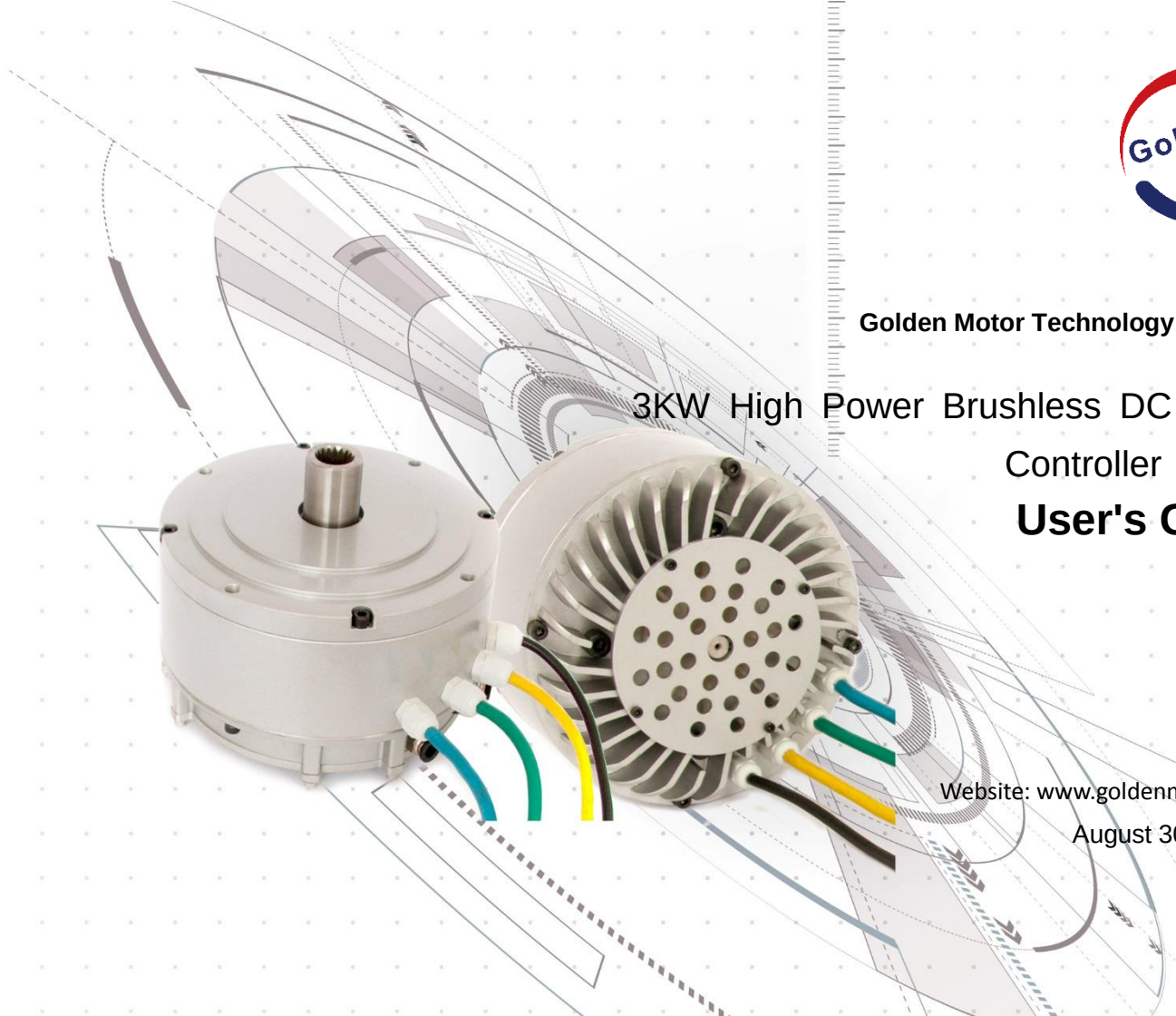


