

2009 ~ 2010

# Scientific Instruments of Korea

*Basic Scientific Devices*

*Audio & Video Educational System*

*Laboratory Equipments*

*Machinery and Automobile Education*

*Electric & Electronic Measuring Device, Automatic Control*



**Korea Scientific Instruments Industry Cooperative**



## From President

### Greeting Address



South Korea has grown up into one of the world's top 10 science technology powerhouses ahead of newly rising countries, for which the driving force ascribes to its passion for science and education. South Korea, where its students of the total population accounts for 35% and more than 25% out of its GDP has been invested into education, has made quite a name for itself around the world as the No. 1 in IT, the second in math literacy and the 15th winner of the World Olympics of Technology. South Korea has prepared not for today but for its future injecting enormous resources into science as well as education.

We should stir up science technology to perpetuate our modern culture despite today's severe depression in the whole world. As a measure to overcome these difficulties we need to expand our investment for science and education, which can improve the quality of lab equipments and devices.

The 21st century has witnessed rapid changes and developments day by day. As one of the countermeasures against these changes, we published this catalogue to help you catch up with them. This brochure shows much more information on South Korea's science devices to those who crave the world's technology development, paving the way for a win-win situation for each other.

This book includes the cutting-edge devices for experiments as well as practices such as audiovisual aids, physical and chemical appliances, vocational training equipments as well as basic science experiment tools.

We promise to provide products with better service and high quality.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Hong'.

Yoon Sik Hong

President

# From President



# Introduction

## KSIIC

KSIIC was established in 1984 as a special legal entity under Small and Medium Business Administration of Korean government. Its more than 205 members are manufacturing educational materials, scientific analysis instruments, and technical training equipment.

KSIIC and its members are dedicated to supply quality products to customers in Korea and foreign countries. By supplying newly developed products, KSIIC's member companies are contributing to improvement of education, test and analysis activities of schools, laboratories and relevant industry.

KSIIC is organizing exhibitions in Korea and participating at international exhibitions to promote foreign trading and transfer technology . We also lead trade delegations to visit various places of the world.

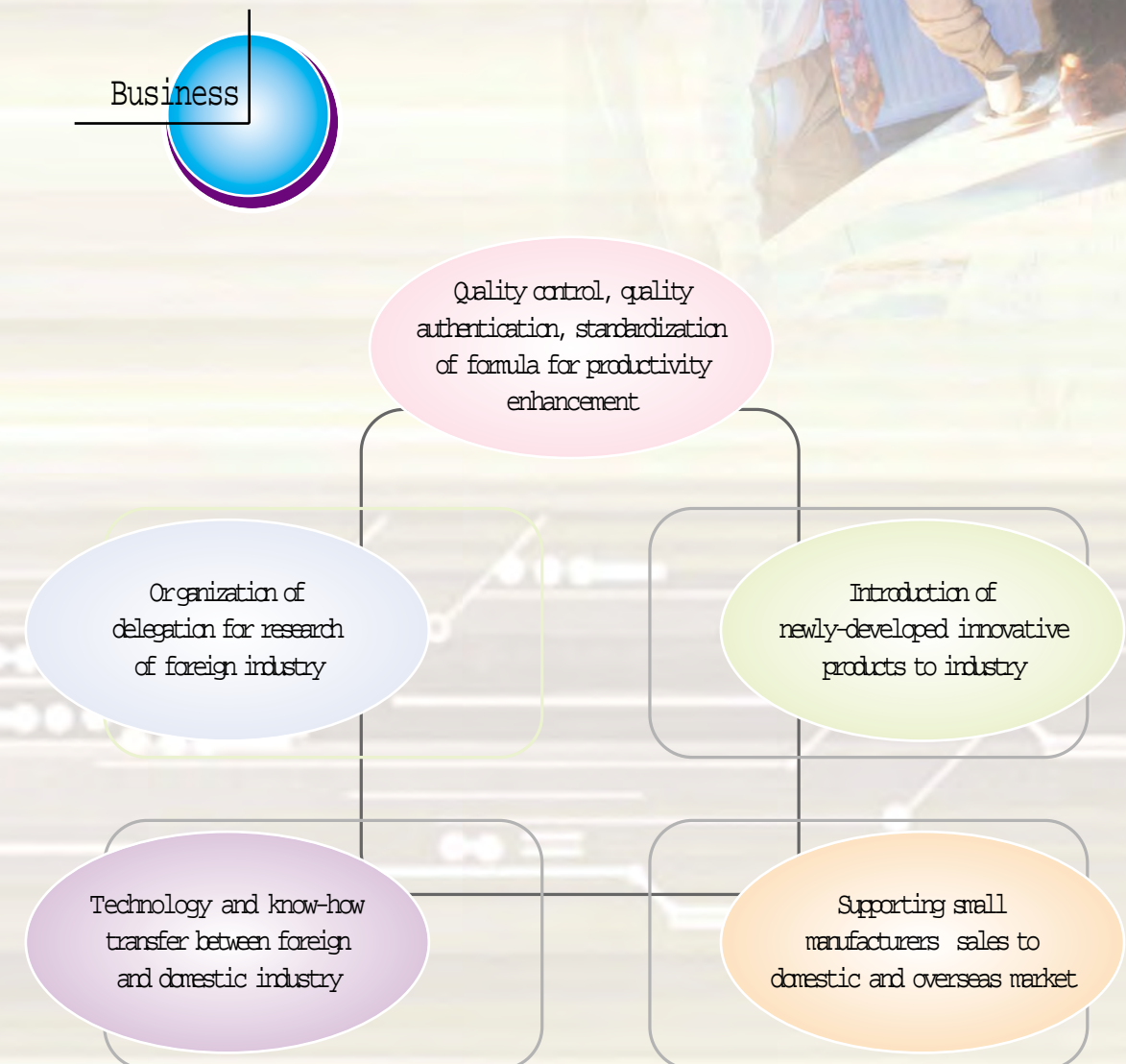
KSIIC hopes to join international efforts to enhance human standard of living by means of providing new technology and concept for students, teachers, trainers, and scientists.

We welcome any proposal to exchange creative ideas and information for mutual prosperty.

Korea Scientific Instruments  
Industry Cooperative (KSIIC)

# Business

Business



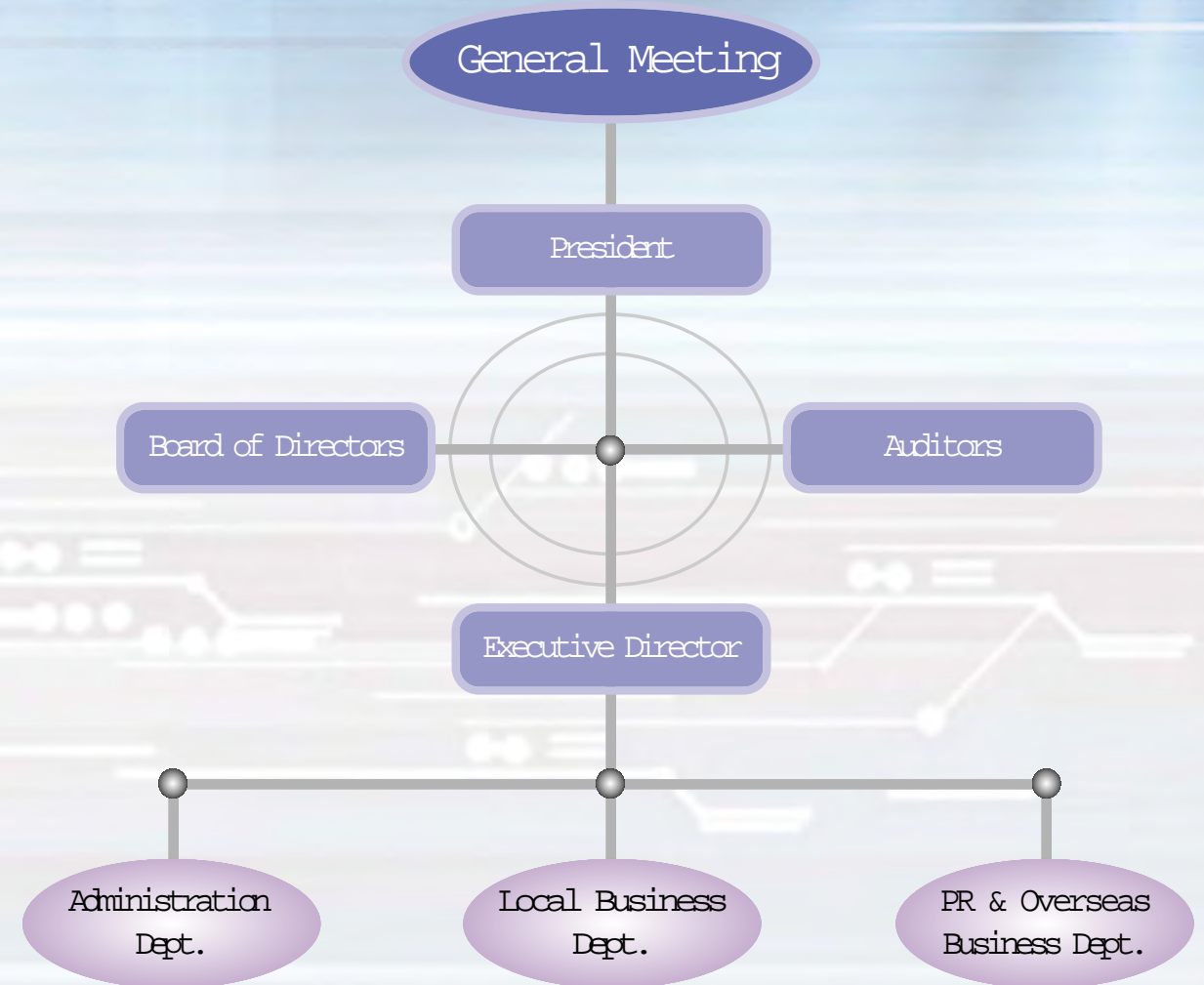




# History

# Organization

- 1984 Establishment of Korea Scientific Instruments Industry Cooperative
- 1987 Appointed as Quality Inspection Institution by Industrial Avancement Administration of Korea
- 1988 Acquired Export-Import License from Seoul City
- 1991 Designated as a supplier of Military Equipment by Korean government
- 1992 Opened the 1<sup>st</sup> International Scientific Instruments Exhibition at Seoul, Korea.
- 1992 Awarded as the Best Cooperative from Korean the President
- 1998 Established Institute of Scientific Instruments inside KSIIC
- 2005 KOSIS 2005 (Korea Scientific Instruments Show 2005) was held in May
- 2007 Strategic Export Market Trade Mission (Thailand and Singapore)





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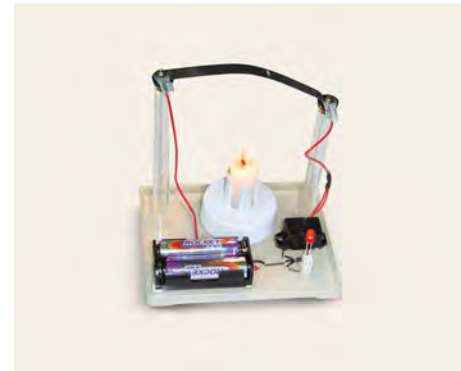
## *Basic Scientific Devices*

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DR-107

**Bimetal**



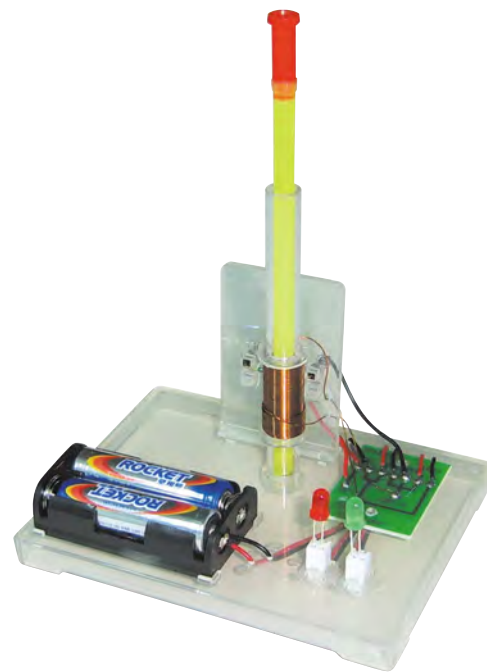
**FEATURE**

It is made by affixing the two metals with the different thermal expansion figures.  
 If one metal is applied by heat, the other metal become longer to get bent.  
 With making use of this characteristics, it can be used in the fire alarm box or the thermo-regulation of the iron.

- Size : 120 x95 x130mm (W xD xH)
- Dry cell holder, LED, LED socket, Buzz, Candle, Bimetal, Pipe ( 2 pcs)

DR-414

**Magnetic field of Solenoid**



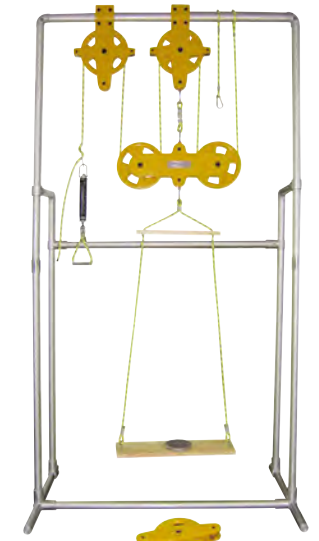
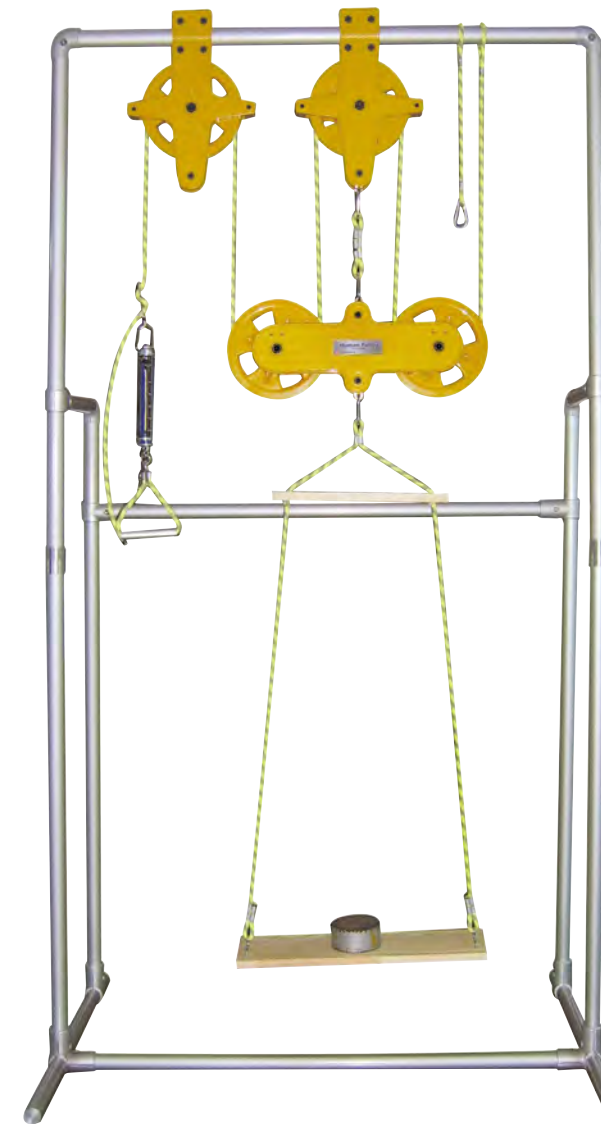
**FEATURE**

In case the magnet put in or pull out in the coil of solenoid(in case the magnetic field is changed), we can understand that electromagnetic-induction phenomenon which induced electromotive force is occurred.  
 The magnetic field made by the induced current interfere the magnetic motion so that induced current flow.  
 So, It can show the Lenz's law.

- Size : 120x95 x105mm (WxDxH)
- Dry cell holder, LED, LED socket, Solenoid coil, Basic board, Leader switch, Drinking straw, Magnet

DR-305

**Human Pulley**



**FEATURE**

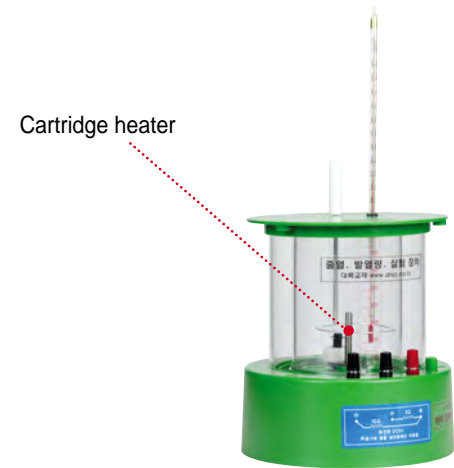
Human pulley can be used in order to lift the heavy object.  
 By the principle of the work, it can lift the object with the 25% of the original weight.  
 It can be fabricated and dismantled easily.  
 It can be moved and kept in convenient.  
 Also, by using the large spring balance, it can calculate the gain volume of the power quantitatively.

- Size : 1100x800 x2200mm (W xD xH)
- Swing, Fixed pulley (2 set), Pulley with twin round wheel, Pulley with one round wheel, Spring balance, Rope, Jlg clip, Holder (16 pcs), Pipe (12pcs)



DR-103

### Joule's Heat, Resistive Heating Apparatus (Type A)



**FEATURE**

When electric flows and reaches nichrome wire, it changes to heat energy. This tool is manufactured not to change resistance even in the water by using a cartridge heater, and there is no fear of poor contacting point even if it was used for long. Also Watt(W) was adjusted to fit class hours. It was made transparently to show inside, and has a vacuum screen(double partition) in order to isolate from outside temperature.

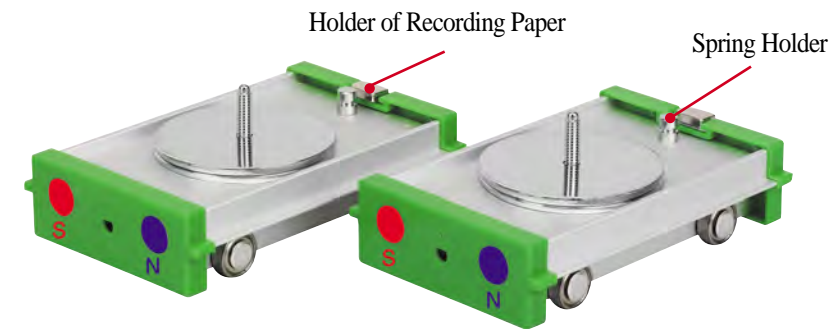
- Size : 5 L, 10 L (Voltage 6V)

**Methods of Use**

1. An experiment or measurement is not performed when there is no water for safety.
2. Pour necessary quantity of water up to the scale and start experiment.
3. Mix the mixer up and down.

DR-104

### Dynamic Cart



**FEATURE**

It was made easy to experiment by upgrading the product and by fixing a strong magnetic in fore and back surface

- Size : 115x110x40mm (WxDxH)
- 1 Wagon, weight 100g x 4, spring holder, neonium magnetic x 8, holder of recording paper

DR-105

### Brownian Movement (Kinetic Theory of Gas)



**Brownian Movement**  
Kinetic Theory of Gas

**Methods of Use**

1. Install the brown motion observation tool at a focusing point of an object lens to pass the laser light above the microscope stage.
2. Put into burning container after burning perfume.
3. Adhere closely the ending point of an injector and suck in the perfume smoke.
4. After suck in the smoke, put it into the inlet of brown motion observation tool and insert smoke.
5. Turn ON the switch, and adjust laser light to pass focusing point of an object lens.
6. An appropriate magnification of a microscope is 40~100 multiplication.
7. Make an observation period short.
8. After using for long period, open the lid and clean.

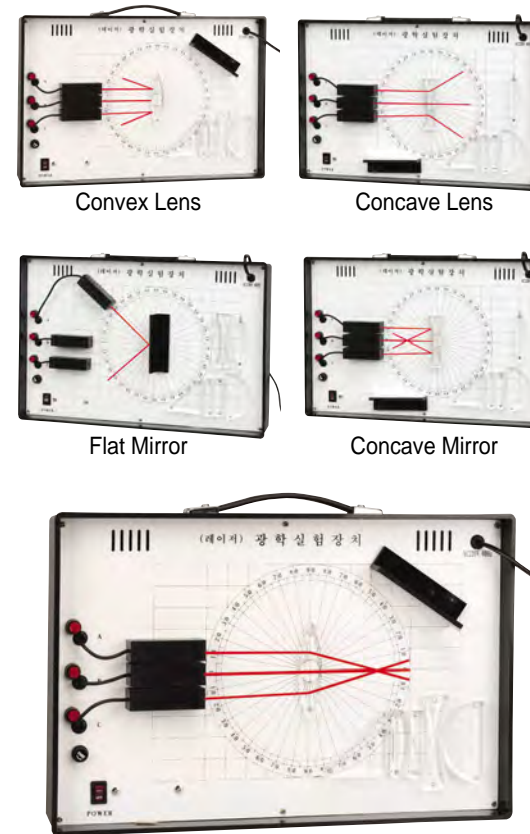
**FEATURE**

Irregular motion of very small particles which flies inside liquid or gas and moves is called Brown motion. Without movement of an object, small particles which consist the object is having heat movement and do translation while bumped with other small particles. This tool is a tool which allows to see heat movement of gas particles directly, while existing brown motion observation is to observe the pollen above water with a microscope or by putting colored gas to an airtight container. Since it was not an observation of brown motion by a standardized observation tool, it was not only difficult to control variable of the experiment, but also it had a difficulty to observe with sight because it did not show small particles well enough due to shortage of light source. This solved such inconveniences with a simple one unit tool, and allowed to observe easily, conveniently and accurately. Observe with a microscope by inserting perfumed smoke into a brown motion tool and lightening with a laser light.

- Size : 220x45x40mm (WxDxH)

DR-201

### Laser Optics Experiment Device



**FEATURE**

• Composed to be easy to understand for experts and novices. The laser can always maintain bright light taking advantage of AC even when battery is changed. And the screen coated with special material supports the brightness of light. The screen can stay standing or laid due to its magnetic characteristic. Neonium magnet is attached at the back of the screen for the magnetic function.

- 440 × 290 × 70mm (W×D×H)
- Convex Lens (two kinds), Concave Lens (two kinds), Flat mirror, Total reflection prism, Three laser sets

DR-202

### Lens Set



**FEATURE**

It is convenient to use as a halter because it is easy to attach to a magnetic blackboard.

- Size : 10 types 1 set (use for magnetic blackboard) 360 angle board, right angle plane mirror, semi-circle convex lens, triangle prism, double concave lens, convex lens, concave/convex mirror, semi-convex lens, semi-concave lens

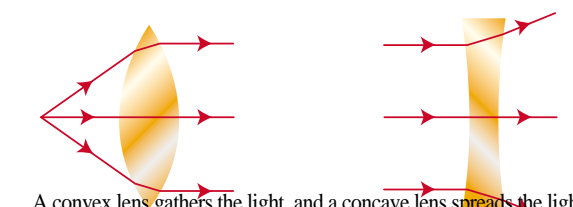
DR-203

### Slit Laser Pointer



**FEATURE**

It is convenient to observe the process of light and conveniently used for various types of lens, water pail, prism light experiment because it was made by slit. Also, because it is attached with a magnet, it can be used for a magnetic blackboard.

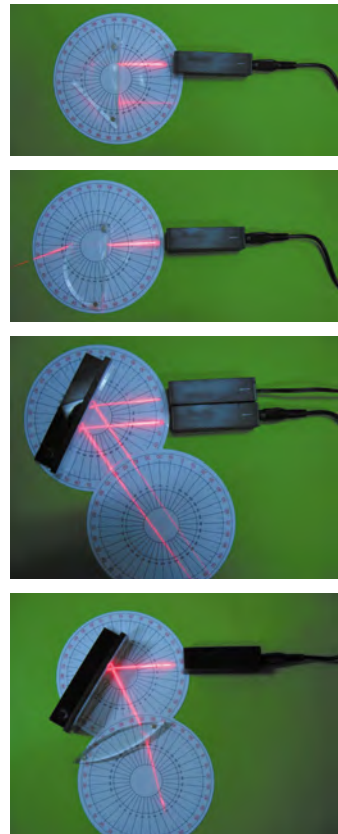


A convex lens gathers the light, and a concave lens spreads the light.



DR-204

### Slit Laser Lens Set



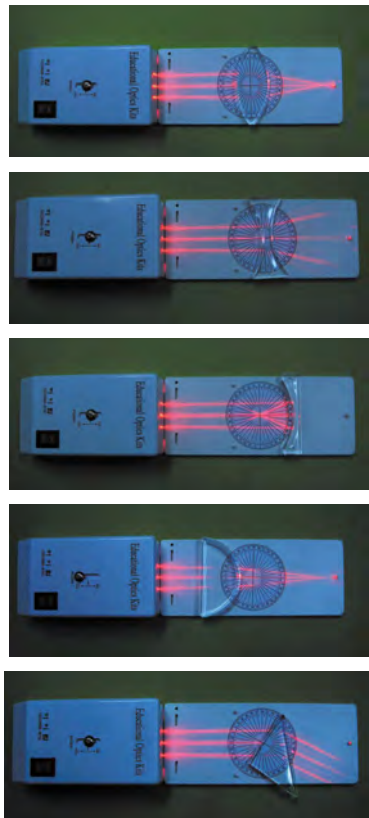
#### FEATURE

By using slit laser and lens set, it helps to understand bending and processing of light. With an attachment of magnet, it can be used in blackboard.

- Size : 12 types 1 set

DR-205

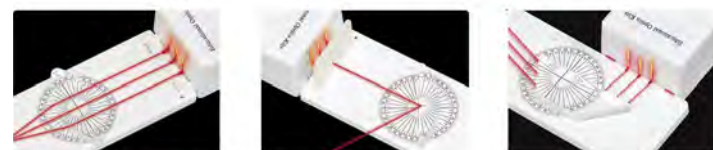
### Educational Optics Kit



#### FEATURE

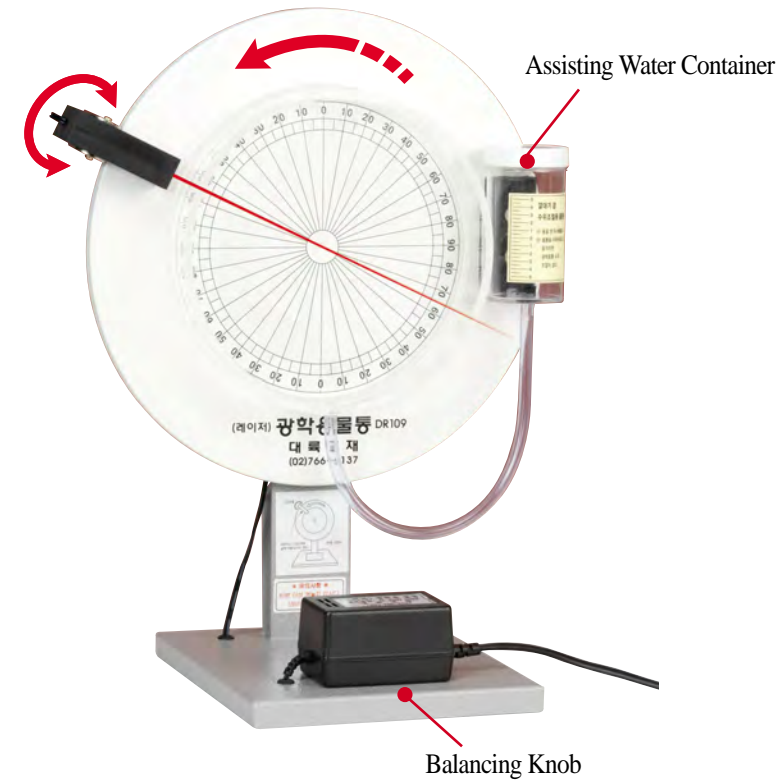
By using high bending angle LED, it clearly shows process of light. Angle board in screen rotates and it is convenient for experiments of incidence angles and reflection angles of light. The battery lasts long by using LED.

- Size : Optics container 130x70x40mm (WxDxH)
- Screen : 175x70x7mm (WxDxH) Light Lens 7 types



DR-206

### Water Bottle For Optical Studies



#### FEATURE

As a water container that manifests light bending by laser, this tool used to have difficulties to adjust horizontal line of 180, but by attaching an adjustment tool that makes adjustment easily, it made the preparation simply.

1. Water level adjustment is easy by moving assisting water container up and down
  2. Horizontal adjustment is adjusted by turning horizontal handle.
- Size : Water Container, laser, assisting water container, horizontal bolt(3), power

DR-207

### Light Composition Testing Equipment



#### FEATURE

It observes color mixing condition by lightening three colors to screen which are derived from light when three lights are installed in order to evaporate the three primary colors; it is also easy to adjust location and brightness of light easily and makes various colors, it is easy to understand.

- Size : 320x200 x215mm (W xDxH)

#### Methods of Use

1. Connect the power, close the screen distance to 20~30cm, and observe at distance where it shows colors most clearly.
2. It works well when it is adjusted to a composition point.
3. Light may move up and down.



DR-208

### Colored Top



#### FEATURE

It makes various color composition by using various colors.

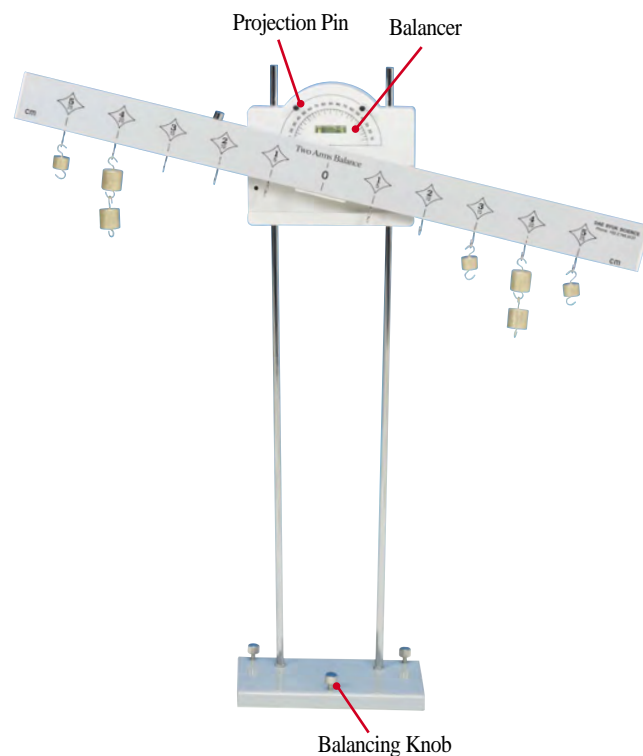
- Size : 10 monochromatic color, 1 three primary color filter board(red, blue, yellow)

#### Methods of Use

1. It is incised to put different colors in a monochromatic color board.
2. It may adjust color size by overlapping 2 or 3 incised parts. Also it may make more various colors by using a color filter.

DR-301

### Two Arm Balance



#### FEATURE

It was made to hang objects at a hook which is divided into both sides with a central point of 600mm of the arm as a standard, and there is a balancer and balance adjustment knob at the bottom and head parts to adjust balance. Also with an angle measurement board, it shows the slope. In order to prevent leaning of an arm, it is attached with a projection pin. Also it can be used while attached to a magnetic blackboard.

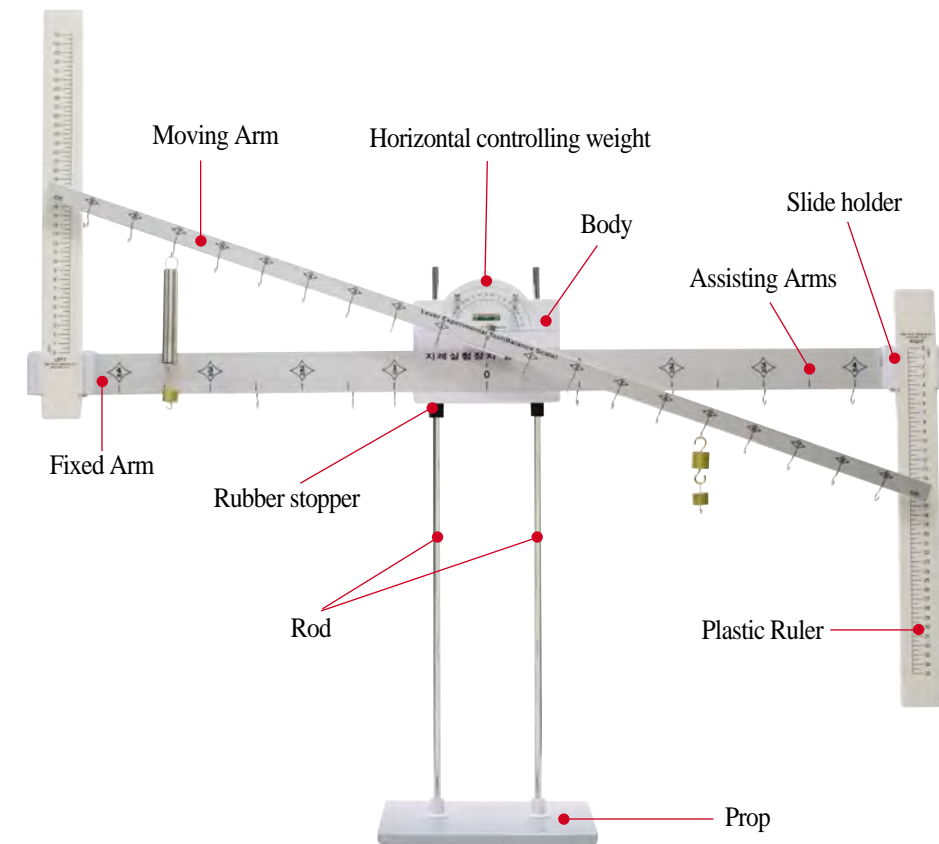
- Size : 600x50x00mm (WxDxH)



Example of Using Magnetic Blackboard

DR-302

### Lever Experimental Tool (Balance Scale)

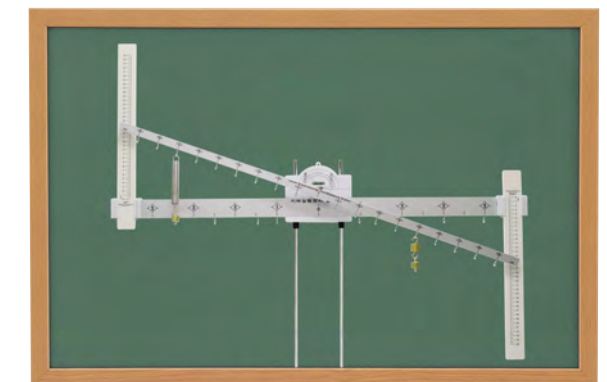
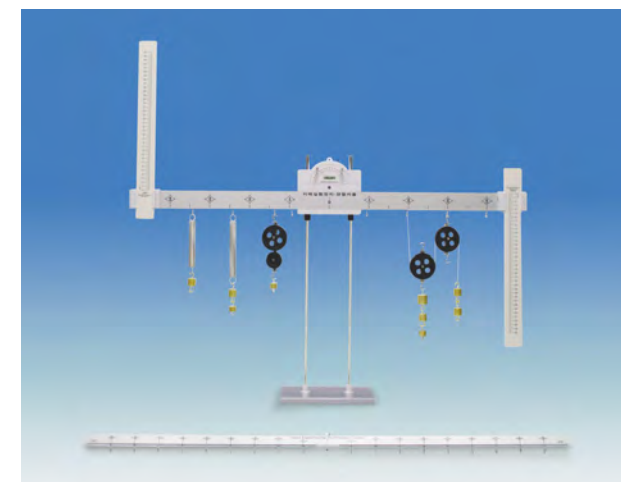


Example of Statics Experiment

#### FEATURE

It was made to hang objects at a hook which is divided into both sides with a central point of 1000mm of the arm as a standard, and it allows to keep the balance by a balancer to adjust balance at the bottom and head, and by making a balance adjustment bolt at the bottom part. Also each end of assisting arm of 1060mm, it is attached with a perpendicular ruler, which allows you to know the slope degree. There is an angle measurement board at head. The body arm can be disjointed when you do an experiment of various lever experiments and dynamics experiments, and helps you to a settled experiment by using hooks at assisting arms. At central spindle of the arms, it minimizes rubbing resistance by using bearing which makes the operation soft and smooth. Also it can be used while attaching to a magnetic blackboard.

- Size : 1060x120x800mm (WxD xH)

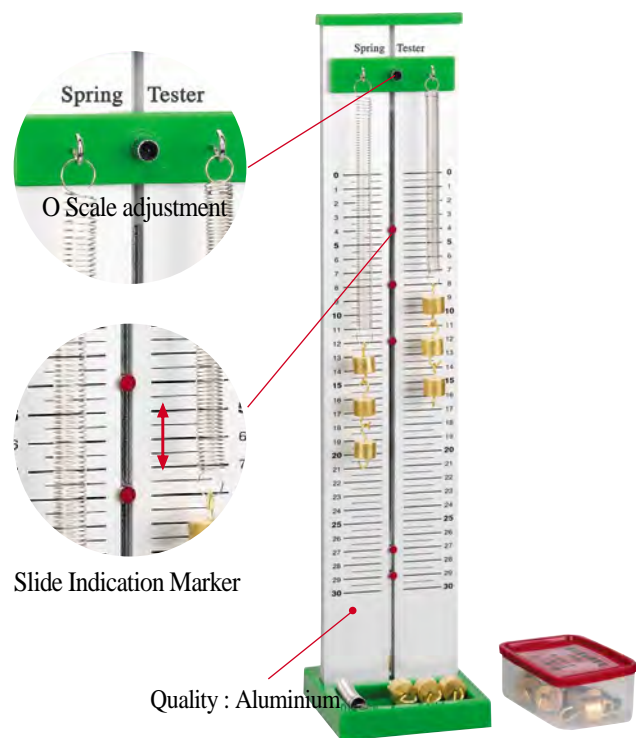


Example of Using Magnetic Blackboard



DR-303

### Spring Tester



#### FEATURE

It has a slide market which indicates upgrade of the product and experimental point. By using 2 types of springs which has same types of wire(iron wire) but has different diameter, it can experiment characteristics of spring scale.

°yThe experiment is accurate because it removed initial bouncing power of the spring.

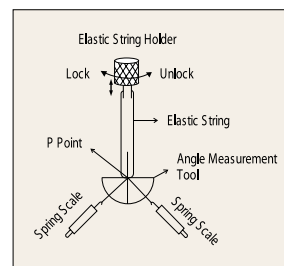
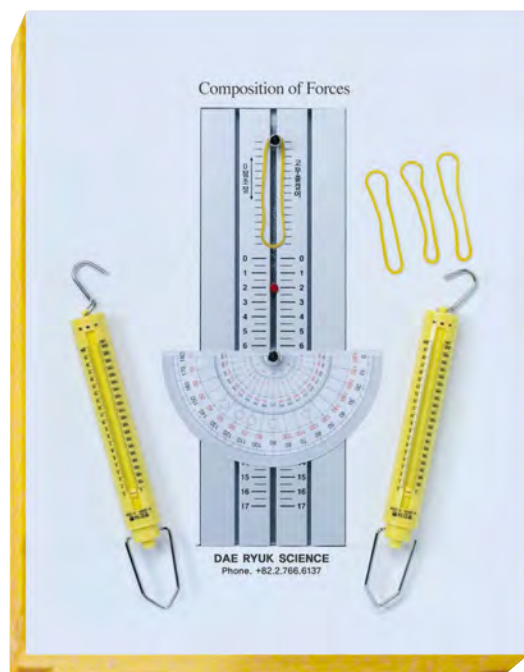
- Parts : 20g weightx5, 30x3, two types of springs, 5 side indication markers

#### Methods of Use

The experiment will perform well without errors when you use a big  $\Phi$  (diameter) spring for experimenting 20g, and use a small  $\Phi$  (diameter) for 30g.

DR-304

### Composition of Forces



#### FEATURE

There is a slide groove in order to adjust distance between slide elastic string holder and elastic string which allows to hang the elastic string in the middle of a rectangular board. For elastic string, use a gum band, and slide angle measurement tool is movable.

- Size : 300x400x18mm (WxDxH)

#### Methods of Use

- When you turn the handle left and right after hanging the gum band to a elastic string holder, it becomes locking and unlocking, and adjusts 0 scale(  $\uparrow$  up  $\leftarrow$  down).
- Do not add strong power(damage).
- Do the experiment by moving the angle measurement tool and adjust it to an arbitrary point of P.

DR-401

### Battery Voltage Meter

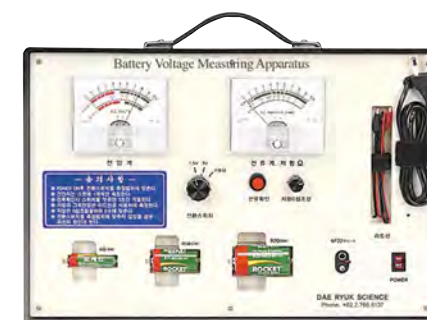
#### FEATURE

With small power, batteries have regular voltage and electric circuit. When you keep the battery for long, the power is automatically decreased, and it consumes electric circuit and voltage when you use a battery. This experimental tool is made to quickly and accurately understand fast and accurately the voltage, electric circuit, resistance of a battery. "A proper voltage condition" is colored in green(GOOD), and "low voltage condition" is indicated in red(BAD).

- Size : 440x290x70mm (WxDxH)

#### Methods of Use

1. Adjust conversion switch to a measurement scope after turning POWER ON.
2. Measure 1 battery each in a socket.
3. It works for 3 seconds when you press the switch for checking electric circuit.
4. Measure resistance and other voltage by using a LED line.
5. Adjust resistance to 0 BŸby adjusting 0 scale.
6. It causes damages when you do not fit the conversion switch to a measurement scale.



DR-402

### Electric Resistance Experiment Circuit

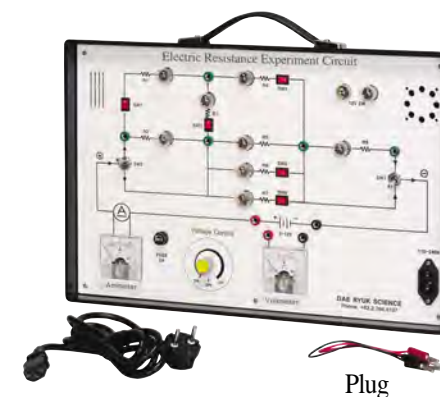
#### FEATURE

Electric circuit flow is understandable when resistance is understood. Resistance(bulb) experimental circuit is a product made to improve understanding of basic electricity by using a bulb instead of existing resistance; it actually shows voltage and electrical circuit flow by consisting various flows such as electrical series, parallel circuit, wheatston bridge while checking brightness of the bulb.

- Accessories : 10 lamps, manual, 2 power cable plug lines, 1 individual experimental evaluation question sheet
- Power : 110V - 220V, 60Hz Free Voltage / Capacity : 3.5A DC
- Lamp : 12V 5W / Size : 440x290x70mm (WxDxH) / Weight : 2.1kg

#### Methods of Use

1. Connect power.
2. Connect the plug into a voltmeter, put it into  $\text{---} \text{---} \text{---} \text{---} \text{---} \text{---}$  jack, adjust it into a proposed voltage for measurement with a power adjustment.
3. You may manipulate the circuit with a switch which you want to experiment.
4. Detailed instruction is given in a users' guideline manual.



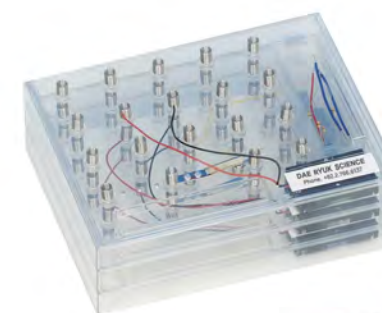
DR-403

### Spring Board

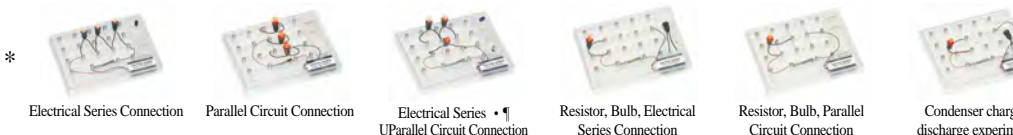
#### FEATURE

This is manufactured to make series, parallel connection of each parts such as resistor, condenser, LED, small bulbs easily by using spring. A container which can contain each part is attached, and it was made easy to keep by pile up and overlapping boards. Electrical unit experiment can be done quickly by connecting without brazing electrical parts which are sold in market.

- Size : 220x175x25mm (WxDxH)



\*Spring Board\*



Method of Connecting Wire



DR-404

**Bulb Resistor Block**



Size : 155×50×20mm

DR-405

**Fuse Block**



Size : 155×50×20mm

DR-406

**Buzzer Block**



Size : 155×50×20mm

DR-407

**Battery Socket Block**



Size : 155×50×20mm

DR-408

**Bulb Resistor Block Set (4 pcs)**



**FEATURE**

It may connect freely without conducting wire tweezers electrical series, parallel circuits, series and parallel(combination) circuits with bulb resistance board. You may change it with a small bulb.

- Size : 115x50x20mm (WxDxH)
- 3V 4 in 1 set (may change with 1.5V, 6V, 9V)

**Methods of Use**

1. Adjust one in a flat plane and push the other to fit in the form from top to bottom when connecting in electrical series.
2. Do the other way round when disjoint them.

DR-409

**Motor Block**



Size : 155×50×20mm

DR-410

**Switch Block**



Size : 155×50×20mm

DR-411

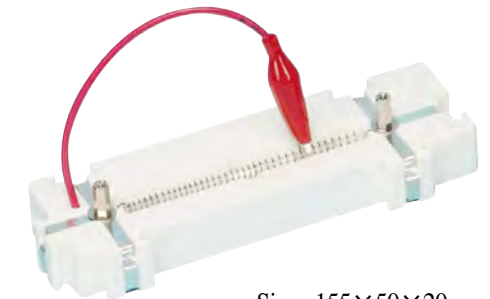
**Nichrome Wire Resistor Block**



Size : 155×50×20mm

DR-412

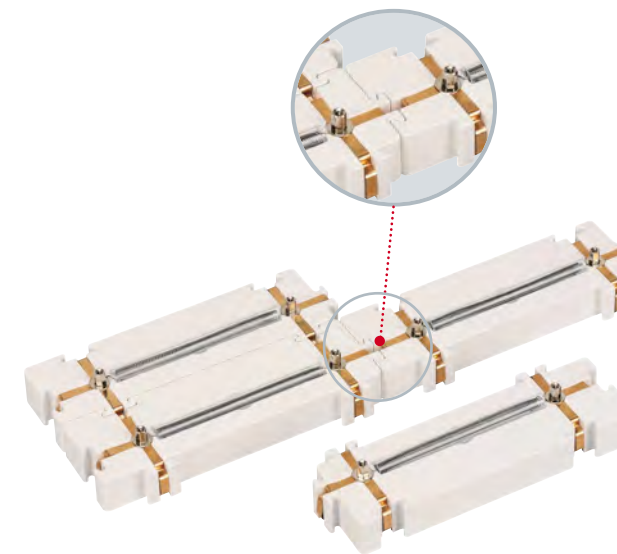
**Variable Resistor Block**



Size : 155×50×20mm

DR-413

**Nichrome Wire Resistor Block Set (4 pcs)**



**FEATURE**

You may connect the nichrome line resistance board freely without conducting wire tweezers electrical series, parallel circuits, series and parallel(combination) circuits.

You may prevent damage of nichrome line by using the machine which is strong to heat and a glass tube.

- Size : 115x50x20mm (WxDxH)
- 5Ω, 10Ω, 15Ω, 20Ω, 1 each

**Methods of Use**

1. Adjust one in a flat plane and push the other to fit in the form from top to bottom when connecting in electrical series.
2. Do the other way round when disjoint them.



DR-501

### Mini Surface Wave Projecting Device



**FEATURE**

It is convenient to move, disjoin and construction by its small size, and it is also used for water surface wave of OHP.  
 It may change horizontal adjustment of water surface and origin location of water surface wave, and prevented occurrence of reflection wave at water tank. Brightness of water surface wave can be adjusted by brightness adjustment of source of light.  
 • Size : 400x400x230mm (WxD xH)

DR-502

### Surface Wave Projecting Device For OHP

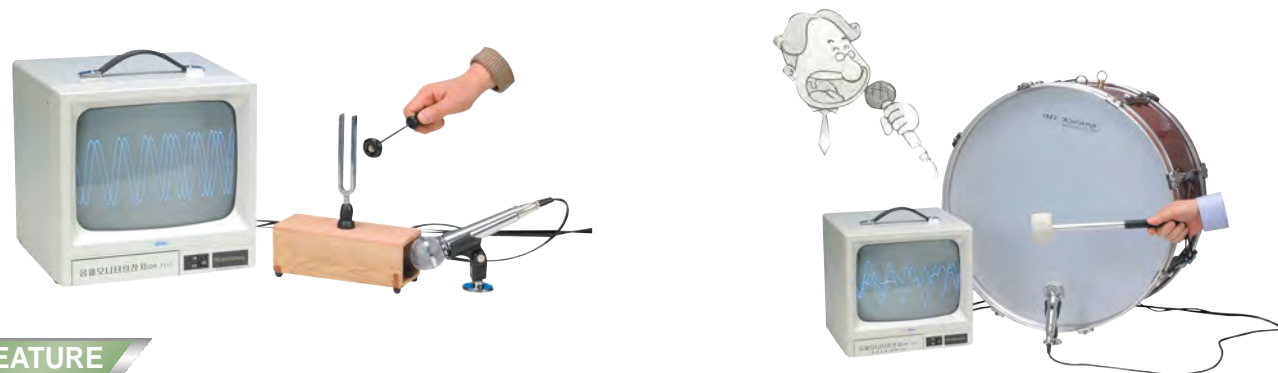


**FEATURE**

Usage of this tool is same as reflection tool of water wave, and is made small so it can be used on top of OHP and reflect on a screen, which is convenient to use for educating a large number of people.  
 • Size : 400x400x50mm (WxD xH)

DR-503

### Sound Wave Monitoring Device



**FEATURE**

When sending sound wave to microphones, sound inserted through the microphone is changed to an electrical code which allows us to see the sound wave; all sound surrounded can be observed by sight with an accurate wave and vibration

- Braun Tube Proper to the Machine : 12"
- Using Electric Power : AC100 ~ 200V/400W(Free voltage)
- Size : 305x300x300mm (WxDxH)
- Weight : 7.50 kg

DR-601

### Measuring Instrument for Diffusion Speed of Gas



**FEATURE**

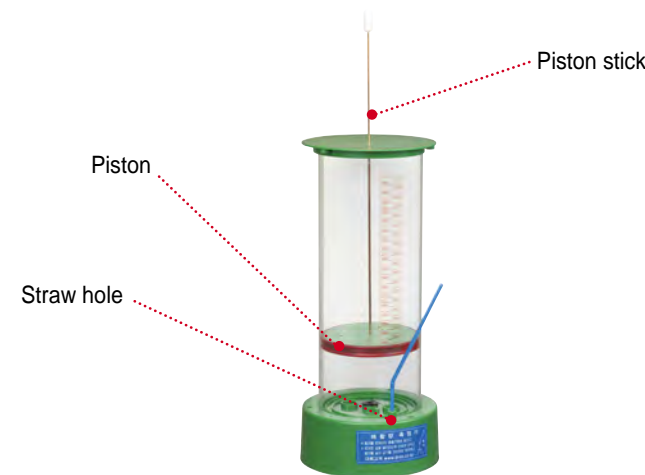
It allowed to smear sample ore to each cotton by improving construction of the glass tube while it improved accuracy of speed.  
 • Size :  $\Phi 24 \times 600$ mm

**Methods of Use**

1. Put an appropriate amount of clean cotton to each side of the glass tube, close with rub plugs.
2. Close rub plugs, put two fountain fillers one inserted with hydrochloric acid, the other with ammonia water, into each protrusion of glass tube.
3. In this condition, if you insert sample ore by pushing the fountain filler tube of each side, an accurate experimental measurement can be measured.
4. Apart from this, because there is a water tank which allows the whole glass tube to sink, it is easy to clean after the experiment is done.

DR-701

### Breathing Capacity Meter



**FEATURE**

How much air is breathed in and out when we breath? Also, how much amount of air will be there when we breath in the air at the maximum and breath out? Let's check this by using a measuring instrument of lung capacity.

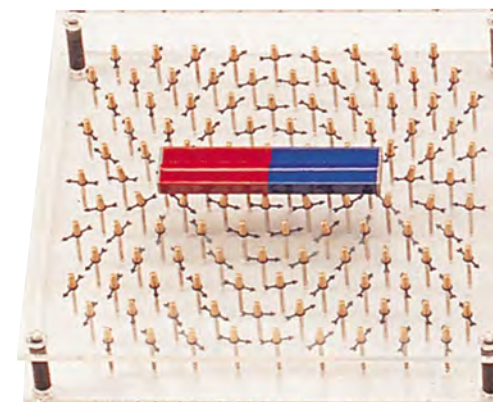
- Size :  $\Phi 90 \times 370$ mm

**Methods of Use**

1. Put a piston closely to the ground by using a pillar handle of the piston.
  2. A piston rises when you blow the straw after putting the straw in a straw holder.
  3. One straw is used for one person each for hygienic reason.
- ※ Put the straw after using the piston. When you push while the straw is put inside, it may be polluted due to elimination of inside air.

DR-801

### Magnetic Needle Observation Panel



**FEATURE**

Magnetic field and magnetic force by magnet can observe forming circle in three dimension. We can observe that scattered magnetic needles form three dimensionally at once when we put magnet at a magnetic board. It is made to enlarge and show how the forming of magnetic power is done on a screen by putting it on a OHP.

- Size : 150 x 150 x 25mm (W x D x H), consists of 108 magnetic needles 1 Alnico bar magnet



Jhp-1500, 3000

**Power Supply**



**FEATURE**

- Equipment that converts general AC electric power into DC electric power
- Installed the circuit of constant voltage and electric current controller to protect over electric current or over load.

Model	Mode	Input	Output
Jhp-1500	Needle indicator V,A meter	AC220V	15V/5A
Jhp-1500A	Digital V,A meter	AC220V	15V/5A
Jhp-3000	Needle indicator V,A meter	AC220V	30V3A
Jhp-3000A	Digital V,A meter	AC220V	30V3A

Jh-9900, 10000

**Time Recorder**



**FEATURE**

- Used for the measurement of acceleration and deceleration of moving objects. This recorder marks with dot on the record paper vibrating regularly. The gap of dot is made by the speed of record paper.
- Conduction 80x135x40mm
- AC 220V 60Hz.
- Record time: 10,20,50,60,100 dots
- Marking dot is clear and there is no noise as it is electric conduction type.
- The time of marking dot is precise as it is set up a standard time by 8-bit micro processor (Class 0.001%).
- Able to select 'Fast movement' or 'Slow movement' by the optional setting of record time.
- Measurement error is minimized, as tape friction is small.
- Easy to taping.
- Able to measure variously with various fix methods.

Model	Record	Dot-marking time	Power	Class	Tape	Type
Jh-9900	Conduction	10,20,50,60,100hz	AC 220V	1/10000	Conduction paper	Micro 8bit
Jh-10000	Dot-marking	60hz	AC 220V	1/60	Self paper	Magnet

Jh-11000

**Digital Stroboscope**



**FEATURE**

- Xetone output 20W, 60~15,120rpm
- Used for taking a picture speedy stop motion like falling motion, uniform motion, and etc. or for measuring the speed of revolution.
- Classified into union set and disunion set.
- Controlled by digital up-down mode and controlled by 16bit micro processor and memorized the times of vibration by memory sector
- Easy to take a multi picture by falling delay system of magnet

Model	Type	Power	Output	Vibration range	Motive output	Magnet control
Jh-11000	Light uniform	AC220V	20W	60-15120/min	4-10Vpp	Control
Jh-11000	ALight dis-uniform	AC220V	20W	60-15120/min	4-10Vpp	Control

Jh-3008A, 5500

**Digital Stop Watch**



**FEATURE**

- 1/1000second(15 memory)
- Used to measure quick time in the test of velocity, acceleration, and up-down motion gravity acceleration.
- Able to measure from 0.001 seconds to 60 minutes and has the function of start, stop, lap, and reset.
- Able to measure the moving time of objects by using light sensor.
- Photo-gate (Micro stop watch parts)
  - A parts micro-chronometer and electronic switch which makes 'Start' and 'Stop switch' automatically operate after sensing the objects moving with quick velocity.
  - Able to measure the velocity of up-down motion, uniform velocity motion, and acceleration motion with the error of  $\pm 15\mu s$ .
  - Installed with verticality, horizontal, and all angle.
  - Installed in the upper and lower sides of falling motion.



Jh-3008A	Digital stop watch	AC220V, DC9V	0.001sec-60min	15 Memory
Jh-5500	Photo gate	Micro-chronometer power	15us	



Jh-3600

**Magnetic Stirrer**



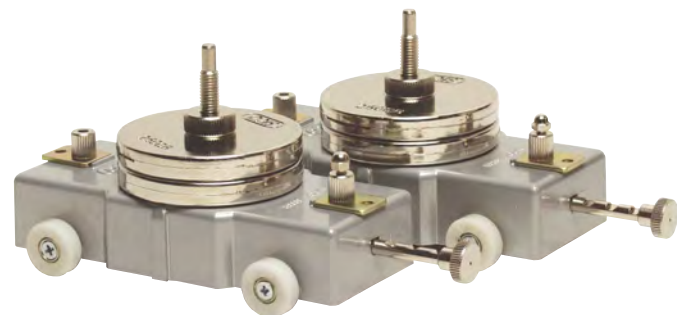
**FEATURE**

- An instrument which bends more than two mixtures
- Magnetic type which is used to precipitate Magnetic Bar in liquid

Model	Mode	Power	rpm
Jh-3600	Magnetic	AC 85-220V	60-3600

Jh-1500p

**Dynamic Cart**



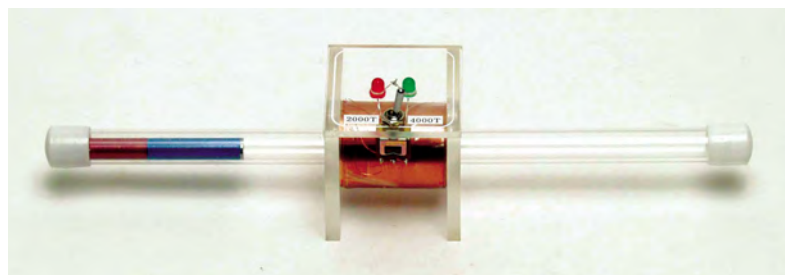
**FEATURE**

- Used for test of uniform motion, degree of acceleration, variation of mass by acceleration, raw of motion preservation, and stop/ inertia by spring
- Consisted of 1 set( 2 carts with same mass)

Model	Cart weight	Balance weight	Total weight	Consist
Jh-1500p	500g	250g(2 ea(set))	1 kg	2 ea(set)

Jh-4000T

**Electric Generator**



**FEATURE**

- An instrument which generates electricity of coil by up-down motion of magnet
- Magnet motion track is installed in the empty core solenoid coil
- Small lamp is lighted with the positive and negative poles separately

Model	Mode	Coil	Display
Jh-4000T	Stick magnetic	2000/4000T	LED(2 ea)

JHV-1999D, 1999A

**Digital Meter**



**FEATURE**

- 3 1/2 digital-meter that measures voltage and electric current.

