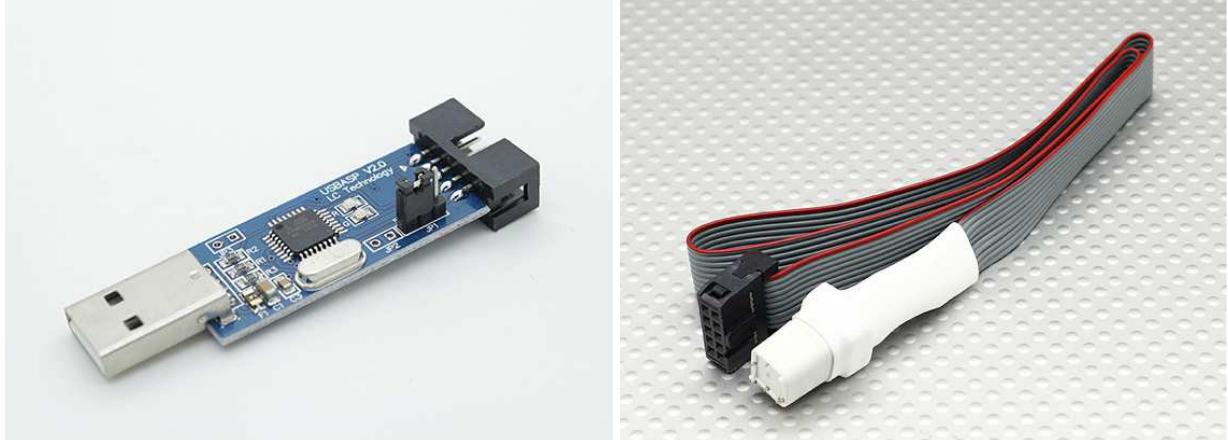


# Programming hardware and software options for flashing BLHeli Atmel ESCs

USBasp:



Arduinos and AVRs:



Links to further information on tools and software can be found here:

[https://docs.google.com/spreadsheet/ccc?key=0AhR02IDNb7\\_MdEhfVjk3MkRHVzhKdjU1YzdBQkZZRIE#gid=0](https://docs.google.com/spreadsheet/ccc?key=0AhR02IDNb7_MdEhfVjk3MkRHVzhKdjU1YzdBQkZZRIE#gid=0)

Fuses:

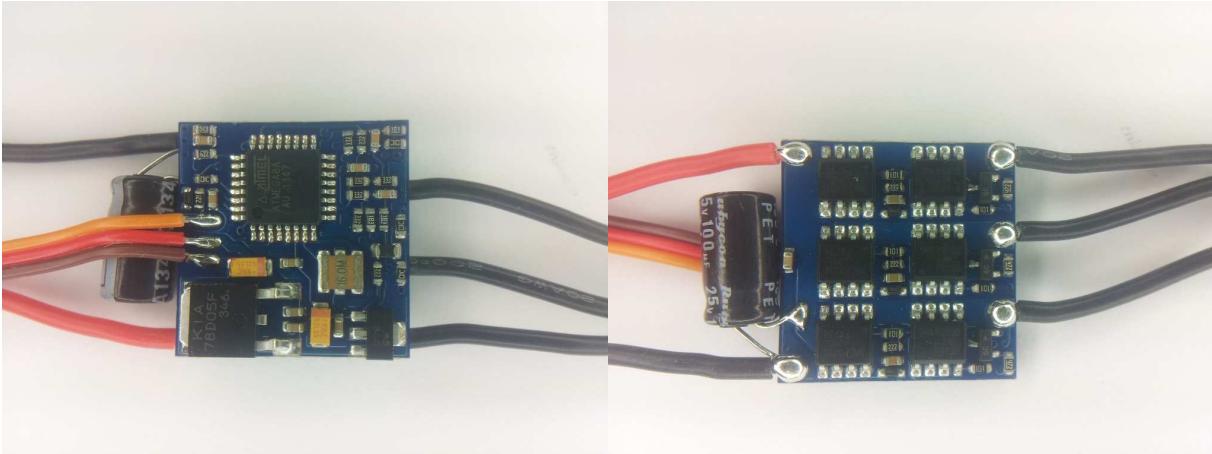
Unless otherwise noted, the fuses shall be programmed to:

High fuse byte: 0xCC

Low fuse byte: 0x3F

# ESCs supported by BLHeli Atmel

## BlueSeries 12A:



The ESC supports 2S to 4S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.

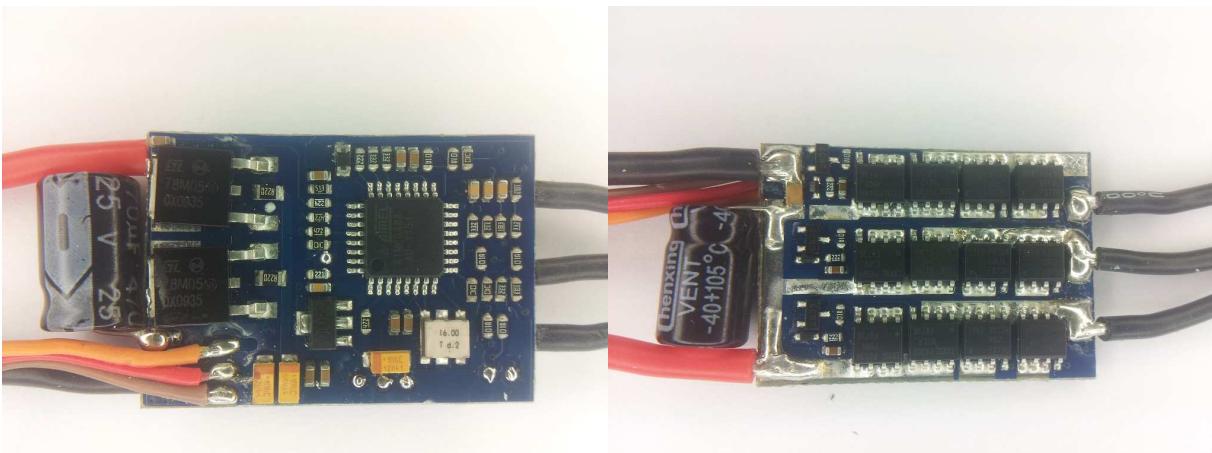
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

It uses the "BlueSeries\_12A\_.." code.

## BlueSeries 20A:



The ESC supports 2S to 4S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.

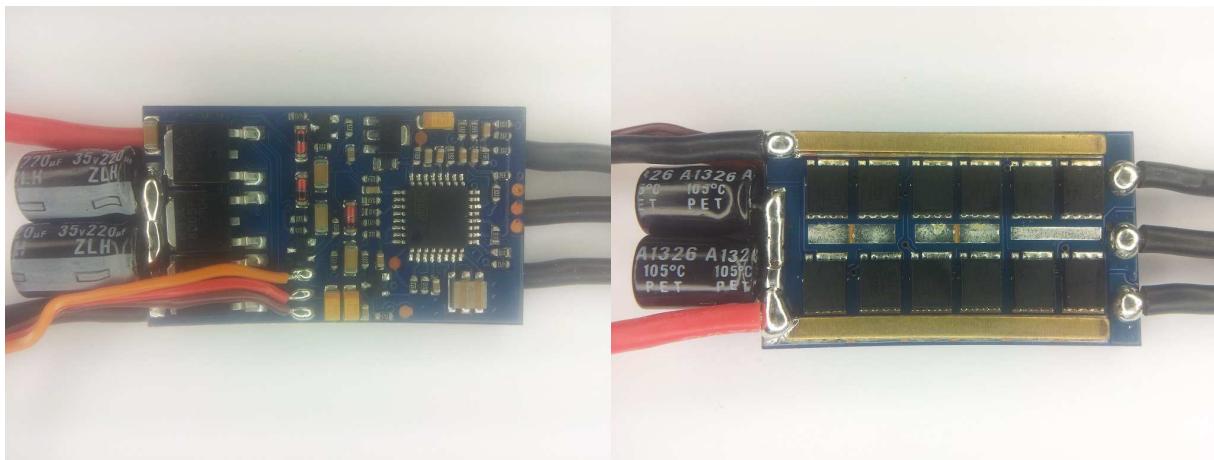
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

It uses the "BlueSeries\_20A\_.." code.

## BlueSeries 30A:



The ESC supports 2S to 4S operation.

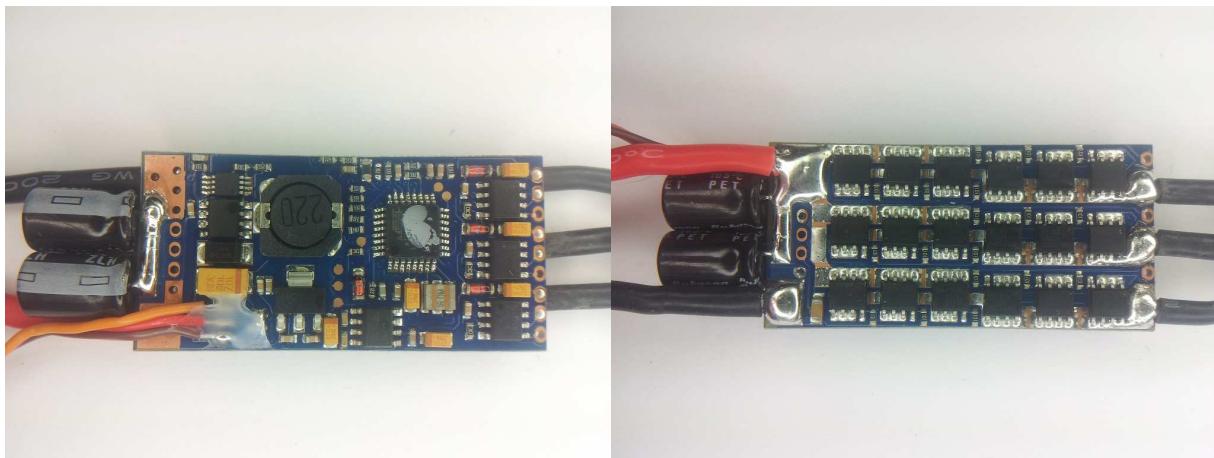
It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

It uses the "BlueSeries\_30A\_.." code.

## BlueSeries 40A:



The ESC supports 2S to 6S operation.

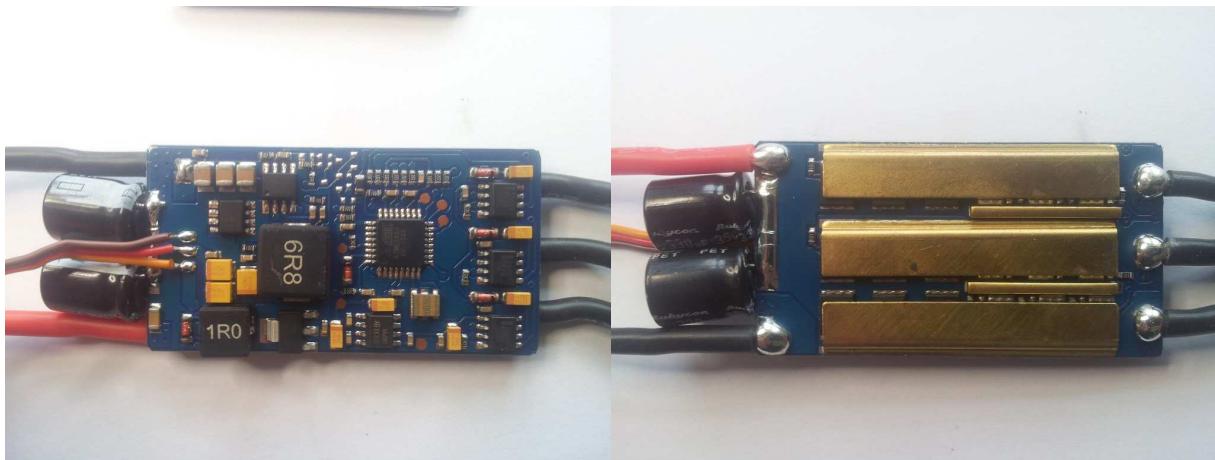
It supports overtemp protection and bootloader on input plug.

Switching speed is quite fast.

Both high side and low side are Nfets.

It uses the "BlueSeries\_40A\_.." code.

## BlueSeries 60A:



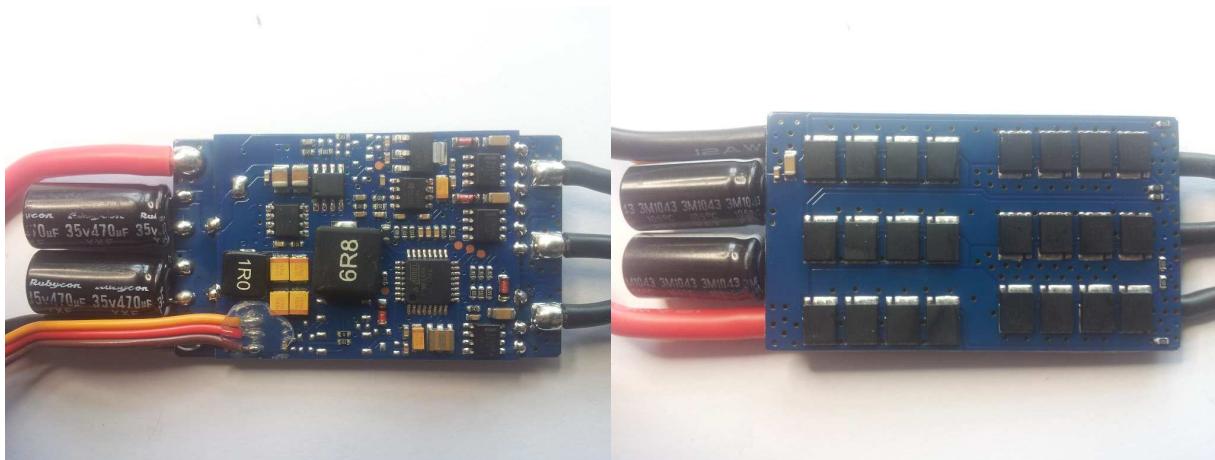
The ESC supports 2S to 6S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast.

Both high side and low side are Nfets.

It uses the "BlueSeries\_60A\_.." code.

## BlueSeries 70A:



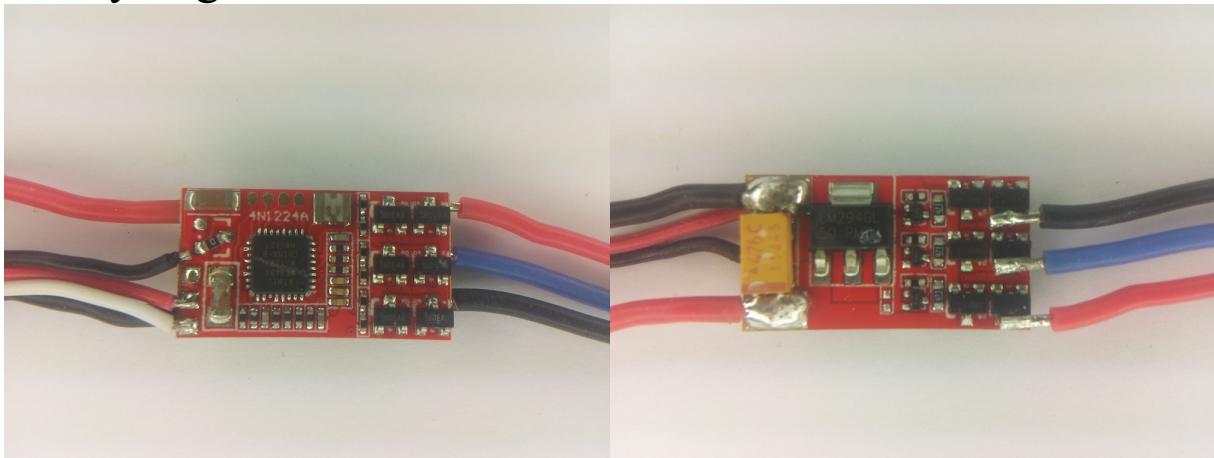
The ESC supports 2S to 6S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast.

