.microsoft.com/windowsmobile/activesync/default.aspx>

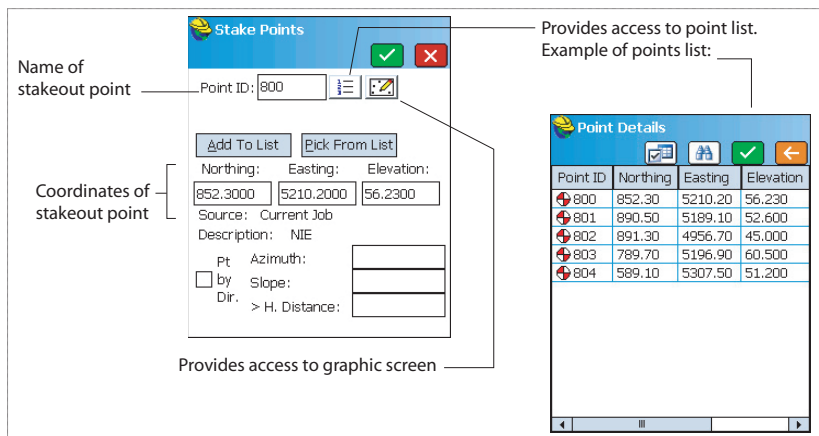
<http://www.microsoft.com/windowsmobile/activesync/default.aspx>

- Run GNSS Solutions on your office computer.
- Open the project containing the stakeout points you want to transfer to the receiver or field terminal as your job.
- On the project map view, select all the reference and target points making up your job.
- Select **Project>Upload Positions to External Device..**
- Select **RTK Job** and **FAST Survey data collector**.
- Click **OK**.
- Name the job (e.g. MYJOB). Keep the **Selected Targets and References** option selected and click **OK**. This opens the Data Transfer dialog box.
- In the combo box, select **Active Sync** and keep **Automatic transfer** enabled.
- Click **OK** to establish the connection with the receiver or field terminal and upload the job (to \My Device\Program Files\FAST Survey\Data).
- After the job has been uploaded, turn off the receiver or field terminal, disconnect the USB cable and go to the field with your surveying equipment to stake out your points.

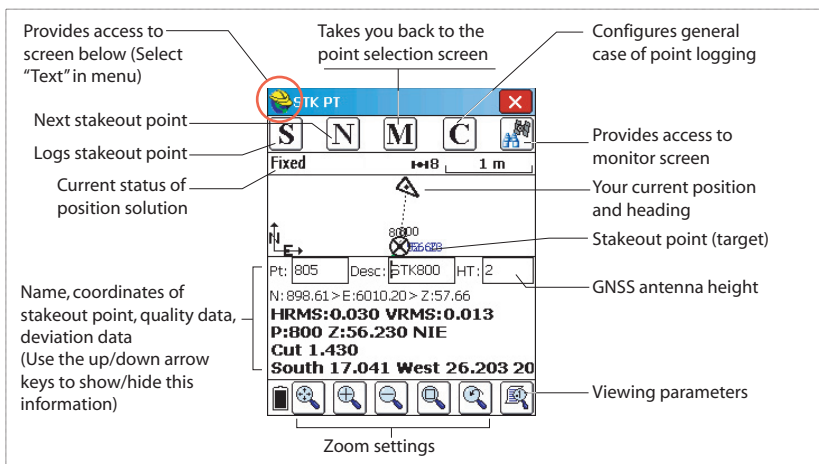
## Staking Out Points

1. Run FAST Survey and open the job containing the points you want to stake out.
2. Tap on the **Survey** tab and then select **Stake Points**. The screen now displayed allows you to stake out points.

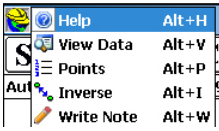
- On this screen, FAST Survey asks you to choose the point you want to stake out. You can either type in its coordinates in the **Northing**, **Easting** and **Elevation** fields, or select a pre-defined point from the points list (see **File> Points**). You can also define graphically the point by tapping on the point on the graphic screen, or define the point according to azimuth, slope and horizontal distance.



