

KL-800

AUTOTRONIC TRAINING SYSTEM



Computerized Interactive System for Automotive

The whole system has been modularized to provide Electronic and Automotive courses with step-by-step experiments on technological educational training.

All theoretical, experimental and practical learning procedures are supported by a personal computer assisted supervision and dedicated software.

Features

- 89C51 computer interface monitor control
- For fuel injection, ignition and exhaust gas system experiment, data acquisition by computer
- Can be assembled as the injection system
- With trouble-shooting simulation function
- Switch-off input/output function when trouble-shooting is made
- Build-in and external power supply for safety

MAIN UNIT (KL-81001)

1. Power Supply Unit

Fixed DC Power Supply

- (1) Output Voltage : +5V, $\pm 12V$
- (2) Max. Output Current : +5V/2A, +12V/2A
- (3) With output overload protection

2. Computer Interface

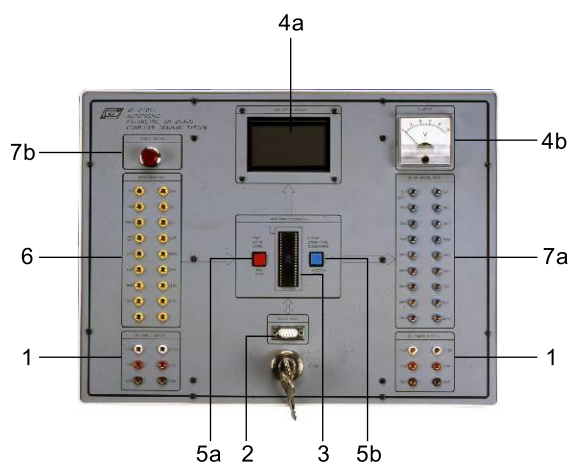
- (1) RS-232C Port : 9pin D-sub connector

3. CPU

- (1) Single-Chip Processor : 89C51

4. Display

- (1) LCD Graphic Display : 64 x 128
 - With Back-light
 - Synchronously display following values :
NE, PHO, HALL, MAF, MAT, MAP, TPS, CTS, VSS, IPW
- (2) Analog Meter
Oxygen's meter



KL-81001



LCD Graphic Display

5. Selectors

- (1) Select : NE, PHO, HALL
- (2) Mode : Fuel Injector select
 - Sync. • Non-sync. • Sequence

6. Input Signals

- (1) NE, PHO, HALL, VAF, MAT, F/C, MAF, MAP, TPS, CTS, O₂, P/N, A/C, PSPS, VSS, 3GR

7. Output Signals

- (1) INJ1, INJ2, INJ3, INJ4, SPK1, SPK2, SPK3, SPK4, FANC, F/C, ACC, IAC1, IAC2, IAC3, IAC4, TCC, CCP, EGRV
- (2) Check Engine Lamp

Experiment Modules

1. Using 4mm plugs and sockets connected by 4mm test leads
2. Circuits symbols, blocks and components printed on the surface of each module
3. Modules secured in plastic housing, dimension : 297x226x60mm
4. With cabinet for all modules easy storage facilities
5. Comprehensive experiment manuals
6. All modules equipped with 4/8 bit DIP switch for fault simulation



KL-83004



KL-83005



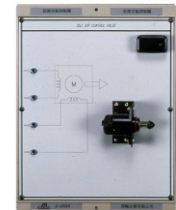
KL-83006



KL-83007



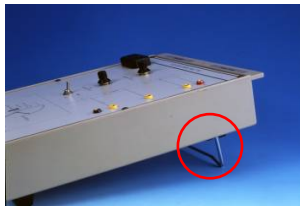
KL-83008



KL-83009



KL-83010



Stand-up feet for easy operating on the Workbench



All modules equipped with 4/8 bit DIP switch for fault simulation



Storage cabinet for easy storing of all modules

List Of Modules

- KL-83001 Crankshaft Position Sensor
- KL-83002 Air-Flow Sensor (Vane Type)
- KL-83003 Air-Flow Sensor(Hot-Line) & Manifold Absolute Pressure Sensor
- KL-83004 TPS, CTS & O₂ Sensor
- KL-83005 P/N, A/C, PSPS Switch & Vehicle Speed Sensor
- KL-83006 Fuel Injectors/Spark Plugs
- KL-83007 Ignition System
- KL-83008 Cooling Fan & Fuel Pump & AC Compressor Relays
- KL-83009 Idle Air Control Valve
- KL-83010 TCC & CCP & EGRV Solenoid

