



School Science Experiments

Make Science Learning Inspire-ing

Suitable for IGCSE & IB Curriculum



CE Certified

Product Videos also available at www.inspirephysics.com





Ajay Sagar (M.D.)
B.E. Production,
PEC Chd.

What's in a word?

We thought long and hard to find a name to represent the family of products we now call Inspire. We wanted it to convey the essence of what we have developed, the innovation underlying our products (we don't copy others, we work from first principles), the quality we strive for, in the materials we use and the way we manufacture. It's in the manuals that support our products and the software and apps that make sense of our wireless data.

Inspire says it all,

It's what we strive for in every inspire product, we want to be different and want to reach for new heights.

It's what it conveys to the students who use our equipment, the spark that ignites understanding.

So who are we?

We are a family business based in Ambala in North India. We are Indosaw, an offspring of century old OSAW group.

From a small beginning, today there are more than 300 employees. We all went together in buses to Mata Vaishno Devi, Jammu & Kashmir, India to celebrate our centenary. We have ethical and moral standards; child labour is not acceptable to us since our inception. Employees stay with us a long time and promotion from within is the reward for their effort as our company grows.

We have invested in modern machinery and facilities and we are an ISO 9001 : 2015 certified company but most of all we invest in our people.

Where do we get our inspire-ation from?

The MD Ajay Sagar has continued the ethos of his Grandfather in reaching out to the world with Indosaw range of products. But this is a new era, we know we can do better. He has a vision for the company to create world class, innovative, unique education products and the new range of inspire products encapsulate much of what we seek to achieve. We want to inspire all who use our products, and this is our motivation. We have great ideas for the future too.

We have been supported in our innovation by David Cook-Martin from the UK, ex Unilab and Philip Harris.

How do we build quality into our inspire products?

Under one roof we have the facility to develop embedded solutions, software, CAD, CAM, instrumentation etc. We strive to ensure our products are built to consistent high standards where training of our operators and assemblers is key. Our standard operating procedure is that, we produce, test, calibrate and after all the quality inspection, we go that extra mile to put our products through a soak test, subjecting them to full load conditions for 12 hours.

As an ISO 9001 : 2015 certified company our processes and systems are thorough to ensure that when we build to high quality standards, we ascertain to maintain them.



David Cook-Martin
GradInstP
MInstP
PGCE

Where will we go in the future?

We have some great ideas for education products in Science, Engineering, Technology and Math. Watch out for us.



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INSPIRE TIMING-PRO BLUETOOTH TIMING BALL SV748

Experiments:

- Exp-1 Determining free fall time of a ball when it is dropped from a known height and thereby measuring 'g', acceleration due to gravity.
- Exp-2 Study the variation of height, h as a function of both t and t² during free fall where h is the free fall height and t is the free fall time.
- Exp-3 Measurement of total time of flight during a projectile motion.

The Timing ball is a unique device that records time from moment of release of ball to the moment of impact (on ground or object). It can be used to conduct experiments involving acceleration due to gravity (g). Built-in 3-axis accelerometer detects release of ball. The same accelerometer detects impact. The accuracy is amazing, measurement of 'g' for example.



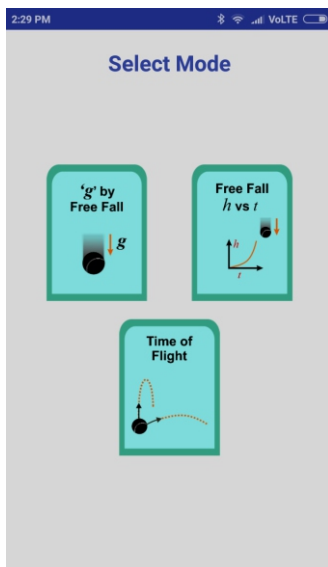
Inspiring Students with Hands-on Experiments



Free App & Software

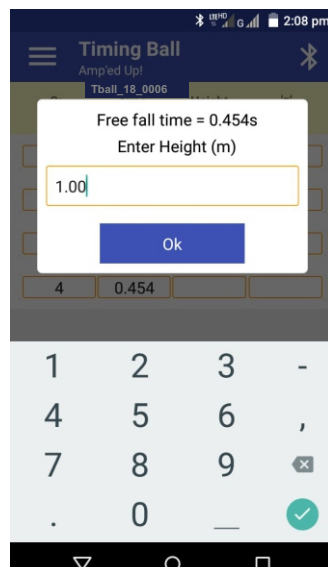


Three Modes



Built-in experiments in iOS / Android / PC

Manual Entry for Height



Captures times on Smart-phone, PC or Tablet.

SCOPE OF SUPPLY:

Cat No.	Item Name	Qty.
SV748	Timing Ball	1
SA731	Pointer Attachment	1
	Instruction Manual	1

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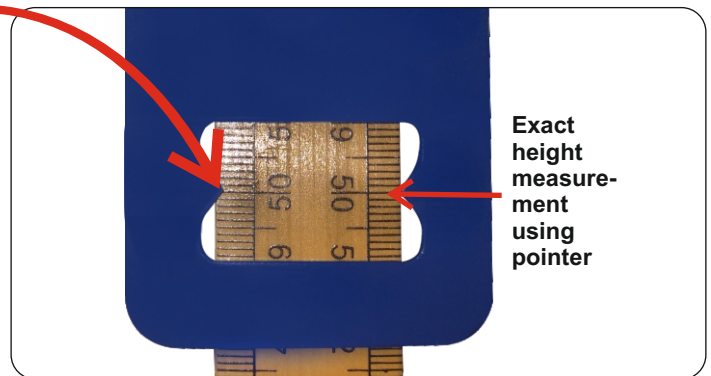
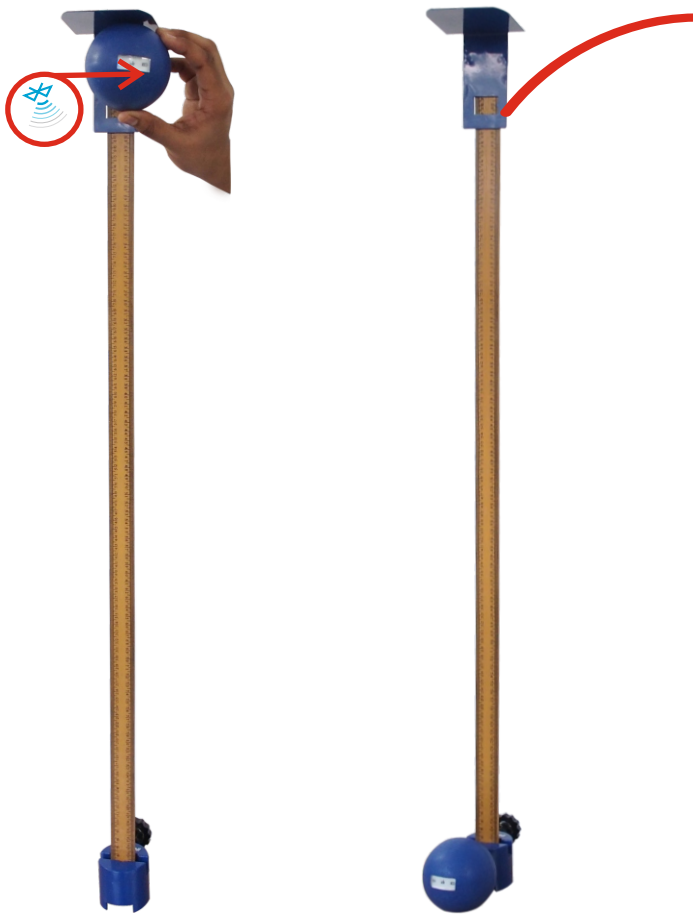
INSPIRE TIMING-PRO BLUETOOTH TIMING BALL SV748

Key Features:

- ▶ Most direct method to measure 'g', acceleration due to gravity.
- ▶ Learning Science while Playing Approach
- ▶ Excellent Time Measurement with high precision.
- ▶ 1 ms resolution.
- ▶ Accessory for exact height measurement.
- ▶ Accessory can be mounted on any rule.

Key Features:

- ▶ Accessory allows to drop the ball from predefined set height. Hence any uncertainty in height measurement is eliminated.
- ▶ Pointer accessory measures exact free fall height.
- ▶ Even a little error (up to 1 cm) provides an accurate result of 'g' due to very high accuracy in time measurement.
- ▶ Data can be collected on PC, tablets or smartphones.
- ▶ Dedicated software and app for analysing motion along with different templates for different experiments.



Note: Rule is not included within the scope of supply.

Pointer attachment : Pointer attachment serves as an accessory of the timing ball. It allows to drop the ball from a predefined set height.

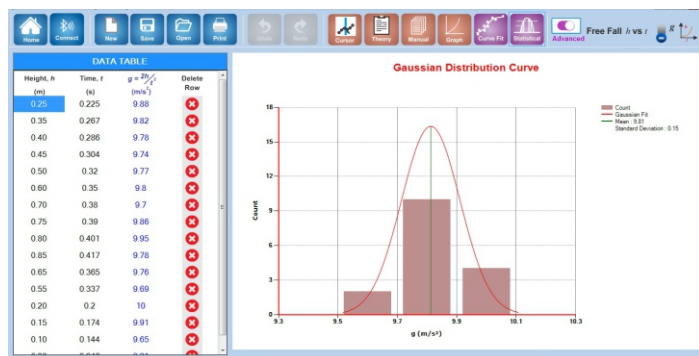
Before Release

After Release



Time, t (s)	Time ² , (t*s) ²	Height, h (m)	g, (m/s ²)
0.425	0.18	0.90	9.97
0.420	0.18	0.85	9.64
0.399	0.16	0.80	10.05
0.391	0.15	0.75	9.81
0.377	0.14	0.70	9.85
0.300	0.09	0.45	10.00
0.367	0.13	0.65	9.65
0.346	0.12	0.60	10.02
0.335	0.11	0.55	9.80
0.322	0.10	0.50	9.64

Mean 'g' = 9.84 m/s²



Graph A Gaussian Distribution of Your Data Using One of The Statistical Tools

Tabular Display of Data In Tablet When Ball Is Released From Different Heights

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INSPIRE TIMING-PRO BLUETOOTH DYNAMICS CAR SL1047

Experiments:

- Exp-1 Study of linear motion under low friction and plot of distance, velocity, momentum, energy (kinetic, potential and total energy) and acceleration as a function of time.
- Exp-2 Study of Newton's Second Law of Motion.
- Exp-3 Study of linear motion in an inclined plane.
- Exp-4 Study of damped harmonic oscillation in potential well.
- Exp-5 Study of dependence of kinetic energy on mass and velocity.
- Exp-6 Study of elastic collision: conservation of momentum and energy.
- Exp-7 Study of inelastic collision: conservation of momentum.
- Exp-8 Study of explosion : conservation of momentum.
- Exp-9 Study of damped harmonic oscillation in horizontal track and determination of spring constant.
- Exp-10 Study of crash test : Energy absorbed by crumple zone in crash.
- Exp-11 Demonstration of air balloon propelling vehicle.
- Exp-12 Demonstration of air drag on the motion of vehicle.

We present a unique built-in motion encoding and wireless data transmission car which while going along a track automatically senses the displacement with time and simultaneously transmits these data to computer via bluetooth. Velocity, acceleration, momentum, force, potential and kinetic energy are then calculated. As a result, this dedicated car can be used to study many kinematical principles and phenomena of classical mechanics. A single car (Primary Car) can be employed to study the motion in one dimension and verify the relationship between kinematical parameters. Another interesting feature is that the car can also run on a curved track as the design does not require any external electronics to be mounted on tracks. While studying the collision experiment, two cars namely primary and secondary car are needed. A complete set of accessories enables the system to study a wide range of experiments.



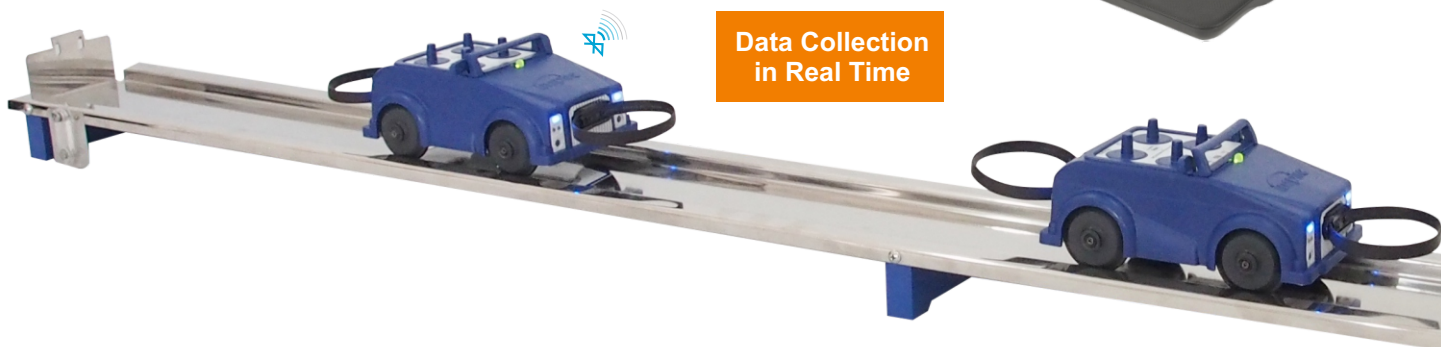
Free Software



* Additionally Required

Computer is not supplied with the setup.

