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1.0 Introduction

This document outlines the step by step procedure in configuring Hi-Target V30 GNSS RTK System for static and real time kinematic (RTK) operations.

The static operation discussed herein is configured via the V30 receiver control panel. The RTK procedure, meanwhile, is done via the controller that comes with the V30 RTK System. Corrections are sent using NTRIP (Networked Transport of RTCM via Internet Protocol) and Wi-Fi connection as data link.

2.0 Static Observation

The V30 receiver interface, including its button functionalities and LED indicators, are shown below:

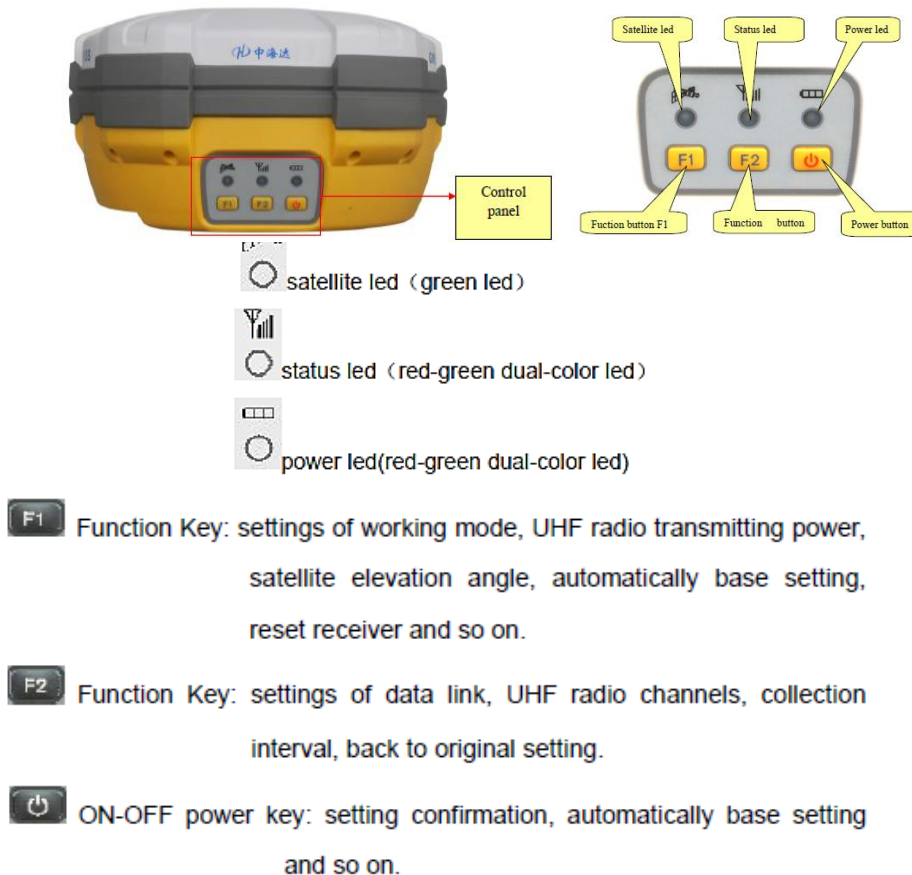











Figure 1. V30 receiver control panel, LED indicators and function keys

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- 2.1 Turn on the receiver by pressing the power button 
- 2.2 Set the receiver to work on static mode by pressing the F1 button  twice (interval between button presses should be between 0.2 to 1 second). A voice message will call out the current work mode setting. Single press (less than 0.5 second) F1 to choose between “base”, “rover” and “static”. Select “static” and then single press the power button to confirm the setting.
- 2.3 To set the elevation angle, long press (more than 3 seconds) the F1 button. A voice message will state the current elevation angle setting. Select between “5”, “10” or “15” degrees by single pressing F1. Confirm the setting by pressing the power button.
- 2.4 Long press the F2 button  to set the collection interval. A voice message will call out the current collection interval setting. Available settings are “1”, “5”, “10” and “15” seconds. Single press F2 until the desired collection interval is reached. Press the power button to confirm the setting.
- 2.5 Double press F2 to start collecting static data. A voice message will call out “Begin record” to indicate that data logging has started. The Status LED  will start flashing red, the interval of which is similar to the collection interval set (i.e. if collection interval is set to 5 seconds, the Status LED will flash red every 5 seconds).

