SHETAB

Parsan Elactric Bus
Manufacturing co.

Zima
E-Bus


Green Journey
Health Boom
Zima E-Bus

Preface

Clean energies are getting one of the major concerns of government and businesses. The greatest automotive manufacturers are swapping combustion engines with electric propulsions. Avoiding environmental pollutions and less dependance to fossil fuels are the major reasons for such a terrific change in the automotive industry. The rise of population, changes in lifestyle, highest ever fuel consumption and energy are the factors which will inevitably incline people to switch to electrification and one of the best approaches is to move to electric transportation.

About SHETAB

In line with the development of electrification and smartening process, as well as aiming at the production of all-electric buses, a dedicated company named "Parsan Electric Bus Manufacturing Company" with the trademark of "SHETAB" was established in 2020 in order to develop and manufacture state of the art E-buses for domestic and foreign markets.

"SHETAB" is a strong cooperation of the main player of energy section in the Middle East "MAPNA Group" and the main hub of Iran bus manufacturing industry "Oghab Afshan Group".

The E-bus prototype was unveiled in one of the metropolitan cities of Iran, Mashhad. The design and manufacturing of the electric buses are carried out entirely by the local experts and technicians, employing most recent and key technologies.

Our mission is focus on design and production of electric commercial and public vehicles and our vision is to become the reference industrial group in the field of electric public transportation infrastructures.

General Specifications

- The first locally designed and developed automotive product on PLM platform
- Chassis Structure: Monocoque, Low-floor
- Doors: 2 double-flap doors (option: 3 doors)
- Seat Configuration: 35 seated, 45 standee, room for wheelchairs and prams
- Acceleration 0 to 30 km/h: <12s
- Max. Speed: 90 km/h (Limited)
- Powered by electric axle and Lithium Ion batteries, cyclic life: 4000
- Max. output of power generation and transmission: >92% using “Near-the-Wheel” technology
- 20% max. gradeability and 18580 Nm. output torque suitable for various urban areas
- Smart system with numerous sensors and data gathering and analysis system
- Different battery pack solutions for various bus lines
- Dynamic regenerative brake system
- Various methods of AC and DC fast charging
- Advanced monitoring and troubleshooting system
- Advanced cooling system, designed based on different climates
- Acoustic vehicle alert system (AVAS) alerting vulnerable road users to the approach of a vehicle in electric mode

