



# Trimble R12i

## GNSS SYSTEM

**⚠ WARNING** – For safety information, refer to the *Safety Information* section of the *Trimble R12i GNSS Receiver User Guide*.

### FIVE SIMPLE STEPS TO GET STARTED

This guide provides an overview of the important features and instructions for how to set up and operate the Trimble® R12i GNSS system.

1. Unpack and check the contents.
2. Charge batteries fully and insert the battery and SIM card into the receiver. Attach the quick release adapter and radio antenna with SMA connector (receiver models with internal radio only).
3. Turn on the receiver.
4. Connect to a Trimble controller running the Trimble Access™ field software.
5. In the field, collect GNSS data with the Trimble Access field software running on a Trimble controller.



### Additional information

For further details regarding the features and operation of the receiver, and to access the latest information, including the *Trimble R12i GNSS Receiver User Guide* and release notes, go to [www.trimble.com](http://www.trimble.com).

### Trimble R12i support

For Trimble R12i support, go to [www.trimble.com/support](http://www.trimble.com/support).

## Step 1: Unpacking and checking contents



No.	Description	No.	Description
1	Transport case (for one receiver)	5	Quick release adapter
2	Trimble R12i receiver (no internal UHF radio or internal UHF radio)	6	UHF radio antenna with SMA connector (receiver models with internal radio only)
3	Dual battery charger with battery slot inserts (power supply and power cord kit sold separately)	7	USB office data and power Y-cable (7P Lemo-to-USB-A male and power)
4	Rechargeable Battery (x2)	8	USB field data cable (7P Lemo-to-USB-A female)
<i>Quick Start Guide</i> (this document) and <i>Trimble Geospatial Accessories Card</i>		<i>Warranty activation card</i> and <i>WEEE statement</i>	

**Tip** – Refer to the *Trimble Geospatial Accessories Card* to learn more about optional Trimble R12i accessories. Alternatively, contact your Trimble distribution partner.

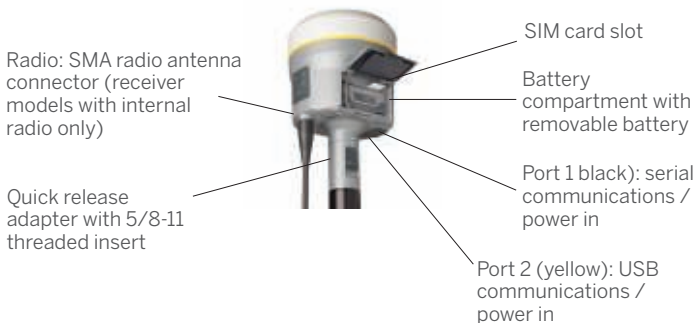
## PARTS OF THE TRIMBLE R12i RECEIVER



All operating controls are located on the front panel. Communication and power Lemo ports and connectors are located on the bottom of the unit.

### Front panel



### Lower housing



Icon	Name	Connections
	Port 1	7-pin 0-shell Lemo, RS-232, device, computer, external radio, power in, no power out
	Port 2	7-pin 0-shell Lemo, USB 2.0, device, computer, power in

## Step 2: Charging batteries, inserting battery and SIM card into receiver, attaching quick release adapter and radio antenna

### Charging the Lithium-ion battery

The rechargeable Lithium-ion battery is supplied partially charged. Before using the battery for the first time, charge it completely using the dual-battery charger (country-specific power supply and power cord sold separately). The batteries come with charge battery indicator LEDs. Push the button on the battery to check the battery charge status.

Charging takes approximately 3 hours at room temperature. If 2 batteries are charging in the dual battery charger, the batteries will be charged simultaneously.

**⚠ WARNING** – Ensure that nothing obstructs the vents in the back of the charger and that the charger is placed on a hard, flat and level surface, to ensure that there is airflow around the charger. Do not operate the battery charger while it is in the transport case.

