

Manual of Electric Brushless Motor Conversion Kit

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Universal Version for E-bike / E-scooter / Go-Kart Hub Motor Kit

Model Series: 36V/48V/60V/72V 500W–3000W Brushless DC Motor Kit

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1. Product Introduction

This complete brushless electric motor conversion kit converts ordinary bicycles, scooters or small vehicles into electric power transport. The kit adopts high-efficiency brushless hub motor + intelligent sine wave controller, supporting twist throttle, pedal assist sensor (PAS), brake power-off, LCD speed display and multiple speed gears.

Core advantages:

Low noise, high torque, energy-saving brushless motor

Over-current, over-voltage, under-voltage, short-circuit multi-protection controller

Plug-and-play color-coded wiring harness, easy installation

IP54 waterproof motor casing for daily rainy riding

Adjustable speed limit and power output via display setting

2. Safety Warning (Must Read Before Any Operation)

2.1 Pre-installation Safety

- 1.Disconnect the battery completely before installing or disassembling any electrical parts to avoid short circuit and electric shock.
- 2.Do not connect positive and negative battery wires directly; short circuit will cause wire burning, fire or permanent damage to controller.
- 3.Professional bicycle/electric vehicle maintenance personnel are recommended for installation if you lack mechanical and electrical experience.
- 4.Do not modify motor, controller internal circuit or cut original wiring arbitrarily,which will void warranty.

2.2 Riding Safety

- 1.Always wear safety helmet, gloves and protective gear during riding; comply with local electric vehicle traffic laws.
- 2.Do not overload passengers or cargo beyond the rated load marked on the kit.
- 3.Avoid driving in heavy rain, deep water or flood; water immersion will damage motor and controller.
- 4.Keep clothes, shoelaces and tools away from rotating motor wheel, chain and gears to prevent entanglement injury.
- 5.Do not operate the vehicle when battery is severely low; under-voltage driving will shorten battery service life greatly.
- 6.Do not climb long steep slopes at full throttle continuously; sustained overload will burn motor winding.

2.3 Storage & Fire Prevention

- 1.Store the kit and battery in cool, dry environment, away from high temperature, open flame and direct sunlight.
- 2.Stop using immediately if wire overheats, smokes or gives off strange smell; cut off power at once.
- 3.Keep out of reach of children; prohibit children from operating the electric vehicle without adult supervision.

3. Kit Components Checklist

Check all parts after opening package, contact seller for missing/damaged accessories:

- 1.Brushless hub motor wheel (front/rear hub optional) ×1
- 2.Matching sine wave brushless controller ×1
- 3.Twist throttle / thumb throttle ×1
- 4.Brake power-off sensor (2 pcs, for left & right brake)
- 5.Pedal Assist Sensor (PAS) ×1
- 6.LCD digital display meter ×1
- 7.Complete color wiring harness (motor 3 thick phase wires + 5pin Hall wire)
- 8.Torque anti-spin washers, axle nuts, spacers ×1 set
- 9.Cable ties, protective wire sleeve, fixing brackets ×1 set
- 10.User manual ×1

4. Required Installation Tools

Prepare the following tools before assembly:

Hex wrench set (3/4/5/6/8mm)

Adjustable spanner / socket wrench (14–19mm for axle nut)

Cable cutter, insulating tape, heat shrink tube

Freewheel remover (for rear hub motor only)

Multimeter (optional, for circuit testing)

Grease (for axle and thread lubrication)

5. Mechanical Installation Steps

Step 1: Remove Original Wheel

1. Turn vehicle upside down, loosen original wheel axle nuts with spanner.
2. Detach brake caliper, take out original wheel and freewheel/cassette.
3. Clean frame dropout and axle contact surface, apply a thin layer of anti-rust grease.

Step 2: Mount Motor Hub Wheel

1. Install torque anti-spin washer onto motor spindle: the protruding pin of washer must fully insert into frame dropout groove to prevent motor rotation during acceleration.
2. Put standard flat washer outside dropout, then screw on axle nut.
3. Tighten axle nut firmly with spanner; re-tighten after first test ride and every 2 weeks.
4. Rear motor only: Install original freewheel on motor hub thread with freewheel remover; ensure chain alignment with derailleur.
5. Install brake disc on motor hub if using disc brake, align with brake caliper gap.

Step 3: Install Handbar Accessories

1. Remove original rubber handle grips from handlebar.
2. Slide throttle to right handlebar, lock with small hex screw.
3. Paste brake power-off sensor on brake lever body, attach matching small magnet on brake lever arm; sensor will cut motor power once brake is squeezed.
4. Fix LCD display on middle of handlebar, route all wires down frame tube.

Step 4: Install PAS Pedal Assist Sensor

1. Remove crank arm and bottom bracket nut on bicycle frame.
2. Fit PAS induction ring onto bottom bracket spindle, re-install crankset.
3. Fix PAS signal wire along frame, connect to controller harness.

Step 5: Controller Fixing & Cable Arrangement

1. Fix controller under seat tube / down tube with brackets and cable ties; avoid collision and mud immersion.
2. Arrange all wires neatly, use wire sleeve to wrap exposed cables; do not pinch wires when folding frame.
3. Reserve enough slack for steering rotation to prevent wire breakage during turning.

