



Lab. Solution, Trainer, Installation, Training.

Professional Automotive Software & Laboratory Equipment Manufacturer



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A Electric Vehicle (Nissan Leaf) Training Lab. Solution



▲ Model No.: CLNL13001

▲ Items List:

1. Fully function 2013 year Nissan Leaf (half cutaway car body)
2. Body Control Module Checking Panel Trainer
3. Air Conditioning System & Driving Info Display Control Module Checking Panel Trainer
4. EV Power Delivery and Driving System Checking Panel Trainer
5. Teacher App & Student App
6. Fully Service Manual , Owner Manual , User Manual.
7. Touch Screen Monitor (55 inch)
8. Laser pointer



▲ EV Car Tools :

OBD Scanner \ Oscilloscope \ Insulating gloves \ Insulating tools \ Multi-Meter

▲ Main Functions:

1. Leading the control unit , sensor , actuator line of the main part of the car to the checking panel via a Coolife R&D wiring cable. Real-time data detection of cars can be performed on the panel.
2. With the mobile app, you can experiment with real fault settings and troubleshooting.
During the experiment, the car real-time data can be read by OBD scanner , can check the voltage/resistance by multi-meter, can also read waveforms by oscilloscope
3. Real car circuit be painted on the panel, easy to understand also can explain to the working principle.
4. This is a functioning car that can learn all the functions of the original car.
5. The panel is mounted on an aluminum frame stand, with self-locking wheels.
6. The diagnosis and measurement of the training process can be displayed simultaneously through the integrated machine.

▲ Model No.: CLNL13002



- PDM Disassembly and assembly practice, Components structural cognition.
- Inverter Disassembly and assembly practice, Components structural cognition.
- Drive Motor Disassembly and assembly practice, Components structural cognition,
- Reducer Disassembly and assembly practice, Components structural cognition,
- Differential Disassembly and assembly practice, Components structural cognition,
- Learning of the control principle of high voltage management systems and motor.

▲ Model No.: CLNL13003



- High Voltage Disassembly and assembly practice, components structural cognition.
- Service plug Disassembly and assembly practice, structural cognition.
- High Voltage Wiring Disassembly and assembly practice, structural cognition.
- High Voltage Wiring Current Flows and
- Learning of the control principle of high voltage battery and BMS.

▲ Training Courses



CLE15001 >>>

A



Fully Function Electric Car WI Detection Panel Trainer

- Product composition

A pure electric vehicle, with control inspection panel trainers , a touch-one machine computer, and supporting tools.

- Product specifications

Control inspection trainer panel size: 1500mm × 700mm × 1750mm (Lx W x H)

Working power supply: DC12V

Touch-one machine computer: 50 inch (optional)

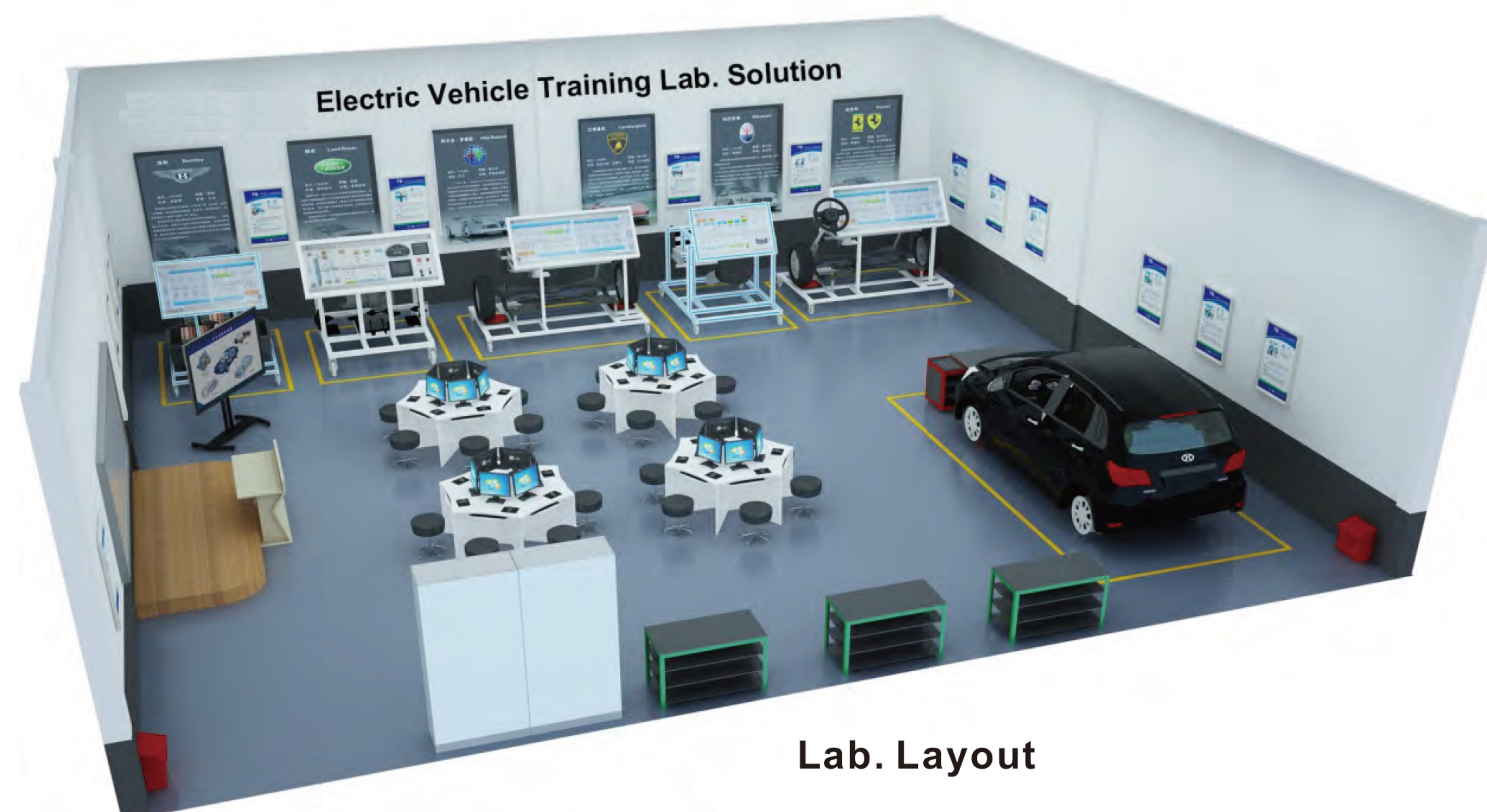
- Functional description

1. The whole vehicle does not need to be modified, and the control detection trainer panel is directly connected to the vehicle control system through a special plug;
2. Control and test trainer panel uses the original car sensor, actuator and other physical pictures to paint the panel picture, configure the real mating plug of the components, and teach in the environment close to the original car;
3. Control detection trainer panel can perform various signal detection on the whole vehicle, such as voltage value, resistance value, frequency signal, etc.
4. Can set fault: open circuit, short circuit and other faults;
5. There are troubleshooting guides for each fault point;
6. Supporting a large amount of electric courseware resources (including pictures, videos, animations, micro-classes, etc.).

