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1.0 Introduction

This document outlines the step by step procedure in configuring Trimble R10 GNSS RTK System for real time kinematic (RTK) operations using PAGeNet real-time correction service.

The RTK configuration is done via the controller that comes with the R10 RTK System. Corrections are sent using NTRIP (Networked Transport of RTCM via Internet Protocol) and Wi-Fi connection as data link.

The R10 receiver interface, including its button functionalities and LED indicators, are shown below:

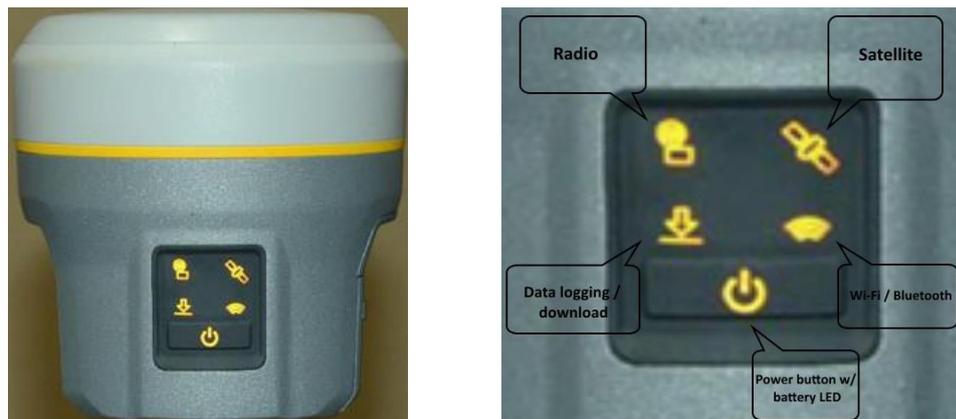


Figure 1. R10 receiver, LED indicators

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2.0 Real Time Kinematic Survey

2.1 Turn on the receiver by pressing the power button.

2.2 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.

2.3 Turn on the **Controller** and the Wi-Fi feature of the controller.

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



- Then click on **Dial** or **Signal** icon.





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- Click on **Wireless Manager**.



- If internet source is shared via Wifi, turn on Wi-Fi option.



- Click on the **Wi-Fi** option to display available connections.

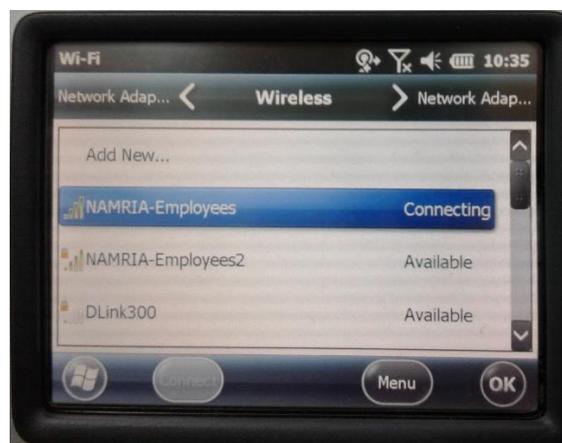


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- Click on **show all network** to display all available Wi-Fi sources.



- Select your preferred network and then click **Connect**





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- Once connected, test internet connection by opening the controller's web browser and test using common websites, e.g., www.google.com or www.yahoo.com.



