



Future is Now / *BYD Ebus*  
*Electric bus for the future*



A wide-angle photograph of a lush green field, possibly a meadow or a farm, stretching to a flat horizon. The sky is a deep blue with scattered white clouds. The text "Build Your Dreams" is overlaid in a large, white, sans-serif font across the middle of the image.

**Build  
Your Dreams**



## How to make the green dream come true? BYD knows how

As a leading integrated-technology, automobile and new energy enterprise, BYD has clearly defined its overarching goal. It is to spur mass-market adoption of green technologies and to drive dramatic global economic and environmental recovery.

BYD has created its Green City Solution, which aims to electrify urban public transportation systems by transitioning from gasoline and diesel powered buses and taxis to pure electric ones. Besides electric vehicles, BYD also provides related services such as charging facilities, charging station monitoring systems and after-sale service, all as a one-stop-shop solution.

Widespread adoption of these green technologies would help to create greener, healthier and more economically vibrant cities.





## What can you expect from the BYD electric bus?

BYD's pure electric city bus is the first Fe battery powered electric bus in the world. Powered by three battery packs with a capacity of 600Ah, and offering an extremely light weight solution, the BYD ebus has a range of 250km on a single charge in typical urban conditions.

The BYD ebus is designed for driver and passenger comfort with low noise and zero emissions.

## Fascinating at first glance

With a distinctive appearance, the BYD ebus is in tune with the modern design style common in the public transport sector. Many details, such as the clear and sleek lines on the front, the blue and silver oval logo and the alloy wheels, all accentuate the strong design identity. BYD ebus is available in a range of colours to meet regional operator requirements and livery styles.



BYD ebus

## BYD ebus highlights

Fe Battery



### Fe Battery

The power battery for an electric bus should meet requirements for safety, energy density and low cost. BYD's Fe battery is the best choice meeting all of these criteria.

250 km



### Extended Range

BYD ebus is able to run 250km on a single charge in urban conditions.

Customization



### Customization

Different body types, interiors, ranges and loading capacity can be tailor-made according to customers' requirements, providing more operating flexibility.

20 years



### All-aluminum Monocoque Body

Being corrosion-resistant for a life of more than 20 years, the monocoque aluminum body not only reduces curb weight, but also improves power and controls performance and lowers energy consumption. Meanwhile, it also enhances safety and comfort.

0 Emission



### Eco-Friendliness

BYD ebus has no tailpipe because it drives without a conventional engine, produces zero emissions and helps to improve air quality.

Battery Pack



### Flexible Battery Pack Position

The battery pack position can be designed to meet any special requirements.

WVTA



### WVTA

BYD ebus has received the EU's Whole Vehicle Type Approval, WVTA for short, allowing it to be sold in all EU member states without the need for individual national approval.

100km  
130 kWh

### Cost-saving

The energy consumption of BYD ebus is around 130kWh/100km in urban conditions. It saves up to 75% of fuel cost compared with a diesel bus. The longer you drive, the more you save.



## BYD ebus with Nordic package

A special BYD electric bus model designed for Nordic Europe has arrived.

This BYD ebus has been prepared and tested to meet the grueling climatic conditions of Scandinavia. Challenging operational conditions like abrasive, salt and water corrosion and heat-insulation are thoughtfully considered in the body construction. Auxiliary heating and AC cooling systems provide passengers a comfortable journey all year round.

### Features

- Double-glazed tinted glass
- Panoramic front windscreen: Double-glazed toughened safety glass, with electric defogger
- Extra thermal and fireproofing insulation layer in body construction
- Heavy-duty protective paint for chassis and protective guard for chassis wire harness
- Auxiliary heating system keeps the compartment at a comfortable temperature even in extreme cold weather









## Left Hand Drive - 2 doors

This version of the BYD ebus has been proven by millions of kilometres of passenger-carrying service. Well positioned battery packs are located strategically on the bus. The driver's seat is supplied by GRAMMER, which ensures high quality and comfort.

The two doors BYD ebus has been put into commercial operation in Israel. The two doors BYD ebus has been tested worldwide in major global cities, including – in Europe – Madrid, Salzburg, Warsaw, Amsterdam, Barcelona, Brussels and Budapest. The Dutch island of Schiemonnikoog has converted its entire bus fleet to pure electric BYD e buses and, furthermore, a fleet of 35 units has been ordered for Schiphol Airport, Amsterdam.



