

XF2 Data Controller – Enable Internal GPS Module

Part Number 874-0305-000 Released: February 13, 2013

Overview

This document describes how to enable and use the internal GPS module in the XF2 data collector. It describes how to select the COM Ports and Baud rates to output GPS data from the XF2's internal GPS module to software programs installed on the XF2 data controller that can include the u-Center Mobile GPS Evaluation software and the Carlson SurvCE software.

Equipment and Software Required:

- Hemisphere GPS XF2 Data Collector, Part Number: 940-2097-000
- Carlson SurvCE software, Part Number: 750-2008-000
- u-Blox u-Center Mobile software

The free ublox Mobile Terminal Application – GPS Evaluation software can be downloaded from the following link: <http://www.u-blox.com/en/evaluation-tools-a-software/u-center/u-center-mobile.html>

Unzip and install the ublox mobile u-Center software onto the XF2 using the USB cable and Windows Mobile Device Center software.

The Carlson SurvCE software can be downloaded from the following link:

<http://www.hemispheregps.com/Products/SurveyConstruction/S320LandingPage/tabid/640/Default.aspx>

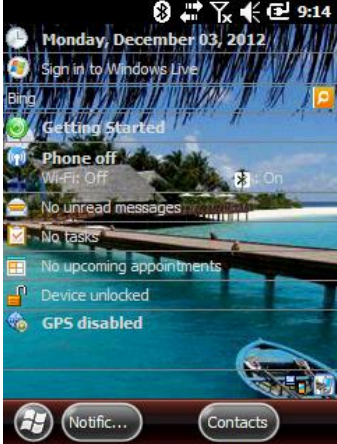


From the S320 Landing page, the SurvCE software can be downloaded from the **Resources, XF Series Data Collectors** area.


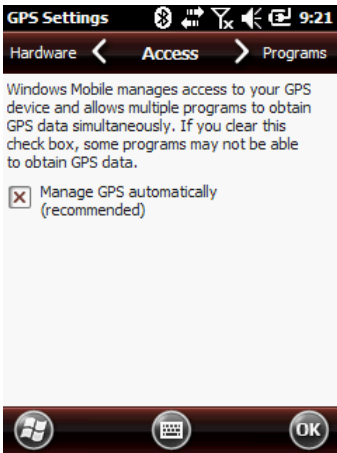
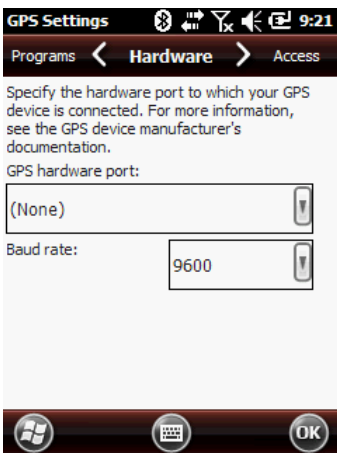
- **SurvCE Software Download for XF2 (English and Spanish)**

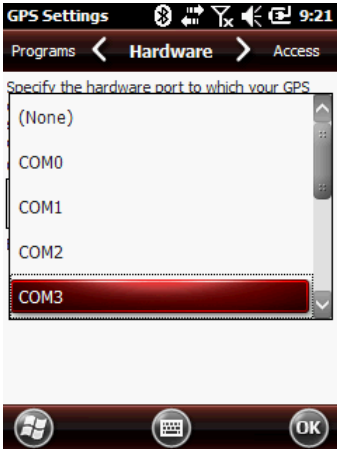
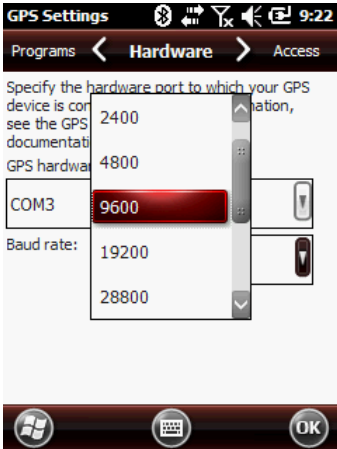
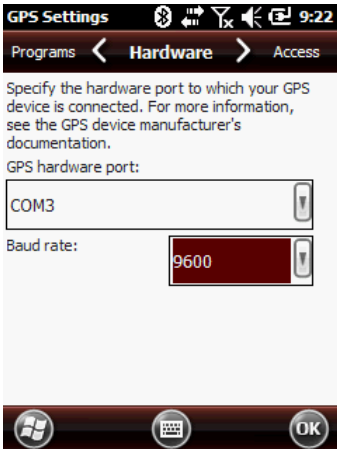
For the XF2 Data Collector, download the file: XF2_SurvCE_ENG_SPA.zip

