

# TOPCON Network RTK (NTRIP)

Recommended Hardware  
Configuration for rovers

# Topcon Wireless Hardware Configuration


1. Topcon Hiper+ or any Topcon GNSS Receiver
2. FC-100 Field Controller with TopSURV (Version 6.04.03 or above).
3. FC-100 Cradle
4. Mobile Phone with Bluetooth Function
5. SIM Card (GPRS Function)
6. Bluetooth Card, CF Type
7. Fixed Height Pole

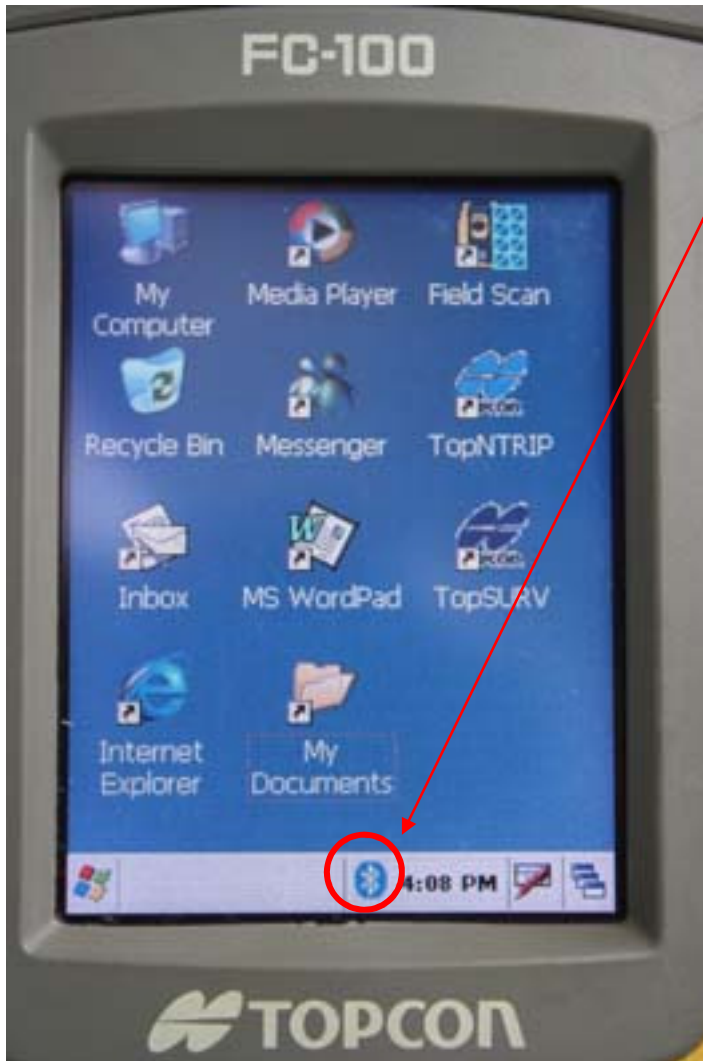



# Configuration for using Network RTK services provided by the SMO of the Lands Department of the HKSAR

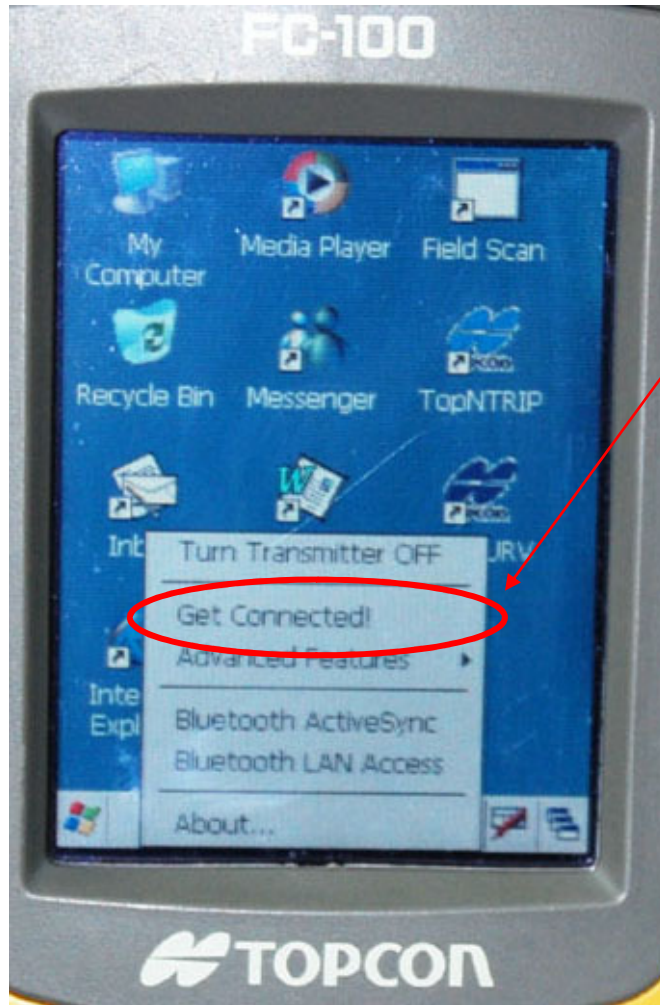
- One-time initial rover setting using NTRIP communication



1. Press  button for 2 seconds to switch on the Field Controller.



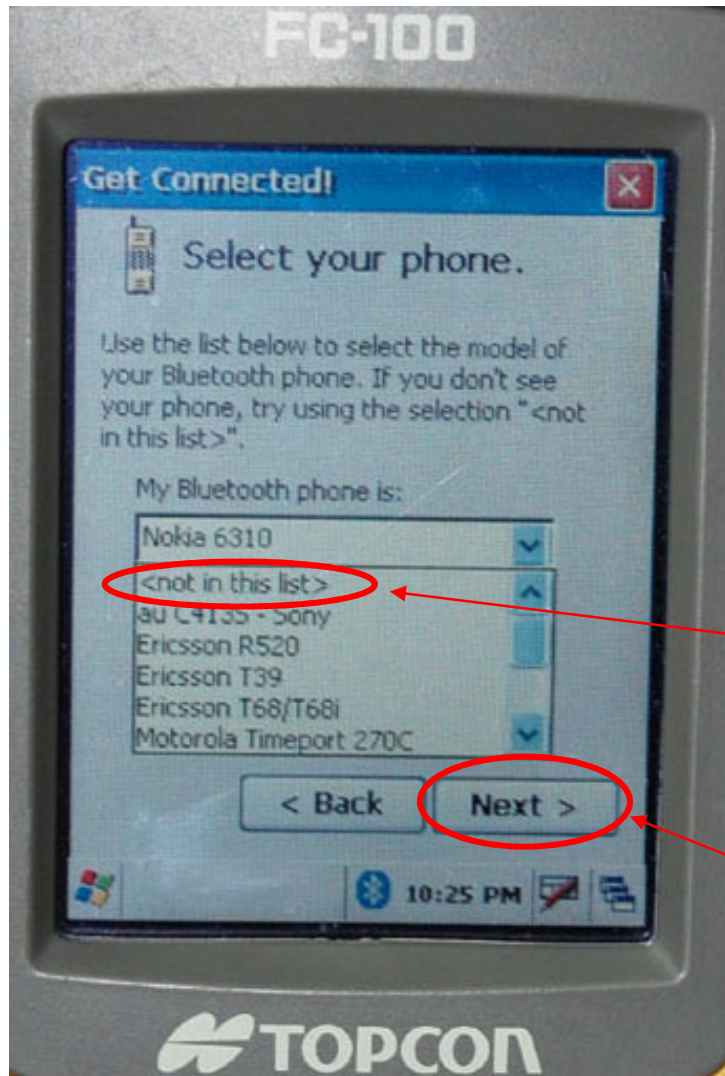
2. Click  Bluetooth icon to get connected with the Bluetooth mobile phone.



3. Choose “Get Connected!” to set up the connection parameters.



4. Click "Next >" icon to continue.

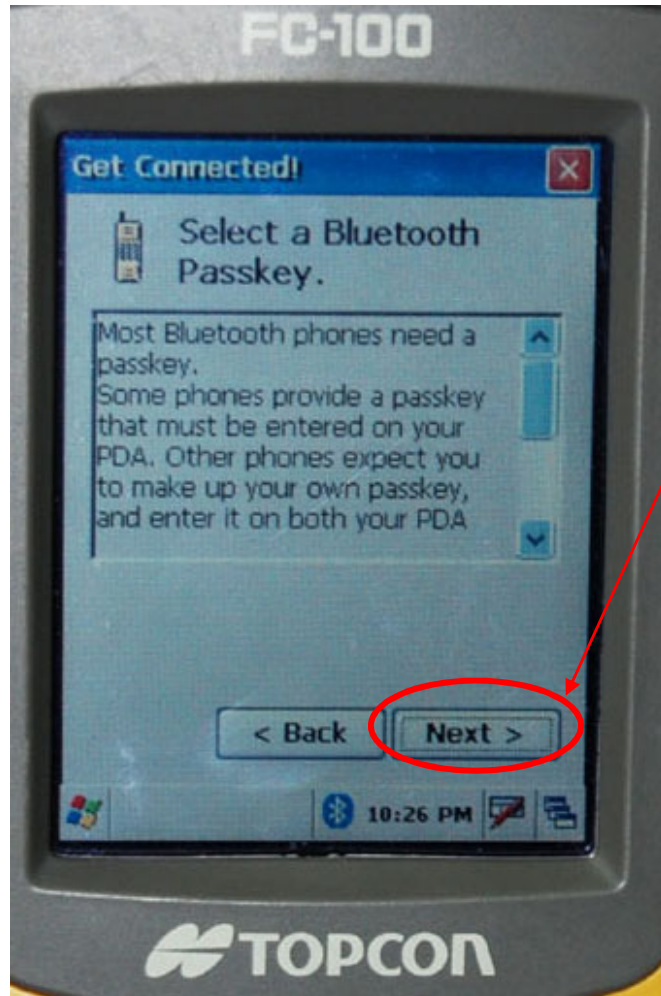


5. Choose your mobile phone model from the list or you can choose “<not in this list>”, then click “Next>” icon.

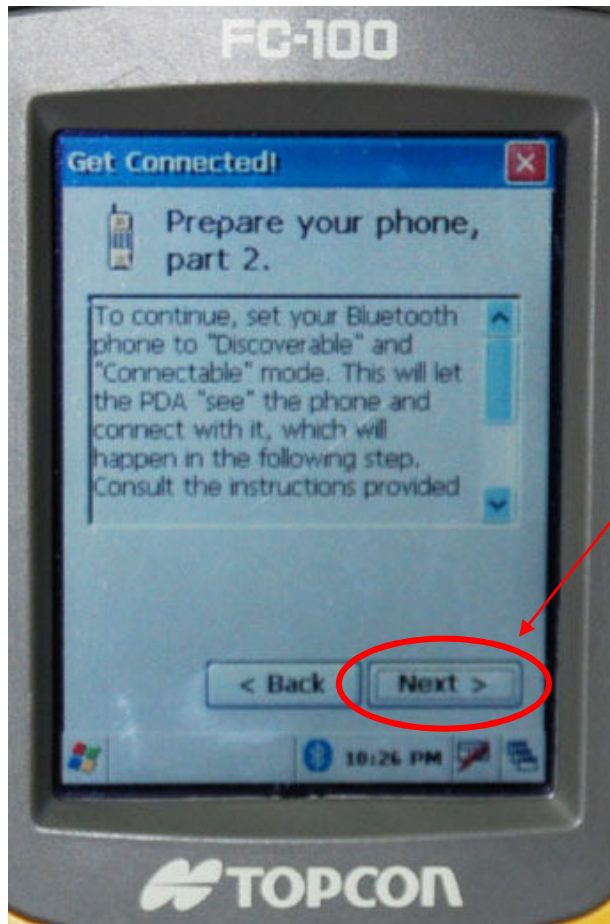
i.e. “<not in this list>” has been chosen in this testing.



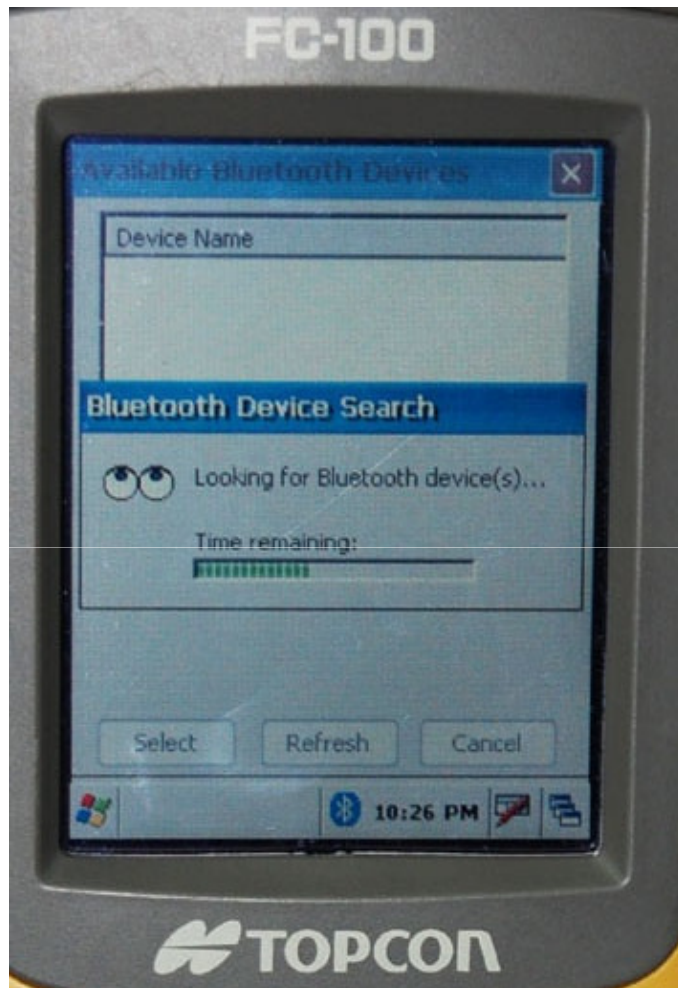
6. Switch on your Bluetooth function in your mobile phone, then click “Next>” icon.



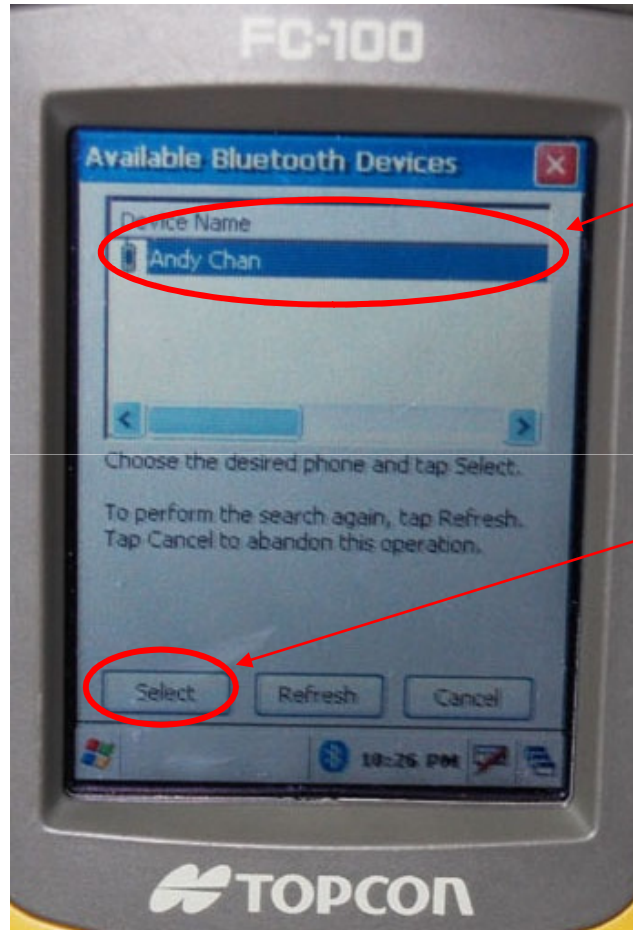
7. Click "Next>" icon to set up a passkey for bonding the Field Controller and the Bluetooth mobile phone



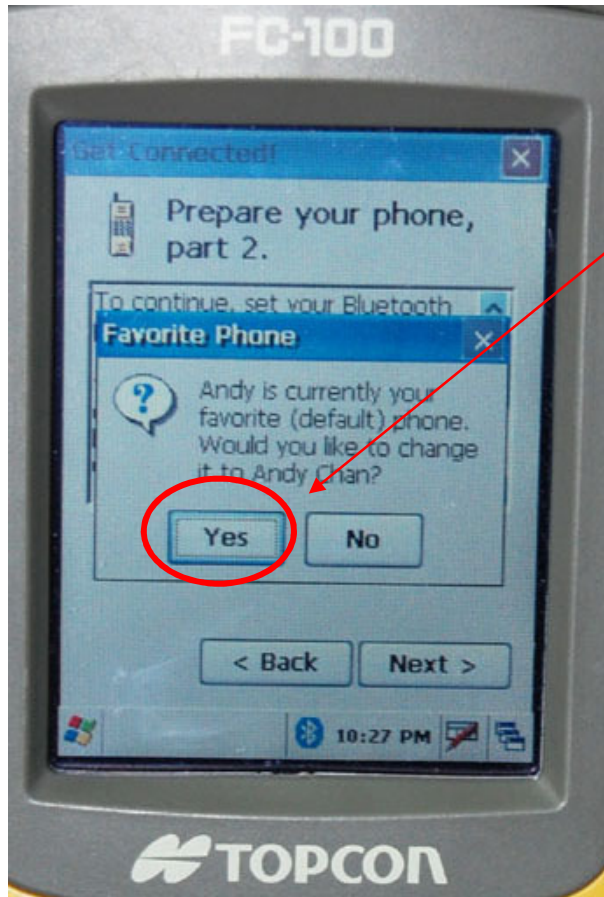
8. Please follow the notes to prepare the Bluetooth mobile phone, then click "Next>"



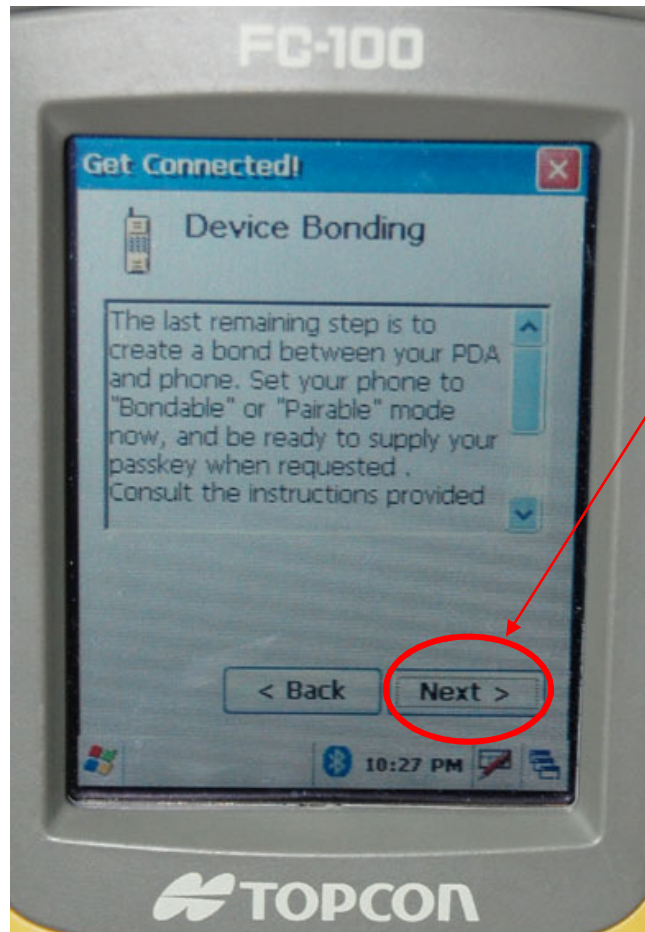
9. Now the Field Controller is searching the adjoining activated Bluetooth devices , wait for a moment.



