DEGEM SYSTEMS

AT-3001

Autotronics

Multi-point Injection 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

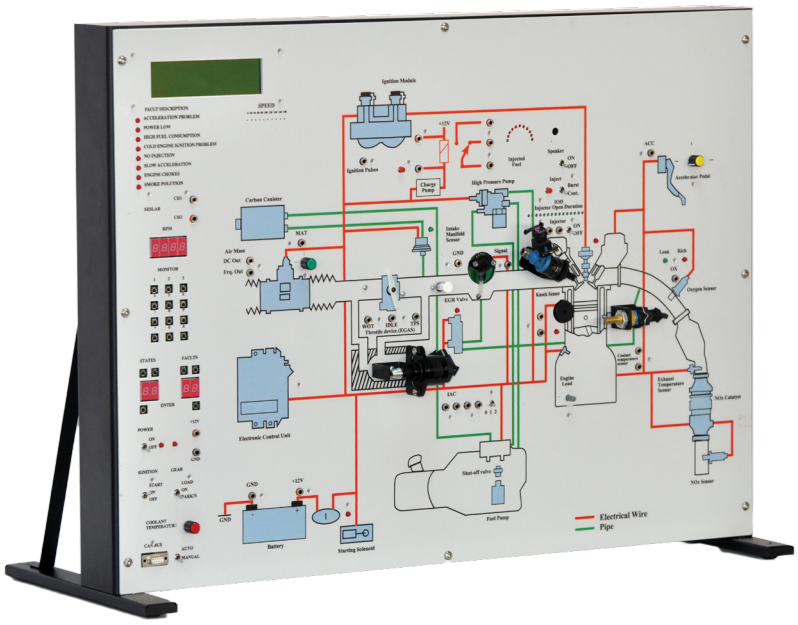
The AT-3001 Automotive Multi-point Injection Training Simulator is designed to provide students with automotive training program introducing various systems and real components in modern cars.

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 real and 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 indicating describing 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 real components and 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 via USB 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) LED's to indicate troubleshooting state
- Status mode switches and display
- Warning indicating light
- Graphic and Alphanumeric LCD display 64X240 pixels
- Numeric keyboard
- CAN-BUS interface
- USB communication interface with the PC
- PC / MANUAL switch
- 12V Power adapter
- Digital multimeter
- Operating and simulation switches
- Simulation potentiometers including: Manifold Air Mass, Manifold Air Pressure and Air Temperature sensors
- Main switch and main switch relay
- Fuel delivery system simulation
- Real Injection valve
- eLight bar indicating injection duration
- ECU combined ignition and injection
- Vacuum pump (simulated by a component)
- Air control module
- Throttle control simulator including Throttle Position Sensor (TPS)
- O2 simulation sensor
- Real coolant temperature sensor
- Engine load simulation potentiometer
- Speed LED display
- Speaker
- Vacuum meter
- 7 Segment RPM display

EXPERIMENTS

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

- Fuel delivery
- Fuel pump safety circuits
- Intake air mass measurement
- Air density and temperature
- TPS (Throttle Position Sensor)
- Electromagnetic injectors
- Injection duration and system operation
- Injection pulses analysis
- Injection duration at idle operation
- Injection duration with load
- Circuit cut-out during fuel overflow
- Idle air control
- O2 sensor
- Troubleshooting

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

OPTIONAL ACCESSORIES

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