Futaba
1M23N174xx

FMR-01

FASSTest-2.4GHz Bidirectional Communication System
S.BUS2 / S.BUS System Receiver

INSTRUCTION MANUAL

Thank you for purchasing a Futaba **FMR-01 FASSTest-2.4GHz** compatible receiver. The **FMR-01** receiver features bi-directional communication with a **FASSTest** Futaba transmitter using the **S.BUS2** port. Using the **S.BUS2** port an impressive array of **telemetry sensors** may be utilized. **FMR-01** has a merit which acquires the information from the model on flight by connecting an optional **telemetry sensors**. It also includes both standard PWM output port (3ch only) and **S.BUS** output ports.

Applicable systems: Futaba FASSTest-2.4GHz system-transmitter

If FMR-01 does not use S.BUS/S.BUS2 system, it can perform only operation of 1 channel. However, if S.BUS/S.BUS2 system is used, use of the maximum channel of a transmitter can be performed. You have to use S.BUS/S.BUS2 servo, in order to use S.BUS/S.BUS2 system.

Usage precaution

- Analog servos cannot be used with the FMR-01 in the FASSTest 12CH mode.
- The FMR-01 receiver can only be used with FASSTest capable transmitters.

⚠WARNING

Changes or modification not especially approved by the party responsible for compliance could void the user's authority to operate the equipment.

The FMR-01 receiver should be protected from vibration by foam rubber, Velcro or similar mounting methods. Protect from moisture.

Keep away from conductive materials to avoid short circuits.

Don't connect the servo or gyro which do not correspond to S.BUS2 port S.BUS2.

- When the servo and gyro which do not correspond to S.BUS2 are connected to S.BUS2 port, there is a danger of falling by malfunction.

Turn on the power in transmitter → receiver order. In addition, always check the operation of all the servos before flight.

Do not insert or remove the servo connector while the receiver power is ON.

- Since the S.BUS servo switches the operation mode automatically according to the type of signal (S.BUS signal/PWM signal) from the receiver, if the connector is inserted or removed while the power is ON, an S.BUS connected servo will be erroneously recognized and may stop.

Antenna installation precaution

Do not cut or bundle the receiver antenna wire.

Do not bend the coaxial cable. It causes damage.

The antennas must be mounted in such a way to assure they are strain relieved.

Keep the antenna as far away from the motor, ESC and other noise sources as you possibly can.

Installation makes sure that 2 antennas won't touch the ground.

Be sure that the two antennas are placed at 90 degrees to each other.

- The FMR-01 has two antennas. In order to maximize signal reception and promote safe modeling Futaba has adopted a diversity antenna system. This allows the receiver to obtain RF signals on both antennas and fly problem-free.

Antenna installation for carbon fuselage

⚠WARNING

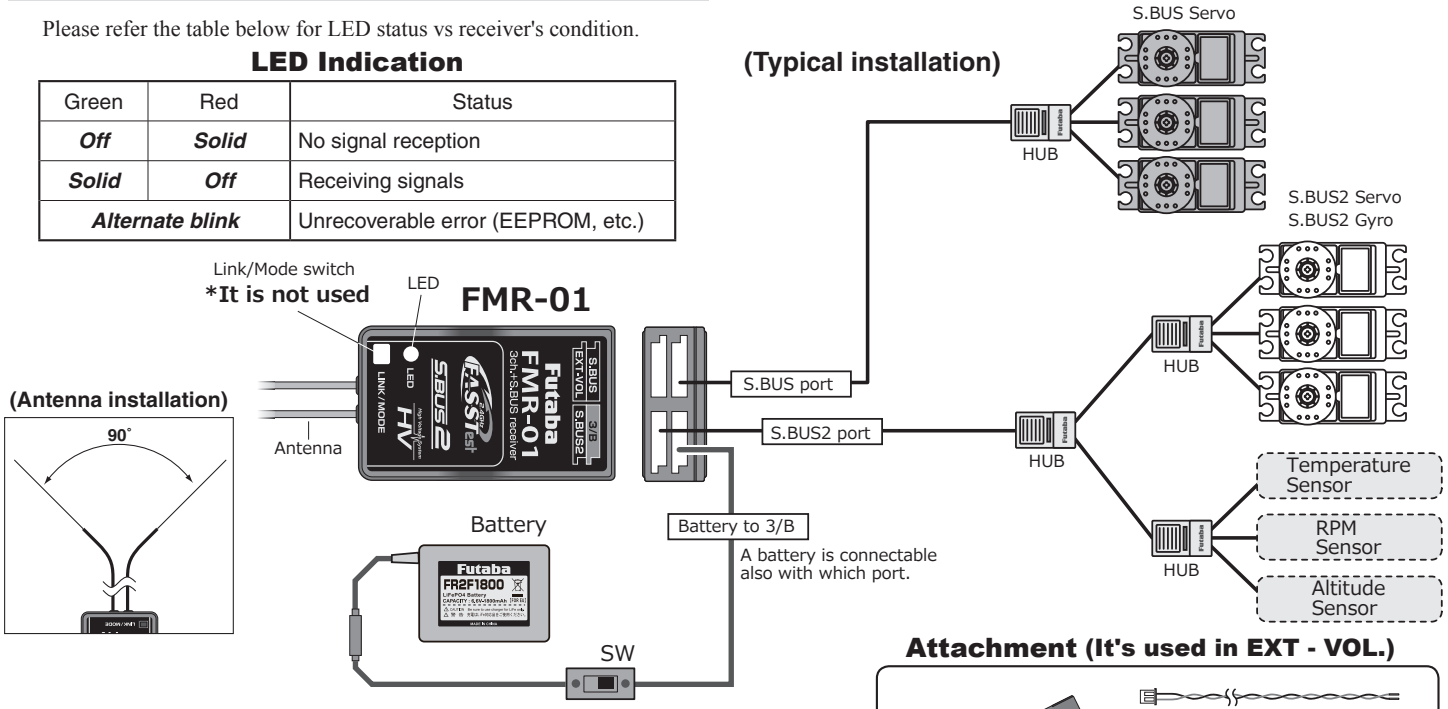
You must leave 30mm at the tip of the antenna fully exposed. The exposed antenna should be secured so that it cannot move around or back inside of your aircraft.