Model	Product name	Measuring range	Class	Power	Mode
JHV-1999D	DC VOLTMETER	0-199.9V	0.5%	DC 9V	L,C,D
JHV-1999A	AC VOLTMETER	0-300V	0.5%	DC 9V	L,C,D
JHA-1999D	DC AM METER	0-1.999A	0.5%	DC 9V	L,C,D
JHA-1999A	AC AM METER	0-19.99A	0.5%	DC 9V	L,C,D
JHG-1999	GALVANOMETER	0-1999uA	0.5%	DC 9V	L,C,D

Jh-1061, 2001

**Induction Coil**

**FEATURE**

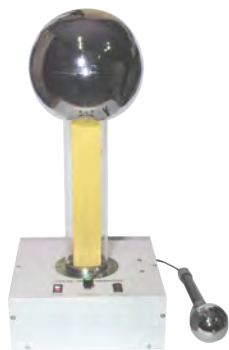
- Used for the source of electric power, as an instrument, which makes high voltage power. Be suitable for a laboratory use as it is high voltage and low electric current.



Model	Electric power	Frequency	Polarity	Output control	Discharge distance
Jh-1061	AC220V, DC12V	Frequency control	Conversion	Control	120mm
Jh-2001	Involved discharging rod			×	100mm



### Van de graff Generator



**FEATURE**

It's a belt-type generator for static electricity by collecting the electricity on a metal ball on the top after generating friction on rubber inside a transparent and charged cylinder. The stored electricity is discharged when a small ball with electricity approaches. The instrument is used for attraction and reaction by static electricity, electrification of human, line of electric force and static discharge.  
 Power : AC220V(50/60Hz)  
 Type : Vibration, embedding dry light  
 Dimension : 250x250x600mm  
 Weight : 5.25kg

### Sound Frequency Counter



**FEATURE**

The instrument consists of frequency gauge and sound source microphone to measure frequency of the source. It's used for measuring frequency of tuning forks and musical instruments.  
 Power : AC220V, DC9~24V  
 Frequency : 1Hz to 20KHz  
 Dimension : 150x160x50mm

### Low Frequency Generator



**FEATURE**

The instrument is used for sound source in sound wave experiments and for a vibration generator in wave experiment. It can be used for various experiments by connecting it to audio amplifier.  
 Power : AC220V, DC9~24V  
 Output Frequency : 1Hz to 100KHz  
 Output Power : 50mVp-p to 5Vp-p  
 Temperature for Use : 0°C to + 50°C  
 Dimension : 150x160x50mm

JHL-2000

### He-Ne LASER



**FEATURE**

It's an instrument to generator He-Ne LASER for educational use. The laser is used to observe direct motion, refraction, reflection, diffraction of single-color and interference of light.  
 Model: JHL-2000  
 Power : AC220V 50/60Hz  
 Beam Power : 2.0mW(max) 0.58mm  
 Wavelength : 632.8nm  
 Beam Divergence : 1.4mred  
 He-Ne gas laser org.

JHR-5500

### Wheatstone Bridge



**FEATURE**

It's an instrument to measure resistance precisely and can measure it in a proportional way by embedding standard resistance. It there is no proportion between the embedded resistance and the measured one, the meter gauge moves left and right.  
 Power : AC220 50/60Hz  
 Range : 4 Dial  
 Ammeter : 200uA  
 Composition : Resistance for measurement  
 Range : 1-11110Ω  
 Dimension : 330x160x120mm

JHP-6600

### Light Source for Line Spectrum



**FEATURE**

It's an instrument to generate line spectrum by embedding high-voltage power in tubes for three different elements. It's possible to adjust proper voltage through voltage adjuster. It consists of standard light source to observe spectrum distribution of an element, spectrometer and samples for direct spectrometer.  
 Power : AC220V 50/60Hz  
 Lamp : Neon, helium, argon (3 kinds)  
 Dimension : 330x160x120mm

JHS-6060

### Stroboscope



**FEATURE**

It's an instrument to observe motion of an object with optical stop or slow speed by taking advantage of stroboscopic phenomenon by a slit with 12 gaps attached to the generator for adjusting speed.  
 Power : AC220V 50/60Hz,DC 12V  
 Velocity : 10-600 rpm  
 Composition : Digital counter, a sloth with 12 gaps of φ 180mm, speed adjuster



# Data logger for Education

## MAX V (KDS-MAX V)



MAX V is a device which is combined Lap-top computer and interface. It doesn't need to bring additional computer because MAX V is a complete lap-top computer. It maximizes space utilization of laboratory. 14 inch screen is adopted supplying wide and clear view. There's no limit to store data, because it has 120GB hard disk. It supports Wire/Wireless LAN, Bluetooth and USB to build perfect communication environment. It is possible to edit data by using document & graphic program of PC. User can make a report includes annotations and pictures. Also it's possible to share the report and data with others through internet. Especially it is ideal device to use Excel program based data-logging program of ScienceCube. All documents can be printed directly from MAX V, and it's compatible with any projectors. It's perfect device for ICT educational environment, because it supports network so teacher can monitor students' experiment progress.

Specifications	Software Applications	Hardware Peripherals
Celeron Dual Core T1400 (1.7GHz)	Windows VISTA \ Built-in ScienceCube's powerful softwares	3 analogue and 1 Digital Sensor ports
1G DDR2 Memory	Picture processing software & Video Contents Analyzing software	LAN:10 and 100 Mb/s
120GB GDD Standard	Direct supporting any kind of Word processor S/W and text editor. (ex:Open office)	3 USB 2.0 interface ports with support for keyboard, mouse, flash memory, etc
14.1" WXGA LCD Monitor (1280*800)	Direct supporting MS Outlook	Support SD/MMC/MS/MS Pro Memory Card
RTC (Real-Time Clock)	Sound recording & Analyzing software	New 86 Keys K/B w/Screw fixing
Dimension: 343*245*34mm	File compressing software	Internal Microphone Support
2.4kg	PDF format displaying software	1.5W Built-in audio 2 speakers
4 Cells Li-ion Battery		Mini Card w/USB interface IEEE 802.11 B/G Standard VGA display port

## MAX II (KDS-MAX II)



### Datalogging

MPU	MCU:16 bit
A/D Resolution	12 bit
Sensor Input	Analog Input: 3 Channel

### Specifications

	Specification
Model	ScienceCube MAX II
CPU	AMD Geode LX800 L2 Cache : 64KB
System Memory	512MB (SO-DIMM PC2700 DDR333) Standard / Maximum : 512MB / 1GB
Hard Disk	40GB
Graphic System	LX800 (on board) Memory : Standard 8MB (Max. 245MB)
Display	7 inch Wide TFT Glare LCD (Standard 800x480, LED Back light)
Sound System	AC' 97 Codec
LAN	100BASE-TX / 10BASE-T
Wireless LAN	IEEE802.11b/g Bluetooth Ver.2.0 + EDR Class-1
Speaker	Stereo Speaker (0.5W + 0.5W)
Interface	3in1 Memory Slot (MMC, SD, Memory Stick Pro), USB2.0 x2, CRT 1 Out, CF Card Slot, LAN 1 Port, Volume Control Switch, Bright Control Button, Stick Pointer, Scroll Button, Mouse Button MIC - in 1, Headphone output 1
Battery	Lithium-Ion Battery (11.1V, 2,600mAh, Max. 5 Hour)
AC Adaptor	Input 100~240V, 50/60Hz
Dimension	218(W) x 163(D) x 25.4(H) mm
Weight	960g (Battery Included)
OS	Microsoft Windows XP Home Edition SP2 Microsoft Windows Media Player 10

## MAX Advance



CPU	Tital ARM 11 (600 MHz)
LCD	7" TFT Wide 800 x 480 Touch screen
Keypad	USB keyboard and mouse pad.(Option)
Memory	128 MB(mDDR), 256MB(Flash)
Camera	2M Pixel (Option)
Memory Card	2 GB SD card slot (Max 8 Gb: Option)
USB	USB x 3 (USB2.0, USB HOST)
VGA	VGA ports
RF 1	802.11g (ETHERNET 10Mbps)
RF 2	BLUETOOTH (Option)
Sensor In/Out	Analog Input : 4ch (Max 8 ch) Digital I/O 1ch, SPI 1ch
ADC	12 bit
BATTERY	4 Hour ( Option 8 Hour) capacity
SOFTWARE	ScienceCube Analysis Software
OS	Windows CE.NET 6.0

## ScienceCube Mentor



CPU	533 MHz Mobile application processor
Display	320X240 pixel, Stylus and 3.5 TFT color touch screen
Battery	Rechargeable, 3.7V 2,300mAh Lithium-Polymer battery Run up to 4 hours continuously
Memory	256MB Flash Rom, 128MB Ran buil-il storage External micro SD card slot, up to 2GB
Indicator	LED indicator for data logging status
Button and	5-button navigation and menu cluster
Switch	Stereo headphone port, microphone port
Audio Input	Built-in microphone, speaker
output	Stereo headphone port, microphone port
I/D Channels	4 Physical channels, simultaneous and shared AI, DIO
AD	12 bit, up to 16 bit resolution
Communication	Digital 12C

## Total Package (for example)



1	ScienceCube MAX V
2	ScienceCube MAX II
3	Interface - Pro
4	Interface - Life
5	Thermocouple Probe
6	pH Sensor
7	Magnetic Field Sensor
8	Relative Humidity Sensor
9	Differential Voltage Probe
10	Current Probe
11	Microphone
12	Sound Level Meter
13	Accelerometer 5g
14	Barometer
15	Turbidity Sensor
16	Co2 Gas Sensor
17	Dissolved Oxygen Probe
18	Photogate
19	Dual Range Force Sensor II
20	PT Temperature Probe
21	Gas Pressure Sensor B
22	Photometric Light Sensor
23	Gas Pressure Sensor A
24	Galvanometer
25	Conductivity Probe
26	ORP Sensor
27	EKG Set
28	PC-cam
29	Motion Sensor II
30	Colorimeter II
31	Heart Rate Monitor
32	Oxygen gas Sensor
33	Stethoscope
34	Balance I (200g)
35	Radiation Monitor II

### Available experiment list

#### Physics

- Motion sensor : Free Falling Movement, Pendulum, Newton's law, Friction force, Gravity, Collision and Conservation of Energy
- Current sensor & Voltage sensor: Ohm's law, Resistance in parallel circuit
- Galvanometer: Faraday's law
- Gas Pressure sensor : Boyle's law
- Microphone : Sound beat, Sound waveform

#### Chemistry

- Gas Pressure sensor: Vapor pressure, The relationship between the boiling point and the pressure
- pH sensor: Neutralization Titration reaction
- PT Temperature sensor: Exothermic reaction, Boiling & Freezing point, Specific heat

#### Biology

- Gas pressure sensor: Respiration of yeast, Transpiration
- Co2 Gas sensor: Photosynthesis
- Current sensor & Voltage sensor: Stimulus and Reaction

#### Earth Science

- PT Temperature sensor: Convection current, Global warming, Making cloud
- PD light sensor: Change of the light intensity by the distance
- Humidity sensor: Range of daily humidity



# Sensor List for Data logger

**Accelerometer 5-g**  
(KDS-1014)



- Range : Full range:  $-47m/s^2 \sim +47m/s^2$
- Available range:  $-19.6m/s^2 \sim +19.6m/s^2$
- Resolution :  $0.038m/s^2$
- Frequency Response : 0~100Hz

**Accelerometer 25-g**  
(KDS-1048)



- Range : Full range:  $-245m/s^2 \sim +245m/s^2$
- Available range:  $-98m/s^2 \sim +98m/s^2$
- Resolution :  $0.2m/s^2$
- Frequency Response : 0~100Hz

**Absolute Pressure Sensor** (KDS-1061)



- Range : 0 ~ 6,900 hPa
- Resolution : 1.69 hPa

**Barometer Sensor**  
(KDS-1016)



- Range : 0 ~ 2,068hPa
- Resolution : 0.6hPa

**Balance I**  
(KDS-1053)



- Range : 0 ~ 200g
- Resolution : 0.01g

**Balance II**  
(KDS-1054)



- Range : 0 ~ 500g
- Resolution : 0.1g

**CO<sub>2</sub> Gas Sensor**  
(KDS-1020)



- Range : 0 ~ 5,000ppm (0 ~ 0.5%)
- Resolution : 2.44ppm (using 12 bit 5V AD converter)
- Accuracy (at standard 1atm):  $\pm 100ppm$  (0 ~ 1,000ppm)  
 $\pm 10%$  (1,000 ~ 5,000ppm)

**High Concentration CO<sub>2</sub> Sensor**  
(KDS -1037)



- Range : 0 ~ 10% (0 ~ 100,000ppm)
- Resolution : 30ppm
- Accuracy (at standard 1atm) 0~10,000ppm :  $\pm 100ppm$  or  $\pm 10%$  of reading, 10,000ppm~20,000ppm :  $\pm 20%$  of reading over 20,000ppm ; qualitative only.
- Calibration Information Slope: 25000ppm/V, offset 0V (0V=0ppm, 4V=100,000ppm)

**Conductivity Probe**  
(KDS-1038)



- Range:**
- Low Range : 0 to 200  $\mu s/cm$  (0 to 100 mg/L TDS)
  - Mid Range : 0 to 2000  $\mu s/cm$  (0 to 1000 mg/L TDS)
  - High Range: 0 to 20,000  $\mu s/cm$  (0 to 10,000 mg/L TDS)
- Resolution :**
- Low Range : 0.025  $\mu s/cm$  (0.05 mg/L TDS)
  - Mid Range : 0.25  $\mu s/cm$  (0.5 mg/L TDS)
  - High Range: 2.5  $\mu s/cm$  (5 mg/L TDS)

**Colorimeter II**  
(KDS-1044)



- Range : 0 ~ 100%T
- Resolution : 0.035%T
- Wavelength : 430nm, 470nm, 565nm, 635nm

**Current Probe**  
(KDS-1010)



- Range : DC -1.0 ~ +1.0 A
- Resolution :  $\pm 0.6mA$  (12bit)
- Circuit Properties : Sensor is separated and insulated from ground
- Power dissipation : Max. 5W (0.01  $\Omega$ )

**Galvanometer**  
(KDS-1035)



- Range : DC  $\pm 12.5mA$ ,  $\pm 1.25mA$ ,  $\pm 0.125mA$
- Resolution :  $\pm 0.06\mu A$
- Circuit Properties : Sensor is separated and insulated from ground

**Differential Voltage Probe** (KDS-1009)



- Input voltage range :  $\pm 12.0V$
- Max. input voltage :  $\pm 14.5 V$
- Input Impedance (to ground) : 10 M $\Omega$
- Linearity : 0.01%
- Resolution (12bit) : 3.1 mV
- Supply voltage : 5V DC
- Supply current (typical) : 9 mA
- Output voltage range : 0 ~ 5 V

**DO Probe**  
(KDS-1022)



- Range : 0 to 15 mg/L (or ppm)
- Accuracy :  $\pm 0.2 mg/L$
- Resolution : 0.007 mg/L
- Response Time : 95% in 30 seconds, 98% in 45 seconds
- Temperature Compensation : automatic from 5-35 $^{\circ}C$

**Dual Range Force Sensor II** (KDS-1029)



- Range :  $\pm 10N/\pm 80N$
- Resolution :  $\pm 0.0056/\pm 0.056/$
- Sensor type : Electrical strain gauge

**EKG (ECG) Set**  
(KDS -1040)



- EKG Range : 0 ~ 5mV Resolution : 5 $\mu V$
- Pulse Range of Pulse : 47 ~ 250 BPM Resolution : 1 BPM

**Differential Gas Pressure Sensor A** (KDS-1034)



- Range : -1000 ~ 3000hPa
- Resolution : 1.3hPa
- Tolerant : -1000 ~ 3050hPa
- Unit : Differential (Relative) pressure
- Response time : 0.2ms average

**Differential Gas Pressure Sensor B** (KDS-1032)



- Range :  $\pm 650hPa$
- Resolution :  $\pm 0.335hPa$
- Tolerant :  $\pm 700hPa$
- Unit : Differential (Relative) pressure
- Response time: average 0.2ms

**Heart Rate Monitor**  
(KDS - 1046)



- Range : 0 ~ 250 BPM
- Resolution : 1 BPM

**Humidity Sensor**  
(KDS-1008)



- Range : 0 ~ 100%
- Resolution : 0.1%

**Ion Selective Electrode Amplifier** (KDS-1043)



Ion Selective Electrode amplifier can be used with any electrode such as NH<sub>3</sub>, Cl, Ca, Na, K HNO<sub>3</sub> etc. Also this amplifier can be connected to pH, ORP, TDS for handling signal.



**Magnetic Field Sensor**  
(KDS-1007)



- Range : -50 ~ +50 G
- Resolution : 0.024G (12 bit)
- Sensor depth : 5.0mm
- Sensor type : Radiometric, Linear Hall Effect Sensor
- Strobe Timing : changes according to interface (Max. 0.1ms)

**Magnetic Field Sensor II**  
(KDS-1063)



- Range : -50 ~ +50 G (-5mT ~ +5mT)
- Resolution : 0.0244G

**Microphone**  
(KDS - 1012)



- Range : 20Hz~20000Hz, 50 ~ 20dbVrm

**Motion Sensor II**  
(KDS-1042)



- Range : 0.16 ~ 6m (Max. 10m)
- Resolution : ± 1.5mm
- Gauging principle : Ultra Sonic Transducer
- Beam Angle : Cone, around 15°
- Sampling rate : (Max. 100samples/s) depends on measuring distance

**ORP Probe**  
(KDS-1039)



**ORP Electrode**

- Type : Sealed, gel-filled, epoxy body, Ag(AgCl) reference
- Storage solution : pH-4/KCl solution (10g KCl in 100mL buffer pH-4 solution)
- Temperature range : 0 ~ 60°C
- Impedance : ~20MΩ at 25°C

**Electrode(ORP) Amplifier**

- Amplifier input range : -450 mV ~ 1100 mV
- Voltage output range : 0 - 5 V
- Calibration function :  $V(mV) = 466.875 * Vout(V) - 559.793$
- Resolution : 0.5 mV

**Oxygen Gas Sensor**  
(KDS-1047)



- Range : 0 ~ 27% O2
- Output voltage range : 0 ~ 4 V in air at 25°C, sea level (standard) other range optional.
- Resolution : 0.03% (12 bit)

**PC Camera**  
(KDS-1041)



- Interface : USB 1.1 /2.0 compliance
- Resolution : 3968 X 2976 via software interpolation
- Color : 24-bit, True Color (24RGB, 1420)
- Sensor : Advanced CMOS Image sensor
- View Angle : 360 degrees

**pH Sensor**  
(KDS-1005)



- Range : pH 0 ~ 14
- Resolution : ± 0.0036 pH units

**Photogate**  
(KDS-1023)



**Internal Gate**

- Infrared source peak wavelength : 880 nm
- Rising time : 2.5 μs
- Falling Time : 3.8 μs

**External Gate**

- Infrared source peak wavelength : 880 nm
- Spectrum Sensitivity : 500 ~ 1050 nm
- Rising time : 8 μs
- Falling Time : 10 μs

**Pulley**  
(KDA-15)



- Effective circumference : 20 cm
- Pulse / round : 10
- Effective diameter : 64 mm
- Out diameter : 67 mm

**Laser Pointer**  
(KDA-18)



- Output Mode: Constant Wave
- Laser Wave Length: 532nm
- Batteries: Alkaline 'AAA' (2 included)

**Photodiode Light Sensor**  
(KDS-1033)



- Range : 0 ~ 15000Lux
- Resolution : Full range : 0 ~ 15000Lux  
General Purpose : 0 ~ 6000Lux  
Sensitive range : 0 ~ 600Lux

**Radiation Monitor**  
(KDS-1030)



- Range : 0 ~ 20mR/hr (0 ~ 20,000 CPM)
- Resolution : 1 CPM
- Temperature Range : 0 ~ 50°C

**Salinity Sensor**  
(KDS-1055)



- Range: 0~50 ppt
- Resolution: 0.02 ppt

**Sound Level Meter**  
(KDS-1013)



- Accuracy : ± 1.5dB
- Range: 35~130dB

**Stethoscope**  
(KDS-1051)



You can see your heart beat as a graph with the Stethoscope.

**Turbidity Sensor**  
(KDS-1017)



- Range : 0 ~ 200NTU
- Resolution : 0.25NTU

**AC Power Control Strip**  
(KDS-3036)



- AC 250V ~ 15A 50/60 Hz

**PT Stainless Steel Temperature Probe** (KDS-1031)



- Range : -50°C ~ +180°C
- Resolution : ± 0.06°C
- Sensor Properties : PT temperature element (RTD), Stainless steel covered.
- Response Time : 10s(90%)
- Chemical Resistance : 15 minutes (1M HCl)

**Stainless Steel Temperature Probe** (KDS-1001)



- Range : -25°C ~ +125°C
- Resolution : ± 0.1°C
- Sensor Properties : Thermistor Stainless steel covered
- Response Time : 10s(90%)
- Chemical Resistance : 15 minutes (1M HCl)

**Thermocouple Probe**  
(KDS-1002)



- Range : -200°C ~ +1200°C
- Resolution : ± 0.6°C
- Sensor Properties : Type K Thermocouple stainless steel covered.
- Linearity : 0 ~ 400°C (± 3°C), -200°C ~ 0°C (± 2°C)
- Chemical Resistance : 15minutes (1M HCl)



KISCO-8055

### Thermometer Case



#### FEATURE

- Suitable for safekeeping glass thermometers to prevent from its breakage
- Able to keep 150mm thermometers or 300 mm thermometers respectably
- Able to keep 75 units of thermometer all together

#### SPECIFICATION

- Material : Steel, Plating paint
- Grade : 45 units for 300 mm thermometers, 35 units for 150 mm thermometers
- Size : 330 × 170 × 170 mm

KISCO-900

### Total Water Meter



#### FEATURE

- Strong and easy to carry as it is made of aluminum
- Convenient for measurement and speedy for test results
- Able to various water analysis by one equipment
- Useful for practice for students
- Able to get the details of water analysis with one description
- t from it's breakage or alcohol or mercury or broken

#### Accessories

- Korean language description
- Case for keep and carry(aluminum case with a shoulder string)

#### SPECIFICATION

- \* Component
- Digital thermometer : -50~200C
  - ph-meter :-1~15.0 ph
  - TDS : 0~1990ppm
  - COD tester
  - NH4 tester
  - PH compensating liquid
  - Beaker
  - Water container
  - Sample bottle
  - Measuring tape
  - Spectacles
  - Pincette

KISCO-1

### Scoliometer Edu System



#### FEATURE

- Most suitable equipment to diagnose Scoliosis without radiation damage by X-ray test
- Newest equipment which meets all requirements of measurement
- Precise measurement with scientific design
- Easy carry and convenient for use to apply to various measurements
- Able to measure cm, mm, and soon.
- Strong surface intensity by special coated
- Convenient for use by circular level

#### SPECIFICATION

- Mesuerment range : level : 0~45  
Support stand : 450 mm  
Extension stand : 160mm
- Accuracy : level : 5  
Support stand : 10 mm  
Extension stand : 2mm
- Measuring items : Shoulder slant angle  
pelvis slant angle  
Chest protrusion angle  
neck curve angle  
Front/ back chest curve angle  
Mean look front/back angle
- Size : 450 × 180 × 80mm
- Weight : 450g

#### Accessories

- Descriptions
- Aluminum case

#### Basic understanding of scoliosis

- Symptoms: vertebra metamorphosis of 'S' shape  
unbalance of pelvis  
Shoulder curving phenomenon of body
- Occurrence time : After 10 years olds
- Occurrence frequency : about 10%

KISCO-8044

### Spring Scale



#### FEATURE

- In order to school and kindergarten education
- High quality and Simple design with basic color

#### SPECIFICATION

- Capacity 200g 500g 1,000g 2,000g 5,000g



MRS 5508 **Breathing Tester**



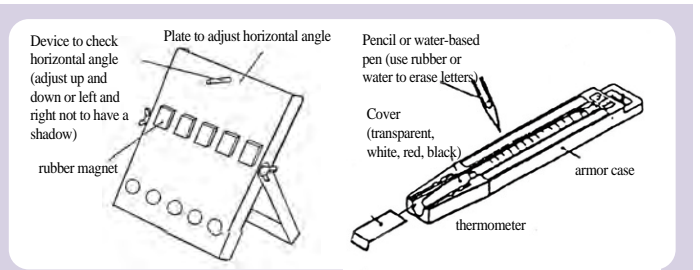
Type B : The instrument easily demonstrates how inspiratory and expiratory movements work through air pressure by contracting and extending bellow (diaphragm) with lever.  
 Spec : 96 x 280mm, plastic column, 80x200 ± 5mm  
 Usage : for elementary, middle and high school students

MRS 3347 **Tank for Optical Experiment**



It's an instrument to observe incidence and refraction angles by filling different liquids (oil, water, etc).  
 Spec : 300x150x450mm, LASER generator, tank with degrees, stand  
 Usage : for elementary, middle and high school students

MRS 3568 **Equipment for Optical Experiment**



※ Caution ※  
 1. Use a soft-led pencil (HB) or water-based pen to easily erase letters on the armor case. Never use ball-point pen or oil-based magic pen.  
 2. Gauges of each thermometer have different scale. Take caution that the temperature in one thermometer looks higher than the other ones even though the temperature is lower. Instruct students not to judge temperature intuitively and instruct students to read the gauge.  
 3. Keep covers attached to thermometers after experiment. This gives a help to prevent the covers from being lost.

It's an instrument to demonstrate the warmth depends on light.  
 Spec : Thermometers with black, white, red and transparent covers, thermometer plate  
 Dimension : 210x250x15mm

**FEATURE**

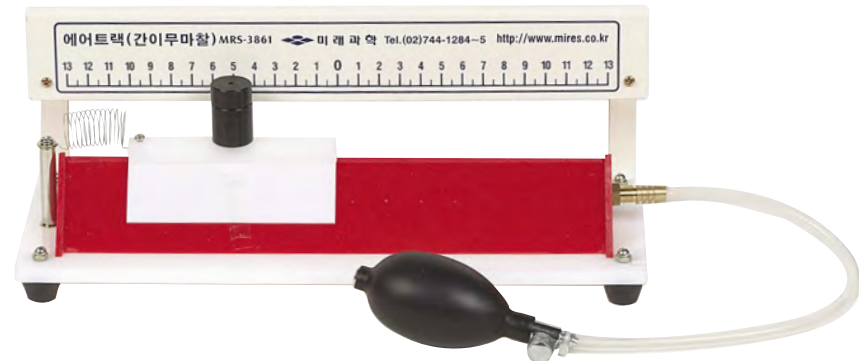
1. Compare and experiment 5 thermometers (4 with transparent, white, red and black covers and 1 without cover) under the same condition
2. A photo-detecting instrument is installed to find out the most efficient direction and this makes it easy to check the same condition
3. Thermometers are kept in cases made by ABS to provide low possibility of being broken and it is easy to change covers
4. It is manufactured to write or erase contents written with a pencil or a water-based pen on the gauge
5. It is easy to adjust photo-detecting angle with adjustment panel
6. A window is installed on the adjustment panel not to give influence from reflected light on the thermometers

MRS 3209 **Instrument for Experiment on Slope (angle adjustable)**



It's an instrument to experiment uniformly accelerated motion. It is possible to adjust angles and has a firm stand. A rail is installed on the slope, making it possible to experiment with steady environment and without error.  
 Spec : 1000x150x25mm, angle adjustment, one pulley, one cart, 5 pieces with 20g weight, 5 pieces with 10g weight  
 Usage : for middle and high school students

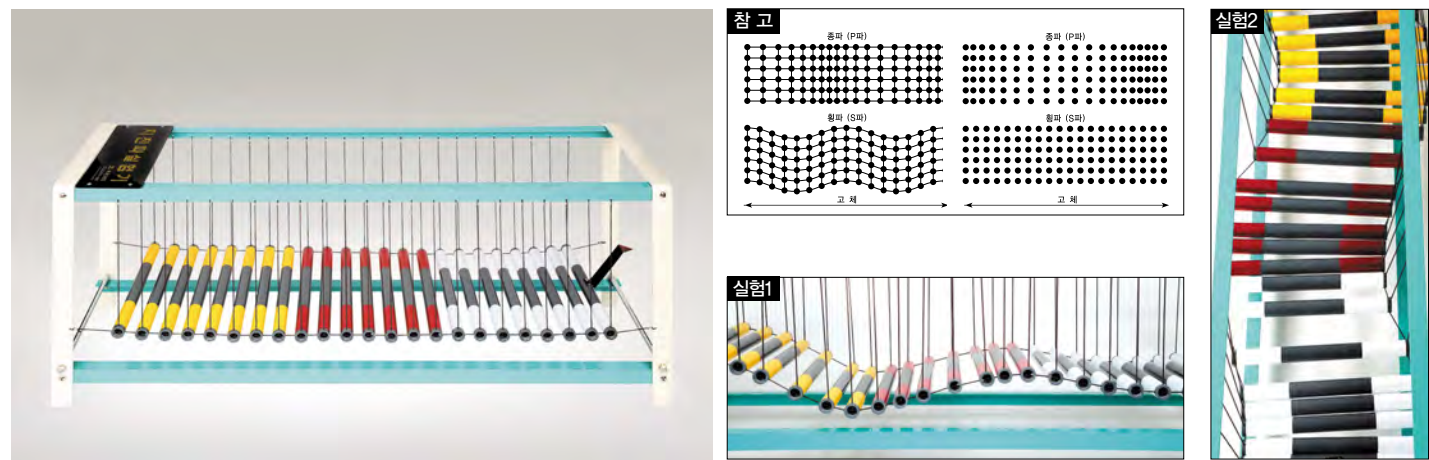
MRS 3861 **Air Track (Simplified no-friction) Utility and design patent pending**



It's an instrument to show how spring oscillator works on an air track with almost no friction and designed to give a help learning simple oscillation (vibration) in the physics. It effectively shows conversion between kinetic energy and potential energy.  
 Spec : 300x150x200mm  
 Usage : for middle and high school students

※ It's possible to use air pump for providing air (for further information, please refer to user's manual)

MRS 6635 **Seismic Wave Generator**

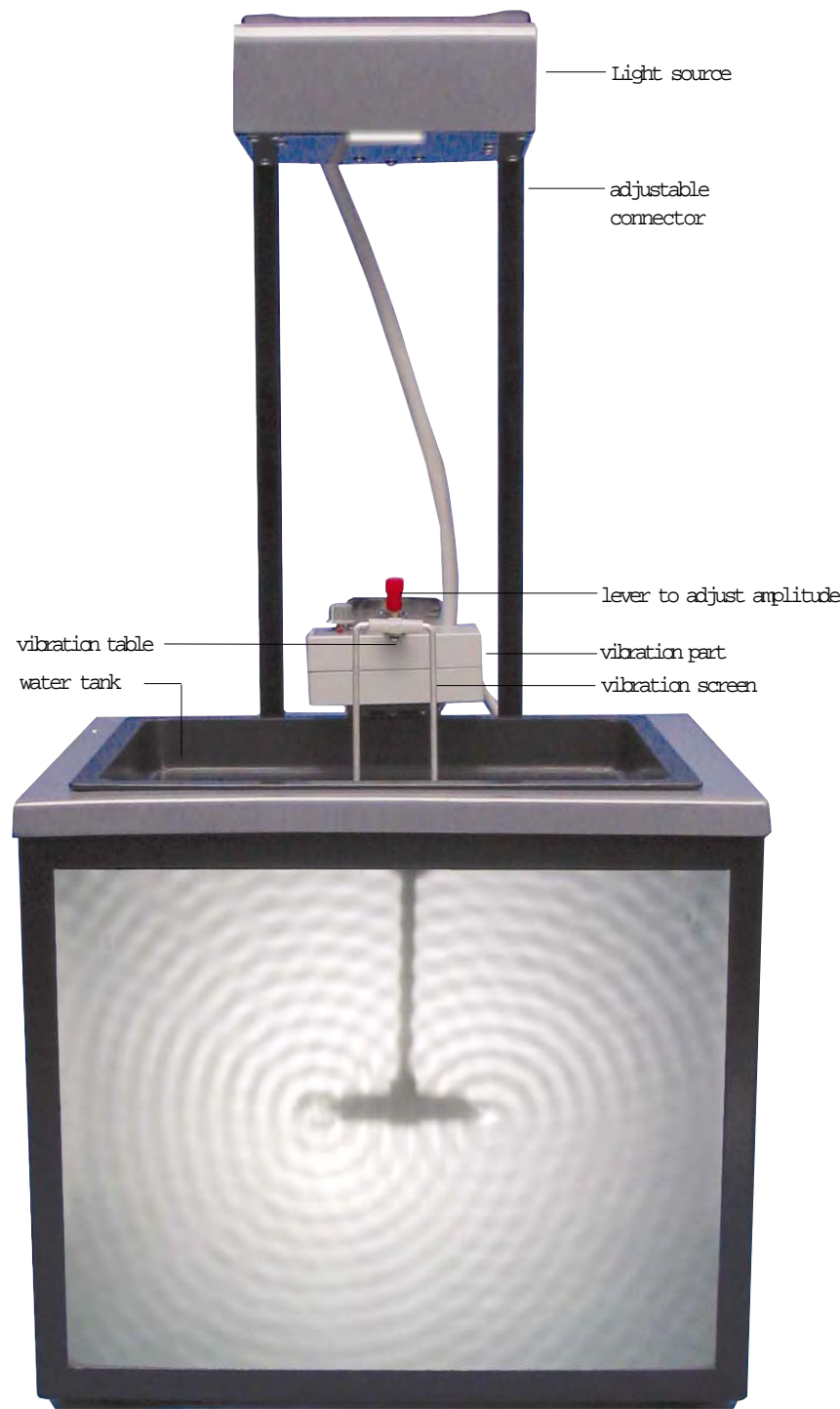


It's an instrument to observe speeds of the seismic wave (longitudinal wave, transverse wave) and have a look at how the waves go by generating transverse wave and longitudinal wave separately. It's an excellent tool to demonstrate what longitudinal wave and transverse wave are with intuitive ways.  
 Function: It's possible to observe propagations of P, S and L in the seismic wave. It demonstrates how media propagate when vibrations are applied to them. The media with same characters move together and reflection happens after that. Observe each component of the seismic wave by observing indicator in this process.  
 Spec : 1,000x300x400mm / oscillator : 23 pieces with ø21x300mm  
 Usage : for elementary, middle and high school students



MRS 1118

**Water Wave Projector (synchronized)**



※ Light source with adjustable height



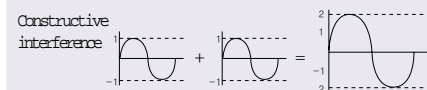
The instrument demonstrates shapes of waves by exploiting types, spread, reflection, insert and refraction of water wave or of synchronized wave on the screen based on frequencies. Compared to other products, it is easy to handle and store and gives various experiments using light source with adjustable height.

Spec : 350x300x450mm, weight: 10.5kg  
Power : AC220V, halogen lamp with 12V100W  
Usage : middle and high school students  
Utility and design patents pending

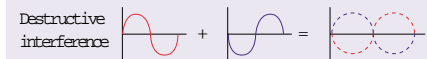
**Example 1**

**Interference with two circular waves**

Constructive interference: Amplitudes of two waves become larger when synchronized waves are overlap.  
Destructive interference: Amplitudes of two waves become zero for the peak of one wave to compensate the bottom of the other because when the peak of a wave meets the bottom of the other.



A new wave with twice amplitude is made when two waves with the same phase overlap.



Two waves set off when they have opposite phases.

**Example 2**

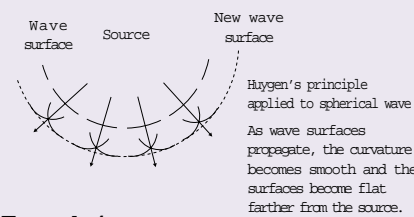
**Propagation of wave (velocity)**

Let's check that particles in a medium just vibrate, not propagate with a wave. If it is possible to have numbers of peaks (frequency) and distances of them (wavelength), we can calculate horizontal distance for a certain peak per second.  
Velocity of a wave (v) = frequency (f) x wavelength (λ)

**Example 3**

**Wave diffraction - Huygen's principle**

When a wave passes through a slit, the wave propagates with the shape of arc and becomes a source of wavelets.



**Example 4**

**Wave propagation**

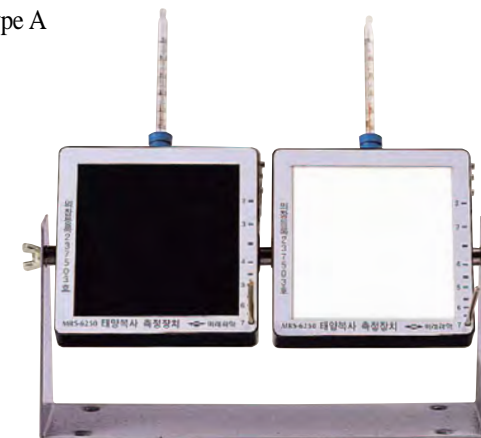
Check that particles in a medium just vibrate, not propagate with a wave. It means that wave propagates through materials and the materials are called media.

MRS 6250

**Instrument for Measuring Solar Radiation Energy**

Utility and design patents pending

Type A



It's an instrument measuring energy from the Sun (radiation) and measures temperature change by radiating sunlight after pouring water in copper case (front). Check temperature change by adjusting angles of sunlight.

**Type A**

Spec : Install 2 copper cases for experiment in different angles. 2 copper cases with 50x50x10mm, 2 thermometers, shadow grids (170x70x100mm)

**Type B**

Spec : Black-colored copper case 10x10cm, Styrofoam frame, adjusting sunlight angle  
Usage : for middle and high school students

MRS 3698

**Instrument for Gas Convection**

Utility and design patents pending



It consists of metal case with glass front and 2 chimneys and candles to observe gas convection. Observe that gas comes inside through one column, moves inside the case and goes out of the other column.

(for further information, refer to user's manual)

Usage : for elementary and middle school students

MRS 6627

**Instrument for Demonstrating Movements of the Sun and the Moon**

Utility and design patents pending



It consists of three plates for benchmark, the Sun and the Moon and shows that it shows sunrise when the Sun moves from the black to the yellow part of the benchmark and shows sunset when moving the opposite direction.

When someone softly pushes the Sun plate, sets the Moon plate 15° and spins the Sun plate clockwise, the Moon goes below the horizontal line. When the Moon rises from the east, the Sun goes below the horizontal line in the west. He or she comes to know that the Moon becomes full when fixing the axis of the Moon.

When setting the Solar plate 3° and spinning the plate, a person sees that November appears low part in the west as the Sun goes below the horizontal line. By using the same way, it is possible to explain all the shapes of the Moon including waxing moon with 7 or 8° and waning moon with 22 or 23° Each gauge indicates 44' and check position of the Moon by adjusting letters or belt on the Moon plate.

Spec : 450x100x450mm

Usage : for elementary, middle and high school students



MRS 3259

Slide Resistance

Type A

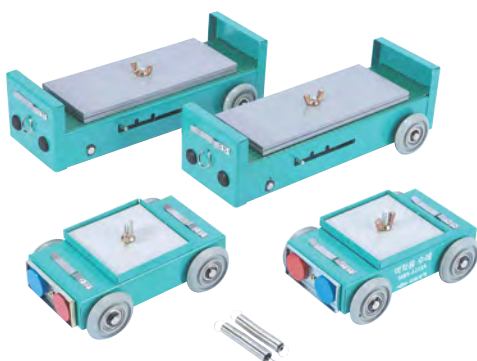


It's an instrument to adjust current and voltage on a circuit by continuously changing resistance on nichrome wire and gives good education effect for not having external cover.

Spec :  
Open-type : 0~50Ω, measuring fine resistance  
Close-type : 0~50Ω 6A / 0~15Ω 6A  
Usage : for middle and high school students

MRS 3213

Cart for Mechanical Experiment



It's an instrument for experimenting uniform motion, acceleration, mass change by acceleration, conservation of momentum and inertia from springs. It consists of 2 cars with same mass of weights.

Type A : 80x150x45mm, 2 steel frames, weights, magnets, springs  
Type B : 90x90x300, about 1kg of cart, 2 pieces of weight with 500g  
Usage : for middle and high school students

MRS 6628

Instrument for Measuring Altitude of the Sun (slit)



The instrument is designed to light a protractor through slit and manufactured to improve a way through barrel. When there is a light on the slit, the light goes to the protractor and the instrument is good for many students watching the degree at the same time.

Spec : 410x140x300mm  
Usage : for elementary students

MRS 1979

Instrument for Demonstrating how Earthquake Happens



A visual aid observing how earthquake happens

It's a manually-driven instrument to show how earthquake happens by spinning a lever on the rear part of the instrument to move seabed and to show that a building is moving.

A. It vividly demonstrates by using special equipment between a continent and seabed  
B. It's a large-scale instrument for many students in laboratory or class  
Material : Urethane case, wood  
Operation : manual (handle on the rear)  
Dimension : 600x150x400mm

MRS 1101

Kit for Showing Molecular Structure (Type A)



The kit is made from plastic molecular structures and chemical compounds and has clear colors to firmly make structures.

Spec : 409 kinds, 350x150x160mm  
Usage : for middle and high school students

Atom	Color	Bonding Angle	EA	Connector
Carbon	Black	109°	50	Ø4x25mm-40
Carbon	Black	90/120°	50	Ø4x40mm-100
Hydrogen	White	-	50	Ø4x50mm-75
Oxygen	Red	105°	50	Ø4x120mm-10
Nitrogen	Blue	109°	50	Ø4x60mm-10
Sulphur	Yellow	90°	50	
Chloride	Green	-	50	
Chloride	Green	90°	50	
Sodium	Silver-gray	90°	50	
Total			174	235

MRS 1428

Kit for Molecular Structure



Atom	Color	Bonding Angle	Hole	EA	Connector
Carbon	Black	109	4	30	50mm-20
Carbon	Black	120	5	30	35mm-110
Hydrogen	White	-	1	40	
Oxygen	Blue	105	2	2	
Nitrogen	Thick Blue	109	4	2	
Sulphur	Yellow	90	2		
Chloride	Green	-	1	2	
Chloride	Green	90	6	13	
Sodium	Silver-gray	90	6	14	
Total				134	130

It's possible to make structures of organic or inorganic molecules in human blood and others including diamond, sodium or chloride.

FEATURE

1. The kit composed of colored rubber balls and coil springs has strong endurance and is easy to make structures.
  2. It is scientifically designed and shows exact angles and types of binding length or types.
- Spec : 134 balls with 7 types, 130 connectors with 2 types  
Dimension : 264 types, 350x230x50mm  
Usage : for middle and high school students

MRS 2945

Kit for Atomic and Molecular Structures



Carbon	Black	10
Oxygen	Red	6
Nitrogen	Blue	1
Halogen	Green	6
D2sp3	Gray	4
Short	White	12
Long (bend)	Gray	12

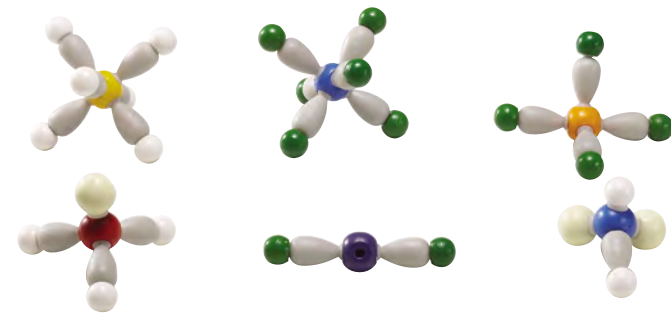
The kit is for making models forming frames or spaces in organic or inorganic chemistries.

Spec : 12 types, 117 types, 350x230x50mm  
Usage : for middle and high school students



MRS 2946

Molecules orbital structure model set



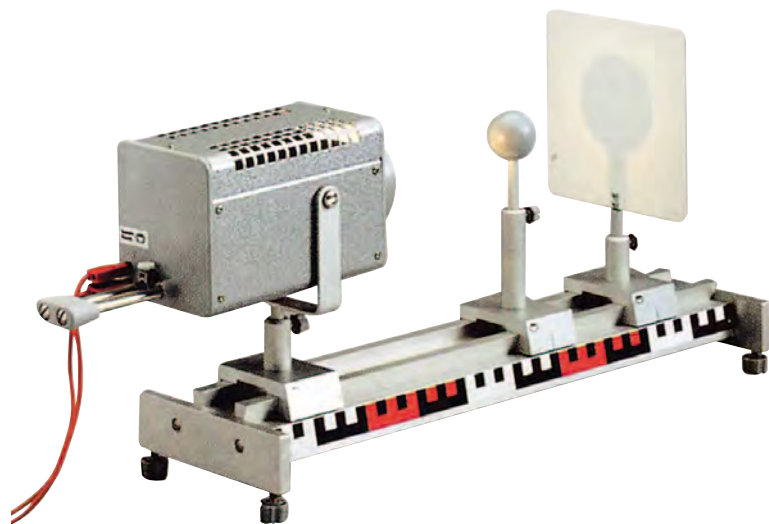
Coordinate number	Form	molecular formula	compound
1	Liner form	HCl	hydrogen chloride
2	Liner form	BeCl	beryllium chloride
	Curve form	H <sub>2</sub> O	Water
3	Pyramid form	NH <sub>3</sub>	ammonia
	Plate triangle	BH <sub>3</sub>	boron hydride
4	regular tetrahedron	CH <sub>4</sub>	methane
5	triangular pyramid	PCl	Phosphorus chloride
6	octahedrons,	SF <sub>6</sub>	Hexafluoride sulfur

This Kit contains such as above picture it can make 8 Molecular models. Molecules shape in a picture show 1 – 6 coordinate number and various bounding.

Usage : for middle and high school students

MRS 3605

Instrument for Light and Shadow (for teachers)



It's an instrument to measure shadow using direction and distance from light source to observe size, brightness and direction of the shadow.

Spec: 600mm length, 300x300mm screen, halogen lamp, AC220V

Usage: for elementary and middle school students

MRS 6240

Instrument for Experimenting Heat Insulation



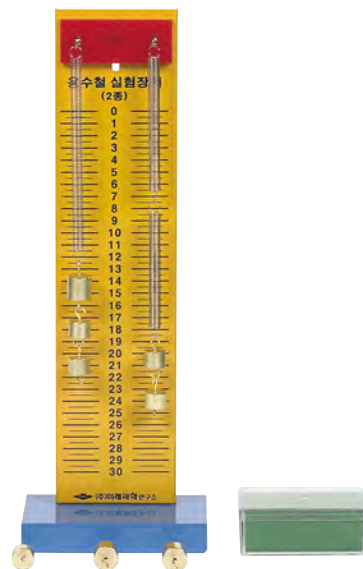
It's an instrument to demonstrate how crowd (fog) is generated by condensing vapour from adiabatic expansion and makes students understood relations between adiabatic change and relative humidity.

Type A : Air pump for compression and exhaust, one gauge, one thermometer, rubber lid

Type B : Thermometer 0~50°C  
Usage : for middle and high school students

MRS 3858

Spring Experiment



It's an instrument to test properties of springs with different diameter.

Component : 5 pieces of weight with 30g, 50g x 3, 2 types of springs

Usage : for elementary school students

MRS 1123

Kit for Observing Magnetic Force Line in 3D (4 types)



2 pieces of observing magnetic force line on flat surface (155x90x10mm)

Shake the case well to mix iron powder and observe lines using bar and horseshoe magnets.

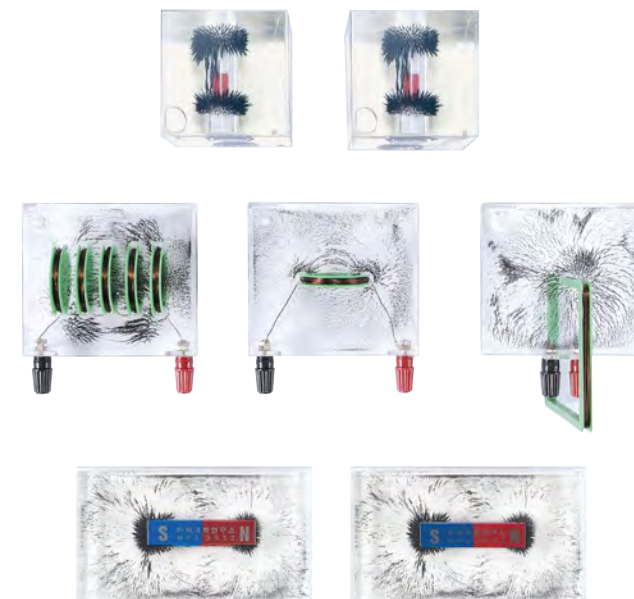
2 pieces of observing magnetic force line in 3D (75x75x75mm)

It's an instrument to demonstrate the lines in 3D by putting magnet in the center of the lines

Component: 2 column magnets, 2 bar magnets, case  
Usage: for elementary and middle school students

MRS 1125

Kit for Observing Magnetic Force Line (Integrated)



2 pieces of observing magnetic force line on flat surface (155x90x10mm)

Shake the case well to mix iron powder and observe lines using bar and horseshoe magnets.

2 pieces of observing magnetic force line in 3D (75x75x75mm)

It's an instrument to demonstrate the lines in 3D by putting magnet in the center of the lines

3 pieces of observing magnetic field (97x97x30mm)

It's an instrument to observe magnetic field around solenoid by applying electric current on it and the field appears with the same type of bar magnet (OHP available for its transparent case)

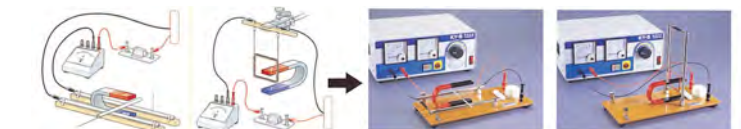
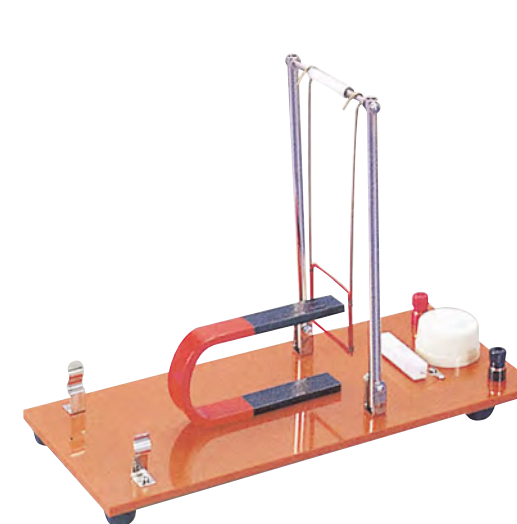
(1 and 5 pieces of circular coil, solenoid (rectangular), magnetic field)

Component: 2 column magnets, 2 bar magnets, 2 horseshoe magnets, 1 lead, case

Usage: for elementary and middle school students

MRS 1928

Kit for Electromagnetic Forces (Fleming's Principle)



① A bar on two parallel columns moves along the direction of the force after applying magnetic field to the bar

② A swing-type coil attached to 2 columns tilts along the direction of force.

1. It's possible to experiment forces from electric circuit or magnetic field in horizontal and vertical directions
2. It's possible to check the direction of induced force by swinging coil after connecting electrometer to the terminal (right hand principle of Fleming)

Spec

Dimension : 300x130mm Power : DC4~6V

Terminal : 2 (for input and electrometer). Buttons and fixed resistances are included in the circuit

Column : converter between horizontal and vertical directions

Accessory : horseshoe magnet (movable), thin rod, swing-type coil

Usage : for middle and high school students



MRS 6520

**Instrument for Measuring Altitude and Azimuth Angle**

Utility and design patents pending



It's an instrument to measure altitude and azimuth (location) of the Sun, the Moon and stars. Observe meridian altitude by the location of the Sun and each season.

Type A : 160 x 240mm, made for desktop, bendable nest, equipped with compass, horizontal gauge

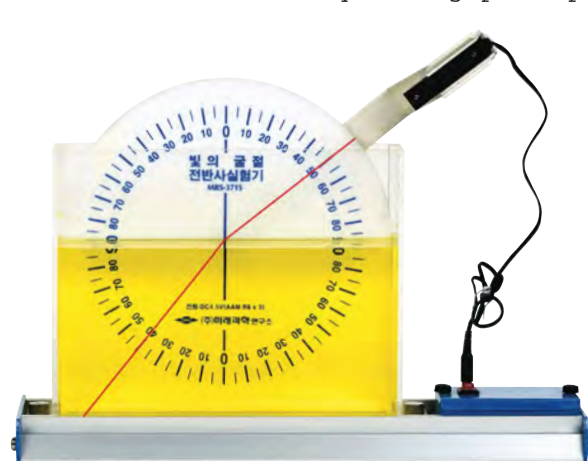
Type B : 100x240, made for desktop, equipped with compass

Usage : for elementary, middle and high school students

MRS 3715

**Instrument for Measuring Refraction and Total Reflection of Light**

Utility and design patents pending



It's an instrument to measure refracted angle of light in water by changing incidence angle when the LASER light (option: line marker lens) goes through a protractor on the plastic water tank (rectangle). Also, it is possible to observe total reflection by putting a fish form and looking it up.

Spec : Water tank (transparent plastic, 250x200x50mm), circular protractor, semiconductor LASER (AC), one oil-based pen, DC 6V

Usage : for elementary, middle and high school students

MRS 1134

**Instrument for Measuring the Sun**



It's an instrument to directly measure harmful rays including UV and infrared and certified by DIN (Federal German Standard).

It's danger to observe the Sun through colored paper or plastic.

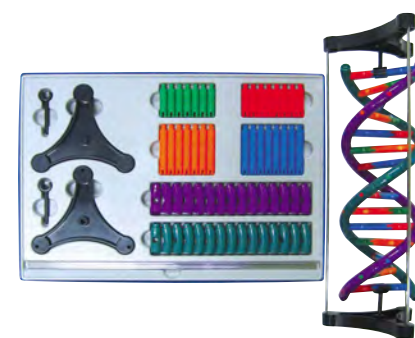
Spec : DIN No. 13, 100x45x3.8mm, made in Germany, wood box

Usage : for elementary, middle and high school students

MRS 1305

**DNA Form**

**FEATURE**



1. It's an instrument for students to understand DNA, fundamental of biology, by making DNA structure.
  2. It's made of plastic and without wreckage (semi-permanent)
  3. It's easy to assemble and disassemble and used for decoration after being assembled
  4. It properly distinguishes colors and expressions with 6 colors
  5. It is possible for students to study further by purchasing more forms to connect longer
  6. It's provided with a large-size picture (DNA, RNA, protein)
- Spec : 125x125x350mm Material : Plastic (ABS), Stainless rod  
Usage : Instrument for biology

MRS 3239

**Instrument for Static High Voltage**

Type A

Type B

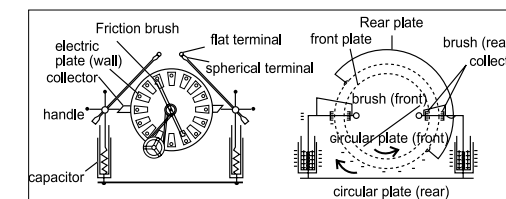


It's an instrument to generate electricity by spinning 2 acrylic plates with 300mm diameter each in opposite direction. The generated electrons are stored in the Leyden jar and discharged by short ball.

Spec : 300x400x230mm, more than 600mm of discharge length

Accessory : 2 generator plates, friction brush, U-shaped collector, capacitor for discharge, rotator

Usage : for middle and high school students



MRS 3238

**Van de Graaff**

Type A

Type B



It's an instrument to charge electricity in a large ball on top through friction on rubber belt inside the acrylic plate with vibration. The stored electricity is discharged when the earth and a small ball approach.

Spec : AC 220V, 278x580x200mm

Usage : for middle and high school students

**A. Experiment of Spark Discharge**

- 1) Connect a small ball to electrostatic generator
- 2) Operate the generator
- 3) Observe spark discharge generated between the balls by adjusting distance of the small ball
- 4) Turn off the power switch and ground the small ball by touching the ball on the electrostatic generator

**Warning**

- 1) Ground the generator after experiment
- 2) Operate the generator with power switch while turning the operation switch on
- 3) Make electrons on the ball of the electrostatic generator discharged by putting the small ball on it when a person puts his or her hand on the ball of the generator
- 4) Take care not to touch hand on the ball of the generator while working it
- 5) Operate desiccation for a long time in a humid day
- 6) Don't do experiment around appliances including radio, computer, audio, mobile phone or fixed line phones

**B. Experiment of Aspiration and Kickback**

- 1) Turn on the power switch
- 2) Drop small pieces of paper around the ball on the electrostatic generator
- 3) Observe the phenomenon

**C. Experiment of Electrification on Human Body**

- 1) A student with thin hair stands on the insulation plate
- 2) Turn on the switch of electrostatic generator
- 3) Observe hair by coming hand closer to the ball on the generator

**D. Experiment of Line of Electric Force**

- 1) Cut silk thread and attach to the ball with cellophane tape
- 2) Operate the electrostatic generator and observe phenomenon



SPE102

### V-styled Electrolysis Apparatus



This is experimentation equipment to observe feature and quantity of gas qualitatively and quantitatively by electrolysis of water or aqueous water of mixture.

#### FEATURE

- It is designed that ratio of hydrogen and oxygen is 2:1 at water electrolysis.
- You can experiment movement of electron and oxidation and reduction.
- It is economical if it is broken by careless, you can change only the part that have problem since it is designed to assemble.
- It is easy to change electrode depends on experiment type.

#### Component and Size

- Component: Power device (1 Output DC 6-12V), electrode (6 Øx50mm), 2 carbon electrode, 2 platinum electrode, 2 copper electrode, 1 thermometer (50°C)
- Size: 150 x 170 x 400mm (L x W x H)

SPE103

### The Law Of Boyle Experiment Equipment



You can experiment simply since it is designed by setting mass of poise and calculating area where get force (pressure) to explain quantitatively Law of Boyle that is "constant amount of gas is in inverse proportion to pressure on constant temperature."

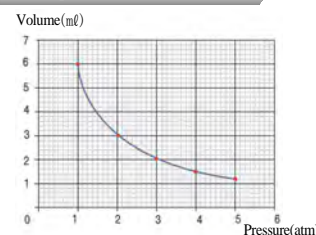
#### Component and Size

- Component: Body, 3 Poises
- Size: 150 x 110 x 190 mm (L x W x H)

#### FEATURE

You can experiment simply since weight of poise is produced by knowing area where get force (pressure).