- Teaching and training programs

1. Master the structure, working principle and detection method of each control unit, sensor and actuator of pure electric vehicle battery, motor and electronic control;
2. Perform the following training tests for the control system:
Combination meter control unit, gateway control unit, P gear position motor control unit, motor control unit, gear position control unit, DC/DC control unit, high-voltage battery BMS control unit

EVA01»» Electric Vehicle Training Lab.



1. EV Battery Training System (EVA0101)
2. EV High-voltage Controller Training System (EVA0102)
3. EV Motor W/ Controller Training System (EVA0103)
4. EV Air Conditioning Training System (EVA0104)
5. EV Steering Training System (EVA0105)
6. EV Section Car Body W/ Electronics Training System (EVA0106)
7. EV Tools Sets
8. EV All-in-One-Touch Screen Multi-function Education System

EVA0101 >>>

A



EV Battery Training System

● Product composition

Original electric vehicle power battery pack and management system, control panel, intelligent fault setting system, support platform.

● Product specifications

Dimensions: 2000mm × 1400mm × 750mm (Lx W x H)

● Functional description

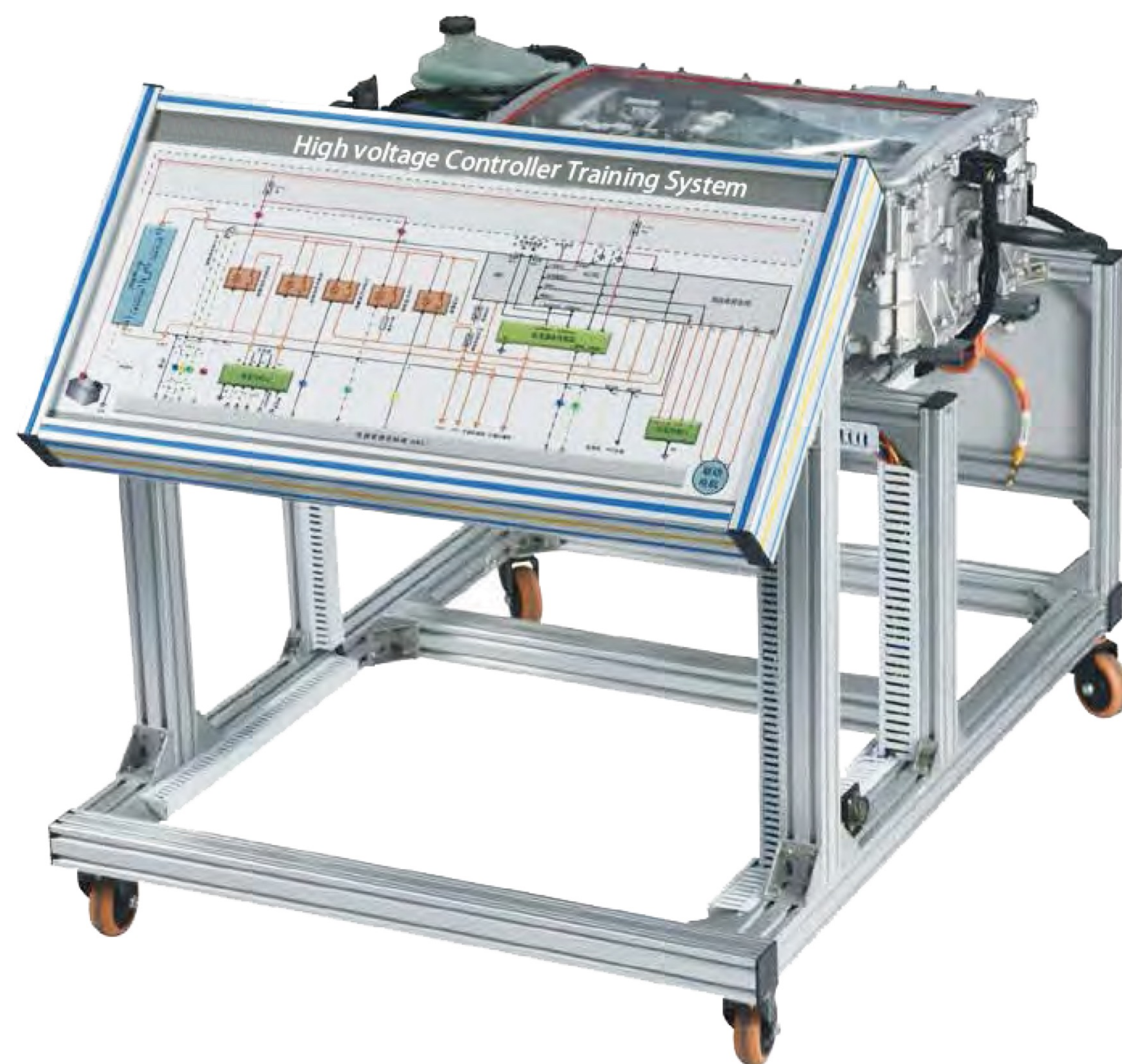
1. Students can intuitively understand the internal structure of the battery pack, a batteries consisting of a single cell, and a battery pack consisting of a plurality of batteries connected in series;
2. Each battery pack is equipped with a separate battery detection module, all sub-modules communicate with the main control module through the CAN bus, and achieve equalization control;
3. The training platform is equipped with a detection control panel, which can detect resistance, voltage, current and other data of each control line and signal line through the detection hole;
4. The training platform is used together with the BYD drive system and the drive control system during normal work;
5. Equipped with intelligent fault setting assessment system, which can be used with digital practical training platform based on integration of theory and Practice.

● Teaching and training programs

1. Understand the structural composition of the power battery pack;
2. Understand the layout and application of the components of the power battery pack and battery management system;
3. Fault diagnosis of power battery pack and battery management system;
4. Master the safety principle and operation method of high pressure operation;
5. Understand the functions of the battery management system;
6. Master the characteristics of lithium iron phosphate battery and the structure of square package battery;
7. Master the logical relationship between charging and discharging of electric vehicles.

EVA0102 >>>

A



EV High-voltage Controller Training System

- Product composition

Electric vehicle high voltage power delivery control module, Hall sensor, DC charging stand, AC charging stand, detection panel.

- Product specifications

Dimensions: 1300mm × 1000mm × 700mm (Lx W x H)

- Functional description

1. The rack is installed with the original car high-voltage distribution box assembly, connected to the DC charging interface and the AC charging interface, and the charging operation can be used to charge the whole set of training equipment;
2. The training platform is equipped with a training inspection panel, and the working signals of all contactors and sensors in the high-voltage distribution box can be monitored in real time through the detection holes on the panel;
3. The internal structure of the high voltage distribution box can be clearly observed;
4. It can be used with digital practical training platform based on integration of theory and Practice.