Data Collection in Real Time



INSPIRE TIMING-PRO BLUETOOTH DYNAMICS CAR

Key Features:

- ▶ Novel tool for comprehensive studies of motion related experiments both in Linear and Curved Track.
- ▶ Two Cars (Primary and Secondary) for collision experiments with built-in rechargeable battery and electronics.
- ▶ Live Data transfer in PC/Android Phone via Bluetooth Connectivity: Distance, Speed, Acceleration, Momentum and Kinetic Energy as a function of time.
- ▶ Hassle-Free, Noise-Free and easy wireless device replacing the conventional air track and light gate timer.
- ▶ Recording of very smooth time - distance data.
- ▶ Free Dedicated Software with Data Analysis and several other tools.
- ▶ Special Provision in software to easily demonstrate Conservation of Energy and Momentum in Collisions, Inclined Track and Curved Track experiments.
- ▶ Visualisation of Kinetic and Potential energy and their inter-conversion in graphical software interface.
- ▶ Complete kit with all easily mountable accessories.
- ▶ Experiment in Curved Track : an alternative method to determine 'g', acceleration due to gravity.

DESIGN FEATURES:

- ▶ Motion Data Collection : Unrestricted on any linear or curved track as the design does not require any external electronics to be mounted on tracks.
- ▶ Two Cars : Primary – Secondary configuration to study collisions. Primary can be used for single car experiments on curved or linear track.
- ▶ Communication between Primary Secondary : "Infrared Transmission" by Secondary and reception by Primary with signal conditioning circuitry. Primary & Secondary: Each have dedicated controller for communication.
- ▶ Communication between Primary to PC : Wireless Bluetooth. Primary transmits motion data of both cars along with time stamp by main controller.
- ▶ Accessories : Magnetic Bumper attachments for collisions, crash test and explosion.
- ▶ Clamping arrangement for using various accessories like elastic ribbon, balloon propulsion and drag sheet.
- ▶ Dedicated software for analyzing motion.



CAR, TRACKS & ACCESSORIES

WHAT WE WILL LEARN:

- ▶ Motion In One Dimension : Straight and Curved Tracks.
- ▶ Distance, Velocity & Acceleration.
- ▶ Newton's Laws of Motion.
- ▶ Linear Momentum, Kinetic and Potential Energy.
- ▶ Force and Friction.
- ▶ Damped harmonic oscillation.
- ▶ Conservation of Momentum.
- ▶ Conservation of Energy.
- ▶ Conversion of Potential Energy to Kinetic Energy and Vice Versa.
- ▶ Elastic and Inelastic Collision.
- ▶ Concept of Horizontal and Inclined Motion.
- ▶ Concept of Potential Well Track.
- ▶ Spring constant.
- ▶ Crumple zone absorbs energy in crash.

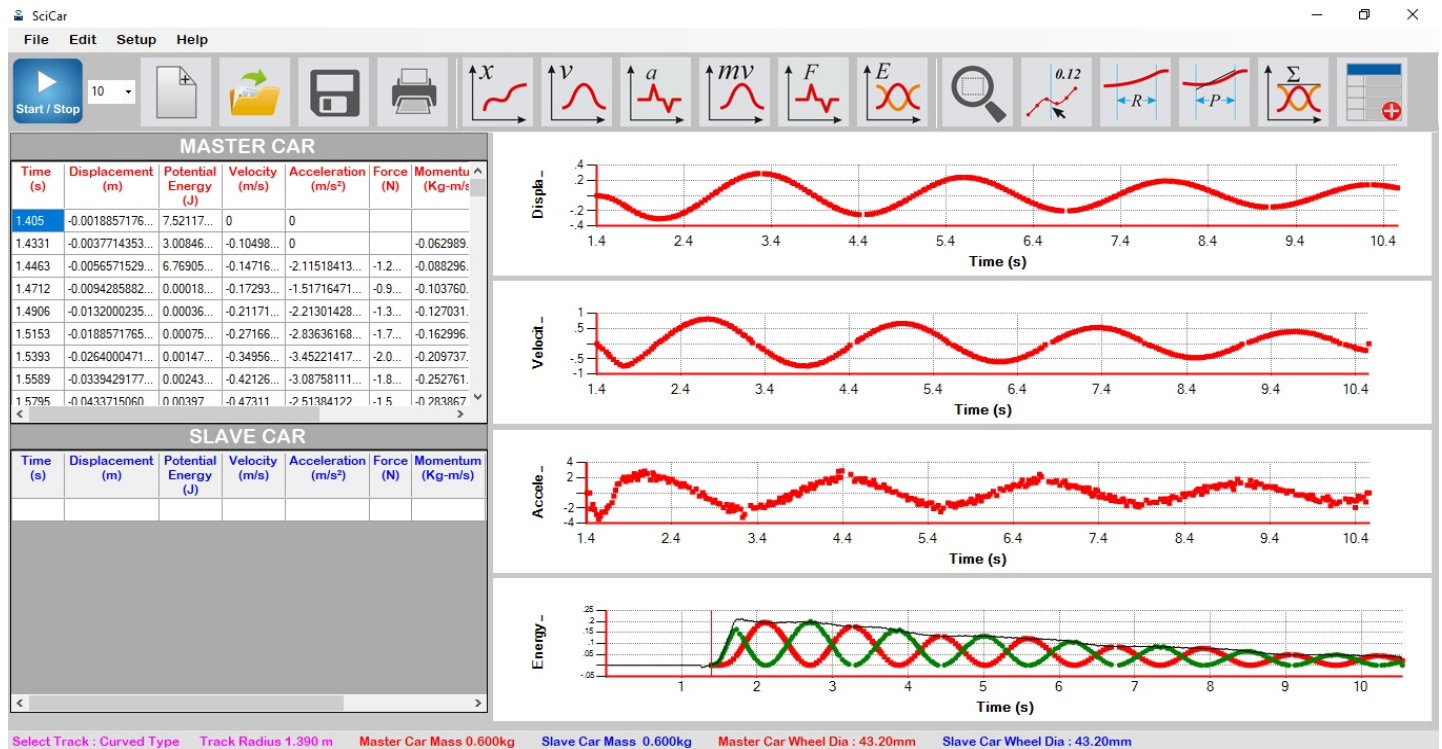
SCOPE OF SUPPLY:

Cat No.	Item Name	Qty.
SA709	Primary Car	1
SA710	Secondary Car	1
SA711	Linear track (SS 1.5m)	1
SA712	Curved track (SS)	1
SA714	Set of accessories	1

Special Software Advantage

- ▶ Polynomial Equation Fit of Data Points
- ▶ Built-in math tools to calculate velocity, acceleration, momentum, potential energy, kinetic energy and to summate these functions so that energy and momentum before collisions can be analysed for example or the energy absorbed by crumple zones.
- ▶ Zoom in and Zoom Out

INSPIRE TIMING-PRO DYNAMICS CAR SOFTWARE



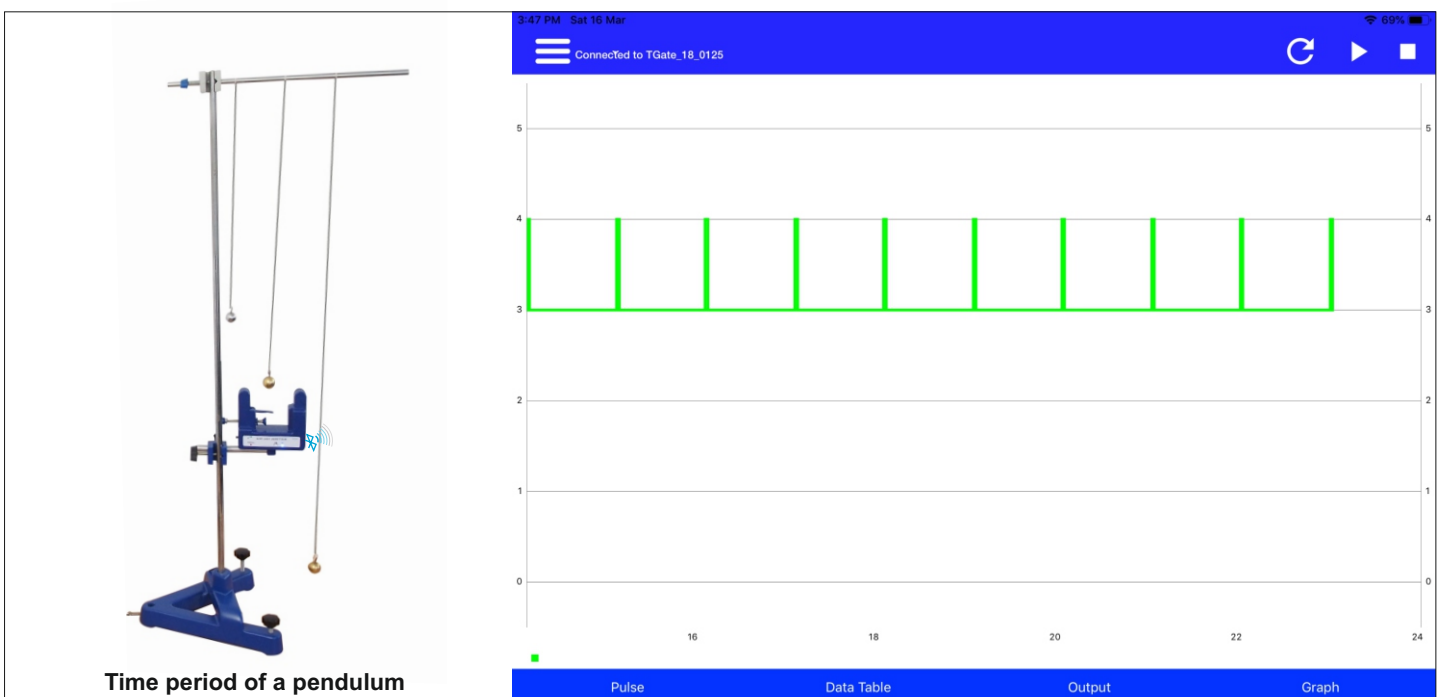
MOTION IN POTENTIAL WELL : CONSERVATION OF ENERGY



ELASTIC COLLISION BETWEEN TWO CARS OF DIFFERENT MASSES

INSPIRE TIMING-PRO LIGHT GATE

Bluetooth light gates with built-in timer is a self contained device with several advanced features over the conventional Timer. Dedicated software on PC and apps for Android/iOS is also available which graphically displays the blocked pulse as a function of time for two channels. The Primary light gate contains a microcontroller having crystal controlled time base to accurately measure the time with least count time resolution of 0.1millisecond. Communication between Primary and Secondary light gates is carried on via wire and Primary light gate communicates with pc or smart device via Bluetooth. Unlimited Secondary light gates can be daisy chained both on Primary and Secondary channels. A built-in rechargeable cell provides power for the set-up. The Primary light gate also provides both power and trigger to an optional solenoid. Special circuits conserve battery power on the light gates and Solenoid. The user-friendly software also contains templates for various experiments: Velocity, Acceleration, Collision, Picket Fence, 'g' by Free Fall and many more. These advanced light gates come with 'picket fence' masks to attach to air-track trolleys and dynamics cars and have built-in attachments for mounting them to inspire apparatus such as g-by-freefall, air track and law of motion.



