Reflex Drive

RD 4-in-1 ESC 100A

MADE IN INDIA



TRAPEZOIDAL TECHNOLOGY

Stuck Rotor Protection

Startup Protection

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Product Description:

Reflex Drive's 4-in-1 ESC is an ultra-lightweight, high-power controller designed for demanding UAV propulsion systems. Supporting 4S-6S operation with up to 2.4 kW power (100 A @ 6S), it delivers exceptional power density in a package under 55 g. Proven stable at nearly 1.9 kW even at 37 °C ambient with indirect airflow, it offers reliable thermal performance for heavy lift and industrial drones.

Technical Specification

S. No.	Parameter	Value	Remarks
1	Input voltage	4 - 6S LiPo	-
2	Continuous current	85 A (8 min, with active cooling)	Tested in continuous airflow and 34 ℃ ambient temperature
3	Peak current	100 A (180 s, with active cooling)	Tested in continuous airflow and 34 ℃ ambient temperature
4	BEC output voltage	No	-
5	Operating ambient temperature	(-20 ℃) ~ (+75 ℃)	-
7	Standby current (24 V)	≤ 60 mA	-
8	PWM range (can be calibrated)	1050 µs ~ 1950 µs	Calibration enabled
9	Recommended throttle refresh frequency	50 Hz	-
10	Throttle I/P mode	PWM & DShot300	-
11	Over temperature protection	No	-
12	Over current protection	No	-
13	Stuck rotor protection	Yes	-
14	Waterproof rating	Conformal coated	Conformal coated
15	Startup protection	Yes	-
17	Telemetry	Yes	Voltage, current, PCB temperature, motor eRPM (not in DShot300)
18	Braking feature	Yes	-

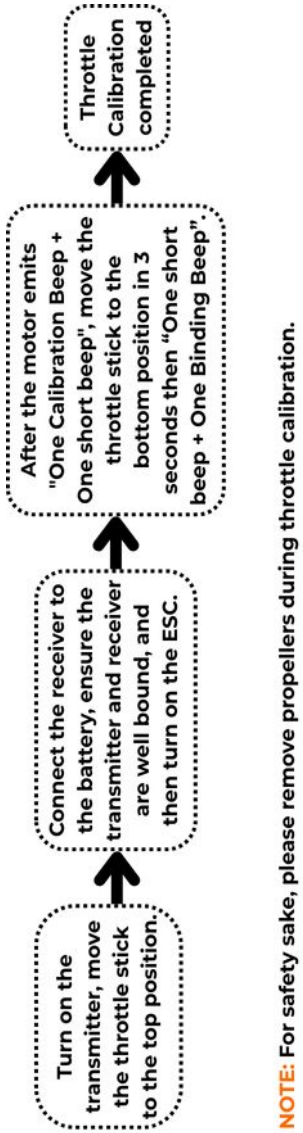
Wire and Enclosure Specification

Seq.	Item	Wire colors / Size	Length	Remarks
1	Input cables	NA	-	-
2	Output cables	NA	-	-
3	Signal & telemetry wires	8P JST connector 28 AWG	30 cm	±1 cm

Dimensions & Weight

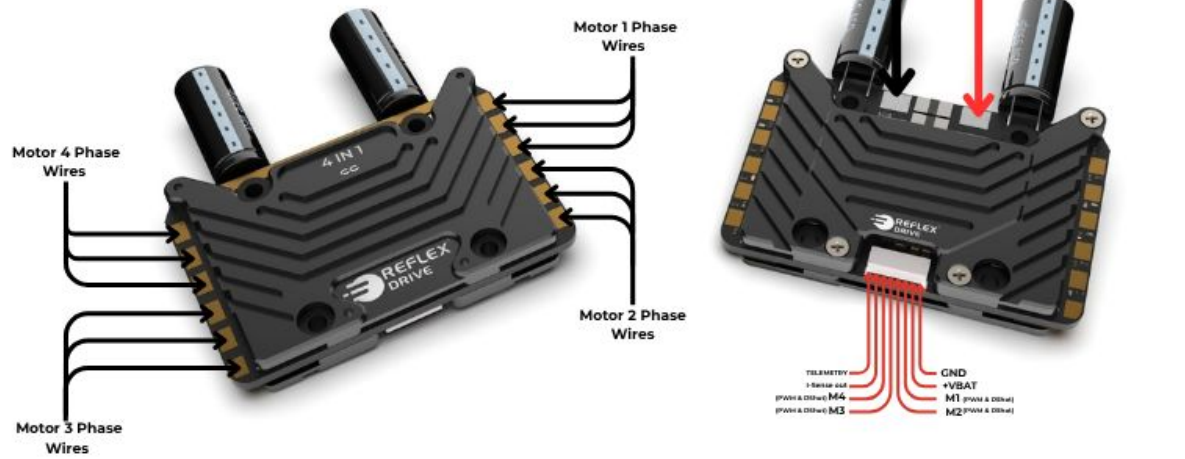
S. No.	Item	Requirement	Remarks
1	Length	42.5 mm	±1 mm
2	Width	61.72 mm	±1 mm
3	Height	10.02 mm	±0.02 mm
7	Weight (incl. ESC with signal wire)	54 g	±1 g

Throttle Range Calibration



NOTE: For safety sake, please remove propellers during throttle calibration.