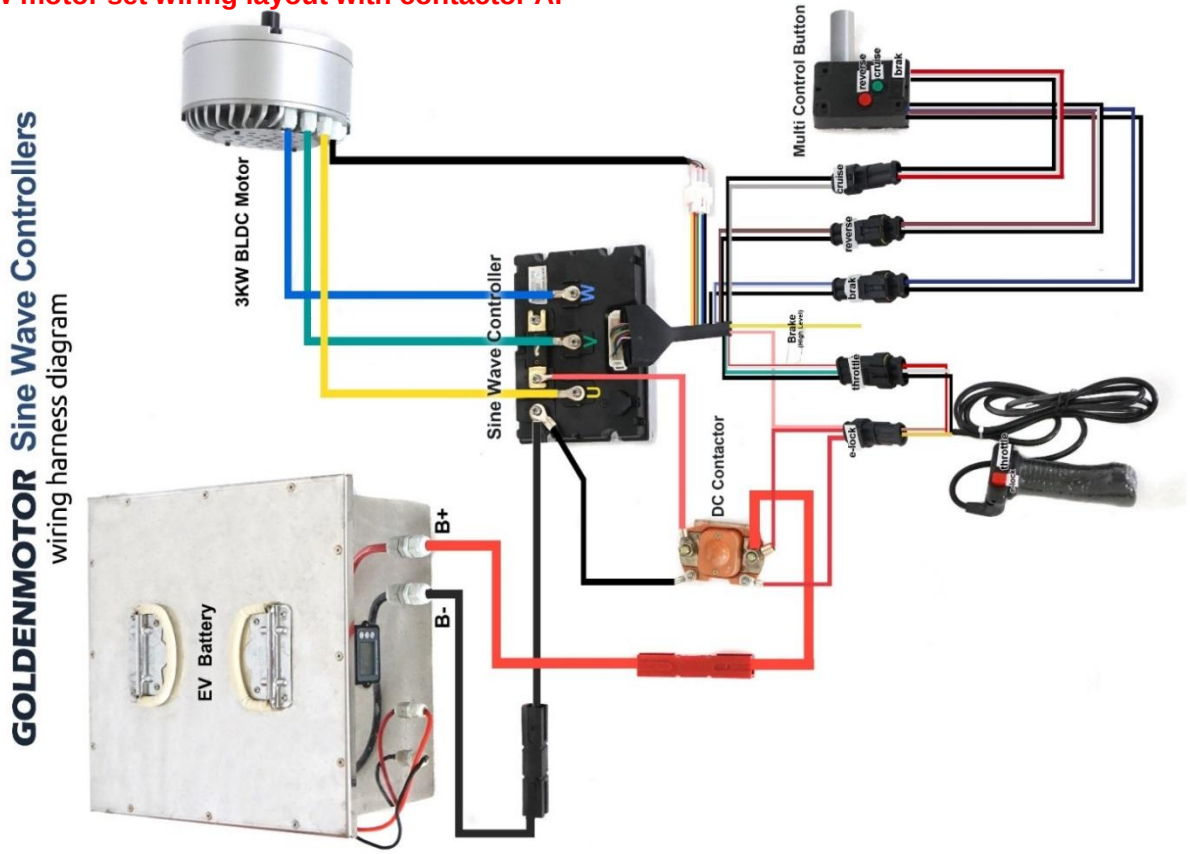
Golden Motor Technology Co., Ltd.