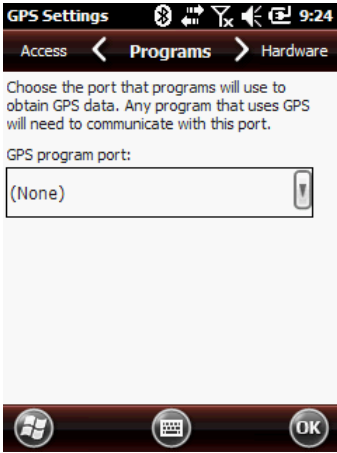
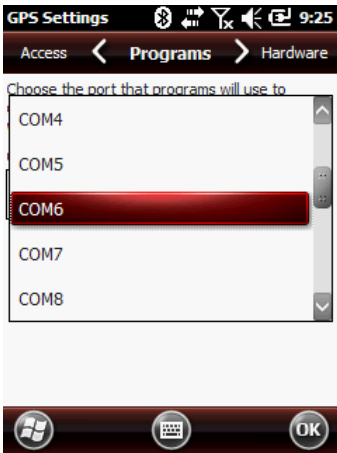
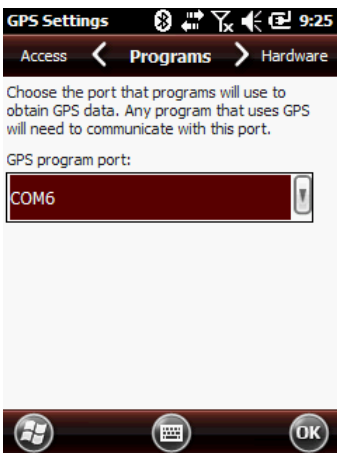
Unzip and install the Carlson SurvCE software in the preferred language onto the XF2 using the USB cable and Windows Mobile Device Center software.

Procedure

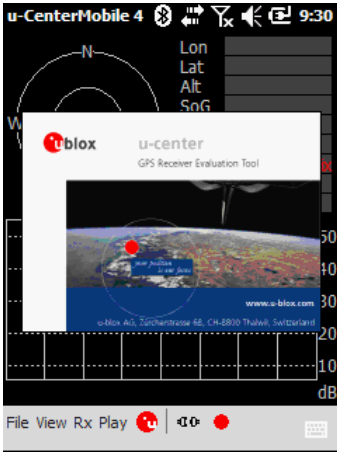
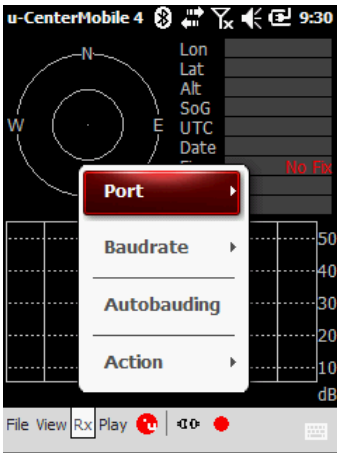
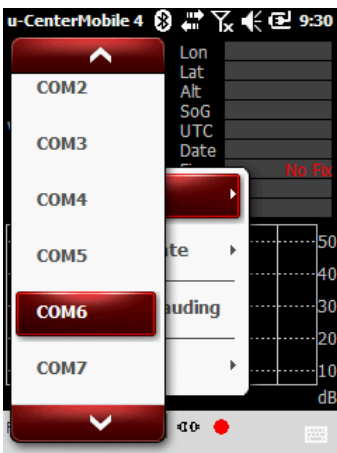
Screenshot or Graphic	Step
	<ol style="list-style-type: none"> 1. Press the Power button the XF2 data collector, turning the XF2 unit On, 2. From the Windows Mobile Desktop, tap/select the Windows Start icon on the lower left corner of the task bar,
	<ol style="list-style-type: none"> 3. From the Start menu, navigate to the Settings icon, tap/select Settings,
	<ol style="list-style-type: none"> 4. From the Settings menu, navigate to the System icon, tap/select System,

