



EMLID

# REACH RS2+

Multi-band RTK  
GNSS receiver

Model RRS-P

User guide

Version: 2.0



# Introduction

Reach RS2+ is a multi-band RTK GNSS receiver. Usage scenario: For outdoor use, this product needs to be fixed on a special measuring rod. (See picture) designed for surveying, mapping, and navigation. The receiver gets FIX in seconds, delivers centimeter precision even in challenging conditions, and records logs in the industry-standard RINEX format. Reach RS2+ comes with a user-friendly and regularly updated app Emlid Flow that allows controlling all the receiver's features.



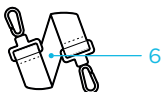
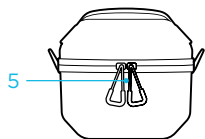
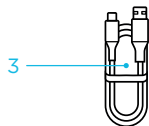
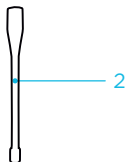
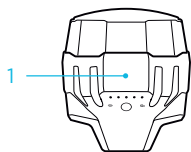
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# Introduction

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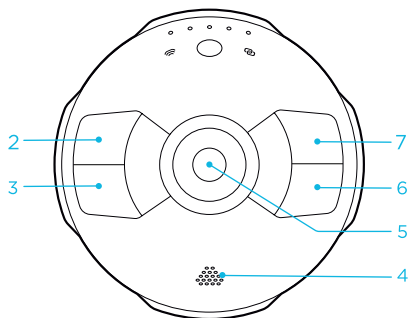
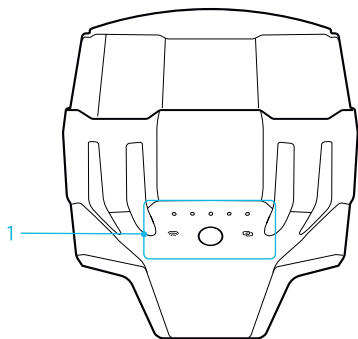
# Package contents

1. Reach RS2+
2. LoRa antenna
3. USB Type-C cable
4. User guide
5. Carrying bag
6. Shoulder strap



# Overview

1. Front panel
2. Extension port
3. Nano-SIM port
4. Ventilation holes
5. Thread mount
6. USB Type-C port
7. Antenna port





# LED status

## 1. Battery LEDs

The LEDs indicate the loading state and battery charge.

### **Running white**

Loading

### **Solid white**

Ready for use  
Charge level

### **Blinking white**

Charging

### **Solid red**

Low charge

### **Blinking red**

Not enough charge  
to boot

## 2. Power LED

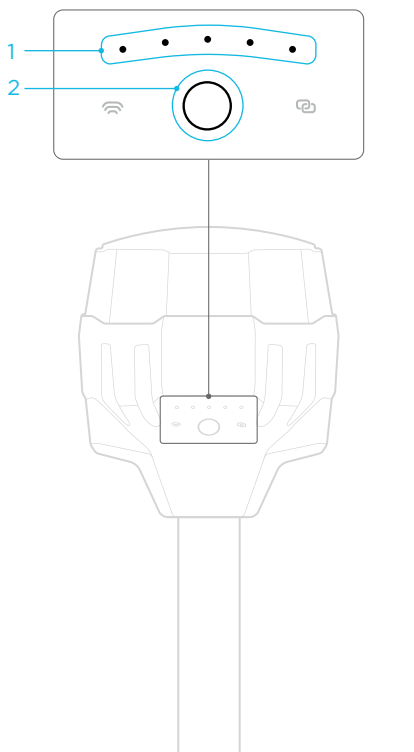
The LED indicates the on-state and point collection mode.

### **Solid white**

On

### **Blinking white**

Point collection mode



# LED status

## 3. Wi-Fi LED

The LED indicates the network connection and its state.

### **Solid white**

Broadcasting Wi-Fi

### **Solid blue**

Connected to Wi-Fi

### **Blinking blue**

Scanning networks

## 4. RTK LED

The LED indicates RTK status and the correction output state.

