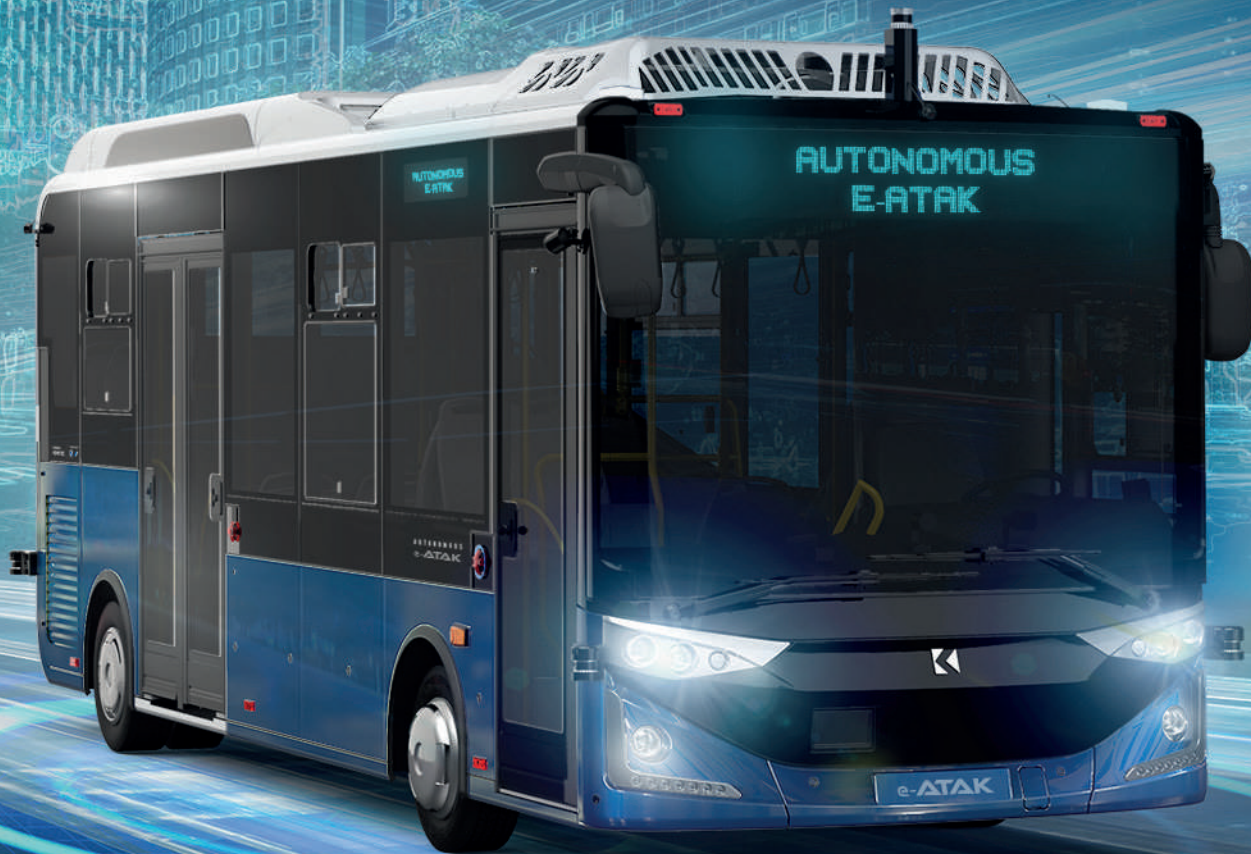


AUTONOMOUS READY



 KARSAN

Automated by
ADASTEC

in cooperation with



AUTONOMOUS
e-ATAK



CUTTING- EDGE TECHNOLOGY FOR THE CITIES OF THE FUTURE

With its innovating sustainable future mission, Karsan reveals another premiere in its sector and takes you on an exciting journey, introducing the leading technology of new era.

