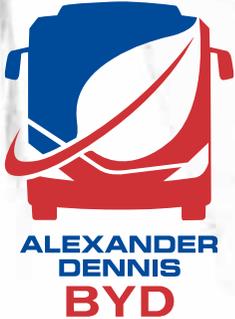




# ENVIRO<sup>200</sup> EV

PURE ELECTRIC. ZERO EMISSIONS



# PURE VISION

*The age of pure electric power has arrived*

**Cleaner cities. Quieter streets. Zero emissions. Lower operating costs.**  
**The benefits of the BYD ADL Enviro200EV are clear.**

The Enviro200EV brings together the proven battery and electric technology of BYD and the outstanding design and build expertise of Alexander Dennis Limited (ADL). BYD is one of the world's leading manufacturers of all-electric buses having produced around 30,000. ADL is the UK market leader and one of the world's fastest growing specialists in designing and building buses that meet the demands of modern operators.

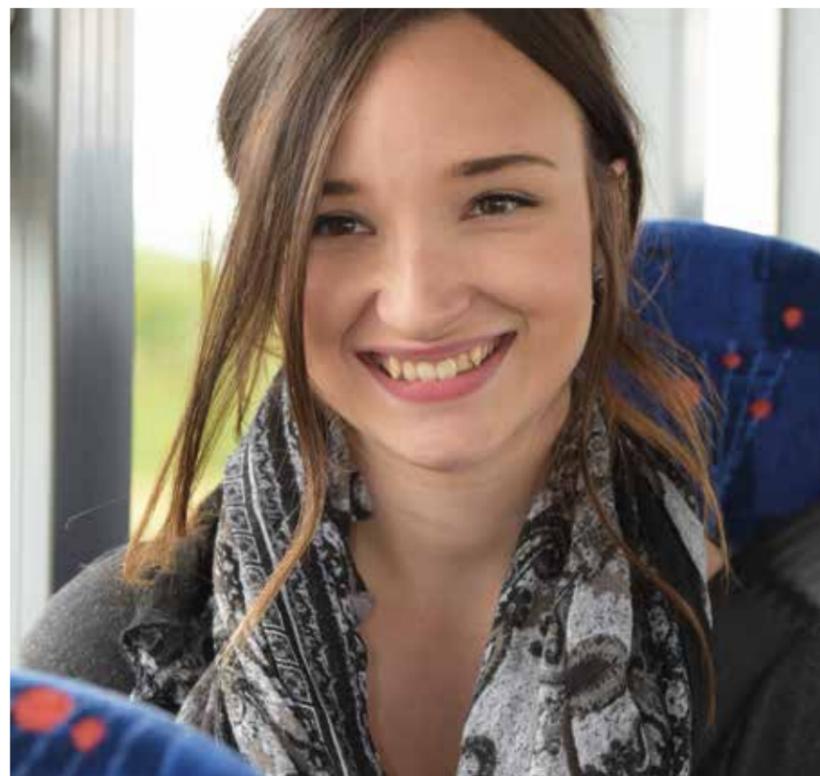
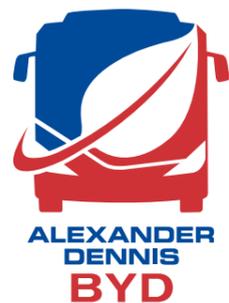
## World-leading technology

The Enviro200EV pure electric bus may be the shape of the future, but it's grounded solidly in meeting the needs of today's operators.

The battery technology at the heart of the Enviro200EV is already well established through millions of miles of passenger-carrying service around the globe and is already delivering significantly lower cost of operation. Add the proven design and build track record of ADL into the mix and you have a world-class bus that's ready to go into service now.

The infrastructure required to maintain the vehicle, such as charging points, can be supplied by BYD and is easily deployable and more than flexible enough to comply with relevant building and planning regulations.

The new age of urban transport is here.



## The Benefits

- » Proven drivetrain
- » Zero emissions powertrain improves air quality
- » Reduced noise levels
- » Smoother ride for passengers and driver
- » Significant reduction in fuel costs
- » Rapid charging at easily installed charging stations
- » Easily manoeuvrable
- » High standards of passenger comfort
- » ADL quality British build
- » BYD Iron-phosphate battery technology provides higher safety

# PURE LIVING

*A cleaner future for our cities*

**The Enviro200EV is the future of urban transport. Cleaner air and lower noise levels - both inside and out - open up opportunities never dreamed of before.**

City streets free from fumes and pollution. City centres where you can hear yourself talk. A more relaxed, healthier, cleaner life for us all.