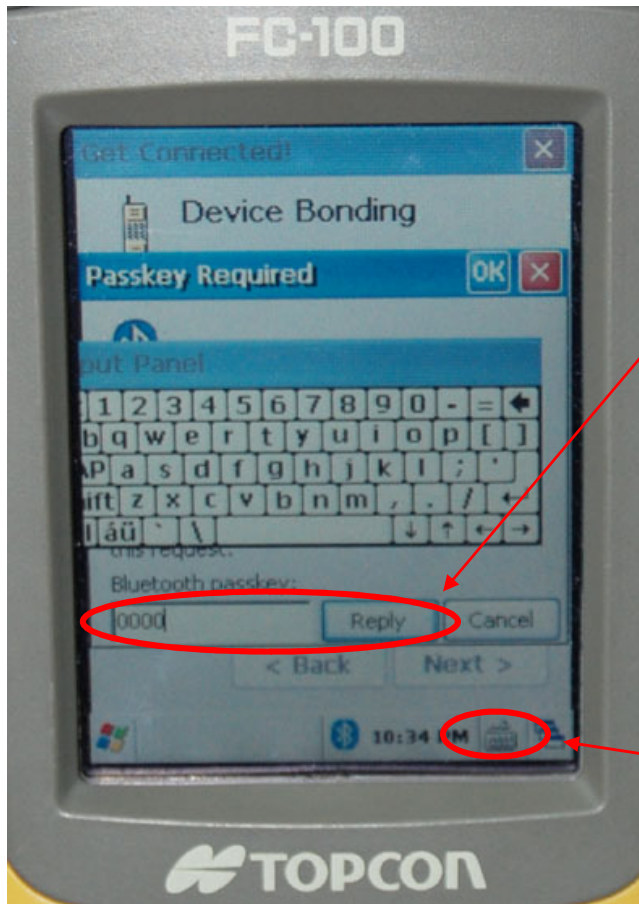
10. Highlight the Bluetooth mobile phone's name, then click "Select" icon.



11. Click “Yes” icon to continue the setting.



12. Click "Next" icon to bonding the Field Controller and the Bluetooth mobile phone.

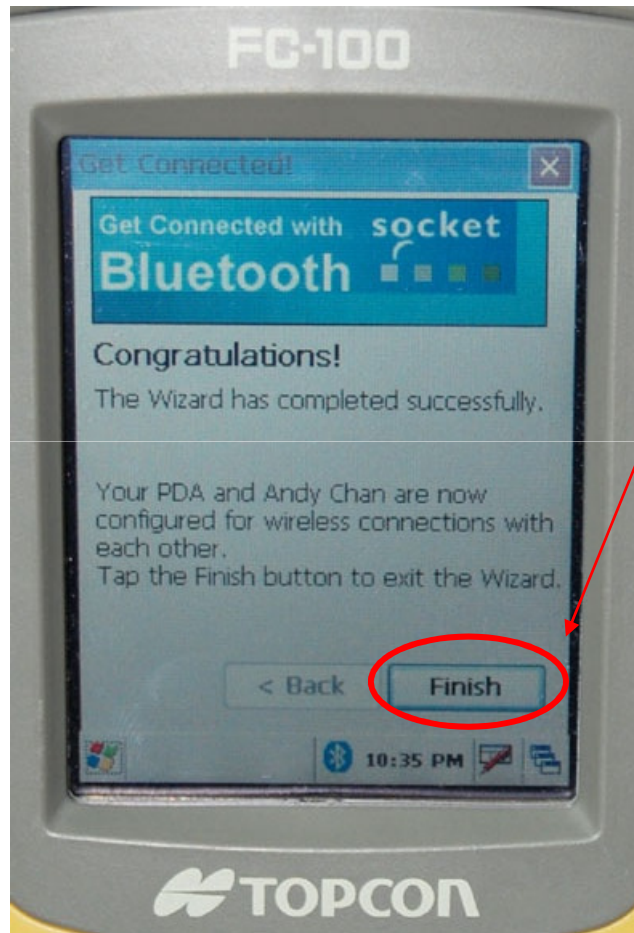


13. Input the Bluetooth passkey, (e.g. 0000), then click “Reply” icon.

i.e. Click keyboard logo to show the virtual keyboard for passkey input.



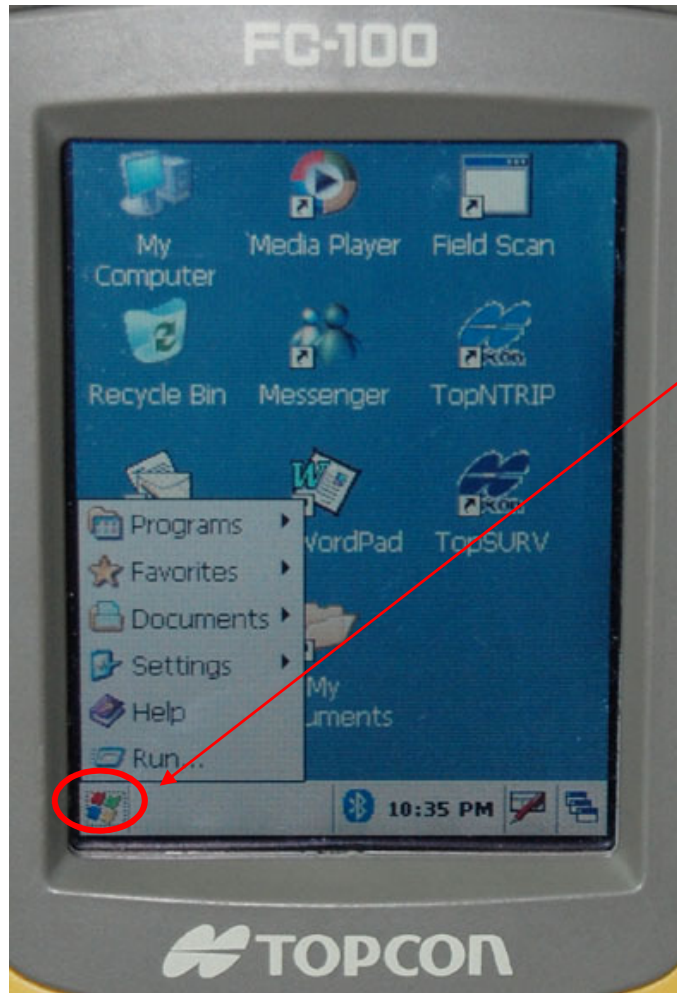
14. In this time, the Bluetooth mobile phone will ask you to input the passkey to allow the bonding, key in the same passkey. (e.g. 0000)




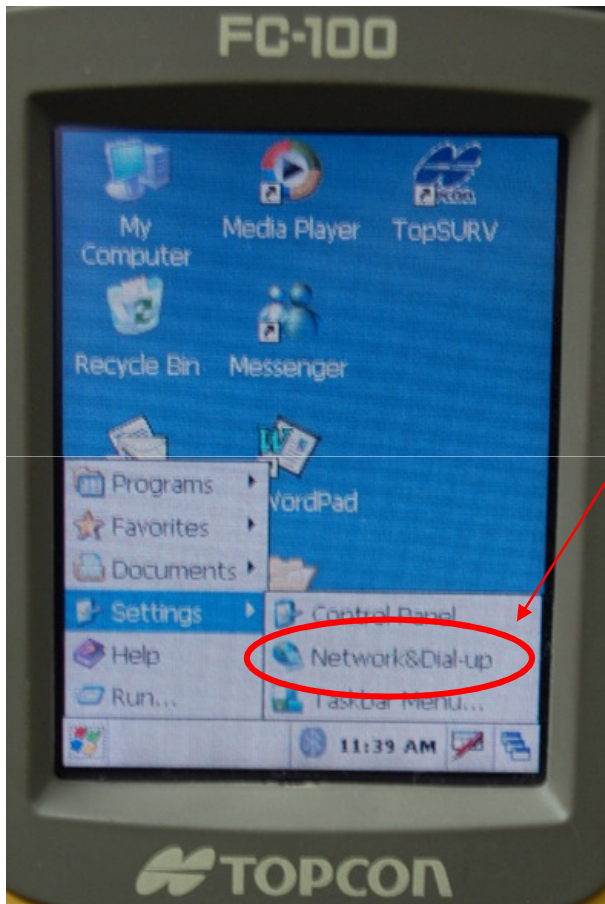
15. Click “Finish”  
icon to  
complete the  
bonding  
process.

Please follow the steps 16 to 25 for the first time dial up connection setup, otherwise start from step 26 for dial up connection.

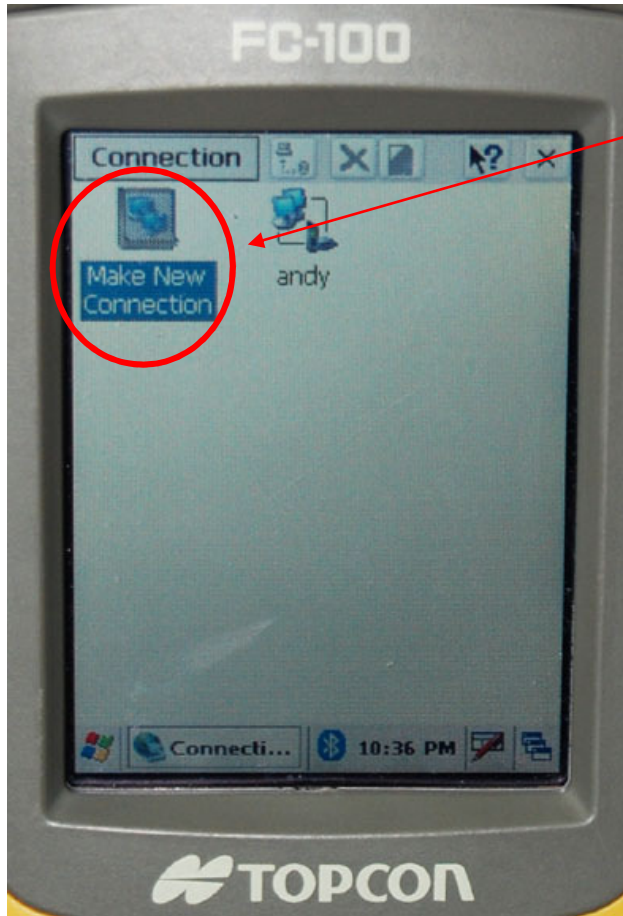




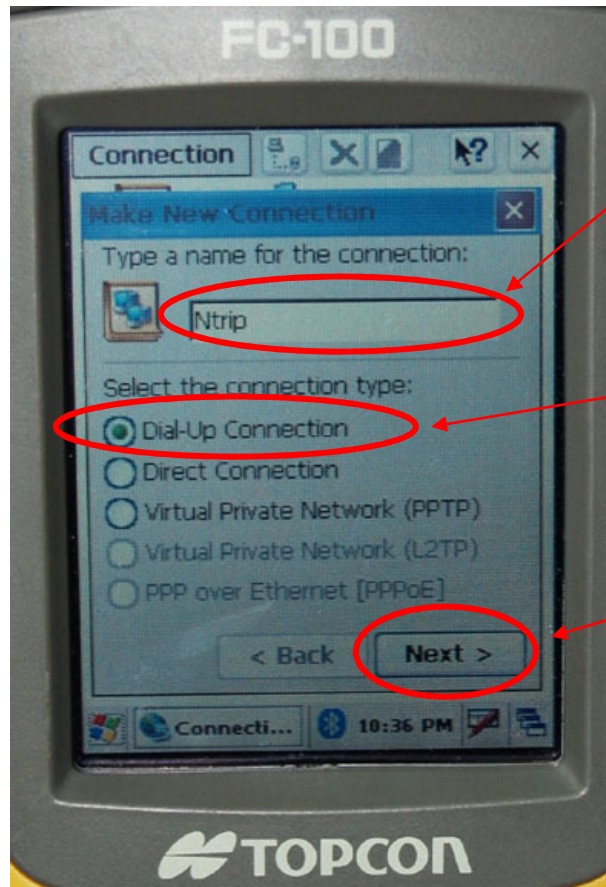
16. Click  icon to show the main pull down menu.



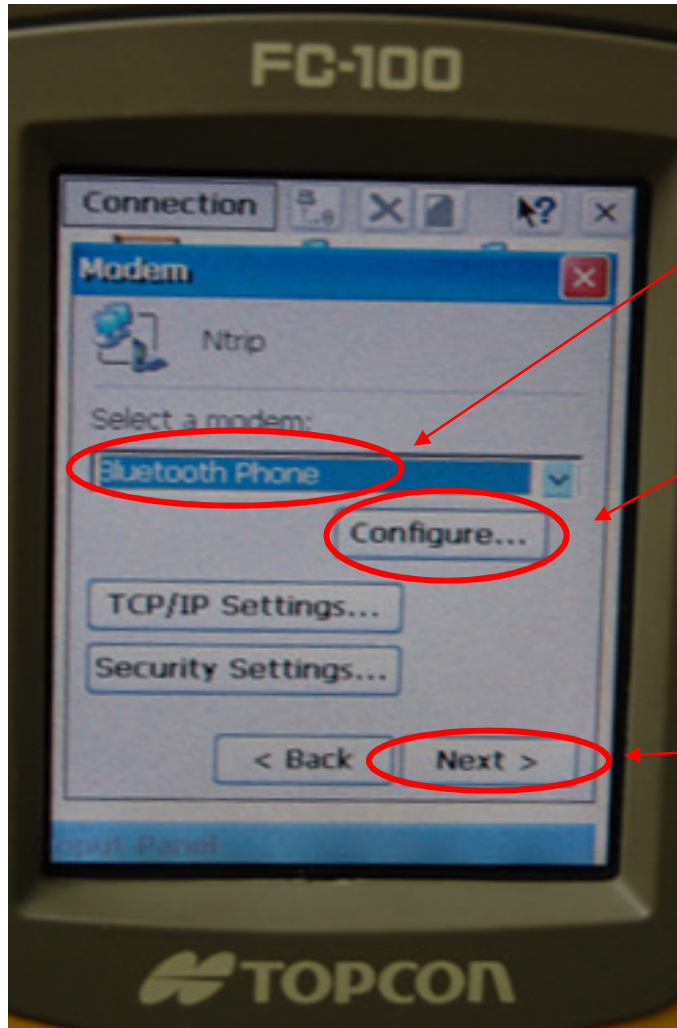
17. Choose  
“Network&Dial-  
up” under  
“Settings”.



18. Click “Make New Connection” icon to setup the dial-up connection parameters.



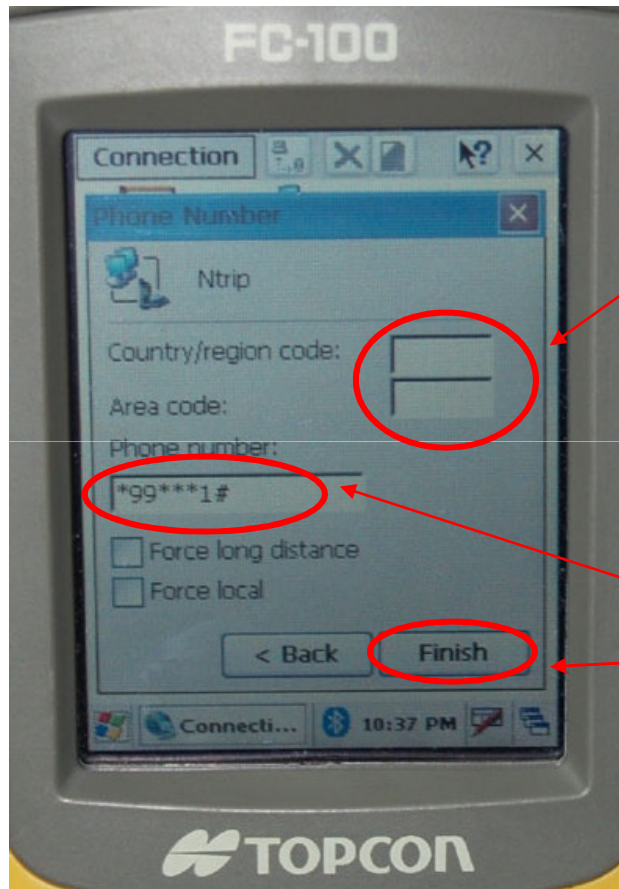
19. Input a name for this connection file (e.g. Ntrip). Check “Dial-Up Connection” box, then click “Next >” icon.



20. Choose “Bluetooth Phone”.

Then, click “Configure...” icon to setup the dial-up parameters.

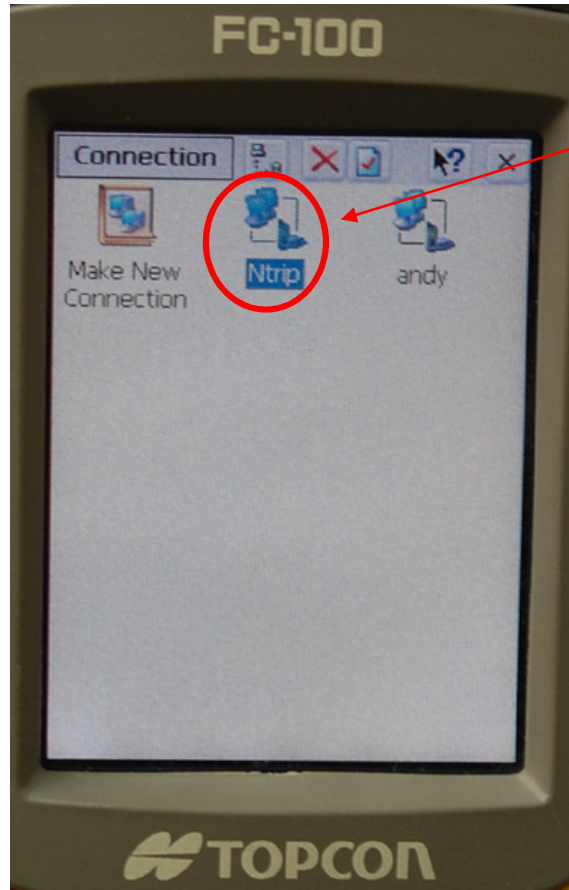
OR Press “Next” to next step.



Re: Please ask your network supplier for the GPRS phone number.