#### Experiment data

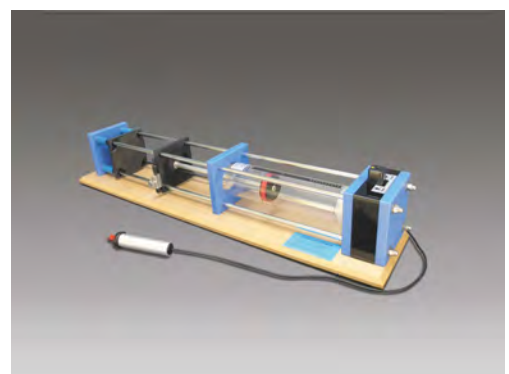


Reference)

- width of bottom of cylinder: 0.7883
- Poise: 0.78kg (tolerance of poise 70g)
- If there is problem to move piston since oil

SPE104

### Experiment Equipment On The Law Of Gaseous Reaction



This is experimentation equipment to generate 2 water molecules (vapor) as 2:1 ratio of hydrogen gas and oxygen gas by discharging with piezoelectric exploder on mixed status by putting certain amount of hydrogen gas and oxygen gas into equipment. It is efficient to experiment The Law Of Gaseous Reaction ( $2H_2 + O_2 = 2H_2O$ )

#### Component and Size

- Component: 1 Body
- Size: 130 x 680 x 110 mm (L x W x H)

#### FEATURE

- You can experiment the law of definite proportions.
- You can observe generated water by bonding of 2 gases with naked eyes since you can repeat experimentation several times.
- You can experiment cloud generation by adiabatic expansion with generated water inside equipment.

SPE107

### Gas Generator (KIP Equipment)



kinds of experimentation with gathering various gases safely, conveniently and quantitatively with water substitution.

#### Component and Size

- Component: 1 Body
- Size: 130 x 680 x 110 mm (L x W x H)

#### FEATURE

- You can gather pure gas from generated gas with water substitution part.
- There is no smell on experimentation and there is no risk of explosion even though combustion experimentation on generated gas.
- You can gather generating gas quantitatively.
- It is economic that you can use aqueous solution (hydrochloric acid, sulphuric acid) inside container several times until it loses efficacy.

SPE105

### Photosynthesis Experiment Equipment



This is experimentation equipment that is developed to observe photosynthesis of green plant (i.e. land plant, aquatic plant) or respiration of small animal and amount of respiration of sprouting seed qualitatively and quantitatively.

#### Component and Size

- Component: Body, Upper body
- Size: 135 x 220 x 460 mm (L x W x H)

#### FEATURE

- You can experiment photosynthesis of aquatic plant and land plant in parallel.
- You can control increasing temperature of inside experimentation equipment by heat of room light.
- You can observe amount of gas ( $O_2$ ) through transparent capillary quantitatively.
- You can observe generated gas ( $O_2$ ) by combusting experiment qualitatively.
- You can apply to respiration of small animal (i.e. frog, etc) and sprouting experimentation of seed.

SPE116

### Flame Reaction Experiment Equipment



Flame reaction is that it shows flame color depends on kinds of element when special metal element and compound including the element is put into high temperature flame. This experimentation equipment is designed to apply to know kind of element by observing flame color with combusting vapor that generated through ultrasonic vibration on liquid sample container including element with torch.

#### Component and Size

- Component: Aluminum container box, 5 liquid sample containers, body, small torch, 5 liquid samples ( $BaCl_2$ ,  $NaCl$ ,  $KCl$ ,  $SrCl_2$ ,  $CuCl_2$ )
- Size: 410 x 140 x 200mm (L x W x H)
- Weight: 2.7kg

#### FEATURE

- We observed flame reaction of metal with combusting solid sample on existing flame reaction experimentation, but we couldn't observe in details since combustion time was very short. This flame experimentation equipment allows anybody to observe flame reaction of metal easily to extend combustion time with combustion method that changed liquid sample to gas not with method of combustion of existing solid sample. Also it allows experimenting easily by putting solution of  $BaCl_2$ ,  $NaCl$ ,  $KCl$ ,  $SrCl_2$ ,  $CuCl_2$  into each container.
- You don't need to prepare extra stuffs for experimentation since experimentation preparation is integrated.
- You can observe flame color of element in details with extending combustion time.
- You can separate and assemble body of experimentation equipment and liquid sample container easily on experimentation.



SPE117

## Expansion of Ion Experiment Equipment



How work this equipment is that LED lamp is lighted by current of 2 electrodes after distilled water is changed to electrolyte solution by ion. Since ion speed meter is lighted on as soon as ion moves you can see movement of ion easily. Also you can measure movement speed of ion. You can measure movement speed of ion that melted in distilled water and in particular, you can see movement of ion dynamically since sediment through net ion sediment generating reaction is formed as thin band on sediment generating reaction unlike reaction inside test tube.

### Component and Size

- Component: Expansion of Ion Experiment Equipment, power equipment.
- Size: 400 x 90 x 80 mm (L x W x H)

SPE115

## Electric Conductivity Apparatus



This equipment is for separating electrolyte and non-electrolyte solution. You can recognize easily according to light count of LED bar and apply to experimentation simply.

### Component and Size

- Component: Electric Conductivity Apparatus
- Size: 150x170x400mm (LxWxH)
- Power: 12V battery

### FEATURE

- You can know difference of electric conductivity of experimentation solution by light count of LED bar.
- It is minimized error by using platinum-plate on measurement part.

SPE111

## Micro Stirrer



### Component and Size

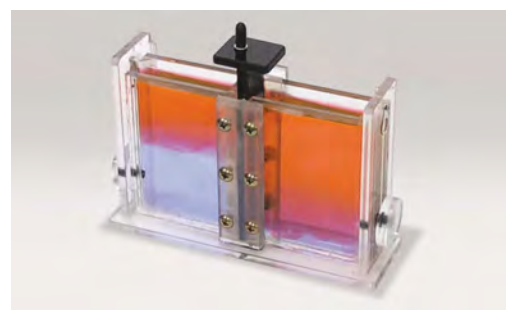
- Component: mini stirrer, stirring bottle, stirring magnet
- Size: 67x67x27mm (LxWxH)
- Weight: 104g • Power: 1.5 AAMx2ea

### FEATURE

- You can observe experimentation that can miss to see by slow stirring with speed control.
- You can individual and team experiment because it is small and light.
- It is possible to use for long time because of little power consumption.
- It uses neo lithium magnet that has strong magnetic force.

SPE123

## Convection Complex Experiment Equipment



- You can experiment density and convection with this equipment and observe generating frontal surface and front with using 2 kinds of water that density is changed by difference of temperature.
- You can observe movement of smoke with removing and adhering black background on convective experimentation by incense.
- You can observe convective phenomenon in detail since you can make holes upside and bottom side and open and close with double partition.

### Component and Size

- Component:
- Size: 145x46x120mm (LxWxH)

SPE120

## Multi Electrolysis Kit



- (1) Micro electrolysis KIT
- (2) Fuel cell KIT
- (3) 9V battery and snap
- (4) Rocket launching pad
- (5) Melody KIT

This electrolysis way is more simple and safe than existing equipment and it is effective to understand process and theory of electrolysis. Gas gathering time is short and you can gather generating gas quantitatively and apply the gas to combustion experimentation and other experimentation. Also if you set carbon stick kit on this equipment and electrolyze, generated hydrogen and oxygen become fuel cell. Experimentation item: electrolysis of water. Electrolysis of copper aqueous water, movement and oxidation and reduction of electron, hydrogen fuel cell, water synthesis (hydrogen rocket)

### Component and Size

- Component: Micro electrolysis KIT, Fuel cell KIT, Rocket launching pad, Melody KIT, 9V battery and snap, 3 chemicals, 2 syringes
- \* Size: 340x200x85mm (LxWxH)

SPE113

## Observation Apparatus for Heat Conduction



You can observe difference of thermal conductivity of each metal through color change of liquid crystal temperature film with heating on 5 kinds of metal (iron, brass, zinc, aluminum and copper) that we can see often around.

### Component and Size

- Component: mini stand, Observation Apparatus for Heat Conduction, 250ml beaker (optional)
- Size: 130x85x300mm (LxWxH)

### FEATURE

- You can observe result quantitatively with same experimentation condition on iron, brass, zinc, aluminum and copper.
- It is convenient and safe since there is no need equipment such as alcohol lamp because of heating metal with warm water (over about 30!) in 250ml beaker.
- You can experiment simply and safely with using liquid crystal temperature film.

SPE118

## Expansion of Gas Experiment Equipment



Expansion of gas is spreading process to charge space that has same partial pressure by moving a gas to another gas status. This experimentation equipment is for measuring speed of expansion of gas qualitatively and quantitatively.

### Component and Size

- Component: Expansion of Gas Experiment Equipment, 2 1ml syringes, 2 reagents (HCl, NH<sub>4</sub>OH)
- Size: 380 x 100 x 90 mm (L x W x H)

### FEATURE

- You can experiment without cotton simply and safely unlike existing experimentation.
- You can expect visual effect since it shows process of expansion of gas.
- You can prevent safety concerns on experimentation since test tube is plastic (P.S)
- It is easy to observe that back ground color of test tube is black.
- You can expect quantitative experimentation result since you can control horizontal (installing level).
- You can observe experimentation result in short time.



SPE112

## The Composition of Light Apparatus



This is experiment equipment to know difference between three primary colors and three primary lights that generated Red, Blue and Green by luminescent diode.

### Component and Size

- Component: body, 9V battery, adapter (optional, 8,800won)
- Size: 67x67x63mm (LxWxH)

### FEATURE

- You can compose light easily with clicking red, blue and green button each.
- You can see clearer color with circle plastic globe.
- You can use 9V battery and 6V adapter.
- You can experiment anywhere since there is no need other equipment.

SPS134

## Standing Twister KIT



Standing Twister KIT that easy to assemble by students allows verifying that frequency (f) is in inverse proportion to wavelength( $\lambda$ ) when delivery speed of wavelength (v) on wire by measuring wavelength fluctuation of normal wave according to frequency of electromotor. It is very useful experimentation KIT at school since you can verify overall feature about normal wave without expensive big equipment.

### Component and Size

- Component: transparent round case, PET bottle lid, rubber clay, decoration material (eyes, ribbon), thin wire, electromotor, AAA battery, button switch, AAA battery holder (1), resistance, etc
- Preparation: glue gun, oily pen (optional)

SPE109

## Pot Park



his new concept pot, Pot Park, is interior and educational pot that has various functions to use for school, home, office and show window!

### Size

- Size: 110x100x130(LxWxH)

### FEATURE

Make hidden space beautiful with Pot Park!

This pot is functional pot to remove and attach easily on glass, tile or slick part with compressing function. You can remake hidden space to live space

Water culture is available in Pot Park, so it is enough to use for education.

Water culture that can observe root of onion, sweet potato and potato is possible and you can put flowers and little fish, so it is helpful for kid s education.

There are 5 kinds of Pot color and you can choose the color what you want when you buy.

SPS104

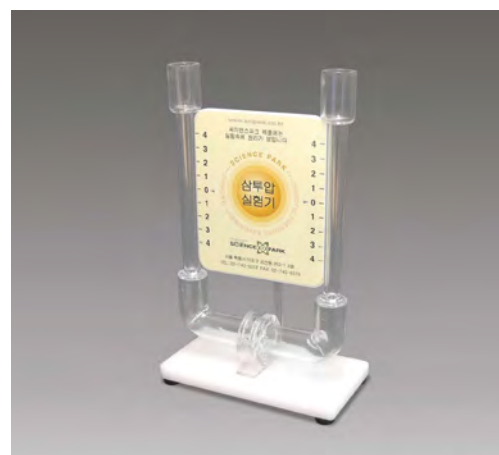
## Ion reaction KIT (For 2 people)



If you Ion reaction KIT, you can reduce amount of wastewater because of using small amount of indicator and you can see 4 major chemical reactions that happened inside aqueous solution by reacting with 1 drop of 24 kinds of indicator on ion reaction plate.

SPE114

## Osmotic Pressure Apparatus



This equipment is used phenomenon that solvent moves from thin concentration to thick concentration when 2 different concentration of solution are contacted with semipermeable membrane.

### Component and Size

- Component: Osmotic Pressure Apparatus, semipermeable membrane, 2 solutions, micro spuit
- Size: 100x55x170mm (LxWxH)

### FEATURE

- You don't need to prepare solution in addition since there is solution already.
- It is easy to inject solution and change semipermeable membrane.
- It was uncomfortable and doesn't work well on existing experimentation with eggshell or cellophane paper; on the other hand, this product allows experimenting

SPS102

## Detection of nutrient KIT (For 2 people)



This KIT is experimentation kit to detect each nutrient such as dextrose, dextrin, protein and fat that included in our food by basic nutrient detection method.

SPS103

## Making aspirin KIT (For 2 people)



You can experiment organic composition through synthesis of Aspirin that is organic compound. You can know esterification, hydrolysis, optical isomer, theory of suction flask in experimentation equipment and how to improve yield through experimentation.

SPS109

## Neutralization reaction experiment KIT (For 2 people)



You can learn how to find neutral point with using indicator through experimentation and examine usable indicator according to kind of acid and base. It allows accuracy experimentation by mixing solution in real time with mini stirrer.



SG-5124

**Two dimensional Motion Apparatus**



**FEATURE**

A unique recording system allows quantitative measurements in experiments covering topics such as Newton's laws, conversion from potential to kinetic energy, centripetal force, simple harmonic motion accelerated motion in two dimensions, oscillations, and collisions.

SG-D101

**Aero dynamic system**



**FEATURE**

This is use to pressure of difference as velocity of fluid. This called Bernouli effect. This Experiments apparatus make rapid for velocity of fluid by Air supply.

SG-6114

**Fleming's rule demonstrator**

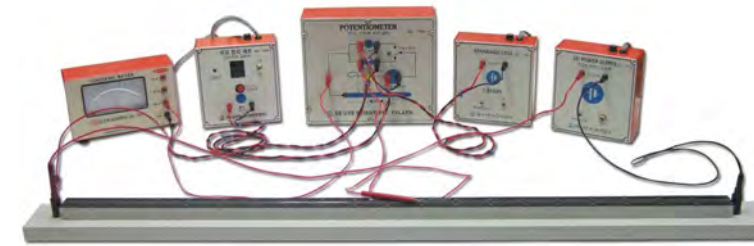


**FEATURE**

Fix strong magnet at stand. From force between one current and the other current, understand Fleming's law.

SG-7704

**Potentiometer system**



**FEATURE**

Using a standard cell, understand the property of potentiometer. To measure the effective voltage of unknown resistor. The standard cell and potentiometer are made up of a set.

SG-7800

**Coulomb's law**



**FEATURE**

Measurement of Coulomb's constant with Coulomb's law apparatus

SG-6211

**Glow discharge apparatus**



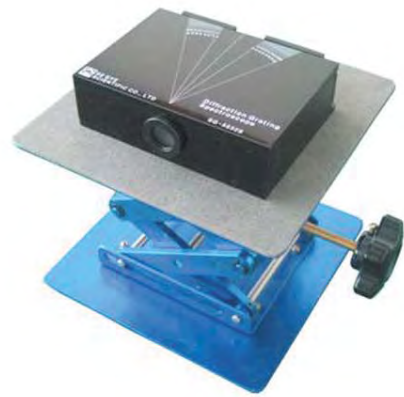
**FEATURE**

This is glow discharge apparatus. This is discharge experiment apparatus as degree of a Vacuum. This apparatus use high voltage.



SG-5532S

**Diffraction grating spectroscope**



**FEATURE**

Easy to measure wavelenght of line spectrum

SG-9111

**Ampere's law system**

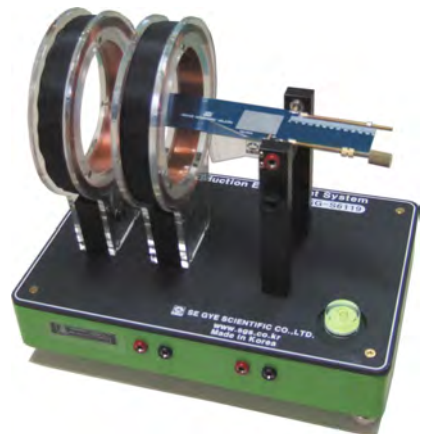


**FEATURE**

Measuring the magnetic field for a straight conductor, circular conductor loops and solenoid coil.

SG-S6119

**Segye magnetic induction (The current balance)**



**FEATURE**

A conducting wire to flow electric current receive a force in the magnetic field. Measure the force and you can get a magnetic field and magnetic induction B.

SG-9420

**Ripple tank**



**FEATURE**

The Ripple Tank creates wave patterns superior to any other apparatus commercially available. By incorporating new design features, the apparatus produces clear, stable wave patterns that vividly demonstrate wave mechanics principles.

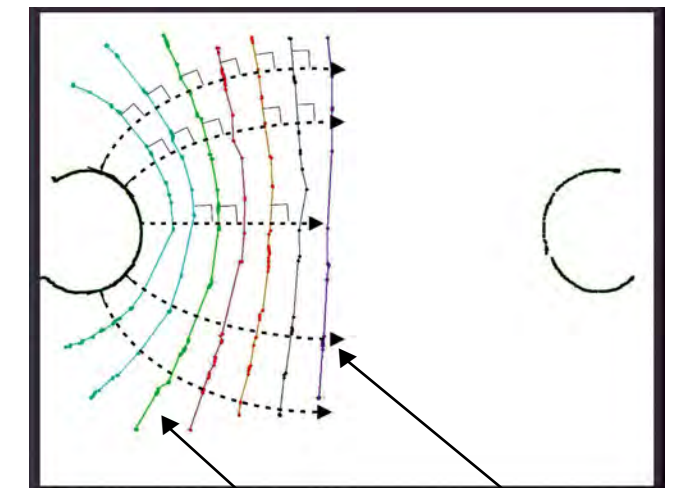
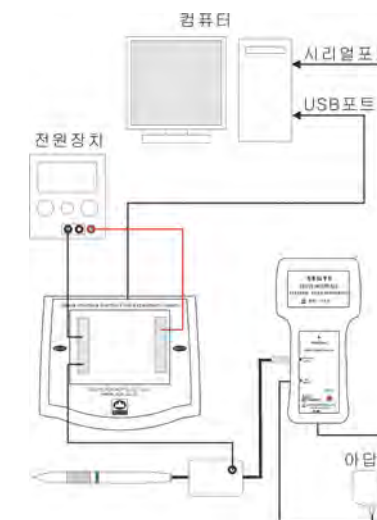
SG-IT2

**Segye interface electric field apparatus system**



**FEATURE**

Students can draw the equal electric field line and study electric field and equal line. Segye Interface Electric Field Apparatus System(SG-IT2)is able to make a various experiment with electrode material.



Equipotential line      Electric field



SG-IT3

Segye digital oscilloscope interface

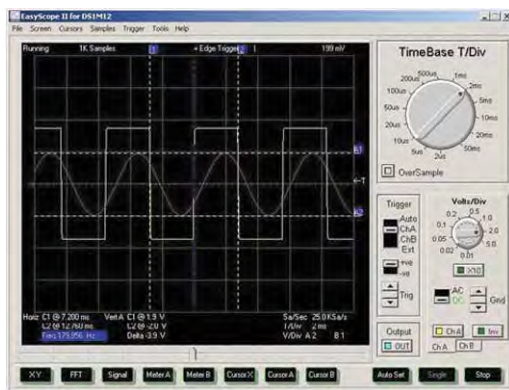


FEATURE

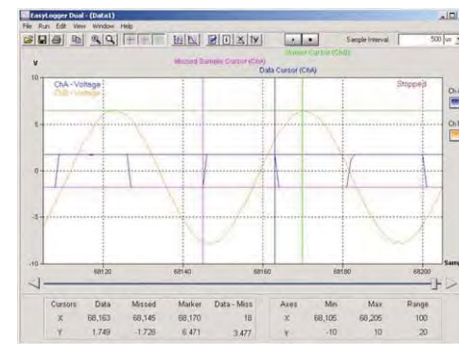
Segye Digital Oscilloscope read in voltage by computer. Input Voltage analyze by Program. Additional this is possible to measure current, temperature, intensity of illumination, magnetic field. Oscillation is possible 0 to 10V. This generate signal like a Function generator. To measure voltage is possible 2 Channel.

Function	Specification
Oscilloscope	20M S/s sampling rate Save the Data on screen by CSV data file and BMP image file.
Logger	100 ~ 100,000 samples / sec Save the Data by CSV file, Save the Data on screen by BMP image file.
Function Generator	Output Voltage 10V, Buffer 32Kb Sine, Square, Triangle, Sawtooth, Pulse, user defined
Interface	Temperature Sensor, Magnetic Sensor, Optical Sensor, Photogate Timer, Ammeter

● SG-IT3 Function



Oscilloscope



Logger

SG-M100A

Segye Moving Picture System (SMPS)



FEATURE

Segye moving picture system (SG-M100A) is an equipment that can make the image data with CCD camera and DVR and calculate the position and time with moving picture analysis software

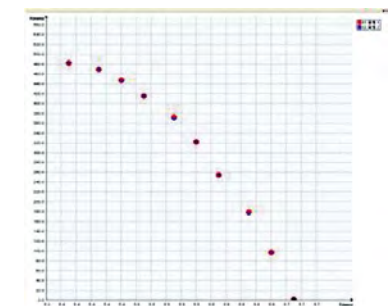
Digital Video Recorder (DVR)	CCD Camera	Software
Resolution : the maximum 704 * 480 Communication process : USB 2.0 Camera control unit Power : 220V	1/4" 410,000 picture elements high resolution CCD the minimum lux : 0.005Lux, DAY & NIGHT realization, motion detector Zoom of 30 magnifications Digital Zoom of 10 magnifications Outstanding compatibility: DVR direct connection Automatically wide area white balance Remote control : RS-485 remote control	OS : Windows XP Hardware - more than pentium4 3.0G, 1024Mb Six objects tracing at the same time objects tracing real time and picture storing scale calculation : for real size and size of moving picture Storage : moving picture and position data of objects coordinate calculation of objects per time

SG-M7136

Free-fall experiment apparatus

FEATURE

This Free-Fall experiment apparatus is used to Segye moving picture system.





SHSPC-F002

**Viscera (crusian carp)**



**FEATURE**

- This SHSPC-F002 provides information of internal organs such as the blood vessel, intestines, the air bladder, the urinary bladder. These organs are treated with the color injection for natural color, so it provides clear vision too. Besides, SHSPC-F002 provides the names, shapes and others of the internal organs because each organ is indicated by a name tag.

**SPECIFICATION**

- Standard : 15 × 32 × 4cm<sup>3</sup>

SHSPC-B001

**Viscera (Fowl)**



**FEATURE**

- This SHSPC-B001 provides information of internal organs. Its organs are treated with the color injection for natural color, so it provides clear vision too. For example, the artery, the vein are injected with the original color matters. Besides SHSPC-B001 provides the names, shapes and others of the internal organs because each organ is indicated a name tag.

**SPECIFICATION**

- Standard : 16 × 42 × 5cm<sup>3</sup>

SHSPC-M001

**Viscera (Squid)**



**FEATURE**

- This SHSPC-M001 provides information of internal organs. Its organs are treated with the color injection for natural color, so it provides clear vision too. For example, the artery, the vein and intestines are injected with the original color matters. Besides SHSPC-M001 provides the names, shapes and others of the internal organs because each organ is indicated a name tag.

**SPECIFICATION**

- Standard : 15 × 42 × 4cm<sup>3</sup>

SHSPC-M007

**Viscera (Clam)**



**FEATURE**

- This SHSPC-M007 provides information of internal organs. Its organs are treated with the color injection for natural color, so it provides clear vision too. For example, the blood vessel is injected with the original color matters. Besides SHSPC-M007 provides the names, shapes and others of the internal organs because each organ is indicated a name tag.

**SPECIFICATION**

- Standard : 15 × 42 × 4cm<sup>3</sup>

SHSPC-C003

**Dissection of Heart (Dog)**



**FEATURE**

- This SHSPC-C003 provides information of internal organs. Its organs are treated with the color injection for natural color, so it provides clear vision too. For example, the artery, the vein heart valves, both ventricles and atria are injected with the original color matters. Besides SHSPC-C003 provides the names, shapes(atria, ventricles, heart valves) and others of the internal organs because each organ is indicated a name tag.

**SPECIFICATION**

- Standard : 15 × 47 × 4cm<sup>3</sup>

SHSPC-S002

**Dissection of Kidney (Pig)**



**FEATURE**

- This SHSPC-S002 provides information of internal organs. Its organs are treated with the color injection for natural color, so it provides clear vision too. For example, the artery, the vein, the urinary vas are injected with the original color matters. Besides SHSPC-S002 provides the names, shapes(horizontal and vertical sections) and others of the internal organs because each organ is indicated a name tag.

**SPECIFICATION**

- Standard : 15 × 42 × 4cm<sup>3</sup>

### Anatomical Human Body Model

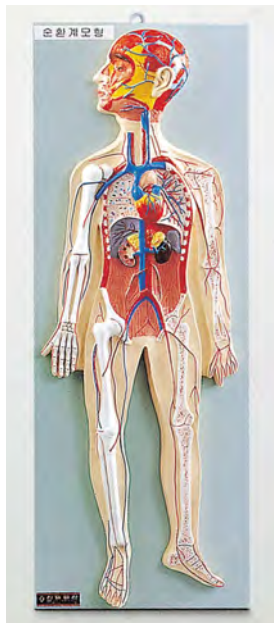


Shape linkage of Human Body organs

**SPECIFICATIONS**

- 145cm resin plastics
- Real sized whole body, muscle, chest, abdominal, head parts are sectional or prefabricated. Real size stand

### Circulation System Model



Solid model for the easy explanation of the blood circulation and the cardiac pulses of the human body

**SPECIFICATIONS**

- Resin plastics

### Human Skeleton Model



All part of whole body skeleton model  
Solid type model

**SPECIFICATIONS**

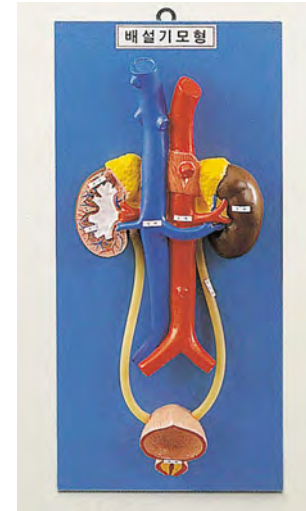
- Real size
- Resin plastics

### Nervous System Model



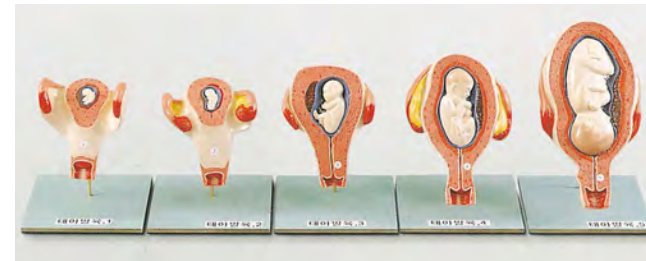
A network of nerves connects the brain and spinal cord to every part of the body this simplified diagram shows only the main nerves.

### Urinary System Model

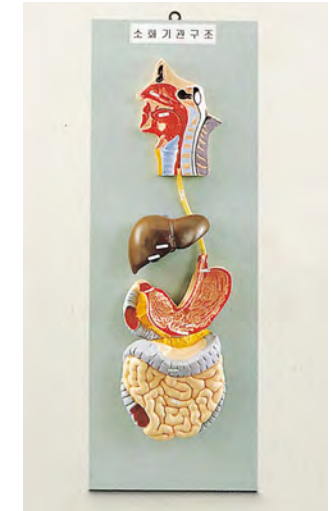


The urinary system, which includes the kidney, removes poisonous substances from the blood and eliminates excess water and salts. This keeps the concentration of the blood constant

### Embryo Growth Model



### Digestive System Model



For the understanding of how foods are absorbed and resolved in human body and its organic passage in the body  
Synthetic resin materials  
• 310 × 790 × 120mm Resin plastics

The Embryo growth model shapes, functions made as an education model

**SPECIFICATIONS**

- Resin plastics, Real size, 5 in 1 set, with stand

### Pelvis with Fetus



The Pelvis with fetus shapes, functions made as an education model

**SPECIFICATIONS**

- Resin plastics

### Eye Model



For the study of the structure and function of eye in human body

**SPECIFICATIONS**

- 70 × 170 × 240mm Synthetic resin materials, with stand



# 2

## *Audio & Video Educational System*

■ O M A X	68 ~ 69
■ O R I E N T A V C O . , L T D .	70 ~ 73
■ T O P E X Corporation	74 ~ 75

### Tablet Monitor MP-II (17")



OMAX tablet monitor is an innovative product with using a digital pen. Users can easily show their handwriting, drawing, signature, etc on the screen directly. The digital pen can completely replace the function of a mouse and a keyboard.

- Motivating e-learning for students
- Easy in making presentation
- Medical chart and imaging
- Digital signature
- Pressure level : 512

### Tablet Desk m-Pen Desk



m-Pen Desk is a integral item comprising a tablet monitor and other parts. User can draw, write anything on the monitor and record & edit it in the computer built in the desk, while making a presentation or speech.

- Multi-purpose amplifier(Max 50W)
- Goose neck condenser Microphone
- Amplifier and equalizer in one (2 channels, Low / High)
- AUS in/out : independent volume adjustment

### PDP type cyber computer board



- Space saving installation
- Excellent in brightness and color
- Cost saving equipment (No need to replace a lamp for projector or projection TV)

#### SPECIFICATION

Specification	ACB-5APH	ACB-6DPH	ACB-7BPH
Screen size	127cm	160cm	108.3cm
Resolution	1,366(H) x 768(V)	1,920(H) x 1,024(V)	
Brightness	1,100cd/m2		
Contrast	5,000 : 1	10,000 : 1	6,000 : 1
Viewing angle	170 degree		
Tablet type	Hand touch input available		
Responding speed	16ms		
Data transmitting type	USB		

### Projection TV style furnished with side white boards and storage



**Creating a real time content for education**  
Writing, drawing and highlighting a web page or teacher's works from the computer during class, which can be saved & replayed as education content  
(Providing e-learning service for students at home)  
**Protecting teachers form electromagnetic wave**  
The system minimize the electromagnetic exposal to teachers during class or presentation

#### SPECIFICATION

Specification	display	Screen size	Screen Pitch	Resolution	Tablet type	Viewing angle	Contrast
ACB-7100HLM	LCOS(LG)	0.99mm 180.3cm	(Micro Fine Pitch Screen)	IRTS1/OCIS-1 1280 X 1024	(Image reading by Camera)	160 degree	10,000 : 1
O/S	Video input	Backgrounds for blackboard	Real time recording	Mode shift	Image	document converting	eraser function
Win 2000 / XP	Analog RGB / RCA / RF	Various colors, English notebook,	recording a teacher's work and voice through this system	Mouse / Pen mode supporting	JPG, BMP etc	MS ppt / MS Word / MS Excel / HWP / PDF / Image files	Local eraser / General eraser

### Rear Projection style with an interior decoration



**Providing off-line education as well as online one at once**  
Providing not only the existing class environment using a blackboard but also the internet-based & screen to face environment using a huge computer display with touch input at the same time

**Supporting various class formats**  
enabling teacher to offer students various class formats such as TV Contents from Education Broad casting system, pictures, audio, and video from multi-media players, and import educational material from teacher's computer.

**User-based design**  
User friendly design so that beginners can write on the huge DLP projection display, save a lecture into a computer and convert a text into other format by making one click only

Model	ACB-100SH	
Rear projection cyber board	Product lineup	2540mm(100") Rear projection display + front finishing
	Screen ratio	16:9
	Screen size	2540mm(100")
	Touch Sensor	IRTS1 / OCIS-1
	Projection type	Rear projection & optical screen.
	Sensor type	Hand touch sensor
	Storage	Educational equipment and materials
Component parts	- Tablet S/W	
	- Side blackboard X 2ea	
	- Tablet desk	
	- Control P/C	
	- Audio system including wireless Mic. - system integration controller	



## NuriNET-NF System Master Side (NFA)

### Digital Multimedia Language Laboratory System(Computer network-based)



NuriNET-NFA Main Display

Developed for future-oriented ICT (Information & Communications Technology) education, NuriNET-NF System is a cutting-edge class operation solution available under the PC-networked environment using audio & video integrated controller where top technology is applied.

Consisting of hardware (Master controller) connected to and operating software installed in teacher computer, NuriNET-NFA offers teacher easy-to-use functions essential to deliver efficient language teaching and to make full use of all the multimedia resources and data even from Internet.

#### Functions

- Pair Study/Group Study
- Attendance Check
- Electronic Board
- Oral Test & CBT
- Intercom
- Visual & Audio Modeling
- Media Player with block repetition and bookmark
- Monitoring 12 student screens at a time
- Transferring teacher's screen, cassette tape and other media sources to whole class/group/individual student
- Messenger function
- Virtual Recorder (for recording & editing)

#### Main Components of Master's side

- Master computer 1 set
- NuriNET-NFA (controller & operating software) 1 set
- Master recorder (including recorder cover) 1ea
- Network equipment 1set
- Headset 1ea

## NuriNET-NF System Student Side(NFS)

### Digital Multimedia Language Laboratory System(Computer network-based)



NuriNET-NFS Media Controller & Main Display

NuriNET-NFS, as the program installed in student computer, provides effectively various functions necessary for multimedia class as well as language class and self-study in linkage with teacher class-controlling software.

#### Functions

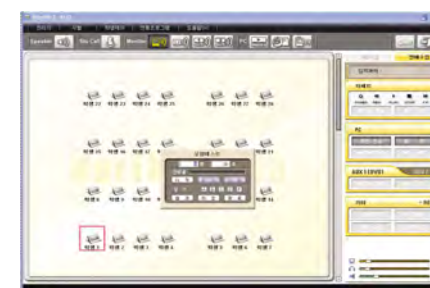
- Support of almost all types of video file formats
- Media player
- Web browser viewer with electronic board function
- Content compatibility that maximizes use of data
- Teacher calling & Help function
- Recording of sound of teaching material/teacher's & student voice
- Messenger function
- Sound volume control
- Convenient Testing (suitable for TOEIC and TOEFL)

#### Main Components of Student side

- Student computer
- NuriNET-NFS (media controller & operating software)
- Headset
- Audio/video cable & connector

## NuriNET-AOD System Master Side(AODA)

### Digital Multimedia Language Laboratory System(Digital Recorder network-based)



NuriNET-AODA Main Display

NuriNET-AOD System in the best language education solution which has never been developed before. As uniquely-designed FTP mode-supported as well as TCP/IP Network-based, this system allows all data from teacher computer to be processed by digital, which makes high quality AOD (Audio on Demand) function available.

AODA, consisting of a master control console and operating software installed in teacher computer, establishes the digital multimedia language teaching environment based MP3 technology and offers most of the functions available in computer-networked environment, which results in innovative and cost-efficient.

#### Functions

- AOD function and management; students can access to the database stored in teacher PC.
- Dialogue practice
- Testing and score management
- Language-learning-exclusive media player
- Student terminal lock/unlock
- Linked program register

#### Main Components of Master's side

- Master computer 1 set
- NuriNET-AODA (controller & operating software) 1 set
- Master recorder (including recorder cover) 1ea
- Network equipment 1 set
- Headset 1ea

## NuriNET-AOD System Student Side(AODS)

### Digital Multimedia Language Laboratory System(Digital Recorder network-based)



NuriNET-AODS Digital Recorder

By connecting to the teacher computer through TCP/IP network, AODS can store the digital file transferred from teacher computer and perform various language learning functions.

#### Functions

- Large voice storage capacity (up to 100minutes) for self-study; external USB port added
- AOD function
- Real-time dialogue with remote control by teacher
- Channel selection and listening
- Recording class content
- Continuous repetition and variable speed playback
- Availability of both digital and analog teaching aids
- Help function
- Others: Bookmark, Oral Test, Conversation-Slow play

#### Main Components of Student side

- NuriNET-AODS (digital recorder)
- Headset
- Cable & connector

#### Optional

When teacher intends to use visual material in his/her class: Student monitor, TV, DVD Combo, LCD Projector, etc.



ML-500 System  
Master Side

## Digital Multimedia Language Laboratory System



ML-500 Main Display

ML-500 System is the most typical multimedia language laboratory system and perfectly controlled by teacher computer where operating software, ML-500 is installed.

### FEATURES

- Simultaneous transmission available up to 4 different programs
- Seats arrangement displayed on master monitor and flexible rearrangement
- Remote controlled master & student recorders
- Help function with step-by-step instructions

### Functions

- All Call/Group Call
- Line Call(Adding Teacher's Voice)
- Monitoring Student's Practice and its Evaluation
- Intercom
- Model Voice
- Automatic Scanning Monitor
- Pair Study
- Tripartite Conference
- Free Talk
- Test, Evaluation & Result Print
- Bookmark(Quick Index Search)
- Group Assignment (up to 5)

### Main Components of Master's side

- Master computer 1 set
- ML-500(console & operating software) 1set
- Master recorder (including recorder cover) 1ea
- Headset 1ea

ML-500 System  
Student Side

## Digital Multimedia Language Laboratory System



Student's Recorder



Headset



Booth Amplifier



Cable & Connector

Depending on equipment installed in student's side, ML-500 System has two applications : (i) Recorder Type and (ii) Booth Amplifier Type.

### Recorder Type

- All of general recorder functions available
  - P-Stop/Sentence Back/Block Repeat/Bookmark
  - Essential functions for efficient language learning supported
  - Main components of student's side
- |                                     |                  |
|-------------------------------------|------------------|
| Recorder (including recorder cover) | Headset          |
| Cable & Connector                   | Power Trans Unit |

### Booth Amplifier Type

- Essential functions for efficient language learning supported such as Teacher Calling, 1:1 Conversation, Tripartite Conference, Pair Study, Oral Test, Multiple choice Test and etc.
  - Main Components of student's side
- |   |         |
|---|---------|
| Booth Amplifier for listening conversation with LCD display | Headset |
| Cable & Connector   |         |

### Optional

When teacher intends to use visual material in his/her class: Student monitor, TV, DVD Combo, LCD Projector, etc.

OLC-5200 System  
Master Side

## Multimedia Language Laboratory System



OLC-5200 Master Console



OLC-5200 Master Recorder

OLC-5200 System is designed for simple laboratory and cost-efficient. It is characterized by easy-to-use, almost trouble free, and core functions for language lab supported.

### FEATURES

- Present status displayed on LCD panel of master console
- Simultaneous transmission available up to 2 different programs

### Functions

- All Call
- Line Call (Adding Teacher's Voice)
- Monitoring Student's Practice and its Evaluation
- Intercom
- Model Voice
- Automatic (or manual) Scanning Monitor
- Pair Study
- Tripartite Conference
- Free Talk
- Test & Analyzing
- Bookmark (Quick Index Search)

### Main Components of Master's side

- OLC-5200 console 1ea
- Master recorder (including recorder cover) 2ea
- Headset 1ea

OLC-5200 System  
Student Side

## Multimedia Language Laboratory System



(i) Recorder Type



(ii) Booth Amplifier Type

Depending on equipment installed in student's side, OLC-5200 System has two applications : (i) Recorder Type and (ii) Booth Amplifier Type.

### Recorder Type

- All of general recorder functions available
  - P-Stop/Sentence Back/Block Repeat/Bookmark
  - Essential functions for efficient language learning supported
  - Main components of student's side
- |                                     |                  |
|-------------------------------------|------------------|
| Recorder (including recorder cover) | Headset          |
| Cable & Connector                   | Power Trans Unit |

### Booth Amplifier Type

- Essential functions for efficient language learning supported
  - Main Components of student's side
- |                   |         |
|-------------------|---------|
| Booth Amplifier   | Headset |
| Cable & Connector |         |



CEI-700

**CHEMICAL ELEMENT INFORMATION**



**FEATURE**

- Conforms to IUPAC standards
- Contains 118 individual elements in 17 element groups
- Replays audio sources of element information
- Signals selected element by flickering lamp
- Controlled by remote control and on-board panel

**SPECIFICATION**

- Speaker: 4Ω 10W x 2
- Frame: Steel
- Element board: Acryl panel
- Power: AC 110~240V, 50/60Hz, 1.4A
- Stand or Wall type
- Size: 1350 x 900 x 78mm (27.5kg)
- Language: English, Russian

TVP-850K

**HIGH RESOLUTION VIDEO PRESENTER**



**FEATURE**

- Provides high resolution images (850,000 pixels)
- Image capture & saving without PC
- Auto focus, AWB, Color/Mono, Mirror, Nega/Posi
- Picture in picture, Split screen, Image revolving
- Connectable to various imaging equipment

**SPECIFICATION**

- 1/3" progressive scan type color CCD sensor
- Resolution: 850,000 pixels
- Zoom: 16X optical, 10X digital
- Frame rate: 30fps
- Output: Video, Audio, S-video, RGB
- PC interface: USB 2.0, RS-232C

TVP-2300

**DESKTOP VIDEO PRESENTER**



**FEATURE**

- Image capture, saving & printing
- Zoom in up to 88X
- Auto focus, Pan/Tilt, Freeze, Nega/Posi, Color/Mono effects
- Relays external video sources
- Connectable to microscopes

**SPECIFICATION**

- 1/4" color CCD sensor
- Resolution: Horizontal 450 TV lines
- Zoom: 22X optical, 4X digital
- Input: Video 2, Audio 2, Mic 1
- Output: Video 2, Audio 2, S-VHS 1
- PC interface: USB 2.0

TCS-3M

**PORTABLE DOCUMENT CAMERA**

**NEW!**



**FEATURE**

- Provides high resolution images more than 3 mega pixels
- Image capture & saving (Built-in memory)
- Auto focus & AWB
- OSD functions
- Operated with or without PC

**SPECIFICATION**

- 1/3" color CMOS sensor
- 3.2 mega pixels
- Zoom: 3X optical, 8X digital
- Output: DVI, RGB, Composite, S-video
- Pan/Tilt, Nega/Posi, Color/Mono, Image revolving
- Remote control

TFV-300/400

**PORTABLE DOCUMENT CAMERA**



**FEATURE**

- World Didac Award 2000
- User-friendly portable document camera with gooseneck
- Simple & convenient on-body buttons
- Connectable to microscopes
- Image capture & saving with PC(TFV-400)

**SPECIFICATION**

- 1/4" color CCD sensor
- Horizontal 450 TV lines
- 2X optical zoom
- Pan/Tilt, Nega/Posi, Color/Mono, Freeze
- Output: S-VHS, Video, Audio, USB(TFV-400)
- Remote control

LSP-500

**MICROSCOPIC PROJECTOR**



**FEATURE**

- Projects microscopic images without imaging devices
- A group of observers can see microscopic images at the same time
- Suitable for classrooms with no imaging devices

**SPECIFICATION**

- Magnification: 100X, 200X, 300X
- Projection distance: 1~2M
- Lighting: JC24V/150W halogen lamp
- 360° rotatable head
- Coaxial coarse/fine focusing knob
- Power: 110/220V

# 3

## Laboratory Equipments

■ CHC LABORATORY CO.,LT D.	78 ~ 83
■ ENBI CO.,LT D.	84 ~ 87
■ EUNHA FLUID SCIENCE	88 ~ 91
■ G W ON HITECH CO.,LT D.	92 ~ 95
■ HUMAN CORPORATION	96 ~ 97
■ H WASHIN TECHNOLOGY CO.	98 ~ 99
■ ILSHINLAB CO.,LT D.	100 ~ 101
■ ISTEK, INC.	102 ~ 103
■ JISICO CO.,LT D.	104 ~ 109
■ LABZONE CO.,LT D.	110 ~ 111
■ MDM INSTRUMENTS	112 ~ 115
■ MIRAE ST CO.,LT D.	116 ~ 117
■ SHIN SAENG SCIENTIFIC CO.,LT D.	118 ~ 119
■ UNIVERSAL SCIENTIFIC CO.,LT D.	120 ~ 121
■ VISION SCIENTIFIC CO.,LT D.	122 ~ 125



### Vertical Laminar Flow Cabinet (CLB-201S-04) : Vertical type



#### FEATURE

1. HEPA Filter which efficiency is over 99.99% (particles size 0.3 μm) is attached.
2. UV-Lamp is attached to sterilize on the work surface.
3. Speed Controller is attached that can be controlled wind velocity.
4. The upper body and the underbody can be separated.
5. The Sliding rails are attached in order to smooth the front door at the back.

#### SPECIFICATIONS

Model No.	CLB-201S-03	CLB-201S-04	CLB-201S-05	CLB-201S-06
Dimensions (External) W x D x H (mm) (Internal)	1040 x 745 x 2000 920 x 630 x 565	1340 x 745 x 2000 1220 x 630 x 565	1650 x 745 x 2000 1530 x 630 x 565	1960 x 745 x 2000 1840 x 630 x 565
Downflow Velocity	Approx. 0.3 m/s ~ 0.4 m/s (Variable Set Speed)			
Filter Efficiency	HEPA Filter ≥ 99.99% at 0.3 μm / Class 100			
Noise Level	≤ 65dB(A) at Normal Speed			
Sterilization	Germicidal UV Lamp			
Door	5 mm Tempered Glass (Sliding Type)			
Work Top	Stainless Steel			
Electrical Supply	120/240 V, 50/60Hz (Available)			
Power Socket	1ea		2ea	

### Horizontal Laminar Flow Cabinet (CLB-202D-04) : Horizontal type



#### FEATURE

1. HEPA Filter which efficiency is over 99.99% (particles size 0.3 μm) is attached.
2. UV-Lamp is attached to sterilize on the work surface.
3. Speed Controller is attached that can be controlled wind velocity.
4. The upper body and the underbody can be separated.
5. The Sliding rails are attached in order to smooth the front door at the back.

#### SPECIFICATIONS

Model No.	CLB-202D-03	CLB-202D-04	CLB-202D-05	CLB-202D-06
Dimensions (External) W x D x H (mm) (Internal)	1040 x 745 x 2150 920 x 510 x 585	1340 x 745 x 2150 1220 x 510 x 585	1650 x 745 x 2150 1530 x 510 x 585	1960 x 745 x 2000 1840 x 510 x 585
Downflow Velocity	Approx. 0.3 m/s ~ 0.4 m/s (Variable Set Speed)			
Filter Efficiency	HEPA Filter ≥ 99.99% at 0.3 μm / Class 100			
Noise Level	≤ 65dB(A) at Normal Speed			
Sterilization	Germicidal UV Lamp			
Door	5 mm Tempered Glass (Sliding Type)			
Work Top	Stainless Steel			
Electrical Supply	120/240 V, 50/60Hz (Available)			
Power Socket	1ea		2ea	

### Laminar Flow Cabinet (CLB-060F-03)



It is attached HEPA filter (≥ 99.99% at 0.3 μm), so that the fresh air is formed from ceiling by vertical direction, it can protect the sample from contamination.

#### FEATURE

1. HEPA Filter which efficiency is over 99.99% (particles size 0.3 μm) is attached.
2. UV-Lamp is attached to sterilized on the work surface.
3. Speed Controller is attached that can be controlled wind velocity.
4. The upper body and the underbody can be separated.
5. It made of acrylic (PMMA) three sides, so that it is easy to inspect inside.

#### SPECIFICATIONS

Model No.	CLB-060F-03	CLB-060F-04
Dimensions (External) W x D x H (mm) (Internal)	900 x 650 x 2040 884 x 622 x 730	1200 x 650 x 2040 1184 x 622 x 730
Downflow Velocity	0.3 m/s ~ 0.4 m/s (Variable Set Speed)	
Filter Efficiency	HEPA Filter ≥ 99.99% at 0.3 μm	
Noise Level	≤ 65dB(A) at Normal Speed	
Sterilization	Germicidal UV Lamp	
Door	Acrylic (PMMA) 8mm	
Work Top	Phenolic Laminate 20mm	
Electrical Supply	120/240 V, 50/60Hz (Available)	

### Biological Safety Cabinet (CHC-777A2-03)



#### Class II, Type A2 Biological Safety Cabinet

These Biological Safety Cabinets (BSC) are a Class II, Type 2 and are designed for universities, research laboratories, pharmacies and pharmaceutical companies (for cGMP) to protect both users and procedures from contamination when working with biological fields.

#### How It Works

Minimum airflow velocity is 100 fpm (0.51 m/s) through face opening. HEPA filtered downflow air is a portion of the mixed downflow and inflow air from a common exhaust plenum. All contaminated ducts and plenums are under the negative pressure.

#### FEATURE

- Class II Design: Personnel, Product and Environmental Protection Fully Compliant, Tested and certified US Standard NSF 49, European Standard EN 12469 and Korea Standard KSM 10103 Tested
- Safety: HEPA / ULPA Filtration
- System with Alarm Ergonomic: Pitched Profile

#### Offers 3 Forms of protection

1. Personnel Protection  
Protects personnel from potentially harmful agents used inside the cabinet.
2. Product Protection  
Protects the research materials for product/experiment from contaminants in the room environment or from cross-contamination inside the cabinet.
3. Environmental Protection  
Protects your environment from research materials for contaminants generated or used inside the cabinet.

#### SPECIFICATIONS

Model No.	CHC-777A2-03	CHC-777A2-04	CHC-777A2-05	CHC-777A2-06
Dimensions (External) W x D x H (mm)	1060 x 810 x 1520	1385 x 810 x 1520	1690 x 810 x 1520	1995 x 810 x 1520
Chamber Dimensions W x D x H (mm)	925 x 610 x 760	1250 x 610 x 760	1555 x 610 x 760	1860 x 610 x 760
Average Airflow Velocity	(Nominal set point) Inflow 0.53 m/s (105 fpm), Downflow 0.35 m/s (70 fpm)			
Supply HEPA/ULPA Typical Efficiency	ULPA: > 99.999% for particle size between 0.1 to 0.3 microns HEPA: > 99.99% at 0.3 microns			
Exhaust HEPA Filter Typical Efficiency	> 99.99% at 0.3 microns			
Electrical Supply	110V/60HZ, 220V/50HZ, 220V/60HZ			
Noise Level	< 64 dB(A)			
Accessories	User's manual, Power cord Option: IV Bar, Gas / Air / Water / Vacuum Vakes, Drain valve assembly, Support stand, Canopy, Differential Pressure Gauge			

## Lab Center Table (CLF-1110F)

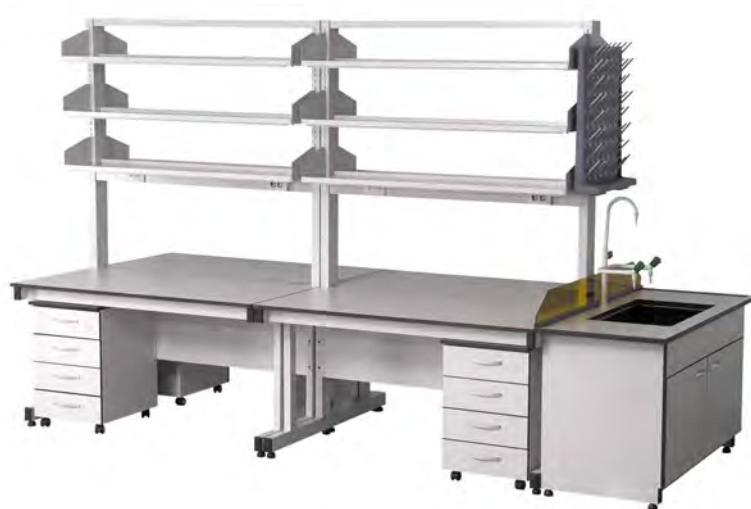
All the furniture and fume hoods of CHC LAB are made under the standard and regulation of SEFA(Scientific Equipment & furniture Association).

### FEATURE

1. Work top : Phenolic laminate (Option: Epoxy resin)
2. Structure : steel plate with powder coated
3. Duct: SCP2 plate with powder coated
4. Drying rack : PP
5. Shelve : Steel plate phenolic laminate
6. Braket : Steel plate with adjustable height
7. Cabinet : Movable cabinet with LPM PB
8. Frame : steel square pipe with powder coated
9. Sink bowl : PP resin
10. Water cock

### Lab Tables Include

1. Center Table
2. Side Table
3. Corner Table
4. Sink Table
5. Functional Table(Micro scope, Electronic balance)
6. Movable Cabinet
7. Movable Drawer



## Fume Hood (CLE-101AN)

All the furniture and fume hoods of CHC LAB are made under the standard and regulation of SEFA(Scientific Equipment & furniture Association).

Fume hood aims to maintain the user and the place safe as well as comfortable through ventilate harmful gas during experiment at laboratory, the place handling to treat harmful material in the body.

### Fume Hood Series

1. By pass Air Type
2. Air Curtain Type
3. Auxiliary Air Type
4. Center Table Top Type
5. Side Table Top Type
6. Low Work-in Type
7. Walk-in Type



## Ductless Storage Cabinet (CLE-061)

It is the storage cabinet of ductless type with the built-in carbon filter that can make the environment of laboratory clear.

### FEATURE

1. It is attached the caster that can be controlled height, and since don't need to set duct that make free to move, keep the reagent safe.
2. Spill tray is set under the cabinet so that minimize to flow out the harmful stuff through your carelessness.
3. The color of doors is made up brown in order to block the light outside, and the transparent door can make users check the reagent inside easily.
4. The filter test hole is set up, you can use the gas detection kit check the saturation in the filter.

### SPECIFICATIONS

Model No.	CLE-061	CLE-062
Dimensions (External)	1600 x 525 x 2160	800 x 525 x 2160
W x D x H (mm) (Internal)	1520 x 455 x 1615	720 x 455 x 1615
Filter	Carbon Filter(Gene ral Type)	
Blower	Centrifugal Blower	
Noise Level	≤ 65dB(A)	
Volume of Air Treated	150m <sup>3</sup> /h	100m <sup>3</sup> /h
Electrical Supply	120/240 V,50/60Hz (Available)	
Shelves	8ea	4ea
Door	Acrylic 5mm (Brown Color)	



## Ductless Fume Hood (CLE-051F-03)

It is filtering hood no need for duct, it is used at simple chemical experiment. Users can choose the filters according to the kind of gases that make harmful gas filter during the experiment so that protects users from a danger of exposure.

### FEATURE

1. It is used experiments that caused harmful gases and bad smell.
2. Duct is unnecessary, that can be easy to move.
3. It uses carbon, HEPA, pre-filter that can change.
4. It is made of acrylic(PMMA) three sides, so that it is easy to inspect inside.

### SPECIFICATIONS

Model No.	CLE-051F-03	CLE-051F-04
Dimensions (External)	900 x 650 x 1970	1200 x 650 x 1970
W x D x H (mm) (Internal)	884 x 622 x 730	1184 x 622 x 730
Filter	Pre-Filter / Carbon, HEPA Filter(Optional)	
Blower	According to Chemicals	
Noise Level	Centrifugal Blower	
Volume of Air Treated	180m <sup>3</sup> /h	320m <sup>3</sup> /h
Electrical Supply	≤ 65dB(A)at Normal Speed	
Power Consumption	130W	266W





### Arm Hood (CLE-001-05)



The arm hood is a partial exhaust system that can be ventilated small contaminated air so that protects both user and area safely from harmful material.

#### FEATURE

1. It is made of a pivot joint structure that can revolve freely and easy to move a specific area.
2. The damper can control exhaust air velocity is attached that can adjust wind velocity by user own by any environment.

Pipe Holder : PP Resin  
 Pipe : PP Resin  
 Dome Hood : PP, PE (Selectable)  
 Bracket : SCP2 Steel Plate With Epoxy Powder Coated

#### SPECIFICATIONS

Model No.	Dimensions
CLE-001-05	Ø 75 x 1500 Dia. x L (mm)

### Acrylic Arm Hood (CLE-040)



#### FEATURE

1. The acrylic arm hood is exhausted harmful gases in the partial area from a duct, that protects both user and area safely from harmful material.
2. It is made of acrylic(PMMA) four sides, so that it is easy to inspect inside.

#### SPECIFICATIONS

Model No.	Dimensions WxDxH(mm)
CLE-040	500 x 450 x 400

### Movable Arm Hood (CLE-020)



The arm hood is a partial exhaust system that can be ventilated small contaminated air so that protects both user and area safely from harmful material.

#### FEATURE

1. can remove the partial contamination that could be generated every kind of bad smell and harmful material from work place.
2. It can be exhausted from harmful material to the clean air through the filter.
3. It is attached arm hood that is free to revolve and move.
4. Speed controller is attached that can controls wind velocity.
5. Caster is attached so that can be easy to move.
6. The indicator of revolving and moving for Movable Arm Hood.

Pipe Holder : PP Resin  
 Pipe : PP Resin  
 Dome Hood : PP, PE (Selectable)  
 Bracket : SCP2 Steel Plate With Epoxy Powder Coated

#### SPECIFICATIONS

Model No.	Dimensions	
CLE-020	Arm	Ø 75 x 1300 Dia. x L (mm)
	Filter Box	500 x 500 x 865
		W x D x H (mm)

### Safety Balance Work Station (CLE-071F-03) : SBWS



It is used experiment requested non-vibration. It is exhausted harmful gases during the experiments that can protect users.

#### FEATURE

1. To minimize the vibration on the work surface marble stone 30mm, rubber foot and anti-vibration pad are settled.
2. Utility hole makes the electricity and gas line enter the work surface.
3. It is made of acrylic(PMMA) three sides, so that it is easy to inspect inside.
4. The exhaust part is made by back draft structure to prevent flowing harmful gases backward.
5. It can protect both users and laboratory from poisonous dust during using the electronic scale.

#### SPECIFICATIONS

Model No.	CLE-071F-03	CLE-071F-04
Dimensions (External)	900 x 560 x 1345	1100 x 560 x 1345
W x D x H (mm) (Internal)	880 x 530 x 555	1080 x 530 x 555
Body	Acrylic(PMMA) & SCP2 Steel Plate(Epoxy Powder Coated)	
Stand Support	SCP2 Steel Plate & Steel Square Pipe With Epoxy Powder Coated	
Work Top	Mable Stone 30 mm	
Filter Box	500 x 500 x 865 (WxDxH mm)	
Filter	Carbon / HEPA / Pre-Filter	
Noise Level	≤ 65dB(A)at Normal Speed	
Electrical Supply	120/240 V, 50/60Hz (Available)	

### Safety Trimming Work Station (CLE-081F-03) : STWS



It is used experiment requested non-vibration. It is exhausted harmful gases during the experiments that can protect users.

#### FEATURE

1. Ultra Violet Lamp is attached to sterilize on the work surface.
2. Utility Hole is attached to make electricity and gas line entered the work surface easily.
3. Acrylic(PMMA) is applied in three sides, so that it is easy to inspect inside.
4. The exhaust part is made by back draft structure to prevent flowing harmful gases backward.
5. The Cup sink and water tap are attached so that can wash, and you can wash without using hand.