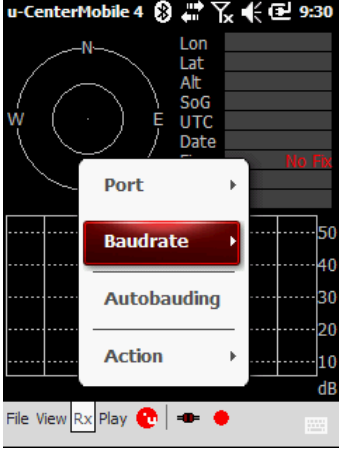
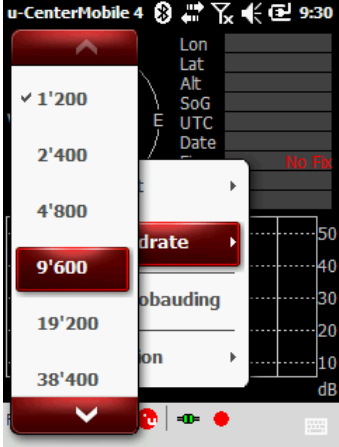
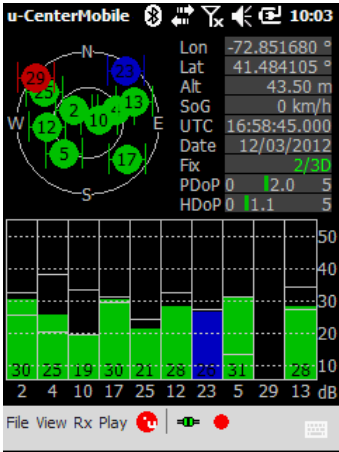
Screenshot or Graphic	Step
	<p>5. From the System menu, navigate to the External GPS icon, tap/select External GPS,</p>
	<p>6. From the GPS Settings menu, select the <Access> menu,</p> <p>7. Activate the [X] Manage GPS automatically (recommended) option,</p>
	<p>8. From the GPS Settings menu, select the <Hardware> menu,</p> <p>From GPS hardware port: (none) option, tap/select the down-arrow to reveal the COM port options,</p>

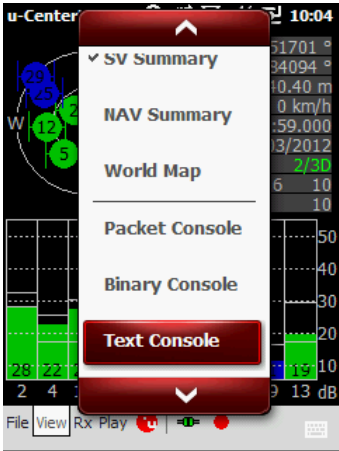
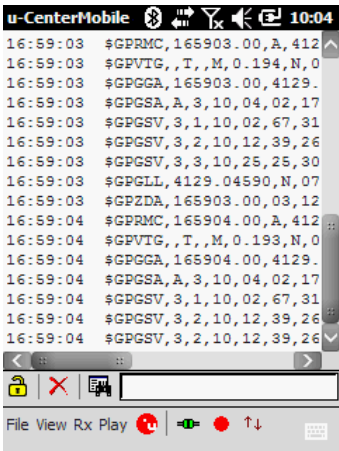
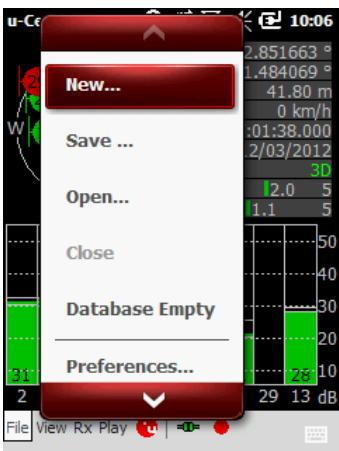
Screenshot or Graphic	Step
 <p>The screenshot shows the 'GPS Settings' application with the 'Hardware' tab selected. A list of COM ports is displayed, with 'COM3' highlighted in red. The status bar at the top shows the time as 9:21.</p>	<p>9. From the GPS Hardware port: COM port options, tap/select COM3,</p>
 <p>The screenshot shows the 'GPS Settings' application with the 'Hardware' tab selected. The 'COM3' port is selected. A list of Baud rate options is displayed, with '9600' highlighted in red. The status bar at the top shows the time as 9:22.</p>	<p>10. From the GPS Hardware port: Baud rate: option, tap/select the down-arrow to reveal to Baud rate options, select 9600,</p>
 <p>The screenshot shows the 'GPS Settings' application with the 'Hardware' tab selected. The 'GPS hardware port' is set to 'COM3' and the 'Baud rate' is set to '9600'. The status bar at the top shows the time as 9:22.</p>	<p>11. GPS Settings <Hardware> GPS hardware port: COM3 Baud rate: 9600</p>

