AlphaEcosys

PRODUCT DATASHEET · LIGHT VEHICLE ELECTRIFICATION

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SUZHOU · CHINA

TUK-TUK ELECTRIC CONVERSION KIT — V2.0

Gasoline-to-electric retrofit system · re-machined differential platform · 72 V / 4 kW class

SYSTEM OVERVIEW

ITEM	SPECIFICATION
Application	Gasoline / CNG three-wheeler (auto-rickshaw) electric conversion — engine & fuel system removed, chassis / body / suspension / OEM half-shafts retained
Architecture	72 V platform · PMSM motor + single-speed gearbox + re-machined differential (OEM CV-joint match) · under-seat LFP battery · CAN 2.0 vehicle bus
Reference vehicle	TVS King (kit in production) · Bajaj RE / Bajaj Maxima in adaptation
Installation	≈ 2 h standard install (TVS King) by trained mechanic · SOP manual with torque specs supplied · no chassis cutting or welding

TRACTION MOTOR

PARAMETER	VALUE
Type	Permanent-magnet synchronous (PMSM)
Rated voltage	72 V DC
Rated power	4 kW
Peak power	8 kW
Peak torque	65 N·m
Max speed	6,000 rpm
Position sensor	Magnetic encoder
Protection / cooling	IP67 · air-cooled
Insulation class	H

MOTOR CONTROLLER

PARAMETER	VALUE
Rated voltage	72 V DC
Max input current	150 A DC
Max output current	510 A AC
Communication	CAN 2.0
Functions	Cruise control · anti-theft · multi-mode drive · multiple safety protections
Protection	IP66

GEARBOX & DIFFERENTIAL

PARAMETER	VALUE
Reduction ratio	8 : 1, single-speed
Layout	Rear-mounted, rear-wheel drive
Lubrication	Oil bath
Differential	Re-machined housing & gear set — output splines matched to OEM CV joints; inner CV joints supplied; original half-shafts retained

BATTERY PACK

PARAMETER	VALUE
Chemistry	LFP (lithium iron phosphate), EV-grade cells from Tier-1 Chinese cell makers
Nominal energy	≈ 8 kWh (72 V / 120 Ah)
BMS	Integrated, CAN 2.0 communication
Cycle life	~2,000 cycles to 70% retention
Installation	Under driver seat (seat bucket area)
Options	Larger capacities (10 / 12 kWh class) and lease / swap-ready configurations on request

CHARGING & AUXILIARIES

PARAMETER	VALUE
Charging	AC charging · full charge 4–6 h · on-board charge port
DC-DC converter	72 V → 12 V · 22 A
Dashboard	Digital — road speed + battery state of charge
Controls	Throttle grip with D/R selector + 3-speed mode switch · key switch

VEHICLE PERFORMANCE (TVS KING, REF.)

PARAMETER	VALUE
Top speed	55–60 km/h
Range per charge	100–120 km (typical city duty cycle)
Gradeability	≥ 20%
Noise	55–60 dB (vs. 75–85 dB petrol)
Energy cost	≈ Rs. 7 / km (Sri Lanka, vs. Rs. 20–25 / km petrol)

KIT CONTENTS

- **Traction motor** — 72 V / 4 kW PMSM
- **Motor controller** — CAN 2.0, IP66
- **Single-speed gearbox** — 8:1, rear drive
- **Re-machined differential set** — OEM CV-joint match
- **Inner CV joints** — 1 pair
- **Mounting bracket set** — model-specific, rubber-isolated
- **Wiring harness** — complete HV + LV vehicle loom
- **Digital dashboard** — speed + SOC
- **Throttle grip** — D/R + 3-speed mode
- **DC-DC converter** — 72→12 V, 22 A

- **Key switch & charge port**
- **LFP battery module** — 8 kWh, under-seat (supplied separately or with kit)

VEHICLE COMPATIBILITY

TVS King — AVAILABLE NOW Full kit in production; ≈ 2 h standard installation.	**Bajaj RE** — IN ADAPTATION CV-joint interface drawings complete; fleet pilots open.	**Bajaj Maxima** — IN ADAPTATION Differential assembly drawings prepared.

Notes. All values refer to the reference configuration and are subject to the final production datasheet for the specific vehicle model. Range and energy cost vary with load, terrain, driving style and ambient temperature. Kit scope and battery configuration are quoted per model and order volume. Technician training, SOP documentation and spare-parts supply programs are available for fleet and dealer partners.