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INNOVATION LEADS THE FUTURE

YUTONG NEW MODELS DUAL-POWERED TROLLEYBUS





WHO WE ARE

WORLD'S MAJOR BUS AND COACH SUPPLIER
GLOBAL TOP-SELLING BUS BRAND

- 4 manufacturing bases
- Total plant area > 3.59 million m²
- Max. daily production capacity > 445 units
- Max. daily production capacity of new energy bus > 375 units
- 5m-18m full product lineup, incl. city buses, coaches, commuters, school buses, special vehicles, etc.
- Successful promotion of new energy bus products in over 300 cities with accumulated sales volume exceeded 130,000 units

OUR MISSION

CREATE GREATER VALUE FOR
CUSTOMERS, BRING GOOD TRAVEL
EXPERIENCE FOR PUBLIC

- Save 58,919L fuel per year
- Reduce 9,290t NO (nitric oxide) emission per year
- Reduce over 1,600,000t carbon emission per year
- Reduce 193t PM2.5 emission per year

YUTONG

Yutong has constructed 2.5KM test network that is equipped with the fast charging technology for dual-powered trolleybus, and designed 2 kinds of input schemes: voltage adjustable rectifier substation + power supply simulation system, supporting function test and performance validation of dual-powered trolleybus on grid and off grid.

68 Yutong dual-powered trolleybuses (40 units 18m and 28 units 12m) were put into operation in Shanghai. Since the operation, the buses were safe and stable, efficient and environmental protection, so that, they were praised by all walks of life.

Yutong won the bid of 130 dual-powered trolleybuses (80 units 12m, 50 units 18m) in Mexico again.

2014

2017

2020

2010

2015

2019

Yutong cooperated with Guangzhou Trolleybus Company to develop dual-powered trolleybus with off-grid driving function.

Yutong undertook the China National Science and Technology Support Program of "Development and Industrialization of dual-powered Quick Charging Full Electric Bus", and developed selfmade trolleybus system on the basis of high voltage isolation technology and full electric bus common platform. At the same year, 35-unit 12m dual-powered trolleybuses were sold to Dalian City, Liaoning Province, China.

The first overseas order of Yutong dual-powered trolleybuses: 63 units 12m dual-powered trolleybuses were exported to Mexico. This was the first time in 22 years that Mexico replaced trolleybuses.





START A NEW MILEAGE OF TROLLEYBUSES

On grid or off grid, flexible at will.

Zero emission, high efficiency, green and energy-efficient.

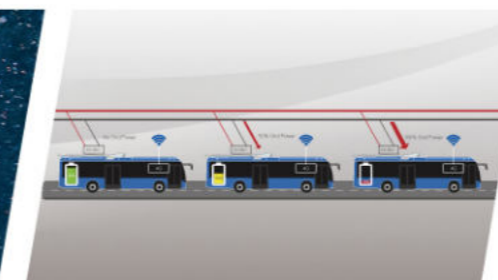
New performance, pursue the reminiscence.

Yutong dual-powered trolleybus isolates wire network from vehicle high voltage system physically, significantly improving bus safety. Also, its protection level and power density are superior to competitors in market.

Boosts urban public transport development with green energy resource, and assists users fully reusing the old power grid to resume reminiscence on trolleybus.

BREAK THROUGH LIMIT, OPERATE WITHOUT WORRY

Yutong dual-powered trolleybus is powered by power grid when on grid. At the same time, traction battery is charged. So that, it not only gets rid of driving mileage, but also, improves motility. It provides possibility that customer can operate better.



INTELLIGENT MANAGEMENT, QUALITY BREAKTHROUGH

Intelligent DC/DC converter +IPMS (intelligent energy management system) realizes intelligent management and dynamic distribution of grid energy.



SMALL SIZE, BIG CAPACITY

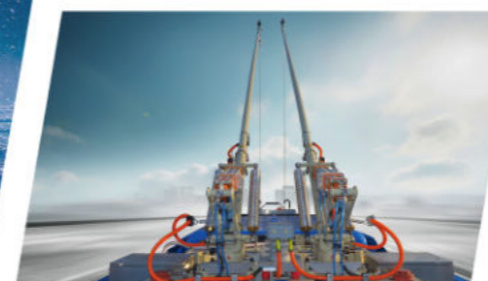
Adopt HED battery pack. More energy can be stored at the same weight.

(The mileage with off-grid is related to the battery capacity.)



