DTRx31d Instructions

DelTang YouTube Channel: http://www.youtube.com/user/now4dt
DelTang website: http://www.deltang.co.uk

The Rx31d is a 4 channel receiver unit for use with micro servos. To save weight it has no connectors and you solder the servo wires directly to the pads.

The main feature of this receiver is its ability to handle "Differential Thrust Steering" meaning that the receiver has two x 2Amp brushed ESCs onboard which can each power their own motor. Alternately, you can configure control of two brushless motors controlled by external ESC units. The outputs to the two motors can be direct, or be set up for steering through thrust mixing in varying amounts from 12.5 to 100%.

This is a DSM2 compatible receiver unit which can be bound to a Spektrum DSM2 capable transmitter or any other transmitter which is DSM2 capable.

VERSION: 3.4.3

1. GENERAL:

3-6v may be connected with correct orientation to +/- points.
The Rx is not insulated so take care to avoid short circuits.
The PCB is thin so do not bend it or exert great force on it.

2. LED:
Led On = perfect reception (real-time indicator).
1 flash = Scanning (~2sec between flashes; wrong model if never stops).
2 flash = Brownout (receiver voltage went too low; check battery/servo load).

3. FAILSAFE:
Outputs are not driven (do nothing) on startup and while scanning.
Outputs 'hold' on short signal losses (<1sec) and then do nothing (>1s).

4. BINDING: (YouTube Video link - http://youtu.be/eYeutjiS8vc)
1. Switch Rx on and wait ~20s until led flickers fast.
2. Switch Tx on in bind mode and Rx led should flash slowly and then go solid.
3. Change distance between Tx/Rx if binding does not work.

5.1 'SERVO' OUTPUTS:
Pads 1-4 will normally be used for servos or an external ESC on Pad1 (default)
Pad 3 can be set to Sum-PPM for quad copter type models.
Pad 4 can be set to drive a second external ESC for 'dual-brushless' (see 5.3).

5.2 BRUSHED ESC's:
Set Ch1/Throttle throws to 100%.
Close throttle to arm the ESC's.
Differential thrust steering mix can be enabled by setting 'mix' to 12.5-100% (0%=disabled).
A 3.0v LVC is enabled by default.
The ESC will rearm if the throttle is closed briefly.
The led will have a 2-flash if LVC is triggered.

5.3 'DUAL BRUSHLESS':
Pads 1 and 4 can drive two external ESC's (eg: brushless) with steering mix. This feature is programmed with Levels 3 and 4 both set to 2 flashes.

6.1 PROGRAMMING:



1. Switch Transmitter on with left/right sticks in towards middle of Tx.
2. Switch Receiver on and wait for the Led to flicker very fast then release all sticks.
3. The led flashes the setting for the first 'Level' (eg: 1 flash = 0% Steering Mix).
4. Yes = push the Ch3 (Elevator) stick forward (to top of Tx) to accept choice and advance to next Level.
5. No = pull the Ch3 (Elevator) stick back (to bottom of Tx) to see next choice for same Level.
6. Continue through all Levels until Led comes on solid.
7. Settings are saved automatically at the end so switch off at any time to abort.
8. Say 'yes' to every item to just see what is currently set.

Example – To enable twin-steering: (YouTube Video link - http://youtu.be/l7Jbo2nw9Mk)
Level 1: 1-flash NO, 2-flash NO, 3-flash YES = Option 3 (25%) & move to next level
Level 2-6: YES to all.

6.2 PROGRAM LEVELS / NUMBER OF FLASHES:
Level 1: Steering Mix %
1 = 0% (Default)
2 = 12.5%
3 = 25%
4 = 50%
5 = 100%
Use 'Travel Adjust' in the Transmitter to fine-tune steering sensitivity.

