



DEGEM  
SYSTEMS

Autotronics

# AT-3006

## Suspension Simulator

Multi-point injection

Electronic ignition

ABS 4 channel system

Engine controls & sensors

Car air-conditioning & climate control

Suspension

Transmission

Safety systems

Automotive accessories

Main Panel

Multipoint Fuel Injection

Emission Control

Airbag Systems

Electronic Stability Program

Hybrid Vehicle Systems

### Objectives

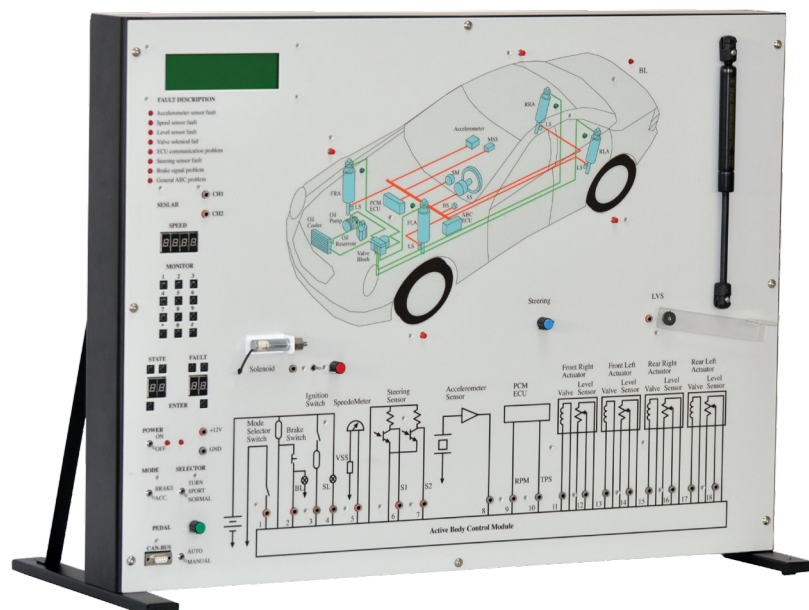
The AT-3006 Automotive Suspension Simulator is designed to provide students with automotive training program introducing various systems and real components in modern cars.

The simulator brings a comprehensive view of the entire system in the car, the system's actual components and their interconnection, functions, operation, signals, diagnosis and repair methods under hands-on safe activities.

### Description

The simulator includes simulated components controlled by internal controller that produces the signals for measurement according to its internal simulating program or according to PC simulation programs.

The simulator's panel is with colored graphics clearly presenting the system components, connections and inter-relations with test points for real measurements and LED's to indicate the component status.



# Specifications

## TECHNICAL CHARACTERISTICS

The simulator is in a wide metal enclosure with a colored printed circuit experiment panel (80 x 60 x 10 cm), which ensures easy handling and good visibility of the components and the simulation part.

The simulator includes simulation components modules. The experimenting panel includes the system drawings with test points and banana sockets.

The simulator can be operated as a stand-alone system without a PC, guided by experimental book using built in oscilloscope or an external oscilloscope.

The simulator can be connected to a PC in USB communication using CBT courseware and D-SCOPE software for signal display.

A record of the student progress can be recorded on the student PC using the optional DCML software and can be accessed by the instructor for monitoring, course management and records if a local area network (not supplied) is available.

## THE SYSTEM INCLUDES

- A power switch with indicating light
- D-SCOPE 2-channel digital oscilloscope
- 7 segment display and control switches, one for fault insertion unit and one for selecting simulation mode
- Eight (8) LEDs to indicate troubleshooting state
- Status mode switches and display
- Warning indicating light
- Graphic and Alphanumeric LCD display 64X240 pixels
- Numeric keyboard
- CAN-BUS interface
- Serial or USB communication interface with the PC
- PC / MANUAL switch
- 12V Power adapter
- Digital multimeter
- Operating and simulation switches
- Simulation potentiometers

- Shock absorber unit simulation
- Accelerometer simulation
- Braking pressure sensor with simulating unit
- Gear ratio sensor with simulating unit
- Steering angle and speed with simulating driving device
- Simulating modules for engine butterfly valve sensor and its operation, electrical-electronic system shock absorbers controlled by a microcontroller, remote control switch for shock absorber solenoid valves, RPM sensor

## EXPERIMENTS

This system enables the student to perform several experiments and covers the following topics:

- Introduction to modern car suspension system, construction, sensors and operation.
- Accelerometer sensor signal analysis.
- Logic intervention in relation to the vertical acceleration.
- Steering sensor signal analysis.
- Logic intervention in relation to the steering angle and to the car speed.
- Logic the intervention in relation to the gear selected, to the acceleration, and to the car speed.
- Logic intervention in relation to the braking pressure.
- Logic intervention in relation to the steering speed and to the car speed.
- The driving signal of the shock absorbers solenoid valves analysis (waveform and duration).
- Insertion of non-destructive faults and troubleshooting and analysis of irregularities and operational defects, by means of microprocessor fault simulator faultfinding methods with various instruments.

An experiment manual for the student and instructor manual accompany the system.

## OPTIONAL ACCESSORIES

- Personal computer with MS-Windows
- DCML (Degem Computer Managed Laboratory)