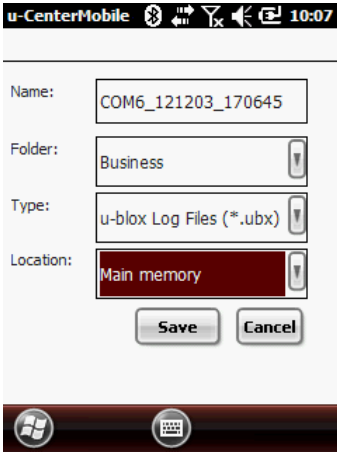
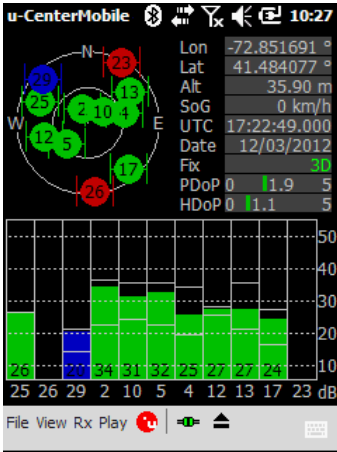
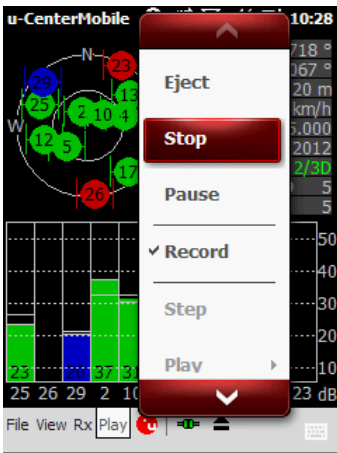
Screenshot or Graphic	Step
 <p>The screenshot shows the 'GPS Settings' application with the 'Programs' menu selected. The 'GPS program port' is currently set to '(None)'. The interface includes a status bar at the top with the time 9:24 and a task bar at the bottom with an 'OK' button.</p>	<p>12. From GPS Settings menu, select <Programs> menu,</p> <p>From GPS program port: (none), tap/select the down-arrow to reveal the Port options,</p>
 <p>The screenshot shows the 'GPS Settings' application with the 'Programs' menu selected. A list of COM ports is displayed, with 'COM6' highlighted in red. The interface includes a status bar at the top with the time 9:25 and a task bar at the bottom with an 'OK' button.</p>	<p>13. From the GPS Program Ports options, tap/select COM6</p>
 <p>The screenshot shows the 'GPS Settings' application with the 'Programs' menu selected. The 'GPS program port' is now set to 'COM6'. The interface includes a status bar at the top with the time 9:25 and a task bar at the bottom with an 'OK' button.</p>	<p>14. GPS Settings <Programs> menu GPS program port: COM6</p> <p>Tap/Select the OK button on the task bar.</p>

Screenshot or Graphic	Step
	<p>15. User is returned to the System menu, Tap/Select the (X) icon on the task bar.</p> <p>The user will be returned to the Windows Mobile Desktop.</p> <p>This completes the required steps to enable the internal GPS module on the XF2 data controller.</p>
	<p>The following steps describe how to view GPS satellite data and record log files in the u-Center Mobile software.</p> <p><i>The following steps presume the u-Center Mobile software has already been installed on the XF2 data collector.</i></p> <ol style="list-style-type: none"> 1. From the Windows Mobile Desktop, tap/select the Windows Start icon on the lower left-corner of the task bar,
	<ol style="list-style-type: none"> 2. From the Start menu, navigate to the u-Center Mobile icon, tap/select u-Center Mobile,

Screenshot or Graphic	Step
	<p>3. U-Center Mobile 4 splash screen,</p>
	<p>4. From the u-Center Mobile 4 software, From the task bar menu along the bottom of the display, tap/select RX menu, The RX menu will pop-open, Tap/Select Port ></p>
	<p>5. From the Port > menu Browse the Ports list, select COM6</p>