6. Electrical Wiring Connection Guide

All connectors are uniquely shaped and color-matched, cannot be inserted reversely:

1. Motor Power Cable (3 thick colored wires: Yellow/Green/Blue)
Match same color plug between motor and controller phase wire, insert tightly.
2. Motor Hall Sensor Wire (5pin thin round plug)
Connect motor Hall plug to controller Hall socket; misconnection causes motor jitter or no rotation.
3. Throttle Wire (3pin plug)
Insert throttle plug into corresponding throttle port on main harness.
4. Brake Cut-off Wire (2pin ×2 plugs)
Connect left & right brake sensor plugs to dual brake ports.
5. PAS Pedal Assist Wire (6pin plug)
Link PAS sensor to PAS signal port.
6. LCD Display Wire (Multifunction round plug)
Connect display to communication port for speed, power, gear adjustment.
7. Battery Main Power Wire (Red=Positive, Black=Negative)
Red wire to battery positive terminal, Black wire to negative terminal;
double-check polarity before power-on.

Note: Do not force plug insertion; align pin notches first. Seal all connectors with insulating tape or heat shrink tube for waterproof performance.

7. Operation & Function Instructions

7.1 Power On & Basic Control

1. Connect battery plug, turn on power key on battery pack; LCD screen lights up.
2. Twist throttle clockwise to accelerate; release throttle to slow down automatically.
3. Squeeze any brake lever: motor power cuts off instantly, acceleration fails until brake is released.

7.2 Pedal Assist Mode (PAS)

5-level assist optional via LCD setting:

Level 0: Pure throttle mode, no pedal power assistance

Level 1–5: Higher level = stronger motor output when pedaling, labor-saving for climbing and long-distance riding

7.3 LCD Display Function Introduction

Screen real-time display: Current speed, battery voltage, remaining power, PAS gear, total mileage, single trip mileage.

Button functions:

Short press: Switch mileage page

Long press: Enter setting menu (speed limit, unit KM/H or MPH, wheel size adjustment)

7.4 Speed Limit Function

Default speed limit 25km/h (compliant with most regional e-bike standards); enter setting menu to unlock higher speed if local regulations permit.

8. Battery Charging Rules

1. Use original matched charger only; incompatible charger will damage battery and cause safety hazard.
2. Charging environment: 0°C–35°C, ventilated, no flammable objects nearby.
3. Charging sequence: Plug charger to battery first, then plug AC power socket.
4. Charging complete indicator: Charger red light = charging; green light = full power, unplug power supply timely.
5. Do not overcharge over 12 hours continuously; do not discharge battery completely to 0V frequently.
6. If vehicle will not be used for over 1 month, charge battery to 60% power and store separately.

9. Daily Maintenance & Care

Mechanical Parts Maintenance

1. Check motor axle nut tightness every two weeks to prevent loose wheel.
2. Lubricate chain, freewheel and bearings monthly with chain oil; wipe away mud and sand.
3. Clean brake disc and caliper regularly to guarantee braking performance.
4. Avoid motor hub impact; do not drive over high speed bumps violently.

Electrical Parts Maintenance

- 1.Wipe motor, controller and connectors dry immediately after riding in rain; do not high-pressure wash electrical components directly.
- 2.Inspect wires monthly for cracking, peeling or exposure; wrap damaged wire with insulating tape.
- 3.Keep controller heat sink clean for heat dissipation, avoid covering by plastic cloth.
- 4.If motor runs with abnormal noise, stop use and check hub bearing and internal gear.

10. Troubleshooting Common Faults

Fault Phenomenon	Possible Cause	Solution
LCD no display after power on	Battery loose plug / dead battery / broken main power wire	Reconnect battery; fully charge; check positive-negative wire breakage
Throttle no response, motor does not rotate	Brake sensor stuck disconnected / throttle wire loose / Hall wire unplugged	Release brake lever; re-plug throttle and Hall connectors
Motor jitters, cannot reach full speed	Hall sensor loose plug or damaged	Reinsert 5pin Hall wire; replace Hall sensor if damaged
Motor runs slowly, weak power	Battery under-voltage / PAS level too low / speed limit locked	Charge battery; increase assist gear; unlock speed limit on display
Controller overheats quickly	Long-time overload climbing / poor heat dissipation	Stop full-throttle climbing; clean controller heat sink
Sudden power cut during riding	Loose battery connector / over-current protection triggered	Turn off power, re-plug all wiring; cool controller and restart
Abnormal noise from motor wheel	Worn hub bearing / foreign matter inside hub	Disassemble motor wheel, replace bearing and clean internal space

11. Product General Specifications

Item	Standard Parameter
Motor Type	Brushless DC Hub Motor
Rated Voltage	36V / 48V / 60V / 72V Optional
Rated Power	500W / 1000W / 1500W / 2000W / 3000W
Controller Type	Sine Wave Intelligent Controller
Protection Function	Over-voltage, Under-voltage, Over-current, Short-circuit, Brake Power-off
Waterproof Grade	Motor IP54, Controller IP50
Rated Speed	450–800RPM (Depends on wheel size)
Operating Temperature	-20℃ ~ +45℃
Max Load Capacity	120kg
Applicable Wheel Size	10"/16"/20"/24"/26"/27.5"/700C

12. Warranty Terms

- 1.Warranty Period: Motor 12 months, controller 12 months, throttle, display, PAS sensor 6 months from delivery date.
- 2.Free warranty service applies only to manufacturing defects under normal use.
- 3.The following situations are not covered by free warranty:
 - Damage caused by improper installation, self-disassembly and circuit modification
 - Water immersion, high-pressure washing, fire, impact, fall man-made damage
 - Overload, long-time full-throttle climbing leading to motor winding burnout
 - Use of unmatched battery or non-original charger
 - Natural wear of consumables (freewheel, bearing, brake disc, rubber grips)
- 4.After-sales Process: Contact supplier with fault video and order number for repair or replacement service.