Both high side and low side are Nfets.

It uses the "BlueSeries\_70A\_.." code.

## Hobbyking UBEC 6A:



The ESC supports 2S to 3S operation.

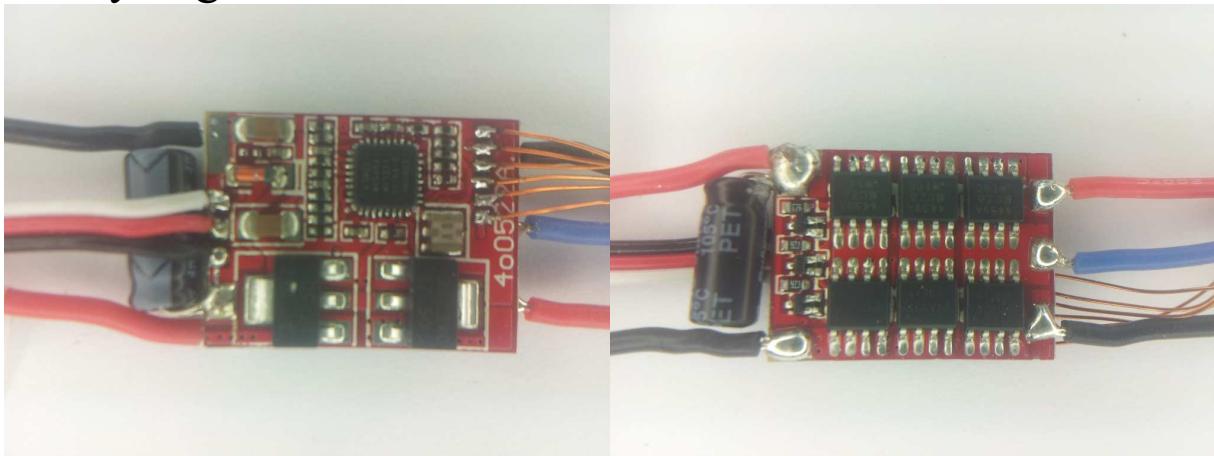
It supports overtemp protection and bootloader on input plug.

Switching speed for high side to turn off is slow.

Low side are Nfets and high side are Pfets.

It uses the "HK\_UBEC\_6A\_.." code.

## Hobbyking UBEC 10A:



The ESC supports 2S to 3S operation.

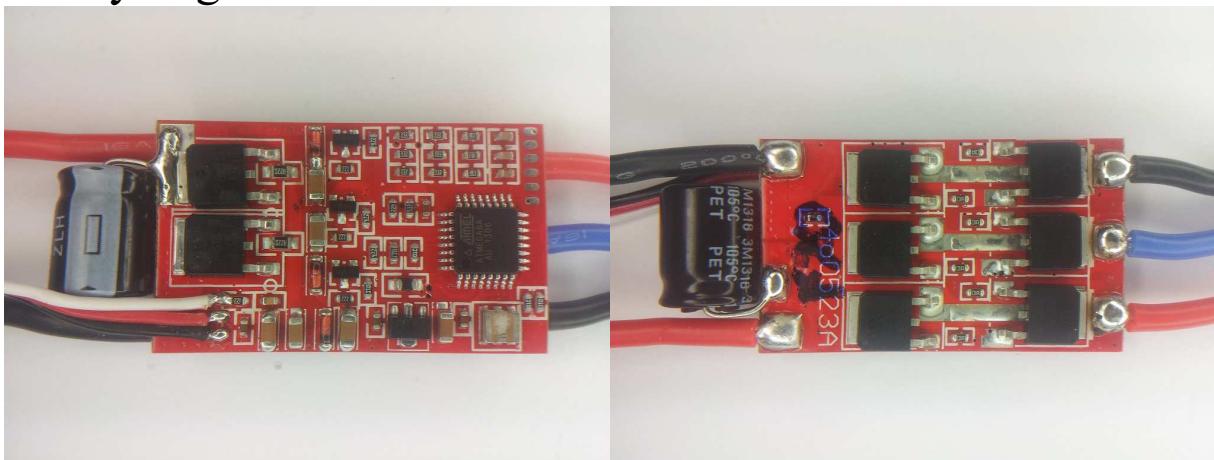
It supports overtemp protection and bootloader on input plug.

Switching speed for high side to turn off is slow.

Low side are Nfets and high side are Pfets.

It uses the "HK\_UBEC\_10A\_.." code.

## Hobbyking UBEC 20A:



The ESC supports 2S to 4S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.

Switching speed is quite fast, although high side is slow to turn on.

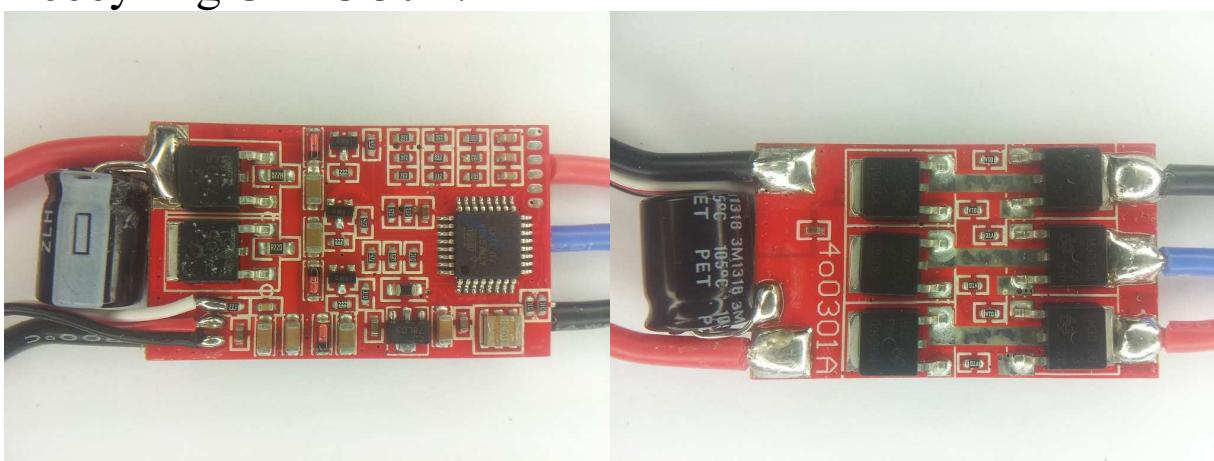
Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

The ESC is also known as "F-20A UBEC".

It uses the "HK\_UBEC\_20A\_.." code.

## Hobbyking UBEC 30A:



The ESC supports 2S to 4S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.

Switching speed is quite fast, although high side is slow to turn on.

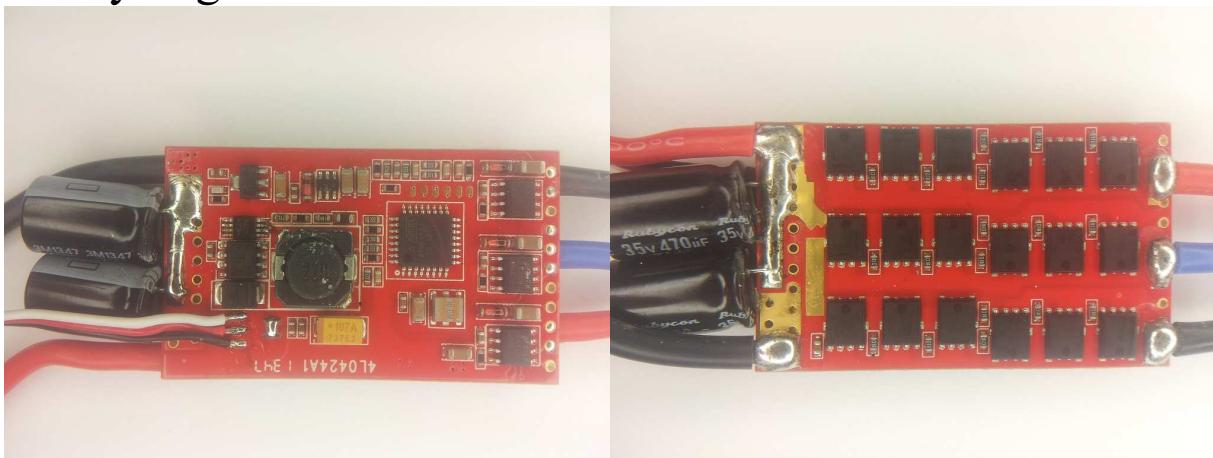
Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

The ESC is also known as "F-30A UBEC".

It uses the "HK\_UBEC\_30A\_.." code.

## Hobbyking UBEC 40A:



The ESC supports 2S to 6S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast.

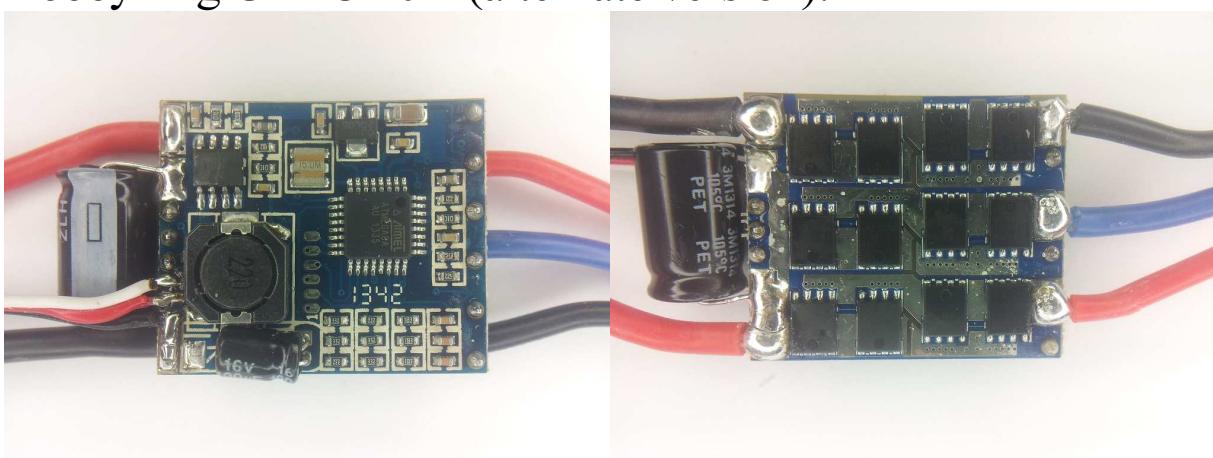
Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

The ESC is also known as "F-40A UBEC".

It uses the "HK\_UBEC\_40A\_.." code.

## Hobbyking UBEC 40A (alternate version):



The ESC supports 2S to 6S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast.

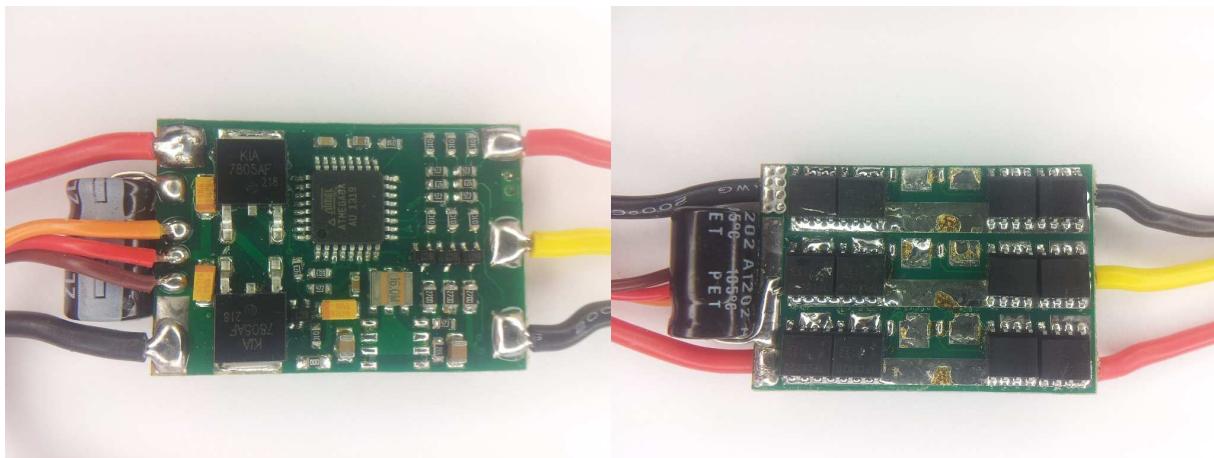
Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

The ESC is product ID 9261000003.

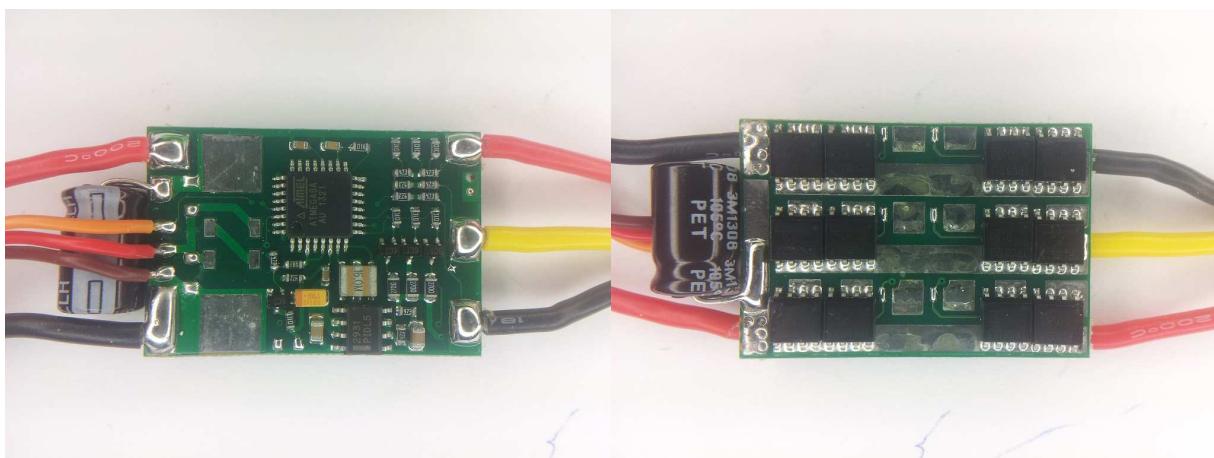
It uses the "HK\_UBEC\_40A\_.." code.

## Multistar 15A:



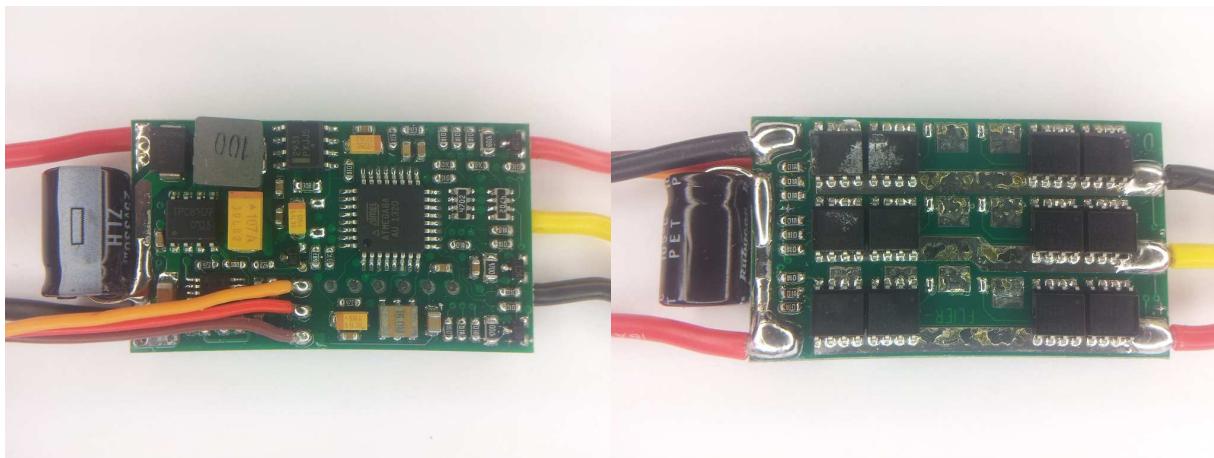
The ESC supports 2S to 3S operation.  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "Multistar\_15A\_.." code.

