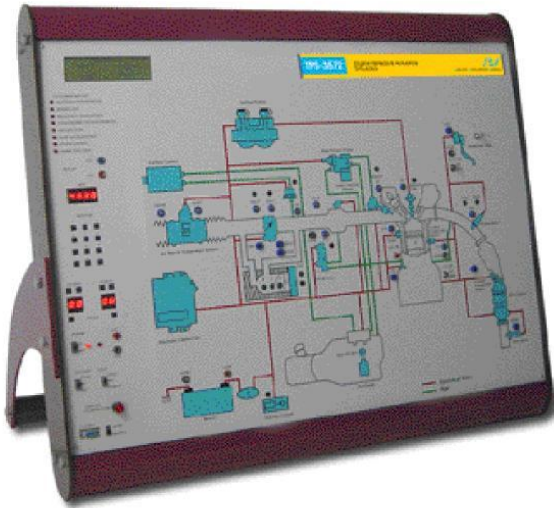


MODULE
TPS-3572

ENGINE SENSORS & ACTUATORS SIMULATOR



Objectives

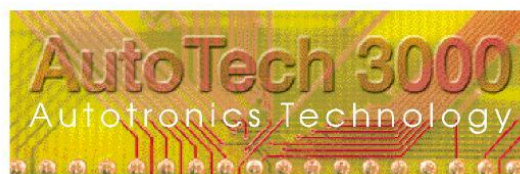
The TPS-3572 Automotive Engine Sensors & Actuators Simulator is designed to provide students with automotive training program introducing various systems and components in modern cars.

The simulator brings a comprehensive view of the entire system in the car, the system's 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 LEDs describing the component status.



M O D U L E

TPS-3572

Engine Sensors & Actuators Simulator

Technical Characteristics

The simulator is in a wide metal case with a colored printed circuit experiment panel (80X60X10 cm) which ensures easy handling and good visibility of the components simulation.

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 its built in oscilloscope or an external oscilloscope.

The simulator can be connected to a PC in serial communication (RS232 or USB) using SES-CBT courseware and SESCOPE software for signal display

Student PC can be connected to the teacher PC for monitoring, course management and records by SESML software (optional)

The system includes

- A power switch with indicating light
- SESLAB 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
- Engine status mode switches and display
- Warning indicating light
- 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
- **Simulation units:**
- Engine Electronic Control Unit
- Air pressure sensor
- Intake air pressure sensor

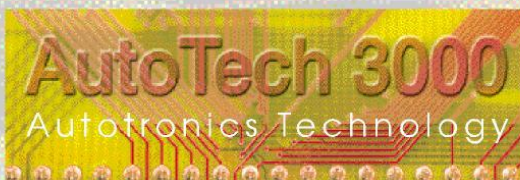
- Intake air temperature sensor
- Air flow and mass sensors
- Coolant temperature sensor
- Knock sensor
- Exhaust gas oxygen sensor
- Fuel pump and high pressure fuel pump
- Fuel delivery system
- Electronic fuel Injector
- Acceleration pedal sensor
- Throttle position sensor
- Speed, position and phase crankshaft sensor
- RPM display
- Electronic DIS ignition system
- Spark plug
- Emission control system/EGR valve
- Exhaust gas temperature sensor
- Carbon canister and canister valve
- NOx sensor and catalyst
- Starting module and solenoid
- Battery and electrical system
- Park (Neutral) / ON / Load switch

Experiments

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

- Engine Sensors: temperature, pressure, knock, flow, position, speed and oxygen
- Air control system and Idle air control
- Fuel delivery system and Injection system
- Ignition system and spark plugs
- Exhaust gas oxygen & temperature sensors
- Solenoid operation, finding and repair of open circuit of position sensor of Exhaust Gas Recirculation valve, short solenoid of EGR valve and partially short solenoid of the Early Fuel Evaporation valve
- Fault troubleshooting of various sensors, transducers, solenoids and valves.
- Troubleshooting and repair of different operational modes like leakages in the starting system etc.

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



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