BE THE CHANGE

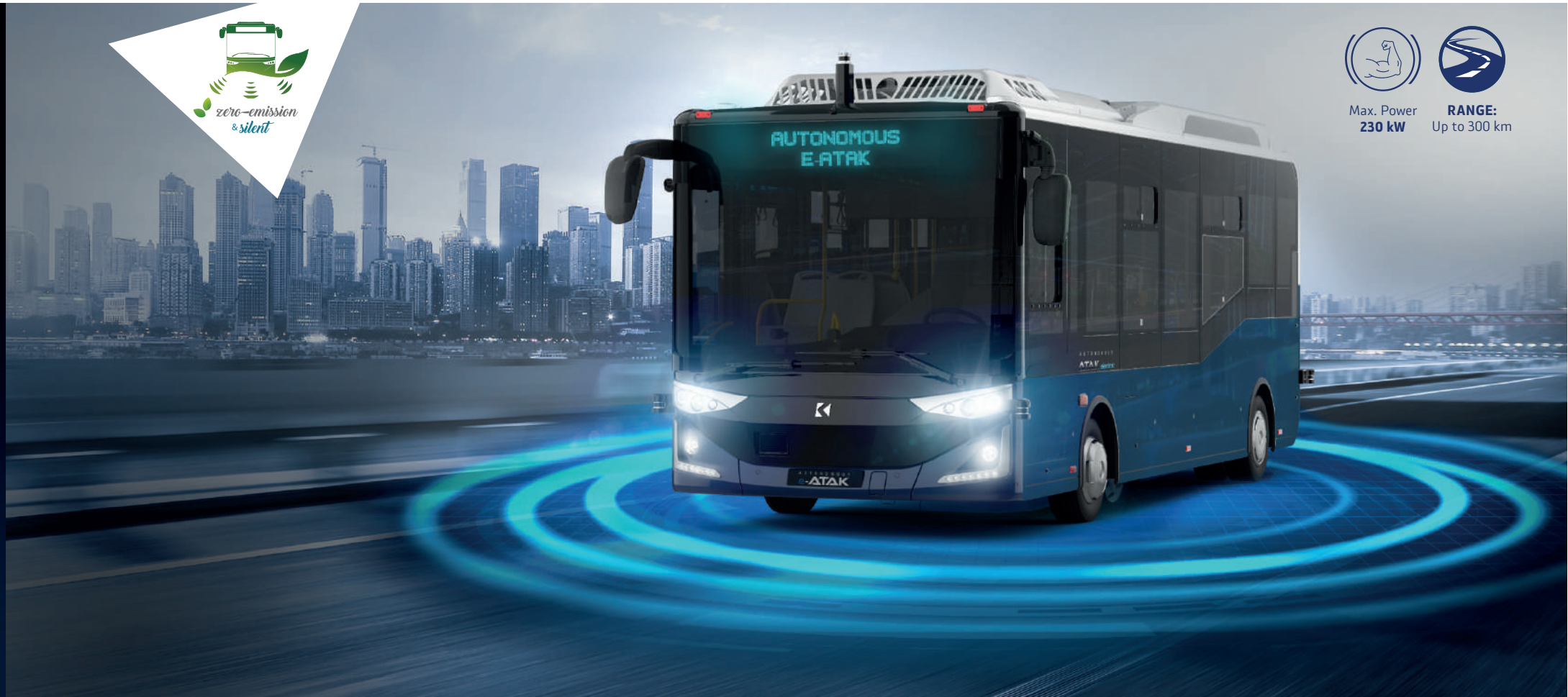
Karsan is ready for the future today with its autonomous technology to overcome the consequences of increasing population, harmful gas emissions and human-induced errors in traffic.



Max. Power
230 kW



RANGE:
Up to 300 km



MEET LEVEL 4 AUTONOMOUS TECHNOLOGY

With its Level 4 autonomous driving technology, Autonomous e-ATAK safely navigates without a need for human control, by detecting road and environmental conditions on defined routes. After the Karsan electric buses travelling millions of kilometers, now Autonomous e-ATAK introduces you to the technology of future.