## Multistar 20A:



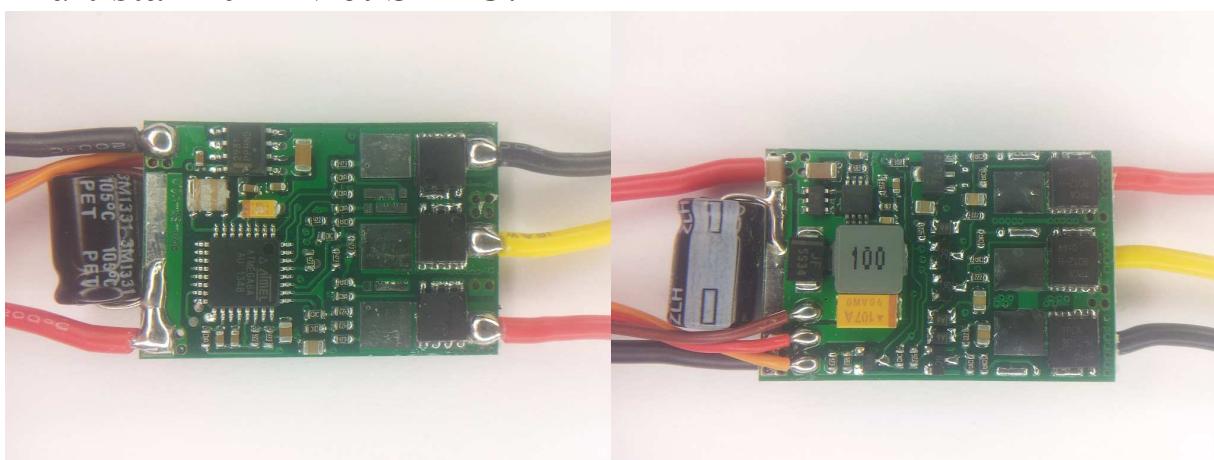
The ESC supports 2S to 4S operation.  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "Multistar\_20A\_.." code.

## Multistar 20A SBEC:



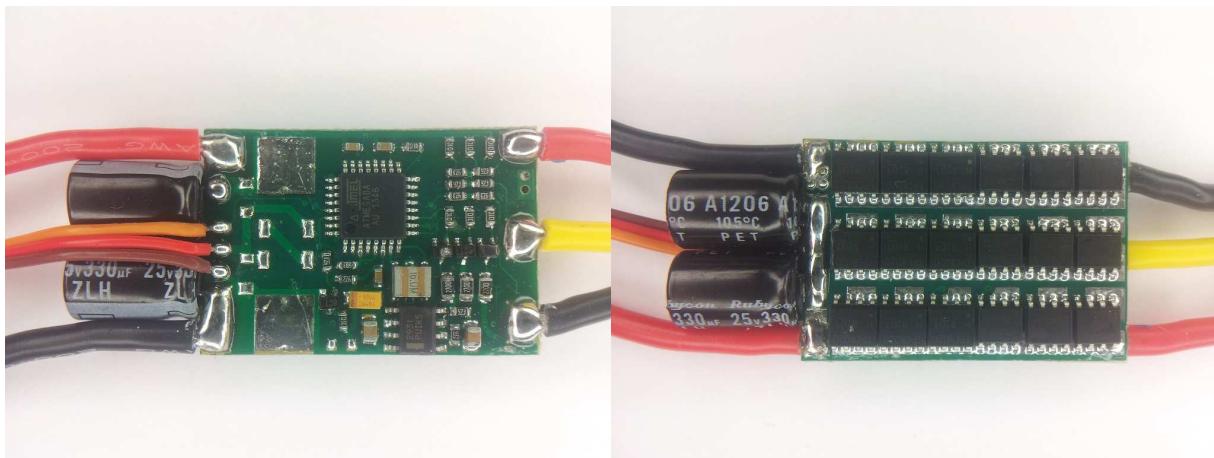
The ESC supports 2S to 4S operation.  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "Multistar\_20A\_.." code.

## Multistar 20A Nfet SBEC:



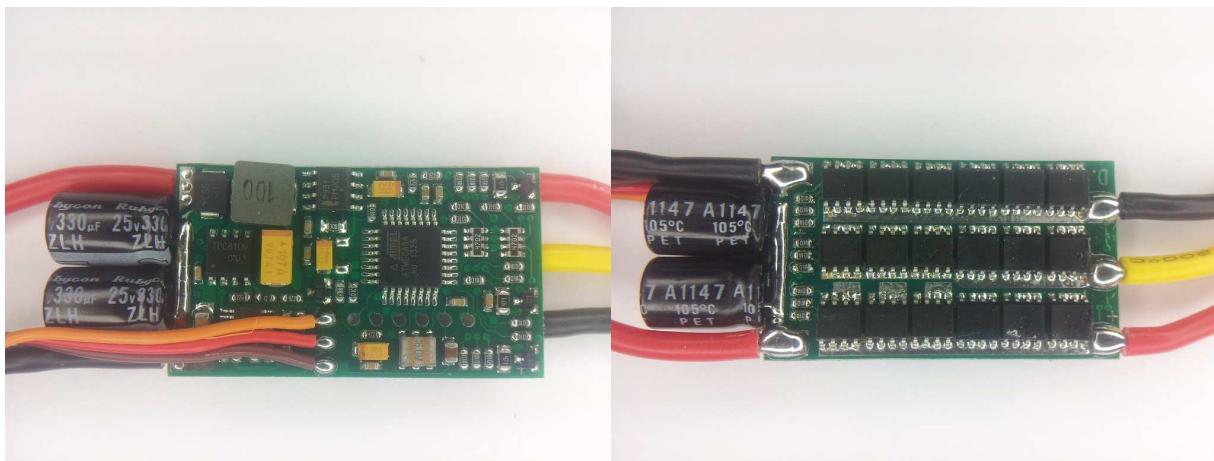
The ESC supports 2S to 4S operation.  
It supports damped light mode.  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed is quite fast, although high side is slow to turn on.  
Both high side and low side are Nfets.  
It uses the "Multistar\_20A\_Nfet\_.." code.

## Multistar 30A:



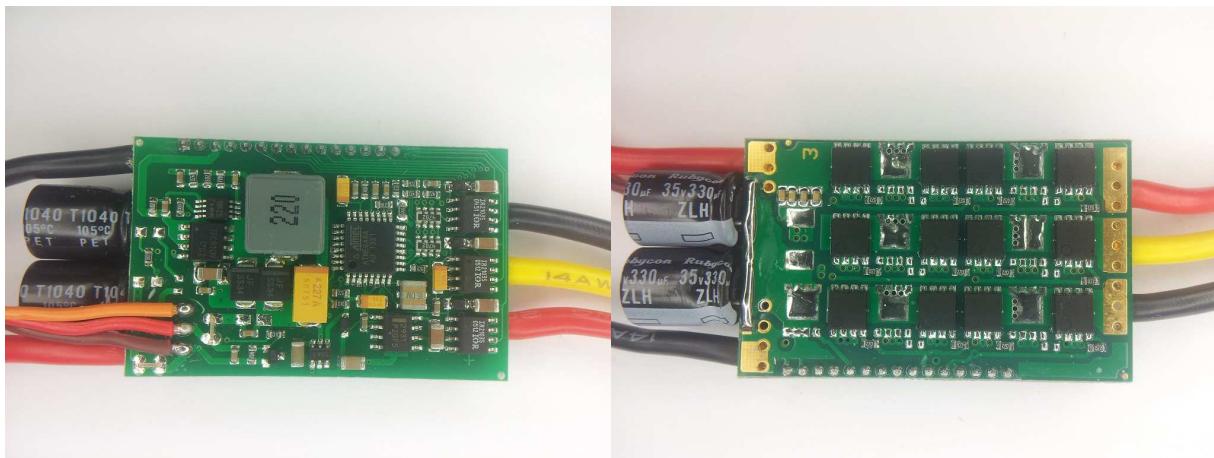
The ESC supports 2S to 4S operation.  
It does not support bootloader on input plug  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "Multistar\_30A\_.." code.

## Multistar 30A SBEC:



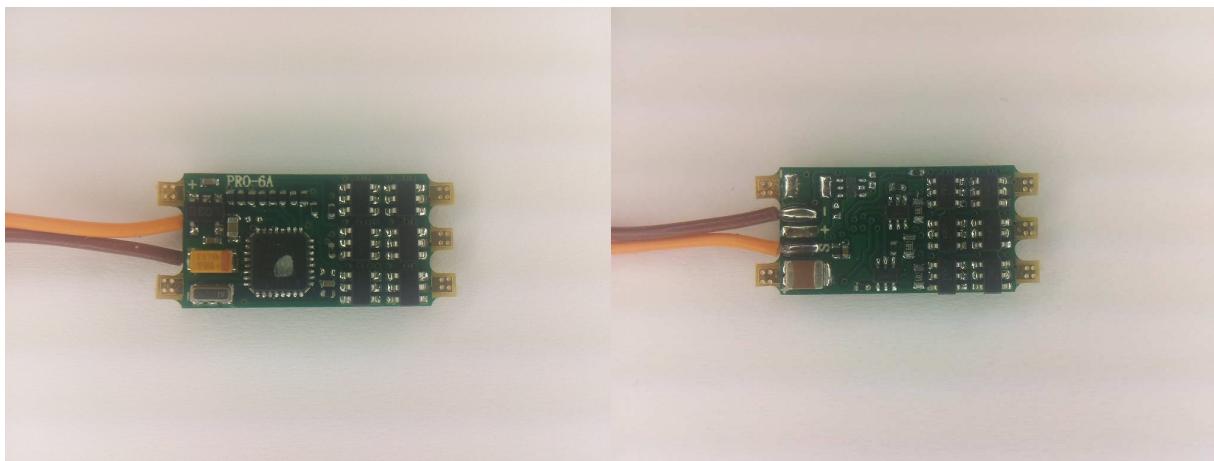
The ESC supports 2S to 4S operation.  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "Multistar\_30A\_.." code.

## Multistar 45A:



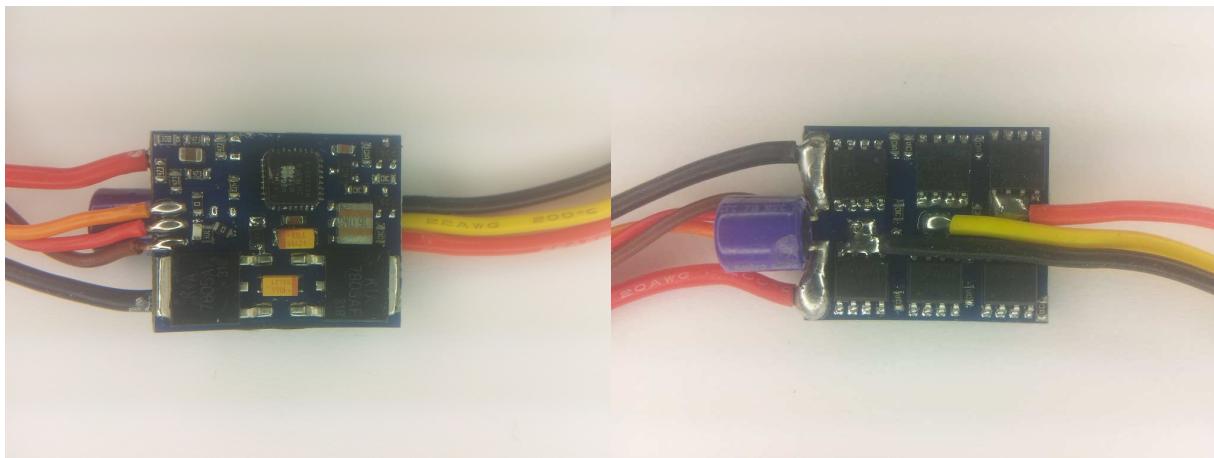
The ESC supports 2S to 6S operation.  
It supports damped light mode,  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed is fast.  
Both high side and low side are Nfets.  
It uses the "Multistar\_45A\_.." code.

## Multistar 6A v2 BLHeli:



The ESC supports 2S to 3S operation.  
It supports bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "Multistar\_10Av2\_.." code.

## Multistar 10A v2 BLHeli:



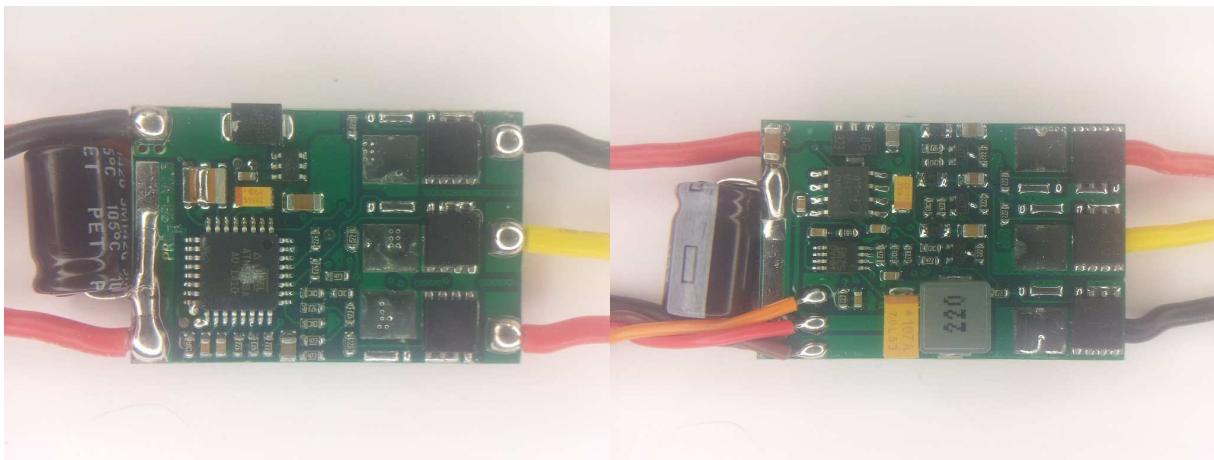
The ESC supports 2S to 3S operation.  
It supports bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "Multistar\_10Av2\_.." code.

## Multistar 20A v2 BLHeli slim:



The ESC supports 2S to 6S operation.  
It supports damped light mode and bootloader on input plug.  
It does not support overtemp protection.  
It does not support low voltage limiting.  
Switching speed is quite fast, although high side is slow to turn on.  
Both high side and low side are Nfets.  
It uses the "Multistar\_20Av2\_.." code.

## Multistar 20A v2 BLHeli:



The ESC supports 2S to 6S operation.

It supports damped light mode and bootloader on input plug.

It does not support overtemp protection.

