GPS Hiper Ga with FC-2000 Network RTK (NTRIP) SURVEY PROCEDURE GUIDE

Prepared By

Abdul Jaleel K.M.

Technical Support Engineer/Service centre in charge

Mobile: 050-6944728, Tel:04-2823145 Ext: 160

E-mail:topconsc@fajerest.ae

Al Fajer Establishment
Scientific Division

Topcon certified Service Center
P.O.Box:1600, Dubai, UAE
Dubai-Tel: 04-2823145, Fax: 04-2823015
Abu Dhabi-Tel: 02-6411303, Fax: 02-6411378
E-mail: topconsc@fajerest.ae, Web: www.fajerest.com

TOPCON Hiper Ga with FC-2000
GPS RTK (NTRIP) SURVEY PROCEDURE GUIDE

Introduction:

Real Time Kinematic surveying used for topographic survey and stakeout, and is the most precise method of Real Time surveying. The concept of GPS Network Reference Stations allows us to eliminate/reduce systematic errors in reference station data, to provide high-accuracy, real-time kinematic (RTK) GNSS positioning for wider areas. A VRS network improves productivity while at the same time reduces costs, by eliminating the need to set up a base station.

The purpose of this guide is to provide a step-by-step procedure for completing RTK topographic surveys using the Topcon hardware and software. This guide consists of following sections:

Initial Setup
Topography Surveying
Importing Job
Exporting Job
Localization

Hardware Required:

Topcon Hiper Ga Dual-frequency receiver
Topcon Controller FC-2000 with Bluetooth Card (Data Collector)
Mobile with SIM Card

Software Required:

TopSurv running in Windows CE operating system (on FC-2000)
Top Link software for PC (Download)

Our Related Guides:

TopSurv User Manual
TopSurv Reference Manual
GR3 Operator's Manual
Top Link Reference Manual

Additional information such as Bluetooth operation, radio frequency, etc. is not included in this guide. Contact our Technical support Engineers for assistance.

Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

Al Fajer Establishment
Scientific Division

Topcon certified Service Center
P.O.Box:1600, Dubai, UAE
Dubai-Tel: 04-2823145, Fax: 04-2823015
Abu Dhabi-Tel: 02-6411303, Fax: 02-6411378
E-mail: topconsc@fajerest.ae, Web: www.fajerest.com

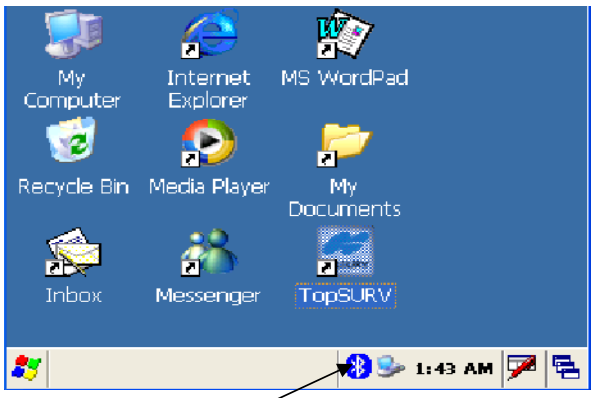
Turn on the FC-2000 by pressing the green Power Button for more than 1 second.

Turn Power ON

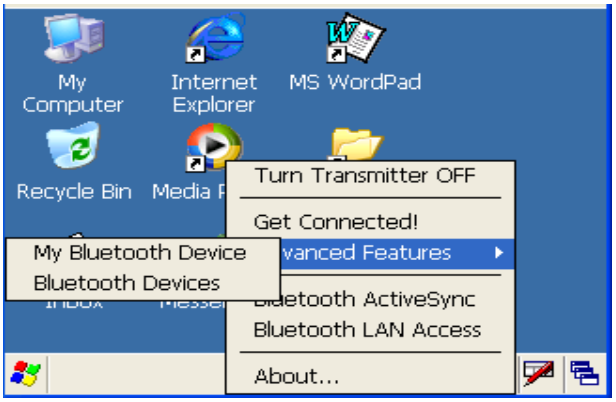
Green Button

If you want to reset the controller PRESS

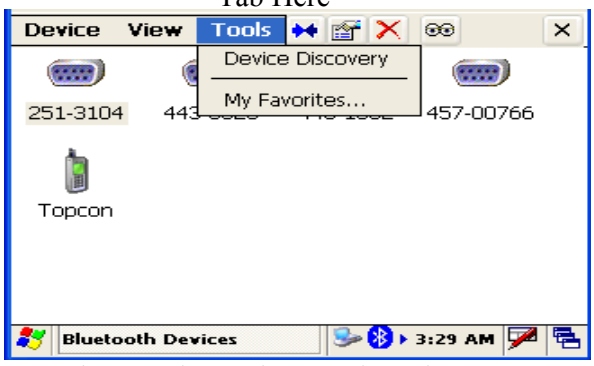
(Shift + Func + ESC)



Tab Here



Select Advanced Features – Select Bluetooth Devices

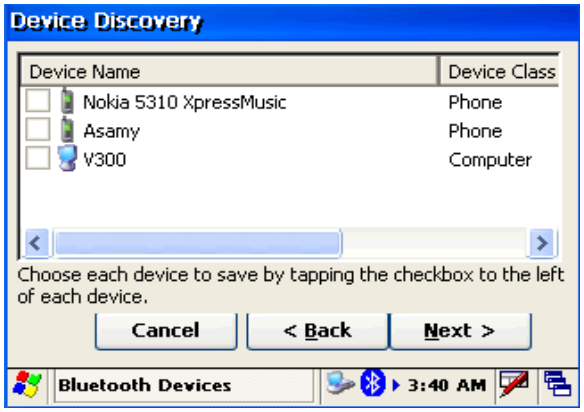


Select Tools – Select Device Discovery

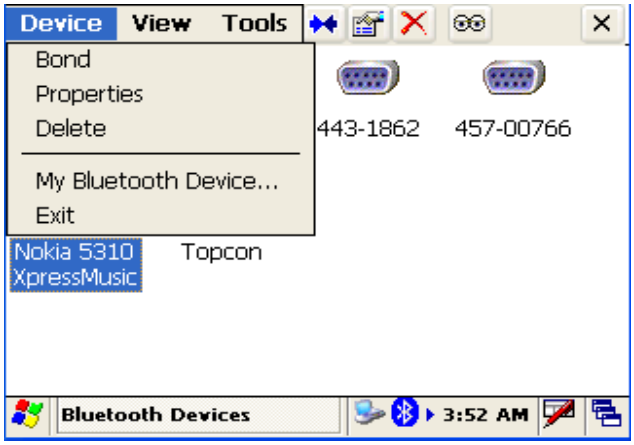
Tab Next

Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

Tab Next



Select Phone - Tab Next

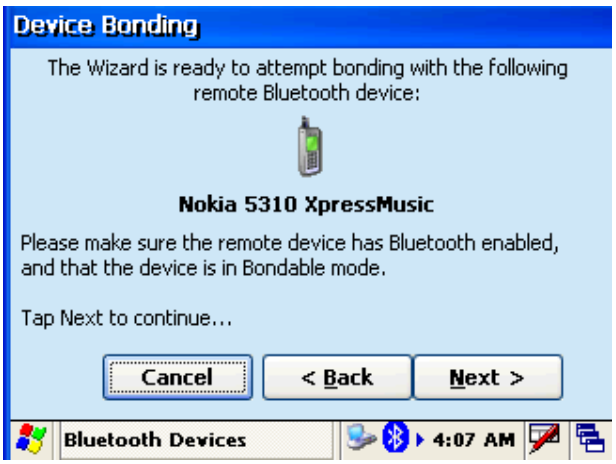


Tab Finish

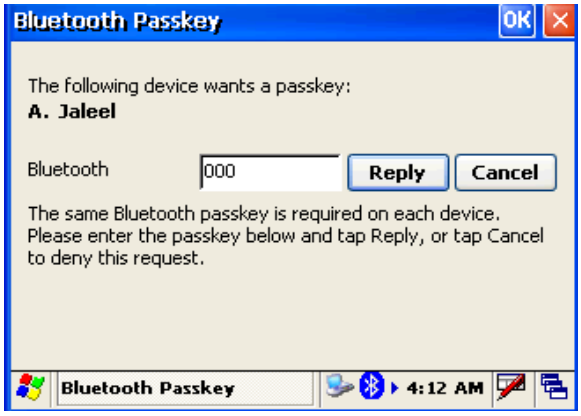
Select Required Mobile – Go to Device – Select Bond

Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

Tab Next

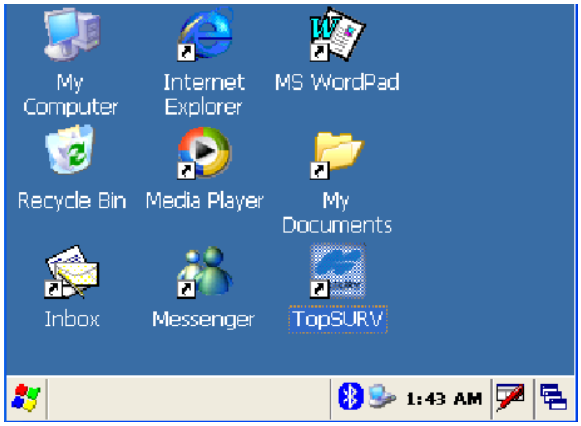


Tab Next



Enter passkey and Tab reply
(*Note:* **Enter same Passkey in Mobile also)**

Tab Finish and Exit

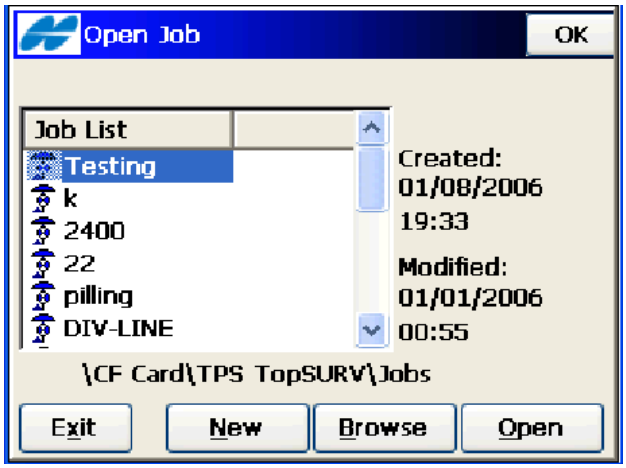


Double click the “TopSURV” icon

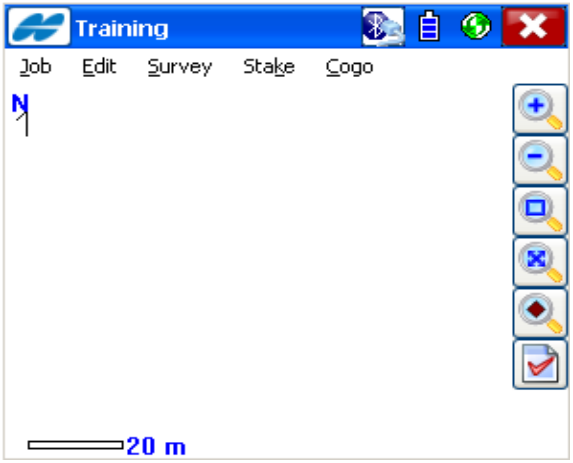
Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

