

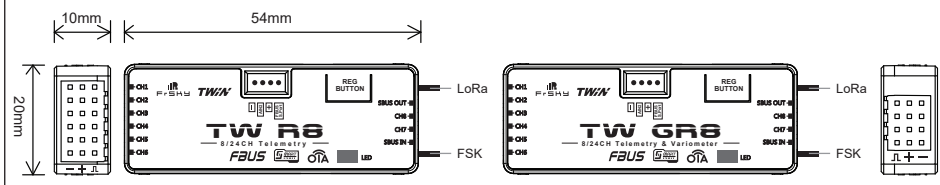
## Introduction

TWIN series TW R8/GR8 receiver features a new stable TW protocol that benefits from simultaneously integrating dual active 2.4G frequency bands. The TW active-active protocol is different from the general active-standby redundancy solutions (where one receiver takes over signal control only when the other is in Failsafe mode), with the TW protocol, dual 2.4G frequency bands are active on the TW series receiver at the same time.

This receiver is designed for RC users who want to benefit from resilience and long-range in their radio communications, typically up to tens of kilometers is achievable. TW GR8 receiver features an upgraded high-precision variometer that gives pilots quick, accurate altitude and vertical speed data, and is ideal for any type of glider pilot.

The TW R8/GR8 receiver is equipped with 2x2.4G antennas. The signal ports include both SBUS In & Out channel and 8 PWM output channel ports. It also supports telemetry functions through FBUS /S.Port. By setting the TW R8/GR8 to use FBUS protocol in the ETHOS system, the signal control and telemetry can be connected to any device that supports FBUS protocol through only one line to achieve bidirectional transmission, also simplifying the model build using fewer wires.

## Overview



## Specifications

- Frequency: Dual 2.4GHz
- Dimension: 54\*20\*10mm (L\*W\*H)
- Weight: 9.8g
- Operating Voltage: 3.5-12V (Please ensure the supplied voltage exceeds 2.8V during the use.)
- Operating Current: 80mA@5V
- Variometer Measurement Range (TW GR8)
  - Altimeter Range & Resolution: - 700m to 10000m & 0.1m
  - Vertical Speed Range:  $\pm 10\text{m/s}$
- Voltage Measurement Range via AIN2 (External device): 0-36V
- Antenna Connector: IPEX4
- Compatibility: TWIN series Radio & RF module in TW mode.

## Features

- Simultaneous working dual 2.4G TW mode
- High-precision variometer sensor (TW GR8)
- Black-Box function
- Long control range (Range varies based on the RF Power settings.)
- Over-The-Air (OTA) FW update
- 8 PWM channel ports
- SBUS Out port (Supports 16CH / 24CH mode)
- SBUS In port (Supports Signal Redundancy)
- FBUS / S.Port

## Registration & Automatic Binding

Follow the step below to finish the registration & binding procedure:

1. For TWIN X Lite as an example, enter into the Model, select RF System, turn on the internal module, select status [ON] and TW MODE(Type), then select [Register].
2. Connect the battery to the receiver while holding the button on the receiver. The RED LED and GREEN LED on the receiver will be on, indicating into the [Reg] status.
3. When it shows the Register ID, RX name and UID, click [Register]. The RED LED and GREEN LED on the receiver will flash, and the transmitter displays [Registration OK ].
4. Power off the receiver.
5. Move the cursor to select any one of the 3 receivers and press [Bind].
6. Connect the battery to the receiver.
7. Select the RX, the GREEN and BLUE LED will keep lit, then the transmitter displays [Bind successful].

**Note:** Once the receiver is registered, the button is not needed anymore in the binding process.

## LED State

Status	Green LED	Blue LED	Red LED
LoRa	-	On	Off
FSK	On	-	Off
Failsafe	Off	Off	On

## How to set the altitude telemetry data (TW GR8)

1. Bind the receiver with the built-in variometer sensor to the transmitter.
2. Enter [Model] menu and use [Telemetry] tool.
3. Discover new sensors and then the [Altitude] data should keep flashing in the list.
4. Holding the [Altitude] bar can call the [Edit] menu out.
5. The telemetry data like [Range] and [Unit] of the variometer can be set now.



Telemetry sensor ETHOS

Value: -0.05m

ID: 1A 0100 (ISRM Rx0)

Name: Altitude

Unit: m

Decimals: 2

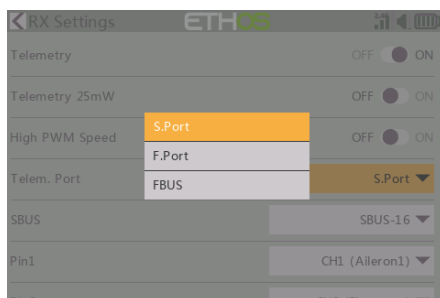
Range: -100.00m - 1000.00m

Write Logs: OFF

## How to switch the S.Port/F.Port/FBUS

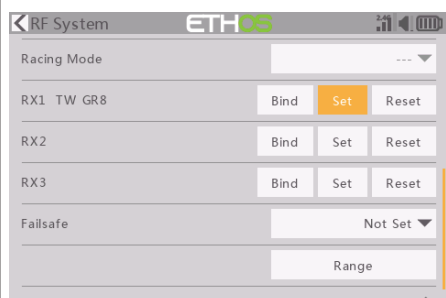


Enter into the [Set] of receiver.