21. If doing the survey in Hong Kong, blank the boxes of “Country/region code:” and “Area code:”

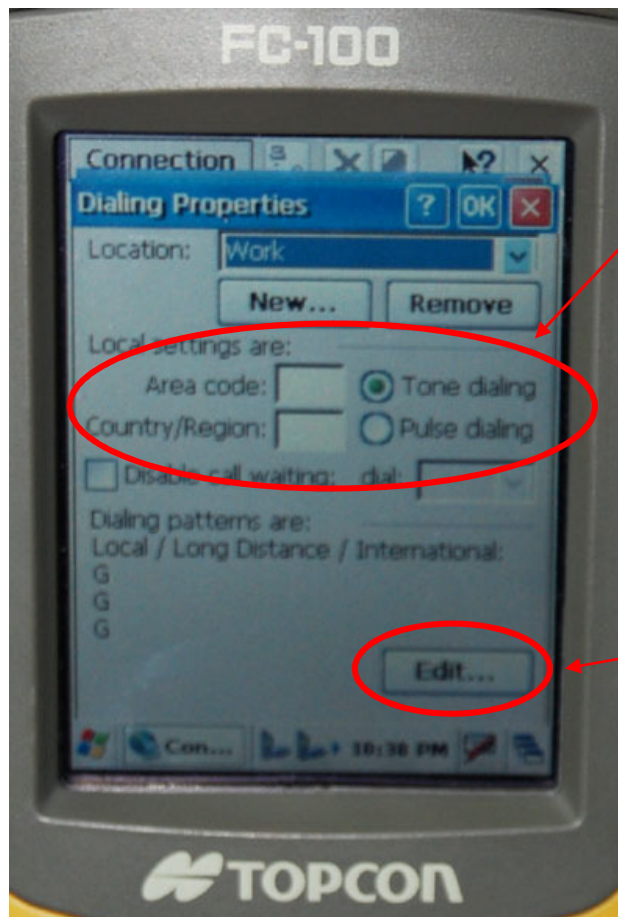
Input the phone number for GPRS connection (e.g. \*99\*\*\*1#), then click “Finish” icon



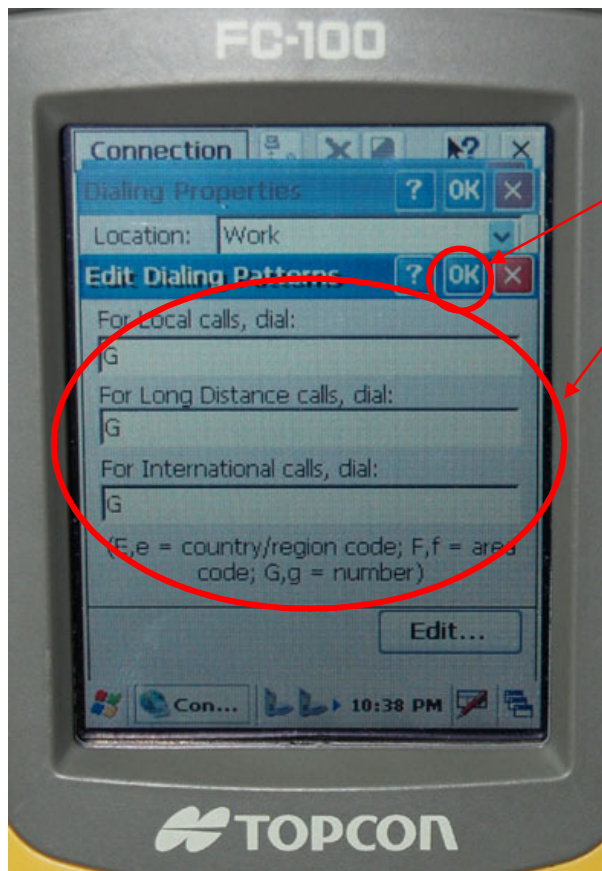
22. Now a new setup file icon “Ntrip” is shown and click this icon to setup the dial properties.



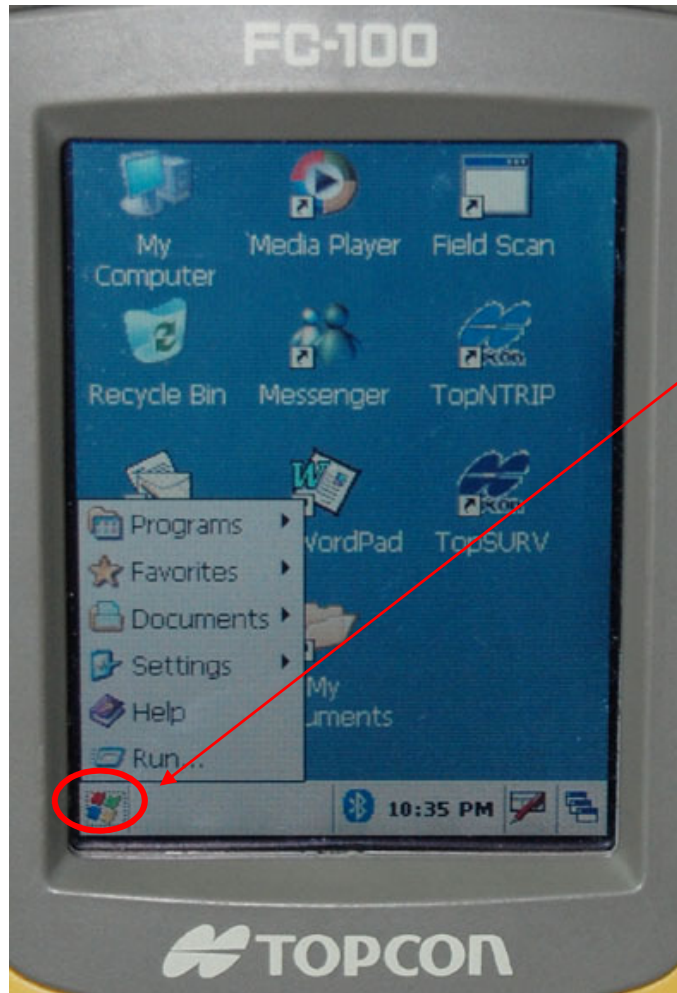
23. Click “Dial Properties...” icon to set up the dial properties.




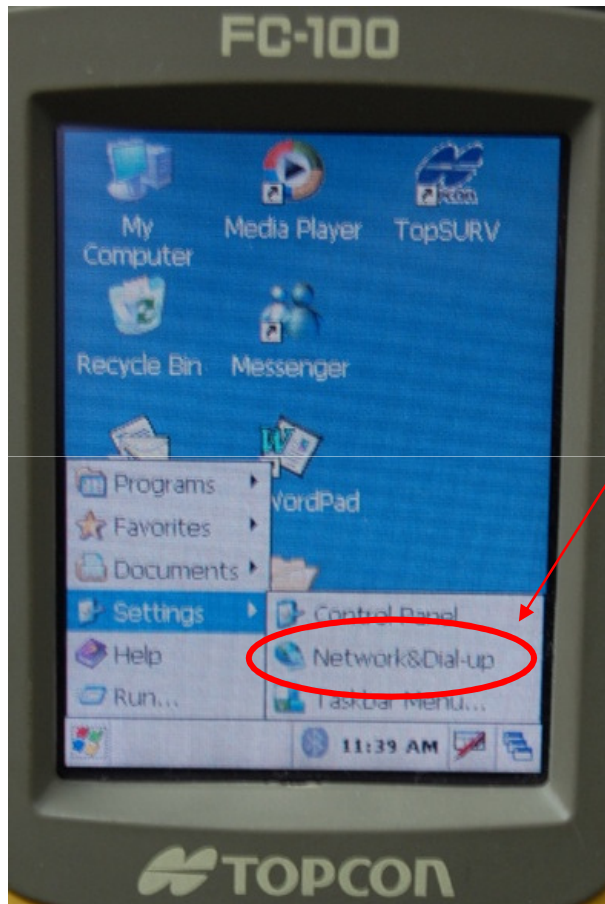
24. Confirm the boxes of “Area code:” & “Country/Region:” are blanked. The “Tone dialing” box must be checked, then click “Edit...” icon to edit the dialing patterns.



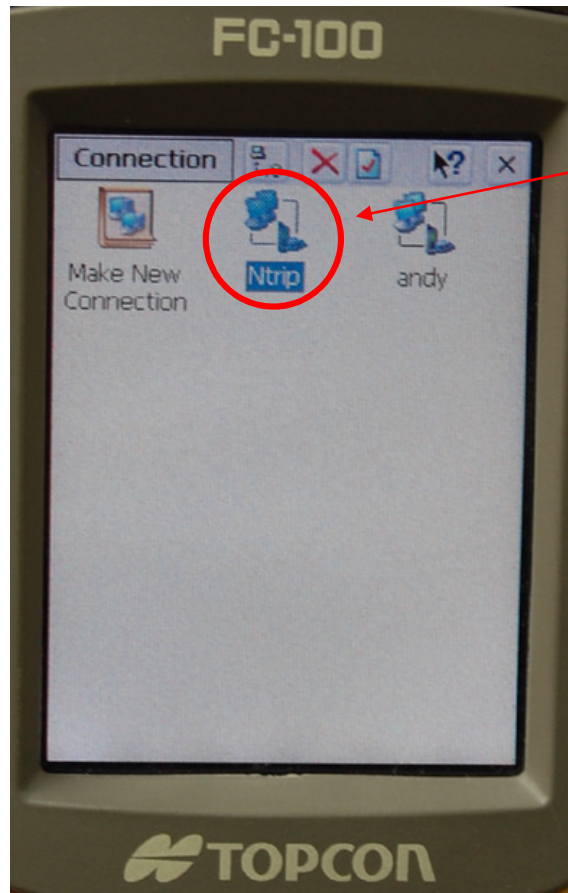
25. If doing the survey in Hong Kong, only filled the letter “G” into each box, then click “OK” icon. Now all the dialing properties have been set and you can use the Field Controller to dial up.



26. Click  icon to showing the main pull down menu.



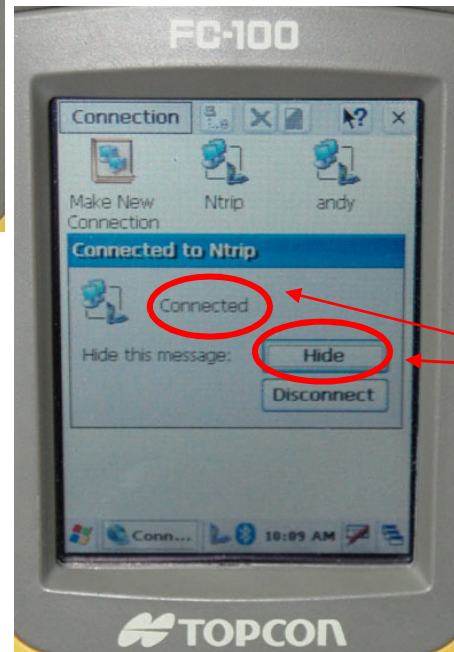
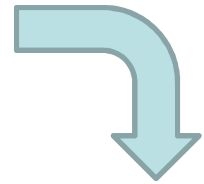
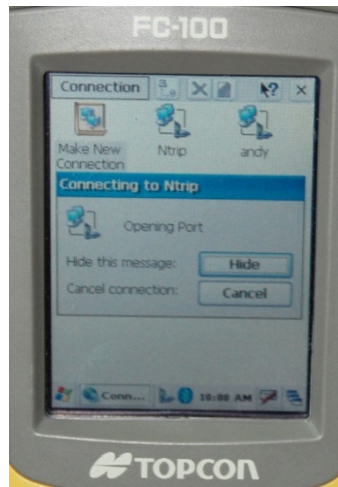
27. Choose  
“Network&Dial-  
up” under  
“Settings”.



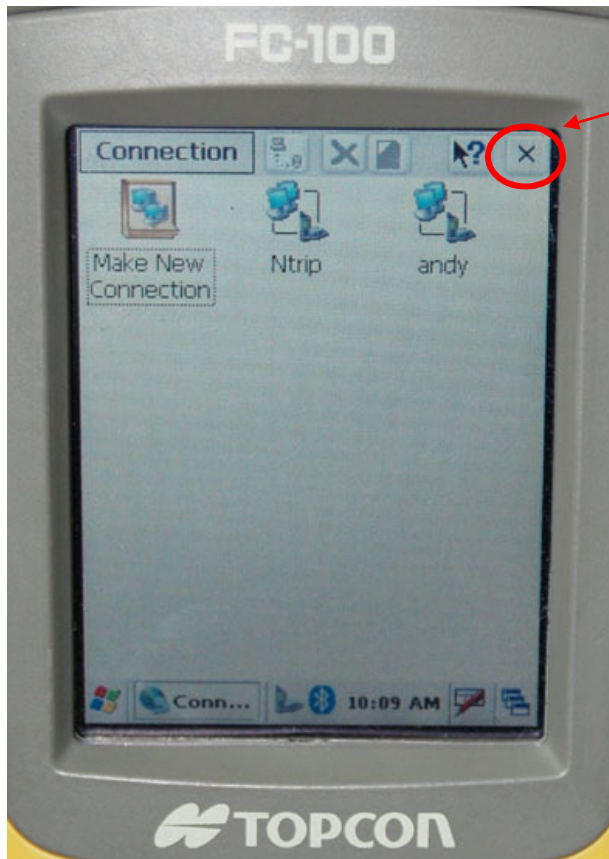
28. Double click the connection icon (e.g. “Ntrip”).



29. Click “Connect”  
icon to dial.



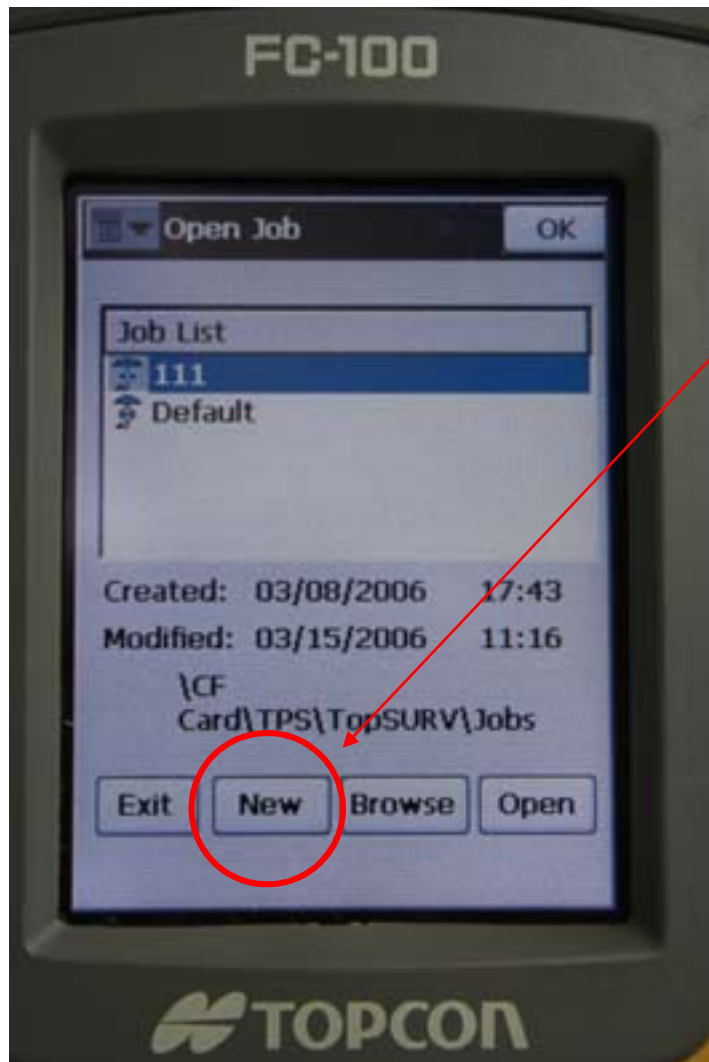
30. Now the controller will connect with the network through the mobile phone automatically. After connected, click “Hide” icon.



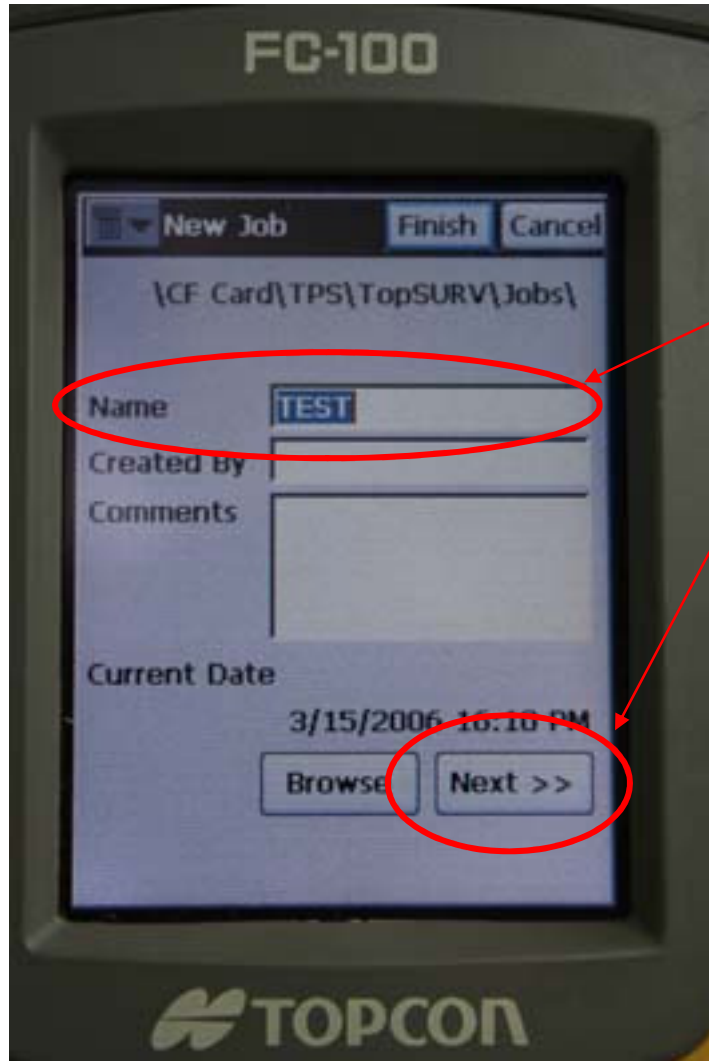
31. Click “X” icon to close the Connection page.



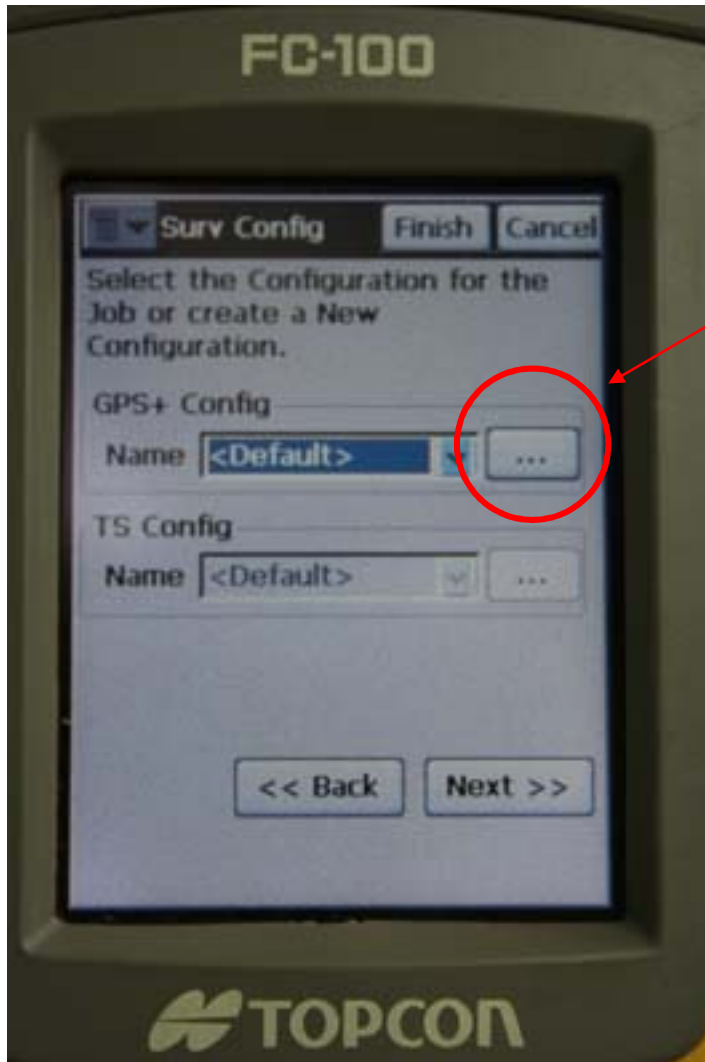
32. Click  
“TopSURV”  
icon to run the  
TopSURV  
program for  
data collection  
in RTK mode  
by NTrip.