Wiring Diagram



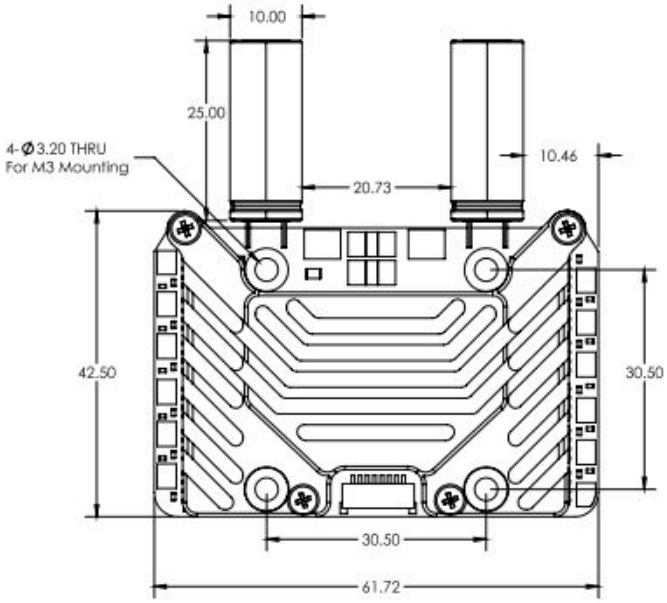
Back / Front

Recommendations - Wire Gauge (AWG):

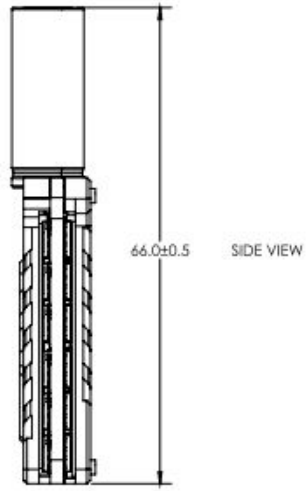
1) Input Wire: 12 AWG
2) Motor Phase Wires: 16 AWG

Note: Please solder the motor phase wires on the back side of the ESC.

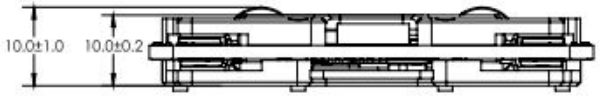
Technical Drawing



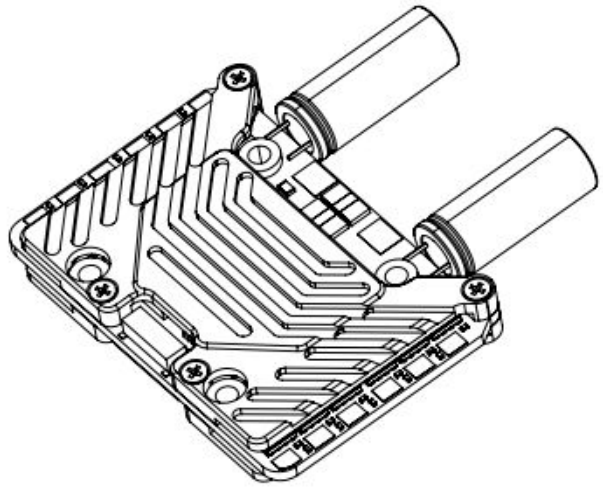
TOP VIEW



SIDE VIEW



FRONT VIEW



ISOMETRIC VIEW

Precautions

- Do not exceed the recommended operating voltage range of the ESC, otherwise it may cause irreversible damage to the ESC.
- Ensure adequate cooling for the ESC. Avoid enclosing it in airtight spaces. Overheating can reduce performance and may permanently damage components.
- Do not expose the ESC to water, oil, dust, or conductive particles unless it is properly sealed or coated. This can cause short circuits or corrosion.
- Always double-check battery connections. Reverse polarity can instantly damage the ESC.
- Only use batteries within the specified voltage and current ratings (e.g., LiPo with proper cell count). Over-voltage or unstable supply can damage the ESC.
- Loose connectors or poor soldering may cause arcing, noise, or intermittent failure. Ensure all connections are firm and reliable.

Protection Function Description

- **Stuck Rotor Protection**

  The ESC performs a single startup attempt and terminates operation if no rotor movement is detected. Restart is permitted only after the throttle is reset to minimum. Persistent failure indicates a possible motor or mechanical fault.

- **Over Current Protection**

  This ESC does not provide Over Current Protection.

- **Over Temperature Protection**

  This ESC does not provide Over Temperature Protection.

- **Low Voltage and High Voltage Protection**

  This ESC does not provide under-voltage or over-voltage protection. Operation below 8 V or above 26 V may cause abnormal behavior or malfunction. Ensure operation within specified limits. Immediate landing is recommended in UAV applications if voltage deviates from this range.

- **Throttle Signal Loss Protection**

  Motor output is disabled immediately upon loss of the throttle input signal.

Common Faults and Alert Tones Description

Fault Phenomena	Alarm	Possible Cause	Solution
After powering on, the motor fails to start	“Beep, beep, beep...” (with a 2-second interval between each beep)	The receiver's throttle channel is not outputting a throttle signal	Check if the radio and receiver are paired correctly. Check if the throttle channel wiring is connected properly. Verify the ESC communication priority (factory default is PWM).

IMPORTANT

To avoid potential issues, ensure there are no interruptions, whether power loss or connection drops, during the flashing process. While most ESCs can be recovered with a power cycle and re-flashing, successful recovery is not guaranteed.

AFTER SALE MAINTENANCE

If your ESC is damaged, please contact Reflex Drive support before attempting any repair or replacement. Only use the ESC after receiving confirmation. Do not install unofficial components, as this may affect performance or void the warranty.

SUPPORT

For any questions, technical support, or product-related assistance, feel free to reach out to us at: sales@reflexdrive.in, call us at +91 9151118036.

Visit our website at www.reflexdrive.in for the latest product releases, firmware updates, and helpful resources tailored to your needs. Explore new offerings and stay informed to get the most out of your Reflex Drive experience.