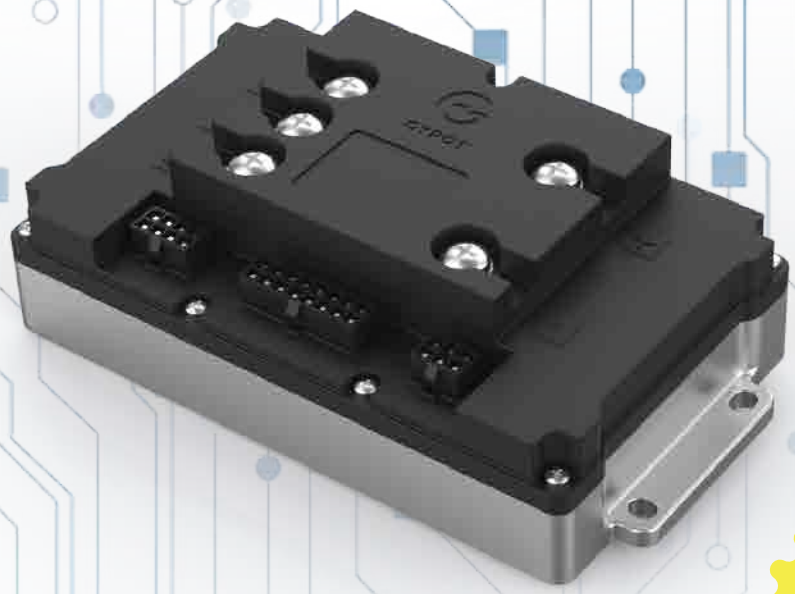
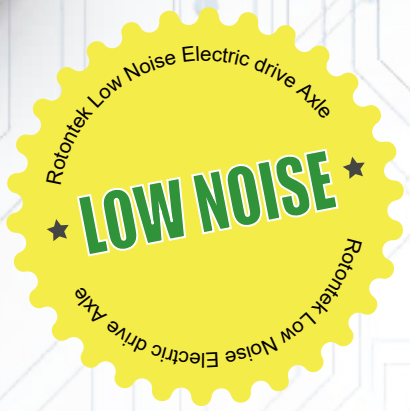
RotonTEK

Motor Controllers

User Manual
Model ID200H/E

Brushless Permanent Magnet Motor Controller





www.rotontek.com

ID200H/E

Superb Performance and Value

ID200 is a BLDC motor controller specifically designed for small electric vehicles, using state-of-the-art sine wave vector control algorithms both domestically and internationally. It also supports square wave control, providing very smooth, quiet, low-cost, and efficient motor speed and torque control. This controller adopts automotive grade electronic components, providing customers with high safety and supporting handheld programmers, suitable for any low-power permanent magnet brushless DC motor application. The ID200 series is a full bridge or four quadrant controller that can achieve flexible energy feedback control, effectively improving driving range. It is widely used in elderly scooters, electric cleaning vehicles, golf carts, electric special vehicles, etc.

Product Features

(1) Using TI Company mainstream DSP as the main control chip and advanced sine wave vector control algorithm, the controller achieves precise control of motor torque and speed.
(2) The high-power MOSFET transistor from InfineonCompany was selected as the power device, achieving low noise and high efficiency energy conversion.
(3) Soft start, soft stop, and intelligent braking ensure safer and more comfortable driving in any situation.
(4) Braking or reverse energy feedback control to increase the vehicle's range.
(5) Equipped with Hall phase sequence automatic identification function, it is convenient for vehicle manufacturers to debug.
(6) Anti slip function, improving driving safety performance.
(7) The automatic motor load compensation function ensures that the vehicle maintains stable speed when crossing obstacles or climbing hills.
(8) By using a programmer, parameters can be flexibly adjusted to adjust the vehicle's handling performance, meeting the requirements of different road conditions and various usage environments.
(9) The comprehensive protection functions for accelerator faults, overvoltage, undervoltage, overcurrent, overload, overheating, etc. have improved the reliability of the system.
(10) Personalized software can be customized according to customer needs.
(11) The protection level of IP55.