### LED status indicator



Beside each slot are three LED indicators (red, green, and yellow) to display the battery status:

Status	Red	Green	Yellow
No battery detected (no battery present or battery defect)	On	Off	Off
Battery detected (charging not started yet)			
– Conditioning not required	1 Hz	1 Hz	Off
– Conditioning required	1 Hz	1 Hz	On
Charging in progress			
– Conditioning not required	Off	1 Hz	Off
– Conditioning required	Off	1 Hz	On
– Over/under temperature (charge is inhibited)	2 Hz	Off	2 Hz
Conditioning in progress	On	Off	1 Hz
Conditioning done (charging after 30% battery capacity)	On	1 Hz	Off
Conditioning done (battery fully charged)	On	On	Off
Battery fully charged			
– Conditioning not required	Off	On	Off
– Conditioning required	Off	On	On
Power supply over/under voltage	Off	Off	Off
When Output Over-Voltage Protection (OOVP) or Output Over Current Protection (OCP) is on	2 Hz	Off	Off

## Inserting the battery and SIM card into receiver

- ▶ Align the arrows ▼ and ▲ on the battery and battery compartment and then insert the battery as indicated in the picture. To remove the battery, slide the battery bail to the left.
- ▶ Insert the SIM card with the contacts facing upward, as indicated by the SIM card icon ▲ next to the SIM card slot. To eject the SIM card, slightly push it in to trigger the spring-loaded release mechanism.

💡 **Tip** – The SIM card is provided by your cellular network service provider.



**Note:** Due to local regulations, the integrated cellular modem cannot be enabled in China, Taiwan, or Brazil. A Trimble controller integrated cellular modem or external cellular modem can be used to obtain GNSS corrections via an IP (Internet Protocol) connection.

## Attaching the quick release adapter and radio antenna

- ▶ Push down the spring-loaded button of the quick release adapter and then align the white dots on the bottom of the receiver and the quick release adapter. Slide in the quick release adapter and then release the button.
- ▶ To install the radio antenna, screw it in clockwise. Do not overtighten!

## Examples for base and rover configurations

Postprocessing/RTK  
base setup



RTK base setup with  
remote UHF antenna

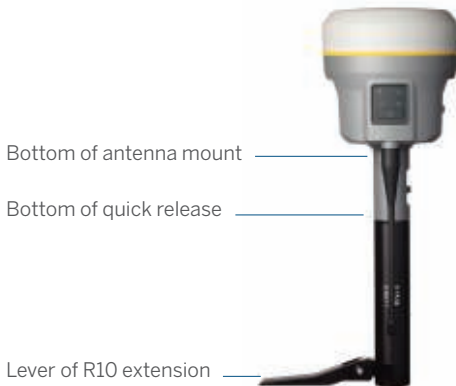


RTK/Network rover  
setup



💡 **Tip** – Optional accessories, such as the base station extension with height measurement lever, tripod, tribrach, external base battery, and remote UHF antenna are available.

## Antenna measurement methods




## Step 3: Turning on the receiver

### Power button

- ▶ To turn on the receiver, press the power button. All four LEDs light up, remain lit for 3 seconds and then turn off. The power LED then immediately lights up again.
- ▶ To turn off the receiver, hold the power button for 2 seconds and then release it. When holding down the power button, the battery LED remains lit, the satellite LED lights up constantly and then turns off after 2 seconds. After releasing the power button, the battery LED stays lit for about 5 seconds and then all LEDs turn off.
- ▶ To clear the ephemeris file and reset the receiver to the factory defaults, hold down the power button for 15 seconds. The radio, Wi-Fi, and satellite LEDs turn off after 2 seconds but the battery LED remains lit. After 15 seconds, the satellite LED lights up to indicate that it is time to release the power button.

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 **CAUTION** – Resetting the receiver will permanently erase all data. Download your data before resetting your receiver.