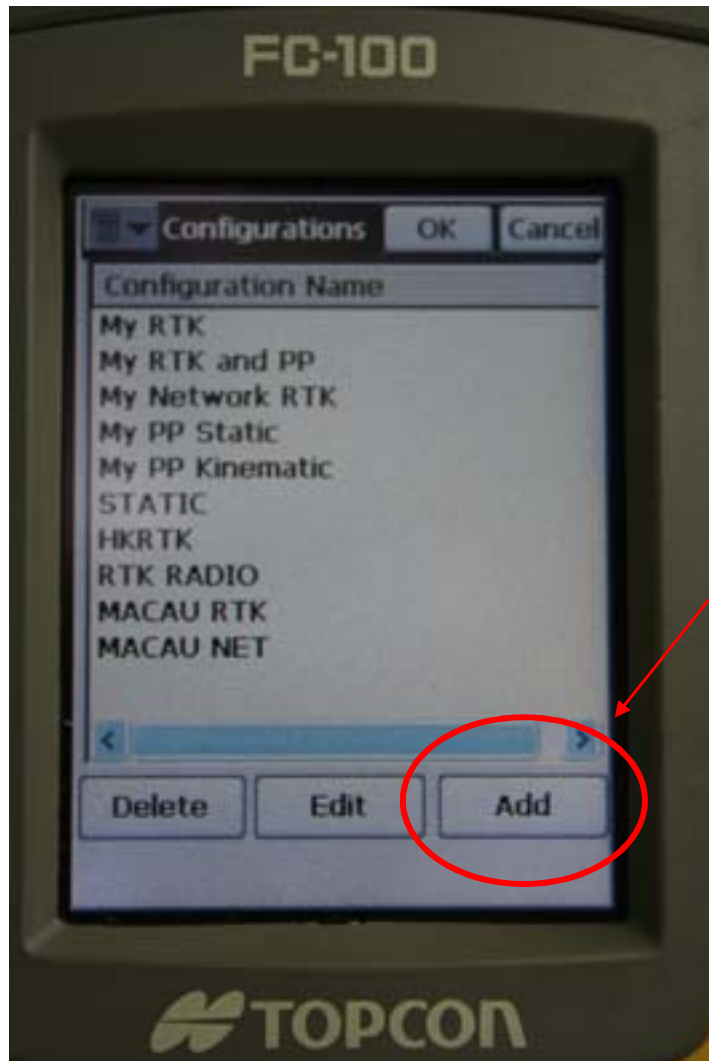
33. Click the “New” icon to open a new job file.



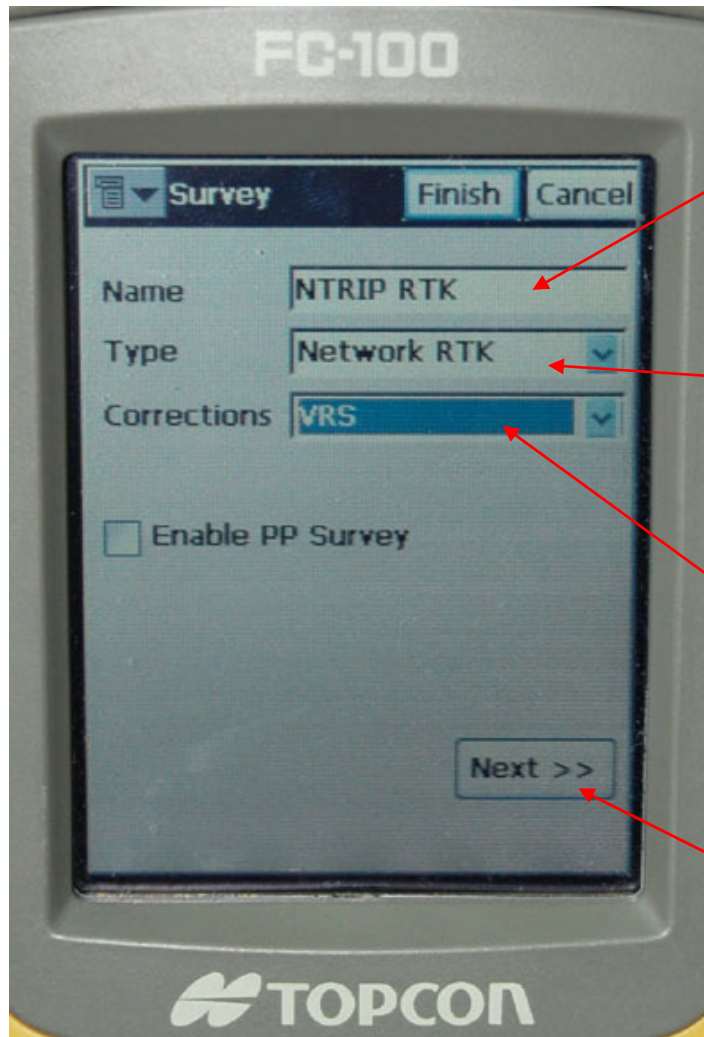
34. Input a new Job Name at the Name field, then Press the “Next>>” icon.



35. Click the “...” icon under GPS+ Config to create a new setting.



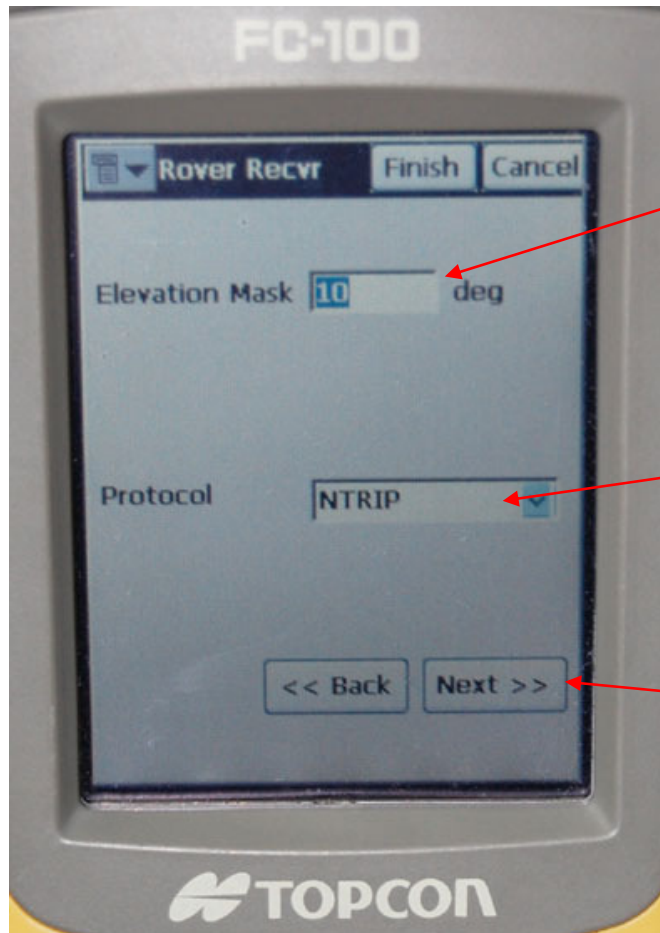
36. Click the “Add” icon to create a customized NTrip network GPS configuration.



37. Input a name for the configuration at the Name field.

In Type field, choose “Network RTK”,

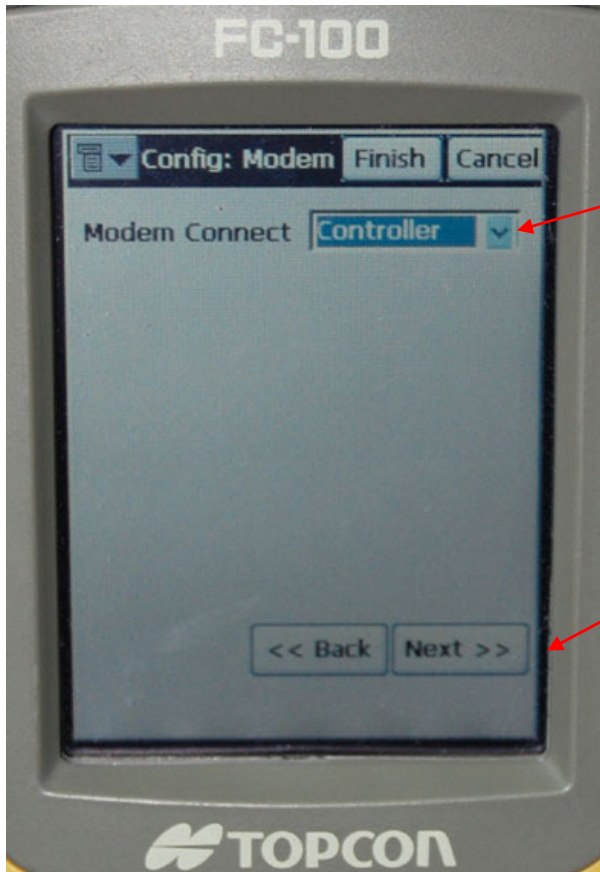
In Corrections field, choose “VRS”, then click “Next>>” icon



38. Input an angle of Elevation Mask (in degree).

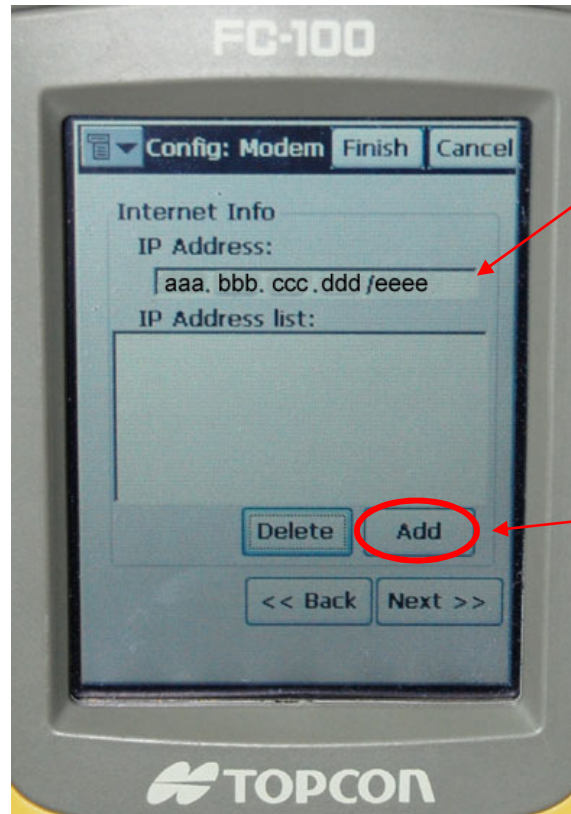
Select "NTRIP" in Protocol

Click "Next>>" icon to next page.



39. Select “Controller”  
in Modem  
Connect.

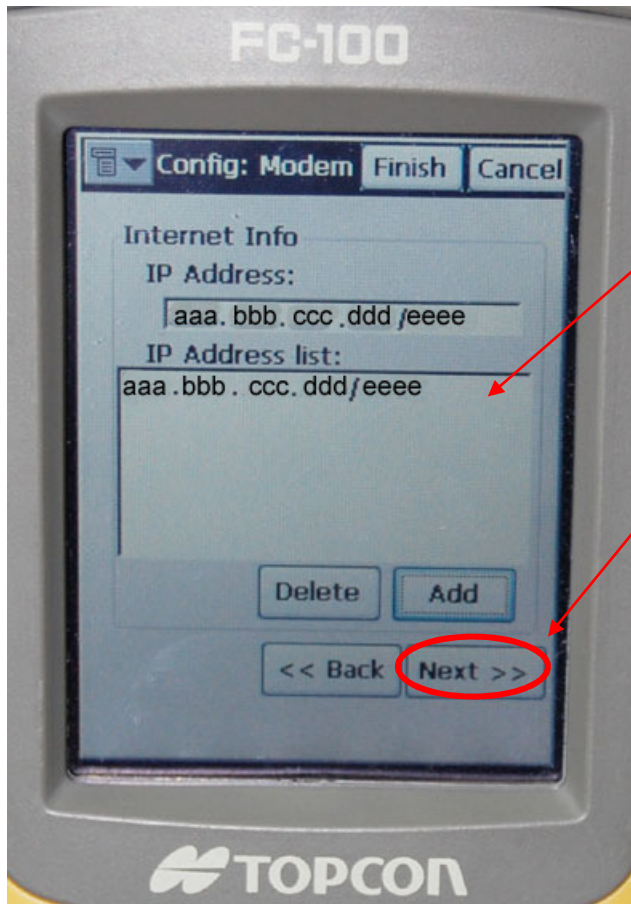
Click “Next>>”  
icon to next page.



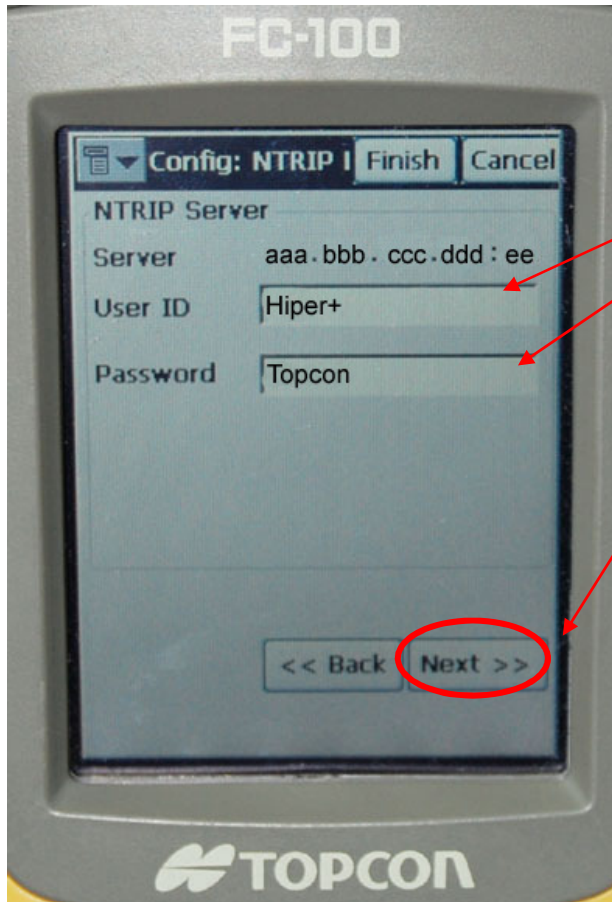
40. Input an IP Address:  
aaa.bbb.ccc.ddd/eeee  
(for the IP address is  
aaa.bbb.ccc.ddd and  
the Port is eeee)

Click “Add” icon to next  
page.

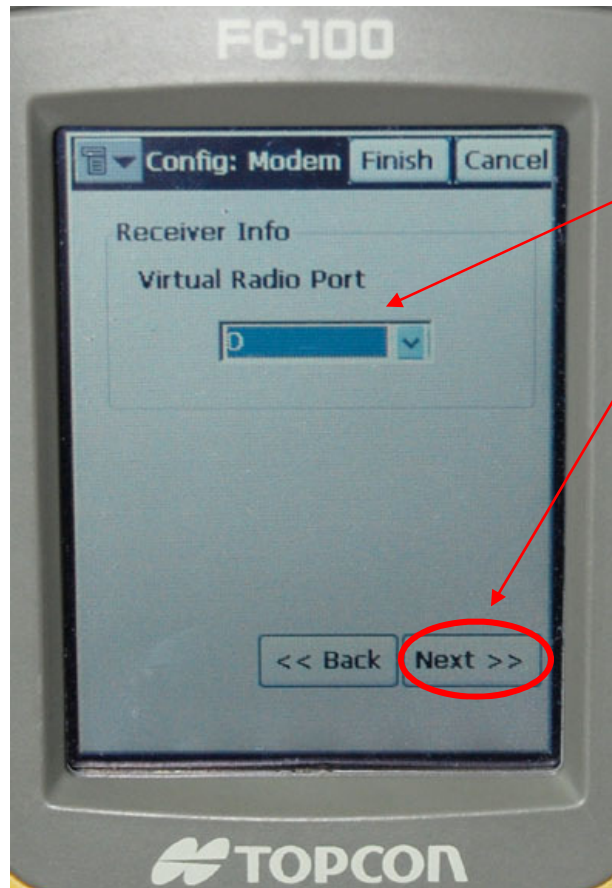
Re: Please ask SMO for the IP Address.



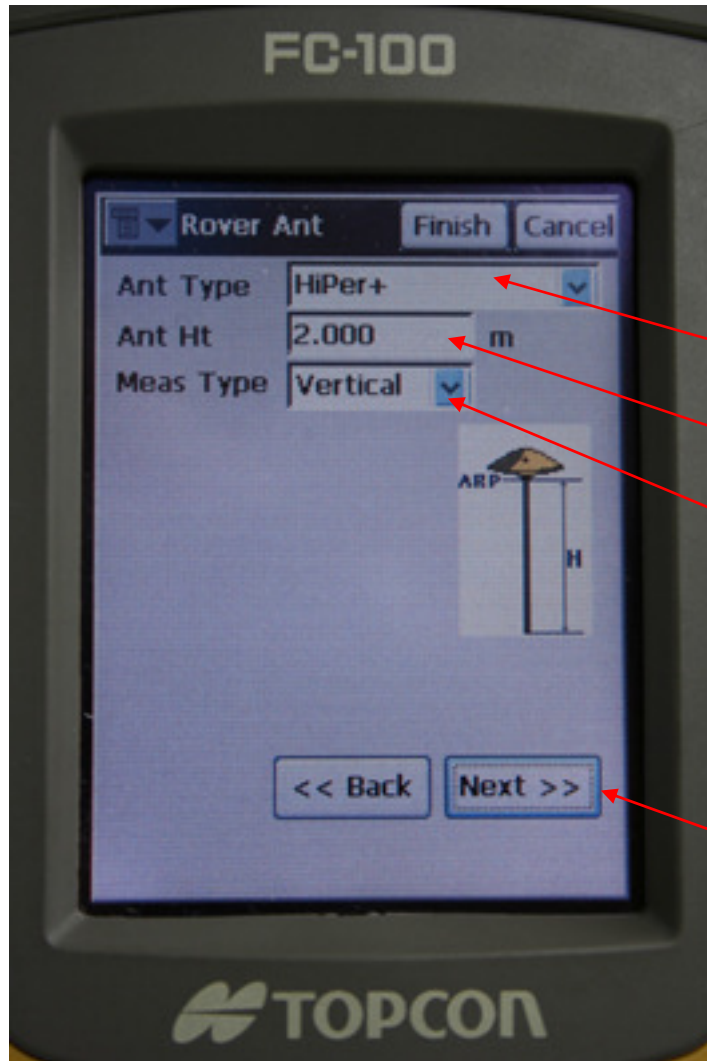
41. The IP address will be added into the IP Address list, then click “Next>>” icon to next page.