- Or type in PAGE Net's IP address (i.e., <http://122.55.96.59:2101>) to test at the same time whether internet connection has been established and PAGE Net service is working. If both are working, the browser should display the source table as shown below:

```
SOURCE TABLE 200 OK
Server: GNSS Spider 7.0.1.7266/1.0
Date: Fri, 23 Aug 2019 05:38:32 GMT Standard Time
Content-Type: text/plain
Content-Length: 4857

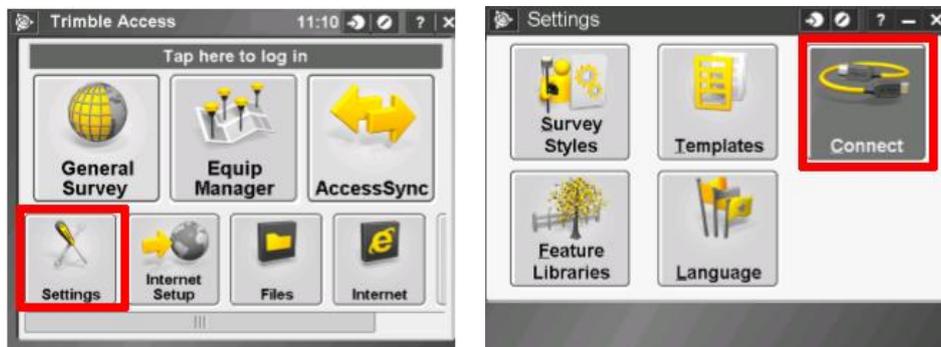
STR;PTAG_RTCM3;PTAG_RTCM3;RTCM 3;;2;GPS & GLO;PageNET;;14.54;121.04;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PDAV_RTCM3;PDAV_RTCM3;RTCM 3;;2;GPS & GLO;PageNET;;7.13;125.64;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PDDN_RTCM3;PDDN_RTCM3;RTCM 3;;2;GPS & GLO;PageNET;;7.46;125.78;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;NB_RTCM3;NB_RTCM3;RTCM 3;;2;GPS;PageNET;;14.54;121.04;1;0;Leica GNSS Spider;none;B;Y;9600;
STR;PTGY_RTCM3;PTGY_RTCM3;RTCM 3;;2;GPS & GLO;PageNET;;14.10;120.94;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PTLC_RTCM3;PTLC_RTCM3;RTCM 3;;2;GPS & GLO;PageNET;;15.47;120.59;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PSTC_RTCM3;PSTC_RTCM3;RTCM 3;;2;GPS & GLO;PageNET;;14.28;121.41;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PTGO_RTCM3;PTGO_RTCM3;RTCM 3;;2;GPS+GLO;PageNET;;8.53;124.42;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PPPC_RTCM3;PPPC_RTCM3;RTCM 3;;2;GPS+GLO;PageNET;;9.77;118.74;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PTAC_RTCM3;PTAC_RTCM3;RTCM 3;;2;GPS+GLO;PageNET;;11.25;125.00;0;0;Leica GNSS Spider;none;B;Y;9600;
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STR;PCB2_RTCM3;PCB2_RTCM3;RTCM 3;;2;GPS+GLO;PageNET;;15.45;120.94;0;0;Leica GNSS Spider;none;B;Y;9600;
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STR;PMRV_RTCM3;PMRV_RTCM3;RTCM 3;;2;GPS+GLO;PageNET;;14.44;120.49;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PSUR_RTCM3;PSUR_RTCM3;RTCM 3;;2;GPS+GLO;PageNET;;9.79;125.49;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PURD_RTCM3;PURD_RTCM3;RTCM 3;;2;GPS+GLO;PageNET;;16.00;120.58;0;0;Leica GNSS Spider;none;B;Y;9600;
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STR;PTUG_RTCM3;PTUG_RTCM3;RTCM 3;;2;GPS+GLO;PageNET;;17.66;121.75;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PMRM_RTCM3;PMRM_RTCM3;RTCM 3;;2;GPS+GLO;PageNET;;7.86;125.06;0;0;Leica GNSS Spider;none;B;Y;9600;
STR;PTAG_RTCM3_MS4;PTAG_RTCM3_MS4;RTCM 3;;2;GPS+GLO+GAL+BDS+QZSS;PageNET;;14.54;121.04;0;0;Leica GNSS Spider;none;B;Y;9600;
ENDSOURCE TABLE
```

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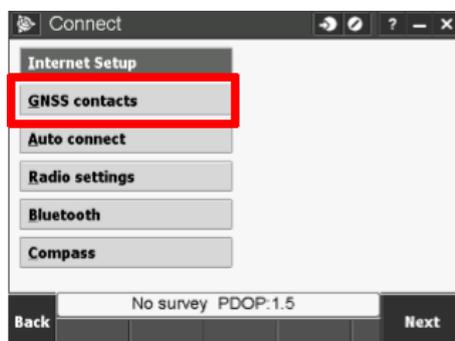
2.4 Once internet connection and PAGeNet are confirmed working, open **TRIMBLE ACCESS**.