Level 2: Steering channel (for mix)
1 = Ch4/Rudder
2 = Ch2/Aileron (Default)

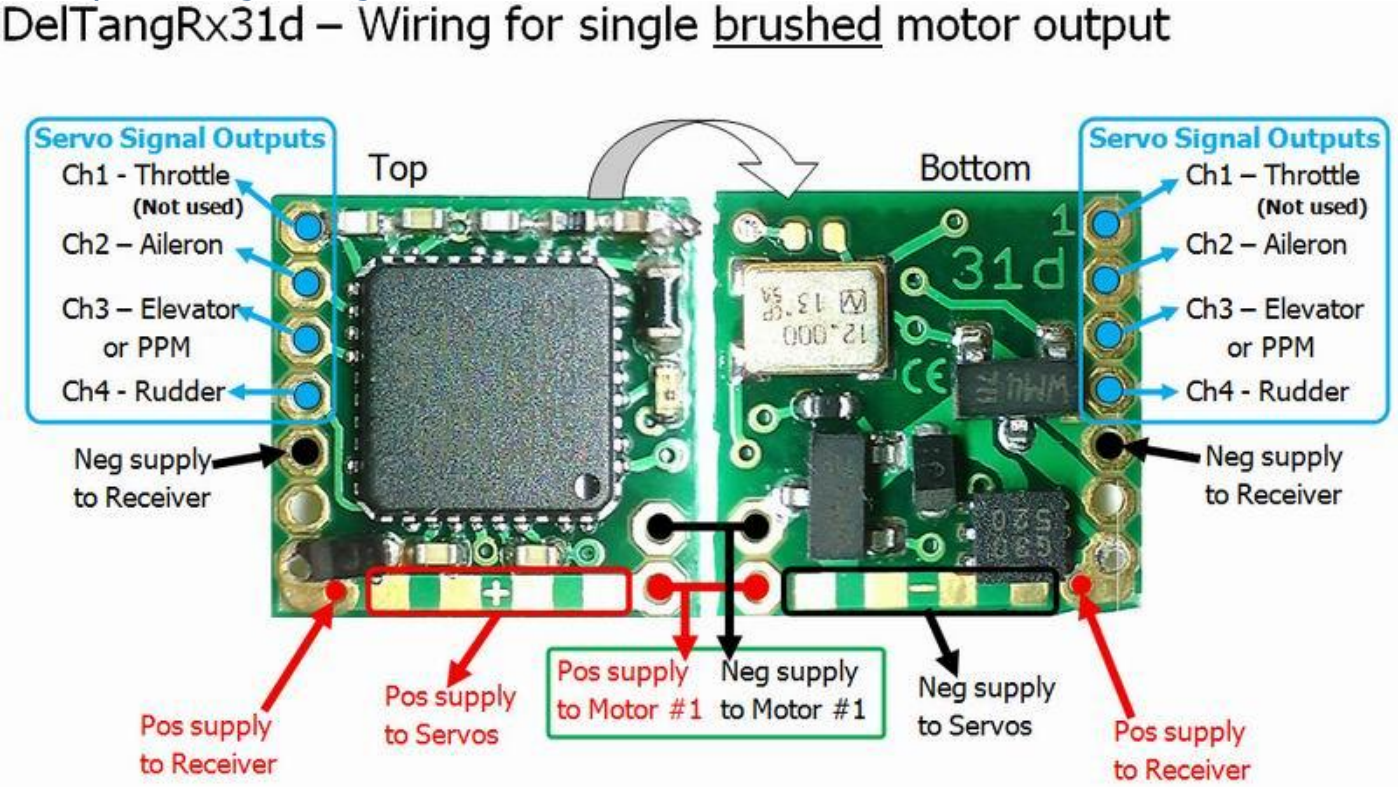
Level 3: Pad 1 output ('brushless 1')
1 = Normal Ch1/Throttle (Default)
2 = Throttle + Steering mix

Level 4: Pad 4 output ('brushless 2')
1 = Normal Ch4/Rudder output (Default)
2 = Throttle + Steering mix

Level 5: Low Voltage Cutoff (brushed ESC's only)
1 = Disabled
2 = Enabled (Default)

Level 6: Servo/Sum-PPM outputs
1 = Sum-PPM on Pin3
2 = Serial on Pin3
3 = Servo outputs on all pads (Default)