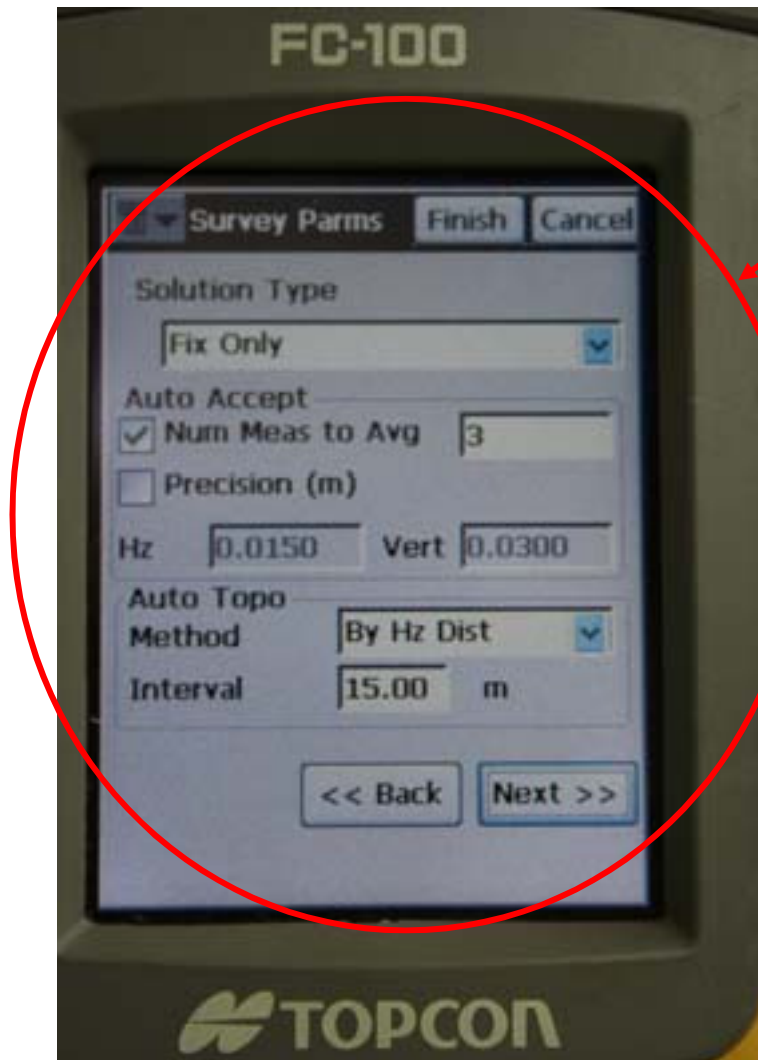
42. Input the User ID & Password that provided by SMO, then click “Next>>” icon to next page.



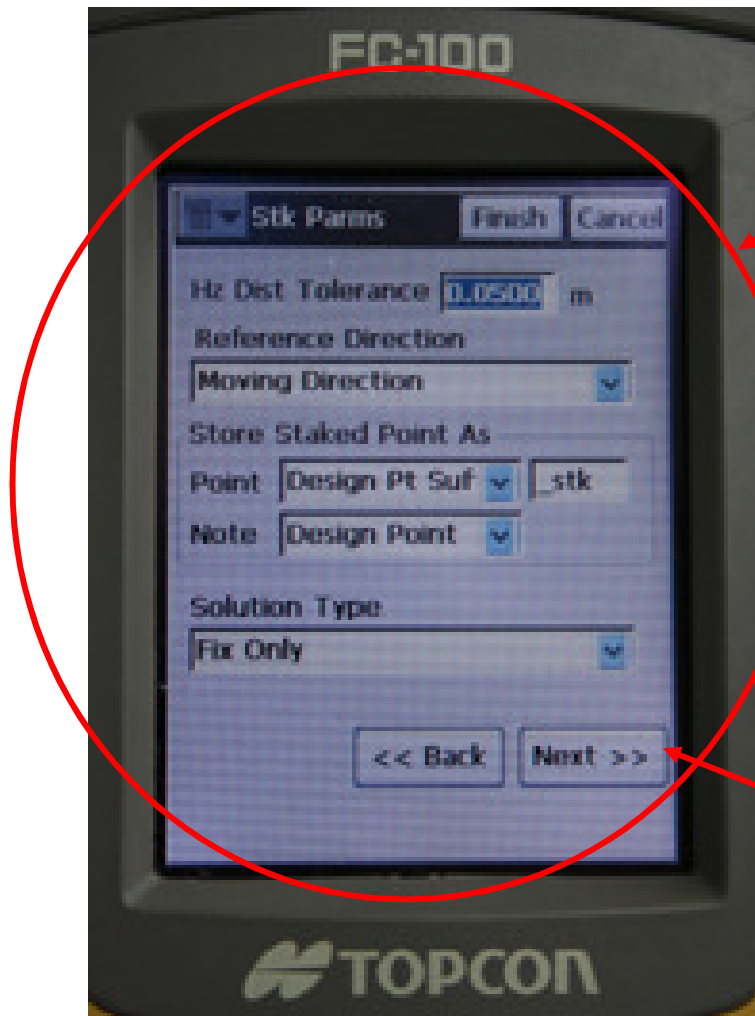
43. Select the Virtual Radio Port (Topcon recommended user to set this virtual radio port as "D"), then click "Next>>" icon to next page.



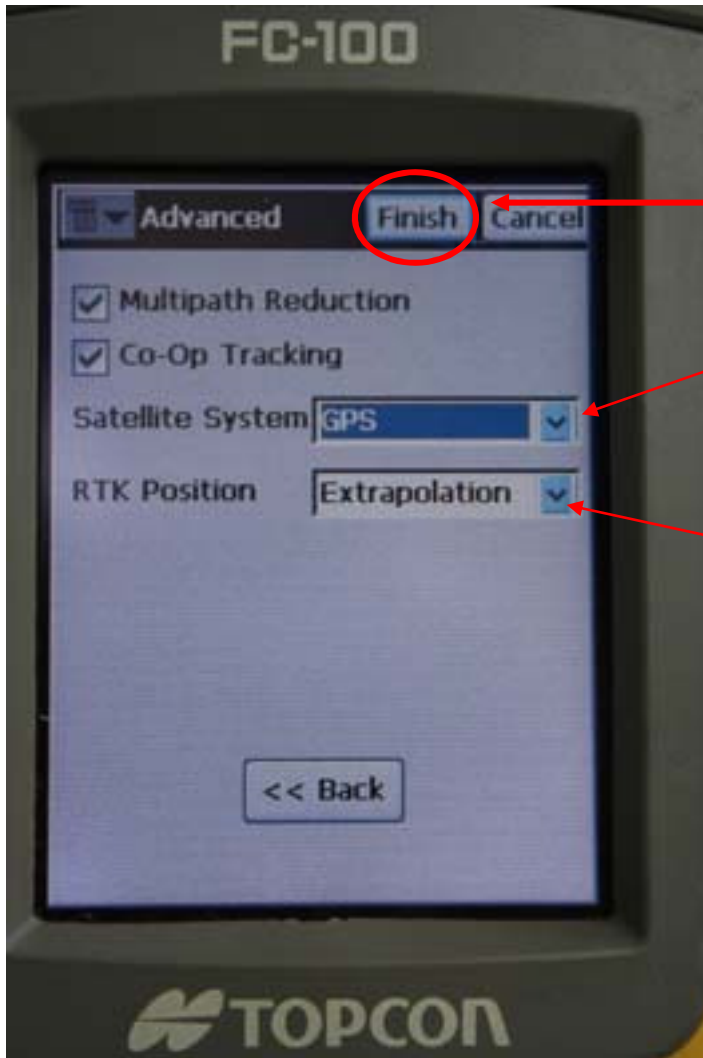
44. Choose Ant Type (Topcon Hiper+ GNSS receiver has been used in this demonstration) to “Hiper+” and input the Ant Height & Measurement method in Meas Type field. Then click “Next>>” icon.



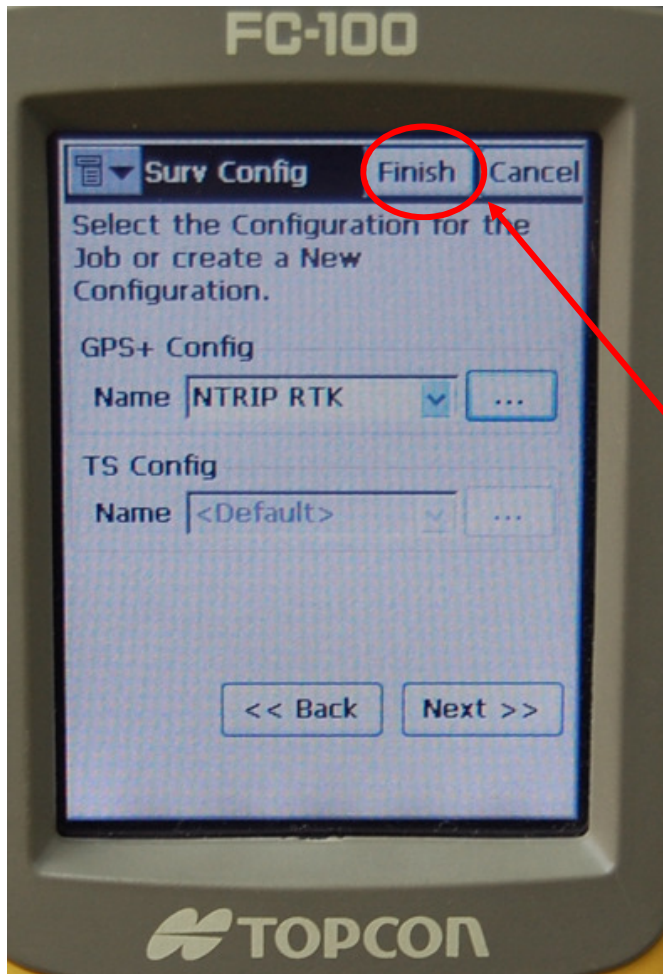
45. In Survey Params Page, input the survey parameters based on surveying requirements. Click the “Next>>” icon.



46. In Stk Params Page, input/select the parameters based on respective setting out requirements. Click the “Next>>” icon to continue.



47. Set Satellite System to “GPS” and set RTK Position to “Extrapolation” or “Matched Epoch”. Then click the “Finish” icon.




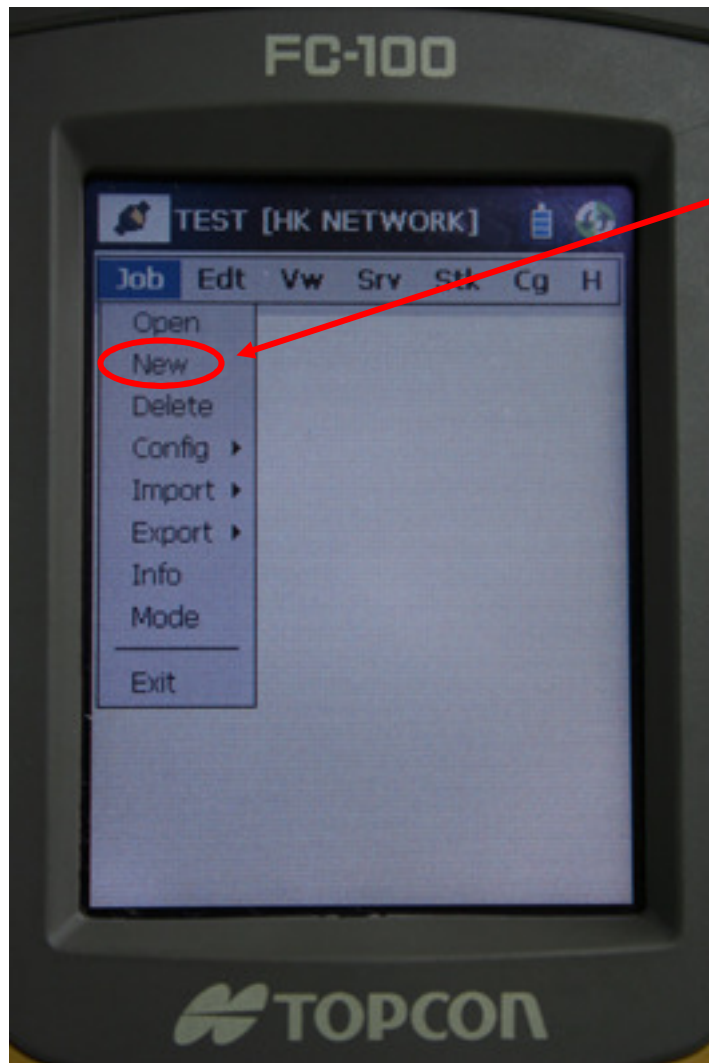
48. The Surv Config page is shown again. The customize NTRIP RTK Surv Config has been set. Click the “Finish” icon to start your Network GPS Survey.

# Procedure for using Topcon GNSS receiver for NTrip Network RTK Survey

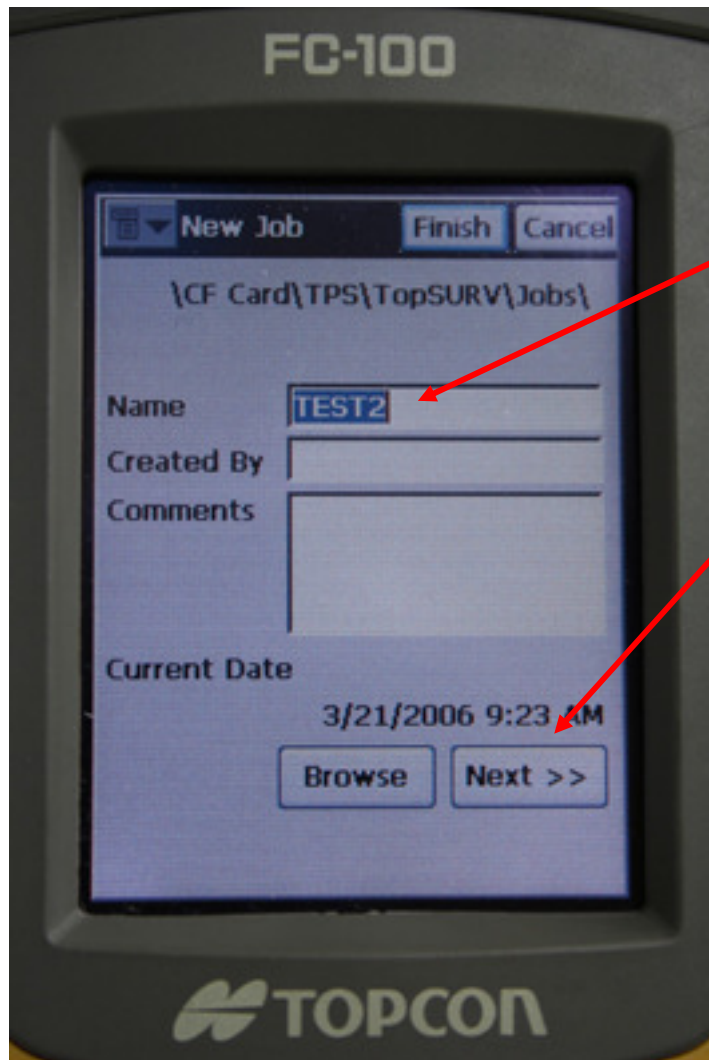
(Topcon Hiper+ GNSS Receiver has been used in this demonstration)



1a. Press “” button to switch on the Hiper+ GNSS Receiver. If FC-100 is off, turn it on, re-connect with the mobile phone and dial up again, then run TopSURV GPS+.

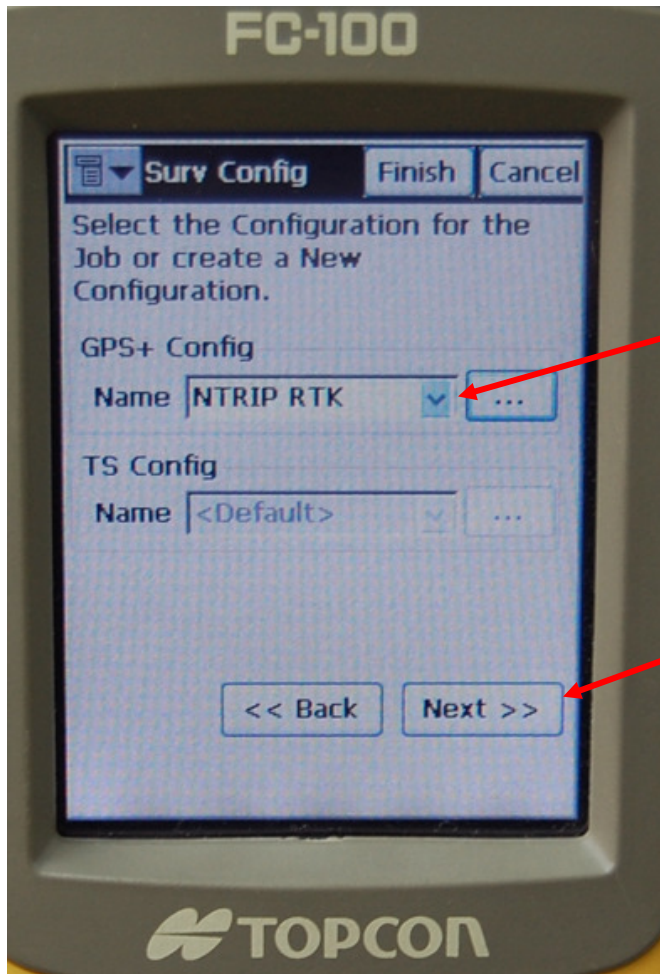


1b. Create a New Job (or open an existing job and go to Procedure 9)



2. Input a new job Name and click the “Next >>” icon

(For new job only)

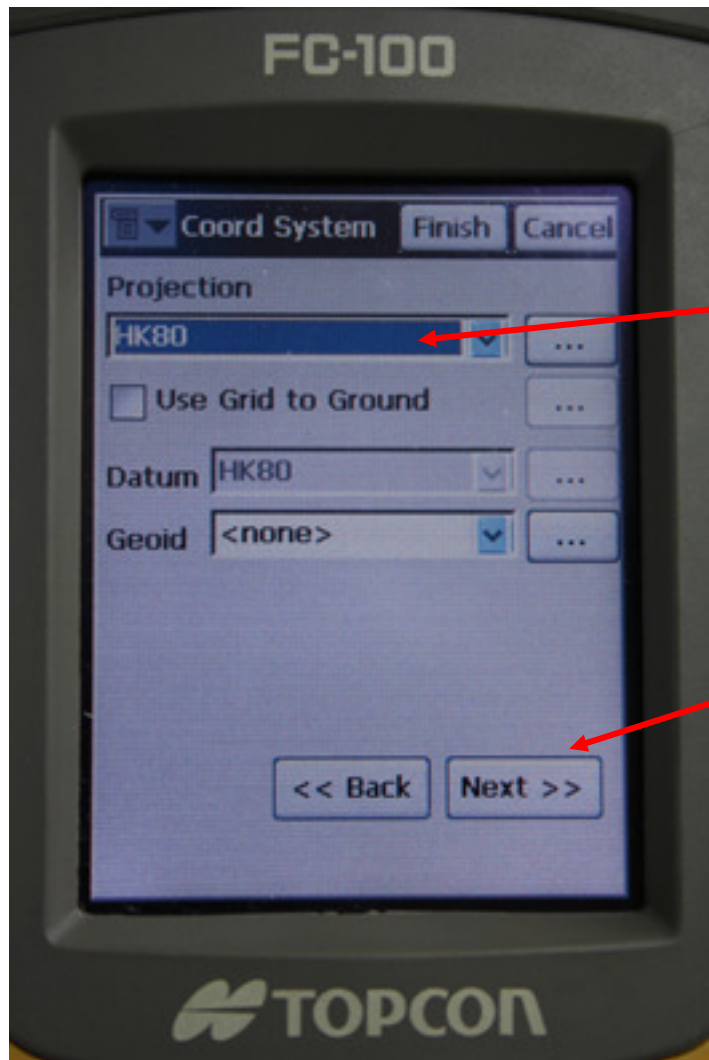


3. Choose your Pre-set GPS+ Config\* for NTRIP RTK.

Then click the “Next >>” icon.

