

# AUTONOMOUS READY



Automated by  
**ADASTEC**

In cooperation with



AUTONOMOUS  
**ATAK electric**



### 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 Atak Electric 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 Atak Electric introduces you to the technology of future.

### ENJOY DRIVERLESS JOURNEY

Autonomous Atak Electric 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 Atak Electric, all you have to do is to sit back and enjoy the journey.

### SAFE DRIVE WITH MAXIMUM CONTROL

Autonomous Atak Electric handles the situations it encounters in traffic, following all traffic signs while driving on urban lines without a need for driver control. Autonomous Atak Electric's high technology sensors continuously detects what is happening around. Motorcycles or pedestrians in blind spots are visible to Autonomous Atak Electric, providing maximum safety.



## EFFICIENT MOBILITY

Daily operations can easily be achieved with Autonomous Atak Electric's extended range and superior technology.

## 100% ELECTRIC 0% EMISSION

Thinking about the future needs cutting-edge technology, just like the technology Autonomous Atak Electric has. Autonomous Atak Electric 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 Atak Electric. With Autonomous Atak Electric, 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 Atak Electric 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 Atak Electric 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 Atak Electric equipped with superior technological features.

## 7/24, IN EVERY CONDITION

No matter if it rains or shines, day or night, Autonomous Atak Electric 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.

## SENSES WITH ITS ALL

**LiDAR:** In Autonomous Atak Electric, 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 Atak Electric 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 Atak Electric 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 Atak Electric, 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.

## REMOTE CONTROL

Data can be obtained instantly from Autonomous Atak Electric 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 Atak Electric 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 Atak Electric calculates the movement of each object around 20 times per second and takes you on a safe journey.

## TECHNICAL SPECIFICATIONS

<b>VEHICLE TYPE</b>	
Vehicle Category & Class	Low Floor Electric Bus, M3 Category, Class I, LHD
<b>POWERTRAIN SYSTEM</b>	
Drive Type	Direct Drive
Engine	TM4 Electric Motor
Maximum Power (kW)	230
Maximum Torque (Nm)	2.500
<b>PERFORMANCE &amp; ELECTRIC SYSTEM</b>	
Turning Radius (Kerb to Kerb) (mm)	6.312
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**
<b>BODY</b>	
Body Type	Carbon Steel: Space Frame Steel Tube Structure
Corrosion Resistance	Cataphoresis & Underbody Coating
<b>SUSPENSION</b>	
Suspension	Air Suspension + Electronic Level Control + Kneeling
Front Axle	Independent
Rear Axle	Rigid Drive Axle
<b>BRAKE SYSTEM</b>	
Front & Rear Brakes	Pneumatic Disc Brake System
Steering Wheel	Tiltable & Telescopic Electro Hydraulic Steering Wheel
<b>CAPACITY</b>	
Gross vehicle weight (kg)	11.000
<b>DIMENSIONS</b>	
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)	2.370
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
<b>TIRES</b>	
Front Tire Sizes & Rim Sizes	245/70 R17.5 & 6.75"xJ17.5" Single
Rear Tire Sizes & Rim Sizes	225/75 R17.5 & 6"xJ17.5" Double

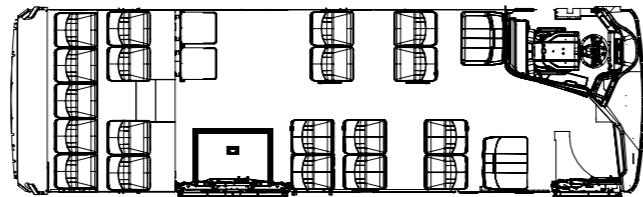
\* Range may vary depending on various factors, in particular: individual driving style, route characteristics, outside temperature, heating/air conditioning, seated & standing passenger weight.

