

**KSIIC**  
**2015~2016**

# 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**



# Greeting



## Greeting

As the world most renowned scholars forecast a rapid evolution into a society led by information, creative knowledge is expected to be the key to lead the society in the future. In this society, science and technology will be conserved as strong basis for knowledge and science and technology enhancement will be the key growth agenda to determine national competitiveness.

It is needless to say that science education will be taking more importance and will be one of the most urgent tasks. No one can deny that science and technology will be the fundamentals to boost creative activities of entire educational and research institutes. It is also clear that education, research facilities including quality experiment equipments and precision measurement and analysis equipments will play important role in the journey towards an information-oriented society.

For 30 years since its foundation, Korea Scientific Instruments Industry cooperative KSIIC has been contributing to improvement of science education







and supply of experiment equipments along with members of the cooperative and responding to changes in the market in movement towards an information-oriented society, it becomes imperative to enhance and improve lab equipments , too. To meet this requirement, the cooperative has been striving hard to develop innovative education & training and experiment equipments in convergence of basics and changes with an aim of playing its part to facilitate another leap forward for the nation to join the league of advanced science powers.

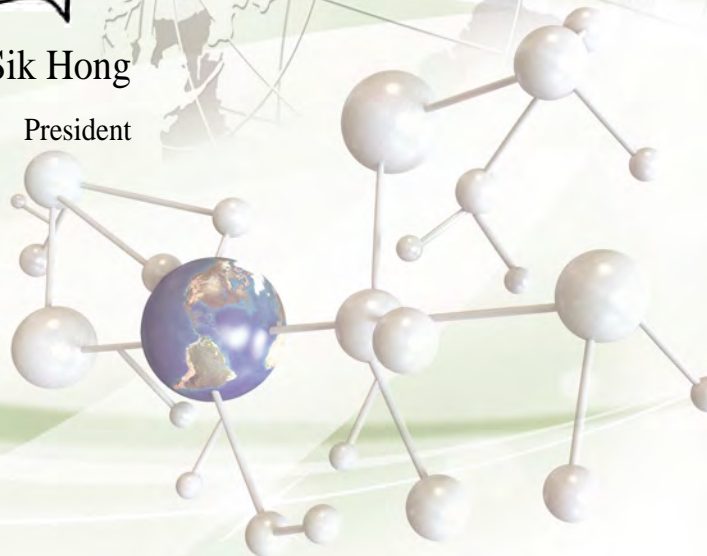
New products introduced in the catalogue published this time are the supporting evidence of time and efforts of members of the cooperative, preparing for the coming 10 years and we hope you may find it helpful as materials for advancement and development of science anywhere.

Thank you.

Sincerely yours,

Yoon Sik Hong

President





# Introduction of KSIIC

## *KSIIC*

KSIIC was established in 1984 as a special legal entity under Small and Medium Business Administration of Korean government. Its more than 193 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.

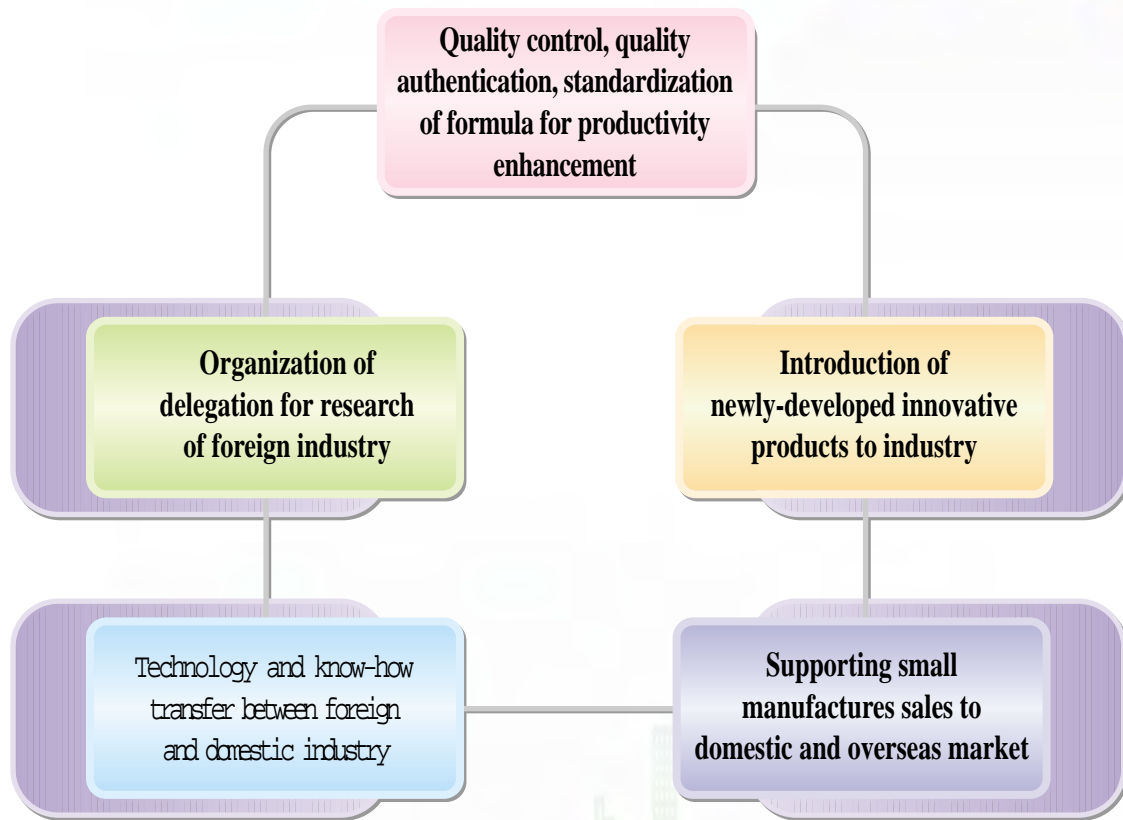
KSIIC hopes to join international efforts to enhance human standard of living by means of providing new technology and concept for students, teachers, trainers, and scientists.

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

**Korea Scientific Instruments  
Industry Cooperative (KSIIC)**









# History

1984	Establishment of Korea Scientific Instruments Industry Cooperative
1987	Appointed as Quality Inspection Institution by Industrial Advancement 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
2004	ISO 9001 Certification Authorized
2005	KOSIS 2005 (Korea Scientific Instruments Show 2005) was held in May
2007	Strategic Export Market Trade Mission (Thailand and Singapore)
2010	Awarded as contribute for science and education development from Ministry of Education, Science technology
2011	Business Cooperative with Korea Business Centre (KOTRA) for overseas market development
2014	30th Anniversary Foundation





# Organization





Name of Cultural Properties :

Description :



## Gwanghwamun

Gwanghwamun is the main gate of the main palace.

It has a double-roofed pavilion over three arched openings set in a high stone foundation. The king used the central arch, while the crown prince and officials entered through the openings on either side. The gate pavilion housed a bell, which announced the time of day.

The original gate had been moved to the north of Geonchunmun, the east gate of the palace, when the headquarters of the Japanese Government-General in Korea was built right behind Gwanghwamun in the 1920s. Bombed during the Korean War(1950-1953), the pavilion of the original gate was destroyed and the stone foundation was severely scarred. Gwanghwamun was rebuilt in 1968 as a concrete structure but restored to its original shape as a wooden and granite structure in 2010.

The fact that Gyeongbokgung is the Joseon Dynasty's main palace was evident by the style of its gates, including Gwanghwamun. Although the gates in other palaces stand on low steps, those of Gyeongbokgung are replicas of fortress gates, with high stone foundations and arched entrances in the center. Gwanghwamun is the most formal of these gates with three arched openings, a good indication that Gwanghwamun is the main gate of the main palace.