Time period of a pendulum

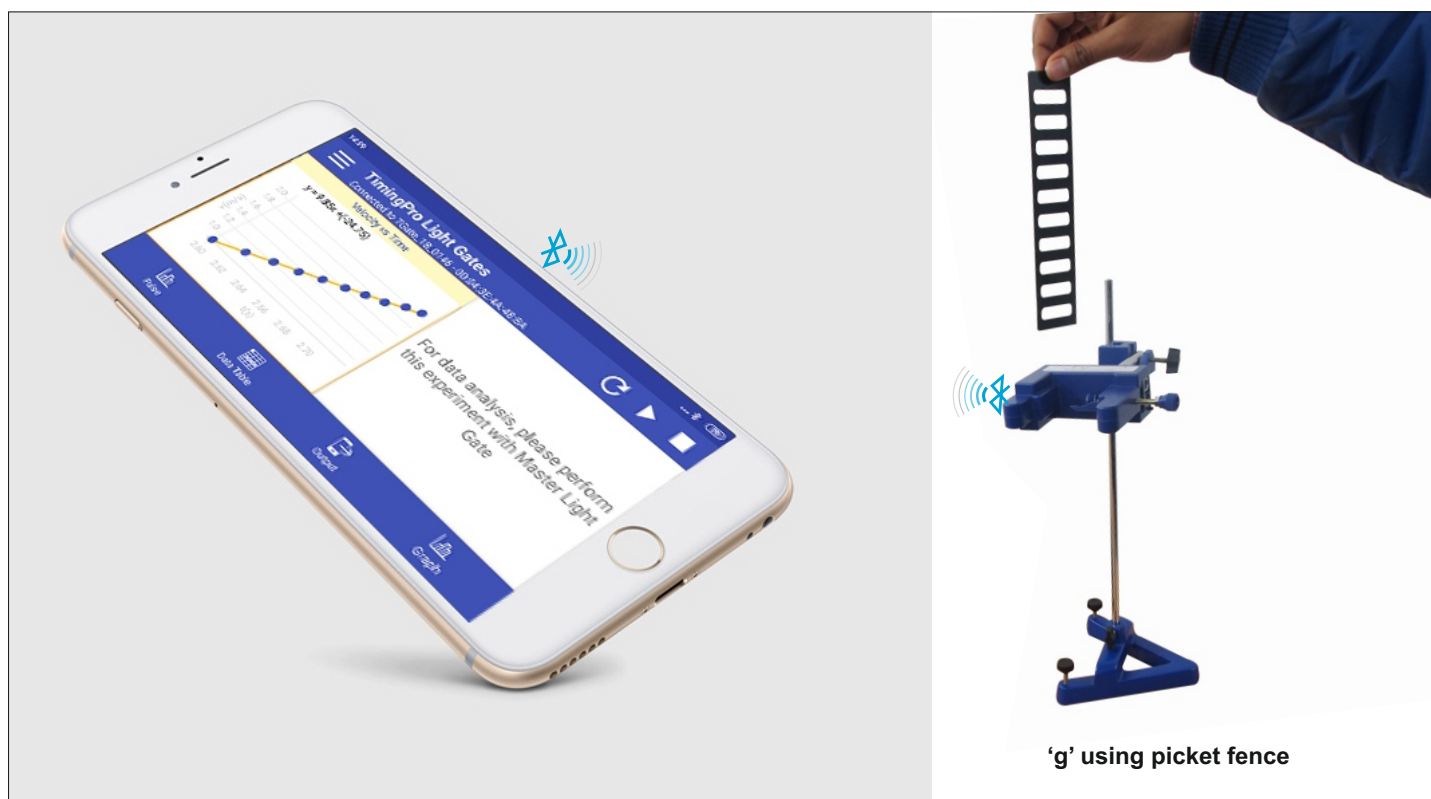
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INSPIRE TIMING-PRO LIGHT GATE



DAISY CHAINING OF LIGHT GATES



'g' using picket fence

SCOPE OF SUPPLY:

Cat No.	Item Name	Qty.
SA724	Primary light gate	1
SA726	Secondary light gate	1

Also see light gates used in g by free fall apparatus (page no. 8-9), in Law of Motion kit (page no. 10) and in Linear Air Track (page no. 11).

FREE FALL APPARATUS WITH TIMING-PRO LIGHT GATES & SOLENOID SK196

Experiments:

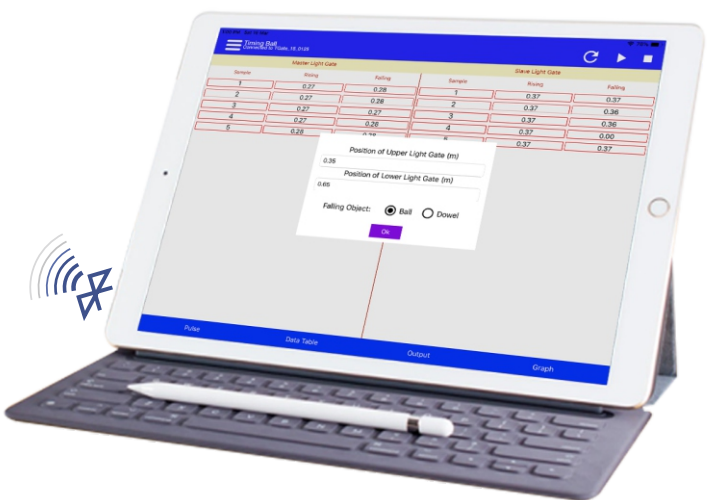
Exp-1 To determine the value of "g" by dropping metal ball/dowel using solenoid through a pair of light gates.

Key Features:

- ▶ Unique semi-wireless solution to perform 'g' by free fall experiment.
- ▶ Primary and Secondary light gates communicate with laptop or mobile phone on wireless bluetooth link.
- ▶ Primary light gate has inbuilt Digital Timer with 100 micro-second resolution.
- ▶ A special solenoid module is triggered from Primary light gate to release ball.
- ▶ Built-in rechargeable cells.
- ▶ Communication between Primary Secondary light gates and Solenoid is wired.
- ▶ Graphical display of blocked pulses can be observed on PC software android app and iOS app.
- ▶ Easy to set up and accurate result.
- ▶ Primary and Secondary light gates can be used with air track and dynamic trolleys, to study linear motion on inclined plane and collision experiments.
- ▶ Solenoid is only powered when ball or dowel is in position, so conserving battery power.
- ▶ Data can be collected on PC, tablets or smartphones.



Free App & Software



SCOPE OF SUPPLY:

Cat No.	Item Name	Qty.
SA725	'g' by free fall stand	1
SA724	Primary light gate	1
SA726	Secondary light gate	1
SA732	Wireless solenoid module	1
SW924	Steel ball/dowel	1
SU0293A	Thread reel	1

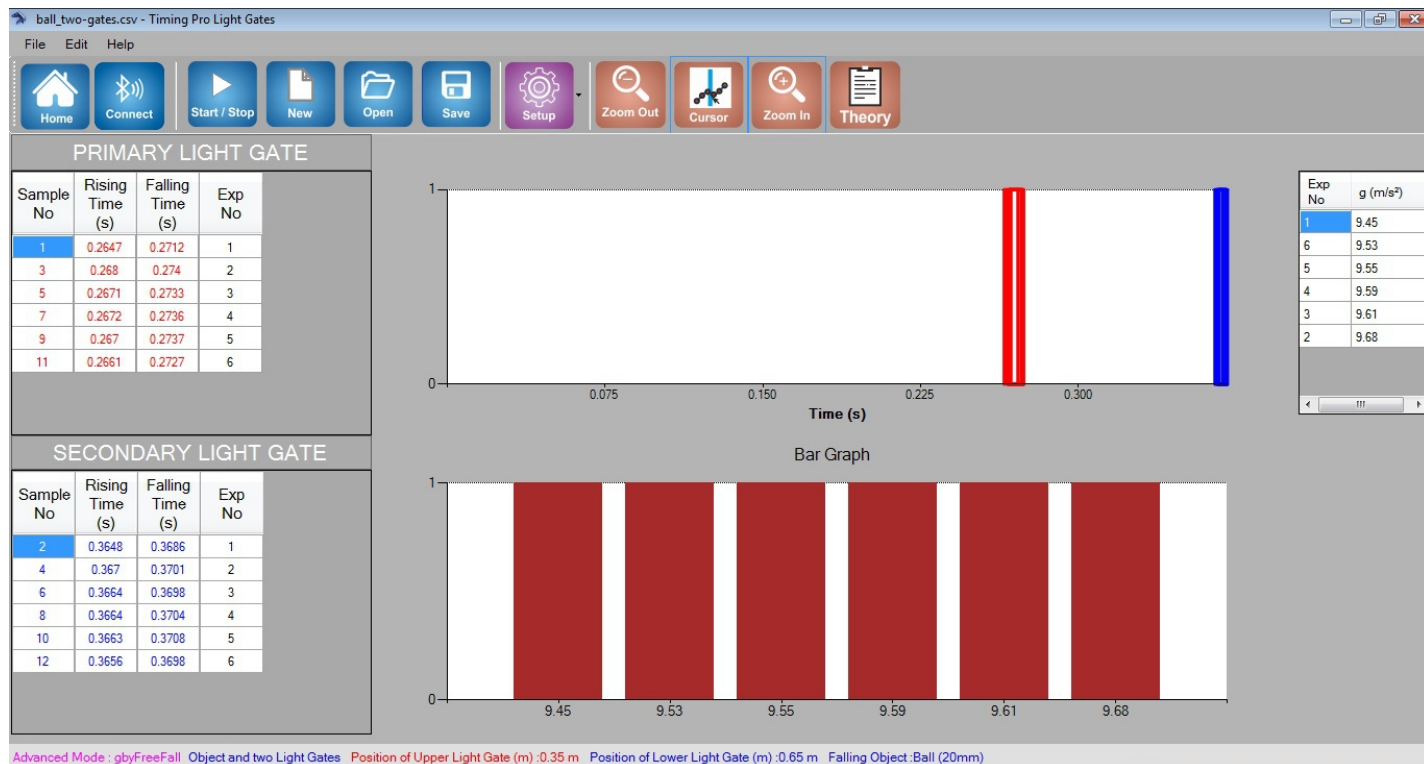
Key Topics:

- ▶ Free fall.
- ▶ Acceleration due to gravity.
- ▶ Line of sight & IR.
- ▶ light gate.
- ▶ Bluetooth.
- ▶ Solenoid.

FREE FALL APPARATUS GRAPH



Timing-Pro Light Gates app : Plot of $h \sim t$ and $h \sim t^2$ can be obtained in an android or iOS smartphone when a single light gate is used at various positions



Timing-Pro Light Gates Software : Determination of g and its bar graph when two light gates are set at two different positions.

LAW OF MOTION KIT SW471

Experiments:

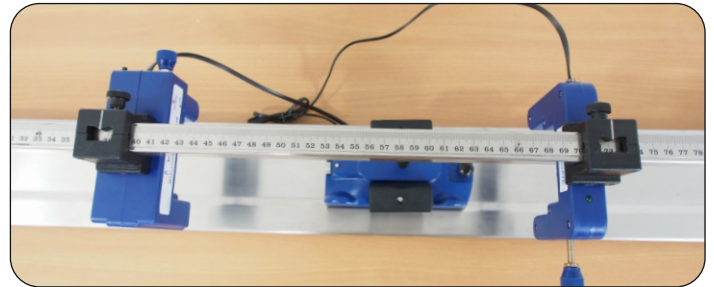
- Exp-1 To find the velocity of an object.
- Exp-2 To determine the average speed of an object.
- Exp-3 To determine the acceleration of a moving object.
- Exp-4 To demonstrate the elastic collision.
- Exp-5 To demonstrate the law of conservation of energy.
- Exp-6 To demonstrate the transfer of energy.
- Exp-7 To plot a graph between velocity and time using picket fence.

Key Features:

- ▶ No noise as in Air Track experiment.
- ▶ **Facilitating the study of mechanics both qualitatively & quantitatively.**
- ▶ **Low friction wheels of trolley.**
- ▶ Superior quality SS track.
- ▶ 4 mm socket on trolley for attaching various accessories & weight.
- ▶ Precise and accurate data.
- ▶ Data can be collected on PC, tablets or smartphones.

Key Topics:

- ▶ Linear motion.
- ▶ Newton law of motion.
- ▶ Elastic collision.
- ▶ Inelastic collision.
- ▶ Conservation of momentum.
- ▶ Conservation of energy.
- ▶ Mass ratio.



Top view to read light gate position



Free App & Software

Law of Motion kit has been designed to study linear motion, momentum and kinetic energy of trolleys moving on a smooth track. Picket fence masks attached to the trolleys and light gates mounted on an overhead rail, enable calculation of velocity and acceleration of the trolleys using free software. Experiments in Laws of motion, including action and reaction, force and acceleration and study of momentum and kinetic energy in collisions can be investigated with the equipment.

The track is of superior quality stainless steel which together with low friction trolleys, ensures smooth travel. Soft buffers at the track ends prevent damage to the trolleys and a pulley provides for a hanging weight attached to a trolley.

SCOPE OF SUPPLY:

Cat No.	Item Name	Qty.
SH299	Track for dynamic trolley	2
SP075	Dynamic trolley	2
SA724	Primary light gate	1
SA726	Secondary light gate	1
SN360	Accessories for dynamic trolley	1
SH504	Slotted Masses	1
C13044	Light gate rider	1
C13045	Light gate mount	2
C13046	Side clamp (left)	1
C13047	Side clamp (right)	1

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LINEAR AIR TRACK WITH DIGITAL TIMING-PRO LIGHT GATE SK099

Experiments:

- Exp-1 To study the linear motion under virtually frictionless conditions.
- Exp-2 To study the elastic and inelastic collision.
- Exp-3 To study the concept of velocity.
- Exp-4 To study the concept of accelerations.
- Exp-5 To study the conservation of momentum & energy.
- Exp-6 To study the dependency of mass ratio to kinetic energy.

Key Features:

- ▶ Accessories simply plug into the ends & top of vehicle.
- ▶ **Facilitates the study of mechanics.**
- ▶ Linear motion under frictionless condition.
- ▶ Light gate with sensitivity-adjustment knob.
- ▶ Precise and accurate data.
- ▶ Many other experiments can also be performed with the same wireless light gates with built-in-timer.
- ▶ Data can be collected on PC, tablets or smartphones.

Key Topics:

- ▶ Linear motion.
- ▶ Newton law of motion.
- ▶ Elastic collision.
- ▶ Inelastic collision.
- ▶ Conservation of momentum.
- ▶ Conservation of energy.
- ▶ Mass ratio.



Triangular section track made of aluminum with perforations. An inlet cover is given at one of the ends, which is connected to hose of an air blower. The gliders move on an air cushion thus minimizing friction.

Apparatus is used for performing experiments to investigate laws of motion, speed, acceleration, and momentum. Wireless light gates with built-in-timer provide accurate measurement of various kinematic parameters. Data may be collected for easy analysis on the free software and apps.