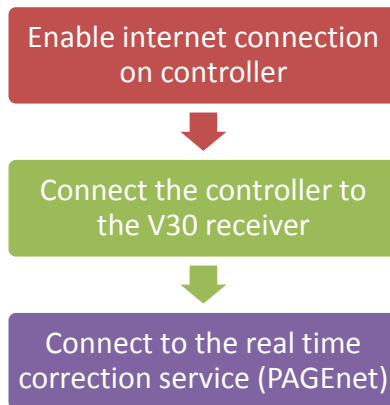
If no changes are to be made to the receiver settings from its last operation, one may “Auto-set base” by pressing F1 + Power at the same time until the receiver emits a bell sound. The receiver will operate based on the previous settings configured. A voice message will state the current status of the receiver i.e. work mode, elevation angle and collection interval.

 Do not forget to measure the antenna height as this will be needed in post processing the static data collected. Observe proper antenna height measurement in all instances.

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3.0 Real Time Kinematic Survey


The workflow for the RTK connection via Wi-Fi is as follows:

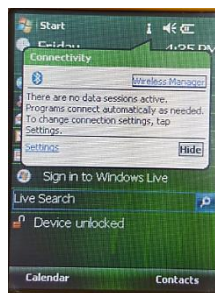


3.1 Enable internet connection

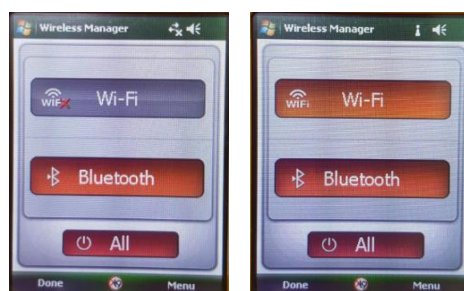
Before proceeding, make sure that the Wi-Fi source is turned on and working. The source may be a pocket Wi-Fi device, a mobile wireless hotspot, or a wireless network. Have the network key at hand if this is required to connect to the network.



3.1.1 Turn on the Wi-Fi feature of the controller.

- To open **Wireless Manager**, click on the  icon located in the top right portion of the screen.



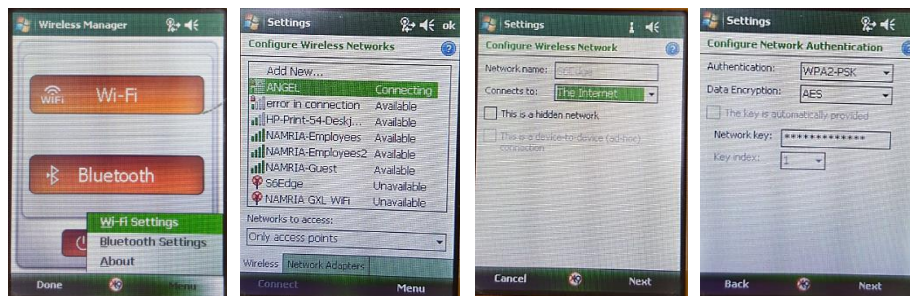
- **Wi-Fi** is disabled if button is gray. Click to enable.



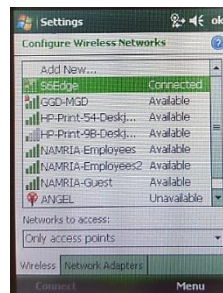
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3.1.2 Connect to the wireless network that will be used.

- Click **Menu / Wi-Fi Settings**. In **Configure Wireless Networks**, click on the name of the wireless network. On the next page, make sure **Connects to** is set to **The Internet**. Enter the network key if one is required, click **Next** and then **Finish**.

