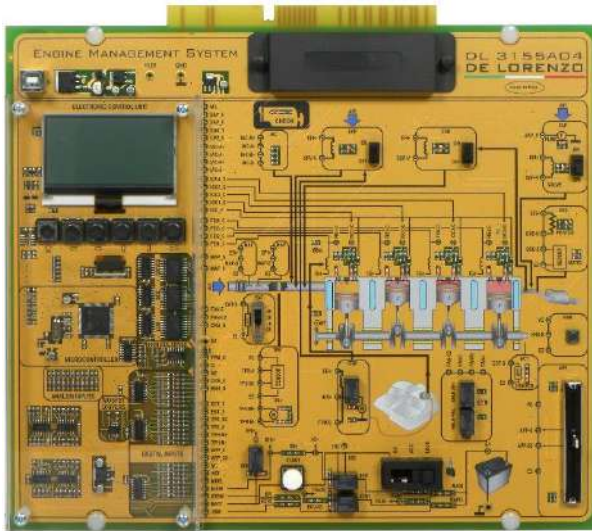# ENGINE MANAGEMENT

DL 3155A04

The design and construction of electronic circuits to solve practical problems is an essential technique in the fields of electronic engineering and computer engineering.

With this board, the students can study the operation, the electric signals, all the sensors and the actuators used in the automobiles. The sensors and actuator studied with this board are simulated, but the values measured are real. A LCD display and a keyboard permit to select and view a motor status (speed, pressure, temperature, emission). A scantool OBD-II is integrated in the system to troubleshooting function

THEORETICAL TOPICS
- Battery: Properties
- IGS Starter Switch and IGR Relay
- MIL (Malfunction Indicator Lamp)
- Electronic Control Unit (ECU)
- ECU Power distribution
- Grounds
- Accelerator Pedal Position Sensor
- Throttle Valve Position Sensor
- Throttle Valve Actuator (THA)
- External Air Temperature Sensor
- Engine Coolant Temperature Sensor
- Mass Air Flow Meter
- Oxygen Sensor (Lambda Probe)
- Crankshaft Sensor (NE) and Camshaft Sensor (G)
- Fuel Electro Injectors
- Ignition Coils
- Catalytic Converter
- Fuel Anti-Evaporation System
- Exhaust Gas Recirculation
- Secondary Air System
- OBD and modes

CIRCUIT BLOCKS
- Electronic Control Unit
- Malfunction Indicator Lamp
- Ignition Switch and Start/Stop Button
- Accelerator Pedal Position
- Idle Air Control
- Throttle Position Sensor
- Throttle Position Actuator
- External Air Temperature Sensor
- Engine Coolant Temperature Sensor
- Mass Air Flow Meter Sensor
- Manifold Air Pressure Sensor
- Knock Sensor
- Oxygen Sensor
- Crankshaft/Camshaft Position/Speed Sensors
- Fuel Electro Injectors
- Ignition Coils
- Catalytic Converter
- Fuel Pump
- Cooling Fan Plant
- Evaporation Plant
- Exhaust Gar recirculation Plant
- Secondary Air Plant

Complete with theoretical and practical manual.
Dimensions of the board: 297x260mm

AUTOTRONICS - MODULES

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AUXILIARY BOARDS can be added to increase the didactic experience:
- **DL 3155A05G**
- **DL 3155A07G**

DL 3155A05G – ENGINE SENSORS

DL 3155A04 Auxiliary board. It includes real sensors used in automotive motor

It includes the following components:
- Map sensor
- Throttle position sensor
- Maf sensor
- NTC sensor
- PTC sensor
- Knock sensor

DL 3155A07G – ENGINE ACTUATORS

DL 3155A04 Auxiliary board. It include real actuators used in automotive motor

It includes the following components:
- ECU
- EGR valve
- Idle actuator
- Diesel injector
- Gasoline injector

AUTOTRONICS - MODULES

CAI SOFTWARE:
Each board of the TIME system can be supplied complete with a Student Navigator software that allows students to perform their learning activities through a Personal Computer, without the need for any other documentation.
Ordering code: please add SW after the code of the board (i.e. DL 3155A04SW)

Required:
POWER SUPPLY NOT INCLUDED
Base frame with power supply (completed with connecting cables):
➢ **DL 3155AL3** - Base frame with power supply and interface to pc and virtual instrumentation
➢ **DL 3155AL2** - Base frame with power supply and interface to pc

Basic power supply (connecting cables not included):
➢ **DL 2555ALG -** DC power supply ±5 ±15 Vdc, 1A
➢ **TL 3155AL2 -** Connecting cables
Choosing this power supply, for the execution of the experiments, it is normally required the use of an oscilloscope and two multimeters.

DE LORENZO S.p.A. V.le Romagna 20 – 20089 ROZZANO (MI) Italy – Tel. ++ 39 02 8254551
Fax ++39 02 8255181- E-mail: info@delorenzo.it sales@delorenzo.it

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