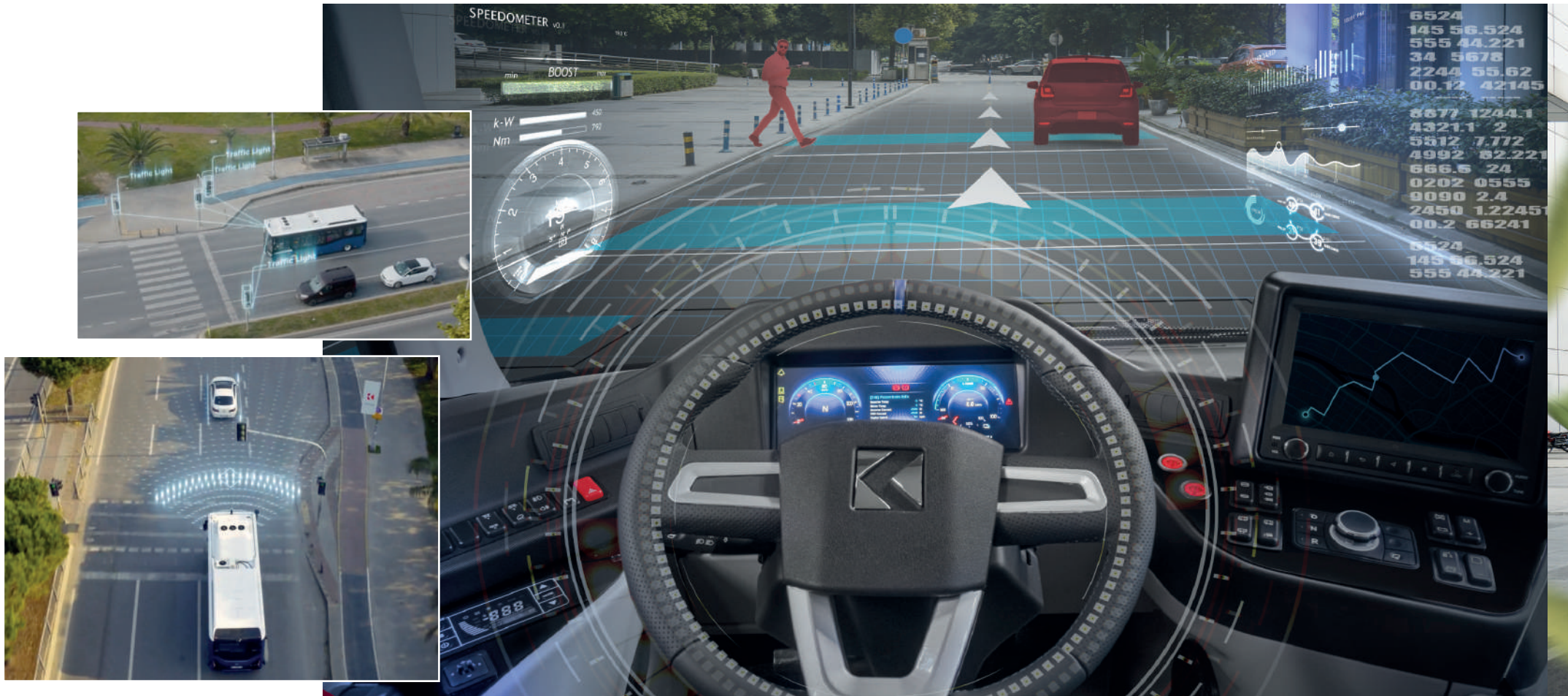
ENJOY DRIVERLESS JOURNEY

Autonomous e-ATAK detects every living and non-living object around with its superior technology. It decides when to turn or change lanes along a predefined route, monitoring road conditions. When travelling with Autonomous e-ATAK, all you have to do is to sit back and enjoy the journey.

SAFE DRIVE WITH MAXIMUM CONTROL

Autonomous e-ATAK handles the situations it encounters in traffic, following all traffic signs while driving on urban lines without a need for driver control. Autonomous e-ATAK's high technology sensors continuously detects what is happening around.

Motorcycles or pedestrians in blind spots are visible to Autonomous e-ATAK, providing maximum safety.



EFFICIENT MOBILITY

Daily operations can easily be achieved with Autonomous e-ATAK's extended range and superior technology.

100% ELECTRIC 0% EMISSION

Thinking about the future needs cutting-edge technology, just like the technology Autonomous e-ATAK has. Autonomous e-ATAK considers the future of nature and humanity with its 100% electric motor. First steps in forming a greener and cleaner city lies in 0% emission level.

BMW i. BATTERY

Proven BMW Li-Ion batteries vitalize Autonomous e-ATAK. With Autonomous e-ATAK, a seamless journey begins in the city from one end to the other with a single charge. With an unrivalled range of 300 km, Autonomous e-ATAK can easily achieve daily operations during the day.

CHARMS IN ALL RESPECTS

Autonomous driving not only radically changes mobility, it also gives an innovative perspective in interior design. Appealing to the eye with its characteristic design, Autonomous e-ATAK offers a comfortable experience to its passengers with its spacious interior design. Get ready to be impressed when you take the first step towards Autonomous e-ATAK equipped with superior technological features.

7/24, IN EVERY CONDITION

No matter if it rains or shines, day or night, Autonomous e-ATAK is always aware of its surroundings. Thanks to its high-quality sensors, its performance is unaffected compared to the human eye in situations like exposure to bright light or thick fog, and provides a safe drive.