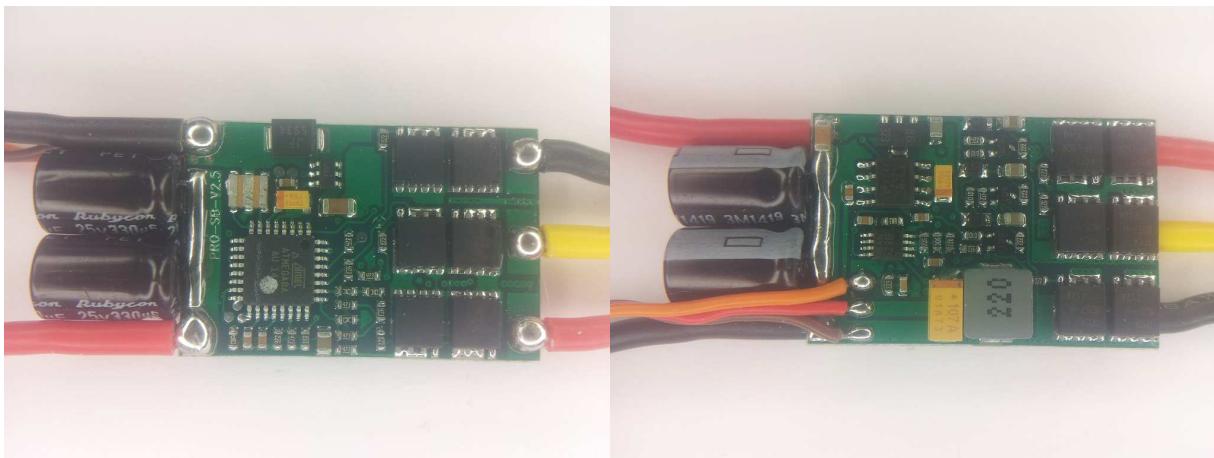
It does not support low voltage limiting.

Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

It uses the "Multistar\_20Av2\_.." code.

## Multistar 30A v2 BLHeli:



The ESC supports 2S to 6S operation.

It supports damped light mode and bootloader on input plug.

It does not support overtemp protection.

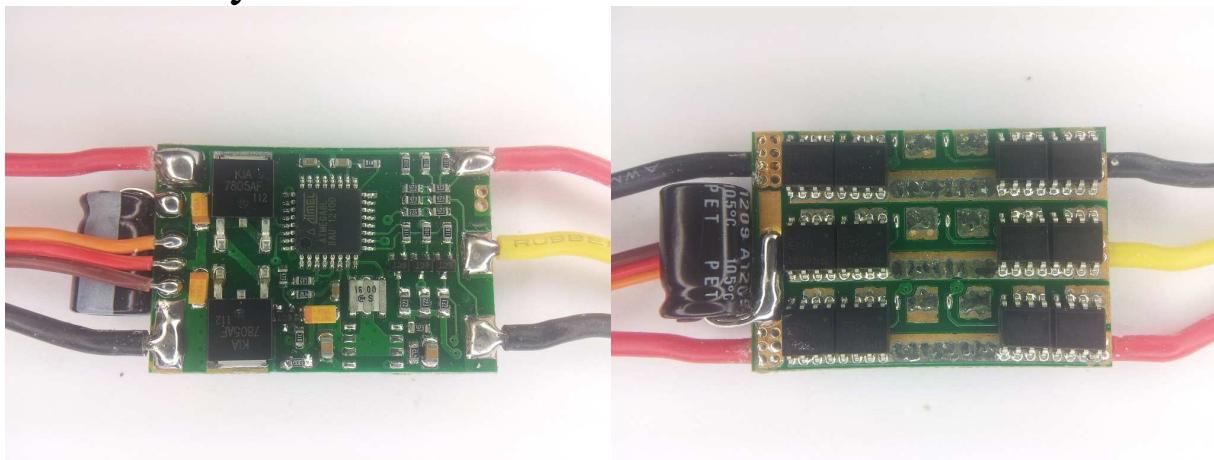
It does not support low voltage limiting.

Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

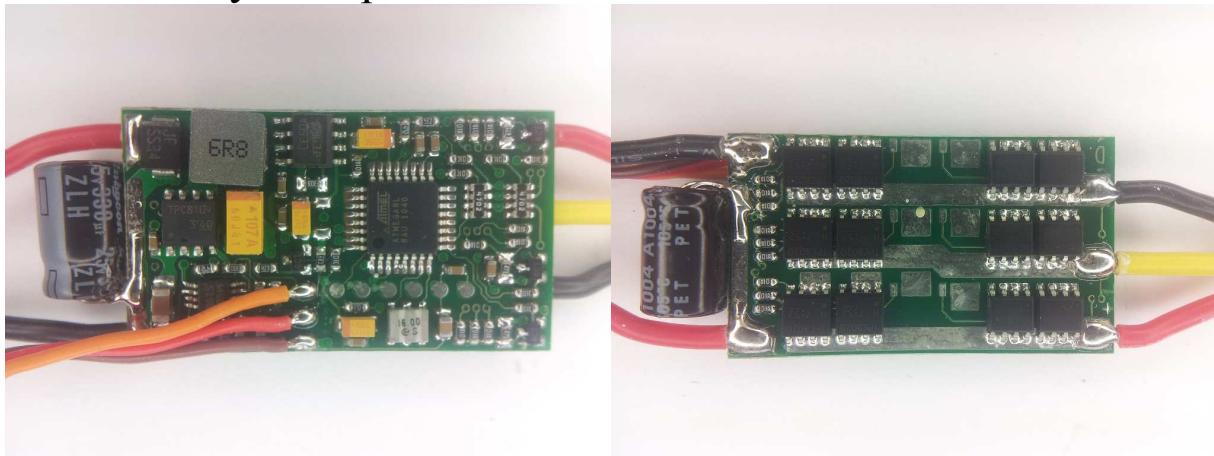
It uses the "Multistar\_20Av2\_.." code.

## HiModel Fly 20A:



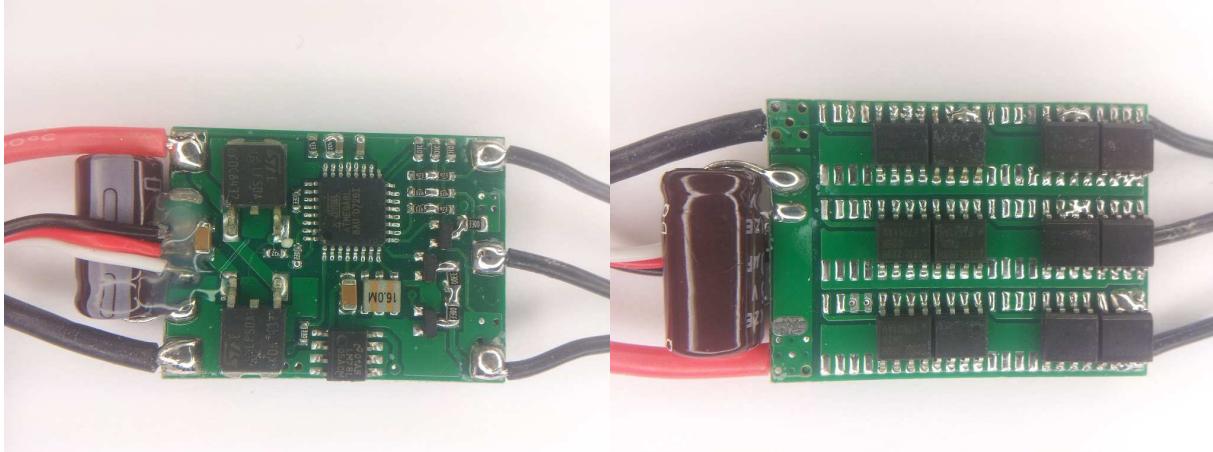
The ESC supports 2S to 3S operation.  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "Multistar\_20A\_.." code.

## HiModel Fly 20A pro SB:



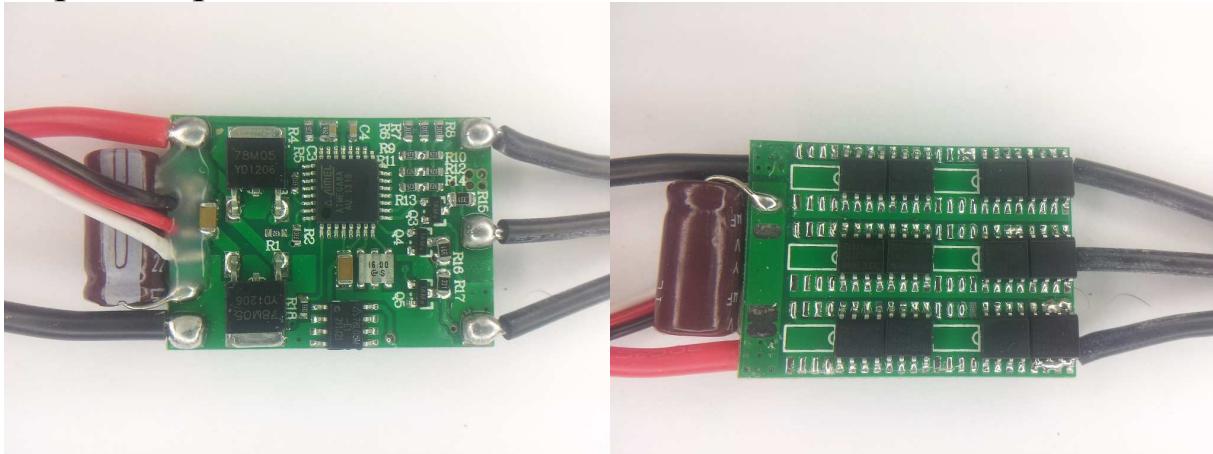
The ESC supports 2S to 4S operation.  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "Multistar\_20A\_.." code.

## SuperSimple 18A:



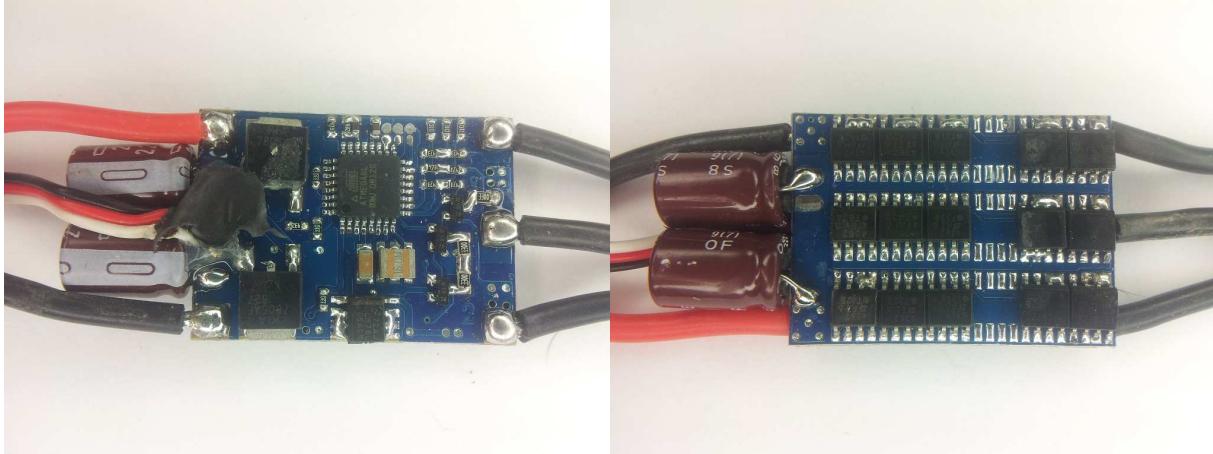
The ESC supports 2S to 3S operation.  
It supports bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "SuperSimple\_18A\_.." code.

## SuperSimple 20A:



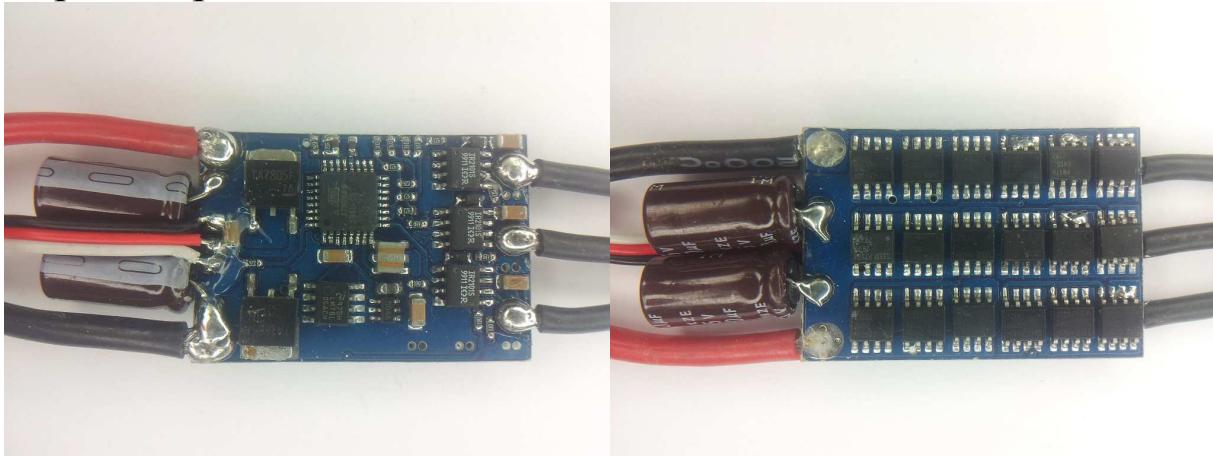
The ESC supports 2S to 3S operation.  
It supports bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "SuperSimple\_20A\_.." code.

## SuperSimple 30A:



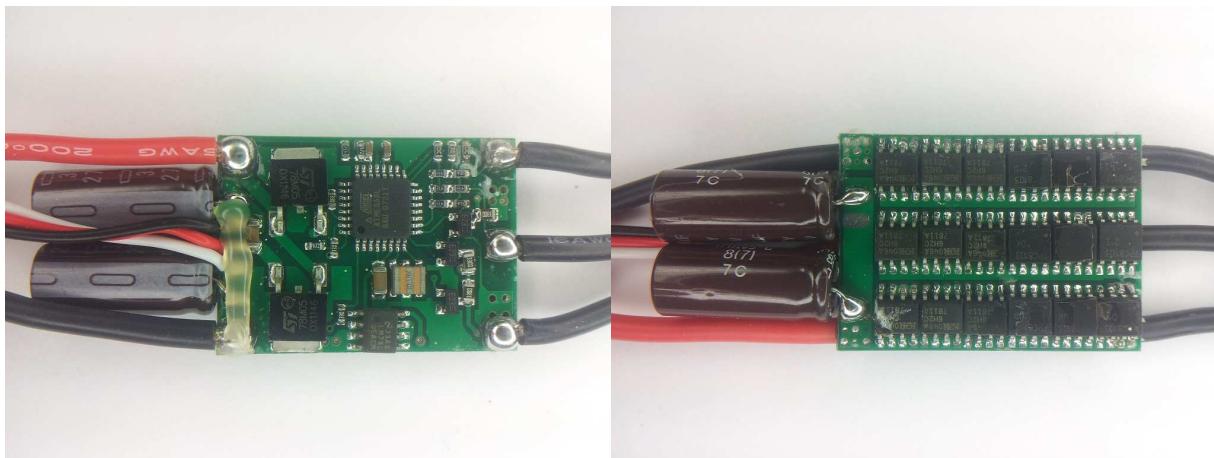
The ESC supports 2S to 3S operation.  
It supports bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "SuperSimple\_30A\_.." code.