#### SPECIFICATIONS

Model No.	Dimensions WxDxH(mm)
CLE-040	500 x 450 x 400

FDE02-50  
FDE03-50/85

## External Type Freeze Dryer



FDE02-50 FDE03-50/85

### FEATURE AND ADVANTAGES

- Compact size with table top type (Model No.: VFDL02-50)
- Easy to install in narrow place (Model No.: VFDL03-50, VFDL03-85)
- Easy to install drying chamber or manifold chamber
- Easy to use various sample containers including flask, ampoule or vial
- Observe moisture trapped while drying
- Install purified air or nitrogen purge port after drying
- Block backflow of vacuum pump oil by automatic purge system
- Block moisture from penetration for protecting vacuum pump when cold trap temperature increases
- Easy to check the equipment with LED showing vacuum, cold trap temperature and so on
- Convenient to users for automatic operation
- Alarm when the cold trap temperature abnormally increases
- Alarm when it needs to clean condenser filter
- Alarm for exchanging vacuum oil
- Self-inspection of the end of freeze drying

### SPECIFICATIONS

Description	Model No.	FDE01-50	FDE03-50	FDE03-85
Ice Holding Capacity(L)		2	3	3
Cold Trap	Dimension (φXH) mm	250X230	250X280	250X280
	Temperature	-50℃ Below	-50℃ Below	-80℃ Below
Compressor(Hp)		1/3	1/2	1/2X2sets
Applicable Vacuum Pump	Displacement Speed(L/min)	100	200	200
	Ultimate Pressure(Torr)	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>
Aver. Power Consumption(kW)		1	1	1.5
Power Supply		200VAC 60Hz or 50Hz 1phase		
Cabinet Dimension (WDXH)mm		550X550X420	600X600X880	

- Specification may change to improve quality or performance
- Vacuum pump is optional.

FDI Series

## Internal Type Freeze Dryer



### FEATURE AND ADVANTAGES

- Easy to install drying chamber or manifold chamber
- Easy to use various sample containers including flask, ampoule or vial
- Observe moisture trapped while drying
- Install purified air or nitrogen purge port after drying
- Block backflow of vacuum pump oil by automatic purge system
- Block moisture from penetration for protecting vacuum pump when cold trap temperature increases
- Easy to check the equipment with LED showing vacuum, cold trap temperature and so on
- Convenient to users for automatic operation
- Alarm when the cold trap temperature abnormally increases
- Alarm when it needs to clean condenser filter
- Alarm for exchanging vacuum oil
- Self-inspection of the end of freeze drying

### SPECIFICATIONS

Description	Model No.	FDI06-50	FDI06-85	FDI09-50	FDI09-85	FDI12-50	FDI12-85
Ice Holding Capacity(L)		6	6	9	9	12	12
Cold Trap	Dimension (φXH) mm	250X280	250X280	250X350	250X350	250X400	250X400
	Temperature	-50℃ Below	-85℃ Below	-50℃ Below	-85℃ Below	-50℃ Below	-85℃ Below
Compressor(Hp)		1/2	1/2X2sets	1/2	1/2X2sets	1/2	1/2X2sets
Applicable Vacuum Pump	Displacement Speed(L/min)	200	200	200	200	400	400
	Ultimate Pressure(Torr)	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>
Aver. Power Consumption(kW)		1	1.5	1	1.5	1	1.5
Power Supply		220VAC 60Hz or 50Hz 1phase					
Cabinet Dimension (WDXH)mm		700X720X880					

- Specification may change to improve quality or performance
- Vacuum pump is optional.

FDS06-50~FDS12-50

## Shell Freezer Combined Freeze Dryer



Shell Freezer Bath

### FEATURE AND ADVANTAGES

- No need to have separate freezer for embedded shell freezer
- Easy to install drying chamber or manifold chamber
- Easy to use various sample containers including flask, ampoule or vial
- Observe moisture trapped while drying
- Install purified air or nitrogen purge port after drying
- Block backflow of vacuum pump oil by automatic purge system
- Block moisture from penetration for protecting vacuum pump when cold trap temperature increases
- Easy to check the equipment with LED showing vacuum, cold trap temperature and so on
- Convenient to users for automatic operation
- Alarm when the cold trap temperature abnormally increases
- Alarm when it needs to clean condenser filter
- Alarm for exchanging vacuum oil
- Self-inspection of the end of freeze drying

### SPECIFICATIONS

Description	Model No.	FDS06-50	FDS09-50	FDS12-50
Ice Holding Capacity(L)		6	9	12
Cold Trap	Dimension (φXH) mm	250X280	250X350	250X400
	Temperature	-50℃ Below	-50℃ Below	-50℃ Below
Compressor(Hp)		1/2	1/2	1/2
Applicable Vacuum Pump	Dimension (WDXH)mm	176X325X150	176X325X150	176X325X150
	Temperature	-40℃ Below	-40℃ Below	-40℃ Below
Compressor(Hp)		1/3	1/3	1/3
Displacement Speed(L/min)		200	200	400
Ultimate Pressure(Torr)		5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>
Aver. Power Consumption(kW)		1.5	1.5	1.5
Power Supply		220VAC 60Hz or 50Hz 1phase		
Cabinet Dimension (WDXH)mm		1000X720X880		

- Specification may change to improve quality or performance
- Vacuum pump is optional.

FDS06-85~FDS12-85

## Shell Freezer Combined Freeze Dryer



### FEATURE AND ADVANTAGES

- Possible to capture organic solvents by providing -85℃ of cold trap temperature
- No need to have separate freezer for embedded shell freezer
- Easy to install drying chamber or manifold chamber
- Easy to use various sample containers including flask, ampoule or vial
- Observe moisture trapped while drying
- Install purified air or nitrogen purge port after drying
- Block backflow of vacuum pump oil by automatic purge system
- Block moisture from penetration for protecting vacuum pump when cold trap temperature increases
- Easy to check the equipment with LED showing vacuum, cold trap temperature and so on
- Convenient to users for automatic operation
- Alarm when the cold trap temperature abnormally increases
- Alarm when it needs to clean condenser filter
- Alarm for exchanging vacuum oil
- Self-inspection of the end of freeze drying

### SPECIFICATIONS

Description	Model No.	FDS06-85	FDS09-85	FDS12-85
Ice Holding Capacity(L)		6	9	12
Cold Trap	Dimension (φXH) mm	250X280	250X350	250X400
	Temperature	-85℃ Below	-85℃ Below	-85℃ Below
Compressor(Hp)		1/2	1/2	1/2
Applicable Vacuum Pump	Dimension (WDXH)mm	176X325X150	176X325X150	176X325X150
	Temperature	-40℃ Below	-40℃ Below	-40℃ Below
Compressor(Hp)		1/3	1/3	1/3
Displacement Speed(L/min)		200	200	400
Ultimate Pressure(Torr)		5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>
Aver. Power Consumption(kW)		2	2	2
Power Supply		220VAC 60Hz or 50Hz 1phase		
Cabinet Dimension (WDXH)mm		1000X720X880		

- Specification may change to improve quality or performance
- Vacuum pump is optional.



FDPT Series

Programmable Freeze Dryer

FEATURE AND ADVANTAGES



- Compact design with table top type
- No need to have separate freezer for its own freezing function (Option: -20℃ of heat plate)
- Good for precise drying of bulk type samples with temperature-adjustable heat plate
- Possible to seal samples in vacuum after drying vial or ampoule (option)
- Easy to install and detach various types of drying chambers
- Easy to use various sample containers including flask, ampoule or vial
- Observe moisture trapped while drying
- Install purified air or nitrogen purge port after drying
- Block backflow of vacuum pump oil by automatic purge system
- Block moisture from penetration for protecting vacuum pump when cold trap temperature increases
- Easy to check the equipment with LED showing vacuum, cold trap temperature and so on
- Convenient to users for automatic operation
- Alarm when the cold trap temperature abnormally increases
- Alarm when it needs to clean condenser filter
- Alarm for exchanging vacuum oil
- Self-inspection of the end of freeze drying

SPECIFICATIONS

Description	Model No.	FDPT05-0050	FDPT05-2050
Ice Holding Capacity(L)		6	9
Shelf Temperature Range		Amb. ~ +50℃	-20℃ ~ +50℃
Shelf Temperature Range		-50℃ Below	-50℃ Below
Compressor(Hp)		1/3	1/2
Applicable Displacement Speed(L/min)		200	200
Vacuum Pump Ultimate Pressure(Torr)		5X10 <sup>-3</sup>	5X10 <sup>-3</sup>
Recorder		2 Pens(Shelf, Sample)	2 Pens(Shelf, Sample)
Aver. Power Consumption(kW)		1	1.5
Power Supply		220VAC 60Hz or 50Hz 1phase	
Drying Chamber Dimension (WDXH)mm		330X370X240	
Shelf Dimension (WDXH)mm		300X350X20	
Shelf Useable No.		1	
Cabinet Dimension (WDXH)mm		840X725X610	

- Specification may change to improve quality or performance
- Vacuum pump is optional.

FDPU Series

Up-Right Type Programmable Freeze Dryer

FEATURE AND ADVANTAGES



- Possible to capture organic solvents by providing -85℃ of cold trap temperature
- No need to have separate freezer for its own freezing function (Option: -20℃ of heat plate)
- Good for precise drying of bulk type samples with temperature-adjustable heat plate
- Possible to seal samples in vacuum after drying vial or ampoule (option)
- Easy to install and detach various types of drying chambers
- Easy to use various sample containers including flask, ampoule or vial
- Observe moisture trapped while drying
- Install purified air or nitrogen purge port after drying
- Block backflow of vacuum pump oil by automatic purge system
- Block moisture from penetration for protecting vacuum pump when cold trap temperature increases
- Easy to check the equipment with LED showing vacuum, cold trap temperature and so on
- Convenient to users for automatic operation
- Alarm when the cold trap temperature abnormally increases
- Alarm when it needs to clean condenser filter
- Alarm for exchanging vacuum oil
- Self-inspection of the end of freeze drying

SPECIFICATIONS

Description	Model No.	FDPU05-0050	FDPU05-3050	FDPU05-0085	FDPU05-3085
Ice Holding Capacity(L)		5	5	5	5
Shelf Temperature Range		Amb. ~ +50℃	-20℃ ~ +50℃	Amb. ~ +50℃	-20℃ ~ +50℃
Cold Trap Temperature		-50℃ Below	-50℃ Below	-85℃ Below	-85℃ Below
Compressor(Hp)		1/3	1/2	1/3X2sets	1/2X2sets
Applicable Displacement Speed(L/min)		200	200	200	200
Vacuum Pump Ultimate Pressure(Torr)		5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>
Recorder		2 Pens(Shelf, Sample)	2 Pens(Shelf, Sample)	2 Pens(Shelf, Sample)	2 Pens(Shelf, Sample)
Aver. Power Consumption(kW)		1	1.5	2	3
Aver. Power Consumption(kW)		220VAC 60Hz or 50Hz 1phase			
Drying Chamber Dimension (WDXH)mm		330X370X240			
Shelf Dimension (WDXH)mm		300X350X20			
Shelf Useable No.		1			
Cabinet Dimension (WDXH)mm		840X725X9950			

- Specification may change to improve quality or performance
- Vacuum pump is optional.

FDPP Series

Pilot Plant Scale Freeze Dryer

FEATURE AND ADVANTAGES



- Automatically proceeding all the processes
- Programmable P.I.D. control system
- Showing temperature of heat plate, cold trap temperature and vacuum in real time
- Showing and printing temperatures of heat plate, cold trap and dried materials in real time
- No need to dry in advance for self-drying function
- Good for precise drying of bulk type samples with temperature-adjustable heat plate
- Observe moisture trapped while drying
- Install purified air or nitrogen purge port after drying
- Block backflow of vacuum pump oil by automatic purge system
- Block moisture from penetration for protecting vacuum pump when cold trap temperature increases
- Possible to capture organic solvents by providing -85℃ of cold trap temperature (select -85℃ series)
- Capping in vacuum after drying vial (option)

SPECIFICATIONS

Description	Model No.	FDPU05-0050	FDPU05-3050	FDPU05-0085	FDPU05-3085
Ice Holding Capacity(L)		6 Above	12 Above	22 Above	36 Above
Shelf	Temperature Range	-50℃ ~ +90℃	-50℃ ~ +90℃	-50℃ ~ +90℃	-50℃ ~ +90℃
	Dimension (WXD)mm	250X400	400X500	400X850	400X850
	Useable No.	3	3	3	5
	Inter Space(mm)	60	60	60	60
Cold Trap Temperature		-65℃ Below	-65℃ Below	-65℃ Below	-65℃ Below
		(-85℃ Below)	(-85℃ Below)	(-85℃ Below)	(-85℃ Below)
Vacuum Pump	Displacement Speed(L/min)	60Hz	400 (Direct Driven)	400 (Direct Driven)	600 (Direct Driven)
		50Hz	340 (Direct Driven)	340 (Direct Driven)	500 (Direct Driven)
	Ultimate Pressure(Torr)	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>
Cabinet Dimension (WDXH)mm		1100X1300X1900		1300X1900X1900	
Power Supply		220VAC 60Hz or 50Hz 1phase		380VAC 60Hz or 50Hz 3phase	

- Specification may change to improve quality or performance
- Vacuum control and stopping system are optional.
- Default drying chamber is cylinder. Rectangle-type is optional.
- Internal or external freezing system
- Default condensation of freezing system is air-cooling. Water-cooling is optional.

SPECIFICATIONS

Description	Model No.	FDPU05-0050	FDPU05-3050	FDPU05-0085	FDPU05-3085
Ice Holding Capacity(L)		52 Above	110 Above	220 Above	320 Above
Shelf	Temperature Range	-50℃ ~ +90℃	-50℃ ~ +90℃	-50℃ ~ +90℃	-50℃ ~ +90℃
	Dimension (WXD)mm	400X900	800X900	900X1200	900X1600
	Useable No.	7	7	10	11
	Inter Space(mm)	60	60	60	60
Cold Trap Temperature		-65℃ Below	-65℃ Below	-65℃ Below	-65℃ Below
		(-85℃ Below)	(-85℃ Below)	(-85℃ Below)	(-85℃ Below)
Vacuum Pump	Displacement Speed(L/min)	60Hz	800 (Direct Driven)	1500 (Direct Driven)	4500 (Direct Driven)
		50Hz	670 (Direct Driven)	1250 (Direct Driven)	3800 (Direct Driven)
	Ultimate Pressure(Torr)	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>	5X10 <sup>-3</sup>
Cabinet Dimension (WDXH)mm		1800X2200X1900	1800X2500X1900	2100X2800X2000	2100X3250X2000
Power Supply		380VAC 60Hz or 50Hz 3phase			

- Specification may change to improve quality or performance
- Vacuum control and stopping system are optional.
- Default drying chamber is cylinder. Rectangle-type is optional.
- Internal or external freezing system
- Default condensation of freezing system is air-cooling. Water-cooling is optional.

EH-HB-140E, 140L

### Hydraulics Bench



#### FEATURE

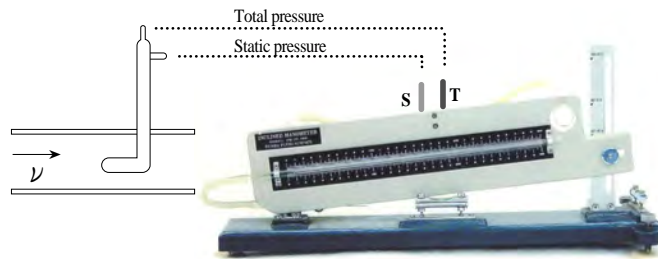
- Self contained and fully mobile service unit for the water circulation and flow rate measuring support for Eunha Fluid mechanics and Hydraulics Instruments : - Bernoulli's theorem apparatus
  - Flow measuring apparatus
  - Orifice and jet apparatus & etc.
- Continuous flow monitoring and the exact flow rate measurement.
- An open channel and ample working space on the bench top for various experiment.
- Supplied as standard Accessories, 3 type of weirs.

#### SPECIFICATIONS

MODEL	EH-HB-140E	EH-HB-140L
Open channel	23W × 17H × 80L(cm)	70W × 100H × 120L(cm)
Pump & motor	Magnetic coupling pump	
	Total head(Max) : 8m	12m
	220V(60Hz)	220V(60Hz)
	90(Out)~170(In)W	150(Out)~290(In)W
	70ℓ/min (Max)	110ℓ/min (Max)
Sump tank	Capacity : 150ℓ (Max)	
Volumetric measuring tank	35 ℓ (Max)	
Sight tube & scale	0~40 ℓ (Max)	
Weight	110kg	131kg
Pressure gauge (delivery)	0~2 kg/cm <sup>2</sup>	
Flow meter	4~40 ℓ/min (Max)	
Dimensions	70W × 100H × 120L(cm)	70W × 100H × 160L(cm)

EH-IM-100

### Inclined Manometer



#### SPECIFICATIONS

Measuring range	100 (3:1)	60 (5:1)	30 (10:1)	15 (20:1)
Differential pressure (mmAq)	0~100	0~60	0~30	0~15
Minor divisions (mm)	0.33	0.2	0.1	0.05
Full scale range	300mm			
Velocity (Max.)	40m/sec			
Gauge fluid	Alcohol or Water			
Weight (Approx.)	3kg			
Dimension (Approx.)	520L × 240H × 160W (mm)			
※ Option	Pitot tube			

EH-FVC-15

### Flow Visualization Apparatus



#### FEATURE

- Visualize the flow patterns associated with submerged models in open channel. The silent flow to wide open channel (10 x 150 x 700 mm) of one side observation is obtained through pass round glass marbles. Array of 10 injection needles makes sharp parallel lines. Acceptable not only the 6 shaped supplied models but any shaped self made models also.

#### SPECIFICATIONS

Dye injection needles	10 ea.
Dye reservoir capacity	0.4ℓ
Channel (Acryl)	Width - 10mm, Depth - 150mm, Length - 700mm
Water head tank	180W × 180D × 400H(mm)
Flow rate (Max.)	3.5ℓ /min
Undershot weir	10mm (wide)
Dimensions (Approx.)	1030L × 800H × 350W (mm)

EH-JIM-M8

### Jet Impact



#### FEATURE

- Demonstrate the force of water jet impinging to stationary object.
- For the best performance, connect to Eunha Hydraulics bench(EH-HB-140/140E) is essential.
- On the upper end of this stem is mounted a weight container.
- The dead weight of the moving parts is counter-balanced by a compression spring.
- Total of three targets are provided; a flat plate, a 120 degree cone and a hemispherical cup.

#### SPECIFICATIONS

Nozzle diameter	8mm
Target (PVC)	Flat plate : 35 φ Cone type : 40 φ (120 degree cone) Hemispherical cup : 40 φ
Tank (Cylindrical)	150 φ × 300H (mm), Transparent acryl
Flow rate	20ℓ /min (Max.)
Drain hole (Outlet)	25A
Dimension	250 φ × 50H (cm)
Standard accessories	<ul style="list-style-type: none"> <li>• Weight : 100gr - 2 ea, 50gr - 2 ea, 20gr - 3 ea, 10gr - 3 ea, 5gr - 2 ea.</li> <li>• Target : Flat plate, Cone (120 Degree), Hemispherical cup - 1 ea.</li> <li>• L-Wrench : 5/32" - 1 ea.</li> </ul>

EH-FVO-G

### Flow Measuring Apparatus

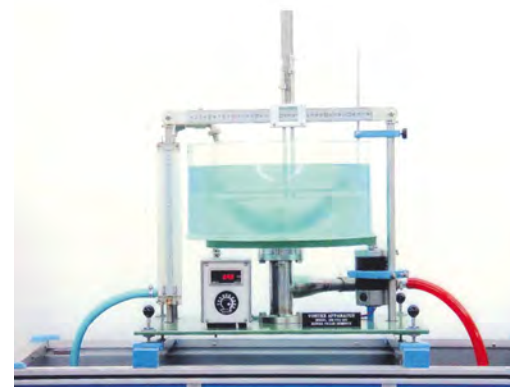


#### FEATURE

- A serial connection of Venturi, Orifice meter and 90 degree Elbow pipe with proprietary rotameter with tappings of prior or after each of devices. The 9 lane of vertically installed manometer tube is connected to each of devices so that they can shows energy loss of flow water. Determine of flow rate and pressure drops using a Venturi Meter, an Orifice Plate, 90 degree Elbow pipe and a Rotameter and Demonstrate the Bernoulli's Equation. Measure the head loss across the devices of a sudden enlargement and sudden reduction. For the best performance, connect to Eunha Hydraulics bench(EH-HB-140/140E) is essential.

EH-VTX-400

### Vortex Apparatus



#### SPECIFICATIONS

Rotating vessel	Transparent acryl
	Diameter (O.D) : 400mm (Approx)
	Deep : 190mm (Approx)
Spiral perforated cylinder	Transparent acryl
	Diameter (O.D) : 300mm (Approx) Deep : 190mm (Approx)
Speed Variation	DC voltage regulator : rpm 140 (Max) (Inlet voltage : AC 220V, 70W, 60Hz)
Probe, linear scale	Horizontal : 400mm Vertical : 180mm
Dimension (Approx.)	600W × 700H × 450L(mm)
Weight	25.5kg



EH-OJ-400H

## Orifice and Jet Apparatus



### FEATURE

- Scaled head tank with height and water level adjustable overflow unit.
- 3 sets of vertically attached moveable orifice of different diameter (3, 6, 9mm).
- The 10 needles represent the detail of trajectory of flow jet.
- Two magnetic strips hold graph paper on the support back board.
- Connect to Eunha Hydraulics bench(EH-HB-140/140E) is highly recommended.

### RANGE OF EXPERIMENTS

- Experimentally determine the velocity coefficient for small orifices, 3, 6 and 9mm dia.
- Calculate the coefficient of discharge for a small orifice under the flow of constant and varying head.
- Demonstrate the Torricelli's law for the flow energy.

EH-FO-13M

## Flow Through an Orifice



### SPECIFICATIONS

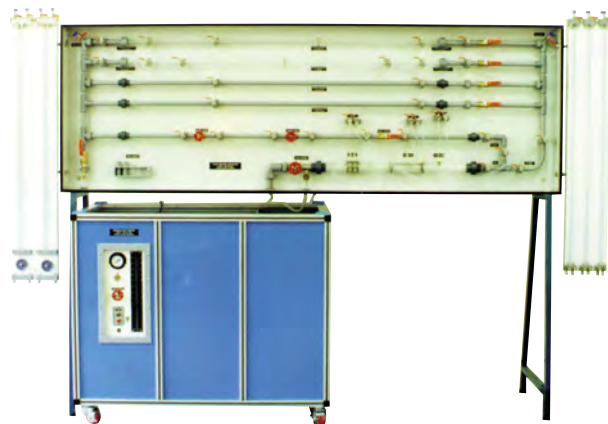
Standard orifice	13mm Dia.
Head (Max.)	390mm
Cylindrical tank (Acryl)	180 φ × 40H (cm)
Inlet pipe (With dissipator)	19mm
Overflow pipe (Variable head)	22mm
Overflow tank (Acryl)	100D × 110W × 270H (mm)
Flow rate (Approx.)	18ℓ /min
Traverse mechanism	Lead screw with adjusting nut calibrated 1/10(mm) per division (With pitot tube)
Dimension (Approx.)	340 φ × 800H (mm)

### FEATURE

- Full analysis of Vertical water jet and orifice flow.
- Integral pitot traverse tube.
- For the best performance, connect to Eunha Hydraulics bench(EH-HB-140/140E) is essential.
- Direct measurement of total head, head loss and diameter of jet.
- Determination of the actual discharge coefficient by measuring the flow rate.

EH-FF-2000

## Fluid Friction Apparatus



### FEATURE

- Total 14 devices with manometer tabs are arranged in a single board.
- Energy loss experiments due to the friction of fluid flows of any conditions are performed accurately.
- Multiple lanes of manometers, two u-tube mercury and three pair of water manometer measures the pressure head of 5 devices simultaneously.
- Eunha Hydraulics bench(EH-HB-140/ 140E) included.

### RANGE OF EXPERIMENTS

- Fluid Friction in a smooth bore pipe
- Head loss due to friction & pipe fittings
- Head loss due to Sudden Contraction & Enlargement
- Fluid Friction in a roughened pipe
- Flow measurement using differential head (Orifice, Venturi, Pitot-tube)

EH-HEW-1500

## Heat Exchanger

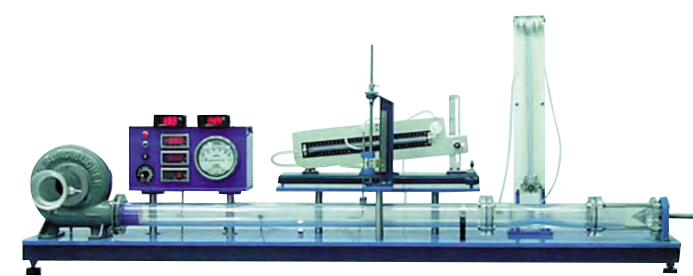


### SPECIFICATIONS

Heat exchanger (Concentric tube)	Tube (Copper) : 16mm O.D. Wall Thickness : 1.0mm Effective length : 1.5m
Working temperature	80℃ (Max.)
Temperature controller	Digital, Accuracy : ±0.5℃
Temperature indicator (Digital)	6 Points (6ea.) Accuracy approx. : ±0.5℃ Thermocouple : Pt 100Ω
Circulating pump	Magnetic coupling pump Capacity : 7ℓ /min Max. temp : 80℃
Heater (Immersion type)	220V(60Hz), 2.4kw
Heater regulator	Thyristor controlled
Sump tank	Capacity : 24ℓ (Max.), Stainless steel
Flow meters	1~7ℓ /min (Hot water), 1~7ℓ /min (Cold water)
Dimensions	125H × 85W × 60D (cm)

EH-FTR-C50

## Fan Test Rig

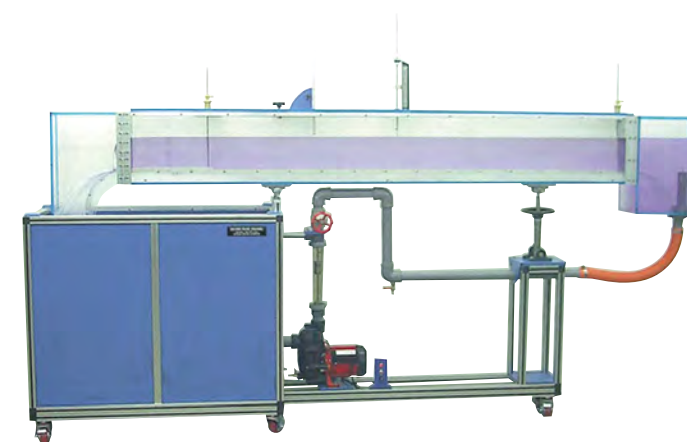


### SPECIFICATIONS

Centrifugal	Flow rate : 200~250m <sup>3</sup> /h Rotational speed : 0~3600rpm Drive motor : DC 90V, 0.1KW
Duct (In)	50mm
Flow rate control	Throttle Valve
Flow rate measuring detector	Venturi
Velocity measuring detector	Pitot tube (with Vertical Traverse)
Pannel meters (Control Box)	DC volt meter & DC Ampere meter (Digital) Temperature Indicator, Tacho meter (Digital) Differential pressure gauge (Analog) Water Manometer (400mm)
※ Option	Inclined Manometer

EH-TFC-200

## Tilting Flow Channel



### SPECIFICATIONS

Working section (Channel)	2200L × 250H × 100W (mm)
Bed slope (Adjustable)	1/120 ~ 5/120cm
Flow meter (Range)	15~150ℓ /m
Pump, Motor	220V(60Hz), 400W 160ℓ /min (Ht=7m)
Sump tank (PVC)	300ℓ (Max.)
Overall dimensions	Height : 180cm (To top of point gauge) Width : 50cm Length : 310cm
Standard accessories	Hook & Point gauge : 0~180mm Weir • Sharp crested weir • Ogee weir • Broad crested weir • Crump weir Adjustable sluice gate

- Demonstrate flow behaviors over the various weirs, sluice and slope in a uniform flow of open channel.

◆ In case of quality improvement control specification can be changed without notification and please make the detailed inquiry for the particular product of interesting.

GMK-315AC

### Honey Moisture Meter



GMK-315AC

#### FEATURE

1. Measuring by micro-compact.
2. Easy to use, quick to read & compact.
3. Large Digital LCD displays.
4. Low battery sign appears.

#### SPECIFICATIONS

1. Measuring Range	12.0% ~ 40.0%
2. Accuracy	± 0.2%
3. Resolution	0.1%
4. Power Source	Battery 9V X 1EA
5. Display	Large Digital LCD
6. Temperature Compensation	Automatic
7. Dimensions	154(L)X108(W)X43(H)mm
8. Gross Weight	Approx. 1Kg

GMK-703F(A)  
GMK-703F(B)

### Foods Sugar Meters



GMK-703F(A)  
GMK-703F(B)

#### FEATURE

1. Measuring by micro-compact.
2. Easy to use, quick to read & compact.
3. Large Digital LCD displays.
4. Low battery sign appears.

#### SPECIFICATIONS

1. Measuring Range	GMK-703F(A) 0.0% ~ 28.0% GMK-703F(B) 25.0% ~ 65.0%
2. Accuracy	± 0.1%
3. Resolution	0.1%
4. Power Source	Battery 9V X 1EA
5. Display	Large Digital LCD
6. Temperature Compensation	Automatic
7. Dimensions	136(L)X69(W)X32(H)mm
8. Gross Weight	Approx. 500g

GMK-610  
GMK-610(A)

### Alcohol Degree Meters



GMK-610  
GMK-610(A)

#### FEATURE

1. Measuring by micro-compact.
2. Easy to use, quick to read & compact.
3. Large Digital LCD displays.
4. Low battery sign appears.

#### SPECIFICATIONS

1. Measuring Range	GMK-610 0.0% ~ 80.0% GMK-610(A) 90.0% ~ 100.0%
2. Accuracy	± 0.1%
3. Resolution	0.1%
4. Power Source	Battery 9V X 1EA
5. Display	Large Digital LCD
6. Temperature Compensation	Automatic
7. Dimensions	136(L)X69(W)X32(H)mm
8. Gross Weight	Approx. 500g

GMK-706R

### Fruits Brix-Acidity Meter



GMK-706R

#### FEATURE

1. Sweetness(Brix) : By using light refractive index.  
Sourness (Acidity) : By using electrical conductivity method.
2. Average data available.
3. Measurement results can be printed.
4. Low battery sign appears.
5. Platinum glided electrode used.
6. 'CE' mark obtained(GMK-835 series).

#### SPECIFICATIONS

1. Measuring Range	Acidity : 0.00%~3.50%, Brix : 0.00%~45.0%
2. Accuracy	Brix : ±0.1%, Acidity : ±0.05%
3. Resolution	Brix : 0.1%, Acidity 0.01%
4. Power Source	Battery 9V X 1EA, AC 100~240V.60HZ
5. Dimensions	175(L)X250(W)X65(H)mm
6. Gross Weight	Approx. 3Kg

GMK-708

### Fruits Acidity Meter



GMK-708

#### FEATURE

1. Sweetness(Brix) : By using light refractive index.  
Sourness (Acidity) : By using electrical conductivity method.
2. Average data available.
3. Measurement results can be printed.
4. Low battery sign appears.
5. Platinum glided electrode used.
6. 'CE' mark obtained(GMK-835 series).

#### SPECIFICATIONS

1. Measuring Range	0.00%~3.50%
2. Accuracy	± 0.05%
3. Resolution	± 0.01%
4. Power Source	Battery 1.5VX4EA, AC100~240V/Hz
5. Dimensions	175(L)X250(W)X65(H) mm
6. Gross Weight	Approx. 3Kg

GMK-835 Series

### Fruits Acidity Meters



GMK-835

#### FEATURE

1. Sweetness(Brix) : By using light refractive index.  
Sourness (Acidity) : By using electrical conductivity method.
2. Average data available.
3. Measurement results can be printed.
4. Low battery sign appears.
5. Platinum glided electrode used.
6. 'CE' mark obtained(GMK-835 series).

#### SPECIFICATIONS

	GMK-835	GMK-835A	GMK-835B	GMK-845	GMK-855	GMK-855A
Application	Citrus	Orange	Pineapple	Grape	Apple	Pear
Kind of acid	Citric Acid	Citric Acid	Citric Acid	Tartaric Acid	Malic Acid	Malic Acid
Measuring Range	0.00~3.50%	0.00~3.50%	0.00~3.30%	0.00~2.00%	0.00~2.50%	0.00~3.00%
Resolution	0.01%					
Accuracy	0.05%					
Power Source	9V Battery 1EA					
Dimensions	154(W)X108(L)X43(H) mm					
Gross Weight	Approx. 1Kg					



GMK-525N  
GMK-545A  
GMK-555A

### Digital Salt Checks



Digital Salt Check is not a typical healthcare product. However, it is the necessity of your life that cares for not only your taste but also your health by checking out the salt contents of all the foods you eat.

#### FEATURE

Hot key enables to measure the salt content in all kinds of soup things immediately while they are even being boiled. And, Cold key helps to measure directly the foods between 0 to 15 In other words, you don't need to spend your time in cooling or heating your foods in order to know the exact salt content in them.

#### MODELS

**GMK-525N**  
Precise measurement for patients with the diseases such as obesity, diabetes, high blood pressure, kidney problem, heart trouble & etc.

**GMK-545A**  
Home Doctor of home made foods. It is very much useful for housewives to want to care about the health of their children.

**GMK-555A**  
Measurement up to 10% directly for meat, dried meat, fish & dried fish to be preserved in salt.

#### SPECIFICATIONS

	GMK-525N	GMK-545A	GMK-555A
1. Measuring Ranges	0.00%~5.00%	0.0%~5.0%	0.0%~10.0%
2. Resolution	0.01%	0.1%	0.1%
3. Accuracy	±0.05%	±0.2%	±0.2%
4. Measuring Time	Approx. 5secs		
5. Display	Large Digital LCD		
6. Operating Temperature	0~100		
7. Power Source	Battery 1.5V(AAA)X3EA		
8. Dimensions	210(L)X45(W)X25(H) mm		
9. Gross Weight	Approx. 100g(Net Weight)		

GMK-303&503 Series

### Moisture Meters for Grains & Seeds



Rice, Brown Rice, Paddy, Barley, Naked Barley, Wheat, Coffee, Soybean, Red bean, Mung Bean, Beans, Pea, Peanut, Maize(Corn), Sunflower, Sesame, Millet, Rapeseed, Linseed, Buckwheat, Oats, Rye, Pumpkin, Radish, Cabbage, Melon, Water Melon, Red Pepper, Eggplant, Carrot, Spinach, Cucumber, Onion and etc.

#### FEATURE

1. Moisture content measurement for grains.
2. Easy to use, quick to read and compact.
3. Microprocessor control.
4. Automatic temperature compensation.
5. Battery replacement sign appears.
6. Electrical resistance method.
7. 'EM' & 'CE' marks obtained.

#### SPECIFICATIONS

1. Accuracy	±0.5%(Below 20%)
2. Resolution	0.1%
3. Display	Digital LCD
4. Operating Temperature	5~40
5. Power Source	Battery 1.5VX4EA
6. Dimensions	164(L)X94(W)X40(H) mm
7. Gross Weight	Approx. 1.5Kg

#### APPLICATIONS & MEASURING RANGES

GMK-303	GMK-303A	GMK-303C	GMK-303CF	GMK-303D	GMK-303ES
Rice 8.3%~26.0%	Rice 8.3%~26.0%	Hot(Drying) 7.0%~20.0%	Coffee 6.5%~23.5%	Rice 8.3%~26.0%	Millet 9.7%~25.4%
Brown rice 8.3%~36.0%	Paddy 8.5%~40.0%	Cold(Storgae) 7.0%~20.0%	Rice 8.3%~26.0%	Brown rice 8.3%~36.0%	Pea 9.7%~21.5%
Paddy 8.5%~40.0%	Soybean 8.5%~21.5%	Normal 7.0%~20.0%	Paddy 8.5%~40.0%	Paddy 8.5%~40.0%	Rapeseed 4.7%~20.2%
Barley 8.3%~35.0%	Barley 8.3%~35.0%		Wheat 8.5%~35.0%	Barley 8.3%~35.0%	Sunflower 4.5%~13.5%
Naked barely 8.5%~35.0%	Wheat 8.5%~35.0%		Soybean 8.5%~21.5%	Naked barely 8.5%~35.0%	Barley 8.3%~35.0%
Wheat 8.5%~35.0%	Maize(Corn) 8.7%~22.8%		Sunflower 4.5%~13.5%	Wheat 8.5%~35.0%	Wheat 8.5%~35.0%
			Maize(Corn) 8.7%~22.8%	Drying Paddy 6.8%~29.8%	Maize(Corn) 8.7%~22.8%
GMK-303F	GMK-303RS	GMK-303U	GMK-503	GMK-503A	
Millet 9.7%~25.4%	Rice 8.3%~26.0%	Black Pepper 5.0%~12.0%	Pumpkin 5.8%~12.0%	Eggplant 3.8%~12.5%	
Paddy 8.5%~40.0%	Paddy 8.5%~40.0%	Peanut 4.5%~14.7	Radish 1.9%~10.5%	Carrot 3.1%~11.1%	
Pea 9.7%~21.5%	Soybean 8.5%~21.5%	Sesame 4.8%~15.0%	Cabbage 3.3%~9.8%	Spinach 3.7%~10.3%	
Rye 9.8%~25.0%	Red bean 12.5%~19.7%	Red bean 12.5%~19.7%	Melon 3.9%~11.2%	Cucumber 3.3%~10.5%	
Soybean 8.5%~21.5%	Barley 8.3%~35.0%	Mung bean 10.5%~20.9%	Water Melon 3.6%~11.8%	Tomato 3.3%~11.5%	
Wheat 8.5%~35.0%	Wheat 8.5%~35.0%	Buckwheat 10.0%~26.0%	Red Pepper 3.9%~11.5%	Onion 5.4%~11.7%	
Maize(Corn) 8.7%~22.8%	Maize(Corn) 8.7%~22.8%	Sunflower 4.5%~13.5%			

#### Make Your Own GMK-303CF & GMK-303F

You can choose coffee & 6 grains (for GMK-303CF), or 7 grains (for GMK-303F) among APPLICATIONS above, and make your own GMK-303CF & GMK-303F.

Zeneer Power Series (RO & UP)

Water Purification System



Choice of Colors!

FEATURES

- Certified CE, ISO 9001, GD, QD, SD mark
- Built-in RS 232C Port
- Built-in Volumetric dispensing function by timer

SPECIFICATIONS

	Zeneer Power I	Zeneer Power II	Zeneer Power III
Product (RO, UP)	Max. 15L/Hr	Max. 25L/Hr	Max. 35L/Hr
Water Quality	-Pure Water: 0.0 to 30.0 $\mu$ s/cm -Ultra Pure: Up to 18.3 M $\Omega$ -cm		
Controller functions	1) Self test for external & internal system 2) Auto cleaning and monitoring function 3) Filter exchange indicator 4) Auto monitoring of Feed water quality		
Dimensions(W x D x H)	309 x 460 x 460mm		
Power	230V(110V on request), 50/60Hz, 60W		

Zeneer RO Series

Pure Water System



Choice of colors!

FEATURES

- Certified CE, ISO 9001, GD, QD, SD mark
- Built-in RS 232C Port
- Built-in Volumetric dispensing function by timer

SPECIFICATIONS

	Zeneer RO 180	Zeneer RO 280	Zeneer RO 380
Product (RO)	Max. 15L/Hr	Max. 25L/Hr	Max. 35L/Hr
Water Quality	-Pure Water: 0.0 to 30.0 $\mu$ s/cm		
Controller functions	1) Self test for external & internal system 2) Auto cleaning and monitoring function 3) Filter exchange indicator 4) Auto monitoring of Feed water quality		
Dimensions(W x D x H)	300 x 460 x 460mm		
Power	230V(110V on request), 50/60Hz, 60W		

Zeneer UP System

Ultra Pure Water System



Choice of colors!

FEATURES

- Certified CE, ISO 9001, GD, QD, SD mark
- Built-in RS 232C Port
- Built-in Volumetric dispensing function by timer

SPECIFICATIONS

	Zeneer UP 900
Product (UP)	1 ~ 1.2L/min
Water Quality	-Ultra Pure: Up to 18.3M $\Omega$ -cm
Controller functions	1) Self test for external & internal system 2) Auto recirculation function 3) Filter/UV Lamp exchange indicator 4) Auto monitoring of Feed water quality
Dimensions(W x D x H)	300 x 460 x 460mm
Power	230V(110V on request), 50/60Hz, 60W

New Human Power Series (RO & UP)

Water Purification System



Choice of colors!

FEATURES

- Certified CE, ISO 9001, GD, QD mark
- Programming by 2 steps of water quality for the filter exchange.
- Very simple to exchange the Filter-Pack (Molding Type)

SPECIFICATIONS

	New Human Power I	New Human Power II	New Human Power III
Product (RO, UP)	Max. 15L/Hr	Max. 25L/Hr	Max. 35L/Hr
Water Quality	-Pure Water: 0.0 to 30.0 $\mu$ s/cm -Ultra Pure: Up to 18.3 M $\Omega$ -cm		
Controller	1) Self test for external & internal system 2) Auto cleaning functions 3) Filter exchange indicator		
Dimensions(W x D x H)	400 x 567 x 500mm		
Power	230V(110V on request), 50/60Hz, 60W		

- New Human Power Series, New Human RO Series, New Human UP Series

Nex Power Series (RO & UP)

Water Purification System



FEATURES

- Certified CE, ISO 9001
- Produce Pure water & Ultra Pure water, simultaneously
- Very simple to exchange the Filter-Pack

SPECIFICATIONS

	Nex Power 1000	Nex Power 2000	Nex Power 3000	Nex Power 4000
Product(RO, UP)	Max. 15L/Hr	Max. 25L/Hr	Max. 35L/Hr	Max. 45L/Hr
Water Quality	-Pure Water : 0 to 30 $\mu$ s/cm -Ultra Pure : Up to 18.3M $\Omega$ -cm			
Display	Digital Display (RO : 0 to 200 $\mu$ s/cm) (UP : 1 to 18.3M $\Omega$ -cm)			
Dimensions(W x D x H)	400 x 570 x 500mm			
Power	230V(110V on request), 50/60Hz, 60W			

- Nex Power Series, Nex RO Series, Nex UP Series

X-ma 3000/1000 series

UV / VIS Spectrophotometer



FEATURES

- Built-in 8 cell holder
- Built-in USB or Parallel Port
- High resolution scanning (X-ma 3000 series)
- Single beam system
- Easy-to-use instrument

SPECIFICATIONS

	X-ma 3200
Wavelength Range	190 to 1100nm
Wavelength Accuracy	$\pm$ 0.3nm
Wavelength Repeatability	0.2nm
Monochromator	Single-beam, Grating 1200 lines/mm
Photometric accuracy	$\pm$ 0.2% T
Photometric repeatability	$\pm$ 0.15% T
Display	LCD Display
Measuring modes	Abs. % T. Conc.
Dimensions(WxDxH)	480 x 360 x 160mm



POWERSONIC 405/410/420

### Ultrasonic Cleaner



#### FEATURES

- Built-in microprocess controller
- Selectable use with ultrasonic power controller(3 steps)
- Built-in a digital thermometer and timer to set a optimum condition for cleaning

#### SPECIFICATIONS

Model	405	410	420
Transducer	Industrial BLT Type		
Time Range	0~99min (Digital)		
Temp. Range	0~50℃ (Digital)		
Frequency	40KHz		
Housing Material	ABS		
Bath Capacity(ℓ)	5.7	10.0	20.7
Bath Size(mm)	300X155X150	300X240X150	500X300X150
Overall Size(mm)	500X285X255	510X375X275	720X450X275
Required Power(W)	350	500	700
Net Weight(kg)	7	9	14
Voltage	100~240VAC, 50/60Hz		

POWERSONIC 505/510/520

### Ultrasonic Cleaner



#### FEATURES

- Backlit LCD screen
- Furnishing all information - Ultrasonic power, set time, elapsed time, set temperature, solution temperature, heater operation status
- Easy to adjust time and temperature setting with a number key
- Using a silicon rubber heater for durability and stability

#### SPECIFICATIONS

Model	505	510	520
Display	70X40mm LCD Screen		
Transducer	Industrial BLT Type		
Time Range	0~99min (Digital)		
Temp. Range	0~50℃ (Digital)		
Frequency	40KHz		
Housing Material	ABS		
Bath Capacity(ℓ)	5.7	10.0	20.7
Bath Size(mm)	300X155X150	300X240X150	500X300X150
Overall Size(mm)	500X285X260	510X375X280	720X450X280
Required Power(W)	350	500	700
Net Weight(kg)	7	9	14
Voltage	100~240VAC, 50/60		

POWERSONIC 603

### Ultrasonic Cleaner



#### FEATURES

- Built-in microprocessor controller
- User-friendly control panel for easy and simple operation
- Selectable use of ultrasonic power (3 steps - Low, Medium, High)
- Degassing function

#### SPECIFICATIONS

Transducer	Industrial BLT Type	Time Range	0~99min (Digital)
Temp. Range	0~60℃ (Digital)	Frequency	40KHz
Housing Material	SUS 304 + ABS	Bath Capacity(ℓ)	3.3
Bath Size(mm)	W240XD140XH100	Overall Size(mm)	W325XD225XH255
Required Power(W)	220	Basket Dimensions(mm)	W230XD135XH105
Net Weight(kg)	4.5	Voltage	100~240VAC, 50/60Hz

POWERSONIC 212

### Ultrasonic Pipette Cleaner



#### FEATURES

- Automatic water supply and drain by Siphon principle
- Strong cleaning power by industrial BLT transducer
- No need to change water when cleaning
- Short cleaning time

#### SPECIFICATIONS

Frequency	28KHz
Timer	0~99min (Digital)
Vessel Size(mm)	160φ X H685
Basket Size(mm)	140φ X H505
Overall Size(mm)	W320XD320XH850
Water Flow Rate(ℓ)	12
Cabinet Material	Stainless steel SUS 304
Vessel Material	Transparency Acryl resin
Output(W)	250
Power Supply	AC 220V, 50/60Hz
Accessory	Basket, water supply hose(3m)

205RM / 210RM

### Roller Mixer



#### FEATURES

- Simultaneous rotating and rocking action provides fast and gentle mixing
- Rollers are made of plastics, which are durable and easy to dispose Contaminants.
- The quiet motor, durable plastic gears, and smooth mixing action result in a low noise level
- Baseplate is made of stainless steel and easy to maintain

#### SPECIFICATIONS

Model	205RM	210RM
Roller	5 ea	10 ea
Speed	40 rpm	50 rpm
Roller Length	325	325
Capacity	Universal bottle 12	Universal bottle 27
Dimension(mm)	W220XD480XH110	W420XD480XH110
Net Weight	4.5	8.5
Power	AC110 or 220V, 50/60Hz	

250VM / 260VM

### Vortex Mixer



#### FEATURES

- Suitable for the experiments of mixture, reaction and dissolution of fluid samples in a moment
- Proper speed according to the environment of experiments can be achieved with a toggle switch
- The most suitable mixing condition can be made by using a powerful motor

#### SPECIFICATIONS

Model	250VM	260VM
Type	Test Tube	Flat Head
Head Material	NBR	PE Foam
Case Material	Engineering ABS	
RPM	Max 3000	Max 3000
Dimension(mm)	135X185X180	135X185X190
Net Weight	About 3kg	
Power	AC110 or 220V, 50/60Hz	

## DEEP FREEZER



### FEATURE

- Hermetically sealed cooling system with very durable compressors
- Cold air loss is minimized by insulated inner doors
- 130 mm polyurethane foamed insulation
- Cabinet with round corners for easy cleaning
- Quiet running fans and compressors create a very low noise level (+/- 50 dBA)
- Light adjustable HDPE shelf with air circulation hole(No wrenched in -120°C)

### Standard Specification Up-Right Freezers Cascade Refrigeration System : -40°C to -86°C

Model no:	DF8510	DF8514	DF8517	DF8520	DF8524
Capacity	276 liters	369 liters	484 liters	605 liters	730 liters
Ext Dimensions W×D×H mm	920×900×1740	920×900×1979	920×1050×1979	1070×1050×1979	1070×1180×1979
Int Dimensions W×D×H mm	600×480×960	600×480×1280	600×630×1280	750×630×1280	750×760×1280
Weight	294 kg	334 kg	380 kg	410 kg	450 kg
Insulation	130 mm Non CFC, foamed in place polyurethane				
Certifical	ISO9001, ISO14001, CE, EM, KFDA, ETL Certified				

### Standard Specification Chest Freezers Cascade Refrigeration System : -40°C to -90°C

Model no:	DF9007	DF9010	DF9014	DF9017	DF9020
Capacity	191 liters	295 liters	392 liters	492 liters	593 liters
Ext Dimensions W×D×H mm	1280×790×1030	1590×790×1030	1880×790×1030	2180×790×1030	24800×790×1030
Int Dimensions W×D×H mm	570×500×670	870×500×670	1170×500×670	1470×500×670	1770×500×670
Weight	211 kg	236 kg	261 kg	286 kg	311 kg
Insulation	130 mm Non CFC, foamed in place polyurethane				
Certifical	ISO9001, ISO14001, CE, EM, KFDA, ETL Certified				

## ICE - MAKER (FLAKE TYPE)



### FEATURE

- One-touch connection system for easy water supply
- Safety System of check ice storage check, with automatic check system.
- Twin screw shaft mechanism
- Automatic system form water supply to ice production

### SPECIFICATION

- Specifications of Ice Maker
  - Model No IF300-150
  - Cabinet Dimensions : 700W×700D×975H mm
  - Bin Storage Dimensions : 600W×300D×500H mm
  - Ice Production : 120 kg / Day
  - Storage Capacity : 90 kg
  - Refrigeration System : 1/3 Hp Compressor
  - Cabinet Material : Blower Molded(High Density Poly Ethylene)

## FREEZE DRYER



### FEATURE

- Automatic Control System: Customer can operate from drying to defrosting by pushing a button at once.
- Automatic Purge System : Automatic purge system prevents backward of vacuum oil to protect sample.

Model no:	FD5508	FD5512	FD5518	FD8508	FD8512	FD8518
ICE Capacity/day	5 liters	10 liters	12 liters	5 liters	12 liters	18 liters
Total Ice Capacity	8 liters	12 liters	18 liters	8 liters	12 liters	18 liters
Cabinet Dimensions	805W×750D×885H mm					
Weight	120 kg	122 kg	130 kg	145 kg	147 kg	155 kg
Condenser Temperature	-50°C to -55°C			-75°C to -85°C		

## PROGRAMMABLE VACUUM FREEZE DRYER



### FEATURE

- Using compulsory Circulation method for heat-transmission allows equality of shelf temperature. So sample can be stabilized and equally dried.
- With Touch Screen Control System customer can monitor whole drying procedure and store/print as per customer' s need.
- Ice holding method protects refrigeration system by expanding cold trap surface.
- Customer can use manifold drying system when they want to dry separated sample during chamber drying procedure.
- Automatic alarm signal and sound when alarm system is working
- Automatic dial contact five telephone number as per customer' s setting

Model No:	PVTFD10R	PVTFD20R	PVTFD30R	PVTFD50R	PVTFD100R
ICE Capacity/day	8 liters	16 liters	24 liters	40 liters	80 liters
Total Ice Capacity	10 liters	20 liters	30 liters	50 liters	100 liters
Condenser temperature	- 70°C to -80°C				
Shelf temperature	-40°C to +80°C				
Shelf dimensions(W×D×H)	400×500×20	500×800×20	500×800×20	805×1005×20	
Shelf Quantity	3+1= 4 EA	5+1= 6 EA	4+1= 5 EA	7+1= 8 EA	7+1= 8 EA
Refrigeration system	2Hp×2 EA	3Hp×2 EA	5Hp×2 EA	7.5Hp×2 EA	10Hp×2 EA
Cabinet dimensions (W×D×H)	1390×850×1765	1470×1023×1905	1300×1891×1895	1450×2003×2140	1600×2415×2210
Electrical requirements	220/230V, 50/60Hz, Single/Three phase			380V, 50/60Hz, Three phase	
Vacuum Pump	417 Liters/Min	648 Liters/Min	841 Liters/Min	841 Liters/Min	1600 Liters/Min



pH-20N

**pH/mV/ORP/Temp(Custom LCD)**



**FEATURE**

- Waterproof(IP66) housing, Backlit custom LCD display
- Fast, accurate and easy to use, RS 232C communication
- Simultaneous display of pH, temp and current time
- Auto(Manual) calibration with choice of buffer(3points)
- Automatic compensation for Temperature
- Low Battery Alarm, Rechargeable Battery
- Data-log up to 100 Points, Auto power-off
- Certificated CE mark, GD mark, ISO 9001

DO-350L

**DO/O<sub>2</sub>/Air/pO<sub>2</sub>/Temp(SDIS, Graphic Color LCD)**



**FEATURE**

- Wide & clear backlit graphic color LCD display
- Fast, accurate and easy to use, RS 232C communication
- Simultaneous display of DO(O<sub>2</sub>/Air/pO<sub>2</sub>), temp and current time
- Automatic compensation for Temp, Alarm displays at high/low limit,
- Using high sensitive polarographic type DO sensor
- Automatic compensation for temp and barometric pressure
- Available measure by using latest calibration data
- Self diagnostics, Auto-hold, Data-log up to 500 Points
- Certificated CE mark, ISO 9001, Built-in printer (Option)
- Upload the data in Excel format to PC by RS232C(SDIS-Option)



EC-470L

**Conductivity/TDS/Salinity/Resistivity/Temp(SDIS, Graphic Color)**



**FEATURE**

- Wide & Backlit graphic color LCD display
- Fast, accurate and easy to use, Auto hold
- Simultaneous display of EC(Salinity/TDS), temp and current time
- Selectable cell constant, Automatic compensation for Temp
- Alarm displays at high/low limit, Auto ranging
- Data-log up to 500 Points, Self diagnostics
- RS 232C communication, Built-in printer (Option)
- Certificated CE mark, ISO 9001
- Upload the data in Excel format to PC by RS232C(SDIS-Option)



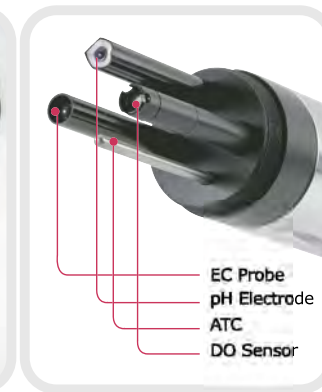
PDC-70N

**pH/ISE/DO/O<sub>2</sub>/Air/EC/Salinity/TDS/Temp(Rechargeable Battery, Graphic LCD)**



**FEATURE**

- Industrial electrodes(pH/DO/EC) are used
- Waterproof(IP66) housing, Backlit graphic LCD display
- Cable length can be adjusted on request (std 3M, Max 100M)
- Fast, accurate and easy to use, Auto hold
- Depth of water 10M(Max), Data-log up to 210 points
- Measure and display of pH(ISE), DO and EC simultaneously
- Fast, Accurate and easy to install, Auto buffer choice
- Selectable cell constant, Auto ranging
- Automatic compensation for Temp and barometric pressure
- Auto power-off, Self diagnostics, Low Battery Alarm
- Rechargeable Battery, RS 232C communication
- Certificated CE mark, GD Mark, ISO9001, KT Mark
- \*Application : Industrial water, Aqua cultural water, Supplying water and Ground water



EcoMet P15 /D 35 /C 65

**Compact Portable Meter**



▲EcoMet P15 ▲EcoMet D35 ▲EcoMet C65

Model No	Measuring Parameter
P15	pH/mV/Temp
D35	Dissolved Oxygen/O <sub>2</sub> /Temp
C65	Conductivity/Temp
O10	ORP
S60	Salinity/Temp

**FEATURE**

- Clear custom LCD display
- Fast & accurate and easy to use
- Automatic(2points) calibration & buffer recognition
- Simultaneous display of Data and Temperature
- Automatic (Manual) compensation for Temperature
- Automatic compensation for barometric pressure and salinity
- Easy to use by Automatic O<sub>2</sub> compensation
- Selectable cell constant for accurate measurement

J-300S / 300M

**Forced convection drying oven**

CE



Model		J-300S	J-300M
Type			
Forced convection system			
Overall size (W×D×H)	mm	580×600×820	730×650×870
Chamber size (W×D×H)	mm	450×450×450	600×500×500
Capacity	ℓ	91	150
Temperature	range	Ambient+ 10℃ ~ 260℃	
	accuracy	± 0.5℃ at 100℃	
	uniformity	± 1.0℃ at 100℃	
	controller	PID controller	
	regulator	SSR type	
Thermocouple			
K type(CA)			
Heater(incoloy sheath)	W	1,200	1,200
Circulation fan & motor	W	φ 150X60 24W	
Safety device			
Self diagnosis function (Memory error, Temp. overheating, SSR short circuit, Sensor short circuit), ELB (Electric Leakage Breaker)			
Shelves			
3ea			
Material	interior	Stainless steel plate	
	exterior	Steel plate with powder coated finish	
Power source		AC 230V, 50/60Hz, 1 φ	
Certification		CE	

J-100S / 100M

**Gravity convection incubator**

CE



Model		J-100S	J-100M
Type			
Gravity convection system			
Overall size (W×D×H)	mm	580×600×820	730×650×870
Chamber size (W×D×H)	mm	450×450×450	600×500×500
Capacity	ℓ	91	150
Temperature	range	Ambient + 5.0℃ ~ 60.0℃	
	accuracy	± 0.5℃ at 37℃	
	uniformity	± 1.0℃ at 37℃	
	controller	PID controller	
	regulator	SSR type	
Thermocouple			
Pt 100 ohms			
Heater	W	200	300
Safety device			
Self diagnosis function (Memory error, SSR short circuit, Temperature overheating protection, Sensor short circuit), ELB			
Shelves			
3ea			
Material	interior	Stainless steel plate.	
	exterior	Steel plate with powder coated finish	
Power source & consumption		AC 230V, 50/60Hz, 1 φ	
Certification		CE	

J- IBO1 / IBO2 / IBO3

**BOD incubator**

CE



Model		J-IBO1	J-IBO2	J-IBO3
Type				
Forced convection system				
Overall size (W×D×H)	mm	660×720×1,360	660×820×1,610	760×770×1,810
Chamber size (W×D×H)	mm	500×400×750	500×500×1,000	600×450×1,200
Capacity	ℓ	150	250	324
Temperature	range	5℃ ~ 60℃		
	accuracy	± 0.5℃ at 20℃		
	uniformity	± 1.0℃ at 20℃		
	controller	PID controller		
	regulator	SSR type		
Thermocouple				
Pt 100 ohms				
Heater (Ni-Cr)	W	600	800	1,000
Refrigeration compressor	Hp	1/4	1/4	1/3
Safety device				
Self diagnosis function (Memory error, Temp. overheating, SSR short circuit, Sensor short circuit), ELB				
Shelves				
3ea				
Material	interior	Stainless steel plate		
	exterior	Steel plate with powder coated finish		
Power source		AC 230V, 50/60Hz, 1 φ		
Certification		CE		

