



## ORANGERX DSMX/DSM2/Devo 2.4GHZ SWITCHABLE TRANSMITTER MODULE (JR/TURNIGY COMPATIBLE)

### USER MANUAL



#### FEATURES:

- Works with any JR/Turnigy/Taranis compatible module-based transmitter
  - 5 switchable modes: DSM2 1024/22ms, DSM2 2048/11ms, DSMX 22ms, DSMX 11ms, Walkera
  - 4 switch selectable power outputs: 1, 5, 25, 70mW
  - Easy to access bind button
  - Range check mode (1mW)
  - Selectable channel mapping (AETR, TAER)
- Current consumption: 100mA

#### COMPATIBILITY:

Standard JR style 5 pin module-based transmitters (JR/Turnigy compatible)  
2.4Ghz protocol: DSMX / DSM2 / Walkera Compatible  
Input Voltage: 6 - 18VDC  
Power: 1, 5, 25, 70mW (selectable)  
Radio Type: Full range system

#### OUTPUT PROTOCOLS:

DSM2 –1024/22ms, 2048/11ms  
DSMx – 22ms/11ms  
Walkera Devo

#### TX MODULE INSTALLATION

The Tx module can be installed and used in following radio transmitters:

- All JR compatible radios with external Tx module compartment
- Turnigy 9XR and 9XR Pro
- Taranis X9D and compatible

#### ANTENNA POLARIZATION AND ORIENTATION

For optimum RF link performance it's important that the antenna be oriented in the way that allows for the best possible signal reception when the aircraft is in all possible attitudes and positions. Follow simple rules:

- Never point antenna to the aircraft. Pointing antenna to the aircraft will give you the worst reception.
- Don't block an antenna with metal objects (frames, trays, monitor and smartphone holders). This weakens the signal.
- In the most situations it is better to position antenna horizontally to get better performance and avoid pointing antenna to the aircraft.

#### ID CHANGE

To make sure that many models can be controlled at the same time and place without interference to each other a unique ID is assigned to each control communication. A transmitter module provides this ID to the receiver during binding procedure. There is totally more than 4 billion

combinations available. You may want to change ID before binding to another model to make sure that if you accidentally turned previous model ON with settings for the new model, the previous one will not respond to your radio transmitter.

### RANGE TESTING

Before each flying session and especially with a new model, it is important to perform a range check.

Make sure that your transmitter battery is fully charged. Be careful and make sure that all propellers on your aircraft are removed.

Turn your transmitter on and following turn on your receiver.

Make sure that the orange LED on your receiver/satellites is ON and solid. That indicates a good signal received.

Move the sticks and confirm that all servos/control surfaces are moving smooth and without stopping and delays. Ask your buddy to watch your aircraft.

Move 30 steps away (appr. 28 meters). Press and hold BIND button. Move sticks and check if all servos are moving smooth and without delays. Check if orange LED on the receiver is solid ON.

If orange LED is solid ON and all control surfaces move smooth and no delays then the range test is PASSED.



### CONNECTORS:

#### **Connector P1 Pin description:**

PIN1- PPM signal, TTL 5V, 6-12 channels

PIN2- Not connected,

PIN3- VCC In, 6-18VDC, 100mA

PIN4- GND

PIN5- for future use

#### **Antenna connector:**

SMA connector to attach a standard rubber duck 2.4GHz 50Ohm antenna.

### BUTTONS:

#### **Button 1(ID)**

##### **Both Spektrum and Walkera modes:**

When pressed upon power on a new unique ID is assigned to Tx.

There is totally 4 billion combinations available. When powered up with Button1 pressed the new ID will be generated. The procedure of new ID generation is initiated regardless if PPM signal present or not. After detection of Button 1 pressed module waits for 3 sec then generated a new ID and buzzer generates long beep (0.3 sec). After this the module waits until the button 1 is released. When button is released the module detects PPM signal from the radio. In Walkera mode as soon as PPM signal is detected the module enters binding mode and following standard transmission mode. In Spektrum mode following binding procedure is necessary.

#### **Button 2(Bind)**

##### **In Spektrum mode:**

When the module is powered on while the button is pressed a binding procedure is initiated.

When pressed during operation the output power is reduced to 1mW for a range check

##### **In Walkera mode:**

When pressed during operation the output power is reduced 1mW for a range check. Pressing button upon power ON in this mode doesn't have any function assigned.

