Chassis Linkage | Electrics and the Environment | Engines | Injection | ABS/ESP | Air Conditioning | Multiplexed Communication Networks

Measurements/Diagnostics | Electricity / Body | Sensors | Actuators | Battery Control | Charge | Software

Educational Products for Automotive Technology Teaching & Training

2013 Guide / EN
Education
www.exxotest.com

EXXOTEST ®

Educational Products for Automotive Technology Teaching & Training

2012-2013 Guide
Education

summary

An Important partner in Automotive Training and Teaching, EXXOTEST® designs and manufacture a large range of products which answer to the needs of automotive / mechanical schools, training centers as well as car manufacturers.

The partnerships of our R&D department with most of the European Car & Car component manufacturers allow EXXOTEST® to achive high performance and "up to date" technology oriented teaching products.

Our international network of Distributors and Agents, are at your disposal for any question or specific needs you may have.

Please feel free to contact us!

Chassis Linkage

MT-TWINGO, MT-HD10 & MT-DAE

MT-TWINGO

Ground link model based on a Renault Twingo (1/1 scale), can be used with a standard geometry control station for front and rear axles.

Visualization and modification / adjustment of all angles possible. ◼

Visualization and modification / adjustment of all angles possible.

MT-Twingo

MT-HD-xx

Teaching geometry control system, easy and efficient.

Heads assembly with laser sighting on slide rule.

Steering Control Parallel, camber, castor and kingpin control and adjustment. ◼

Versions:

MT-HD-10	Light vehicle
MT-HD-20	Farm tractor
MT-HD-30	Truck

MT-HD-10

MT-DAE

Electrical steering assistance teaching model.

Multi-disc brake mounting at the end of the rack and pinion as to recreate an effort. ◼

MT-DAE

Electrics and the Environment

HE-3000 Electrical vehicle

HE-3000

The first educational electrical vehicle!

This working system is naturally instructive.

The EXXOTEST® **HE3000** integrates the brake's energy recovery technology, as well as a CAN bus communication.

This vehicle has full instrumentation and totally secured for a use in technical training centers.

It is equipped with a breakout box allowing teachers to create discrete faults and students to measure signals

HE-3000

(acceleration pedal information, brake, 3 phases current, engine speed, ...)

■

BAPxxx

The 48V - 4 Kw three phase motor is equipped with a CURTIS™ electronic variator.

This converter is parameterizable (torque/speed, acceleration, …) using the CURTIS™ diagnostic tool.

Curtis 1236

Curtis 1311

HE-3001

Possible alternative: Vehicle equipped with a 38V/44A Lithium battery module with its integrated BMS (Battery Management System)

■

Lithium battery (variant)

Delivered with instructions, developed with the requirements of teachers in mind.

HE-3010 Electrical bicycle

HE-3010

The EXXOTEST™ HE-3010 is a new 'Bicycle' teaching model, designed to help understand electrical assistance with Brake Energy Regeneration.

The bicycle is equipped with a 26 V motor (36V version also available) with brake energy regeneration. The device includes an electronic home trainer simulating climb and descent.

■

Educational coverage of the HE-3010:

■ Creativity and competitiveness,

■ Eco-design,

■ Functional study of the system,

■ Behavioral study of the system,

■ Hardware and / or software structure,

■ Construction of the system.

HE-3010

Battery

The **REFLET™** information software, delivered with the model, allows measurements data as well as a graphics processing (**EXXOGRAPH**) of these measurements through a simple USB connection. It also offers features as measurements logging, curves tracing, measures, zoom, data export, printing, …

Multiplexed network analysis, hexadecimal frames view, … REFLET is compatible with the full **EXXOTEST™** products range (Muxtrace, DLC, …)

A control panel giving access to several parameters: LCD screen, breakout box, CAN bus sockets, road's profile selection, cyclist's weight choice, breakdown box and emergency stop.
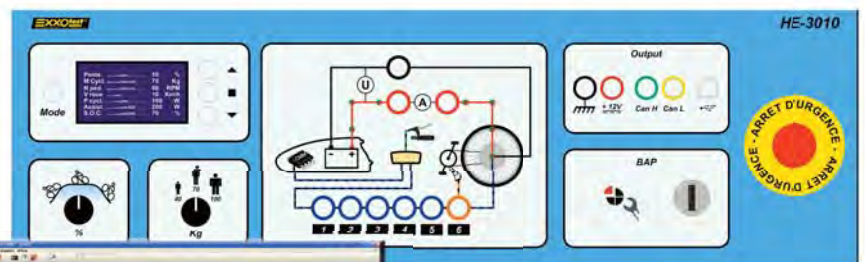
Braking engine

Delivered with comprehensive instructions to assist teaching.

ABS ESP

MT-ESP1000 & DTP-ABS1000

MT-ESP1000

Study and analyze
a **vehicle's comportment**
in differnet configurations,
according to **ABS**, **ASR**
and/or **ESP** embedded systems. ■

The MT-ESP1000 model,
is the first innovating teaching model of
our "**Virtualization service training**"
products range. It is dedicated to the
study of:

- **ABS**: Antilock Braking System,
- **ASR**: Anti-Skid Regulation,
- **ESP**: Electronic Stability Program.

Steel structure with 2 touch screens
(anti-scratch 6 mm) and an integrated
computer.

- **Screen N°1 :**
  Visualization of the drivers position,
  choice of the meteorological conditions
  (Dry, rain, snow), choice of the vehicle's
  technologies (ABS, ASR and ESP),
  settings (scale, zoom, …) and curves
  visualization.

- **Screen N°2 :**
  Visualization of the ABS, ASR and ESP
  bloc, of fluid movement into the pipes,
 of actions on wheels.

Pedals bloc with acceleration and brake
pedal for the driving the vehicle on a drive
track.

