



MOTION TECHNOLOGIES PTY LTD

Electrify your future

Product Catalog 2018



www.motiontech.com.au

Introduction

How to Choose the Right Motor for Your Electric drive?

A guide of how to choose the best motor for your application.

According to the structure and working principle, there are three types of electric propulsion drive motors:

These are:

1. Direct current motors have 2 types:
 - a. Brushed, commonly referred to as DC motors, are the original traditional design dating back to the early 1900's. They have a wound rotor with a static magnet field grouped around the outside of the rotor. They need routine maintenance because the internal carbon brushes regularly wear out and have inherent sparking at the commutator when changing direction to further increase wear. Thus, DC motors are not recommended for electric vehicle drives and now usually confined to applications for sub-fractional powers.
 - b. Brushless, commonly referred to as BLDC motors, were developed on a similar basis but with permanent magnets fixed to the rotor and the windings grouped outside the rotor. There are no brushes and commutation is achieved using a digital speed controller or servo drive. Care must be taken as demagnetization can occur if over-driven but with the advent of modern-day sophisticated controllers this can be avoided but which also limits the available peak torque. BLDC motors are typically used where power is less than 5 kW and used in e-bicycle or scooter.
2. Asynchronous AC motor (AC motor for short) are a more conventional AC induction motor design as used for high voltage motors powered by industrial/domestic mains electricity but wound for operation with low voltage battery power from 48 to 120 volts. Compared with BLDC motors the efficiency of an AC motor is slightly lower but the torque is higher for the same power which means that for vehicle drives they have a better climbing ability. After several years of development, the cost of AC motors is now less than a BLDC motor and is maintenance free. It is better to use BLDC motors for applications below about 3 kW while 3 kW to 30 kW is most suitable for an AC motor. Also, AC motors have an inherent higher speed capability over BLDC which, for example, results in a maximum vehicle speed of a 15 kW AC motor to typically reach 120 km/hr.
3. Synchronous permanent magnet AC motor, commonly referred to as PMSM. These are brushless AC motors with a permanent magnet rotor thus a cross between BLDC and AC but they also can be used as a generator. Because the structure of PMSM is more complicated the cost of the motor and controller is higher and there is also the possibility of de-magnetism. These are typically used for very high power where the power to weight ratio is advantageous to BLDC but the cost ratio is a disadvantage.

In summary, given that electric vehicles require climbing and overload ability which usually exceeds 5 kW with a high demand up to 30 kW and above, the AC motor has a distinct price advantage because magnets are not used in their construction.

PMSM have several disadvantages for powers <20 kW:

- a. The motor and controller prices are much higher than AC motors and controllers.
- b. The higher the power the more batteries are needed. At present, lithium batteries are expensive while the volume of lead acid Gel batteries is large so the application typically dictates the type of battery chosen.

To conclude, AC asynchronous motors are the best choice for electric vehicles in the 3 to 30 kW range.

About Us



At ShinTech, our passion is to develop products and technologies that deliver high quality performance for automation, robotic and electric transportation applications.

Since 2006, we have been dedicating ourselves to design and production of sustainable motor control system for the electric vehicles. Over the last decade, we have obtained rich insight in this industry. Our specialists with over 15-year experience have developed an extensive production line covering the permanent-magnet synchronous motors, AC asynchronous motors and DC brushless motors. Our controllers, featured with high energy efficiency, large current and excellent reliability, are highly recognized by the electric vehicles manufacturers such as electric forklifts and cars for its high quality and performance. Our controllers are used for a variety of customers, ranging from universities and military enterprise to listed companies all around the worlds. Our high-quality delivery enables our customer to enjoy long life from our products.

ShinTech believes that investing in a sustainable future is essential to the society. By producing durable quality goods, we reduce the impact on the environment by minimizing waste and the need for regular spare-parts replacement. To build a low-carbon and environmental-friendly industry, we will keep striving to produce the high-quality products and service to our customers.

Motor

Specifications

Model No.	STE-3-60	STE-4-60	STE-5-60
Power	3kW	4kW	5kW
Voltage	48V/60V/72V		
Model No.	STE-7.5-72	STE-10-96	STE-15-108
Power	7.5kW	10kW	15kW
Voltage	72V	96V	96V/108V



Applications:

- Electric Car
- Electric Boat

Features:

- High reliability and durability
- Strong torque and easy maintenance
- High level of tolerance for significant changes in operating temperature

NOTE:

The product images shown are for illustration purposes only and may not be an exact representation of the product or package content because the appearance could be customized as per request.