REMOTE CONTROL

Data can be obtained instantly from Autonomous e-ATAK and remote route changes can be made. Thus, management support can safely be provided at intersections, crossings and traffic lights in an unusual road interruption. By staying in continuous communication with the operation and task management system, it can also be directed by central control while retaining autonomy.

FLAWLESS TRAFFIC WITH SAFE DRIVE

Autonomous e-ATAK drives confidently in traffic with its superior technology, taking maximum precaution at bus stops, traffic lights and pedestrian crossings. Determining its location with precision, Autonomous e-ATAK calculates the movement of each object around 20 times per second and takes you on a safe journey.

SENSES WITH ITS ALL

LiDAR: In Autonomous e-ATAK, LiDAR carries out the activities of detecting bicycles, living or non-living objects, determining the location with map-area, and environmental detection.

Camera: All eyes of Autonomous e-ATAK are on the road, with RGB and thermal cameras, which perform object detection, color detection, object classification and lane information recognition.

IMU: The IMU in Autonomous e-ATAK is used for acceleration, rotation speed calculation and position information.

GNSS: GNSS (Global Navigation Satellite System) is used to spot the coordinate of the bus while navigating.

Radar: As one of the main sensors of Autonomous e-ATAK, radar takes role in Emergency Braking, Dynamic Speed Control Assistance and Speed Based Vehicle Tracking by measuring the distance of objects.

Ultrasonic Sensor: Support the detection of objects at close range, ultrasonic sensors have a critical role in low speed driving scenarios.

TECHNICAL SPECIFICATIONS

VEHICLE TYPE

Vehicle Category & Class Low Floor Electric Bus, M3 Category, Class I, LHD

POWERTRAIN SYSTEM

Drive Type	Direct Drive
Engine	TM4 Electric Motor
Maximum Power (kW)	230
Maximum Torque (Nm)	2.500

PERFORMANCE & ELECTRIC SYSTEM

Range*	Up to 300 km
High Voltage Battery (Type - Capacity)	Li-ion 360V - 220 kWh
Charging (Type - Power - Time)	AC Type 2 - 22 kW Single - 10 h**
	AC Type 2 - 44 kW Double - 5 h**
	DC Combo 2 - 80 kW - 3 h**

BODY

Body Type	Carbon Steel: Space Frame Steel Tube Structure
Corrosion Resistance	Cataphoresis & Underbody Coating

SUSPENSION

Suspension	Air Suspension + Electronic Level Control + Kneeling
Front Axle	Independent
Rear Axle	Rigid Drive Axle

BRAKE SYSTEM

Front & Rear Brakes	Pneumatic Disc Brake System
Steering Wheel	Tiltable & Telescopic Electro Hydraulic Steering Wheel

CAPACITY

Gross Vehicle Weight (kg) 11.500

DIMENSIONS

Overall Length (mm)	8.315
Overall Width (mm)	2.436
Overall Height (mm)	3.090
Front Overhang (mm)	2.040
Rear Overhang (mm)	1.695
Wheelbase (mm)	4.580
Standing Height (mm)	2.372
Step height, Door 1 (mm)	340 (with Kneeling) & 270 (with Kneeling)
Step height, Door 2 (mm)	340 (with Kneeling) & 270 (with Kneeling)
Approaching / Departure Angles (°)	7,8 / 8,8
Turning Radius (Kerb to Kerb) (Standard Mirrors) (mm)***	6.312

TIRES

Front Tire Sizes & Rim Sizes	245/70 R17.5 & 6.75"x J17.5" Single
Rear Tire Sizes & Rim Sizes	225/75 R17.5 & 6"x J17.5" Double

* Range may vary depending on various factors, in particular: individual driving style, route characteristics, outside temperature, heating/air conditioning, seated & standing passenger weight.

** From 0% to 80% battery capacity in ideal conditions.

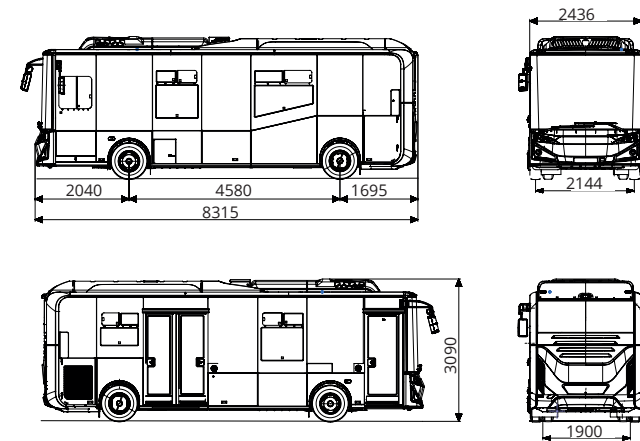
*** May change in case of using Mirror Camera option.