- Once you have chosen a point, tap . A graphic screen is now displayed to help you head for the point.

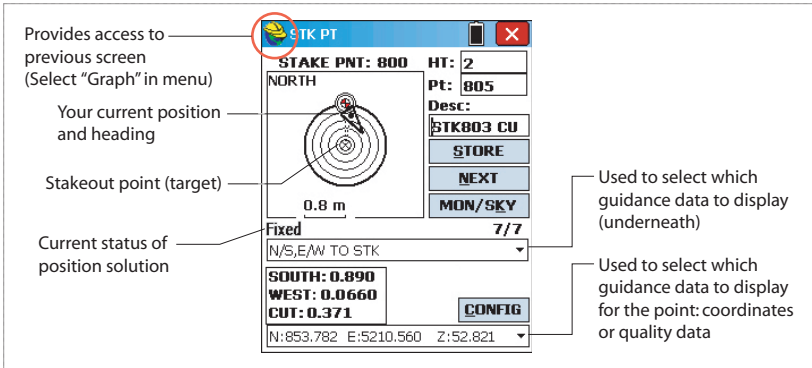


Yellow helmet gives access to Function Menu!



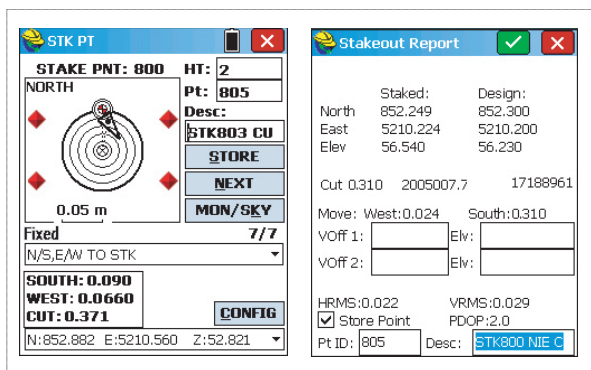
- When the distance to the stakeout point is too small to be clearly seen on this screen, tap on the surveyor's helmet in the upper-left corner and select **Text** from the menu that pops up.



A new screen appears giving a more accurate view of the remaining distance to the stakeout point. (If you want to return to the previous screen, just select **Graph** in the same menu.)



When the remaining distance is within the stakeout tolerance (this parameter can be changed in **Equip>Tolerances**), markers appear in the four corners of the target. You can now set a stake on this point.

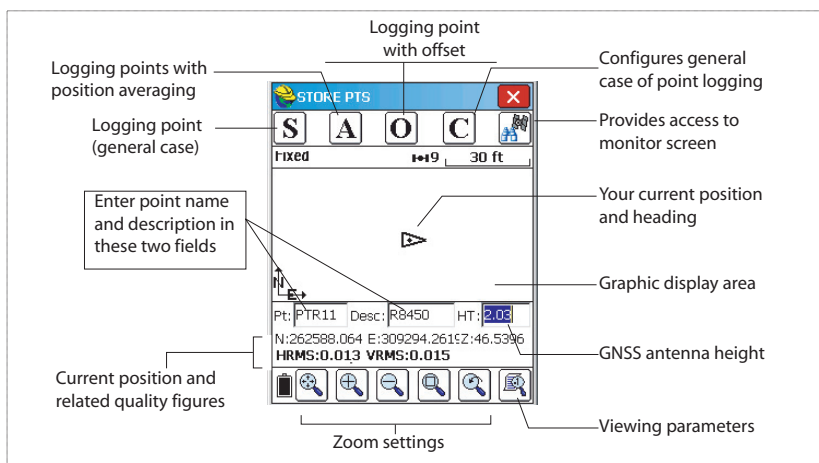
- Tap on the **STORE** button if you want to store the position of this point. You will be notified if the values of HRMS and VRMS exceed the tolerances set for these two parameters in **Equip>Tolerances**. A new screen is then displayed showing the coordinates of both the staked and design points.



