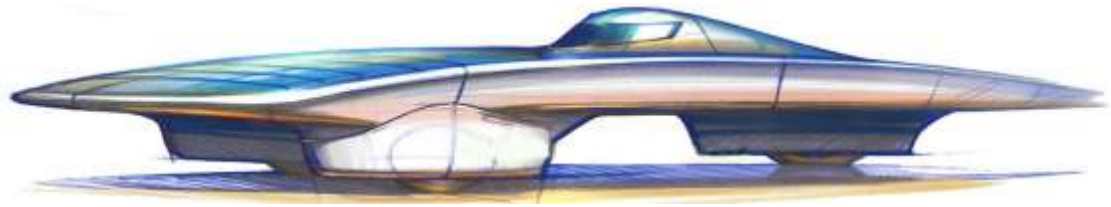
MITSUBA

MITSUBA electric motors have proved its success in the international races, where the Japanese labor and technology are combined to create high-performance BLDC Hub motors. MISTUBA Hub Motor Kits are offered to sale only in Japan and Turkey. 96% efficiency (with motor and control unit) is achieved by intelligently designed nickel / cobalt alloy rotor. Magnetic flux losses through the rotor/stator are minimized at every speed, hence providing the highest efficiency in the Hub Motors at the current markets. MITSUBA Hub Motors may also be specially designed and manufactured according to customer applications and needs, such as maximum speed and the amount of power needed at this particular speed.



M2096D Hub Motors have proven themselves successful in "World Solar Challenge" with their superior performance producing 2 kW of rated power at 96 V and at 840 rpm speed. Moreover, with their servo control unit M1596C, whole set is able to generate 5 kW of rated power, reaching a top speed of 140 km/h.

In the "Shell Eco – Marathon" races, M0548D Hub Motors verified their high-efficiencies providing 500 W of rated power at 48 V, meanwhile a speed of 600 rpm is obtained. M0848C servo motor unit, even at low speeds, if used together with the motor unit, a 95% total efficiency, and 2 kW of maximum power can be obtained.

- High Efficiency
- Low Magnetic Flux Losses
- Wide Operation Voltage Range
- Eco / Power Mode Options
- Speed / Torque Control Options
- User Training

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Mitsuba Hub Motors can be conveniently used with specially designed wheels and centre locking wheel hubs. High strength/light weight alloys allows stiffer tires with lower weights. Moreover; wheel hubs, suitable for these tires, are able to minimise the friction and prevent any energy loss due to the misalignments. Moreover, low friction tyres like Dunlop Solarmax, Bridgestone Ecopia, Michelin 95/80 are compatible with 14" and 16" lightweight alloys wheels.

Mitsuba Hub Motors along with their equipment enables either World Solar Challenge racing teams or Shell Eco – Marathon racing teams to have high efficiencies and reliable mechanical properties of their vehicles.

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TEKNOLUS® energy

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Motors for Shell Eco – Marathon							
Layout							
Characteristics	HS – LT[1]	LS – HT[2]	50 W – 12 V	100 W – 24 V	50 W – 12 V	100 W – 24 V	500 W – 48 V
Model	M0124D – A		M00512D – IV	M0124D – IV	M00512D – V	M0124D – V	M0548D
Nominal Voltage	24 V		12 V	24 V	12 V	24 V	48 V
Dimensions	Ø156 × L68 mm		Ø194 × L106 mm				Ø202 × L60 mm
Weight	3.4 kg						7.4 kg
Nominal Power	100 W		50 W	70 W	50 W	70 W	500 W
Maximum Power	~180 W		~150 W	~350 W	~150 W	~400 W	~2000 W
Efficiency	$\eta_{max} > 82$ %		$\eta_{max} > 93$ %				$\eta_{max} > 94$ %
Nominal Speed	315 rpm	270 rpm	280 rpm	480 rpm	385 rpm	670 rpm	600 rpm
Controllers							
Model	M0124C		–				M0848C
Dimensions	81 × 147 × 58 mm		Merged into the motor				143 × 178 × 71 mm
Weight	0.45 kg		–				1.6 kg
Nominal Voltage	24 V		12 V	24 V	12 V	24 V	48 V
Voltage Range	8 – 32 V		8 – 32 V	6 – 32 V	8 – 32 V	6 – 32 V	18 – 72 V
Regeneration	Optional		Included				
Speed Control	PWM – 3 Stage Electronic Switching Signal Control		PWM – 16 Stage Electronic Switching Signal Control				

[1] High Speed – Low Torque
[2] Low Speed – High Torque

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Motors for World Solar Challenge			
Layout	 **M1048S**	 **M1096S**	 **M2096S**
Characteristics	1000 W – 48 V	1000 W – 96 V	2000 W – 96 V
Model	M1048R	M1096D	M2096D
Nominal Voltage	48 V	96V	96V
Dimensions	Ø135 × L90 mm	Ø262 × L47 mm	Ø262 × L59 mm
Weight	2.5 kg	7.4 kg	11.0 kg
Nominal Power	1000 W	1000 W	2000 W
Maximum Power	~2000 W	~2500 W	~5000 W
Efficiency	$\eta_{max} > 93$ %	$\eta_{max} > 95$ %	$\eta_{max} > 96$ %
Nominal Speed	3350 rpm	800 rpm	840 rpm
Controllers			
Model	M0548C	M0896C	M1596C
Dimensions	130 × 147 × 58 mm	143 × 178 × 71 mm	164 × 226 × 92 mm
Weight	0.9 kg	1.6 kg	3.0 kg
Nominal Voltage	48 V	96V	96V
Voltage Range	32 – 63 V	70 – 150V	70 – 150V
Regeneration	Boost Regeneration Function	Included	Included
Speed Control	SusumuSumi PWM – E16 Stage	PWM – 16 Stage Electronic Switching Signal Control	PWM – 16 Stage Electronic Switching Signal Control

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