- Teaching and training programs

1. Cognitive practice of structural composition of high voltage distribution box;
2. Precautions for insertion and removal of high-voltage connectors and high-pressure operation safety procedures;
3. Charging signal detection and analysis;
4. It is possible to test the internal components of the high voltage distribution box.

EVA0103 >>>

A



EV Motor W/ Controller Training System

● product composition

Electric vehicle synchronous motor and control system, transmission system, electric brake system,
DC-DC converter, detection control panel, intelligent fault setting system.

● Product specifications

Dimensions: 1400mm × 1400mm × 1200mm (Lx W x H)

● Functional description

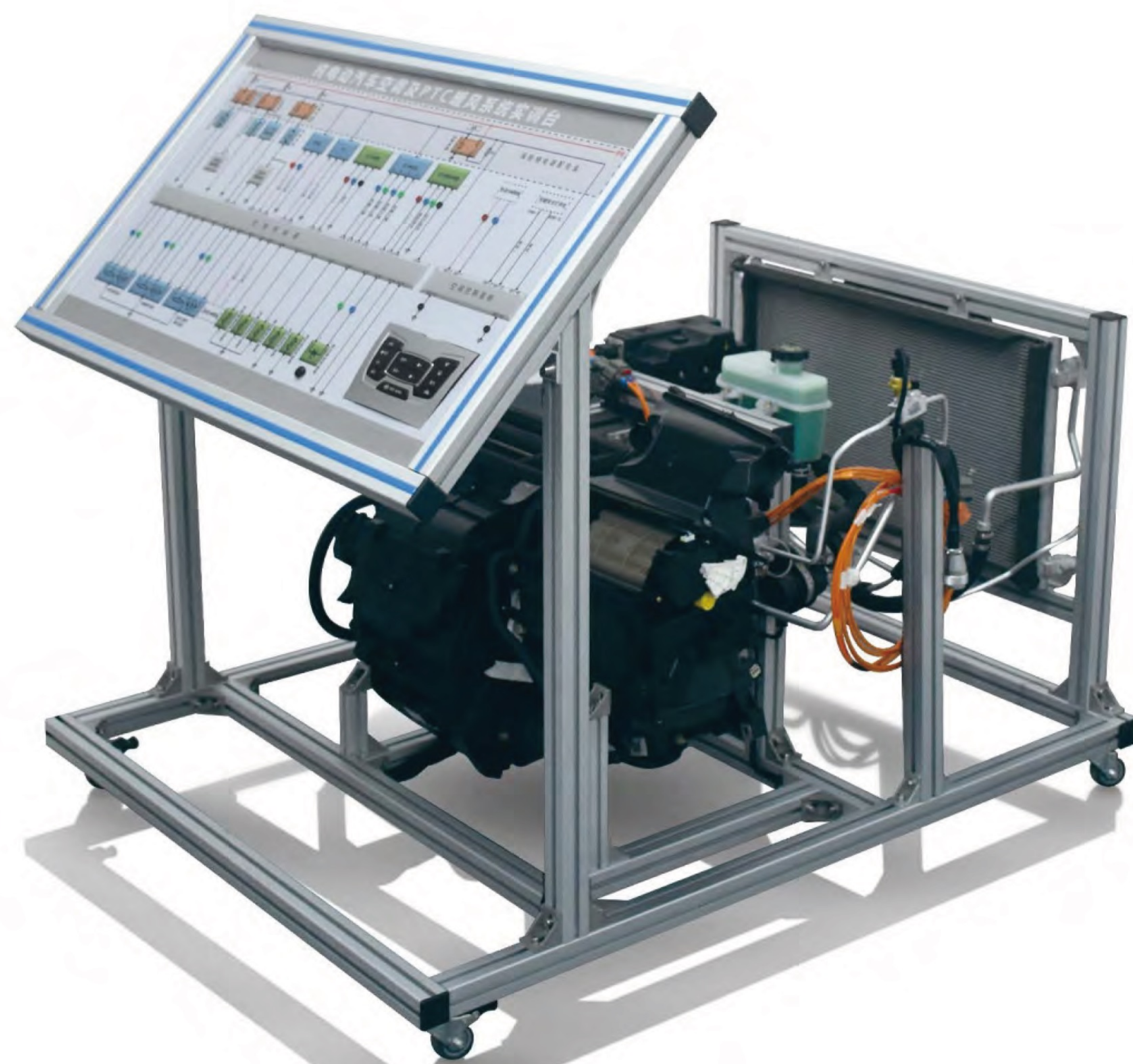
1. The real and operable pure electric vehicle drive system fully demonstrates the composition and working process of the pure electric vehicle drive system;
2. Learn to drive motor cognition, drive motor principle and detection;
3. The automobile instrument is installed on the trainer panel, which can display the parameters such as power transmission process, vehicle speed and electronic control system fault indicator in real time;
4. The trainer panel is equipped with a detection control panel, which can detect resistance, voltage, current and other data of each control line and signal line through the detection hole;
5. The trainer panel is equipped with a throttle control device, which can facilitate acceleration and deceleration of the pure electric vehicle drive system;
6. Equipped with intelligent fault setting assessment system, which can be used with digital practical training platform based on integration of theory and Practice.

● Teaching and training programs

1. Static detection experiment of high-power three-phase full-bridge inverter and power device IGBT;
2. Electric vehicle various signal acquisition experiments (throttle brake, I G B T temperature, voltage and current, etc.);
3. Complete testing and maintenance of the drive motor and control system training;
4. Electric vehicle motor and motor controller high voltage safe operation training.

EVA0104 >>>

A



EV Air Conditioning Training System

● **Product composition**

Automotive automatic air conditioning and PTC heating system, control panel, air conditioning operation panel.

● **Product specifications**

Dimensions: 1400mm × 1200mm × 1000mm (L x W x H)

● **Functional description**

1. The real and operable automatic air conditioning system of the car fully demonstrates the composition and working process of the automatic air conditioning system of the automobile;
2. The trainer panel equipped with a detection terminal, which can directly detect the electrical signals of various circuit components of the air conditioning system, such as resistance, voltage, current, frequency signal, etc.;
3. The pressure gauge and temperature gauge are installed on the trainer panel, and the parameters of the air conditioning pipeline pressure and the inlet and outlet air temperature can be displayed in real time;
4. The training platform provides the practical working platform for the trainees to practice adding refrigerant and leak detection;
5. It can be used together with BYD E6 other training assessment system, which can be used in conjunction with digital practical training platform based on integration of theory and Practice.

● **Teaching and training programs**

1. The component of the automatic air conditioning training system;
2. The functional principle of the compressor of the automatic air conditioning system;
3. The working principle of refrigerant refrigeration for automatic air conditioning training system;
4. The original composition and working principle of the air supply system of the automatic air conditioning training system;
5. Automatic air conditioning training system high and low voltage numerical display parameters.

EVA0105 >>>

A



EV Electric Power Steering Training System

● Product composition

Electric vehicle electric power steering system, steering wheel, left front suspension, right front suspension, wheel assembly, ingot beam, hydraulic oil can, pressure gauge, inspection panel, corner sensor.

