



ElectroCraze 20D-BD v2

Dual Channel 20A Bidirectional Brushed Motor Controller

High-current dual-motor control for RC vehicles, combat robots & 4WD platforms

PRODUCT OVERVIEW



The **ElectroCraze 20D-BD v2** is a high-power dual-channel bidirectional brushed motor controller engineered for demanding RC and robotics applications. With an input voltage of **12–24V (3S–6S LiPo)**, it delivers **20A continuous (24A peak) per channel** with an integrated 6V BEC. A 3-way hardware switch provides Normal, Mix, and Mirror modes — no transmitter configuration required. Combined with Invert Mode via servo signal wire, it is the ideal choice for combat robots, 4WD platforms, and high-current ground vehicles.

SPECIFICATIONS

Model	ElectroCraze 20D-BD v2
Input Voltage	12V – 24V (3S to 6S LiPo)
Output Current (Cont.)	20 A per channel
Output Current (Peak)	24 A per channel
Current Limiting	Yes
Signal Input	Standard Servo Input
Throttle Centre	1460 – 1540 μ s
Dead Band (From Centre)	40 μ s
BEC Output	6V 300 mA max
Input Wire	14 AWG Silicone Wire (Red & Black)
Output Wire	16 AWG Silicone Wire (Yellow & Blue)
Compatible Motors	370/520 series, 550/555 series (light duty only)
Dimensions	56.1 × 41.3 × 19.06 mm (excl. wires)
Weight	46 g (incl. wires)

KEY FEATURES

[DC] Dual-Channel 20A Control

Independent, mixed, or mirrored control of two motors

[24A] 24A Peak per Channel

Handles high-current bursts without tripping

[MX] 3-Way Hardware Switch

Normal / Mix / Mirror mode — no transmitter setup needed

[INV] Invert Mode

Keeps drive direction consistent after robot flip

[BEC] Integrated 6V BEC

Powers receiver — no separate BEC required

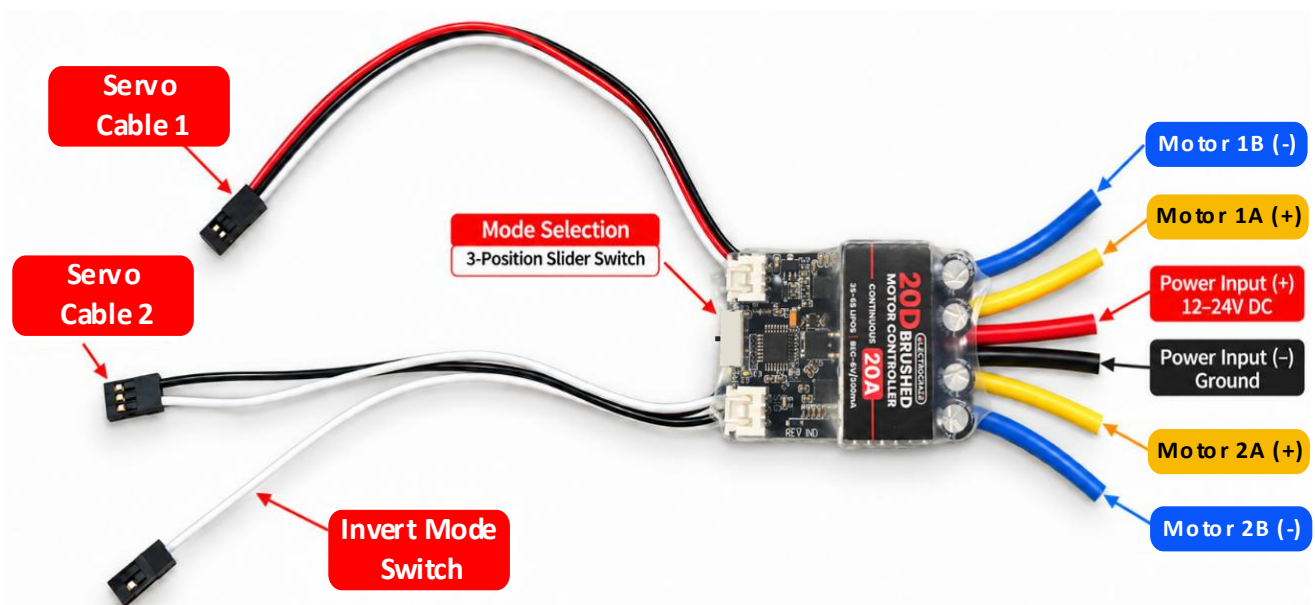
[SC] Signal Loss Protection

Safeguards motors automatically on RC signal loss

LED INDICATOR STATUS

LED Color	LED Status	Meaning
Green	Solid	Valid Power — controller powered on
Blue	Solid	Valid Signal — RC signal received
Red	Solid	Mix Mode active
White	Solid	Mirror Mode active
N/A	—	Invert Mode (no dedicated LED)
Green (solid) + Blue (blink)	Alternate	Power OK but no signal received