3KW High Power Brushless DC Motor Controller Wiring **User's Guide**

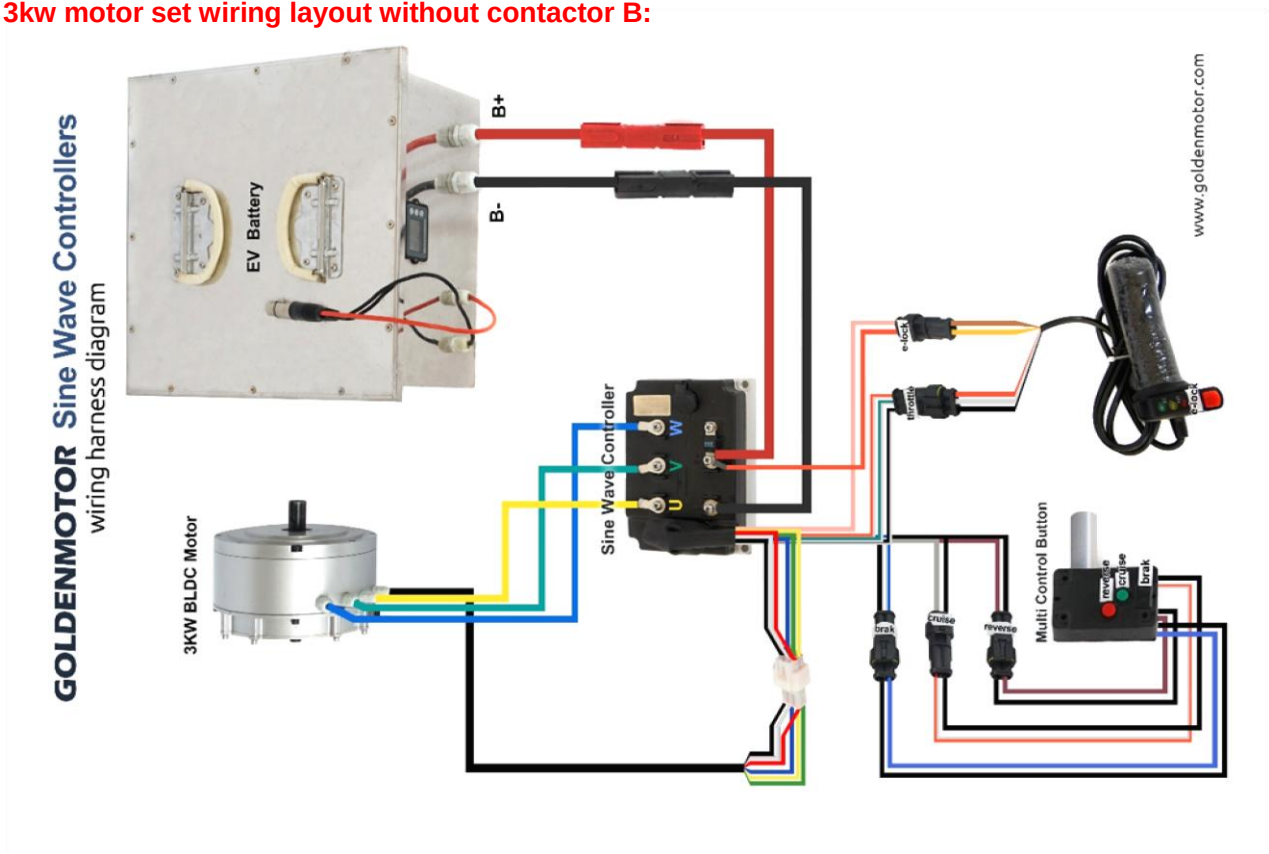
Website: www.goldenmotor.com