Controller

Specifications

Model No.	ST1210		
Power	3kW	4kW	5kW
Voltage	48V/60V		
Model No.	ST1212		
Power	7.5kW	10kW	15kW
Voltage	72V	96V	108V



Features:

- Easy installation and automatic fault detection
- Smooth driving experience, powerful start, and accurate response for acceleration
- Large torque for excellent ability in climbing
- Regenerative braking system to save energy
- Stable and reliable performance, and maximum protection design

Controller Assembly Parts



Key Switch



Stall Switch



Air Switch



Accelerator Pedal



Wiring Harness

Programmer



Function:

Programmer is an optional part for controller. It enables users to change specific parameters such as ramp-up rate, max. speed, base voltage (to conform it with the voltage of battery system) and so forth. Via the programmer, you can also monitor operational status of motor control system via the programmer by checking the following parameters for example:

- Error code (or indicated by the flash times of LED light on the controller)
- Temperature of the motor
- Pedal accelerator status
- Motor speed
- Battery voltage
- Forward or reverse status

DC-DC Converter

Specifications

Model No.	STDC4812	STDC-6012	STDC-7212	STDC-9612	STDC-10812
Power	600W				
Voltage	48V->12V	60V->12V	72V->12V	96V->12V	108V->12V



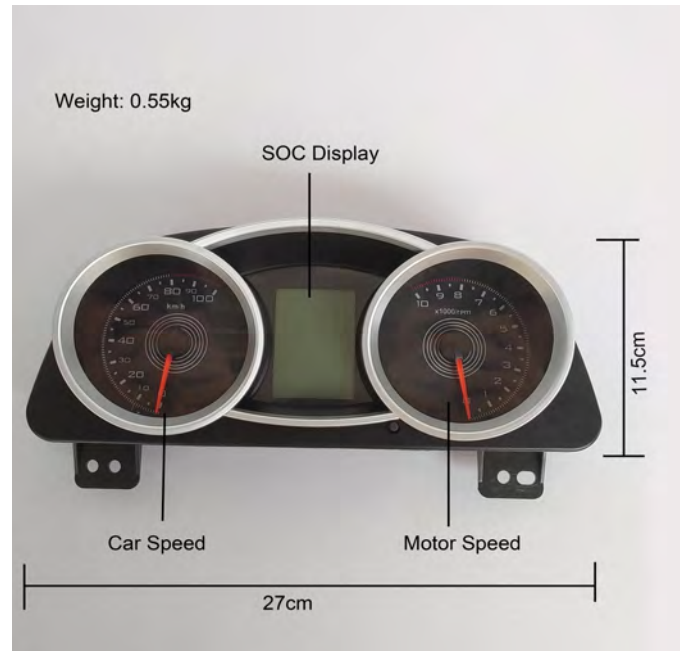
Usage:

DC-DC converter is to lower the voltage of battery pack to 12V, in order to match suitable voltage requirement for specific components of an electric car such as headlights, dashboard, etc..

