CHARIOT E-BUS FOR BETTER FUTURE

Chariot 12m Ultracapacitor e-bus

Chariot Motors

Sustainable, silent, and green Ultracapacitor e-buses...

...these are the features of innovative Chariot 12m Ultracapacitor (UC) electric buses whose mission is to:

- help make the future better for us all
- help make cities clean and green
- offer reliable zero emissions public transport
- offer high energy efficiency and quality

The Chariot Motors Company helps the transition to green public transportation by offering fully electric zero emissions non-polluting e-buses. We are helping to improve urban life and deliver better and sustainable future for us and our children.

Chariot UC e-buses mean clean, quiet, and greener cities. The future for urban transportation worldwide is electricity. Battery, hybrid, hydrogen, and ultracapacitor electric buses are the future of public transport. **Be part of this transition together with us!**

But why to choose ultracapacitor technology for your fleet? What are the technological advantages? Many decision makers find the transition from diesel to electric buses not an easy task. It is even more difficult to make the right decision on the most appropriate technology for a particular city, municipality or operator.

We at Chariot Motors know you might have doubts and questions. Our experts are here to help you with this transition.

We at the Chariot Motors Company have acquired deep experience in the electric bus market since company's incorporation in 2009. We have supplied over 150 electric buses to many European and Israeli cities.
Until January 2022 Chariot UC e-buses had covered more than 13 million kilometres and cut some 5 694 040 kg CO_2 and 3 235.25 kg NOx of harmful emissions.

Contact us to help you with the transition to sustainability:
info@chariot-electricbus.com


Chariot e bus

Why choose Chariot Ultracapacitor (UC) 12m fast charging e-buses?

The Chariot UC city e-buses feature Aowei's latest and most advanced technology. The buses are assembled in the Higer Bus Company's world leading facilities.

Chariot Motors 12-metre UC e-buses are low-floor city buses with 72 kWh Aowei Ultracapacitors. The electric vehicles comply with European homologation certifications: a strict EU market requirement, including the ECE R100 energy storage device standard. The e-buses are comfortable, air conditioned, low floored, equipped with wheelchair ramps and a stop request button plus audible signals for blind people. Amenities include double USB outlets by each seat, allowing passengers to charge mobiles.

Here are the main advantages of Chariot UC e-buses:

- 5-to-10-minute charges for the 72 kWh UC and a subsequent range of over 90 km under SORT conditions;
- no overnight charges. The previous day's last fast charge is enough to power the e-bus in the morning without any overnight charging;
- frequent charge/discharge cycles do not affect UC longevity;
- significantly less powerful charge infrastructure: cheaper and requiring smaller power source capacity;
- UCs have proven robust, environmentally friendly, and safer than batteries of similar power. They have no harmful or toxic components, present no pollution hazard, and have no hidden end-of-life disposal costs;
- UCs present no fire risk and retain performance in temperature extremes of - 40°C to 60°C;
- unsurpassed recuperation levels: UCs take extremely high charge current and offer exceptionally low power demand by the vehicle's power train;
- UC e-buses have the passenger capacity and autonomy of the traditional diesel buses. One of the major advantage is that there is no daily run limit: recharges at terminus stops does not take any longer than a quick break for the driver;
- Chariot e-buses come with full UC pack warranties of up to 10 years;
- Chariot UC e-buses may be delivered with two-pole charging or four pole fast charge equipment to European standards (bottom up and top down), making then compatible with any other electric bus using the same standards;
- power saving is a key feature of Chariot UC e-buses: energy consumption (traction only) is just 1.1 kWh/km: among the lowest operational e-bus indicators. The Chariot UC e-buses offer almost 98 percent operational availability.

Specifications of fast charging Ultracapacitor electric buses are:

A five to ten min single charge

Long capacitor life

Works down to -40 degrees

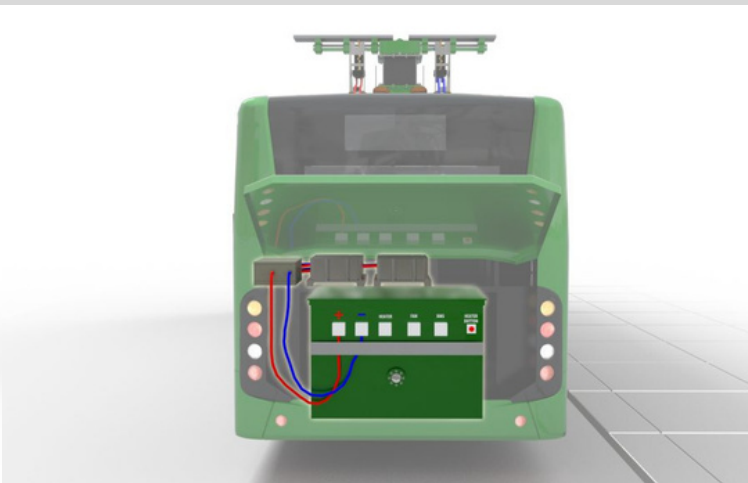
A long range of up to 90 km on a single charge

zero emission, green city environment

no CO_2 or NOx emissions

Here are some other advantages of Aowei UC technology:

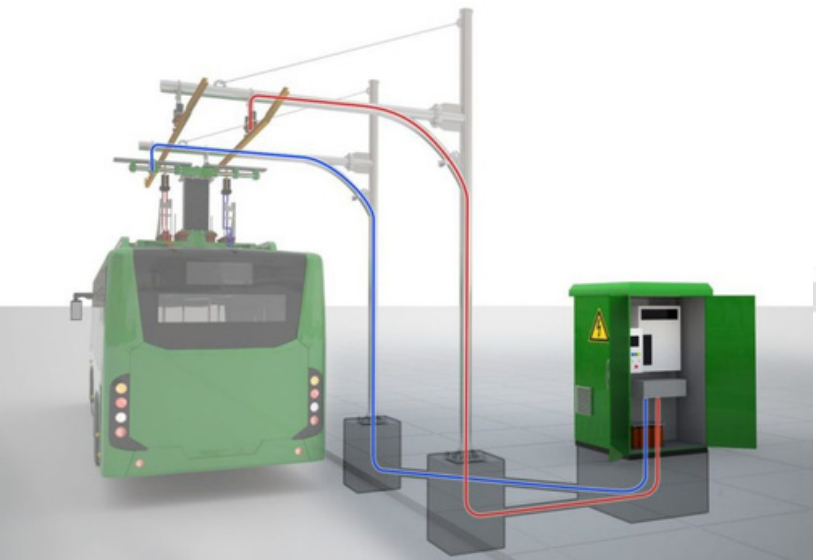
- 16 years' commercial operation in Europe, Israel, and Shanghai and over 85 million km of roadway, making it amongst the best tested and most mature energy storage technology in today's electric public transport vehicles;
- highly reliable UC energy storage: the usable state of charge can theoretically vary from 0% to 100%;
- long UC operational life: 50,000 to 100,000 cycles;
- great UC temperature tolerance allowing operation in extreme cold weather conditions;
- better UC cell heat management cuts overcharges and over discharges;
- though light and compact, UCs grant ranges of up to 90km per charge. Chariot e-buses have low curb weight and high passenger capacity, with plenty of space inside;
- UC e-buses are safe, with no danger of fire or explosion even in heavy use. UCs are within a safety cage to further cut any risk;
- the UC cells are clean containing no harmful or toxic substances;
- there is no need to balance the UC e-buses overnight;
- an intelligent onboard and remote UC Management System allows quick and efficient diagnosis and maintenance;
- high reliability gives UCs lifetime low operating and maintenance costs.



Chariot charging stations

Here are specifications of Chariot charging stations:

- offer controllable DC current charging cycles;
- have a controllable power system with a conventional frequency inverter (FI), rectifier (AC/DC converter), and programmable logic controller (PLC) to guide UC charging with current and voltage feedback;
- have integrated commutation equipment to serve the power aspect;
- have touchscreen human/machine interface (HMI) visualising charging law set parameters, currently measured process parameters, archived graphical log parameters, and archived alarm lists;
- have a built-in internet teleservice module (TSM) connected with the charging station for remote monitoring and control by PC, tablet, or smartphone;
- feature an integrated safety relay sensing when the cabinet doors are open or when the emergency switch is activated. Charging stations work automatically and restore automatically after power interruption.