7. Tap  if you agree. The “Point Stored” message appears briefly. The screen then comes back to the Stake Points screen where you can choose the next point to be staked.
8. After staking out all your points, tap  in the upper-right corner of the screen to return to the menu.


## Logging Points

1. Tap on the **Survey** tab and then on **Store Points**. The screen now displayed allows you to log all your points. The figure below summarizes all the functions available from that screen.





2. Type in the point name and description in the corresponding two fields (see above)

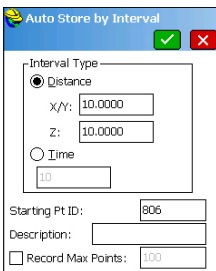
3. Tap on the “A” button
4. Enter the number of readings you want before FAST Survey is allowed to compute an average position for this point.

For example, type in “5” and tap .

Messages follow successively indicating that the system is taking the five requested readings. Then FAST Survey displays the average coordinates it has determined for the point.

5. Tap  if you agree. The “Point Stored” message appears briefly. The screen then shows the location of the point together with its name and description.
6. After logging all your points, tap  in the upper-right corner of the screen to return to the menu.

## Logging a Line



Auto Store by Interval

Interval Type

Distance

X/Y: 10.0000

Z: 10.0000


Time

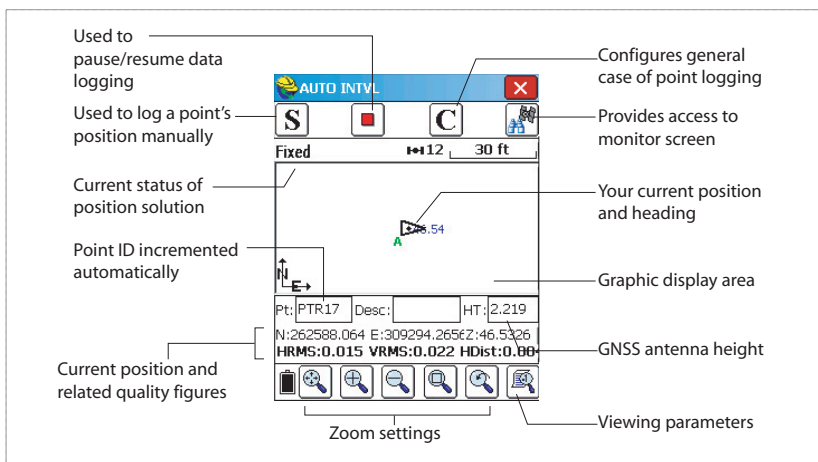
10

Starting Pt ID: 806

Description:

Record Max Points: 100

1. On the **Survey** tab, select the **Auto by Interval** function. Two different modes are possible: Time or Distance.
2. If you choose **Distance**, enter the horizontal and vertical increment value respectively in the **X/Y** and **Z** fields, according to the chosen unit. If you choose **Time**, enter the increment value, in seconds.
3. Enter a point Id. for the start point in the **Starting Pt ID** field. This field will be incremented by one after each point logging. Initially, the Point Id. may only consist of letters (e.g. “ABCD”). FAST Survey will then increment the Point Id. as follows: ABCD1, ABCD2, etc.
4. Tap  to switch to the graphic screen (see figure below) and start logging the series of points along the line.



The **S** button lets you instantly log the position of a point. The pause button allows you to pause data logging in continuous mode.

If data logging in continuous mode is paused, you can still continue to log points in manual mode using the **S** button. Tap the pause button again to resume data logging in continuous mode.

If you directly tap **X** to come back to the main menu, data logging in continuous mode is automatically stopped.