PASSENGER CAPACITY ALTERNATIVES



	Seated	Max. Standing	Foldable	WheelChair	Max. Total Passenger****
18+4	18	34	-	-	52
	18	28	-	1	47
	18	29	4	-	51
21+2	21	31	-	-	52
	21	25	-	1	47
	21	25	2	-	48
21+4	21	31	-	-	52
	21	25	-	1	47
	21	25	4	-	50

****Passenger capacity depends on selected optional features & wheelchair area utilization. Wheelchair is valid only when foldable seats are not being used.



EQUIPMENT FEATURES

STYLE

Exterior Design

LED Front & Rear Lights	S
LED Day Time Running Lamps	S
Front Fog Lamp	S
3 rd Stop Lamp	O
Electrical and Heated Mirrors	S
Mirror Cameras	O
5 Sliding Side Windows	S
Light Tinted Color Side Glass	S
Dark Tinted Color Side Glass	O
7 Sliding Side Windows ¹	O
Heated Windscreen	S
Sliding Heated Driver's Window	S
Heated Front Door Window	S
Monocolor LED Destination (Front + Side + Rear)	S
Front & Rear 17.5" Steel Wheels	S
Wheel Covers	S
Cataphoresis & Underbody Coating	S
Spare Tire	O
Body Color: White	S
Body Colors: (Opac Colors)	O

Interior Design

Anti-Slip PVC Floor Cover, Green Patterned	S
Handrail Tubes, Stainless Steel	S
Handgrips	S
Stop Signs + Digital Clock + Temperature Indicator	S
Billboard ²	O
Outdoor Billboard (Right & Left Side)	O

TECHNOLOGY

Charging Infrastructure

Single On-Board Charger	S
Double On-Board Chargers	O

Driver Compartment

12" Full Digital Cluster	S
Rear Park Sensors	S
Ticket Validator Preparation (Front)	S
Smart Tachograph	O
2 x Driver Area Speakers	S
Manuel Locking System	S
Start & Stop Button (Keyless)	S
External Speaker	O
Coat Hook	S
FMS Gateway	S

Audio & Video Systems

Radio + USB Port + Bluetooth Connections	S
Announcement System for Passenger Area - 5 x Passenger Speakers + Goose Neck Microphone + Amplifier	O
10.1" Multimedia Touchscreen	S
Rear Camera	S
Wi-Fi Router	O
Roof Mounted Fixed 19" LCD Screen with USB	O
DVR (1 TB) ; Front, Driver, Inside, Service Door Cameras (Touchscreen Integrated)	O
DVR (1 TB) ; Front, Driver, Inside, Service Door Cameras (7" LCD Screen Integrated)	O

COMFORT

Cooling & Heating

Passenger A/C with Heating Function	S
Driver A/C with Heating Function	S
Passenger Area Heater 12 kW	S
Passenger Sidewall Heater	S
Pre-heater ³	O

Driver Compartment

8-Way Pneumatic Driver Seat with 3-Point Seat Belt (ISRI)	S
Driver Seat with Heating Function	O
Isolated Cabin (Rear as Glass)	S
Seperated Driver Cabin with High Glass	O
Driver Side Window Manual Sun Visor	O
Front Manual Sun Visor	S
Alcoholmeter Preparation	O

Passenger Area

Plastic Type Passenger Seats	S
Plastic Type Passenger Seats (with Pad & Fabric)	O
Shuttle Type Passenger Seats (Seat Back Plastic)	O
Backrest Totem and Wheelchair Designations	S
Manual Wheelchair Access Ramp	S
USB on Sidewalls	S
Door Compress Prevention	S

SAFETY

ESP - Electronic Stability Program	S
EBS - Electronic Brake System	S
ABS - Anti-Lock Braking System	S
ASR - Anti-Slippage System	S
RBS - Regenerative Brake System	S
HSA - Hill Start Aid	S
Front Anti Roll Bar	S
E-Motor Room Fire Detection System	S
Fire Supression System ³	O
Reverse Gear Buzzer	S

S : Standard O : Option

¹ 7 Sliding Side Windows can be selected with Dark Tinted Color Side Glass.

² Only without Rear (Cabin) Separation Window.

³ Options can not be selected separately from each other.

