The **HE3000** from **EXXOTEST®** is an innovative educative support that represents an ideal solution for learning electric vehicle drive system. This vehicle is completely safe for use in school.
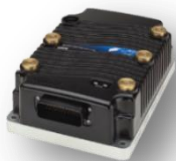
OBJECTIVES

- Visualize, learn and understand how works electrical vehicle drive system.
- Learn also the regenerative braking system functionality.
- Prepare electrical accreditation that allows working on real electrical vehicles.

DESIGN

Infos, control, diagnostic

CURTIS Speed controller

- Electric motor (48 V / 4 kW) and reversible speed controller.
- 4 batteries 12 V and DC / DC converter (48/12 V).
- 4 disc brakes and parking brake.
- LCD display placed on the instrument panel (speed, level of battery ...).
- Thermal protection, alarm and automatic shut-off to protect the motor and the speed controller.
- Rugged and waterproof box, IP65 controls connector.
- Break down box that allows measuring the physical values of the speed controller input and outputting signals.
- Delivered with the CURTIS diagnostic tool and programming software
- Delivered with **EXXOTEST® MUXTRACE® Expert** CAN HS bus analyser (data base is provided).
- Delivered with **REFLET®**, special **EXXOTEST®** software that allows data acquisition onto a PC (USB connection).

SPECIFICATIONS

The vehicle is equipped with a special screen and a dedicated break down box that provide an access to the different signals:

- Batteries voltage 48 V and converter voltage 12 V,
- Ignition plus signal,
- Forward and reverse gear requests,
- Main relays orders,
- Electrical motor position and temperature,
- Accelerator and brake pedal position,
- Communication line of Curtis' speed controller,
- From the CAN bus: vehicle speed, total and partied odometer, battery charge level and intensity, motor speed and temperature, vehicle acceleration
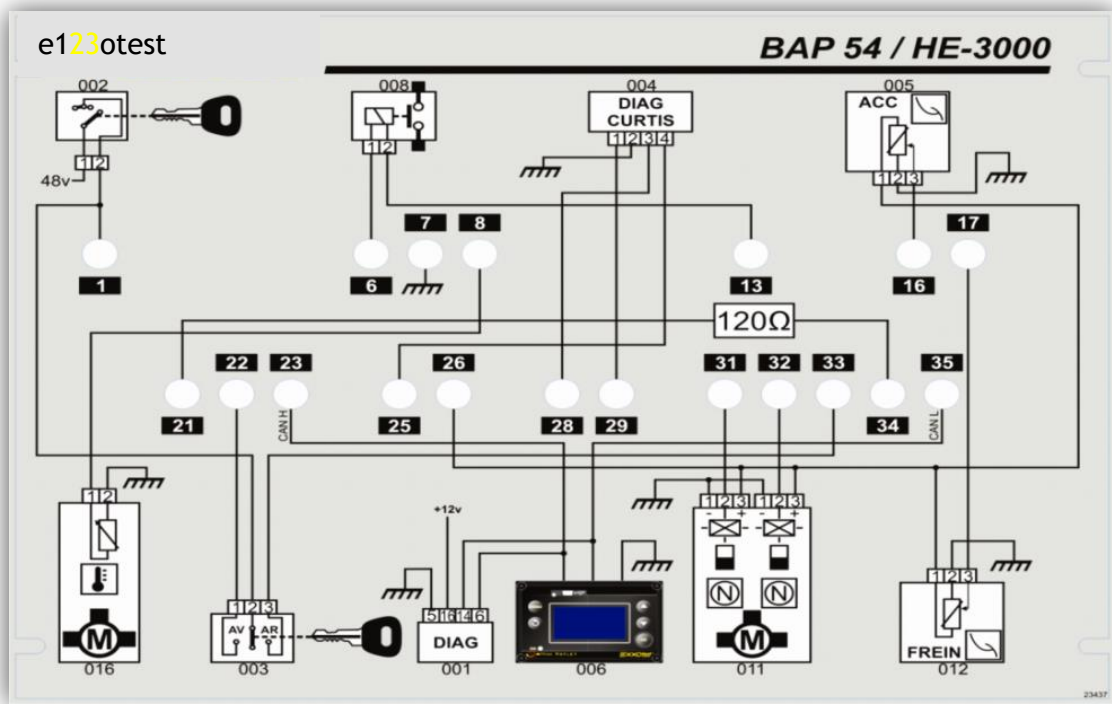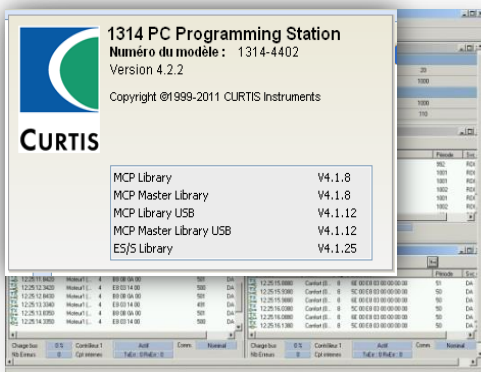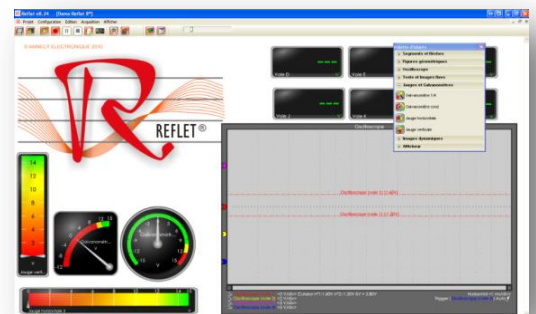
EQUIPMENT