● Product specifications

Dimensions: 1800mm × 1400mm × 1100mm (Lx W x H)

● Functional description

1. Master the composition and working process of the EPS electro-hydraulic power steering system of the electric vehicle ;
2. Analysis and understanding of the working principle of electric vehicle electric hydraulic pump, fault setting and analysis of electric hydraulic pump;
3. The training platform is equipped with a detection control panel, which can detect resistance, voltage, current and other data of each control line and signal line through the detection hole;
4. The training platform uses the original front suspension assembly to adjust the wheel positioning of the wheel suspension;
5. It can be used in conjunction with the digital practical training platform based on integration of theory and Practice.

● Teaching and training programs

1. Master the structure of the electro-hydraulic power steering system and the working principle of each component of the BYD E6 model;
2. Learning and analyzing the working signals of each sensor actuator during the working process of the system;
3. The difference between electric power steering operation and unassisted steering operation.

EVA0106 >>>

A



EV Section Car Body W/ Electronics Training System

● Product composition

Electric vehicle complete vehicle body dissection, a body electrical testing training platform, intelligent system can detect electrical components and line electrical signals on the original car body, complete the pure electric vehicle low-voltage electrical system teaching.

● Product specifications

Body size: 4560mm × 1822mm × 1630mm (Lx W x H)

Training platform size: 1800mm × 1300mm × 1700mm (Lx W x H)

● Functional description

1. The complete vehicle lighting system can practice the measurement and troubleshooting of each single component.
2. It can set and measure the faults of all the body electronic system signals on the original car.
3. The body is subjected to symmetrical partial anatomy, and all sections are processed and sprayed with different colors to represent the functions of different positions of the body sheet metal.
4. The body is equipped with a professional inspection trainer panel that can be connected to the body electrical system through a dedicated aviation plug and transmit signals.
5. Supporting E6 other training evaluation system, it can also be used with digital practical training platform based on integration of theory and Practice.

● Teaching and training programs

1. Understand the physical parts and actual circuit wiring diagram of low-voltage electrical equipment system such as pure electric vehicle body structure, wiper system, lighting system, electric window system, rearview mirror electric adjustment, door lock motor system, 12V auxiliary battery;
2. Understand the operation and changes of some electrical system components after the circuit is turned on;
3. Understand the structural composition and working principle of the low voltage electrical system;
4. Master how to measure the signal parameters of each line when a fault occurs.

EVB01»»



Electric Vehicle Powertrains System Trainer

● Product composition

DC permanent magnet synchronous motor, motor controller, DC-DC power conversion module, power battery pack, vehicle charger, high voltage distribution box, accelerator pedal, gear switch, gearbox, drive shaft, brake system, intelligent fault setting system, etc.

● Product specifications

Dimension: 1400mm × 1200mm × 1200mm (L x W x H)

● Functional description

1. The pure electric vehicle drive system that can be operated fully demonstrates the composition and working process of the pure electric vehicle drive system;
2. Supporting new energy vehicle intelligent motor controller and debugging software. The internal parameters of the motor controller can be set by software to meet the secondary development of the motor controller by teachers and students.

● Teaching and training programs

1. Under the starting condition, the voltage change status of each system of the electric vehicle;
2. The working state of each system of the electric vehicle under the parking condition;
3. The secondary development parameter adjustment setting of the motor controller;
4. The working process of the battery management system and the learning practice of the detection function.

EVB02»»»



Electric Vehicle Powertrains Demo Panel Trainer

● Product composition

Analog brushless DC motor, ignition switch, gear analog switch, working condition lock button, brake switch, motor tachometer, pointer current meter, accelerator pedal, etc.

● Product specifications

Dimensions: 1500mm × 600mm × 1700mm (L x W x H)

Working voltage: AC220V 50Hz

● Functional description

1. This training platform shows the electric power system of the car, which can dynamically simulate the energy flow direction and the running state of the motor under the six conditions of starting, low speed, general driving, full speed driving, deceleration driving and parking, dynamic display of automotive electric power system features;
2. The panel of the teaching board is equipped with an ignition switch, a working condition switch, an accelerator pedal, a gear switch, a brake switch, a digital tachometer, a current indicating meter, etc., and is supplemented by a light-emitting diode for dynamic indication of the flow direction of the system. There is an analog motor to demonstrate the working state of the motor;
3. The trainer panel adopts the ordinary 220V AC power supply, which is transformed by the internal circuit to be converted into 12V DC and has a short-circuit proof function, eliminating the need for a battery.

● Teaching and training programs

1. Cognition of original components of electric vehicle energy management system;
2. The working principle of electric vehicle energy management system.

EVB03»»»



High-Voltage Connector Plug in and Upplug Trainer

● Product composition

Electric vehicle power system, DC permanent magnet synchronous motor system, display system and BMS physical component group, total positive relay, total negative relay, pre-charge relay and pre-charge resistor.

● Product specifications

Panel size: 1400mm × 1000mm × 200mm (L x W x H)

Bench size: 1400mm × 1000mm × 700mm (L x W x H)

● Teaching and training programs

1. Battery pack and BMS battery management system composition and fault detection;
2. The composition and fault detection of the high voltage power distribution system;
3. Precautions and operation methods for plugging and unplugging high voltage connectors during maintenance of electric vehicles;
4. Electric vehicle motor system fault detection and troubleshooting.

● Functional description

1. This equipment can dynamically simulate the running status and working process of the high-voltage safety protection system of the whole vehicle;
2. The work adopts electric vehicle battery pack power supply. The 12V DC power supply of other systems is provided by DC/DC module, and the electric vehicle GB 220V charging port and charging gun are installed to realize the electric vehicle charging operation
3. Through the BMS control unit, the real signal of the voltage, current and temperature of each monomer lithium iron phosphate battery can be displayed.

EVB04»»»



Electric Vehicle Drive Dynamometer Trainer

● Product composition

Power battery pack, BMS battery management controller, motor and motor controller, DC/DC converter, vehicle charger, control panel, high voltage cable, low voltage cable, high voltage acquisition module, magnetic powder loader, torque meter assembly , etc.