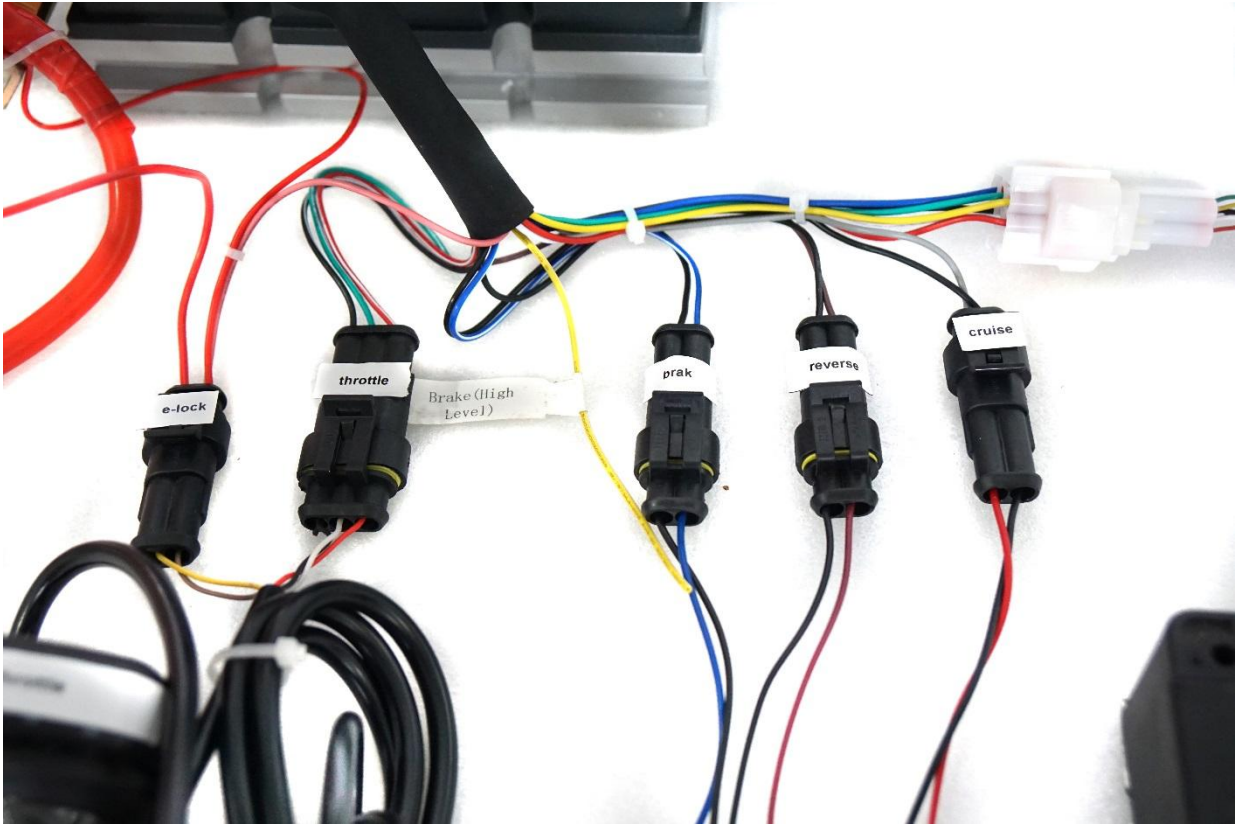
August 30th, 2017

3kw motor set wiring layout with contactor A:



3kw motor set wiring layout without contactor B:

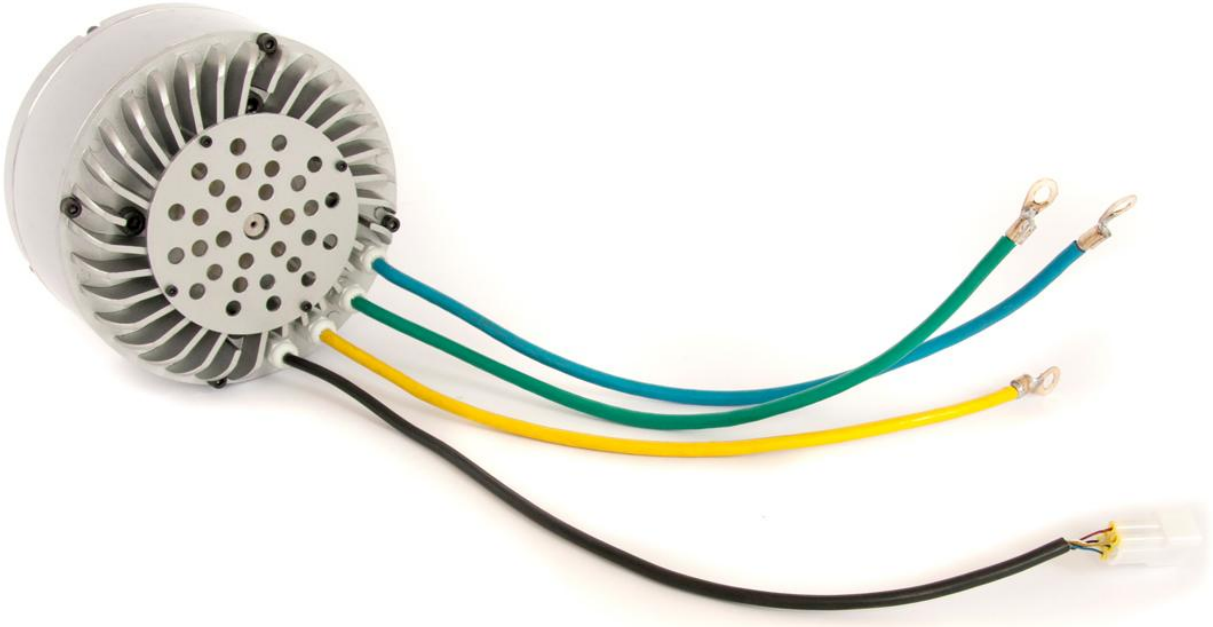



e-lock
throttle
Brake(High Level)
prak
reverse
cruise

Model: HPM 3000 -- High Power BLDC Motor (Air cooling / Liquid cooling)

1. Voltage: 48V/72V
2. Rated Power: 2KW-3KW
3. Efficiency: >90%
4. Speed: 3000-5000 rpm (Customizable)
5. Rated torque: 10N·m
6. Peak torque: 25N·m
7. Weight: 8KG
8. Casing: Aluminum
9. Length (Height): 12.5
10. Diameter: 18cm
11. Waterproof grade: IP56
12. Insulation Grade: H
13. Features: Air /Liquid Cooling, Compact design, stainless steel shaft, Self-Cooling Fan.
14. Applications: Electric car, electric motorcycle, electric tricycle, electric golf carts, fork lift, electric boat, etc.