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

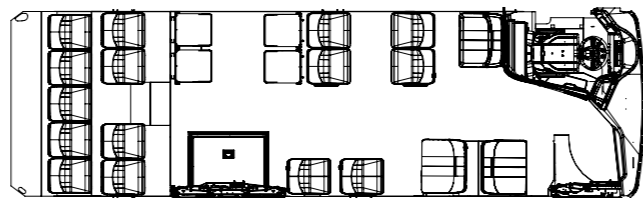
## PASSENGER CAPACITY ALTERNATIVES

	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

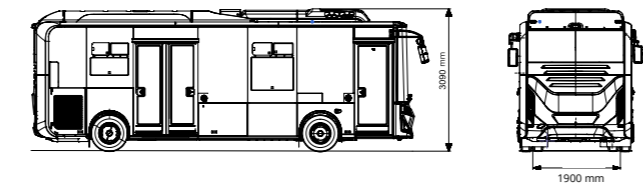
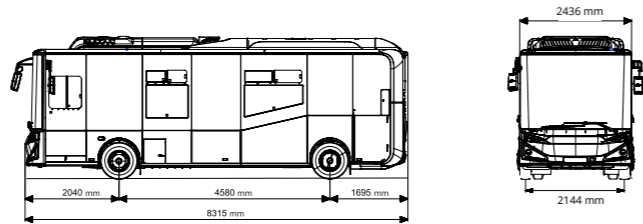
\*\*\*Passenger capacity depends on selected optional features & wheelchair area utilization. Wheelchair is valid only when foldable seats are not being used.



21+2



18+4



## EQUIPMENT FEATURES

<b>STYLE</b>	
<b>Exterior Design</b>	
LED Front & Rear Lights	S
LED Day Time Running Lamps	S
Front Fog Lamp	S
3 <sup>rd</sup> Stop Lamp	O
Electrical and Heated Mirrors	S
5 Sliding Side Windows	S
Light Tinted Color Side Glass	S
Dark Tinted Color Side Glass	O
7 Sliding Side Windows***	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
Standard Body Color: White	S
Optional Body Colors: (Opac Colors)	O
<b>Interior Design</b>	
Anti-Slip PVC Floor Cover, Green Patterned	S
Handrail Tubes, Stainless Steel	S
Handrail Tubes, Green	O
Handgrips	S
Stop Signs + Digital Clock + Temperature Indicator	S
Billboard	O
<b>TECHNOLOGY</b>	
<b>Charging Infrastructure</b>	
Single On-Board Charger	S
Double On-Board Chargers	O
<b>Driver Compartment</b>	
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

<b>Audio &amp; Video Systems</b>	
Radio + USB Port + Bluetooth Connections (on Touchscreen)	S
Announcement System for Passenger Area	LP
10.1" Multimedia Touchscreen	S
Rear Camera	S
Wi-Fi Router	LP
Roof Mounted Fixed 19" LCD Screen with USB	LP
DVR (1 TB) ; Front, Driver, Inside, Service Door Cameras (Touchscreen Integrated)	SP1
DVR (1 TB) ; Front, Driver, Inside, Service Door Cameras (7" LCD Screen Integrated)	SP2

<b>COMFORT</b>	
<b>Cooling &amp; Heating</b>	
Passenger A/C with Heating Function	S
Driver A/C with Heating Function	S
Passenger Area Heater 12 kW	S
Passenger Sidewall Heater	S

<b>Driver Compartment</b>	
8-Way Pneumatic Driver Seat with 3-Point Seat Belt (ISRI)	S
Isolated Cabin (Rear as Glass)	S
Full Separated Driver Cabin	O
Driver Side Window Manual Sun Visor	O
Front Manual Sun Visor	S

<b>Passenger Area</b>	
Plastic Type Passenger Seats	S
Plastic Type Passenger Seats (with Pad)	O
Backrest Totem and Wheelchair Designations	S
Manual Wheelchair Access Ramp	S
USB on Sidewalls	S
5 x Passenger Area Speakers	LP
Door Compress Prevention	S

<b>SAFETY</b>	
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
Reverse Gear Buzzer	S

S: Standard  
O: Option  
LP: Luxury Pack  
SP1:Surveillance Pack 1  
SP2:Surveillance Pack 2

SP1 & SP2 can't be selected together.  
Monitoring will be from Touchscreen in SP1 and from 7" LCD in SP2  
\*\*\* 7 Sliding Side Windows can be selected with Dark Tinted Color Side Glass