Name of Cultural Properties :

Classification :

Description :



## Jagyeongnu Clepsydra at Changgyeonggung Palace

National Treasure 229

The water clock was used for standard hours since the Three Kingdoms Period.

Jagyeongnu, made in 1434 during the reign of The Great King Sejong of Joseon, was the first water clock that was devised to strike the hour automatically with a bell, gong or drum.

However, as it had not been properly preserved, King Jungjong had it remade in 1536, of which only some parts remain to the present. The bronze receptacle is 93.5 cm in diameter and 70.0 cm in height.

The smaller ceramic vessel is 46.0 cm in diameter and 40.5 cm in height.

Two pedestals for the latter still remain behind the Myeongjeongjeon Hall of Changgyeonggung Palace. The design of this water clock is as follows: The water poured into the upper largest vessel goes down via the smaller one into the long water tank.

As the water level rises to the previously set position, a floating rod touches the lever device, which causes a bead at the other end to roll down to hit another bead.

This bead, while rolling, triggers many devices to strike the gong, bell and drum or for a wooden puppet to lift up the time notice board.

To our regret, however, we cannot see this performance now as only the vessel parts remain to this day. This water clock was made a little later than the one that had been made by the Ming Dynasty, China.

Still, it is regarded very precious for its scale and elaborateness.

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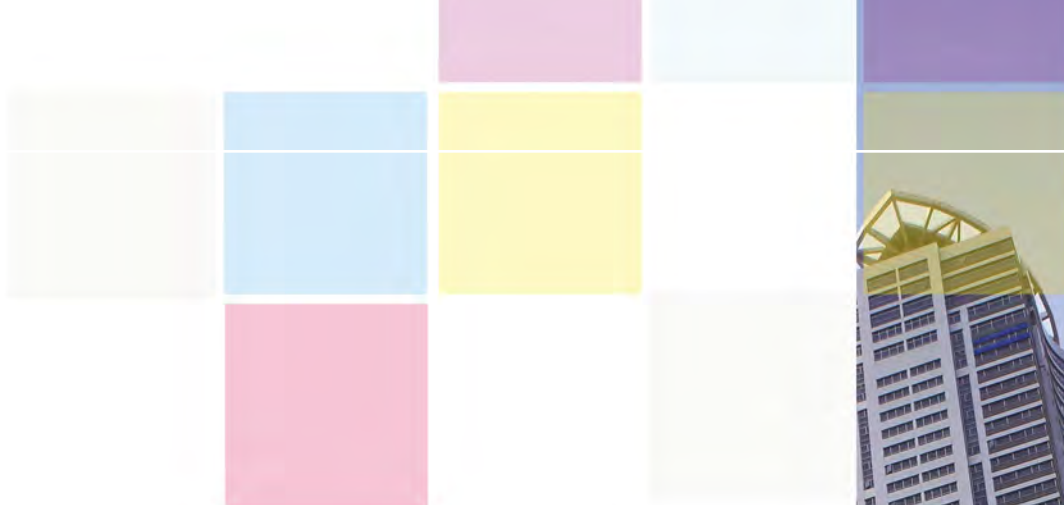
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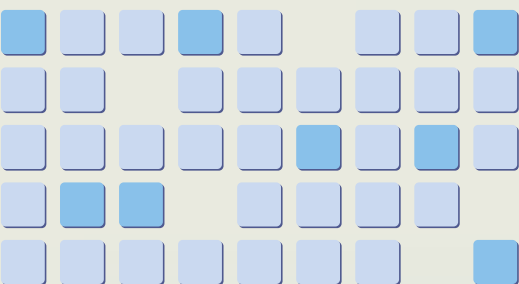


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## Basic Scientific Devices







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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

The equipment could be changed in order to improve performance

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

The equipment could be changed in order to improve performance



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

The equipment could be changed in order to improve performance

JHS-2012

## Water Wave experimental equipment. (Sensitive and compact)



This equipment is for demonstrating reflection, diffraction and refraction. It is composed of a LED stroboscope in the lower end, a square tank for causing water waves and the screen for clearly representing the water waves. In order to overcome the limitation from the compact size, it increases the SYNC frequencies about four times. It makes you could not find any differences from the normal ripple tanks. Furthermore, it uses a high-powered 3W LED stroboscope allowing for clear water wave projection. It is provided with power outlet (input of AC220V and output of DC12V), vibrator creating various forms of waves and subjects for reflecting and disturbing.

### Functions of SYNC and FREE

1. SYNC Mode – harmonizes the frequencies of waves and lights for generating completely suspended image.
2. FREE Mode – allowing for adjusting the frequencies of waves and lights differently for making slow moving image. It also has CCD and PC camera that able to display the moving and captured image of waveform observed during experimentation.

- Size : 150\*200\*160 (mm)

### Component

Main body(SYNC stroboscope, Power generator, built-in Screen), Power supply, Vibrator, disturbing Subjects (4pieces), reflecting subject(1piece), Water Tank (130\*140mm : 1piece)



Jh-3600

## Magnetic Stirrer



### FEATURE

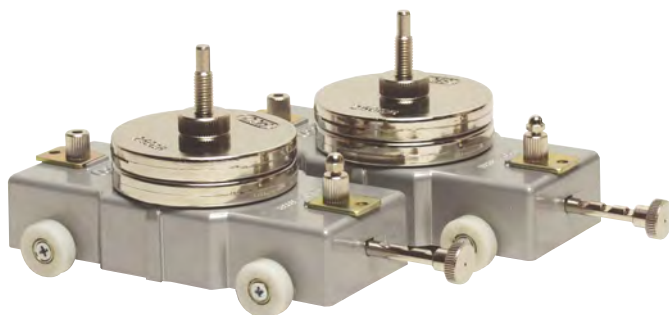
- An instrument which blends more than two mixtures
- Magnetic type which is used to precipitate Magnetic Bar in liquid

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

The equipment could be changed in order to improve performance

Jh-1500p

## Dynamic Cart



### FEATURE

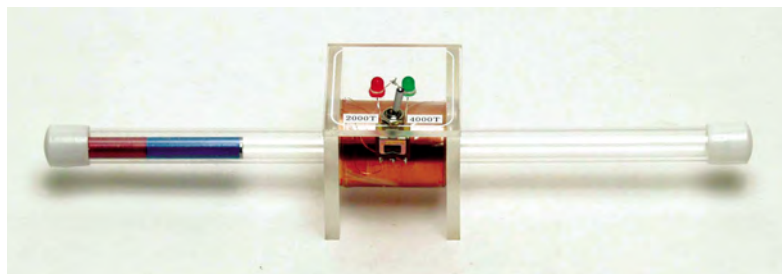
- Used for test of uniform motion, degree of acceleration, variation of mass by acceleration, raw of motion preservation, and stop/ inertia by spring
- Consisted of 1 set( 2 carts with same mass)

The equipment could be changed in order to improve performance

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)

The equipment could be changed in order to improve performance



JHV-1999D, 1999A

## Digital Meter



### FEATURE

- 3  $\frac{1}{2}$  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	0-1999μA	0.5%	DC 9V	L,C,D

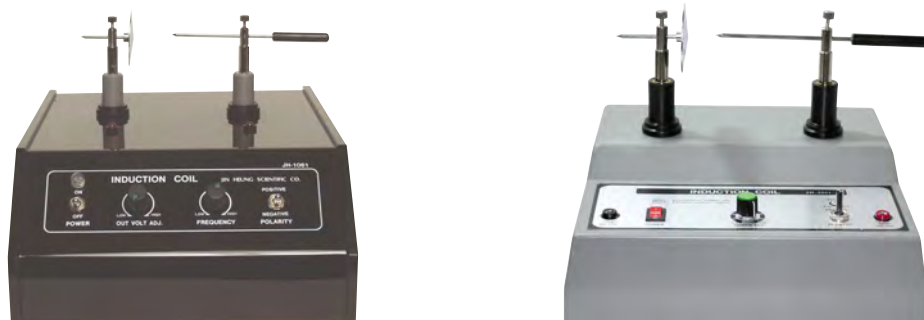
The equipment could be changed in order to improve performance

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.