Dashboard

Specifications

Model No.	STEa609-CAN	STEb609-CAN
Voltage	48V/60V/72V	96V



Charger



Specifications

72V/25A	96V/25A	108V/25A
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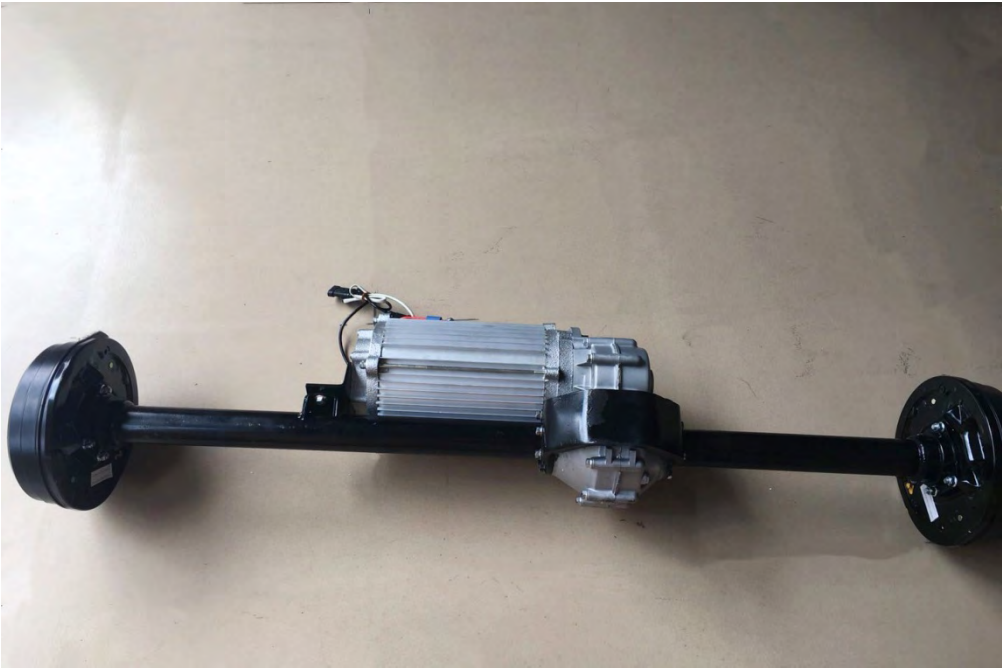
Gearbox



Specifications

Ratios	6.5:1
Length	38/44cm
Height	23/25cm
Weight	12.15kg

Rear Axle with Gearbox

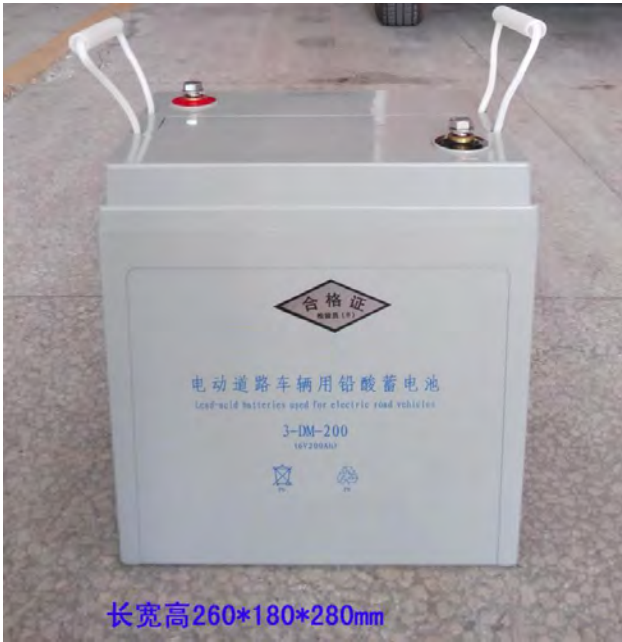


Transmission Shaft



The length of transmission shaft can be customized.

Battery



Lead-Acid battery



Lithium-ion Battery
(Ternary Battery/ LiFePO4 Battery)