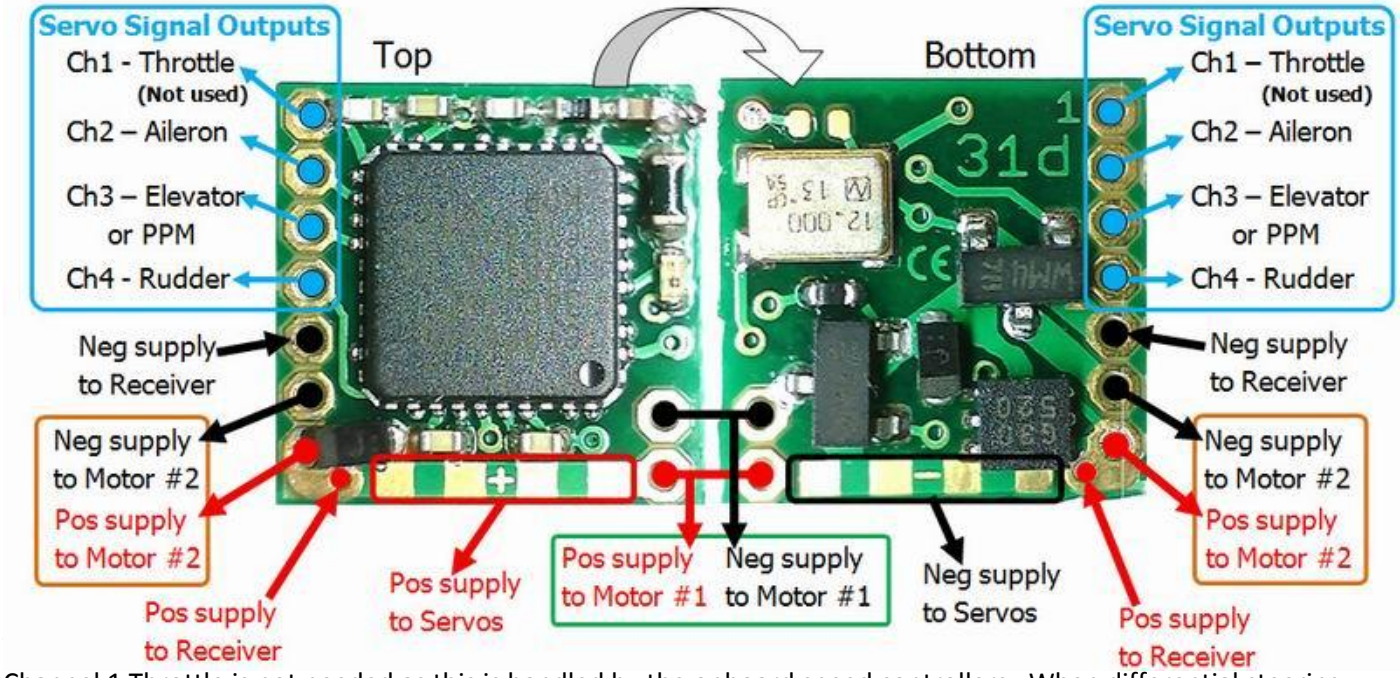
Example Wiring Configurations



This is the most simple and straight forward system to set up. Note that the Ch1 - Throttle signal output is not needed as the onboard speed controllers take care of this. Also, in the image above we have connected the motor to one of the speed controller connectors. However, it doesn't matter which one you connect the motor to.