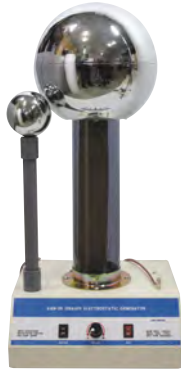


Model	Electric power	Frequency	Polarity	Output control	Discharge distance
Jh-1061	AC220V, DC12V	Frequency control	Conversion	Control	120mm
Jh-2001	Involved discharging rod			×	100mm

The equipment could be changed in order to improve performance



## 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

The equipment could be changed in order to improve performance

## 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 : 1.4mrad

He-Ne gas laser org.



JHL-2100

## Compose light source device



The three powers LED with high power emit the rich amount of the basic colors (red, green and blue). The LED is made on the basis of the basic colors' wavelength; it can directly emit the perfect color without the external filters. For this reason, it is able for the LEDs to make the perfect color without any sort of distortion. Furthermore, by this non-distortion characteristic, this product can show you the basic color of Red, Green and Blue and the arrangements of those basic colors. This product includes the rheostat for each color to modify the color tone of each color.

- Size : 200\*80\*130(mm)

### Component

Main body (Power LED – R,G and B inside), a Power supply, a Milky white screen

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

The equipment could be changed in order to improve performance

JHL-6000

## Experimental apparatus for Boyle's law



- This apparatus is able to experiment mechanism for Boyle's law which describes how the pressure of a gas tends to decrease as the volume of a gas increases in constant temperature.
- This test system includes six weights which allow you for measuring the volume of the cylinder by adding them one by one.
- There are two valves in this apparatus. One is for setting the volume of the cylinder, the other is for measuring the pressure of the cylinder from the external device.

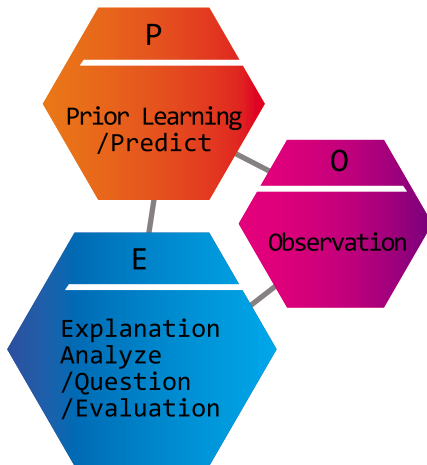
- Size : 160\*110\*215(mm)

### Component

Body (cylinder;20ml, piston;41g, twin valve, six weights;250g), two open valves, one 10ml syringe.



Korea Digital (KD) is a South Korean company founded in 1997 offering educational equipments and supplies for private and public sectors



## Have Fun While Exploring Science !

Easy science experiments by using smart and handy sensors

## Easy-to-Use Science Activities and Student's Report Generation

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## Science Experiments and Activities for K5/K6 and AP courses by POE

ScienceCube by POE helps teachers to engage students and make students to achieve higher standards in the field of Science

## Meteorological Observation & Monitoring System

2013 KES Innovation Award “**Best Content**”






For Science Education  
For Local Weather Monitoring  
For Agriculture  
For Industry





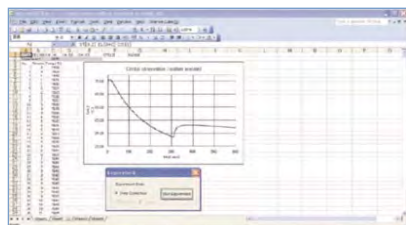
## Interface Data logger

### Data Logger Interface

		
Max Advance II	MAX – Vb	Free Linker / Smart Linker
PC & Interface combination Internet Access Split Screen (3 Parts—Table, Graph, Gauge)	Laptop computer & Interface combination Window 7 Installed Data storage (120GB –Hard) Wire/Wireless LAN & Bluetooth & USB	4 FREE CH (Analogue & Digital) Wireless (RF 2.4 GHz) / USB 2.0 12 bit ADC

### Wireless Interface

### Software Program



Excel Based Program

#### 1. Simple operation

Beginners can learn how to operate the software with ease

#### 2. Powerful processing function

It can record and analyze data in real time

#### 3. Software's popularity

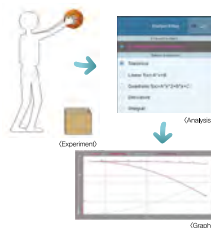
It can be used the software as long as MS office is installed

#### 4. Software's utility

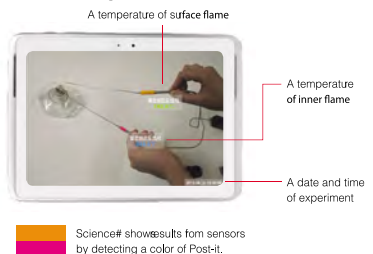
To attract student's attention, user could use vivid color in one's table and it would help to improve student's interest

### Science #

Analysis based on contents



AR Camera  
(Augmented Reality)  
Recording Function



Contents Authoring TOOL

Apply to Science# & Making contents on MS-



### STEMCUBE

European Computer Engineering Program + MBL Based Science Experiments

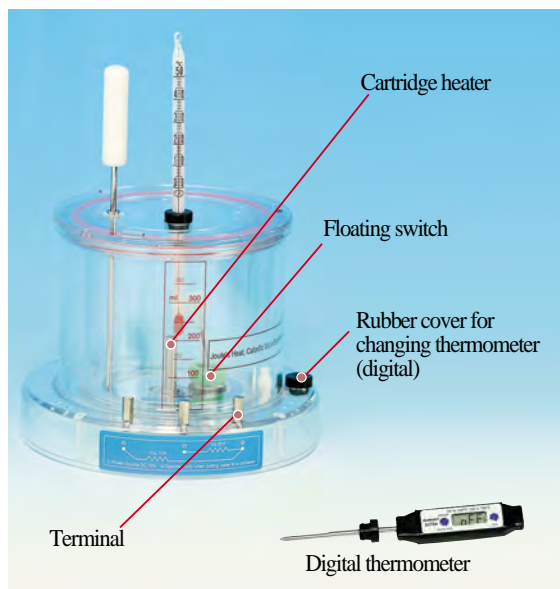
**fischertechnik** + **ScienceCube**





DR-103C

## Joule's Heat, Exothermic Reaction Apparatus



### Special Features

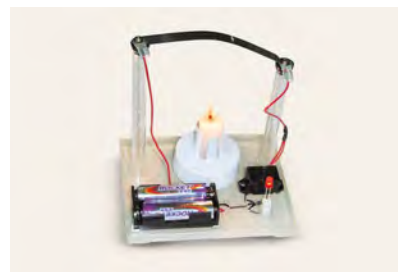
- When electricity flows and reaches Nichrome wire, it changes to heat energy. This tool is manufactured not to change resistance even in the water by using a cartridge heater, and there is no chance of poor contacting point after long-term usage. Also Wattage(W) was adjusted to meet class hours.
- It is made transparent to observe inside, and is made of double wall(vacuum) to prevent heat transfer.
- At 5V, 5Ω(5W), 10Ω(2.5W), at 6V, 5Ω(7.2W), 10Ω(3.6W). The higher the voltage, the higher the heat.
- Cartridge heater : Installed Nichrome wire heater inside stainless pipe and prevented outside effect.
- Floating switch : Acts as switch only when there is water upto a certain level for safety reason.

