

KL-100

Linear Circuit Lab (1) - Electric Circuits Lab



The KL-100 Linear Circuit Lab (1) Electric Circuits Lab is a comprehensive and self-contained system suitable for tuition and experimentation with electric circuits.

All the necessary equipment for electric circuit experiments such as power supply, function generator, analog and digital meters are installed on the main unit.

The 11 modules cover a wide variety of essential topics for electric circuit. It is indeed a time and cost saver for both students and engineers interested in training, developing and testing prototype circuits.

+ **Simulation**

● Features

1. Ideal for electric circuit experiments and design exercises
2. Integrated trainer with complete curriculum.
3. Complete with power supplies and test systems for easy and efficient experimentation.
4. Universal breadboard (1680 tie points) for circuit design and prototyping.
5. All modules equipped with an 8-bit DIP switch for circuits fault simulations.
6. Including computer - based training



KL-29001
Storage cabinet for easily storing all modules

● Specifications

Main Unit(KL-21001)

1. DC Power Supply
 - (1) Fixed DC power supply
 - a. Voltage range : $\pm 5V, \pm 12V$
 - b. With output overload protection
 - (2) Dual DC power supply
 - a. Voltage range : $\pm 3V \sim \pm 18V$, continuously adjustable
 - b. With output overload protection

2. AC Power Supply
 - (1) Voltage range : $9V \sim 0V \sim 9V$
 - (2) With output overload protection
3. Function Generator
 - (1) Output waveform : Sine, square and triangle
 - (2) Output frequency : $10 \text{ Hz} \sim 100 \text{ KHz}$, 4 settings, continuously adjustable
 - (3) Accuracy : $\pm 5\%$ of full scale value
 - (4) Output impedance : 50Ω
 - (5) Output voltage : $\geq 18V_{pp}$ (open loop)
 $\geq 9V_{pp}$ (with 50Ω load)
4. 3 1/2 digit Digital Voltmeter/Ammeter
 - (1) DC voltage range : $2V, 200V$
 - (2) DC voltage accuracy : $\pm 0.3\%$ of reading + 1 digit
 - (3) DC current range : $200\mu A, 2000mA$
 - (4) DC current accuracy : $\pm 0.5\%$ of reading + 1 digit
5. Analog Meters
 - (1) AC current : $0 \sim 100mA \sim 1A$
 - (2) AC voltage : $0 \sim 15V$
 - (3) DC current : $0 \sim 100mA \sim 1A$
 - (4) DC voltage : $0 \sim 20V$
6. Speaker
one $8\Omega, 0.25W$ speaker with driver circuit

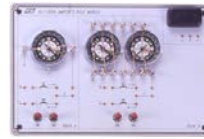
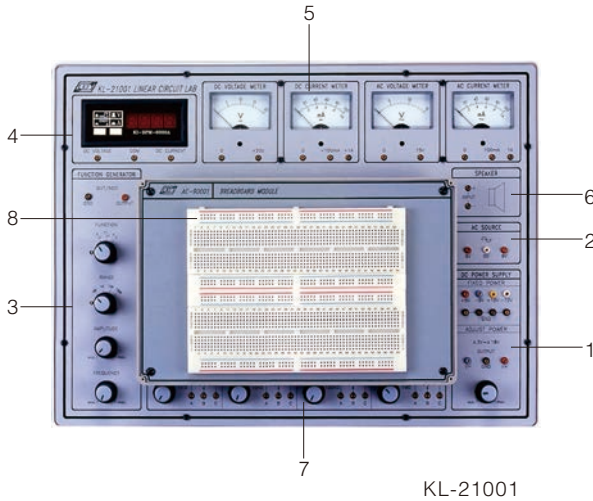


7. Variable Resistors

- (1) 1K Ω , 0.25W variable resistor with 3 terminals (A,B,C)
- (2) 10K Ω , 0.25W variable resistor with 3 terminals (A,B,C)
- (3) 100K Ω , 0.25W variable resistor with 3 terminals (A,B,C)
- (4) 1M Ω , 0.25W variable resistor with 3 terminals (A,B,C)

8. Breadboard (AC-90001)

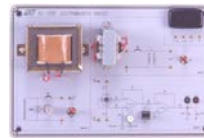
1680 tie-point breadboard on top panel can be easily put into and taken off.