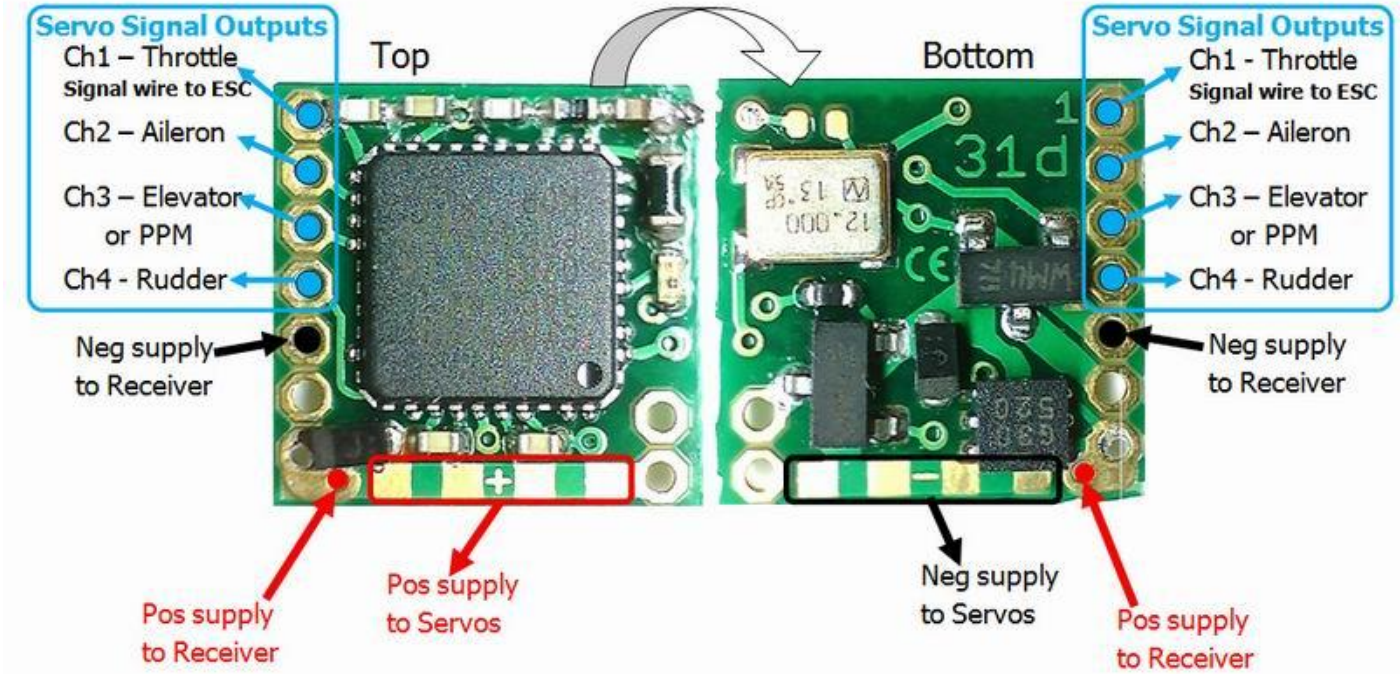
DelTangRx31d – Wiring for dual brushed motor output

(when using motors for differential steering)