But there's more to this quiet revolution than the social and environmental benefits.

Think about what a low-noise bus means when it comes to running night services that won't disturb anyone's sleep. Think about opening routes through quiet zones and streets which, previously, would be off limits to noisy and polluting buses.

Think about a better quality of life that's all made possible by the Enviro200EV.



## Zero Emissions

Pure electric means no more kerbside CO<sub>2</sub>, NO<sub>x</sub> particulate pollution, helping improve air quality in urban areas.



## Reduced Operating Cost

The cost of electricity to operate the BYD ADL Enviro200EV is approximately a third of the price of diesel fuel. It does not only save the environment, but also reduces your operating costs by charging at night on low rate electricity.



## Quiet Comfort

Because the Enviro200EV is a zero emissions vehicle it has no diesel engine noise, delivering an extremely quiet experience both for passengers and other road users.



# PURE PLEASURE

*A better way to travel*

**One of the attractions of the all-electric, zero-emissions Enviro200EV is the fact that acceleration is seamless.**

No gear changes mean a gentle, smooth and quiet experience that all passengers will love. Better still, the Enviro200EV retains all the class-leading features of ADL's proven and successful Enviro200 midi-bus, including excellent low-floor access, spacious interior, large windows, and LED lighting.

It all adds up to a superior ride, building on ADL's world of experience in designing and manufacturing exceptional buses and incorporating BYD's cleaner, quieter electric powertrain and industry leading battery technology. Unlike their competitors, the BYD batteries allow full operation of an average urban daily shift without recharging being necessary.



*Quiet, safe, comfortable ride.*

*No gear changes.  
Just a smooth, quiet  
and relaxed experience*



### Welcoming Environment

Spacious low floor access, bright and airy interior with large windows and LED lighting. A sophisticated temperature control system and hopper windows provide an enhanced passenger experience.



### Street Appeal

Class leading styling inside and out gives the new Enviro200EV unrivalled street presence.

### Easy Access

Low entry, wide doors, a broad gangway and a flat floor coupled with ample space for buggies and wheelchair users.



### Quiet, Comfortable and Smooth Ride

Comfortable seating with no compromise on leg room – capacity for up to 90 passengers, who can expect a gentle and peaceful ride thanks to an electric drive free from engine noise and delivering its power smoothly.

# PURE PERFORMANCE

*An environmentally-friendly bus designed to deliver reduced operating costs*

**BYD's development approach is integral to their global electric bus leadership with 30,000 buses produced.**

Operating costs are lower, thanks to a significant reduction in fuel costs.

By working with ADL, these benefits have been built into a bus that is a joy to travel in and a dream to drive. The driver's environment is extremely comfortable, it's a world-class ergonomic workspace that offers superior visibility. Better still, the quieter operating environment reduces stress, while improving bus operators' bottom line.

### Operational benefits at a glance

- » Zero emissions powertrain combined with electric accessories, electric cooling and light body weight offer significant reduction in fuel costs
- » Efficient, rapid charging within 4hrs for maximum productivity and minimum downtime delivering an outstanding 18hrs service on a single charge
- » Regenerative Braking System converts part of the kinetic energy into electricity and stores it in the battery to give additional driving range
- » ADL lightweight aluminium body structure reduces kerb weight, improves power and controls performance

### Wheel-hub Motor Assembly

The rear drive axle system, developed by BYD, integrates the wheel-hub drive and regenerative braking technologies, and at the same time, provides exceptional passenger comfort.



### Electric Powertrain System

Integrated onboard charger controls the functions of the battery and motor allowing the driving motor to run in reverse when required. The 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 body control module.



### Regenerative Braking System

The Enviro200EV features a Regenerative Braking System, which converts part of the kinetic energy into electricity and stores it in the battery to give additional driving range.

SINGLE CHARGE

18hrs

SERVICE

### Low Cost, Rapid Charging

The BYD charger is small and easy to install. As it doesn't require a special station, it can be easily placed in a depot using just 80kW AC of charging power.



### Driver Comfort

The driver's area is spacious offering excellent panoramic vision with well positioned mirrors, featuring easy access to all controls in an ergonomically designed driving environment.



### Front and Rear Suspension

State-of-the-art suspension for improved ride comfort, reduced costs and greater reliability.