### **Switching between white and blue every 2 seconds**

Correction output is on

### **Solid white**

FIX

### **Fast blinking white**

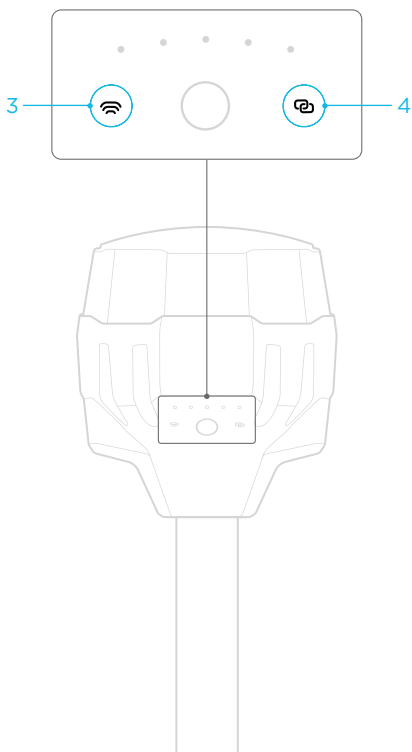
FLOAT

### **Slow blinking white**

SINGLE

### **Off**

No solution

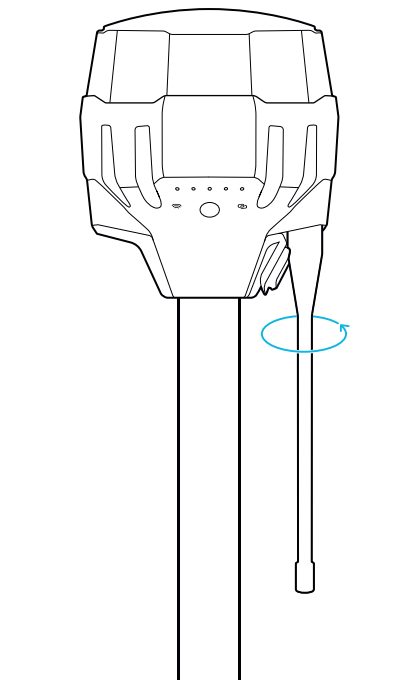


# Antenna attachment

To attach the antenna, open the blue silicone flap on the connector and carefully screw in the antenna.

**Note:** Use only an external antenna that is designed to be used with Reach RS2+.

**Caution:** Antennas are excellent conductors of electricity, so use extreme caution when operating near power lines and other sources of electric current or during stormy weather.

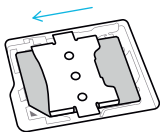
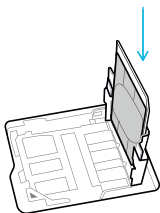
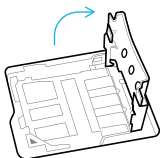
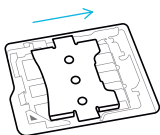


# SIM card insertion

To insert a SIM card, follow the steps below:

**Caution:** To prevent slot damage, use it with care.

1. Slide the metallic cover to the right to unlock the slot.
2. Pull the cover up to open the SIM card slot.
3. Insert your SIM card as shown in the picture.
4. Return the slot cover into horizontal position and slide left to lock the slot.





# Operation

## Charging

To charge the receiver, take a USB Type-C cable and plug the USB connector to a computer USB port or USB wall charger rated 5V 2A.

**Note:** Reach RS2+ supports USB Power Delivery allowing fast charging from USB PD 5V 3A compliant adapters.

## Powering on/off

To turn on or off Reach RS2+, press and hold the power button for 3 seconds.

## Hard reset

To hard reset Reach RS2+, follow the steps below:

1. Press and hold the Power button for 15 seconds.
2. The Battery LEDs will start blinking, and the receiver will turn off.
3. Turn on the receiver.

# First setup

Get started with your Reach RS2+ in just three steps:

1. Download Emlid Flow app.



2. Connect to Reach RS2+ over Wi-Fi.

📶 reach:xx:xx

🔒 emlidreach

3. Launch Emlid Flow on your device.

To explore the Reach RS2+ guides, tutorials, and videos, scan QR-code:



# Specification

## Positioning

Precision	Static	H: 4mm+0.5ppm V: 8mm+1ppm
	PPK	H: 5mm+0.5ppm V: 10mm+1ppm
	RTK	H: 7mm+1ppm V: 14mm+1ppm
Convergence time		~5s typically
Signal tracked		GPS/QZSS L1C/A, L2C, GLONASS L1OF, L2OF, BeiDou B1I, B2I, Galileo E1B/C, E5b
Number of channels		184
Update rates		Up to 10 Hz

## Connectivity

LoRa radio	Frequency range	868/915 MHz
	Power	0.1 W
	Distance	Up to 8 km
LTE modem	Regions	Global
	Bands	FDD-LTE: 1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28, 66
		TD-LTE: 38, 40, 41
		UMTS (WCDMA/FDD): 1, 3, 2, 4, 5, 6, 8, 19
		Quad-Band, 850/1900, 900/1800 MHz
	SIM card	Nano-SIM
Wi-Fi		802.11b/g/n

Bluetooth	4.0/2.1EDR	
Ports	RS-232, USB Type-C	
Data protocols	Corrections	NTRIP, RTCM3
	Position output	NMEA, LLH/XYZ
Data logging	RINEX	
Internal storage	16 GB	