- A breakout box with number of access
  as signals of electro valves, wheels sensors,
  CAN HS and LS networks, …

MT-ESP1000

DTP-ABS1000

ABS simulator with dynamic
visualization. Shows the action of fluids,
pressures, actuators' work, wheels'
slipping, etc.
Disposes of an ECU's platform allowing
the access to inputs / outputs signals,
to the vehicle's speed adjustment,
to the wheels' grip, etc. ■

DTP-ABS1000
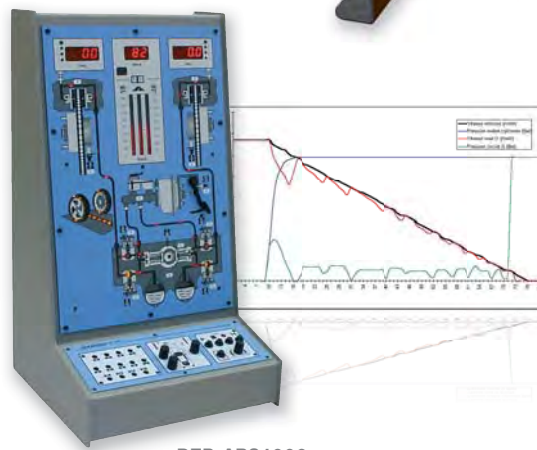
This simulator integrates
a logging and replay feature
of sequences.
It is delivered with
a PC software
for signals analysis.
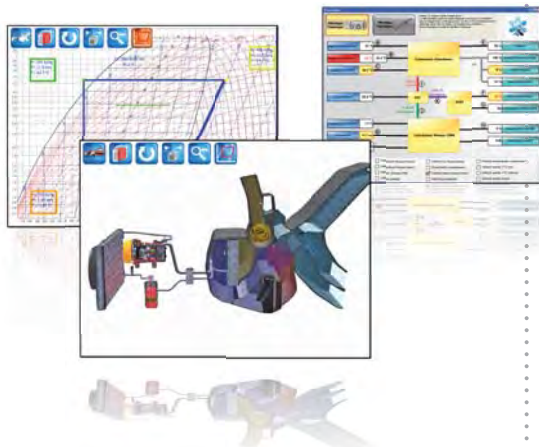
Air-Conditioning

MT-C5001, MT-C5002, MT-C7000 & EXXOCLIM

MT-C5001

Dedicated to the study of the operation and the diagnostics of **auto-regulated air-conditioning system**, based on a real A/C ECU (**Peugeot**). ■

MT-C5002

The EXXOTEST® **MT-C5002** is a new teaching model intended for **the study of automotive regulated air-conditioning system.** ■

MT-C7000

Cold producing, automotive A/C model:

with real components:
Variable capacity compressor, condenser, filter drier, expansion valve and evaporator. ■

EXXOCLIM

- User-friendly and intuitive, the EXXOCLIM guides its user step by step in his control and diagnosis operations,
- Accurate and reliable owing to the use of high accuracy sensors,
- Evolutionary, its USB link to a PC allows the EXXOCLIM's embedded software to follow any of the A/C systems,
- Convenient thanks to its diagnostic reports and printing management PC application. ■

This autonomous model consists of **3 parts** : "**Cockpit**", "**Engine**" and "**Control**"

MT-C5001*

MT-C5002*

It integrates 3D technology.
This virtual representation explains in detail the most complex phenomena of air-conditioning.

2 touch screens:
the first one shows a **block diagram operation** of the A/C system, and the second one shows **the cold loop's pressures and temperatures evolution**.

A control panel equipped with potentiometers for the adjustment of environment and inputs conditions of the A/C.

A breakout box offers direct access to sensors, actuators and CAN network.

MT-C7000

Discovery of a simple and easy to access cold loop. Possible actions: refrigerant fluid recovery, vacuum and filling using your own standard R134a A/C station.

Temperature and pressure measurement at several points of the loop, for the under-cooling and over-heatng calculation, report to the theoric' Mollier diagram.

Ambient and vent air temperature and humidity measurement wireless sensor.

EXXOCLIM

3 working modes and several measurement inputs makes the EXXOCLIM the most efficient solution of the market, fitting with any user's profile:
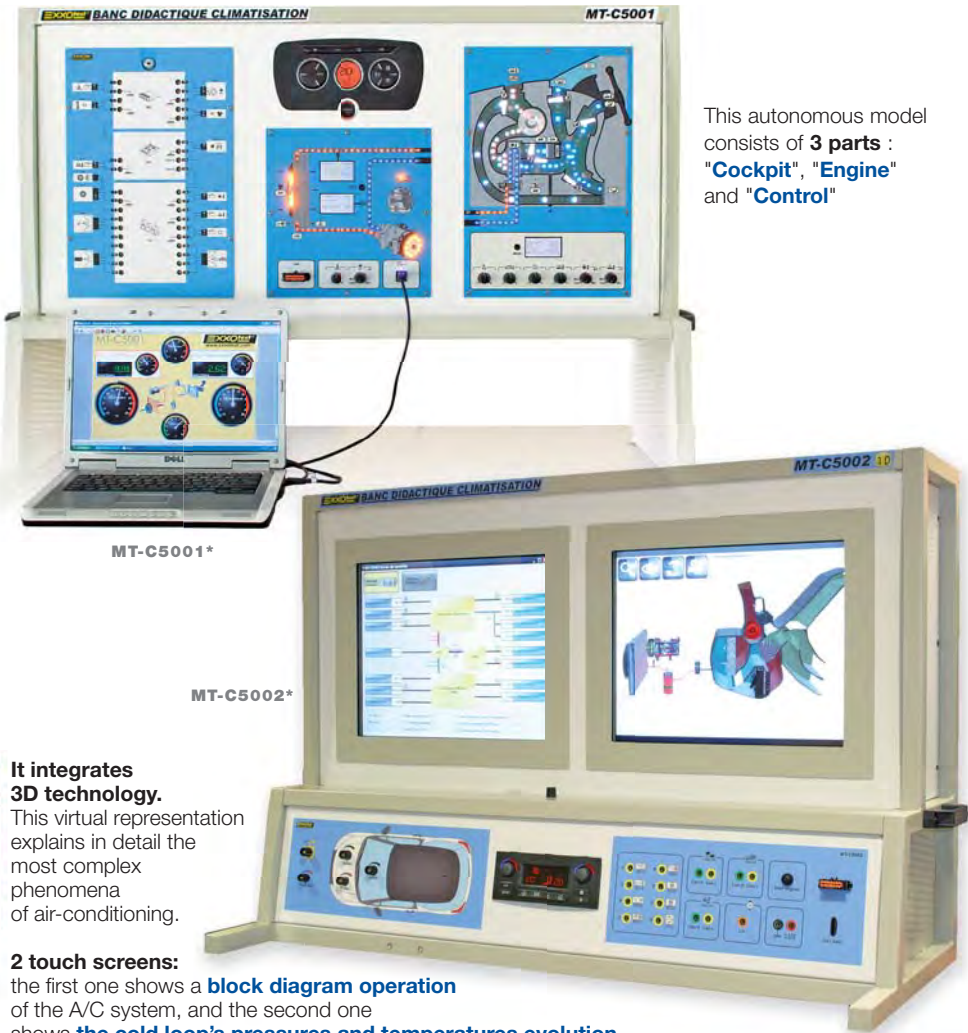
Measurement mode:
Several display types allows the measurements parameters' interpretation of the experienced user.