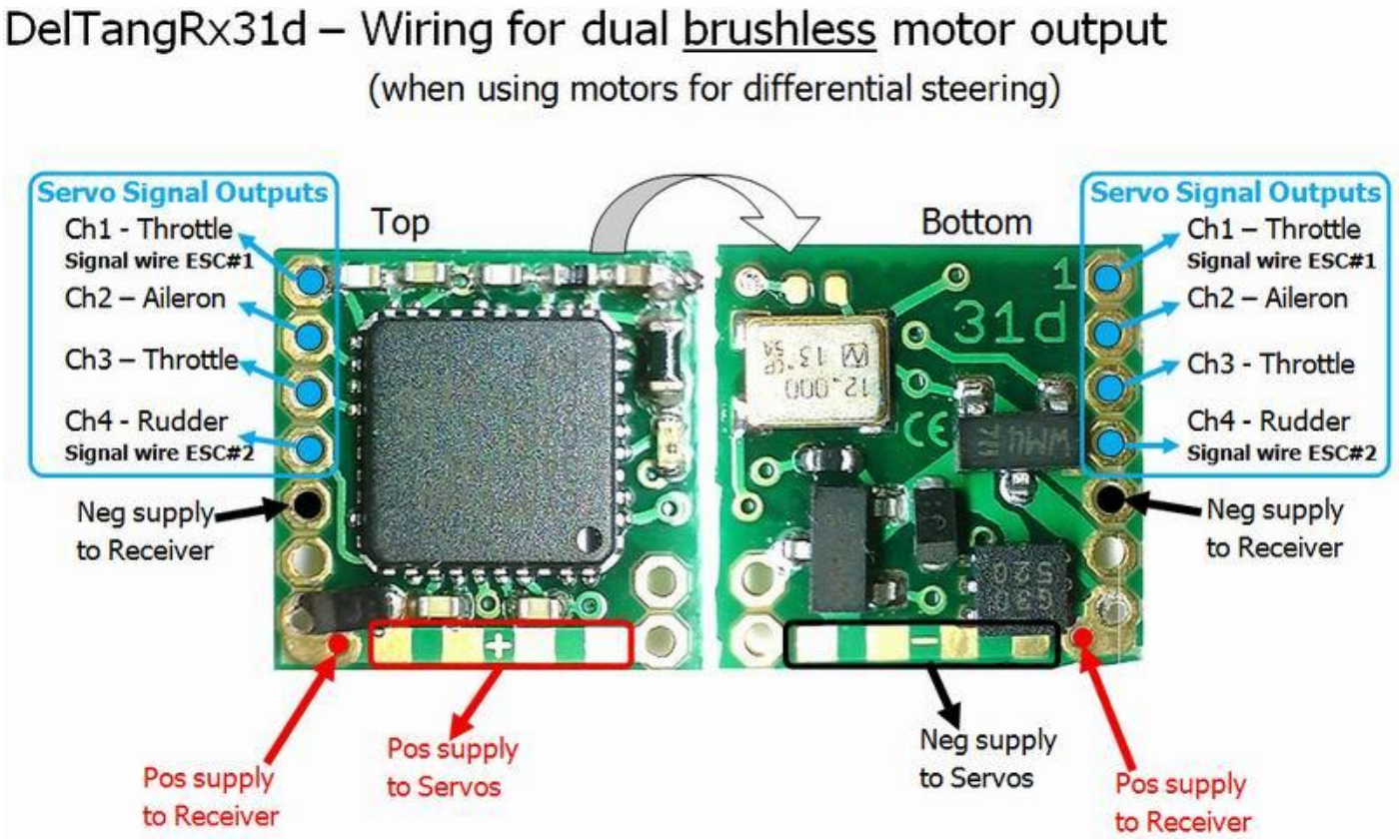


Channel 1 Throttle is not needed as this is handled by the onboard speed controllers. When differential steering mode is set with the transmitter, yaw is controlled by varying the power to each engine. You can choose whether the rudder or aileron will control the yaw. Normally, with this setup you would just have 2 motors and an elevator servo to control the plane.

DelTangRx31d – Wiring for single brushless motor output



The configuration above is an example of a simple set up for a plane with aileron, rudder and elevator controls as well as a single brushless motor. In this setup, a signal wire from Ch1 – Throttle goes to the signal port on your ESC unit. Note that power to the ESC unit may be supplied with leads from the receiver but in the example above we have assumed that the pos and neg power to the ESC unit will be supplied with leads direct from the battery.



This example shows a common setup for running a system with dual brushless motors. Note that you will also need 2 ESC units. Once the receiver has been set for differential steering by using the transmitter, the signal for the ESC units will be provided from Ch1 and Ch4 on the receiver. You can choose whether the rudder or ailerons control the differential steering. With this setup you would typically have 2 motors and their ESC units and one servo for the elevator.

DTRx31d Main Features

The DtRx31d is the next generation of the DTRx31 receivers and is capable of all the features of the DTRx31 and more. This is a brief summary of the main features.

1. Differential Steering – The inclusion of 2 x 2AMP onboard ESC units allows two motors to be connected and controlled by the receiver. In addition to this, varying amounts of steering mix can be set for each.

2. Power Outputs - The DTRx31d has dedicated Pos and Neg power output pads for each motor as well as dedicated pads for supply of power to the board.

3. Power For Servos – The DtRx31d has four dedicated power pads for Pos and Neg power to the servos making wiring of the unit much easier.