WIRING SUMMARY



POWER INPUT

Red → Positive (+)
Black → Negative (-)

MOTOR CH 1

Yellow (M1A) → Motor 1 (+)
Blue (M1B) → Motor 1 (-)

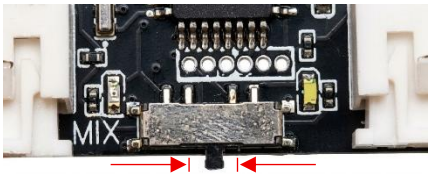
MOTOR CH 2

Yellow (M2A) → Motor 2 (+)
Blue (M2B) → Motor 2 (-)

RC Servo Cable: Connect servo cable 1 & 2 to receiver for drive signals. Invert mode switch wire activates Invert Mode (assign transmitter switch). Leave servo cable 3 disconnected if Invert Mode is not needed. Verify ground, 5V, and signal pin alignment on receiver.

MODE SUMMARY

Normal Mode

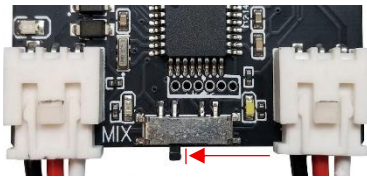


Both channels operate independently via servo cable 1 & 2. Ideal when separate motor control is needed. Use transmitter mixing if combined control is required.
Slide switch to **Middle** and **Restart** controller for Normal Mode.

Case 1: Remote V-tail Mixing		
Servo Connector	Receiver Channel	
Servo Connector 1	CH2	
Servo Connector 2	CH4	
Servo Connector 3	Invert Switch channel	

Case 2: Remote Eleveon Mixing		
Servo Connector	Receiver Channel	
Servo Connector 1	CH1	
Servo Connector 2	CH2	
Servo Connector 3	Invert Switch channel	

Mix Mode



Single throttle input drives both channels together. Built-in hardware switch — perfect for differential-drive robots even without transmitter mixing support.
Slide switch to **Left most** side and **Restart** controller for Mix Mode activation.

Case 1: Eleveon Mixing		
Servo Connector	Receiver Channel	
Servo Connector 1	CH1	
Servo Connector 2	CH2	
Servo Connector 3	Invert Switch channel	

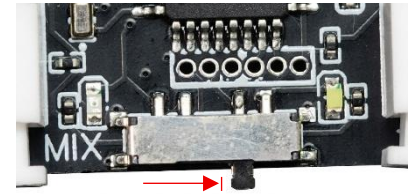
Case 2: V-tail Mixing		
Servo Connector	Receiver Channel	
Servo Connector 1	CH4	
Servo Connector 2	CH2	
Servo Connector 3	Invert Switch channel	

Mirror Mode

Slide switch to **Right most** side and **Restart** controller for Mirror Mode activation.

The controller internally links Servo Cable 1 signal to Servo Cable 2 signal. So, a single servo cable (1st shown in previous diagram) drives both motors together.

Wiring Note: Because the outputs are identical, connect **Motor 1st** in reverse so both wheels spin in the same direction:



Yellow (1A): Negative (-)

Blue (1B): Positive (+)

Invert Mode

Electronically reverses both output signal via Invert mode switch cable. Maintains consistent drive direction after a robot flip (upside-down). Forward motion (motor rotation) changes to Backward motion which keeps front face in same direction.

Assign any toggle switch from Transmitter Remote to Servo connector 3 channel. Leave Servo connector 3 disconnected if Invert function not needed.

- Invert mode can be used in Normal and Mix mode but not works in Mirror mode.

APPLICATIONS

4WD Combat Robots

Differential Drive Robots

RC Ground Vehicles

Heavy Robotic Platforms

RC Boats & Crawlers

High-Current Custom Builds

ADVICE & WARNINGS

- **Check Battery Polarity:** Always verify wiring before connecting power. Reversed polarity causes irreversible damage to the controller.
- **Controller Temperature:** The board gets hot during operation. Do not touch immediately after use or place near low-melting-point materials.
- **Do Not Insulate:** Never wrap in insulating material — heat must dissipate freely to maintain rated continuous current.
- **Prevent Short Circuits:** Keep conductive materials away from the PCB. Instantaneous shorts may exceed the current limiter response time.
- **Secure Against Vibration:** Stabilize heavy PCB components such as power capacitors with silicone or epoxy in high-vibration builds.
- **Input Voltage Range:** Designed for 12V–24V only. Voltages above 24V will cause permanent damage. Always verify battery voltage before connection.
- **For Mirror Mode:** Connect only Servo cable 1 and interchange Motor 1 output cables [Yellow wire to (-ve) terminal of Motor and Blue to (+ve) terminal].

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