● Product specifications

Dimensions: 1500mm × 700mm × 1700mm (L x W x H)

Working voltage: low voltage DC12V, high voltage: DC72V

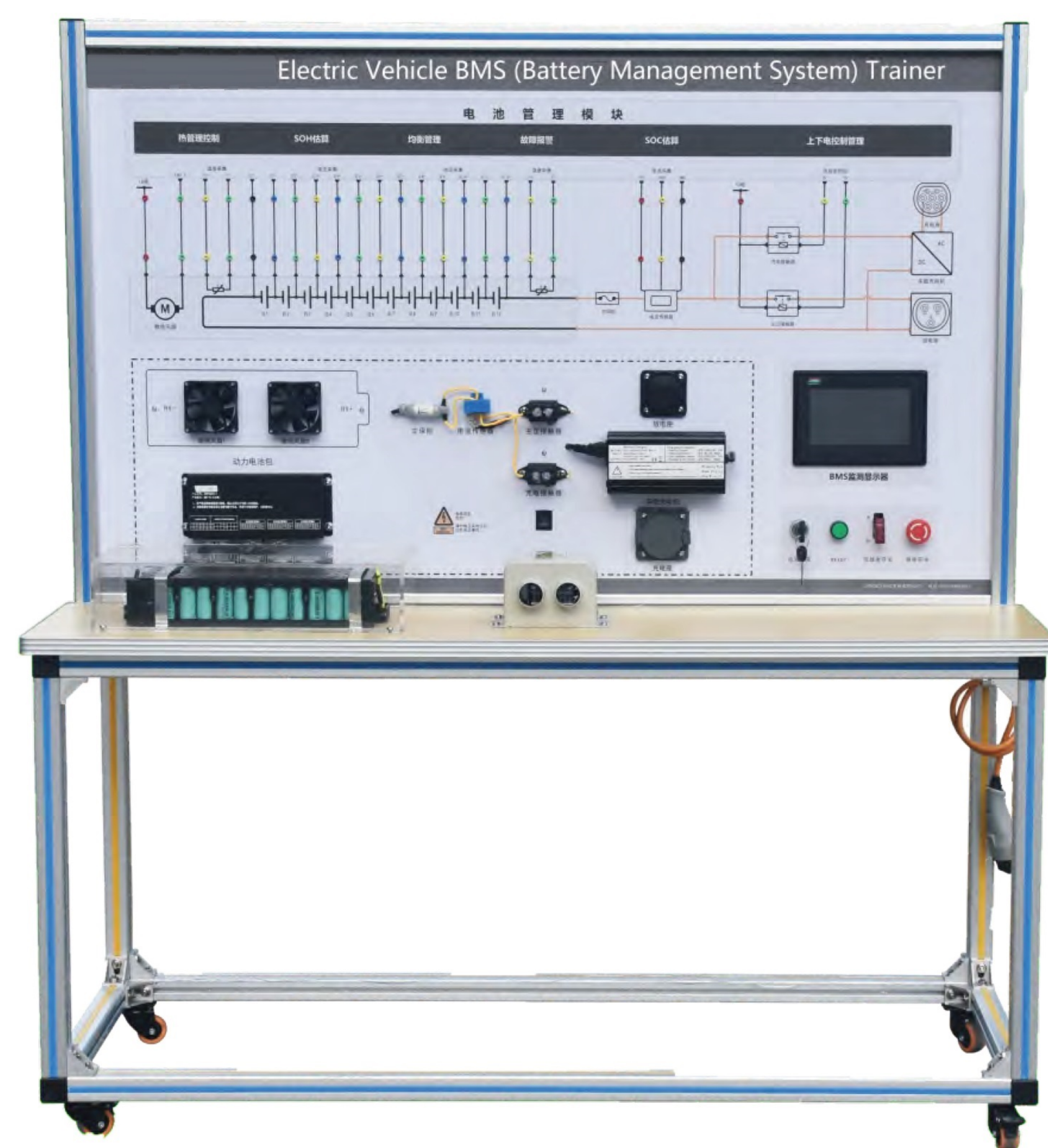
● Functional description

1. Students can intuitively understand the internal structure of the battery pack, such as the arrangement of the battery packs and Product process;
2. Each battery pack is equipped with a separate sampling line to communicate with the main control module to achieve equalization control, and a dedicated instrument such as a multi-meter can be used to detect the single battery;
3. The equipment can be started and fully displayed each working condition of the drive motor;
4. The panel is equipped with an electrical schematic to describe the working principle of the D C/D C converter and the motor controller;
5. The fault detection of each control line and signal line can be performed through the control panel detection hole;
6. Battery detection display can extract battery voltage, current, storage charge, etc.
7. The magnetic powder loader applies a load to the equipment, and the output torque of the equipment is detected by the torque detector and displayed on the integrated machine.

● Teaching and training programs

1. The structural principle and composition of the battery pack;
2. The arrangement of the battery pack;
3. Failure detection of single battery;
4. Communication fault detection;
5. Detection of the battery management system;
6. Electric vehicle various signal acquisition experiments (resistance, voltage, current, etc.);
7. Electric vehicle motor structure learning;
8. Electric vehicle motor and motor controller high voltage safety operation training;
9. Disassembly test of high voltage components of electric vehicles;
10. The working principle of the DC/DC converter;
11. Analysis of the instrument indicator light.

EVB05»»»



Electric Vehicle BMS (Battery Management System) Trainer

● Product composition

Detection control panel, BMS battery management control module, BMS information display, lithium iron phosphate battery pack, etc.

● Product specifications

Dimensions: 1500mm × 600mm × 1700mm (L x W x H)

Working voltage: AC220V 50Hz

● Functional description

1. Students can intuitively compare the structural schematic diagram and physical object of pure electric vehicle battery management system, and understand and analyze the working principle of pure electric vehicle battery management system;
2. The equipment is based on the pure electric vehicle BMS (battery management system) system, which can dynamically monitor each single battery voltage, dynamically estimate the battery pack capacity, dynamically monitor the battery pack temperature, dynamically display all battery pack information, and dynamically monitor, total loop current, dynamic alarm indication, real-time charging control, etc.
3. The main panel of the test bench is equipped with a power main switch, BMS battery management control module, BMS information display screen, key switch, charge and discharge switch, 12V switching power supply, charging and discharging socket, power detection terminal, etc., which can be directly detected on the panel. Power control unit electrical signals, such as resistance, voltage, current, frequency signals, etc.;
4. The test bench is equipped with a PTC heater for simulating the discharge load of the battery pack during vehicle operation;
5. The test bench works with ordinary 220V AC power supply, which is converted into 12V DC power supply by internal circuit voltage transformation, without battery, reducing the trouble of charging. The 12V DC power supply has anti-short circuit function;
6. The test bench is equipped with a resistive load. The charging and discharging ports provided with the panel are used to simulate the charging and discharging process of the battery pack during vehicle operation.

● Teaching and training programs

1. The structure, working principle and detection method of the battery management unit;
2. Battery charging and discharging actual operation and maintenance precautions;
3. Trouble shooting method for pure electric vehicle battery pack.

EVB06»»



Electric Vacuum Assist Hydraulic Brake Trainer

● Product composition

Original vacuum booster pump, control unit, emergency stop button, electric vehicle brake pedal, intelligent fault setting system, etc.

● Product specifications

Dimensions: 1500mm × 600mm × 1700mm (L x W x H)

Working voltage: AC220V 50Hz

● Functional description

1. The electric vacuum assist braking system of the electric vehicle that can be operated, showing the composition of the electric vacuum assisted braking system;
2. Adjust the analog knob to simulate the change of vacuum, and fully demonstrate the working process of the electric vacuum assisted braking system.

● Teaching and training programs

1. The composition of an electric vacuum assisted braking system;
2. The structure and working principle of the electric vacuum booster pump;
3. The structure and working principle of the electric vacuum assist pressure sensor;
4. Completely demonstrate the working process of the electric vacuum assisted braking system.

