

BLDC3525 / BLDC2838 / BLDC3650 / BLDC4260

English Wiring Instruction Manual

Applicable to black BLDC motors with red / black / white / blue / yellow leads and the controller wiring modes shown in the provided diagrams.

Quick Wire Reference

Wire Color	Signal	Main Function
Red	Vcc	Motor power positive
Black	GND	Motor power negative / ground
White	CW / CCW	Direction control input
Blue	SPEED	0–5V analog speed-control input; also used as the brake-related function line depending on controller mode
Yellow	FG	Speed feedback output; leave open when using the shown controller

1. Critical Safety Warnings

- **Power polarity must never be reversed.** Connect DC V+ IN to the positive supply and DC V- IN to the negative supply only. Reverse polarity can burn the driver board immediately.
- **Do not let the power wires touch the FG wire or speed wire.** Contact between the power lines and the yellow FG line or blue speed line can destroy the driver board and cause motor failure.
- **The FG wire must remain open when using the controller shown in the diagrams.** That controller does not provide FG speed measurement capability.
- **Brake and speed control are mutually exclusive on this controller.** Use either speed-regulation mode or brake mode, not both at the same time.

2. Electrical Terminal Description

Terminal / Signal	I/O	Electrical Condition	Remark
GND	IN	Ground	Black wire; power negative
Vcc	IN	DC 12V $\pm$ 10%	Red wire; power supply input
FG	OUT	Open collector output. VOH: min 4V at 5V with 10k Ω pull-up. VOL: 0V to max 0.6V. Max current: 5mA. Pulse quantity: 6 pulses / revolution.	Yellow wire; speed feedback output
SPEED	IN	0–5V input. Effective analog regulation range: 1.2–3.3V.	Blue wire; motor speed is proportional to the analog input voltage
CW / CCW	IN	0–5V logic input. VIH min 2V = CCW. VIL max 0.2V = CW.	White wire; direction control

Note on SPEED input: the source diagrams label the blue line as “PWM”, but the detailed terminal chart clarifies that it is a **0–5V analog control input**, not a standard PWM-wave duty input. True PWM-wave control would require a customized

version.

3. Basic Direct Motor Wiring

- **Type 1: Default rotation.** Red wire to power positive, black wire to power negative, white wire left open.
- **Type 2: Reverse original rotation.** Red wire to power positive, and white wire connected together with black wire to power negative.
- **Function lines.** Blue wire is the speed-control line. Yellow wire is the FG output line with a base signal count of 6 pulses per revolution.

4. Controller Wiring Modes

Mode A — Speed Regulation Function (reversible, no brake)

Controller Terminal	Connection in Speed Regulation Mode
Power V+	DC power input positive → DC V+ IN
Power V-	DC power input negative → DC V- IN
Motor Vcc+	Motor positive → Red wire
Motor GND-	Motor negative → Black wire
CW / CCW	Direction control input → White wire
BRAKE	Leave open / unconnected
PWM	Connect to blue SPEED wire
FG	Yellow FG wire left open / unconnected

- Use this mode when adjustable speed is required.
- The motor can be reversed through the white CW / CCW line.
- Brake is not used in this mode.

Mode B — Brake Function (reversible, no speed regulation)

Controller Terminal	Connection in Brake Mode
Power V+	DC power input positive → DC V+ IN
Power V-	DC power input negative → DC V- IN
Motor Vcc+	Motor positive → Red wire
Motor GND-	Motor negative → Black wire
CW / CCW	Direction control input → White wire
BRAKE	Connect to blue SPEED wire
PWM	Leave open / unconnected
FG	Yellow FG wire left open / unconnected

- Use this mode when brake control is required.
- The motor can still be reversed through the white CW / CCW line.
- Speed regulation is disabled in this mode.

5. Operating Logic Summary

Item	Value / Behavior
Power input	DC 12V $\pm$ 10%
Direction logic	White wire low ($\leq 0.2V$) = CW; white wire high ($\geq 2V$) = CCW
Speed input	Blue wire accepts 0–5V analog input; practical regulation range 1.2–3.3V
FG output	Yellow wire open collector; max 5mA; 6 pulses per revolution

6. Practical Recommendations

- For simple motor run only, use Type 1 direct wiring.
- For reverse rotation without a controller, use Type 2 direct wiring.
- For adjustable speed operation, use Speed Regulation Mode and connect the blue wire to the controller PWM terminal.
- For brake control, use Brake Mode and connect the blue wire to the controller BRAKE terminal.
- When using the provided controller, always leave the yellow FG wire disconnected.

Final Warning: Incorrect polarity, or accidental contact between the supply lines and the FG / speed lines, can burn the driver board. Damage caused by reverse power connection is not covered.