Check mode:
A large choice of guided check operations of the cold loop's parts for further fault research or to confirm a repair.

Auto-Diagnosis mode:
A large choice of guided check operations of the cold loop's parts for further fault research or to confirm a repair.

Injection and Power Train

MT-H9000, DTP6001, MT-E5000, DTP2000, DTP6030
MT-BVR, GI3000 & RV1020

MT-H9000

HDI diesel injection teaching Test Bench with a turbo diesel engine with **Common Rail injection**. ■

MT-H9000*

DTP6001

Pre and Post-heating teaching simulator allowing the simulation and the viewing of all working phases of the system (based on Renault components). ■

This bench is dedicated to the viewing, analyze and the understanding of Common Rail system, showing pressures, rotation, air and fuel flow, etc.

DTP6001

MT-E5000

Petrol **Phased Sequential Injection system** teaching bench based on a simulated PSA's TU 1,6 16V petrol engine with motorized throttle valve and EOBD support. ■
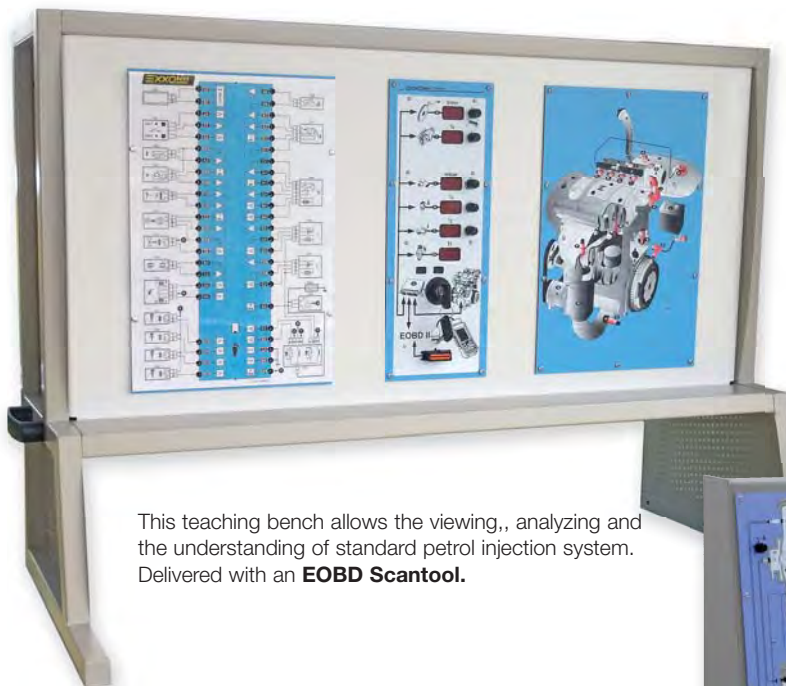

MT-E5000*

DTP2000

Motronic Petrol Injection Teaching simulator. Viewing and adjustment of several parameters. ■

This teaching bench allows the viewing,, analyzing and the understanding of standard petrol injection system. Delivered with an **EOBD Scantool.**

Possibility to create faults on the back panel.

DTP2000

DTP6030

Engine Cooling teaching simulator, an unit management, serial or parallel 3 relays system. Relay wiring inside the simulator to be set by the teacher with or without faults. ■

Set up wiring on the simulator's front panel to be examined by the student, with or without the electrical drawing's mask.

MT-BVR

Robotized Gearbox training bench, driven by an electrical motor ,electronically controlled for the dynamic viewing of the clutch and shifting actuators according to the driver's requests. ■

Integrated breakout box. With safety protections.

MT-BVR

GI3000

Measurement and simulation tool of: Voltage, PWM Pulse Width Modulation and Frequency. ■

GI3000

RV1020

Resistive sensor simulator to be plugged in place of a CTN, CTP sensor or petrol gauge. Displays the simulated resistance from 18 Ω to 40kΩ. ■

RV1020

*Trolley option

# Sensors & Actuators

DT-xxxx Series

CONTROL or MEASURE

EXXOTEST® Introduces **a new range of teaching materials based on real components.**
Each module allows the access to its power supply, wiring and to measurement points
of several sensors / actuators.
The teaching exploitation of these modules goes from a simple analysis of a sensor to the
integration of actuators into more complete development projects. Several type of signals
to be studied: pulse width modulation, inductive, hall effect, magneto-resistive, ...

Delivered with:
- Use and teaching instruction book,
- Banana plug cable assemblies according to the module needs,
- 12V and / or 5V power supply according to the module's needs.
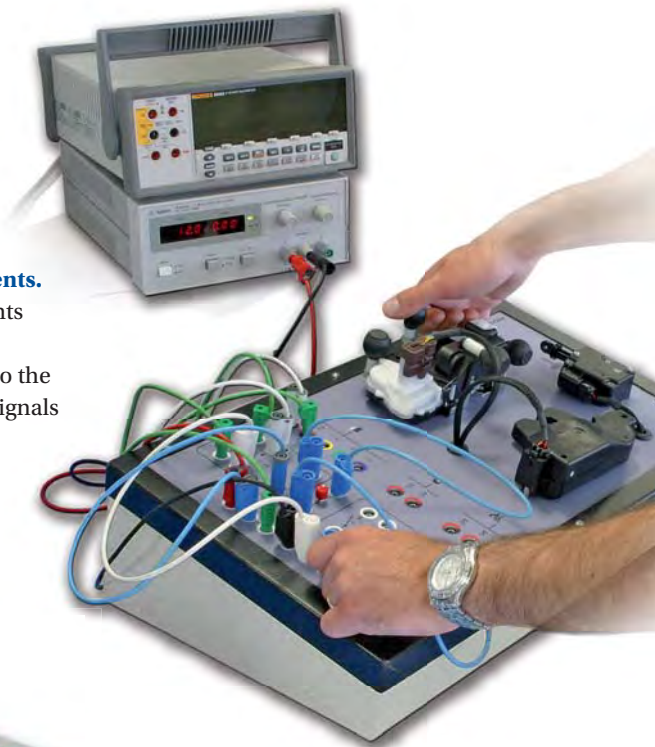
DT-C001

Control DC electrical motors.

Window-lift and rearview mirrors:
control of the motors in both
directions. ■

- Window-lift motor,
- Rearview motor,
- Rearview and mirrors adjustment buttons.

