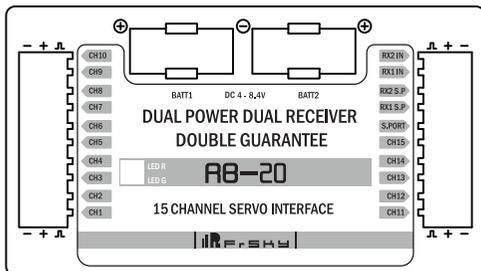## Introduction:

Thank you for purchasing FrSky RB-20. It is a high-performance and multi-function unit. In order to fully enjoy the benefits of this system, please read the instruction manual carefully and set up the device as described below.

Overview:

- **CH1~CH15** - connect up to 15 servos (PWM)
- **RX1 S.P** - connect to the S.Port of RX1
- **RX2 S.P** - connect to the S.Port of RX2
- **S.PORT** - connect to the S.Port of FrSky products with S.Port
- **RX1 IN** - connect to the SBUS port of the receiver
- **RX2 IN** - connect to the SBUS port of the receiver
- **BATT 1&BATT 2** - MPX connectors for batteries or BEC connection, supply power for RB-20 and connected receivers

What's New!

- **Multi-channel output**
- **Higher operating current (The current is twice as big as RB) and supporting high-current servos (Please refer to the chart in Overload Protection)**
- **Automatically selected telemetry between RX1 and RX2:**
  decide on/off of telemetry on RX1 and RX2 through RX1 S.P and RX2 S.P

Specifications:

- Recommended input voltage range: DC 4~8.4V (1~2s Lipo or 4~6s NiMH)
- Number of servos: up to 15
- Operating temperature: -20℃~75℃
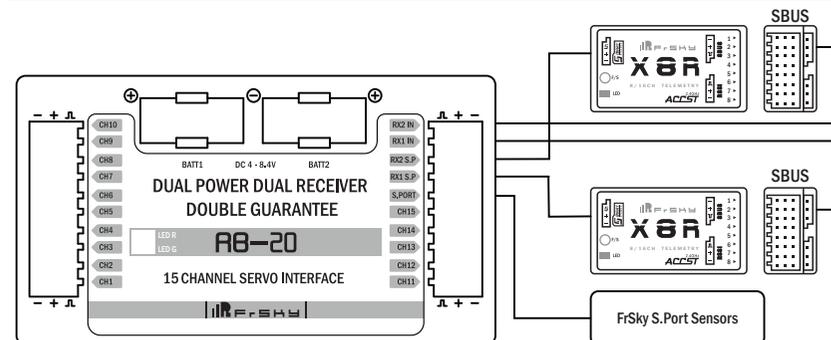- Weight: 37g
- Dimension: 77×43×22mm

Features:

- High voltage servo supported
- Overload protection on each channel
- Compatible with other FrSky S.Port products
- Dual power and dual receiver
- Integrated S.Port telemetry feedbacks (voltage, current, capacity, overload indication, etc.)
- Settable servo signal output period: 50Hz of servo outputs (20ms period) or equal to the input of SBUS cycle

Working State :

Red LED	Green LED	State
Off	On	Normal
On	Off	Abnormal

Connection:

The RB-20 is a switchboard connected to power supplies, receivers, servos and S.Port sensors. The RB-20 does not contain circuitry to stabilize or regulate voltage to the servos. The level of the input voltage is equal to the level of (output) supplied voltage to the servos. Be sure to match the proper type of servos with your selected power supply (for example: when using 2 LiPo cells without a regulator, it is necessary to use servos labeled "High Voltage").
Do not use Y harness to connect more than one servo to each servo output.

Note
R-XSR,G-RX8 and RX8R PRO could enable/disable telemetry through S.Port.
X8R,X4R and XSR could enable/disable telemetry through S.Port with the firmware above and V180125.