J-IRW300 / IRA200

**CO<sub>2</sub> incubator**

CE



Model		J-IRW300	J-IRA200
Type			
		Water jacketed system	Air jacketed system
Environmental temperature range			
5℃ ~ 25℃			
Overall size (W×D×H)	mm	620×630×970	
Bath inner size (W×D×H)	mm	440×430×650	
Using capacity	ℓ	122	
Temperature	range	Ambient+ 10.0℃ ~ 50.0℃	
	accuracy	± 0.5℃ at 37℃	
	uniformity	± 1.0℃ at 37℃	
	controller	PID controller	
	regulator	SSR type	
CO <sub>2</sub>	range	0.0% ~ 10.0%	
	accuracy	± 0.1%	
	uniformity	± 0.25%	
CO <sub>2</sub> sensor			
N.D.I.R. (Non dispersive infrared) sensor			
Heater	W	400	200
Safety device			
Self diagnosis functions (Memory error, Temp. overheating, SSR short circuit, Sensor short circuit), ELB, overheating protection, water level display			
Shelves			
3ea			
Power source		AC 230V, 50/60Hz, 1 φ	
Certification		CE	-

J-NSIL-R/SISN-R

**Shaking incubator**

CE



Model		J-NSIL-R (cooling)	J-SISN-R
Shaking type			
Rotation type			
Overall size (W×D×H)	mm	540×675×580	540×620×460
Chamber size (W×D×H)	mm	500×500×300	500×500×300
Plat-form size	mm	410×410	
Temperature	range	15.0℃ ~ 60.0℃	Ambient + 10.0℃ ~ 60.0℃
	accuracy	± 0.5℃ at 37℃	
	uniformity	± 1.0℃ at 37℃	
	controller	PID controller (digital setting and display)	
	regulator	SSR type	
Thermocouple			
Pt 100 ohms			
Heater(Ni-Cr)	W	700	500
Capacity		Erlenmeyer flasks 250ml × 18ea or 500ml × 13ea	
Shaking speed	rpm	35 ~ 300	
Refrigeration compressor	Hp	1/8	-
Safety device			
Self Diagnosis function (Memory error, temperature overheating, SSR short circuit, Sensor short circuit), ELB (Electrical Leakage Breaker), Sound alarm			
Material	interior	Stainless steel plate	
	exterior	Steel plate with powder coated finish	
Power source		AC 230V, 50/60Hz, 1 φ	
Certification		CE	-

J-RHC1-LCD-T

**Constant temp. & humidity chamber**

CE



Model		J-RHC1-LCD-T
Overall size (W×D×H)		
mm		
1,070×1,020×1,750		
Chamber size (W×D×H)		
mm		
500×500×600		
Capacity		
ℓ		
150		
Temperature	range	-20.0℃ ~ 150.0℃
	controller	LCD touch screen programmable controller
Humidity	range	35% ~ 95% (Basic range)
	controller	LCD touch screen programmable controller
	sensor	Electronic sensor (4~20mA)
Thermocouple		
Pt 100 ohms		
Heater (sheath)	drying bulb	W
	humidity bulb	W
		2,000
Refrigerator	condenser system	
	compressor	Hp
		One stage (air cooling)
		1/3 × 1ea, 3/4 × 1ea
Safety device		
Overload prevent, alarm, overheating prevent, ELB, water empty, current leak, over current, circuit breaker		
Shelves		
3 ea		
Material	interior	Stainless steel plate
	exterior	Steel plate with powder coated finish
Power source & consumption		AC 230V, 50/60Hz, 1 φ
Certification		CE

※Option : Temp. & Humidity recorder



J-SWB18 / SWB28

Water bath shaker

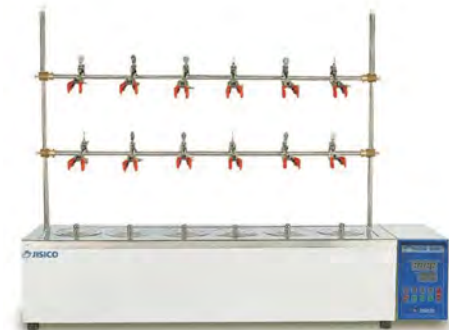


Model		J-SWB18	J-SWB28
Type		Reciprocating type	
Overall size (W×D×H)	mm	560×410×380	760×460×380
Chamber size (W×D×H)	mm	400×350×220	600×400×220
Capacity	ℓ	35	60
Temperature	range	Ambient+ 5℃ ~ 99℃	
	accuracy	± 0.1℃ at 50℃	
	uniformity	± 0.5℃ at 50℃	
	controller	PID controller	
Thermocouple	regulator	SSR type	
		Pt 100 ohms	
Shaking	speed range	rpm	35 ~ 250
	stroke	mm	30
	motor	Hp	1/8
	capacity	ml	250×9ea
Heater(sheath)	W	2,000	3,000
Circulation fan & motor	W	φ 150X60X24W	
Safety device		Self diagnosis function (Memory error, temp. overheating, SSR short circuit, Sensor short circuit)	
Material	interior	Stainless steel plate	
	exterior	Steel plate with powder coated finish	
Power source & consumption		AC 220V, 50/60Hz, 1 φ	

※ Option : Digital rpm meter, shaking plate (spring wire rack)

J-BS3D

Soxhlet water bath



Model		J-BS3D
Type		6 hole opening type
Overall size (W×D×H)	mm	1,080×230/260×220/870
Bath inner size (W×D×H)	mm	890×170×130
Capacity	ℓ	19
Temperature	range	Ambient + 5℃ ~ 100℃
	controller	PID controller
	regulator	SSR type
Thermocouple		Pt 100 ohms
Heater(sheath)	W	2,000
Safety device		Self diagnosis function (Memory error, temp. overheating, SSR short circuit, Sensor short circuit)
Material	interior	Stainless steel plate
	exterior	Steel plate with powder coated finish
Power source		AC 220V, 50/60Hz, 1 φ

J-BAL / BAG / BAS / BAO

Water bath



Model		J-BAL8	J-BAG8	J-BAS8	J-BAO8	
Size	bath inner(W×D×H)	mm	450×300×200	320×260×200	350×250×150	300×200×110
	overall(W×D×H)	mm	610×360×395	510×360×370	510×310×350	460×260×280
Capacity	ℓ	27	16.6	13	6.6	
Temperature	range	Ambient+ 5℃ ~ 100℃				
	controller	Digital setting & display				
	regulator	SSR type				
Thermocouple		Pt 100 ohms				
Heater(sheath)	W	1,500	1,500	1,000	550	
Material	interior	Stainless steel plate				
	exterior	Steel plate with powder coated finish				
Power source & consumption		AC 220V 60Hz 1 φ				
Net weight	kg	16		12	9	

※ Option : P.I.D. controller

J-FM2 / FM3 / FM4

Electric muffle furnace



Model		J-FM2	J-FM3	J-FM4
Overall size (W×D×H)	mm	450×610×550	580×655×675	1,010×770×1,220
Chamber size (W×D×H)	mm	150×300×100	250×350×160	350×450×400
Capacity	ℓ	4.5	14	63
Temperature	range	Ambient +10℃ ~ 1,000℃(Max)		
	using range	300℃ ~ 900℃		
	controller	PID controller		
	regulator	SSR type		SCR type
Thermocouple		K type(CA)		
Heater capacity	W	3,000	4,500	12,000
Heating element		Molded Kanthal A1		
Insulation		Fiber & ceramic		
Power source		AC 220V, 50Hz or 60Hz, 1 φ		AC 220V, 50Hz or 60Hz, 3 φ

J-NAS62 / NAS81 / NAS103

Automatic autoclave, sterilizer

CE



Model		J-NAS62	J-NAS81	J-NAS103
Overall size (W×D×H)	mm	700×500×880/1,160	750×550×880/1,160	800×600×880/1,160
Inner size (φ×H)	mm	350×650	400×650	450×650
Capacity	ℓ	62.5	81.6	103
Method sterilization		High pressure system		
Temperature	range	121℃		
	controller	PID controller		
	regulator	SSR type		
Thermocouple		Pt 100 ohms		
Using pressure		1.15kgf/cm <sup>2</sup>		
Heater (sheath)	W	3,500	4,000	4,500
Pressure gauge	kgf/cm <sup>2</sup>	Mechanical type 0 ~ 2 (JAPAN)		
Basket		2ea		
Safety device	heating	Self diagnosis function (Memory error, temp. overheating, SSR short circuit, Sensor short circuit), ELB		
	pressure	Double safety valve (U.S.A)		
Material	basket	Stainless steel		
	exterior	Steel plate with powder coated finish		
Power source		AC 230V, 50/60Hz, 1 φ		
Certification		CE		

J-USRC

Shaker

CE



Model		J-USRC
Shaking type		Rotation type (Option :Reciprocating type)
Main body size (W×D×H)	mm	310×370×75 (without plat-form)
Plat-form size (W×D×H)	mm	300×300×50 (with 100ml flask holder)
Stroke	mm	30
Shaking speed	rpm	35~250
Motor (BLDC)	W	40
Controller		Digital setting / feedback system
Capacity(flask)	ml	100×16ea or 250×9ea or 500×6ea
Power source		230V, 50/60Hz, 1 φ
Certification		CE

Option



J-MF

Vortex tube mixer

CE



Model		J-MF
Overall size (W×D×H)	mm	125×185×160
Speed range	rpm	3,000(Max)
Motor	Hp	23
Flask pad diameter	mm	90
Material		ABS. (acrylonitrile-butadiene-styrene)
Power source		AC230V, 50/60Hz, 1 ∅
Net weight	kg	2.6
Certification		CE

J-MSFS

Separatory funnel shaker

CE



Option



Model		J-MSFS	
Shaking type		Reciprocating type (vertical or horizontal shaking)	
Overall size (W×D×H)	mm	660×460×480	
Platform size (W×D)	mm	300×400	
Shaking	controller	Dial knob/ digital display	
	speed	rpm	60 ~ 350
	capacity	mℓ	Separatory funnel 250, 500, 1000 (250/500/1,000×6ea) Erlenmeyer flask holder 250 ~ 300×12ea
Motor (BLDC)	W	60	
Accessories (option)		Shaking rack for flask (clamp type)	
		Shaking rack for test tube (spring type)	
		Shaking rack for bottles or flasks (bar type)	
		Safety cover and rubber foot (4 ea)	
Power source & consumption		AC 230V 50/60Hz 1 ∅	
Certification		CE	



J-NMS / MS4

Hot-plate magnetic stirrer



Model		J-NMS	J-MS4
Overall size (W×D×H)	mm	200×225×120	460×380×175
Size (top-plate) (W×D)	mm	180×180	∅ 150×4ea
Temperature (surface)		400℃(Max)	400℃(Max)
Speed	rpm	100~1,600	2,000(Max)
Heater(sheath)	W	600	300×4
Material (top-plate)		Ceramic coated	Aluminum die-casting with ceramic coated
Power source		AC 220V, 50Hz or 60Hz, 1 ∅	AC 220V, 50Hz or 60Hz, 1 ∅
Net weight	kg	3.5	11.7

J-VSS

Vibratory sieve shaker

CE

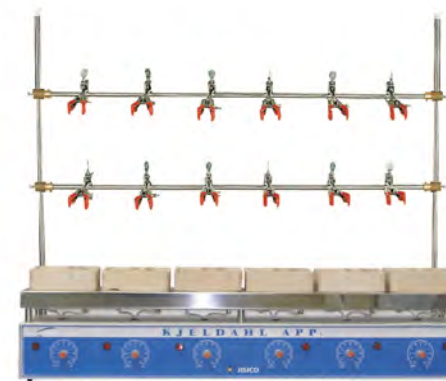


Model		J-VSS
Shaking type		Vibration type(up/down)
Overall size(W×D×H)	mm	360×460×620(170/450)
Shaking(vibration)	control system	Frequency control
	controller	Digital setting / display
	mode	Interval vibratory motion :3.2.1sec Continuous & vibratory motion (4 mode)
	vibration speed	130 cycles per min.
Power consumption	W	500
Power source		AC 230V 50/60Hz 1 ∅
Certification		CE

※Option : Sieve, sieving ring, rubber ball

J-H6S

Kjeldahl digesting equipment



Model		J-H6S
Overall size (W×D×H)	mm	810/880×170/220×200/770
Plate size (W×D×H)	mm	120×120×60, 6ea
Temperature	range	600℃(Max)
	controller	Analog setting type x 6 set
Heater(Ni-Cr)	W	3,000 (500×6ea)
Capacity (flask)	mℓ	250 ~ 800×6ea
Material	body	Steel plate with powder coated finish
	hot plate	Porcelain refractory
Power source		AC 220V, 50Hz or 60Hz, 1 ∅
Weight		20 kg

J-JT6S

Jar-tester

CE



Model		J-JT6S
Overall size (W×D×H)	mm	950×340×450
Impeller	blade(W×L)	75×25
	up-down	250
Speed controller		Digital setting/display
Speed (digital display)	rpm	28 ~ 300(Max.)
Motor (BLDC)	W	38
Stirrer		6ea
Function		Digital PID speed controller and timer, digital RPM meter
Timer (digital setting & display)		99hr 59min. or infinity
Fluorescent lamp	W	30×2ea
Material	body	Steel plate with powder coated finish
	stirrer	Stainless steel plate
Power source & consumption		AC 230V 50/60Hz 1 ∅
Net weight	Kg	40



Labcare-900

### Filtration Fume Cupboard



#### FEATURE

- Ductless Filtering Fume Cupboard System
- Toxic Gas & Odor Eliminated by Zeolite Chemical Filter System
- Purified Room Air by Filtration System

#### SPECIFICATION

- Dimension : 900(W) × 750(D) × 2,000(H)mm
- Filter type : Zeolite Chemical Filter
- Retention Capacity : More than 3,000g
- Air Flow : 300 CMH
- Air Velocity : More than 0.53 m/s
- Lighting : 36W × 2ea
- Sound Level : Less than 49dBA
- Power Consumption : 100W (Except Lamp)
- Voltage : 230V-60Hz / 115V-50Hz
- Safety Device : Timer, Filter Check, Velocity Monitor, Fan Failure, Worksurface & Spill Tray

Labcare-EDU

### Educational Filtration Fume Cupboard



#### FEATURE

- Ductless Filtering Fume Cupboard System
- Toxic Gas & Odor Eliminated by Zeolite Chemical Filter System
- Back Panel for the Education
- Purified Room Air by Filtration System

#### SPECIFICATION

- Dimension : 800(W) × 650(D) × 1,900(H)mm
- Filter type : Zeolite Chemical Filter
- Retention Capacity : More than 2,000g
- Air Flow : 150 CMH
- Air Velocity : More than 0.53 m/s
- Lighting : 55W
- Sound Level : Less than 49dBA
- Power Consumption : 50W (Except Lamp)
- Voltage : 230V-60Hz / 115V-50Hz
- Safety Device : Timer, Filter Check, Velocity Monitor, Fan Failure, Worksurface & Spill Tray

Labstore-Single

### Filtration Reagent Storage Cabinet



#### FEATURE

- Ductless Filtering Reagent Storage System
- Toxic Gas & Odor Eliminated by Zeolite Chemical Filter System
- Purified Room Air by Filtration System

#### SPECIFICATION

- Dimension : 800(W) × 500(D) × 2,100(H)mm
- Storage Capacity : More than 100 bottle (1Liter)
- Filter type : Zeolite Chemical Filter
- Retention Capacity : More than 2,000g
- Air Flow : 90 CMH
- Air Velocity : More than 0.51 m/s
- Shelves : 5ea (Adjustable)
- Sound Level : Less than 49dBA
- Power Consumption : 50W
- Voltage : 230V-60Hz / 115V-50Hz
- Safety Device : Filter Check, Velocity Monitor, Fan Failure, Spill Tray, Lock System

Labstore-Double

### Filtration Reagent Storage Cabinet



#### FEATURE

- Ductless Filtering Reagent Storage System
- Toxic Gas & Odor Eliminated by Zeolite Chemical Filter System
- Purified Room Air by Filtration System

#### SPECIFICATION

- Dimension : 1,600(W) × 500(D) × 2,100(H)mm
- Storage Capacity : More than 200 bottle (1Liter)
- Filter type : Zeolite Chemical Filter
- Retention Capacity : More than 2,000g
- Air Flow : 90 CMH
- Air Velocity : More than 0.51 m/s
- Shelves : 10ea (Adjustable)
- Sound Level : Less than 49dBA
- Power Consumption : 50W
- Voltage : 230V-60Hz / 115V-50Hz
- Safety Device : Filter Check, Velocity Monitor, Fan Failure, Spill Tray, Lock System

## Water Purifier System (Wellix Series)



### FEATURE

- 20X4 Line Blue backlight LCD is adjusted, so quality of water and temperature are shown in one screen.
- Solution about the error message is indicated, when error occurs during the working.
- Screen shows in real-time. Sensors about temperature of input water and measurement of quality of water are attached.
- Replacement is easy. When filter changes, internal pressure of machine is automatically removed.
- Machine run time and remainder of filter are shown as % (percent), filter life can be anticipated.
- When quality of water lowers, "warning" and "replace" message are expressed as character.
- A point of replacement time of RO pack or UP pack is expressed as sound.
- When location of filter pack is not proper or different size pack is installed, error message is shown.
- Guard pack, RO filter, and UP filter are made as pack type, so replacement is easy. (Design application)
- Front door can be open, so replacement is very easy.

Model	Wellix Plus I	Wellix Plus II	Wellix Pure I	Wellix Pure II	Wellix Mega
Product	RO, UP	RO, UP	RO	RO	up
Product flow	Max. 15L/Hr (RO Standard)	Max. 25L/Hr (RO Standard)	Max. 15L/Hr (RO Standard)	Max. 25L/Hr (RO Standard)	Max. 50L/Hr
Quality display	Input water : 0 ~ 600 $\mu$ s/cm Pure water (RO) : 0 ~ 200 $\mu$ s/cm Ultra pure water (UP) : 0 ~ 18.3M $\Omega$ .cm Temperature : 0 ~ 99.9 $^{\circ}$ C		Input water : 0 ~ 600 $\mu$ s/cm Pure water (RO) : 0 ~ 200 $\mu$ s/cm Temperature : 0 ~ 99.9 $^{\circ}$ C		Input water : 0 ~ 600 $\mu$ s/cm Ultra pure water (UP) : 0 ~ 18.3M $\Omega$ .cm Temperature : 0 ~ 99.9 $^{\circ}$ C
Controller	Microprocess Type		Microprocess Type		Microprocess Type
Display	20 X 4 characters backlight LCD digital display		20 X 4 characters backlight LCD digital display		20 X 4 characters backlight LCD digital display
Standard filter & Accessories	Guard Pack, Wellix RO Pack, Plus UP Pack, 0.22 $\mu$ s Capsule filter, Power cord, Tube, Level sensor, Manual		Guard Pack, Wellix RO Pack Power cord, Tube, Level sensor, Manual		Mega UP Pack, 0.22 $\mu$ s Capsule filter Power cord, Tube, Level sensor, Manual
Optional filter	Water softener, 254/185nm UV Lamp, MW 5000 UF filter		Water softener		Water softener, 254/185nm UV Lamp, MW 5000 UF filter
Function	- System auto test - Flushing function - Machine protection function - Check key function - Auto / Manual Recycle - Filter replace function - Filter replace display - Auto control function for drain		- System auto test - Flushing function - Machine protection function - Check key function - Filter replace function - Filter replace display - Auto control function for drain		- System auto test - Auto Recycle - Machine protection function - Check key function - Filter replace function - Filter replace display
Water Qualification	Pressure of input water is higher than 1kgf/cm $^2$		Pressure of input water is higher than 1kgf/cm $^2$		
Dimensions	400(W) $\times$ 492(D) $\times$ 517(H)		400(W) $\times$ 492(D) $\times$ 517(H)		400(W) $\times$ 492(D) $\times$ 517(H)
Power	110Vac or 220Vac, 50/60Hz, 80W		110Vac or 220Vac, 50/60Hz, 60W		110Vac or 220Vac, 50/60Hz, 60W

## Water Purifier System (Dream Series)



### FEATURE

- 16  $\times$  2 Line Blue backlight LCD is adjusted.
- When error occurs during the working, error message is shown.
- Quality of water is displayed in real-time, because sensor for correction about quality of water is attached.
- Filter life can be expected, because run time and remainder % of filter are shown during the working.
- When quality of water lowers, "warning" and "replace" message are expressed as character.
- When location of filter pack is not proper or different size pack is installed, error message is shown.
- Guard pack, RO filter, and UP filter are made as Pack type, so replacement is easy. (Design application)
- Front door can be open, so replacement is very easy.

Model	Dream Plus I	Dream Plus II	Dream Pure I	Dream Pure II	Dream Mega
Product	RO, UP	RO, UP	RO	RO, UP	UP
Product flow	Max. 15L/Hr (RO Standard)	Max. 25L/Hr (RO Standard)	Max. 15L/Hr (RO Standard)	Max. 25L/Hr (RO Standard)	Max. 50L/Hr
Quality display	Pure water (RO) : 0 ~ 200 $\mu$ s/cm Ultra water (UP) : 0 ~ 18.3M $\Omega$ .cm		Pure water (RO) : 0 ~ 200 $\mu$ s/cm Ultra water (UP) : 0 ~ 18.3M $\Omega$ .cm		Ultra water (UP) : 0 ~ 18.3M $\Omega$ .cm
Controller	Microprocess Type		Microprocess Type		Microprocess Type
Display	16 X 2 characters backlight LCD digital display		16 X 2 characters backlight LCD digital display		16 X 2 characters backlight LCD digital display
Standard filter & Accessories	Guard Pack, Dream RO Pack, Plus UP Pack, 0.22 $\mu$ s Capsule filter, Power cord, Tube, Level sensor, Manual		Guard Pack, Dream RO Pack, Power cord, Tube, Level sensor, Manual		Mega UP Pack, 0.22 $\mu$ s Capsule filter Power cord, Tube, Level sensor, Manual
Optional filter	Water softener, 254/185nm UV Lamp, MW 5000 UF filter		Water softener, 254/185nm UV Lamp, MW 5000 UF filter		254/185nm UV Lamp, MW 5000 UF filter
Function	- System auto test - Machine protection function - Filter replace display - Auto control function for drain		- System auto test - Machine protection function - Filter replace display - Auto control function for drain		- System auto test - Auto Recycle - Machine protection function - Filter replace function - Filter replace display
Water Qualification	Pressure of input water is higher than 1kgf/cm $^2$		Pressure of input water is higher than 1kgf/cm $^2$		
Dimensions	400(W) $\times$ 505(D) $\times$ 517(H)		400(W) $\times$ 505(D) $\times$ 517(H)		400(W) $\times$ 505(D) $\times$ 517(H)
Power	110Vac or 220Vac, 50/60Hz, 80W		110Vac or 220Vac, 50/60Hz, 60W		110Vac or 220Vac, 50/60Hz, 60W



## Water Purifier System (Chosim Series)



### FEATURE

- Error lamp is turned on, when error occurs during the working.
- When quality of water lowers, a point of replacement time is expressed as lamp and buzzer.
- Front door can be open, so replacement is easy.

Model	Chosim I	Chosim II	Chosim I	Chosim II
Product	RO, UP	RO, UP	RO	RO
Product flow	Max. 15L/Hr (RO Standard)	Max. 25L/Hr (RO Standard)	Max. 15L/Hr (RO Standard)	Max. 25L/Hr (RO Standard)
Quality display	Pure water (RO) : 0 ~ 200 $\mu$ s/cm Ultra water (UP) : 0 ~ 18.3M $\Omega$ .cm		Pure water (RO) : 0 ~ 200 $\mu$ s/cm	
Controller	Microprocess Type		Microprocess Type	
Display	5 X 7 Dot LED Display		5 X 7 Dot LED Display	
Standard filter & Accessories	Prefilter, A/C filter, RO Membrane, Ion filter, 0.22 $\mu$ s capsule filter, Power cord, Tube, Level sensor, Manual		Prefilter, A/C filter, RO Membrane Power cord, Tube, Level sensor, Manual	
Optional filter	Water softener, 254/185nm UV Lamp, MW 5000 UF filter		Water softener	
Function	- Machine protection function - Filter replace display - Auto control function for drain		- Machine protection function - Filter replace display - Auto control function for drain	
Water Qualification	Pressure of input water is higher than 1kgf/cm $^2$		Pressure of input water is higher than 1kgf/cm $^2$	
Dimensions	400(W) $\times$ 470(D) $\times$ 517(H)		400(W) $\times$ 470(D) $\times$ 517(H)	
Power	110Vac or 220Vac, 50/60Hz, 80W		110Vac or 220Vac, 50/60Hz, 80W	

## Water Purifier System (Max Series)



### FEATURE

- 20  $\times$  4Line Blue backlight LCD is adjusted, quality and temperature of water are displayed in one screen.
- When error occurs during the working, error message is shown.
- Pressure of input water and Membrane can be confirmed in front.
- Buzzer alarms, when purity of product is lower than the standard.
- Front door on the left can be open, so Guard pack and RO membrane filter are easy to be replaced.
- Remainder of filter is expressed as % (percent), filter life can be expected.
- Purity of RO is detected in real-time, so when machine is abnormal, error message is shown.
- In case of suspension of input water, pressure sensor is attached for motor protection.
- In case tank is full, machine stops automatically, and when the situation is over, machine reactivates automatically.
- Depending on capacity, this machine can produce 50, 100, 200, 400, 600, 1000, and 2000L/Hr at maximum.
- Protection about quality of water through clean PVC pipe arranging (Option)

Model	Max Pure 50/100	Max Pure 200/400	Max Pure 600/1000
Product	RO	RO	RO
Product flow	50,100L/Hr	200,400L/Hr	600,1000L/Hr
Quality display	Input water : 0 ~ 600 $\mu$ s/cm Pure water (RO) : 0 ~ 200 $\mu$ s/cm Ultra water (UP) : 0 ~ 18.3M $\Omega$ .cm Temperature : 0 ~ 99.9 $^{\circ}$ C		
Controller	Microprocess Type		
Display	20 X 4 characters backlight LCD digital display		
Standard filter & Accessories	Prefilter, A/C filter, RO Membrane Power cord, Tube, Level sensor, Manual		
Optional filter	Water softener, 254/185nm UV Lamp, Ion Resin		
Function	- System auto test - Machine protection function - Check key function - Filter replace display		
Water Qualification	Pressure of input water is higher than 3kgf/cm $^2$		
Dimensions	500(W) $\times$ 500(D) $\times$ 800(H)	570(W) $\times$ 570(D) $\times$ 1500(H)	900(W) $\times$ 800(D) $\times$ 1500(H)
Power	110Vac or 220Vac, 50/60Hz, 1kW	110Vac or 220Vac, 50/60Hz, 1.5kW	380Vac/3,50/60Hz, 3kW

ECO-Up9000

### Ultrapure Water System



**FEATURE**

1. It is very easy and convenient to exchange. (Eco-UP Pack)
2. It is economic model
3. It is very easy to set and move the Water Purification System
4. This system are registered to ISO9001, and certificated on NEP Mark.

**SPECIFICATION**

1. Product Rate (UP to) : 1.5L/Min(90L/Hr)
2. Resistivity : 18.2M $\Omega$ -cm (at25 $^{\circ}$ C)
  - TOC : < 10ppb
  - Particles(0.2 $\mu$ s) : <1ml
  - Bacteria : <1cfu/ml
3. Function : Recirculation to inhibit Bacteria
4. Power : 220V, 50/60Hz, 70W
5. Display : Digital LED

Esse-RO Basic10

### Reverse Osmosis Water System



**FEATURE**

Puris, RO Water System is a instrument to make basic pure water in laboratory and you can use this pure water in general chemical test, final washing and rinsing for glassware, making the media and feed in Ultra water purification system. (This systems are produced under ISO9001, CE certified quality management system and NEP mark for the best product quality and security)

**SPECIFICATION**

1. Flow Rate (UP to) : 10L/Hr
2. Conductivity : 1-25 $\mu$ s/cm
  - Heavy Metals : < 100ppb
3. Cartridge exchange reminder
4. Time program for RO Membrane cleaning
5. Automatic drain for less value than setting value
6. Power : 120/230V, 50/60Hz, 65VA"
7. Display : Microprocessor Control LCD

Esse-UP Analysis

### Ultrapure Water system



**FEATURE**

1. Verified Ultrapure Quality of Water
2. A Great Variety of Components
3. Easy and Handy Function
4. Sensational Design
5. This systems are produced under ISO9001/CE certified quality management system and NEP mark for the best product quality and security

**SPECIFICATION**

1. Flow Rate (UP to) : 1.5L/min
2. Resistivity (at25 $^{\circ}$ C) : 18.2M $\Omega$ -cm
  - Inorganics : <0.1ppb
  - TOC : 1-5ppb
  - Particles (0.2 $\mu$ m) : <1/ml
  - Bacteria : <1cfu/ml
3. Dispenser timer for product quantities
4. UV Lamp exchange reminder
5. Pack exchange reminder
6. Power : 110/230V, 50/60Hz, 65VA
7. Interface : RS-232C/RS45 for data output
8. Display : Microprocessor Control LCD

Expe-RO Ele10

### Reverse Osmosis Water System



**FEATURE**

1. Produces the ASTM water grade III, IV
2. Wide graphic LCD display
3. Easy to use and convenient maintenance
4. Compact design
5. Printer for data output
6. ISO9001 and certified CE

**SPECIFICATION**

- |  |                                      |
|--|--------------------------------------|
| 1. Product Rate (up to) : 10L/Hr             | 2. Product Quality : 1-25 $\mu$ s/cm |
| 3. Filter pack exchange message              | 4. RO Membrane cleaning timer        |
| 5. Automatic drain for low quality           | 6. Power : 110/230V, 50/60Hz, 85A    |
| 7. Printer with interface for data output    |                                      |
| 8. Display : Wide graphic LCD(128x64 digits) |                                      |

Expe-UP Ele UV

### Ultrapure Water System



**FEATURE**

1. Produces the ASTM water grade I
2. Wide graphic LCD display
3. Easy to use and convenient maintenance
4. Volumetric time setting
5. Reliable & desired water quality
6. Printer for data output with interface
7. ISO9001 and certified CE and NEP

**SPECIFICATION**

1. Flow Rate (up to) : 1.5L/Min
2. Resistivity (at25 $^{\circ}$ C) : 18.2M $\Omega$ -cm
  - Inorganics : <0.05ppb
  - TOC : 1-5ppb
  - Particles (0.2 $\mu$ s) : <1/ml
  - Bacteria : <1cfu/ml
3. Volumetric time setting
4. protection for low water quality
5. Protection for high temp. & feed water
6. Filter pack exchange message
7. UV Lamp exchange message
8. Power : 110/230V, 50/60Hz, 100VA
9. Printer with interface for data output
10. Display : Wide graphic LCD (128x64 digits)

Expe-CB Ele10

### RO & UP Water System



**FEATURE**

1. Produces the ASTM water grade I, III, IV by one system
2. Produces wide graphic LCD display
3. Easy to use and convenient maintenance
4. Reliable & desired water quality
5. Printer for data output
6. ISO9001 and certified CE and NEP

**SPECIFICATION**

1. Product Rate : (RO - 10L/Hr, UP - 1.5L/Min)
2. Conductivity (RO) : 1-25 $\mu$ s/cm
- Resistivity (UP) : 18.2M $\Omega$ -cm
- Inorganics : <0.1ppb
- TOC : 20ppb
- Particles (0.2 $\mu$ m) : <1/ml
- Bacteria : <1cfu/ml
3. RO Membrane cleaning timer
4. Automatic drain for low quality
5. Filter pack exchange message
6. Power : 110/230V, 50/60Hz, 20VA
7. Printer with interface for data output
8. Display : Wide graphic LCD (128x64 digits)



## FUME HOOD



GENERAL SPECIFICATIONS	SPIN 1000 / 2011 / 2012 / 2013
Construction	Interior : Stainless Steel 304(standard) & Phenolic resin laminates(optional) Exterior : Steel Plate with Powder Coating Door : Safety cemented glass - Sliding Type
Blower Motor	Built-in Sirocco Type
Plate in Workzone	Ceramic (standard) & Phenolic resin laminates (optional) & Epoxy resin top plate (optional)
Electrical Outlets	AC 220V with 2 holes x 1ea and AC 110V with 2 holes x 1ea
Utility	Water Cock / Air Cock / Gas Cock
Control Switch	Button type for the Lamp and Blower
Base Cabinetry	Drawer-Sliding Type (Cutting-edge design, Best Selling style)
Supply Voltage & Frequency	AC 230V, 50/60HZ

## LOW TEMPERATURE INCUBATOR



TECHICAL DATA	SBOD & SIM INCUBATOR
Type	Forced Convection Type
Temp Range	0°C to 60°C
Accuracy	±0.5°C
Controller	Digital PID Controller
Regulator	SSR Controller
Thermocouple	PT-100A/Q
Timer Range	99min 59sec
Controller	Digital Display
Material Interior Construction	Stainless Steel Plate
Exterior Construction	Steel Plate With Powder coating
Insulation	Glass Wool
Door Packing	Double Door Magnetic Gum packing
Inner Door	High Temperature safety glass of thickness 5mm
Shelves	Stainless Steel(Adjustable Type)
Safety Device	Over Temperature Limit / Over Current Glass Fuse
Freezer Compressor	Air cooling unit system
Supply Voltage & Frequency	AC 230V, 50/60Hz

## CHEMICAL REAGENT STORAGE CABINET



GENERAL SPECIFICATIONS	SWN 2006
Dimension	1250 x 780 x 2400mm(6Rooms)
Blower Motor	Sirocco Type / Ø 200mm
Door	Safety Glass (4Rooms)/Dark Room(2Rooms)
Material Interior	ABS Injection molding
Exterior	Steel Plate with Powder Coating(E.G.I)
Filter	Carbon Filter
Time	Multi
Controller	L.C.D Display(Digital)
Sensor	Senser for human body
Lamp	L.E.D(High luminance lamp)2ea
Handle	Moving Lock Handle
Main Switch	Key Switch
Caster	Packing Caster(4ea)
Shelves	14ea
Power Consumption	265W
Power	AC230V, 50/60Hz

## TEMPERATURE & HUMIDITY CHAMBER



This distinguished STHN model series of Temperature & Humidity Chamber is openly recognized by our diversified customers in the world as the most suitable & high-efficiency equipment for Electronic industry, Automobile industry, Automobile supply industry, Test laboratories, Quality assurance, Aircraft industry, Semi-conductor, Mechanical engineering, Chemical industry, Plastic industry, Textile industry, Construction materials industry and Military engineering.

## SHAKING INCUBATOR



GENERAL SPECIFICATIONS	SKIR-601	SKIR-601L	SKIR-602	SKIR-602L
Type		Forced Convection & Rotation Type		
Temp Range	Amb ±5°C to 60°C	10°C to 60°C	Amb ±5°C to 60°C	10°C to 60°C
Accuracy	±0.5°C	±0.1°C	±0.5°C	±0.1°C
Controller	Digital PID Controller	Digital PID Controller	Digital PID Controller	Digital PID Controller
Regulator	SSR Controller	SSR Controller	SSR Controller	SSR Controller
Compressor	N/A	1/8HP	N/A	1/6HP
Shaking Speed		20 ~ 350 RPM (maximum)		
Stroke		20 mm		
Timer		99hr 59min		
Platform Size		440 x 390	640 x 590	
Dimensions	500 x 550 x 800	500 x 550 x 1300	700 x 750 x 800	800 x 910 x 1180
Material		Steel Plate With Powder Coating and Acrylic material		
Safety Device		Over Temperature Limit / Over Current Glass Fuse		
Supply Voltage & Frequency		AC 230V, 50 /60hz		

## AUTOMATIC HAND SANITIZER DISPENSER



### The Special Features of SAH-1000

- Built-in Germicidal Lamp
- Built-in Special Heater
- Locking device installed
- Automatic Reset function
- LED indicator for operating process
- Control function for spraying
- Automatic Drying function

## Universal Washing Chamber



### SPECIFICATION

- Controller : PV Display : 5 Digit 7-Segment red LED, Height 20mm  
LCD Display : 32 x 128 DOT LCD Indicator  
Status Indicator Lamp : Yellow and Green LEDES  
Control Method & Input : Micro processor and touchpad  
Power unit Lithium battery : For data storage, for approx. 10 years
- Dimension(W × D × H) : (in size) 600 × 600 × 700mm  
(out size) 930 × 760 × 1850mm  
(rotation rack size)  $\phi$ 550 mm
- Material : External : Stainless H/L Plate  
Internal : Stainless P/L Plate
- Door : Automatic System , Safety Glass
- Washing Pump : Goulds Pump NPE-LC Series.  
Impellor Material : SUS #304  
Capacity : 60 ~ 160kg/min , H Max. : 40M , RPM : 3500rpm  
Pressure : 2.2 ~ 3.3kg/cm<sup>2</sup>  
Temperature : 100℃ below
- Drying System : Heater : Infrared ceramic Heater 1.5KW  
Drying Fan Motor : Sirocco Type , Forced Convection  
Drying Air Filter : Nylon  
Air Drying : External  
Drying Temperature : 90℃
- Water Heater : SUS #316 Pipe Heater 5KW  
Boiler for hot water supply
- Power Consumption : 8.6KW (Max. : 6kw , Min. : 2.6kw)
- Water Supply : Hot and Cold Water (Pressure 0.5 ~ 2.5kg/cm<sup>2</sup>)
- Washing Method : Power Jet Spray
- Chamber : Up : Jet Rack  
Down : Rotation Rack
- Drain Pump : Automatic Control and Manual Control
- Detergent Pump : Mechanical Magnetic Pump 30cc/Per cycle
- Water Consumption : 24 ~ 190ℓ / Pre Cycle
- Program Pattern : Pre Wash → Wash → Rinse → Dry → End (7-Pattern)
- Sterilization : U.V Ray 15W 2EA
- Interface : RS - 485
- Power Supply : 3 Phase 220V 60Hz

- This machine is capable of washing, rinsing, sterilizing through the lamp-style sterilizer, and drying glass equipment used in experiments, substance analysis and examinations through and automated digital program control.

This allows for savings in time and work time for the operator, as well as improving the level of data acquired in experiments.

It is an easy to use cleaner using warm sterilized air during the drying

### FEATURE

- The pattern for cleaning can be changed according to the residue on the instruments
- With the built in water filter the rinsing water is free from outside contamination
- In order to increase the level of cleaning, a separate hot water pipe is installed, in the event that hot water is not available, the built in heater can be used to enhance.
- With the built in lighting system you can inspect the nozzle, there by preventing stoppage.
- An automatic liquid soap Supplier is built in, and there is a separate switch to regulate the flow of liquid soap depending on the type of glass used and the degree of contamination
- A variety of baskets can be interchanged to accommodate the different sized instruments.
- The indicator shows the current cycle in the cleaning process
- The cleaner is equipped with an automatic door opener.
- With a built in water tank and pump the level of water provided is maintained at a constant level.

## Vortex Mixer



### FEATURE

- A variety of tube can be used without changing mixing plate, and the plate of Vortex Mixer is too soft, flexible, and resistible to be damaged easily.
- Through choice of switch button between full or touch, a researcher is able to proceed his experiment in terms of 3 options of operation of the product.
- Vortex Mixer is equipped with a speed controller, so a researcher can control the speed of his test work by virtue of sample in order to get more powerful results of experiment in lab.
- Vortex Mixer has suction cup, with a view to trivializing vibration while the product being operated.

### SPECIFICATION

- Speed Range : 1000 ~ 3500 rpm
- Mixing Plate :  $\phi$  90mm
- Mixing Method : Vibration Type
- Plate Strock : 4mm
- Power Consumption : 0.5A
- Power Source : 220V/60Hz
- Use Container : Test Tube and Flask

- Vortex Mixer is the product, which is designed to test the results such as through using tubes, tiny flask, etc. Mixing Plate has 5 holes in order to mix multiple test tubes simultaneously, it is designed to pursue convenience and speed of laboratory work.

## Steam Aging Test Bath



TW - SC - DS



TW - SC - D

### FEATURE

- The temperature control uses a digital format, reducing the level of error and enhancing the ease of operation and maintenance of required temperature
- The water supply and level is adjusted automatically, allowing for longer and safer use of the steam aging machine
- With the Auto Start, Auto Stop Timer it can be operated by simply inputting the temperature and item setting.
- The entire product is made of stainless steel.
- There is a viewing window in the front of the machine.
- This product is a steam aging tester appropriate for the Older Bility Test (Mil-Std-883C) of semi-conductors.

### SPECIFICATION

- Temp. Range : Amb. +5℃ ~ 95℃
- Temp. Control : Digital Set Readout PID Control
- Temp. Stability :  $\pm$ 0.3℃ at 90℃
- Dimension(W × D × H) : (in size) 685 × 285 × 240mm  
(out size) 965 × 345 × 475mm

- Testing aging or quality status of any apparatus, this more advanced test bath employs digital mode in setting and indicating  
Temperature to develop operation, temperature reproducibility, and safety more than ever.

- Material : All SUS #304
- Timer & Buzzer : auto start, auto stop, 99.9/hr, digital display
- Heater : 1KW × 4
- Safety Device : Power Breaker Switch
- Power Source : AC 100 or 220V/60Hz



CO2 /O2 Incubator

VS-9160C, 9160GC



FEATURE

- Invariable temperature
- Accurate Infra-red sensor
- Safety protector
- 7-Segment Numeric display
- Water Jacket Type
- Compact design

Model	VS-9160C	VS-9160GC
Dimension	(in) 510x480x705(H)mm (out) 600x600x990(H)mm	
Capacity	173ℓ	
Water Jacket Volume	34ℓ	
Temperature Range	Ambient+5℃ to 50℃	
Temperature Accuracy	0.1℃ at 25℃	
Temperature Control	Digital P.I.D Controller	
CO2+O2 Accuracy	±0.1% at 5%	±0.1% at 5%
CO2 Range	0~20%	
CO2 Sensor	Dual-Beam Non Dispersive Infrared Sensor	
O2 Range		0.1~20.9%
O2 Sensor		2FO Oxygen CiTiceL
Humidification	Up to 96% RH at 37℃	
Display Type	LCD Display, 7Segment Numeric Display	
Door	Double Door, Silicone Packing Magnetic Door	
Inner Door	Safety glass door with U-groove packing	
Shelve	3EA, Adjustable type	
Circulation Fan	Internal Convection Fan	
Material	(in)Stainless Steel (out) Steel Plate with Powder Coating	
Safety Device	Exclusive Over Temp. Protector	
Weight	98Kg	
Power	AC200-240V, 4.2A, 50/60Hz, 1Phase	

CO2 /O2 Incubator

VS-9000C, 9000GC



Model	VS-9000C	VS-9000GC
Dimension	(in) 320x300x340(H)mm (out) 410x410x540(H)mm	
Capacity	32ℓ	
Water Jacket Volume	11ℓ	
Temperature Range	Ambient+5℃ to 50℃	
Temperature Accuracy	±0.1℃ at 25℃	
Temperature Control	Digital P.I.D Controller	
CO2+O2 Accuracy	±0.1℃ at 5%	±0.1℃ at 5%
CO2 Range	0~20%	
CO2 Sensor	Dual-Beam Non Dispersive Infrared Sensor	
O2 Range		0.1~20.9%
O2 Sensor		2FO Oxygen CiTiceL
Humidification	Up to 96% RH at 37℃	
Display Type	7Segment Numeric Display	
Door	Double Door, Silicone Packing Magnetic Door	
Inner Door	Safety glass door with U-groove packing	
Shelve	3EA, Adjustable type	
Circulation Fan	Internal Convection Fan	
Material	(in)Stainless Steel (out) Steel Plate with Powder Coating	
Safety Device	Exclusive Over Temp. Protector	
Weight	40Kg	
Power	AC200-240V, 1.2A, 50/60Hz, 1Phase	

Shaking Water Bath

VS-1205W, 1205WP



Model	VS-1205W	VS-1205WP
Circulation Pump		Internal Pump, 15/min
Temp. Range	Ambient+5℃ to 99	
Temp. Accuracy	±0.2℃ at 37℃	
Temp. Controller	Digital P.I.D. Controller	
Display	LED Digital Display	
Capacity	21ℓ	
Lid	Stainless Steel	
Dimension	495 x 290 x 150(H)mm	

Shaking Water Bath

VS-1205SW1, 1205SW1-C



Model	VS-1205SW1	VS-1205SW1-C
Temp Range	Ambient +5℃ to 99℃	Ambient -10℃ to 99℃
Capacity	50ℓ	50ℓ
Temp. Accuracy	±0.1℃ at 37℃	
Temp. Controller	Digital P.I.D. Controller	
Speed Range	0-220RPM	
Shaking motion	Reciprocal	
Stroke	3-5cm	
Dimension (IN)	600x300x278(H)mm	600x300x278(H)mm
(OUT)	820x360x360(H)mm	820x360x710(H)mm

Shaking Water Bath

VS-1205SW2



[Constant-temperature shaking water tank]

- Orbital type shaking constant-temperature water tank
- Brushless motor DC with less noise
- Digital PID controller
- Auto Tuning PID function that reduces temperature variation
- Holder rack to use a flask conveniently
- Trustworthy safety device
- Easy to use

Model	VS-1205SW2
Temp. Range	Ambient+5℃ to 99℃
Temp. Accuracy	±0.1℃ at 37℃
Temp. Controller	Digital P.I.D. Controller
Speed Range	0-250RPM
Speed Controller	Solid state Electronic controller
Drive Motor	Brushless DC Motor
Shaking motion	Orbital
Dimension (IN)	400x350x250(H)mm
(OUT)	750x530x500(H)mm
Capacity	35Liter
Material (IN)	SUS304
(OUT)	Steel Plate with powder coating
Lid	SUS304
Standard plate	Holder Plate/250ml x 12EA
Power	220V, 6.5A, 1.4kW, 60Hz

Micro High Speed Refrigerated Centrifuge

VS-15000CFN II



FEATURE

- Microprocessor control
- Safety Apparatus
- Brushless D.C. Motor
- Automatic Rotor Identification System

<b>Model</b>	<b>VS-15000CFN II</b>
Max. RPM	15,000RPM
Max. RCF	16,853 x g
Max. Capacity	1.5ml x 36Tubes
MainControl	Microprocessor controller
Operating Mode	RPM, RCF
Display	Back Light LCD
Program memory	9 Memory
Drive System	Brushless D.C Motor drive
Acceleration	10 profiles
Deceleration	10 profiles
Timer	99min. 59sec & Hold for long run
Temperature Range	-10℃ ~ 40℃
Safety system	Over/Under speed protection
Dimension	370x600x310(H)mm
Weight	35kg
Power	220V, 0.4Kw, 50/60Hz
Standard Items	Body, Rotor V1.518A, Power Code, Instruction Manual

[Rotor]



V1.518A  
15,000RPM  
1.5 mlX 18



V1.524A  
12,000RPM  
1.5 mlX 24



V1.536H  
12,000RPM  
1.5 mlX 36



V1.516S  
12,000RPM  
1.5 mlX 16

Micro High Speed Centrifuge

VS-15000N



<b>Model</b>	<b>VS-15000N</b>
Max. RPM	15,000RPM
Max. RCF	16,853 x g
Max. Capacity	1.5ml x 24Tubes
MainControl	Microprocessor controller
Operating Mode	RPM, RCF
Display	Back Light LCD
Program memory	9 Memory
Drive System	Brushless D.C Motor drive
Timer	99min. & Hold for long run
Safety system	Over speed Protection, Door Locking
Dimension	254 x 310 x 210(H)mm
Weight	10kg
Power	220 V,2A,50/60Hz
Standard Items	Body, Rotor V1.518A, Power Code, Instruction Manual

[Rotor]



V1.518A  
15,000RPM  
1.5 mlX 18



V1.524A  
12,000RPM  
1.5 mlX 24

Green Sseriker II

Programmable Shaker

Green Sseriker



<b>Model</b>	<b>VS-201P, VS-202P, VS-203P</b>		
Max. Speed	350RPM		
Min. Speed	10RPM		
Motion	Orbital		
Integral Timer	99Hr. 59min.		
Drive System	Beltless Direct Drive		
Motor	Brushless DC Motor		
Working Mode	Normal/Step Frequency Drive Delay Start		
Dimension /Capacity /Weight	VS-201P	360x360x110(H)mm	20kg
		250ml x9EA	
	VS-202P	470x490x115(H)mm	28kg
		250ml x25EA	
	VS-203P	745x490x115(H)mm	40kg
		250ml x40EA	
Noise	Lower 30dBA		
Power	220V, 60Hz		
Standard Items	Body, 250ml Plate of Flask		



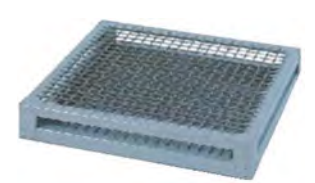
<b>Model</b>	<b>VS-201D, VS-202D, VS-203D</b>		
Max. Speed	350RPM		
Min. Speed	10RPM		
Motion	Orbital		
Integral Timer	999.9Hr		
Drive System	Beltless Direct Drive		
Motor	Brushless DC Motor		
Working Mode	Digital Display		
Dimension /Capacity /Weight	VS201D	360x360x110(H)mm	20kg
		250ml x9EA	
	VS202D	470x490x115(H)mm	28kg
		250ml x25EA	
	VS203D	745x490x115(H)mm	40kg
		250ml x40EA	
Noise	Lower 30dBA		
Power	220V, 60Hz		
Standard Items	Body, 250 ml Plate of Flask		

[Plate of Flask]

<b>Flask</b>	<b>VS201D,VS201P</b>	<b>VS-202D,VS202P</b>	<b>VS-203D,VS203P</b>
100ml	16EA	36EA	60EA
250ml	9EA	25EA	40EA
500ml	9EA	16EA	24EA
1000ml	4EA	9EA	15EA
2000ml	2EA	4EA	8EA
Platform(mm)	350x320	455x455	760x470



Plate of Flask



Spring Rack

[Spring Rack]

	<b>PL-80SL</b>	<b>PL-80SS</b>
Dimension	670x450mm	450x450mm



Slide Platform



Plate tube rack

[Slide Platform]

<b>PL-80ML</b>	<b>PL-80MS</b>	<b>PI-80MN</b>
760x470mm	455x455mm	350x320mm

[Multi purpose plate]

Multi Purpose Type 1  
Model PL-80MP1

Multi Purpose Type 2  
Model PL-80MP2

Mixing tube plate  
Model PL-80MT



[Plate tube rack]

<b>PL-80TR-L</b>	<b>PL-80TR-S</b>	<b>PL-80TR-N</b>
760x470mm	455x455mm	350x320mm



# 4

*Machinery and Automobile Education*

- DAE SUNG G-3 C O.,LT D. 128 ~ 133
- H WA N WOONG MECHATRONICS CO.,LT D. 134 ~135

G-070201

## F/R Automotive Power Train System Structure Educational Equipment



### FEATURE

- Engine specifications: Gasoline, 2,000cc, 4-cylinder, SOHC, electric-controlled engine. rear drive by GM Daewoo Motor Co.
- It is a very effective educational equipment for understanding operating principle and function of power train system including engine, transmission, propeller shaft, differential gear, rear axle, shaft, brake, and tire by cross-sectioning components.
- Internal structure and operating principle of piston, valve, crank, etc. can be educated effectively by cross-sectioning cylinder and head of 4-stroke 4-cylinder engine.
- Internal structure of clutch, 5 speed manual transmission, differential gear, brake system, etc. can be seen by directly operating pedal and lever, and also, gear ratio of 4WD manual transmission and detailed power system education can be done.
- Block, head, starting motor, alternator, air-conditioning compressor, fuel system, cooling system, lubricating system, manifold, muffler, and actual body are cross-sectioned, and operated for better educational quality.
- Structure and operating principle of steering, suspension systems, and actual body frame can be demonstrated.
- The model is painted by our company's detailed specifications for painting to enhance educational quality. Cut face: dark red, intake system: sky blue, exhaust system: pink, lubricating system: yellow, cylinder block: light black, cylinder head: silver, gasket: white.
- Exterior is painted by diamond and parts are coated for durability.
- Single phase 220V, 180W motor, 4.5~5.5 rpm, two lamps, control box, additional safety device.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- A robust 6 wheels stand and powder coated. ■ Product size=L:314xW:157xH:138cm, Wt=450kg

G-090106

## V6 Engine Structure Exhibit Educational Equipment



### FEATURE

- Gasoline, 3,000cc, V6-cylinder, electronic-controlled engine for exhibit and education.
- It is a very effective exhibit equipment for understanding operating principle and function of V-type high quality engine by cross-sectioning components.
- It is an educational structure that is operated by motor with block, cylinder, and head of V-type engine cross-sectioned.
- Starting motor, alternator, air-conditioning compressor, fuel system, cooling system, lubricating system, intake system, exhaust system, manifold, etc. are cross-sectioned, and operated for better educational quality
- It has high exhibit effect with engine stand and device that rotates crank and shaft by motor rotating simultaneously.
- Lower part of engine can be reflected and seen through mirror stand.
- Exterior is painted by diamond, nickel, and chrome, and parts are coated for durability
- The model is painted by our company's detailed specifications for painting to enhance educational quality. Cut face: dark red, intake system: sky blue, exhaust system: pink, lubricating system: yellow, cylinder block: light black, cylinder head: silver, gasket: white.
- Single phase 220V 180W 4-pole motor, 0~5.5 rpm, stand, 4-pole 250W motor, 5~7 rpm halogen lamp, control box, control module, additional safety device
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- 4 wheel circular stand, powder coated ■ Product size=φ:100cm H:138cm Wt=363kg

G-090311

## SOHC Engine Structure Educational Equipment



### FEATURE

- Gasoline, 1,500~1,800cc, 4-cylinder, electronic-controlled SOHC engine
- SOHC engine is general rocker arm, indirect operating type and it is operated with one camshaft with entire engine body cross-sectioned and mounted on educational stand.
- It is an educational structure that is operated by motor with block, cylinder, and head of SOHC engine cross-sectioned.
- Operating speed of internal components such as valve, piston, intake and exhaust system, crank, and shaft can be controlled and it can be systematically educated.
- It is very effective for education of power generating principle with LED indicating module for each stroke of intake, compression, expansion and exhaust.
- Starting motor, electric generator, air-conditioning compressor, fuel system, cooling system, lubricating system, intake system, exhaust system, manifold, etc. are cross sectioned, and operated for better educational quality.
- The model is painted by our company's detailed specifications for painting to enhance educational quality. Cut face: dark red, intake system: sky blue, exhaust system: pink, lubricating system: yellow, cylinder block: light black, cylinder head: silver, gasket: white.
- Exterior is painted by diamond and parts are coated for durability.
- Single phase 220V 180W 4-pole motor, 4.5~5.5 rpm, lamp, control box, additional safety device, control module
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- 4 wheel stand, powder-coated ■ Product size=L:94 X W:65 X H:133cm, Wt=220kg

G-090702

## Diesel Engine Structure Educational Equipment



### FEATURE

- 2,500cc, 4-cylinder, Diesel engine, Porter by Hyundai Motor Co.
- It is a very effective equipment for understanding operating principle and function of general Diesel engine
- It is an educational structure that is operated by motor with block, cylinder, and head of engine cross-sectioned.
- Rotary injection pump, alternator, starting motor, air con compressor, fuel, cooling, lubricating, intake and exhaust system, manifold, etc. are cross-sectioned for better operation.
- This equipment can be educated systematically by controlling operating speed of internal components such as valve, piston, intake and exhaust system, crank, shaft, etc.
- It is very effective for education of power generating principle with LED indicating module for each stroke of intake, compression, expansion and exhaust.
- Exterior is painted by diamond and parts are coated for durability
- The model is painted by our company's detailed specifications for painting to enhance educational quality. Cut face: dark red, intake system: sky blue, exhaust system: pink, lubricating system: yellow, cylinder block: light black, cylinder head: silver, gasket: white.
- Single phase 220V, 4P, 180W of motor power, 0~5.5 rpm, control box, lamp, safety device, controlling type structure of motor speed.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- 4-wheel stand, powder-coated ■ Product size=L:94XW:65XH:150cm, Wt=150kg

G-210601

## Automatic Transmission Structure Educational Equipment



### FEATURE

- It is an educational equipment for understanding internal structure of 2,000cc FF type passenger car's 4 speed automatic transmission.
- Precisely cross-sectioned structure of torque converters, stator, clutch, planetary gear, band, servo, trans axless, etc.
- It is effective for functional explanation and operating principle during automatic transmission education.
- The model is painted by our company's detailed specifications for painting to enhance educational quality. Cut face: dark red, lubricating system: yellow, etc.
- Top quality paint and coating are adapted such as diamond, etc.
- It is manufactured for excellent durability and high display effect.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder coated 4-wheel stand. ■ Product size=L:60XW:50XH:100cm, Wt=100kg

G-260202

## Electronic Control Suspension System Educational Training Equipment



### FEATURE

- It is an educational equipment for integrated training of 20 different type functions of active ECS system installed to a high class passenger car.
- It is very effective for understanding operating principles and functions of ECS by simulating position control, damping force control, height control, control indicating light, and under operating condition of actual vehicle.
- Components: ECU, instrument panel, color location indicator, ECS mode switch, damping force actuator, steering wheel, steering angle sensor, brake switch, idle switch, accelerator, reverse button, light button, door button, self-diagnosis jack, power terminal, voltmeter and ammeter, variable controllers, air cylinder, control lever, etc.
- Vehicle speed sensitive damping force control in auto mode, high mode, sport mode, starting control, and OFF control and anti squat control, anti roll control, and anti dive control are operated.
- The instructor can freely operate automobile height control for each wheel in any condition. Also, operating condition and change in position control of ECS can be educated both in automatic and manual manners with controllers.
- When car body's position changes or temporary value is set to rear pressure-G sensor-VSS speed, ECU reads the change and it automatically shows automotive height sensor value and position control change process.
- For the change of automotive height due to passengers and freight weight, it controls with balance weight of front-80kg and rear-70kg, total-150kg to reach the target height. And also, it measures change value of location with 4-corner 1 meter stainless steel ruler.
- By installation of diagnosis error control unit to ECU circuit, it controls input and output condition.
- By installation of diagnosis terminal for individual circuit, input and output data can be measured and trained conveniently with multimeter, oscilloscope, diagnostic system, etc.
- By using self-diagnostic system to DLC, data values of ECS operation can be measured and with actuator's compulsory operation, individual solenoid valve can be tested.
- Control panel has excellent durability with installation of ECS control switches, 4 variable control valves, actuator, diagnostic terminal, etc. to an aluminum CNC engraved coated plate.
- Color circuit diagram panel is designed for effective education and has excellent durability with aluminum plate engraved with CNC.
- Pressure gauge for individual pneumatic circuit and LED operating light is installed to a color circuit diagram panel which makes it effective and systematic for understanding operating principle of ECS.
- ECS air pressure is a built-in compressor and an air tank control type. And position control is a input operational type of commercial air pressure.
- Built-in high-efficient constant voltage transmission designed and manufactured for AC 220V ECU electronic control.
- The model is deigned and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 6-wheel frame panel stand
- Multimedia program player monitor, training textbook installation (wireless remote control system)
- DM - Diagnosis error Control Module
  - \* Brake-out setting with conversion switch per number on ECU, TCU circuit.
  - \* Module is AL BOX type and breakdown control part can be locked with cover.
  - \* Diagnosis pin function with check terminal per number on ECU, TCU circuit.
- Product size=L:250XW:140XH:157cm, Wt=800kg