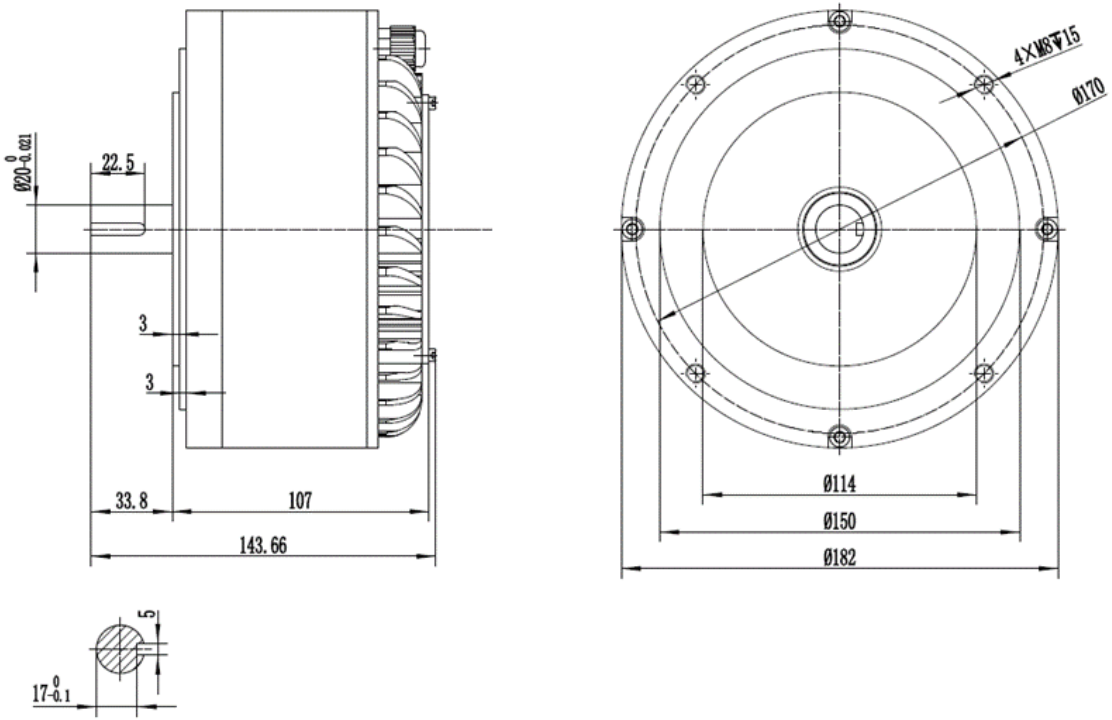
HPM 3000 Air cooling



HPM 3000 Liquid cooling

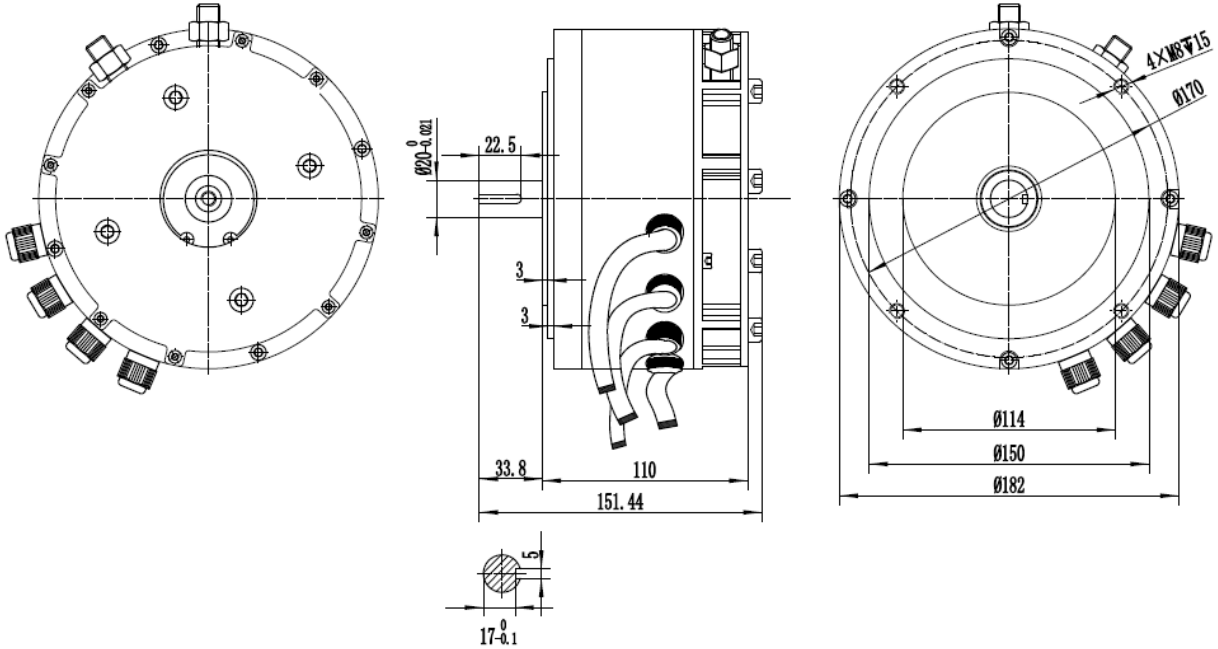
3kw Motor drawing:

Air Cooling



3kw Motor drawing:

Liquid Cooling



Golden Motor's FOC controller products are specially designed for high power rating brushless dc (BLDC) motors from 1KW up to 20KW with voltages between 48V and 96V. The product series use the FOC(Field Oriented Control/Sine Wave）algorithm in which SVPWM is used to drive the power device so that it injects sinusoidal current to the three-phase of motor. Meanwhile, by using a 32-bit microprocessor which incorporates the latest ARM core，it exhibits excellent operational capability. The system handles several close loops which include torque, flux and speed loop and at the same time other high demand of real-time task operation is possible. By advanced control solution the system can achieve the following performance: maximum torque control, constant power control, speed closed loop control and regenerative braking. Compared with traditional square wave motor controller, the PMSM controller has the following obvious advantages:

Model: VEC200

Voltage: 48V/72V

Rated continuous current: 80A

Maximum phase current: 200A

Motor control mode: FOC

Driving method: Direct torque control

Dimensions: 170mm(L) x 120mm(W) x 50mm(H)

