KL-500
Industrial Electronic Trainer

*Option : Oscilloscope (20MHz)

The KL-500 Industrial Electronic Trainer is a self-contained training equipment allowing students to learn more than 70 experiments through a power supply unit and 16 replaceable modules.

Various types of industrial electronic devices, such as UJT, PUT, SCR, SCS, DIAC, TRIAC, JFET, MOSFET, IGBT are introduced in this system. For each device, students are able to learn its characteristic, trigger circuit. Moreover, application circuits provide students a comprehensive understanding of related knowledge in this technology field.

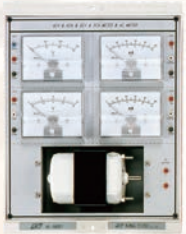
● Features

1. Comprehensive study includes the theoretical study and practical exercises
2. Use of industrial-type components, devices and circuits

● Specification

1. Power Supply Unit (KL-51001)
   (1) ACV output voltage : 18V ~ 0 ~ 18V/0.5A
   (2) ACV output voltage : 12V ~ 0 ~ 12V/0.5A
   (3) DCV output voltage : +12V/0.5A
   (4) DCV output voltage : +5V/0.5A
2. Meter/Motor Unit (KL-58001)
   (1) Dual-scale ACV : 150V ~ 300V, class 2.5
   (2) Dual-scale ACA : 0 ~ 100mA ~ 1A, class 2.5
   (3) Dual-scale DCV : 0 ~ 10V ~ 20V, class 2.5
   (4) Dual-scale DCA : 0 ~ 100mA ~ 1A, class 2.5
   (5) AC110V/220V motor
3. Isolation Transformer (KL-58002)
   AC 110V/220V

KL-51001

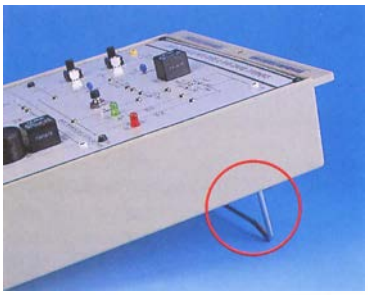


KL-58001

KL-58002

Experiment Modules

1. Generally use 2mm plugs and sockets connected by 2mm or 4mm test leads
2. Circuits, blocks and components symbols printed on the surface of each module
3. Modules, secured in plastic housing, are with standard DIN A4 equivalent height
4. Cabinet provides easy-to-store facility for all modules
5. Comprehensive experiment manuals



Stand feet for easy operation on the workbench

Cabinet enhances storage facility of all modules

List of Modules

KL-53001 UJT Experiments
KL-53002 PUT Experiments
KL-53003 PUT & SCR Experiments
KL-53004 SCS Experiments
KL-53005 UJT & PUT Trigger SCR Experiments
KL-53006 SCR Control DC Motor & DIAC, TRIAC Characteristic Experiments
KL-53007 Automatic Control Lamp and TRIAC Control Speed Experiments
KL-53008 Temperature Ratio, Photo-Couple and Touch Control Experiments
KL-53009 Over / Under-Voltage Breaker and Flasher Control Experiments
KL-53010 TRIAC Liquid Level & IC Timer Switch Experiments
KL-53011 Digital Signal Driver & Zero-Voltage Switch Experiments
KL-53012 Zero-Voltage Switch Experiments
KL-53013 SCR Converter Experiments
KL-53014 SCR Rectifier Circuit Experiments
KL-53015 JFET / MOSFET Characteristic & MOSFET Speed Control Experiments
KL-53016 IGBT Characteristic & IGBT Speed Control Experiments

List of Experiments

1. Power Supply Circuits
   (1) AC voltage measurement
   (2) DC voltage measurement

2. UJT Experiments (KL-53001)
   UJT Characteristics
   (1) UJT introduction
   (2) UJT characteristic
   (3) UJT equivalent circuit
   (4) CDS trigger, RTH trigger
   UJT Oscillator and Timer Circuits
   (1) UJT relaxation oscillator
   (2) UJT timer switch

3. PUT Experiments (KL-53002)
   PUT Characteristics
   (1) PUT introduction
   (2) PUT characteristic
   (3) PUT equivalent circuit
   (4) CDS trigger
   (5) RTH trigger
   PUT Oscillator and Timer Circuits
   (1) PUT circuit oscillator
   (2) PUT timer switch

4. PUT & SCR Experiments (KL-53003)
   Ramp and Staircase Generators
   (1) PUT staircase generator circuit
   (2) PUT voltage control ramp circuit
   SCR and RC Phase Control
   (1) SCR principle
   (2) SCR characteristic curve
   (3) SCR construction
   (4) SCR trigger mode
   (5) SCR RC phase control circuit

5. SCS Experiments (KL-53004)
   SCS Characteristics
   (1) SCS construction and operation mode
   (2) Use VOM meter measuring SCS
   (3) SCS schmitt circuit
   (4) SCS simulate PUT circuit
   SCS Trigger Circuits
   (1) CDS trigger
   (2) RTH trigger