Product Specifications

Controller model	Rated Voltage	Current Rating (S2-60 minutes)[1]	Current Rating (S2-1 minutes)[2]	Peak current (10 seconds)	CAN SCI	Size
ID200X-1050	12V	40A	70A	90A	YES	165*96*46
ID200X-1080		70A	100A	140A	YES	189*102*54
ID200X-2050	24V	35A	60A	75A	YES	165*96*46
ID200X-2150		60A	100A	140A	YES	189*102*54
ID200X-3080	36V	35A	60A	75A	YES	165*96*46
ID200X-3150		60A	100A	140A	YES	189*102*54
ID200X-4080	48V	30A	60A	75A	YES	165*96*46
ID200X-4200		60A	100A	140A	YES	189*102*54
ID200X-6080	60V	40A	90A	130A	YES	189*102*54
ID200X-7200	72V	35A	80A	120A	YES	189*102*54

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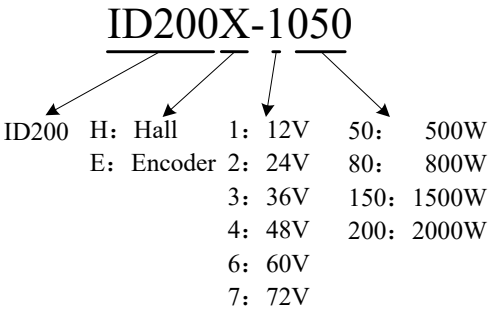
Note：

S2-60 minutes is based on the controller installed on a 1/8 square meter 8mm thick aluminum plate with an ambient temperature of 25 ℃ and running for 1 hour under a heat dissipation airflow of not less than 6 kilometers per hour.
S2-1 minutes Current value is based on an ambient temperature of 25 ℃. The controller is installed on a non-thermal conductive surface and runs for 1 minute without airflow. The controller temperature is below 75 ℃.



Wire

·The connection between the battery and the controller should be placed last;
·The wiring between the motor, battery, and controller should be as short as possible and parallel;
·All switches must be in the off position and live operation is prohibited;
·All wiring cross-sectional areas must meet the carrying current requirements, as shown in the table below;
·The main fuse and control circuit fuse must be indispensable and must match the maximum current value of the controller.

Currnet(A)	16	28	35	48	65
cross-sectionalarea(mm²)	1.5	2.5	4	6	10

Motor

A motor is a component that converts battery energy into mechanical energy and drives the wheels of an electric vehicle to rotate. Precautions for use are as follows：
·The surrounding area of the motor should be kept clean and dry, and no other objects should be placed inside or outside it;
·It is strictly prohibited to coexist with strong magnetic objects;
·The input voltage level needs to be ensured to be correct;
·If any abnormal noise or odor is found during use, the motor should be immediately stopped for inspection;
·The wiring between the motor and controller should be as short as possible;

Battery

·Do not use under overload, high humidity, or high wave intensity conditions;
·Keep the heat dissipation part of the battery unobstructed and avoid exposure to sunlight;
·Do not mix old and new batteries;
·If the lead-acid battery has been in use for more than 4 years and the lithium battery has been in use for more than 6 years, it needs to be replaced;
·When charging, do not reverse the polarity of the battery, otherwise it may cause the battery to be scrapped;