Al Fajer Establishment
Scientific Division

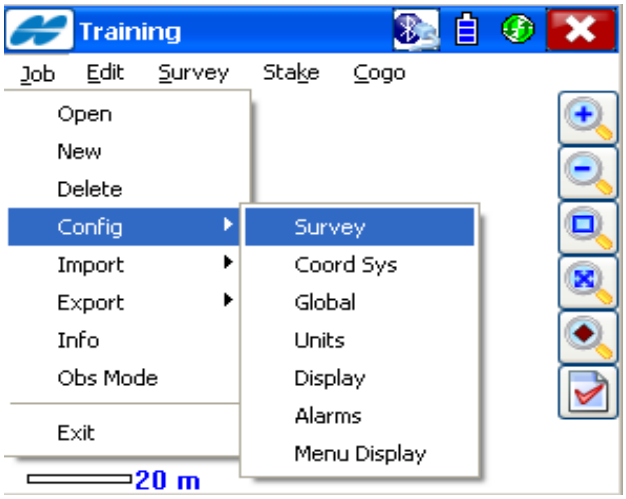
Topcon certified Service Center
P.O.Box:1600, Dubai, UAE
Dubai-Tel: 04-2823145, Fax: 04-2823015
Abu Dhabi-Tel: 02-6411303, Fax: 02-6411378
E-mail: topconsc@fajerest.ae, Web: www.fajerest.com



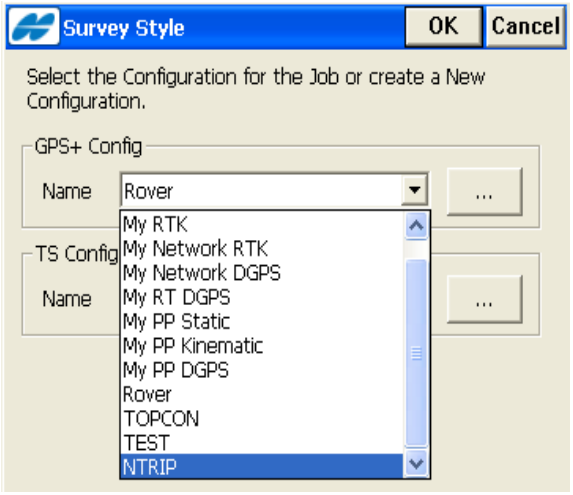
Create New Job



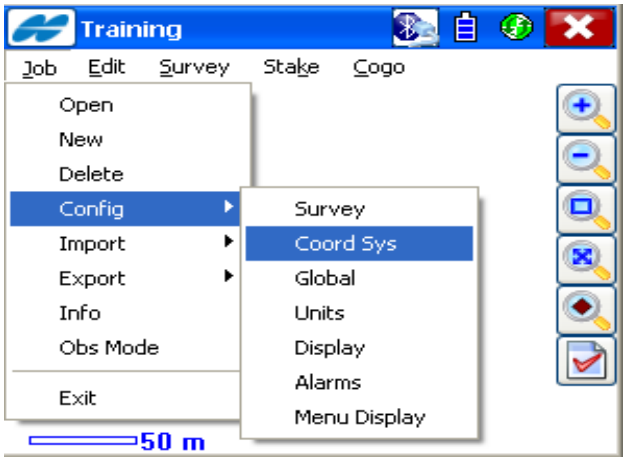
Enter Job Name or File Name



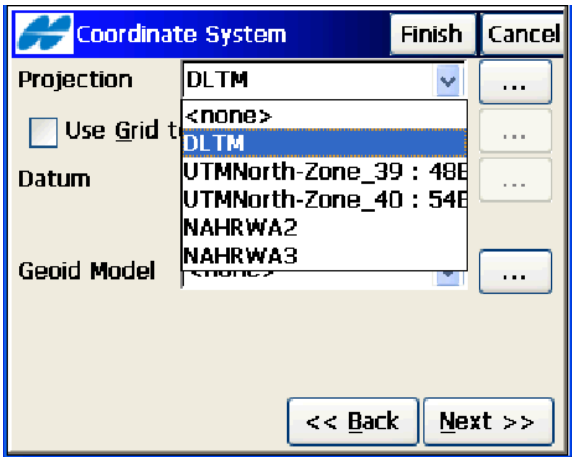
Select Job – Config – Survey



Select NTRIP



Select Job – Config – Survey



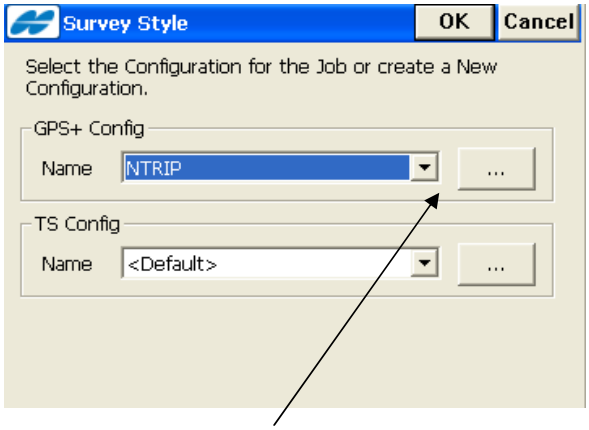
Select Required Coordinate System

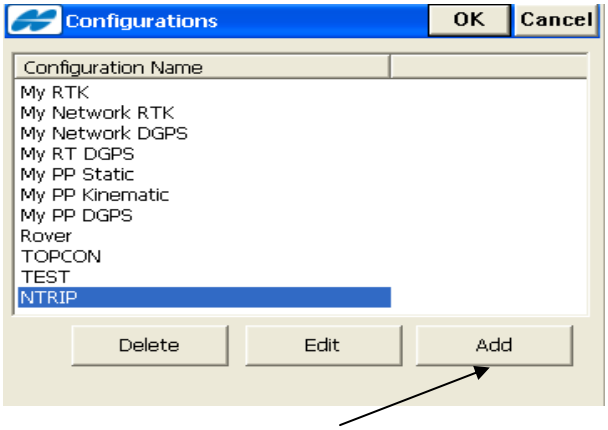
Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

Al Fajer Establishment
Scientific Division

Topcon certified Service Center
P.O.Box:1600, Dubai, UAE
Dubai-Tel: 04-2823145, Fax: 04-2823015
Abu Dhabi-Tel: 02-6411303, Fax: 02-6411378
E-mail: topconsc@fajerest.ae, Web: www.fajerest.com

