



EMLID

REACH RS4P

All-band RTK GNSS receiver
with IMU tilt compensation

User guide

Version: 0.1

Model: RRS-4, RRS-4P

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Introduction

Reach RS4 is an all-band RTK GNSS receiver with a built-in LTE modem, IMU tilt compensation, dual-radio connectivity, and two onboard cameras for visual surveying*. Designed for surveying, mapping, and navigation, the receiver delivers centimeter-level accuracy, streams real-time position in NMEA format, and logs raw data in industry-standard RINEX.

Reach RS4 comes with the Emlid Flow app for receiver configuration and surveying.

*Available only for Reach RS4 Pro model.

Package contents

1. Reach RS4
2. Radio antenna
- 3.USB Type-C cable
- 4 . User guide
- 5 . Carrying bag

Overview



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

SIM card insertion

To insert a SIM card, follow the steps below:

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

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

Operation

Charging

To charge the receiver, do as follows:

1. Plug the USB-C connector into the receiver.
2. Connect the other end to a USB Power Delivery-compliant charger supporting 5V 3A, 9V 3A, 12V 3A, or 15V 3A rate.

Powering on/off

To power on your Reach RS4, press and hold the power button for 3 seconds and wait until the Power LEDs stop blinking and the Network LED turns solid white. This may take about a minute.

To turn off your Reach RS4, press and hold the power button for 3 seconds and wait until all the LEDs go out. This may take about 5 seconds.

Hard reset

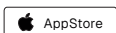
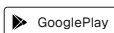
To hard reset Reach RS4, follow the steps below:

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 RS4 in just three steps:

1. Download the Emlid Flow app.



2. Enable Bluetooth on your smartphone or tablet.
3. In Emlid Flow, allow location permissions and connect to Reach RS4 over Bluetooth.

To access detailed information and technical support for your Reach RS4, scan the QR code:



emlid.com/support/reach-rs4

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: L1C/A, L2C, L5 GLONASS: L1OF, L2OF Galileo: E1-B/C, E5a, E6 BeiDou: B1I, B1C, B2a, B3I QZSS: L1C/A, L1C/B1I, L2C, L5 NavIC: L1-SPS Data, L5-SPS
Tilt compensation		RTK+2mm+0.3mm/°
Number of channels		672
Update rates		Up to 10Hz

Connectivity

Emlid radio*

LoRa radio	Frequency range	902.9-927.5 MHz
	Power	0.39W
	Distance	Up to 8km

UHF radio	Frequency range	410.125-469.125MHz(FCC ID) 410.125-429.125MHz (ISED) 450.125-469.125MHz(ISED)
	Protocols	TRIMTALK 450S**
	Modulation type	GMSK

LTE modem	Regions	Global
	Bands	FDD-LTE: 2, 4, 5, 7, 12, 13, 26,
		TD-LTE: 38, 41
		WCDMA: 2, 5
	GPRS&EGPRS: 850, 1900	
SIM card		Nano-SIM

.**TRIMTALK is a trademark of Trimble Inc.

Wi-Fi	802.11a/b/g/n	
Bluetooth	Bluetooth 5.1 (BR/EDR + LE)	
Ports	RS-232, USB Type-C	
Data protocols	Corrections	NTRIP, RTCM3
	Position output	NMEA, LLH/XYZ
Data logging	RINEX, NMEA, LLH/XYZ, UBX	
Internal storage	16 GB	

Imaging***

Image sensors	1/2.6 in, CMOS, global shutter, Full HD	
Field of view	Front camera	H: 64.6°, V: 42.8°
	Bottom camera	H: 63°, V: 42°
Video frame rate	25 fps	

***Applies to Reach RS4 Pro only.

Mechanical

Dimensions	128.6 x 128.6 x 99.3 mm
Weight	920 g
Temperature	-20...+65°C
Ingress protection	IP68

Electrical

Autonomy	18 hrs as RTK rover with tilt, 22 hrs of logging
Battery	Li-Ion 5000 mAh, 7.2 V, 36 Wh
Charging	USB Type-C (PD): 5V—3A, 9V—3A, 12V—3A, 15V—3A

Safety instructions

To ensure the safe operation of your Reach RS4, 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.
- Do not point the camera at the sun or other high-intensity light sources.
- Avoid rapid temperature changes to reduce condensation inside the optics.

Use and care

Although Reach RS4 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.

Cleaning

To clean Reach RS4 from dirt, follow the steps below:

1. Rinse the receiver with fresh water.
2. Dry the receiver with a soft, lint-free cloth.

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

Storage

To prepare your Reach RS4 for storage, follow the steps below:

1. Turn off the receiver 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 carrying bag at room temperature.

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

Transportation

To protect your Reach RS4 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-ion 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: 2BAYERCH4

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 30 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-RCH4

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 30cm 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 30 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

GITEKI

Japan

**Ministry of Internal Affairs
and Communications conformity**

㊞ 003-220017

㊞ 022-220054

㊞ 018-250174

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.



To explore the Reach RS4 documentation,
scan the QR code:



docs.emlid.com/reachrs4/

Notes

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