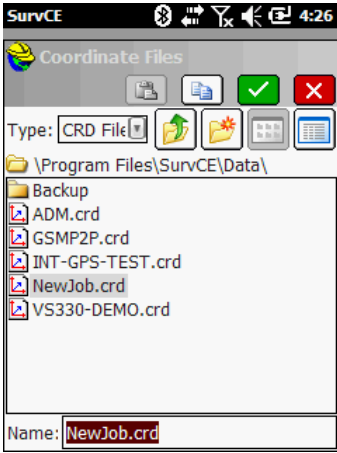
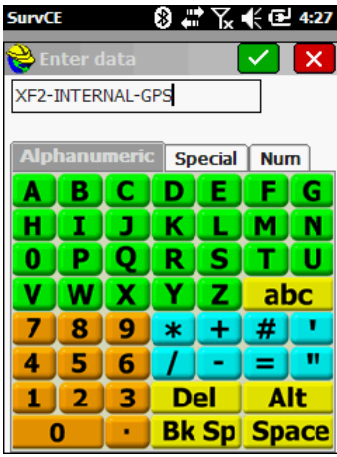
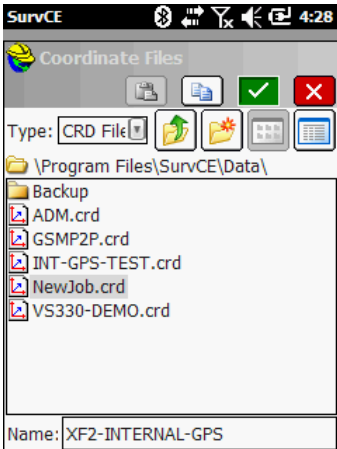
Screenshot or Graphic	Step
 <p>The screenshot shows the u-Center Mobile 4 interface. At the top, there's a status bar with 'u-CenterMobile 4', signal strength, location, and time '9:30'. Below is a circular compass-like display with 'N', 'E', 'S', 'W' labels. To the right, a list of GPS parameters is shown: Lon, Lat, Alt, SoG, UTC, Date. A 'No Fix' indicator is visible. A menu is open over the display, with 'Port' at the top, 'Baudrate' highlighted in red, 'Autobauding', and 'Action' below. At the bottom, there are icons for 'File', 'View', 'Rx', 'Play', and a red dot.</p>	<p>6. From the u-Center Mobile 4 software, From the task bar menu along the bottom of the display, tap/select RX menu, The RX menu will pop-open, Tap/Select Baudrate ></p>
 <p>This screenshot shows the 'Baudrate' menu expanded. The list of baud rates includes: 1'200 (checked), 2'400, 4'800, 9'600 (highlighted in red), 19'200, and 38'400. The background interface is partially visible, showing the same parameters as the previous screenshot.</p>	<p>7. From the Baudrate > menu, Browse the list, select 9600</p>
 <p>The screenshot shows the u-Center Mobile software with a successful GPS fix. The top status bar shows 'u-CenterMobile', signal strength, location, and time '10:03'. The circular display now shows satellite signals with green and blue icons. The GPS parameters list includes: Lon: -72.851680, Lat: 41.484105, Alt: 43.50 m, SoG: 0 km/h, UTC: 16:58:45.000, Date: 12/03/2012, Fix: 2/30, PDOP: 0 2.0 5, HDOP: 0 1.1 5. Below the parameters is a bar chart showing signal strength for various satellites. At the bottom, there are icons for 'File', 'View', 'Rx', 'Play', and a red dot.</p>	<p>8. The u-Center Mobile software will connect to the internal GPS module in the XF2 data controller. The user should observe live/active GPS data being displayed in SV Summary menu. Note the Green (active) connection icon on the task bar. To disconnect from the internal GPS module, tap on the connection icon on the task bar. The connection icon will separate, disconnect from the internal GPS module. To restore the connection, simply tap on the connection icon again. This will refresh the display.</p>

Screenshot or Graphic	Step
	<p>9. From the u-Center Mobile software, From the task bar menu along the bottom of the display, tap/select View menu, The View menu will pop-open, Browse the list, select Text Console,</p>
	<p>10. Example Text Console display, The current GMT time with corresponding NMEA message sentences are displayed. The NMEA messages include: GSA,GSV,GLL,ZDA,GGA and VTG.</p> <p>To change the View, tap/select View on the task bar menu, select SV Summary, or select other available views,</p>
	<p>11. To capture Log Files from the internal GPS module in the XF2, tap/select File from the task bar menu,</p> <p>Note, the Log files consist of a series of NMEA messages output by the internal GPS module.</p> <p>12. From the File menu, browse the list, select New...</p>

Screenshot or Graphic	Step
	<p>13. New File configuration menu,</p> <p>Name: S/w automatically names the file: COM6_MMDDYYR_GPS Seconds of the Week format. The filename can be change by the user if required.</p> <p>Folder: tap down-arrow to select Folder.</p> <p>Type: u-blox Log Files (*.ubx)</p> <p>Location: Select from options: Main memory or Storage Card</p> <p>Note: If Storage Card option is selected, the user must insert a Micro SD-Card into the XF2 battery compartment.</p> <p>Tap/Select Save</p> <p>Log File is opened and stored in specified folder location.</p>
	<p>14. From the SV Summary display, note the Green connection (Active) icon and the Record File icon on the task bar.</p>
	<p>15. To stop the data collection, close the Log file, on the task bar tap/select Play</p> <p>Browse the list, select Stop.</p> <p>Alternatively, the user can also tap/select the Play icon on the task bar, toggling the icon to Stop.</p>