6. UJT & PUT Trigger SCR Experiments (KL-53005)
   UJT-SCR Phase Control
   (1) Phase control basic circuit
   (2) Phase control analysis
   (3) AC phase control circuit analysis
   (4) UJT trigger SCR phase control circuit
   PUT-SCR Power Control


KL-53001


KL-53002


KL-53003

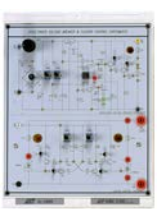

KL-53004


KL-53005


KL-53006


KL-53007


KL-53008


KL-53009


KL-53010


KL-53011


KL-53012


KL-53013


KL-53014


KL-53015


KL-53016

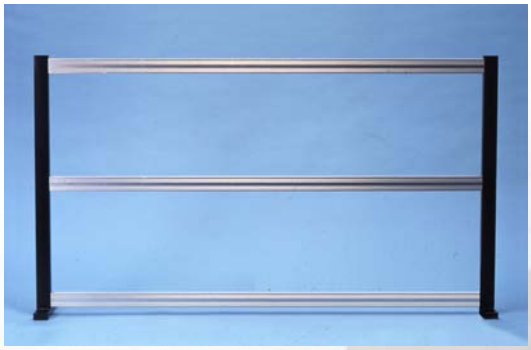
7. SCR Control DC Motor & DIAC, TRIAC (KL-53006)
   SCR DC Motor Forward / Reverse Control
   SCR Control DC Motor Forward / Reverse Experiment
   (1) SCR cut-off principle
   (2) SCR control DC motor forward / reverse control experiment
   DIAC and TRIAC Characteristics
   (1) DIAC construction and characteristic
   (2) DIAC operation mode and measurement
   (3) TRIAC construction and characteristic
   (4) TRIAC trigger mode
   (5) TRIAC static measurement
8. Automatic Control Lamp, TRIAC Control Speed Experiments (KL-53007)
   Automatic Lamp Dimming Circuits
   (1) TRIAC shift control
   (2) TRIAC automatic control lamp experiment
   Motor Starting and Speed Control
   (1) Different motor introduction
   (2) TRIAC control motor speed experiment
9. Temperature Ratio, Photo-Couple and Touch Control Experiments (KL-53008)
   Proportional Temperature Control
   (1) Electronic component of thermal resistor
   (2) SCR bridge temperature ratio control experiment
   Photocoupler and Touch Alarm Circuits
   (1) Photo-couple control circuit
   (2) FET construction and characteristic
   (3) Touch alarm circuit
10. Over / Under Voltage Breaker and Flasher Control Experiments (KL-53009)
    Overvoltage and Undervoltage Breaker
    (1) OPA characteristic with reverse & non-reverse circuit
    (2) Voltage comparison circuit
    AC Flasher Control Circuit
    (1) Application of TRIAC power control
    (2) AC circuit control
    (3) Multivibrator
11. TRIAC Liquid Level & IC Timer Switch Experiments (KL-53010)
    Liquid Level Controller
    (1) Digital circuit introduction
    (2) TRIAC liquid level control experiment
    IC Timer Switch
    (1) NE 555 IC circuit introduction
    (2) IC timer switch experiment
12. Digital Signal Driver & Zero-Voltage Switch Experiments (KL-53011)
    Digital Signal Driver
    Zero Voltage Switch
    (1) Ideal half-wave zero-voltage switch experiments
13. Zero-Voltage Switch Experiments (KL-53012)
    Zero-Voltage Switch Experiments (II)
    (1) TRIAC zero-voltage switch experiments
    (2) IC mode zero-voltage switch experiments
14. SCR Converter Experiments (KL-53013)
    (1) Parallel converter introduction
    (2) Series converter introduction
    (3) Converter trigger source
    (4) Converter voltage adjustment
    (5) Converter output-waveform improvement
15. SCR Rectifier Circuit Experiments (KL-53014)
    (1) Single-phase half-wave rectifier
    (2) Single-phase full-wave rectifier
    (3) Single-phase bridge rectifier
    (4) Three-phase half-wave rectifier
    (5) Three-phase full-wave rectifier
16. JFET / MOSFET Characteristics and MOSFET Speed Control (KL-53015)
    (1) JFET characteristic experiment
    (2) MOSFET characteristic experiment
    (3) MOSFET speed control experiment
17. IGBT Characteristics and Speed Control (KL-53016)
    (1) IGBT characteristic experiment
    (2) IGBT speed control experiment

Accessories (KL-59001)

1. Experiment Manual
2. Tank x 2pcs
3. Connection Leads and Plugs x 1set
4. Storage Cabinet x 2sets (KL-99001)

Option

1. Rack Frame (KL-89003)



2. Power Supply : 30V/3A
3. Oscilloscope (20MHz)