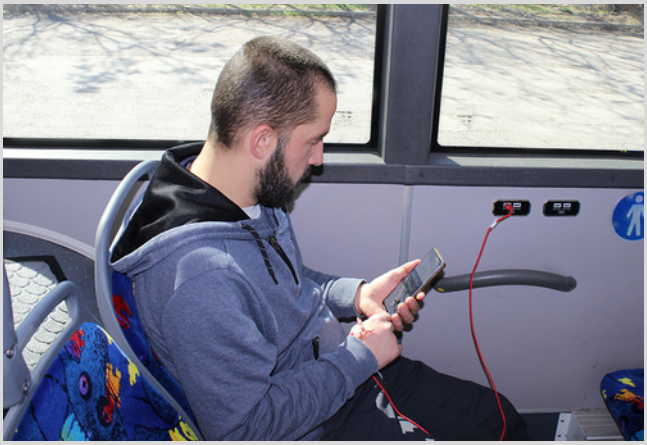


Chariot UC e-buses: high comfort and quality

The driver workstation

E-bus driver Rosen Tabakov of the Stolichen Electrotransport operator in Sofia is enthusiastic about comfort:
"The e-bus is silent, quiet, and comfortable. It stays warm in winter and airconditioned cool in summer. This makes the Chariot-Higer e-bus one of the summit innovations of e-transport technology...
Charging with the pantograph is ever so easy! It just takes about five to six minutes, and that's it!"

Here is how Sofianite M. Nikolov feels about Chariot UC e-bus comfort:
"The new Sofia electric buses are exceptionally quiet and comfortable. Seats are comfy, there's plenty of space in the cabin, the vehicles are nicely cooled in summer and cosy in winter. We're spoilt with USB ports to charge our smartphones and WiFi for online surfing. There's a ramp for wheelchairs and baby buggies. We Sofianites are proud and very happy that our public transport has such modern and smart buses, and moreover ones that don't emit any harmful emissions and help cut pollution in the city. "



Chariot UC e-buses: high comfort and quality

Here is what Stefano Brinchi, an ex President and CEO of Roma Mobilità said about the UC e-bus:
"The electric bus is liked by drivers and passengers, shows the survey for route No 64. The vehicle had electric motors whose power supply is not from batteries, but rather from ultracapacitors which get charged at a charging point at the terminal stop. Charging can take place during the driver's regular break, without affecting the schedule.
The survey results, emerging from some 200 interviews, show absolute satisfaction from the novel type of vehicle. Of drivers, 92.3 percent said they were pleased and very pleased. Visibility, comfort, ease of operation and overtaking performance were also rated highly by drivers. A high percentage
of them felt driving was more pleasant than traditional diesel buses.
As to passengers, 97.9 percent said they were very pleased and pleased with the comfort offered by the vehicle. Some 98.9 percent rated equipment functionality highly."

Here is what Dan Chairman Shmuel Rafaeli and CEO Ofer Zilbiger said about Chariot UC e-bus:
"With this electric bus, Dan is the bearer of glad tidings for Tel Aviv and Israel. The bus is the fulfilment of Dan's vision of rolling-over its entire bus fleet to electric power so as to boost the Gush Dan metropolitan region quality of life and environment."

Chariot e-bus quality

The Chariot Motors Company partners with two modern giants in world e-bus manufacture: **the Shanghai Aowei Technology Development Company**, developers of fast-charging capacitors, and **the Higer Bus Company**. Each leads its sector and has many years' experiences in electric mobility and sustainable urban transport. Our e-buses are assembled at the Higer Bus Company's world leading facilities. Our partners and suppliers are crucial to our success by delivering high quality-controlled products and services to our customers.

We source the major parts of Chariot e-buses from European suppliers, some of which are described herewith below:

Part	Brand	Part	Brand
Bus design	**Higer**	Heating system	**Spheros**
Dashboard	**ACTIA**	Climate system	**Valveo**
Drivers' seat	**ISRI**	Air suspension/brake support	**ZF**
Passenger's seat	**Ster**	Front – and rear axles	**ZF**
Braking system	**Wabco**	Electric motor	**Siemens**
Tires	**MICHELIN**	Electrical system	**Actia**
		UC system	**AOWEI**

Chariot e-buses on the map

Chariot Motors projects in Bulgaria

Pilot project in Sofia

Period: May 2014
Operator: Stolichen Elektrotransport
Fleet: 1 Chariot UC city e-bus

15 Electric buses in Sofia

Period: January 2020
Operator: Stolichen Elektrotransport
Fleet: 15 UC Chariot e-buses
Daily utilisation: 19 hours