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To delete application files, hold down the power button for 30 seconds. The radio, Wi-Fi, and satellite LEDs turn off after 2 seconds but the battery LED remains lit. After 15 seconds, the satellite LED lights up and remains lit on for 15 seconds, then turns off to indicate that it is time to release the power button. The battery LED remains lit for 15 seconds after you release the Power button. The receiver then restarts



### Battery LED

Receiver mode	Power LED	Description
Off	Off	
On, healthy power	On	Either internal battery or external power
Low power	Fast flash	Less than about 15% power



## Satellite LED

Receiver mode	Satellite LED
No satellite tracked	Off
Boot up or in monitor mode	On
Tracking fewer than 4 satellites	Fast flash
Tracking more than 4 satellites	Slow flash



## Radio LED

Radio mode	Radio LED	Description
No receive or transmit	Off	
Receive	Radio slow flash	This LED also flashes when using the Wi-Fi only for receiving corrections.
Transmit	Radio slow flash	This LED also flashes when using the Wi-Fi only for transmitting corrections



## Wi-Fi LED

Receiver mode	Wi-Fi LED
Wi-Fi off	Off
Wi-Fi is access point (base mode/sending corrections)	Medium flash
Wi-Fi is client (and not connected to an access point)	Off
Wi-Fi as client (rover mode receiving corrections)	Very slow flash



## Data logging/downloading LED

Receiver mode	Data LED
Data logging off	Off
Data logging on	On
Downloading to USB Flash memory stick	Slow flash
Full USB Flash memory stick detected	Fast flash
Download to USB complete	Very slow flash



## Step 4: Connecting to a Trimble controller running the Trimble Access field software

The Trimble R12i receiver can communicate with any controller—for example, a Trimble TSC7 controller—that is running Trimble Access software (version 2020.10 or later) using Bluetooth® wireless technology. If you do need a cable, refer to the *Trimble R12i GNSS Receiver User Guide* for a list of all available cables for the receiver.

 **Tip** – To learn more about Bluetooth connections to a Trimble R Series receiver, refer to the Trimble Access help portal at <https://help.trimblegeospatial.com/TrimbleAccess>.

## Step 5: Collecting GNSS data with Trimble Access field software on a Trimble controller in the field

The Trimble R12i system with Trimble Access field software is now ready to be used. Refer to the [Trimble Access help portal](#) for more information.

### Aligning the system

The Trimble R12i has an integrated Inertial Measurement Unit (IMU) comprising multiple sensors that detect relative motion. Data from the IMU and GNSS signal measurements are combined by the positioning engine to compute the position (XYZ) and attitude (roll, pitch, and azimuth) of the receiver, allowing the pole tip position to be determined when the rover is tilted. You do not need to perform any specific calibration steps to align the IMU with the GNSS reference frame, and the system is unaffected by sources of magnetic interference.

To achieve a combined GNSS and inertial solution:

1. Begin a Real Time Kinematic survey with corrections from a base station, VRS network, or Trimble CenterPoint RTX.
2. Enter the antenna height in Trimble Access.
3. Introduce some motion to the system, which may include tilting the pole in orthogonal directions. Trimble Access will report an “RTK+IMU” solution type along with the estimated horizontal and vertical precision once the solution has aligned.

For more information, refer to the [Trimble Access help portal](#).

## Connecting to the office computer

To communicate with the office computer using a serial connection, you can either connect the receiver using a serial cable (P/N 89851-00 or P/N 59046), or by using the USB cable (P/N 89852-00 or P/N 80751) and then configuring a computer USB port as a virtual serial port.

Before you connect to the office computer, ensure that the receiver battery is fully charged.

## Connecting to the receiver web interface

1. Turn on the receiver and wait for the last four digits of the receiver serial number to appear under the available Wi-Fi networks on your smart phone or office computer. For example, **Trimble GNSS xxxx** (where **xxxx** represents the last four digits of the receiver serial number).
2. Select the receiver, open a web browser and then enter the following IP address: **http://192.168.142.1**

The default login values for the receiver are as follows:

User Name: **admin**

Password: **password**

 **Tip** – Most web browsers for computers/laptops and smart phones support the receiver web interface.



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Trimble Inc.  
10368 Westmoor Drive  
Westminster CO 80021  
USA