

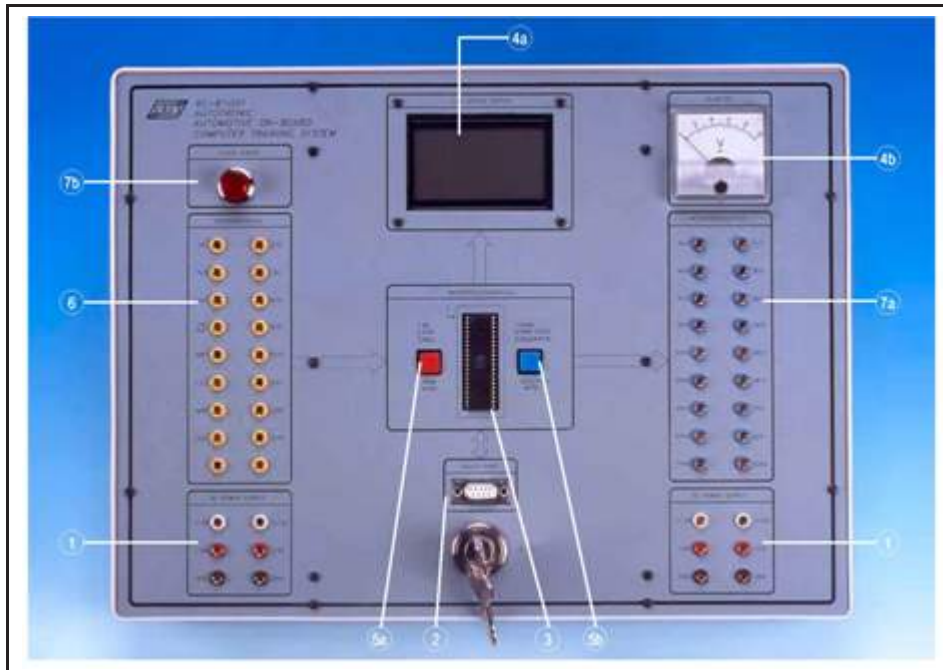


This modular system provides Electronics and Autotronics training by study and experiments on educational technological modules.

All theoretical, experimental and practical learning procedures are assisted and supervised by a Personal Computer and dedicated software.

FEATURES

- 89C51 computer interface monitor control.
- For Fuel Injection, Ignition and Exhaust Gas system computer control experiment.
- Can be assembled to become the injection system.
- With trouble-shooting simulator function.
- Switch-off input -output function when trouble-shooting is made.
- Build-in and external power supply for safety.

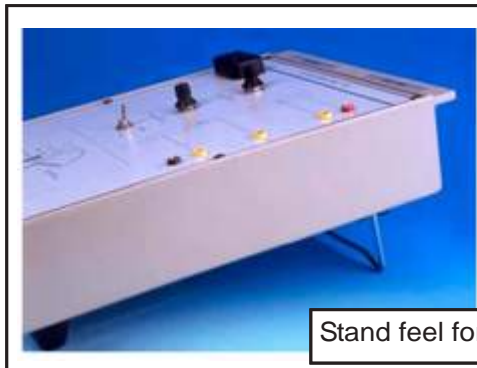


KL-81001 Main Unit

1. Power Supply Unit
Fixed DC Power Supply
 - a. Output Voltage: +5V, +12V
 - b. Max. Output Current: +5V/2A, +12V/2A
 - c. With Output overload protection
2. Computer Interface
RS-232C Port: 9 pin D-sub connector
3. CPU
Single-Chip Processor: 89C51
4. Display
 - a. LCD Graphic Display: 64x128
 - (1) With Back-light
 - (2) Synchronously display following values: NE, PHO, HALL, MAF, MAT, MAP, TPS, CTS, VSS, IPW
 - b. Analog Meter
Oxygen's Sensor
5. Selectors
 - a. Select: NE, PHO, HALL
 - b. Mode: Fuel Injector select
 - (1) Sync. (2) Non-sync. (3) Sequence
6. Input Signals
NE, PHO, HALL, VAF, MAT, F/C, MAF, MAP, TPS, CTS, O₂, PIN, AIC, PSPS, VSS, 3GR
7. Output Signals
 - a. INJ1, INJ2, INJ3, INJ4, SPK1, SPK2, SPK3, SPK4, FANC, F/C, ACC, IAC1, IAC2, IAC3, IAC4, TCC, CCP, EGRV
 - b. CHECK ENGINE Lamp

Experimental Modules

- a. 4mm plugs and sockets used throughout, connected by 4mm test leads
- b. Circuits symbols, blocks and components printed on the surface of each module
- c. Modules secured in plastic housing, the dimension: 297 x 226 x 60mm
- d. With storage cabinet for all modules to be easily stored
- e. Comprehensive experiment manuals
- f. All modules equipped with 4/8 bit DIP switch for fault simulation.