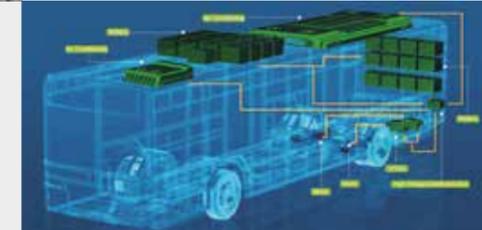
### QRG – Quick Release Glass

ADL's optional patented QRG system reduces window replacement time and can be done by one person alone.



### Simple Maintenance

Expansive doors and panels provide direct access to key components, for efficient servicing and repairs.

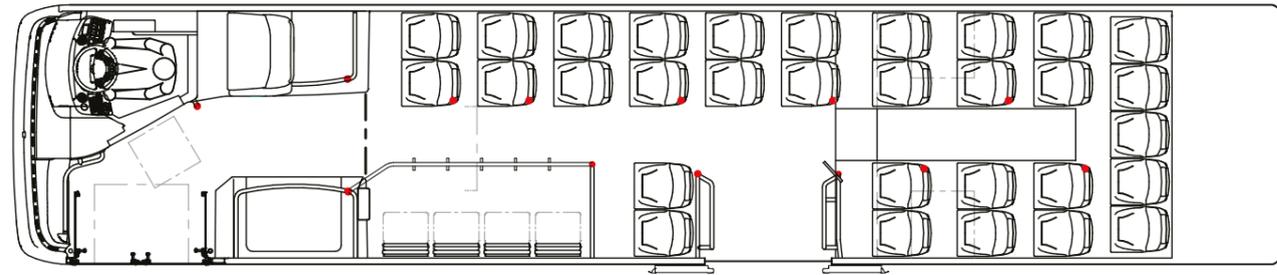


### The Power at the Heart of the Enviro200EV

BYD is the first company in the world to make full commercial use of Iron-Phosphate batteries.

- **Environmentally-friendly:** BYD batteries don't include any electrolytes or heavy metals. No emissions or pollution are caused during production. Waste batteries can be recycled with minimal environmental impact.
- **Long service life:** Even after 10 years continuous operation and recharging, BYD batteries retain 75% of their charge.
- **Stable and safe:** BYD's batteries have passed rigorous tests for safety, including crash, impact, fire and penetration by sharp objects.

# ENVIRO<sup>200</sup>EV



12m layout shown.  
10.8m variant also available.

## Chassis Specification

### 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 Battery Management System consists of the signal collector and controller, which can inspect every cell's working status. Other controllers include the high voltage distribution box, direct current-direct current converter, vehicle to grid, and the body control module.

### Motor Features

Two wheel-hub motor.  
Max. power – 90 kW.  
Torque - 350 Nm @ 7500 rpm.  
Water-cooling system.  
Retarder gear ratio - 17.7.

### Front Axle

ZF RL85A deep drop beam axle. Capacity 8500 kg.  
Lock angle 55°.

### Rear Axle

BYD-EQ13. Capacity 13000 kg.

### Suspension

Full air suspension mounted within chassis frame floor contours eliminating component intrusion into passenger saloon areas.  
Front: Two 310 mm (12.2") air springs. Multilink location.

Anti-roll bar and two double-acting dampers.

Rear: Four 325 mm (12.8") air springs. Multilink location.  
Anti-roll bar and four double-acting dampers.

Features: Electronically Controlled Air Suspension (ECAS).  
Full Kneeling and fast-kneel facility on front suspension reducing height from 339 mm to 255 mm.

### Steering Gear

ZF 8098 integrally powered, variable ratio steering gear.  
457 mm two-spoke steering wheel.

Telescopic steering column and binnacle automatic interlocked with the handbrake for safety.

### Frame

High-strength steel.  
Bolted modular platform.  
Rectangle frame section is 120 mm x 60 mm x 6 mm thick.

### Braking System

The E200EV 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 system converts part of the kinetic energy into electricity and stores it in the battery to give additional driving range.

### Wheels and Tyres

Tyres: 275/70R22.5 X Incity Michelin tubeless radial.  
Wheels: 8.25" x R22.5" Aluminum.

### Cooling System

Rear mounted offside side-by-side cooling pack incorporating intercooler with electronically controlled hydraulic fan drive.  
Separate coolant header tank located in rear compartment.

### Electrical Equipment

24 volt, single pole negative earth.  
2 x 12 volt heavy duty maintenance-free batteries with 70 ampere-hour capacity. Mounted on slide-out carrier under driver's cab.  
Intelligent charging system. The start battery is charged automatically by the power battery when it is at low voltage.  
Integrated intelligent battery guard.  
Fast fuse and overvoltage protection.  
CAN Bus.  
Fleet management system.