## Right Hand Drive - 2 doors (TfL Spec)

This version has been specifically designed for the right hand drive markets, such as the UK and Ireland. This bus has two doors with an emergency exit on the right. It is designed with a low entry feature for convenient passenger flows. This version will be test-trialed in London.







850-128-18

BYD

BYD ebus

BYD

比亚迪



## Left Hand Drive - 3 doors (Low Floor)

BYD supplies a 3-door version of the electric bus to allow for more convenient passenger flows. To allow faster passenger movement, a different battery layout has been adopted. The driver's seat is also supplied by GRAMMER for high quality and comfort.





## A comfortable way of driving and riding

### Driver's cockpit

The driver will quickly learn to appreciate the wide windscreen design, and the cockpit with its large TFT instrument panel giving excellent brightness and contrast, providing the driver with crucial driving information, such as mileage, remaining energy, etc. The centre console is well layed-out for ease of operation. The front windshield covers two thirds of the frontal facial, providing excellent front vision. The height of driver's seat can be adjusted automatically, making it easier for an ideal driving position. Additionally, tranquil and independent climate control systems enhance the driver's comfort.

With BYD's in-house developed Keyless system, the bus can be started and stopped by just one press on the "POWER" button.





## Passenger Compartment

The bus exterior design conveys modern styling. The interior boasts an air of quality with durable seating for passengers. An engineered sound insulation system keeps the ride whispering quiet and provides a pleasant passenger experience.

All aspects have been designed to maximize the passenger comfort. The low entrance and low floor ensure quick and efficient boarding and exiting, even for wheelchair users and those with impaired mobility.

**Wheelchair Ramp:** The physically challenged passengers and infant strollers can get on and off the bus conveniently and easily. An electrically operated ramp is optional.

**Wheelchair Area:** The wheelchair can be placed securely on the bus with safety harness device.



## It's a new level of technical innovation

### BYD Fe Battery

BYD is the first enterprise in the world to fully commercialize the Fe battery (Lithium-iron phosphate battery). All BYD electric vehicles, including cars, buses, forklifts and in the future, trucks, are powered by the Fe battery which offers multiple advantages.

### High Stability and Safety

The Fe battery applied in BYD ebus has passed numerous tests, including crash, nail perforation, burning, squeezing, etc.

### UL Approval

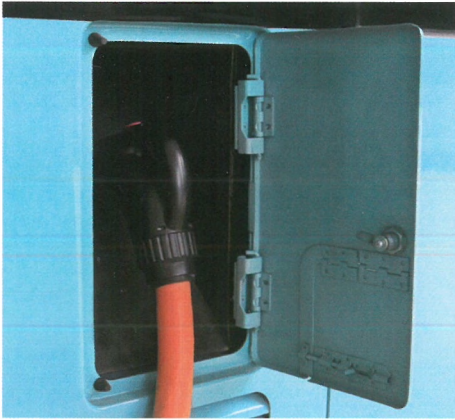
The single cell of the BYD Fe battery has obtained UL Approval, making BYD one of the few companies in the world to obtain approval in this area. BYD also jointly formulated some of the standards with UL (Underwriter Laboratories Inc.).

### Long Service Life

Under normal conditions, BYD's Fe battery can be fully charged and discharged for more than 4,000 cycles, and still retains over 75% of its capacity with no memory effect.

### Environment-friendly

The Fe battery contains no heavy metals or toxic electrolytes with no pollution and emissions during production. Also, waste batteries can be recycled with minimal environmental impact.



## Electric Powertrain System

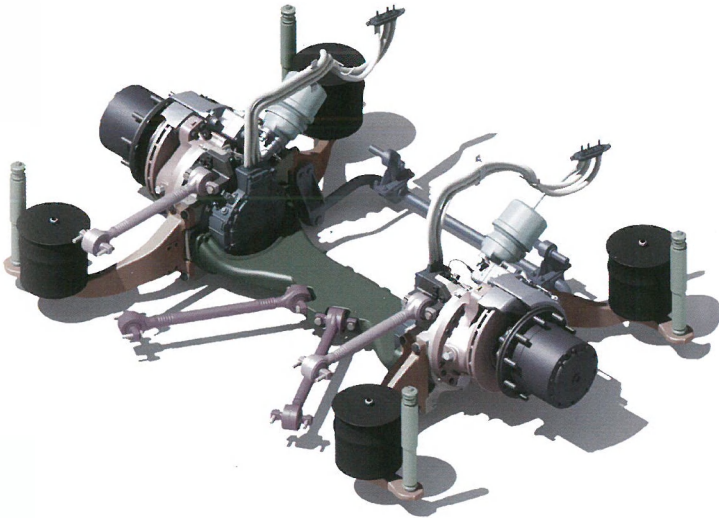
The in-house developed motor controller with integrated on-board charger controls the functions of battery and motor, allowing the driving motor to run in reverse when required. The distributed Battery Management System consists of the signal collector and controller, which can inspect every cell's working status. Other controllers include the HV distribution box, DC-DC converter, inverter, and the BCM.