EVB07»»



Electric Vehicle Control System Trainer

● Product composition

DC permanent magnet synchronous motor, motor controller, DC-DC power conversion module, power group, car charger, high voltage distribution box, accelerator pedal, gear switch, intelligent fault setting system.

● Product specifications

Dimensions: 1600mm × 600mm × 1700mm (L x W x H)

Working voltage: DC 72V

● Functional description

1. Students can intuitively understand the structure and product functions of the drive motor control system;
2. The equipment can be started and fully displayed for each working condition of the drive motor;
3. The panel is equipped with an electrical schematic to describe the working principle of the DC/DC converter and the motor controller;
4. The fault detection of each control line and signal line can be performed through the control panel detection hole.

● Teaching and training programs

1. Battery output voltage display;
2. Communication fault detection;
3. Motor signal acquisition experiments (resistance, voltage, current, etc.);
4. Electric vehicle motor structure learning;
5. High-voltage safety operation training for electric vehicle motor and motor controller;
6. Disassembly and assembly test of high voltage components of electric vehicles;
7. The working principle of the DC/DC converter.

EVB08»»»



Electric Vehicle CAN Bus Instrument Panel Trainer

● **Product composition**

Pure electric vehicle CAN bus instrument, CAN data collector and related components.

● **Product specifications**

Dimensions: 1500mm × 600mm × 1700mm (L x W x H)

● **Functional description**

1. The process of adjusting the analog signal sensor to demonstrate the CAN protocol modulation of the information;
2. Demonstrate the functions and experimental projects of the pure electric vehicle CAN bus, which can demonstrate the working process of the electric vehicle instrument. The CAN data collector collects the voltage, current, speed, speed and other related data of the simulated electric vehicle, and transmits it to the meter via the CAN bus. The meter displays relevant information; the environment variable can be controlled by the analog switch, and the meter displays the information change experiment.

● **Teaching and training programs**

1. Electric vehicle instrument CAN network information interaction experiment;
2. Analog signal AD conversion experiment;
3. Electric vehicle CAN network waveform extraction;
4. Identification of electric vehicle instrument warning lights.

EVB09»»»



EV Energy Recovery System Trainer

● Product composition

1. Ignition switch, working condition switch, accelerator pedal, gear switch, brake switch, motor, motor controller, DC controller, etc., supplemented by LEDs for dynamic indication of system energy flow.

2. Intelligent fault setting system.

● Product specifications

Dimensions: 1500mm × 600mm × 1700mm (L × W × H)

● Functional description

1. The equipment fully demonstrates the basic principle of pure electric vehicle driving energy output and braking energy recovery, and can dynamically simulate the operating state of pure electric vehicle driving energy output and braking energy recovery under different working conditions;

2. Instruct the motor to drive the energy output current through the LED to understand the motor controller drive control principle;

3. Instruct the flow direction of the motor braking energy recovery current through the LED to understand the control principle of the motor controller energy recovery;

4. The LED indicating system and the motor controller are linked together to display the energy conversion of the electric vehicle during driving and braking;

5. The trainee can intuitively compare the schematic diagram and the physical object of the pure electric vehicle drive system through the working principle diagram on the gantry panel, and recognize and analyze the working principle of the pure electric vehicle driving energy output and braking energy recovery;

6. The trainer panel works with ordinary 220V AC power supply, and is converted into 12V DC power supply by internal circuit transformer rectification. No battery is needed, which reduces the trouble of charging. The 12V DC power supply has anti-short circuit energy;

7. Intelligent fault setting function.

● Teaching and training programs

1. Cognition of the structure of a pure electric vehicle drive system;

2. Cognition of the working principle of permanent magnet synchronous motor driving energy output;

3. Cognition of the working principle of braking energy recovery of permanent magnet synchronous motor;

4. The permanent magnet synchronous motor can realize the characteristics of energy recovery;

5. Brake energy recovery in the characteristics of pure electric vehicles.

EVB10»»»



Electric vehicle charging system training

● Product composition

AC charging pile, charging gun intelligent billing card, control panel, intelligent fault setting system.

● Product specifications

1. Dimensions: 1500mm × 600mm × 1700mm (L x W x H)
2. Input voltage: single phase 220V
3. Rated current: 16A
4. Rated input power: 3.6KW

● Functional description

1. The training platform integrates the European standard/national standard charging gun, and the definition and function of each pin in the charging gun are indicated in the demonstration board;
2. The training platform extracts various sensor signals during the charging process of the plug-in electric vehicle, such as CC/CP signal, input and output voltage sampling signal and ripple, input and output current sampling signal, IPM protection signal, short circuit protection signal, etc. The oscilloscope or multimeter can be used to observe the amplitude and frequency characteristics and changes of the waveform;
3. This training platform provides demonstrations of all protection strategies during plug-in electric vehicle charging, such as short circuit protection, temperature protection, overvoltage and overcurrent protection, undervoltage protection, handshake failure protection, etc.
4. This training platform can be used online with the company's "Electric Vehicle BMS (Battery Management System) Training Platform", real demonstration plug-in electric vehicle in battery detection, automatic inspection pre-charge, automatic charging control, protection strategy, etc. Charging and discharging process;

● Teaching and training programs

1. The electric vehicle charging training system component;
2. The charging principle of the electric vehicle charging training system;
3. Electric vehicle charging training system charging current control process;
4. Electric vehicle charging training system charging control mode;
5. Electric vehicle charging training system charging connection method.

EVB11»»



EV Drive System Assembly And Wiring Connection Trainer

● Product composition

AC asynchronous motor, motor controller, power battery pack, gear switch, car charger, DC-DC direct-current converter, battery management system display, instrument, high voltage cable, low voltage cable, etc.

● Product specifications

Dimensions: 1500mm × 600mm × 1700mm (L x W x H)