MULTIPLE MEASURES, LESS ENERGY CONSUMPTION

Adopt whole vehicle integrated energy management algorithm, braking energy recovery technology, accessory electric upgrade and whole vehicle lightweight technology to ensure whole vehicle low energy consumption.



AUTOMATION, HIGH MOBILITY

Trolley pole rises, lowers and captures grid automatically. Driver drives free of worry, and vehicle runs flexibly.



ANTI-INTERFERENCE, HIGHLY ADAPTIVE

The reactor suppresses the abnormal interference and fluctuation of the line network voltage, reduces the impact of the line network voltage on the high-voltage system of the vehicle, and improves the adaptability of the vehicle to different power supply line networks.



TOP PROTECTION, SAFER DRIVING

Adopts high voltage isolation type trolleybus system structure, and shares the same platform with Yutong full electric vehicle. It is equipped with Yutong new energy cutting-edge technology "ReCtrl" and follows Yutong 3S⁺ safety standards, realizing the highest protection level in the industry (IP68) and meeting requirements of Euro standards. Driving safety is ensured comprehensively.

Isolated DCDC power supply

Realize the physical isolation between wire network and vehicle high voltage system, improving vehicle safety greatly.



Highly reliable water cooled motor

Highly reliable electric driven chassis, equipped with water cooled motor and share platform with full electric bus, which has been fully verified by the market and proved to be safe and reliable.



Integrated motor controller

With integrated design, high-voltage node and volume are reduced by 59%, making the bus safer and more reliable.



INTELLIGENT SAFETY TECHNOLOGY

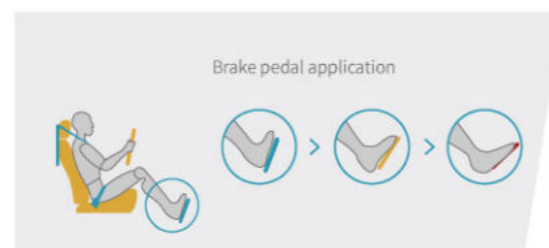
Collision pre-warning and collision mitigation control system

- Vehicle collision pre-warning
Intelligent recognition on lanes, pedestrians and vehicles to avoid potential danger.
- Forward collision warning system
Actively recognize pedestrians and vehicles within 80m ahead, and warn if there is a potential collision within 2.7s.



Brake safety system

- Operation auxiliary brake system
After a door is opened, the bus enters parking brake status automatically to prevent slipping and ensure the safety of passengers.
- Brake hold system
Hand brake operates automatically when the bus stops. Driver handbrake operation is reduced by 80%, and starting frequency of air compressor is reduced by about 20%.
- Hill start assist system (HSA)
HSA is applied or released according to road slope information to increase bus starting stability.

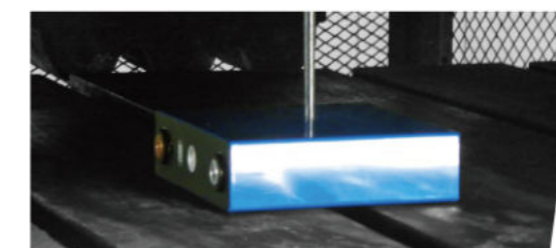


Fire-proof, water-proof and electric shock-proof

Improve safety of the bus when it drives in dusty areas or wades (≤ 0.3 m).

Liquid-cooling battery system

The battery has gone through multiple strict performance tests & verifications with 24 hours safety monitoring, to ensure the battery does not catch fire or explode.



