

# ES15/ES30/ES40 Electrification Kits

HUB MOTOR



CONTROLLER



CHARGER



## HUB MOTOR

Direct driven wheel motor is installed inside the rim to form the wheel. The motor and rim turn the wheel in 1:1 ratio that structures a driven system without belts, gears and chains. The direct driven wheel motor reduces the transmission loss to implement both high and low turning speed providing the electrical characteristic of strong torsion.

### Technical Features

- Noise reduction.
- No need to change the carbon brush to reduce the maintenance cost.
- Lower down the transmission loss by approx 25%.
- Lower down the weight by approx 10kg.
- Lower down the production cost with simple structure – reduce the transmission system components.

## CONTROLLER

The digital intelligent controller is specially designed for "direct driven scooter" to use in the DC motor with external rotor brush. It uses MOSFET as on/off switch via PWM. This controller enables the direct driven motor to improve the entire vehicle performance up to 95%.

### Guarantees

- Passed the test conducted by Electronics Test Center (ETC) and complied with EMI regulation.
- Built-in with various failure detection and protection functions such as over current, over temperature and under voltage.

### Key Features

**Over heat protection:** It cuts the driving power half or totally when the system temperature reaches the safety limit.

**Over current protection:** It cuts off the driving power when the driving current is higher than the safety limit and exceeds the time set.

**Battery power management:** It sounds intermittent warning beeps and cuts the power supply by half when the battery is lower than the safety limit and left about 10% riding distance. The warning beep continues and cuts off the driving power when the battery is dropped to the maximum safety limit.

**Power (P-Shift) / Economic (E-Shift) dual driving mode control:** The user can select to use either Power mode or Economic mode to comply with the road condition or riding habit.

**Brake power off:** It prevents the brake and accelerator being used simultaneously to avoid the waste of battery power and electric machinery over heat.

**Easy to maintain** as the service cost is reduced.

## CHARGER

The charger complies with UL, EC and Australian C-Tick regulations. With the implementation of the most advanced equalized charging technology, each battery is charged equally to ensure the battery life.

## KEY FEATURES

### HUB MOTOR

- High torque in low speed
- As high as 85% efficiency
- Less energy consumption
- Excellent overall performance (less transmission loss, less energy consumption and long driving range)
- No Noise

### CONTROLLER

- Digital Intelligent Controller System
- P/E Dual Driving Mode  
(P) Power Mode for higher speed ride  
(E) Economic Mode for urban ride
- Battery Energy Management
- Overheat Protection
- Over Current Protection
- Power on Self-Diagnosis

### CHARGER

- Charger : 110V/220V  
(for Lithium or Lead-Acid Battery)
- 350W

### DC-DC CONVERTER

- Input Voltage: 60~90Vdc
- Input Current: < 1.6A ~ 2.4A
- Input Protection: 5A Fuse
- Protections: Short Circuit Protection
- Output Voltage: 12Vdc +/- 3%
- Output Current: 10A Max
- Max Output Watts: 120W