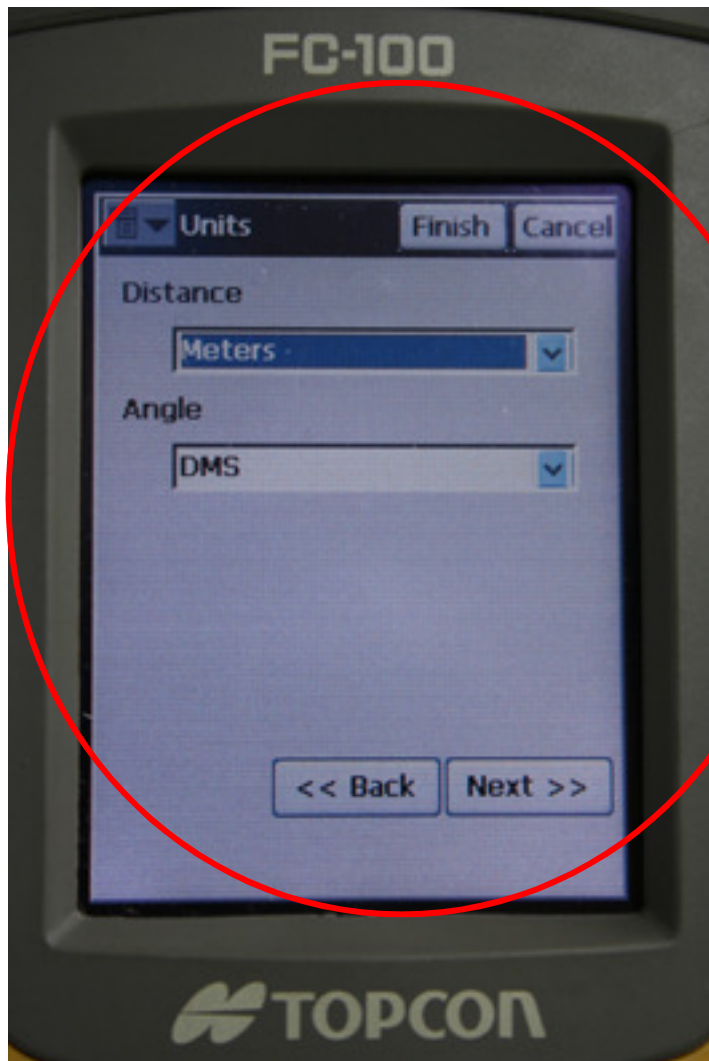
\*Remarks: Please refer to step 35 to 47 in One-time initial rover setting using NTRIP communication.

(For new job only)



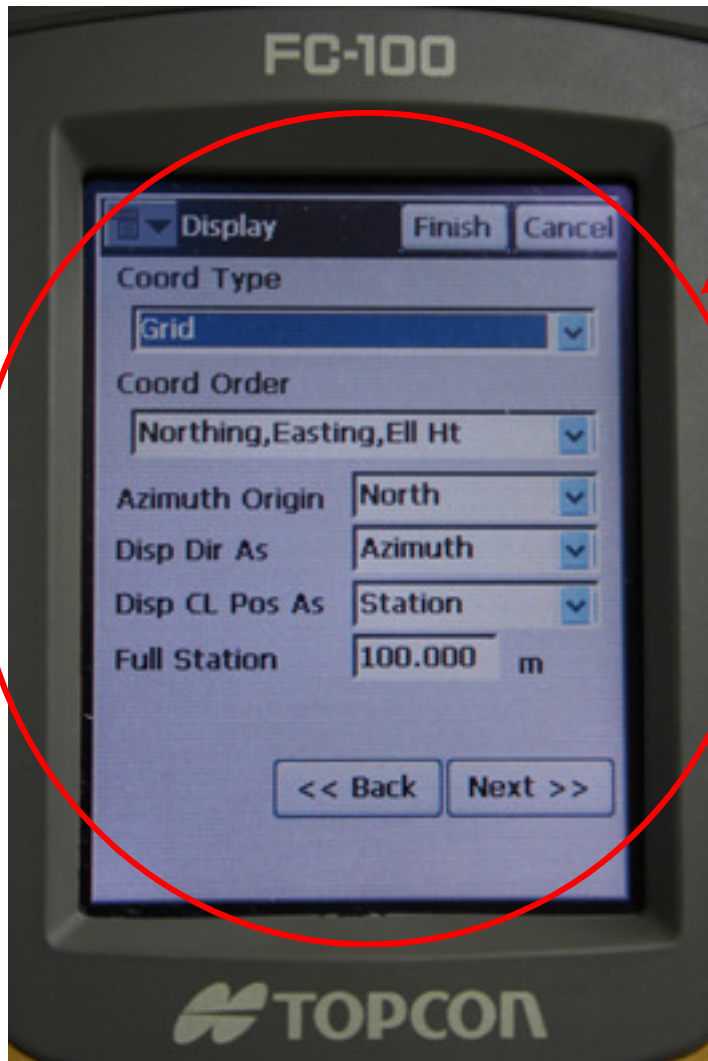
4. If user want to get the coordinates of surveyed points in HK80 System, go to Coord System page, choose “HK80” in Projection field and then click the “Next>>” icon.

(For new job only)



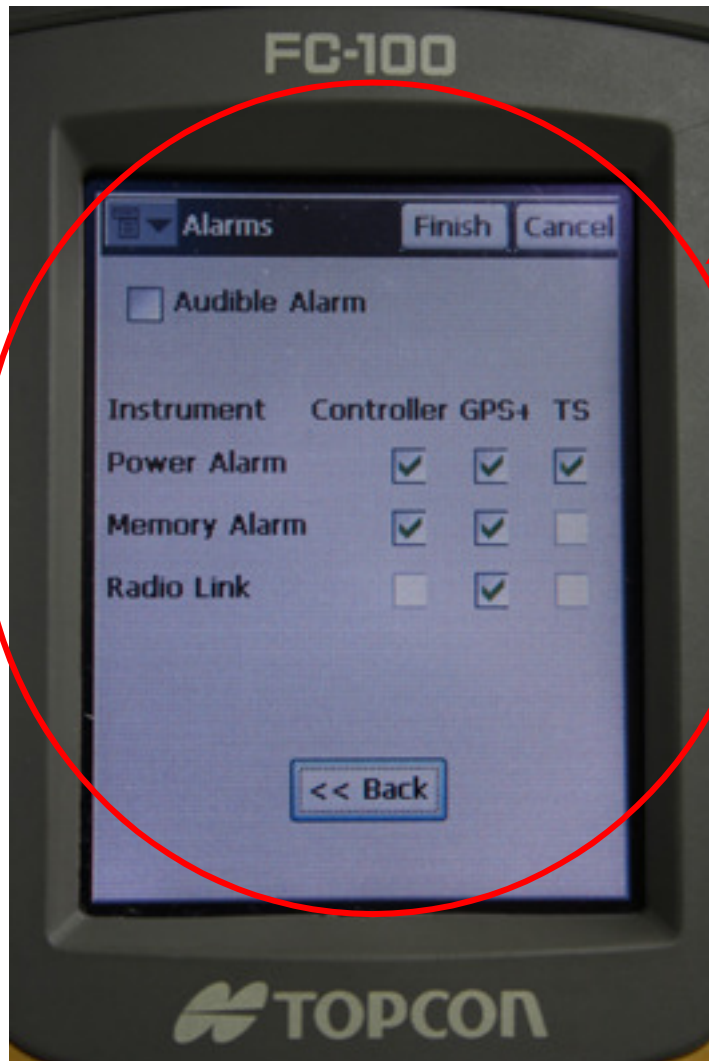
5. In Units page, choose the suitable units (meters and DMS are default values) then click the “Next >>” icon

(For new job only)



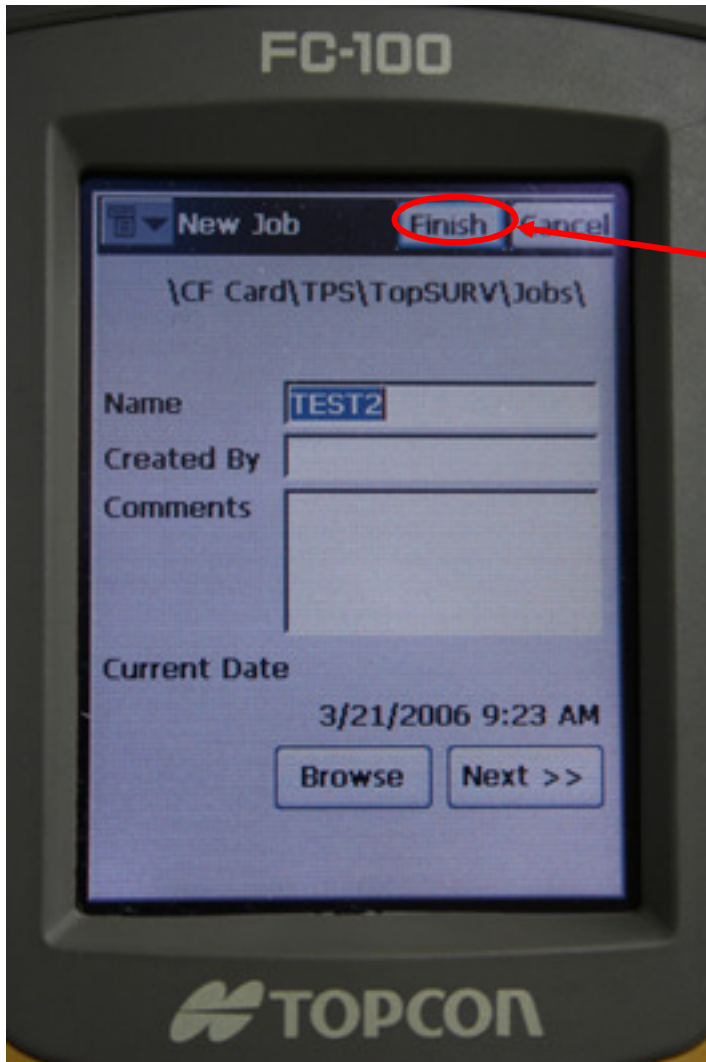
6. Setup the display item and sequence to fit the job in Display page. After setting all the display parameters, click "Next >>".

(For new job only)



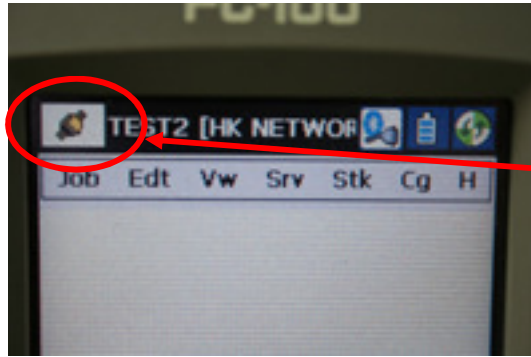
7. Set the alarms parameters in Alarms page, then click “Finish”.

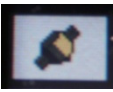
(For new job only)



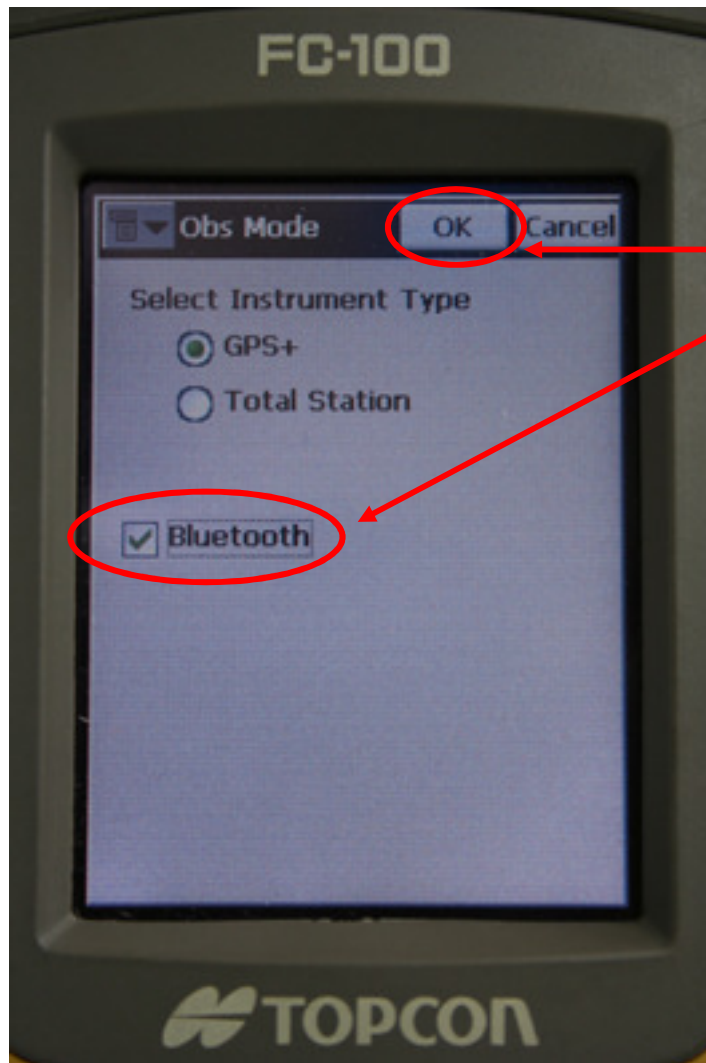
8. In Surv Config Page click the “Finish” icon to start the Network RTK Survey.

(For new job only)

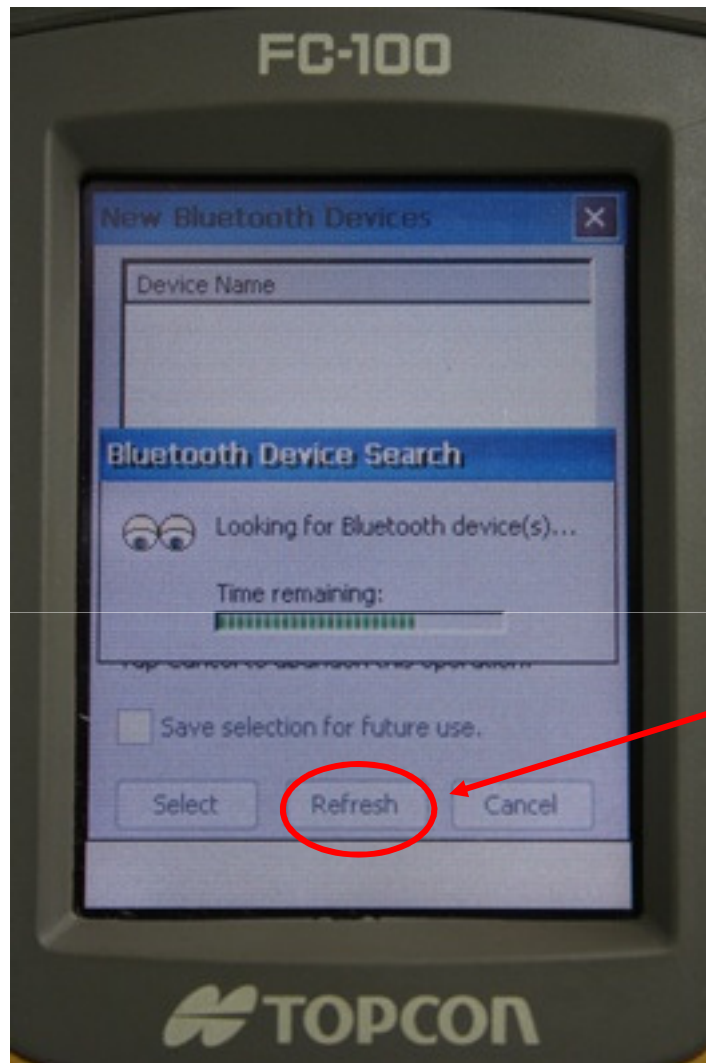


9. In TopSURV main page, Click the “” icon to connect the Hiper+ GNSS receiver with the FC-100 Controller via Bluetooth.

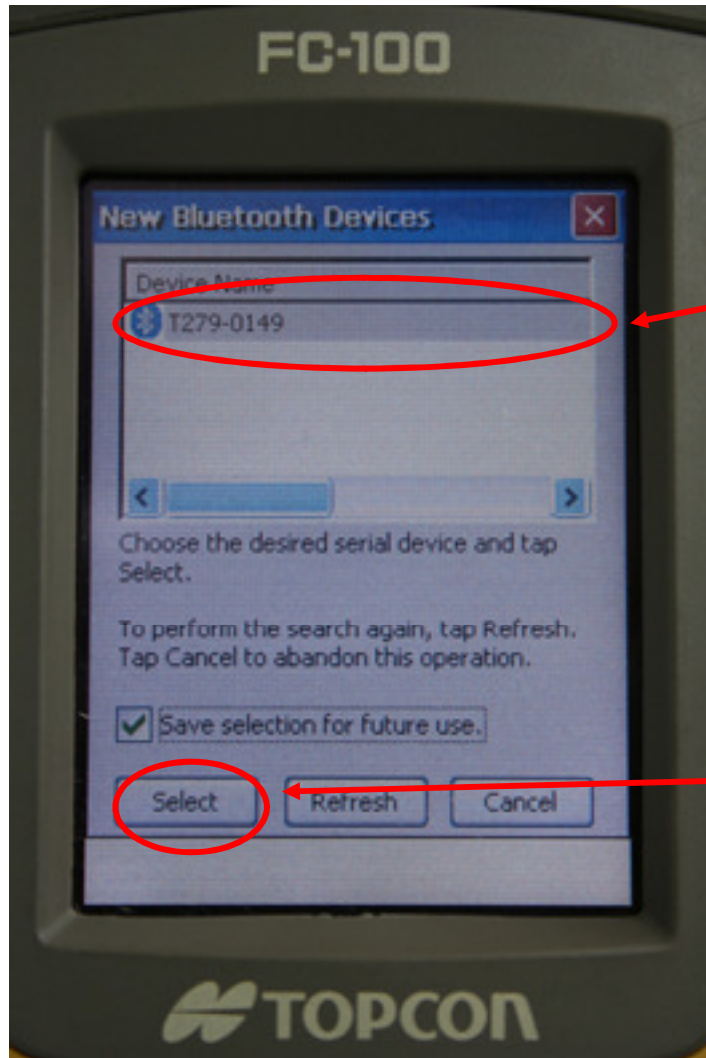
(After a new job has been create or an existing job has been selected)



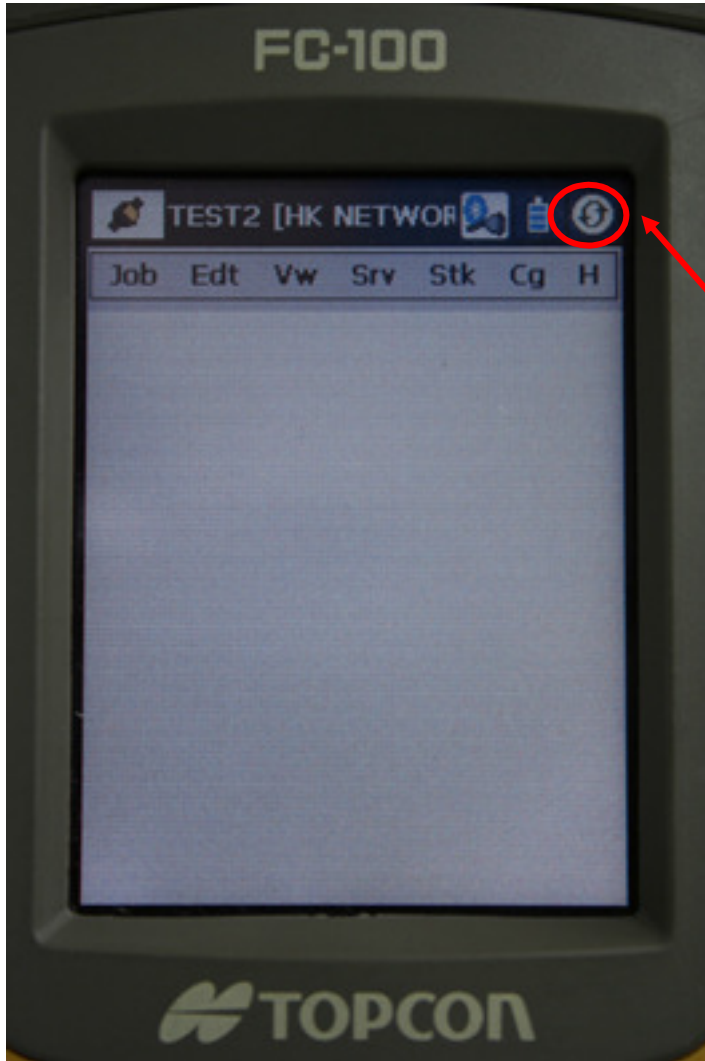
10. In Obs Mode page, check the Bluetooth box and click the “OK” icon.





