Magnetic field in Helmholtz coil (Complete setup)

Experiments: the following experiment shall be done on this kit:

KS/PHY/MAGHELCOIL

To measure the spatial distribution of the magnetic field between a pair of identical coils in helmholtz arrangement. To investigate the spacing between coils at which magnetic field is uniform and to measure its spatial distribution. To demonstrate the superposition of the magnetic fields of the two individual coils.

The set up shall contain the followings to perform the above experiments:

Set of Copper Coils with 375-400 turns and 140-160 diameter. Digital gauss meter (Ranging 200 G & 2 k G) with axial probe to measure magnetic field having least count of 0.1 Gauss. 4 mm safety sockets and dual temperature controlled exhaust fan.

U- Rail Aluminum bench

The potentiometer to set 0 point exactly and display of 3 $^{1\!\!/_2}$ digits

Aluminium coil base along with other accessories to be provided

4mm Safety sockets and plugs to make connection Must be complete with all other basic accessories.

1 Instruction manual with above experiment details shall be provided.

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Magnetic field in Helmholtz coil (Complete setup)

KS/PHY/MAGHELCOIL

Power Supply: DC 0-20V , 5A Continuously Variable Display: LED/LCD Connection: 4 mm safety socket Support base

Support rod

Base for Helmholtz coil

U channel small

Deflection compass (100 mm diameter with base)

Material: Aluminum Axial probe holder Connecting lead





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Faraday's law & induced e.m.f (Complete setup)

KS/PHY/FARADAYEMF

Experiments: the following experiment shall be done on this kit: Verification of Faraday and Lenz's law of induction by measuring the induced voltage as function of time.

Measurement of the induced voltage impulse as a function of the velocity of the magnet.

Calculation of the magnetic flux induced by the falling magnet as a function of the velocity of the magnet.

The set up shall contain the followings to perform the above experiments:

1 Voltage Sensor: ± 2.5V (AC/DC), accuracy ± 3%, resolution 1.25mV, input resistance > 1M Ω

Coils: Two coils of different number of turns with diameter of 30-35mm and Length 70-75mm

Magnet, etc must be provided

All measurement accessories must be provided. (e.g. – 1 Data Logger: Equipped with a Li polymer rechargeable battery and memory capacity of 800k Samples. Must have at least 5 in-built sensors and 4 ext. sensor ports. 1 Photogate: Detector Infrared, RJ11 connector, Software CD etc.)

Complete accessories required to carry out above experiments must be supplied along with.

1 Instruction manual with above experiment details shall be provided.





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Faraday's law & induced e.m.f (Complete setup) KS/PHY/FARADAYEMF

SI.	Item Name	Specifications
No.		
1.	Voltage Sensor	Pickup Coil.
2.	Coils	2 No
3.	Cylindrical Magnet	Included
4.	Tube	Included (300 mm)
5.	Digital Timer	Included
6.	Photogate	Included
7.	Sensor cable	Included
8.	Support base and stand	Included
9.	Bosshead	Included
10.	Clamps	Included
11.	User Manual	Included



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Capacitance and Dielectric Constant (Complete setup)

KS/PHY/CAP&DIECONS

Experiments: the following experiment shall be done on this kit:

To determine the capacitance of plate capacitor by charge measurement.

To measure the capacitance as a function of area of plates. To measure the capacitance as a function of distance between the plates.

To determine the dielectric constant of different dielectric materials.

The set up shall contain the followings to perform the above experiments:

Must be supplied with U Rail Shaped Metalic Bench ranging from 330-360mm, along with rectangular multiple Capacitor plate ranging from 20-30 cm.

Capacitors plates are attached to insulated riders.

All electrical connections are made using safety sockets. 4mm transparent Socket for two way switch along with Glass and Polystyrene Sheet. Must be complete with all other basic accessories.

1 Digital multimeter

1 Instruction manual with above experiment details shall be provided.



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Capacitance and Dielectric Constant (Complete setup)

KS/PHY/CAP&DIECONS

This trainer kit is designed to study the variation of a dielectric constant of a material With three Probe arrangement with setup, Sample Bakelite, Teflon PZT & CCL4 for liquid, Digital Capacitor meter range 0 pf to 50mf

Salient Features

Charge measurement by electrometer amplifier. All electrical connections are made using safety sockets.

Capacitors plates are attached to insulated riders. Electrical safety tested.



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Permeability and Permittivity of Air (Complete setup)

Experiments: the following experiment shall be done on this kit: To measure the force between current carrying conductor and determine the permeability of air. To measure the force of attraction between charged capacitor plates and determine the permittivity of air. To verify the relationship of speed of light with permeability and permittivity of air.

The set up shall contain the followings to perform the above experiments:

Coulomb and current balance kit -Levelling knobs, 4mm Safety socket, Multiple Straight conductors and Parallel Plates. The lever position must be around 25 cm.

Power supplies with safety sockets in all and dual temperature controlled exhaust fan.

High voltage power supply with safety socket and smart thermal safety switch.

Must include cylindrical bases, diode laser (0.6-1.0mW power) & all other accessories.

Must be complete with all other basic accessories.

1 Instruction manual with above experiment details shall be provided.

Salient Features : High current power supply. High voltage DC power supply.

Very sensitive coulomb and current balance. Diode laser based optical lever.



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KS/PHY/PER-AIR

Permeability and Permittivity of Air (Complete setup)

COULOMB AND CURRENT BALANCE

KS/PHY/PER-AIR

Leveling : 2 nos, threaded knobs Connection : 4mm safety socket Lever position : 25.5cm A sensitive balance with adjustable counter weight and an optical lever for measuring tiny forces by the null method. Straight conductor : L=33.5cm, dia.=3mm, Aluminium Straight conductor : L=26.5cm, dia.=3mm, Aluminium (U type) Max. current : 20Amp C Parallel plate : 12.5cmx12.5cmx0.8mm (LxWxT) Material : Aluminium

Max. current : 20Amp

Scope of supply : Complete with base unit, pair of straight conductor, pair of parallel plates and plane mirror.

POWER SUPPLY 0-30V DC, 0-20A

Input Voltage : 220V, ±5%, 50Hz AC Output Voltage : 0-30V Voltage Resolution : 0.1V Voltage Display : 2½ Digit LED Output Current : 0-20 Amp **Current Resolution : 0.1 Amp** Current Display : 2½ Digit LED Protection : Current-Limiter Primary fuse : 8 Amp



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Permeability and Permittivity of Air (Complete setup)

DIODE LASER Peak wavelength : 635nm

Operating voltage : 5V DC Operating current : 250mA Optical power : 0.4-0.8mW Laser product : Class II Operating temp. : 0 - 40°C Storage temp. : -10 to 50°C

HIGH VOLTAGE POWER SUPPLY

Input Voltage : 220V, ±5%, 50Hz AC Output Voltage : 0-600V DC Voltage Resolution : 10V Voltage Display : Analog Short Circuit Current : 100µ Amp

WEIGHT BOX Weights : 1mg to 50gms Material : Nickel plated brass Fractional : Aluminium, supplied in weight plastic box Housed in wooden box with a forcep

CYLINDRICAL BASE

Material : Ferrous Mount : Rod 10-14mm dia : Flat object up to 10mm

Groove (LxW) : Slide object, 30x10mm

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KS/PHY/PER-AIR