

KL-100

LINEAR CIRCUIT LAB (1)-ELECTRICITY CIRCUIT LAB



The KL-100 LINEAR CIRCUIT LAB (1) — *ELECTRICITY CIRCUIT LAB* is a comprehensive and self-contained system suitable for tuition and experimentation with electricity circuits.

All necessary equipments for electricity circuit experiments such as power supply, function generator, analog and digital meter are installed on the main unit.

The 11 modules covers a wide variety of essential topics in the field of electricity circuit. It is indeed a time and cost saving system for both students and researcher interested in training, developing and testing circuit prototypes.

- Ideal for electricity circuit experiments and design exercises.
- Integrated trainer, with complete curriculum.
- Complete with power supplies and test systems for easy and efficient experimentation.
- Universal breadboard (1680 tie points) for circuit design and prototyping.
- All modules equipped with an 8-bit DIP switch for fault simulation.



Storage cabinet for easy storing all modules.



SPECIFICATIONS

MAIN UNIT(KL-21001)

① DC POWER SUPPLY

A. Fixed DC Power Supply

- (1). Voltage Range : $\pm 5V, \pm 12V$
- (2). Maximum Current Output : 0.3A
- (3). With output overload protection.

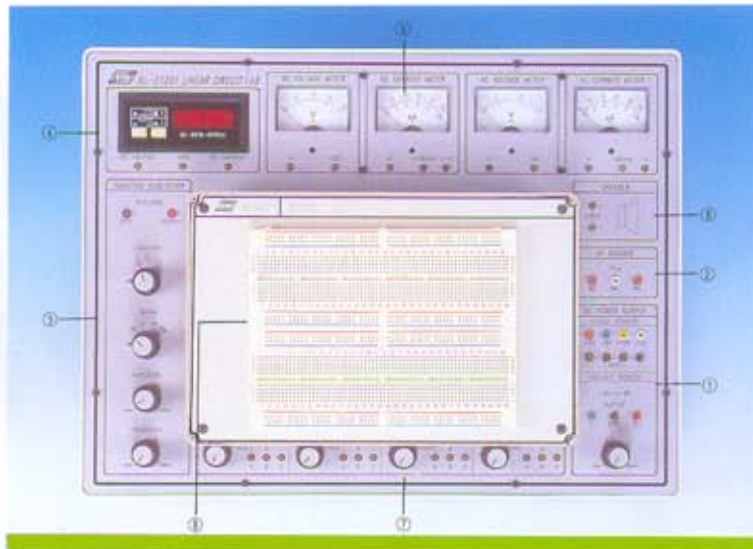
B. Dual DC Power Supply

- (1). Voltage Range : $\pm 3V - \pm 15V$, continuously adjustable
- (2). Maximum Current Output : 1A
- (3). With output overload protection.



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① AC POWER SUPPLY

- (1). Voltage Range : 0V – 0V – 9V
- (2). Maximum Current Output : 500mA
- (3). With output overload protection.

② SIGNAL GENERATOR

A. Function Generator

- (1). Output Waveform : Sine, Square and Triangle.
- (2). Output Frequency : 10 Hz – 100 KHz, 4 settings, continuously adjustable.
- (3). Accuracy : $\pm 5\%$ of full scale value.
- (4). Output Impedance : 50 Ω
- (5). Output Voltage : $\geq 18Vp-p$ (open loop); $\geq 9Vp-p$ (with 50 Ω load).

③ 3 1/2-DIGIT DIGITAL VOLTMETER/AMPMETER

- A. DC Voltage Range : 2V, 200V
- B. DC Voltage Accuracy : $\pm 0.3\%$ of reading + 1 digit
- C. DC Current Range : 200 μ A, 2000mA
- D. DC Current Accuracy : $\pm 0.5\%$ of reading + 1 digit

④ ANALOG METERS

- A. AC Current : 0 – 100mA – 1A
- B. AC Voltage : 0 – 15A
- C. DC Current : 0 – 100mA – 1A
- D. DC Voltage : 0 – 20V

⑤ SPEAKER

one 8 Ω , 0.25W speaker with driver circuit.

⑥ VARIABLE RESISTORS

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

⑦ BREADBOARD (AC-90001)

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

⑧ ACCESSORIES

- A. Connect Lead: 2mm-0.65mm, 300mmL 6pcs.
- B. User's Manual
- C. Fuse
- D. AC Cord
- E. Anti-Dust Cover

EXPERIMENT MODULES

1. 11 modules, each module is equipped with an 8-bit DIP switch for fault simulations. Students can practice trouble shooting by setting the DIP switch to different positions.
2. Detailed solution for the simulated faults are included in the Instructor's manual.
3. All terminals on the modules accept 2mm plugs.
4. Comprehensive experiment and instructor's manual.
5. Module dimension: 255 x 165 x 30mm.

MODULES AND THE EXPERIMENTS THEY PERFORM



KL-13001: Basic Electricity Experiments Module



KL-13002: Magnetism Element Introduction Module



KL-13003: Magnetic Field Module



KL-13004: Ampere's Rule Module



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KL-13005: Fleming's Rule Module



KL-13006: Electromagnetic Induced



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

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 Kirchhoff'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)

- A. Experiment Manual
- B. Connect Leads: 2mm-2mm, 300mm, 25pcs
- C. Connect Plugs: ϕ 2mm 10mm, 10pcs
- D. Inductors: (1) 0.5H
(2) 0.1H
- E. Magnet: 1pc
- F. Key: 1pc