Screenshot or Graphic	Step
	<p>16. From the SV Summary menu,</p> <p>Note the u-Center Mobile is still connected to the internal GPS module green (active) connection icon, but the software is not currently logging a file; the red circle icon is displayed on the task bar.</p> <p>To start a new Log file, tap the Red circle icon on the task bar, the new file menu will be displayed to the user, tap/select Save, a new log file will be opened, NMEA messages recorded into the log file.</p>
	<p>17. To exit from the u-Center Mobile software, tap/select File, browse the list, select Exit</p> <p>18. The user is returned to the Windows Mobile Desktop.</p> <p>19. If needed, the u-Center Mobile Log files can be copied from the XF2 data controller to the office PC using USB cable and Windows Mobile Device Center software.</p>
	<p>1. The following steps describe the steps to output data from the XF2's internal GPS module to the Carlson SurvCE software.</p> <p><i>The following steps presume the Carlson SurvCE software has already been installed on the XF2 data collector.</i></p> <p>2. From the Windows Mobile Desktop, tap/select the Windows Start icon on the lower left-corner of the task bar,</p>

Screenshot or Graphic	Step
	<p>3. From the Start menu, navigate to the SurvCE icon, tap/select SurvCE,</p>
	<p>4. Carlson SurvCE splash screen,</p>
	<p>5. From the File menu, Select from the two available options, <u>C</u>ontinue Last Job <u>S</u>elect New/Existing Job,</p> <p>In this Example, choose: Tap/select Select New/Existing Job</p>

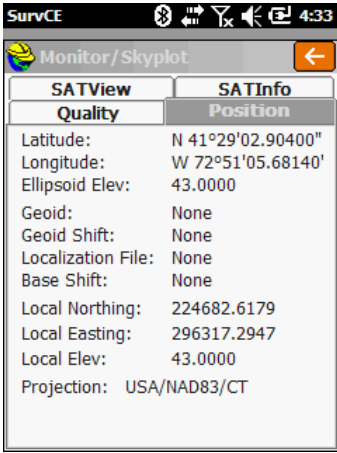
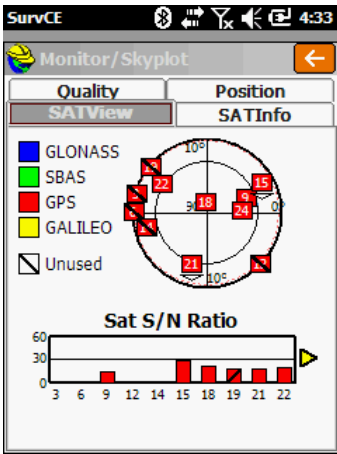
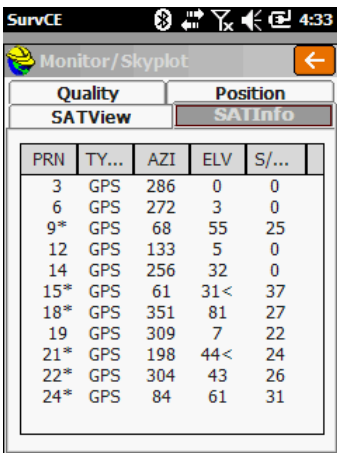
Screenshot or Graphic	Step
	<p>6. From the Coordinate Files menu Tap/Select into the Name: template,</p>
	<p>7. The virtual keyboard will pop-open, Using the stylus, tap into the Name template, enter a new job name, when finished entering a suitable job name, tap the green check mark, the virtual keyboard will close.</p>
	<p>8. From the Coordinate Files menu, Name: XF2-Internal-GPS The name of the new job has been entered, tap the green check mark again, Select the Linear Units for the new job. In this example: Metric was selected.</p>

Screenshot or Graphic	Step
	<p>9. From the Job Settings System menu, Projection: tap/select the down-arrow to select a previously used Projection.</p> <p>If the Projection you need is not available from the drop-down menu; tap/select on the Edit Projection List, then tap/select the Add Predefined menu button, set the Country: (in this example) USA/NAD83,</p> <p>Browse the list of States/Zones, select the Projection needed for your project, then tap/select the green check mark. Tap/select the green check mark again to save the Job Settings.</p>
	<p>10. User is returned to the SurvCE main menu,</p> <p>11. Select the Equip 3 GPS Rover menu,</p>
	<p>12. From the GPS Rover Current menu, Select the following options,</p> <p>Manufacturer: NMEA GPS Receiver</p> <p>Model: defaults to NMEA GPS Receiver,</p>