SCOPE OF SUPPLY:

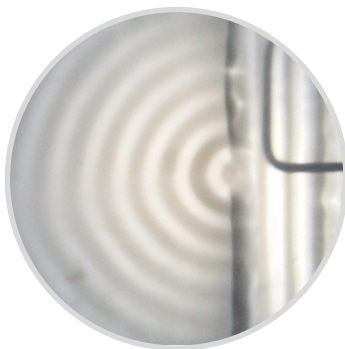
Cat No.	Item Name	Qty.
C9305	Linear air track	1
CH238	Air Blower with pipe	1
SP059	Linear Air track accessories	1
SA724	Primary light gate	1
SA726	Secondary light gate	1
S11011	Linear air track light gate mount	2

COMPACT RIPPLE TANK (ADVANCED) SA705

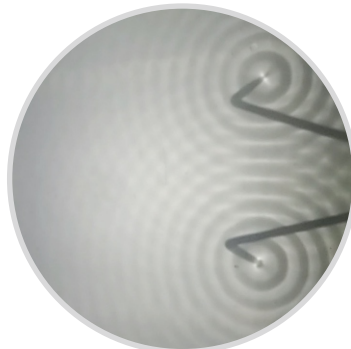
Experiments:

- Exp-1 To study the relation between frequency and wavelength and to determine the wave velocity.
- Exp-2 Image formation by plane mirror.
- Exp-3 Reflection of plane wavefront at straight barrier.
- Exp-4 Reflection of plane wavefront at concave barrier.
- Exp-5 Reflection of plane wavefront at convex barrier.
- Exp-6 Reflection of circular wavefront at concave barrier.
- Exp-7 Refraction using rectangular refractor.
- Exp-8 Refraction using convex refractor.
- Exp-9 Refraction using concave refractor.

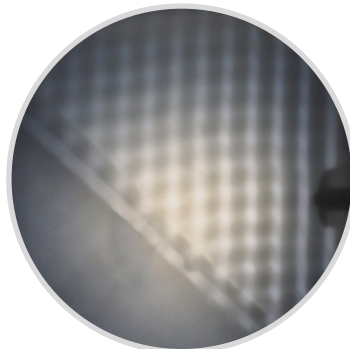
- Exp-10 Diffraction of plane wave at single edge.
- Exp-11 Diffraction of plane wave when the slit width is greater than the wavelength of wave.
- Exp-12 Diffraction of plane wave when the slit width is less than the wavelength of wave.
- Exp-13 Interference using double point dipper.
- Exp-14 Interference pattern for Young's Double Slit Experiment.
- Exp-15 Llyod's Mirror : Interference pattern between waves from parent source and source produced by reflection.



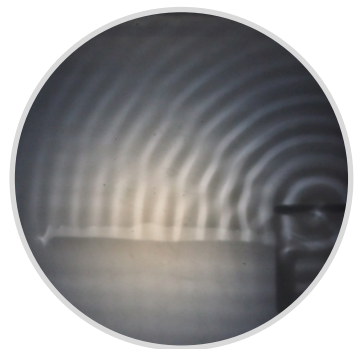
Diffraction



Interference



Reflection



Llyod's Mirror

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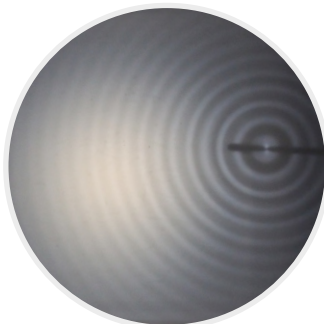
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Key Features:

- ▶ Micro-controller based digital control.
- ▶ Compact and completely self-contained unit with features to digitally set frequencies and control amplitudes of Vibrator and LED strobe.
- ▶ Frequency 1-250Hz operation (controllable in 1 Hz step).
- ▶ LED illumination in two ways: Synchronous and Independent Mode.
- ▶ Individual digital LED display for wave and strobe frequency with membrane keypad for control.
- ▶ 13 accessories neatly packed in integrated accessory box.
- ▶ Camera mode for classroom projection.
- ▶ To study all the wave phenomena: Reflection, Refraction, Interference and Diffraction.
- ▶ Hand book with 15 experiments available.
- ▶ Experiment can be performed within minutes.



KEYPAD:

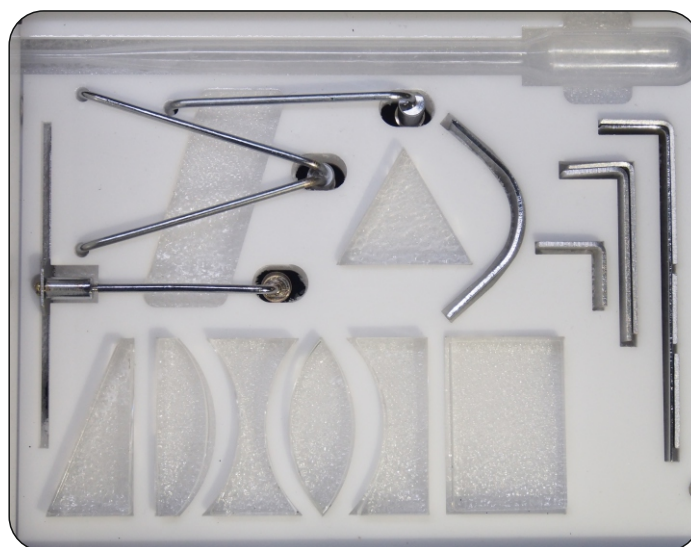


Circular Wave

SCOPE OF SUPPLY:

Cat. No.	Item Name	Qty.
SA705	Ripple tank base unit	1
CD1093	Tank	1
	Power adaptor	1
C11725	Single point dipper	1
C11728	Double point dipper	1
C11730	Plane wave bar dipper	1
CD691	Curved reflector	1
C11722	Diffraction barrier	2
C11718	Rectangular block shape	1
C11719	Convex lens shape	1
C11720	Concave lens shape	1
C11717	Triangular shape	1
C11723	Small diffraction barrier	1
SB289	Dropper	1
C12581	Young's double slit	1
C12582	Long straight barrier	1
SA730	Camera with attachment	1
	"A" shaped base	1

ACCESSORIES:



"If you are dropping pebbles into a pond and do not watch the spreading rings, your occupation should be considered as useless, said the fictional Russian philosopher, Kuzma Prutkoff. And, indeed we can learn much by observing these graceful circles spreading out from the punctured surface of calm water."

— Gamow and Cleveland

"One way conceive light to spread successively, by spherical waves."

— Christiaan Huygens

COMPACT RIPPLE TANK (ECONOMY) SA706

Experiments:

- Exp-1 To study the relation between frequency and wavelength and to determine the wave velocity.
- Exp-2 Image formation by plane mirror.
- Exp-3 Reflection of plane wavefront at straight barrier.
- Exp-4 Reflection of plane wavefront at concave barrier.
- Exp-5 Reflection of plane wavefront at convex barrier.
- Exp-6 Reflection of circular wavefront at concave barrier.
- Exp-7 Refraction using rectangular refractor.
- Exp-8 Refraction using convex refractor.
- Exp-9 Refraction using concave refractor.

- Exp-10 Diffraction of plane wave at single edge.
- Exp-11 Diffraction of plane wave when the slit width is greater than the wavelength of wave.
- Exp-12 Diffraction of plane wave when the slit width is less than the wavelength of wave.
- Exp-13 Interference using double point dipper.
- Exp-14 Interference pattern for Young's Double Slit Experiment.
- Exp-15 Lyod's Mirror : Interference pattern between waves from parent source and source produced by reflection.



KEYPAD:



Key Features:

- ▶ Micro-controller based digital control.
- ▶ Compact and completely self-contained unit with features to digitally set frequencies.
- ▶ Frequency 50-175Hz operation (controllable in 1 Hz step).
- ▶ LED illumination in two ways: Synchronous and Independent Mode.
- ▶ Individual digital LED display for wave and strobe frequency with membrane keypad for control.
- ▶ 13 accessories neatly packed in integrated accessory box.
- ▶ To study all the wave phenomena: Reflection, Refraction, Interference and Diffraction.
- ▶ Hand book with 15 experiments available.
- ▶ Experiment can be performed within minutes.



SCOPE OF SUPPLY:

Cat. No.	Item Name	Qty.
SA706	Ripple tank base unit	1
CD1093	Tank	1
	Power adaptor	1
C11725	Single point dipper	1
C11728	Double point dipper	1
C11730	Plane wave bar dipper	1
CD691	Curved reflector	1
C11722	Diffraction barrier	2
C11718	Rectangular block shape	1
C11719	Convex lens shape	1
C11720	Concave lens shape	1
C11717	Triangular shape	1
C11723	Small diffraction barrier	1
SB289	Dropper	1
C12581	Young's double slit	1
C12582	Long straight barrier	1
	Instruction Manual	1

▶ WAVES & OSCILLATION

VIBRATION GENERATOR SA009A

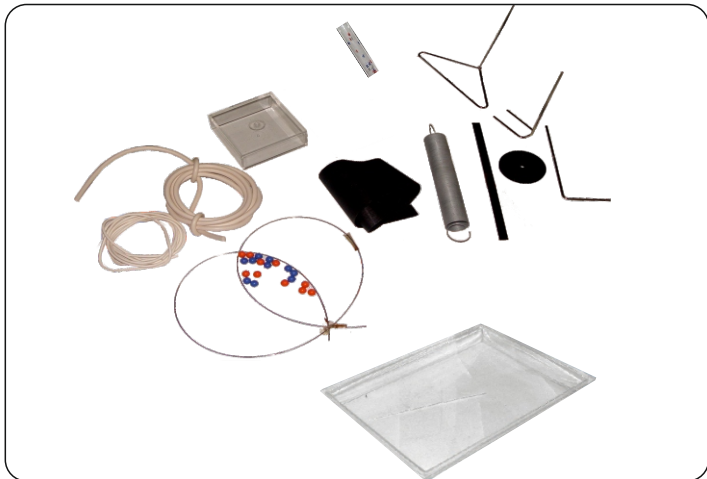
Experiments:

- Exp-1 To demonstrate the Kinetic Theory.
- Exp-2 Longitudinal and transverse waves.
- Exp-3 Resonance with a non constant wave length.
- Exp-4 To demonstrate resonance of metal strips.
- Exp-5 To demonstrate interference & doppler effect.
- Exp-6 To demonstrate reflection, refraction & diffraction.

Key Features:

- ▶ **Mechanical oscillations.**
- ▶ **Max peak to peak displacement .**
- ▶ Total frequency range: 1 Hz to 10 kHz.
- ▶ Coil and magnet assembly are enclosed.
- ▶ **Armature allows attachment of the item to be vibrated.**

VIBRATION GENERATOR ACCESSORIES:



See page no. 34 for more details of inspire Power Signal Generator and the many experiments that it is capable of please see page no. 35.

Key Topics:

- ▶ Longitudinal Wave.
- ▶ Transverse Wave.
- ▶ Kinetic Theory.
- ▶ Brownian Motion.
- ▶ Resonance.



SCOPE OF SUPPLY:

Cat No.	Item Name	Qty.
SH507	Vibration Generator	1
SE1082	Signal Generator (Advanced)	1
SW653	Jack	1
CA384	Spring	1
CA554	Acrylic pipe	1
CA448-49	Plastic balls set	1
CA542-43	Rubber cords	1
CA553	Tapered rubber strip	1
CA540	Chladni plate	1
CA552	Wire loop	1

Cat No.	Item Name	Qty.
CA549-51	Steel strips	1
CA541	Disc	1
CA556	Transparent tray	1
CA546	Single point dipper	1
CA545	Double dipper	1
CA544	Plane dipper	1
SN201	Lead 100cm black	1
SN204	Lead 100cm red	1
CA1024	Bridge piece	1
	Instruction manual	1

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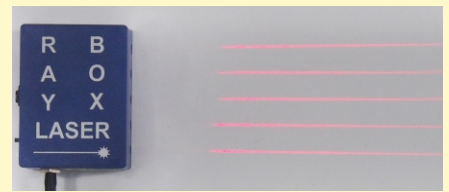
LASER RAY KIT SV144A

Experiments:

- Exp-1 Working of Human Eye (Normal eyes, near sighted eyes, far sighted eye).
- Exp-2 Principle of photographic camera.
- Exp-3 Principle of Galileo telescope & periscope.
- Exp-4 Principle of Kepler telescope.
- Exp-5 Principle of Spherical aberration.