## SuperSimple 40A:



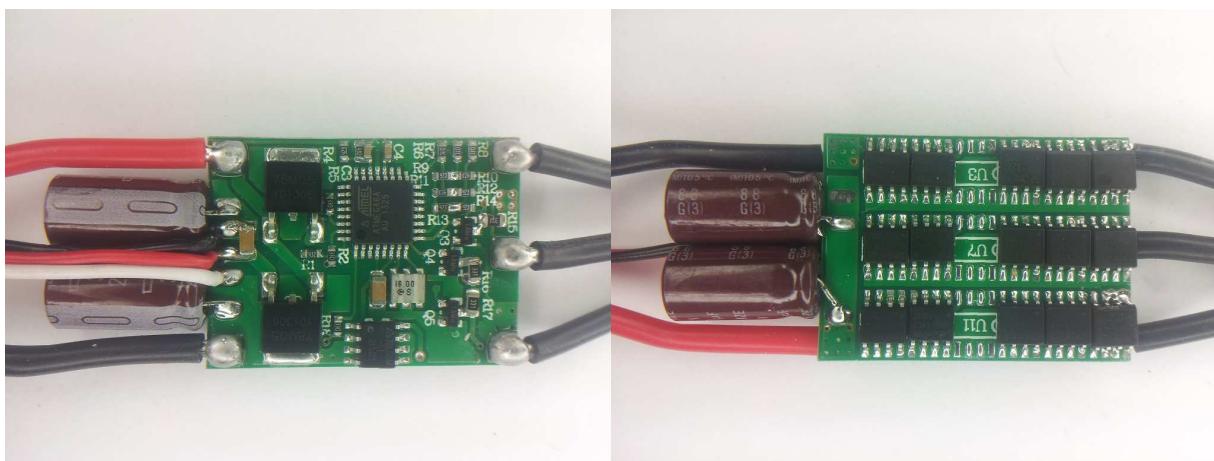
The ESC supports 2S to 3S operation.  
It supports damped light mode and bootloader on input plug.  
It does not support overtemp protection.  
Switching speed is quite fast.  
Both high side and low side are Nfets.  
It uses the "SuperSimple\_40A\_.." code.

## Birdie 30A:



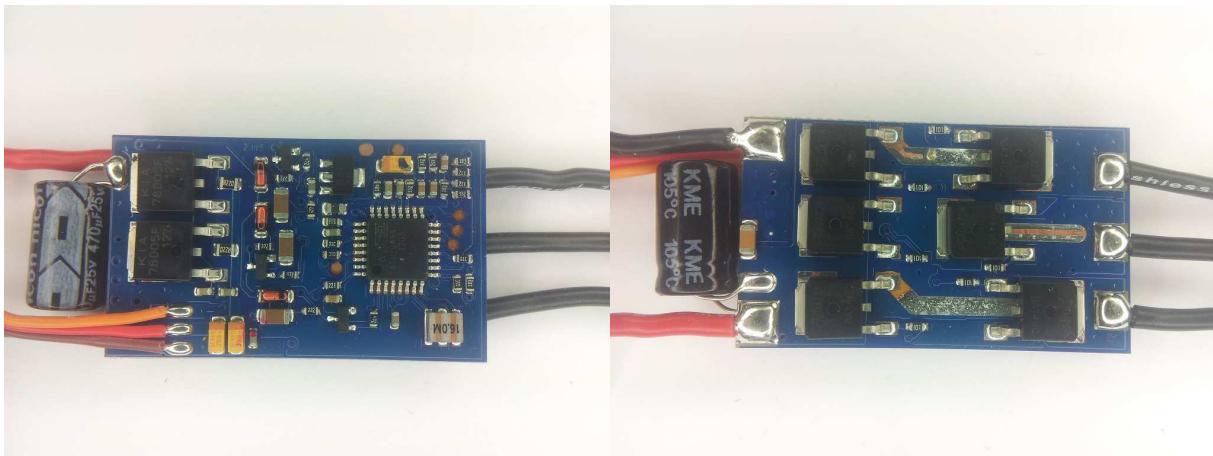
The ESC supports 2S to 3S operation.  
It supports bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "SuperSimple\_30A\_.." code.

## Red Brick 30A:



The ESC supports 2S to 3S operation.  
It supports bootloader on input plug.  
It does not support overtemp protection.  
Switching speed for high side to turn off is slow.  
Low side are Nfets and high side are Pfets.  
It uses the "SuperSimple\_30A\_.." code.

## ZTW AL 20A:



The ESC supports 2S to 3S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.

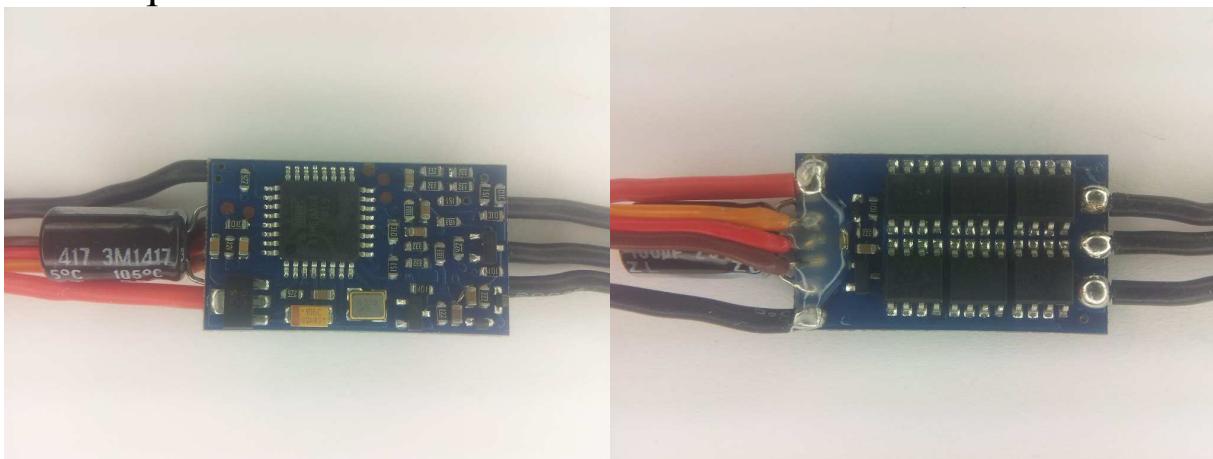
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

It uses the "BlueSeries\_20A\_.." code.

## ZTW Spider 12A v2:



The ESC supports 2S to 4S operation.

It supports damped light mode and bootloader on input plug.

It does not support overtemp protection.

It does not support low voltage limiting.

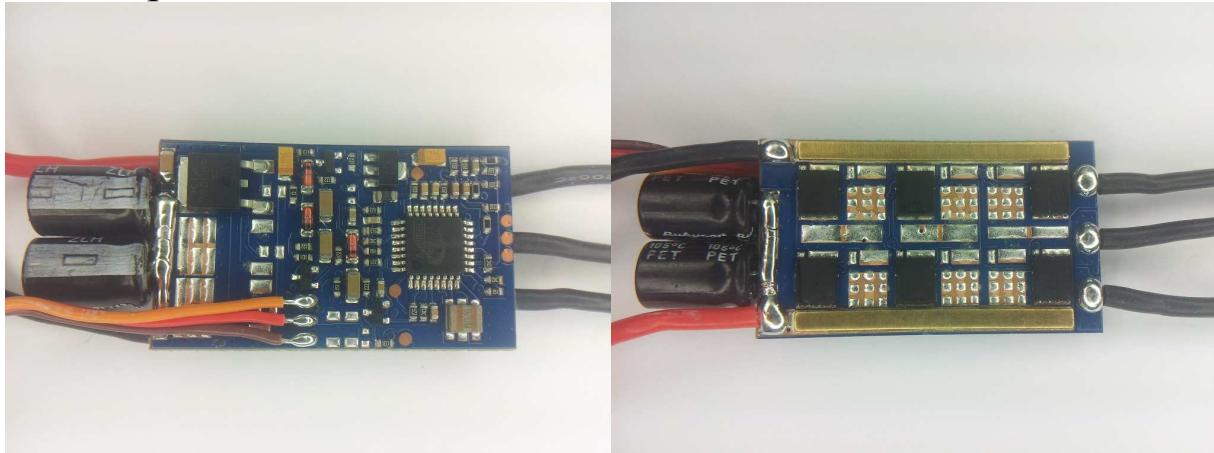
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

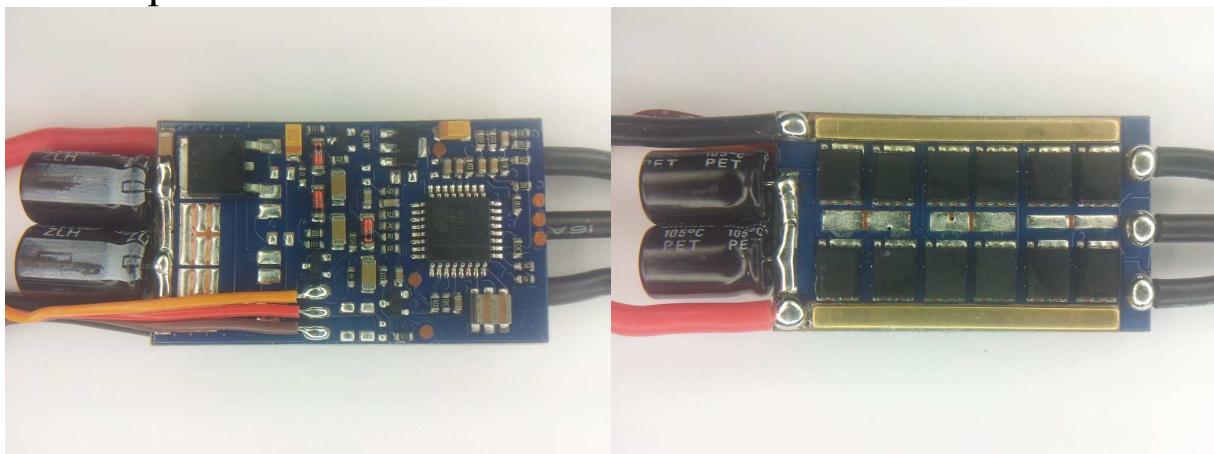
It uses the "BlueSeries\_12A\_.." code.

## ZTW Spider 20A:



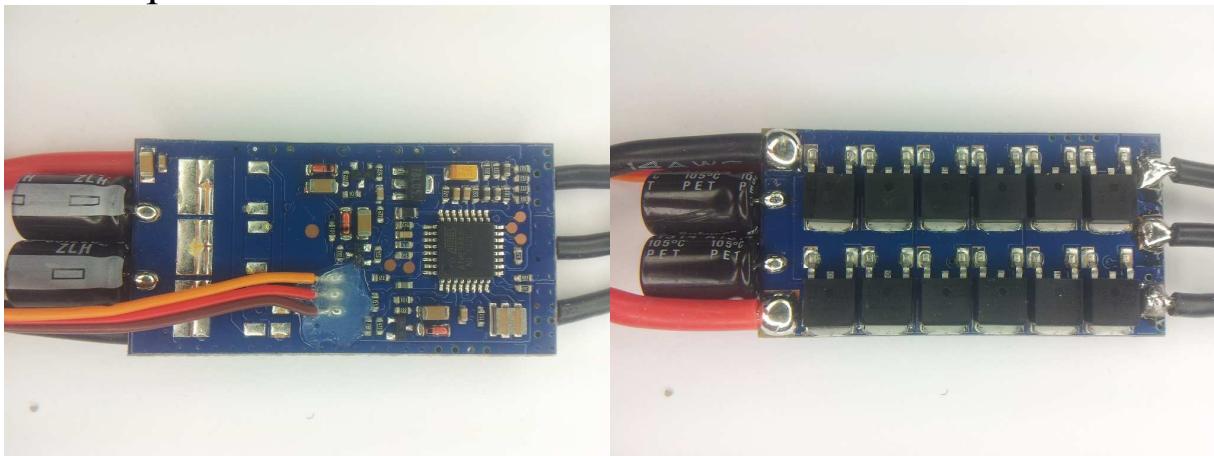
The ESC supports 2S to 6S operation.  
It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast, although high side is slow to turn on.  
Both high side and low side are Nfets.  
At 2S, low voltage limiting does not work reliably.  
It uses the "BlueSeries\_20A\_.." code.

## ZTW Spider 30A:



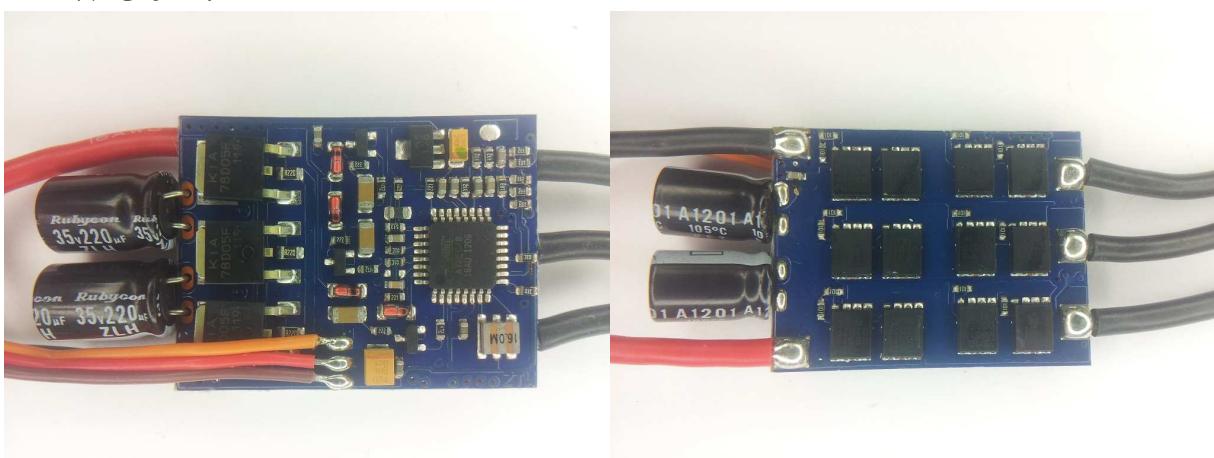
The ESC supports 2S to 6S operation.  
It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast, although high side is slow to turn on.  
Both high side and low side are Nfets.  
At 2S, low voltage limiting does not work reliably.  
It uses the "BlueSeries\_30A\_.." code.

## ZTW Spider 40A:



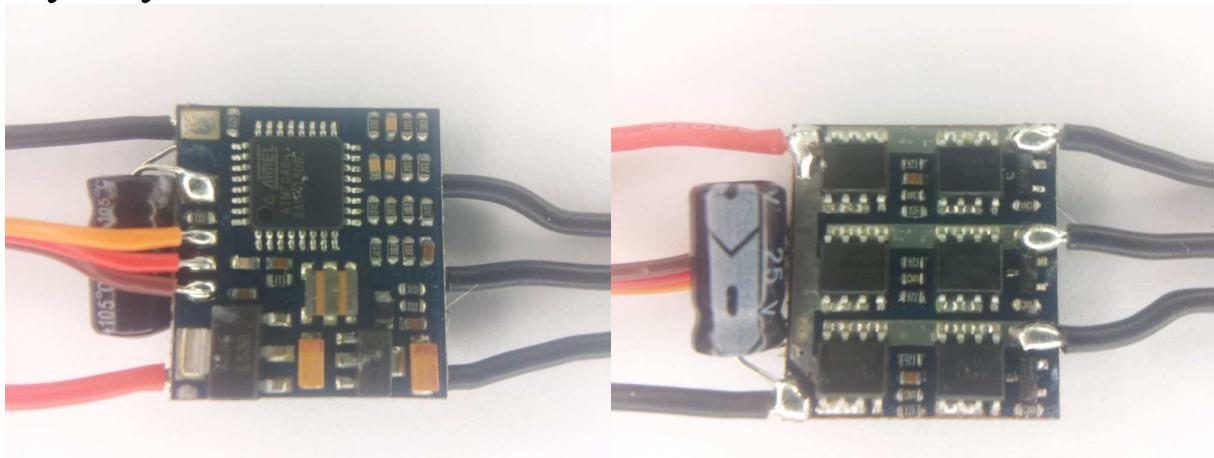
The ESC supports 2S to 6S operation.  
It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast, although high side is slow to turn on.  
Both high side and low side are Nfets.  
At 2S, low voltage limiting does not work reliably.  
It uses the "BlueSeries\_30A\_.." code.