Specifications

Rated Voltage (V)	48V/60V/72V	96V/108V
Capacity (Ah)	100-240Ah	150 -240Ah

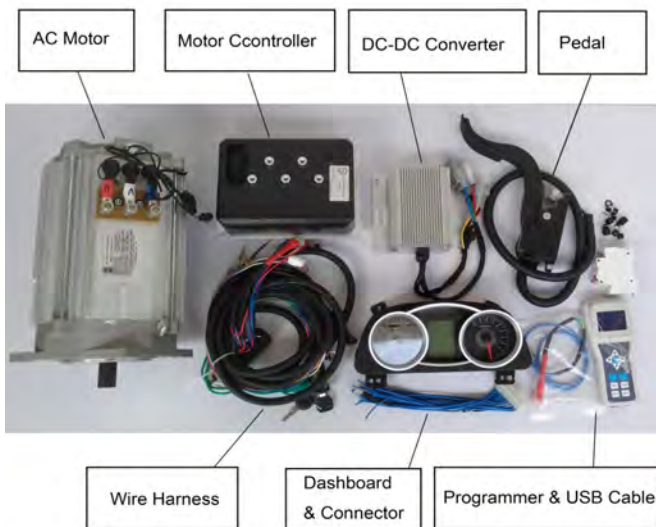
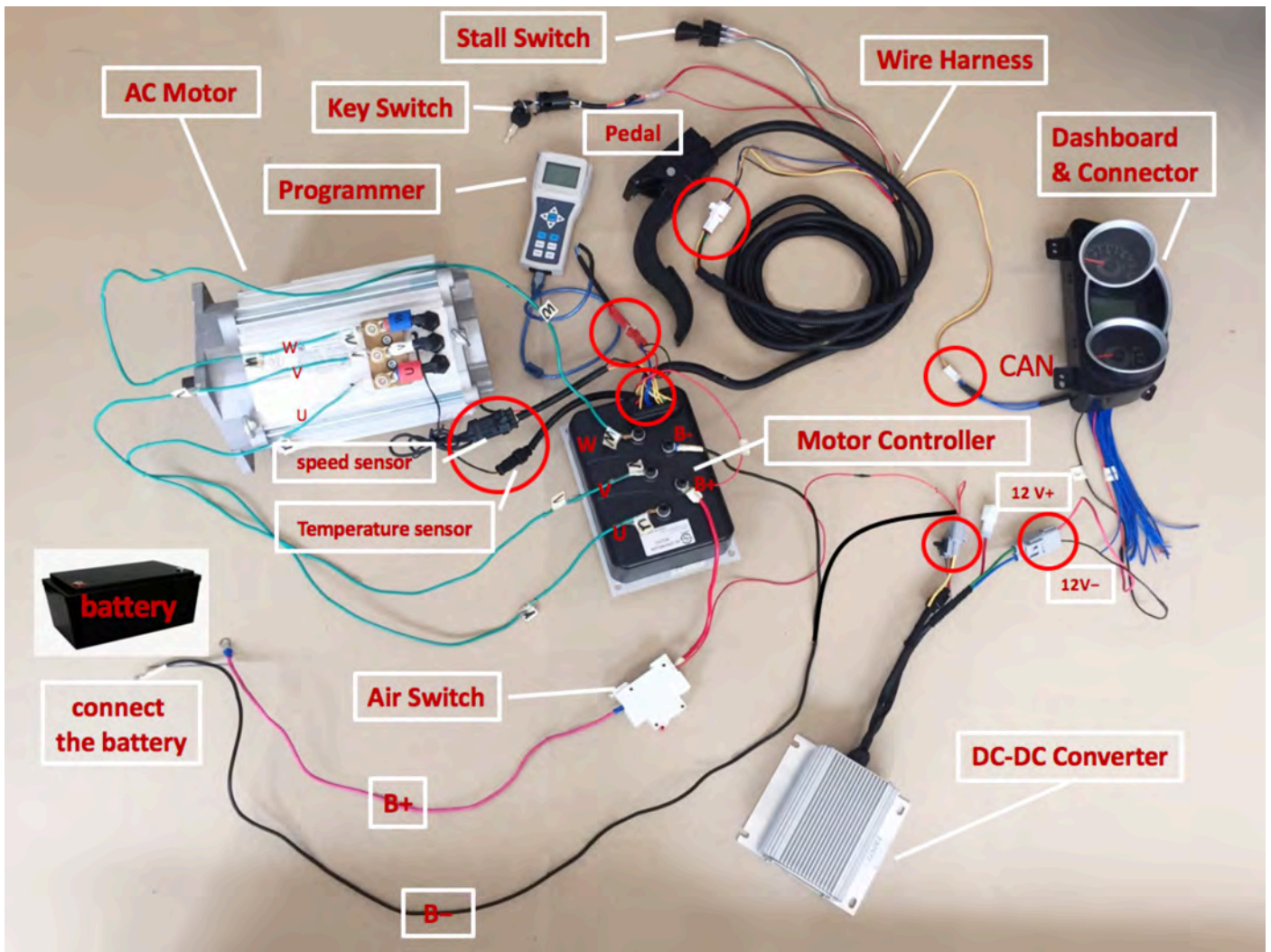
Vacuum Pump Brake



Motor Match with Gearbox & Transmission Shaft



Motor Control System



Other Motion Tech Products



Precision in the Extreme



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