Working voltage: DC72V

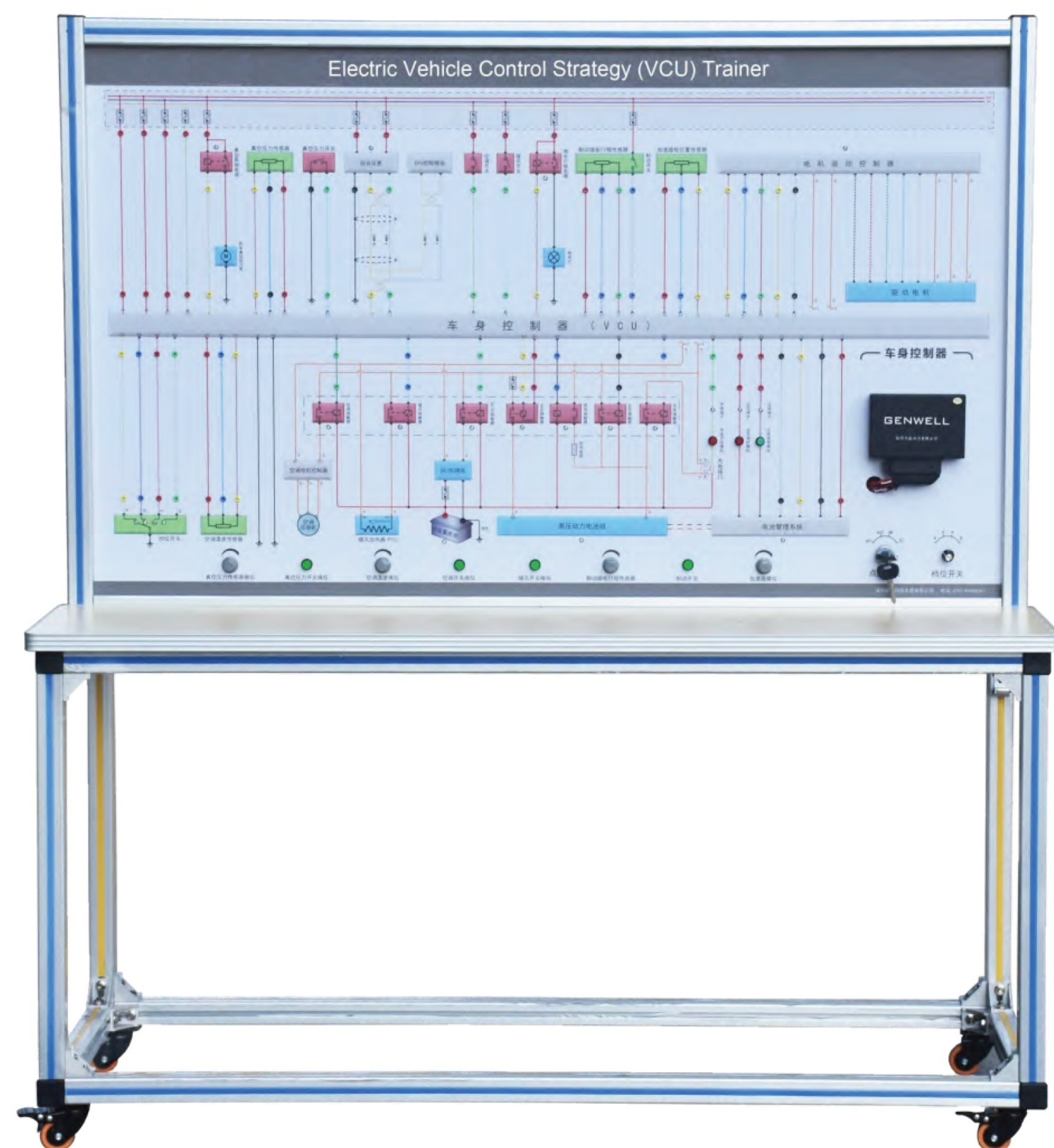
● Teaching and training purposes

1. Understand the composition of the motor drive system;
2. Understand the relationship between DC bus voltage and three-phase AC voltage during the operation of the motor controller;
3. Master the working principle of DC/DC DC converter;
4. Understand the working principle and wiring of the motor controller;
5. Understand the working principle and wiring of the electronic accelerator pedal;
6. Master the structure and wiring of the high voltage power distribution system;

● Functional description

1. The components are reasonably arranged on the panel of the gantry, and corresponding plug-in connection holes are formed on the original parts of the drive system for plug-in connection;
2. The training platform panel has a circuit schematic diagram, which can visually compare the components of the motor drive system in the circuit diagram;
3. The detection terminal is installed on the panel, and the electrical resistance, voltage, current, frequency and other electrical signals of each control unit pin can be directly detected on the panel, and the training is performed by excluding the set simulation fault;
4. According to the wiring principle of the motor drive system and the circuit diagram on the panel, connect the corresponding components with external wires, and then energize them to run;
5. The training platform is equipped with an electronic throttle control device, which can facilitate acceleration and deceleration of the pure electric vehicle drive system;
6. The training platform is equipped with protection devices such as a power main switch and a rotating component cover.

EVB12»»»



Electric Vehicle Control Strategy (VCU) Trainer

● Product composition

Vehicle controller (VCU) assembly, analog brushless DC motor, ignition switch, gear analog switch, motor tachometer, pointer current meter, working condition lock button, brake switch, accelerator pedal, etc.

● Product specifications

Dimensions: 1500mm × 600mm × 1700mm (L x W x H)

● Functional description

1. Fully demonstrate the control principle of vehicle control strategy for pure electric vehicles;
2. The working process of the vehicle controller VCU can be independently demonstrated;
3. Configure an intelligent fault setting system.

● Teaching and training programs

1. Cognition of components of an electric vehicle complete vehicle controller (VCU);
2. Cognition and training of the control principle of the electric vehicle controller (VCU);
3. The training of the electric vehicle complete vehicle controller (VCU) control process.

EVC01»»



Electric Vehicle Drive Axle Disassembly And Assembly Trainer

● Product composition

Variable speed drive axle, flip frame, etc.

● Product specifications

Dimensions: 900mm × 700mm × 1200mm (L x W x H)