### SWITCHES:

#### **SW1: Walkera/DSM2(x) protocol selection.**

ON-Walkera,

OFF-DSM2(x)

Note: In Walkera mode SW3..SW6 are ignored.

#### **SW2: Channel mapping.**

ON-AETR

OFF-TAER

#### **SW3: DSM2(x) Auto/Manual settings for DSM2(x).**

OFF-Auto mode

ON-Manual mode

#### **SW4: DSM2/DSMx. Selects DSM2/DSMx protocols in manual mode**

OFF-DSM2

ON-DSMx

Note: Switch position will be ignored in Auto mode(when SW3 is ON)

#### **SW5: 11ms/22ms for DSM2 and DSMx**

ON-11ms

OFF-22ms

Note: Switch position will be ignored in Auto mode(when SW3 is ON)

#### **SW6: 1024/2048 for DSM2 only.**

OFF-1024

ON-2048

Note: Switch position will be ignored in Auto mode (when SW3 is ON) and for DSMx

**SW7, SW8: Output power selection (Table 1)**

	SW7	SW8	Power	
	OFF	OFF	18.5dBm	70mW
	OFF	ON	13.2dBm	25mW
	ON	OFF	7dBm	5mW
	ON	ON	0,5dBm	1mW
Range test	N/A	N/A	0,5dBm	1mW

**Note:** During binding procedure the output power is fixed at 0.006mW regardless of the switch positions  
During Range test procedure the output power is fixed at 1mW regardless of the switch positions.

**LED FUNCTIONALITY:**

During normal working operation LED indicates current working mode. You can see what current mode is without removing your Tx module and checking switches position.

- DSM2, 1024 mode – OFF
- DSM2, 2048 mode – single blinks
- DSMx, 22ms mode – double blinks
- DSMx, 11ms mode – triple blinks
- Walkera Devo – continuously ON

**BUZZER:**

Buzzer indicates the status and the mode of the Tx module. When it is powered ON in presence of PPM signal (normal operation) you should hear three short beeps. If you powered your radio and don't hear three short beeps that means your radio probably doesn't output the PPM signal. The reasons for the radio not outputting PPM signal can be:

- Your radio is not set up to output PPM signal;
- Sticks, and/or switches are not in their initial position – throttle might be high or switches for landing gear/flaps/throttle hold are not in proper position. Check your switches and sticks position.

During binding procedure upon successful binding the module will also make three short beeps. With unsuccessful binding it will be a single long beep.

**OPERATING MODES:**

**1. Walkera mode (SW1 - ON)**

**Switches, LED and Buzzer:**

**SW2** provides channel mapping according to switch description (AETR/TAER)

**SW3...SW6** are ignored

**SW7, SW8** change output power selection according to switches description (see Table 1)

**Button1** – ID change – see Button1 description.

**Button2** – When pressed during operation the output power is reduced to 1mW for a range check. When pressed during power on the button is ignored. There is no binding procedure by button in Walkera Devo mode.

**Buzzer** – beeps 3 times on power ON after detecting PPM on the PPM input.

**LED** – continuously ON in normal operation mode, OFF if PPM signal has not been received.

**Functionality:**

**Power ON:**

When powered up the module is waiting for valid PPM signal to be detected.

As soon as PPM signal is detected the buzzer generates three short beeps (0.1s) indicating that the system is ready.

When module starts transmitting RF packets red LED is ON. Therefore it is ON during binding and standard transmitting procedures.

The module works in so called "non-fixed ID" mode. Every time the power is recycled a binding procedure will be automatically initiated. After power ON and receiving valid PPM signal the module automatically enters BIND mode and transmits bind packets for 10 seconds. During this time receiver should be turned on to initiate binding procedure. After 10 seconds binding procedure is over and the module enters the regular transmitting mode and stays in this mode until power turned off.

After recycle power the sequence of procedures repeats

**ID change:**

When powered up with Button1 pressed the new ID will be generated.

The procedure of new ID generation is initiated regardless if PPM signal present or not.

