LBMC072152HJ2X

Product Descriptions

• The product is the latest PMSM(Permanent Magnet Synchronous Motor) controller made by Wuxi Lingbo Electronic Technologies Co.,Ltd, which can output 1500W power. It's designed with FOC(Field Oriented Control) algorithm in which SVPWM is used to drive the power device so that it injects sinusoidal current to the three-phase of motor. Meanwhile, we use a 32-bit microprocessor which integrates the latest ARM core, it exhibits excellent operational capability and task processing ability. The system can handle several close loops which include torque, flux, speed loop and other high demands of real-time task operations at the same time. Through these control methods, the system can achieve the following performance: maximum torque control, constant power control, speed closed loop control and energy feedback control while braking. Compared with traditional DC motor (BLDC) controller, the PMSM controller has significant advantages as follows:

Comfortable driving

• Direct torque control, smooth start-up, excellent acceleration performance, especially in medium and high speed stages, which approximates to the performance of fuel motorcycle.

Super low noise

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

Flexible configuration

• Provide PC software(GUI), by which can configure hundreds of parameters, so will improve the flexibility of on-site application.
•Monitor the operating status in real-time.
• Have UART(standard equipment) or CAN BUS, Bluetooth communication interface(user option).
•Make the function interfaces of different types of products compatible.

Perfect protection functions

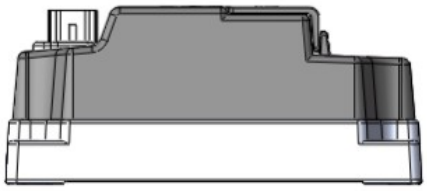
• Have Signal integrity detection(e.g. motor interface signal, control signal, etc.).
• With Over-current protection, over or under voltage protection & over-heat protection.
•Provide motor temperature-control interface.

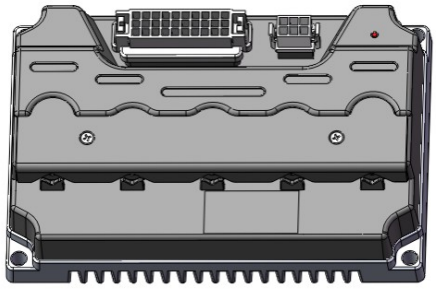
Key features

• On-site parameters setting & provide PC software
•Self-checking function after system power-on
•Energy regenerative braking
•Brake, cruise, and 3-modes speed selection port
•Integrate waterproof terminal port
•PWM output port
•High-current output port, to connect with relay & contactor
•Display port
•LED indication for operation and fault status
•Ultra-thin shape design, to be installed inside the vehicle easily

Applications

•Electric scooter
•Small electric vehicle
•Electric golf vehicle
•Electric Sightseeing vehicle
•Electric boat





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Specifications

Maximum Ratings & Main parameters	
Rated Input Voltage	48V/60V/72VDC
Max Input Current	52A
Max Output Current	180A
Rated Output Power	1500W
Operating Temperature Range	-20℃~100℃
Storage Temperature Range	-55℃~85℃
Motor Control Mode	FOC (Field Oriented Control)
Standby Power Consumption	20～40mA
Max. Motor Speed Limitation	Depended on Motor and configuration
Driving Method	Direct Torque Control

System Protection Characteristics		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
Stalling protection	Motor stalling time is over default value	4
Hall Sensor 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	Self-checking is abnormal if internal system power-on	10
Controller over-heat protection	Controller operation temperature is higher than default value	11
Motor over-heat-protection	Motor Temperature is higher than the value of	13

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	configuration	
Throttle protection	Throttle input is abnormal	12

Communication Characteristics	
UART Communication	UART interface: parameter configuration and working state monitoring
Bluetooth Communication	Bluetooth wireless interface: parameter configuration and working state monitoring
LED Indicator	Indicate current working or fault state