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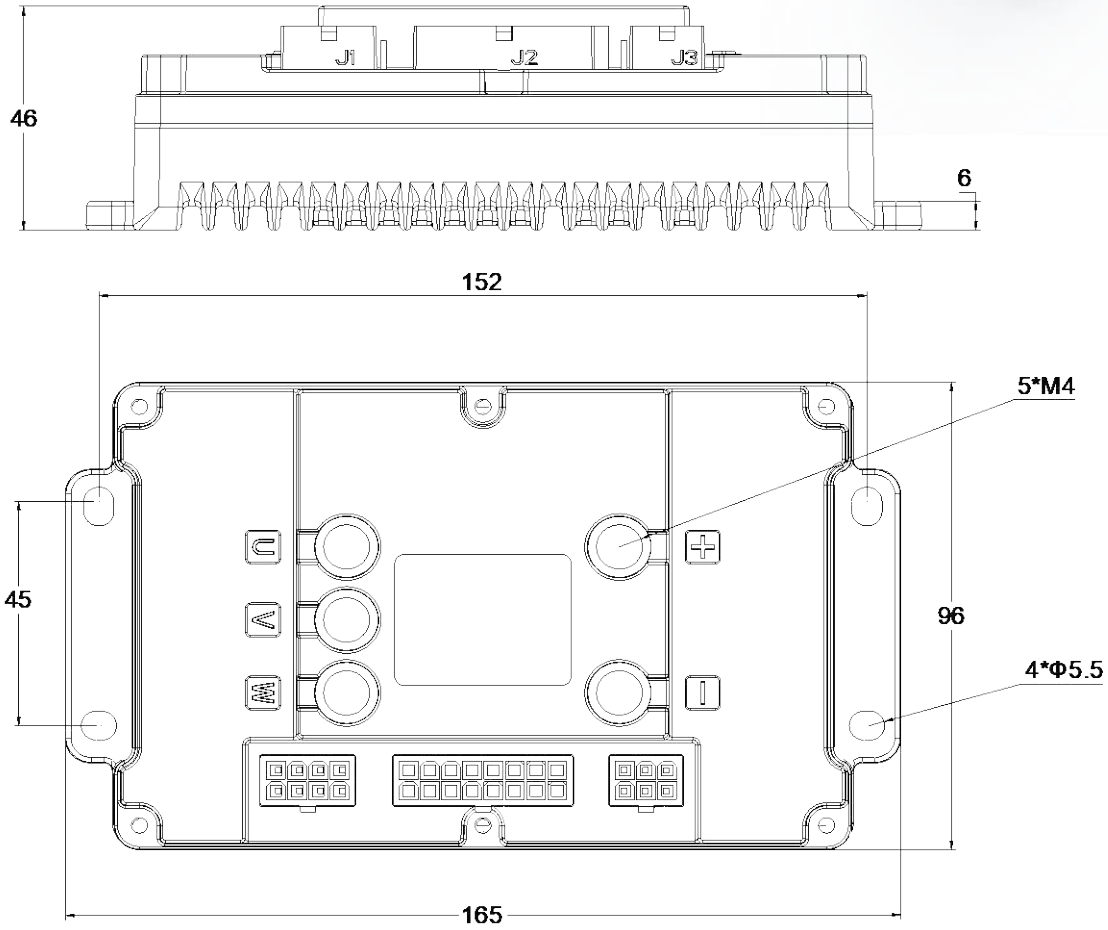
·Maintenance-free batteries need to be regularly charged when not in use, usually not exceeding one month;
·Open type liquid lead-acid batteries should not be short of water and generally require maintenance with water for two to three months;
·The cross-sectional area of battery B+and B - short wiring must meet the current requirements, as shown in the table below;
·When removing the battery, the negative end should be removed first to avoid a short circuit between the positive end and a certain part of the vehicle body;

Charge

·The output voltage must be compatible with the battery;
·Do not place the charger in an area with high temperature or humidity;
·Regular cleaning of the charger and charging interface is required;
·Vehicle charger should pay attention to vibration protection;