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 ■ E-mail : dsg-3@dsg-3.co.kr ■ URL http://www.g-3.co.kr



G-110701

### Gasoline ENG, A/T Control System Educational Training Equipment

**FEATURE**

- It is high standard educational system of gasoline 2,000cc DOHC engine 4 speed automatic transmission. (New EF)
- A consecutive operating system that is equipped with components such as engine electronic fuel, cooling system, intake and exhaust system, automatic transmission, etc.
- It is manufactured as an educational structure with same condition of actual vehicle for efficient education.
- It has educational training function that controls condition of input and output by installing diagnosis error control module to ECU,TCU circuit.
- By installation of check terminal to ECU,TCU circuit, input and output data can be measured and trained conveniently with multimeter or oscilloscope.
- It is composed as an efficient system for automotive engineer qualifying education and inspection training such as engine tune-up, exhaust gas, ignition timing, intake pipe, vacuum level, cylinder pressure, radiator, timing, fan belt, fuel, oil, electrolyte, charging, moving circuit, etc.
- Electric-control function of EOBD and instruction of diagnostic system and data can be trained through DLC and DM.
- Pressure gages are installed at P, R, N, D and L hydraulic circuits of automatic transmission to instruct operation of hydraulic circuits according to each range.
- By installing check terminal for each sensor, it is convenient to use tester and also, it protects the circuit.
- Instruments, vacuum gauge, fuel pressure gauge, voltmeter, DLC, power source jack, key, dual accelerate module, battery, stainless fuel tank, engine, radiator protector, fire extinguisher, a book holder etc. are installed.
- Control panel has excellent durability with aluminum plate, CNC engraver, and color.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 2-drawer door cabinet stainless molding, 4-wheel stand
- Product size=L:150XW:136cmXH:123cm Wt=480kg



G-120301

### CRDI Diesel ENG, A/T Control System Educational Training Equipment

**FEATURE**

- It is high standard educational system of gasoline 2,000~2,200cc 4-cylinder VGT A engine 4 speed automatic transmission. (SANTAFE, TRAJET, TUCSON,etc RV car)
- A consecutive operating system that is equipped with components such as engine electrical system, fuel, cooling system, intake and exhaust system, automatic transmission, etc.
- It is manufactured as an educational structure with same condition of actual vehicle for efficient education.
- It has educational training function that controls condition of input and output by installing button diagnosis error control module to ECU,TCU circuit.
- By installation of check terminal to ECU,TCU circuit, input and output data can be measured and trained conveniently with multimeter or oscilloscope.
- It is composed as an efficient system for automotive engineer qualifying education and inspection training such as engine tune-up, exhaust gas, ignition timing, intake pipe, vacuum level, cylinder pressure, radiator, timing, fan belt, fuel, oil, electrolyte, charging, moving circuit, etc.
- Electric-control function of EOBD and instruction of diagnostic system and data can be trained through DLC and BU.
- Pressure gages are installed at P, R, N, D and L hydraulic circuits of automatic transmission to instruct operation of hydraulic circuits according to each range.
- By installing check terminal for each sensor, it is convenient to use tester and also, it protects the circuit.
- Instruments, vacuum gauge, fuel pressure gauge, voltmeter, DLC, power source jack, key, accelerate module, battery, stainless fuel tank, engine, radiator protector, fire extinguisher, a book holder etc. are installed.
- Control panel has excellent durability with aluminum plate, CNC engraver, and color.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 2-drawer door cabinet stainless molding, 4-wheel stand
- Product size=L:150XW:136XH:122cm, Wt=565kg



G-130201

### Diesel Engine Educational Training Equipment

**FEATURE**

- It is an educational training equipment of 2,500cc 4 cylinder Porter Diesel engine. Hyundai
- A consecutive operating system that is equipped with components such as engine electrical system, fuel, cooling system, intake and exhaust system, etc.
- It is manufactured as an educational structure with same condition of actual vehicle for efficient education.
- It is composed as an efficient system for automotive engineer qualifying education and inspection training such as engine tune-up, exhaust gas, ignition timing, intake pipe, vacuum level, cylinder pressure, radiator, timing, fan belt, fuel, oil, electrolyte, charging, moving circuit, etc.
- By installing check terminal for each sensor, it is convenient to use tester and also, it protects the circuit.
- Instruments, vacuum gauge, oil pressure gauge, voltmeter, DLC, power source jack, key, dual accelerate module, battery, stainless fuel tank, engine, radiator protector, fire extinguisher, a book holder etc. are installed.
- Control panel has excellent durability with aluminum plate, CNC engraver, and color.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 2-door cabinet stainless molding, 4-wheel stand
- Product size=L:150XW:136XH:120cm, Wt=400kg



G-180303

### Motronic Electronic Control System Educational Training Equipment

**FEATURE**

- ME-Motronic is the newest model of DLI Fuel Injection System by Bosch Co. which electronically controls fuel and ignition system.
- It is an educational training equipment of DLI Motronic Fuel Injection system with installation of actual components and educational devices.
- Motronic system's data change of input and output can be diagnosed and educated by controlling injection time and ignition time with data variable controller of TPS, ATS, WTS, MAP and O2 sensor.
- By installation of diagnosis terminal to ECU circuit, input and output data can be measured and trained conveniently with multimeter or oscilloscope.
- EOBD Motronic electric-control function and data instruction of diagnostic system can be trained with DLC.
- Color Circuit Diagram panel is effective for training theory and test, and has excellent durability with aluminum coated plate and CNC engraver.
- Operation of fuel line system such as fuel tank, fuel pump, injection, etc.
- It has high efficiency of visual education with installation of LED ignition system which consecutively operates in intake line, exhaust line, and fuel line for each injector.
- It is composed of constant-voltage transformer with high efficiency which is designed and manufactured for automotive electric control. And also, key, switch, automatic cutout, fuse, safety switch, cover, etc. are included. Power source: single phase 220V.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder coated 2-door cabinet 4-wheel panel stand. ■ Product size=L:122XW:50XH:160cm, Wt=110kg



G-170401

### Automotive Electric & Electronic Integrated Components Educational Training Equipment

**FEATURE**

- It is an integrated educational training equipment of gasoline 2,000cc passenger car's electric and electronic system. EF Sonata.
- The whole electronic system is designed as a coated panel type color circuit diagram
- It is an operating system with electronic parts and wire harness installed to front and rear of panel.
- Color circuit diagram facilitates circuit education.
- It is an efficient educational equipment for training of electronic system.
- Components: ECU, TCU, audio system, air conditioning system, window, door lock system, electronic ignition system, handle, multi-functional switch, lamp system, charging system, actuators, motor, switches, relay, sensor, operating sensor module, LED injection system, etc.
- By installing 1:1 circuit check terminal to each components, it makes it convenient to use the tester and protects its circuit.
- It is equipped high efficiency transformer by designed and manufactured vehicle electronic control.(Diagnostic education and use of actual voltage and electric current are efficient with 12V battery automatic charging system inside of alternator operation by cabinet and 220V 2HP motor on demand.)
- Safety cover is attached to motor, spark, fan, and speaker.
- Installation of control box which is composed of operating switch, automatic circuit breaker, fuse, and safety switch.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated 4 door cabinet 6 wheel panel stand. ■ Product size=L:250XW:80XH:180cm, Wt=350kg



G-180203

### Automotive ETACS System Educational Training Equipment

**FEATURE**

- Electric time and alarm control system of large-sized passenger car. (Hyundai New EF Sonata)
- It is an educational training equipment for test and diagnosis of time and alarm control system. (Hyundai Motor Co.)
- It is a professional system equipment with installation of educational device and arrangement of ETACS, IMS system components in position and circuit diagram.
- Components: ETACS, module, IMS module seat, combination switch, wiper motor, washer motor, wiper relay, door switch, instrument panel, left door module, right door module, power window relay, motor, hot-wire switch, door lock actuator, start relay, buzzer, key lamp, room lamp, lightening system, etc.
- It has high educational efficiency with digital indication and control of timer and additional device such as key, remote control, keyless module, burglar alarm relay, auto-light sensor, defogger, and automatic door unlock system for crash.
- It has excellent durability with installation of 1:1 Diagnosis terminal to ETACS, IMS module, circuit, and components. Also, input/output data can be easily diagnosed and trained with multimeter, oscilloscope, etc.
- This panel is efficient for training of theory and test with systematic and beautiful color circuit diagram
- It is equipped high efficiency constant voltage transformer by designed and manufactured vehicle electronic control.
- Control box and safety cover such as operating switch, automatic cutout, fuse, safety switch.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- 4-wheel panel stand with powder-coated 3-door cabinet. ■ Product size=L:190XW:60XH:165cm, Wt=250kg





G-210701

## Automatic Transmission Structure Educational Equipment



### FEATURE

- It is an educational equipment for understanding internal structure of FR type passenger car's 4 speed automatic transmission.
- Precisely cross-sectioned for structure education of torque converters, stator, clutch, planetary gear, band, servo, valve body, etc.
- It is effective for understanding operating principle and function explanation during automatic transmission education.
- The model is painted by our company's detailed specifications for painting to enhance educational quality. Cut face: dark red, lubricating system: yellow, etc.
- Top quality paint and coating are adapted such as diamond, etc.
- It is manufactured for excellent durability and high display effect.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder coated 4-wheel stand. ■ Product size ≒ L:84XW:54XH:90cm, Wt≒80kg

G-240303

## ABS System Educational Training Equipment



### FEATURE

- It is a high standard educational training equipment for understanding operating principle and function through experiment, fault diagnosis and tester with simulating system of 4-sensor 4-channel anti-lock brake system and traction control system installed to a medium-size passenger car.
- Components: ABS system's 4 wheel hydraulic actuator assembly, control module, wheel speed sensor, master cylinder, vacuum brake booster, etc.
- RPM can be controlled with a inverter and each tire is composed of tire grip force, rotation inertia, and hydraulic control system.
- A special device of inertia without slip system is installed to drive and brake, and a control system of actual drive change.
- The input and output condition can be controlled by installing button diagnosis error control unit to ECU circuit.
- By installation of diagnosis terminal for each circuit, input&output data can be measured and trained with multimeter, oscilloscope, diagnostic system, etc.
- The operating principle of ABS hydraulic circuit system and additional maintenance can be trained and educated.
- By using self-generator installed to DLC, all data can be seen and with compulsory operation of actuator, each solenoid valve can be tested and educated.
- ABS hydraulic electric color circuit diagram panel is designed for effective education and has excellent durability with aluminum plate engraved with CNC.
- ABS education is systematic and effective with installation of 4 wheel digital rpm gauge, brake pressure gauge, master cylinder 1.2 pressure gauge, etc. to AL color circuit diagram panel.
- Control panel has excellent durability with installation of ABS control switches, control valve, actuator, diagnostic terminal power, connector, key switch, safety switch, etc and aluminum plate engraved with CNC.
- AC 380V, 1HP 5 motors, 1 5HP inverter (0-60Hz), alternator operated by motor, 12V battery automatic charging, and vacuum system are installed inside.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder coated, stainless steel molding, 2 drawer door cabinet, 4-wheel frame stand.
- Multimedia program Player monitor training Textbook Installation (Wireless Remote Control System)
- Product size ≒ L:160XW:136XH:150cm, Wt≒460k

G-270401

## Automotive Air Conditioning System Educational Training Equipment



### FEATURE

- It is the latest educational training equipment of manual temperature control air conditioning system installed to 1,500cc passenger car.
- The operating principle of MTC can be educated and professional training can be done efficiently with this equipment.
- Control panel has excellent durability with installation of power lamp, safety switch, key switch, A/C switch, display, etc. to an aluminum panel engraved with CNC.
- Designed color circuit diagram panel is effective for education and understanding with circuit diagram for individual air conditioning cycle.
- Operating principle of MTC system can be educated and additional maintenance training and testing of refrigerant can be done.
- Components: compressor, condenser, dryer, expansion valve, orifice tube, evaporator, ventilator, pipe, coolant fan, unit, control panel, etc.
- Compressor is AC 380V 7.5HP motor driven system.
- Air condition. Refrigerant - R134a. - HFC (Hydro Fluro Carbon)
- Heating-5kw, how-water heating, PT sensor, PID, SCR, control automatic operating system.
- Equipment power - alternator motor driven. 12V battery, automatic charging system.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder coated, 2 door cabinet, stainless steel molding, panel, 4-wheel frame stand.
- Product size ≒ L:190XW:140XH:170cm, Wt≒300kg

G-340101

## Tractor Structure Educational Training Equipment



### FEATURE

- It is an educational displaying model for understanding the power train structure of new agricultural tractor by cross-sectioning component.
- It is educational system for theoretical and practical education by controlling internal operating structure and principle of functions to explain by seeing and operating each parts of tractor.
- It is effective to understand power train system of tractor as well as technical training such as fault diagnosis, periodic inspection, and maintenance.
- 4 stroke 4 cylinder, water cooling, 1,732cc, 35Hp of Diesel engine, 8 speed transmission.
- It is useful for technical education of power generating principle and components such as intake, exhaust, cooling and lubricating system by cross-sectioning cylinder, piston, head, cam, valve, nozzle.
- It is manufactured as operating type by cross-sectioning clutch, transmission, 4WD, differential gear, hub, break, power train, PTO, power steering, working parts, etc.
- Power source : AC 220V. Motor driving system of 4~5rpm and control box including power s/w, power lamp, fuse, circuit breaker, emergency s/w are installed.
- Display effect is good because of using two high brightness halogen lamp.
- The model is painted by our company's detailed specifications to enhance educational quality. Cut face part : dark red, intake : skyblue, exhaust : pink, lubricating device : yellow, block : black, head : silver, gasket : white.
- Exterior is painted by diamond and parts are coated for durability.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- A robust stand, made of steel and powder-coated, can be easily moved and stopped by 6 wheels.
- Product size ≒ L:340XW:152XH:254cm, Wt≒1,945kg

G-341501

## Combine Structure Educational Training Equipment



### FEATURE

- It is educational system for understanding internal structures and operating principle of combine by cross-sectioning component.
- Complicated whole system is divided into three major subsystem such as cutting, threshing, and power source parts.
- It is effective for theoretical and practical education by operating three subsystems to watch internal structures and operating principle.
- It is effective for technical training such as fault diagnosis, periodic inspection, and maintenance. It clearly shows power generation mechanism of 4-stroke Diesel engine, from which power transfer processes to driving, cutting and threshing parts are clearly seen.
- Cutting part: upper and lower cutting blades, feeding chain, driving shaft gear
- Threshing part: feed system, threshing system, screw, reservoir tank
- Power source part: engine, intake and exhaust systems, fuel system, lubricating system, cooling system, clutch, caterpillar.
- Power train parts are cross-sectioned, and are operated.
- Cutting and threshing parts have motor operating system of 4~5rpm, AC 220V and electric circuit control box including power switch, power lamp, fuse, circuit breaker and emergency switch.
- It uses halogen lamp to visualize internal structure and increase display effect.
- The model is painted by our company's detailed specifications to enhance educational quality. Cut face: dark red, intake system: sky blue, exhaust system: pink, lubricating system: yellow, block: light black, cylinder head: silver, gasket: white.
- Exterior is painted by diamond, and parts are coated for durability.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- A robust stand, made of steel and powder-coated, can be easily moved and stopped by 4~6 wheels.
- Power train part size ≒ L:300XW:160XH:245cm, Wt≒970kg
- Cutting part size ≒ L:160XW:120XH:170cm, Wt≒540kg
- Threshing part size ≒ L:250XW:170XH:170cm, Wt≒785kg

G-342001

## Power Tiller System Structure Educational Equipment



### FEATURE

- It is educational system for understanding internal structure and operating principle of power tiller by cross-sectioning components.
- It is effective for theoretical and practical education system of internal operating structure and principle of each function of 10HP electric starter power tiller.
- It is effective for technical training such as fault diagnosis, periodic inspection and maintenance of power generation mechanism of 4 stroke Diesel engine, from which power transfer processes to driving, and working parts are clearly seen.
- Cylinder, crankcase, valve, injection, intake and exhaust systems, fuel system, cooling system, transmission, clutch, differential gear, hub, brake, and working parts are cross sectioned and operated.
- Motor starter system of single phase AC 220V, RPM 4~5, and control box of power switch, power light, fuse, circuit breaker, emergency switch, etc are installed.
- The model is painted by our company's detailed specifications to enhance educational quality. Cut face: dark red, intake system: sky blue, exhaust system: pink, lubricating system: yellow, block: light black, cylinder head: silver, gasket: white.
- Exterior is painted by diamond, and parts are coated for durability.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- A robust stand, made of steel and powder-coated, can be easily moved and stopped by 4 wheels.
- Product size ≒ L:293XW:90XH:160cm, Wt≒420kg



DYTEK 40/70/130 /230/400

### Eddy Current Dynamometer - Machine



**FEATURE**

- The increasing demands to improve technology of vehicle test systems have become a major concern in line with the development of automotive industry all over the world. Leading suppliers strive arduous efforts to produce better engine related test equipment which is regarded as a basis in testing engines.

DYTEK 2000

### Dynamometer Main Control System

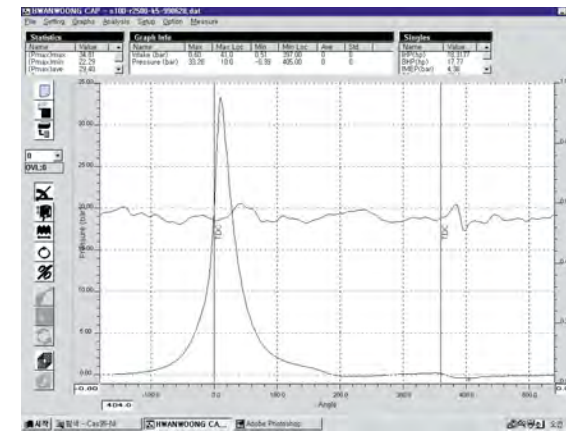


**FEATURE**

- Our high quality engine dynamometer is the result of ceaseless research and expertise invested for more than 10 years in this field. Advanced know-how and skill in both precision and assembling assure us high competitiveness and therefore produce every year innovative latest systems with high stability and endurance.
- Every unit is subject to stringent inspection to insure high quality and safety. Reliability precision and stability means our Dynamometer Controller

DYTEK 5200

### Engine Combustion Analysis System

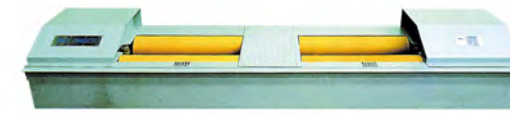


**FEATURE**

- Total S/W Package for Combustion Analysis
- Real Time Scanning & Graphic Display
- Real Time Measuring
- Pointing Zoom (Free Scale)
- Pressure Graphs
- Crank Angle Cylinder Pressure
- Crank Angle Intake
- Crank Angle Based Graphs
- P -  $\ominus$ , P - V Curve,  $dp/d\ominus$   $dQ/d\ominus$   $\ominus$ , x  $\ominus$ , Poly  $\ominus$
- Statistical Service : IMEP Cycle, Pmax/Pmin Cycle Pmax-Hist, Pmin-Hist,  $\ominus$  Cycle

DYTEK 6000

### Chassis Dynamometer



**FEATURE**

- Our chassis dynamometer is a system to fulfill accurate measurements through simulating on-road driving conditions of four-wheel drive vehicles by giving flywheel inertia and electrical control. Nothing can carry out correct test performance better than our advanced measurement technology. Our product enables the operator to capture quite precise measurement values such as the number of roller rotation and torque by measuring damping force gained from break work. Applications, depending on the vehicle type and performance aims, can be classified according to the missions such as assessment of exhaust gas components, endurance test, general function measurement and further research.
- Among various chassis dynamometers for exhaust gas component measurement, our product is engineered essentially with flywheel-130kw(180ps)/200kw(260ps) Eddy Current Dynamometer equipped with widely accepted  $\text{C}^{\text{TM}}$ 220mm twin roller which not only answers the E.P.A. standards but offers significant strengths in ease of control, durability covering specific range and competitive cost frames. Materials are carefully adopted by our analysers through perfect examinations and thorough research on the structure and functional characteristics of chassis dynamometer system. Key parts like flywheel and roller are uncomparatively designed with sophisticated design know-how.

DYTEK 5000

### Automation System for Dynamometer



**FEATURE**

- Carrying out high speed integral data acquisition from engine performance test units, our auto measuring system features a wide range of capabilities in accurate data conversion, output in graphs and record by user's easier operation.
- In combustion chamber examination, it presents reliable measurement values of torque, engine speed, pressure, temperature, fuel consumption ratio and throttle on-off effect, etc. Computer base forms signal from sensor units, Interface measurement device, data acquisition board and built-in programmes.

# 5

## *Electric & Electronic Measuring Device, Automatic Control*

■ AD POWER CO.,LT D.	138 ~ 143
■ CHUNGPA EMT CO.,LT D.	144 ~ 149
■ FESTECH CO.,LT D.	150 ~ 151
■ FESTOONE CO.,LT D.	152 ~ 153
■ HANBACK ELECTRONICS CO.,LT D.	154 ~ 159
■ H.I SYSTEM CO.,LT D.	160 ~ 163
■ KMC ROBOTICS CO.,LT D.	164 ~165
■ KTENG CORPORATION	166 ~ 169
■ MIDAS ENGINEERING CO.,LT D.	170 ~ 173
■ W OOSUN CONTROL CO.,LT D.	174 ~ 177



PM-2200K

## Digital Power Meter



### SUMMARY

PM-2200K has been applied for IEC KSC 62301 International Standby measurement Standard and are able to measure consumption power, standby power, AC, and DC. The basic frequency measurement range of 2200K is 40Hz ~ 100kHz and is used to measure the consumption power for high frequency range such as light and inverter products.

### FEATURE

- Measurement Range (Extension) : 1 mW ~ 6 kW (AC/DC)
- Frequency Measurement Range : DC/40 ~ 100 kHz (PM-2200K)
- Green FND Display (Eco - Friendly)
- GUI(Graphic User Interface)
- SMPS (90 ~ 250V, AC)

### GENERAL SPECIFICATION

- Operating Temperature : 0 °C ~ + 50 °C, 40 ~ 85 RH
- AC line input Voltage : 90 ~ 240 V 50 / 60 Hz
- Dimensions : 280(W) × 95(H) × 270(D) mm
- Weight : ≒ 2.5 kg

### ACCESSARY

- Power Cord : 220 V (1)
- Manual : (1)
- Load Wire (1)
- Fuse (1)

### SPECIFICATION

	PM 2200K	Accuracy	Remark
Voltage	10 V ~ 600 V	± 0.1 % + 3 digit	
Current	1 mA ~ 20 A	± 0.1 % + 3 digit	
Active Power	100 mW ~ 12 kW (AC/DC)	± 0.2 % + 3 digit	110V / 0.1W
Reactive Power	100 mVar ~ 12 kVar (AC)	± 0.2 % + 3 digit	
Power Factor	Lead 0.001 ~ 1 ~ 0.001 Lag (AC)	± 0.2 % + 3 digit	
Frequency	10 ~ 100 kHz (AC)	± 0.1 % + 3 digit	
Interface	RS 232C		
Hi, Lo Compare	O.K		
CT Ratio	1 ~ 1000		
Measurement Line	1 P 2 W AC / DC		

PM-2200A

## Power Meter



### SUMMARY

PM-2200A has been applied for IEC KSC 62301 International Standby measurement Standard and are able to measure consumption power, standby power, AC, and DC. The basic frequency measurement range of PM-2200A is from 40 up to 20kHz and the applications range will be for test or inspection on the QA product line.

### FEATURE

- Measurement Range (Extension) : 1 mW ~ 6 kW (AC/DC)
- Frequency Measurement Range : DC/40 ~ 20 kHz (PM-2200A)
- Green FND Display (Eco - Friendly)
- GUI(Graphic User Interface)
- SMPS (90 ~ 250V, AC)

### GENERAL SPECIFICATION

- Operating Temperature : 0 °C ~ + 50 °C, 40 ~ 85 RH
- AC line input Voltage : 90 ~ 240 V 50 / 60 Hz
- Dimensions : 280(W) × 95(H) × 270(D) mm
- Weight : ≒ 2.5 kg

### ACCESSARY

- Power Cord : 220 V (1)
- Manual : (1)
- Load Wire (1)
- Fuse (1)

### SPECIFICATION

	PM 2200A	Accuracy	Remark
Voltage	10 V ~ 600 V(AC/DC)	± 0.1 % + 3 digit	
Current	1 mA ~ 20 A(AC/DC)	± 0.1 % + 3 digit	
Active Power	0.2W ~ 12 kW (AC/DC)	± 0.2 % + 3 digit	110V / 0.1W
Reactive Power	0.2Var ~ 12 kVar (AC)	± 0.2 % + 3 digit	
Power Factor	Lead 0.001 ~ 1 ~ 0.001 Lag (AC)	± 0.2 % + 3 digit	
Frequency	10 ~ 100 kHz (AC)	± 0.1 % + 3 digit	
Interface	RS 232C		
Hi, Lo Compare	O.K		
CT Ratio	1 ~ 1000		
Measurement Line	1 P 2 W AC / DC		

PA-3400A

## Power Analyzer



### SUMMARY

The mood for development of high efficiency devices are spreading as a trend of 21C.

In accordance with this demand, the researchers are looking for a more precious and realizable power analyser and PA-3400A can provide with all of solutions, users requiring we confident.

### FEATURE

- Real Time Clock Installation , DSP application
- Basic Power Accuracy ±0.1 %
- 1 mA ~ 50 A Range Extension
- 3 V , 3 A Power, PF at the same time display event
- 10 Hz - 100 kHz Bandwidth
- 1 P 2 W, 3 P 3 W (Un Balance)
- Measurement Range : V, A, W, VA, Var, Flicker, PF, Hz, Wh, Ah, High Frequency, Crest Factor Function
- Flicker Function
- High Frequency Range 50th
- FFT Function
- Voltage Cycle Display Function

### SPECIFICATION

- Voltage Range : 10 / 50 / 100 / 150 / 300 / 500V(AC), 1,000V(DC)
- Current Range : 1 mA / 50 mA / 500Ma/ 1 / 2 / 5 / 10 / 20A (AC & DC)
- Power Range : 0.1 mW - 20.00 kW
- VAR Range : 7.4 Var - 20.00 kVar
- Frequency Ranger : 10 Hz - 100 kHz
- Power Factor Range : ±0.001 ~ 1
- Watt hour Range : 0 - 24hour
- : USB port & RS232 port
- GUI(Graphic User Interface)

HPM-100A

## Standby Power Meter (Wattman)



### SUMMARY

IEC KS C 62301 is a meter for measuring consumption power and standby power. The meter is a Plug & Play type and is considered an innovation in the area of power measurement. You can plug the products for power measurement into a universal multi socket without using additional cables, so you can use four items at the same time.

The meter is used to measure a variety of items such as AC Voltage, Current, Power Factor, correction, Frequency, Wattage, electric charge according to wattage and carbon dioxide emission. It is also widely used by public institutes, mass retailers, industrial institutes, and consumer authorities. Its use as a portable wattmeter for educational purposes in elementary and junior middle schools is also widespread.

In addition, our product has been certified as a world-class product, an excellent procurement product, and an innovative product by the Korea Agency for Technology and Standards.

### FEATURE

- Battery & Adaptor are not necessary
- Timer built-in (1hour/ 24hour)
- Measurement standby and consumption power (9mW ~ 3.75kW)
- Voltage, Current, Watt, Frequency  
(Display 4 values at the same time)
- Wide measurement range  
(V, A, W, Wh, PF, Hz, charge, CO2 expelled volume)
- Easy to use with multi-consent (Plug & Play)
- Electric charge are calculated and expelled volume of CO2 is able to compute
- GUI(Graphic User Interface)

### SPECIFICATION

- Current Measurement Range : AC 100  $\mu$ A ~ 15 A (Direct)  $\pm$ 0.3%
- Volt Measurement Range : AC 90V ~ 260V ( $\pm$ 0.3%)
- Watt Measurement Range : 9 mW ~ 3.75 kW  $\pm$ 0.4%
- Power Factor :  $\pm$ 0.001 ~ 1  $\pm$ 0.5%
- Frequency : 50 ~ 1 kHz
- Dimension & Weight : 115(W)  $\times$  200(H)  $\times$  45(D) mm, 650g

### APPLICATIONS

- Public Institution & Consumption Union
- Home Appliance Store
- Energy Saving Educational Program
- Electronic product Line & Service Center

HPM-300A

## Handy Power Meter



### SUMMARY

The Watt Meter for trend of 21 Century and new generation should be measured consumption power, standby power, AC, and DC and be easy to use and has reasonable price. HPM-300A shows 4 factors' (Volt, Current, Watt, and Frequency) measurement value on the wide LCD display at the same time and is able to measure 11 factors such as COS  $\phi$ , Wh, VA, Var, and etc. With Clamp Sensor it is able to measure more than 15 A up to 1,000 A and also able to measure 3 phases power by using Fronde's 2P & 3P system

### FEATURE

- Consumption / Standby Power Measurement  
(AC/DC 1mW ~ 220kW)
- Clamp Sensor (AC 15 A ~ 1,000 A) : (Option)
- Lithium Ion Rechargeable Battery
- 128 X 64 Pixel LCD Display
- Load Wire Supplied (1Phase)
- Holster Supplied
- GUI(Graphic User Interface)

### SPECIFICATION

- Current Measurement Range : 500  $\mu$ A ~ 15 A (AC/DC)  $\pm$ 0.3%  
With Clamp Sensor : 15 ~ 1,000 A (AC  $\pm$ 3%)
- Volt Measurement Range : 1 V ~ 1,000 V (DC)  $\pm$ 0.3% &  
1 V ~ 500 V (AC)  $\pm$ 0.3%
- Watt Measurement Range : AC/DC 1 mW ~ 3.5 kW (Direct)  
 $\pm$ 0.4% (Clamp Sensor : Up to 220 kW)  $\pm$ 3%
- Power Factor :  $\pm$ 0.001 ~ 1  $\pm$ 0.4%
- Frequency Measurement Range : 50 ~ 1 kHz
- Dimension & Weight : 100(W) x 200(H) X 45(D)mm, 600g



AD-M2M & AD-M1M

### Digital Panel Multy Power Meter



AD-M2M(AC)



AD-M1M(DC)

#### SUMMARY

Type AD-M2M & M1M developed as compact panel insertable in order to attach on facility and system equipments etc. Micom chip for power only use improved accuracy and reasonable price. AD-M2M Type has a display of V, A, W and PF that they can be shown orderly by key And the measurement range can be extended by outside C,T for high voltage and current over 10A.

#### FEATURE

- Measurement : Single phase (AC/ DC) multiple use
- Display: FND 4Digit
- Accuracy:  $\pm 0.3\%$  + 4 Digit
- Frequency: 40 ~ 1kHz

#### SPECIFICATION

	AD-M2M(AC)	AD-M1M(DC)	Accuracy	Remark
Voltage	10 V ~ 500 V (AC)	10 V ~ 500 V (DC)	$\pm 0.3\%$	RMS
Current	1 mA ~ 10 A	1 mA ~ 10 A	$\pm 0.3\%$	current extendable (C.T)
Active Power	0.01 W ~ 5 kW	0.01 W ~ 5 kW	$\pm 0.3\%$	2~2kW at regular 200V use
Power Factor	Lead, Lag 0.001		$\pm 0.3\%$	180°
Frequency	50 ~ 60 kHz		$\pm 0.3\%$	
Power	90~250V(AC)	90~250V (DC)	-	50~60Hz(AC)/ SMPS type
Dimensions	48 × 96 × 85(mm)	48 × 96 × 85(mm)	-	-

A2011 / 2013

### Portable Volts & Ammeter



#### FEATURE

The A2013 and A2014 are moving iron and rectifier type instruments using a Taut-Band suspension and hair spring system. These instruments have excellent reproducibility and are highly resistant to vibration and shock.

#### SPECIFICATION

- Principle : Moving iron or Rectifier type
- Operating Temp & Humi : 0~40 °C, 40 ~ 80 % RH
- Rated Accuracy :  $\pm 0.5\%$  of full scale value
- Scale Length : Approx, 135 mm (5.3 / 8")
- Frequency Influence : Within 0.2 % of indicated value (45 to 65 Hz)

A2041 / 2042

### Portable Wattmeter



#### FEATURE

The A2041 and A2042 are electrodynamicometer type and use the hair spring system. There instruments are highly reliable, and designed for use in laboratories for presistios measurement of power at DC and commercial frequencies up to 1,000Hz. There instruments are housed in phenol resin cases and shielded with double permally sheets to block external magnetic fields.

#### SPECIFICATION

- Principle : Electrodynamicometer Type
- Rated Accuracy :  $\pm 0.5\%$  of Full Scale Value
- Scale Length : Approx. 135 mm (5.3 / 8")
- Frequency Ranges : A2041 ; DC, 25 to 1,000 Hz ( $\cos \phi = 1.0$ )  
DC, 25 to 500 Hz ( $\cos \phi = 0.2$ )  
A2042 ; DC, 25 to 1,000 Hz ( $\cos \phi = 1.0$ )

A2038 / 2039

### Power Factor & Frequency Meter



#### SPECIFICATION

- Principle : Frequency sensing transducer
- Rated Accuracy :  $\pm 0.2\%$  of full scale value on 45 to 65Hz range  
 $\pm 1.0\%$  of full scale value on 20 to 100Hz range  
 $\pm 0.5\%$  of full scale value on 100 to 500Hz range
- Scale Length : Approx. 135mm(5-3/8")
- Principle : Rectifier Type
- Rated Accuracy : 3.0%
- Scale :Power Factor : Lead 0-0.3-1.0-0.3-0 Lag
- Phase Angle : Lead 90 ° -0 ° -90 ° Lag
- Effective Power Factor Measuring Range : Lead 0.5-1.0-0.5 Lag
- Scale Length : Approx.135mm(5-3/8 ")
- Frequency Influence :Within  $\pm 1.5^\circ$  Phase angle at 45~65Hz

#### FEATURE

The A2039 is used for measurement in single-phase and balanced three-phase circuits.

from a phase discriminating circuit, the output of the built-it transducer produces a DC proportional to the phase between voltage and current to operatethe DC indicator.

CP-Solar110

## Solar Generating System



### FEATURE

- Real-time educational training system
- Designed to enable the user to understand the principal of solar generation, solar cell, power converter, and solar generation system and to make experiments of solar generating structure and operation
- Designed to enable the user to use easily as system diagram is attached with voltmeter and ammeter on every measurement area

### Experimental contents

- Practice of the configuration of Solar Generating System
- Practice of Characteristic Curve of the Solar Module
- Photocurrent as a Function of Distance and Angle of Incidence of the Light Source
- Practice of Battery Charging and DC Loading
- Practice of Inverter and DL Loading Characteristics

CP-Win300

## Wind & Solar Generating Trainer



### FEATURE

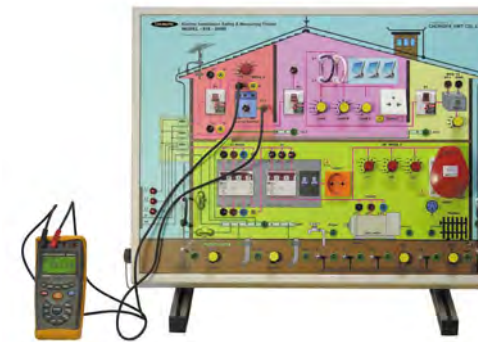
- Wind Generating Trainer was designed for the easy experiment and practice, as a wind and solar generating system
- Software can be linked with of Wind Generating
- Trainer and the user can monitor data such as the output current and power of temperature, wind speed, wind generating, solar generating, battery voltage, load current, and etc.

### Experimental contents

- Learning Wind & Solar generating trainer configuration
- Learning Wind & Solar Generating Trainer Load Device
- Measuring IV characteristic curve of solar cell module
- Measuring photocurrent by incidence angle and distance
- Theory of wind generation characteristic experiment
- Wind power and solar combined training
- Training for software measurement and data management
- Characteristic training by TEST JIG for load test

EIS-2000

## Electric Installation Safety Measurement Trainer



### FEATURE

- Electric safety education preventing from electric accidents
- Grounding and electric installation safety education
- Electromagnetic Interferences and their prevention education
- Static electricity disturbances and their prevention education
- Thunderbolt damages protection education
- Inspection prior to the power supply of electric installations
- Experiments and practices of electric equipment safety
- Single phase / three phase voltage measurements
- DC voltage measurements
- R/S/T phase and live line voltage detection
- Insulation resistance measurements
- Ground resistance (2 point, 3 point type) and earth voltage measurements
- The measurement experiment of ground resistance which is influenced by earth resistivity
- Leakage current measurements and electric leakage breaker test
- Measurement of wiring continuity test

This trainer is the integrated simulation equipment for measuring AC voltage, DC voltage, earth resistance, insulation resistance, and leak current in single-phase AC, 3-phase AC, 3-phase 4-wire AC circuits and for allowing the test of electric leak cutoff.

CEM-2200

## Multifunctional Electric Meter



### FEATURE

- Digital Graphic LCD with back-light
- No-Contact Point Push Button Switch
- Precise & Quick Response
- Effective Value Measurement
- Auto Power Off
- Ground resistance measurement with 3-point and 2-point
- Key button back-light and setting time function
- IrDA Communication
- Lead wire connection status display
- Real Time Clock (RTC)
- Minimum value/maximum value/average value measurement

CEM-2200 is a multifunctional electric meter with which the user can measure electric equipments with various functions very easily and accurately. CEM-2200 is portable and an integrated measuring instrument, which has various measurement functions such as insulation resistance, ground resistance, AC voltage, DC voltage, electroscopes test, phase test, AC current, leakage current, and etc.



CPE-MP100

## Micro Computer Training Kits



CPE-MP100 basically consists of 3 MCU boards, 1 microprocessor master unit(MP100 Master), and 6 interface control experimental modules. In addition, this training kits is supplied with various cables and an experimental guidebook as well. CPE-MP100 has 11 optional experimental control modules like peripheral expand 8255 module by which the user can learn various things like industrial facility control and automatic control.

### FEATURE

- MCU (AT89S51 / ATmega8535 or ATmega128 / PIC 16F874) characteristics
- Hardware interface
- MCU software and development tool
- General-purpose input/output port; usual input/output port
- Make additions to Parallel I/O port;
- Interrupt control;
- Analog comparator
- Analog to digital converter(ADC)
- Digital to analog converter(DAC)
- SPI(Serial peripheral interface)
- USART(Universal synchronous and asynchronous serial receiver and transmitter)
- RS232, Parallel, and USB interface control
- Graphic LCD Module control
- 7-segment LED control
- Dot-matrix control
- LED control
- Relay control
- Limit switch and read switch control
- 16-Key control
- PWM DC motor control
- Step-motor control
- Thermistor (NTC) and CDS control
- Infrared light sensor control

### MAIN CONFIGURATIONS

- Microprocessor master unit (MP100 Master) : 1set
- MCU board : 3ea
- Experimental control module : 6ea
- Interface cable and high strength jump wire : 1set

UDT-250A

## Ubiquitous Micro Processor Trainer



UDT-250A is the educational trainer a user can systemically train micro-processor practical application, interfacing remote control with other electronic instruments, and transmitting & receiving data utilizing wireless communication network.

### FEATURE

- Wireless communication utilized mobile phones
- Applied various processors (VAR, 80196, PIC)
- Applied serial communication (RS232)
- Mycom program utilized ISP
- Applied sensors
- Wired/Wireless R/C and metering
- Intelligence home network practicing
- R/C metering and control measuring
- Telematics and logistics system

CPE-ER1100

## Intelligent Light Control Trainer



### FEATURE

- 6-experimnetal modules
- All kinds of lighting control function
- MCU (ATmega128) control
- CDMA Wireless communication control by mobile phone
- PC interface program control
- All kinds of I/O devices control
- Firmware download training using ISP port
- Ubiquitous remote control training
- Building lighting control principal training
- Lighting control circuit design and lighting power control circuit training

### Experimental contents

- Illumination intensity measurement training by CDS
- Illumination intensity measurement training by Photo TR
- Lamp operation and control training by sequence training equipments
- Lamp operation and control training by PLC
- Xenon lamp operation and control circuit training
- Halogen lamp operation and control circuit training
- LED control training
- High brightness LED control training
- Control training by SCR & TRAIC
- Dot Matrix control training by PWM type
- Stage lighting simulation training
- CDMA Wireless communication lighting control by mobile phone training
- Ethernet(TCP/IP) network control training
- Dot Matrix control training
- O-LED control training
- Control training by A/D, D/A converter
- Control training by timer

CSN-2005

## Integrated Sensor Application Trainer



CSN-2005 is very useful for various and systematical trainings as this trainer consists of one main unit(CSN-200), and various sensor circuit experimental modules and sensor unit, one bread-board module, one external I/O control module, and PC application software.

### FEATURE

- Sensor signal measuring experiment through main unit (CSN-200)
- Real time measuring for sensor signal waves
- Digital graphic LCD display with high sensitivity
- Quick and precise response of measuring values
- PC interface through 2-USB / RS-485 communication
- Sensor characteristic experiment through PC application S/W
- Automatic recognition of sensor modules
- 4-Channel sensor experimental module interface
- External output control practice through sensing data
- RF(Radio Frequency) transmitting practice of sensor values
- Various analogue sensor characteristic practice
- Sensor signal AD converting and digital control
- Sensor circuit controlling practice through Microcomputer(CSN-200)

### MAIN CONFIGURATIONS

- CSN-200 Sensor network system (main unit)
- 22 ea of sensor circuit experimental modules
- 15 ea of sensor units
- PC Application software, accessories, system case, and etc.

CPE-PN7000 / 7500

## PNEUMATICS TRAINING SYSTEM

### FEATURE

Chungpa EMT's Pneumatics trainer is very useful to practice various contents ranging from basic and electrical Pneumatics principal to applicable control.

- Basic and electrical Pneumatics circuit practice using various Pneumatics parts
- Relay, PLC, Microprocessor practice
- Suitable to study from basic to high grade technology
- One-touch lever 2 site clamps (convenient to handle)
- The module is movable vertically and horizontally
- Industrial symbols and names are printed on the module panel
- Various optional modules and various parts for FMS

- **Basic Pneumatics Training System**  
| CPE-PN7000
- **Electro-Pneumatics Training System**  
| CPE-PN7500

### Experimental contents

- Pneumatics principal and practice (more than 35types)
- Electric Pneumatics principal and practice (more than 25types)
- PLC Pneumatics principal and practice (more than 45types)



CPE-HY8000 / 8500

## HYDRAULICS TRAINING SYSTEM

### FEATURE

Chungpa EMT's Hydraulics trainer is very useful to practice various contents ranging from basic and electrical Pneumatics principal to applicable control

- Basic and electrical Hydraulics circuit practice using various Pneumatics parts
- Relay, PLC, Microprocessor practice
- Suitable to study from basic to high grade technology
- One-touch lever 2 site clamps (convenient to handle)
- The module is movable vertically and horizontally
- Industrial symbols and name is printed on the module panel
- Various optional modules and various part for FMS

- **Basic Hydraulics Training System**  
| CPE-HY8000
- **Electro-Hydraulics Training System**  
| CPE-HY8500

### Experimental contents

- Hydraulics principal and practice (more than 30types)
- Electric Hydraulics principal and practice (more than 25types)
- PLC Pneumatics principal and practice (more than 45types)



ISO / ISOS Series

## Digital Supersonic Cleaner

ISO / ISOS Series has the functions of digital timer, temperature control, and cleansing power and shows temperature and remaining time. ISO / ISOS Series is so reliable that the user is able to use this cleaner repeatedly as it has UltraBLT vibrator. ISO / ISOS Series is very effective and semi-permanent in its life as it has a silicone heater. And this cleaner has a good design and is made by the skills of high technological plastic mold injection.

### FEATURE

- Supersonic cleansing function
- Perfect cleansing
- Powerful ultra BLT vibrator
- One-touch system
- In research centers, school laboratories, hospitals
- For industrial machines, automobile parts, jewelry



MPS - MFL 7

## Multimedia Total Visual System

Multimedia total visual system is possible to attach digital total projector and it has built-in high sensitivity wireless MIC, built-in DVD-Combo, built-in multi-function high sensitivity amp system, and built-in dual speaker. It is high-tech total visual solution performing all style of audio-visual education by one device.

Also by design of air-cooling system and 3 stages safe locking device, it achieves stability and security. It is possible to control power totally and to move quietly by applying special urethane wheels.

Solution for more combined usage and manages!

Total system eliminates limitation of Multimedia total visual system with Sliding type LCD monitor, keyboard and industrial PC.

### MAIN CONFIGURATIONS

- Digital total projector (option)
  - LCD projector, high quality visual presenter, video image projector, OHP, document projection function
- DVD-combo
- Wireless MIC system
- High output amp
- Built-in dual speaker
- Multi image console
- Installed multimedia total visual exclusive PC
- Sliding type LCD monitor





FP-100 series

## Pneumatics training set



### FEATURE

The pneumatics training set is composed of various industrial pneumatic parts. All the parts are adopted one-touch mounting clamp so that users can easily attach it and make a pneumatic circuit. Pneumatic training package is consist of FP101, FP102, FP201 and FP202. FP101 is for basic level of pneumatics and FP102 is for advanced level. FP201 and FP202 are electro-pneumatic training packages. FP201 is for basic level and FP202 is for advanced level.

FH-100 series

## Hydraulics training set



### FEATURE

The hydraulics training set is composed of various industrial hydraulic parts. All the parts are adopted one-touch mounting clamp so that users can easily attach it and make a hydraulic circuit. Hydraulic training package is consist of FH101, FH102, FH201 and FH202. FH101 is for basic level of hydraulics and FH102 is for advanced level. FH201 and FH202 are electro-hydraulic training packages. FH201 is for basic level and FH202 is for advanced level.

FS-100 series

## Sensors training set



### FEATURE

Sensor training package is consist of FS110, FS120, FS130. FS110 is Proximity Sensors training packages. The equipment set FS 110 offers comprehensive training on the topic of proximity sensors. FS120 is sensors for distance and displacement. FS130 is sensors for force and pressure. The equipment set FS130 uses force and pressure sensors with an analog output. The output signals of the analog sensors are measured with a digital multimeter.

FATK series

## MAS



### FEATURE

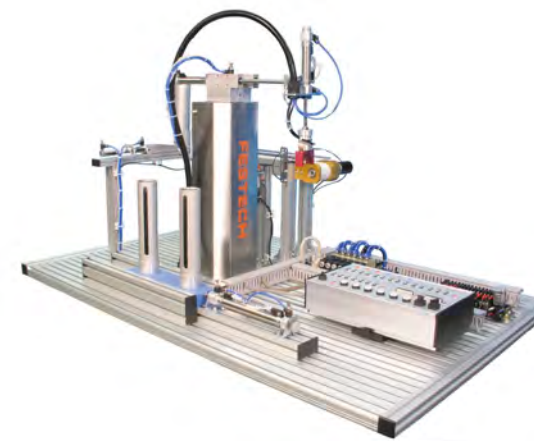
- Each module has a mounting clamp
- Variable module combination
- Open structure for practical training
- 4mm standard electric socket

### COMPONENTS

- Distribution module
- Transfer cylinder module
- Conveyor module
- Tower lamp module
- Solenoid valve & relay module
- Drill motor module
- Sensor test module
- Ejecting module
- I/O control module

FATK series

## PTP robot



### FEATURE

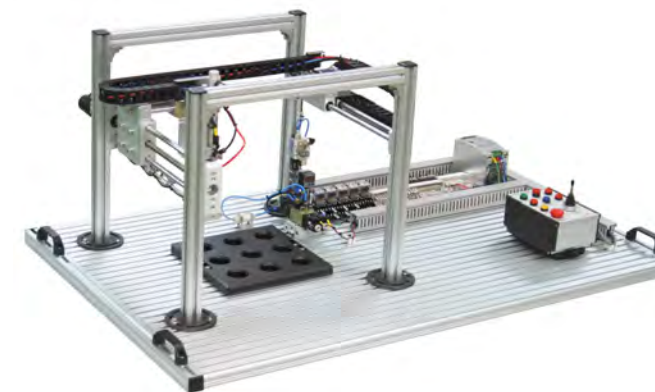
- Pneumatic transfer and sorting system
- Real industrial parts
- Basic and advanced training
- Open structure for practical training
- Control module for Auto/Manual
- 4mm standard electric socket

### MAIN COMPONENTS

- Distribution module
- Conveyor module
- PTP robot module
- Sensor unit
- Sort & storing module
- Control module

FATK series

## Position Control Trainer



### FEATURE

- 2 axes position control system
- Spindle drive type
- DC/Stepper/AC Servo motor(selection)
- Basic and advanced training
- Open structure for practical training

### MAIN COMPONENTS

- Spindle drive module
- pneumatic suction module
- valves and I/O module
- workpiece and pallet
- operating console



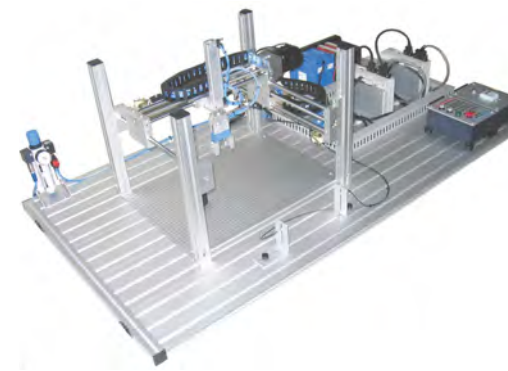
### Pneumatics&Hydraulics System Training Kit



**FEATURE**

Pneumatics & Hydraulics System Training Kit enables combining theory and practice of Pneumatics and Hydraulics. This kit provides sufficient training from basic knowledge and applies knowledge of Pneumatics and Hydraulics as well as PLC education. Work station, which is biotechnologically designed and the combination of aluminum profile provides ONE-STOP education environment for various automation tests.

### Motor System Training Kit



**FEATURE**

Motor System Training Kit, which used Servo Motor or Stepping Motor is an automation kit. By acquiring the mechanism of the motor, this kit enables keen location control and speed control by using the most used parts in the actual industry.

### RFID Distribution Store System Training Kit



**FEATURE**

This kit transfers to the location recognized in the chip by using RFID. Wide range of theoretical and practical training is available regarding the foundation of automation such as Pneumatics, Electronics, Microprocessor, RFID(Radio Frequency Identification), Touch Screen and PLC. By enabling warehousing and taking goods out from the warehouse through RFID, this kit can be utilized in real industrial field

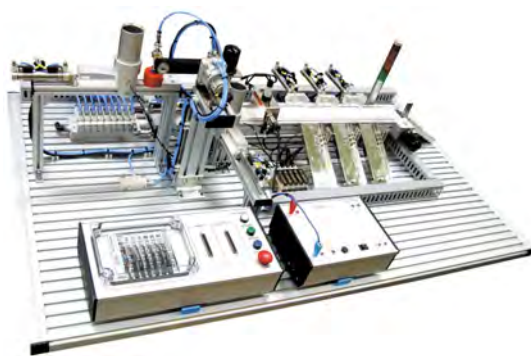
### Quality Vision Control System Training Kit



**FEATURE**

Quality Vision Control System Training Kit can be used in training the foundation and applied knowledge regarding factory automation, assembling parts, quality control, packaging and application of Vision System through out the system. This kit can be controlled real time via program.

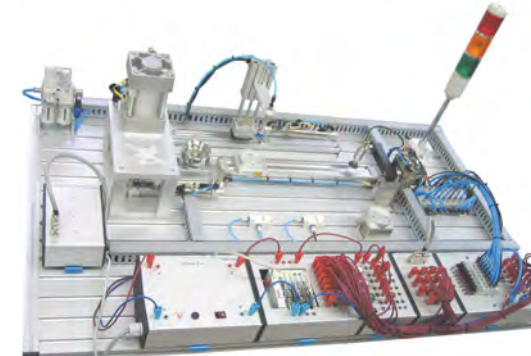
### Mechatronics System Training Kit



**FEATURE**

Mechatronics System Training Kit is the foundation of FA(Factory Automation). By applying the distribution system of production automation, it can be utilized as mechatronics production automation kit. Theoretical and practical training is available regarding the foundation of automation such as Pneumatics, Electronics, PLC, Sensor and PC-Based Control. This kit can be designed and constructed according to the needs of the user.

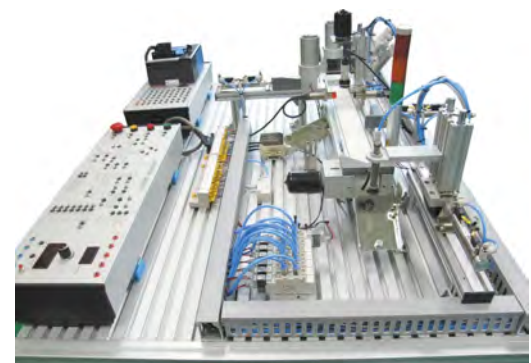
### Curing System Training Kit



**FEATURE**

By enabling students whom are learning industrial automation to experience exciting and easy practical training, Curing System Training Kit(attach prototype picture bottle opener, attach prototype picture pin button manufacturing device) maximizes the education effect for students in understanding the principal and motion of Automation System Training Kit.

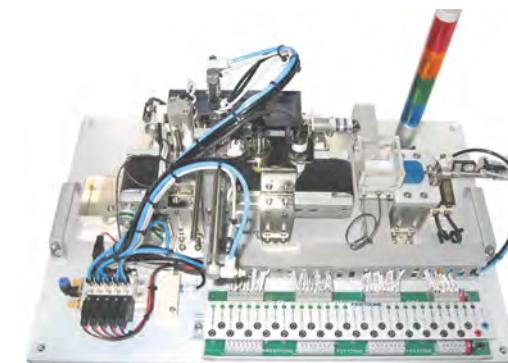
### Production Automation Conveyor System Training Kit



**FEATURE**

This kit increases the efficiency of distribution management, such as dealing & keeping distribution and unloading. Also, it can be applied in production management system and material management system. This kit can be designed and constructed according to the needs of the user.

### Mechatronics Modular System Training Kit



**FEATURE**

Each and every machine fabric and modules are Lego structured, which enables efficient usage. Since all parts can be disassembled and assembled, this kit maximizes the Simple Automation assembly training.



## HBE-EROBO-Tank



### [Intelligent Caterpillar Traction Tank Robot System]

- Best Robot Educational Platform for intelligent mobile robot project experiment.
- Intelligently Variable caterpillar traction tank robot system
- 6 motors for flexible caterpillar traction movement and 1 joint consists of 4 arms
- 4 embedded microcontroller with easy 8bit ATmega128 processor
- Robot sensor application experiments with various robot sensors
- Provides project experiment environments for actuators, sensors and wireless communications
- Provides a wireless control function in the Ubiquitous (or Wireless) Sensor Network environment using the HBE-ZigbeX USN mote.
- Intelligent high performance Robot image and voice digital processing option module with a Intel® XScale™ core(ARM V5TE; ARM9 family compliant microprocessor) embedded board (HBE-KROBO) (project example)

## HBE-ROBONOVA-AI



### [Intelligent two-legs walking robot equipped with 32 bit embedded system]

- Robust frame / High efficient motor technology grafted
- Speed control by PWM technology / RC motor compatible
- CCD camera (Robot eyes) / 32 bit embedded board (robot brain) installed
- WinCE 5.0 program environment
- Real-time image processing using FPGA
- Offers the convenient program environment using ROBOBASIC and ROBOSCRIPT

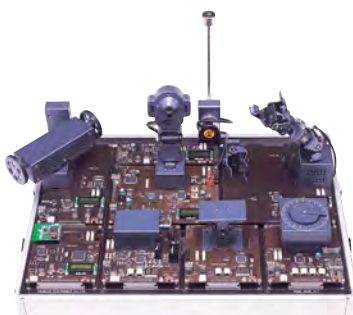
## HBE-RoboCAR



### [Robot driving unit enabling various sensors and motor control experiment]

- A simple HBE-RoboCAR control experiment with HBE-RoboCAR internal 8-bit microprocessor (ATmega128L)
- Intelligent robot control through multiform embedded microprocessor modules (Embedded processor, FPGA, MCU)
- Detection of obstacles with ultrasonic and infrared sensor
- Detection of robot movement with acceleration sensor
- Line tracer driving through phototransistor on the lower part of main body
- Experiment of wireless control and using auxiliary sensor through USN interface
- Operation test of driving stage through DC encoder motor and stepping motor
- Mobile experimental environment with large current capacity of rechargeable battery

## HBE-RoboMotor



### [Essential Platform for Robot Education through Systematic Learning of various Motors and Sensors]

- Education system optimized with drive motors and sensors for robot
- Experiment and practice platform of all motors and sensors used in robot system
- Manual control and programming control practice for learning principles of drive motors and sensors
- Precision control practice using microcontroller's basic control and DSP
- Visual, Hearing, and Tactual function control practice using various sensors for robot
- Remote control practice using IrDA / USN
- Intelligent control algorism practice using inverse pendulum

## HBE-Multi Tracer



### [Flexible Robot Actuator with various Embedded System]

- FPGA design experiment for Robot control using FPGA module (Altera, Xilinx Module)
- Microcontroller application experiment for Robot control using 8bit AVR module (ATmega128L)
- Embedded processor application experiment for Robot control using Embedded Process module (HBE-SM, HBE-SM II)
- Hands-on robot experiment using various modules of HBE-MCU-Multi
- Robot line tracer experiment using infrared sensor application
- Sensor data processing with sensor LEDs (8)
- Design by using option devices (Segment, Buzzer, Button Switch, LED)
- Mobile Experiment on long-time battery driving through large-capacity rechargeable battery

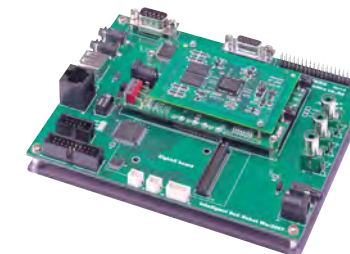
## HBE-EROBO-Vision



### [Intelligent Robot Training Platform for Robot Image processing Experiment]

- Embedded processor system for Robot vision.
- Educational IDE(Integrated Development Environment) runs on the PC or ARM9 Core based embedded system with embedded operating system
- Implemented Marvell PXA272 embedded processor; Intel® XScale™core (ARM V5TE; ARM9 family compliant microprocessor)
- Embedded O.S with WinCE 5.0 and Linux 2.6.12
- Real-Time intelligent vision pre-processing algorithm using FPGA Digital processing Algorithm.
- Digital image processing principle experiment.
- Supporting experimental resources of various intelligent vision applications for object image recognition and tracing.
- Various sensor option modules can interface according to Robot LAB project.
- Various motors can interface to Robot LAB project.
- Various general interfaces are prepared for other mobile robot system.

