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Using Cellular Modems

Using Cellular Modems with Survey Controller

This document contains updated information on using cellular modems with the Trimble Survey Controller software. The information supplied here replaces the information distributed in the Survey Controller Help. It is available in English only.

The individual HTM files can be uploaded to the controller using Microsoft ActiveSync, replacing the existing files.

Cellular Modem – Overview

In a real–time survey, you can use a cellular modem as the corrections data link between the base and the rover receivers. You can also use the cellular modem to connect to the Internet to exchange data and e–mail, and to receive Internet based real–time corrections. For information on connecting to an Internet Service Provider (ISP), refer to the Windows CE Help on the controller.

To use a cellular modem to connect the controller to the Internet, see Connecting to the Internet.

To use a cellular modem in an Internet real–time survey, configure the base and rover radio as an Internet connection when you create or edit a Survey Style. The cellular modem must support an Internet connection.

To use a cellular modem in a dial–up real–time survey, configure the base and rover radio as a cellular modem when you create or edit a Survey Style. The modem must support Hayes compatible AT commands.

Configuring a Survey Style for a Dial–up Real–Time Survey

Before you start a survey using a cellular modem that is connected to the controller with Bluetooth:

1. Make sure that the phone is connected and paired to the controller.
2. Select Configuration / Controller / Bluetooth. In the Connect to radio field, set the name of the paired cellular modem.

To configure the base/rover radio for a cellular modem that uses a dial–up (circuit switched) connection to another modem:

1. From the main menu, select Configuration / (Selected Survey Style) / Base/Rover radio.
2. In the Type field, select Cellular modem.
3. If you are connecting the cellular modem directly to the controller using a cable or Bluetooth, select the Route through SC check box.

4. If you are configuring a rover modem, enter the phone number of the base station modem. Do one of the following:

♦ From the Name to dial field, tap the field menu (right arrow) button to access a directory of numbers to dial.
♦ From the Number to dial field, key in the phone number.

The following table shows cellular modem commands and information.

Field	Information required	Functions of command
Modem PIN (optional)	Number (4 digit).	Unlocks cellular modem.
Init string (optional)	Command **Note** – For the base modem, the command must leave the modem in auto–answer mode. Alternatively, set the auto–answer mode separately, using a Terminal program.	Starts communication and sets up modem options.
Hang up	Command	Ends communication.
Dial prefix	Command	Command used to initiate dialing number.
Number to dial	Phone number of the base station modem. **Note** – Use a comma (,) to send a short delay, for example, to separate the area code from the number.	–
Dial suffix (optional)	Command	Software sends to the modem after it has dialled the number.
–	**Note** – The Dial prefix, Number to dial, and Dial suffix values are concatenated to send to the modem.	–
Post connect (optional)	Once the connection is established between the base and rover modems, information is sent from the rover to the base. This is usually the log–in name and password. **Note** – Use a carat (^) to send a carriage return and a 3–second delay to the base system. For example, use this to separate a log–in name from a password.	–

For information on starting a Real–time survey using a cellular modem, see:

Starting the Base Receiver

Starting a Real–time Survey using a Cellular Modem

Starting a Wide–Area RTK Survey

Configuring a Survey Style for an Internet Real−Time Survey

To configure the base/rover radio to use an Internet connection:

1. From the main menu, select Configuration / (Selected Survey Style) / Base/Rover radio.
2. In the Type field, select Internet connection.
3. If you are configuring a rover connection, enter the IP address and IP port number of the base station data source.

    Obtain the IP address of the base from the internet GPS correction data provider, or the IP address of the controller (if you are using a controller at the Internet base). To determine the IP address of the controller, open a command prompt [Start/Programs/Utilities/Command Prompt] on the controller and enter [ipconfig /all]. Use the IP address of the highest numbered PPP adapter.

4. If you are configuring a base connection, enter the IP port number the rover will connect to. Enter this same IP port number when you configure the rover Survey Style.

Before starting the survey, make sure that the controller is connected to the Internet. For more information, see Connecting to the Internet.

Connecting to the Internet

To connect to the Internet, you need a cellular modem (typically, a cell phone). The cellular modem can be connected to the controller by Bluetooth or by cable.