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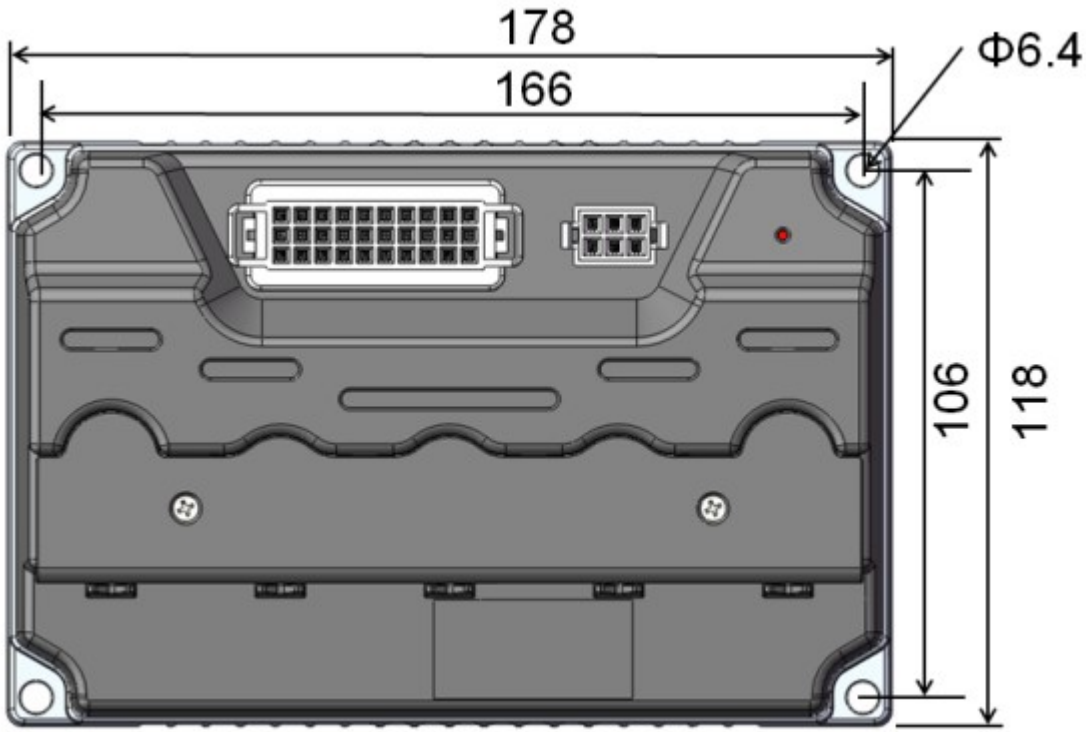
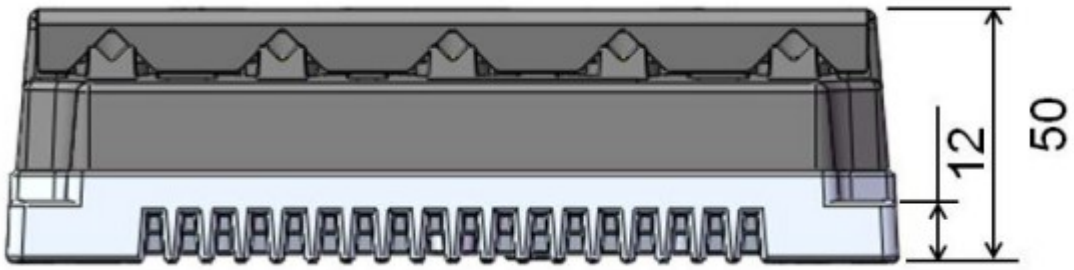
LBMC072152HJ2X Dimensions





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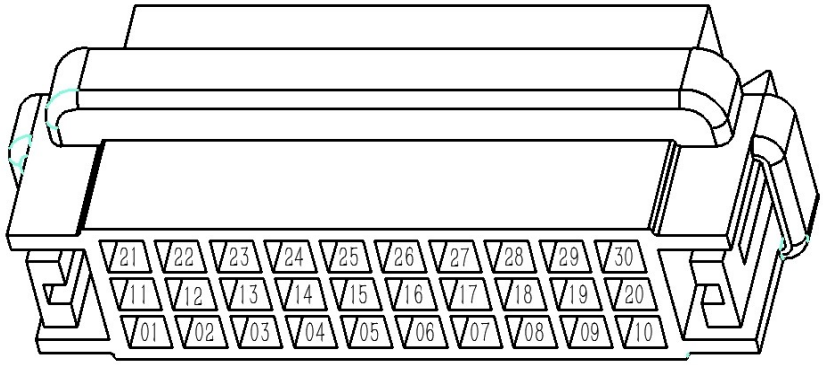
Connecter Descriptions



Terminal No.	Terminal Descriptions	Remarks
30	NC	
29	NC	
28	3.3V	PC Software (GUI)
18	TX	
19	RX	
20	GND	
10	Power Supply for Control Circuit of Controller	Power ON/Off
27	Throttle Ground	Throttle
26	Throttle Signal	
25	Throttle Power+	
22	High level brake input(+12V input)	Braking
21	Low level brake input	
8	Anti theft Device Power	Anti theft Device
17	Ground	
9	Lock cable for Anti theft Device	
7	Motor Phase	
6	Anti theft Device Signal	

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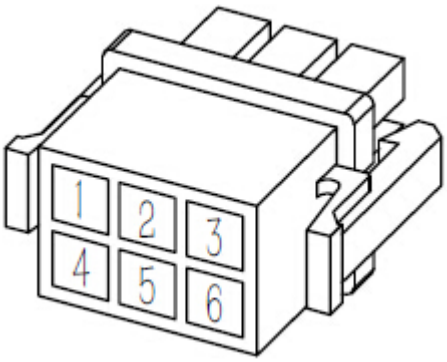
16	Cruising Control (Active Low)	Cruise
4	Low Gear Input	3-Gear Speed Control
3	High Gear Input(or Button Input)	
2	Reverse Control(Active Low)	Reverse
1	Boost	Boost
5	Reserved Input	
15	Reserved Input	
13	GND	Ground
12	GND	
11	GND	
24	HALL Speed Shown On Display	Display Indication
23	Motor-Phase Speed Shown On Display	
14	One-Line-Display	



Terminal No.	Terminal Descriptions	Remarks
1	HALL Sensor Ground	Connected to Motor Hall Sensor
2	NC	
3	HALL Sensor Power	
4	HALL Sensor C	
5	HALL Sensor B	
6	HALL Sensor A	

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