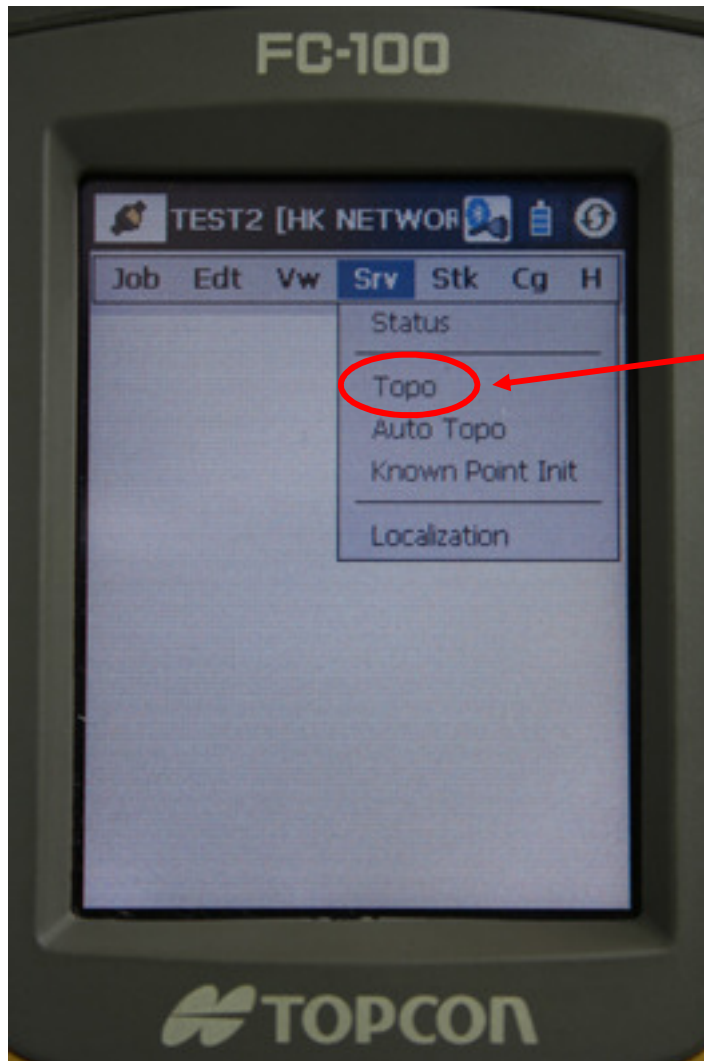
11. The FC-100 will search the GNSS receiver automatically. Click the “Refresh” button to search again when required.



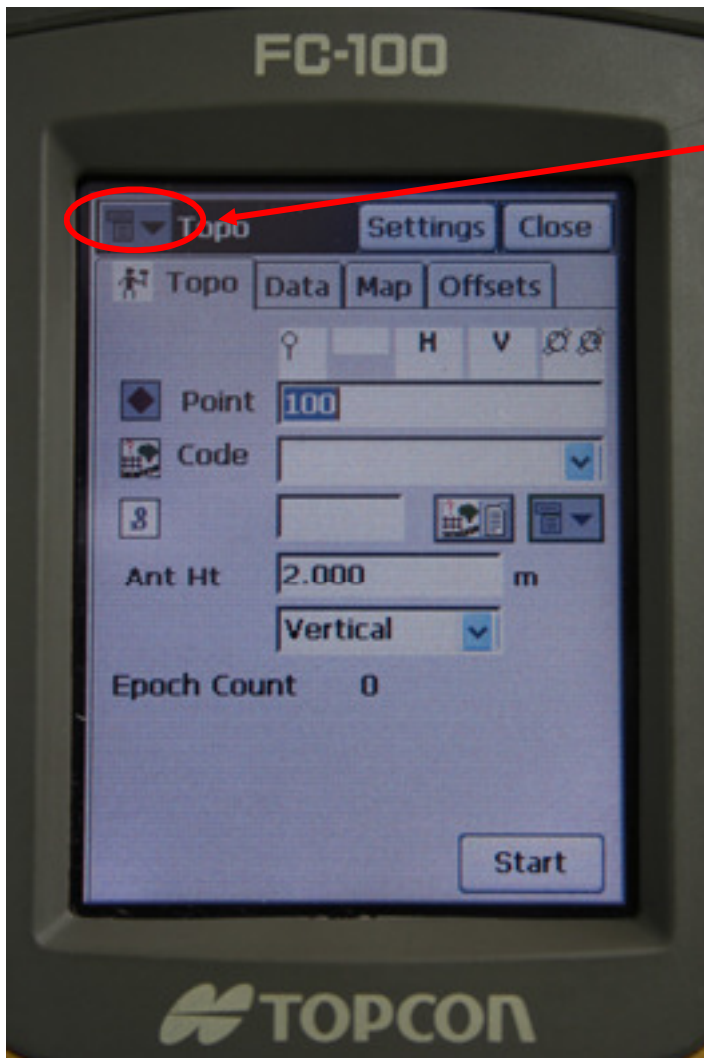
12. The serial no. of the receiver is shown on the screen after searching. Highlight the serial no. and click the “Select” icon to choose the receiver.

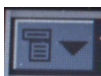


13. After connecting the receiver and the controller, the Bluetooth icon will change from “” to “”.

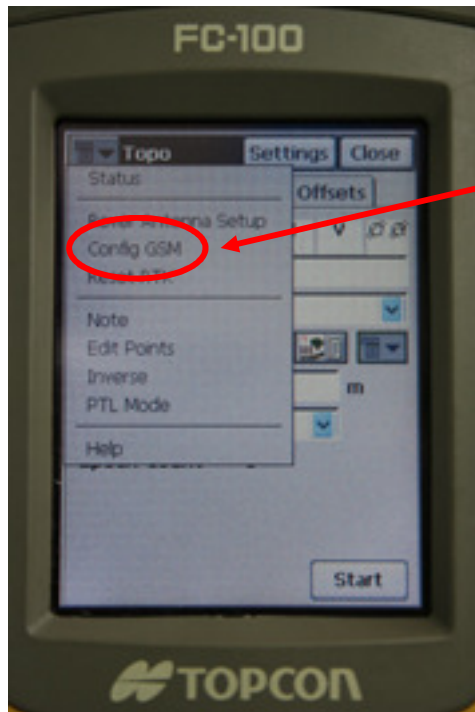


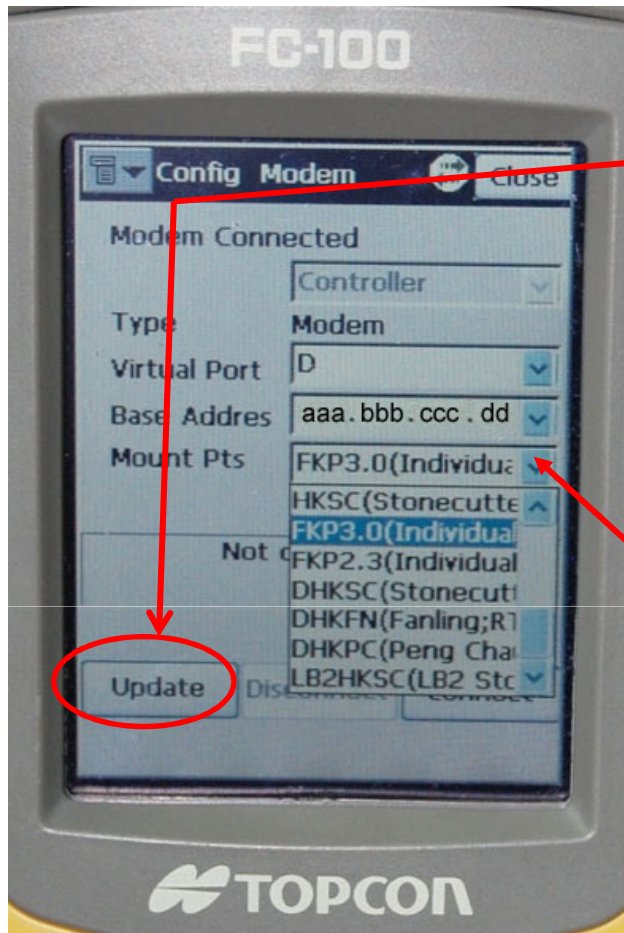
14. To start Network RTK work, choose “Topo” under the “Srv” menu.



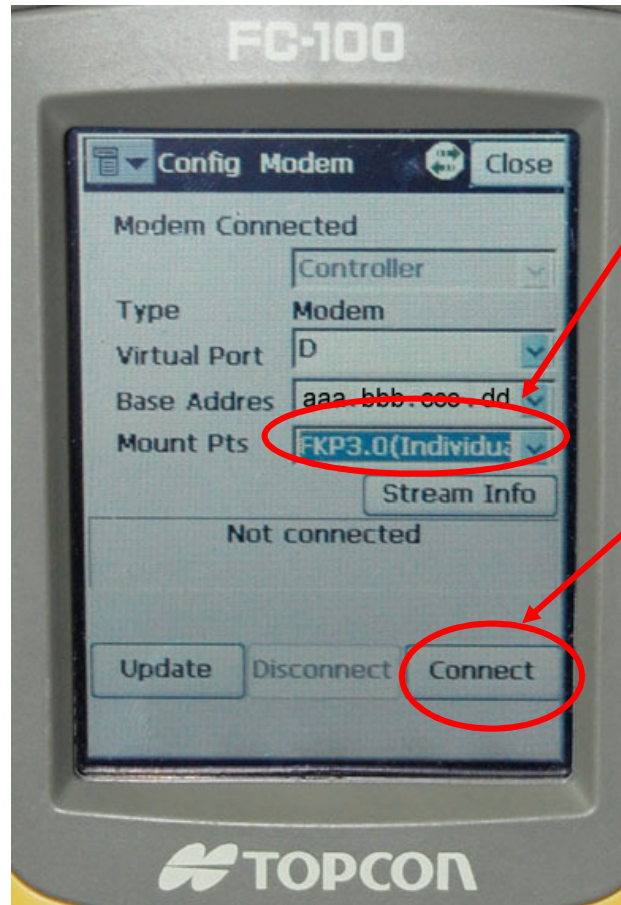
15. In Topo page,  
click the  
“” icon to  
setup the NTrip  
data  
communication.

16. Choose  
“Config GSM”.

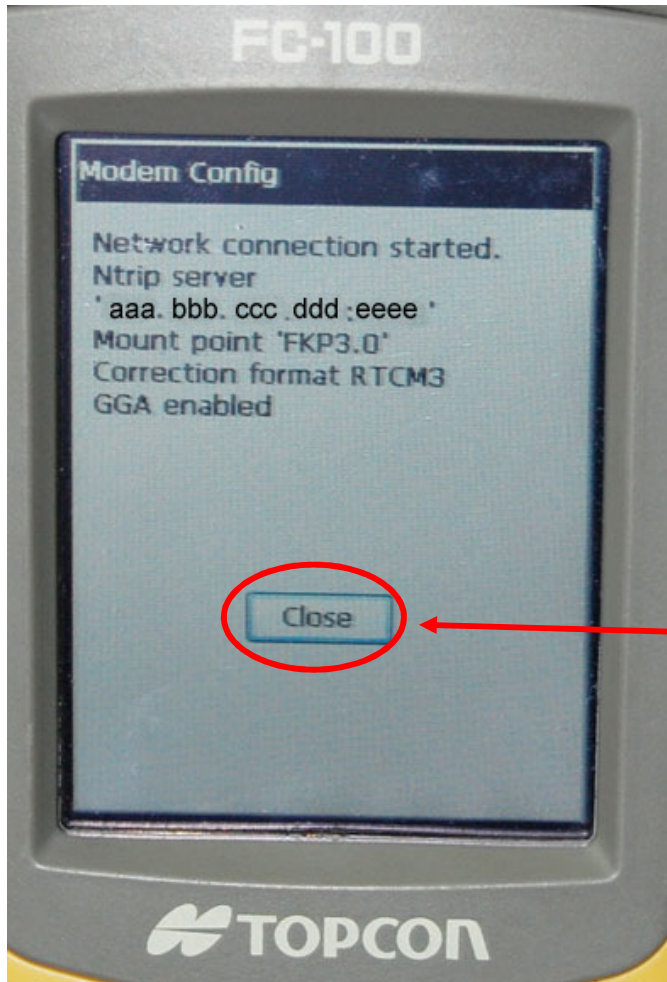




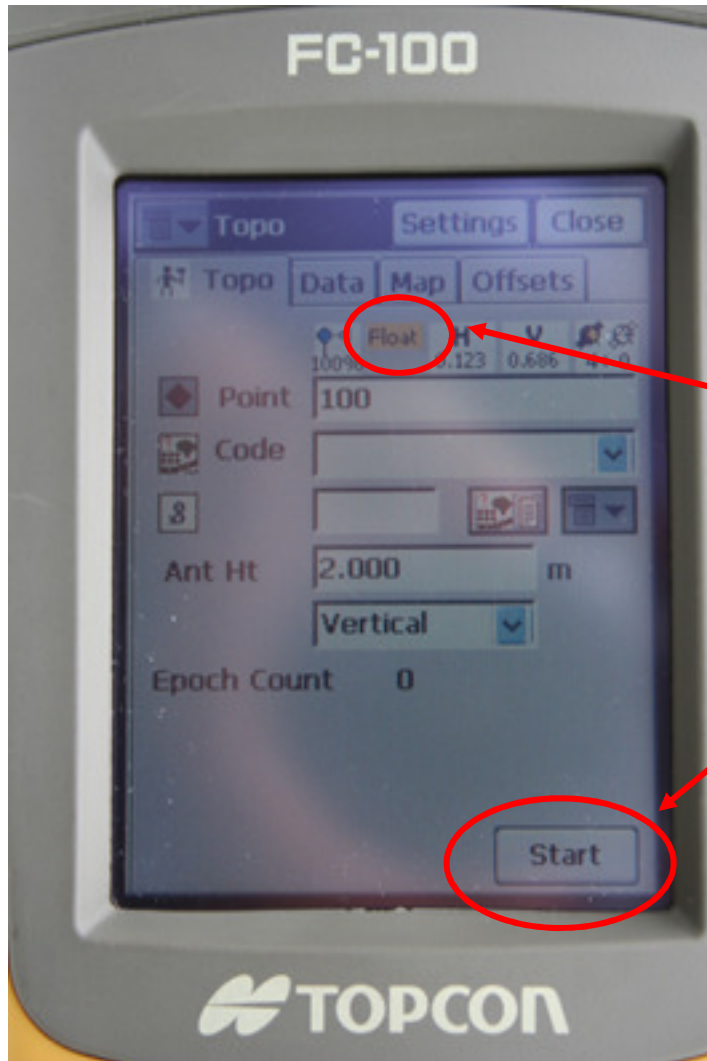
17. Click the “Update” icon, then all the Mount Pts will be shown in the Mount Pts list.



18. Choose the suitable mount point for running the topo survey, then click “Connect” icon.

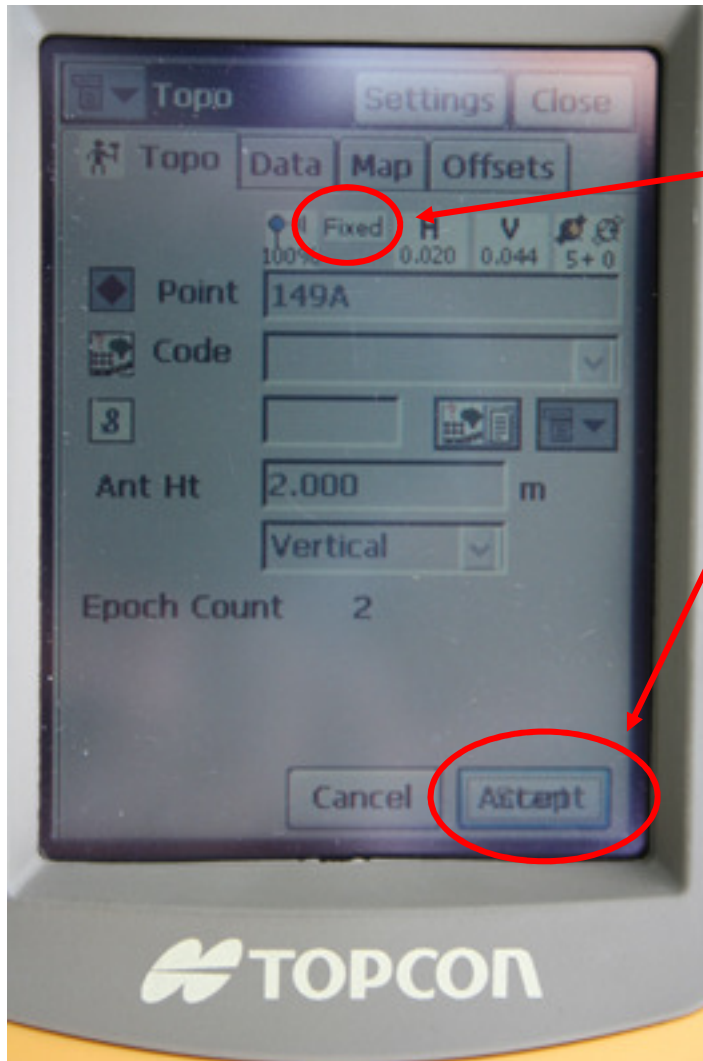


19. After connected with the mount point successfully, the mount point information will be shown on the screen, then click "Close" icon.