Weight: 2.5kg

FOC Controller Series

Model	Rated Voltage	Rated Current	Max Phase Current	Dimensions L*W*H Weight
VEC200-48	48V	85A	240A	170*120*50mm(2.5kg)
VEC200-72	72V	55A	220A	170*120*50mm(2.5kg)

Main Technical Parameters and Operation Characteristics

Main Performance	
Rated operation voltage	48V~72V
Rated DC BUS current	30A~200A
Rated output power	1000~10000W
Motor control mode	FOC
Quiescent operation current	20~40mA
Speed limit	Controlled by motor and configuration
Driving method	Direct torque control

Smooth driving

·Direct torque control，smooth start-up，excellent acceleration performance，especially in slow speed.

Low noise

Vector control sinusoidal current injection and smooth motor output torque, which fully suppress the low frequency noise caused by the fluctuations of motor torque.

Programmable via PC

Provide PC software (GUI) to program motor and control parameters to fine tune the drive system.

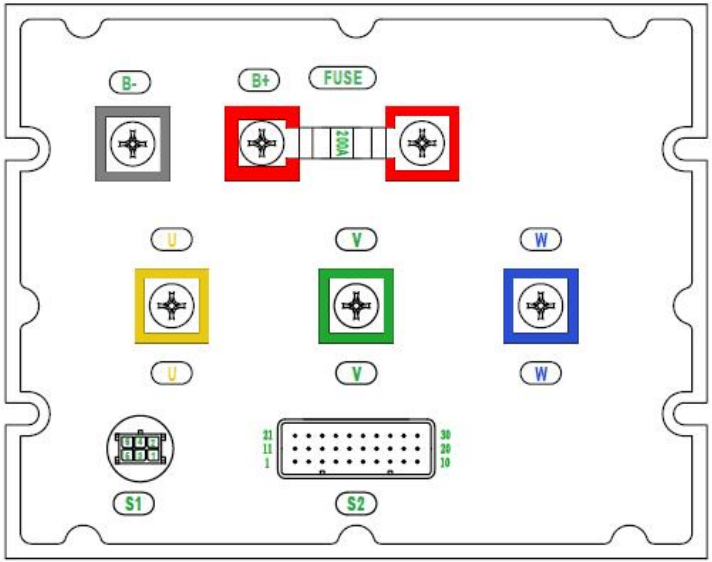
Perfect protection functions

Signal integrity detection (motor interface signal, control signal, etc.)

·Over-current protection, over or under voltage protection and over-temperature protection.

·Provide motor temperature-control interface

VEC Controller functional pins definitions



B+—Power +
U —Phase Line(Yellow)
V —Phase Line(Green)
W —Phase Line(Blue)
B- —Power-

S1—Programming

①—GND（Black）
③—RX（Green&Yellow）
⑤—TX（Green）
⑥—+5V（Red）

S2—Function control wiring harness

(3)—Motor Temperture（White）
(4)(5)(6)—GND
(7)—Cruise（Gray）
(9)—Electric Lock（Orange）
(10)—Hall C（Blue）
(12)—Hall B（Green）
(13)—Hall A（Yellow）
(14)—+5V （Red）
(15)—+12V Brake(Yellow&White)
(16)—Brake （Blue&White）
(17)—Reverse(Brown)
(20)—High Speed (Blue)
(21)—GND (Black)
(24)—Low Speed (Blue)
(26)—GND（Black&White）
(27)—Throttle（Green&White）
(28)—+5V（Red&White）
(1)—CAN
(2)—CAN

Trouble shooting

When the controller fails, the fault indicator light flashes; the fault light keep flashing is showing error code

System protection features		LED Blinking Times
Over-voltage protection	Battery voltage is higher than default value	1
Under-voltage protection	Battery voltage is lower than default value	2
Motor over-current protection	Motor phase is short-circuit or phase to ground is short-circuit	3
Stall/Block protection	Motor stalling time is over default value	4
HALL protection	HALL input is abnormal	5
MOSFET protection	MOSFET self-checking is abnormal	6
Phase winding disconnect protection	One of the motor phase is disconnection	7
Self-checking error protection	System internal power-on self-checking is abnormal	10
Controller over-heat protection	Controller temperature is higher than default value	11
Speed protection	Throttle abnormal	12
Motor over temperature protection	Motor temperature is higher than default value	13
Switch error	Controller is powered on but the switch is not released	14
Controller brake	The controller is in brake status	15

FAQ

1.Can you accept sample order?