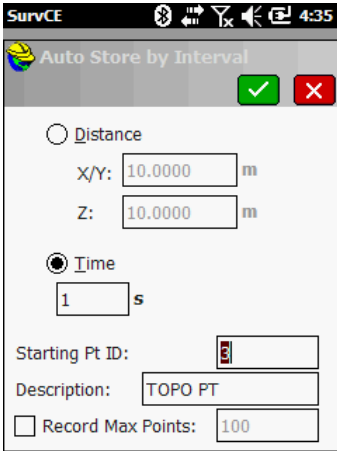
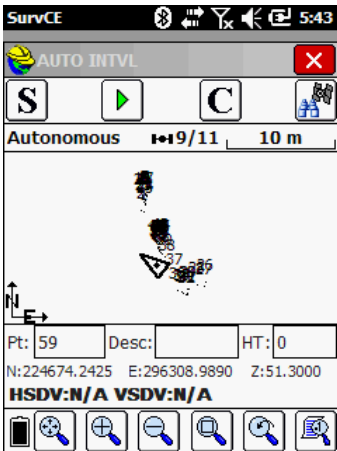
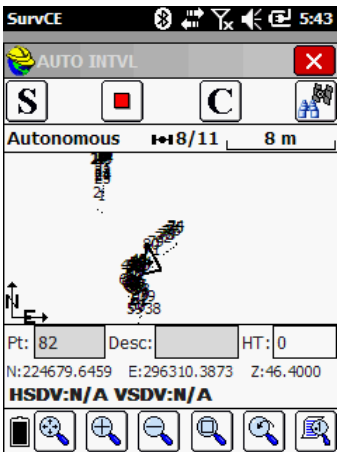
Screenshot or Graphic	Step
	<p>13. From the GPS Rover Comms menu, Select the following options,</p> <p>Type: Cable</p> <p>Port: COM 6</p> <p>Baud: 9600 Parity: None</p> <p>Stop Bits: 1 Data Bits: 8</p>
	<p>14. From the GPS Rover Receiver menu, Select the following options:</p> <p>[Unknown] Unknown</p> <p>(•) Vertical</p> <p>This sets the antenna model for the GPS Rover. In this case, it's best to select the Unknown GPS antenna model. The GPS antenna is an internal antenna inside the XF2 data collector.</p> <p>Tap the Green check mark to accept these settings and continue...</p>
	<p>15. Configuring rover display...</p> <p>Connected to NMEA GPS Receiver</p>

Screenshot or Graphic	Step
	<p>16. User is returned to the Equip menu</p> <p>17. Select Equip 5 Configure,</p>
	<p>18. From the Configure General menu,</p> <p>19. Un-check the option for Store Fixed Only (GPS).</p> <p>This setting applies only for RTK surveying, when the user only wants to store Fixed RTK measurements.</p> <p>When using the Internal L1 only GPS module, (NMEA GPS Receiver), the accuracies will be at Autonomous GPS level, not differentially corrected.</p> <p>Set No. Readings to Average for GPS: 1</p> <p>Tap the Green check mark to save settings and continue.</p>
	<p>20. User is returned to the Equip menu</p> <p>21. Select Equip 8 Tolerances,</p>

Screenshot or Graphic	Step
	<p>22. From the Tolerances menu,</p> <p>Set reasonable HRMS, VRMS and Stakeout Tolerances for the NMEA GPS Receiver equipment currently being used.</p> <p>In this example,</p> <p>HRMS Tolerance: 3.000 m</p> <p>VRMS Tolerance: 5.000 m</p> <p>Stakeout Tolerance: 3.000 m</p> <p>Note: the RMS values may not be available from the currently selected GPS</p> <p>Tap the Green check mark to save settings and continue,</p>
	<p>23. User is returned to the Equip menu,</p> <p>24. Select Equip Z Monitor/Skyplot,</p> <p>In this menu, the user will be able to confirm the NMEA GPS Receiver is sending data into SurvCE; the user can view the Quality, Position, SATView and SATInfo menus to confirm the NMEA data streams.</p>
	<p>25. From the Monitor/Skyplot Quality menu,</p> <p>The Status: Autonomous</p> <p>Latency: 0 Date: 12/03/2012</p> <p>Satellites: 4/11 Time: 16:27:53.0</p> <p>Local Northing, Local Easting, Local Elev</p> <p>HDOP, TDOP, VDOP, GDOP, PDOP</p> <p>HRMS: N/A</p> <p>VRMS: N/A</p>