Stand feel for easy operation on the Workbench



Storage cabinet for all modules to easy storing



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

List of Modules

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

List of Experiments

- (1) Crankshaft Position Sensor
 - a. Pick-Up Sensor
 - b. Photo Interrupt Sensor
 - c. Hall IC Sensor
- (2) Air-Flow Sensor (Vane Type)
 - a. Output Voltage: 0.2V-3.5V
 - b. Thermal Resistor MAT Output: 2.3V-2.7V
 - c. Fan Control: F/C switch
- 3) Air-Flow Sensor (Hot-Line) & Manifold Absolute Pressure Sensor
 - Hot-Line Experiment
 - a. Output Voltage: 1.0V-3.5V
 - Manifold Absolute Pressure Sensor Experiment
- 4) TPS, CTS & O₂ Sensor
 - a. TPS Experiment
Output Voltage: 0.5V - 4.5V
 - b. CTS Experiment
Output Voltage: 0.5V - 4.5V
Voltage level: 4.5V/-40°C, 2.3V/20°C, 0.5V/108°C
 - c. O₂ Sensor Experiment Normal: 0.1 - 1.0V swing Rich: 0.6 - 1.0V swing Lean: 0.1 - 0.3V swing
- (5) PIN, AIC, PSPS Switch & Vehicle Speed Sensor
 - a. PIN Switch: Park-Neutur Switch
 - b. AIC Switch: Air-Condition Switch
 - c. PSPS Switch: Power Steering Pressure Switch
 - d. Speed Sensor: Speed adjustable & 3GR switch
- (6) Fuel Injectors/Spark Plugs Fuel Injectors Experiment
 - a. Static Load: 180
 - b. Normal rotation speed 800 rpm, max. rotation speed 3000 rpm
 - c. Sequential Changeable
 - d. Fuel Injectors LED display Spark Plugs Experiment LED display
- (7) Ignition System
 - Ignition System Experiment (a)
 - a. Static Load: 20
 - b. LED Display
 - Ignition System Experiment (b)
 - a. Static Load: 10
 - b. LED Display

(8) Cooling Fan & Fuel Pump & AC Compressor Relays

Cooling Fan Relay Experiment

- a. Control Signal: FANC
- b. DC 12V Motor
- c. Operational Conditions: AIC signal ON or CTS signal is 108°C or CTS signal is under 108°C

Fuel Pump Relay Experiment

- a. Control Signal: FIC
- b. DC 12V Motor
- c. Operational Conditions: Air-Flow FIC signal ON and with rotation speed

AC Compressor Relay Experiment

- a. Control Signal: ACC
- b. DC 12V Motor
- c. Operational Conditions: AIC signal ON

(9) Idle Air Control Valve

- a. Control Signal: IAC1, IAC2, IAC3, IAC4
- b. Step Motor
- c. Operational Conditions: PIN, AIC, PSPS signal ON

(10) TCC, CCP, EGRV, Solenoid Torque Converter Clutch

- a. Control Signal: TCC
- b. DC 12V Solenoid
- c. Operational Conditions: VSS signal is over 40Km and 3GR switch ON

Carbon Canister Purge Valve

- a. Control Signal: CCP
- b. DC 12V Solenoid
- c. Operational Conditions: c-1 rpm is over 1200 c-2 CTS is over 65°C c-3 TPS is 1.0 - 2.5 these three conditions synchronously exist, the CCP is ON

Exhaust Gas Recirculation Valve

- a. Control Signal: EGRV
- b. DC 12V Solenoid
- c. 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 these four conditions simultaneously, the EGRV is ON

(11) Accessories (KL-88001)

- (1) One set of 4mm-4mm multilam, stackable test leads
- (2) User's Guide & Experiment manual
- (3) Power Cord
- (4) Storage cabinet (KL-99001x2)
- (5) Rack Frame (KL-89003)

Manufacturer : **AMRON**

Tel : (033) 3868309
Fax : (033) 3868556
E MAIL: amron@pixie.co.za

P. O. BOX 2435
Pietermaritzburg
3201

Distributor :