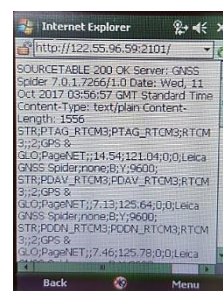




- Wait until the network status shows **Connected** before closing the window by clicking **OK**.



3.1.3 To check if the controller is already connected to the internet, open a browser i.e. Internet Explorer and try to load a webpage (e.g. Google).

Good practice: Access the PAgNet source table by typing <http://122.55.96.59:2101> in the address bar. It will check both the status of the internet connection and the real time correction service at the same time. If the source table is shown, it means the internet connection and PAgNet are up. If not, try to access Google to verify if only the real time correction service is offline. If it loads successfully, contact your real time correction service provider.



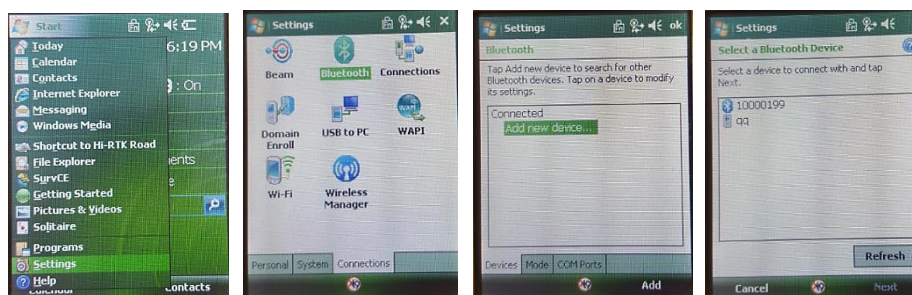
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3.2 Connect the controller to the V30 receiver

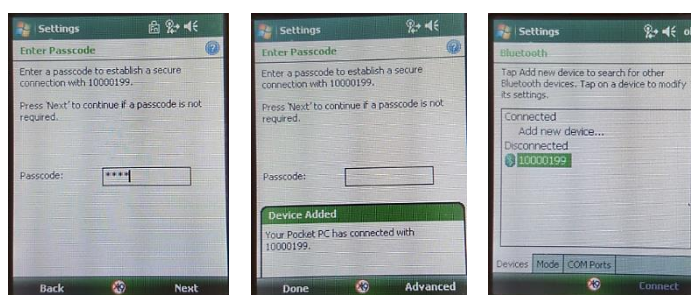
Before proceeding, make sure that the V30 receiver and the controller's Bluetooth feature are turned on.

3.2.1 Pair the controller with the V30 receiver via Bluetooth

- From the **Start** menu, go to **Settings**, then click on the **Connections** tab.
- Select **Bluetooth**, and then click **Add new device**.
- Choose the V30 receiver (indicated by the receiver's serial number) in the **Select a Bluetooth Device** page and then click **Next**.



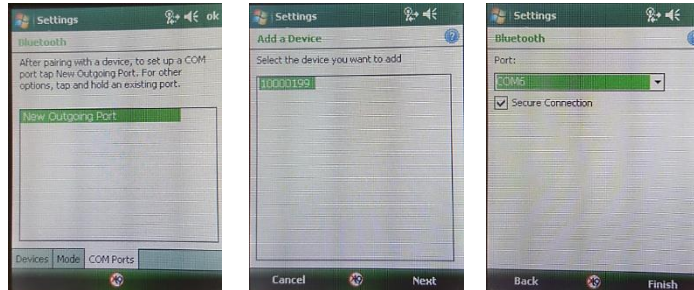
- Enter a passcode in the **Passcode** field to establish a secure connection with the receiver, and then click **Next**.
- Select **Yes** when prompted if you want to add the device to the list of Bluetooth devices.
- A **Device Added** notification should be displayed and the V30 receiver should be displayed in the Disconnected list of Bluetooth devices upon successful addition of the receiver.



- After pairing with the device, check in the **COM Ports** tab to see if an outgoing port has already been assigned to the V30 receiver. If there is none, click on the **New Outgoing Port**, select the V30 receiver in the **Add a Device** page and then click **Next**.
- In the **Bluetooth** page, select an available port in the **Port** drop-down list. Enable the **Secure Connection** check box and then click **Finish**. Click **OK** to finish the setup and then close the **Settings** page.