After detection that Button 1 is pressed the module waits for 3 sec then generates a new ID and buzzer produces a long beep(0.3 sec). After this the module waits until the Button1 is released. When the button is released the module detects PPM signal from the radio. In Walkera mode as soon as PPM signal is detected the module enters binding mode and following standard transmission mode. In Spektrum mode following binding procedure is necessary

**2. Spektrum Auto mode SW1-OFF, SW3-OFF**

**Switches, LED and Buzzer:**

**SW2** provides channel mapping according to switch description

**SW4 SW5, SW6** are ignored

**SW7, SW8** change output power selection according to switches description

**Button1** – ID change

**Button2** – When pressed during operation the output power is reduced to 1mW for a range check. When pressed during power on a binding procedure will be initiated

**Buzzer** – beeps 3 times on power ON after detecting PPM on the PPM input (AETR/TAER)

**LED** – DSM2, 1024 mode – OFF  
DSM2, 2048 mode – single blinks  
DSMx, 22ms mode – double blinks  
DSMx, 11ms mode – triple blinks

**Functionality:**

**Power ON:**

When powered up the module is waiting for valid PPM signal to be detected. As soon as PPM signal is detected the buzzer generates three short beeps (0.1s) indicating that the system is ready. When module starts transmitting RF packets red LED is will blink **according to the mode selected during binding (!)**. For example if your receiver supports only DSM2, 2048ms and it is bound to the Tx module in this mode, Tx module will produce single blinks during the normal operation.

Modes indicated by the LED in Spektrum Auto mode:

DSM2, 1024 mode – OFF  
DSM2, 2048 mode – single blinks  
DSMx, 22ms mode – double blinks  
DSMx, 11ms mode – triple blinks

**Binding procedure:**

After power ON with the Button2 detected pressed and valid PPM signal present the module generates three sort beeps and enters binding procedure.

The module sets output power at 0.006mW and starts binding procedure. **Based on your receiver capability** one of following modes will be selected:

DSM2, 1024 mode  
DSM2, 2048 mode  
DSMx, 22ms mode  
DSMx, 11ms mode

After that the module generates three short beeps. If the bind was unsuccessful it generates one long beep. After binding procedure is over the module enters the regular transmitting mode and stays in this mode until power turned off.

The settings for transmission will not be changed if the binding procedure was unsuccessful. If the binding procedure was successful the settings will be changed to the new ones.

If the receiver and the module can operate with different protocols following priority is taken (from most simple to most advanced):

DSM2->DSMx  
1024->2048  
22ms->11ms

**ID change:**

When powered up with Button1 pressed the new ID will be generated. The procedure of new ID generation is initiated regardless if PPM signal present or not. After detection of Button 1 pressed module waits for 3 sec then generated a new ID and buzzer generates long beep(0.3 sec). After this the module waits until the button 1 is released. When button is released the module detects PPM signal from the radio. In Spektrum mode following binding procedure is necessary.

**3. Spektrum Manual mode SW1-OFF, SW3-ON**

**Switches, LED and Buzzer:**

**SW2** provides channel mapping according to switch description (AETR/TAER)

**SW4:** DSM2/DSMx. Selects DSM2/DSMx protocols in manual mode

OFF-DSM2  
ON-DSMx

**SW5:** 11ms/22ms for DSM2 and DSMx

ON-11ms  
OFF-22ms

**SW6:** 1024/2048 for DSM2 only.

OFF-1024  
ON-2048

**SW7, SW8** change output power selection according to switches description (see Table 1)

**Button1** – ID change

**Button2** – When pressed during operation the output power is reduced to 1mW for a range check. When pressed during power on a binding procedure will be initiated

**Buzzer** – beeps 3 times on power ON after detecting PPM on the PPM input (AETR/TAER)

**LED** – blinks accordingly to the mode selected by switches.

**Functionality:**

**Power ON:**

When powered up the module is waiting for valid PPM signal to be detected. As soon as PPM signal is detected the buzzer generates three short beeps(0.1s) indicating that the system is ready. When module transmits RF packets red LED blinks in **accordance to the mode selected by switches**.

DSM2, 1024 mode – OFF  
DSM2, 2048 mode – single blinks  
DSMx, 22ms mode – double blinks  
DSMx, 11ms mode – triple blinks

**Binding procedure:**

After power ON with the Button2 pressed and valid PPM signal present the module generates three sort beeps and enters binding procedure. The module sets output power at 0.006mW and initiated binding procedure. During binding the module uses transmission settings selected by switches. After that the module generates three short beeps if the bind was

successful. If the bind was unsuccessful it generates one long beep. After binding procedure is over the module enters the regular transmitting mode and stays in this mode until power turned off.

**ID change:**

When powered up with Button1 pressed the new ID will be generated. The new ID will be generated regardless if PPM signal present or not. After detection of Button 1 pressed module waits for 3 sec then generated a new ID and buzzer makes long beep(0.3 sec). After this the module waits until the button 1 is released. When button is released the module detects PPM signal from the radio. After ID changing following binding procedure is necessary.