





Quick Start Guide

TS30 GNSS Receiver

- **Laser Ranging**
- **Visual Positioning**
- **AR Staking**



Version 1.0

	<p>Note: Please check each item according to the item list first to confirm that all the accessories are correct for the purchased kit.</p>
	<p>Install the radio antenna before switching the radio transceiver to transmit mode, or the radio transceiver may be damaged due to overheating. The energy to be transmitted cannot be emitted out without the antenna, which may cause the temperature rise and overheat of the radio module.</p>

This Quick Start Guide introduces how to start using TS30 GNSS Receiver quickly, the detailed introduction and operations of TS30 refer to User Manual for *TS30 GNSS Receiver*.



Figure 0.1 TS30 GNSS Receiver

The four steps for TS30 are outlined below:

1. Rover Setup
2. Configuration via Nuwa
3. Laser Ranging
4. Visual Positioning
5. AR Staking

1.Rover Setup

According to the customer requirements, set up the system as shown below.



Figure 1.1 TS30 as a Rover

Table 1.2 Devices in Figure 1.2

NO.	Device Name
1	TS30 GNSS Receiver
2	450-470MHz radio whip antenna if needed
3	Ranging pole
4	Bracket for TC80
5	TC80 Controller

2. Configure via Nuwa

2.1 Connect TS30 in Nuwa App

Long press the power button to power on TS30.



Figure 2.1 Power On TS30

Start Nuwa App, click [Device]-->[Connect], select device TS20/21/30 and target WiFi, then click [Connect] to complete the device connection.

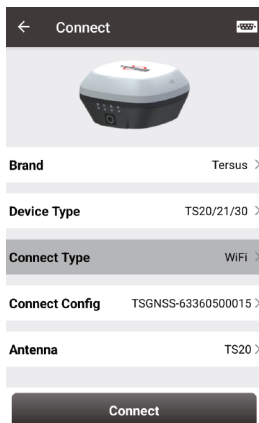


Figure 2.2 Connect TS30

2.2 Configure TS30 as a Rover

Go to the Device interface, click [Rover] to create a new Rover mode or edit an existing rover mode.

Choose [Internal Radio], [Receiver Network] or [PDA Network] for Data Link to receive the correction data. Fill in the detailed configuration and activate rover mode to get the fixed solution.

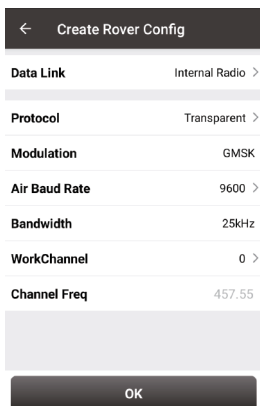


Figure 2.3 Internal Radio

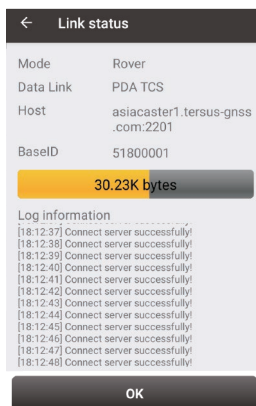




Figure 2.4 PDA Network

NOTE:

1. Requires radio whip antenna required in Internal Radio mode
2. Requires SIM card in TS30 in Receiver Network mode
3. Requires SIM card in controller in PDA Network mode

3.Laser Ranging

3.1 Laser Initialization

Go to [Survey] and enter the survey interface. Tap the tilt icon  to enable tilt compensation. Then tap the laser icon  to turn on the laser. The front camera on the same side will be activated automatically. Gently shake the pole or move TS30 as shown in the animation to complete tilt and visual initialization until the animation disappears.

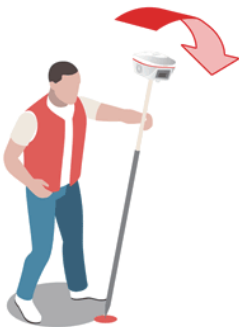


Figure 3.1 Tilt Initialization

3.2 Laser Ranging Measurements


Move TS30 to align the laser spot with target. The position of laser spot is also displayed on the screen and can be zoomed in to ensure precise alignment. The marker changes from red to green as accuracy improves. Tap the measurement button  to complete the measurement. Stabilization will be performed automatically during the process.