## HBE-KROBO



### [Intelligent Robot Embedded Processor Training System]

- Best embedded processor Training System for intelligent robot application.
- Real-Time FPGA & Processor application experiments for robot image processing

## HBE-OPT-303



### [Opt-Electronics Training & Optical Network System]

- OPT-303 conducts the WDM transmitting & receiving test, based on such built-in functions as Function Generator, Dual Light Source (1310/1550nm), Dual Optical Receiver (power meter), and Digital Oscilloscope
- OPT-303 conducts optical communication practice and operation test by use of a light source with various wavelengths (650nm-MM, 1310nm-SM, 1550nm-SM, etc.)

## HBE-MCU-Multi



**[Innovative embedded microcontroller training kit consists of multiform MCUs and various functionality modules for technological convergence concept wised Lab experiments]**

- Supports multiform MCU of independent module structure
- Supports CPLD module for digital circuit experiment
- Functional modularity of application
- Provides analysis and measurement module for improving the efficiency of MCU learning
- Supports various interfaces for signal connections between MCU and module
- Offers measurement point for signal analysis
- Provides multiform program experiments for the basis and project experiments

## HBE-Sensor-Multi



**Microprocessor Training Equipment capable of practicing application of various sensors**

- Composed of more than 20 sensor modules for practicing the features and application of various sensors
- 8 bit MCU system for easy sensor application
- Microprocessor programming practice through sensor application
- Provide basic example program sources for sensor application practice
- Provide teaching materials specified for basic theory and application of sensors
- Platform suited for the experiment and exercise of electronic, telecommunication, electric, mechatronics, robot and controls
- Provide interface capable of co-operating with each module of HBE-MCU-Multi

## HBE-WCDMA



**[3G WCDMA & CDMA Mobile Communication Core MODEM Design Experiment Kit]**

Used for the "Special Project for Training of High Value-Added Industrial Engineers" and "Blue Ocean Project for Training of Industrial Engineers" programs.

- Platform for WCDMA communication theory education
- WCDMA hardware structure & operation algorithm education
- WCDMA hardware block implementation
- DM tool with intuitive UI
- Test environment for interworking with simple base station equipments
- Performance-measuring environment by using equipments

## HBE-TDMB



**[Platform for training Terrestrial DMB/DAB (Digital Multimedia Broadcasting / Digital Audio Broadcasting)]**

- Best Platform for Terrestrial DMB/DAB Study and Training
- Perfect T-DMB Receiver System: Real RF T-DMB Receiving to H.264 Decoding
- Real T-DMB Service Experiment between T-DMB Broadcasting Equipment and Multi T-DMB Receiving Terminals
- Receiver System Management S/W Included for Analyzing T-DMB Protocol
- ARM9 core based Embedded System Experiment included

## HBE-Ubi-HomeNet



**[New Ubiquitous Home Network Test-beds based on Wireless Sensor Networks]**

- New test-beds for real implementations of ubiquitous home networks based on smart sensors.
- Independent modules and smart sensors to support more flexible home network tests.
- Package includes real home appliances controlled by the modules and smart sensors of HomeNet.
- Its examples cover from a theoretical education of TinyOS to experiments about real controlling home appliances.
- Target of educational departments : Electronics, Electrical Communication, Computer Science, Mechanical, and Civil, Chemical Engineering, Environmental and Earth Science.

## HBE-Ubi-nanoLOC



**[CSS (chirp spread spectrum) technology is used to measure the distance]**

- A ubiquitous wireless sensor network system allows an autonomous communication network to be built in it.
- A powerful server ensures a variety of access options.
- IEEE 802.15.4a location-tracking PHY (physical layer)
- Chirp spread spectrum (CSS) technology is used to measure the distance.
- An engine for distance measurement is provided.

## HBE-Ubi-MSP430



**[Ultra Low Power Mote Platform for USN and WSN]**

- New smart sensor platform based on the ultra low power microprocessor (TI MSP430).
- Its examples cover from wireless sensor network principles to commercial Ad-hoc and Mesh network applications with low power energy consumptions.
- Lab course objective: Handle of MSP430 CPU, 802.15.4 LR-WPAN standard based RF, Electronics, Communications, Networks Principles, Ubiquitous Sensor Network System H/W & S/W and Application Design Skill Training
- Target of educational departments: Electronics, Electrical Communication, Computer Science, Mechanical, and Civil, Chemical Engineering, Environmental and Earth Science.

## HBE-ZigbeX



**[Ubiquitous Sensor Network or Wireless Sensor Network Educational Platform]**

- The best educational platform in the ubiquitous computing based lab experiment areas.
- Its examples cover from wireless sensor network principles to commercial Ad-hoc and Mesh network applications.
- Lab course objective: 802.15.4 LR-WPAN standard based RF, Electronics, Communications, Networks Principles, Ubiquitous Sensor Network System H/W & S/W and Application Design Skill Training.
- Target of educational departments: Electronics, Electrical Communication, Computer Science, Mechanical, and Civil, Chemical Engineering, Environmental and Earth Science.



## HBE-Ubi-Box



### [A New Efficient Base Station for Wireless Sensor Networks]

- Realizing the maximum 300m communication distance with 10dBm RF power
- Perfectly compatible with ZigbeX, Ubi-Coin and Ubi-MSP430
- Capable of building as USN base stations
- It has a more powerful microprocessor (PXA272)
- It supports Bluetooth communication, ZigBee RF as well as LAN (built-in web server)
- Utilizing the embedded Linux kernel 2.6 as the main OS

## HBE-Ubi-Coin



### [A Coin Size Smart Sensors]

- Very small size smart sensor platforms
- Low power design with the TI MSP430 Processor
- Utilizing for sensor network experiments & mass productions
- It is operated based on TinyOS

## HBE-LogDSP



### [High-Speed DSP Solution to Enable Image Signal Processing]

- Equipped with high-performance CPU TMS320C6414-600MHz
- Video Decoder for 720x484
- Equipped with CCD camera basically
- High-speed memory interface through high-speed SDRAM, SBSRAM

## HBE-DSPLAB2000



### [Standard Digital Signal Processing Platform]

- Loaded with TI's 32-bit floating point operation's TMS320C31 device
- Signal analysis with DSP+plus-only software
- Built-in function generator without a need for additional equipment
- Interworking with TI's emulator

## HBE-SM II



### [Technological Convergence Concept wised Embedded System with Multiform Application Modules]

- Marvell PXA270 application processor installed
- WinCE 5.0 / Linux 2.6.12 installed as standard
- Palm size module structure stackable for handheld use
- Provides various experiment themes using the basic and application modules
- Provides various project themes using driving unit (RoboCAR, Multi tracer)

## HBE-EMPOS II



### [ Embedded Processor Application Training System]

- Best-seller embedded processor training kit with plentiful practical design and application references.
- Selective option modules related Project Experiments on Operating System, FPGA, USN, Mobile, Network and Multimedia Applications.
- Flexible and extensible capacity of hands-on Experiment Source on Embedded Processor application
- Embedded processor system implemented with 32bit ARM9 family compliant Marvell RISC processor PXA255 ; 400MHz high-performance and low-power consumption
- Suitable for multiform embedded software design experiments with enough embedded memory of 128MByte. - Embedded Network applications with two 10/100 Base-T Ethernet

## HBE-EMPOS II CIS



### [HBE-EMPOS II and CIS Module of Embedded Processor and FPGA design training course for Image and Multimedia processing Application]

- Best Embedded Processor and FPGA Training Platform of Multimedia Processing with CMOS Image sensor, TFT LCD, and various Memories
- Supporting Customized Embedded Processor Device Driver Developments and Application Experiments
- Supporting CIS, SDRAM, Image Processing Embedded FPGA Logic Design Experiments
- Supporting External Video Signal Processing and High Speed Real-Time Video Processing and Buffer Control Experiments

## HBE-Combo II



### [Selectable ALTERA, XILINX device modules and various application modules]

- Modularized ALTERA, XILINX devices
- Flexible and extendable capacity of device design
- Experiment on various application examples using peripheral devices
- Selecting 16 input frequencies through Clock Control Block
- Loadable on various application modules

## HBE-B3E



### [Electric & Electronic Practice Equipment on Integrated Automatic Instrumentation Environment]

- Implement all the instruments for circuit practice into one equipment.
- Check a practice course and results within the equipment.
- Automate the wiring for experiment & measurement.
- Help acquire a clear electronics theory through automation practice (AC signal analysis)
- Practice GUI (Graphic User Interface) of Touch Screen mode
- Carefully selected 50 types of electric & electronics practice themes

## HBE-RFID -REX



### [HBE-RFID-REX Bridges a Gap between RFID industrial grade HW/SW Solutions and Educational Experiences of Students]

- Lab Experiments Start from Digital Communications Principles for perfect understanding RFID technology.
- Major Commercial LF,HF and UHF RFID reader modules are prepared for RFID Hands-on Lab experiments.
- Air-interface standardization experiment
- RFID Air-interface standard and application software experiment
- Embedded System-combined Reader's application experiment



HI-AnyHome 1000

## Home Network System Trainer



> HI-AnyHome 1000



> Monitoring S/W

### FEATURE

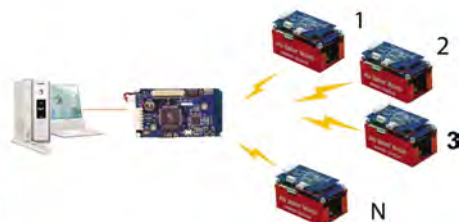
- Optimized Education of Ubiquitous Home Network System
- Suitable for maintenance education of Home Network
- Various external Networks available
  - TCP/IP, USN, PLC, and RS-232C
  - Smart Home Network Integration Solution supplied
  - Hierarchical Study through step-by-step
- USN Practices about Finger Print Recognition, and Automatic Door/Curtain
- USN Practices about Finger Print Recognition, and Automatic Door/Curtain
- Principles of Home Security System and its Remote Control
- Home Gateway System with Qt-Embedded Library
- Various Client Programs realized with Java, Visual C/C++/C# and Basic

HI-Nano24XC

## Sensor Network Trainer



> HI-Nano24XC



> USN & 13.56MHz RFID Reader Module

### FEATURE

- HI-Nano24XC USN(Ubiquitous Sensor Network) trainer enables Students to construct a wireless PAN(Personal Area Network) with Nano-Qplus or TinyOS
- EZ-EATO Zigbee IDE (Integrated Development Environment) software based on Eclipse
- HI-Nano24XC contains 10 Zigbee main modules and each of them can be connected to sensor module or actuator module
- Nano24EDU main modules designed for low power consumption and operated by AA Size battery
- Temperature sensor, humidity sensor, CdS photo sensor and RTC are basically mounted on the main module
- Provide exercise programs, experimental manuals through plentiful USN system development experience

HI-AnyRFID V4.0

## RFID System Trainer



> HI-AnyRFID V4.0



> RFID & USN Application



> HI-AnyRFID V1.0 (RFID & USN System Module)



> HI-AnyRFID V1.0A



> RFID Antenna (5 x 3 & 5 x 5)



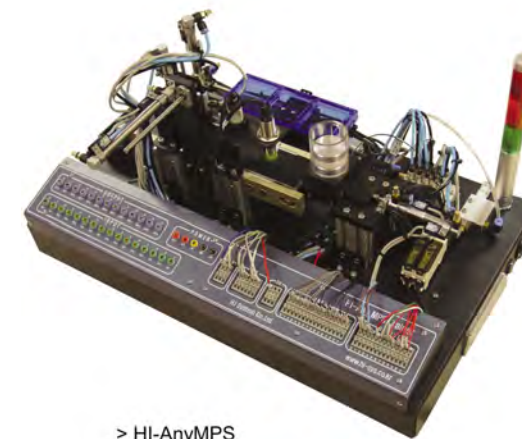
> RFID Application S/W (Warehouse control)

### FEATURE

- A student can learn basic skills of RFID and its application technologies
- Study about RFID theory and practice by this RFID system trainer
- RFID application is possible by provided hardware and software API in various fields of industry
- Divided into 5 sections (RFID diagram, RFID antenna, RFID Reader, operation status and breadboard section)
- Indicate size antennas equipped in RFID diagram section
- 2 different size antennas equipped in RFID antenna section to practice with breadboard, applied programs are realized in breadboard section

HI-AnyMPS

## Mechatronics Training System



> HI-AnyMPS

### FEATURE

- Real-Time Monitoring is available through Human-Machine Interface Program
- Very Easy USB Programming with USB Driver and its API Supply
- Various kinds of PLC such as Siemens, GLOFA, Master-K, XGI, XGK, Melsec, AB, Omron, and so on
- Understanding the Mechanism and Installation through the Assembly and Disassembly of the each Process
- Moving Picture(Animation Based on Adobe Flash) Description of Assembly Process of Mechanical Part
- Very Easy Assembly and Disassembly
- Tools for Assembly and Disassembly Supplied

HI-AnyNET 8051/196 Combo V7.0

## Multi-Embedded Network & Microprocessor Trainer



> HI-Any51 Combo



> HI-Any196 Combo

### FEATURE

- Various Experiments such as Network-Based Remote Control and conventional Microprocessor.
- Dual Booting Modes (Conventional Microprocessor and Embedded Network)
- Any-NET Combo is Network-Based Control Trainer used for Microprocessor Experiments and Data Communication through internet
- Support Source Codes, Schematic Diagrams, and so on
- Used for the Target Board Analyzer
- Support Set-made Stand Alone Web Server, and Remote Control through Network
- Various Peripheral Devices- Digital Input/Output Port, D-MATRIX
- Replacement of MCU Modules is very easy, since AnyNET is divided into 2 Modules such as MCU Module, Network Module, and Peripherals
- Networking Program coded by Visual C++/Java Languages LEDs, DC/Stepping Motors, LCD, FND, Audio, Key-Matrix, A/S, D/A, Sensors for Home Automation
- Replacement of MCU Modules is very easy, since AnyNET is divided into 2 Modules such as MCU Module, Network Module, and Peripherals
- Networking Program coded by Visual C++/Java Languages

HI-CNA

## Network Trainer



### FEATURE

- Computer Network Trainer HI-CNA will provide PC Network and LAN/WAN basic concept, component operating skill and introduction of LAN/WAN for experiment
- Textbook considered of experimental amount of 10 weeks
- Analyze Self-Composed Network through Protocol Analyzer.
- Fundamental and Applied Practices or Embedded Network and Microprocessor.
- Each Network Component is assembled or disassembled with each module.



HI-AnyNET V9.1

### Multi One-Chip Microprocessor Trainer



> HI-AnyNET V9.1

**FEATURE**

- 8 Kinds of One-Chip MCU (89S51, ATmega8535, ATmega128, PIC16F877, 18F452, T89C51AC2, ATmega32) are used for experiment, respectively
- Replacement of MCU Modules is very easy, since AnyNET is divided into 2 Modules such as MCU, and Peripherals.
- AnyNET is appropriate for Electronic, Communication, Electricity, and Mechatronics
- Various Peripheral Devices - Digital Input / Output, DOT-Matrix LEDs DC/Stepping Motor, LCD, FND, Audio, Key MAtrix, A/D, D/A, Sensors for Home Automation, Relay, 4\*1 Terminal to External
- Pneumatic/Hydraulic and Factory Automation Equipments controllable by MCU connected with 4\*1 Jack
- Abundant Source Codes, Schematic Diagrams, and so on

HI-AnySensor V1.0 / HI-AnyLab V2.0

### Multi One-Chip Microprocessor & Sensor Trainer



> HI-AnySensor V1.0

> HI-AnyLab V2.0

**FEATURE**

- HI-AnyNET V9.1 (Multi One-Chip Microprocessor Trainer) designed 8 kinds of One-Chip Microprocessors are used for experiment, each
- HI-AnyNET V9.1 is suitable for training system in Electronics, Electricity and Information Technology
- Sensor training is available together with optional 8 Sensor Modules and the Model of this combined system is HI-AnySensor V2.0 (HI-AnySensor V2.0 = HI-AnyNET V9.1 + 8 sensor Modules). 8 sensor Modules contain 27 kinds of sensor
- PC Inter Face Sensor Trainer (HI-Any Lab V2.0 + 8 Sensor Modules)

HI-AnyMDB V3.0 A, B, C

### Multi One-Chip Microprocessor Trainer



> HI-AnySensor V3.0A > HI-AnySensor V3.0B > HI-AnySensor V3.0C



>8051 (T89C51AC2) >AVR (ATmega32) >PIC(16F877) >PIC(18F452) >AVR (ATmega128) >uPD(NEC) PD78F0547DGC >PIC(18F452)

**FEATURE**

- Support 8 Kinds of MCUs (89S51, ATmega8535, ATmega128, PIC16F877, 18F452, T89C51AC2, ATmega32)
- Operation Software is included in many kinds of Compiler Packages
- Breadboard or Digital I/O with Relay and PPI Expansion (User Selectable)
- Abundant Source Codes, Schematic Diagrams, and so on

HI-AnySPT 7000

### Recycled Energies Training System



> HI-AnySPT 7000

**FEATURE**

- Oriented to the Photovoltaic Theme among recycled energies, this training system is suitable for a high-level education based on real practices.
- Electric power and characteristics can be examined on PC through USB-interfaced Solar Curve Tracer for Photovoltaic signal.
- With luminous source supplied, experiments can be always performed.
- Divided into theories and practices, textbook is directly applicable to education.
- Simulation software for the experimental sequence is supplied.
- Experimental modules are attachable and detachable on aluminum rack.
- With 4\*1 terminals on solar cell module, all the solar cell modules are connectible serially or parallelly.

HI-Extreme R1

### Multi-Robot System Trainer



> AVR (ATmega32) > 8051 (T89C51AC2) > PIC (PIC18F452)

**FEATURE**

- Best Experimental item of Microprocessor Applications
- 3 Functions - Micro Mouse, Line Tracer, RC Soccer Robot
- Program update is very easy through ISP (In System Programming) Function
- LOW Battery Warning, RF Data Communication, Programming with C-Language
- 3 CPUs Supported - ATmega32
- 3 Kinds of IR Sensor  
1 Sensor for Micro Mouse, 2 Sensors for Line Tracer

HI-Extreme R5 / HI-Extreme R4

### Intelligent Mobile Robot System



> Monitoring S/W > HI-Extreme R5 > HI-Extreme R4 > Bluetooth > Ultrasonic & PSD Sensor > Multi PCB Single > 5DOF ARM Robot > Servo & Camera > CDS & Temperature > IR Remocron

**FEATURE**

- Intelligent Mobile Robot HI-Extreme R3 is composed of Mobile Robot base and 3 control modules.
- Robot base contains 3 PSD sensors, 3 ultrasonic sensors for detecting distance and position respectively, 2 DC servo motors with aluminum wheels make this intelligent mobile robot run to any direction you want. Hence, you can make auto-navigating robot.
- Wireless camera (2.4GHz, 1/3" COMS color), IR receiver and Bluetooth communication modules provided, this robot can be controlled by Bluetooth and IR communication methods. Stepping motor and Robot Arm module are provided optionally.
- HI-Extreme R4 is Intelligent Robot Trainer which divided HI-Extreme R3 into each module.



KMC-89S51L  
KMC-8535L  
KMC-877L

## Microprocessor education equipment with terminal stand



### FEATURE

- KMC-COMBO indicated integrated trainer ok KMC-89S51L, KMC-8535L, and KMC-877L
- Easy to conduct experiment due to separation of CPU and experiment module
- Programming and hardware practice with 14 types of modules
- Easy to use with one-touch connector
- Control experiment with microprocessor and attachment of various sensors and motors
- Interchangeable CPU module among 8051, AVR, PIC

### TEXTBOOK



KR-TMS23

## Sensor education equipment



### FEATURE

- Sensor module - 23 ea, Application module-3ea, Display module - 5 ea, Actuator module- 5 ea
- Each module is equipped with output connector and indicator for user convenience
- Ergonomic arrangement to facilitate the wiring between main and application module
- Jog shuttle lever for easier transition of CPU module
- Only use USB for program downloading method
- Integrated program downloading method for CPU via USB
- 4 CPUs are available (largest selection of CPU module among comparable model)
- Actual signal checking by allowing test point per module

KMC-ROBI

## Line Tracer education equipment with MCS-51



### FEATURE

- Education equipment for ROBI(Line Tracer)
- Easy to carry and store by attaching body and main board of ROBI to case
- Same hardware composition with ROBI
- Adopting same MDS(Microprocessor Developing System), circuit and mechanism of ROBI
- Utilize ROBI station with Rom-Emulation feature
- User created program can be downloaded from PC
- Composed to be easily utilized by after-hour activity and educational institute



### TEXTBOOK

- Chapter 1 Basic theory on robot
- Chapter 2 Robot running by C language
- Chapter 3 ROBI hardware
- Chapter 4 ROBI assembly

### Appendix

- A IAR-C compiler installation
- B Compiler usage
- C ROBI STATION program
- D ROBI circuit diagram

KMC-EXRP

## Facial Expression Robot



### FEATURE

- Can express the emotion of robot via facial expression and voice
- Using 11 servo motors, various movements such as laughing, angry, startled look, etc can be expressed.
- Visual recognition with camera and voice output
- Serial interface between computer and robot via RS-232
- Motion control on robot by Visual C++
- Motion control board with greater expansion capability

Product	KMC-EXRP
CPU	PC (Windows XP), Sub CPU - ATmega128
Display	17" Color LCD Screen (Touch Screen - Option)
RC Servo Motor	HDS-877 x 6ea / HS-5645 x 5ea
Camera	Quick Cam Pro4000 with 1.3mega pixels 2ea
Power	AC220V

Product	KMC-EXRP
Power Supply	Input AC 220V / Output DC 5V 10A
S/W	Robot real-time controlling Program
Body	face - 60 series 5TAluminum / eye,eyebrow,lip frame - Plastic
Compiler	Visual c++
Accessory	Keyboard, Mouse

KMC-KOBI

## Inchworm with AV (Wiggler)



### FEATURE

- Robot that expresses the movement of snake and inchworm using 10 servo motors
- By utilizing the algorithm and programming capability on snake and inchworm, it can be helpful for education on microprocessor.
- Recently spotlighted micro controller, AVR8535, is adopted.
- User can easily program using ISP feature.
- Sturdy aluminum frame can add processed design capability.
- Robot that can educate mechanical and microprocessor related issues at the same time.

Product	KMC-KOBI
CPU	AT90LS8535, AT90S8535, ATmega 8535(AVR)
Memory	Internal Flash Memory
Display	2 Digital High light LED
RC Servo Motor	DGS-1188 Metal Type RC Servo Motor 10ea
Battery	AA Size Rechargeable Battery 5 ea
S/W	Code Vision
Buzzer	1ea
Sensor	SRF04(Optional)

Product	KMC-KOBI
Body	Material- Al alloy 50Series 1.5t / fabrication - Laser Cutting & bending
Compiler	Code Vision C Compiler
Usage	Program Download
Accessory	ISP Board & Printer Cable
	charger
	Bluetooth controller (Option)
	ultrasonic module (Option)

KMC-LRP6

## 6 legged robot with multi articulation (Spider robot)



### FEATURE

- Autonomously moving 6 legged robot with more than 20 DOF
- Video transmission and control using video input device
- Motion control board with greater expansion capability
- More than 30 minutes of operation when battery is full
- Robot frame for higher DOF
- Robot platform/user control method
- Image capturing while standing or moving due to tilting feature

Product	KMC-LRP6
CPU	ATmega 128
PC Communication	Bluetooth, Serial Controller
RC Servo Motor	DGS-1188 Metal Type RC Servo Motor 20ea
Camera	Small sized high speed (3-Fs) precision camera (Option)
Walking	6 legged walking
Power	6V / 2.7A Ni-MH charger (2700mh)
Battery	AA Size Rechargeable Battery 5 ea

Product	KMC-LRP6
S/W	Real-time Controlling Program, 3D Simulation Program
Body	600mm x 600mm x 245mm Material- Al alloy 50Series 1.5t fabrication - Laser Cutting & bending
Accessory	charger
	Bluetooth Module
	S/W CD
	Bluetooth Controller



KTE-1000BA

## Standard Refrigeration Experimental Apparatus



PAT No. 0463030 (In Korea)

### FEATURE

- Real-time temperature and pressure data view
- Real-time temperature and pressure graph view
- Real-time temperature and pressure data view on the variety of refrigeration cycle
- Real-time enthalpy view on the temperature measuring point of the variety of refrigeration cycle
- Refrigerating efficiency, Heat equivalent of compression load, Emission heat quantity of condenser, Evaporating latent heat, Heat equivalent of flash gas, Quantity of saturated vapor, Quantity of wet vapor and Theoretical Coefficient Of Performance of the variety of refrigeration cycle
- All data automatically can be saved intended every minute by interval data saving time
- All data automatically can be saved in excel files
- Drawing Pressure-enthalpy Diagram with excel filed data by using refrigeration utilities

KTE-3000HD

## 4-Way Reverse Valve Control Heat Pump Heating & Cooling Experimental Apparatus



PAT No. 0432527 (In Korea)

### FEATURE

- Basic Experiment of Standard Refrigeration Trainer
- Changing refrigerant flow way by controlling 4-way reverse valve
- Heating operating test by controlling 4-way reverse valve
- Cooling operating test by controlling 4-way reverse valve
- Heat efficiency rate analysis comparing other heat machine during heating operation
- Heat efficiency rate test by changing heating load
- Economic analysis of electric heat pump comparing with other heat machine
- Analysis of system effect by changing heating load
- Drawing Pressure-enthalpy diagram with excel filed data by using refrigeration utilities

KTE-2000EV

## Refrigerant Parallel Expansion Refrigeration Experimental Apparatus



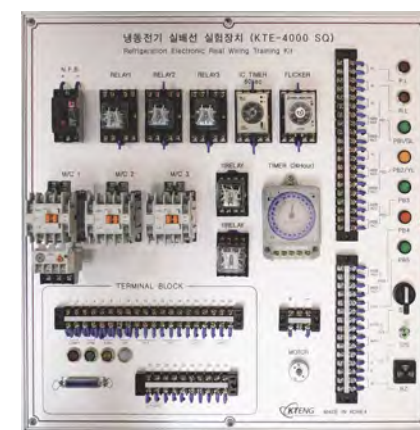
PAT No. 0463030 (In Korea)

### FEATURE

- Basic Experiment of Standard Refrigeration Trainer
- Operating test of air cooling and freezing
- Performance comparing test for the proper refrigerant charging during the air-cooling or freezing operation
- Variable expansion valve(Capillary tube, T.E.V, A.E.V) performance test about item 3
- Test for the air-cooling and freezing by decreasing or increasing capillary tube length
- Variable expansion valve(capillary tube, T.E.V, A.E.V) comparing test
- Performance test by changing condensing temperature
- Surveying compressor discharging temperature about refrigerant and degree of superheat
- Surveying degree of superheat
- Finding latent heat and sensible heat region on the evaporator coil
- Drawing Pressure-enthalpy diagram with excel filed data by using refrigeration utilities

KTE-4000SQ

## Refrigeration Electric Wiring Experimental Equipment



PAT No. 0424765 (In Korea)

### FEATURE

- Practicing to have performance test after making real wire.(But, the real wire trainer should be connected with air-con. system, refrigeration system, freezing system, binary refrigeration system, and heat pump refrigeration system).
- Practicing to make basic circuit and practical circuit in wiring power,electric step by step.
- Practicing to make circuit about that is controlled by every electric control valves as like magnet contactor switch(MC), relay(Ry), push button switch(PB), select switch(S/SW), toggle switch(T/S), buzzer(BZ), timer(Timer), defrost timer(D.T), power lamp(PL),operation lamp(PL), stop lamp(GL) with several kind of circuits.

KTE-2000EP

## Evaporation Pressure Parallel Control Experimental Apparatus



PAT No. 0473494 (In Korea)

### FEATURE

- Basic Experiment of Standard Refrigeration Trainer
- Operating test for air-cooling of the high temperature evaporator and freezing for the low temperature evaporator
- Performance test by changing temperature of the high temperature evaporator, while keeping temperature of the low temperature evaporator
- Refrigerant distribution measuring test by changing temperature of the low and high temperature evaporator
- Testing refrigerant distribution effect for the refrigerator
- Operating test about variation of evaporating pressure by using the Evaporator Pressure Regulator(E.P.R)
- Proper refrigerant test about adjusting temperature of the low and high temperature evaporator
- Performance test by changing temperature of the low temperature evaporator, while keeping temperature of the high temperature evaporator
- Pump down operating test for the low temperature evaporator, while keeping temperature of the high temperature

KTE-4000PL

## Air-conditioning & Refrigeration PLC Experimental Equipment



PAT No. 0802437 (In Korea)

### FEATURE

- Basic programming of GM-WIN PLC
  - How to install GM-WIN program
  - How to use EDIT TOOL
  - How to make a LD program
  - How to make a sequence circuit.
- Control programming for refrigeration system
  - How to make a programming operation by temperature and pressure control
  - How to make a programming operation by pump down control
  - How to make a programming operation by hot-gas and defrost control
  - How to make a programming operation by electric defrost control



KTE-5000LT

### Binary Refrigeration Experimental Apparatus



**FEATURE**

- Basic Experiment of Standard Refrigeration Trainer
- Low stage evaporating temperature test by changing temperature of high stage condensing temperature
- Low stage evaporating temperature test by changing temperature of high stage evaporating temperature
- Low stage evaporating temperature test by changing temperature air-forced heat exchanger
- Testing temperature variation about cascade temperature variable
- Variation test of low stage refrigeration system by changing charging refrigerant
- Analysis temperature by controlling low stage evaporating pressure
- Low stage operating test by changing refrigerant(R-23, ethane)
- Drawing Pressure-enthalpy diagram with excel filed data by using refrigeration utilities

PAT No. 0463027 (In Korea)

KTE-6000BR

### Brine Refrigeration Experimental Apparatus



**FEATURE**

- Basic Experiment of Standard Refrigeration Trainer
- Testing exchange rate evaporator cooling coil and brine
- Testing exchange rate water and brine
- Analysis early evaporating load
- Testing compression load, brine temperature, evaporator temperature and water temperature as passing operation
- Observing melting and icing water
- Comparing of ice thermal storage capacity of industrial ice ball
- Testing heat capacity of a variety of brine
- Drawing Pressure-enthalpy diagram with excel filed data by using refrigeration utilities

PAT No. 0458070 (In Korea)

KTE-1000AHU

### Air Handling Unit Experimental Apparatus



**FEATURE**

- Cycle composition : Preheater - Precooler - Blower - Humidifier - Reheater - Recooler - Control Volume - Outside. With controlling mount of air.
- Refrigerant : R-22.
- The construct of air-conditioning trainer should be a controlled chamber, the duct is visual so that an user can see inside of the trainer, and an user can control amount of inside and outside air temperature.

PAT No. 0510745 (In Korea)

KTE-2000AHU

### Air Handling Unit & Aroma incense Experimental Apparatus Using Lab-view



**FEATURE**

- Study for the principle of air-conditioning in construct field.
- Experiment cooling and heating with control of intake, exhaust and return air.
- Measurement performance of individual device in mechanical air-conditioning.
- Control Air-conditioning with electric penal or computing programming software.
- Measurement performance of refrigeration system.
- Obtaining data and control the system with NI DAQ equipment.
- Experiment with computing programming of NI LabView.
- Drawing psychrometric chart and analysis with real time.

PAT No. 0854130 (In Korea)

KTE-9000SR

### Testing Apparatus of Output and Radiation Heat According to Light Irradiation



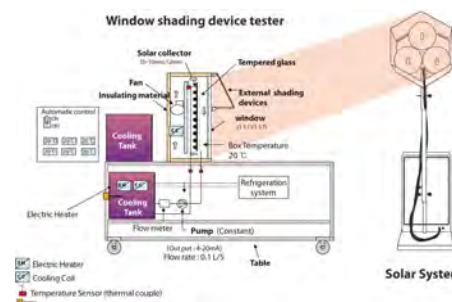
**FEATURE**

- Experimental measurement a mount of radiation heat from heat source(Halogan Lamp).
- Experimental measurement a mount of removal radiation heat using refrigeration and air-conditioning device.
- Monitoring data with an acquisition device.
- Experimental generating using a Solar module or a light source.
- Understanding the principle of Fuel-Cell and Electrolyzer.
- Experimental controlling load or measuring generation electric.

PAT No. 0854131 (In Korea)

KTE-9000SL

### Radiation Convection Experimental Equipment Using Natural or Artificial Sunlight



**FEATURE**

- Experimental operation using natural or unnatural Sun.
- Experimental measuring amount of heat from natural or unnatural Sun.
- Experimental measuring amount of heat as lighting time.
- Understanding collection or principle of Sun light heat.
- Understanding each device for collector of Sun light heat.
- Performance test of blinder for Sun light.
- Performance test of refrigerator.

PAT No. 0776333 (In Korea)



M DA-PXA270/2

## Embedded XScaleTrainer



### FEATURE

- Processor : Intel PXA270/2
- Memory : Intel E28F256 Flash Rom 64MBytes  
Mobile SDRAM 128MBytes
- OS : WinCE.net5.0/6.0 and LINUX 2.6.xx (Multi booting)
- Memory Card : PCMCIA, CF, MMC/SD and Memory stick  
(PXA272-PCMCIA,MMC/SD)
- Display : 7" Wide TFT Color LCD, and Touch Screen
- Audio : AC 97 Codex(UCB1400)
- LAN : LAN91C111(10/100M)
- USB : Host and Client
- CPLD : Lattice LC4256V-75T100(256-Microcell, 64 I/O)

M DA-Multi MicomUSB

## Microprocessor Trainer



### FEATURE

- The MDA-Multi MICOM USB Trainer contains all the basic components necessary to understand PIC, AVR, and 8051 Microprocessor. The application software, MDA-Multi MICOM Studio, combine source code editing, assembling, compiling and program writing in one powerful environment.
- Programmer suitable for programming PIC, AVR, and 8051 devices incorporated into MDA-Multi MICOM USB Trainer.
- PC-Based programming software supplied.
- MDA-Multi MICOM USB trainer connects to USB port of PC for downloading of programs.
- MCU : AT89S51, Atmega8535, PIC16F874 (Basic)  
AT89S52, AT89S8253, Atmega128,PIC18F452(OPTION)
  - Various I/O devices : DOT Matrix, Graphic LCD, Text LCD,  
7 segment, Serial EEPROM, Stepper motor,  
DC Motor, DAC, Relay, 4 X 4Keypad and so on.

M DA - WinAV R

## Windows AVR Trainer



### FEATURE

- Micro-Controller : ATmega 8535
- Include AVR(ISP method) Writer
- Various Input devices experiments.
- Dot matrix(16X32,8X16) experiments.
- Graphic LCD(128\*64) experiments.

M DA - WinPIC-2

## Windows PIC Trainer



### FEATURE

- Micro-Controller : PIC16F874 of PIC16F877
- Operate the DOT Matrix(16\*32,8\*16)Display.
- Graphic LCD experiments(128\*64 Dots)
- 7-Segment, Serial EEPROM, Step Motor, DC,  
Motor, Melody IC experiments
- RS-232C Communication with PC.

M DA-iRTC

## Embedded Communication Trainer



### FEATURE

- Connect to your Ethernet port.
- Control all application units on PC
- Exchangeable microprocessor Topboard  
(8051, AVR and etc)
- Web Server, Telnet Server and TCP control.
- Included 5-port switching HUB.

M DA-ASIC-2

## ASIC(CPLD,FPGA) Trainer



### FEATURE

- Exchangeable top board .(Xilinx, Lattice, Altera, Atmel, etc)
- Select FPGA or CPLD
- Asics are designed using a suit of computer Aided software programs.  
(Verilog HDL,VHDL)
- Download method by PC' s parallel port.
- EEPROM writer for FPGA
- Support the continuous pulse for the digital Circuit  
(Pulse selector:signal,1Hz~50MHz)



M DA-DSP

## DSP TMS320C50 Trainer



### FEATURE

- Micro-controller : TMS320C50
- Display the EMS320C50 internal architecture.
- Keyboard and monitor program support the entry of user program and editing code.
- The powerful software, WinIDE-DSP, combine source code editing, assembling compiling, program writing, and debugging.
- Operated with PC compatible system through RS-232 serial communications.

M DA-68000

## MC68000 Trainer



### FEATURE

- CPU : Motorola MC68000
- RS-232 Communication .(Terminal and Host mode)
- Operated with either on board keyboard or from the PC through RS-232C.
- The powerful software, WinIDE-68k, combine source code editing assembling compiling program writing and debugging.

M DA-8086

## 8086 Trainer



### FEATURE

- CPU : 8086
- Display the register contents.
- Program download and trace function.
- Can be use with stand alone mode with build-in keyboard and LCD or with host PC through RS-232C interface in PC mode.

M DA-EMS51

## 8051 Emulation Trainer



### FEATURE

- Display the 8051 internal architecture.
- 8051 Register internal/external memory dump and editing function.
- Operate stand alone mode with build-in keyboard and LCD or with host PC through RS-232C interface in PC mode.
- The powerful software, WinIDE-EMS51, combine source code editing assembling compiling program writing and debugging.

M DA-EMS196

## 80C196KC Emulation Trainer



### FEATURE

- CPU : 80C196KC
- Display the 80C196KC internal architecture.
- Operated with either on board keyboard or from the PC through RS-232C.
- The powerful software, WinIDE-EMS196,combine source code editing assembling compiling program writing and debugging.

M DA-Z80

## Z80 Trainer



### FEATURE

- CPU : Z80
- Can be use with stand alone mode with build-in keyboard and LCD or with host PC through RS-232C interface in PC mode.
- Program download and disassemble.



WS - SFG1

## Solar Generation System



### Virtual Solar Light Controller

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- Lighting Mode ( Manual / Auto )
- Solar Light Auto Control Ability by Set Pattern
- The Halogen Lamp 500W

### Solar Module

- Max Power Output : 24W
- Open Circuit Voltage : 21.5 V
- Short Circuit Current : 1.28 A
- Max Output Voltage : 17.3 V
- Max Output Current : 1.5 A

WS - SGIC

## Solar or Winding System Educational Equipment (Module Type)



WS - WFG1

## Winding Generation System

This trainer is designed to study construction and principle of winding generation system for permanent magnetic type and winding type. It is easy to take apart and assemble components. Poles and field winding are attached to circle yoke and armature is at the middle.

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- Variable Power : AC 6/12/24/50V
- DC Variable Power
- York Block : Circle Type, 6 Poles
- Driving Block : DC Motor, Continuously Variable Transmission
- 2 Poles, 3Poles Rotor
- 2 Kinds of Pole

This trainer is designed to study construction and principle of solar and winding generation system from basic to application. It is combined with Solar Generation System and Winding Generation System. This trainer can be used for studying for grid and independent system and streetlamp. The capacity for power converter(grid system) is over than 1.5KW.

### SPECIFICATION

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- MCCB : DCP-32PR
- Solar Cell Connection Module, Overcharge Prevent Module, Storage Battery Module
- Stand-alone/ Grid - connected Inverter, Light Control Module, Booster Module
- Digital Multi Meter, Meter, Load

**WS-SFG1 + WS - SGIC : Solar Generation Trainer**  
**WS-WFG1 + WS - SGIC : Winding Generation Trainer**

WS - SCS - 1K

## Winding & Solar Hybrid Generation System



This trainer is designed to study characteristic and principle of hybrid(winding & solar generation) system. To boost a voltage, a chopper is used and an inverter changes DC to AC. It is designed by a brushless type from a permanent magnetic and structure is made to absorb an oscillation.

### SPECIFICATION

- Rated Capacity : 400W, Output Voltage : DC 24V
- Operation Winding Speed : 2.7m/s
- Inner Winding Speed : 50m/s
- Type of Solar Cell : Single Crystalline Silicon Solar Cell. Built-in bypass diodes.
- Open Circuit Voltage : 21.8 V / Short Circuit Current : 4.75 A
- Max Output Voltage : 17.3 V / Max Output Current : 1.5 A
- Max Output : 480 W

WS - SC1K

## Independent Solar Trainer



It is designed as a bag and portable to move elsewhere. The both sides of bag are useful for storage and solar cells are arranged safely. It is used to study for charging a battery, load test, inverter practice by using Photovoltaic(PV).

### SPECIFICATION

- Type of Solar Cell : Single Crystalline Silicon Solar Cell.
- Open Circuit Voltage : 21.5 V / Short Circuit Current : 1.28 A
- Max Output Voltage : 17.2 V / Max Output Current : 1.32 A
- Max Output : 22 W

W S T-23

## Power Electronics Trainer (Board Type)



Every experimental board contains transformer, gate circuit, drive circuit, variable resistance, variable reactance, DC motor and AC motor.

### COMPONENTS

- Diode Rectification Board(WST-2301)
- Single Phase Control Board(WST-2302)
- Three Phase Control Board(WST-2303)
- Single Phase AC Control Board(WST-2304)
- Three Phase AC Control Board(WST-2305)
- Switching Board(SCR)(WST-2306)
- DC Power Control Board(WST-2307)
- Single Phase Inverter Board(WST-2308)
- Three Phase Inverter Board(WST-2309)
- Single Phase Cyclo Converter Board(WST-2310)

W S T-9

## DC Servo Motor Trainer



This equipment could be test out principle and introduction of DC servo PID controller operation and position control.

### SPECIFICATION

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- DC Power :  $\pm 15V$
- Speed Position : LCD Display
- Computer Interface : RS-232C
- Training Content : 12 Items

WS - PET

## Basic Energy Conversion Trainer



The gate circuit and the driver circuit should be formed as block type so that it is easy to connect with power and signal line. It should be formed with check point to measure waveform according to function. All elements of main circuit should be formed with module, as plug type which is easy to remove, adhere or replace.

### SPECIFICATION

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- Inner Power : AC 12V, DC 5V/15V/80V
- Signal Generator : 1/10/100[Hz], 5V
- Meter : DC 300V/DC 2A/AC 300V/AC 2A
- Rotation Speed Meter : 5 Digits, 60p/rev Encoder
- DC Motor : 30W, 90V, 3000rpm
- AC Motor : 25W, 220V, 4 Poles

W S T-10

## Stepping Motor Trainer



The Cover of each panel shows oscillator circuit, control circuit and circuit etc. The LED display shows polarity of stepping motor rotor and stator.

### SPECIFICATION

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- Application Motor : 2-Phase, Unipolar Type
- Excitation Type : 1-Phase, 2-Phase, 1-2 Phase
- Driving Method : PWM Drive Method
- Software : ST MERCURY T10 V3.0



W S T-25A

## Automatic Control Trainer(P.I.D Control, Board Type)



P.I.D device installed separately part the Level control system that belong to driver part establish not cyber real things.

### WST-25A-L Level Control System

- Lever Range : 0~300mm / 0~10[V]
- Liquid & Voltage : 1.9ℓ / min & 10[V]
- Variable Method : Continuous Variable
- Level Sensor

### WST-25A-T Temperature Control System

- Heater : 100[V], 100[W]
- Temperature Sensor : PT 100[Ω]
- Temperature & Voltage Ration : 50℃ & 10[V]
- Cooling Fan : AC 200[V]

### WST-25A-S Servo Control System

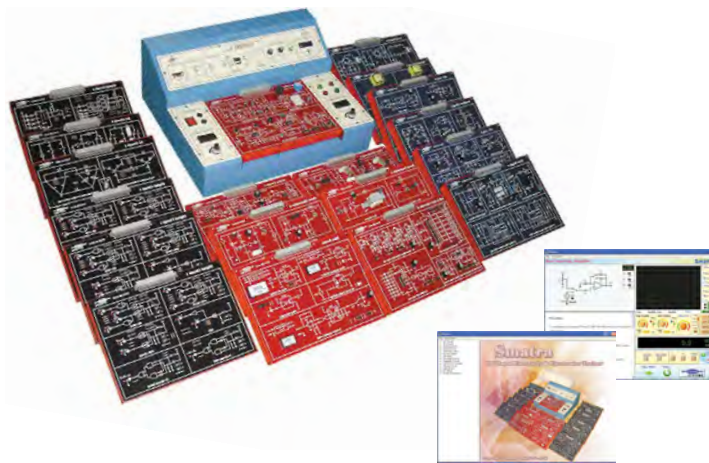
- Motor : DC Servo Motor , DC 0 ~ 75[V]
- Tacho Generator : DC 0~10[V]
- Brake & Scale
- Control Method : PWM Type

### WST-25A-M System Controller

- Power : 1[Φ], AC 220[V], 50/60[Hz]
- System Control Block : 16 set
- System Software : AT MARS T25 V3.0
- Computer Interface : RS-232C

W S T-50

## PC Based Electricity & Electronics Exp. Trainer



The SmaTra is basically PC Based Electricity, Electronics & Power Electronics Exp. and it is possible to interface with PC. This trainer consists of 14 items and 50 modules. Modules are classified into Lower, Middle and High Class. Therefore users can study circuit and principle in a step. First of all, the SmaTra has the troubleshooting ability and it helps users to understand a circuit easily.

### MODULE GROUPS

DC Circuit, AC Circuit, Semiconductor Circuit, Digital Circuit, Transistor Amplifier Circuit, Power Circuit, OP-Amp Circuit, Oscillation Circuit, Magnetic Circuit, A/D & D/A Converter, Sensor Circuit, Photo Electronics Circuit, DC Servo Circuit, Power Electronics Circuit

W S M - 1

## Electric Machine Exp. Trainer



The electric machine experiment set contains series, shunt, wound DC machine that classify connection way, single induction motor that used condenser run type and phase splitting induction type, 3 phase squirrel motor, slip ring motor that used synchronous motor and wound induction motor, universal motor that used as AC and DC braking machine that used brake and dynamometer. These parts can assembly use to DC machine, induction motor and synchronous motor.

### SPECIFICATION

- Power : 3[Φ], AC 220[V], 50/60[Hz]
- Electric Machines : 7 set
- Experimental Modules : 10 set
- Main Device Unit / Electric Machine Storage Cabinet / Working Table / Frame
- Graphic Board (Insulation Plate) : 1 unit

※ Motor & Generator Trainer Series : WSM - 6 : Heavy Current Machine Exp. Trainer, WSM - 7 : Wound Induction Motor & DC Shunt Ge. Trainer, WSM - 9 : DC Compound Motor & Compound Ge. Trainer, WSM - 10 : DC Shunt Motor & Synchronous Ge. Trainer, WSM - 24 : Transformer Experimental Trainer

WSB - 60P

## P.L.C Trainer (Portable Type)



It can be P.L.C training without other devices. The approach switch, photo sensor and small induction motor combined and display revolution detecting. The push button switch, output lamp and buzzer can assist program simulator. The input output module and sensor contain power supply.

### SPECIFICATION

- Power Supply : Main Power, P.L.C Power, DC Out Power, AC Out Power
- Input Terminals / 32 Point, Output Terminals / 32 Point
- Sensor Unit : DC Motor / Photo Sensor / Proximity Sensor
- Input Switch Unit / Output Lamp Unit / Digital Switch Unit
- Noise Situation

W S P - 4

## Electro-Pneumatic Trainer (Module Type)



This equipment contains solenoid valve, all sorts of switch, relay, sensor for basic pneumatic to application practice. This equipment is designed pneumatic modular type & modular type that use at the AL injection molding board. Attach method of each kind module is quick & easy type. It is plastic injection molding type and its size is 100(W)X 85(D)X15(H)mm. Clearance of AL injection molding board is 30mm.

### SPECIFICATION

- Power : 1[Φ], AC 220[V], 50/60[Hz]
- Pneumatic Modules : 35 unit
- Electric Modules : 3 unit
- Electric Control Panel : 9 Block
- Dimension : 1600(W) X 950(D) X 1500(H) mm

W S H - 4

## Application Hydraulic Trainer (Module Type)



WSH-4 Application Hydraulic Trainer

This equipment is designed hydraulic modular type that use at the AL Profile board iron working table contains 4 wheels at the bottom for easy moving. There is an over 40 liter oil tank at the working table, the working table contains relief valve attach for safety. Attach method of each kind module is quick & easy type. It is plastic injection molding type and its size is 100(W)X 85(D)X15(H)mm. Clearance of AL injection molding board is 30mm.

### SPECIFICATION

- Power : 1[Φ], AC 220[V], 50/60[Hz]
- Hydraulic Modules : 38 unit
- Electric Modules : 3 unit
- Electric Control Panel : 9 Block
- Dimension : 1600(W) X 950(D) X 1500(H) mm

### OPTION

#### Excavator trainer

It is made to control the excavator's working by using hydraulic cylinders-swing cylinder, arm cylinder, boom cylinder and bucket cylinder.





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# MEMBER'S PRODUCT

This list is sort up print for KSIIC member's major product

Basic Scientific Devices /  
Audio & Video

Educational System  
Equal-Arm Balance  
Equal Number Balance  
Equal-Arm Balance (Multi Purpose)  
Lever Experiment Apparatus  
Balance Of Force Plat  
W eight  
Mechanics Metal Weight  
W eight(Slot)  
Pulley Experiment Apparatus  
Pulley  
Wheel Axle/Wheel And Axle  
Static Set  
Simple Pendulum  
Borda Pendulum  
Pendulum Experiment Set  
General Pendulum Experiment Set  
Newtonian Demonstrator  
Collision Apparatus  
2 Dimension Collision Apparatus  
Dynamic Energy Experiment Set  
Potential Energy Experiment Set  
Inclined Plane With Friction Board

Inclined Experiment Apparatus  
Track Lane  
Dynamic Cart  
Magnetic Cart  
C Type Clamp  
Optic Sensor  
Air Track  
Vacuum Falling Set  
Spring  
Spring Experiment  
Compose Of Force  
Equilibrium Of Force  
Linear Expansion  
Bimetal  
Joule's Heat  
Specific Heat Counter  
Optical Bench  
Laser Optic Bench  
Laser Generator  
Optical Bath  
General Education Optic Set  
Education Optic Kit  
Lens Set  
Education Optic Set  
Light Source Device  
Light Composition Testing Equipment

Magnifying Glass  
Concave Convex Lens  
Electric Stand  
Spectrometer  
Spectral Apparatus  
Polarization Apparatus  
Linear light Source Device  
Line Spectrum light Source Device  
Multiple-Flash Device  
Right Electric Measuring Device  
Solar Sell Generator  
Sympathetic Tuning Forks  
Sound Wave Monitoring Device  
Magnetic Levitation Propulsion Apparatus  
Lenz's Law Apparatus  
Magnetization Device  
Fleming's Rule Apparatus  
Compass  
Magnetic Observation Panel  
Composition Of Forces  
Gyroscope  
Dynamic Stop Watch  
Centripetal Force Tester  
Surface Wave Projection Device  
Seismic Wave Apparatus  
Metal Density Counter

Archimedes Principle  
Boyle's Law Apparatus  
Magdeburg Hemisphere  
Vacuum Apparatus  
Mol Experiment Apparatus  
Thermal Conduction Apparatus  
Ball And Ring Thermal Apparatus  
Solenoid Demonstrator  
Elec Generator Principle  
Solenoid Coil  
Electric Experiment Circuit  
Choke Coil  
Nichrome Resistor  
Variable Rheostat  
Slide Resistance  
Ohm's Law Experience  
Wheatstone Bridge  
Coulomb's Law Apparatus  
Van De Graaff Generator  
Geiger-Muller Counter  
Induction Coil  
Dc Power Supply  
Crook's Tube  
Electrolysis Device  
Gas Generator  
Brownian Motion Demonstrator



Diffusion Speed Of Gas  
 Glass  
 Metal Stand  
 Test Tube Flask Holder  
 Burette Clamp  
 Clamp  
 Test Tube Stand  
 Pipette Filler  
 Alcohol Lamp  
 Tripod  
 Molecular Structure Model  
 Crystal Structure Model  
 Chemical Element Studying Device  
 Chemical Element  
 Dissection  
 Insect Net  
 Insect Collecting Tool Set  
 Insect Pin  
 Plant Collecting Tool Set  
 Plant Collecting Bottle  
 Plant Matrix  
 Growth Box  
 Photosynthesis Experiment Device  
 Kymograph  
 Breathing Tester  
 DNA Model

Human Body Model  
 Insect Specimen  
 Plant Specimen  
 Animal Specimen  
 Plant Immersion Specimen  
 Animal Immersion Specimen  
 Glob  
 Celestial Glob  
 Tri Glob  
 Transparent Semi Sphere  
 Astrolabe Kit  
 Lunar Shape Monitoring Kit  
 Earth Model Kit  
 Azimuth Panel  
 Accumulation Tester  
 Multi Azimuth Gage  
 Stratum Model  
 Fossil Model  
 Rock Specimen  
 Barometer  
 Anemometer  
 Sundial  
 Weather Research Craft Set  
 Weather Chart Board  
 Mini Seismograph  
 Shadow Observing Set

Screen  
 Microscope  
 LCD Projector  
 Language Lab System  
 Multimedia Educational System  
 Video Presenter  
 Motor Screen  
 Electric Board

### Laboratory Equipments

Drying Oven  
 Forced Convection Drying Oven  
 Vacuum Oven  
 High Temp Dry Oven  
 Vacuum Drying Oven  
 Convection Drying Oven  
 Constant Temp Incubator  
 Low Temp Incubator  
 CO<sub>2</sub> Incubator  
 BOD Incubator  
 Constant Temp Incubate Shaker  
 Multi Purpose Incubate Shaker  
 Growth Chamber  
 Ultra Freeze Chamber

Constant Temp Humidity Chamber  
 Constant Temp Bath  
 Low Temp Circulation Bath  
 Circulation Bath  
 Multi Purpose Water Bath  
 Soxhlet Water Bath  
 Constant Temp Water Bath Shaker  
 Muffle Furnace  
 Autoclave Team  
 High Press Autoclave  
 Fume Hood  
 Clean Bench  
 Globe Box  
 Shaker  
 Dynamic Sieve Shaker  
 Vortex Tube Mixer  
 Jar Tester Mixing  
 Hot Plate Magnetic Stirrer  
 Hot Plate  
 Kjeldahl Digestion Equipment  
 Cutting Mill  
 Centrifuge  
 pH Meter  
 DO Meter  
 Spectrophotometer  
 Conductive Meter

Freezer  
 Drying Freezer  
 Ice Maker  
 Distilling Apparatus  
 Water Purification  
 Ultra Water Purification  
 Aspirator  
 Ultra Sonic Cleaner  
 Chemical Storage Cabinet  
 Experiment Table  
 Flow Measuring Apparatus  
 Freeze Dryer  
 Deep Freezer  
 Moisture Meter  
 Refractor Meter  
 Fluid Friction Apparatus

Machinery and  
 Automobile Education

Educational Design Machine  
 Strength Tester  
 Hardness Tester  
 Air Compressors  
 Grout Mixer

Rockwell Tester  
 Asphalt Stability Tester  
 Universal Testing Machine  
 Dust Measuring Tester  
 Welding Machine  
 Pavement Profilograph  
 Consolidation Tester  
 Structure Exhibit Educational System Car  
 Power Train System Structure Frame Educational Equipment  
 Gasoline Engine, Transmission Structure Educational Equipment  
 Diesel Engine, Transmission Structure Educational Equipment  
 Whole Automotive Educational System  
 Gasoline Eng A/T Educational Training System Equipment  
 Crdi Eng, A/T Educational Training System Equipment  
 Diesel Eng, A/T Educational Training System Equipment  
 Ipi Eng, A/T Educational Training System Equipment  
 Engine Integrated Components Training System Equipment  
 Electric & Electronic Integrated Components Educational Equipment  
 Electric & Electronic System Educational Training Equipment  
 Automotive Electrical Training System Educational Equipment

Electrical Parts Structure Educational Training Model  
 Automotive Transmission System Educational Training Equipment  
 Clutch System Educational Training Equipment  
 Axle Differentials Drive System Educational Training Equipment  
 Brake System Educational Training Equipment  
 Steering System Educational Training Equipment  
 Suspension System Educational Training Equipment  
 Air Conditioning System Educational Training Equipment  
 Fuel System Educational Training Equipment  
 Parts Structure Educational Training Models  
 2 Stroke System Educational Training Models  
 4 Stroke System Educational Training Models  
 Agriculture Machinery Educational Training System Equipment  
 Heavy Machinery Educational Training System Equipment

Electric & Electronic Measuring  
 Device, Automatic Control

Electric Installation Measurement Trainer  
 Ubiquitous Integrated Sensor Application Trainer

Application Micro Processor Training Kits  
 Ibs Light Control Trainer  
 Ubiquitous Mobile Micro Processor Training Kits  
 Industrial Inverter Control Trainer  
 Digital Logic Lab Unit  
 Digital Logic Circuit Trainer  
 Analog Lab Unit  
 Digital & Analog Unit  
 Analog Semiconductor Circuit Trainer  
 Electronic & Semiconductor Circuit Trainer  
 Basic Electricity & Electronics Trainer  
 Pulse Circuit Trainer  
 Analog Op Amp Circuit Trainer  
 Wireless Communication And Antenna Trainer  
 Solar Power Trainer System  
 Wind Power Trainer System  
 Electro-Pneumatic Control Trainer  
 Programmable Logic Control Trainer  
 Electrical Sequence Control Trainer  
 Factory Automatic Control Training System  
 Pcs Process Control Trainer  
 Plc Process Control Trainer  
 Conveyor Control Trainer  
 Pneumatic Auto Door Trainer  
 Temperature Control Trainer



Auto Pump Trainer  
 Plc Temperature Control Trainer  
 Auto Warehouse Robot Trainer  
 Factory Automatic Trainer  
 Elevator Control Trainer  
 Tower Control Trainer  
 Ptp Robot Trainer  
 Home Network Trainer  
 Ubiquitous Sensor Network  
 Rfid Development & Trainer  
 Cdma Mobile Communication Trainer  
 Embedded System  
 Battle Robot  
 Dc High Voltage Generator  
 Rotation Collecting Drum System  
 Collecting Conveyor Machine System  
 Ubiquitous Wireless Communication  
 Equipment & Network  
 H-Sp Distribution Switchboard Simulation Trainer  
 Tft-Lcd Driving System Application Trainer  
 Leakage Clamp  
 Clamp Tester  
 Power Quality Analyzer & Network System  
 Power Quality Analyzer  
 Digital Multimeter  
 Digital Oscilloscope

Function Generator  
 Frequency Counter  
 Power Supply  
 Pc Based Instrument System  
 Pc Based Electricity & Electronics Trainer  
 Pc Based Power Electronics Trainer  
 Pc Based Basic Digital Communics Trainer  
 Air Conditioner / Refrigerator Training System  
 4-Legged Multi Joint Robot  
 Humanoed Robot  
 Intelligent Rbot Trainer  
 Intelligent Rbot  
 Intelligent Service Rbot Trainer  
 Electric Line Power Circuit Trainer  
 Semiconductor & Application Trainer  
 Scr Trainer  
 Logic Lab Unit  
 Logic / Digital Circuit Trainer  
 Sensor Application Trainer  
 A/D & D/A Converter Trainer  
 M/G Set Trainer  
 Inverter Control Trainer  
 Dc Servo Trainer  
 Lan(Local Area Network) Training System  
 Network Training System  
 Pulse/Digital Communication Trainer

Opto Communication Trainer  
 Micro Wave Trainer  
 8Bit Microprocessor Trainer  
 16Bit Microprocessor Trainer  
 Intelligent Mobile Robots System Trainer  
 Multi Robots System Trainer  
 Mobile Robot  
 Intelligent Serving Rbot  
 Piano Robot  
 Facial Expression Robot  
 Multi Articulation 2 Legged Walker With  
 Multi Articulation  
 Inchworm With Av-Wriggler  
 Line Tracer Micro Robot  
 Wattmeter  
 Oscilloscope  
 Voltmeter  
 Ampere Meter  
 Hydraulics Training System  
 Pneumatic Training System



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# MEMBER LIST

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**ACOM INC.**

Phone +82-31-531-2205  
 Fax +82-31-531-9199  
 Website www.acominc.co.kr  
 Product Elec Scale

**AD POWER CO., LTD.**

Phone +82-32-234-3791  
 Fax +82-32-234-3793  
 Website www.adpower21.com  
 Product Power Meter, Power Quality Analyzer, Analog Oscilloscope, Signal Generator, DC Power Supply, Power Factor & Frequency Meter

**AERO TECH**

Phone +82-32-564-7601  
 Fax +82-32-564-7607  
 Website www.dtn.co.kr  
 Product Dry oven

**AHAI&C CO., LTD.**

Phone +82-2-2666-0012  
 Fax +82-2-2666-3456  
 Website www.ahainc.co.kr  
 Product video presenter language lab system, cyber computer board

**AN SUNG SCIENTIFIC CO.**

Phone +82-31-919-9155  
 Fax +82-31-919-9144  
 Website  
 Product pulley

**A-SUNG CO.**

Phone +82-2-765-8404  
 Fax +82-2-747-3622  
 Website www.asungss.co.kr  
 Product Mini Lamp Socket

**BORA GYOGU CO.**

Phone +82-42-256-2526  
 Fax +82-42-256-2612  
 Website  
 Product Lab Table, Fume Hood

**BUNYOUNG GENERAL INDUSTRY**

Phone +82-2-762-4252  
 Fax +82-2-762-4254  
 Website  
 Product Clock Model, Magnet

**C&C INSTRUMENTS CO., LTD.**

Phone +82-32-327-3344  
 Fax +82-32-327-3348  
 Website www.cncinst.co.kr  
 Product Wibro/HSDPA/802.11a/b/g/e Simulator & Analyzer, Ubiquitous, u-Smart Home, Embedded, U-Smart Robot,

**CASPI CO., LTD.**

Phone +82-31-943-0541  
 Fax +82-31-943-0543  
 Website www.caspihome.com  
 Product Projector Screen, Projector Lift, Portable Screen

**CEN KOREA CO., LTD.**

Phone +82-2-732-3800  
 Fax +82-2-735-6300  
 Website www.wicom.co.kr  
 Product Multimedia Language laboratory system, Dr.wicom Language Tutor

**CHC LABORATORY CO., LTD.**

Phone +82-42-933-0887  
 Fax +82-42-933-0039  
 Website www.chclab.com  
 Product Ductless Hood, Arm Hood, Clean Bench, Ductless Storage Cabinet

**CHEIL SCIENCE CO., LTD.**

Phone +82-2-2164-9010  
 Fax +82-2-2164-9014  
 Website www.cheilsci.com  
 Product Fume Hood, Convection Drying Oven, Clean bench, Constant Temp. & Humidity Chamber, etc

**CHONGWON COMPANY**

Phone +82-2-741-5078  
 Fax +82-2-766-4079  
 Website www.chongwon.co.kr  
 Product electrolysis Appartus

**CHUNG BUK SCIENCE CO., LTD.**

Phone +82-43-234-6200  
 Fax +82-43-231-4499  
 Website  
 Product Incubator, Shaker

**CHUNGGYE INDUSTRIAL MFG., CO.**

Phone +82-2-2266-9037  
 Fax +82-2-2277-5183  
 Website www.chunggye.com  
 Product Testing Sieve, Ro-Tap Sieve Shaker, Motorized Sieve Shaker

**CHUNGPA EMT CO., LTD.**

Phone +82-2-2108-5980  
 Fax +82-2-2108-5988  
 Website www.chungpaemt.co.kr  
 Product Electric Installation Safety Measurement Trainer, Integrated Senor Application Trainer, Micro Processor Trainer, Multifunctional Electric Meter.