NTRIP Configuration

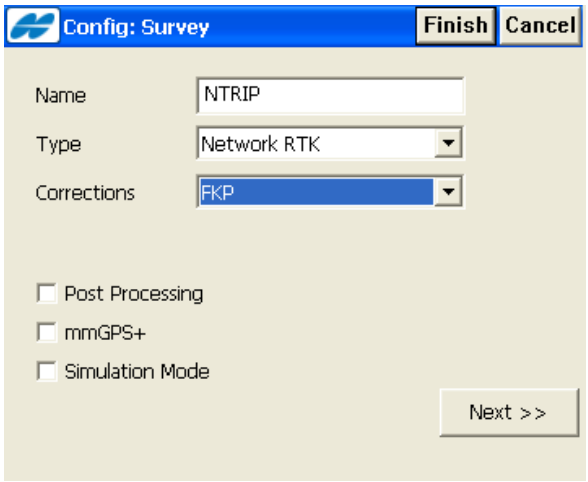


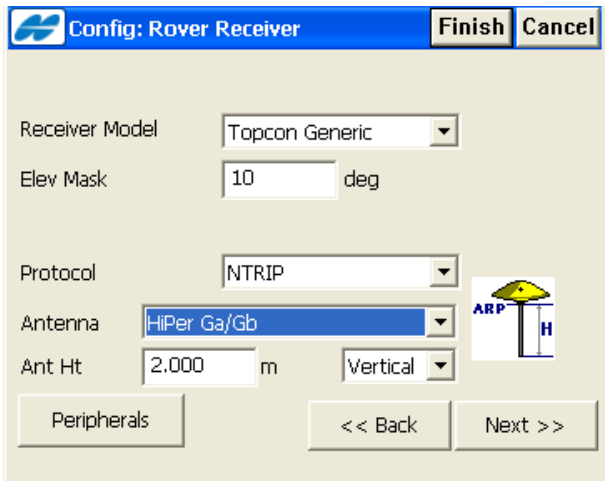


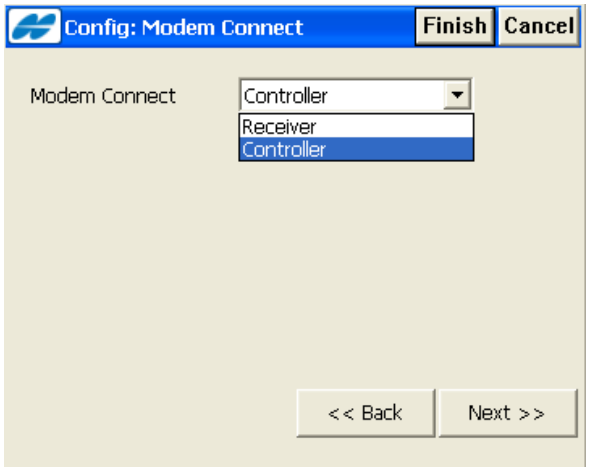
Tab Here

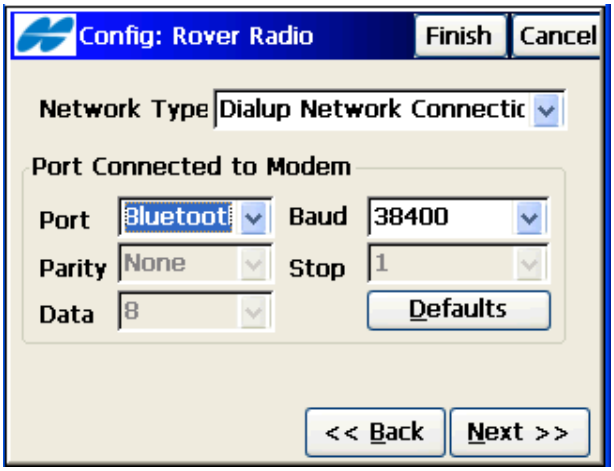
Tab Here

Select Following Configuration Parameters

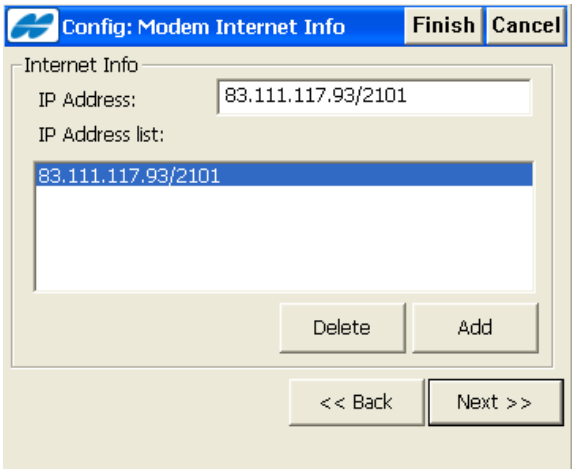


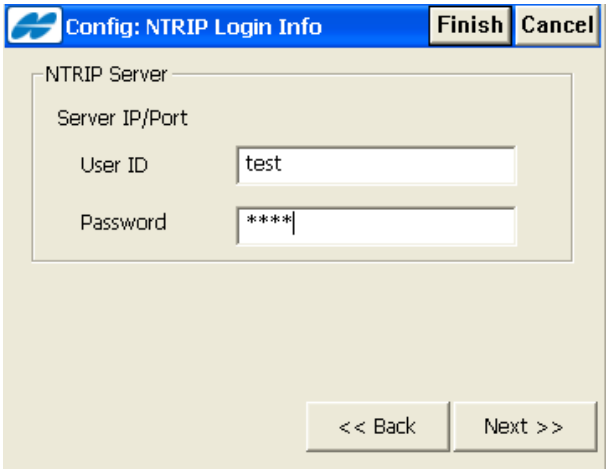


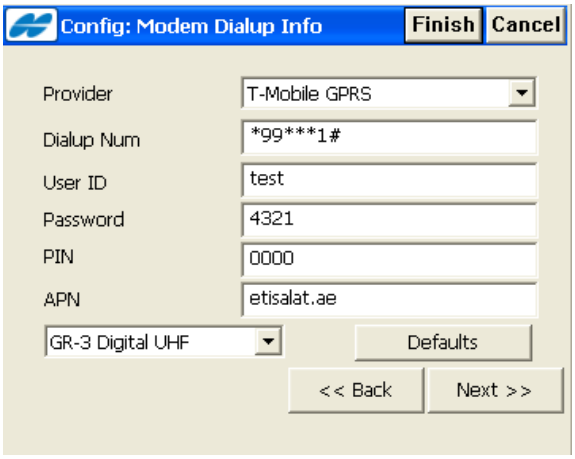


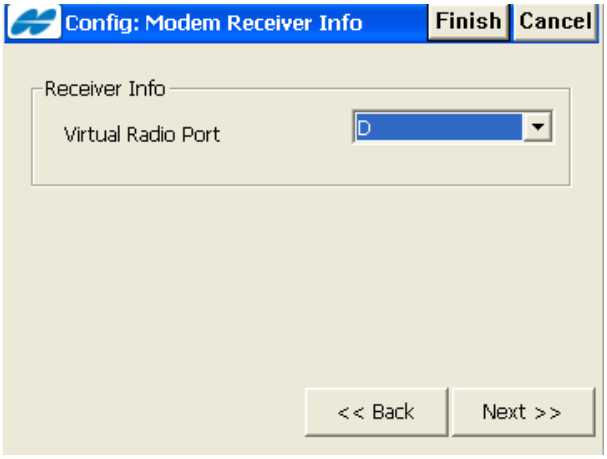


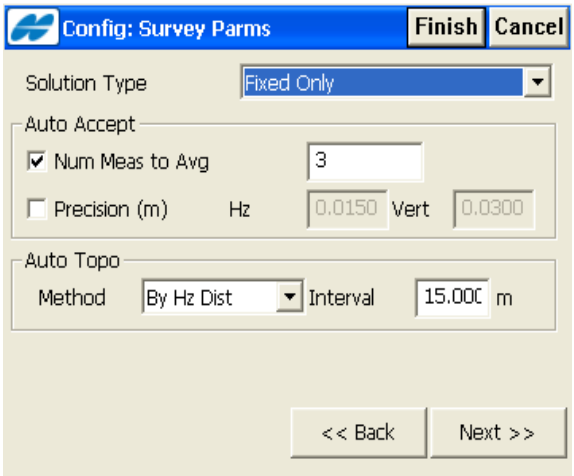
Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

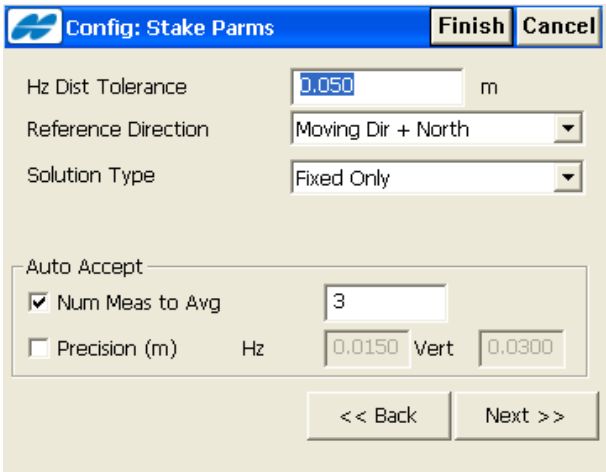








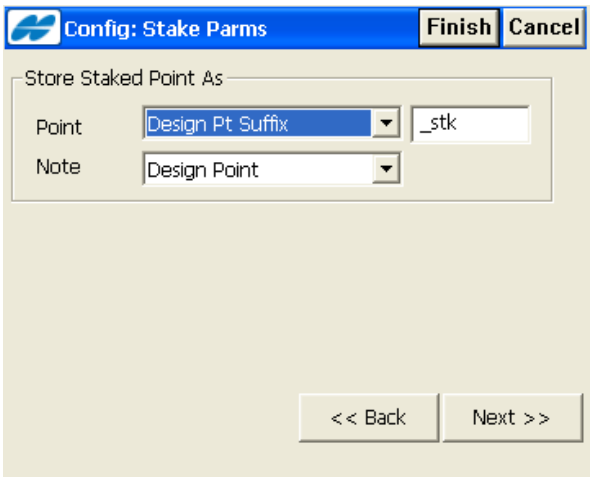


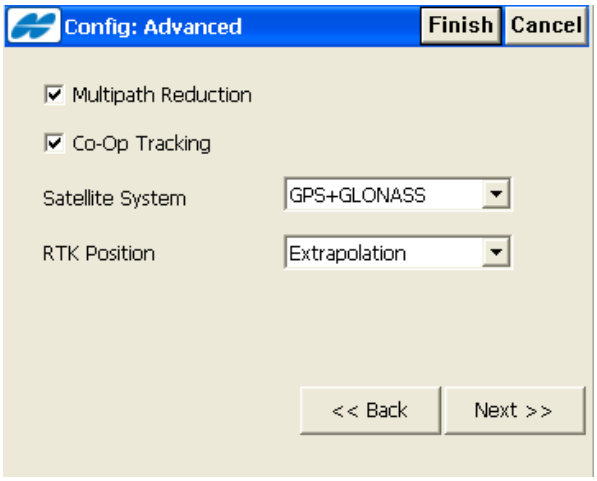


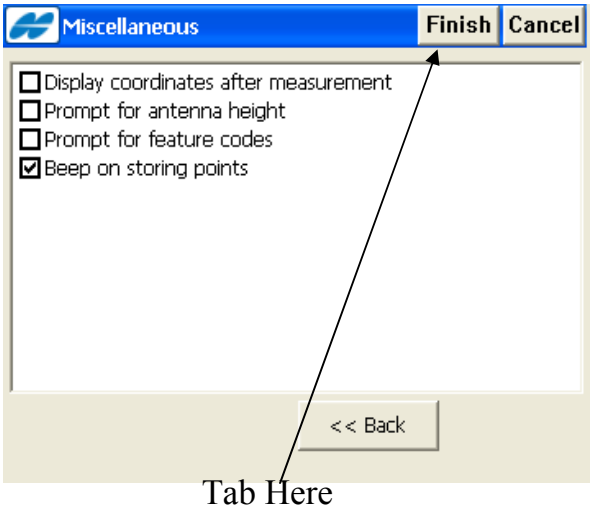
Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