## Mechanical

Dimensions	126x126x142mm
Weight	950g
Temperature	-20...+65°C
Ingress protection	IP67

## Electrical

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Autonomy	16 hrs as LTE RTK rover, 22 hrs of logging
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Battery	LiFePO4 6400mAh, 6.4V
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External power input	6–40V
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Charging	USB Type-C 5V 2A
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Certification	FCC, CE
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# Safety instructions

To ensure the safe operation of your Reach RS2+, observe the following safety instructions:

**Caution:** Failure to comply with safety instructions can lead to malfunction or damage to the receiver.

- Never disassemble or modify the receiver.
- Keep the receiver free from mechanical stress, shocks, or impacts. Otherwise, the unit may be damaged and/or lose its IP67 protection class.
- Keep the receiver free from moisture, water, and dust.
- Do not expose the receiver to open-flame sources.
- Do not expose the receiver to direct sunlight for a long period of time.

- Observe safety precautions when using the receiver in dangerous places.
- Do not obstruct the ventilation holes of the receiver.
- Do not let foreign objects into the receiver.
- Do not let insecticides, benzene, and thinner come in contact with the receiver.
- Handle cables carefully. Hold the plug when unplugging the cable.
- Do not install the receiver in a confined space. This may negatively affect heat dispersal.
- Do not place any other equipment on the receiver.



# Use and care

Although Reach RS2+ is designed to withstand challenging environments, it is necessary to handle it with care, follow safety instructions, and comply with the operating limits given in the specification.

**Caution:** Do not open the receiver, it leads to the loss of warranty. Only certified services are allowed to open the device to assure it will keep its protection class IP67.

# Storage

To prepare your Reach RS2+ for storage, follow the steps below:

1. Turn off the unit by pressing and holding the power button for 3 seconds. Make sure that the device is off—the power LED should go out.
2. Unplug cables.
3. Store the unit and cables in the case at room temperature.

**Note:** Check the device every three months and charge its battery to at least 60%.

# Cleaning

To clean Reach RS2+ from dirt, follow the steps below:

1. Rinse the receiver with fresh water.
2. Dry the receiver with a soft cloth.

**Caution:** Do not use heat sources such as air dryers or ovens to dry the device. It may damage the receiver.

# Transportation

To protect your Reach RS2+ from damage, transport it according to the following instructions:

## Transportation in the field

Carry the receiver and its accessories in the carrying bag or carry it attached to the tripod upright.

## Road transportation

Transport the receiver and its accessories in the carrying bag and properly secure it in a road vehicle.

## Railway, air, sea transportation

Transport the receiver and its accessories in the carrying bag and follow the carrier's instructions when applicable.

**Note:** The receiver contains a non-removable lithium battery. When transporting the receiver by air, observe the applicable national and international rules and regulations.

# Regulatory information

## Certification

United States of America

Federal Communications Commission  
(FCC) statement

FCC ID: 2BAYERCH204

This device complies with Part 15 of the FCC Rules.  
Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions may cause harmful

interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**FCC caution:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## **FCC RF radiation exposure statement**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This

equipment should be installed and operated with a minimum distance of 20 cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

## **Canada**

**IC: 31633-RCH204**

### **ISED Canada compliance statement**

This device contains licence-exempt transmitter(s)/ receiver(s) that comply with Innovation Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

### **ISED RF exposure statement**

This equipment complies with ISED radiation exposure limits set forth for uncontrolled

environment. This equipment should be installed and operated with a minimum distance of 20 cm between the product and your body.

## **Déclaration de conformité avec la réglementation d'ISDE Canada**

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) L'appareil ne doit pas produire de brouillage.
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## **Déclaration d'exposition aux radiations d'ISDE Canada**

Cet équipement est conforme aux limites d'exposition aux rayonnements par ISDE établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 20 cm entre le radiateur et votre corps.



## European Union

### CE Declaration of Conformity

This device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

## United Kingdom

**This receiver complies with the following UK legislations:**

- S.I.2016 No. 1101, Low Voltage, RF Exposure
- S.I.2016 No. 1091, EMI/EMC
- S.I. 2017 No. 1206, Radio Equipment

# Recycling and disposal

The product's packaging is recyclable and can be reused. The recycling and disposal of the receiver and its components may vary in accordance with applicable local rules and regulations.

## For countries in European Union (EU)

This product and the supplied accessories, excluding the batteries, constitute the applicable product according to the WEEE directive.



If you need more information on your Reach RS2+  
or technical support, scan the corresponding QR code:



<https://emlid.com/support/>

## Corporate Office

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