2.5 Go to **Settings** then **Connect**.



2.6 Create **GNSS contacts**

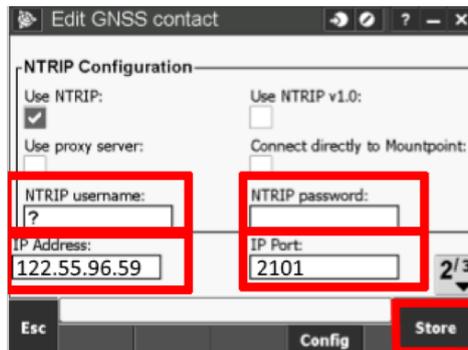


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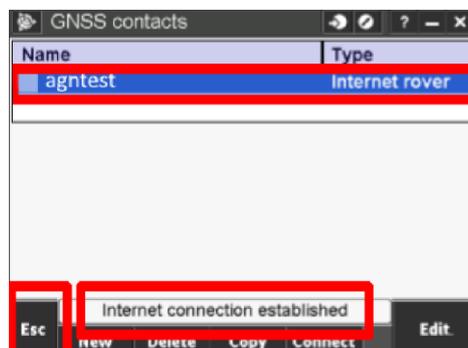
- Select **NEW** and name it as preferred. Contact type should be **Internet rover** and Network Connection should be **Wi-Fi, Active sync**.



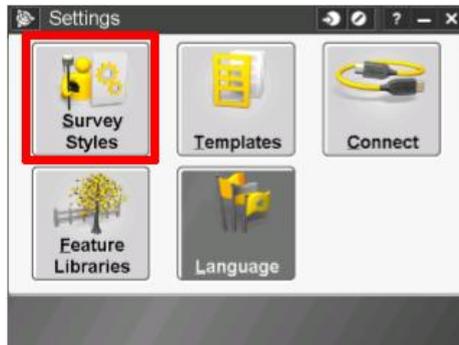
- Input you're **NTRIP username** and **password** (this is your PAGeNet username and password). The I.P. address is **122.55.96.59** and I.P. Port is **2101** for single base correction or **2102** for network-RTK correction. **Store** your configuration.



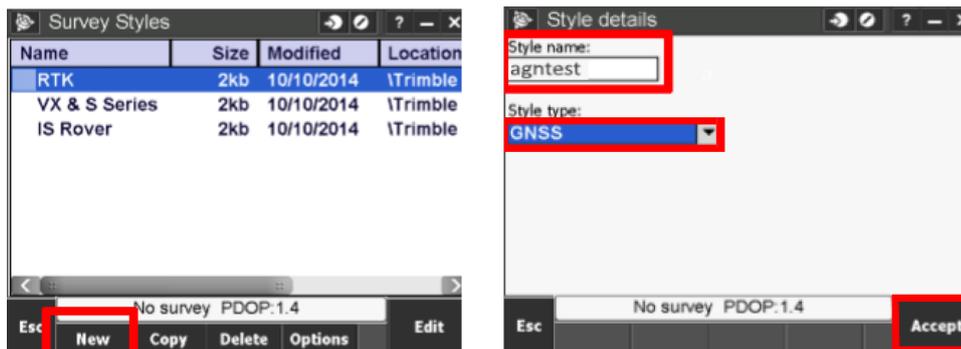
- Select the newly created GNSS Contact and then hit **Connect**. "**Internet connection established**" message should appear, then press **Esc**.