Figure 3.2 Laser targeting

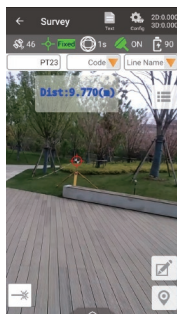


Figure 3.3 Zoom in

4. Visual Positioning

4.1 Initialization and Take Video

Go to [Visual Positioning]. Shake the pole or move TS30 as shown in the animation to complete tilt initialization and visual initialization until the upper-right icon turns green and the animation disappears.

Click [Start Vision] to start capturing images. Make sure the target can be observed by multiple views. Click [Stop] to end capturing and enter the group name for this visual positioning.

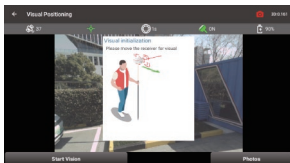


Figure 4.1 Visual Positioning Initialization

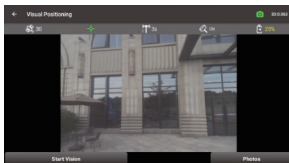
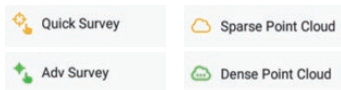


Figure 4.2 Start Vision

4.2 Point Measurements

Click [Photos] to view all groups of photos taken for further measurement. Click on the mode button on the upper right corner in photos screen, there are four modes to take measurement for visual positioning.



In Quick Survey mode, choose one image and then select feature points to measure first. Switch to other photos, check whether the cross needs adjustment. Confirm and click [Store] to save points.



Figure 4.3 Quick Survey

In Sparse Point Cloud mode, first draw circle around the target point first. After the sparse point cloud is generated, select the point in the sparse point cloud to obtain coordinates directly. In Advanced Survey mode, the software will prepare the dense point cloud automatically. Simply pick point on the picture and the software will automatically generate the surrounding dense point clouds. Then select points in the cloud to obtain the results directly.

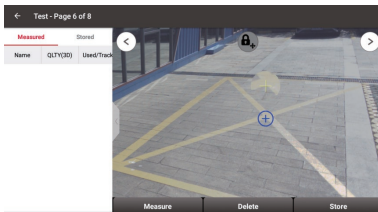


Figure 4.4 Advanced Survey

In Dense Point Cloud mode, generate dense point clouds for circled area or all objects in photos and export them in LAS format.

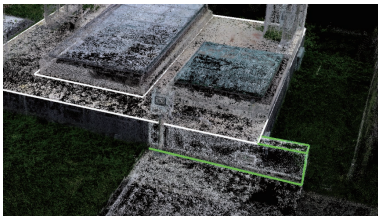



Figure 4.5 Export Dense Point Clouds

5.AR Staking

5.1 Import Targets

Go to [Point Stakeout] to enter point stakeout interface. Click  to show the Staking Point list and click [Import] to import targets from file, from other point lists or directly manually add.

Name	Code	Staked	StakeTime
SPT1		Yes	1
SPT2		Yes	1
SPT7		No	0
SPT8		No	0

Figure 5.1 Staking Point List

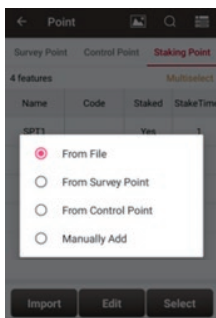


Figure 5.2 Import Targets

5.2 AR Staking

Select one of the point as the target, then click **AR** to enter AR staking interface, which uses dual cameras, as shown below.

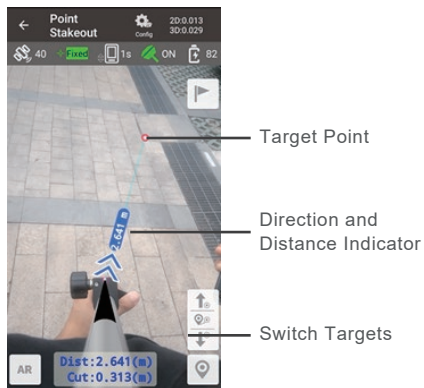


Figure 5.3 AR Staking



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Right to the Point

Get More

This Quick Start Guide briefly introduces the setup and operation for TS30 GNSS Receiver and the operation of Nuwa app. More details please refer to User Manual of TS30 and User Manual of Nuwa app which can be downloaded from Tersus official website:
<https://www.tersus-gnss.com/document>.

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