### Method of Use

1. Experiment is not performed there is no water for safety reasons.
  2. Activates when enough water is poured to cover heater, heater top height and floating switch range are same.
  3. Pour enough water upto the scale and perform experiment.
  4. Stir stirrer upwards and downwards.
  5. Measure temperature after stirring.
- Size : 5Ω(5W), 10Ω(2.5W), Voltage : 5V.

DR-801

## Bimetal



### FEATURE

Bimetal is made as stuck together with two pieces thin metal, call twin metal. If the metal will be heated, then another metal become longer to bent. Such characteristics able to apply for the fire alarm box or thermo-regulation On the iron.

DR-415

## Electromagnetic Wave Generator



### Transmission unit, coil

- If we put exclusive coil which is connected to LED light to the main body of device, the LED which is not connected to battery light is lighting. It is possible to transmit the electricity without connection as the magnetic field which is generated from the coil of main body is being received by the coil of reception.
- We can understand how the electricity can be supplied without power pole (telephone pole) in the future.
- Standard : power transmission unit, coil for power receiving
- size : 85x200x35mm



DR-103B

## Joule's Heat, Exothermic Reaction, Apparatus

### FEATURES

- This equipment shows transaction of energy by changing electric energy into kinetic energy and into heat energy again.
- Students are able to measure data quantitatively from LED indicator. Students can look inside and watch the mill rotating as the bowl is made from transparent plastic. This is a tool that delivers a certain amount of heat by changing dynamic energy transformation to heat energy And it rotates the motor.

### How to use

1. An observer may read change in measurement value with about 10 minutes experimental activity. The valves is visualized in digital.
  2. An observer may directly manipulate it and check temperature rise of water by manipulating the motor speed.
  3. It may measure the most approximate value of Theory value (4.2J/cal)
- Size : 350 x 350 x 400mm (M x D x H) • Power source : AC110 ~ 240V 50/60Hz



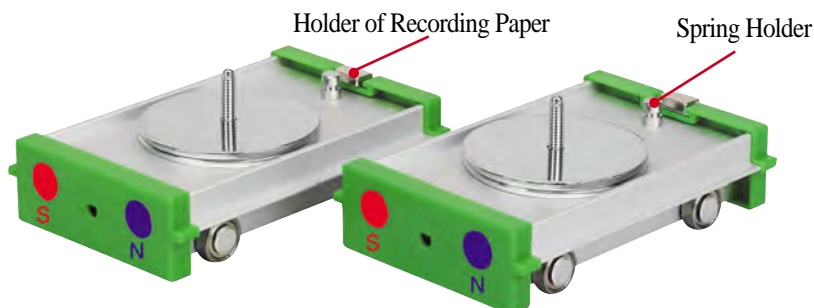
DR-104

## 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 3, spring holder, neodymium magnetic x 8, holder of recording paper



DR-105

## Brownian Movement (Kinetic Theory of Gas)

### 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)
- Power source : AAM battery 1.5V x 2 (3V)



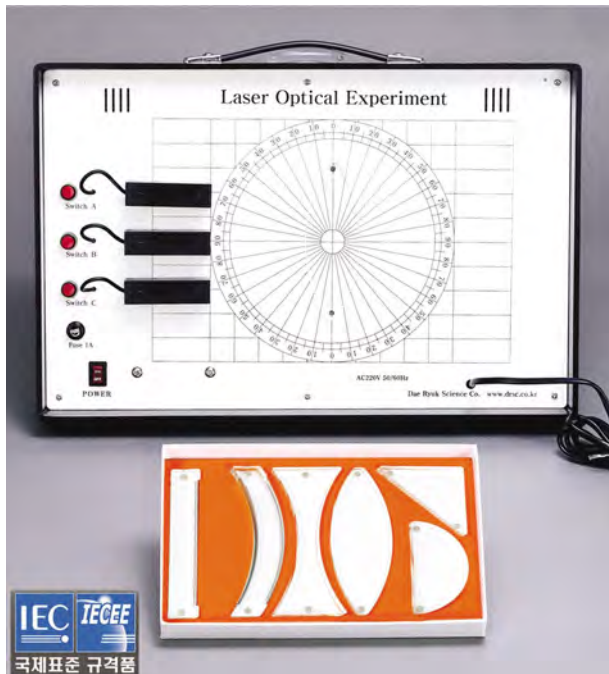
### How to use

1. Put on Brownian motion demonstrator on the microscope's material plate.
2. Burning perfume in the container
3. Sucking the smoke with injector from the container.
4. Stick the injector to air intake of the container and push in the smoke.
5. Turn on the switch and adjust laser light to be focusing the object lense.
6. Proper magnification is to be magnifying power from 40 to 100.
7. Require prompt observation.



DR-201

## Laser Optics Experiment Device

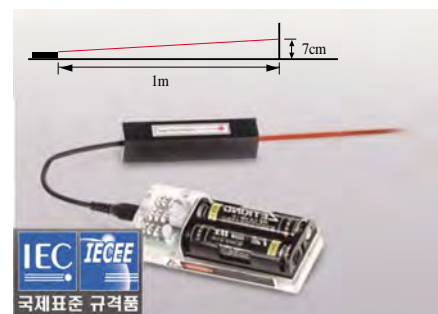


### FEATURE

- 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. Neodymium magnet is attached at the back of the screen for the magnetic function.
- Size :  $440 \times 290 \times 70\text{mm}$  (W×D×H)
- Convex Lens (two kinds), Concave Lens (two kinds), Flat mirror, Total reflection prism, Three laser sets
- Power source : AC110 ~ 240V 50/60Hz

DR-203

## Slit Laser Pointer



### FEATURE

- It's convenient to observe the process of light and conveniently Used for various types of lens, water pail, prism light experiment Due to it was made by slit.
- Also, because it is attached with a magnet, it can be used for a magnetic black board.
- Easily attachable on the metal surface with magnets And available for teaching.
- The light is not to move over 7 cm vertically at the horizontal level.
- Distance of the laser, clearly go out over 1m.
- Output power is to be lower 1m/W as It's can be meet international Standard. But the light is in best level.
- Removed the angle of elevation for the light to be reduced the fatigue of eye.
- Size:  $70 \times 20 \times 22\text{mm}$  (W x D x H), Laser module x 1
- Power source : AA battery 1.5V x 2(3V)



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

DR-202

## Lens Set



### FEATURE

Easily attachable on the metal surface with magnets available for teaching.

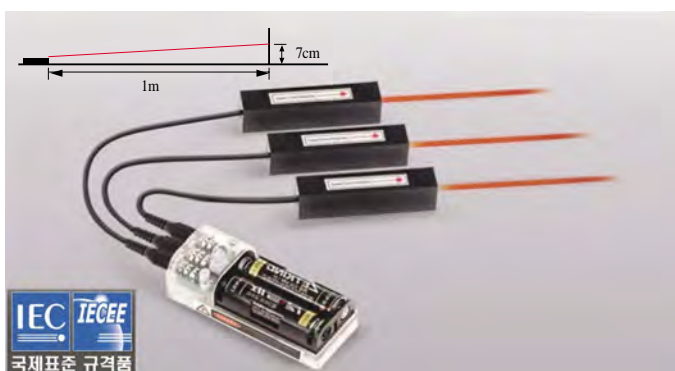
And possible various type's experiment with diversity lenses and mirror.