## Regenerative Braking System

BYD ebus features a Regenerative Braking System. The kinetic energy of the traditional combustion engine vehicle is converted to heat and dissipated during decelerating and downhill braking. However, the BYD system converts part of the kinetic energy into electricity and stores it in the battery to give additional driving range. The vehicle range can be increased accordingly with lower noise by adopting such a regenerative system.

## Wheel-hub Motor

The in-house developed rear drive axle installed on the BYD ebus is the core technology in BYD's electric buses. The rear drive axle system integrates the wheel-hub drive and regenerative braking technologies, and at the same time, provides exceptional passenger comfort.



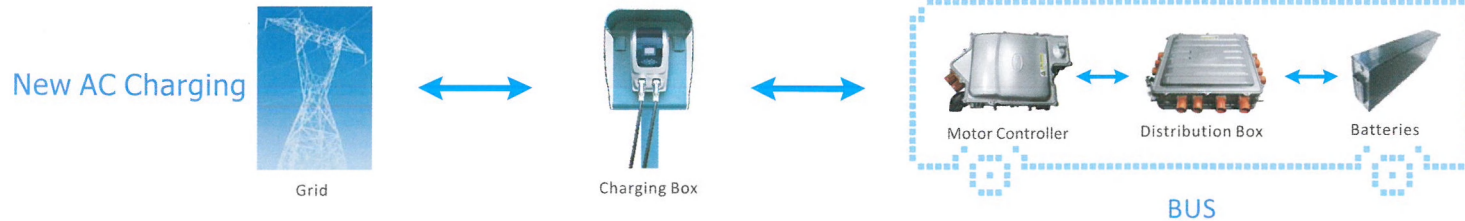
<b>Motor type</b>	<b>Permanent magnet synchronous motor</b>
Max. Power	90 (kW) X 2
Max. Torque	350 (N.m) X 2
Rotation Speed	0~7500 (rpm)
Rated Operational Voltage	540 (V)
Speed Ratio	17.7 (top speed: 70km/h)
Cooling Type	Water-cooling

# AC On-board Charging System

The BYD AC on-board charging system is a newly developed technology for electric bus.

The cost and space occupation are much less than the off-board DC system and the AC on-board charging system is also easier to operate.

Additionally, BYD ebus can be fully charged in 5 hours with 60kW power. Furthermore, off-peak hour charging is even more economical.



## Technical Index of AC Charging System

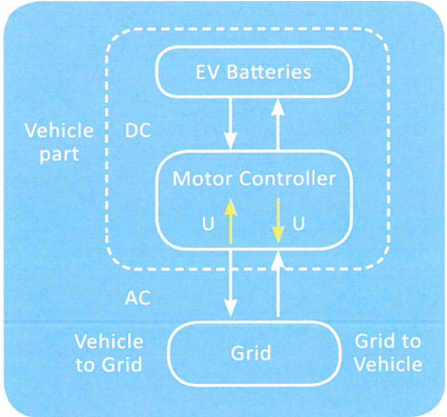
Electric	Rated Input Voltage	3 ∅ 400Vac±10%
	Output Voltage	400V ac
	Max. Output Power	80kW
	Output Connector	IEC62196 standard 7PIN connector
	Charging Time	5h
Safety	Protection Function	Short circuit protection
		Leakage protection
		Over-temperature protection
		Lightning protection