DT-C002

Control injectors and ignition. ■

- Petrol injector,
- Diesel common rail piezoelectric injector,
- Pencil coil plug with spark plug.

DT-C003

Control motors using PWM (Pulse Width Modulation). ■

- Motorized throttle valve,
- Air dispenser,
- EGR valve.

DT-C004

Control door, trunk, ... locking ■

- Door locks,
- Boot locks,
- Fuel Filler Flap locks..

DT-C005

Control stepping motors. ■

- Idling actuator,
- Air recycling motor,
- Front lamps height adjustment.

DT-M001

Measure steering wheel angles:
Com2000 with steering wheel
sensor, signal output on
CAN HS bus and plug (analog). ■

DT-M002

Measure positions:
Body, brakes and accelerator's pedal
sensors. ■

- Accelerator's pedal,
- Redundant brake switch,
- Analog and digital body
  height sensor.

DT-M003

Measure a wheel's speed:
Magneto-resistive sensor.

- Bearing with magneto-resitive
  sensor.

DT-M004

Measure air characteristics:
Pressure, temperature, flow. ■

- Air temperature sensor,
- Air pressure sensor,
- Air flow meter.

DT-M005

**Measure voltage and current,
and understand wiring.** ■

- Lamps, resistors,
  relays, cables.

DT-M006

**Measure engine speed using
different sensor technologies:**
Inductive, Hall effect,
Magneto-resistive. ■

- Engine flywheel inductive sensor,
- Camshaft hall-effect sensor,
- Crankshaft magneto-resistive sensor.

DT-M008

**Alternator study, analysis
of the mechanical to electrical
energy transformation.
Measure of alternative
or rectified current.** ■

Possible wiring:
- Star,
- Delta,
- Diodes bridge wiring.

Engine on Chassis

MT Moteur, Petrol or Diesel engines with control panel

MT-Moteur

New engine, always ready for running, with battery charger, fuel gauge, ...

- Optimized ergonomics,
- Total safety,
- Complete transverse engine with more visibility and accessibility.

Engine

As in the vehicle, the engine is equipped with all its equipment: injection system, electrical wiring harness, injection ECU, ...

The full set is built with unused and manufacturer's original components. The engine is fully instrumented and a working model for use in training institutions. ■

Fuel supply

The fuel supply is controlled by the gauge and submersible pump system of the vehicle (level indication on the dashboard). ■

Electrical system

All wiring harnesses are in conformity with car manufacturer's standards. ■

Cooling

Similar to the vehicle's original cooling system, placed at the front of the chassis. It includes the radiator, the fans unit, various hoses and an expansion bottle. ■

Safety

The engine is a component of the vehicle out of its environment, it is then considered as a machine. In compliance with the "Machinery Directives", EXXOTEST® protects all the rotating parts and hot parts (above 55°C). ■
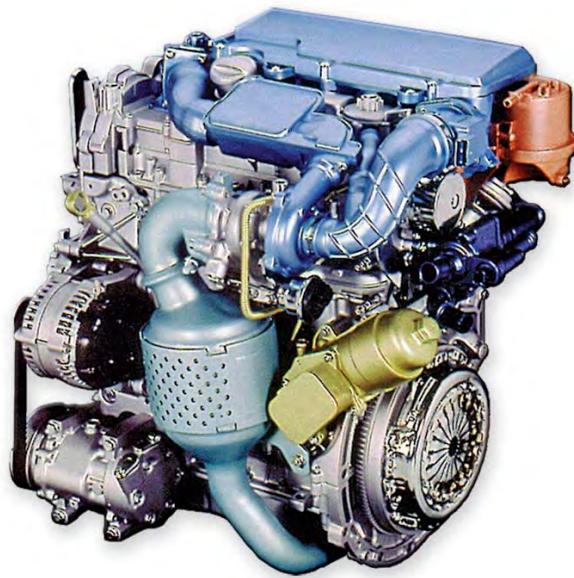
DIESEL ENGINE:

1.4 L DV4TD (PSA) - "Common Rail" direct injection with compressor, Piezoelectric injectors, SIEMENS SID 806 type

1.6L DV6C (PSA) - "Common Rail" direct injection with compressor and DPF (Diesel Particulate Filter), Euro5 standard.

PETROL ENGINE:

1.6 L 16 S TU5JP4 (PSA)
Phased sequential Injection BOSCH ME 7.4.5, catalytic converter, 2 lambda sensors (motorized throttle valve, ...).

1.6 L 16 S EP6 (PSA/BMW)
Phased sequential Injection BOSCH, variable valves lifting (valvetronic), phase shift of the 2 camshafts.

1.6 L 16 S EP6DT (PSA/BMW)
Phased sequential Injection BOSCH MED 174, with "twin-scroll" compressor, phase shift of the admission camshaft, brake's energy recovery and CAN bus.

1.2 L 12 S EB2 (PSA)
Phase sequential petrol indirect injection, 3 cylinders engine.

The electrical power supply is fitted into a locked box at the front of the training chassis. It contains:

- The vehicle's battery,
- A circuit breaker,
- An automatic battery charger,
- The 110/230 V plug for the charger's power supply.

- The transparent bonnet covers the total engine, the bonnet is articulated and supported by jacks.
  - The closed position allows maximum safety during operation of the engine while retaining full visibility.
  - The open position provides a wide access to the engine and facilitates the different interventions.
  - Locking is provided by an electrical lock controlled by the control panel.
- The electric power system is protected by a removable cover.
- A fluid retention tray is fitted in the event of leakage or mishandling.

The chassis

Rugged and lightweight,
the EXXOTEST® designed chassis
is protected with epoxy paint. ■

Control panel

It includes the following items:

- Key switch, emergency stop punch, opening bonnet control, electronic throttle lever.
- Analog indicators: tachometer, water temperature, fuel level, lamps, clock, ...
- High resolution colour screen displaying engine parameters from CAN bus and optional sensors,... (see table).
- Diagnostic plug: the EXXOTEST® CL550 is provided with each engine.

Any other diagnostic tool can be used as on the car. ■

It is mounted on 160mm diameter rollers (2 fixed and 2 directional with 1 brake) for easy mobility.