List Of Experiments

1. Crankshaft Position Sensor (KL-83001)

- (1) Pick-Up Sensor
- (2) Photo Interrupt Sensor
- (3) Hall IC Sensor

2. Air-Flow Sensor (Vane Type) (KL-83002)

- (1) Output Voltage : 0.2V~3.5V
- (2) Thermal Resistor MAT Output : 2.3V~2.7V
- (3) Fan Control : F/C switch

3. Air- Flow Sensor (Hot- Line) & Manifold Absolute Pressure Sensor (KL-83003)

Hot-Line Experiment

- (1) Output Voltage : 1.0V~3.5V

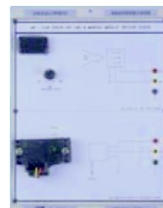
Manifold Absolute Pressure Sensor Experiment



KL-83001



KL-83002



KL-83003

Educational & Training Equipment

4. TPS, CTS & O₂ Sensor (KL-83004)

TPS Experiment

- (1) Output Voltage : 0.5V ~ 4.5V CTS Experiment
- (2) Voltage level : 4.5V/-40°C, 2.3V/20°C, 0.5V/108°C

O₂ Sensor Experiment

- (1) Normal : 0.1 ~ 1.0V swing
- (2) Rich : 0.6 ~ 1.0V swing
- (3) Lean : 0.1 ~ 0.3V swing

5. P/N, A/C, PSPS Switch & Vehicle Speed Sensor (KL-83005)

- (1) P/N Switch : Park-Neutral Switch
- (2) A/C Switch : Air-Condition Switch
- (3) PSPS Switch : Power Steering Pressure Switch
- (4) Speed Sensor : Speed adjustable & 3GR switch

6. Fuel Injectors/Spark Plugs (KL-83006)

Fuel Injectors Experiment

- (1) Static Load : 18Ω
- (2) Normal rotation speed 800 rpm,
max. rotation speed 3600 rpm
- (3) Sequence Changeable
- (4) Fuel Injectors LED display

Spark Plugs Experiment

LED display

7. Ignition System (KL-83007)

Ignition System Experiment (a)

- (1) Static Load : 2Ω
- (2) LED Display

Ignition System Experiment (b)

- (1) Static Load : 1Ω
- (2) LED Display

8. Cooling Fan & Fuel Pump & AC Compressor Relays (KL-83008)

Cooling Fan Relay Experiment

- (1) Control Signal : FANC
- (2) DC 12V Motor
- (3) Operational Conditions :
A/C signal ON or CTS signal is 108°C or under 108°C

Fuel Pump Relay Experiment

- (1) Control Signal : F/C
- (2) DC 12V Motor
- (3) Operational Conditions :
Air-Flow F/C signal ON and with rotation speed

AC Compressor Relay Experiment

- (1) Control Signal : ACC
- (2) DC 12V Motor
- (3) Operational Conditions :
A/C signal ON

9. Idle Air Control Valve (KL-83009)

- (1) Control Signal : IAC1, IAC2, IAC3, IAC4
- (2) Step Motor
- (3) Operational Conditions :
P/N, A/C, PSPS signal ON

10. TCC, CCP, EGRV Solenoid (KL-83010)

Torque Converter Clutch

- (1) Control Signal : TCC
- (2) DC 12V Solenoid
- (3) Operational Conditions :
VSS signal is over 40KM and 3GR switch ON

Carbon Canister Purge Valve

- (1) Control Signal : CCP
- (2) DC 12V Solenoid
- (3) Operational Conditions :
c-1 rpm is over 1200
c-2 CTS is over 65°C
c-3 TPS is 1.0 ~ 2.5

For those three conditions simultaneously exist, the CCP is on Exhaust Gas Recirculation Valve

- (1) Control Signal : EGRV
- (2) DC 12V Solenoid
- (3) Operational Conditions :
c-1 rpm is over 1200
c-2 CTS is over 65°C
c-3 TPS at 1.0 ~ 2.5
c-4 MAP at 1.0 ~ 1.5

Above four conditions simultaneously exist, the EGRV is ON

Accessories (KL-89001)

- 1. One set of 4mm-4mm multilam, stackable test leads
- 2. User's Guide & Experiment manual
- 3. Power Cord
- 4. Storage cabinet (KL-99001) x 2
- 5. Rack Frame (KL-89003)