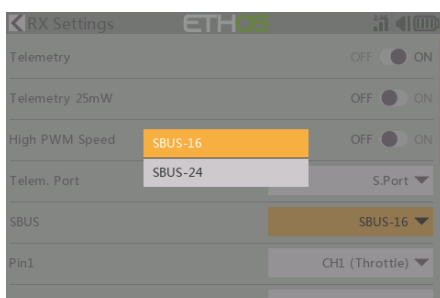


Click the Telem.Port, and select S.Port/F.Port/FBUS.

## How to switch SBUS channel mode



Enter into RX Settings.



Click [SBUS], then select SBUS-16 mode or SBUS-24 mode.

## About OTA function

Go to the [File manager], and select the FW, press the enter button, select [Flash RX by int.OTA]. Power on the receiver, select the RX, go to the [ENTER], complete the flash process, the transmitter will display [Success]. Wait for 3 seconds, the receiver works properly at the moment.

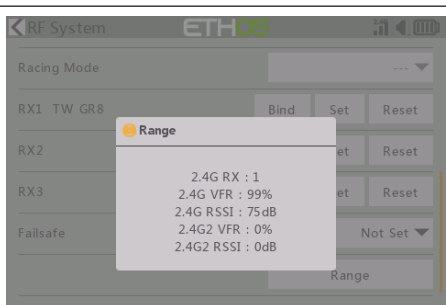
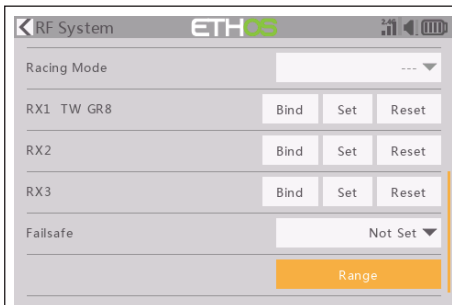
**Note:** Please do not do the binding operation in the near range while the firmware upgrading in progress.

**Note:** Update the firmware after the receiver getting registered (OTA).

## Range Check

A pre-flight range check should be done before every flight, in case the signal loss is caused by the reflection of the signal by the nearby metal fence or concrete, and the shading of the signal by buildings or trees during the actual flight.

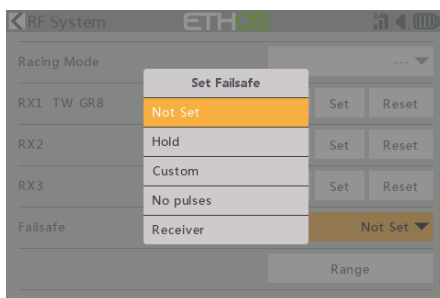
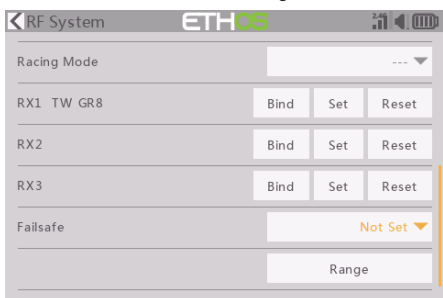
1. Place the model at least 60 cm (2 feet) above the non-metal contaminated ground (such as on a wooden bench). The receiving antenna should be in a vertical position.
2. Enter the ETHOS system, move to the "RF System", scroll the Encoder to select "RANGE" mode and press Encoder. In range check mode, the effective distance will be decreased to 1/30.



## How to set Failsafe

There are 3 failsafe modes when the setting is enabled: No Pulse, Hold, and Custom mode.

- **No Pulses Mode:** On loss of signal, the receiver produces no pulses on any pwm channel. To use this mode, select it in the menu and wait 9 seconds for the failsafe to take effect.
- **Hold Mode:** The receiver continues to output the last positions before the signal was lost. To use this mode, select it in the menu and wait 9 seconds for the failsafe to take effect.
- **Custom Mode:** Pre-set to required positions on the lost signal. Move the cursor to the failsafe mode of the channel and press Encoder, then choose the Custom mode. Move the cursor to the channel you want to set failsafe On and press Encoder. Then rotate the Encoder to set your failsafe for each channel and short-press the Encoder to finish the setting. Wait 9 seconds for the failsafe to take effect.



### Note:

- If the failsafe is not set, the model will always work with the last working status before the signal is lost. That could cause potential damage.
- When the failsafe is disabled on the RF module side, the receiver defaults to Hold mode.
- When in No Pulses Mode, do not set the Failsafe to No Pulses Mode for the SBUS port as it will keep the signal output continuously, Please set "Hold" or "Custom" mode for the SBUS port.

## FCC STATEMENT

1. 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.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 transmitter frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to transmitter communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to transmitter 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 transmitter/TV technician for help.