- 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-204A

## Triple slit laser point



### FEATURE

- It's 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 black board.
- Easily attachable on the metal surface with magnets And available for teaching.
- The light is not to move over 7cm vertically at the horizontal level..
- Distance of the laser, clearly go out over 1m.
- Output power is to be lower 1m/W as It's can be meet international Standard. But the light is in best level.
- The lifespan is long as it's attached laser stabilization circuit.
- Size: 70 x 20 x 22mm (W x D x H) Laser module x 3
- Power source: AA battery x 2(3V)

DR-225

## Triple Laser Lens Set



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.

### FEATURE

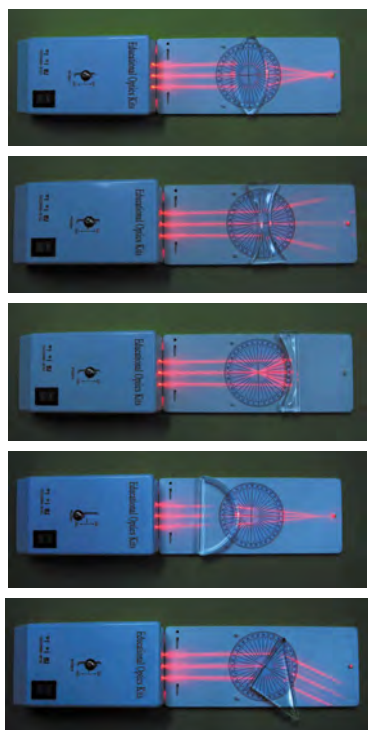
1. Easily attachable on the metal surface with magnets at the backside of laser box and battery holder and lenses.
2. Easy battery change with regular battery.
3. Low power laser for safety.
4. Clearly shows light paths.
5. Made of plastic, little danger of breakage.
6. Sharp corners are trimmed into round curve.
7. Various types of lenses in one set.

### Theory

- A laser is a device that emits light (electromagnetic radiation) through a process called stimulated emission. The term laser is an acronym for light amplification by stimulated emission of radiation.
- Laser light is usually spatially coherent, which means that the light either is emitted in a narrow, low-divergence beam, or can be converted into one with the help of optical components such as lenses.
- Typically, lasers are thought of as emitting light with a narrow wavelength spectrum ("monochromatic" light). This is not true of all lasers, however: some emit light with a broad spectrum, while others emit light at multiple distinct wavelengths simultaneously. The coherence of typical laser emission is distinctive.
- Most other light sources emit incoherent light, which has a phase that varies randomly with time and position.

DR-205

## Educational Optics Kit



### FEATURE

The observer able to see light processing scene through high vending Angle LED, clearly.

Protractor in screen board rotates for the convenience of students.

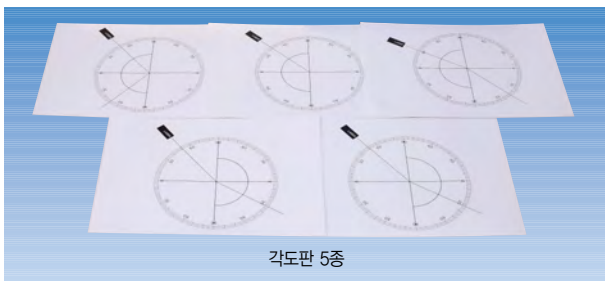
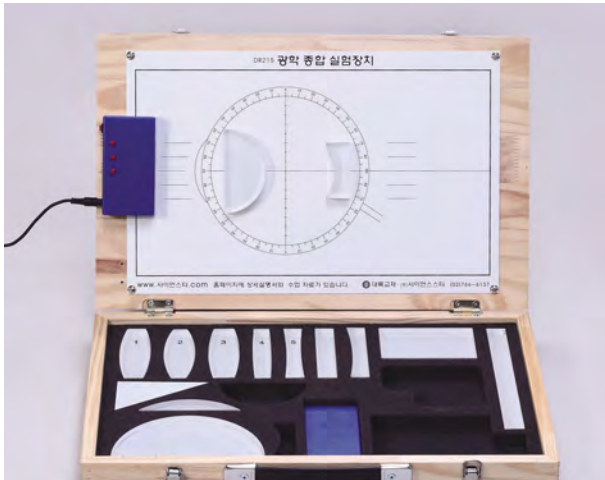
- Size : Optics container 130x70x40mm (WxDxH)  
Screen : 175x70x7mm (WxDxH) Light Lens 7 types
- Power source : AA battery 1,5V x 2(3V)





DR-226

## General Science Experimental Unit



### Technical note

- Composition : 5 holes laser (1 mW), adaptor for cell phone, 14 kinds of lens, 5 kinds of angle plate, woden bag

### Specification

As many kinds of lens are equipped with (14 kinds), it is possible to do light experiment using lens.

Through this, we can see the role of lens (eyeball) and can proceed experiment using semi-convex lens for light progress course or correction of visual impairment in case of normal eye, short-sightedness, long-sightedness like experiment 2.

5 kinds of angle plate can be used attached like experiment 1.

As magnet is attached to lens, it also can be used to magnetic blackboard. Besides it, let's experiment using many lens for the principle of camera, Galilei telescope, Kepler telescope.

In case of experiment 3, it can be experimented for optics bucket by large convex lens. Output of 5 holes laser optics is less 1mW and it is internationally certified product (IEC, IECCE). In case of laser, it is possible to convert through switch from 1 hole to 5 holes.

It can be used around 6 hours after charging 10 minutes.

### example of experiment

- Geometric optics, apparatus set, magnet attach type (it can be attached on magnet blackboard)
- As screen white paint is made on lens, we can see the light proceeding line. It can be used around 6 hours after charging 10 minutes.



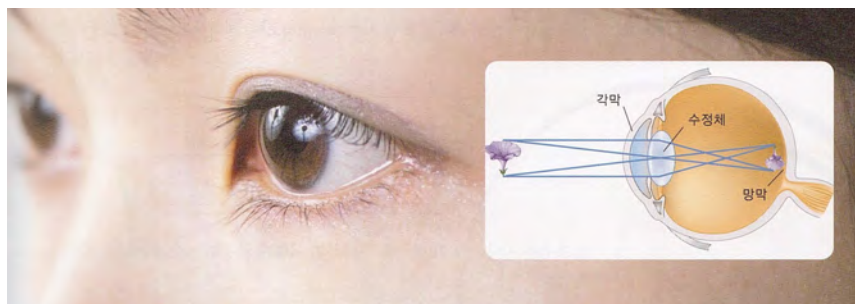
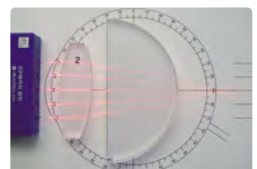
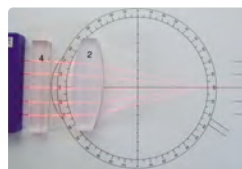
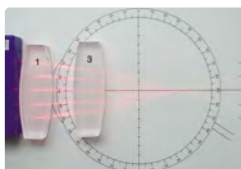
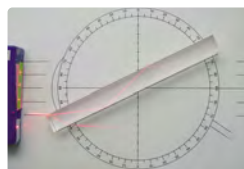
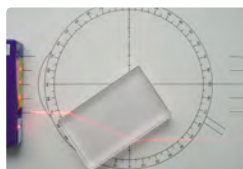
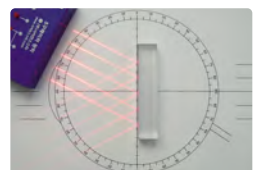
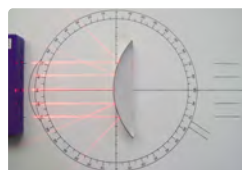
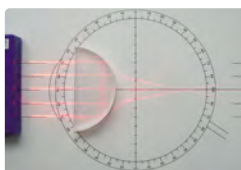
실험 1안



실험 2안



실험 3안



SCIENCESTAR CO., LTD.



