ES15/ES30/ES40 Electrification Kits

HUB MOTOR

CONTROLLER

CHARGER









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 enbles 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

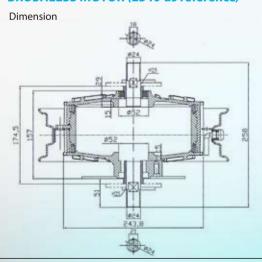
- Input Voltage: 60~90Vdc
- Input Current: < 1.6A ~ 2.4A
- Input Protection: 5A Fuse
- Protections: Short Circuit Protection
- Output Voltage: 12Vdc +/- 3%
- Output Current: 10A Max
- Max Output Watts: 120W



SPECIFICATIONS

Model	Description	ES15	ES30	ES40
Motor	Rated Power	1,500W	3,000W	4,000W
	Rated Voltage	48V	48V	72V
	Rated Current	30A (Max ~45 km/h)	60A (Max ~55 km/h)	60A (Max ~55 km/h)
	Rated Torqu	20 N.m	20 N.m	20 N.m
	Rated RPM	420 rpm	600 rpm	600 rpm
	No Load Current	2.9A	2.9A	2.9A
	No Load Speed	660 rpm	660 rpm	660 rpm
	Maximum Power	3800 W	5000 W	8000 W
	Maximum Torque	70 N.m	70 N.m	70 N.m
	Efficiency	85%	85%	85%
	Net Weight	18kg	18.5kg	19kg
	Rim Size	12"x3"	12"x3"	12"x3"
Controller	Voltage Range	DC 40V ~ 60V	DC 40V ~ 60V	DC 60V ~ 84V
	Rated Output Current	40A	50A	60A
	Rated Output Voltage	0 ~ 100%	0 ~ 100%	0 ~ 100%
	Max Output Current			
		80A, 10sec	120A, 15sec	120A, 10sec
	Max Continuous Current	60A	60A	60A
	Operation Temperature		-10~50° C	
	P/E Mode	Power Mode: 100% Output; Economic Mode: 70% Output		
	Controller Method & Switching Frequency	Six-Step PWM Method @ 20KHZ		
	Communication Interface	Digital I/O, I2C BUS, RS-485, RS-232		
	Protection			
	Battery Low Shtdown	Battery Voltage <40V	Battery Voltage < 40V	Battery Voltage < 60V
	Sutterly 2011 Stitutom.	Cut off the output power; L1 ON with beep sound (10 Sec)		
	Throttle cable not return in right position	L1~L4 Alternate blinking		
	Brake Protection	Turn off the output power < 1 Sec		
	Controller Overheat	OH LED On & Beeping every second;10 Sec Cut off the output power		
	Motor Overheat (90° C)	OH LED Blinking & Beeping every second ;10 Sec Cut off the output power		
	D/D Converter Error	L3 (Green) Blinking every second		
	Hall Sensor Error	L1~L4 ON		
	Standby Mode	Still over 3 Mim; L2 (yellow) Blinking every second		
Charger	Voltage Range	100-240Vac		
	Max. Input Current	6A		
	Max. Output Current	7A		
	Power	400W		
	Battery	Lead Acid Battery ; Lithium Battery		
	Charging Time	4.5-6hr (90%)		
	Operation Temperature	-5°C to +40°C		
	Dimension	220*85*123mm		
	Weight	2.03kg		
	Charger for Lead-Acid Battery	110/220V, 350W		
	Charger for Lithium Battery	110/220V, 350W ÷ 1000W		
DC-DC Converter	Input Voltage	38~60VDC	38~60VDC	60~85VDC
	Input Current	30 0000	< 5A	00 03750
	Input Protection	SA Fuse		
	Protections	Short Circuit Protection		
		12VDC +/- 3%		
	Output Voltag			
	Output Current	10A Max		
	Max Output Watts	120W		

BRUSHLESS MOTOR (ES40 as reference)





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