Inspire-ing Students
with Hands-on
Experiments

Easy visualisation by laser

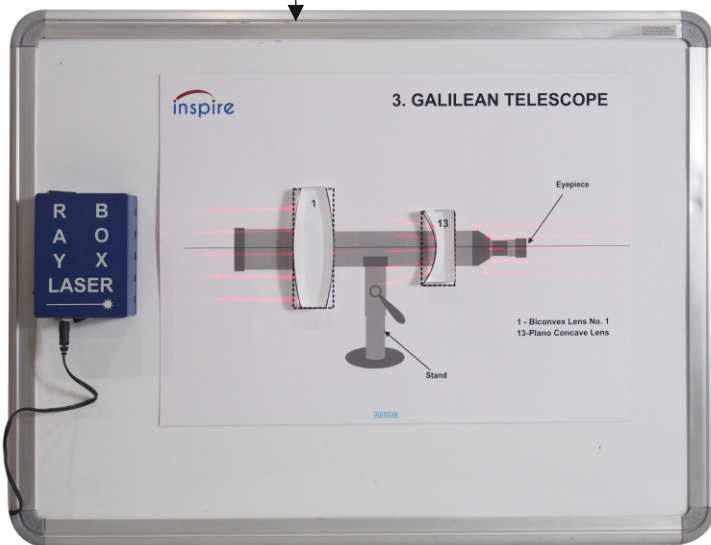


Rays travelling by laser

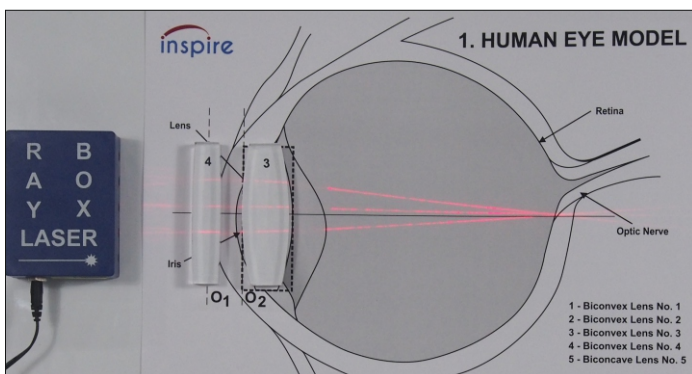


Accurately cut lenses made on CNC for accuracy

Magnetic Board



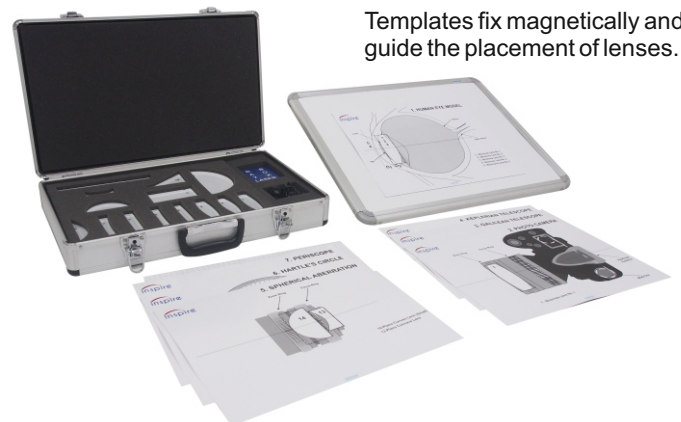
Vertical demonstration for whole class



Working of eye

Laser ray box consists of five independent laser modules with peak wavelength 635nm. The laser is very effective in the demonstration of light trace. Class 2 rated laser is used and so safe to use without goggles.

Templates fix magnetically and guide the placement of lenses.



SCOPE OF SUPPLY:

Cat No.	Item Name	Qty.
CB521	Diode laser box	1
R8688	Power adaptor	1
CB528	Beam selector	1
CB522	Human eye template	1
CB523	Photo camera template	1
CB524	Galilean telescope template	1
CB525	Kepler telescope template	1
CB526	Spherical aberration template	1
CB624	Periscope template	1
CB527	Hartles circle template	1
CB503	Bi-convex lens no 1	1
CB504	Bi-convex lens no 2	1
CB505	Bi-convex lens no 3	1
CB506	Bi-convex lens no 4	1
CB507	Bi-concave lens no 5	1
CB508	Plane convex lens r=45mm	1
CB509	Plane convex lens r=75mm	1
CB510	Plane concave lens	1
CB511	Concave mirror	1
CB512	Convex mirror	1
CB513	Plane mirror	1
CB514	Rectangular slab	1
CB515	Prism	1
CB516	Optical Fiber	1
R8160	Magnetic board	1
	Instruction manual	1

MAGNETIC FIELD INVESTIGATION APPARATUS SA737

EXPERIMENTS:

- EXP-1 Variation of magnetic fields at centre of a circular plane coil with current.
- EXP-2 Dependence of magnetic flux on the dot product between magnetic field vector and area vector.
- EXP-3 Variation of magnetic field along the axis of a circular coil with distance from the centre of coil.

Key Features:

- ▶ Variation of magnetic flux with angle.
- ▶ Dot product between magnetic induction vector and area vector.
- ▶ Easily rotatable coil with angular scale.
- ▶ Axial probe is based on hall effect principle for magnetic field sensing.

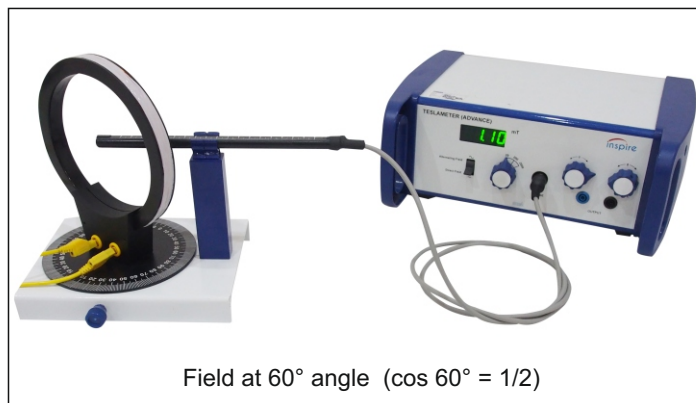
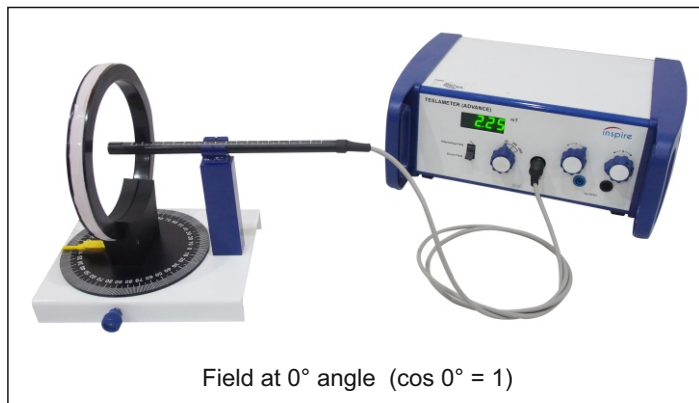


Inspire magnetic field investigation apparatus provides an excellent way to study the dependence of magnetic flux on the dot product of Magnetic Induction and Area vector. It may be supplied with or without power supply and / or Teslameter.

$$d\Phi = \vec{B} \cdot d\vec{s} = Bds \cos\theta$$

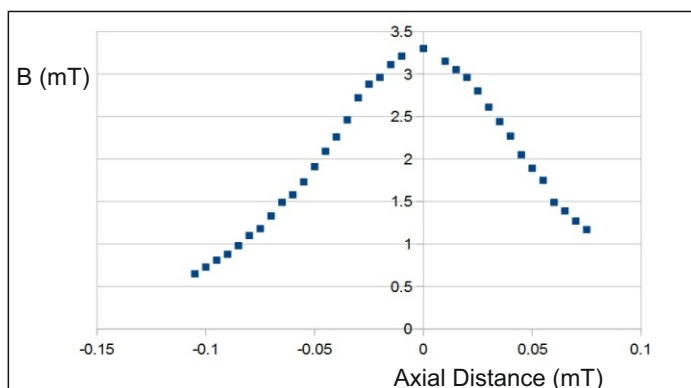
SCOPE OF SUPPLY:

Cat No.	Item Name	Qty.
SA728	Coil with Angular Scale	1
SE1085A	Power Supply	1
SE1083A	Teslameter	1
RS176	Axial Probe	1
SN204	Flexible Lead (red)	1
SN201	Flexible Lead (black)	1



Scale printed on probe to study axial dependence of field.

See page no. 36 for a full description of Magnetic Flux Density meter which provides an accurate reading of magnetic flux density of fields associated with ac or dc currents and permanent magnets.



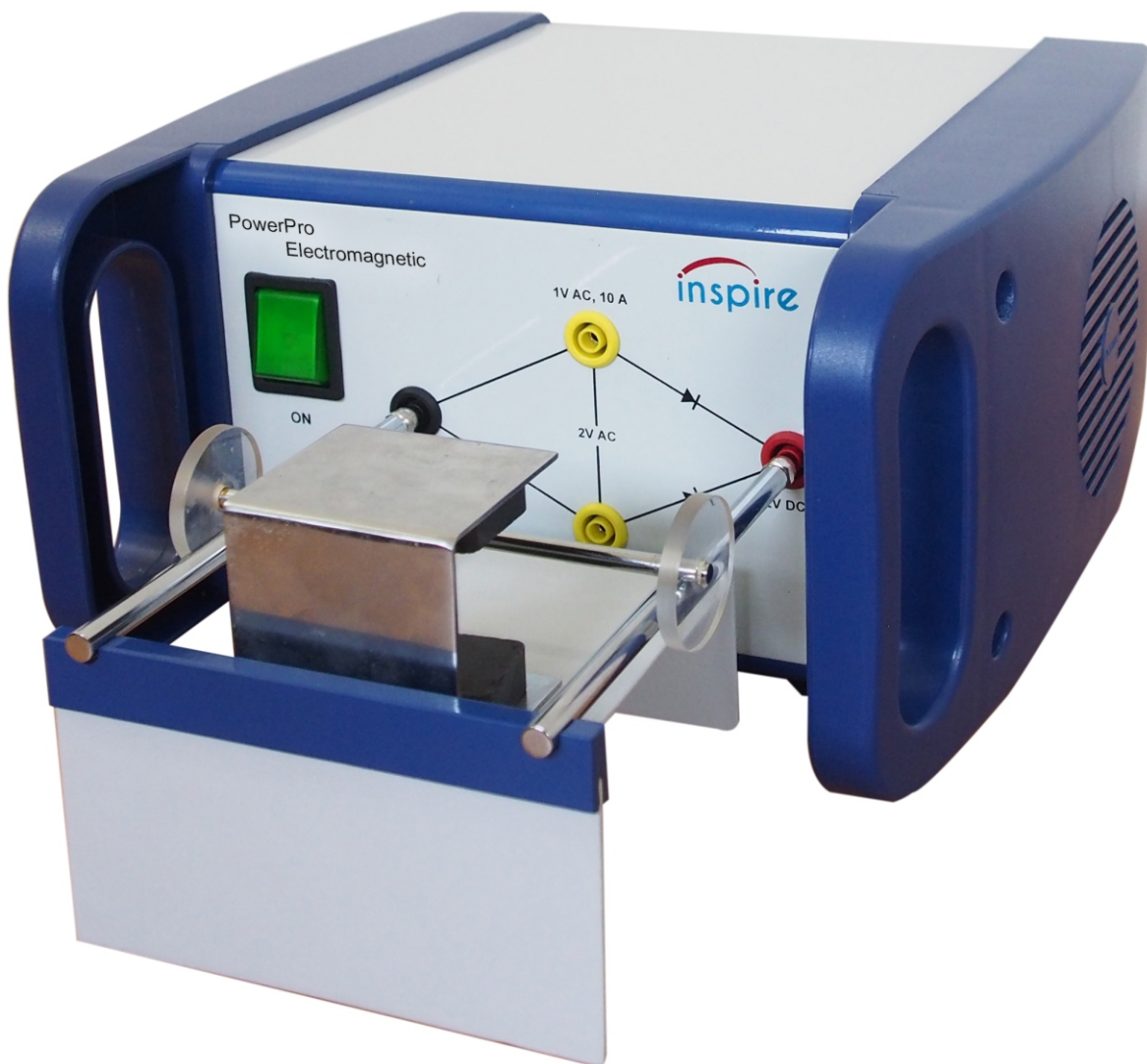
FORCE ON A CURRENT-CARRYING CONDUCTOR IN MAGNETIC FIELD SA736

Experiment:

Exp- Demonstration of Electromagnetic Induction.

Key Features:

- ▶ A great example to study Fleming's Left hand Rule.
- ▶ Demonstration of force on a conductor in a magnetic field.
- ▶ Do It Yourself Approach.
- ▶ Tabletop demonstration of rail-gun.



This is a unique apparatus to demonstrate force on a current-carrying conductor in a magnetic field. It consists of a pair of metal rails with 4 mm plugs at their end to connect them to a suitable power supply. A lightweight conducting brass axle with two discs at its ends can roll over the rails. When this axle is placed over the rails, the electrical contact between the two rails is established. The whole arrangement is now subjected to a vertical magnetic field using two bar magnets. When a current is passed, the axle with the discs is subjected to an outward or inward pull depending on the direction of the magnetic field and it rolls over the rails. This phenomenon is also known as motor effect.

SCOPE OF SUPPLY:

Cat. No.	Item Name	Qty.
SE1077A	Electromagnetic Power Supply	1
SA727	Pair of Laplace Rail	1
	Axle with Discs	1
	Pair of Magnet	1
	Platform for Rails	1
	U-Shaped Magnet Holder	1

See page no. 28 for a full description of the Electromagnetic Power Supply. The output of this power supply can be safely short-circuited making it ideal for electromagnetism experiments.

DEMOUNTABLE TRANSFORMER KIT SA742

Experiments:

- Exp-1 AC induction: Dependence of Induced Voltage On Coil Core.
- Exp-2 Relationship between Transformer Input And Output Voltage Waveforms.
- Exp-3 Dependence of Transformer Output Voltage on The Turns Ratio of the Transformer.
- Exp-4 Variation of Transformer Primary Current with Secondary Current.
- Exp-5 Transformer Efficiency and its Dependence on Load.
- Exp-6 Moving Iron Meter Model.
- Exp-7 Determination of Coil Induction.