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
  - Power source : AA battery 1.5Vx 2(3V)

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)

### How to 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-209

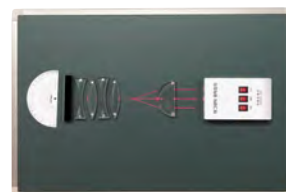
## Magnetic Optics device



### FEATURE

- It's easy to understand for the paths reflection, Refraction, total reflection of the light.
- And installed separate switch for three slit lasers.
- Both magnetic optics device and lens are magnetic.
- It's convenient for individualized teaching at school as It attachable to magnetic blackboard.
- Size: Optic device 150 x 90 x 40mm, Lens barrel 235 x 120 x 25mm
- Power source: AA battery 1.5V x 2(3V)
- Component: Magnetic optic device, Lens set

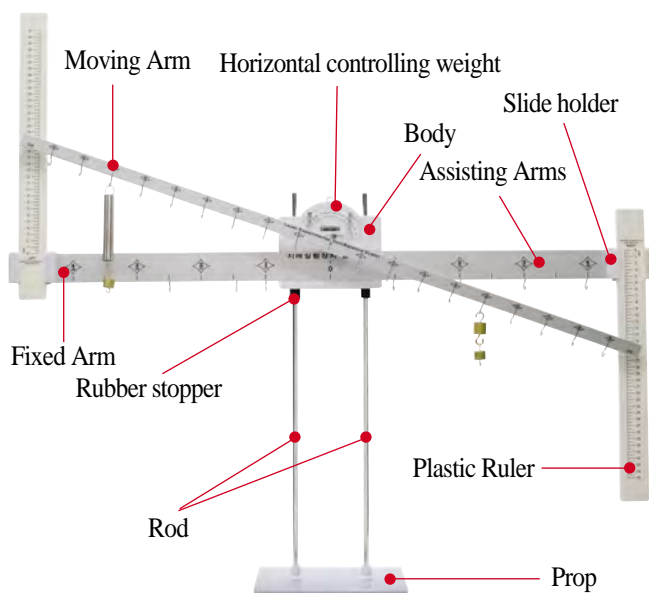
Attachment example for magnet Blackboard





DR-302

## Lever Experimental Tool (Balance Scale)

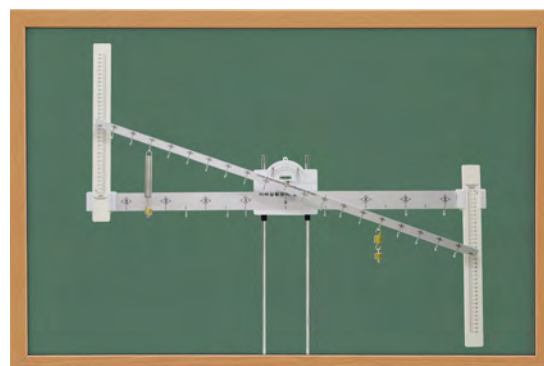


Example of Statics Experiment

### 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 as the balancer to adjust balance at the bottom and head, and as 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

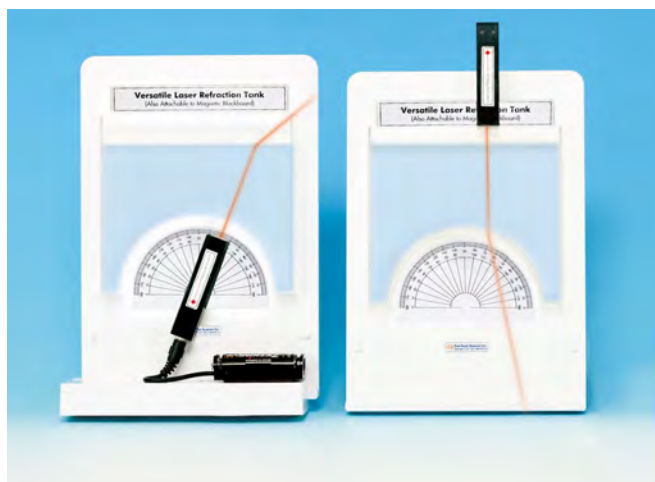
DR-210

## Versatile laser refraction tank

### FEATURE

- The protractor in the center of main body and water Tank are made of stainless steel which magnets can be attached and you can see refraction angle of Water at versatile angles.
- Stand and main body can be separated, and main body can be attached to magnetic blackboard for Teachers demonstration purpose.
- Size: 160 x 60 x 240mm
- Power source : AA battery 1.5V x 2 (3V)
- Component: Laser, main laser power

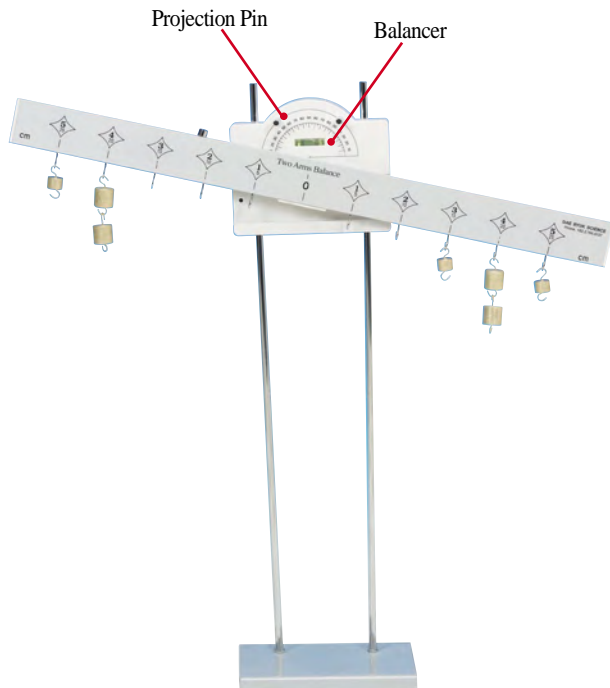
Attachment example for magnet Blackboard





DR-301

## Two Arm Balance



### FEATURE

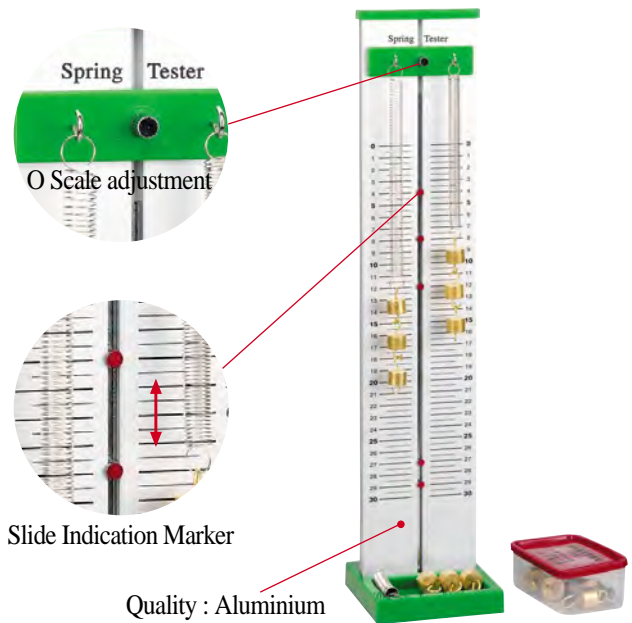
It was made to hang objects at a hook which is divided into both sides with a central point of 600mm of the arm as a standard, and there is a balancer and balance adjustment knob at the bottom and head parts to adjust balance. Also

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)

DR-303

## Spring Tester



Quality : Aluminium

### FEATURE

It has a slide market which indicates upgrade of the product and experimental point.