Engine's parameters shown in real time	Engine speed
	Torque
	Driver request
	Cooling liquid temperature
	Oil temperature
	Water temperature warning
	MIL lamp
	Instantaneous consumption
	Diesel preheating lamp
	Starting information
	Engine running information
	Battery voltage

These data are shown on the screen of the dashboard
And available through the USB port for PC application
(logging, curves tracing,…)

CL550
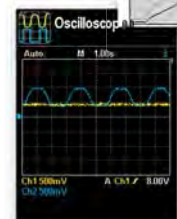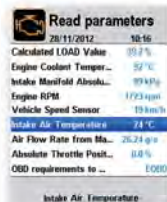
Multiplexed Communication Networks

MT-CAN-LIN-BSI, DTM-MUX8000, MT-AAS, MT-AFIL & DT-M010

MT-CAN-LIN-BSI

Teaching model with real car components for the study of CAN High Speed, CAN Low Speed and LIN type **communication networks**. ■
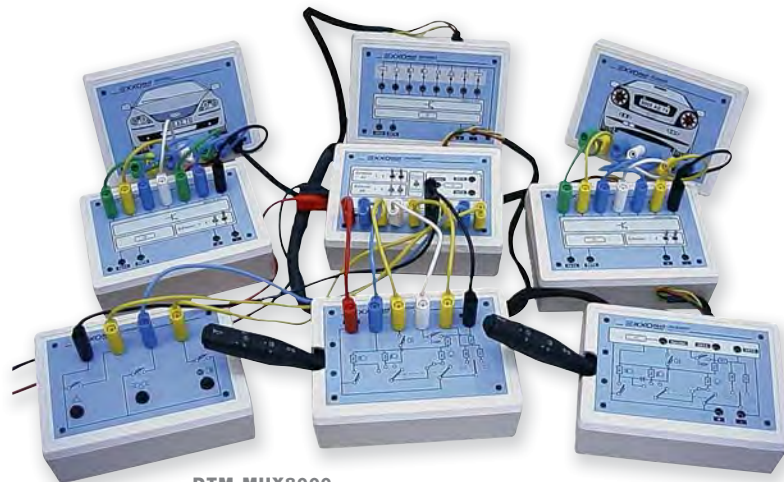
Integrated breakdown box giving access to all parameters.

Xenon headlamps with azimuth servo.

MT-CAN-LIN-BSI

DTM-MUX8000

Set of 9 modules
"Basics of Multiplexing".

Essential for the teaching of communication network basics, it uses « pedagogical » frames which can be observed and decrypted more easily than on real vehicle's networks. ■

DTM-MUX8000

MT-AAS

MT-AAS is a teaching model using real car components, for the study and understanding of the **Radar parking assistant system.** ■

MT-AAS

This function is used to detect obstacles present in the blind spots in the rear of the vehicle.

Analyze and identification of the components, signals survey.
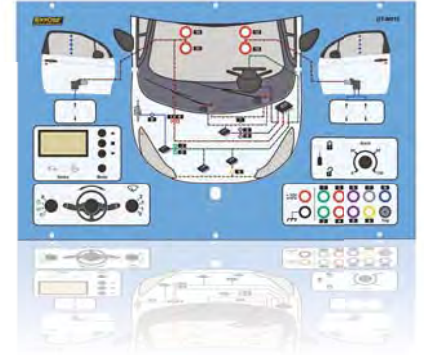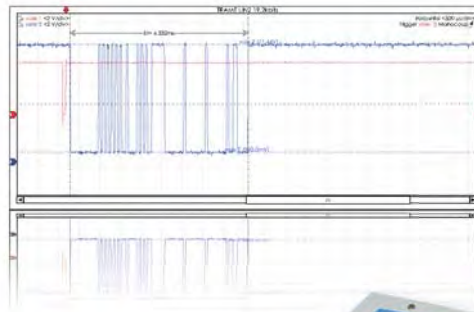
CAN Low Speed network.

DT-M010

Teaching module for the study and understanding of multiplexed networks.

5 communication networks to be accessed:

- 1 CAN "Inter System" 500 Kbits/s,

- 1 CAN Low Speed "Comfort" 125 Kbits/s,

- 1 Can Low Speed "Body" 125 Kbits/s,

- 2 LIN (Wipers and adaptive headlamps") 19.2 Kbits/s.

The teaching module is equipped with an integrated' break-out' box accessible by the teacher through a locked compartment.

Bus band rate can be adjusted from "real" to "idle" (thus adapting to all scopes having a bandwidth exceeding 10MHz) for frames visualization and decoding. ◼

DT-M010

Objectives are:

- Identify the multiplexed networks used by the simulated sensors and study CAN High Speed - CAN Low Speed - LIN communication protocols,
- Analyze the nature of information exchanged on the communication networks,
- Understanding the different network technologies used in multiplexing,
- Diagnose the networks.

MT-AFIL

MT-AFIL is a teaching support using real car components for the study and the understanding of the **Lane-departure Warning System.** ◼

MT-AFIL

CAN Low Speed and LIN networks.

Electricity and Vehicle Body

MT-LAD-C8, DTM7000,DTM7030, MT-EG-C3, DTM7020, MT-VRC-C3 & MT-SE-C6

MT-LAD-C8

This teaching model, based on real car components, allows the study of discharge lamps working under the same conditions as vehicle. ■

It is equipped with potentiometers which allow the operation of several parameters such as ambient light, body height sensor, engine speed and thus observe in real time the adjustments made by ECUs.

It also owns CAN Low Speed Body and Comfort communication networks.

MT-LAD-C8

DTM7000

Set of 10 "lighting and signage" allowing to faithfully reconstruct the functions as applied on vehicle. Implementation of electricity laws, Ohm law, ...

Study of the different subsets: fuses, switches, lamps,...

Each module may be studied separately to further a specific function.

DTM7000

DTM7030

Set of 4 "lighting and signage" trailer plug with 2 DIN and MULTICON wiring harnesses. ■

Ideal for the understanding of wiring and troubleshooting of trailer plug.

DTM7030

MT-EG-C3

The EXXOTEST® MT-EG-C3 is a teaching model dedicated to the study and the measurements of a windscreen wipers system.

This model integrates the real car components which are involved in the working of the windscreen wipers system. ■

It is possible to connect a diagnostic tool to the OBD II connector of the model.

Allows a full mechanical and electrical study of the system.

MT-EG-C3

DTM7020

Set of 5 windscreen wiper
modules integrating:
Stalks, Actuators, Timer, Motor, etc. ■

DTM7020

Learning of components,
wiring, …

MT-VCR-C3

MT-VRC-C3 is a real
car components teaching
model for study and
understanding of the working
of centralized locking system.

Understanding of the system's
operation, connection with
a diagnostic tool, key learning.