Dimensions and standard wiring diagrams

Dimension-1



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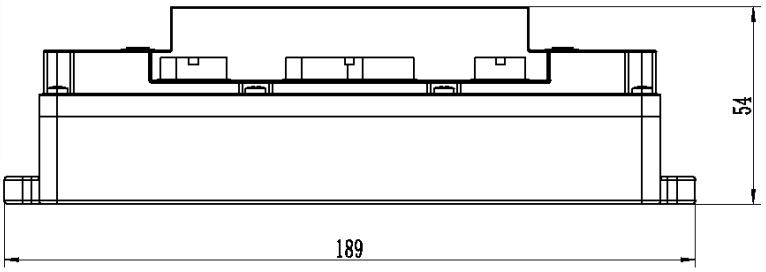
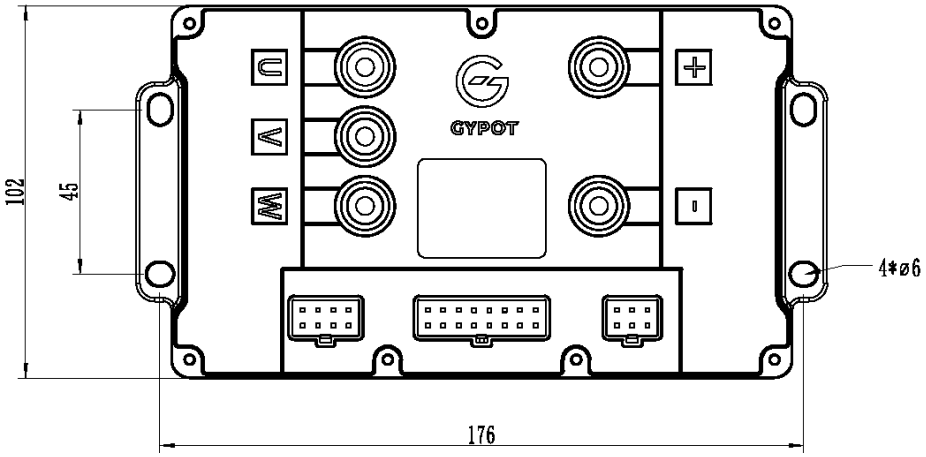
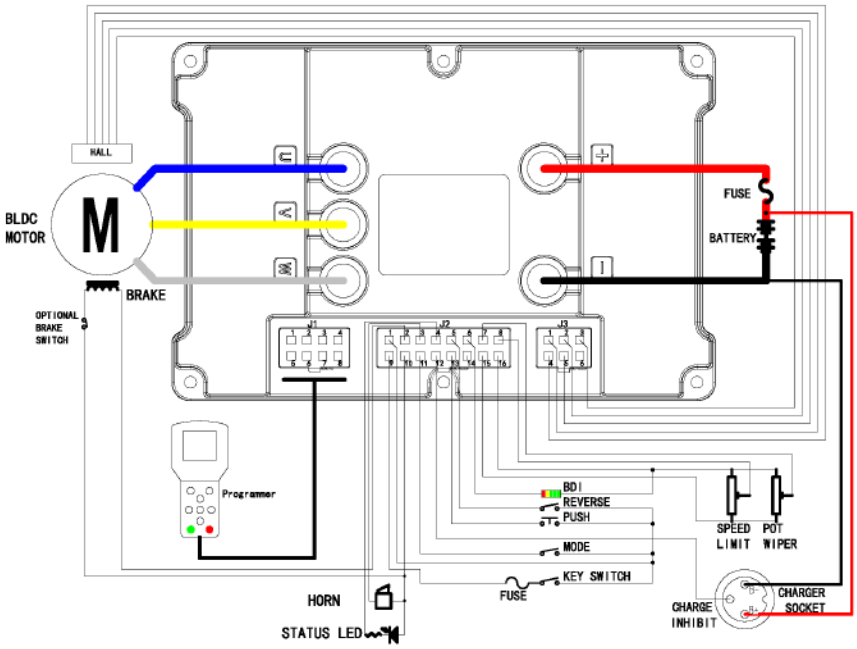
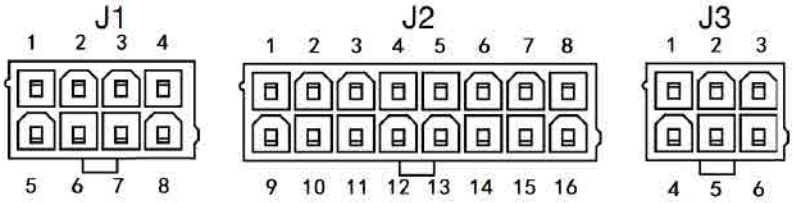
Dimension-2