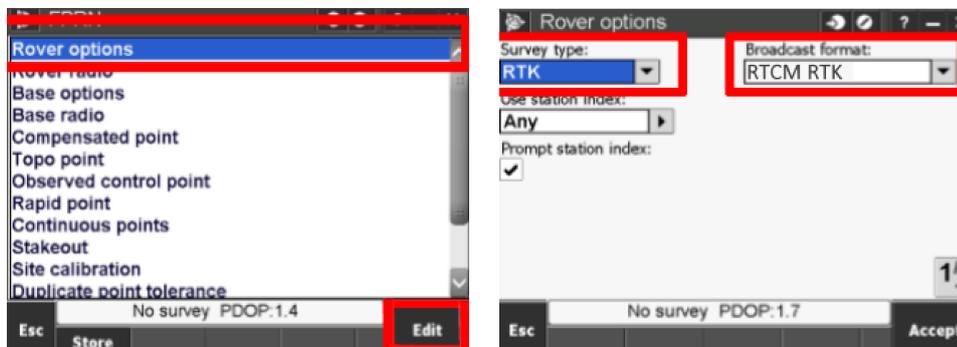
2.7 Select Survey Styles



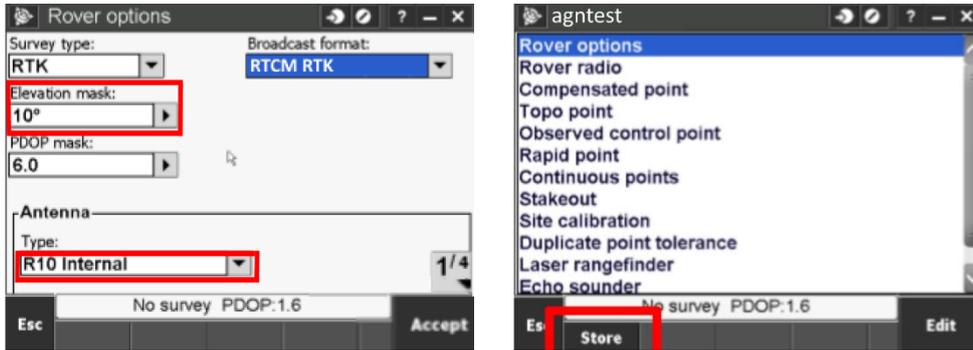
- Create a new Survey Style. Set Style type to **GNSS**, then **Accept**.



- Select **Rover options** and then click **Edit**. Set Survey type to **RTK** and Broadcast format to **RTCM RTK**.



- Set elevation mask as required. Antenna type should be **R10 internal**. Input antenna height then click **Accept** and then **Store** your configuration.