Please refer the table below for LED status vs receiver's condition.

LED Indication

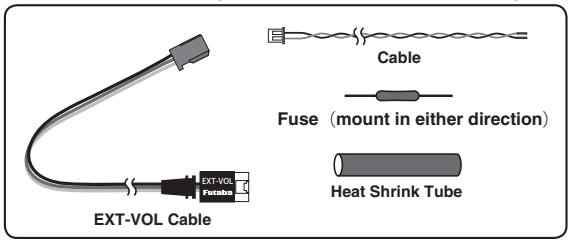
Green	Red	Status
Off	***Solid***	No signal reception
Solid	***Off***	Receiving signals
Alternate blink		Unrecoverable error (EEPROM, etc.)

(Typical installation)



(Antenna installation)

Attachment (It's used in EXT - VOL.)



Compliance Information Statement (for U.S.A.)

This device, trade name Futaba Corporation of America, model number FMR-01, complies with part15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.
(3) This module meets the requirements for a mobile device that may be used at separation distances of more than 20cm from human body.
To meet the RF exposure requirements of the FCC this device shall not be co-located with another transmitting device.
The responsible party of this device compliance is:
FUTABA Corporation of America
101 Electronics Boulevard, Huntsville, Alabama 35824, U.S.A
Fax: 1-256-461-1059
Phone: 1-256-461-9399

FMR-01 Specifications

FASSTest-2.4GHz system/**S.BUS2** and **S.BUS** system receiver

- Dual antenna diversity
- Size: 0.89 x 1.47 x 0.37 in. (22.5 x 37.4 x 9.3 mm)
- Weight: 0.25 oz. (7.2g)
- Power requirement: 3.7V to 7.4V(Voltage range: 3.5 to 8.4V)
- Battery F/S Voltage: It sets up with a transmitter
- Extra Voltage port "EXT-VOL cable and CA-RVIN-700" is used: 0 ～ 70V DC

* Be sure that when using ESCs regulated output the capacity of the ESC must meet your usage condition.

Link to the transmitter

Easy Link ID allows FASSTest receivers to link to compatible transmitter without pressing the link button on the receiver.

1 Bring the transmitter and the receiver close to each other, within 20 inches (half meter).

2 Turn on the transmitter. Place the transmitter into the receiver linking mode.

3 Turn on the receiver.

4 When the LED of the receiver changes from blinking red to solid green, linking is complete.

*Refer to the transmitters operation manual for complete details on how to place the transmitter into the linking mode.

*If there are many FASSTest systems turned on in close proximity, your receiver might have difficulty establishing a link to your transmitter. This is a rare occurrence. However, should another FASSTest transmitter/receiver be linking at the same time, your receiver could link to the wrong transmitter. This is very dangerous if you do not notice this situation. In order to avoid the problem,we strongly recommend you to double check whether your receiver is really under control by your transmitter.

* If the System Type of the transmitter is changed, the receiver will need to be re-linked to the transmitter.

* Link is required when a new model is made from a model selection.

⚠WARNING

- Do not perform the linking procedure while the motor's main wire connected or the engine is operating as it may result in serious injury.
- When the linking is complete, please cycle the receiver power and ensure the receiver is properly linked to the transmitter.
- Please power up your system in this order. Transmitter first, followed by the receiver.
- If the FMR-01 receiver was previously linked to another transmitter, make sure that transmitter is not operating while linking the receiver to the new transmitter.

FASSTest

FASSTest is a bidirectional communication system between the FMR-01 receiver and FASSTest capable transmitters. Multiple optional telemetry sensors may be connected to the **S.BUS2** on the receiver and that data is in turn displayed on the transmitter.

*Please see your transmitters operation manual to configure transmitter to operate with telemetry sensors.

S.BUS2

S.BUS2 extends **S.BUS** and supports bidirectional communication. Sensors are connected to the **S.BUS2** port.

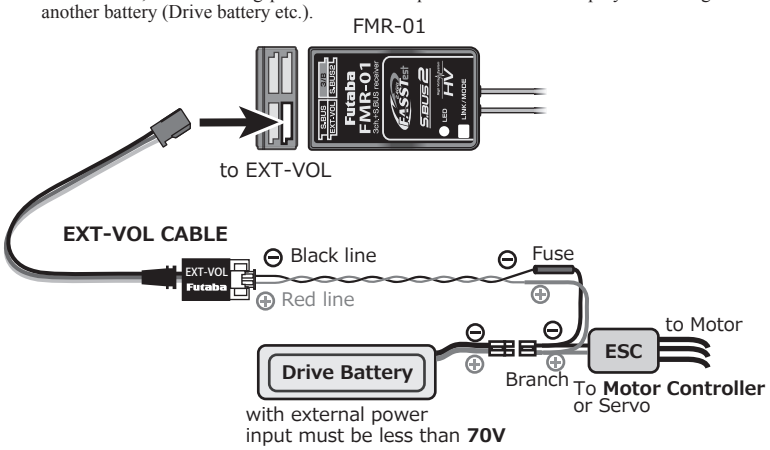
Port	S.BUS Servo S.BUS Gyro	**S.BUS2** Servo **S.BUS2** Gyro	Telemetry sensor
S.BUS	○	○	×
S.BUS2	× (*)	○	○

*Only S.BUS2 capable devices may be connected to the S.BUS2 port. Standard S.BUS servos and gyros should not be connected to the S.BUS2 port.

Measurement of Extra Voltage (Drive battery etc.)

FMR-01 can display the voltage of a receiver battery on a transmitter.

Furthermore, the following procedures are required in order to display the voltage of another battery (Drive battery etc.).



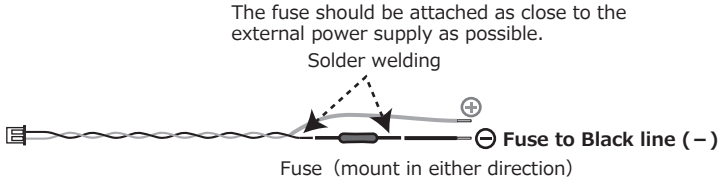
⚠WARNING

- Don't touch wiring.
  - There is a danger of receiving an electric shock.
- Don't connect to Extra Voltage telemetry port before turning on a receiver.
- Don't connect EXT-VOL CABLE other than EXT-VOL port of FMR-01.
- In order to prevent any short circuits, please observe the polarity of all connections.
  - Ensure that the unit is connected properly; failure to do so could result in damage to the cable, receiver, etc.
- Always mount the cable in accordance with the instructions included in this manual.
- Don't apply voltage higher than 70V to Extra Voltage telemetry port.
  - There is fear of explosion, ignition, and breakage.

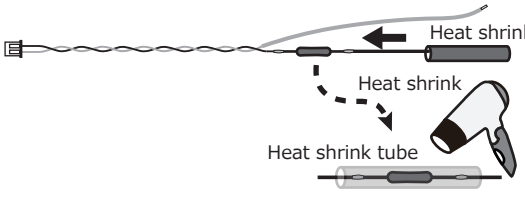
Installation Method

① Measure the cable and then cut it to the desired length.

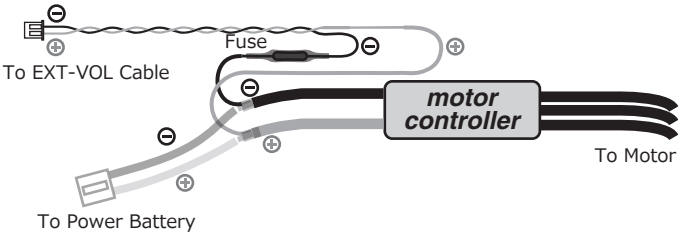
② Cut approximately 30mm of the positive (-, black) line from the cable. Solder the fuse inline on the positive wire and then reattach the section of wire that was previously removed. The fuse should be attached as close to the external power supply as possible.



③ Place a piece of heat shrink tubing over the fuse, ensuring that it covers the soldered areas. Shrink the tubing snug to the fuse and the wire using a heat gun.



④ The cable should be connected as shown in the diagram below. The cable gets connected to the wires that come off the ESC and connect to the battery.



The connection is affixed to the ESC on the wires that are connected to the battery by soldering them and then protecting them with heat shrink.

⑤ The manual for the Telemetry system should be referred to after the setup is complete; checking to make sure it functions as desired and that it provides the correct voltage on the display.

本產品符合低功率電波輻射性電機管理辦法 第十二條、第十四條等條文規定
1. 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
2. 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

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