XR600T series FPV receivers

XR600T series of receivers are super small size but long range and supporting data back receivers designed specially for FPV flight. High efficiency PA and LNA are integrated on its hardware, also two bidirectional serial ports are integrated. Several kinds of communication protocols are switchable conveniently.; We can provide up to 8 types of this series of receivers, all of them can be used on any F4 and F7 flight control board with or without signal inverter.

Features:

1） Super small size (XR601T is 10*17*3mm, XR602T is 11*17*3mm, Note 1)

2） Super light (XR601T is 0.66g, XR602T is 0.8g)

3） All XR600T series receivers can be used on any F4 and F7 flight control board with or without signal inverter.

4） Can connect and work on any serial port of F4 and F7 flight control board;

5） IPEX4 antenna plug;

6） Diversity antenna provides best range and best radio frequency performance(only XR602T series receivers support)!

7） Supports data-back function (Note: B1 version doesn't support this function as it is limited by its protocol)

8） Supports working temperature measurement;

9） Supports RSSI output;

10） Supports normal or reversed SBUS (DMA control)

11） Supports normal speed (100Kbs) or high speed SBUS (200Kbs, very useful for reducing time-lapse, Note 2)

12） Supports normal or reversed Fport (DMA contro);

13） Supports normal speed(115.2Kbs) or high speed Fport (230Kbs, helpful for reducing time-lapse, Note 2)

14） Working current/voltage: 50mA/5.0V(when data-back function is on full power running)

15） Supports port function configuration by user (port output protocol configuration, normal or reversed, normal speed or high speed)

16） Supports configured data-back function (configured data-back working or not working, RF output power);

17） Protocol switchable for SPEKTRUM DSMX/2 to SBUS and Fport protocol (A1 version)

18） Protocol switchable for Futaba SFHSS to SBUS and FPort (B1 version);

19） Protocol switchable for FrSky D16 to SBUS and Fport (B3 version)

20） Protocol switchable for FlySky AFHDS-2A to SBUS and Fport (C2 version)

21） Supports firmware online updating;

22） It can change data output protocol and data-back protocol according to customer requirement.

注：1）Please choose XR401 series receivers if customers like smaller size receiver (10*13*3mm); Please choose XR702T and XR802T series receivers if customers prefer long range receivers; Please choose XR920 and XR950 series receivers if customers want 915M receiver.

2）When high speed SBUS protocol is on working, 1.4ms time-lapse will be reduced, when high speed Fport protocol is on working, 1.4ms time-lapse will be reduced.

Ports description and connection diagram (FPORT protocol)
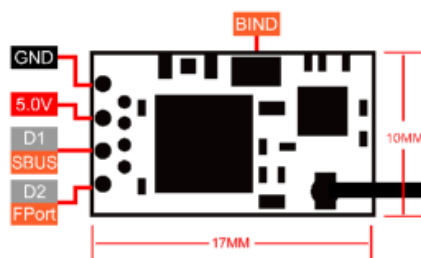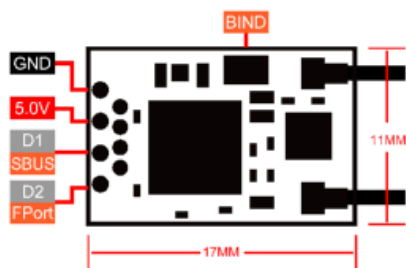
Binding operation:

Press the binding switch after XR6OO receiver is powered, it enters binding mode after 2 seconds when the slow flashing red LED turns to fast blinking. Then bind the receiver according to the transmitter manual. When the fast blinking red LED turns to solid bright, it indicates binding is successful.

Variable RF Link technology:

Variable RF Link technology: When the receiver is too close to radio(remote control), normally RF signal will be blocked and meanwhile lose control happens, Variable RF Link is born for solving the problem! As soon as Variable RF Link finds that the receiver is coming close to radio, it will adjust LNA gain and PA output power lower to avoid short distance control failure automatically; When Variable RF Link detects that the receiver is going far away from radio, it will adjust LNA gain and PA output power higher to increase RX's working range automatically.
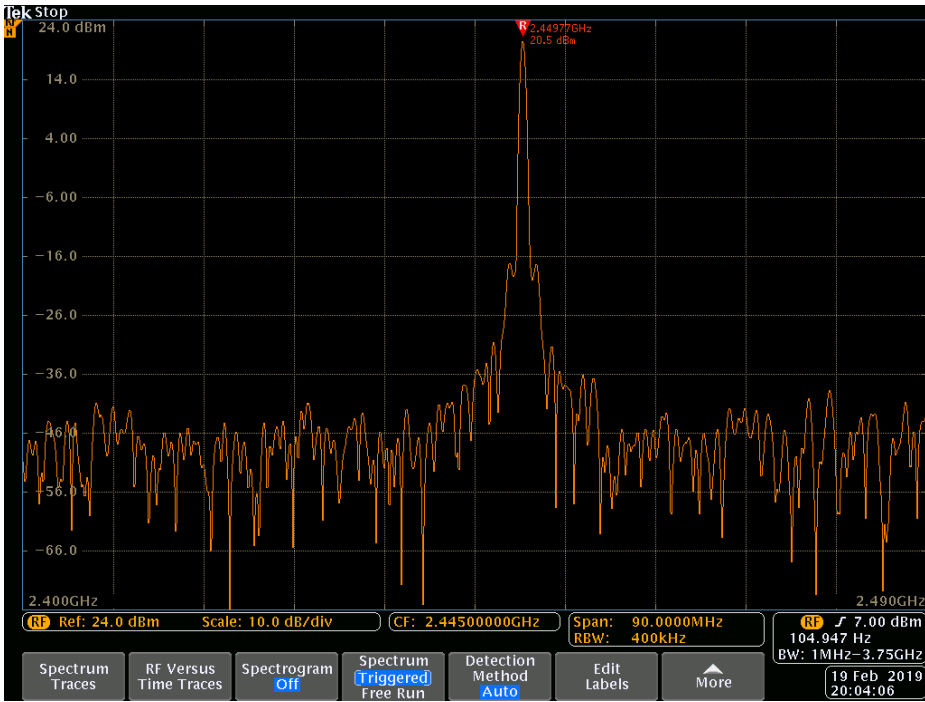
List for XR600T series receivers:

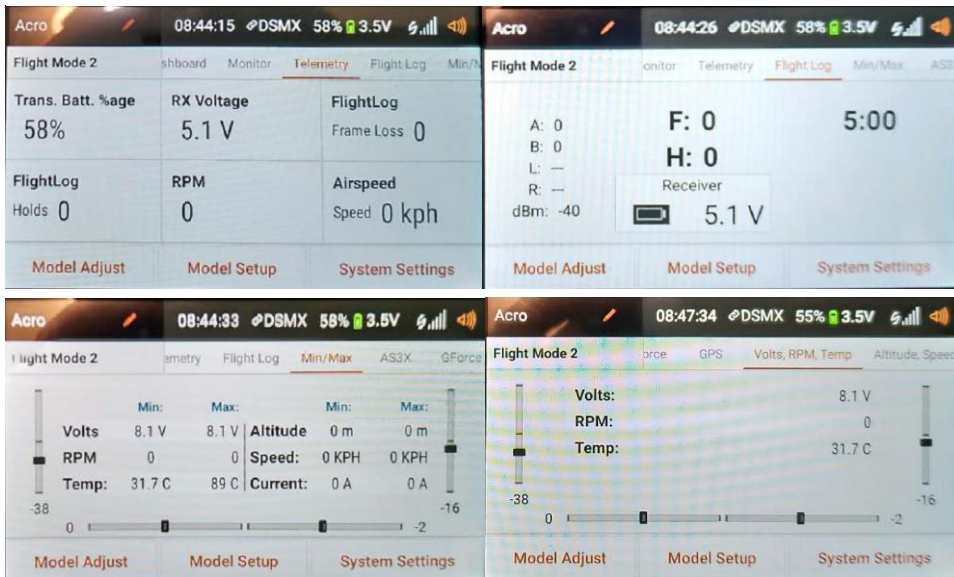|	protocol	size（mm）	antenna	Telem	RSSI	SBUS	FPort	Channel numbers	RF output power
XR601T-D	DSMX/2	10*17*3	single antenna	support	support	support（also support normal and high speed SBUS）	Support(also support reversed FPort and high speed FPort）	12CH	17dBm (S not support)
XR601T-S	SFHSS			no				8CH	
XR601T-F2	Frsky-D16			support				16CH	
XR601T-A2	AFHDS-2A			support				14CH	
XR602T-D	DSMX/2	11*17*3	Diversity antenna	support	support	support(also support normal and high speed SBUS）	support(also support reversed FPort and high speed FPort）	12CH	20dBm (S not support)
XR602T-S	SFHSS			Not support				8CH	
XR602T-F2	Frsky-D16			support				16CH	
XR602T-A2	AFHDS-2A			support				14CH	

Default setting:

	RSSI	SBUS	FPort	Channel numbers	RF output power
XR601T-D	The 14CH in SBUS data package, the 14CH and the 27th data in FPort data package	reversed, normal speed	normal, normal speed	12CH	17dBm (S not support)
XR601T-S				8CH	
XR601T-F2				16CH	
XR601T-A2				14CH	
XR602T-D	The 14CH in SBUS data package, the 14CH and the 27th data in FPort data package	reversed, normal speed	normal, normal speed	12CH	20dBm (S not support)
XR602T-S				8CH	
XR602T-F2				16CH	
XR602T-A2				14CH	

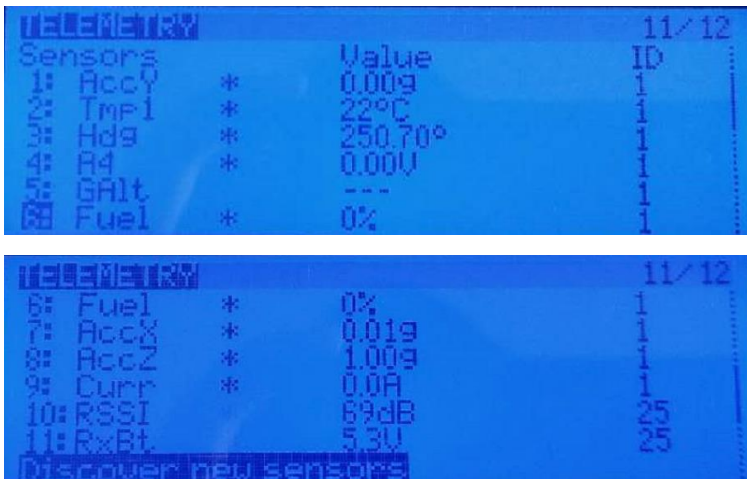**Measuring RF output power of Telem function (XR602T series)**

```
  24.0 dBm                                    B 2.44977GHz
                                               20.5 dBm
  14.0

  4.00

 -6.00

-16.0

-26.0

-36.0

-46

-56.0

-66.0

 2.400GHz                                                          2.490GHz
```

| RF Ref: 24.0 dBm | Scale: 10.0 dB/div | CF: 2.44500000GHz | Span: 90.0000MHz RBW: 400kHz | RF ♪ 7.00 dBm 104.947 Hz BW: 1MHz-3.75GHz |

| Spectrum Traces | RF Versus Time Traces | Spectrogram Off | Spectrum Triggered Free Run | Detection Method Auto | Edit Labels | ▲ More | 19 Feb 2019 20:04:06 |

Telem function page:

A1 version(IX12)：
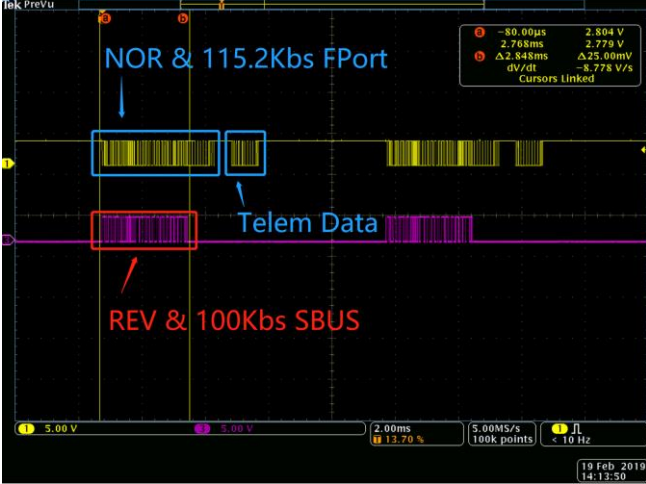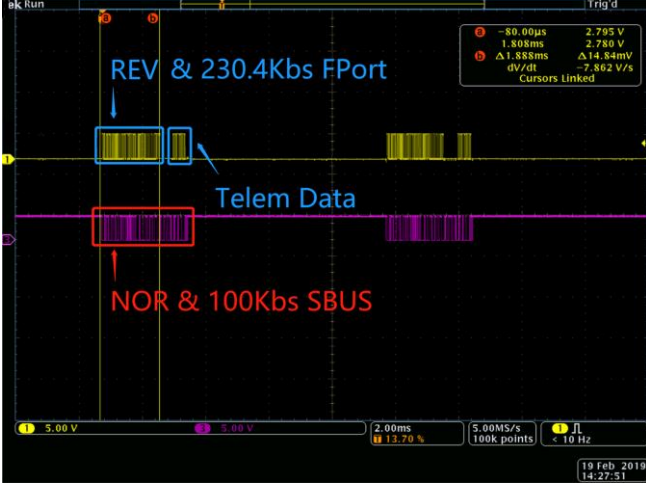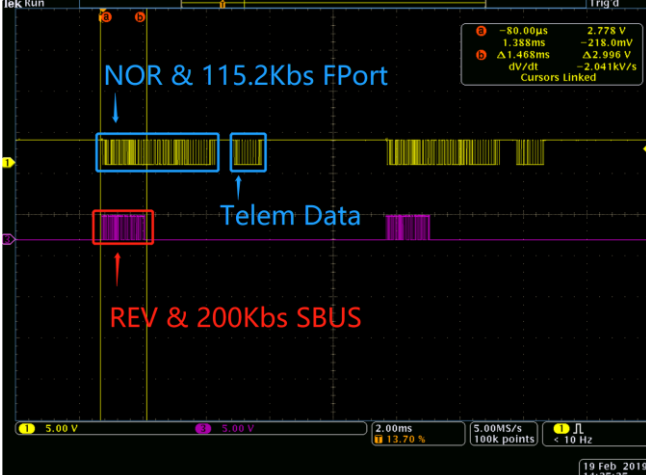
B3 version(X9D)：