30 Electric buses in Sofia

Period: October 2021
Operator: Stolichen Elektrotransport
Fleet: 30 UC Chariot-Higer e-buses
Daily utilisation: 19 hours

3 Electric buses in Gabrovo

Period: November 2020
Operator: Municipality of Gabrovo
Fleet: 3 UC Chariot e-buses
Daily utilisation: 19 hours

Chariot Motors projects in Serbia

5 Electric buses in Belgrade

Period: September 2016
Operator: GSP Beograd
Fleet: 5 UC Chariot e-buses
Daily utilisation: 15 hours

10 Electric buses in Belgrade

Period: January 2022
Operator: GSP Beograd
Fleet: 10 UC Chariot e-buses
Daily utilisation: 18 hours

Chariot Motors project in Israel

37 Electric buses in Tel Aviv

Period: September 2016
Operator: DAN
Fleet: 37 UC Chariot e-buses
Daily utilisation: 14 hours

Chariot Motors projects in Italy

Pilot project in La Spezia

Period: April 2018
Operator: ATC Esercizio
Fleet: 1 UC city e-bus

Pilot project in Turin

Period: February 2021
Operator: GTT
Fleet: 1 UC city e-bus

Pilot project in Rome

Period: October 2021
Operator: ATAC
Fleet: 1 UC city e-bus

Chariot Motors pilot project in Austria

Pilot project in Graz

Period: April 2017
Operator: Graz Linien
Fleet: 2 UC city e-buses

Chariot Motors pilot project in North Macedonia

Pilot project in Skopje

Period: March 2018
Operator: JSP Skopje
Fleet: 1 UC city e-bus

Chariot Motors pilot project in North Denmark

Pilot project in Aalborg

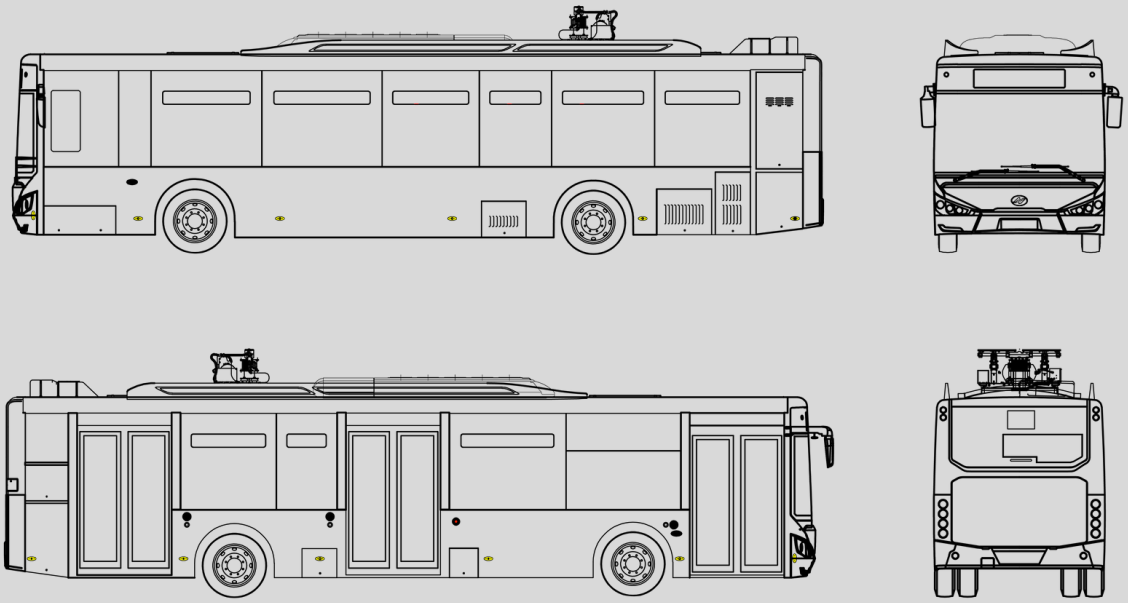
Period: June 2019
Operator: Municipality of Aalborg
Fleet: 1 UC city e-bus