Al Fajer Establishment
Scientific Division

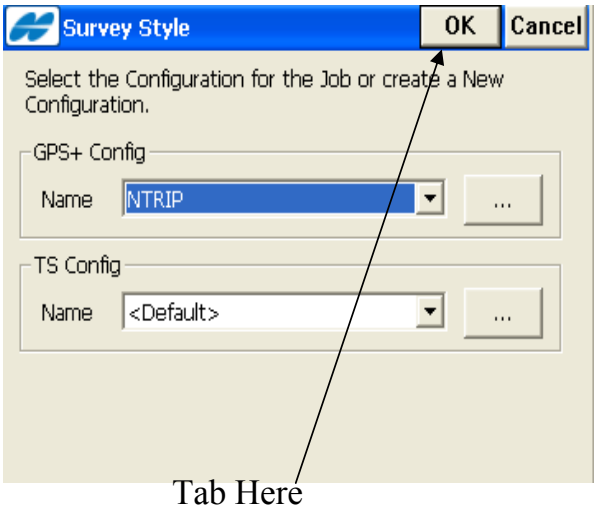
Topcon certified Service Center
P.O.Box:1600, Dubai, UAE
Dubai-Tel: 04-2823145, Fax: 04-2823015
Abu Dhabi-Tel: 02-6411303, Fax: 02-6411378
E-mail: topconsc@fajerest.ae, Web: www.fajerest.com



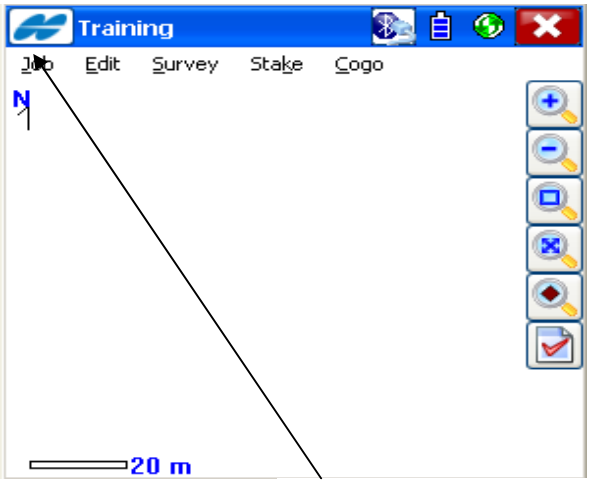




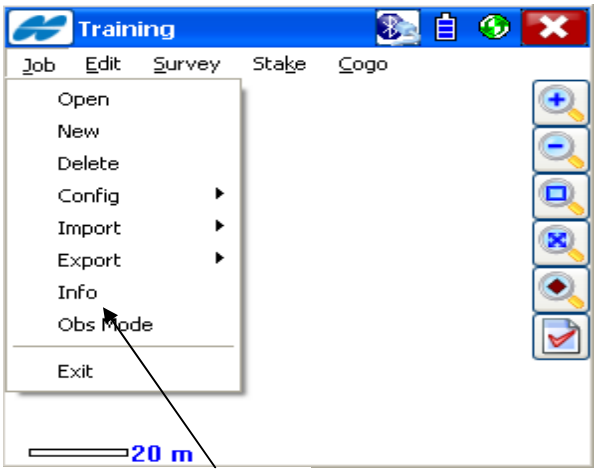
Tab Here



Tab Here



Tab Here

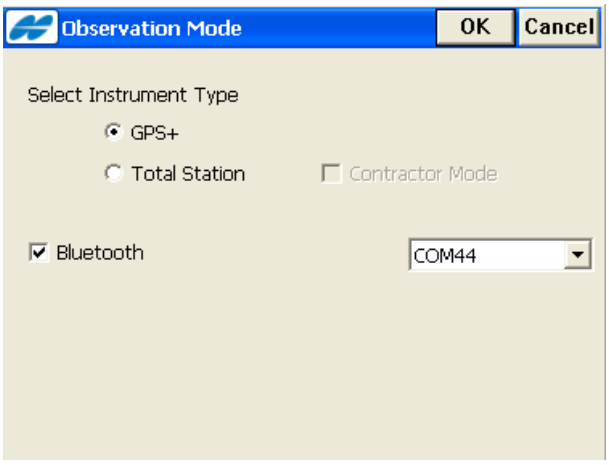


Tab Here

Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

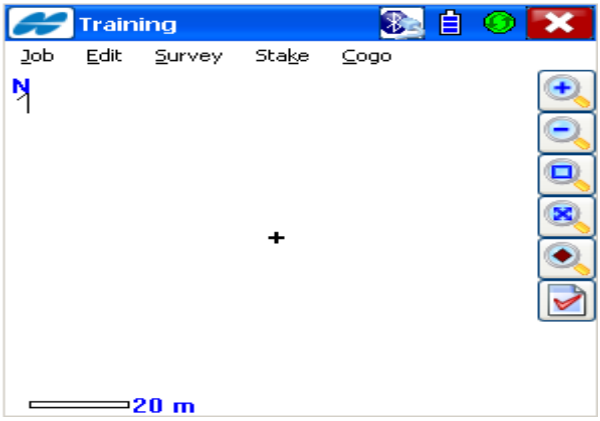
Al Fajer Establishment
Scientific Division

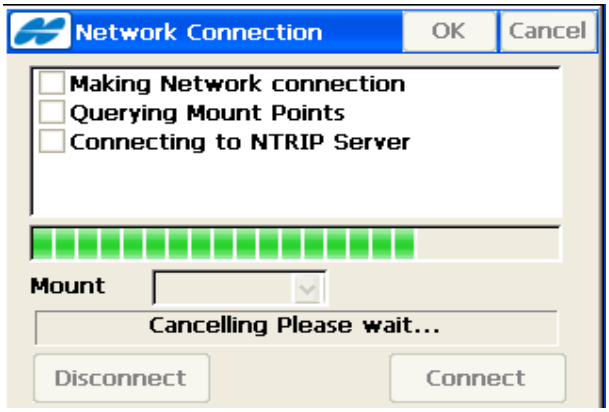
Topcon certified Service Center
P.O.Box:1600, Dubai, UAE
Dubai-Tel: 04-2823145, Fax: 04-2823015
Abu Dhabi-Tel: 02-6411303, Fax: 02-6411378
E-mail: topconsc@fajerest.ae, Web: www.fajerest.com



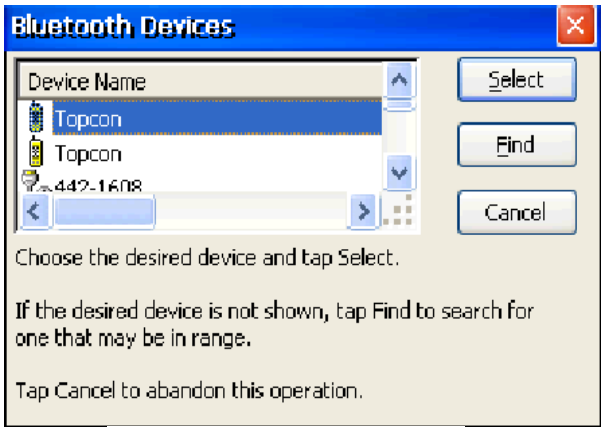
Select Bluetooth and Click OK.

Find base receiver serial number and Then Select

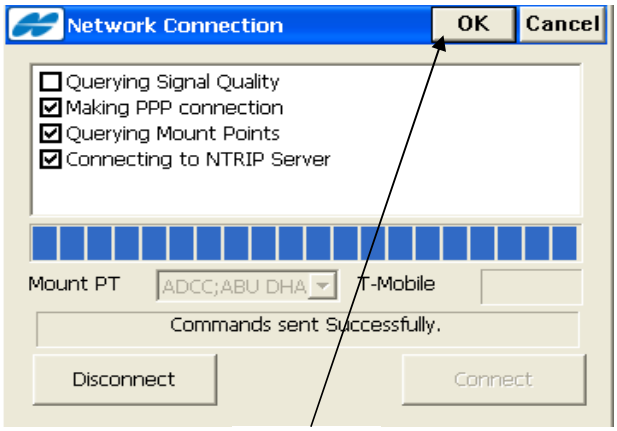




When the connection is established you will be hearing a sound and sees green icon connection comes to dark green colour. Then automatically searching **mount point & PPP Connection**. Finally a message will appear "commands sent successfully".



Select Mobile Bluetooth

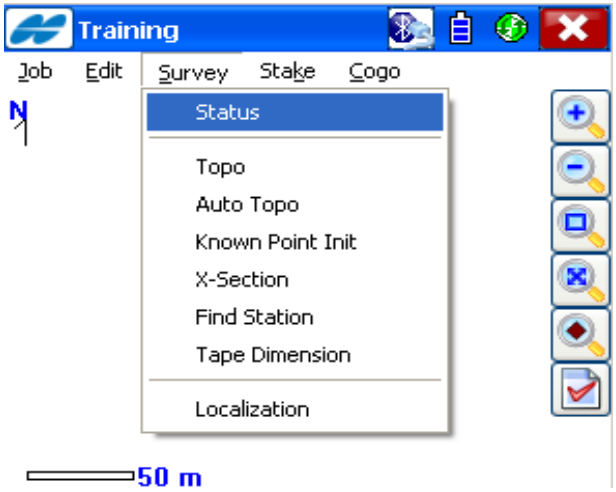


Tab Here

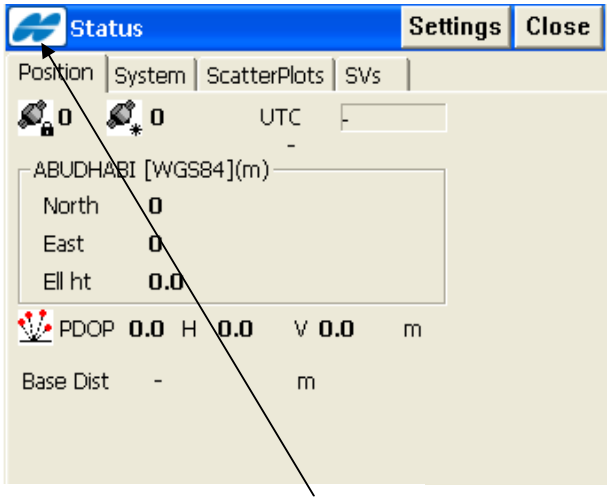
Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