C2 version(NV14 FW-V2.3)：

Wave pattern of signal output from the port:

Port output mode	signal wave pattern
Reversed and normal speed SBUS & Normal and normal speed FPORT signal wave	
Normal and normal speed SBUS & Reversed and high speed FPORT signal wave	
Reversed high speed SBUS & Normal and normal speed FPORT signal wave	

Setting up related FPV flight control board:

Set up serial port for receiver

Set up protocol for receiver (SBUS protocol choose SBUS, FPORT protocol choose FPort, either-or)

Setting channel map and RSSI channel:

When there is no inverter on flight control board but using normal FPort protocol, please enter CLI mode and input the following content:

```
set serialrx_halfduplex = ON
set serialrx_inverted = OFF
save
```

When there is no inverter on flight control board but using reversed FPort protocol, please enter CLI mode and input the following content:

```
set serialrx_halfduplex = ON
set serialrx_inverted = ON
save
```

When there is inverter on flight control board but using normal FPort protocol, please enter CLI mode and input the following content:

```
set serialrx_halfduplex = ON
set serialrx_inverted = ON
save
```

When there is inverter on flight control board but using reversed FPort protocol, please enter CLI mode and input the following content:

```
set serialrx_halfduplex = ON
set serialrx_inverted = OFF
save
```

Receiver functions:

XR600T series receivers applied MCU of high performance, as a result, XR600T series receivers can support functions that other receivers on market can't, such as working temperature measurement, output normal or reversed SBUS and FPort signal ect. User can configure receiver with these functions by GUI or by order (these configuration must be done before RF signal is received by receiver, or the receiver won't deal with the configuration) the configuration orders are the following：

0xAA，0x55，0x07，0x1B，0x00，D00，D01，D02，CheckSum

D00 function description: temperature measurement function for configuring Telemetry and RX is turned on or not, also set up PA output power;

D00 parameter					
B7	B6	B5	B4	B3	B2~B0
0: Telem is off 1: Telem is on	0: RX temperature measurement is off 1: RX temperature measurement is on	0	0	0	0->0dBm; 3->17dBm; 1->4dBm; 4->20dBm; 2->10dBm;

Note: PA max output power for XR601T series receivers is 3-→17dBm; PA max output for XR602T series receivers is 4--→20dBm;

D01 function description: set up working mode of M.BUS-D1

D01 parameter				
B7	B6	B5	B4	B3~B0
0:normal 1:reverse	0:normal speed 1:high speed	0	0	001: SBUS

D02 function description: set up working mode for M.BUS-D2;

D02 Parameter				
B7	B6	B5	B4	B3~B0
0:normal 1:reverse	0:normal speed 1:high speed	0	0	011: F.PORT

CheckSum =(unsigned char)(0x07+**0x1B**+0x00+D00+D01+D02);

Other configuration orders: please refer to related description(on working)

How to update firmware (please use XAR Control Tool software):

Order information:

Typy	Description	Sale
XR601T-D	DSMX/2，supportTelem(17dBm) compatible	on
XR601T-S	Futaba SFHSS compatible	on
XR601T-F2	FRSKY-D16，supportTelem(17dBm) compatible	on
XR601T-A2	Flysky AFHDS-2A，supportTelem(17dBm) compatible	on
XR602T-D	DSMX/2，supportTelem(20dBm) compatible ，Diversity antenna	on
XR602T-S	Futaba SFHSS compatible ，Diversity antenna	on
XR602T-F2	FRSKY-D16，supportTelem(20dBm) compatible ，Diversity antenna	on
XR602T-A2	Flysky AFHDS-2A，supportTelem (20dBm) compatible ，Diversity antenna	on