## Downloading RTK Points to GNSS Solutions

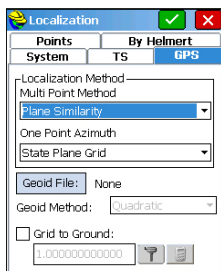
- Go back to your office and connect the receiver or field terminal to your office computer using the USB data cable. For ProMark 200 or ProMark 100, place the receiver on its docking station and connect the docking station to the computer via the USB cable.
- Run GNSS Solutions on your office computer.
- Open the project in which to add the points from the field.
- Select **Project>Download Positions from External Device..**
- Select **RTK Results** and **FAST Survey data collector**.
- Click **OK**. This opens the Data Transfer dialog box.
- In the combo box, select **ActiveSync**, enable **Automatic Transfer** and click **OK**. This opens a new window listing all the jobs stored in the field terminal.
- Select the job you want to download (e.g. "MYJOB") and click **OK**. This starts the download process.



Vector information relative to surveyed points is available only in .rw5 files. FAST Survey saves vector information directly in this file format and so *does not* create O-files that would contain such information.

## Running Localization

### Choosing the Localization Method



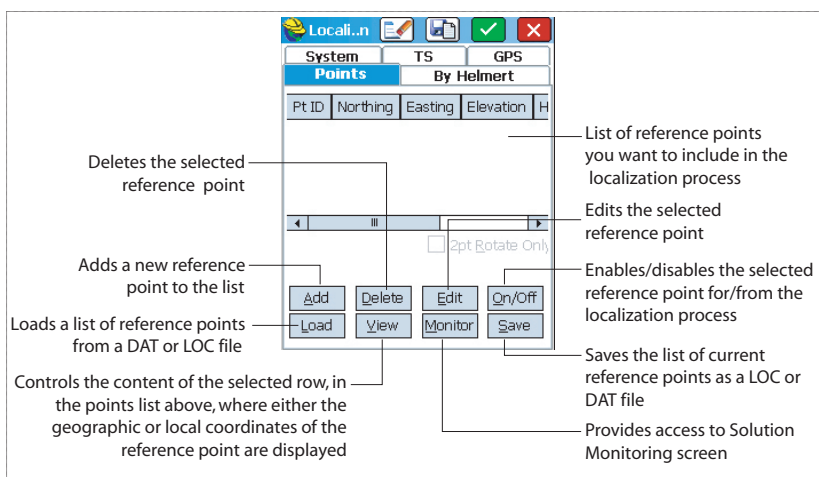
- With your job open in FAST Survey, tap on the **Equip** tab and then on the **Localization** button. This opens the Localization window with the **System** tab shown first.

For your information, this tab shows the name of the projection selected earlier for the project (see **File>Job Settings>System**). Choosing another projection here would change the projection used in the job. It is your responsibility to have the right projection selected on which the localization process is going to be run.

- Tap on the **GPS** tab and select your localization methods for multi-point and one-point localizations. If you choose “Helmert” as the localization method, the one-point method selection is grayed.



### One-Point or Multi-Point Localization


- Tap on the **Points** tab. This tab allows you to define the reference points used as the input to the localization process.



For each of the available reference points, you need to enter the local coordinates and then the WGS84 coordinates, as measured by your equipment.

2. Tap **Add** to define the first reference point. A new window (Local Point) is displayed allowing you to do that. To add a reference point that already exists in the job, do one of the following:

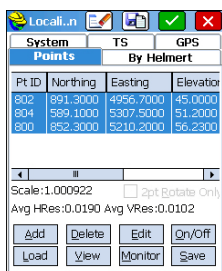
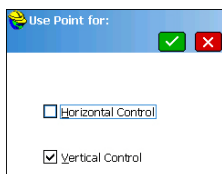
- Type its name in the **Point From File** field. This automatically updates the window with the point's local coordinates.
- Or tap on the  button to access the list of points available. Choose one and tap the green button to return to the Local Point window.
- Or tap on the  button to select the point directly on the map of the working area.