To connect by cable, use the cellular modem data cable connected to the serial port on the controller. Then create a new dialing location and dial−up connection.

To connect to the internet using a Bluetooth cellular modem:

A Bluetooth cellular modem can connect to an ACU, or to a TSCe with a BlueCap using Bluetooth.

1. Make sure that Bluetooth is enabled, and that the cellular modem is paired and connected. For more information, see Bluetooth.
2. On the controller, run the application [Bluetooth2Mobile] to associate your phone with Dial−up networking. Double−tap [My computer] and browse to [\Disk\Program Files\Survey Controller\], then double−tap [Bluetooth2Mobile.exe].
3. Select your cellular modem from the drop down list. Tap [Hide] to minimize the application to the toolbar. Then follow the remaining steps below.

To create a new dialing location:

1. On the controller, tap [Start / Settings / Control Panel / Dialing].
2. Tap [New]. Enter an appropriate name for the dialing location. Tap [OK].
3. Tap [Dial patterns].

4. Set the [Local, Long distance, and International calls] fields all to "[g]". Tap [OK].
   This ensures that the controller does not add any automatic long distance or area codes to the number that it dials.

To create a new Dial−up Connection:

1. On the controller, tap [Start / Settings / Control Panel / Network and Dial−up Connections].
2. Double tap [Make new Connection]. Enter a connection name.
3. Make sure that the connection type is set to [Dial−up Connection]. Tap [Next].
4. Do one of the following:
   − If you are using Bluetooth, select [BluetoothDUN].
   − If you are using a cable, select either [Com1: Hayes Compatible] or [Com2: Hayes Compatible].

   Note − Do not change the settings on the [Configure, TC/IP Settings, or Security Settings] softkeys. The windows defaults are correct.

5. Tap [Next].
6. In the [Phone number] dialog, enter the number to dial:
   − If you are dialing a GSM provider (pay by the minute), then enter the number to dial.
   − If you are dialing a GPRS provider (pay by volume of data transferred), enter *99#. The *99# is a standard access code for GPRS. If you are unable to connect using *99#, contact your GPRS provider.

To start the Internet connection:

1. Make sure that the cellular modem is switched on and connected to the controller.
2. On the controller, tap [Start / Settings / Network/Dial−up Connections].
3. Double tap the new connection that you created earlier.
4. If necessary, enter the [User Name] and [Password] required by your GPRS provider to log onto their network. Many providers do not require a user name or password.
5. Tap [Connect].
6. When you are connected, tap [Hide].

Tip − To check that you are connected to the Internet, tap [Start / Programs / Internet Explorer] and visit a website, for example, www.trimble.com

To configure an Internet Real−Time Survey see Configuring a Survey Style for an Internet Real−Time Survey.

Bluetooth

A Trimble controller (ACU, or TSCe with a BlueCap attachment) can be connected to another controller, a 5800 GPS receiver or a cellular modem using Bluetooth.

To configure one controller to connect to another controller:

1. Switch on both controllers.
2. On both controllers, start Trimble Survey Controller and select [Configuration / Controller / Bluetooth] from the main menu.
3. On both controllers, tap Config and make sure that the [Enable Bluetooth] check box is selected.
4. On **one** controller tap [Scan]. (Do not use [Stop] – wait for the scan to complete.) Trimble Survey Controller searches for other Bluetooth devices within range.

   Do not perform a scan on more than one controller at the same time. A Bluetooth device cannot respond if it is scanning.

5. Once the scan is complete, highlight the Bluetooth device to connect to. Tap the −−> softkey to make it a Trusted device.
6. When connecting one controller to another controller, you do not need to Authenticate the device. When the authentication message appears, tap No.
7. On both controllers, tap [OK] to return to the Trimble Survey Controller software.
8. On the controller that is sending the data, select the controller you are sending to in the Send ASCII data to field. Then tap Accept.
9. On the controller that is receiving the data, make sure that the Send ASCII data to field is set to Null.

The controllers are now configured to send and receive ASCII data.

Warning – Bluetooth connections are made between specific Bluetooth devices. If you swap one BlueCap attachment on a TSCe for another attachment, you must perform another Bluetooth Scan.