# Bi-directional Charging and Discharging Technology

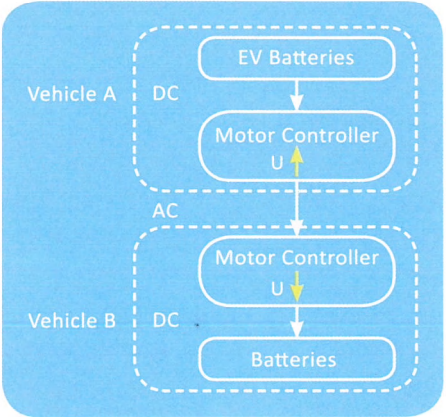
The Bi-directional Charging and Discharging technology is a world-class and revolutionary development, which makes the electric vehicle independent of any specialized charging stations. The electric vehicle itself can function as a mobile power storage station. This Bi-directional technology will transform the way people usually charge their electric vehicles, a significant boost to the electric vehicle.

The essence of this technology lies in the fact that BYD successfully integrates the functions of the driving motor, in-car charger and DC charging station, and is capable of converting the AC power from the grid to DC to charge the vehicle battery, and vice versa in discharging. All functions are achieved through the processor based motor controller.

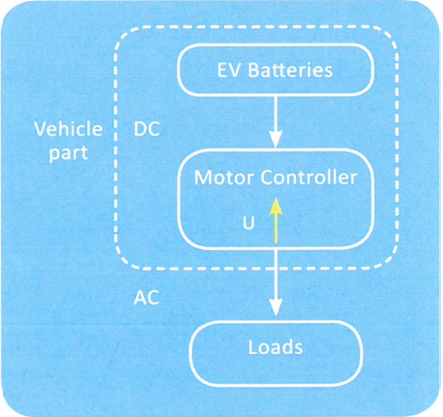
### Vehicle to Grid



### Vehicle to Vehicle



### Vehicle to Loads



## Save money and the environment

### Reduced Operational Cost

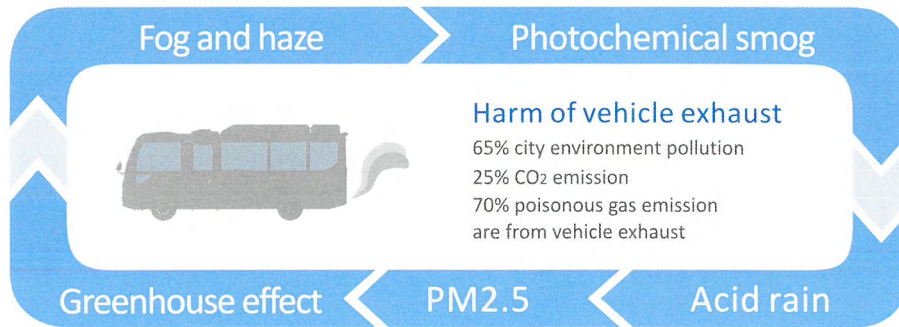
Compared with conventional bus, each BYD ebus saves more than EUR 23,000 per year.

Daily range	250km	Conventional Bus	BYD ebus
Annual availability	353 days		
Life cycle	8 years		
Energy Consumption /100km		40L	130kWh
Energy Price(EUR)		0.92/L	0.08/kWh
Cost/100km(EUR)		36.8	10.4
Annual cost(EUR)		32,476	9,178
Total cost(EUR)		259,808	73,424

Note: The price mentioned in the program refers to the current rough diesel and electricity price in Shenzhen, China.  
(August, 2013; Exchange rate: 1:8)

## Environmental Performance


It is BYD's mission to reduce vehicle emissions for a greener future.



## Emission Reduction of a single BYD ebus

Time period	CO <sub>2</sub> emission(ton)	Equivalent to trees planted	Pollutants (CO, HC, N <sub>x</sub> O <sub>x</sub> ) (kg)
One day	0.27	0.15	5.8
One month	8	4.3	167
One year	95	52	2000
Eight years	760	416	16000

Compared with conventional buses, one BYD ebus can save 42,360 liters of fossil fuel and reduce 95 tons of CO<sub>2</sub> emissions in just one year.