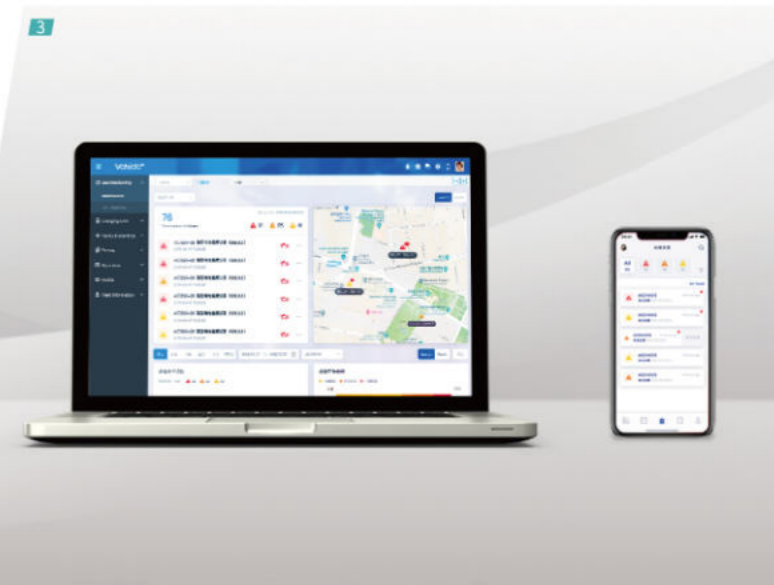
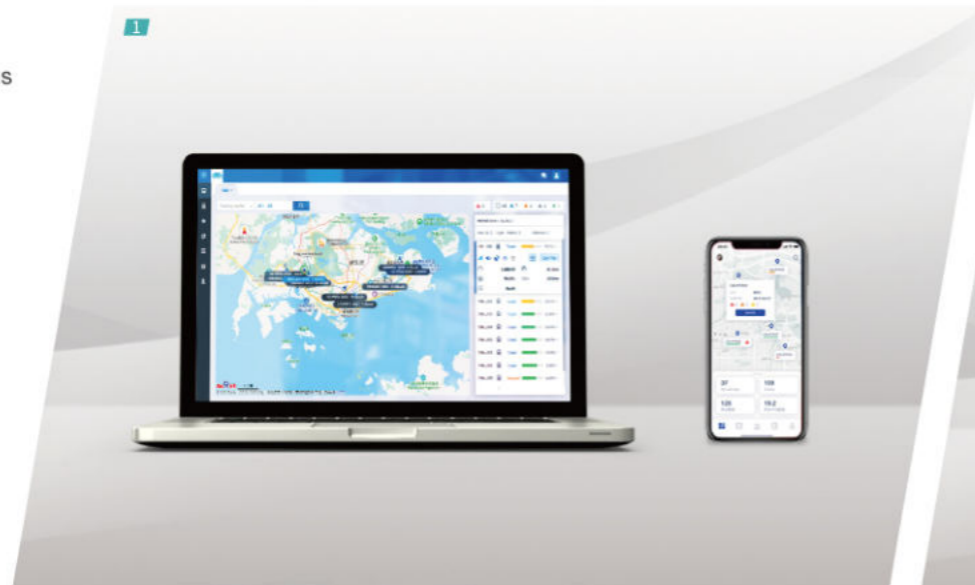
INTELLIGENT NETWORKING, MORE EFFICIENT OPERATION

Yutong vehicle networking is a technical innovation of "Vehicle+ Internet". By combining modern communications with networking technologies, close communication of information is established among vehicle, user, operator, driver and background to break space and time limits. So that, various intelligent services can be realized, operation efficiency is improved great and operation cost is reduced.



Information platform

- 1 Monitor vehicle position and status in real time.
- 2 Analyze vehicle operation data comprehensively to enhance safe and efficient operation.
- 3 Detect malfunctions in real time and alarm in advance, Protect driving safety throughout the whole journey.





NOVEL AND UNIQUE, MORE EYE-CATCHING STYLING

Yutong dual-powered trolleybus adopts medium-capacity styling design, appearance of the whole vehicle is simple and atmospheric expressing industrial aesthetic feeling, which arouse reminiscence on city trolleybus.



- 1** Sincere and simple, create industrial aesthetic feeling.
- 2** Majestic and powerful, express agility and stateliness.
- 3** Split rear light, light up colorful scenery.

ZK5120C



QUIET AND SMOOTH, MORE BEAUTIFUL TRAVEL

Adhering to riding space design concept of "People-Oriented" and on the basis of Yutong mature independent research and development capabilities, Yutong dual-powered trolleybus adopts a complete set of advanced solutions to improve vehicle riding comfort, bringing a wonderful and impressive traveling experience.



Ideal sitting posture, comfort support

Ergonomic seat design, safe and comfortable to sit.



Air suspension, as steady as on firm earth

Equipped with air suspension, drives steadily even on bumpy road.



Quiet space, peace journey

Super quiet design, 3 db lower compared to the traditional vehicle, making you enjoy quiet and comfortable space.

ZK5180C



COMFORTABLE AND EASY, EASIER TO DRIVE

Trolleybus driving standards is high and intensity is great. Yutong dual-powered trolleybus pays high attention to drivers' demands from a professional perspective in the field and combine cutting-edge technology with comfortable driving and control efficiency, so as to optimize the working environment, making driving Yutong bus become a pleasure.