Al Fajer Establishment
Scientific Division

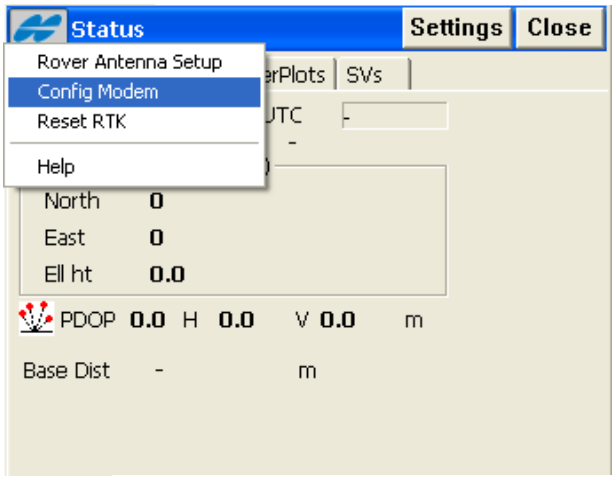
Topcon certified Service Center
P.O.Box:1600, Dubai, UAE
Dubai-Tel: 04-2823145, Fax: 04-2823015
Abu Dhabi-Tel: 02-6411303, Fax: 02-6411378
E-mail: topconsc@fajerest.ae, Web: www.fajerest.com



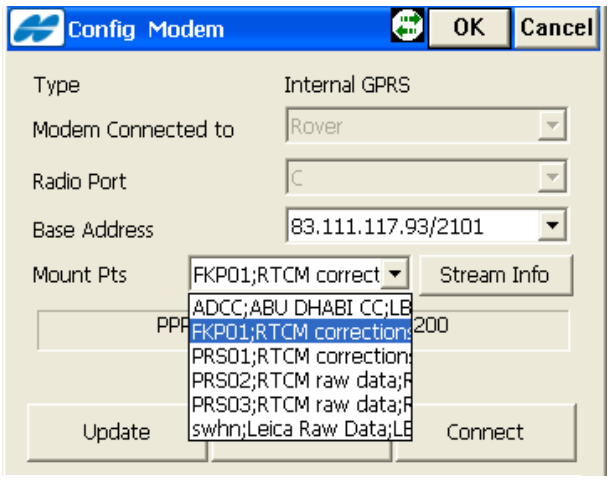
Select Survey – Status



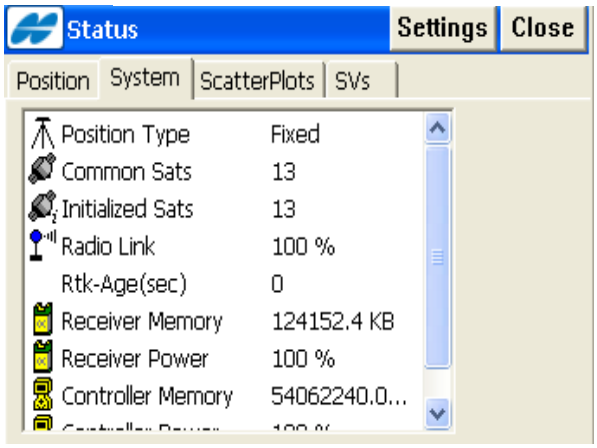
Tab Here



Select Config Modem



Select Required Mount Point and Connect

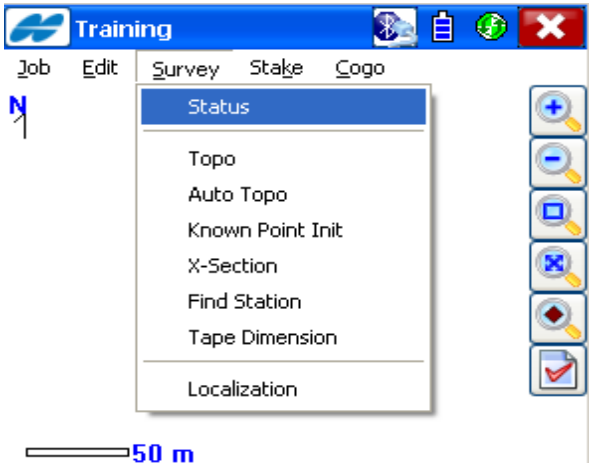


***Note**: The position should become "Fixed" and the common and initialized satellites fields will populate with the number of satellites being tracked, as on the screen.*

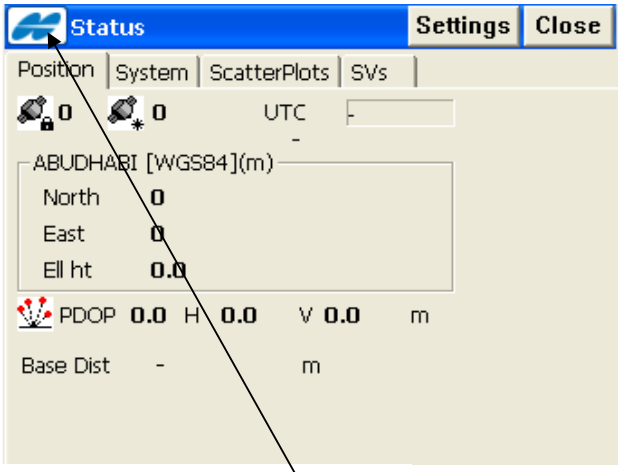
*The Radio Link should be 100% and the RTK-age should be 0 or 1sec. This means the radio is communicating the base station information to the rover receiver. If either of these values is something different, the "**Positioning Type**" will not be "**Fixed**"*

Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

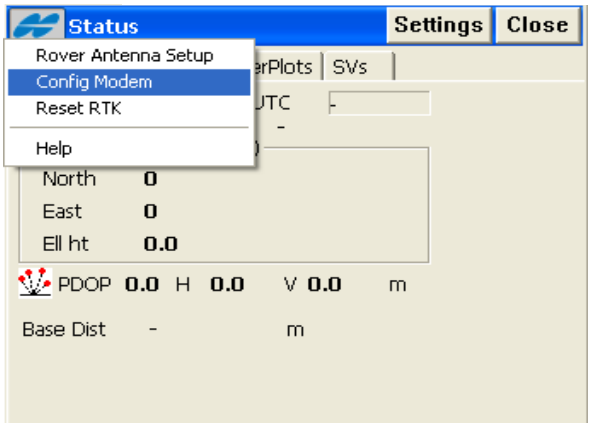
***Note:** If you want to reconnect the Network, do the following steps:*



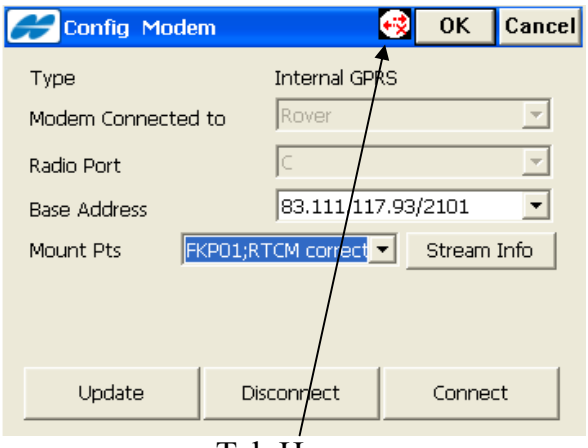
Select Survey – Status



Tab Here



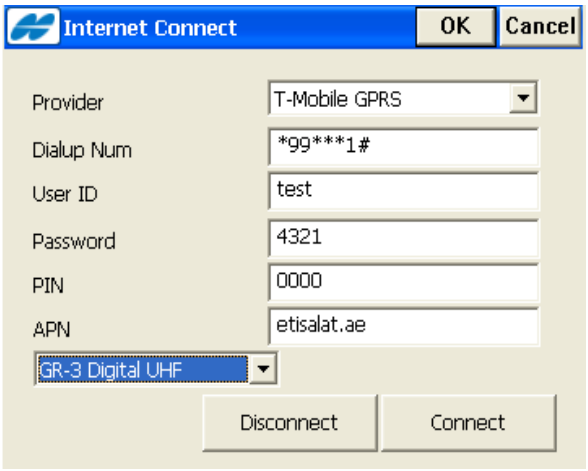
The Red icon shows, there is no GPRS Connection Currently. So, to establish GPRS Connection. Select Provider, Input User ID & Password and APN.



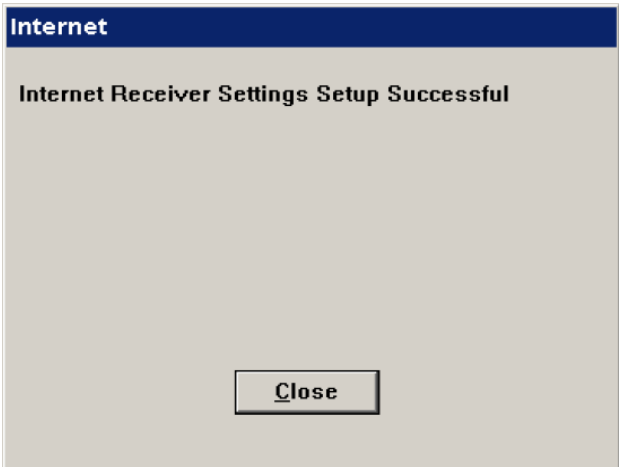
Tab Here

The Virtual Radio must be D. Port C is occupied by the Radio modem.