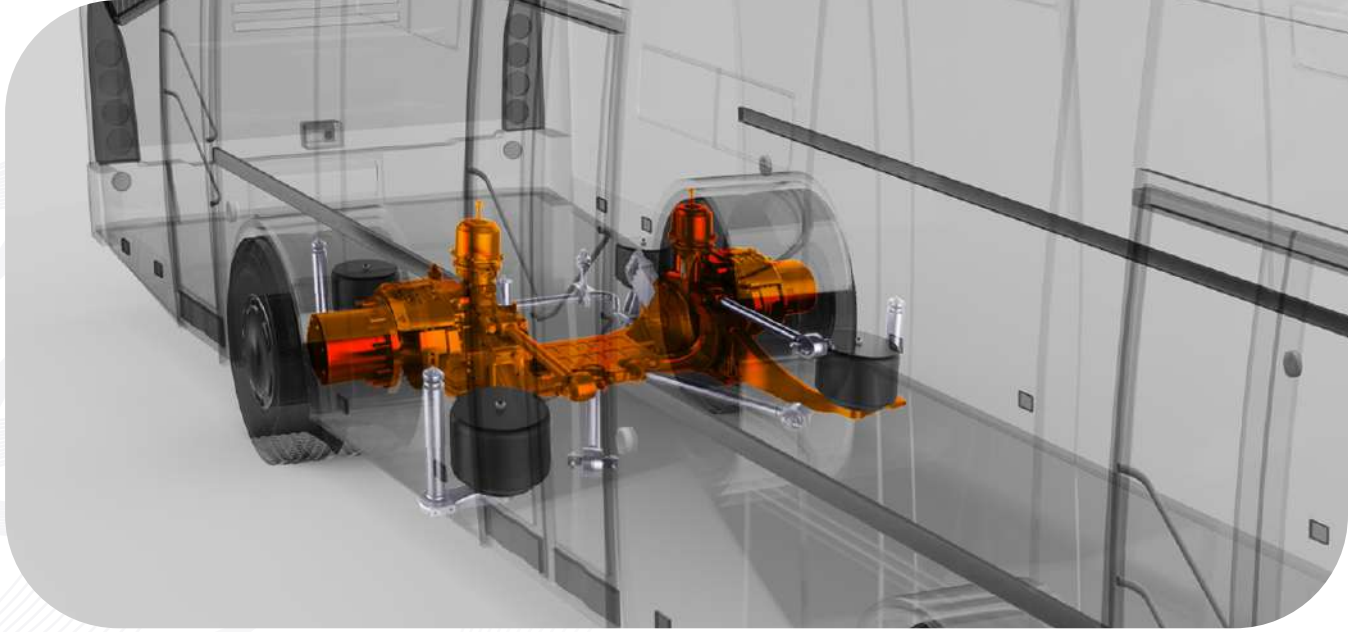
Technical Specifications

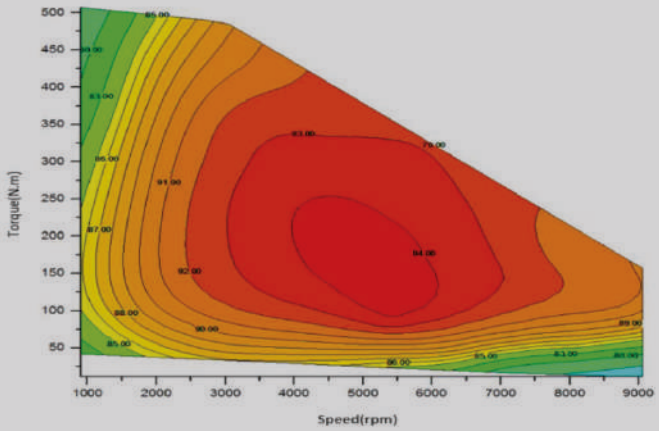
Item	Description
Chassis Type	Monocoque
Chassis Height	Low-Floor
Dimensions (mm)	12450 * 2550 * 3377 (Length * Width * Height)
Type of Drive	Electric Axle, Near-the-Wheel Technology
Max. Permissible Load (kg)	20500
Max. Speed (km/h)	90
Tyre Size	275/70R22.5
Gradeability	20%
Max. Torque on the Wheels (Nm.)	18580
Battery Capacity (kWh)	350
Type of Battery Cell	Lithium Iron Phosphate (LFP)
Voltage Range (V)	High Voltage:450 – 657, Low Voltage: 24 – 28
Charging Systems (kW)	Plug-in CCS2: 120, Pantograph: 600 (Option)
Range (km)	ECE R15: 195
HVAC Capacity (kW)	Cooling: 37, Heating: 35, with convectors in passenger area
Steering System	Electrohydraulic
Doors Mechanism	Pneumatic
Safety Systems	EBD (Electronic Brakeforce Distribution) RBS (Regenerative Brake System) ESP (Electronic Stability Program) ASR (Anti-Slip Regulation) TV (Torque Vectoring)

ZIMA E-BUS
DIMENSIONS

Dimensions & Weights

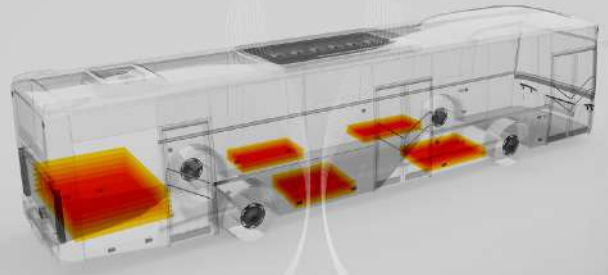
Item	Description
Length (mm)	12450
Width (mm)	2550
Height (mm)	3377
Front Overhang (mm)	2789
Rear Overhang (mm)	3129
Wheelbase (mm)	6532
Approach Angle	6°
Departure Angle	8°
Max. Permissible Load (kg)	20500
Kerb Weight (kg)	13250

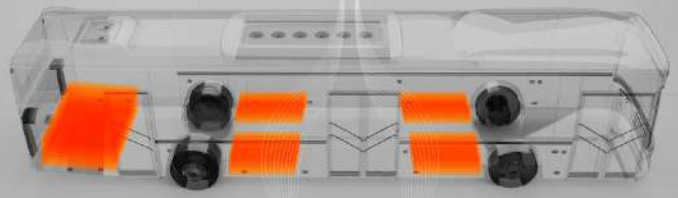




Propulsion System

Item	Description
Type of Drive	Electric Axle Near-the-Wheel motors
Peak Power (kW)	2x160=320
Max. Torque (Nm.)	18580
Motor Technology	PMSM
Motor Max. Speed (rpm)	9050
Efficiency	>92%
Working Temperature (°C)	-20 - +65
Output Reduction Temperature (°C)	85
Shut-down Temperature (°C)	110
Gear Ratio	18.58
Degree of Protection	IP67
Cooling System	Liquid-based