- Exp-8 Half-wave Rectification
- Exp-9 Full-wave Rectification with Centre-tapped Transformer.
- Exp-10 Full-wave Rectification with Diode-bridged Transformer.
- Exp-11 To Produce a Low Voltage but Higher Current to Melt a Nail.
- Exp-12 Demonstration of Induction Furnace.
- Exp-13 Demonstration of Thomson's Jumping Ring Experiment.
- Exp-14 Demonstration of Eddy Current Braking.
- Exp-15 Demonstration of Shaded Pole Induction Motor.



Inspire have redesigned the classic demonstration apparatus to address the safety issues in the conventional apparatus. The conventional design always had the chance to generate lethal voltage if a wrong primary -secondary combination of coils were used. Using the purpose-designed power supply, no voltage greater than 25V ac can be experienced in whatever combination of primary - secondary coils the user selects. Also, the wings of the specially designed coils prevent any wrong combination to generate high secondary voltage. The 25 V ac output terminal of the power supply cannot be connected across the ordinary coils to make step-up or step-down transformer and hence safe. Only specially designed coils with special connectors joins to the 25V ac terminal.

SCOPE OF SUPPLY:

Cat No.	Item Name	Qty.
C15048	Clamp base	1
C15043	300 Turns' Coil	1
C15044	600 Turns' coil	2
C15045	900 Turns' coil	1
C15047	1800 Turns' coil	1
C15046	1200 Turns' coil with centre-tapping [0 - 600 -1200]	1
SA719	100 Turns' coil with wings	1
SA720	300 Turns' coil with wings	1
C8470	U & I Core, section 32X25mm	1
SE067	Multimeter	2
SN200	Connecting Leads 50cm	8
SA722	Demountable Transformer Power Supply	1
CB397	Quadrant Shaped Plane Plate	1
CB398	Quadrant Shaped Slotted Plate	1
CB392	Aluminium Motor Disc	1

Cat No.	Item Name	Qty.
CB396	Vertical Support Rod	1
CD1744	Pole Piece	1
C15103	Tightening Screw	1
CB393	Axle with screw	1
C8469	Clamping Plate	1
C5740	Six Turn Copper Coil	1
C5735	Solder Trough	1
C5738	Solid Aluminium Ring	1
C5739	Split Aluminium Ring	1
R7474	Nails	1
C15075	Clamping Screw	1
	Instruction Manual	1

Note: 800 Turns mains coil with plug can be supplied separately as a substitute of demountable transformer power supply.

DEMOUNTABLE TRANSFORMER KIT

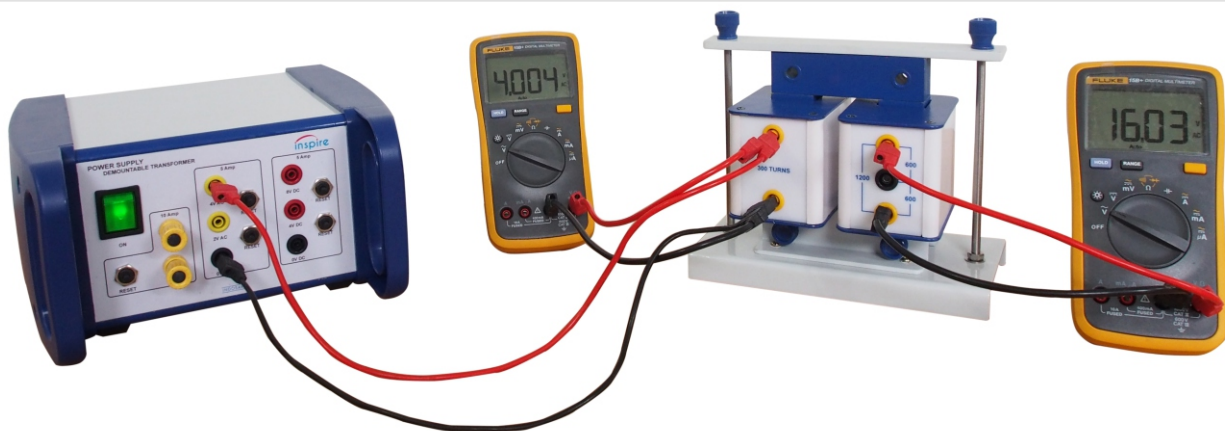


Safety Features:

- ▶ Nail-melting experiment using a high current coil instead of the usual mains-voltage coil.

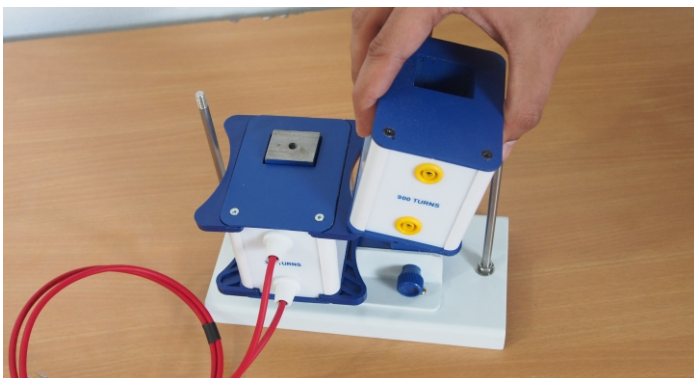
Safety Features:

- ▶ Purpose-designed power supply to safely facilitate experiments associated with the demountable transformer and accessories.
- ▶ Output sockets provide for transformer ratio experiments and other experiments such as transformer efficiency, but voltages will not exceed 24V ac whatever combination of coils is selected. Up to 25V ac is considered safe.
- ▶ Special 25V ac high current coils have been developed as an alternative to the potentially dangerous mains coils that have historically been provided for nail-melting experiment and others.
- ▶ The high current coils require 25Vac and in order to prevent this higher voltage being used in transformer ratio experiments, special terminals are used to which only the high current coils can be connected.



Safety Features:

- ▶ Several coils are provided with different number of windings. We have taken care to ensure that whatever combination of coils is used, the secondary voltage will not exceed 24V ac.



Safety Features:

- ▶ When a 25V ac high current coil is used, 'wings' on the coil prevent a secondary coil being mounted on the frame so preventing potentially dangerous high secondary voltages. But the wings don't obstruct accessories such as the nail melting coil.

For More Information:

Please visit our website
www.indosawedu.com



ELECTROMAGNETIC INDUCTION

RING LAUNCHER SV543

Experiments:

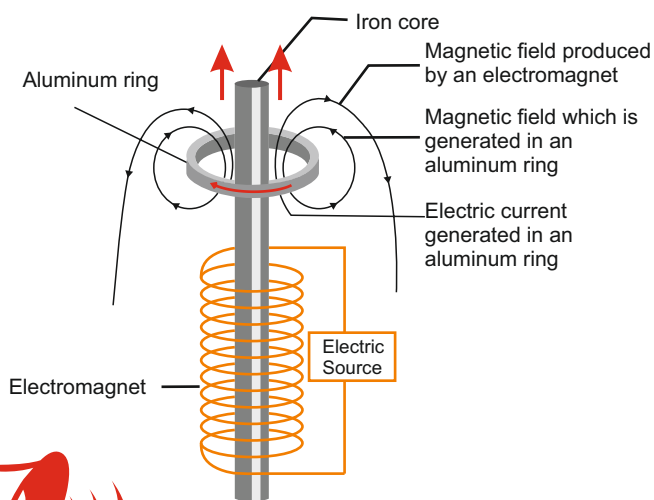
Exp-1 To demonstrate the Lenz's law and effects of electromagnetically induced currents.

Key Topics:

- ▶ Electromagnetic induction.
- ▶ Magnetic flux.
- ▶ Faraday laws.
- ▶ Lenz's law.
- ▶ Eddy current.
- ▶ Self induction.
- ▶ Mutual induction.

UNIQUE CHARACTERISTICS:

- ▶ Activation of the circuit by solenoid insertion and thus provides overcurrent protection.
- ▶ Confirmation of activation by voice message.
- ▶ Necessary instruction and precautions are displayed on the unit.
- ▶ IR Remote for safe launching.
- ▶ Separate indication LED for Power, Activation Status, Remote Pulse and Launch Pulse.



**Warning Message
Before Launch**

**Inspire-ing Students
with Hands-on
Experiments**



Ring launcher demonstrates Lenz's law and effects of electromagnetically induced currents in a unique setup.

An iron core is placed in a solenoid. The ring fits over the coil at some height. When we press launch button on control panel to energize the coil, a large magnetic induction builds-up on the axis of coil, generating oppositely directed induced current in the ring. The two oppositely directed inductions repel, aluminium ring shoots up to several feet in air. No effect is seen when using aluminium slit or acrylic ring.

Transformer principle observed with coil of wire having low voltage lamp, which lights briefly. Overheating of coil is prevented by automatic one-shot timing feature.

The ring launcher has several inbuilt interlocking safety feature along with speech for safe launching.

SCOPE OF SUPPLY:

Cat. No.	Item Name	Qty.
C13055	Ring Launcher unit	1
C5929	Iron core	1
CD392	Adjustment collar	1
C5940	Aluminum Ring	1
C5941	Aluminum Ring with split	1
C5942	Plastic Ring	1
C7617	Coil with lamp	1
C10515	Core holding ring	1
R0696	Power cord	1
C13054	Remote	1

MINI ELECTRONIC PLUGIN KIT SA743

Experiments:

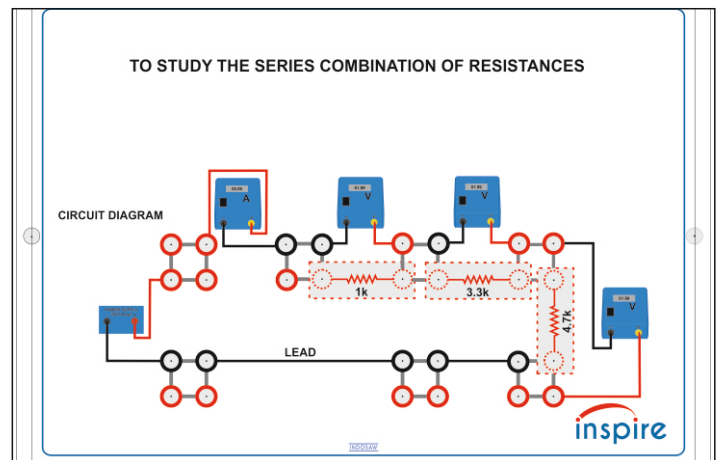
- Exp-1 Diode characteristics of transistor junctions.
- Exp-2 Recording the characteristics of a transistor.
- Exp-3 Recording the characteristics of a field-effect transistor.
- Exp-4 To study half wave and full wave (bridge) rectifier.
- Exp-5 To study capacitor filter effect in power supply.
- Exp-6 To study unregulated and regulated power supply.
- Exp-7 Recording the current-voltage characteristics of diodes.
- Exp-8 Recording the current-voltage characteristics of zener diodes.
- Exp-9 Recording the current-voltage characteristics of LED.
- Exp-10 AND, OR, XOR, NOT, NAND and NOR operations.
- Exp-11 De Morgan's laws.
- Exp-12 Logic operation using three and four variables.

Experiments:

- Exp-13 To study MOSFET characteristics.
- Exp-14 To study characteristics of TRIAC.
- Exp-15 To Study Ohm's Law.
- Exp-16 To Study Kirchoff's Law.
- Exp-17 To Study Series & Parallel Effect of Resistance.
- Exp-18 To Study Resistances As A Voltage Divider.
- Exp-19 To Study LDR Characteristics.
- Exp-20 To Study Thermistor Characteristics.
- Exp-21 To study the R-C Circuit.
- Exp-22 To study the L-R Circuit.
- Exp-23 To study the L-C-R Circuit.
- Exp-24 To study the Clipper and Clamper Circuit.
- Exp-25 To study the Charging and Discharging of a Capacitor.



Plug in board has transparent top (so internal connections can be seen).

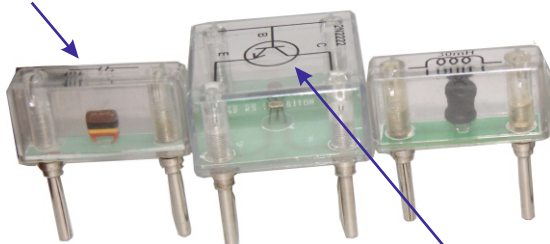


Templates to guide students until they become confident.

WHY ELECTRONIC PLUG IN KIT

- ▶ Electronic plug-in kit is a comprehensive set of components for performing experiments in Analog and Digital Electronics.
- ▶ The plug-in modules include both passive and active electronic components with contacts formed by 4-mm plugs.
- ▶ The plug-in modules have a transparent housing for visibility of the component placed.
- ▶ The symbols and name of the component printed on each plug-in module, so student can easily identify.
- ▶ High quality reliable plug-in system with student support material.
- ▶ It is a “student-centred approach”.
- ▶ Participation in circuit assembling by students, promotes understanding, encouraging own-designed circuits.
- ▶ The freedom to experiment is backed up by formal experiment literature.
- ▶ It leads to knowledge and valuable practical skills.
- ▶ It provides you best electrical safety while performing an experiment.