The model is equipped with
centralized locking system
real components. ■

MT-VCR-C3
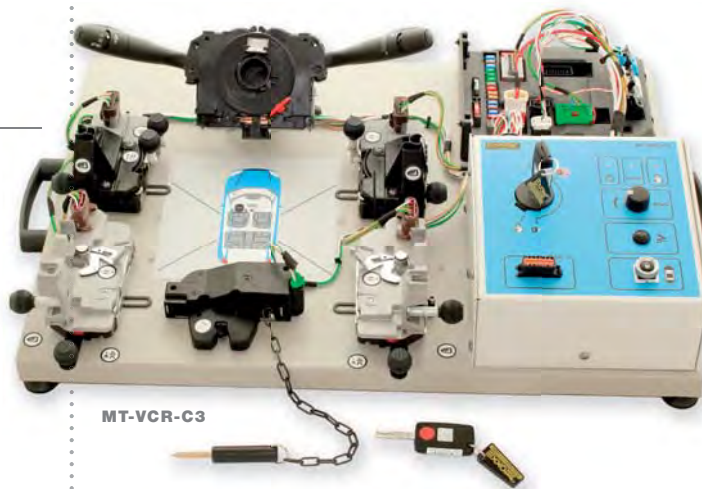
All system's components
are accessible.

Access to every wheelhouse
of locks for a full
and real use of the system.

Powered with a 12V 25A
power supply (included)

MT-SE-C6

The MT-SE-C6 allows you to observe,
analyze and understand the working
of a complete electrical seat and
its various motors and their actions.
Functional and structural analysis
of the seat. ■

MT-SE-C6 integrates:

● A complete electrical seat
with its adjustments motors
and its frame without trim,

● Control and memory ECU
of the seat, Calculate
commands and memory,

● Separated control
plate linked to the
"Body" CAN bus..

MT-SE-C6

Battery Check and Charge Rate

MT-4002V, TCHA-10A-L, TCHA-P25A-L, MI250 & MI250S

MT-4002V

Training in electrcal basics on a **12 V charge and start-up** environment integrating a starter and an alternator with associated components, a diesel pre and post-heating plate, a plate equipped with various components and a speed controller for the alternator's motor.

The training bench is delivered with a **MI250**, real charge and start-up controller approved by many car manufacturers. ■

MT-4002V

TCHA-10A-L & TCHA-P25A-L

Developed to ensure a constant charge quality, these chargers are ideal for embedded use (boats, camping-cars, ambulances...) and for applications which need high charge security level (signage, lighting...).

3 states charge curve:

● **BOOST / Quick charge:**
quick recovery up to 80% of battery's capacity.

● **ABSORPTION / Equalization:**
Progressive load up complement to 100% of capacity.

● **FLOATING / Maintenance charge:**
The charger automatically switches to a maintenance charge mode. The charger can then stay connected to the battery without any time limitation. Compensation of battery auto discharge + supply of eventual consumers, within the power limits of the charger (beyond the maximum power from the charger, the battery is solicited).

IUU curve for 2 different battery types:
lead acid, sealed lead (AGM, Gel).

Choice of the charge curve
by external switch. ■

TCHA-10A-L

TCHA-P25A-L
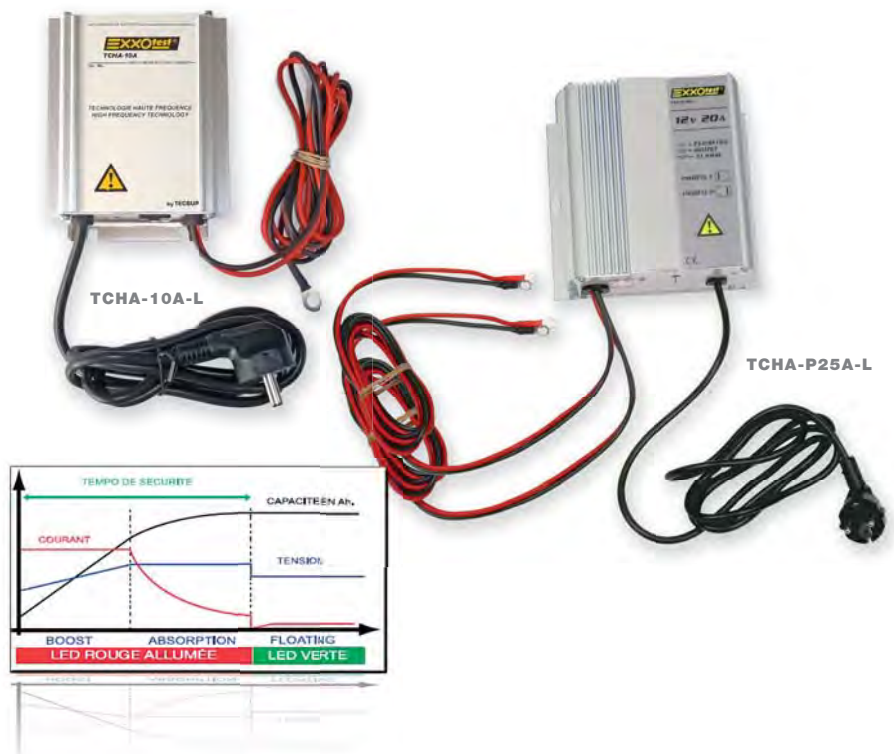
MI250 & MI250S

For 12 V vehicles with current measurement up to 500 Amps. The **MI250S** version integrates a memory saving device to avoid any deprogramming of the vehicle. ■

MI250

MI250S

Measurement and Diagnostic

MT-TELE, CL550, Breakdown boxes,
Breakout boxes, BAP-Mini6-L, MX100 & PT05

MT-TÉLÉ

Teaching model
with real components:
ECU,
dashboard,
key switch,
transponder, ... ■

**The operation is identical,
as on the vehicle:**

- Down loading of ECU embedded software,
- Key learning,
- Options tele-coding,

- DTC reading and erasing, parameters measurements,
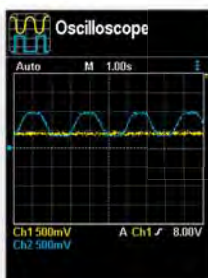- Delivered with its specific ECU diagnostic software.

CL550

EXXOTEST® CL550,
multi-functions tester bringing
together the functions of Oscilloscope,
Mutimeter and OBD II scantool. ■

- 100% evolutionary: USB PC link for printout, data export, updates,
- 100% EXXOTEST: easy, user friendly and efficient.