Power Supply:

Power supply of RB-20 could be provided from either one battery/BEC (connect via BATT1 or BATT2), or two (connect to BATT1 and BATT2). When two power supplies are used, make sure both supply the maximum continuous current of 40A and the maximum peak current of 120A. Otherwise overload protection could not function efficiently.
If the voltages of two power supplies are the same, power can be used from both supplies at the same time;
If the voltages of two power supplies are different, the power comes from the one with the higher voltage, and each supply is isolated from each other instead of shared.
Application of batteries with different capacity, number of cells and chemistry type is allowed.
Please ensure output power on one of the two power supplies is no less than the maximum operation power of the connected devices (servos, etc.), or insufficient power supply on the connected devices may occur.

Caution: Do not connect power supplies to CH1~CH15, S.PORT, RX1 S.P, RX2 S.P, RX1 IN and RX2 IN.

Overload Protection:

The RB-20 has overload protection function through a circuit inside on each servo output. If current overload happens, the affected servo output will be disconnected from the power supply while the remaining servo outputs are still power on.
The allowed continuous current output on CH1~CH15, S.PORT, RX 1IN, RX 2IN is 5A. When the continuous current is over 10A, the RB-20 will activate overload protection immediately 23℃.

Temperature	I_{hold} (A)	I_{trip} (A)
23℃	5.00	10.00
50℃	3.95	7.90
70℃	3.35	6.70

Setting for Servo Signal Output Period:

The default period of the signal output is 20ms, and it could be set to the receiver synchronized.
Analog servos are not recommended to set to receiver synchronized.
Follow the steps below to set the signal output period:
I. Connect the signal pins of CH1 and CH2 by a jumper
II. Connect the power supply to BATT 1 or BATT 2
III. The GREEN LED flashes quickly, indicating that signal output period has been synchronized with that of the receiver (from 20ms to the desired value)
IV. Disconnect both the jumper from CH1 and CH2 and the power supply

> **Note: If you want to change back to the default servo signal output period(20ms), please follow STEP Ⅰ & Ⅱ above without connecting any receiver.**

How to distinguish between 20ms and the receiver synchronized
Connect a receiver to RX1 IN or RX2 IN, then connect power supply to BATT1 or BATT2. If GREEN LED flashes quickly, it is receiver synchronized output. If stay on, it is 20ms output.
How to update the firmware
Update the RB-20 through S.PORT interface

How to change the SBUS signal from negative to positive for RX1 IN and RX2 IN:

The SBUS signal from FrSky Redundancy Bus is negative. Follow the steps below to change it from negative to positive.
Take RX1 IN for example
I. Connect the signal pins of CH11 and CH12 by a jumper
II. Connect the power supply to BATT1 or BATT2 and the GREEN LED will Flash
III. Remover the jumper and disconnect the power supply

> **Note**
> Connect the signal pins of CH13 and CH14 by a jumper, and follow I & II to change the SBUS signal from negative to positive for RX2 IN.
> Connect the signal pins of CH11 and CH12, CH13 and CH14 by jumpers, and follow I & II to change the SBUS signal from negative to positive for RX1 IN and RX2 IN at the same time.
> Follow step I & III to switch back the SBUS signal from positive to negative.

Attention

1. Only failsafe set on the receiver which is connected to RX1 S.P will work.

2. RB-20 doesn't support hotplug. When RX1 or RX2 is replaced halfway, RB-20 needs to be repowered on.

3. Make sure both of the receivers output the same signal. For example,when S8R and X8R are used together, disable gyro on S8R, or they will output different signals.

4. Two receivers could be bound to the same RF module. Also, users could bind RX1(RX2) to IXJT and RX2(RX1) to the external module XJT, but the S.Port of the external module should be disabled (The transmitter could only get the S.Port signal from one module by now).

5. RB-20 will manage the telemetry of the two receivers automatically after connecting the devices. There's no need to disable the telemetry while binding RX1/RX2.

FrSky is continuously adding features and improvements to our products. To get the most from your product, please check the download section of the FrSky website www.frsky-rc.com for the latest update firmware and manuals.