Transparent and Protected Plug in Modules



Symbols and Name Printed or Easy Identification

Key Features:

- ▶ Clear view of circuits.
- ▶ Safe and easy to setup.
- ▶ Reliable connections.



Plug in board with templates and modules fitted on it. Templates can be attached over the transparent top for ease of circuit assembling.

SCOPE OF SUPPLY:

Cat. No.	Item Name	Qty.
CB530	AND Gate Module (Single Gate)	2
SEB14	Capacitor Module 0.01 μ F	3
SEB72	Capacitor Module 0.047 μ F	2
SEB15	Capacitor Module 0.1 μ F	3
SEB16	Capacitor Module 0.47 μ F	3
SEB73	Capacitor Module 10 μ F	3
SEB74	Capacitor Module 100 μ F	1
SEB17	Capacitor Module 1000 μ F	1
CB534	Ex-OR Gate Module (Single Gate)	2
SEB26	Inductor Module 30mH	2
SEB75	Inductor Module 60mH	1
SEB28	JFET Module	1
SEB30	LED Module	1
CB539	Light Sensor (LDR) Module	1
SEB31	MOSFET Module	1
CB531	NAND Gate Module (Single Gate)	1
CB535	NOR Gate Module (Single Gate)	1
CB532	NOT Gate Module (Single Gate)	2
CB533	OR Gate Module (Single Gate)	1
SEB38	Push Button Module	1
SEC06	Regulator Module	1
SEB41	Resistor Module 100 Ω	1
SEB43	Resistor Module 330 Ω	1
SEB46	Resistor Module 1k Ω	2
SEB47	Resistor Module 3.3k Ω	3
	Plug-in-board	1

Cat. No.	Item Name	Qty.
SEB76	Resistor Module 4.7k Ω	1
SEB44	Resistor Module 10k Ω	5
SEB45	Resistor Module 15k Ω	2
SEB78	Resistor Module 27k Ω	2
SEB88	Resistor Module 33k Ω	2
SEB79	Resistor Module 75k Ω	1
SEB40	Resistor Module 100k Ω	1
SEB42	Resistor Module 330k Ω	1
SEB80	Resistor Module 470k Ω	1
SEB53	Switch Module	2
CB538	Thermistor Module	1
SEB84	Transistor Module 2N2222	2
SEB86	Transistor Module Bc109	2
SEB57	Triac Module	1
Sw926	Power Supply 0-20V, 1A	2
CB536	Variable Resistor 1k Ω	1
CB537	Variable Resistor 10k Ω	1
SEB81	Variable Resistor 1M Ω	1
SEB13	Zener Diode Module	1
SEB77	Resistor Module 6.2 k Ω	1
SEB53	Changeover Switch Module	1
CB542	Reed Switch Module	1
SEB27	Inductor Module 225 mH	1
CB540	Buzzer Module	1
SEC06	Regulator Module	1
	Set of Template sheets	1

DC DIGITAL VOLTMETER SA715



DC Digital voltmeter is an accurate bench-top desk top meter for measurements of DC voltage (in the range 0-20V) for many physics and electronics related experiments.

Specification	
Range	: 0-20 V
Resolution	: 0.01V
Accuracy	: $\pm 2\%$
Internal Resistance (Approx.)	: 10M Ω
Power	: Replaceable Cell (8V)

DC DIGITAL AMMETER SA716



DC Digital Ammeter is an accurate bench-top desk top meter for measurements of DC current (in the range 0-10A) for many physics and electronics related experiments.

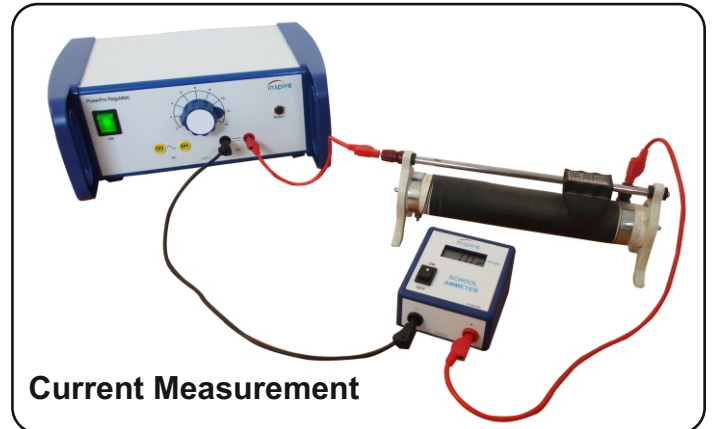
Specification	
Range	: 0-10 A
Resolution	: 0.01A
Accuracy	: $\pm 2\%$
Internal Resistance (Approx.)	: 0.01 Ω
Power	: Replaceable Cell (8V)

DC DUAL METER SA717

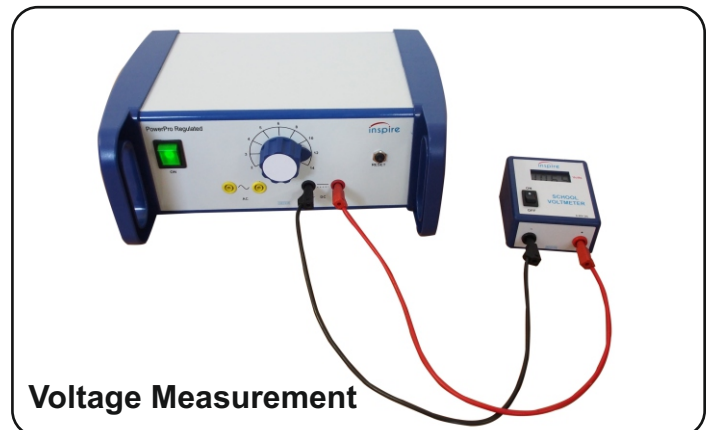


DC Digital Dual Meter is an accurate bench-top desk top meter for measurements of DC voltage (in the range 0-20V) / DC Digital Ammeter (in the range 0-10A) for many physics and electronics related experiments.

Specification	
Range	: 0-20 V / 0-10 A
Resolution	: 0.01V / 0.01A
Accuracy	: $\pm 2\%$
Internal Resistance (Approx.)	: 10M Ω (for voltage section) 0.01 Ω (for current section)
Power	: Replaceable Cell (8V)



Current Measurement



Voltage Measurement

POWER SUPPLIES

INSPIRE POWER SUPPLIES



SALIENT FEATURES

- ★ RELIABLE
- ★ STURDY
- ★ STACKABLE
- ★ EXCELLENT AESTHETICS
- ★ PORTABLE

A trusted name in power supplies.

User may order for 220V/50Hz or 110V/60Hz or
 Universal & Customised (220V/50Hz or
 110V/60Hz) mains Operations

CE certified

INSPIRE POWER-PRO™ PRIME POWER SUPPLY 2-14V AC/DC, 6A SE1085

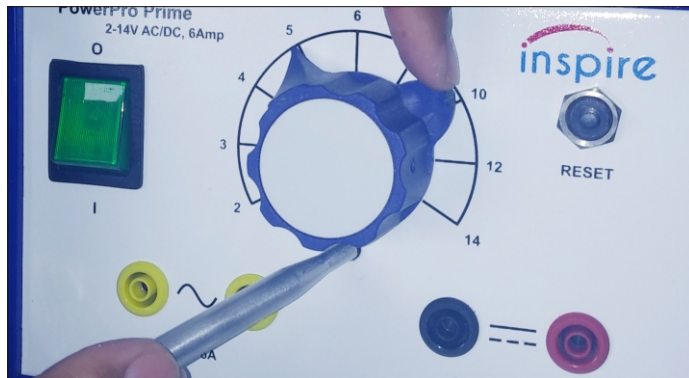


Reliable
Sturdy
Stackable
Portable
Excellent Aesthetics

ECONOMICAL

Key Features:

- ▶ Universal & customized 115V/230V mains operations.
- ▶ Teacher lockable knob to limit the maximum voltage.
- ▶ Resettable overload protection.
- ▶ Split Bobbin Transformer Design with additional inbuilt thermal protection.
- ▶ Output voltage selectable by rotary switch in maximum 8 steps.
- ▶ Long switch lifetime.
- ▶ Slow-blow fuse protection.
- ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used.
- ▶ Recommended economic solution for general purpose laboratory and workshop use.



Teacher Lockable Knob

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output	2, 3, 4, 5, 6, 8, 10, 12, 14V AC/DC (DC is full wave rectified, unsmoothed & unregulated.)
Safety Features	<ul style="list-style-type: none"> ▶ Triple protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶▶ Output current limit. ▶ Safety sockets are provided for both AC/DC output terminal. ▶ Internal heavy duty relays enable voltage to be switched whilst on full load without switch contact problems thus giving a long switch lifetime. ▶ Internal fan for cool running. ▶ All Inspire power supplies are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	Ideal for general purpose applications where a low voltage sturdy power supply is required e.g. for equipment with lamps and resistance.

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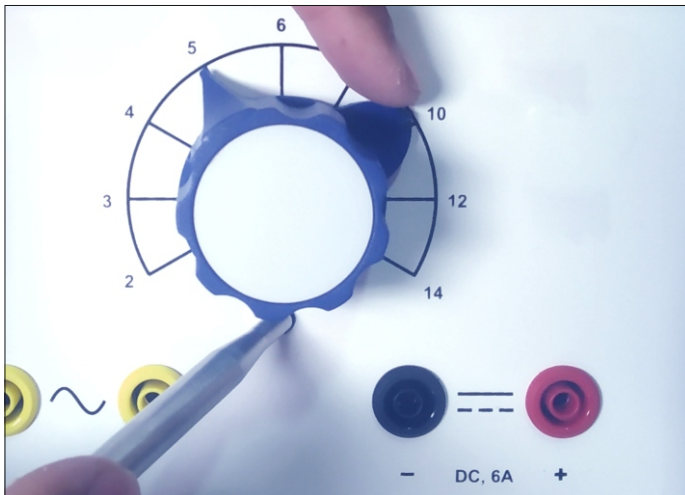
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INSPIRE POWER-PRO™ REGULATED POWER SUPPLY 2-14V, AC/DC 6A (DC REGULATED) SE1078



DC REGULATED



Teacher Lockable Knob



Standard Protection Fuse

Key Features:

- ▶ Universal & customized 115V/230V mains operations.
- ▶ Teacher lockable knob to limit the maximum voltage.
- ▶ DC output voltage is regulated.
- ▶ Internal fan for cool running.
- ▶ Split Bobbin Transformer Design with additional inbuilt thermal protection.

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output	2, 3, 4, 5, 6, 8, 10, 12, 14V AC/DC DC is regulated.
Safety Features	<ul style="list-style-type: none"> ▶ Triple protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶▶ Resettable overload protection. ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used. ▶ All Inspire power supplies are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	Ideal high end power supply for general purpose laboratory & workshop use where a low voltage sturdy power supply is required and also for the circuits which require a regulated and smooth DC supply.

INSPIRE POWER-PRO™ ELECTROMAGNETIC SE077



Reliable
Sturdy
Stackable
Portable
Excellent Aesthetics

Key Features:

- ▶ Universal & customized 115V/230V mains operations.
- ▶ Split Bobbin Transformer Design with additional inbuilt thermal protection.
- ▶ Tolerates short circuit.
- ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used.
- ▶ Suitable for experiments related to magnetic field generated due to a current carrying conductor.



Standard Protection Fuse

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output	1V AC is obtained across one of the yellow terminals and the black terminal. 2V AC is obtained across the two yellow terminals. 2V DC is obtained between red and black terminals. (DC is full wave rectified, unsmoothed & unregulated.) Maximum current rating: 10Amp.
Safety Features	<ul style="list-style-type: none"> ▶ Triple protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶▶ Output current limit. ▶ Safety sockets are provided for both AC/DC output terminal. ▶ All Inspire power supplies are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	Useful for experiments related to magnetic field generated due to a current carrying conductor especially where large current is drawn in the external circuit from a very low voltage source. This type of power supply is useful for this purpose as it can tolerate short circuit.

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INSPIRE POWER-PRO™ PRIME E.H.T. E.H.T POWER SUPPLY 0-6 kV SE1080



Reliable
Sturdy
Stackable
Portable
Excellent Aesthetics

Key Features :

- ▶ Universal & customized 115V/230V mains operations.
- ▶ Teacher lockable knob to limit the maximum voltage.
- ▶ Split Bobbin Transformer Design with additional inbuilt thermal protection.
- ▶ Slow-blow fuse protection.
- ▶ Output voltage continuously variable from 0-6kV at a maximum current of 2 mA.
- ▶ Another output with 50 MΩ safety resistor to limit the current to 50μA.
- ▶ Additionally 6.3V AC at 2 Amp (max.) is provided for the filament supply.
- ▶ An independent external ground terminal is provided which can be connected to any of the output terminals (positive & negative) to keep it at ground potential.
- ▶ Digital LED display for DC output.
- ▶ Internal fan for cool running.
- ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used.
- ▶ Recommended for spectrum tubes and electrostatic experiments.

