

KISS ESC 50A 4-in-1

Welcome to the KISS ESC 50A 4-in-1 Product Description

Safety Instructions

- Due to the "regenerative braking" functionality, a KISS ESC should only be operated with batteries. A power supply could be damaged by the returning current. The ESCs themselves are protected.
- Never start a motor while holding it in your hands!
- Never grab into rotating propellers! When starting the engines with mounted propellers, a sufficient safety distance must be maintained!
- Never touch the ESCs during operation or shortly afterwards! The KISS ESCs can reach a temperature of up to 80°C!
- The ESC must never be powered while soldering!
- The electronic components of the ESC are sensitive to static charge. Please ensure appropriate safety precautions, such as sufficient grounding of the workplace and body grounding (grounding bracelet).

Technical Data

- **Technical Specifications**

- 32-bit ARM Cortex M4 MCU
- Operating voltage 6 - 26V / 2-6S Lipo
- When using 5-6S, a low ESR capacitor of at least 470 μ F is required, ideally 1000 μ F and at least 35V, ideally 50V
- Maximum continuous current output 50A per individual ESC, actively limited
- Maximum rotational error speed 600000 ERPM (we recommend 500000 ERPM)
- Dimensions 40 x 45mm
- Hole spacing 30.5mm
- Hole size 3.2mm

- **Hardware/Feature Specifications**

- Telemetry-capable (voltage, current, temperature, RPM)
- Active current limitation (constant current measurement and limitation at 50A maximum)
- Active temperature monitoring (actively reduces performance from 100°C)
- Sinwave/BackEMF Hybrid conversion for cleaner running
- 2400 (Full resolution of 2000 steps requires only 6.5 μ s)
- Supports all common Dshot commands such as Turtle Mode, 3D Mode and direction change
- Advanced adaptive auto-timing (3.25-30° adjustment with each conversion)
- Built for race quads (50A per individual ESC continuous load possible even with weak cooling)
- High maximum speed! (500,000ERpm, 71,400Rpm with a 14 pole motor)
- Accurate speed control (2000 steps with DShot)
- No additional capacitors needed for 2-4S

- Super fast speed acceptance
- Precise speed acceptance
- Active "free-spinning" (very low diode losses)
- Regenerative braking (Active Braking)
- Supports 3-6S Lipo
- 100-2400, Oneshot42, Oneshot125 as well as (25 – 500Hz) PWM with automatic detection
- Supports the following protocols: FrSky Sbus, Graupner SumD, TBS CROSSFIRE and Multiplex SRXL as well as the following telemetry protocols; S-Port, Graupner HOTT, TBS CROSSFIRE and Sensorbus

ESC Connection Assignment

- Brushless Motor Connections (3)
- Lipo Connection +
- Lipo Connection - (GND)
- Signal/Telemetry/Ground Connection (GND)/FC + Connection as 8-Pin JST Socket
- Telemetry Signal (KISS TLM / SPort / CRSF TX / HOTT / Sensorbus)
- PWM/Dshot Signal Input (PWM / OS128 / OS42 / DSHOT 600-2400)
- FC Connection - (GND)
- FC Connection + (Lipo Voltage)

Changing the Motor Rotation Direction

The KISS FCs as well as Betaflight FCs support the change of the rotation direction via the GUI.

KISS ESC - Serial Receiver

Describes how the KISS ESC is connected directly to a serial receiver output (SBUS, Graupner SUMD, Multiplex SRXL or TBS CRSF receiver). This function is only supported by KISS ESC 25A and KISS ESC 32A! The KISS ESCs support direct connection to a serial receiver. The input signal is automatically detected. Since the ESC does not supply 5V to the receiver, it must be supplied separately! The output of a telemetry protocol is separately adjustable with PWM signal input. More information can be found in the description.

FrSky SBUS and S-Port

Connect the Sbus output with Sig. | RX-Pin. And if you need telemetry, connect S-Port with TLM | TX. If a valid Sbus signal is detected, S-Port is automatically activated. The ESC uses Sbus channel 0 as standard throttle channel. This can be changed in the CLI interface. For S-Port, its standard sensor address is 27. It can be changed in the CLI interface. Available telemetry: Voltage (Volts), Current (Amps), Consumption (mA/h) - Temperature (°C), RPM (standard for 14-pole magnet motor, configurable in the CLI).