Battery Pack

Item	Description
Number of Packs	10
Weight (kg)	220 (each pack)
Battery Capacity (kWh)	350
Type of Battery Cell	Prismatic, Lithium Iron Phosphate
Voltage Range (V)	450 - 657
TMS	Liquid-based with Heater and Refrigeration Cycle
Cyclic Life	4000
Degree of Protection	Mechanical IP67, Electrical (contactors, fuses, MSD)
Max. Permissible Power (kW)	460
Power Distribution System	Designed by advanced simulation systems Adapted for various climatic & temperature conditions PDU and signal boxes are designed separately Automotive signal cables and anti-noise power cables
Battery Packs Location	Six in the back and four under the deck between the axles


100%
Electric Bus

Charging System

Item	Description
Type of Charging System	DC Plug-in / CCS2
Power Output (kW)	120
Input Current (A)	210
Efficiency	>94%
Voltage Range (V)	150 - 1000
Communication & Network	4G, Ethernet, OCPP 1.6
Working Temperature (°C)	-25 - +55
Degree of Protection	IP54
Permissible Humidity	5% – 90%
Permissible Height (m)	2000 (sea level)
Charging Time 3% to 95% (m)	180
Charging Station Features	7” display, connected banking, RFID card reader

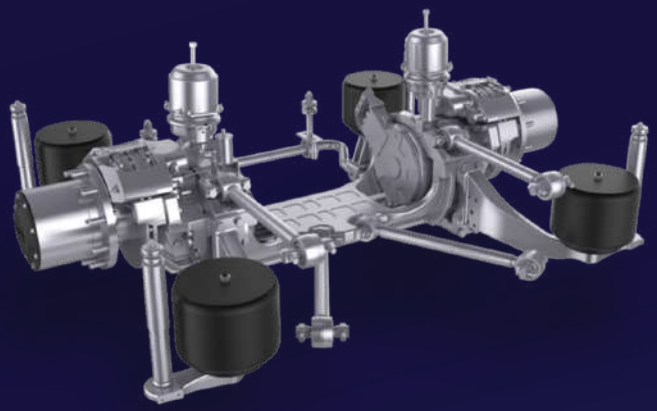
Charging System (option)

Type of Charging System	Pantograph (Opportunity Charging)
Power Output (kW)	600
Input Current (A)	900
Efficiency	>94%
Voltage Range (V)	200 - 900
Communication & Network	PLC, OCPP 1.6, OppCharge
Working Temperature (°C)	-40 - +75
Degree of Protection	IP67 (Wi-Fi Antenna)
Charging Time 3% to 95% (m)	45

Range

Item		Value
According to ECE-R15 (km)	HVAC Off	248
	HVAC Full	196
Constant Speed (km) (37 km/h)	HVAC Off	450
	HVAC Full	376

REAR AXEL
ELECTRIC AXEL



Cooling & Heating Systems

Item	Description
Number of Circuits	Three separate circuits for battery packs, drive motors and passenger area heating system
Cooling Cycle	19.2kW compressor, condenser and heat exchangers
Monitoring	Flow and temperature sensors
Control	Bus comprehensive thermal algorithm, TMS unit, check valves, controllable pumps
Heating System	20kW heater, heats the battery packs and convectors
Working Temperature (°C)	-20 - +55

Axles & Suspension System

Item	Description
Front Axle	Rigid – Max. Permissible Load: 7500 kg
Rear Axle	Electric Axle – Max. Permissible Load: 13000 kg
Tyres	Front: Single Tyres – Rear: Twin Tyres Rim Size: 22.5” Tyre Size: 275/70R22.5
Suspension System	Air Bellows Telescopic Shock Absorbers kneeling system ECAS (Electronically Controlled Air Suspension) The bus returns to its normal level automatically at speeds exceeding 30 km/h or with a switch.

Brake System

- Pneumatic disc brake
- Air compressor with air dryer and separate tanks for each axle
- Parking brake on the rear wheels
- EBS (Electronic Braking System)
- EBD (Electronic Brakeforce Distribution)
- RBS (Regenerative Brake System)
- ASR (Anti Slip Regulation)
- ESP (Electronic Stability Program)

ESP EBD RBS

Low Voltage Sub-Systems

- 2x12 V 220Ah batteries with proper availability and ventilation
- The electrical components and cable harnesses are well-insulated against water and heat penetration
- Three multiplexers in order to reduce the wiring, easy troubleshooting and reduce the risk of unauthorized manipulations
- Isolated fuse box from the battery compartment and insulated against moisture and dust
- Overhead LED lights in the passenger area

HVAC System

Item	Value
Passenger Area Cooling Capacity (kW)	37
Passenger Area Heating Capacity (kW)	35
Driver Area Cooling Capacity (kW)	6
Driver Area Heating Capacity (kW)	12