1 Strong power, quick response

0-50km acceleration time is shorter than 15s and maximum gradeability reaches 17%. Drive with your intentions and travel without restraints.

2 Exclusive driving cabin, concentrative driving

Semi-enclosed design creates exclusive space to driver, benefiting concentrative driving, so that driving is safer.

3 Airbag seat, vibration reduction and comfort

- Double armrests, with pneumatic raising and lowering, backrest massage, ventilation, heating and other functions. Do not get tired even if sitting for a long time.
- Off-seat alarm, seat belt release alarm, lane departure vibration reminder and other functions make driving safer.



INGENIOUS AND EXQUISITE, EASIER REPAIR AND MAINTENANCE

With years of depth research in of bus manufacturing field, Yutong accurately has insight into the actual needs of operator. Design of vehicle parts is meticulous and thoughtful, facilitating repair and maintenance in daily operation.

1 Front/side wall block type design

Left and right light frame of front wall is tumble, middle panel of front wall is tumble too.

2 Compartment door with large opening

Opening of compartment door exceeds 140°, making vehicle detection and maintenance more easier.

3 Maintenance-free head

Electric air compressor adopts structure free from oil pump head, so that, it is not necessary to refill and change lubricating oil, saving maintenance cost.

4 Intuitive level warning

Expansion tank, steering tank and washer reservoir are transparent, so that, it is easier to check level and refill in time.



COZY SERVICE

SERVICE OF "DESIGNATED PERSON AT FIXED LOCATION"



Through ten-year development, Yutong overseas service has formed seven core advantages at present:

- After-sales service policy Industry leadership

- Service network global market coverage



- Training system for the service provider advanced management mode in the industry

- Service information complete

- Advanced support system



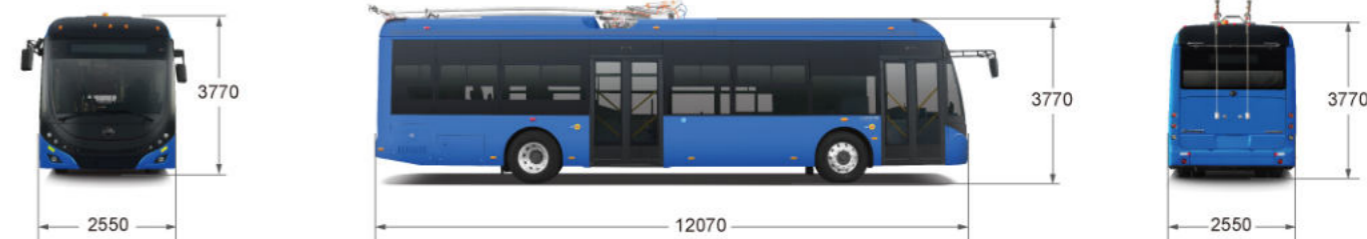
- Parts guarantee system quick and efficient

- Market service team specialization

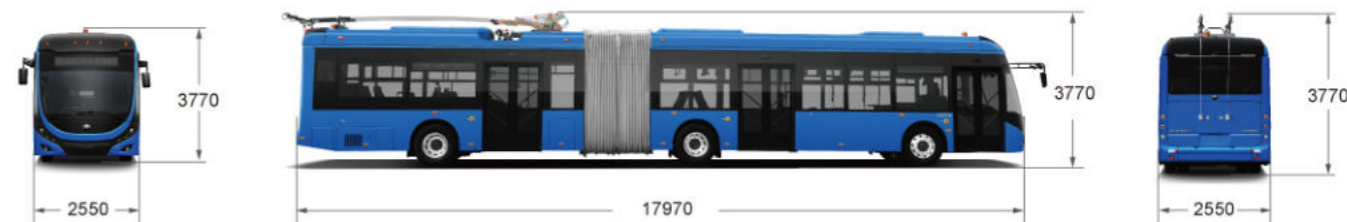


CONFIGURATION

ZK5120C



ZK5180C



ITEM	ZK5120C	ZK5180C
Overall length* width* height (mm)	12,070*2,550*3,770	17,979*2,550*3,770
Interior height(mm)	2,300	>2,300
Min. turning diameter (m)	19	≤24
Approach/departure angle (°)	8/8	8/8
Max. gradeability (%)	17	12
Battery type	LFP	LFP
Seat layout		