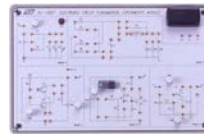
KL-13004
Ampere's Rule Module



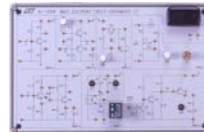
KL-13005
Fleming's Rule Module



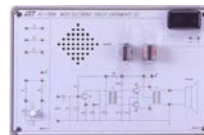
KL-13006
Electromagnetic Induction



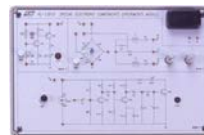
KL-13007
Electronic Circuit Fundamental Experiments Module



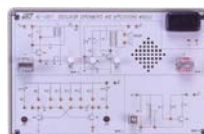
KL-13008
Basic Electronic Circuit Experiments (1)



KL-13009
Basic Electronic Circuit Experiments (2)



KL-13010
Special Electronic Components Experiments Module



KL-13011
Oscillator Experiments and Applications Module

Experiment Modules

1. 11 modules, each module is equipped with an 8-bit DIP switch for circuits fault simulations. Students can practice troubleshooting by setting the DIP switch to different positions.
2. Detailed solution for fault simulation is included in the instructor's manual.
3. All sockets on the modules accept 2mm plugs.
4. Comprehensive experiment manual and instructor's manual
5. Module dimension: 255x 165x30mm.

List of Modules



KL-13001
Basic Electricity Experiments Module



KL-13002
Magnetism Element Introduction Module



KL-13003
Magnetic Field Module



List of Experiments

1. Experiments for Basic Electricity

1-1 DC voltage measurement	KL-21001
1-2 Using an ohmmeter	KL-13001
1-3 Resistor characteristics	KL-13001
1-4 DC current measurement	KL-13001
1-5 Ohm's law	KL-13001
1-6 Power in DC circuit.....	KL-13001
1-7 Series-parallel network and Kirchoff's law	KL-13001
1-8 Superposition, Thevenin's and Norton's theorems	KL-13001
1-9 Maximum power transfer theorem	KL-13001
1-10 DC RC circuit and transient phenomena.....	KL-13001
1-11 AC voltage measurement	KL-13001
1-12 AC current measurement	KL-13001
1-13 AC RC circuit.....	KL-13001
1-14 AC RL circuit.....	KL-13001
1-15 AC RLC circuit.....	KL-13001
1-16 Power in AC circuit.....	KL-13001
1-17 Transformer characteristics	KL-13001
1-18 Series-resonant circuit	KL-13001
1-19 Parallel-resonant circuit	KL-13001
1-20 LC filter.....	KL-13001

2. Experiments for Magnetism

2-1 Magnetic devices	KL-13002
2-2 Magnetic field.....	KL-13003
2-3 Drawing magnetic curves	KL-13003
2-4 Magnetic field strength.....	KL-13003
2-5 Lenz's and Faraday's laws	KL-13003
2-6 Ampere's rule	KL-13004
2-7 Fleming's rule.....	KL-13005
2-8 Self Induction	KL-13006
2-9 Mutual Induction	KL-13006
2-10 Magnetic flux detection.....	KL-13006

3. Experiments for Basic Electronic Circuits

3-1 Diode characteristics	KL-13007
3-2 Rectifier circuit	KL-13007
3-3 Filter circuit	KL-13007
3-4 Zener diode characteristics	KL-13007
3-5 LED characteristics	KL-13007
3-6 Transistor characteristics	KL-13007
3-7 Multimeter functions	KL-13007
3-8 FET characteristics.....	KL-13007
3-9 SCR characteristics	KL-13007
3-10 UJT characteristics	KL-13007

4. Experiments for Simple Electronic Circuits

4-1 Simple amplifier	KL-13008
4-2 Complementary amplifier	KL-13008
4-3 Voltage regulator	KL-13008
4-4 Push-pull amplifier	KL-13009
4-5 Wheatstone bridge.....	KL-13009
4-6 Dimmer circuit	KL-13008
4-7 Multistage cascading amplifier	KL-13008
4-8 Relay characteristics	KL-13008
4-9 Touch-controlled switch	KL-13008

5. Experiments for Industrial Control Applications

5-1 CDS characteristics	KL-13010
5-2 Light-controlled circuit	KL-13010
5-3 Thermistor characteristics	KL-13010
5-4 Temperature-controlled circuit	KL-13010
5-5 Sound controlled circuit	KL-13010

6. Experiments for Oscillator Characteristics and Applications

6-1 Blocking oscillator	KL-13011
6-2 Electronic birdcall circuit	KL-13011
6-3 Astable multivibrator	KL-13011
6-4 LED flasher circuit.....	KL-13011
6-5 LC resonant circuit	KL-13011

● Accessories(KL-18001)

1. Experiment manual and instructor's manual
2. Connection leads and plugs : 1set
3. Inductors : 0.1H, 0.5H each 1pce
4. Magnet : 1pce
5. Key : 1pce

● Computer - Based Training

1. Build-in circuit simulation of experiment modules.
2. Fault simulation is allowed.
3. Users can flexibly compare the simulation analysis result with hardware signal output.
4. Support virtual instrument.