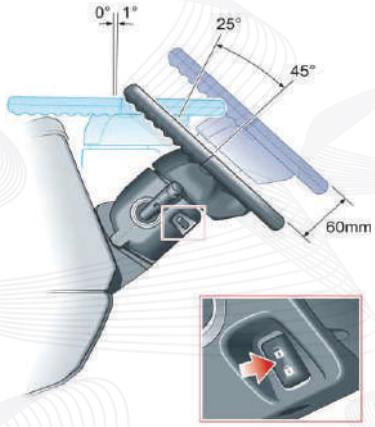
- Standard air conditioning system adapted for a high passenger flow in warm and dry regions
- Driver area HVAC system has a separate control panel
- There are convector heaters in the passenger area

Audio & Video Equipment

- Radio with MP3 player
- Amplifier with the ability of connecting to a destination announcement system
- Electronic destination displays inside and outside the bus
- Video surveillance system and 4 cameras (5 cameras in 3-door configuration)
- Rear view camera
- Color 7” monitor with 5 camera inputs

Driver Area

- Ergonomic and sturdy environment made of ABS
- Adjustable air-suspended driver's seat with artificial leather or velvet upholstery and three-point belt in accordance with European standard
- Adjustable steering wheel angle in order to improve the driver's ergonomics
- Separate HVAC system with control panel
- Vertical R-N-D gear selector
- USB 12V charging port
- Overhead Lockers
- Manual sun visor



Driver & Passenger Seats

- Pneumatic adjustable Driver's seat with artificial leather or velvet upholstery and three-point belt in accordance with European standard
- Robust and comfortable Passenger's seat made of fireproof polyamide with artificial leather or velvet upholstery.

Body Structure

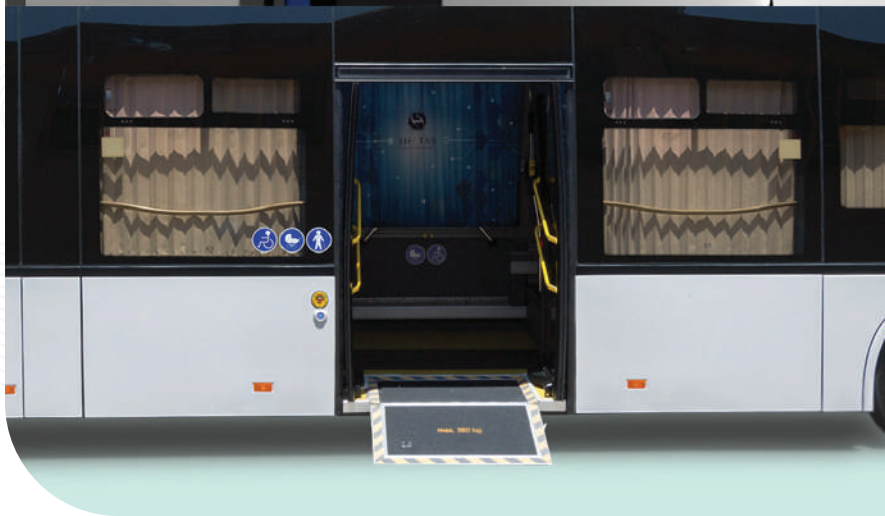
- Industrial stainless steel profiles
- Welding of joints by CO2 shielding gas according to AWS standard
- Modular body sheets
- Body structure is covered by Zinc Chromate anti-corrosion coating
- The Side walls, floor and ceiling of the bus is well-insulated against the penetration of heat and sound into the passenger area
- Furnace body paint resistant to cold, heat and high temperature difference of day and night in winter in dry climates
- Body paint selection is optional
- Fireproof anti-wear silica flooring with proper sealing in joints
- Tinted double-glazed 1/3 sliding side windows glued to the body and single-piece windscreen attached by rubber strip
- Robust low-floor body structure according to EU standard
- Wood flooring by 18mm double sided waterproof multilayer wood
- Undercarriage with corrosion protection treatment

Standard Equipment

- Power heated rear view mirrors plus one convex front view mirror
- Front tow hitch with a hinged cap
- Emergency hammers in the passenger area
- Folding ramp for wheelchairs
- Emergency roof hatch with fan
- Fire extinguisher
- Handrails and handholds for standing passengers
- USB charging ports in passenger area

Other Features

- Hill-Hold Assist
- Electronic Active Differential with Torque Vectoring by Braking
- AVL (Automatic Vehicle Locator)
- OBD (On-board Diagnostics)
- AVAS (Acoustic Vehicle Alerting System)
- GPS connection ability in order to dispatch navigation data
- LED daytime running lamps
- Stop buttons
- Ceiling lights in passenger area (blue and white)



Note


100 %
Electric Bus
Zero
Emissions
SHETAB

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