Graupner SumD

Connect the SumD output with Sig. | RX-Pin. And if you need telemetry, connect HOTT with TLM | TX. If a valid SumD signal is detected, HOTT is automatically activated. The ESC uses SumD channel 0 as standard throttle channel. This can be changed in the CLI interface. In the HOTT telemetry, it is found as Electric Air Module. Available telemetry: Voltage (Volts), Current (Amps), Consumption (mA/h) - Temperature (°C), RPM (standard for 14-pole magnet motor, configurable in

the CLI).

Multiplex SRXL and Sensorbus

Connect the SRXL output with Sig. | RX-Pin. And if you need telemetry, connect Sensorbus with TLM | TX. If a valid SRXL signal is detected, Sensorbus is automatically activated. The ESC uses SRXL channel 3 as the standard throttle channel. This can be changed in the CLI interface. It uses Sensorbus ID 2-6, configurable in the CLI. Available telemetry: Voltage (Volts), Current (Amps), Consumption (mA/h) - Temperature (°C), RPM (standard for 14-pole magnet motor, configurable in the CLI).

TBS Crossfire

Connect the CRSF TX output with Sig. | RX-Pin. And if you need telemetry, connect CRSF RX with TLM | TX. The throttle channel used is CRSF channel 0. Available telemetry: Voltage (Volts), Current (Amps), Consumption (mA/h).

KISS ESC - Calibration & 3D Mode

This process only needs to be carried out if the ESC is used with a 3rd party FC or serial receiver and PWM/oneshot/multishot signal input. Calibration must only be carried out with PWM signal! The default setting is 1000µS min signal, 1050µS start signal and 2000µS full throttle signal. To teach the transmitter path (throttle path), the ESC / controller must be connected to a receiver or FC without the ESC being powered - LiPo disconnected. Set the throttle signal to full throttle (peak gas). Connect the LiPo to the ESC / controller. A beep indicates confirmation that the programming mode is activated. Reduce the throttle signal to a minimum (usually 1000µs) and wait for the speed controller to restart (audible signal high-low-high). The throttle path is now programmed and the ESC/controller is ready for use.

3D Mode

Caution: The loads that arise for the ESC in 3D mode are up to 3 times higher! After the throttle path has been programmed as described above, the 3D mode can be activated as follows:

Disconnect the power supply, set the throttle signal to full throttle. Reconnect the power supply, wait for the beep. Set the throttle to the middle position (half throttle path) and wait for the ECS / speed controller to restart (signal: high-low-high). The 3D mode is now active. Important! The speed controller now only starts at the throttle middle position. Deactivation: Teach new master path. Deactivation of the 3D mode: Teach new master path as explained above.

KISS ESC - FW Update

This guide is valid for KISS ESC >18A and FW >1.1. The KISS ESC has a KISS bootloader for easy updates via the signal input cable via an FC or USB-UART.

- **Software Update with KISS FC** Here you don't have to change any connection as the wiring is as it is needed for flying. Remove all propellers! Connect the FC to your PC. Power the ESCs. Open the KISS GUI and connect to the FC. Go to the ESC Flasher tab, select an FW and start the flash process.
- **Software Update via Betaflight** The KISS Flash Loader app is required for this update. Remove all propellers! Connect the FC to your PC. Power the ESCs. Open the Betaflight GUI, go to the CLI and enter "escprog ki 255". Close the COM port! Open the KISS Flash

Loader and select USB-UART. Choose the firmware you want to flash and start the flash process.

- **Software Update via USB-UART** ESC ↔ USB-UART Signal ↔ TX GND ↔ GND.
Remove all propellers! Connect the USB-UART to your PC. Power the ESC. Open the KISS Flash Loader and select USB-UART. Choose the firmware you want to flash and start the flash process.

KISS ESC - CLI

KISS ESC Command Line Interface. The CLI settings are only required if you want to set up special things, such as using two ESCs on one Sbus or S-Port. It is not required for normal copter use.

KISS ESC - FAQ

Frequently Asked Questions / Error Evaluation. Possible failures: Errors and Solution.