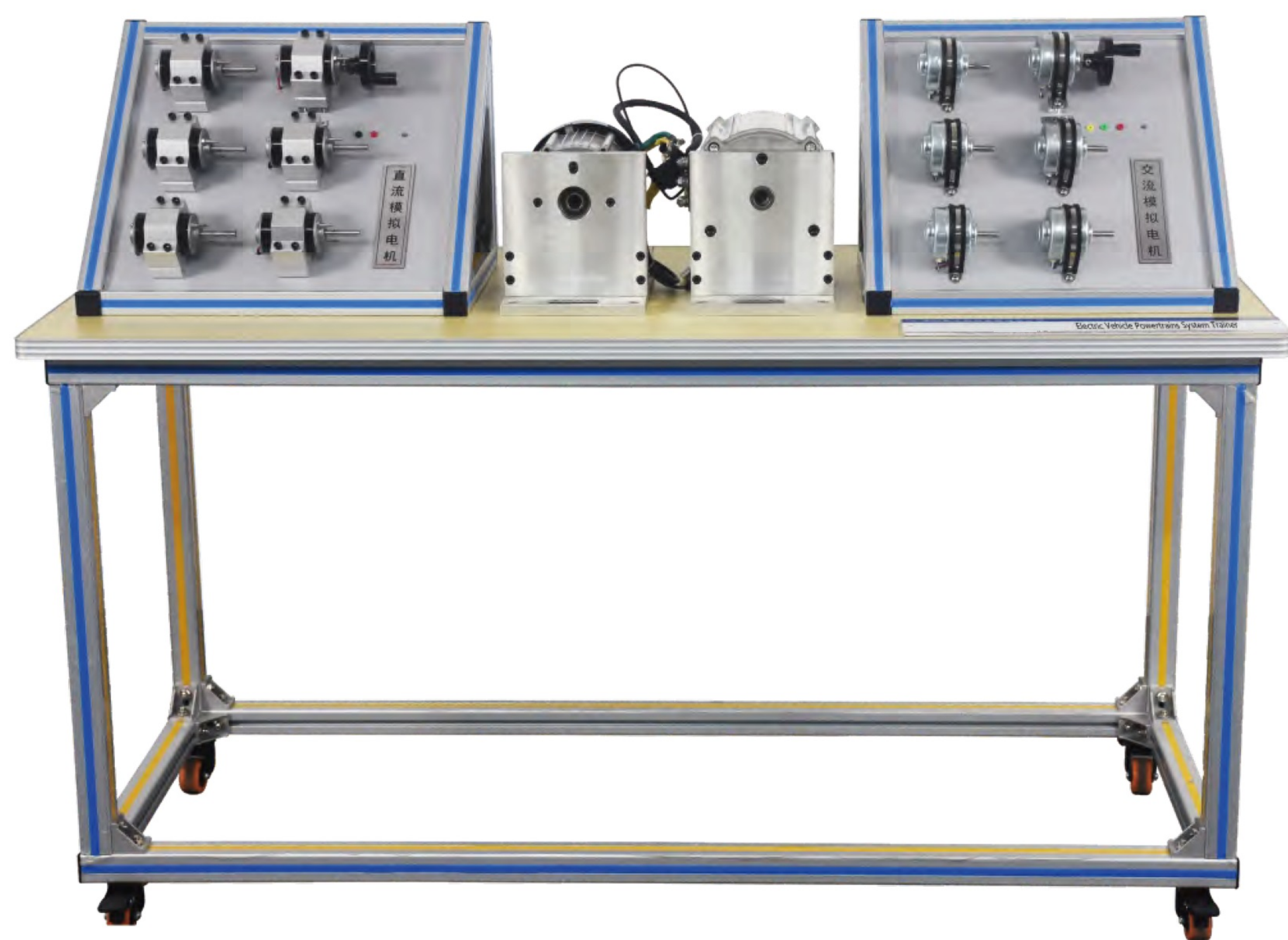
● Functional description

1. The transaxle of the pure electric vehicle is installed on a special flip frame, which is easy to disassemble and assembly;
2. The drive axle can be rotated 360 degrees and can be locked at any angle, which can be disassembled and assembled from different angles;
3. Meet the requirements of the entire process of disassembly, assembly, commissioning and inspection of the drive axle;
4. Place the oil pan at the bottom to facilitate the collection of oil and dirt and keep the training site clean.

● Functional description

1. The structure and working principle of the transaxle;
2. Disassembly and maintenance of the transaxle;
3. Component detection of the transaxle.

EVC02»»»



EV Driving System Main Parts Structure Trainer

● Product composition

DC permanent magnet synchronous motor, AC drive motor, straight AC analog motor and gantry.

● Product specifications

Dimensions: 1500mm × 600mm × 1200mm (L x W x H)

● Functional description

1. DC permanent magnet synchronous drive motor and analog motor are arranged on the gantry, which has a deep understanding of the structure and principle of the motor;
2. The DC permanent magnet synchronous drive analog motor is equipped with a rotating handle, which can be powered by manual driving to make the diode lamp illuminate, which visually demonstrates the power generation principle;
3. The AC drive motor and the analog motor are arranged on the gantry to have a deep understanding of the structure and principle of the motor;
4. AC drive The analog motor is equipped with a rotating handle, which can be powered by manual drive to make the diode light illuminate. Only the power generation principle is shown.

● Teaching and training programs

1. Structure display of DC permanent magnet synchronous drive motor;
2. Principle learning of DC permanent magnet synchronous drive motor;
3. Structure display of AC drive motor;
4. Principle learning of AC drive motor.

EVC03»»»



Electric Vehicle Drive Motor Cutaway Trainer

- Product composition
3KW DC brushless motor assembly (for electric vehicles) with support stand.

- Product specifications
Dimensions: 400mm × 300mm × 300mm (Lx W x H)
Working voltage: AC220V 50Hz
Power: 3KW

- Functional description

1. Adopt the most representative type of electric motor: DC brushless motor for mechanism cutting, fully demonstrating the internal and external structure of the motor part of the electric vehicle, the armature and rotor mechanism of the motor, the winding method of various motors and its working principle And process, etc.;
2. The mechanical section is sprayed with paint of different colors;
3. It is equipped with a protective cover and is equipped with a protective device such as an insulating sheath.

- Teaching and training programs

Cognition of the structure and principle of DC brushless motor:

- (1) Cognition of Motor structure ;
- (2) The working principle of the motor;
- (3) The structure and working principle of the rotor;
- (4) The structure and working principle of the stator;
- (5) Working characteristics of the motor.

EVC04»»»



EV Transmission Cutaway Trainer

- Product composition

Original pure electric vehicle gearbox assembly, training platform.

- Product specifications

Dimensions: 800mm × 600mm × 1400mm (L x W x H)

Working voltage: AC220V 50Hz

- Functional description

1. The teaching aid will partially dissect the pure electric vehicle gearbox and process it with different colors to visually display the structure of the internal components;
2. Fully demonstrate the working principle of the pure electric vehicle gearbox and the relative position and shifting principle of each component;
3. Anatomical display at different levels and at multiple angles.

- Teaching and training programs

1. Cognition of the overall components of the gearbox;
2. Cognition of the working principle of the gearbox;
3. Cognition of peripheral components of the gearbox.

EVC05»»»



New Energy Power Battery Cutaway Panel Trainer

● Product composition

Lead-acid batteries and chargers, lithium batteries and chargers, Prius hybrid NiMH batteries, solar cells, etc.

● Product specifications

Dimensions: 1600mm × 600mm × 1700mm (L x W x H)

● Functional description

1. Fully demonstrate the structure of lead-acid batteries;
2. Fully demonstrate the structure of the lithium battery;
3. Comprehensive display of the structure of nickel-metal hydride batteries;
4. Comprehensive display of the structure of solar cells.

● Teaching and training programs

1. The structure and working principle of lead-acid batteries;
2. The structure and working principle of the lithium battery;
3. Structure and working principle of nickel-hydrogen battery;
4. The structure and working principle of the solar cell.

FCE01»»



Fuel Cell Vehicle Energy Management System Trainer

● Product composition

Ignition switch, working condition switch, accelerator pedal, gear switch, brake switch, digital tachometer, current indicator, etc.

● Product specifications

Dimensions: 1500mm × 600mm × 1700mm (L x W x H)

● Functional description

1. The device fully demonstrates the energy control process of the automobile fuel cell power car, which can dynamically simulate the energy flow direction and the running state of the motor under the six conditions of starting, low speed, general driving, full speed driving, deceleration driving, parking.
2. The trainer panel is supplemented by LEDs for dynamic indication of the system flow direction, and an analog motor is also provided to demonstrate the working state of the motor;
3. The trainer panel adopts ordinary 220V AC power supply, which is converted into 12V DC power supply by variable voltage rectification and has anti-short circuit protection function without battery.

● Teaching and training programs

Cognition and training of energy flow direction and operating state during vehicle start-up, normal driving, full speed, deceleration or parking.