

BASIC ELECTRICITY TRAINING KIT

Model IPC – 555-PH



The kit is composed of a set of components and devices which allow a practical demonstration of the most important laws of electricity & electro physics. All the components and devices are mounted on metallic base complete with terminals for an easy connection circuit. The kit is supplied with a comprehensive manual which outlines the different subjects of the practical exercises in a simple and progressive way. Due to the simplicity of its components and to the guided testing procedures contained in the manual, this kit is suitable for courses both in electro physics and electrotechnics. The tests can be carried out by the student under full safety conditions.

Regulated power Supply:

- power Supply with short circuit protections that provides +5V, +12V and -12V Power Supply. Fuse protected.

Variable DC Power Supply:

- Dual Variable Power Supply that provides 0 to +30V and 0 to -30V powers. Fuse protected.

AC Power Supply:

- Power Supply that provides 9V, 15V, 18V & 30VAC supplies.

AC, DC Voltmeter , Ammeters:

- Voltmeters and Ampere Meters with AC, DC ranges that provides 0 - 30 VAC 0 - 30 VDC
- 0-1 Amp. AC, 0-500mAmp. DC with protection fuse.

Galvanometer:

- Galvanometer for current deflection with protection fuse.

Function Generator:

- Sine, Square, Triangular Wave Frequency all adjustable. 0.5Hz to 500KHz.six ranges.

FREQUENCY COUNTER

- Two Digit operate on 220VAC 50Hz.

RESISTANCE

- 5K ohm, 10Kohm, 100K ohm Variable carbon type

General Features:

- Double Pole Double Throw Switch
- Eight Single Pole Single Throw Switch
- Four Push Pull or Press Switches
- Four +12VDC Bulbs
- Resistance Bank
- Capacitance Bank
- Inductance Bank
- NPN, PNP Transistors
- Diodes, Bridges
- Regulator
- Zener Diodes
- LED
- Double size Breadboard

ADDITIONAL FEATURES:

- Digital Multi-Meter
- Analog Multi-Meter

GENERAL :

- Power Requirements: 220 VAC 50Hz.

STANDARD ACCESSORIES:

- Connecting Leads
- Jumping Wires
- Experimental Manual

Note: - we reserve the right to change the shape & design of the trainer without prior notice.
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OPTIONAL MODULES:-

MODULE-IPC-SN-1

1. Measuring Exercise with capacitors.
2. Measuring Exercise with coils.
3. Measuring Exercise for series circuit of active resistance & reactance.
4. Measuring Exercise for parallel circuit of active resistance & reactance.
5. Measuring Exercise for RCL circuits.
6. Measuring Exercise for quadruples.

MODULE-IPC-SN-2

1. To study different type of semi conductor diodes.
 - 1.1. Rectifier diodes.
 - 1.2. Half wave rectifier circuit with various charging capacitors.
 - 1.3. Half wave rectifier circuit with various load resistance.
 - 1.4. Full wave rectifier circuit with various load resistor.
 - 1.5. Full wave rectifier circuit with various charging capacitors.
2. Mode of operation of RC filters circuits.
 3. Voltage-Doublers & Voltage-Multiplier circuits.
 - 3.1. Mode of operation of a full wave Multiplier circuits.
 - 3.2. Mode of operation of a half wave voltage doubling circuits.
 - 3.3. Mode of operation of a half wave voltage multiplier circuits.

MODULE-IPC-SN-3

1. To study different types of semi conductor diodes.
2. Voltage stabilization using Zener diodes.
3. Voltage stabilization using variable load current I_L .
4. Determination of the dynamic internal resistance r_i of voltage stabilization circuits.
5. Mode of operation of filter circuits with Zener diodes.
6. Voltage limitation with zener diodes.
7. Voltage stabilization using variable input U_{in} .
8. Determination of dynamic internal resistances r_i of voltage stabilization circuits.

MODULE-IPC-SN-4

1. To study different types of Semi conductor diodes.
2. To study Bipolar Transistors.
3. To study Sensors.

MODULE-IPC-SN-5

1. Operational Amplifiers.
2. Basic circuits with operational amplifiers.
3. Compensation of Offset voltage amplifiers.
4. Inverting amplifier for OP-709.
5. Inverting amplifier for OP-741.
6. Non-Inverting amplifier for OP-741.
7. Elector meter amplifier-impedance converter.
8. Operational amplifier as comparator.
9. Adder.
10. Sub tractor.
11. Integrator.
12. Differentiator.
13. AC amplifier with frequency-dependent negative feedback.

MODULE-IPC-SN-6

1. Thyristors.
2. Triggering.
3. Determination of triggering voltage UJT & holding current I_H .
4. Mode of operation in full wave mode.
5. Pulse triggering with integrated circuits.
6. Phase control with thyristors.
7. Mode of operation of phase control.
8. Effect of load resistance on the current flow angle.
9. Control of anti parallel switched thyristors with pulse transformer.
10. Mode of operation of phase control with triac.

MODULE-IPC-SN-7

1. Power supply unit with transistors.
2. Power supply unit with regulating amplifier without constant current source.
3. Generation of the supply voltage by half wave rectification.
4. Generation of the supply voltage with bridge rectification.
5. Power supply unit with regulated amplifier & constant-current source.
6. Basic setting within the working range.
7. Determination of the internal resistance.
8. Analysis of the constant current behavior.
9. Electronic current limitation.

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MODULE-IPC-SN-8

1. Function generator.
2. Square wave generator.
3. Determination of the possible adjustment.
4. Determination of the frequency range.
5. Determination of the pulse no-pulse ratio.
6. Triangular wave generator.
7. Determination of the rise time & full time.
8. Sine wave generator.
9. Setting of the wave form.

MODULE-IPC-SN-9

1. To study different type of Bipolar transistors.
2. To study different type field effect transistors.
3. Setting the work point of depletion layer FETs (JFETs)
4. Determination of voltage gain.
5. Determination of R_{in} & R_{out} .
6. Determination of cutoff frequency.
7. Bipolar transistor / Field effect transistor.
8. Determination of characteristics values of the base circuit.
9. Determination of characteristics values of a two stage LF amplifiers.
10. Determination of characteristics values of the first stage.
11. Determination of characteristics values of the 2nd stage.
12. Comparison of characteristic data of the two amplifier stages.
13. Determination of the total gain $A_{u\ total}$.
14. Determination of the upper & lower cutoff frequency.

MODULE-IPC-SN-10

1. Multivibrator.
2. Monostable multivibrator.
3. Multivibrator with module 555.
4. Measuring the input signal.
5. Behavior of the module 555 as monostable multivibrator.
6. Monostable multivibrator with mode 74123.
7. Schmitt trigger.
8. Schmitt trigger with module TCA 845A.
9. Schmitt trigger with operational amplifier 741.
10. Astable multivibrator.
11. Astable multivibrator with module 555.
12. Frequency ranges of the astable multivibrator.
13. Working principle of the astable multivibrator.
14. Square wave generator with monostable multivibrator.
15. Astable multivibrator with module 74123

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