As used 2 types of springs which has same types of wire(iron wire) but has different diameter, it can experiment characteristics of spring scale. The experiment is accurate because it removed initial bouncing power of the spring.

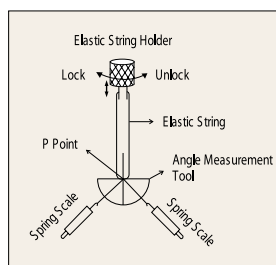
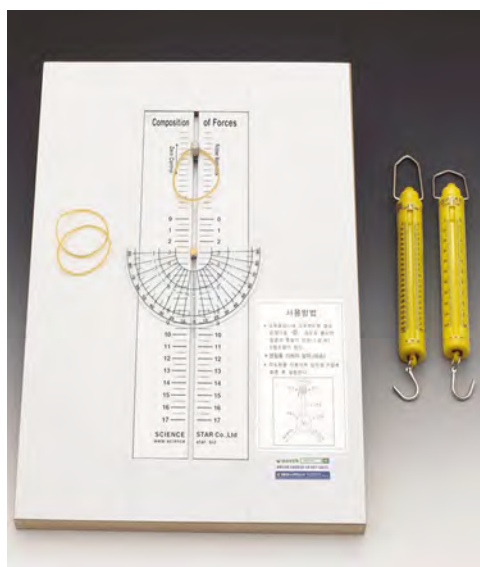
- Parts : 20g weightx5, 30x3, two types of springs, 5 side indication markers

### How to 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)

### How to 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).

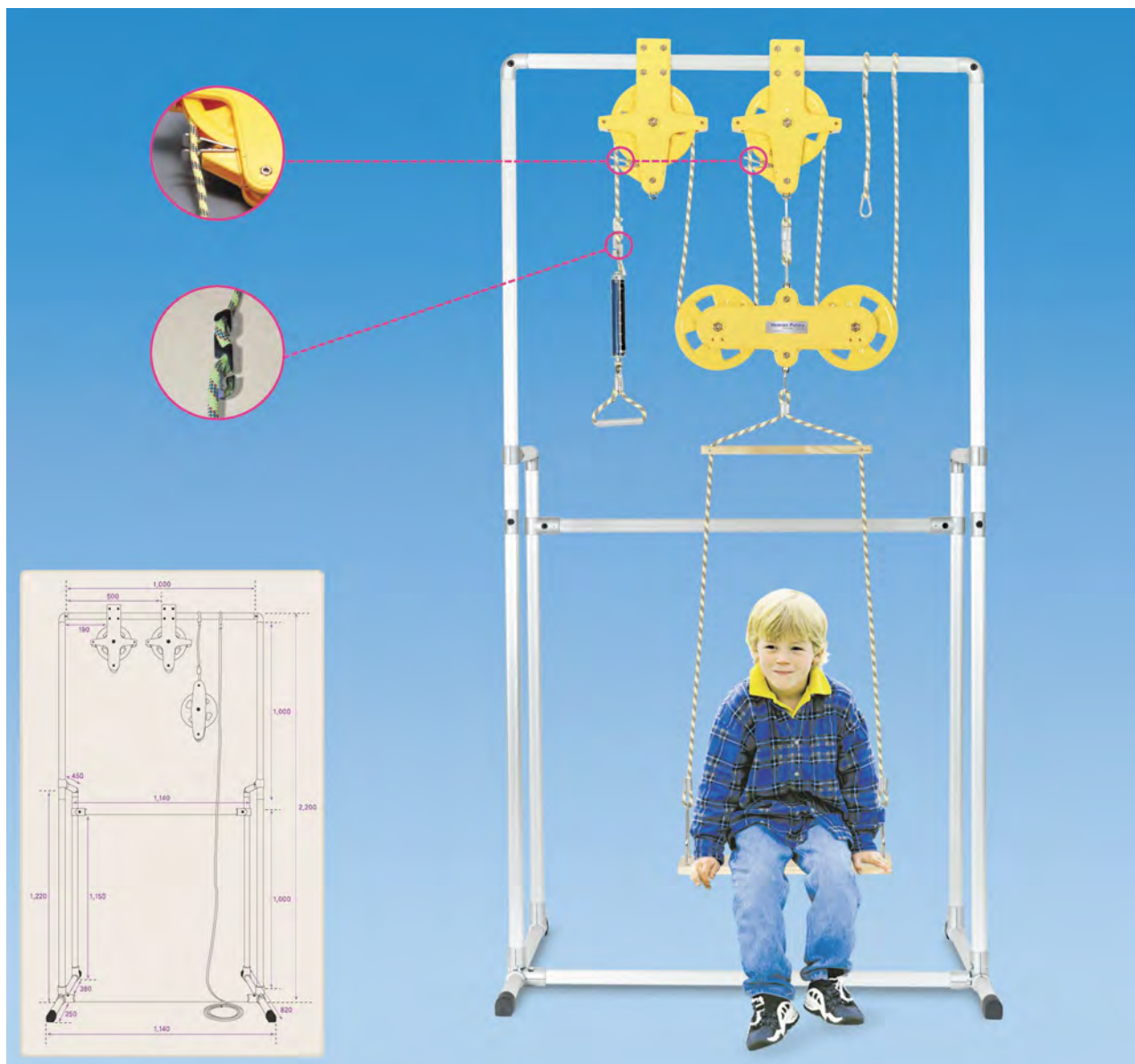
※ Do not add strong power(damage).

- Do the experiment by moving the angle measurement tool and adjust it to an arbitrary point of P.



DR-305

## Human Pulley



### FEATURE

Human pulley can be used in order to lift the heavy object.

In compliance with the principle of work, able to lift the object with 25% of original weight.

It's easy to assemble or disassemble and can be move or storage conveniently.

It also applying the large spring balances and possible to calculate the volume of the force Which enters fixed quantity.

- Size : 1100 x 800 x 2200mm (W x D x H)
- Box Size : 900 x 610 x 250mm (W x D x H) / Weight 18.7kg
- Components : Fixed pulley (2 sets), Moving Pulley, 2<sup>nd</sup> gear pulley, spring balance, Rope bench, Spring balance, Holder (16 pcs), pipe (12 pcs)



DR-414

## Magnetic field of Solenoid



Kit

### 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
- Power source : AA battery 1.5V x 2(3V)

DR-402

## Electric Resistance Experiment Circuit

### FEATURE

Experiment circuit device is produced that it's to be improve comprehensive faculty For the basic electric which is applied the lamp instead of current 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 ~ 240V, 50/60Hz Free Voltage / Capacity : 3.5A DC
- Lamp : 12V 5W / Size : 440x290x70mm (WxDxH) / Weight : 2.1kg

### How to use

1. Connect power.
2. Connect the plug into a voltmeter, put it into  $\text{---} \text{---} \text{---} \text{---}$  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.



Plug

DR-211

## Polariscope

### Technical note

- Standards : 380x230x100mm
- power source : 3V high brilliance LED. .

