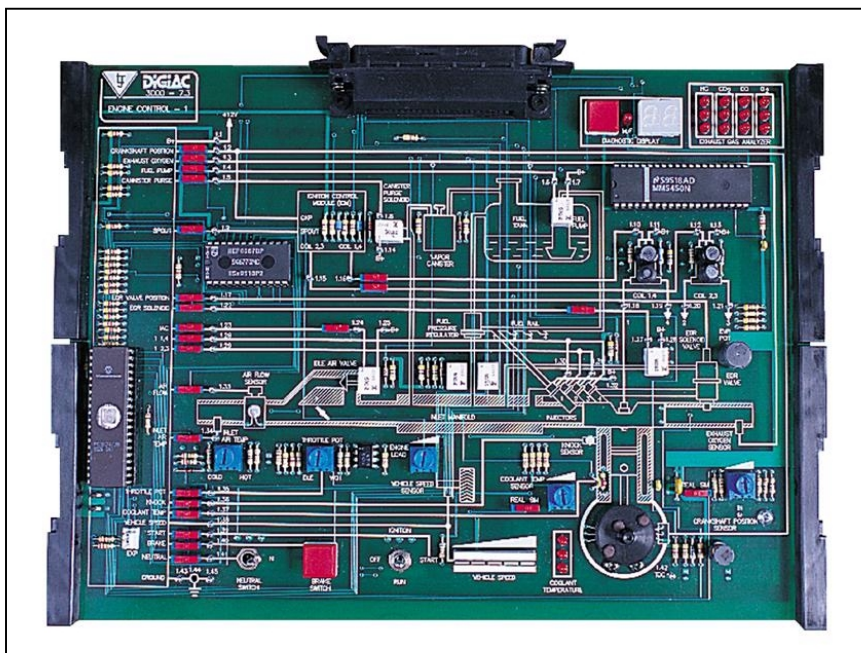


# D3000 7.3 - Engine Control and Management



The D3000 7.3 study module introduces students to automotive engine control and management systems through a wide range of practical activities.

This study module has been designed specifically to operate within a DIGIAC modular electronics program. It comprises a circuit board and student laboratory manual housed in an injection molded storage case.

When used in conjunction with a student personal computer (PC), the laboratory manual is fully compatible with the ClassAct computer managed learning system.

The laboratory manual is divided into a series of chapters. Each covers a specific topic area and provides background theory, practical activities and student assessment questions.

Each chapter is designed around a list of performance objectives. These objectives are used by the ClassAct management system to generate a student competency report.

An instructor's solutions book is available, providing solutions to all of the questions and practical activities contained in the laboratory manual.

### Typical topic areas include:

- Fuel System Electronics - The Basics
- Transducers
- Computers
- Actuators
- Emission Control
- Self Diagnosis and Trouble Codes

### Typical activities include:

- Interpret schematic and block diagrams.
- Identify a typical engine control Vref value.
- Identify the reason for using both crankshaft and camshaft position sensors.
- Recognize how to check correct operation of the engine coolant temperature sensor.
- Determine the typical voltages produced by an exhaust gas oxygen sensor.
- Diagnose faults with the throttle position potentiometer.
- State the advantages of computer control for vehicle systems.
- Convert flash type trouble codes into numerical codes.
- Recognize why injection time varies with engine temperature.
- Recognize how mixture strength is affected by injector open time.
- Diagnose faults with injectors.
- Recognize the operating principle of air injection.

### Typical activities include:

Continued ...

- Measure resistance of the EGR solenoid.
- Recognize how to activate computer self-diagnosis and the purpose of a 'wiggle' test.

### Items supplied with the D3000 7.3 study module include:

- Circuit board
- Laboratory manual
- Storage case

### Additional items required:

- D3000 Experiment Platform (EP) **or** D3000 Virtual Instrument Platform (VIP)
- Digital Multimeter\*
- Oscilloscope\*

\* Note that separate test instruments are not needed if the D3000 VIP is used, as all required test equipment is provided in the form of on-screen 'virtual' instruments.

If a D3000 VIP is used, or if the study module is to be used in a ClassAct computer managed learning environment, then a student PC will also be required.

### Optional supporting items include:

- Instructor's Solutions Book.

## Module Facts

D3000 7.3 - Engine Control and Management

	No.	Average time
Chapters	15	70 minutes
<b>Total</b>		<b>17.5 hours</b>



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