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output	D.C. Voltage : Continuously variable from 0 to 6 kV. (DC is unregulated.) D.C. Current : 2mA(max) for 1st terminal. 50μA(max) for 2nd terminal. A.C. Voltage : 6.3Volt (fixed) A.C. Current : 2 Amps.
Safety Features	<ul style="list-style-type: none"> ▶ Triple protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶▶ Output current limit. ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used. ▶ All Inspire power supplies are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	Useful for electrostatic experiments and for driving vacuum devices and spectrum tubes and special experiments for e.g. Kerr Effect.



Standard Protection Fuse

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POWER SUPPLY 0-25V, AC/DC 6A (DC REGULATED) SE1079



Reliable
Sturdy
Stackable
Portable
Excellent Aesthetics

DC REGULATED

Key Features:

- ▶ Teacher lockable knob to limit maximum voltage.
- ▶ Continuously variable 0-25V (AC/DC) output at a current rating of 6Amp.
- ▶ **DC output is regulated.**
- ▶ Internal fan for cool-running.
- ▶ Digital LED display of voltage and current for both AC & DC.
- ▶ Fully protected secondary by high speed, resettable electronic overload protection.
- ▶ Split bobbin transformer design with additional inbuilt thermal protection.
- ▶ Selection switch and LED indicator for AC/DC.
- ▶ A very popular, advanced, versatile, high specification, continuously variable power unit appropriate for many physics and electronics related experiments.



Teacher Lockable Knob

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output (AC/DC)	Voltage : Continuously variable from 0 to 25V (DC is regulated). Current : 6Amp (max)
Safety Features	<ul style="list-style-type: none"> ▶ Triple protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶▶ Fully protected secondary by high speed, resettable electronic trip. ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used. ▶ All Inspire power supplies are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	A very popular, advanced, versatile, high specification, continuously variable power unit appropriate for demonstration purpose and for use by students/teachers and appropriate for many physics and electronics related experiments where a regulated DC power is required.

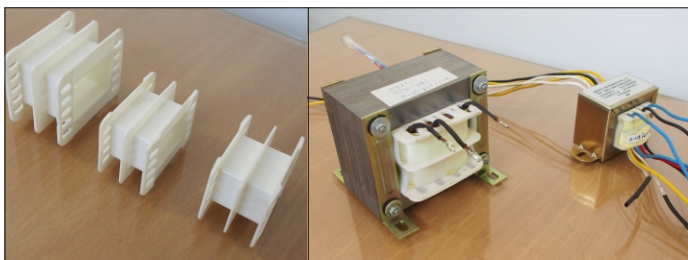
POWER SUPPLY 0-15V, AC/DC 6A SE1076



Reliable
Sturdy
Stackable
Portable
Excellent Aesthetics

Key Features:

- ▶ Universal & customized 115V/230V mains operations.
- ▶ Teacher lockable knob to limit the maximum voltage.
- ▶ Split Bobbin Transformer Design with additional inbuilt thermal protection.
- ▶ Fully protected secondary by high speed, resettable electronic trip.
- ▶ Slow-blow fuse protection.
- ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used.
- ▶ Recommended for general purpose laboratory and workshop use where voltage sensitive components may be damaged by over voltage and experiments requiring fine power adjustments.



Split Bobbin Transformer Design

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output	0-15V AC/DC (DC is rectified, unsmoothed & unregulated.)
Safety Features	<ul style="list-style-type: none"> ▶ Triple protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶▶ Fully protected secondary by high speed, resettable electronic trip. ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used. ▶ All Inspire power supplies are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	Useful for general purpose laboratory and workshop use, particularly in situations where voltage sensitive components may be damaged by over voltage and experiments requiring fine power adjustments.

POWER SUPPLY 0-20V, DC 1A SE1075



Reliable
Sturdy
Stackable
Portable
Excellent Aesthetics

**MULTI-OUTPUT WITH
DC REGULATION ON
ALL OUTPUTS**

Salient Features:

- ▶ Teacher lockable knob to limit the maximum voltage.
- ▶ Multi-output with DC regulation on all outputs.
- ▶ Continuously variable 0-20V (**DC Regulated**) output at a current rating of 1 Amp.
- ▶ Internal fan for cool-running.
- ▶ Digital LED display for variable DC voltage.
- ▶ Split bobbin transformer design with additional inbuilt thermal protection.
- ▶ Slow-blow fuse protection.
- ▶ Additionally $\pm 15V$ DC at 1Amp (max) is provided.
- ▶ Another output of 5V, 1Amp DC is also provided.
- ▶ 3 Resettable overload protection.
- ▶ Ideal for general purpose applications in students' laboratory particularly in the study of semiconductor devices and electronic circuits

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output (DC) [Multi-output]	Voltage : Continuously variable regulated DC (0 - 20V). 5V DC (fixed) -15, 0, +15 DC (fixed) Current : 1A (max)
Safety Features	<ul style="list-style-type: none"> ▶ Triple protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶▶ 3 Resettable overload protection and current limit. ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used. ▶ Internal fan for cool-running. ▶ All Inspire power supplies are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	This multi-output (with DC regulated on all outputs) power supply is ideal for general purpose applications in students' laboratory particularly in the study of semiconductor devices and electronic circuits (e.g. characteristics of diode, transistors, study of OP-AMP etc.)



Standard Protection Fuse

POWER SUPPLY 0-30VOLT, 20A/10A/5A



Reliable
Sturdy
Multi-output
Coarse and Fine
adjustments

**DC REGULATED
CONSTANT VOLTAGE AND
CONSTANT CURRENT
SOURCE**



Adjustable DC Voltage and Current Regulated Power Supply is a high precision DC Power Supply with an output of continuously adjustable voltage and with the provision for limiting the current within desired range. When the maximum current regulation is set, output voltage is continuously variable between 0-30V and can be set at a desired value.

Salient Features:

- ▶ DC regulated.
- ▶ Can be used as a constant current/voltage source.
- ▶ Current limiter protection.
- ▶ Split bobbin transformer design with additional inbuilt thermal protection.
- ▶ Continuously variable 0-30V output DC regulated output at a current rating of 20A/10A/5A.
- ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used.
- ▶ Useful for experiments where a constant large current is necessary such as Biot Savart's Law, Helmholtz's coil, Hall Effect, Zeeman Effect etc.

Order Information:

Code	Name
SE1094	POWER SUPPLY 0-30V, 20AMP
SE1095	POWER SUPPLY 0-30V, 10AMP
SE1096	POWER SUPPLY 0-30V, 5AMP

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output Voltage 1 Output Voltage 2 Output Voltage 3 Output Current 1 Output Current 2 Output Current 3	: 0-30 V variable : 12 V (fixed) : 5 V (fixed) : 0 - 20Amp / 0 -10 Amp / 0-5 Amp. : 500mA (fixed) : 500mA (fixed)
Safety Features	<ul style="list-style-type: none"> ▶ Triple protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶▶ Current limiter protection. ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used. ▶ Internal fan for cool-running. ▶ All Inspire power supplies are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	Useful for experiments where a constant large current is necessary such as Biot Savart's Law, Helmholtz's coil, Hall Effect, Zeeman Effect etc.

INSPIRE POWER-PRO™ SIGNAL GENERATOR SE1082



A versatile instrument useful in many & varied experiments. A must-have!

Key Features:

- ▶ A Low Distortion Signal Generator with Four Decade Range Selectable by Rotary Switch.
- ▶ Produces four different types of waveforms: Sine, Square, Triangular and TTL. Each of the waveform can be selected by tact Switch with LED Indicator.
- ▶ Also having provision for AM and FM Modulation Input.
- ▶ Drives directly vibration generators in study of wave phenomena.
- ▶ Built – in Speaker may be activated for audible frequencies through tact switch.
- ▶ Any external weak signal can also get amplified through the unit.
- ▶ Overload protection through resettable switch.
- ▶ Useful in various Physics and electronics experiments.



Standard Protection Fuse

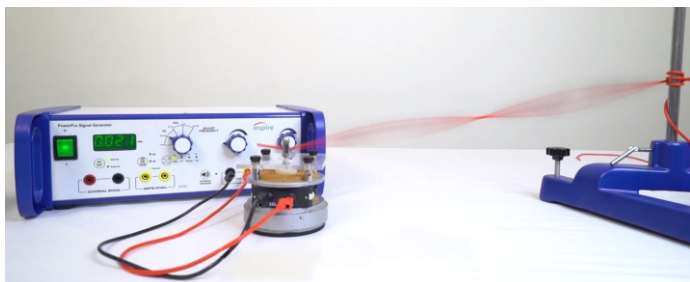
See page no. 15 often used with vibration generator.

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output	Range : 1Hz - 110kHz in four decade ranges. Voltage : Continuously variable from 0 to 10V (V_{PP}). Waveform : Sine & square, triangular and TTL*. Current rating : Directly drives the load less than 1Amp. * for TTL logic level are from 0-5V (V_{PP}).
Safety features	<ul style="list-style-type: none"> ▶ Triple protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶▶ Resettable overload protection. ▶ Safety sockets for use with shrouded safety 4mm plugs but conventional leads with standard 4mm plugs can also be used.. ▶ All Inspire Signal Generators are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	Ideal for general purpose applications in students laboratory particularly in the study of wave phenomena.

SIGNAL GENERATOR

WIDE RANGES OF EXPERIMENTS USING SIGNAL GENERATOR



Standing waves generated by vibration generator driven by signal generator. Note the positions of nodes and anti-nodes.



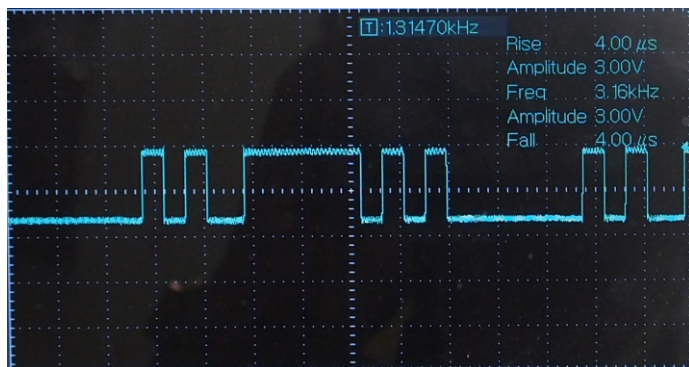
A set of metal strips is attached to vibration generator which is being driven by Signal Generator. It illustrates resonance at various frequencies.



Internal speaker but also amplified output is available from built-in amplifier to drive external speaker or vibration generator.

idea: Try connecting the output from the earphone socket of a smartphone to the 'external signal' sockets. Now try playing music through the amplifier. Its much better if you connect a loud speaker. Be careful it can be loud!

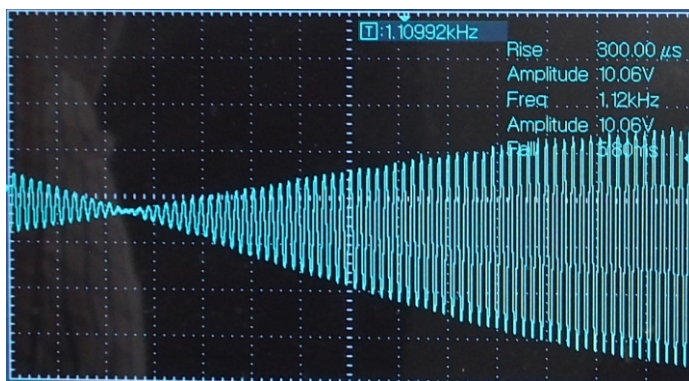
idea: Connect an external speaker. Now test the audible frequency of your students by adjusting the frequency from a few Hertz to 20kHz. Ask them to sit down when they cant hear any more. Be warned audible frequency range reduces with age so you will find your students hearing sound you cant.



FREQUENCY MODULATION



Chaldni plate experiment using vibration generator. Note the positions of nodes and anti-nodes.



AMPLITUDE MODULATION



MAGNETIC FLUX DENSITY METER SE1083



Reliable
Sturdy
Stackable
Portable
Excellent Aesthetics

An ideal meter for accurate measurement of magnetic flux density.

Key Features:

- ▶ Comes with both tangential & axial hall probe.
- ▶ Suitable for measurement of both alternating and direct (AC/DC) magnetic field.
- ▶ Coarse and fine knob for ZERO adjustment.
- ▶ Universal main operation.
- ▶ Suitable for measuring very high magnetic field (upto 2T).
- ▶ Analog Output for connecting an external measuring device.



Uniquely the Hall-probe has been specially developed to avoid errors associated with standard Hall effect devices in off-axis magnetic fields (as occurs when investigating magnetic flux for different angles of a plane coil for example (see page no. 17)

Technical Specification :

Mains operations	Universal & customized Option for both 115V/230V, 60/50Hz AC
Output	3 switchable measuring ranges: Range Resolution 0-20mT 0.01mT 0-200mT 0.1mT 0-1999mT 1mT Display : 3½ Digit LED
Safety features	<ul style="list-style-type: none"> ▶ Double protection: <ul style="list-style-type: none"> ▶▶ Split bobbin transformer design with additional inbuilt thermal protection. ▶▶ Slow-blow fuse protection. ▶ All Inspire Teslameters are tested for CE safety requirements such as insulation resistance test, ground bond test, dielectric strength test etc.
Application	Suitable for measurement of both axial and tangential alternating/direct magnetic field.

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**Suitable for
IGCSE & IB Curriculum**

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