### Instrumentation

Stylish instrument and control binnacle with all instruments clearly visible, incorporating ISO 16121 features and dimensions. Colour TFT screen displaying running data and intuitive On-Board Diagnostics.  
All electrical controls mounted forward of the driver for easy reach.  
Positive action, tactile rocker switches with LED illumination. Exterior lighting check function.

### Options

- Electronic water header tank level indicator.
- Driver's cab air-conditioning/saloon chilled air system.
- Hubodometer.
- Full vehicle squat.
- Ferry lift.

# PURE VERSATILITY

## Dimensions / Weight

LW/H	mm	12029 x 2470 x 3385	Boarding height	mm	339
Wheelbase	mm	6,100	Approach/departure angle	°	7.5 / 7.0
Front/rear overhang	mm	2689/3240	Tyres	275/70R 19.5(GVW-18.6T)	
Turning radius	m	10	Interior headroom	mm	2470
Floor height	mm	381	G.V.W	kg	18,600
Doors	2		Passenger capacity*	90	
Clear door width	mm	ENT: 1163 ; EXIT:1030	Seats	Up to 36	

## Powertrain

Max. motor power	kW	90x2
Max. climb gradient	%	15

\*The passenger capacity may differ due to specifications.

## Body Specification

### Legislation

Our vehicles are designed and Type Approved as compliant with all relevant European Community legislation for the UK, with other country specific legislation available on request.

### Structure

The low weight body structure consists primarily of aluminium extrusions and shear panels with the addition of stainless steel in areas of higher stress ensuring a high body stiffness and durability whilst minimising the vehicle mass. All of the structural members are mechanically joined ensuring ease of repair following any form of collision damage.

The roof consists of single piece composite panels significantly increasing the body stiffness with a reduction in weight compared to conventional construction. Any risk of electrolytic corrosion between dissimilar metals is removed by the application of dielectric paint.

### Exterior Panels

Exterior aluminium side panels are flush fitting with the glazing units giving a very clean aesthetically pleasing appearance. Care has been taken to avoid protrusions including hinges and fixing heads to prevent build up of road dirt and to make cleaning easier. Panels at higher risk of damage from kerbs including side skirts and lower corner

mouldings are quickly and easily replaced. Corner mouldings are separate from the upper panels isolating potential damage and minimising replacement costs.

### Glazing

The vehicle has bonded glazing with hopper windows. ADL's patented Quick Release Glazing (QRG) system is also available as an option. Front and rear glass is bonded.

### Doors

The entrance is fitted with a twin leaf inward swing glider door with active seals for improved sealing performance. The optional exit door is fitted with a twin leaf sliding plug door providing a clear exit platform.  
Electric doors are fitted as standard.

### Interior Trim

The interior comprises of wipe-clean laminates for ease of cleaning which can be tailored and coloured to the operator's requirements and to match floor and seat colour schemes.

### Driver's Cab

A spacious, comfortable, quiet and ergonomically designed driver's cab giving excellent forward vision enhanced by the use of a curved windscreen is provided. The fully adjustable steering wheel and instrument binnacle ensures ease of reach to the operating switches. An integrated assault screen is available as an option.

### Flooring

All products offer low entry as standard with a floor constructed from treated 12 mm birch plywood and covered with a hard wearing floor system available in a wide range of colours and designs to suit the operator's requirements. The joints between vertical panels and the floor are radiused making cleaning much easier.

### Heating & Ventilation

The standard vehicle is supplied with a blown air heating system to the saloon. With forced air ventilation from the front dash, and powered extract from the rear of the saloon.  
The system is fitted with brushless motors and automatic temperature control.  
The vehicle structure is insulated with fire retardant sheet insulation. Air chill is available as an option.

### Destination Gear

Electronic LED destinations are offered as standard on all vehicles.  
Front, side and rear LED illuminated blinds are also available.

### Electrical System

The 24 volt electrical system is fully multiplexed, with hardware situated in easy-to-access locations.

Dedicated expansion locations and interfaces are provided for additional customer equipment.  
Bulkhead connections and modular wiring improve troubleshooting and ease of repair.  
Cleaning light switch provides timer controlled interior lighting.  
Driver's courtesy lighting provides well lit entry and exit.  
Continuous saloon lighting is provided by stylish LED strips as standard.  
LED lights are standard throughout the vehicle with the exception of the headlamps.

### Ramps

Both manual and powered ramps are available.



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