To configure Trimble Survey Controller to connect to a 5800 GPS receiver:

1. Switch on the receiver and the controller.
2. Start Trimble Survey Controller and select [Configuration / Controller / Bluetooth] from the main menu.
3. Tap Config and make sure that the [Enable Bluetooth] check box is selected.
4. Tap [Scan]. (Do not use [Stop] – wait for the scan to complete.)
   Trimble Survey Controller searches for other Bluetooth devices within range.

   Do not perform a scan on more than one controller at the same time. A Bluetooth device cannot respond if it is scanning.
   A 5800 GPS receiver does not respond to a scan if it is already connected through Bluetooth.

5. Once the scan is complete, highlight the Bluetooth device to connect to. Tap the −−> softkey to make it a Trusted device.
6. When connecting a controller to a 5800 GPS receiver, you do not need to Authenticate the device.

When the authentication message appears, tap No.

7. Tap [OK] to return to the Trimble Survey Controller software.
8. In the Receiver field, select the Trusted Bluetooth device to connect to. Then tap Accept.
   Trimble Survey Controller automatically connects to the 5800 GPS receiver within a few seconds.

Note – Unless you change the Receiver drop–down to None, you do not need to use the scan function again. The controller connects to the receiver automatically when you switch on both devices.

Warning – If you are using a TSCe, do not connect or remove the Bluecap when the TSCe is switched on. The connection to a Bluetooth devices could break and you may need to perform a soft reset on the TSCe to reconnect.

To configure Trimble Survey Controller to connect to a Bluetooth cellular modem:

1. Follow steps 1 to 5 above.
2. Once you make the Bluetooth cell phone a Trusted device, an authentication message appears on the controller. Tap [Yes]. The [Enter Pin] dialog appears.
3. Ensure Bluetooth is enabled on your cell phone. Where applicable, enable it to be Discoverable and Connectable or ready for Pairing. This process is different for each make of cell phone. For more information, refer to the cell phone documentation.
   When the Add to paired device message appears on the cell phone, tap Yes.
4. Enter the same Pin on the cell phone and the controller.
   When pairing is successful, a confirmation message appears on the cell phone and the controller is added to the list of paired devices. The cell phone is added to the list of trusted devices on the controller.
5. Tap [OK] to return to the Trimble Survey Controller software.

To connect to the Internet, you must create a dialing location and start a GPRS connection. For more information see Connecting to the Internet

To use a cellular modem for real–time surveying, see Using cellular modems

Using Microsoft CE Windows Explorer to send files between controllers

You can use Microsoft CE Windows Explorer to transfer any type of file between controllers, using Bluetooth, Infrared (IrDA), a serial cable, or a network cable (TCP/IP).

To configure the transfer method:

1. Tap [Start / Programs / Communication / File Transfer].
2. Tap [Settings].
3. To be asked which transfer method to use each time you transfer a file, select [Always ask which transport to use].
4. To use the same transfer method each time, select [Always connect using:], and use the [Choose] softkey to select your transfer method.
5. Configure the other options as appropriate.

Before you can transfer files using Bluetooth, you must configure the Bluetooth devices, to do this:

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1. On both controllers, tap Start / Settings / Control Panel / Bluetooth Device Properties.
2. On both controllers, make sure that the [Enable Bluetooth] check box is selected.
3. On **one** controller tap [Scan]. (Do not use [Stop] – wait for the scan to complete.) Trimble Survey Controller searches for other Bluetooth devices within range.

   Do not perform a scan on more than one controller at the same time. A Bluetooth device cannot respond if it is scanning.

5. Once the scan is complete, highlight the Bluetooth device to connect to. Tap the −−> softkey to make it a Trusted device.
6. When connecting one controller to another controller, you do not need to Authenticate the device. When the authentication message appears, tap No.

To transfer files using Microsoft Windows Explorer and Bluetooth:

   Note – You can only transfer one file at a time with Microsoft Windows Explorer.

1. Use Bluetooth to connect the controllers, as described above.
2. Close Trimble Survey Controller. Otherwise, the file transfer may fail.
3. On both controllers, select [Start / Programs / Windows Explorer].
4. On the controller that is to receive the file, select [File / Receive]. If required select the transport to use.
5. On the controller sending the file, highlight the file and select [File / Send to / File Transfer]. If required select the transport to use.
6. Select [OK].
   The file will be transferred.