## ZTW 30A:



The ESC supports 2S to 4S operation.  
It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast, although high side is slow to turn on.  
Both high side and low side are Nfets.  
At 2S, low voltage limiting does not work reliably.  
It uses the "BlueSeries\_30A\_.." code.

## Mystery 12A:



The ESC supports 2S to 3S operation.

It supports overtemp protection and bootloader on input plug.

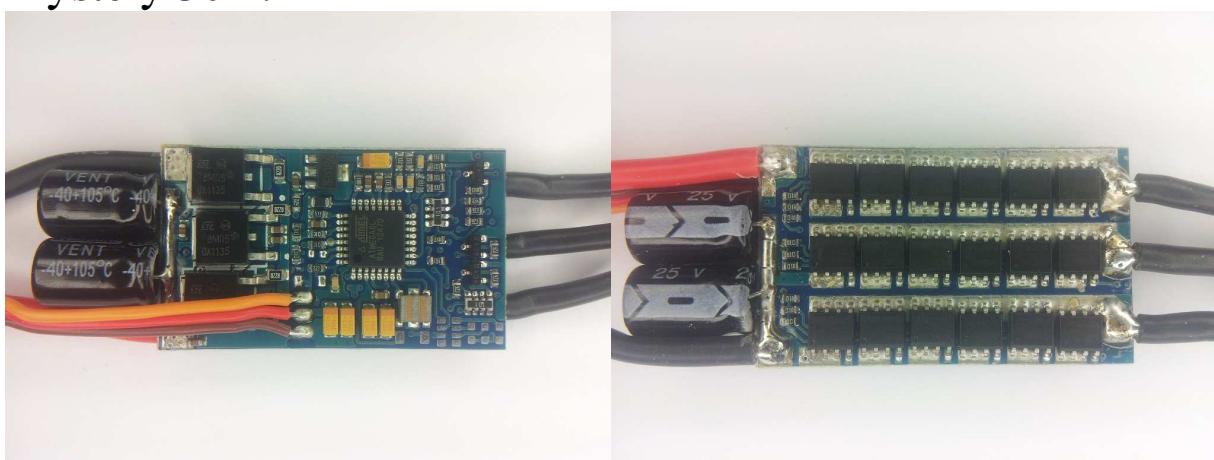
Switching speed for high side to turn off is slow.

Low side are Nfets and high side are Pfets.

At 2S, low voltage limiting does not work reliably.

It uses the "Mystery\_12A\_.." code.

## Mystery 30A:



The ESC supports 2S to 3S operation.

It supports overtemp protection and bootloader on input plug.

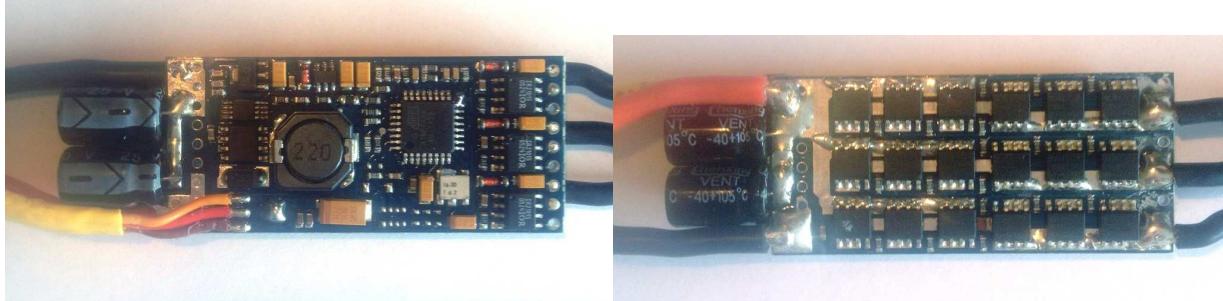
Switching speed for high side to turn off is slow.

Low side are Nfets and high side are Pfets.

At 2S, low voltage limiting does not work reliably.

It uses the "Mystery\_30A\_.." code.

## Mystery 40A:



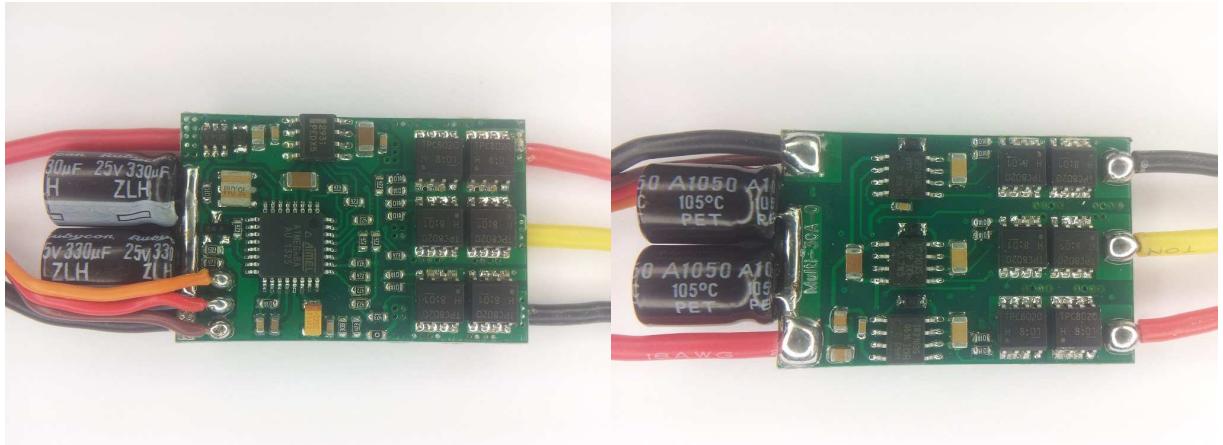
The ESC supports 2S to 6S operation.

It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is fast.

Both high side and low side are Nfets.

It uses the "Mystery\_40A\_.." code.

## Sunrise HiMulti 20A:



The ESC supports 2S to 6S operation.

It supports damped light mode.

It does not support bootloader on input plug.

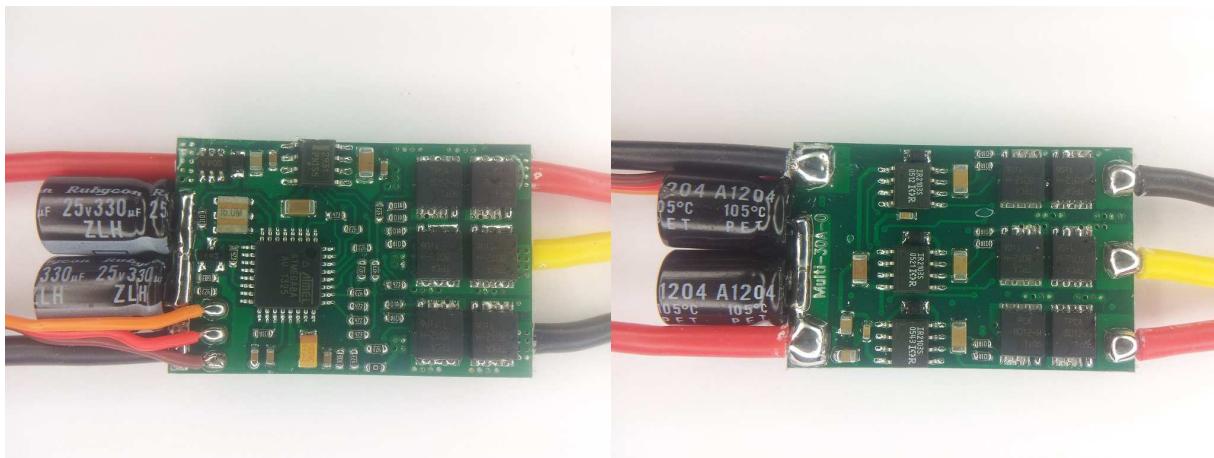
It does not support overtemp protection.

Switching speed is fast.

Both high side and low side are Nfets.

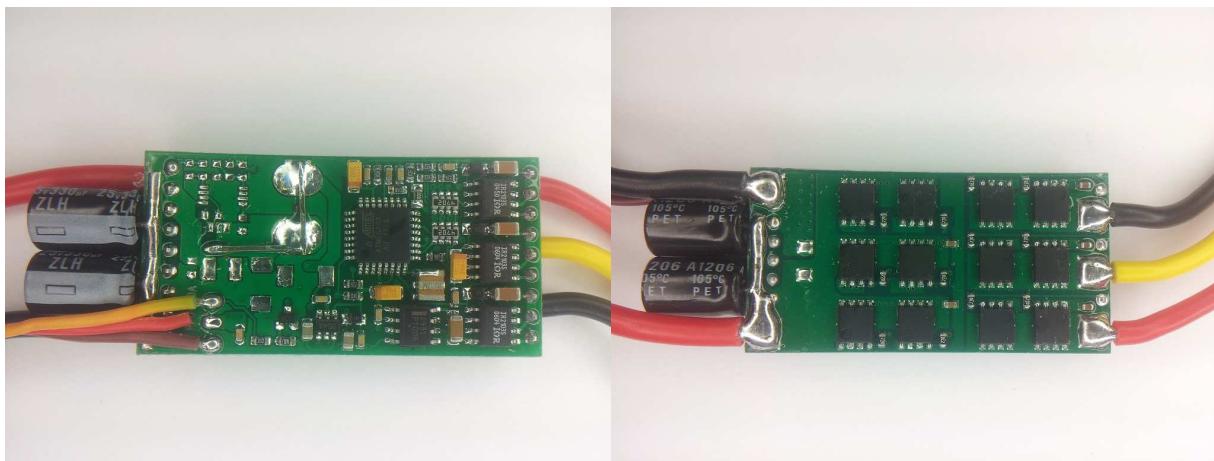
It uses the "Sunrise\_HiMulti\_20A\_.." code.

## Sunrise HiMulti 30A:



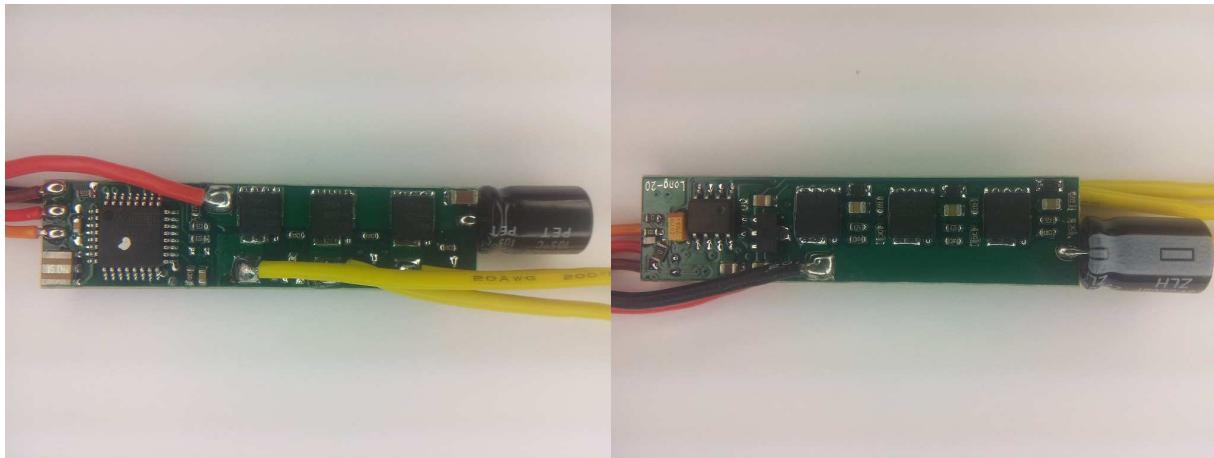
The ESC supports 2S to 6S operation.  
It supports damped light mode.  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed is fast.  
Both high side and low side are Nfets.  
It uses the "Sunrise\_HiMulti\_30A\_.." code.

## Sunrise HiMulti 40A:



The ESC supports 2S to 6S operation.  
It supports damped light mode.  
It does not support bootloader on input plug.  
It does not support overtemp protection.  
Switching speed is fast.  
Both high side and low side are Nfets.  
It uses the "Sunrise\_HiMulti\_40A\_.." code.

## Sunrise BLHeli multi slim 20A:



The ESC supports 2S to 6S operation.

It supports damped light mode and bootloader on input plug.

It does not support overtemp protection.

It does not support low voltage limiting.

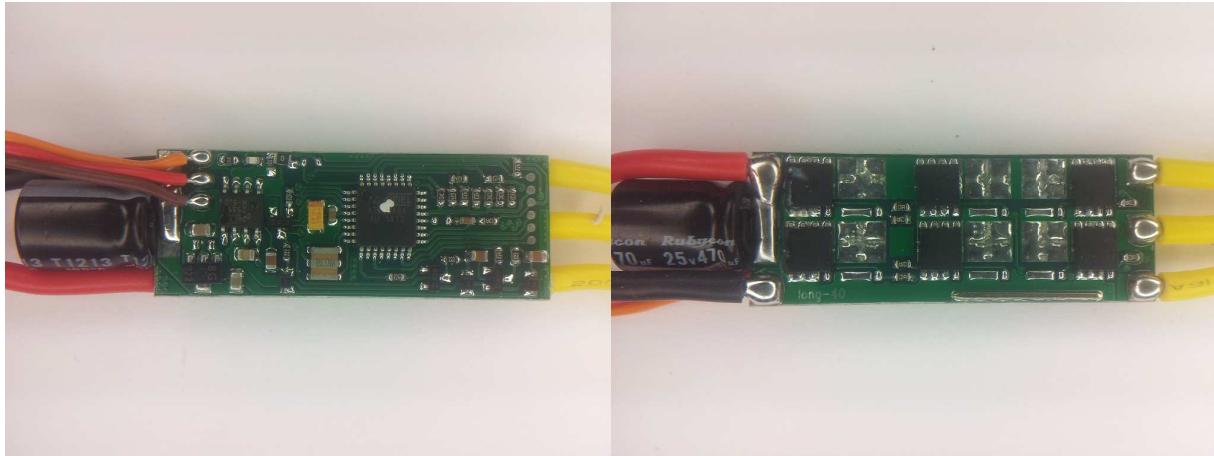
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

**Do NOT flash it with Multistar code! The low side fet gates do not have pulldown, be sure to use a current limited supply when flashing!**

It uses the "Sunrise\_BLHeli\_Slim\_20A\_.." code.

## Sunrise BLHeli multi slim 30A:



The ESC supports 2S to 6S operation.

It supports damped light mode and bootloader on input plug.

It does not support overtemp protection.

It does not support low voltage limiting.