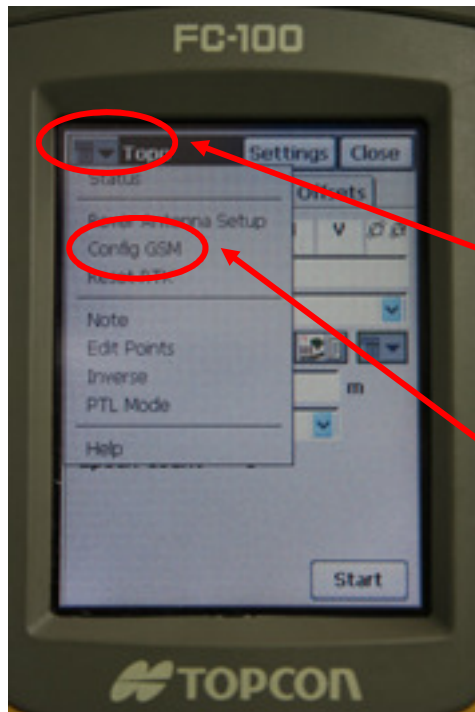


20. Position the Hiper+ receiver on a survey point and click “Start” while “Fixed” solution is shown.

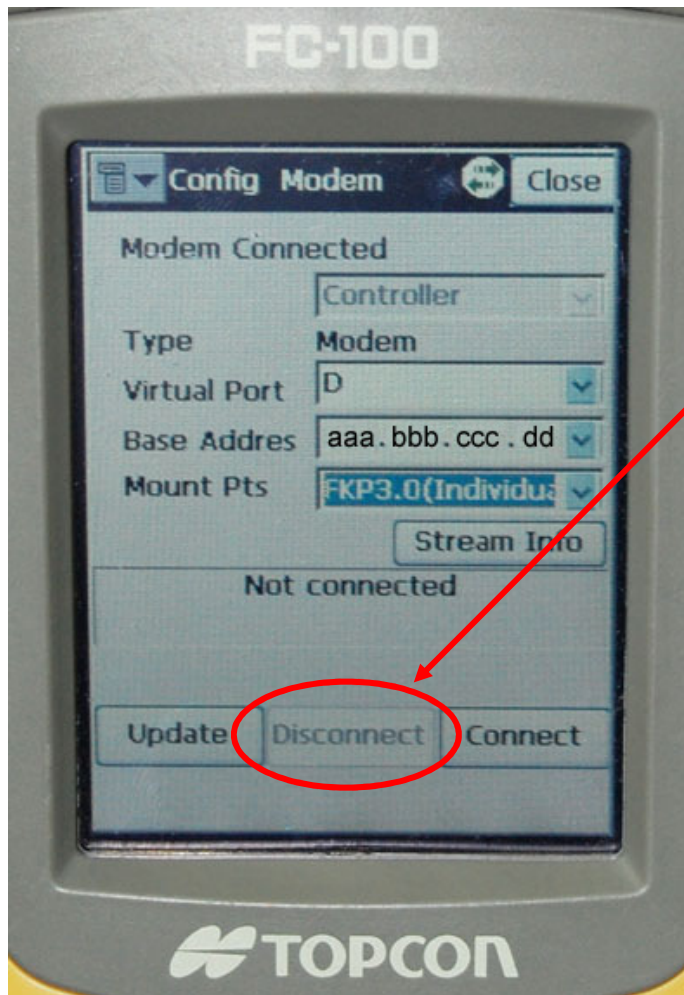
Re: “Auto” or “Float” will be shown when there is no “Fixed” solution.



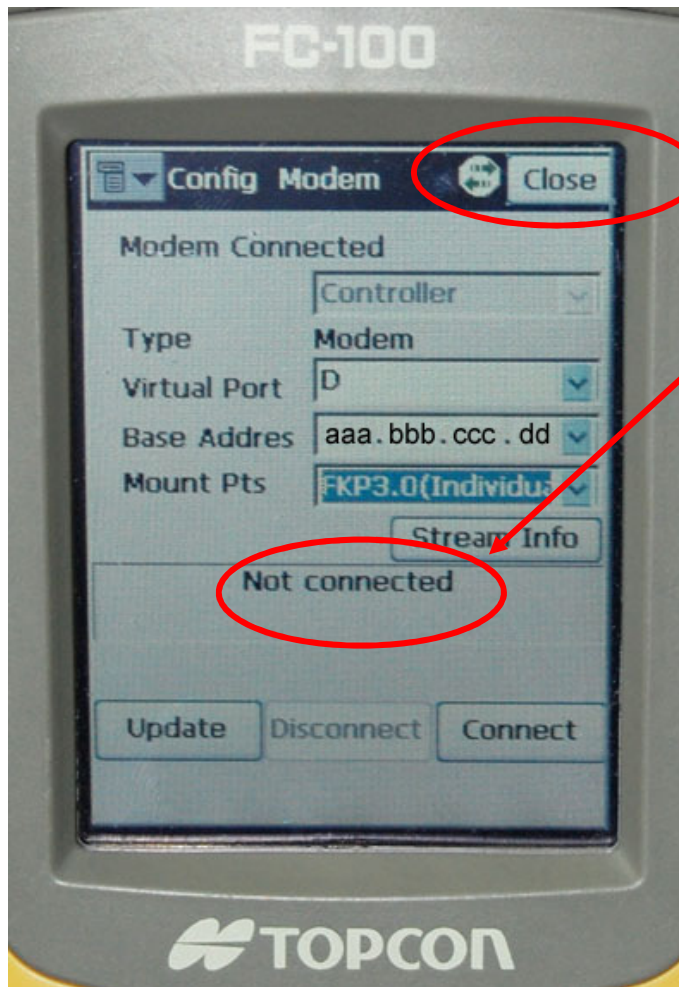
21. Click “Accept” icon to record measured coordinates or wait until Epoch count has been finished. The measured coordinates will be saved automatically if the solution is “Fixed”.



22. After completing all the survey, click the “☰” icon to disconnect NTrip function. Choose “Config GSM”.



23. Click the  
“Disconnect”  
icon.

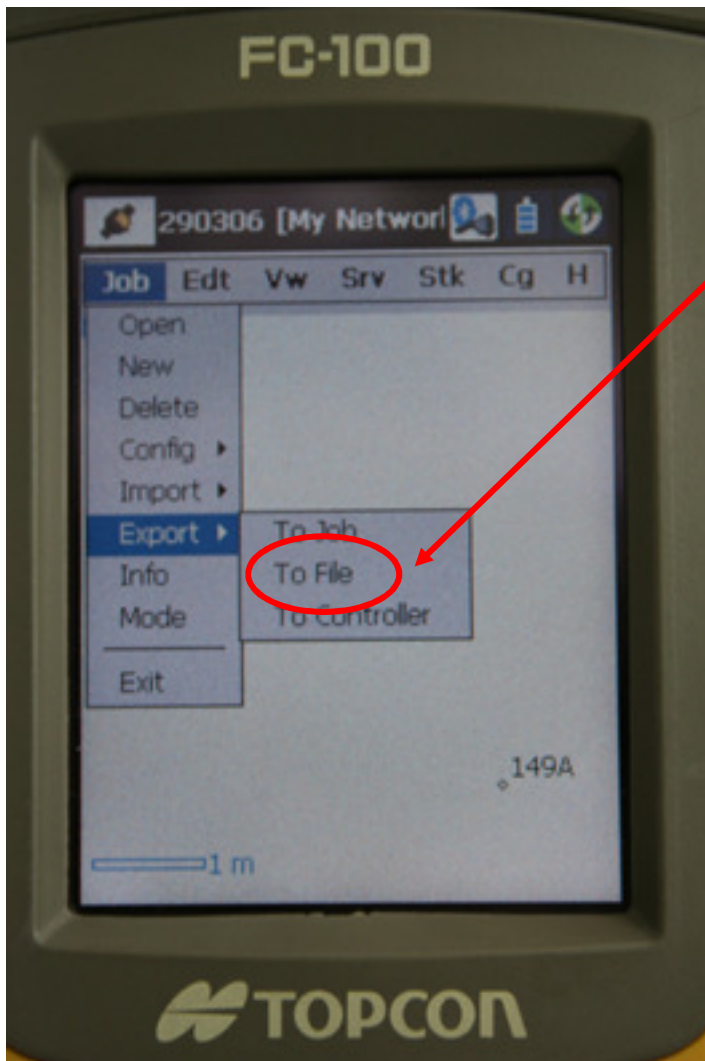


24. Wait until “Not connected” is displayed. The NTrip is disconnected. Click “Close” to continue.

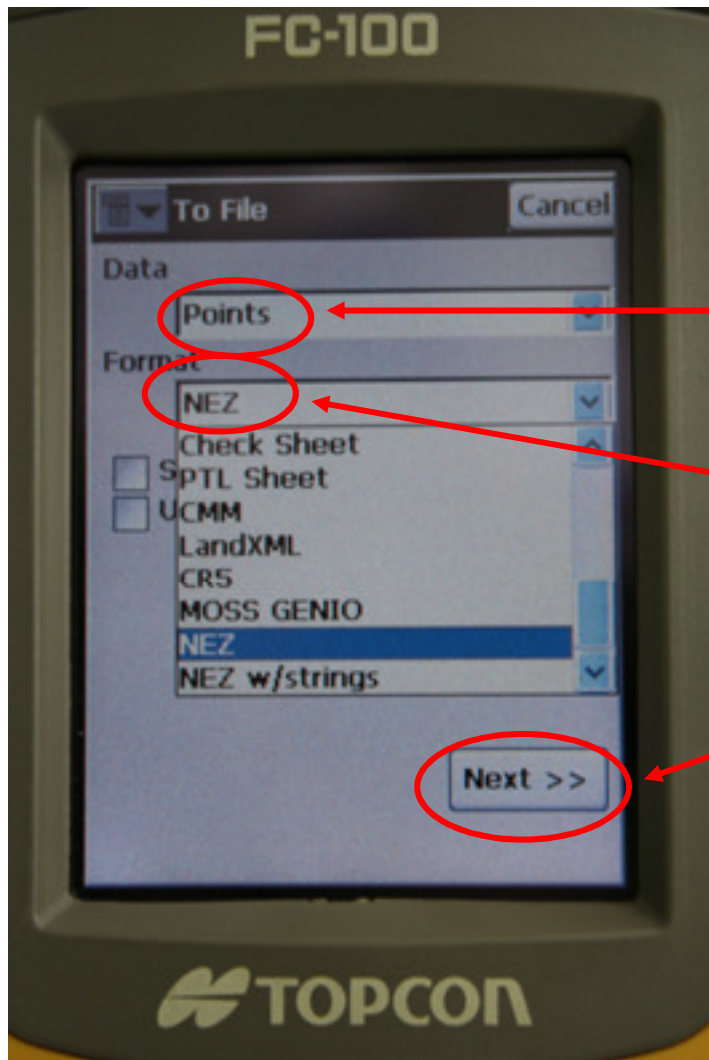


25. Click the “Close” icon to return to the Main Page.

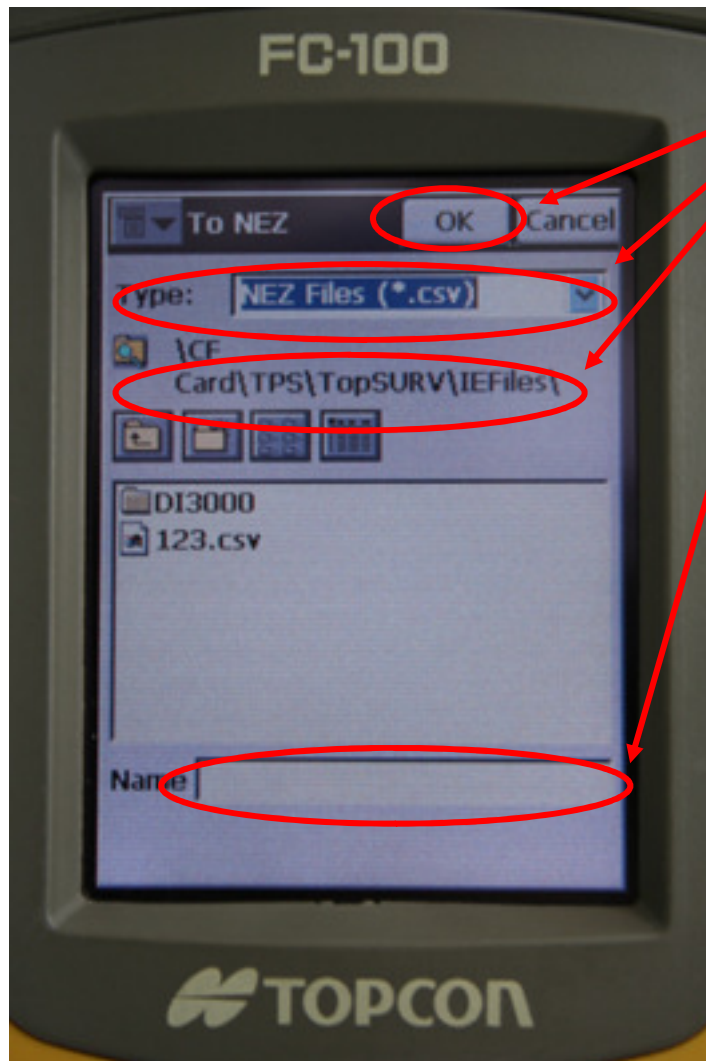
# Exporting Survey Data



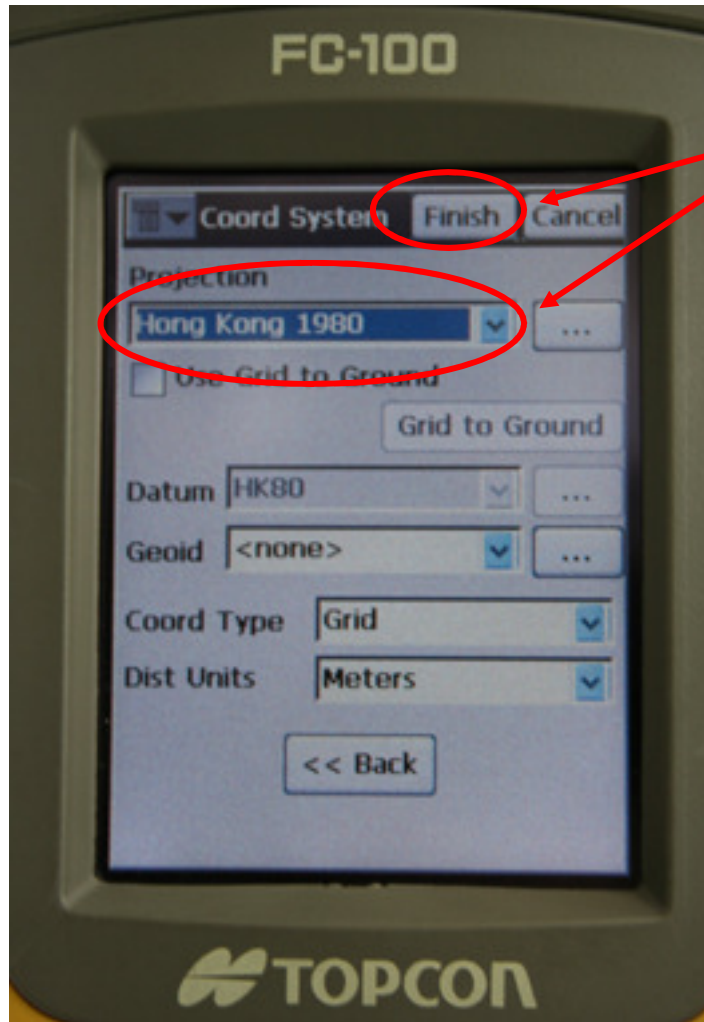
26. In Main Page, choose Export to File under the “Job” menu



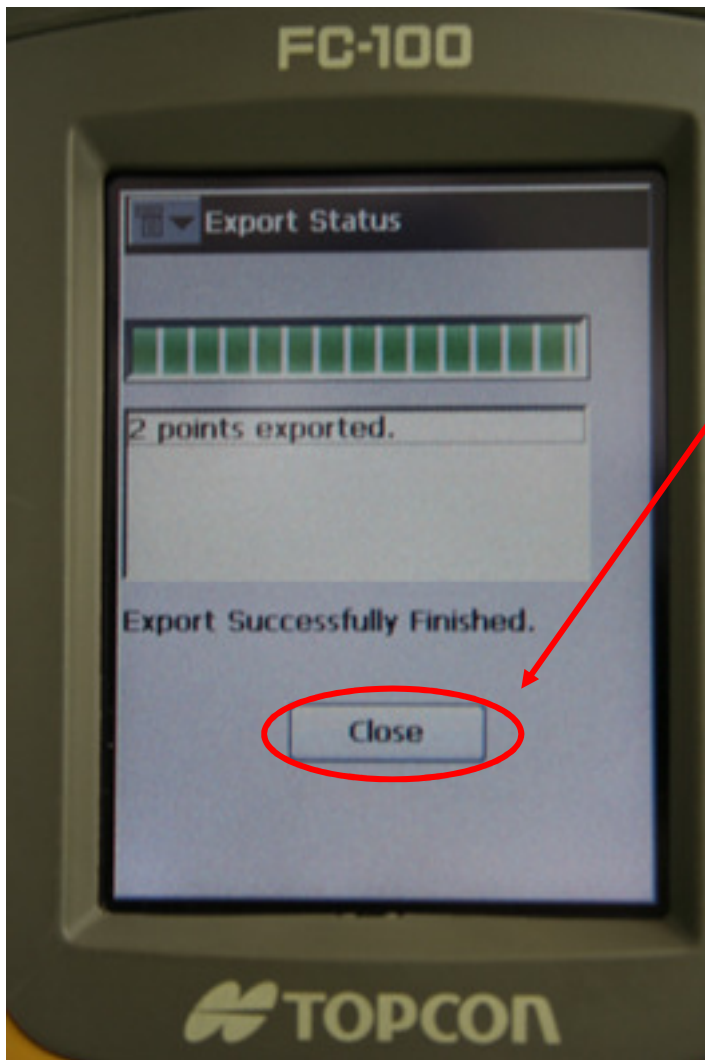
27. In “To File” page, set Data Type as “Point” and Format as “NEZ”, then click the “Next” icon.



28. Choose the destination path for saving the file. (Data can be saved in internal memory of the Field Controller or in memory card (SD Card). After inputting the “file name” in Name field, click the “OK” icon.



29. In Coord System Page, choose HK80 Coordinates System or other desired coordinates systems, then click the “Finish” icon.



30. After all data have been exported, click the “Close” icon to end the export function. Data file can be opened and edited using any word processor.

ENJOY!