3. Tap on the green button () to enter the name and local coordinates of the reference point.

FAST Survey then asks you to enter the WGS84 coordinates of the point. Choose one of the following methods:

- **Read GPS.** Choosing this method means your equipment should be placed exactly over the reference point. Then enter a number of samples required before the equipment delivers an averaged WGS84 solution for the point (5 minimum recommended). Tap on the green button to let the equipment take the required readings and return a result (averaged position + residuals). Then validate the result.
- **Enter latitude/Longitude.** Enter the three WGS84 coordinates of the point, using the “dd.mmssss” format, for latitude and longitude. Elevation should be entered in the distance unit chosen for the job. Enter the orthometric elevation if a geoid file is used otherwise enter the ellipsoid elevation.
- **From Raw File:** Select a point from the job holding the WGS84 coordinates of the reference point. This point should have been surveyed earlier by the system in the same measurement conditions (same base setup, etc.) as now.

Once both the local and WGS84 coordinates have been entered, the reference point appears in the list of points used in the localization process.



- With the point selected in the list, tap on the **On/Off** button to tell FAST Survey how the point should be used in the localization process.


You can force the local grid to pass through its horizontal position by checking the **Horizontal Control** button and/or its vertical position by checking the **Vertical Control** button. Clearing the two options means the point is not involved at all in the localization process. Tap on the green button to validate your choices.


- Resume the previous three steps until all your reference points have been added to the list.

As you add new points, check the amount of residual for each reference point involved in the localization (residuals are displayed in the lower part of the screen). The lower these values, the better the consistency of your set of reference points.


Should some residuals be abnormally high, the relevant point(s) should be deleted using the **Delete** button, or its contribution to the localization process changed by editing its control settings through the **On/Off** button.


If you enter only two reference points, the **2 pt Rotate Only** button is made available. This option allows you to use the second point for direction but not for scaling.

- Tap  when you are satisfied with the level of residuals. FAST Survey then asks you to save your list of points as a LOC or DAT localization file.

- Name the file and tap . **The localization process is now complete and active. This means every new point you will now survey will be expressed on the local grid.**

If points have been surveyed in the job prior to the localization process, FAST Survey will prompt you to convert their coordinates to the new local grid. If you accept, FAST Survey will open the Process Raw File window.

Simply tap  to re-process the coordinates of these points. FAST Survey will return the list of converted coordinates.

NOTE: Tapping  from the Localization screen is mandatory to activate the new localization file. Using the **Save** button saves the localization file but does not make it active.

## Helmert Localization

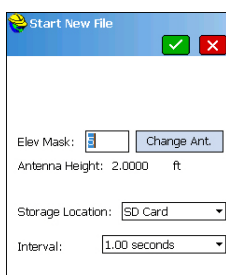
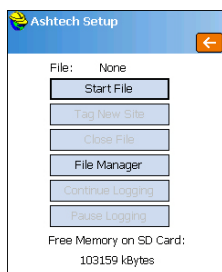
System	TS	GPS
Points	By Helmert	
dx:	0.15	m
dy:	0.02	m
dz:	0	m
rot X:	0.0023	"
rot Y:	0	"
rot Z:	0.00217	"
Scale (ppm):	1.0000000058	
<input type="button" value="Calc from Pts"/> <input type="button" value="Output to Text File"/>		

1. With your job open in FAST Survey, tap on the **Equip** tab and then on the **Localization** button.
2. Tap on the **GPS** tab and select “Helmert” from the **Multi Point Method** field.
3. Tap on the **By Helmert** tab and then enter the seven parameters defining the new datum of the local grid.
4. Tap . **The localization process is now complete and active.** This means every new point you will now survey will be expressed on the local grid.

### Computing Helmert Parameters from a Multi-Point Localization File

- Follow the instructions to perform a multi-point localization.
- After all the points have been defined, tap on the **By Helmert** tab.
- Tap on the **Calc from Pts** button. FAST Survey computes the seven Helmert parameters and displays the result in the corresponding fields.
- To save the seven parameters as a TXT file, tap on the **Output to Text File** button and name the file.

## Collecting Raw Data in Static or Kinematic Mode



Collecting raw data with FAST Survey may be done in static or kinematic mode.

In Stop & Go kinematic, you may tag several points and mark the beginning and end of static occupations on these points. These events will be saved in the raw data file. When post-processing the raw data file with GNSS Solutions, you will have to declare it as a kinematic observation.