The HE-3000 is delivered with:

SOFTWARE AND DIAGNOSTIC TOOL:

- **REFLET®**, software for acquisition and use of input / output signals.
- **MUXTRACE®** software for acquisition and use of CAN multiplexed network (CAN HS).

Diagnostic tool CURTIS®

- **CURTIS®** software for reading and programming the speed controller parameters.
- **CURTIS®** Diagnostic tool: console PG 1311 designed to program, test and diagnose variable speed controller and accessories **CURTIS®** easily and intuitively.

ELECTRICAL CAPACITATION / STANDARD UTE C18-550:

(Materials provided for the empowerment preparation)

- **VAT** – "no voltage" checker, which must be used before each intervention.
- **PPE** - personal protective equipment (face shield, isolation gloves and textile gloves).
- **EPC** - collective protection equipment (signal band and chain, pole lighting, signaling label).

This vehicle does not require electrical certification, but it helps to prepare it.

- Chassis: Multi-tubular steel frame, epoxy paint.
- Body: Composite materials.
- Steering: Standard mechanical steering with steering rack and tie rod.
- Security: General Safety Circuit Breaker, 2 emergency stops (each side of the engine compartment).
- Bulkhead separating the engine compartment and passenger compartment
- Energy chain:
  — Set of 4 lead acid maintenance-free batteries 12V / 70 Ah.
  — Embedded automatic charger with connection plug to the mains (230V / 48V).
  — 3 phases 48V asynchronous motor.
  — 4kW power at 3900 rpm, 45Nm torque at 2000rpm.
  — Bidirectional powers relay (power, regeneration).
  — DC / DC converter (48V / 12V).

- Brake: 4 wheels hydraulic disc brake controlled by master-cylinder. Mechanical parking brake on the rear wheels.
- Transmission: By differential gear and reduction is placed on the front wheels (reduction ratio 1/9.91).
- Suspension: The front wheels are independent, pseudo McPherson / rear wheels, trailing arm / coil springs and telescopic shock absorbers on all 4 wheels.
- Size: 2950 X 1350 X 1500 mm
- Net weight: 450 Kg
- Warranty: 2 years