Chariot UC 12m e-bus specifications

Chariot 12m UC e-bus	12m, 2-doors e-bus	12m, 3 doors e-bus
Body tape	Low entry (with low floor axle)	Low floor
Overall length	12,000 mm	12,000 mm
Overall width	2,530 mm	2,530 mm
Overall height	3,630 mm	3,630 mm
Wheelbase	5,900 mm	5,900 mm
Front overhang	2,700 mm	2,700 mm
Rear overhang	3,400 mm	3,400 mm
Interior height	2,500 mm	2,500 mm
Unloaded vehicle weight	12,800 kg	12,800 kg
Max. total weight	18,600 kg	18,600 kg
Passengers' capacity	90	90
Seat capacity	34 + 2 (foldable) + 1	30 + 2 (foldable) + 1
Energy storage system	40KWh Aowei Ultra-capacitor 720V1000F	40KWh Aowei Ultra-capacitor 720V1000F
Electric motor	Siemens 1DB2016-2NB06 (2500N·m)	Siemens 1DB2016-2NB06 (2500N·m)
Electric control system	Higer electric control system	Higer electric control system
Electrical system	Actia, CAN bus system	Actia, CAN bus system
Charging system	Aowei pantograph (650V, 200A) + EU standards gun charging	Aowei pantograph (650V, 200A) + EU standards gun charging
Front axle	ZF 82EC	ZF 82EC
Rear axle	ZF AV 132	ZF AV 132
Steering	Bosch 8098	Bosch 8098
Propeller shaft	Maintenance-free	Maintenance-free
Brakes	Disc brake, Wabco EBS, ABS and ASR	Disc brake, Wabco EBS, ABS and ASR
Auxiliary brake	Electric energy recycle system	Electric energy recycle system
Suspension levelling system	ECAS II with kneeling function	ECAS II with kneeling function
Air-conditioning	Separate climate control system for driver and passengers; Full Spheros one touch climate control system	Separate climate control system for driver and passengers; Full Spheros one touch climate control system
Passenger compartment heating system	Heating pump; Spheros electric heater	Heating pump; Spheros electric heater
Auxiliary heating system	Electric defroster	Electric defroster
Ventilation system	Valeo transparent roof hatches, and Electrical dual-function fans	Valeo transparent roof hatches, and Electrical dual-function fans

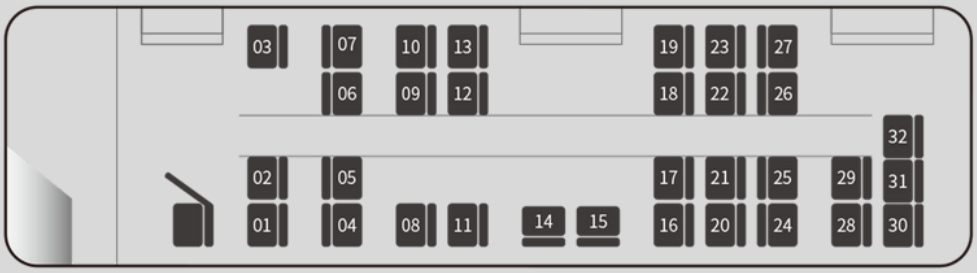
Chariot UC 12m e-bus technical information

Exterior



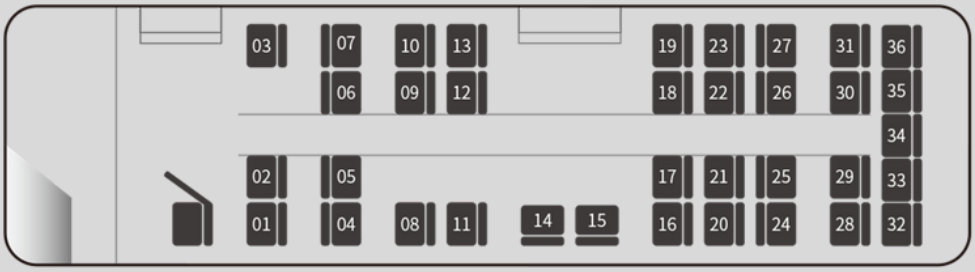
Seating

Chariot 12m UC e-bus, 3 doors, total number of seats 30, 2 foldable



30+2 (foldable) +1

Chariot 12m UC e-bus, 2 doors, total number of seats 34, 2 foldable



34+2(foldable)+1

We are here to help your transition to sustainable public transport!

Find more information on: www.chariot-electricbus.com
Contact us via e-mail: info@chariot-electricbus.com

All images, tables, and specifications are Chariot Motors Company releases.

Some features, applications, and services may vary.