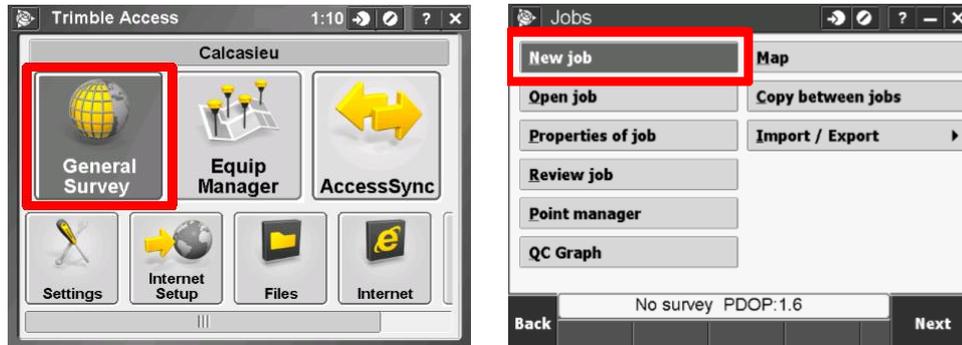
- Exit Survey Styles



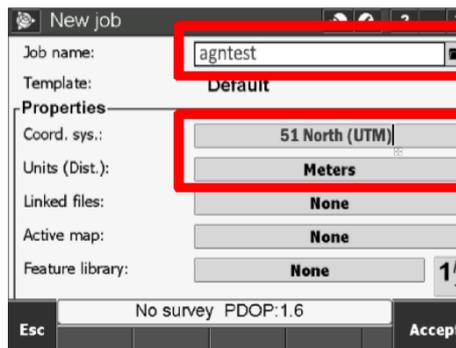
- Exit Settings



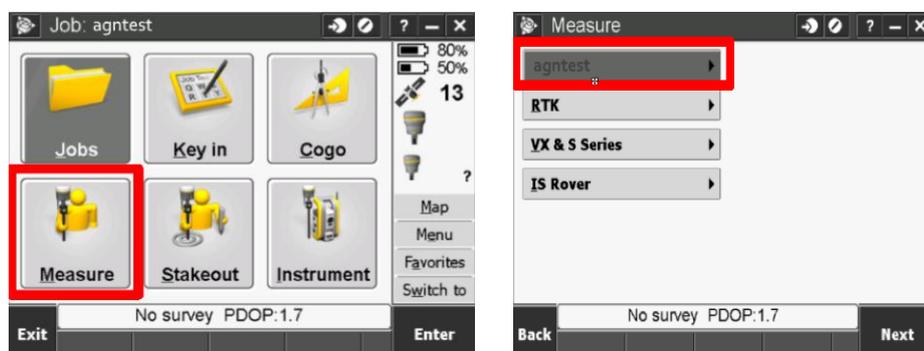
2.8 Go to **General Survey** and create a New Job



- Provide a Job Name and use appropriate Coordinate System and Units, then **Accept**.



2.9 Click on **Measure** use your created Survey Style.

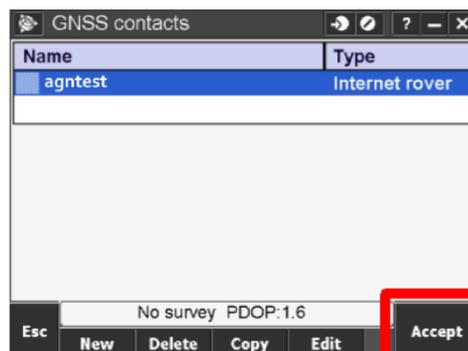
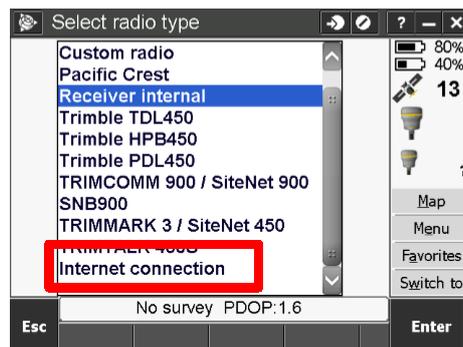
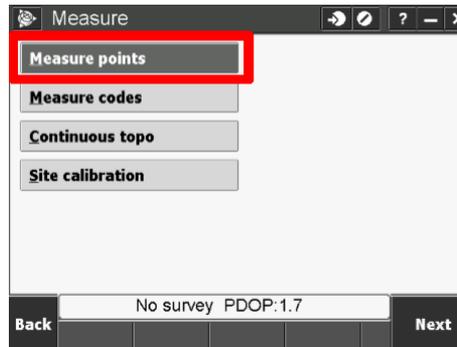




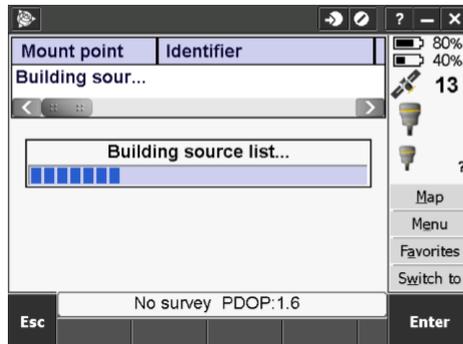
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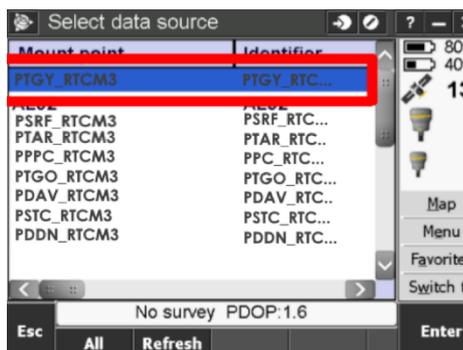
- Click on **Measure Points**. Select **Internet Connection** for Radio Type then select your created **GNSS Contact** then **Accept**.



- **Building source list** should appear.



- Select the nearest/appropriate reference station by selecting the corresponding Mount Point. Click **Enter**.



- **“Starting survey”** message should appear. You can then start measuring your points.