OBD Scantool
Parameters reading,
faults reading
and erasing.

**Voltmeter
Ampmeter**
Simultaneous display
of 2 voltages
(or 1 amp), and
of the battery voltage
with graphical display.
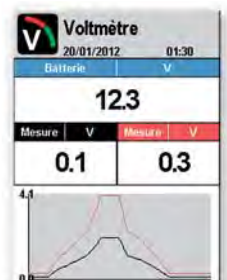
Oscilloscope
2 channels,
+/- 50 V,
100 µs to 10 s
timebase
and 500 mV
to 10 V range.

Main features:

- 2 channels multi-meter with trace mode,
- 2 channels Oscilloscope,
- OBD II 9 modes Scan tool.

Measurement and Diagnostic

MT-TELE, CL550, Breakdown boxes,
Breakout boxes, BAP-Mini6-L, MX100 & PT05

## Changeable Programme "Breakdown box" BAPxxx

The EXXOTEST® "break-out box" is placed in series between the vehicle's wiring harness and an ECU. It facilitates measurements access and allows a teacher to create faults safely, without any risk of deterioration or change of the system or vehicle studied.

■
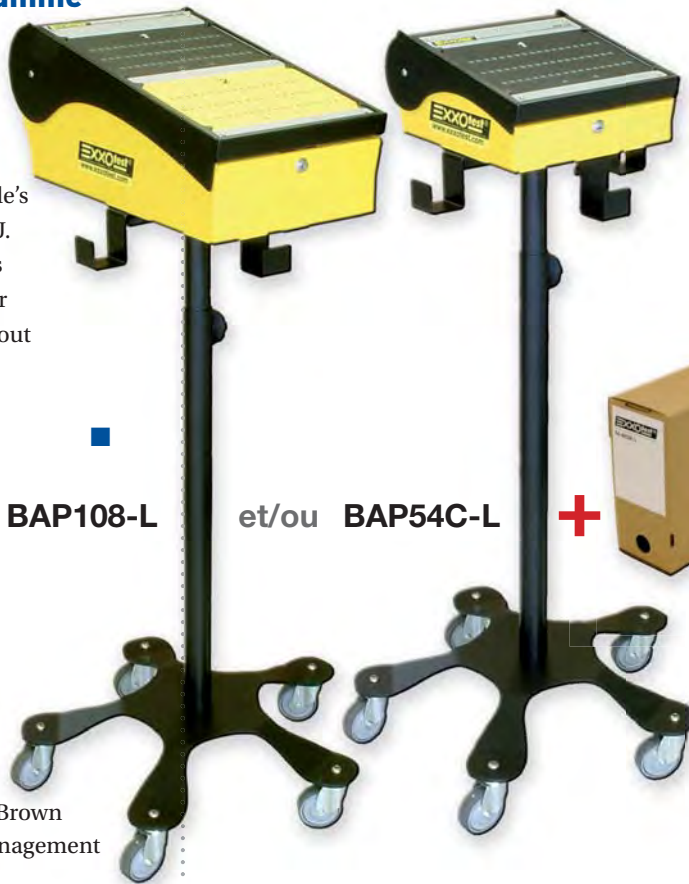
BAP108-L　　et/ou　**BAP54C-L**　　**+**

Changeable programme Break-out boxes 54, 108, 162, 216, 270,… ways
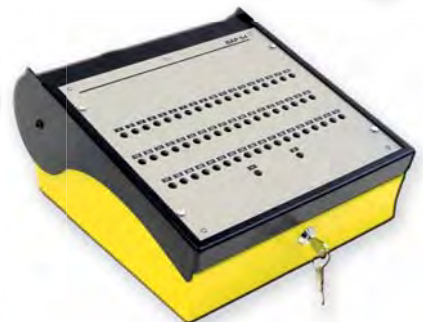
Interfaces kits:

- 32 pins Grey, Black and Brown interfaces for engine management systems
- 48 pins Grey, Black and Brown interfaces for engine management systems
- 53 pins Black and Brown interfaces for engine management systems
- BSI FULL CAN interfaces (requires 2 x BAP108-L)
- Interfaces for body/comfort applications: Embedded electronics, sliding side door, electrical steering assistance, dashboard, A/C, …

BAP108-L	108 way break-out box **with trolley** without interfaces
BAP54C-L	54 way break-out box **with trolley** without interfaces

BAP25	25 way break-out box
BAP35	35 way break-out box
BAP55	specific PSA 55 way break-out box (3 lines)
BAP55/R	specific RENAULT 55 way break-out box (2 lines)
BAP68	45/68 way break-out box

1 interface kit　　=　　Cables　　+　　corresponding front panels for BAPs

Breakout boxes

The analysis and diagnostics of vehicles require an efficient access to measurement points. Easy to use, these breakout boxes cover a large range of current automotive connectors.

Each breakout box fits with the car manufacturers cables sections standards and therefore generates no disturbance on the vehicle.

Measurements are done using delivered test leads. ■

BAP-Mini6-L

Progress in training:
Study the working of sensors and actuators by making their signals easily accessible.

Diagnostics help and simulation of faults using switches associated to each channel. ■

MX100

For 12 V vehicles
(0-20V range). ■

Line and voltage drop tester with 2 displays:
● the 1st screen shows permanently the battery voltage,
● the 2nd screen, associated to the measurement accessories, shows:

PT05

Anti-destruction 0.63 mm diameter retractable measuring tips for measurement operations on fine and fragile contacts. To be used with standard 4 mm sockets. ■
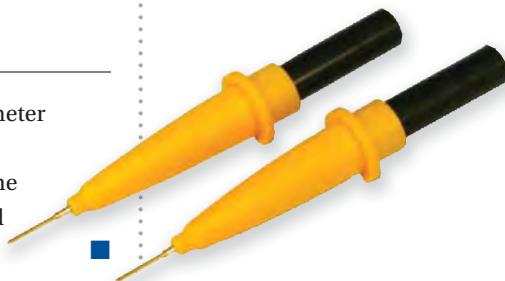
Breakout box / Embedded electronics	
BM204	40 pins MQS + 10 pins Cinch breakout box
BM205	18 pins MQS + 16 pins SIGMA 2, + 12 pins MQS + 6 pins MQS breakout box
BM206	26 pins MQS + 6 pins LMQS Black, + 6 pins LMQS Grey + 6 pins LMQS Blue + 6 pins LMQS Brown breakout box
BM213	28 pins Brown and 28 pins Grey BSM (PSA) breakout box
BM214	28 pins Black and 5 pins Yellow BSM (PSA) breakout box
BM208	16 voies OBD breakout box
BM220	10 pins Black and 10 pins White breakout box
BM221	20 pins Yellow and 20 pins Red breakout box
BM226	BSM-2010 (PSA) 27 pins Brown and 6 pins Black breakout box
BM227	BSM-2010 (PSA) 27 pins Black and 27 pins Blue breakout box
BM250	12 pins trailer breakout box