1. Tap on the **Survey** tab and then on **Log Raw GPS**.
2. Tap on **Start File**. The screen lists the currently used settings.
3. Keep or edit these settings:
  - **Elev Mask:** Elevation mask, in degrees (default: 5 degrees)
  - **Antenna Height:** Current value of antenna height, expressed in the chosen unit. Use the **Change Ant.** button to change the antenna height. Choose the measurement type first (**Vertical** or **Slant**) and then enter the measured value.
  - Choose the storage medium where to store the file.
  - **Interval:** Raw data recording rate, in seconds.
4. Tap . On top of the screen now appears the **Logging...** message indicating raw data recording in progress. A default name is given to the open raw data file, based on the ATOM naming conventions:

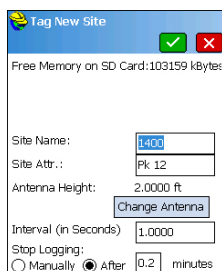
**G<Site><Index><Year>.<Day>**

Where “Site” is the name you last entered in the **Site Name** field below (this may be a bit confusing but you have to get used to it).

5. Use the **Tag New Site** button to tag the raw data file with the name of the site (point or line) you are surveying:
  - **Site Name:** Enter a four-character name (recommended) so that the entire name, and not a truncated name, can appear later in the raw data file name. Longer site names will not be truncated however in GNSS Solutions.

For a static observation (by a base or a rover), enter the name of the site where data collection takes place.

For a Stop & Go observation, enter a new name each time you arrive at a new point. This will later be interpreted as the beginning of a static occupation on



this point. The end of the static occupation is controlled by the **Stop Logging** parameter below.

For a continuous kinematic observation, enter the name of the line you are surveying.

- **Site Attr.:** Enter an optional description for the surveyed site.

[The antenna height and raw data recording rate (interval) are recalled on this screen. You can still change them if necessary.]

- **Stop Logging:** This parameter controls the end of the static observation on the specified point name (not to be confused with the end of raw data collection).

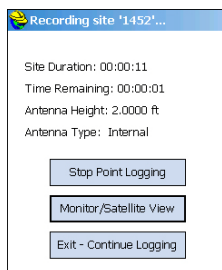
This control may be manual (you will decide by yourself when to stop: select **Manually**), or automatic, by selecting **After** and entering a preset duration, in minutes, for the observation on the point.

Typical durations in static are a day's work for a base or several minutes or hours for a rover.

Typical durations in Stop & Go are several seconds to several minutes on each point.

In continuous kinematic, it makes sense to choose **Manually** because you do not know in advance how long it will take to get to the end of the line.

6. Tap . A new screen is displayed summarizing all your settings.



- **Site Duration:** Shows the time elapsed since you started the observation on the point
- **Time Remaining** is displayed only if you have selected **After** (x minutes)
- Reminder on the antenna parameters used (height and type)
- **Stop Point Logging:** Tap on this button to stop the observation on the point (required if **Manually** was selected). if **After** (x minutes) was selected, tapping on this button will shorten the observation.
- **Monitor/Satellite View** button: May be used to make sure GNSS reception is good on the surveyed point (enough satellites are received, DOP values low). Ignore all RTK-related indicators. Note that making this check is not always compatible with short static occupation times on a point.
- **Exit - Continue Logging** button: Use this button if you change your mind and you no longer want to tag the

point (and you want to continue logging the raw data file).

7. If you stop manually, you will be asked to confirm this. A message “Finished collecting data for this site (xx)” will then appear. In automatic, you will get this message directly.
8. Tap **OK** to close the message. This takes you back to the initial screen where you can see that raw data are still being collected.
9. Tap on the **Close File** button to end data collection and close the raw data file.
10. Tap on the **File Manager** button. You should recognize the last file in the list as the file you have just closed.

You may quit the **Log Raw GPS** function while letting FAST Survey collect raw data. In this case, you will have to confirm that you don't want to close the raw data file.

When coming back to the **Log Raw GPS** function, again FAST survey will ask you what to do about the raw data file being currently logged.

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## Getting Started Guide

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