Yes, of course .MOQ is 1pc

2. How about your lead time?

sample order is about 1-3 working days

small order is about 5- 7working days

bulk order is about 10-20 working days

3. Can you accept OEM and ODM service?

Yes, of course, OEM and ODM is available for us

4. What is the difference between Voltage and ampere?

Amperage, or current, is a measure of the amount of electrons moving in a circuit.

Voltage is a measure of how much force those electrons are under.

In a circuit, say a light and switch in your home, when the light is on there is a voltage across the filament of the bulb that is pushing amperage through the circuit.

When the switch is off there is voltage across the switch but there is no current flowing because it is "blocked" by the switch.

An analogy that normally helps to illustrate the difference between voltage and amperage:

you have a garden hose, the nozzle is closed. You have got pressure but no flow-voltage but no current (amperage). Open the nozzle and the pressure in the hose causes the water to flow - turn on the light and the voltage causes the current to flow (amperage).

5. What is the battery capacity?

Battery capacity is normally quantified in Ampere per hour (Ah). Ampere does not tell you anything about your total battery capacity. To determine the total battery capacity, you need to know the Voltage. To compare different batteries, the battery capacity needs to be quantified in Watt per hour (Wh). The higher the Wh, the more kilometers you can drive with a fully charged battery. The capacity in Wh is the product of Ah and the Voltage of the battery.

6. How to Hooking up reverse rotation

It should be possible to change the default direction of the motor by swapping two Hall sensor wires and two Phase wires, but make sure the battery is disconnected before you touch any wires.

Standard Phase wire configuration:

U = Yellow

V = Green

W = Blue

Hall: Yellow, Green, blue

Reverse rotation

Method 1: Switch hall sensors and two Phase wires.

U = Blue

V = Green

W = Yellow

Hall: Green, yellow, blue

Method 2: Please use the reverse function from controller side.

7. Can I use any battery with your motor?

Many people ask, "Can I use a 60 volt battery on a 48 volt motor? ". The answer is NO. It would likely blow the controller immediately on connection to the battery.

Others ask, "Can I use a 52 volt battery with a 48 volt motor? ". The answer is yes. The 52 volt batteries have a nominal voltage of 52 volts and our liFePO4 batteries have a nominal voltage of 53 volts. So since our batteries actually have a higher voltage than the 52 volt batteries it will be no problem.

You can use any battery you like as long as the voltage is in the required range of what the controllers can handle.

8. What is your temperature sensor specification?

KTY84-130

9. Why the controller doesn't work

Please check the E lock, you need add a switch button to get it work when battery on.

10. How to detect the problem quickly when controller doesn't work.

Normally, controller LED will blink one time then off as normal working status.

Please refer to the Troubleshooting form by LED blinking times for other abnormal status.

11. Do you sell contactors for the large BLDC motors and controllers?

Yes, they are available is the same section as the controllers.

12. Is the controller located in the battery pack?

None of the batteries we have here have the controller in the battery.

WARRANTY

All our products beside the batteries have a one year warranty. If you have an issue with a product, you need to contact us first so we can attempt to troubleshoot the problem. We may ask you to do several tests to try to determine the problem. We may at our discretion send you parts for you to repair your item. If we feel repairs by the customer are not possible you will have to ship the item back to us at your expense. Once we receive and examine the returned product and decide the issue is not due to negligence of the customer, we will repair or replace the product. We will charge the return shipping cost. We ship the product back when the payment has been done.

If we decide the product has failed due to negligence of the customer, then we will estimate the repair or replacement costs and charge you for these costs and the cost of return shipping back to you. Once this is paid we will perform the repair or replacement and ship it back to you. If you decide you do not want to proceed with the repair or replacement you can pay the shipping to have it returned to you or it will simply be discarded or destroyed.

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