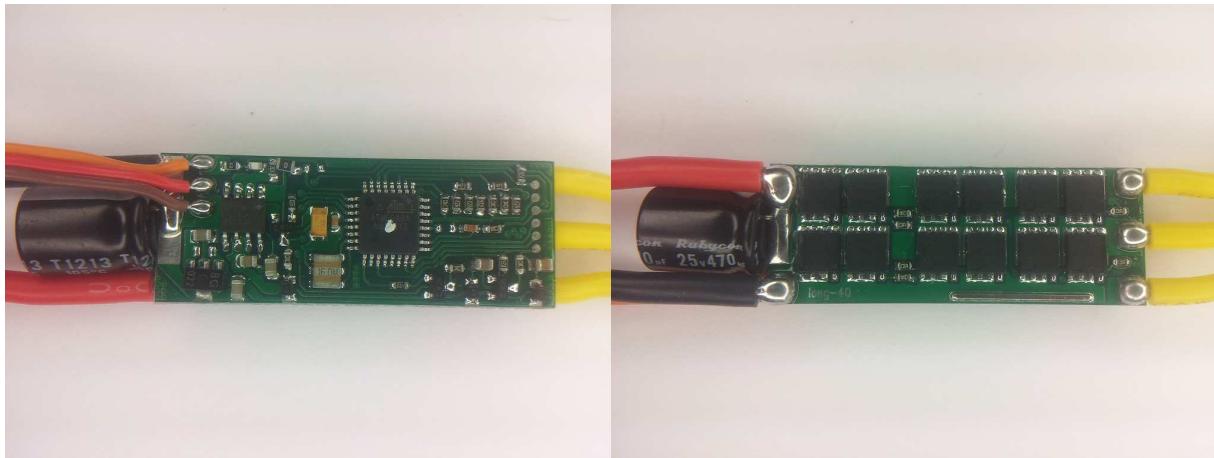
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

**Do NOT flash it with Multistar code! The low side fet gates do not have pulldown, be sure to use a current limited supply when flashing!**

It uses the "Sunrise\_BLHeli\_Slim\_30A\_.." code.

## Sunrise BLHeli multi slim 40A:



The ESC supports 2S to 6S operation.

It supports damped light mode and bootloader on input plug.

It does not support overtemp protection.

It does not support low voltage limiting.

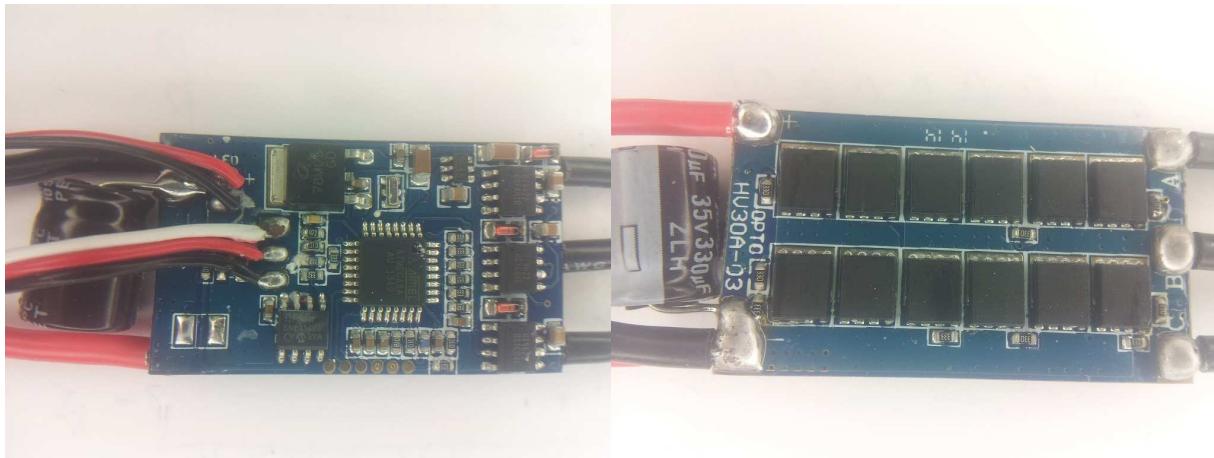
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

**Do NOT flash it with Multistar code! The low side fet gates do not have pulldown, be sure to use a current limited supply when flashing!**

It uses the "Sunrise\_BLHeli\_Slim\_30A\_.." code.

## RCTimer T40A:



The ESC supports 2S to 6S operation.

It supports damped light mode.

It supports bootloader on input plug.

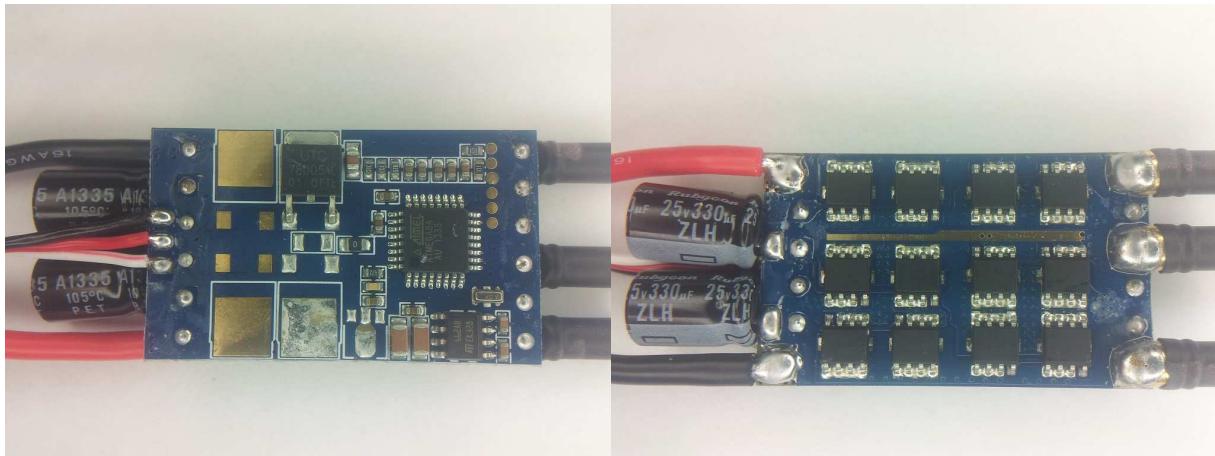
It does not support overtemp protection.

Switching speed is fast.

Both high side and low side are Nfets.

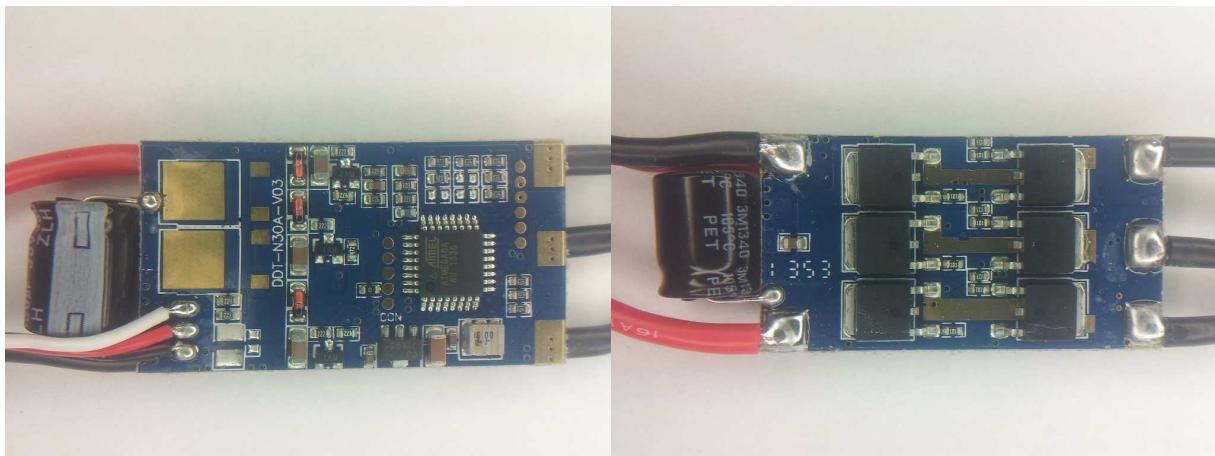
It uses the "RCTimer\_40A\_.." code.

## RCTimer HVSK 40A:



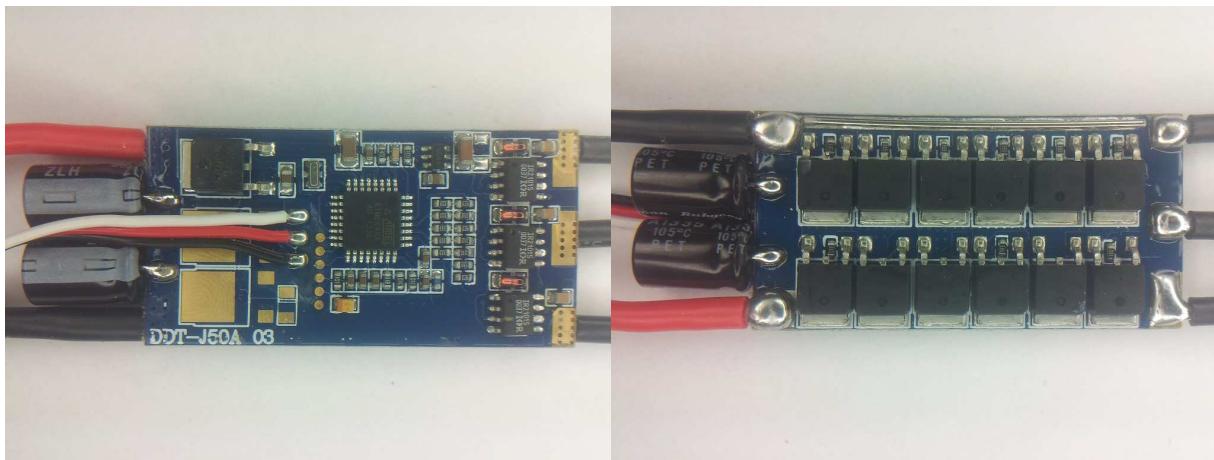
The ESC supports 2S to 6S operation.  
It supports damped light mode.  
It supports bootloader on input plug.  
It does not support overtemp protection.  
Switching speed is fast.  
Both high side and low side are Nfets.  
It uses the "RCTimer\_40A\_.." code.

## RCTimer NFS 30A:



The ESC supports 2S to 4S operation.  
It supports damped light mode.  
It supports overtemp protection and bootloader on input plug (ICP1).  
Since it uses ICP1 as input, it runs smooth also with OneShot125 input signal.  
Switching speed is fast.  
Both high side and low side are Nfets.  
At 2S, low voltage limiting does not work reliably.  
It uses the "RCTimer\_NFS\_30A\_.." code.

## RCTimer NFS 45A:



The ESC supports 2S to 6S operation.

It supports damped light mode.

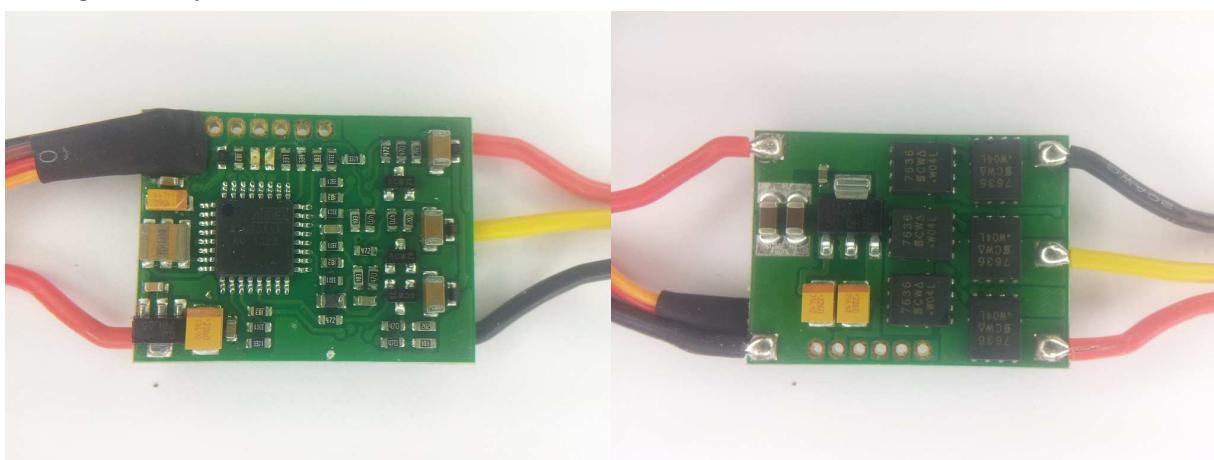
It supports overtemp protection and bootloader on input plug.

Switching speed is fast.

Both high side and low side are Nfets.

It uses the "RCTimer\_40A\_.." code.

## Afro 12A:



The ESC supports 2S to 3S operation.

It supports damped light mode.

It supports overtemp protection and bootloader on input plug (ICP1).

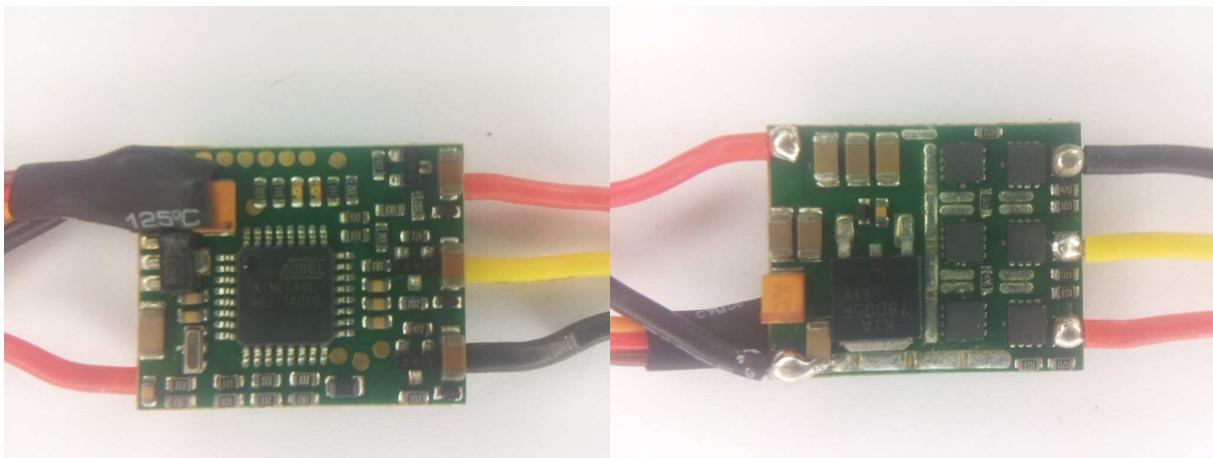
Since it uses ICP1 as input, it runs smooth also with OneShot125 input signal.

Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

It uses the "Afro\_12A\_.." code.

## Afro 12A ultralite:



The ESC supports 2S to 4S operation.

It supports damped light mode.

It supports overtemp protection and bootloader on input plug (ICP1).

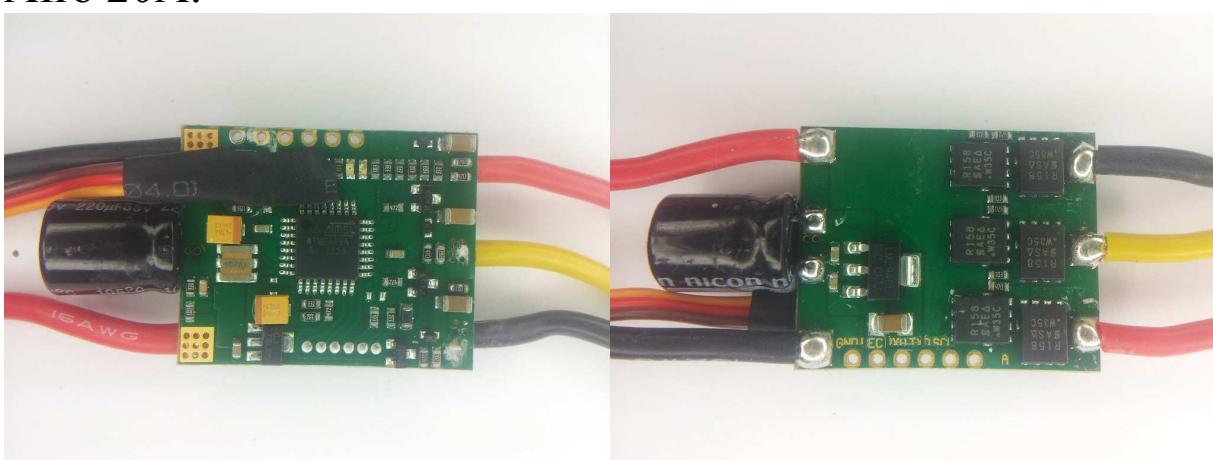
Since it uses ICP1 as input, it runs smooth also with OneShot125 input signal.

Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

It uses the "Afro\_12A\_.." code.

## Afro 20A:



The ESC supports 2S to 4S operation.

It supports damped light mode.

It supports overtemp protection and bootloader on input plug (ICP1).

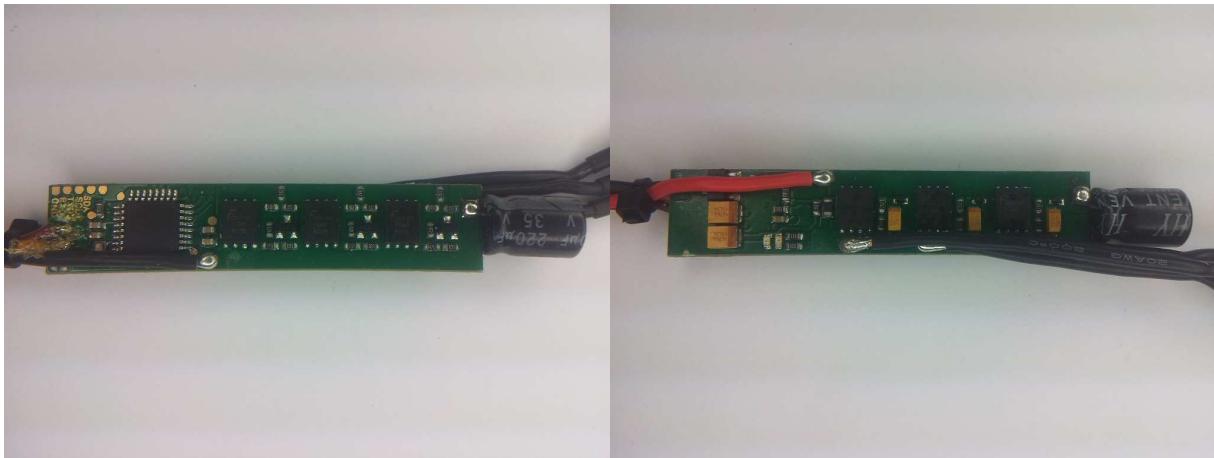
Since it uses ICP1 as input, it runs smooth also with OneShot125 input signal.

Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

It uses the "Afro\_20A\_.." code.

## Afro slim 20A:



The ESC supports 2S to 4S operation.

It supports damped light mode.

It supports overtemp protection and bootloader on input plug (ICP1).

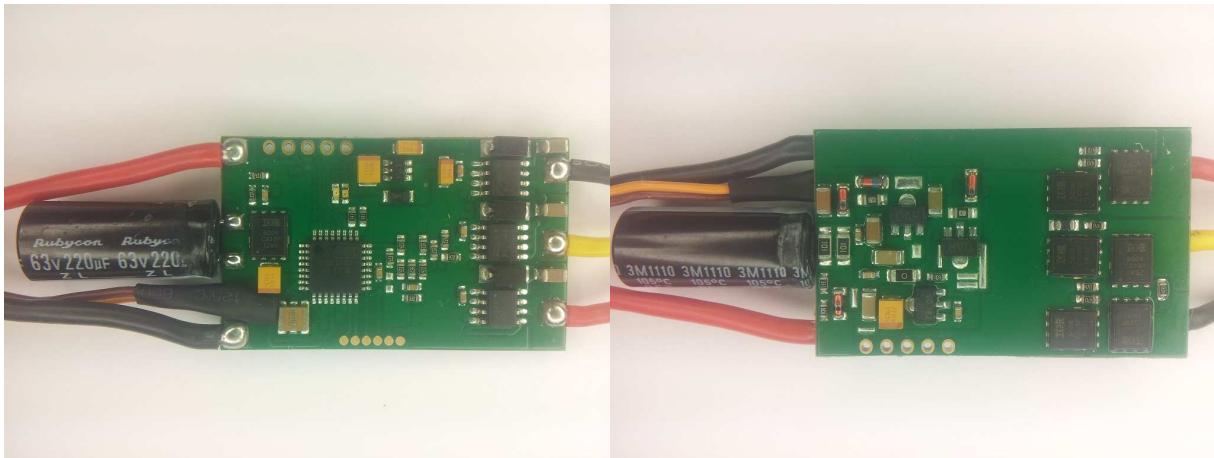
Since it uses ICP1 as input, it runs smooth also with OneShot125 input signal.

Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

It uses the "Afro\_20A\_.." code.

## Afro 20A HV:



The ESC supports 3S to 8S operation.

It supports damped light mode.

It supports overtemp protection and bootloader on input plug (ICP1).

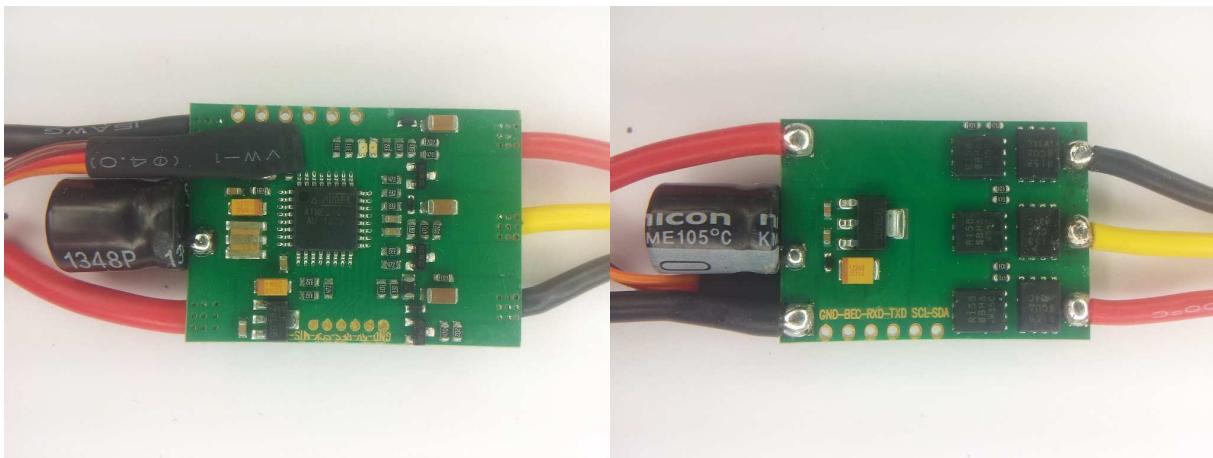
Since it uses ICP1 as input, it runs smooth also with OneShot125 input signal.

Switching speed is fast.

Both high side and low side are Nfets.

It uses the "Afro\_20A\_HV\_.." code.

## Afro 30A:



The ESC supports 2S to 4S operation.

It supports damped light mode.

It supports overtemp protection and bootloader on input plug (ICP1).

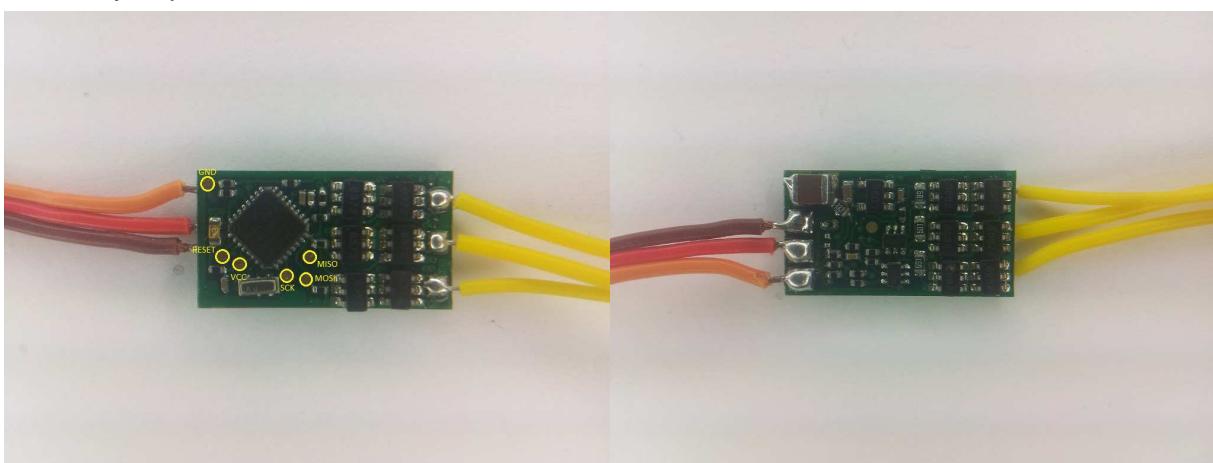
Since it uses ICP1 as input, it runs smooth also with OneShot125 input signal.

Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

It uses the "Afro\_30A\_.." code.

## YEP 7A:



The ESC supports 1S to 2S operation.

It supports bootloader on input plug.

It does not support overtemp protection.

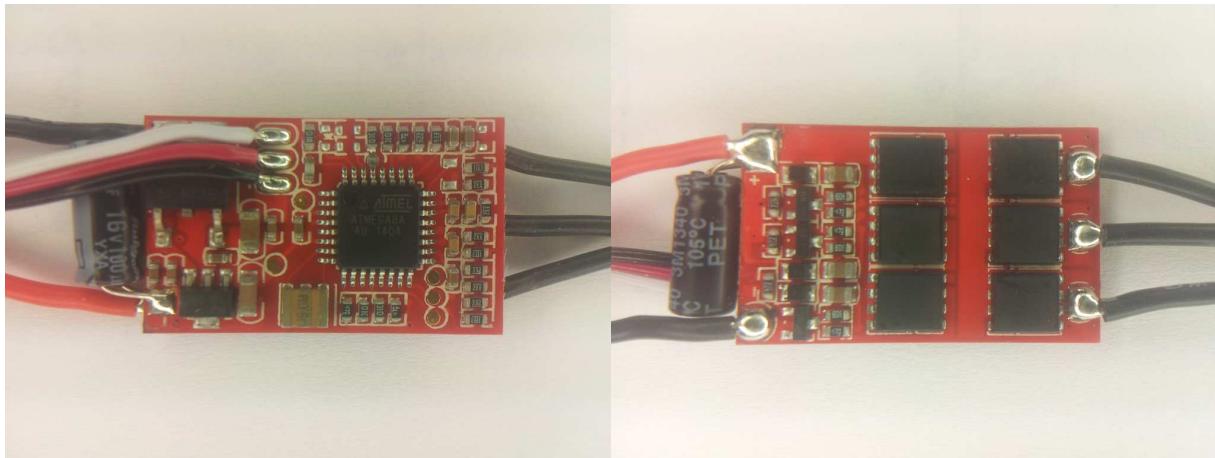
Switching speed for high side to turn off is slow.

Low side are Nfets and high side are Pfets.

Fuse bytes are (E/H/L): 0xFC/0xDD/0xFF

It uses the "YEP\_7A\_.." code.

## Armattan 12A:



The ESC supports 2S to 4S operation.

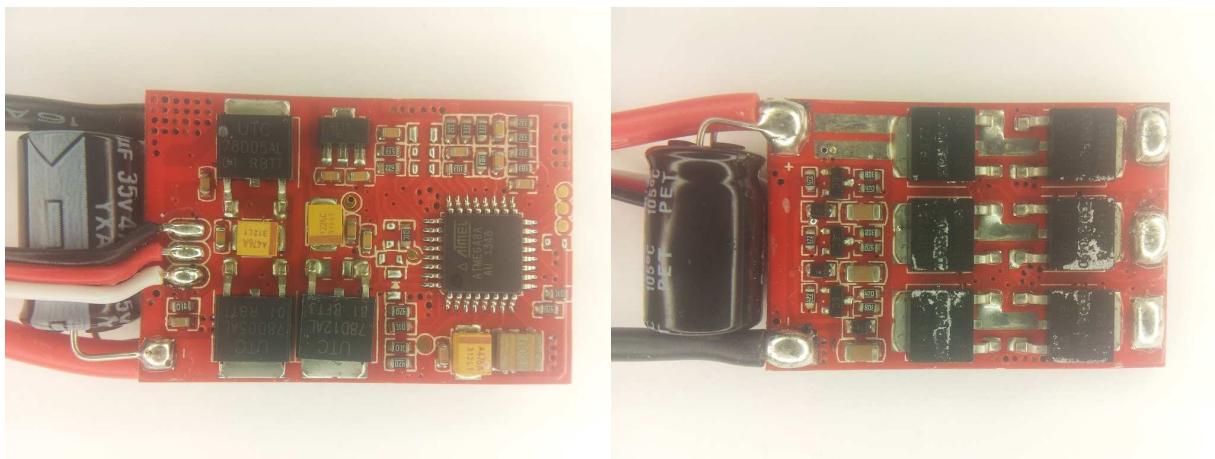
It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

It uses the "BlueSeries\_12A.." code.

## Armattan 30A:



The ESC supports 2S to 4S operation.

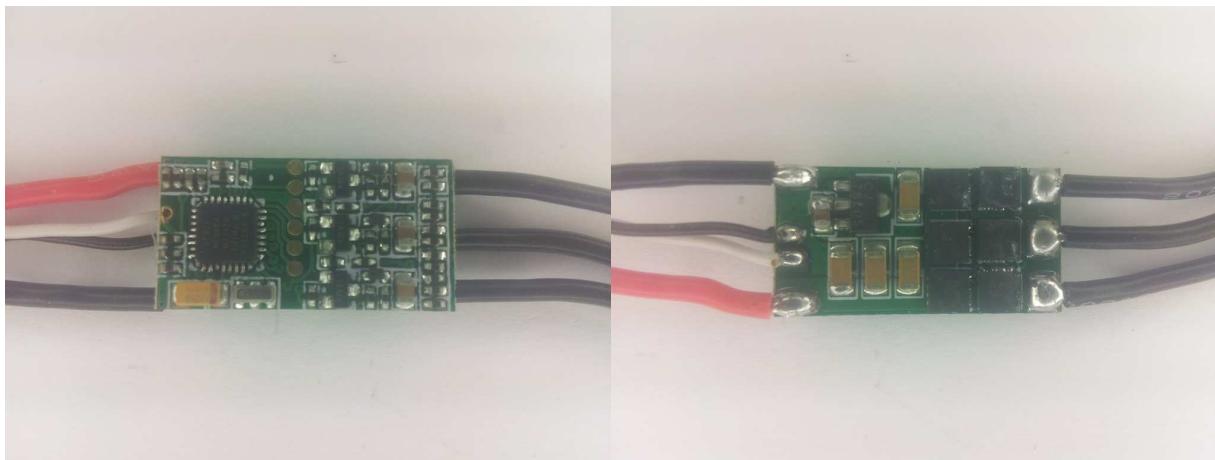
It supports damped light mode, overtemp protection and bootloader on input plug.  
Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

At 2S, low voltage limiting does not work reliably.

It uses the "BlueSeries\_30A.." code.

## DYS SN20A:



The ESC supports 2S to 4S operation.

It supports damped light mode.

It supports overtemp protection and bootloader on input plug (ICP1).

Since it uses ICP1 as input, it runs smooth also with OneShot125 input signal.

Switching speed is quite fast, although high side is slow to turn on.

Both high side and low side are Nfets.

There is also a 16A version that is almost identical, and uses the same code

It uses the "DYS\_SN20A\_.." code.