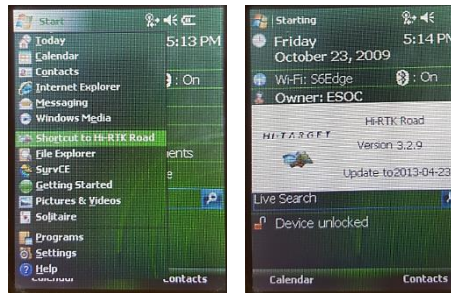


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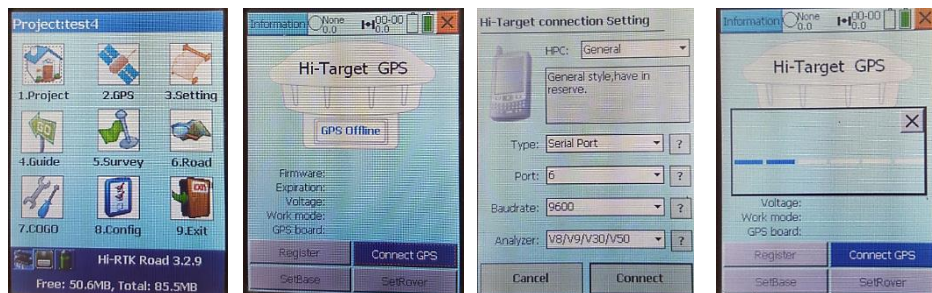


3.2.2 Initiate the connection between the controller and receiver

- Launch the **Hi-RTK Road** software from the **Start** menu.





- From the **Main Menu**, select **2.GPS**, and then **Connect GPS**. Make sure **HPC** is set to **General**, **Type** is **Serial Port**, and the port number is similar to the outgoing port set for the V30 receiver in the **Bluetooth** devices configuration. Click **Connect** and then **Connect GPS**. A progress bar should be displayed which indicates that the controller is connecting to the receiver.



- The connection is successful if the **Information** page shows the serial number of the receiver, as well as some of its details i.e. firmware version and work mode.



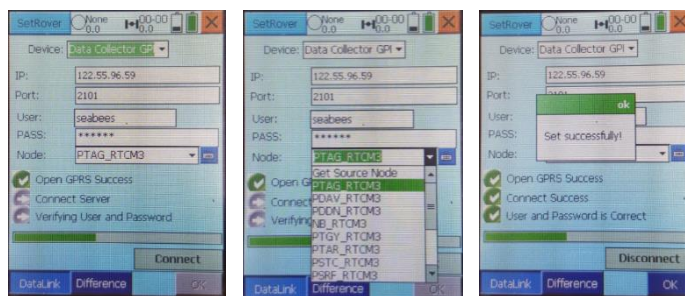
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3.3 Connect to the real time correction service

Before proceeding, make sure that the real time correction service provider's IP address and NTRIP caster port, as well as the user's NTRIP login credentials are at hand.

3.3.1 Still on the **Information** page from the preceding section, click **SetRover**.

- Select **Data Collector GPRS** from the **Device** drop-down list.
- Enter the IP address of the real time correction service provider in the **IP** field.
 - PAGeNet: **122.55.96.59**
- Enter the NTRIP caster port of the real time products in the **Port** field.
 - PAGeNet single-base correction: **2101**
 - PAGeNet network-RTK correction: **2102**
- Enter the user's NTRIP credentials in the **User** and **PASS** fields.
- Select **Get Source Node** from the **Node** drop-down list to download the list of available real time products.
- Once the source node is downloaded, select the specific real time product to connect to i.e. **PTAG_RTCM3** (corrections will come from the PTAG active geodetic station and the message format is RTCM version 3).
- Open the **Difference** tab and check that the message format is set to **RTCM**.
- Click **Connect** to start receiving the corrections. A **Set successfully!** message will be displayed if connection is successful. Click **OK** to close the page.



- Proceed to **5.Survey** from the **Hi-RTK Road Main Menu** to begin the data collection.