**COMBUSTECH CO., LTD**

Phone +82-2-6220-3360  
 Fax +82-2-6220-3365  
 Website www.combus.co.kr  
 Product Cyber computer board, Electronic Desk & Visual Presenter, Cyber Lecture Solution, Multimedia Learning System

**DAE BO SCIENTIFIC CO.**

Phone +82-2-763-1287  
 Fax +82-2-743-5675  
 Website  
 Product Scale, thermometer

**DAE KYUNG ENGINEERING CO., LTD.**

Phone +82-32-677-2931  
 Fax +82-32-675-8774  
 Website www.dktester.com  
 Product Tensile Testing Machine

**DAE RIM SCIENCE**

Phone +82-51-637-8912  
 Fax +82-51-637-8914  
 Website  
 Product Table

**DAE RYUK SCIENCE CO.**

Phone +82-2-766-6137  
 Fax +82-2-766-6139  
 Website www.drsc.co.kr  
 Product Water Bottle For Optical Studies, Mini Surface Wave Projecting Device, Sound Wave Monitoring Device, Bimetal, Human Pully

**DAE SUNG G-3 CO., LTD.**

Phone +82-53-854-2400  
 Fax +82-53-854-2406  
 Website www.g-3.co.kr  
 Product Automotive power train, engine, electric system, transmission, clutch, brake, steering, suspension, axle, air conditioning, fuel system, automotive

**DAEIL TRADING COMPANY**

Phone +82-2-984-3341  
 Fax +82-2-984-1088  
 Website  
 Product Fume Hood, Lab Table, incubator, Clean Bench

**DAEJIN SCIENTIFIC CO., LTD.**

Phone +82-2-745-8009  
 Fax +82-2-745-8010  
 Website www.desco.co.kr  
 Product Mirror&Lens App. Kit, Light Effect Teaching App. Star Chart, Role Play Teaching Kit, e-pen Board, ETC.

**DAI HEUNG INSTRUMENT CO.**

Phone +82-2-743-2779  
 Fax +82-2-741-6450  
 Website  
 Product sedimentation experiment,

**DAIHAN LABTECH CO., LTD.**

Phone +82-31-593-9561  
 Fax +82-31-593-9563  
 Website www.labtech.co.kr  
 Product Autoclave, Phourmaceutical Refrigerators, Thermo-hygrostal

**DAIHAN SCIENTIFIC CO., LTD.**

Phone +82-2-967-5235  
 Fax +82-2-963-5231  
 Website www.DAIHAN-Sci.com  
 Product Temperature & Humidity chamber, Incubator, Water bath, Shaker, Shaking incubator, Culture chamber, Dew chamber, Cold wind seed dry, Clean bench

**DASOL KOREA CO., LTD.**

Phone +82-2-741-5654  
 Fax +82-2-741-5655  
 Website www.dasolko.co.kr  
 Product model etc

**DASOL SCIENTIFIC CO., LTD.**

Phone +82-31-376-1526  
 Fax +82-31-377-4264  
 Website www.dasoltd.co.kr  
 Product Growth chamber, Temperature & Humidity chamber, Incubator, Water bath, Shaker, Shaking incubator, Culture chamber, Dew chamber, Seed germinator

**DEADUK ENGINEERING**

Phone +82-42-636-4549  
 Fax +82-42-636-4549  
 Website  
 Product water press tester

**DEAMYUNG SCIENCE**

Phone +82-2-744-1178  
 Fax +82-2-747-0212  
 Website  
 Product Molecular Model Kit, Variable Rheostat

**DESTEK**

Phone +82-53-551-5777  
 Fax +82-53-551-5772  
 Website www.dsg-3.co.kr  
 Product ABS SIMULATOR

**DIK CO., LTD.**

Phone +82-32-234-4000  
 Fax +82-32234-4020  
 Website www.dik.co.kr  
 Product AWS PH Meter

**DILLI PRECISION IND.CO., LTD.**

Phone +82-31-860-5500  
 Fax +82-31-860-5590  
 Website www.uvprinter.com  
 Product Drafting Machine.

**DONG A ELTEK CO., LTD.**

Phone +82-31-345-1500  
 Fax +82-31-421-4053  
 Website www.dongaeltelk.co.kr  
 Product TFT-LCD Aging TFT-LCD Aging System, TFT-LCD LCD Aging Tester

**DONG SHIN INSTRUMENT PLANT CO., LTD.**

Phone +82-2-975-6201  
 Fax +82-2-977-8360  
 Website  
 Product Cnloride Analyzer

**DONG SUNG SCIENTIFIC**

Phone +82-62-224-8713  
 Fax +82-62-225-5475  
 Website  
 Product Beaker, pipette,

**DONGAH TESTING MACHINE**

Phone +82-2-463-7231  
 Fax +82-2-469-0553  
 Website www.dongahstest.com  
 Product universal test machine

**DONGIL SCIENCE CORP.**

Phone +82-51-257-1010  
 Fax +82-51-257-1040  
 Website www.dongilsci.com  
 Product Dry Oven, Incubator

**DONGWON SCIENTIFIC SYSTEM**

Phone +82-51-245-7521  
 Fax +82-51-246-8521  
 Website www.dongwonsm.co.kr  
 Product Universal Testing Machine, Ball mill, Furnace, Friction Experiment Apparatus, Incubator

**DONGWON SYSTEMS Corp.**

Phone +82-2-589-4755  
 Fax +82-2-589-4750  
 Website www.dongwonsystems.co.kr  
 Product Microscope, Visual-Projector, Over Head Projector, LCD-Projector, Screen, Telescope, Computer Sys.

**DOO SAN SCIENTIFIC CO.**

Phone +82-2-747-3176  
 Fax +82-2-762-2286  
 Website  
 Product In-line type injection pump educational system

**DREAM INFOTECH CO., LTD.**

Phone +82-2-3397-3939  
 Fax +82-2-3397-3930  
 Website www.dreamlab.co.kr  
 Product computer, monitor, language lab system

**E.L PROJECT. CO., LTD.**

Phone +82-2-2677-8170  
 Fax +82-2-2632-7050  
 Website  
 Product Automatic Control Trainer (P.I.D Control, Frame Type)

**EARZONE CO., LTD.**

Phone +82-2-2109-6770  
 Fax +82-2-2109-6776  
 Website www.earzone.co.kr  
 Product wireless education system video presenter

**ED CO., LTD.**

Phone +82-31-730-7300  
 Fax +82-31-730-7312  
 Website www.ed.co.kr  
 Product PLC Trainer, Automatic control Trainer, Hydraulics Pneumatics Trainer, FMS Industrial Trainer, DMM DC Power Supply, Spectrum Analyzer

**EDUTOTAL COMPANY**

Phone +82-2-741-3420  
 Fax +82-2-741-4288  
 Website www.교육종합상사.co.kr  
 Product optical instrument, cloud chamber

**E-MAX ELECTRONICS**

Phone +82-2-857-0123  
 Fax +82-2-857-0890  
 Website  
 Product Senser Trainer.

**ENBI CO., LTD.**

Phone +82-31-666-8614  
 Fax +82-31-666-8618  
 Website www.enbi.co.kr  
 Product Freeze Dryer, Deep Freezer

**e-SCIENCE CO., LTD.**

Phone +82-2-455-0241  
 Fax +82-2-456-4331  
 Website www.e-science.co.kr  
 Product PH Meter, Centrifuge

**EUNHA FLUID SCIENCE**

Phone +82-2-463-0407  
 Fax +82-2-462-0971  
 Website www.ehf.co.kr  
 Product Hydraulic Bench, Inclined Manometer, Flow Through an Orifice, Tilting Flow Channel

**EUNPOONG CO.**

Phone +82-2-798-5448  
 Fax +82-2-795-5066  
 Website  
 Product Struc Ture Model

**FESTECH CO., LTD.**

Phone +82-2-2107-7800  
 Fax +82-2-2107-7801  
 Website www.festech.co.kr  
 Product Hydraulic-Pneumatic Training kit, Position Control Trainer

**FESTOONE CO., LTD.**

Phone +82-2-2113-0660  
 Fax +82-2-2113-0664  
 Website www.festoone.co.kr  
 Product Micropressor Trainer, Basic Electronics

**FINEPCR**

Phone +82-31-429-7471  
 Fax +82-31-429-7470  
 Website www.finepcr.com  
 Product Shaker, Incubator, Heating block etc

**FUTURE EDU**

Phone +82-41-632-8811  
 Fax +82-41-632-8812  
 Website www.futureedu.co.kr  
 Product Lab Table

**GMP CO., LTD.**

Phone +82-31-943-5000  
 Fax +82-31-942-8812  
 Website www.gmp.co.kr  
 Product Lamination

**GS INSTRUMENT CO., LTD.**

Phone +82-32-870-5651  
 Fax +82-32-876-3495  
 Website www.gsinstrument.com  
 Product Measuring Instrument

**G-WON HITECH CO., LTD.**

Phone +82-2-2108-1640  
 Fax +82-2-2108-1650  
 Website www.g-won.com  
 Product Moisture Meter, Refract meter, Acidity Meter, Salt Meter, Fruits Acidity Meters

**H.I SYSTEM CO., LTD.**

Phone +82-31-737-5544  
 Fax +82-31-737-5548  
 Website www.hi-sys.co.kr  
 Product Embedded Linux System, Ubiquitous, Robot, Network, Microprocessor, DVR

**HAHNSHIN SCIENTIFIC CO.**

Phone +82-32-675-6276  
 Fax +82-32-678-9652  
 Website www.hsscience.co.kr  
 Product Rotary evaporator, Cooling water bath, Electric aspirator

**HAN IL LAB TECH CO., LTD.**

Phone +82-2-2265-1426  
 Fax +82-2-2277-5106  
 Website www.hanillab.co.kr  
 Product Fume hood

**HAN IL SCIENTIFIC CO.**

Phone +82-62-383-7744  
 Fax +82-62-383-7746  
 Website  
 Product pitchfork/Stimmgabel/tuning fork

**HAN JIN INTERNATIONAL**

Phone +82-2-894-8640  
 Fax +82-2-894-8639  
 Website  
 Product Job Table

**HAN KOOK AV SCIENTIFIC CO., LTD.**

Phone +82-51-808-5566  
 Fax +82-51-803-1413  
 Website www.hankookscience.com  
 Product Screen, aerovane, test tube rack

**HAN SUNG F&C CO., LTD.**

Phone +82-2-2109-6612  
 Fax +82-2-2109-6615  
 Website www.hansungfc.com  
 Product Dry Oven, Stirrers

**HAN WON SOWAY CO.**

Phone +82-2-2267-2936  
 Fax +82-2-2277-7522  
 Website www.hanwonsoway.co.kr  
 Product Beaker Dyeing Apparatus with IR radiator, Laundry O Meter(Model;HT-700)

**HANBACK ELECTRONICS CO., LTD.**

Phone +82-2-839-7030  
 Fax +82-2-830-3103  
 Website www.hanback.com  
 Product Ubiquitous Sensor Network, Embedded System, Intelligent Robot

**HANBAEKSCIENTIFIC CO.**

Phone +82-32-654-9772  
 Fax +82-32-654-0070  
 Website www.hanbaeksci.co.kr  
 Product dry oven incubator clean bench

**HANIL SCIENCE INDUSTRIAL**

Phone +82-32-543-6906  
 Fax +82-32-542-7124  
 Website www.ihanil.com  
 Product centrifuge

**HANJIN MULTIMEDIA**

Phone +82-31-242-8833  
 Fax +82-31-242-7117  
 Website www.과학교재.com  
 Product human body model

**HANKOOK LAB.EQUIPMENT MFG CO.,**

Phone +82-43-277-6650  
 Fax +82-43-277-6654  
 Website www.fumehood.co.kr  
 Product Fume Hood, Clean Bench, Forced Air Sender, Lab Table

**HANKOOK SCIENCE CO.**

Phone +82-2-764-2948  
 Fax +82-2-742-0479  
 Website  
 Product easy switch

**HANRA PRECISION ENGINEERING CO., LTD.**

Phone +82-2-2619-3637  
 Fax +82-2-2619-3639  
 Website www.hanra.co.kr  
 Product Micro Hi-Vision System

**HANSHIN KUMPUNG CO., LTD.**

Phone +82-31-989-9991  
 Fax +82-31-989-9994  
 Website www.han-shin.co.kr  
 Product Universal Testing Machine

**HEUNGJIN TESTING MACHINE CO., LTD.**

Phone +82-31-986-2351  
 Fax +82-31-986-2355  
 Website www.heungjin.co.kr  
 Product Universal Testing Machine, Rockwell Hardness Tester

**HI TEC KOREA ENG CO.**

Phone +82-32-624-3261  
 Fax +82-32-624-3263  
 Website  
 Product PLC Trainer

**HO NAM SCIENCE CO., LTD.**

Phone +82-62-222-6457  
 Fax +82-62-227-2219  
 Website  
 Product Tripod Stand, Double Switch

**HONGMYONG SCIENCE FURNITURE**

Phone +82-42-822-2734  
 Fax +82-42-932-7100  
 Website www.hongmyong21.co.kr  
 Product Testing bench, show case

**HUMAN CORPORATION**

Phone +82-2-418-4182  
 Fax +82-2-423-6430  
 Website www.humancorp.co.kr  
 Product Water Purification System, UV/VIS Spectrophotometer, Kjeldahl System, Washing Machine, Camera for microscope

**HUMAN SCIENCE CO.**

Phone +82-2-442-3543  
 Fax +82-2-442-3573  
 Website www.puris.co.kr  
 Product Water Purification System, Pure Water System, Ultra Pure Water System.

**HUNDAI PRECISION INDUSTRY**

Phone +82-2-928-9000  
 Fax +82-2-928-5477  
 Website www.testing.co.kr  
 Product Universal Testing Manchine

**HWAN KYUNG TECH**

Phone +82-2-2271-2186  
 Fax +82-2-2271-2189  
 Website www.joylab.net  
 Product Column, Condenser, Adapter, Reaction Flask

**HWANWOONG MECHATRONICS CO., LTD.**

Phone +82-55-582-7970  
 Fax +82-55-582-7975  
 Website www.dytek.co.kr  
 Product Dynamometer, Engine Performance Test System, Combustion Analysis System

**HWASHIN INSTRUMENTS CO., LTD.**

Phone +82-2-2267-6854  
 Fax +82-2-2274-6854  
 Website www.hsworks.co.kr  
 Product Volt am meter, resist meter

**HWASHIN TECHNOLOGY CO.**

Phone +82-31-765-2530  
 Fax +82-31-765-2540  
 Website www.hwashin.net  
 Product Ultrasonic Cleaner, Ultrasonic Pipet Cleaner, Roller Mixer, Vortex Mixer, Ratator

**HYUN JIN EST**

Phone +82-62-972-6671  
 Fax +82-62-972-6672  
 Website  
 Product PLC, Power supply, Friquancy conunter

**IKEON SCIENTIFIC CO.**

Phone +82-2-529-5901  
 Fax +82-2-529-5905  
 Website  
 Product Dry Oven, Fume Hood

**IL DONG CHEMICAL CO.**

Phone +82-42-621-5260  
 Fax +82-42-621-5261  
 Website  
 Product Dry Oven, Fume Hood, Autoclave, incubator,

**IL SHIN SCIENCE CO., LTD.**

Phone +82-51-759-0731  
 Fax +82-51-759-0734  
 Website www.일신과학.com  
 Product Double Coil

**ILSHIN LAB CO., LTD.**

Phone +82-31-867-1384  
 Fax +82-31-867-1387  
 Website www.ilshinlab.com  
 Product Deep Freeze, Freeze Dryer, Ice Maker, Programmable Vacuum Freeze Dryer

**INDEFAC TECHNOLOGY INC.**

Phone +82-2-2107-3507  
 Fax +82-2-2107-3522  
 Website www.indefac.co.kr  
 Product DIGITAL LANGUAGE EXERCISER, DIGITAL LANGUAGE EDITOR

**iSTEK. INC.**

Phone +82-2-2108-8400  
 Fax +82-2-6442-8430  
 Website www.istek.co.kr  
 Product pH/ISE/DO/EC Meter TMS(COD, Chlorine, TN, Turbidity)

**JEIL INDUSTRIAL CO.**

Phone +82-2-766-6058  
 Fax +82-2-764-7850  
 Website www.jeilsience.com  
 Product Wind Vane & Anemometer

**JEIL MACHINE CO., LTD.**

Phone +82-31-632-8060  
 Fax +82-31-632-8068  
 Website www.jeilm.co.kr  
 Product Dry Oven, Mixer Filter, Autoclave

**JEIL PRECISION INDUSTRIAL**

Phone +82-2-2293-2325  
 Fax +82-2-2296-6608  
 Website www.jeil1981.co.kr  
 Product Testing Machine

**JEIO TECH CO., LTD.**

Phone +82-2-325-2346  
 Fax +82-2-325-2335  
 Website www.jeiotech.com  
 Product thermostat, drier, incubator,

**JEUNGDO BIO AND PLANT CO., LTD.**

Phone +82-2-952-8214  
 Fax +82-2-952-8217  
 Website www.jeungdo.co.kr  
 Product Environment Controlled Rearing System, Clean Animal Rack Cage

**JHONSAM CORPORATION**

Phone +82-2-586-3069  
 Fax +82-2-586-3074  
 Website www.johnsam.co.kr  
 Product Incubator, thermostat,

**JIN HEUNG SCIENTIFIC CO.**

Phone +82-2-742-3555  
 Fax +82-2-742-3348  
 Website www.jico.co.kr  
 Product ACV(alternating current voltmeter), Van de graff Generator, Digital Meter

**JIN IL SCIENTIFIC CO.**

Phone +82-2-3672-7303  
 Fax +82-2-766-2385  
 Website  
 Product Switch, Periodic Table of the Elements

**JINGU SCIENTIFIC CO., LTD.**

Phone +82-31-566-0758  
 Fax +82-31-566-0768  
 Website www.jingusci.com  
 Product Soil analyser

**JISICO CO., LTD.**

Phone +82-2-461-7071, 467-7071  
 Fax +82-2-464-1962  
 Website www.jisico.co.kr  
 Product drier, Shaker, Glove box, Water bath, Autoclave, incubator

**JOENBIO CO.**

Phone +82-2-893-7831  
 Fax +82-2-893-7832  
 Website  
 Product Anatomy Sample



**JOONG HEUNG INC.**

Phone +82-2-2265-6284  
 Fax +82-2-2273-4743  
 Website  
 Product polarizer, direct vision spectroscopy, deflecting force experiment

**JOONGANG TEACHING AIDS CO.**

Phone +82-51-804-8257  
 Fax +82-51-803-8258  
 Website www.centerm.com  
 Product School Lab furniture

**JUNG DO TEST INSTRUMENT CO.**

Phone +82-2-2675-4431  
 Fax +82-2-2671-3856  
 Website www.jungdo21.com  
 Product Mini/Pilot Plating Plants. Hull Cell Testing Equipments. Analyzers of Plating Solution. Testing Instruments for Plating & Painting. Salt

**KMC ROBOTICS CO., LTD.**

Phone +82-2-2102-5136  
 Fax +82-2-2102-5135  
 Website www.kmrobot.com  
 Product Micro-Processor Evaluation Kit, Micro-robot, Humanoid Robot, electronic Evaluation Kit, etc

**KOREA DIGITAL CO., LTD.**

Phone +82-2-2109-8877  
 Fax +82-2-2109-8878  
 Website www.koreadigital.com  
 Product sensor control apparatus. MBL. Data logger for Education.

**KOREA ELECTRONIC PARTS**

Phone +82-2-2274-4284  
 Fax +82-2-2274-4285  
 Website www.korea-e-parts.com  
 Product Power Supply

**KOREA HRD CONSULTING**

Phone +82-2-391-0220  
 Fax +82-2-391-0510  
 Website www.koreahrd.co.kr  
 Product Digital Lab System

**KOREA SCIENTIFIC TECHNIQUE**

Phone +82-31-291-4055  
 Fax +82-31-291-4066  
 Website www.gaooze.com  
 Product Constant Temp & Humid Chamber

**KTENG CORPORATION**

Phone +82-31-749-5373  
 Fax +82-31-749-5376  
 Website www.kteng.co.kr  
 Product Heating & Air Conditioning Education Equipment

**KU RYONG SCIENTIFIC CO., LTD.**

Phone +82-2-742-0659  
 Fax +82-2-744-9489  
 Website www.kuryong.co.kr  
 Product Earth Model Kit

**KWANG DONG INDUSTRIAL CO., LTD.**

Phone +82-31-677-2141  
 Fax +82-31-677-5945  
 Website www.forlab.co.kr  
 Product Fume Hood, Clean Bench, Lab Table

**KYONG IL EnS**

Phone +82-53-425-0460  
 Fax +82-53-422-5051  
 Website www.kyoungilens.com  
 Product Tripod, Cart, Stand

**KYUNG SUNG INDUSTRIAL ARTS CO.**

Phone +82-31-592-9664  
 Fax +82-31-591-6586  
 Website  
 Product Test Tube Stand, black box, Insect sample

**KYUNGIN SCIENCE CO.**

Phone +82-2-3675-0088  
 Fax +82-2-3675-0087  
 Website www.kiscoshop.co.kr  
 Product balance,

**LAB DESIGN CO.,LTD**

Phone +82-2-957-8440  
 Fax +82-2-957-8443  
 Website www.labdesign21.co.kr  
 Product Lab Furniture, Storage Cabinet, Safety Reagent Cabinet, Sink Table, Fume Hood, Ductless Fume Hood

**LABZONE CO., LTD.**

Phone +82-42-670-4664  
 Fax +82-42-670-4670  
 Website www.labvalley.net  
 Product Filtration Fume Cupboard  
 Filtration Reagent Storage Cabinet

**MASTER GENERALI EDUCATION**

Phone +82-2-764-6998  
 Fax +82-2-764-6997  
 Website www.masteredu.co.kr  
 Product Tripod

**MC TECHNOLOGY CO., LTD.**

Phone +82-31-888-5900  
 Fax +82-31-888-5915  
 Website www.mctek.co.kr  
 Product RF Generator, LCR Meter, Power Supply

**MDM INSTRUMENTS**

Phone +82-31-252-9755  
 Fax +82-31-252-9756  
 Website www.mdm-ins.com  
 Product Water Purification System

**MIDAS ENGINEERING CO., LTD.**

Phone +82-2-2109-5964  
 Fax +82-2-2109-5968  
 Website www.midaseng.com  
 Product Microprocessor Simulator

**MIRAE SCIENCE**

Phone +82-2-744-1280  
 Fax +82-2-764-8885  
 Website www.miraes.com  
 Product Multi Video System, Human Anatomy Model, Animal Body Specimens Power Supply

**MIRAE EDUPIA**

Phone +82-2-765-1101  
 Fax +82-2-765-1103  
 Website www.edu4u.biz  
 Product adiabatic expansion device, metal leaf electroscope

**MIRAE ST CO., LTD.**

Phone +82-31-420-5753  
 Fax +82-31-420-5978  
 Website www.miraest.co.kr  
 Product Reverse Osmosis Water System, Ultrapure Water System, Ultrasonic Pipet Cleaner

**MIT Electronics**

Phone +82-2-2068-6992  
 Fax +82-2-2068-6991  
 Website www.mmieng.com  
 Product Slide. PLC Trainer.

**MIT ZONE CO.,LTD**

Phone +82-2-992-4300  
 Fax +82-2-992-4303  
 Website www.mitzone.co.kr  
 Product story pen, electric board

**MOCOMTECH CO., LTD.**

Phone +82-2-739-9968  
 Fax +82-2-739-9971  
 Website www.mocomtech.com  
 Product high-gain projection screen

**MOON SUNG CO., LTD.**

Phone +82-2-764-2246  
 Fax +82-2-743-3138  
 Website  
 Product Molecular Model Kit

**MYEONG JI SCIENTIFIC INDUSTRY**

Phone +82-2-741-8513  
 Fax +82-2-741-8516  
 Website www.labedu.co.kr  
 Product mechanical energy apparatus

**NAMBUK TRADING COMPANY**

Phone +82-31-506-0047  
 Fax +82-31-506-0008  
 Website  
 Product Application Trainer, Hydraulics Trainer, Industrial Automation Trainer, Casting Machine

**NICOM INTERNATIONAL CO., LTD.**

Phone +82-31-706-0947  
 Fax +82-31-706-0946  
 Website www.nicom.co.kr  
 Product variable resistor/rheostat,

**OMAX CO., LTD.**

Phone +82-32-682-8811  
 Fax +82-32-675-6959  
 Website www.omax.co.kr  
 Product Video Presenter, screen, microscope, LANGUIGE STUDY UNIT, Cyber Computer Board Rear Projection style with an interior decoration

**OPERON CO., LTD.**

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 Fax +82-31-989-9017  
 Website www.operon.co.kr  
 Product Stem cell Freezer-156. Cryo Freezer-156 Freeze Dryer. Chemical Free Freeze Dryer-120 Ultra Low Temperature Petrochemistry

**ORIENT AV CO., LTD.**

Phone +82-2-396-0880  
 Fax +82-2-396-0850  
 Website www.orientav.co.kr  
 Product Digital Lab System, NuriNET System

**ORIENT SCIENCE**

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 Fax +82-2-744-7963  
 Website  
 Product magnetic compass/compass

**ORIENTAL INTERGRATED**

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 Fax +82-32-671-2244  
 Website www.vieway.co.kr  
 Product CCTV, Power Supply. Video Presenter

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 Fax +82-31-902-9109  
 Website www.osunhitech.co.kr  
 Product MicroScope

**PRINCE CO.**

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 Fax +82-2-2278-9551  
 Website www.princelab.co.kr  
 Product Language Lab System

**PUNG SAN CO.**

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 Fax +82-2-3672-6846  
 Website  
 Product electrolysis

**SAE HAN LAB**

Phone +82-2-766-1303  
 Fax +82-2-766-1304  
 Website www.saehanlab.co.kr  
 Product Beaker, Flask, Cylinder, Condenser, Test tube, Funnel

**SAM HO ELECTRONICS**

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 Fax +82-31-444-6504  
 Website  
 Product function generation, power supply, multimeter

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 Fax +82-2-744-2658  
 Website www.samjeeintl.com  
 Product optic communication tester

**SAMDUK SCIENCE**

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 Fax +82-31-737-9219  
 Website www.Samduk.co.kr  
 Product Hydraulic(Water). Aerodynamic(air)

**SAMDUK SCIENCE CO., LTD.**

Phone +82-31-563-3590  
 Fax +82-31-563-4665  
 Website  
 Product Beaker

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 Fax +82-2-2163-8942  
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 Fax +82-42-621-9953  
 Website www.samjineng.com  
 Product Centrifugal Caster, Electroplating Processor, hydraulic press

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Phone +82-51-818-0571  
 Fax +82-51-816-7052  
 Website www.samjintech.co.kr  
 Product variable resistor/rheostat,

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 Fax +82-31-575-8307  
 Website www.samjinuc.com  
 Product heat exchanger

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 Fax +82-41-552-6771  
 Website www.samkilab.co.kr  
 Product LABORATORY, FURNITURE, Fume Hood

**SAMYEON TECH CORP.**

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 Fax +82-53-591-4226  
 Website www.samyeon.co.kr  
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 Fax +82-2-745-6519  
 Website www.scipark.co.kr  
 Product Waste water management instrument  
 - Electrolysis apparatus  
 - The law of boyle experiment equipment

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 Fax +82-2-548-5984  
 Website  
 Product UV-Vis Spectrophotometer, Color Spectrophotometer, Fluorescence Spectrometer

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 Fax +82-2-430-0049  
 Website www.sgs.co.kr  
 Product Physics Instrument, PC Interface unit, Electronic Instrument, Educational Trainers and etc.

**SE JIN CORPORATION**

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 Fax +82-2-745-2816  
 Website  
 Product Arm Blacing Scale, Coulomb's law, compound pulley

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 Product Microscope

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 Website www.seoulin.co.kr  
 Product Vortex Mixer, 3D Mini Shaker, Orbital Shaker, Intelli Mixer

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 Website www.swsience.com  
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 Website www.singang.co.kr  
 Product Universal Testing Machine, tensile strength Testing Machine, compression Testing Machine

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Phone +82-2-462-0008  
 Fax +82-2-499-1013  
 Website www.e-shinil.co.kr  
 Product Tester

**SHIN JIN SCIENTIFIC CO.**

Phone +82-53-252-2178  
 Fax +82-53-252-0488  
 Website  
 Product Stand

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Phone +82-2-428-0422  
 Fax +82-2-481-7952  
 Website  
 Product mine sample, rock sample, fossil sample,

**SHIN WEOL SCIENTIFIC CO.**

Phone +82-2-747-1832  
 Fax +82-2-741-6752  
 Website  
 Product meteorological observation control system,

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Phone +82-2-393-2613  
 Fax +82-2-393-2615  
 Website www.shinhanlab.co.kr  
 Product Viscera. Specimen of dissection of entire body of frog

**SHINIL CORPORATION**

Phone +82-2-3676-4335  
 Fax +82-2-3673-5123  
 Website  
 Product Anatomy Model

**SHINSAENG SCIENTIFIC CO., LTD.**

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 Fax +82-31-943-1964  
 Website www.shinsaeng.com  
 Product The depository of reagent, Fume Hood, Clean Bench, Thermo-hygrostat, Dry Oven, Chemical Reagent Storage Cabinet

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 Website www.ssgedu.co.kr  
 Product Tripod Stand, Iron Stand, Elementary Twopan Balance, Simple Switch, Electric Wiretongs

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 Website www.ssgedu.co.kr  
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 Product Robot Trainer, Communication Trainer, Hydraulics Pneumations Trainer

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 Website www.sojung.co.kr  
 Product Dry Oven

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 Fax +82-2-873-8983  
 Website www.somyungtech.co.kr  
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 Website  
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 Website  
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 Fax +82-2-862-3433  
 Website www.technomartinc.com  
 Product Spectrophotometer,

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 Fax +82-42-933-3398  
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 Product astronomical telescope

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 Product Washing Chamber, Dry Oven, Culture Chamber, Stem Aging Test Bath, Fume Hood, Flask Shaker

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 Fax +82-2-869-1241  
 Website www.wacom.co.kr  
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 Fax +82-51-553-4712  
 Website www.weedcam.co.kr  
 Product Video presenter

**WELLPIX**

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 Fax +82-31-962-4439  
 Website www.wellpix.com  
 Product Video Presenter, Auto planisphere

**WON IL GLASS CO.**

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 Fax +82-2-744-1613  
 Website  
 Product Beaker

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Phone +82-2-743-6602  
 Fax +82-2-743-6603  
 Website  
 Product Experience Cart, aerovane

**WOO JIN SCIENTIFIC CO.**

Phone +82-53-257-4272  
 Fax +82-53-421-5861  
 Website www.ujin.biz  
 Product pitchfork/Stimmgabel/tuning fork

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 Fax +82-42-634-7101  
 Website www.woosinfirm.co.kr  
 Product Wet Duplex Grinder, Dry Duplex Grinder

**WOOSUN CONTROL CO. LTD.**

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 Fax +82-42-935-2147  
 Website www.woosun.com  
 Product Educational Training Equipment  
 1. Electricity & Electronics Educational Equipment  
 2. Power Electronics Educational

**WOOSUNG E&I CO., LTD.**

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 Fax +82-2-3474-7008  
 Website www.manix.co.kr  
 Product CNC Engrving Machine. CNC Milling Machine Mini Lathe Machine. Mini Milling Machine

**YEONHEUNG ENTERPRISE CO.**

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 Fax +82-31-944-9982  
 Website www.yhlab.co.kr  
 Product Lab Table. Job Table

**YOOHAN ENGINEERING CO., LTD.**

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 Fax +82-2-2107-3366  
 Website www.yheng.co.kr  
 Product Constant Temperature & Humidity Control System. Air Handling Unit. Vaporizing Type Humidifier.

**YOUNG JIN CO.**

Phone +82-51-646-4532  
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 Website  
 Product Dry Oven

**YOUNGLIN INSTRUMENT CO., LTD.**

Phone +82-31-428-8700  
 Fax +82-31-428-8787  
 Website www.younglin.com  
 Product Acme 6000 GC

**YOUSONG SCIENCE INDUSTRIAL**

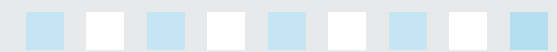
Phone +82-2-922-2303  
 Fax +82-2-922-0189  
 Website yousung.info  
 Product Autoclave. Dry Oven

**YUIL TRADING CORPORATION**

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 Fax +82-2-882-1131  
 Website www.yuilcorp.co.kr  
 Product Ultrasonic Cleaner



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# ScienceCube Mentor

## Graphing Data Logger Remote / Portable data logger



- CPU : 533 MHz Mobile Application Processor
- Display : 320 X 240 pixel, Stylus and 3.5" TFT color touch screen
- Memory : 256MB Flash Rom, 128MB Ram built-in Storage  
External Micro SD card Slot, up to 2GB
- Indicator : LED indicator for data logging status
- Audio Input : Built-in microphone, speaker  
Output : Stereo headphone port, microphone port
- I/O Channels : 4 Physical channels, simultaneous and shared AI, DIO  
AD : 12 bit, up to 16 bit resolution  
Communication : Digital I2C

# MAX ADVANCE



## Win CE Adopted 7" LCD Touch Screen

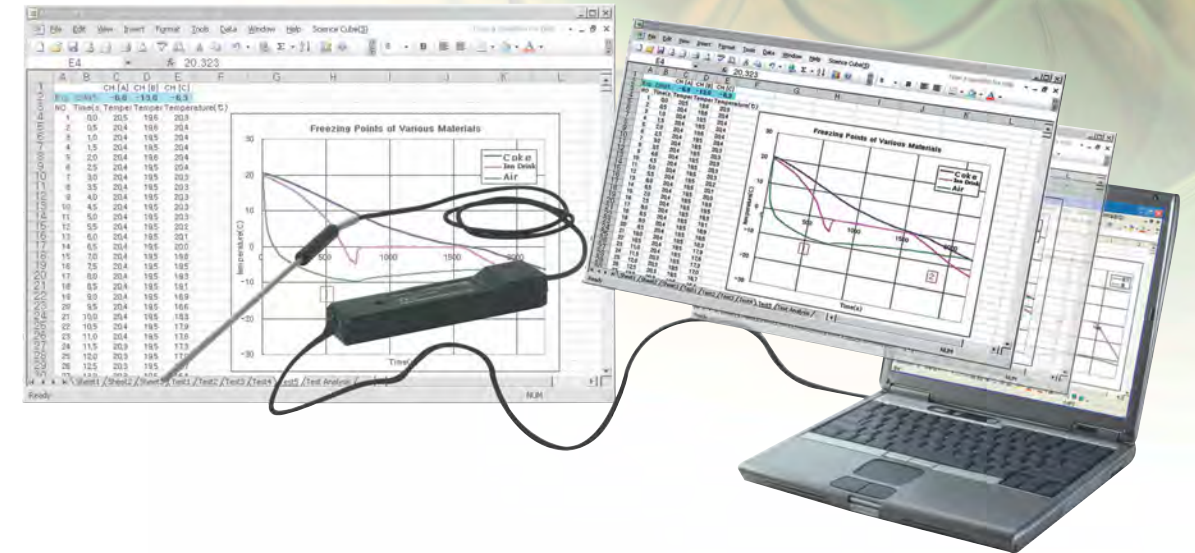
- CPU : Titan ARM 11 (600 MHz)
- LCD : 7" TFT Wide 800 x 480 ( Touch Screen)
- Memory Card : 2 GB SD card slot (Max 8 Gb: Option)
- USB : USB x 3 (USB2.0, USB HOST)
- VGA : VGA ports
- RF1 : 802.11g (ETHERNET 10Mbps)
- Sensor In/Out : Analog Input: 4ch (Max 8 ch)  
Digital I/O 1ch, SPI 1ch
- OS : Windows CE.NET 6.0

- Easy to Use
- Improve student understanding science concepts
- Support inquiry-based lab activities
- Address alternate learning style
- Free class time for engagement in higher-level thinking skill, such as analysis, synthesis and evaluation
- Enable students to perform many new experiments with measurements not previously obtainable in the classroom

## Quick USB Sensor Series Innovative data-logging system using USB Sensors

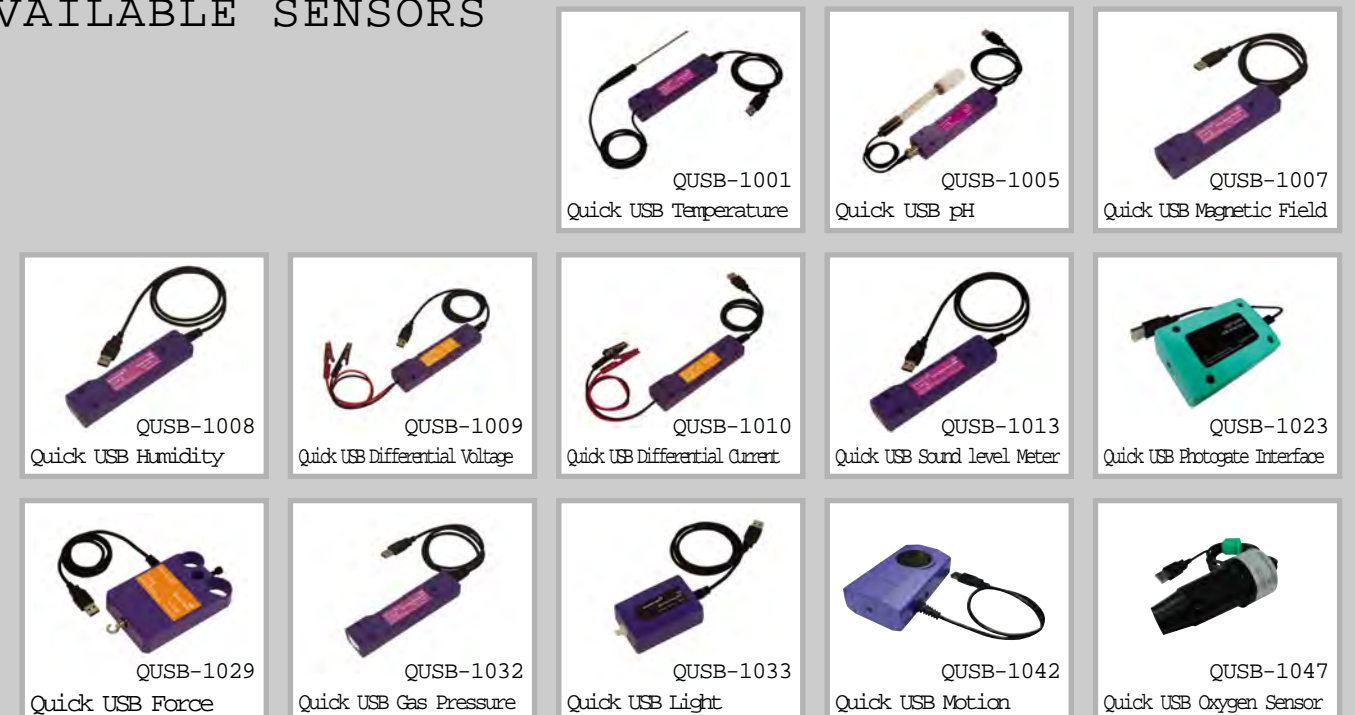
Save your cost & time building  
data-logging environment

Eliminate the need for an additional data-logger!!



Just plug Sciencecube's Quick sensors to USB port of your computer directly.  
No need to connect interface (data-logger)  
Directly operate Sciencecube's software  
- Studio II, Excel based data-logging program, Video Analyzing Program etc.  
No noise, clear & direct data collection

## AVAILABLE SENSORS







# Cyber Teacher LST-2200T/LST-2312/LST-2311

## What about the needs of a larger class or a group sessions?

Cyber Teacher is an instructional professional's preferred multi-purpose language education tool designed for group instructions.

### What is "Cyber Teacher"?

Cyber Teacher is an instructional professional's preferred multi-purpose language education tool designed for group instructions. It features state-of-art technology such as Character Recognition, Voice Recognition, Electronic Bulletin Board (e-Board) as well as Text-to-Speech (TTS) which can enhance the learning experiences effectively.

These features enable instructors to enter word(s) or phrase(s) for native pronunciations including ability to import texts from word processors or on-line resources.

Diversity in rich features enable instructors to compose different patterns customized for diverse audiences for effective listening and speaking skill sets designed for group sessions.



## We now would like to introduce you to each features included in Cyber Teacher and how it can/may help your instructors in specific exercises.

Reading Exercises / Writing Exercises/ Speaking Exercises/ Listening Exercises/ Group Discussion  
Internet Exercises/ Additional Exercise

Thank you for your interest and an opportunity to present Desco's Cyber Teacher for your organization. We are convinced that pre-defined contents from our exclusive business partner - YBM Language Institute with Cyber Teacher will immediately create an intense pool of resources for your instructional professionals.

We hope that this presentation was able to illustrate how Cyber Teacher can support your instructional professionals catered to different needs and please let us know if there are any questions or concerns via your representative.

### Composition

Item	Model	Contents	Others
Cyber Teacher	LST-2200T	Character Recognition, Voice Recognition, Text-to-Speech (TTS), wireless electric Board, word(s) or phrase for native pronunciations, Diverse audiences, Group sessions	Display System (Optional Equip.)
	LST-2312	Master console for group session(12CH)	(Optional Equip.)
	LST-2311	Built in Microphone, Selector, Volume, Headset & Jack, Mic. Jack Mic. Controller(Student)	(Optional Equip.)



# Cyber Talker LST-2422W/S

Cyber Talker (Educational Virtual Chat Machine) is a Multi-Directional Chat system with virtual native speaker.

### What is Cyber Talker?

Cyber Talker is a language education device for individuals who wish to study English in order for it to become a lifestyle.

It induces curiosity and interest in the language by eliminating the fear of English. Using the latest technology of face recognition, appropriate teaching plan for all grade levels can be implemented which enables a 1:1 (one-on-one) tailored study according to their levels.

### Models

Wall Mount model (LST-2422W): Videophone and English zone installed in a booth which can be placed on the wall of a hallway.

Portable Stand model (LST-2422S): Portability livens up the experience by placing them at the corners of the room which provides accessibility and a whole new experience.



LST-2422W

LST-2422S

### For Students

1. Enter personal information, such as student's name and language level together with the face.
2. After face registration is completed, utilizing the face recognition function, Cyber Talker stimulates the interest of a student by first greeting the student using his/her name. Then, the conversation teaching plan is executed according to the previously stored personal level.
3. While the student converses with Cyber Talker, it analyzes the voice of the student who is speaking and evaluates such things as pronunciation accuracy and intonation by showing the score on the display.  
(Until the set score is achieved, a repeat exercise is possible. However if the goal has not been met until the fifth time it moves on to the next conversation sentence.)

### For Teachers (Administrator Settings)

1. First, enter student's name and set the level of speaking. (Currently, it is divided into advanced level and beginner level. Advanced level focuses on conversations while beginner level focuses on listening-and-repeating. However, the setting can only be reset by the administrator.)
2. After entering personal information, register a greeting. Existing greeting can be used or the administrator can personally record the greeting. (Press 'Record' and record a greeting. Verify the greeting by pressing the 'Listen' button.)
3. Finally, register administrator's face. First, by looking at the face on the screen, make sure it is at the center of the screen. With the indicating sound, when "completed" appears on the screen, press "register." After a short while, a button which says "registration successful" will appear. If "OK" is pressed, the face registration is complete.

In addition, Desco is an official partner for language education devices with YBM Sisa English which is the largest national language education company. English teaching plans utilized in the Cyber Talker is the direct reflection and expression of English teaching plans from YBM Sisa English. The best performance and educational results are guaranteed.

### Composition

Item	Model	Contents
Cyber Talker	LST-2422W	Wall Type ; LCD Monitor, Camera, Wall Mount, Cyber Talker
	LST-2422S	Portable Stand type ; LCD Monitor, Camera, Stand Mount, Cyber Talker



# Langstar (Interactive Language Equip.) LST-2100

'Speaking' is the most important part of the learning a foreign language. The learning process would be more efficient and interesting, if there is a trusty partner.

## Interactive Language Equipment

"Interactive Language Equipment (LST-2100)" is fit for the purpose of practicing speaking because it encourages a student's confidence and stimulates interest.

Through the high-tech voice recognition function, a student's performances are recorded and evaluated.

While the student converses with Interactive Language Equipment (LST-2100), it analyzes the voice of the student who is speaking and evaluates such things as pronunciation accuracy and intonation by showing the score on the display.



[Interactive Language Equipment, Langstar - The first picture]  
Main Feature : Word/Sentence/Flash & Movie/Mp4 Player/Self Study etc.



Interactive Language Equipment  
LST-2100S/LST-2100T

Interactive Language Equipment  
LST-2100TKS

### Major Features

- Vocabulary practice**  
See the figure, listen to the native speaker, and repeat after it. Using all senses can make studying much more effective, student-lead. LST-2100 gives grades of the student's pronunciation and accent, so that students can correct mistakes on their own.
- Sentence practice**  
After students answer the question that LST-2100 asked, LST-2100 records and plays it. Subtitles are displayed on the screen. Until the set score is achieved, a repeat exercise is possible. However if the goal has not been met until the fifth time, to prevent the student from feeling bored, it moves on to the next conversation sentence. During the practice, students can find their improvements.
- Conversation practice**  
This is a dialog pattern practice. There are several situations, and students can exercise the whole dialog or just a section they failed to pass. It records the students work automatically and checks the student's pronunciation.
- Additional Information**
  - Video file player
  - MP4 Player: The chant can be repeated and also created directly
  - Self study : Students can make use of the Self study as a recorder in order to check their performances and compare with the native's articulate pronunciation. Also, teachers can assign grades to the student's homework.

### Composition

Item	Model	Contents
Cyber Talker	LST-2100S	Microphone, Speaker, Langstar - 1 copy
	LST-2100T	Langstar, Mic, Speaker

# Auto Sensing Announcement Player

## Automatic human recognition and announcement system

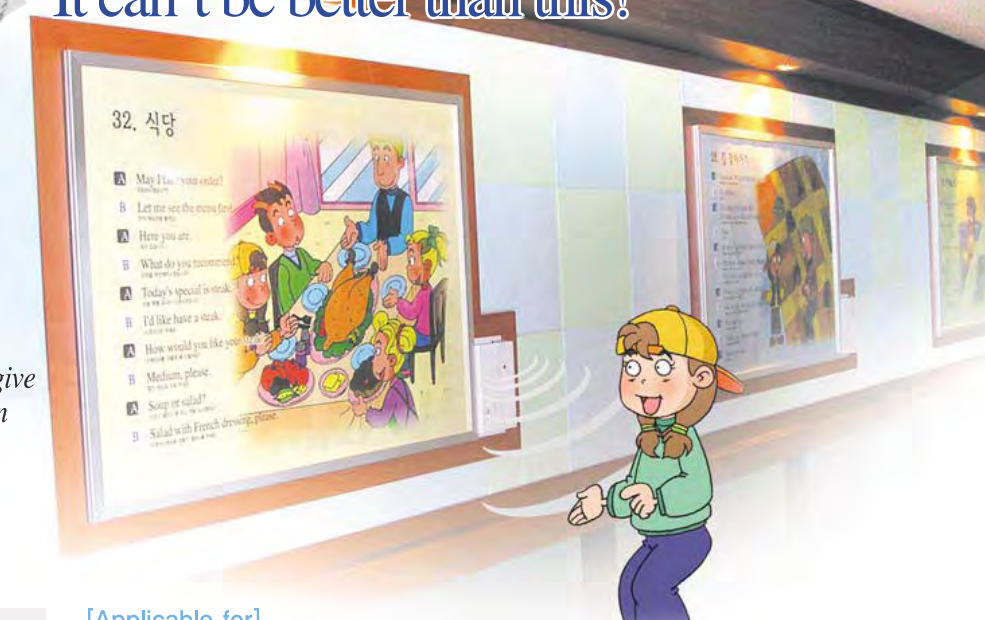
Revolutionary foreign language and progressive self study media! (English, Chinese, etc.)  
Automatic voice announcing attendant for exhibition halls and convention centers  
New ideas in person-to-person or multi-directional voice transmission media



Auto Sensing Announcement Player is a device designed to give an explanation of a notice when a person approaches a notice board or the main body.

Patented on  
No. 0383427, No. 0387270

*Good helper!*  
It can't be better than this!



### Specification

**1. The main body of the announcement equipment**  
(EDU-2105, mp3 Player and SD memory were built-in)

**2. Notice board**  
[The main body + front side detachable type notice board]

**A type** : [including the main body + front side detachable type teaching picture frame, 90x60x3cm]

**B type** : [including the main body + front side detachable type teaching picture frame, 120x90x3cm]

### [Applicable for]

- Educational facilities such as school or organizations**  
Educational contents such as messages, music or explanations can be stored at widely used SD memory card for use with auto sensing announcement player.  
Typical uses are or entrances, hallways, rest areas,...etc.)
  - Language classes** : An essential tool that announces lessons by a progressive study method.
  - Greetings attendant** : Announcements can be made to visiting personnel. (announcements, events, music,...etc)
  - Psychological stability and training facilities**: emotional training and educations can be used to attending students, clients or patients.
- Display spaces such as museum, exhibition halls, show rooms, art galleries,.. etc.**  
Detailed explanations of the displayed products such as arts can be dictated in artist's own voice when approached by human.
- Public spaces**  
For announcement uses at public areas such as parks, rest areas, terminals, ...etc.
- Corporate or Public Sectors**  
Provides voice driven guidance for public and privates guests.

### [How to use]

- If a person approaches a notice board or the main body, the voice announcement device operates by the sensor.
- An operator always can record or delete recorded contents in the built-in SD Memory card.
- It is front side detachable type, so it is easy to replace contents and always conveys realistic new information.
- Recording, play-back and a response are made just like 1:1 interview, so you can experience the best effect.



Convenient operating system and various functions.

# LINK TO THE FUTURE



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## Rear type unified control system

Realize an ideal U classroom for U-learning



Simultaneous On/Offline lectures  
Advanced multimedia system with elegant interior for high-tech presentation and educational environments.

WR-8401 Rear type (Rear projection)  
WR-10001 Rear type (Rear projection)

## Rear type unified control system

Realize an ideal U classroom for ICT



Compact design and structure designed for convenience and efficiency with diverse functions provides an ideal education environment including such elements as an electronic board, black board, and bulletin board.

WR-627B Electric pen type  
WR-720W Electric pen type  
WR-672T Hand touch type  
WR-720T Hand touch type  
WR-610T Hand touch type (PDP)  
WR-710T Hand touch type (PDP)

## Board type unified control system

Realize an ideal U classroom for ICT



Essential equipment to realize multimedia video lectures for the next generation of combined electric board as well as existing board functions.

WF-1000B Electric pen type  
WF-920B Hand touch type  
WF-920W Hand touch type  
WF-1120W Hand touch type  
WF-890B Hand touch type (included sound)  
WF-1109B Hand touch type (included sound)

## Electric board monitor

LCD tablet monitor for class video lecture system



- ① Easy to use
  - ① Soft touch feeling
  - ① Shortcut key setting
  - ① Movie save and play functions
  - ① Effective concentration
  - ① Convenient functions
- PRZM-170 Electronic magnetic field  
PRZM-190 Electronic magnetic field

## Desk board system

Lectures and meetings not limited by place.



- ① Easy to use
  - ① Outstanding efficiency and application
  - ① Movie save/produce and play function
  - ① Terminal built in
- WM-150D Include tablet monitor  
WM-170D Include tablet monitor

## Scanner real image presenter



Digital real image presenter are easily applied to stop images, movies, and video conferences.

- ① Vivid image (Progressive Scan type)
- ① Stop image, movie capture, and printer functions
- ① Stereoscope function
- ① Free-moving headc
- ① VCR connection editing

PREMIUM-2100 Direct connect with TV  
PREMIUM-9100 Projector/Able to combine with TV/ Direct connect with TV  
PREMIUM-350 For projector/Direct connect with TV  
PREMIUM-550

## Artificial Intelligence Screen

New ideal screen designed to detect and control functions as well as operations of overhead projector, real image slide projector or LCD projector.



- ① Artificial intelligence screen
- ① Electro-motion screen
- ① Wall screen

WS-80A 180×180cm  
WS-120A 240×180cm  
WS-80E 180×180cm  
WS-120E 240×180cm  
WS-80W 180×180cm  
WS-120W 240×180cm  
WS-80P 110×180.5cm  
WS-100P 110×221.6cm

Wellpix

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# Educational Trainers

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- PLC
- Mechatronics
- Solar & Wind
- Pneumatics / Hydraulics



Electric Installation Safety Measurement Trainer EIS-2000



Multifunctional Electric Meter CEM-2200



Pneumatics Training System CPE-PN7000/CPE-PN7500



Hydraulics Training System CPE-HY8000/CPE-HY8500



PLC Trainer CPS-3300S



Intelligent Light Control Trainer CPE-ER1100



Integrated Sensor Application Trainer CSN-2005



Solar Generating System CP-S110



Wind & Solar Generating trainer CP-WS300

- Qualifications
- ISO 9001:2000, ISO 14001:2004
  - KSA 9001:2001, CE
  - INNO-BIZ Company
  - Blue-chip Company (by KIBO)
  - Venture Company (by SMBA)



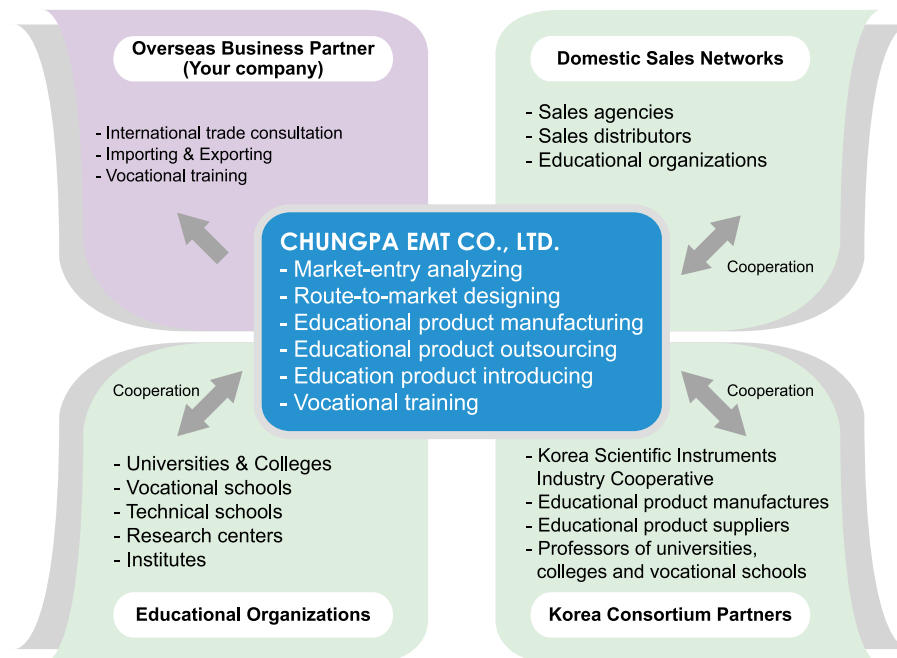


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