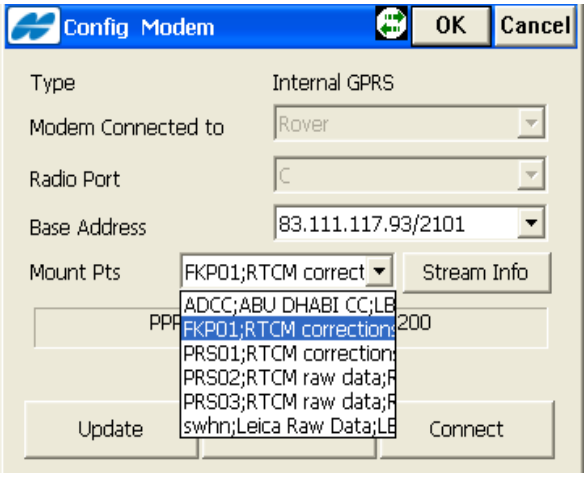
Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae



Press Connect

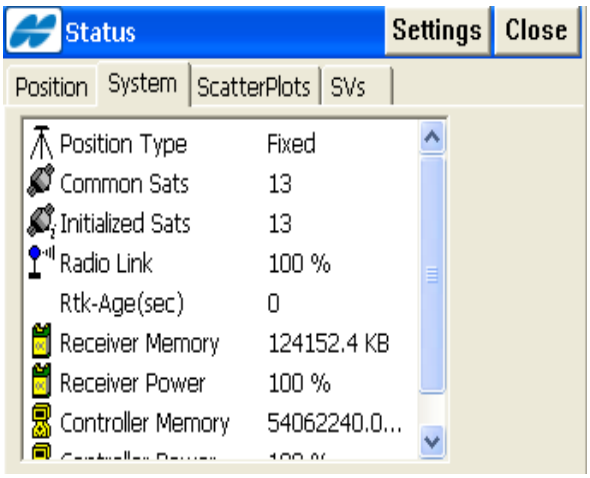


Close Here



Select “Update” and then all the mount points’ shows will be in the Mount point List.

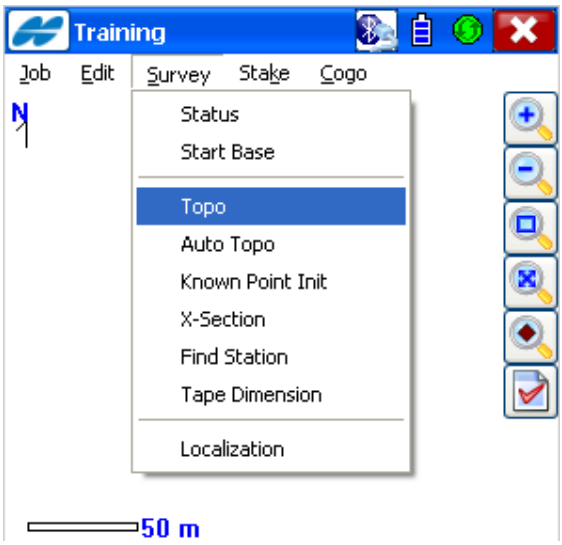
Select Required Mount Point from the list and connect it.



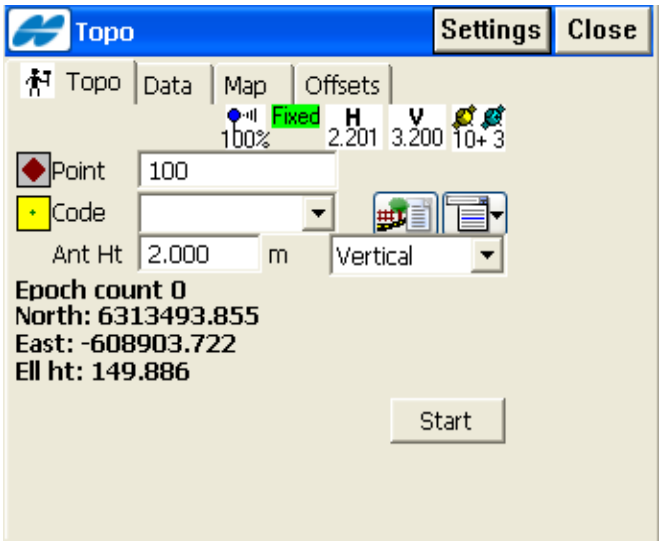
The position should become “Fixed” and the common and initialized satellites fields will populate with the number of satellites being tracked, as on the screen.

Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

Topo Survey:



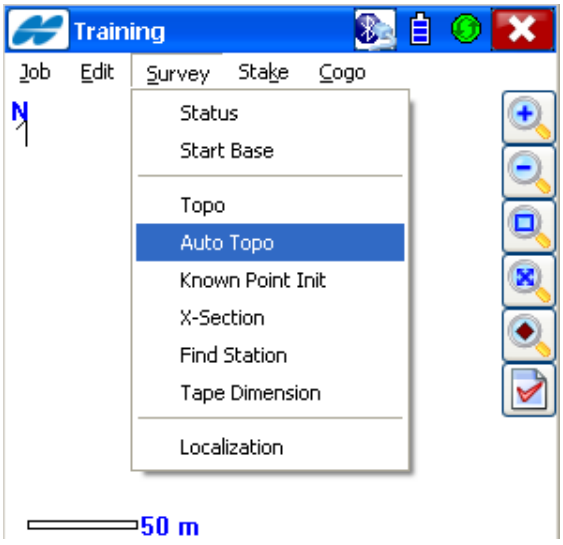
Go to Survey - Select Topo



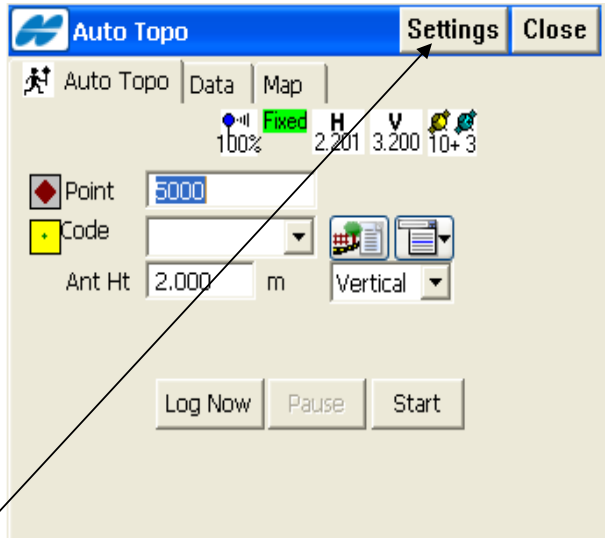
Give point Number – Click Start (Data store automatically)

<u>Note:</u> If you want to see the Topo survey points Go to Edit – Select Points.

Auto Topo:



Go to survey – Select Auto Topo

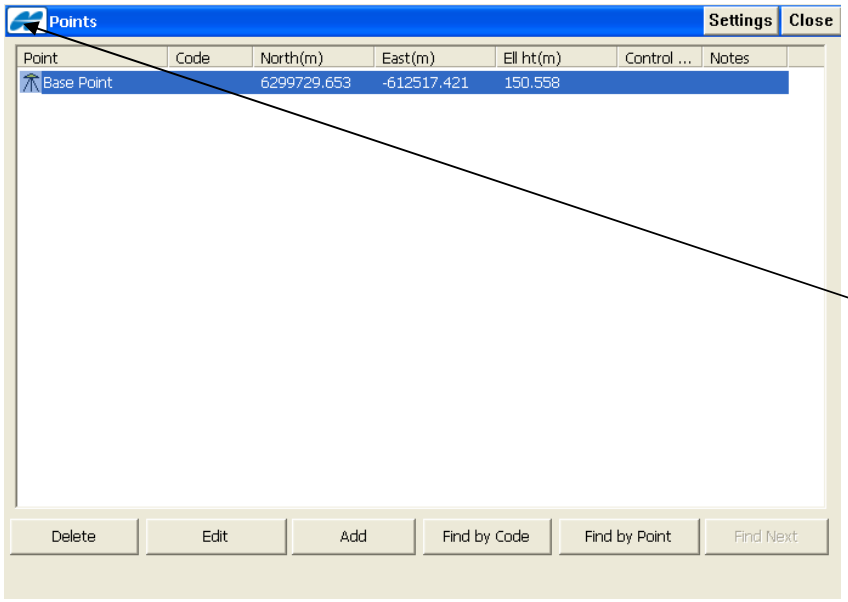


Give point Number-Log Now – Click start

Click here for changing the parameters. Set the Auto Topo method and interval (either by horizontal distance, slope distance, or time).

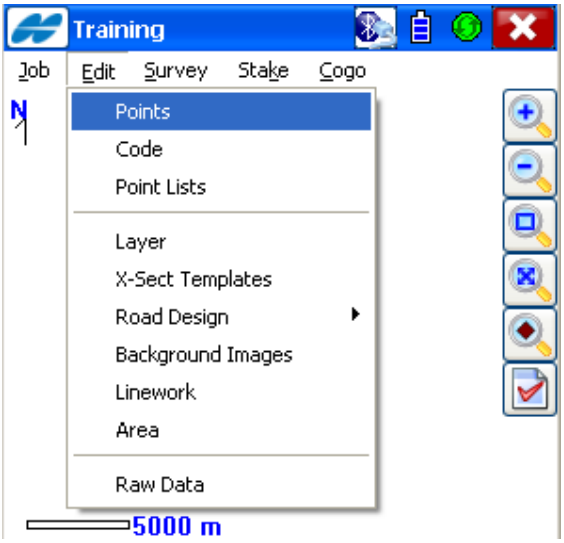
Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

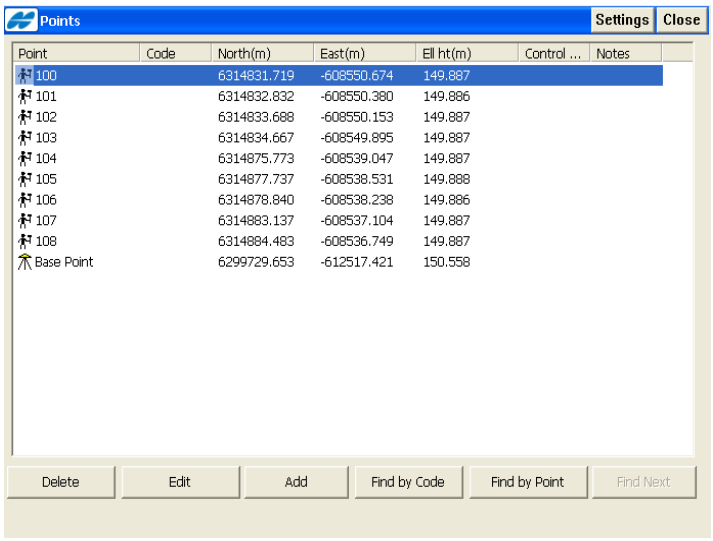
***Note:** If you want to see the Auto Topo survey points Go to Edit – Select Point*