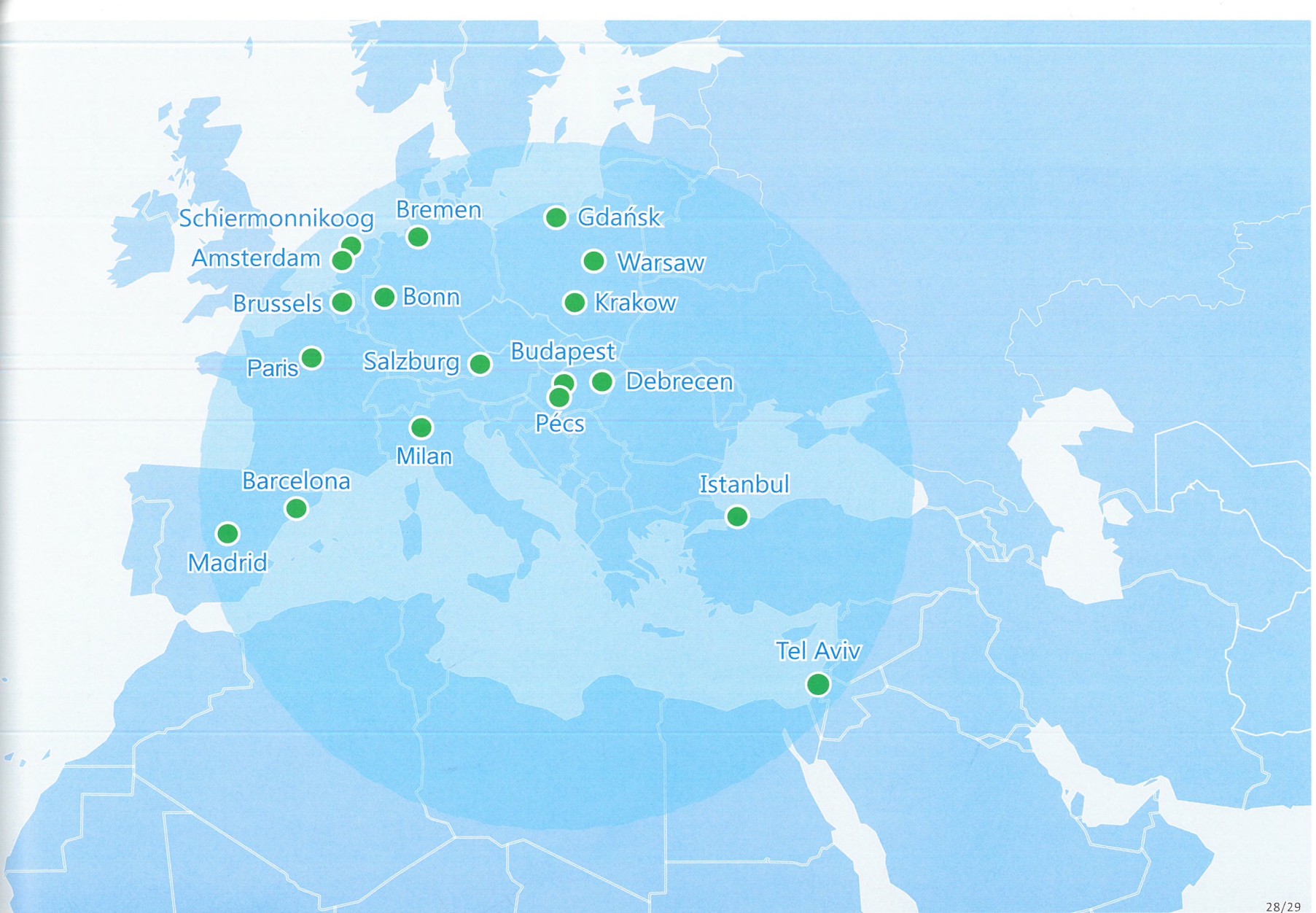


## BYD: your reliable electric bus supplier

BYD is one of the world leading electric bus suppliers. The driving range available from the BYD ebus is better than any other comparable buses.

BYD has already undertaken test-trials in major cities such as Shenzhen, Beijing, Hongkong in China, Madrid, Barcelona, Budapest and Salzburg in Europe, and Los Angeles, California, Bogotá in the Americas.

Each city received BYD electric buses to conduct their own parameter of tests on operational cost-effectiveness and return on investment in the new technology. The encouraging test data and financial figures demonstrate the outstanding reliability and efficiency of BYD's unique electric system.