Standard wiring diagram





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HIGH CURRENT CONNECTIONS

The recommended torque is 3.5±0.4 Nm. The following table describes the terminals:

Terminal	Description
+	Positive battery input
-	Negative battery input
U	Motor phase U
V	Motor phase V
W	Motor phase W

Communication Port (J1)

The 8-pin communications port (J1) handles serial communications and the external +14.5V power supply. The mating connector is a Molex 39-01-2085 receptacle with appropriate 45750-series crimp terminals. The following table describes the port's pins:

Pin	Function
J1-1	SCI Communication Tx (Transmission)
J1-2	Reserve
J1-3	SCI Communication Rx (Receiver)
J1-4	CANL
J1-5	+5V
J1-6	+12V
J1-7	GND
J1-8	CANH

Logic Port (J2)

The 16-pin logic Port (J2) is used for inputs, outputs, and low power drivers. The mating connector is a Molex 39-01-2165 receptacle with appropriate 45750-series crimp terminals. The following table describes the port's pins:

Pin	Function
J2-1	KSI (Key InputSwitch)
J2-2	BRAKE_DRIVER (Electromagnetic brake drives low potential input)/ RO1Multi functional digital output
J2-3	HORN_DRIVER (Speaker driven low input)/ DO1 Multi functional digital output
J2-4	LED_DRIVER (StatusLED driven low input)/ DO2 Multi functional digital output
J2-5	REVERSE (Reverse switch signal input)/S4Multi functional digital Input
J2-6	BDI（Battery Indicator 0-5V Output）/AO1 multifunctional analog output
J2-7	AI1(Accelerator Input)
J2-8	AI2(Speed limiter input)
J2-9	B+ (Battery positive)
J2-10	VTC (Brake/horn/indicator light drive high output)
J2-11	MODE (Mode switch signal input)/S2 Multi functional digital Input
J2-12	LOCK (Charging prohibition switch signal input)/S3 Multi functional digital Input
J2-13	PUSH(Push switch signal input)、S5 Multi functional digital Input
J2-14	BHL_K (HORN_DRIVER/LED_DRIVEROutput control signal input)/ S6 Multi functional digital Input
J2-15	POT_HIGH (Accelerator/speed limiter high output)
J2-16	GND (Accelerator/speed limiter lowoutput)

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Motor port (J3)

The six-pin motor connector (J3) is for the feedback signals from the BLDC motor. The mating connector is a Molex 39-01-2065 receptacle with appropriate 45750-series crimp terminals.

Pin	Function
J3-1	Hall power supply positive(+5V)
J3-2	HALL A/Encoder SIN signal
J3-3	HALL B/Encoder COS signal
J3-4	HALL C
J3-5	Hall power supply negative(GND)
J3-6	Motor temperature input

Technical specifications

Voltage Ranges:	12V~72V(Related to the model)
PWM frequency:	15KHz
KSI input current:	<2A
Switchinputcurrent:	＜10mA
Alarm output current:	1A
BDI Output:	0-5V
BDIOutputimpedance:	10KΩ
LED driving current:	1A
Electromagneticbrake drive current:	32-200Ω
Speed given signal:	0-10KΩ/0-5V
Throttle Type:	Single ended type Swing type Communication type
Operating ambient temperature range:	-25℃~50℃
Storage ambient temperature range:	-40℃~65℃
Over temperature current limit:	60℃Current limiting，85℃ Cut off
Electronics sealed:	IP55
Standard:	EN12184, EN55022, ISO7176-14, IEC 801

Note: Regulatory compliance of the complete vehicle system with the controller installed is the responsibility of the vehicle OEM.

WARRANTY One year limited warranty from time of delivery.

GYPOT