Breakout box / Engine management & gearbox	
BM200	48 pins Cinch brown breakout box
BM201	48 pins Cinch black breakout box
BM202	32 pins Cinch black breakout box
BM203	32 pins Cinch grey breakout box
BM209	48 pins Cinch grey breakout box
BM210	48 pins Cinch green breakout box
BM211	32 pins Cinch blue breakout box
BM212	32 pins Cinch brown breakout box
BM224	53 pins Cinch brown breakout box
BM225	53 pins Cinch black breakout box
BM300	34 pins motorcycle breakout box
BM301	26 pins motorcycle breakout box
BM302	18 pins motorcycle breakout box
BM303	12 pins motorcycle breakout box

6 channels "Break-out box" having interchangeable cables with standard connections, to be plugged to several sensors or actuators from 2 to 6 pins such as:

● Accelerator pedal,
● Motorized throttle valve,
● Temperature sensor,
● Air flow sensor.

Small and lightweight, the mini 6 channels break-out box can be used in or around the vehicle. The switches allow to open the electrical circuits. Series connection.

● The measured voltage,
● The voltage (V) differential measurement compared with the ground or + battery,
● The resistance (Ω) between the measurement point and the + or - of the battery,
● The current (A) using a standard Amp clamp.

Acquisition Software

Reflet®, USB-MUX-xxxx & Muxtrace

REFLET®

The acquisition system dedicated to automotive. ■

EXXOTEST® introduces the 3rd generation of its famous **REFLET® PC** application, always in a spirit of simplicity and adapt to new operating systems.

On engine chassis

On vehicle

On model

- USB connection,
- 4 traces analog and digital oscilloscope module,
- 2D tools interface,
- 3D instruments interface, dynamic visualization of 3D object - EXXOTEST® innovation

PC connection through USB and compatible with the USB-MUX-xxx interfaces range for communication networks analysis.

Analog/digital interface and 4 channels oscilloscope

Part numbers	Denomination	Number of channels	Performance
Reflet® 8-4	Analog Interface	● 12 analog / digital channels ● 1 CAN sensor input	● 100 Khz bandwidth ● 100Ks/s sampling rate ● 13 bits resolution ● Range up to ± 128 v ● Protection ± 200 v
	Oscilloscope with configurable trigger	● 4 channels oscilloscope	● 12 MHz frequency ● 8 Ms/s sampling rate (8/4/2) ● 12 bits resolution

USB-MUX-xxxx

The **EXXOTEST®** USB & Ethernet interfaces allow to interface a PC type computer with CAN HS, CAN LS - different networks activity simultaneously. ■

Each version is delivered with the Muxtrace Expert free demo version and a software development kit (including libraries) for your own developments.
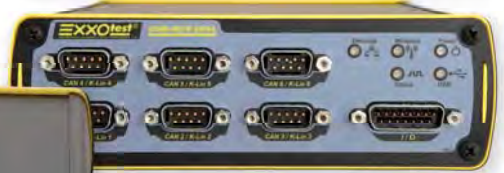

USB-MUX-4C4L	4 CAN HS or LS-fault tolerant, 4 LIN / ISO9141, 12+10 I/O, Ethernet
USB-MUX-6C6L	6 CAN HS or LS-fault tolerant, 6 LIN / ISO9141, 14+12 I/O, Ethernet
AMUX-DB9-CAN	SUB D9 female to banana plugs for 1 CAN HS or LS network.
AMUX-DB9-LIN	SUB D9 female to banana plugs for 1 LIN network.
AMUX-OBD-DB9	Interface cable between the OBS standard vehicle's diagnostic plug and female SUB D9 connectors for CAN and ISO9141/K communication.

Muxtrace

The Muxtrace Expert PC application allows the study of communication networks and protocols. Emission and analysis of frames on CAN HS & LS, LIN and VAN buses. ■

It includes a large range of features such as:

● analyze up to 5 network types simultaneously,

● visualize the decoded values using associated databases (dbc, ldf,… file formats)*,

● display values graphically*,

● log the frames transiting on buses,

● display general information and statistics (bus load, controller status,...),

● send periodic or event messages...
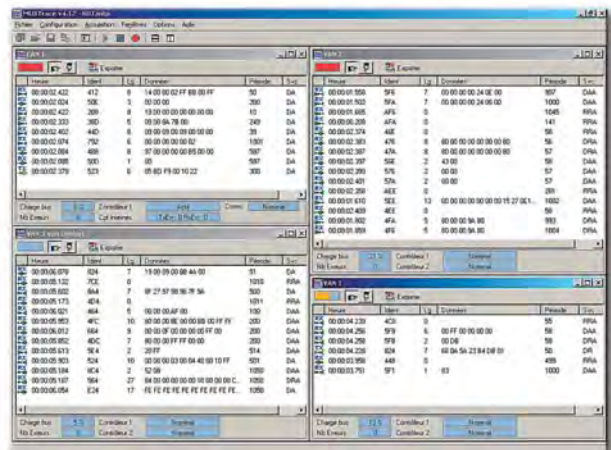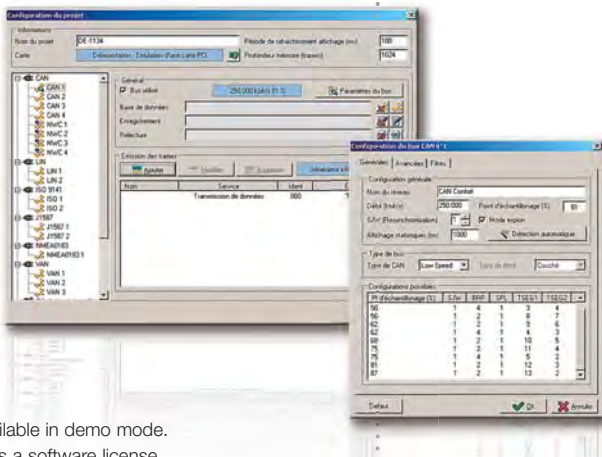
* Not available in demo mode.
  Requires a software license.

EXXOTEST®

EXXOTEST®