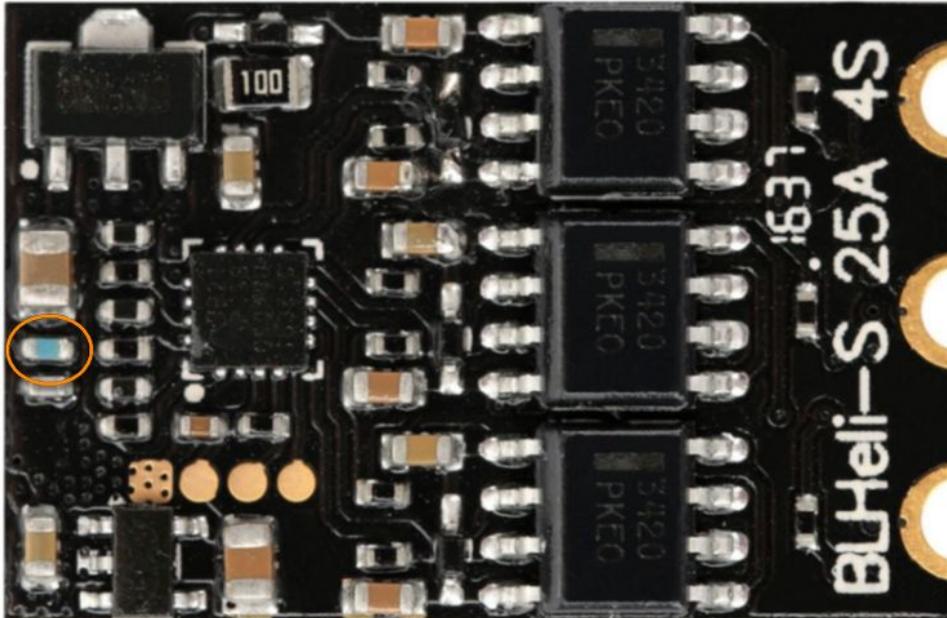


TBS BIHeli-S DShot 600

D-Shot ESC update January 2017

All ESC shipped after January 2017 do have an adjusted RC filter to fully support all DShot signals.

These updated ESC have a blue colored RC filter resistor:



ESC produced prior January 2017 can be modified to support DShot:

Introduction:

The TBS BIHeli-S ESC is designed based on state of the art tech (Q4, 2016). The PWM signal input is supported and tested up to 32MHz Multishot. For DShot signals it will require modifications to the ESC if the production date is back from 2016.

All TBS ESC have a PWM input filter. That filter is here to filter “wrong” signals induced over the air (EMI).

DShot and especially their fastest version called Dshot 600 requires such fast and steep signal that the filter irons out the entire input signal.

By removing the “C”apacitor from the RC filter the filter can be disabled. This requires really clean wiring of the PWM signal on the drone and enough distance from any noisy source (battery traces, DCDC regulators etc.). This requirement is not unique to the TBS ESC, any ESC with Dshot600 enabled will not have adequate filtering for EMI, in our opinion. Lack of filtering may result in distorted signals and then the ESC does not receive control from the FC anymore, resulting in undesirable behavior.

Modification:

Modification is fairly easy, it requires to remove the Capacitor shown on picture below, marked with red circle. Modification is done on your own risk.

Part no:

In any case you want to undo the modification, the Capacitor is:
"470pF, 50V, 0402, 5%"

Possible issues:

When using the ESC on standard PWM (PWM, Oneshot, Multishot) without filter capacitor and there is a no "clean" signal, the signal gets distorted resulting in wrong readings. This can cause the drone to fly improperly, with behavior similar to motor desync.

Warranty:

The ESC warranty is lost after that modification.
Any damage caused due to this modification is not covered.