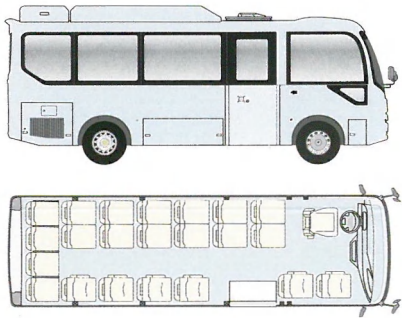




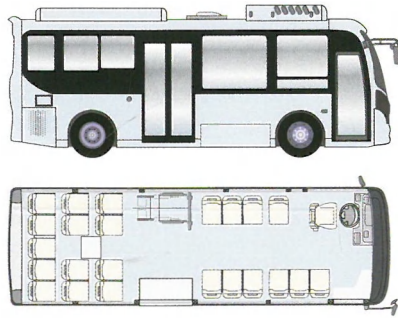
## BYD electric bus models

BYD is a major international industrial and manufacturing company. In Europe, BYD has already demonstrated several kinds of electric buses and in the near future, BYD intends to introduce a full spectrum of electrified mini, midi, double-deck and articulated buses and BRT solutions.

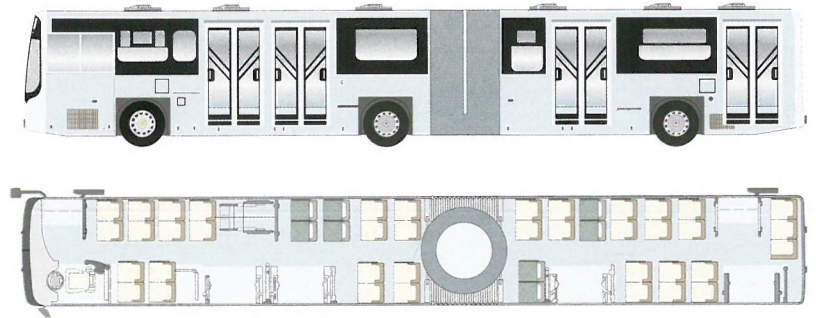
7 meters



8 meters



18 meters



## BYD ebus specifications

### 12 meters

#### Dimensions & Weight

L / W / H	mm	12000x2550x3360 (3150 without roof battery)
Wheel Base	mm	5950
Turning Radius	m	≤12
Tyre		275/70 R22.5
Approach/Departure Angle		7° / 7°
Body Material		Aluminum

#### Performance

Electric Motor	Permanent Magnet Synchronous AC motor (Integrated in Rear Axle)		
Top Speed	km/h	70	
Motor Max. Power	kW	90×2	
Motor Max. Torque	N.m	350×2	

#### Range

Urban Range (\*)      km      ≥250

#### Power Battery

Battery Type	Fe battery	
Battery Capacity	Ah	600
Battery Energy	kWh	324

#### Recharge System

Charging Power	kW	30×2
Charging Time	h	5

- Actual EV range might vary due to different driving conditions.
- All parameters above are for information purpose only and are subject to change.

## 8 meters

Key Items	Unit	Parameters
L / W/ H	mm	8060x2400x3190
Wheel Base	mm	4420
F/R Overhang	mm	1915/1725
Ground Clearance	mm	190
Approach/Departure Angle	°	8/10
Static Roll Inclination Angle	°	≥33
Turning Circle	m	≤8.5
Curb Weight	kg	8300
Door		1-2 (inward)
Clear Width of the Door	mm	650/930
Tyre		Michelin 255/70R22.5
Top Speed	km/h	70

## 7 meters

Key Items	Unit	Parameters
L / W/ H	mm	7005×2040×2650 (2890 with sunroof)
Wheel Base	mm	3935
F/R Overhang	mm	1290/1780
Range	km	≥190
Charging Time	h	2

Key Items	Unit	Parameters
0~50km/h Acceleration Time	s	≤15
Gradeability		≥20%
Battery		BYD Fe battery
Battery Energy	kWh	165
Range	km	≥180
Charging Power	kW	30×2
Charging Time	h	2
Drive Model		Wheel-hub motor driving
Electric Motor Model		Wheel-hub motor, permanent magnet synchronous motor
Motor max. Power	kW	150×2
Motor max. Torque	N·m	550×2
Motor max. Rotational Speed	rpm	10000

## 18 meters

Key Items	Unit	Parameters
L / W/ H	mm	18000×2500×3300
Wheel Base	mm	5650+6690
F/R Overhang	mm	2710/2950
Range	km	≥230
Charging Time	h	2.5



BYD electric bus for the future. Future is now.

**BYD Europe B.V.**

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