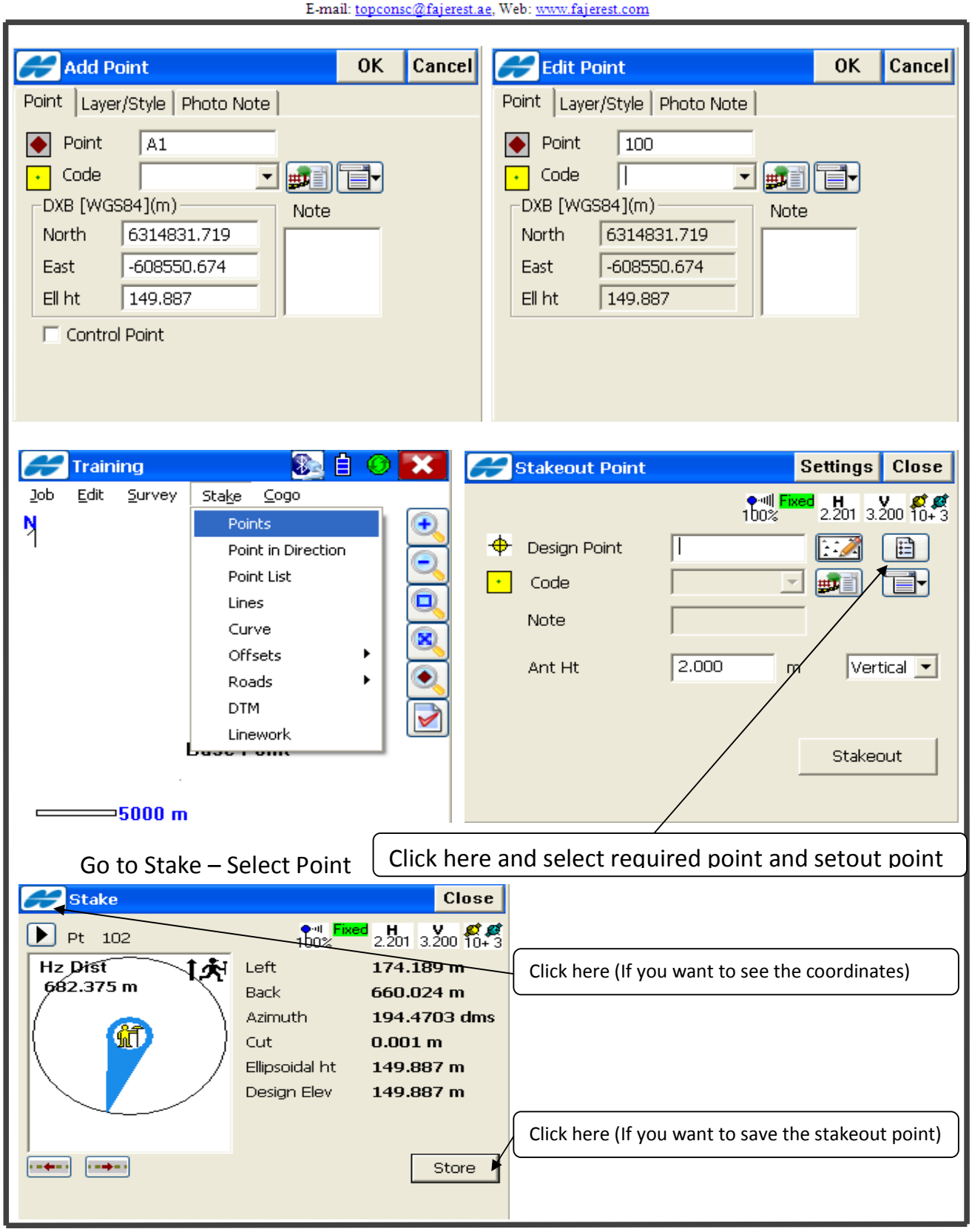
Stake out/Setout/Layout the Points:

If you wish to add points go to edit/ points/add then edit point coordinates then press ok





Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

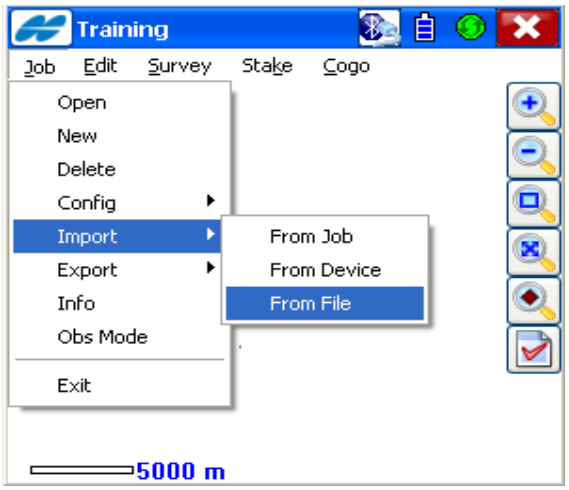


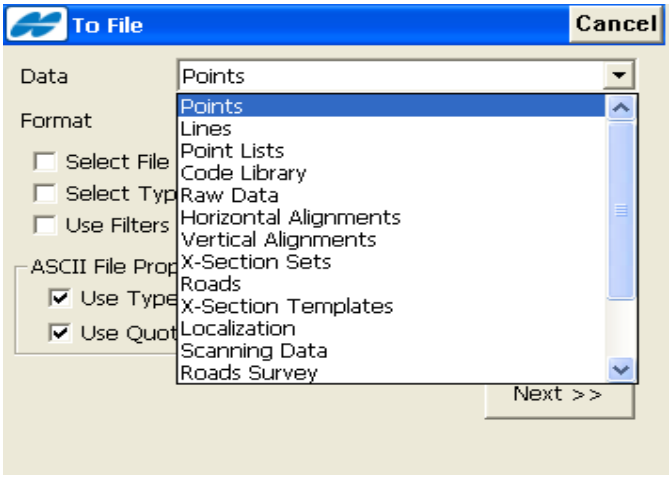
Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

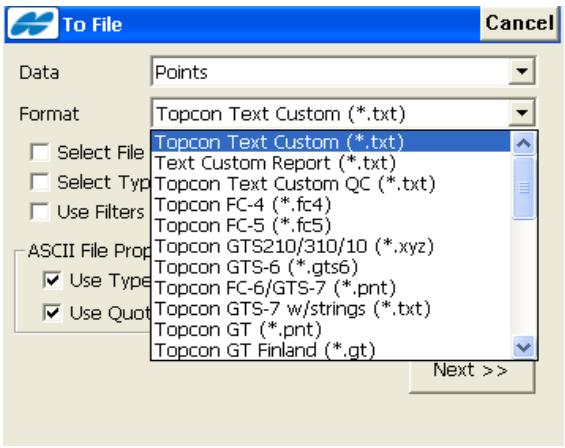
Al Fajer Establishment
Scientific Division

Topcon certified Service Center
P.O.Box:1600, Dubai, UAE
Dubai-Tel: 04-2823145, Fax: 04-2823015
Abu Dhabi-Tel: 02-6411303, Fax: 02-6411378
E-mail: topconsc@fajerest.ae, Web: www.fajerest.com

Import File

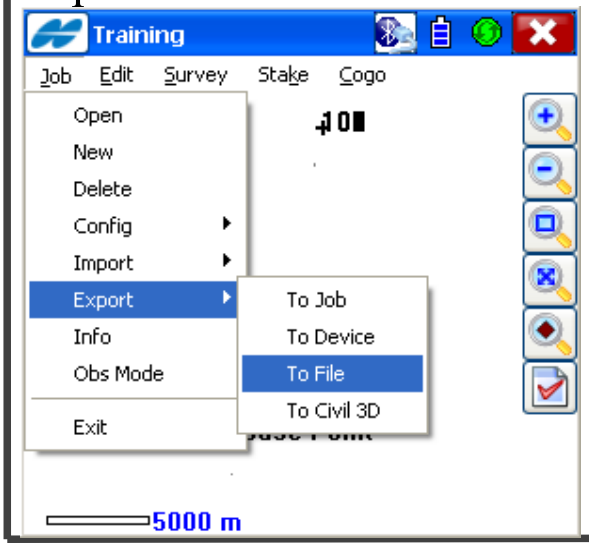


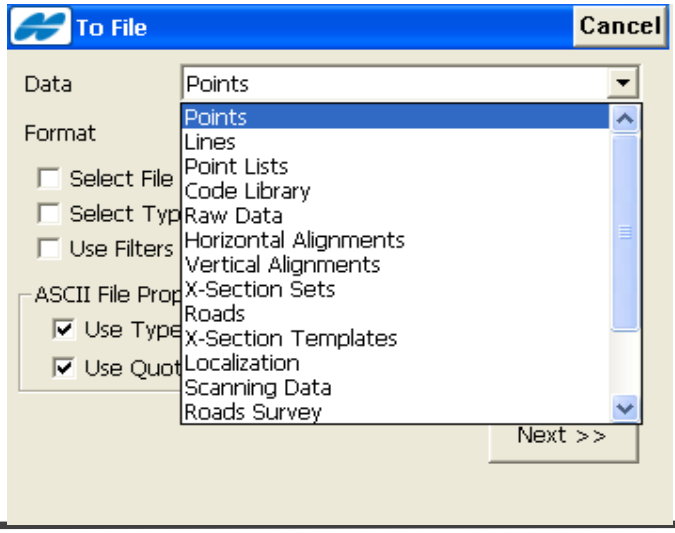




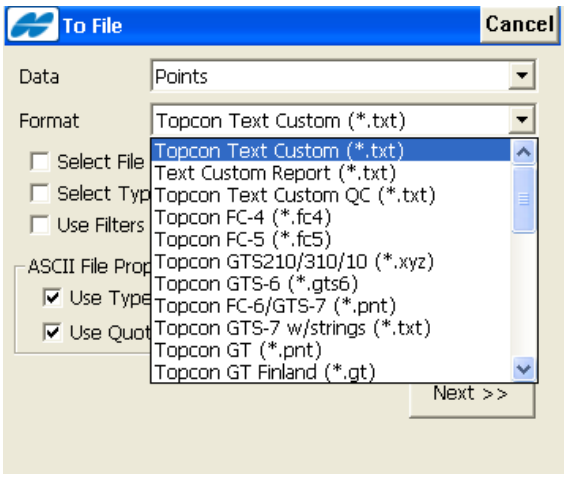
Go to Job – Import – From File - Select required Data – Select required Format - Click Next- Find File - Select required File style – Select Projection-Finish