Screenshot or Graphic	Step																																				
 <p>SurvCE 4:33</p> <p>Monitor/Skyplot</p> <table border="1"> <thead> <tr> <th>SATView</th> <th>SATInfo</th> </tr> <tr> <th>Quality</th> <th>Position</th> </tr> </thead> <tbody> <tr> <td>Latitude:</td> <td>N 41°29'02.90400"</td> </tr> <tr> <td>Longitude:</td> <td>W 72°51'05.68140"</td> </tr> <tr> <td>Ellipsoid Elev:</td> <td>43.0000</td> </tr> <tr> <td>Geoid:</td> <td>None</td> </tr> <tr> <td>Geoid Shift:</td> <td>None</td> </tr> <tr> <td>Localization File:</td> <td>None</td> </tr> <tr> <td>Base Shift:</td> <td>None</td> </tr> <tr> <td>Local Northing:</td> <td>224682.6179</td> </tr> <tr> <td>Local Easting:</td> <td>296317.2947</td> </tr> <tr> <td>Local Elev:</td> <td>43.0000</td> </tr> <tr> <td>Projection:</td> <td>USA/NAD83/CT</td> </tr> </tbody> </table>	SATView	SATInfo	Quality	Position	Latitude:	N 41°29'02.90400"	Longitude:	W 72°51'05.68140"	Ellipsoid Elev:	43.0000	Geoid:	None	Geoid Shift:	None	Localization File:	None	Base Shift:	None	Local Northing:	224682.6179	Local Easting:	296317.2947	Local Elev:	43.0000	Projection:	USA/NAD83/CT	<p>26. From the Monitor/Skyplot Position menu,</p> <p>The Latitude, Longitude and Ellipsoid Elev are coordinates displayed.</p> <p>Local Northing, Local Easting and Local Elev coordinates are displayed.</p> <p>Selected Projection is displayed.</p>										
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Screenshot or Graphic	Step
	<p>29. The user is returned to the SurvCE main menu,</p> <p>30. The user can start collecting data,</p> <p>31. Select Survey 1 Store Points,</p>
	<p>32. From the Store Points menu, Enter a starting PT: number Enter a Description: Leave the HT: 0000 m When ready to Store the Point/Feature, Tap/Select the [S], or Store button, Continue storing Points/Features as needed, When finished Storing Points, tap/select the Red [X] button in the upper right corner of the menu,</p>
	<p>33. If the user wants to store a continuous line or trajectory,</p> <p>34. Select Survey 6 Auto by Interval menu,</p>

Screenshot or Graphic	Step
	<p>35. From the Auto Store by Interval menu, Select from the two available options: <u>D</u>istance or <u>T</u>ime method,</p> <p>In this example, to get best data coverage, select the Time option</p> <p>Enter a 1-second time interval,</p> <p>Enter a Starting PT ID and Description,</p> <p>Tap the Green check mark to save settings and start the Auto Store,</p>
	<p>36. From the Auto INTVL menu,</p> <p>Note the Green [>] icon, this indicates the Auto INTVL is active, storing points every second...</p> <p>Points stored are displayed in the Map view screen,</p> <p>Tap the [C] icon, or Configure to control what information is displayed in the Map View,</p> <p>To stop the Auto INTVL Store Pts, tap/Select the Green [>] arrow, this will stop the Auto INTVL Store Pts, it will toggle the icon to a Red [■]</p>
	<p>37. From the Auto INTVL menu,</p> <p>If the Red [■] icon is displayed, no Auto INTVL points are being stored.</p> <p>To start the Auto INTVL again, tap/Select the [■] icon again, it will toggle the icon to [>] again, resume storing Auto INTVL points again.</p> <p>If the user is finished storing Auto INTVL points, tap/Select the Red [X] in the upper right corner of the menu.</p>

Screenshot or Graphic	Step
	<p>38. User is returned to the main menu, 39. To exit SurvCE, select File 0 Exit,</p>
	<p>40. SurvCE confirmation message, Are you sure you want to exit? Select Yes or No</p> <p>In this example, Yes was selected, The user is returned to the windows Mobile Desktop.</p>
	<p>The data files from the SurvCE software can be copied from the XF2 to the office PC using the USB cable and Windows Mobile Device Center software.</p> <p>The SurvCE data files can be found on the XF2 \Program Files\SurvCE\Data folder.</p> <p>Files to copy: CurrentJobName with file extensions: .crd,.inf, .ref, .rw5, .sys</p>



Further Information

The Precision Products Technical Support team in Scottsdale has coordinated defining these Quick Reference Guides. You can contact Precision Products Technical Support at techsupport@hemispheregps.com for further information.

This document is provided for technical support purposes only. Refer to the product documentation for warranty, license, and safety information associated with the product.

Notes: