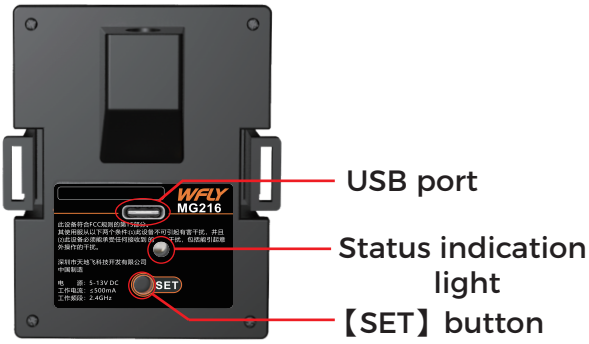
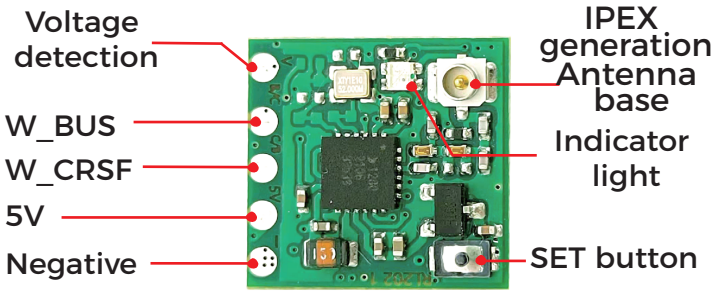
MG216 RF Module User Guide

Ⅰ. Names of each parts

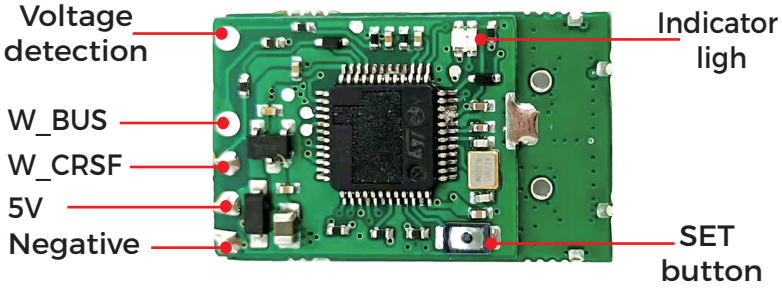
1. RF Module

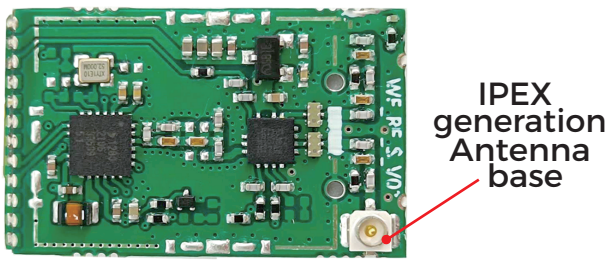


2. RG202 Mini Receiver



3. RG202 Pro receiver





Ⅱ. Firmware upgrade

1. RF module

1.1 Operation steps

(1) Press and hold the 【**SET**】 key, connect TYPE-C to the USB port of the computerwitha data cable (sold separately) to enter the forced upgrademode, Indicator status: the red light is always on.

(2) Short press【**SET**】key to select mode
Module upgrade: indicator status: blue light always on

(3) Long press 【**SET**】 key to enter the upgrade state. Indicator status: blue light flashes

1.2 Computer terminal operation

First upgrade

(1) Install the driver

(2) Open the decompressed 【**Driver**】folder:

For 64-bit operating system, please install 【**dpinst_amd64.exe**】, double-click to run theinstaller, and the corresponding driver will be executed automaticallyInstall.

For 32-bit operating systems, please install 【**dpinst_x86.exe**】, double-click to run the installer, and the corresponding driver will beinstalled automatically.After the driver isinstalled! The module orreceiver can be upgraded.

Non-first upgrade

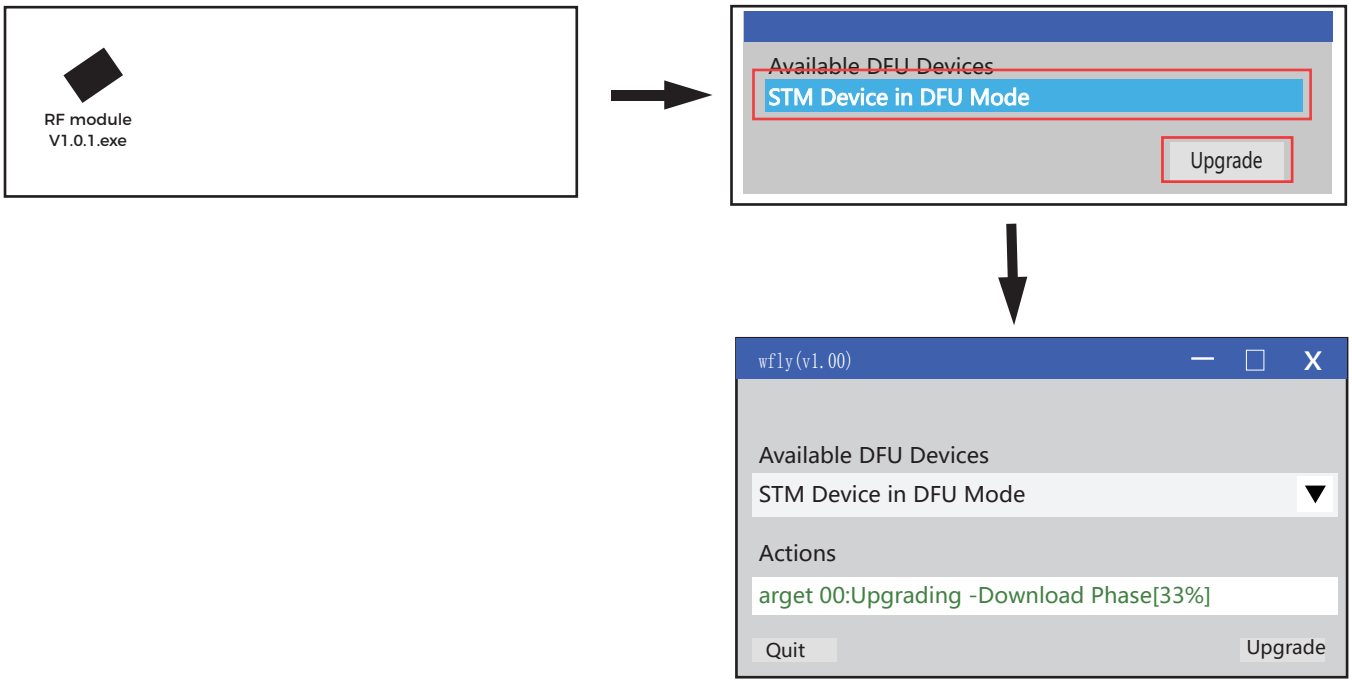
(1) Open 【**MG216 V1.0.1.exe**】(the version number will be different due to different release versions)

(2) When the drop-down bar shows 【**STM Device in DFU Mode**】, you can enter the upgrade normally.

(3) Click 【**Upgrade**】to start the upgrade.

(4) After the upgrade is completed, the indicator light status: red light flashes.

Note: If theupgrade indicator is stuck or the red light does not flash after the upgrade is completed, please turn off the power and follow the above teps to upgrade again.



1.3. Indicator status

Operation	Function	Mode	Indicator status
Short press	Switch function	RF Module	Blue light always on
		Receiver	Green light always on
Long press	Confirm	RF module upgrade	Blue light flashes
		Receiver upgrade	Green light flashes

2. Receiver (wireless upgrade)

Receiver and RF module operation

2.1 Receiver operation

(1) Press and hold the 【**SET**】 key, receiver power on again, the indicator status: the blue light flashes

2.2 RF module operation

(1) Press and hold the 【**SET**】 key, connect the TYPE-C to the USB port of the computer with a data cable (sold separately) to enter the mandatory upgrademodeType, indicator status: red light is always on.

(2) Short press【**SET**】key to select modeReceiver upgrade: indicator status: greenlight

(3) Long press【**SET**】 key to enter the upgrade state. Indicator status: green light flashes

2.3 Computer terminal operation

First upgrade

(1) Install the driver

(2) Open the decompressed 【**Driver**】 hardware driver folder:

For 64-bit operating system, please install 【**dpinst_amd64.exe**】, double-click to run the installer, and the corresponding driver will be installed automatically.

For 32-bit operating systems, please install 【**dpinst_x86.exe**】, double-click to run the installer, and the corresponding driver will be installed automatically. After the driver is installed! The RF module or receiver can be upgraded

Non-first upgrade

(1) Open 【**Receiver V1.0.1.exe**】 (the version number will be different due to different release versions)

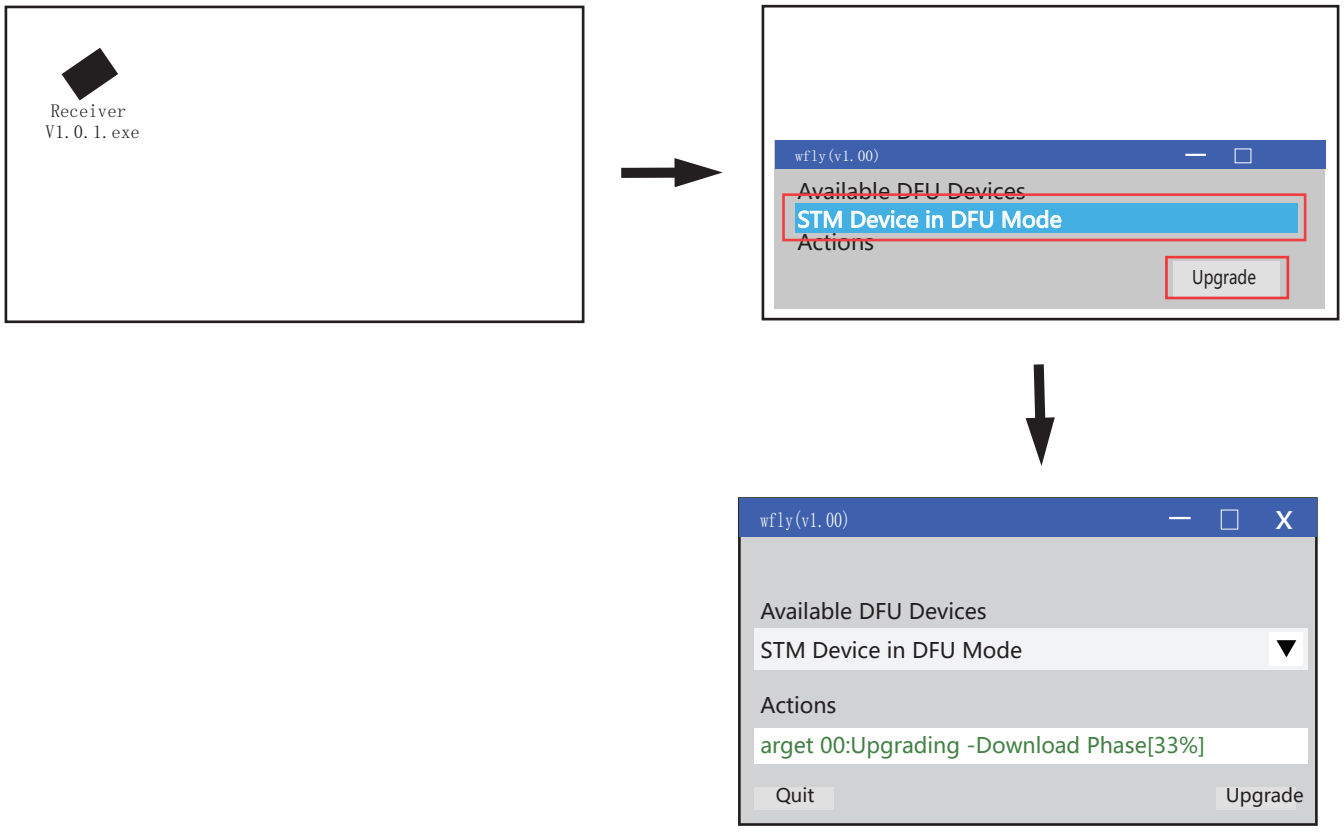
(2) When the drop-down bar shows 【**STM Device in DFU Mode**】, you can enter the upgrade normally.

(3) Click 【**Upgrade**】 to start the upgrade.

(4) After the upgrade is completed, the indicator light status: red light flashes.

Note: If the upgrade indicator is stuck or the red light does not flash after the upgrade is completed, please turn off the power and follow the above steps to upgrade again.

Note: When upgrading, only 1 pair of RF module and receiver are being upgraded, otherwise the upgrade may fail.



Ⅲ. Indicator status

1.RF module

Mode	Color	Status	Function
CRSF	Green	Always on	Connected receiver
S.BUS	Blue		Connected receiver
PPM	Purple		Connected receiver
Warn	Yellow		Receiver not nonnected
	Red	Flashes	Voltage<6.8v
		Always on	No transmitter data received
Link	Yellow	Flashes	Linking

2.Receiver

Mode	Color	Status	Function
Link mode	Yellow	Flashes	Linking
	Green	Always on	Finish
Transmission mode	Red	Always on	No transmitter data received
Warn		Flashes	Voltage<3.7v

Ⅳ. Link

1. RF module

(1) Method 1 【**SET key linking**】

When the RF module does not receive data from the receiver (indicator status: yellow, blue, or purple light is always on), long press the 【**SET**】 button to enter the linking status, and the indicator status: the yellow light flashes.

(2) Method 2 【**Menu linking**】

Open TX system

【**MODEL SETUP**】-【**External RF**】-【**Mode**】When the protocol is set to CRSF, the function setting will bedisplayed.Long press the transmitter 【**SYS**】key to enter the 【**TOOLS**】-【**Crossfire configure**】-【**WFLY TX**】function interface.

In the WFLY TX interface, press the 【**Bind**】 key to bind.

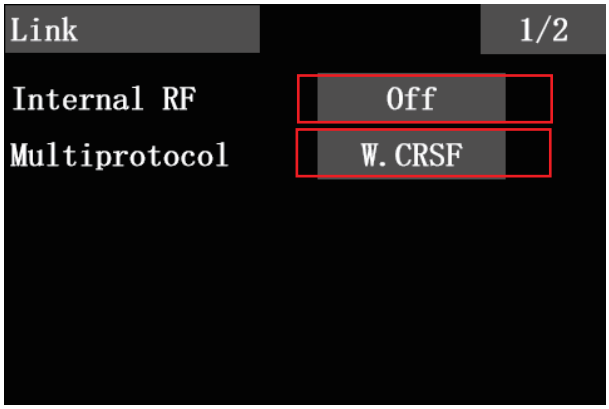
WFLY ET16/S

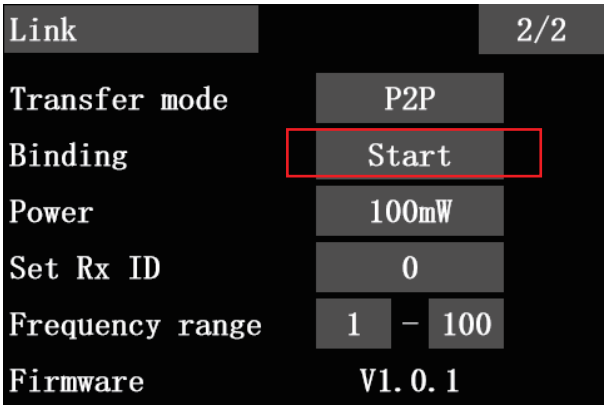
Function path: 【**Linkage setting**】-[**Bind**】

① The built-in module is set to 【**Disabled**】

② Set the external module to【**W.CRSF**】

③ Click 【**Start**】 to check the code.





2. Receiver

(1) Linking mode within 0.13 seconds after power-on

Note: The RF module status needs to be in the linking mode.

(2) Long press the 【**SET**】 key to enter the link state, the indicator light state: the yellow light flashes.

Note: After the code is successfully link, if you need to enter the link again, the receiver needs to be powered on again. Long press【**SET**】key to exit the linking mode.

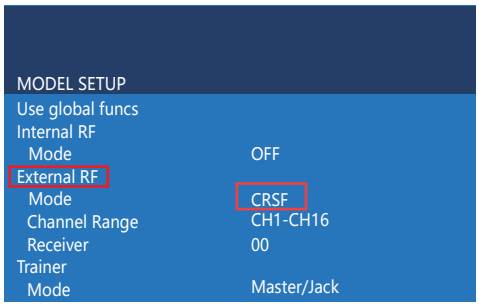
Ⅴ. How to use the RF module

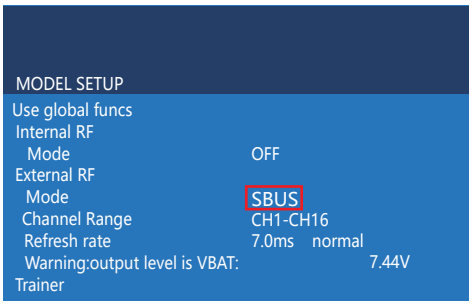
1. The type of protocol supported by the module:

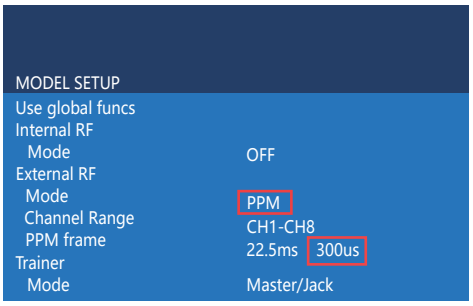
S.BUS, CRSF, PPM protocol, for example: Open TX system, long press the transmitter 【**MDL**】key,【**MODEL SETUP**】-【**External RF**】-【**Mode**】 setting items, respectively set to CRSF,S.BUS, PPM,The module can be identified and connected normally.

Tips: CRSF protocol: support interface function settings,

PPM protocol:【**MODEL SETUP**】-【**External RF**】-【**PPM frame**】 on the OPEN TX system should be set to 300us. PPM protocol supports up to 16 channels







2.WFLY TX interface

【**MODEL SETUP**】-【**External RF**】-【**Mode**】When the protocol is CRSF, the function setting is displayed. Long press the transmitter【**SYS**】key to enter【**TOOLS**】-【**Crossfire configure**】-【**WFLY TX**】function interface.

(1) Set Failsafe (out of control protection setting)

Set the fail-safe protection function, and send the current channel data to the receiver

Note: Only when the【**TOOLS**】-【**Crossfire configure**】-【**WFLY RX**】mode is【**F/S**】, data will be sent to the receiver

(2) Bind

Binding: All parameters need to be set, and then the code pairing operation is performed before the interface data will be sent to the receiver.

Re-Flag: When returning the flag【**Disable**】, the receiver does not return information to the module

Re-Num: The number of return times (1/2/3/4/5), for example: when set to 2, the receiver will return 1 packet of high-frequency header data only after receiving two packets of data.

Transfer_Mode: transfer mode setting

【**P2P**】: The RF module can only be connected to one receiver;

【**Radio**】: The RF module can be connected to multiple receivers at the same time

L_Freq: minimum frequency limit

Range: 1~25 (for example: when set to 1, the frequency is 2.401GHz)

Step value: 1Mhz

H_Freq: Maximum frequency limit (76~100),

Range: 76~100

Step value: 1Mhz

(3) TX.Power: The transmitting power setting of the RF module, which can be set to 5mw/10mw/25mw/50mw/100mw.

(4) Firmware: RF module firmware version

3. WFLY RX interface

【MODEL SETUP】-【External RF】-【Mode】 When the protocol is CRSF, the function setting is displayed. Long press the transmitter **【SYS】** key to enter **【TOOLS】-【Crossfire configure】-【WFLY RX】** function interface.

(1) Set TX.Power: Receiver power setting Receiver transmit power setting, which can be set to 5mw/10mw/25mw/50mw/100mw.

(2) Set RX.Port: receiver port setting

Before setting the receiver port configuration, first select the parameters of the receiver port, and then set it

RX-Port.W_R: Read: Port information read from the receiver.

Write: Set the receiver port.

RX-Port1.mode: can be set to PWM or PPM.

RX-Port1.ch: can be set to CH1 to CH16

Port 1-7: Can be set to PWM or PPM, and support channels 1 to 16 to be mapped to this port.

Port 8 and 9: can be set to PWM, PPM, W.BUS or CRSF mode

PWM: channels 1-16 can be set to map to this port;

PPM: Correspondence containment channels 1 to 9 are mapped to this port

(Set to channel 1, the PPM output is CH1 to CH8 channel data; set to channel 9, the PPM output CH9 to CH16 Channel data);

WBUS: This port outputs W.BUS data;

CRSF: This port outputs CRSF data;

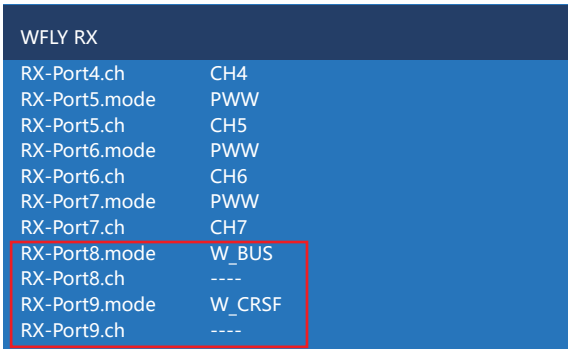
Example: RX-Port8.mode=PWM, RX-Port8.ch=CH2, then the receiver port 8 outputs the PWM data of channel 2.

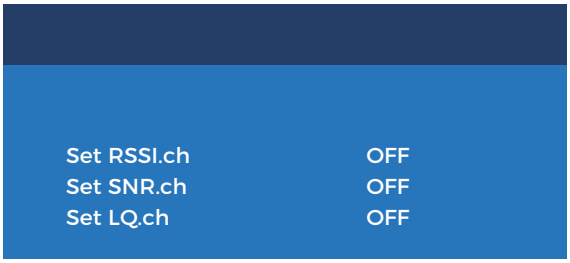
(3) Steps to set the receiver port

①【**RX-Port.W_R**】Set to【**Write**】

②Set the 【**RX-PortX.mode**】and 【**RX-PortX.ch**】 functions separately;

③Set【**Set RX.Port**】, select【**OK**】





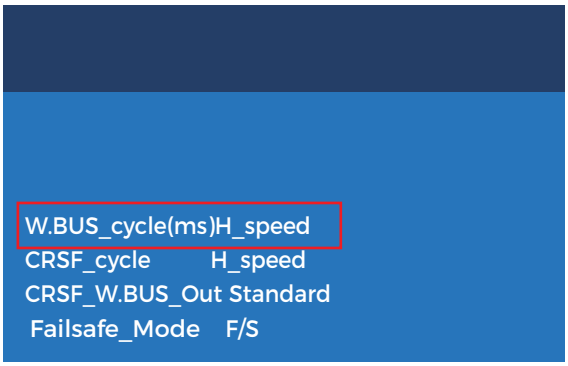
(4) SNR/RSSI/LQ mapping settings

RSSI/SNR/LQ: Can be mapped to output channels 1 to 16.

RSSI/SNR/LQ: 0FF/CH1—CH16

Example: LQ is mapped to CH12, 12 data of output protocol CRSF/W.BUS is LQ setting steps:

Set the channel mapped by RSSI/SNR/LQ and select 【OK】.



(5) W.BUS_Cycle(ms): W.BUS output cycle setting

Can be set to H_Speed/7/8/9/10/11/12/13/14

H_Speed: High speed mode,

When set to 7-14: W.BUS data is output once every 7-14ms

(6) CRSF_Cycle: Set CRSF output cycle

Can be set to H_Speed, Standard

H_Speed: High speed mode

Standard: Standard mode

Setting steps: Set the period of CRSF output, select 【**OK**】.

(7) CRSF_W.BUS_Out: CRSF, W.BUS output positive and negative settings

Can be set to Standard, Inversion

Standard: Standard;

Inversion: Inversion. (Some flight controllers only recognize the inversion of the CRSF or W.BUS protocol, and can be used normally when set to inversion) Setting steps: set CRSF, WBUS output protocol standard or reverse phase, select 【**OK**】.

(8) FailSafe_Mode: Set the fail-safe protection mode

Can be set to Keep, F/S, Close mode

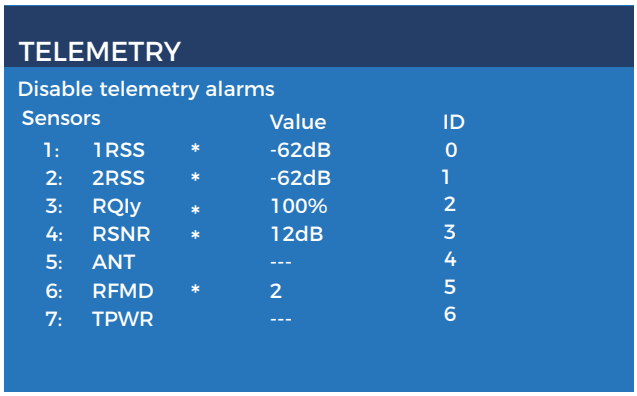
F/S, the receiver will use the channel data received at this time as the out-of-control protection data,

Keep, Close, only change the receiver out-of-control protection mode, and will not change the out-of-control protection data.

Note: When set to Keep or Close, when the fail-safe protection is set in the 【**TOOLS**】-【**Crossfire configure**】-【**WFLY TX**】 interface, only the receiver fail-safe mode will be changed, and the fail-safe data will not be changed.

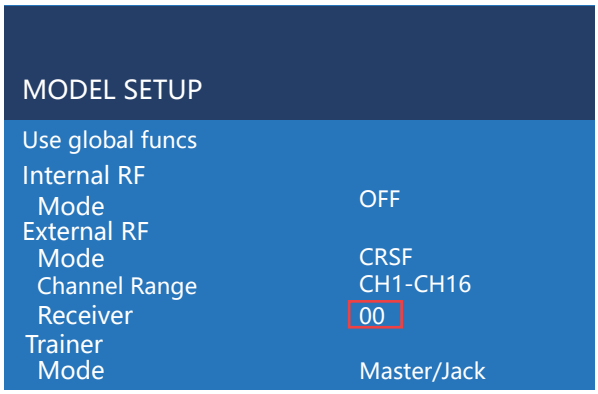
4. Telemetry interface

When the module is connected to the receiver normally, long press the 【**MDL**】 key to jump to the 【**TELEMETRY**】telemetry interface.



5. Receiver number

Long press 【**MDL**】 key, when 【**MODEL SETUP**】-【**External RF**】-【**Mode**】 is 【**CRSF**】mode,【**Receiver**】 The serial number data is sent to the receiver during code matching. And the RF module and receiver will recognize this number when they are connected.



Example: When the 【**Receiver**】 number is set to 【**0**】, the RF module and the receiver are successfully connected after the code is successfully paired. When the 【**Receiver**】number is set to 【**1**】, the RF module and the receiver are disconnected, 【**Receiver**】When the number is reset to 0, the RF module and receiver resume normal connection.

VI.Technical parameters

Product model: MG216
Suppor: ET16 ET16S Open TX（Includes JR slo）
Frequency band: 2.4GHz
working frequency: 2.400-2.483 GHz
Modulated emission: LoRa
Adjustable position: Power adustable
Transmit power: 20dBm
Flying range: >3km（No interference,open area）
High refresh rate: 200/135Hz
Delay: 5ms（CRSF）
Transmission channel: 16
Set interface: Support LUA script（OpenTX）
Antenna type: External single antenna
Antenna interface: Internal thread inner hole
Antenna gain: 3dbi
Power supply range: 3.5~13V
Product dimensions: 65mm*53mm22mm
Power consumption: 0.36W
Weight: 45.0g (including antenna)
Installation slot size: 60.mm*45mm19.5mm
Online upgrade: Suppor
Signal input: CRSF、S.BUS、PPM
Wireless protocol: Third Generation

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