Export File





Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

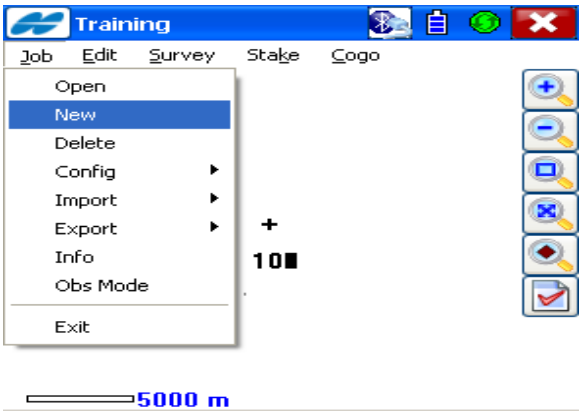


Go to Job – Export – To File – Select Required Data - Select required Format - Click Next- Select Location and give file name - Select required File style – Select Proiection-Finish

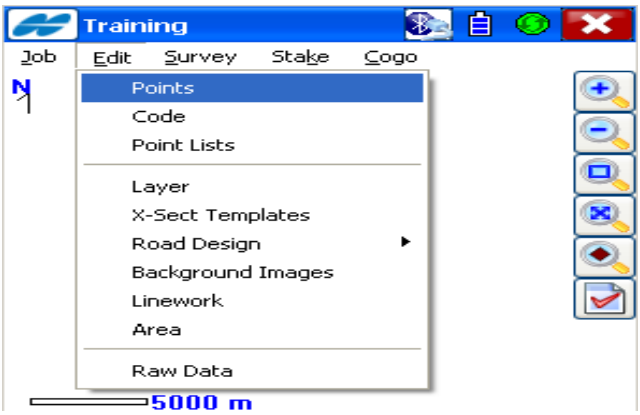
Localization:

Localization is used for transforming coordinates between local system and a WGS84 system. The more points used, the more precise the localization. Localization is performed on a site where you wish to work with the existing local coordinate system. To ensure an accurate localization you need at least 4 known points.

Select a position for your base that will give the best radio range for your project. This may be a known point or you may wish to create a new station a more suitable location. This point does not need to be part of your current survey network. Setup the base over the point, connect with controller and start base and after that connect rover. Localization file should be keep separately.

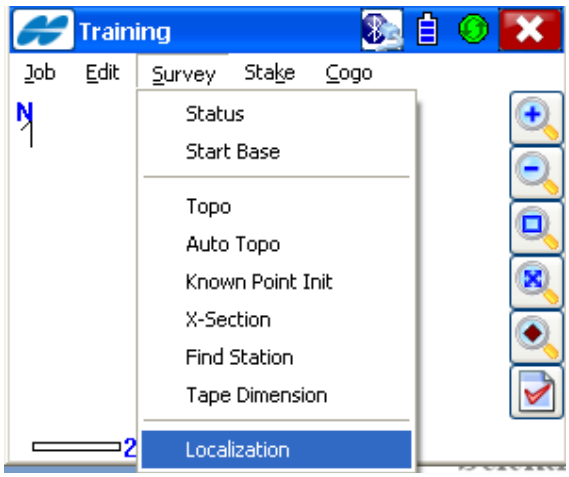


Create New Job

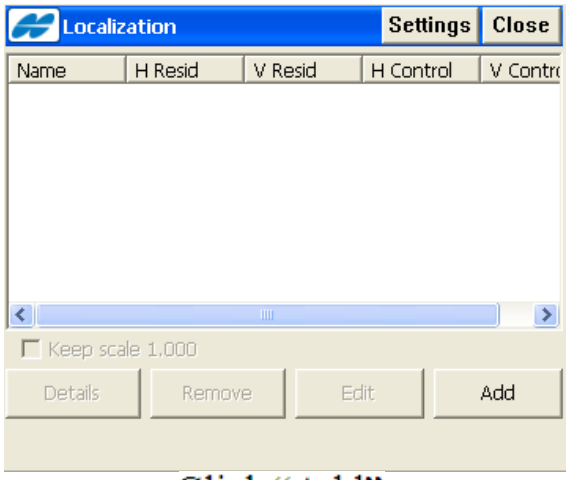


Add Local coordinates

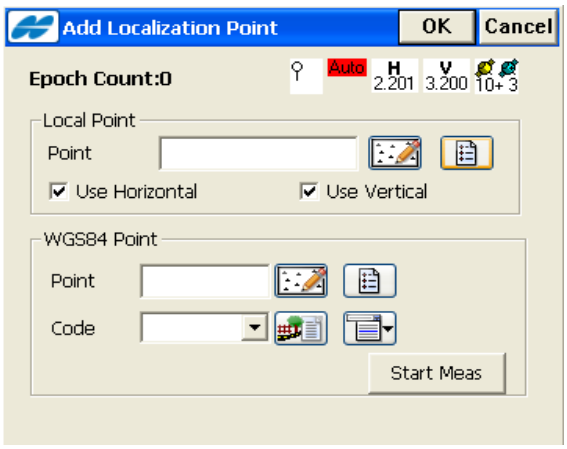
Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae



Go to Survey - Select "Localization"



Click "Add"



Local point select from the list

Give WGS84 Point number

Start Meas

Continue to each local point and survey as above saving as you go. The localization screen displays the Horizontal and vertical residuals for each point you can see which points may not be good.

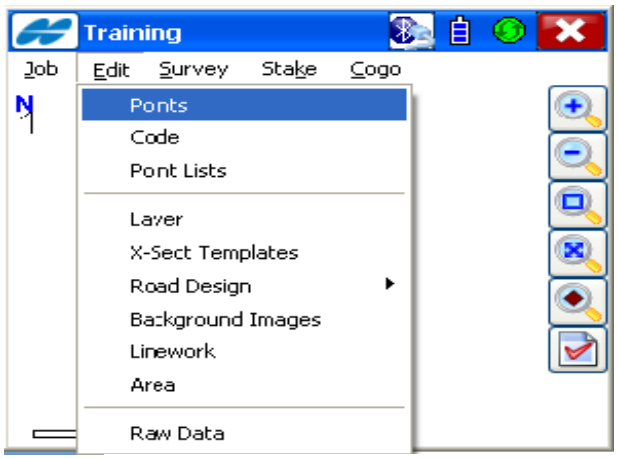
Note: Localization file should be keep separately. If you want to export a Localization file, go to export, select data is Localization and format is Topcon 3D (.gc3).As you create a new job and import localization file (gc3) and continue survey.

Known point Initialization:

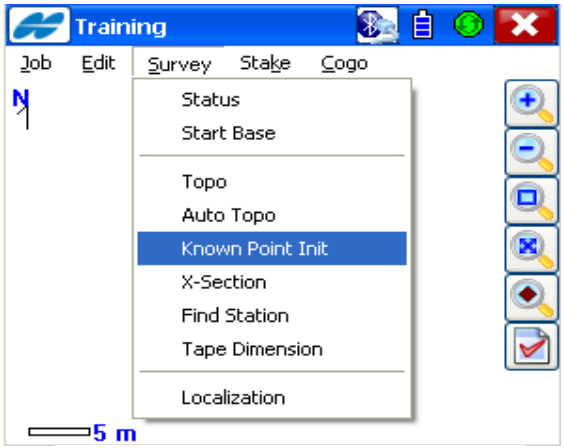
It means, Initializes the receiver using known coordinates for the rover station. Setup the base with required coordinate system and after that connect rover and

Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae

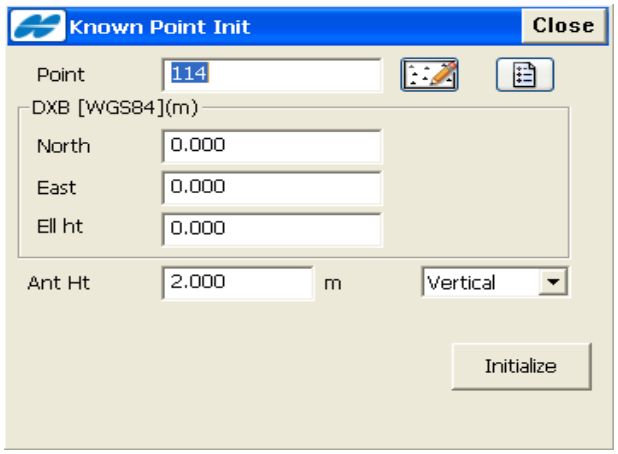
make the fixed solution. Add your control point and its coordinate and then go to survey, select Known point initialization. After open this window, Select required control point from the list and initialize the point and continue the survey.



Add control point

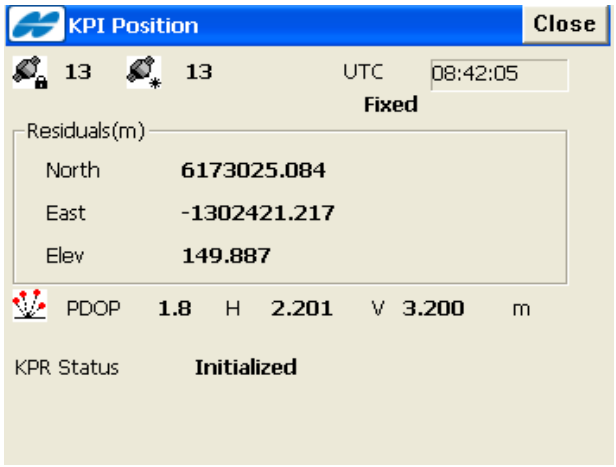


Select "Known Point Init"



Select required Point from the list

Initialize



Once you are initialized the control point, you can continue the survey.

Prepared By: Abdul Jaleel, Mobile: 050-6944728, E-mail: topconsc@fajerest.ae