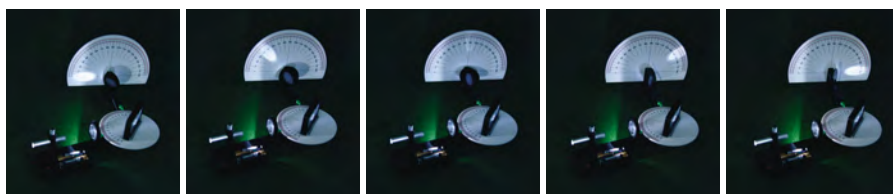
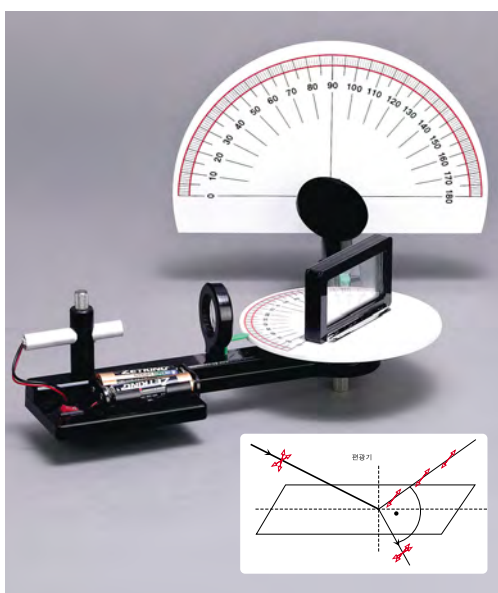
### Specification

How can you prove Brewster's law (be informed as a polarizing angle) in classroom? The polarity property can't be seen in Nature light's source, but phenomenon of polarized light will be appeared if the light is reflected or refracted.

We calls light's incidence angle as polarized light's angle if the light which is reflected by mirror is polarized completely.

The tangent of polarized light's angle is the same as refractive index (Brewster's law).

On the normal glass cup, it is 56 degree. Only simple light can be polarized completely.





DR-118

## Potential Energy Conversion Measuring Apparatus, Gravity Acceleration Measuring Apparatus



- We can get the acceleration of gravity,  $g$  by using dynamic energy conservation law or exercise equation of exercising object at equivalent velocity.

$$g = \frac{v^2 - v_0^2}{2h}$$

- Dynamic energy conservation law experiment is possible.
- There is a gradation on vertical plane buttress. It is possible to get two kinds of beads depart and falling experiment is also available.
- Let's experiment speed measuring instrument while moving. Falling speed is different.
- We can prevent object's breakaway by using transparent acrylic pipe.
- It is good if we put at cm/s speed unit and experiment.
  - \* composition : angle plate, metal bead departure pin, two kinds of metal beads
  - \* price : speed measuring instrument is being sold separately. (drawing) it is possible to adjust its angle.

### 실험예



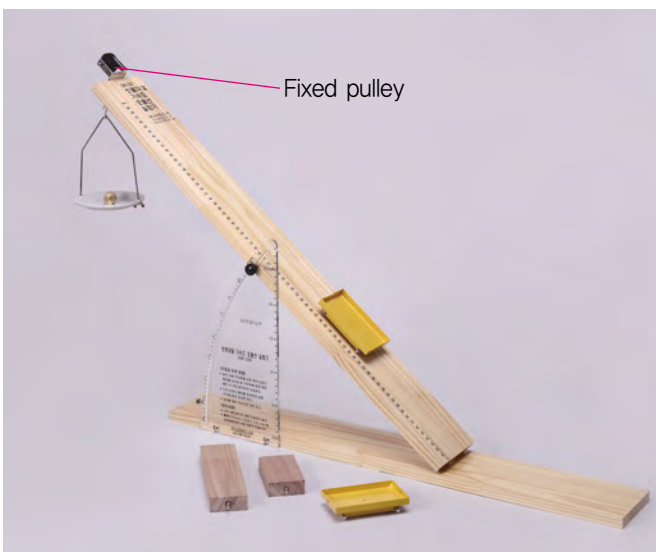
### Specification

- in case of free fall object nearby the surface of the earth, it exercises equivalent velocity by the acceleration of gravity,  $g$ . If we measure mass of bead ( $m$ ), initial speed ( $v_0$ ), last speed ( $v$ ), fell distance ( $h$ ), we can experiment that decreased location energy is the same as Increased exercise energy.

$$mgh = \frac{1}{2}mv^2 - \frac{1}{2}mv_0^2$$

DR-119

## Inclined Plane Friction Tester



### Technical note

- Specifications: 1060x100x310mm

### Specification

Let's do friction experiment by an inclined plane with different size's two object and cart.

It is convenient to adjust an angle of inclination and angle & distance is marked.

Inclined plane's adjustment is good according to angle and safe experiment is possible.

- composition : two kinds of chips, dish, cart, thread, angle plate, pulley



DR-120

## Inclined Plane Friction-Acceleration-Parabola Experimental Unit

### Design Application



### Technical note

- Specifications: 100x1050x600mm
- Composition : cart, 2pcs object, plate, height adjustable angle plate, two kinds of beads

### Specification

This is a experimental apparatus for change of mass by equivalent velocity exercise, momentum conservation law, surface friction by one device and there is a gradation which can know its section distance on the plane buttress.

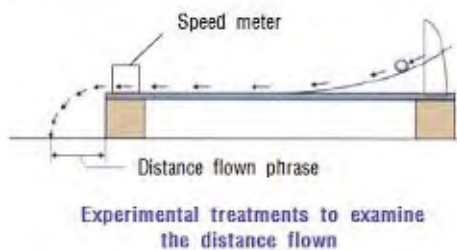
After adjusting an angle of inclination, let's fall different mass bead and we can know the change of speed & falling location. (you can use the experiment table).

Also, let's find out its speed by using speed measuring instrument.

Experiment of an inclined plane is possible.

Let's do our experiment after adjusting an angle of inclination of cart and friction object. (we can use a fixed pulley).

### 실험예



Parabolic acceleration experiments fall

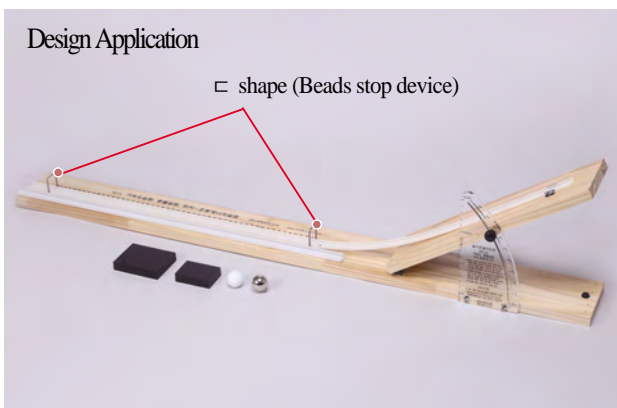


Bevel experiments

DR-121

## Acceleration-Collision-Kinetic Energy Experiment

### Design Application



### Technical note

- composition : □ type goalpost 2pcs, metal bead, magnetic bead, 2pcs object, height adjustable angle plate
- Standards : 1010x100x280mm

### Specification

We can feel the globe's speed which is rolling on an inclined plane differently between high place and low place.

We are not sure if we don't proceed our experiment actually even it is listed on our textbook.

Let's make the object collide through adjusting the height of side angle plate, changing the location and making the metal bead fall onto inclined plane.

Then, we can see its exercise energy.

Let's do falling experiment of metal bead after we set an experimental apparatus on the end of table.

We can see its falling distance which is flying in an arc.

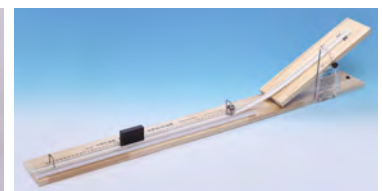
### 실험예



가속도 · 낙하



가속도 · 충돌

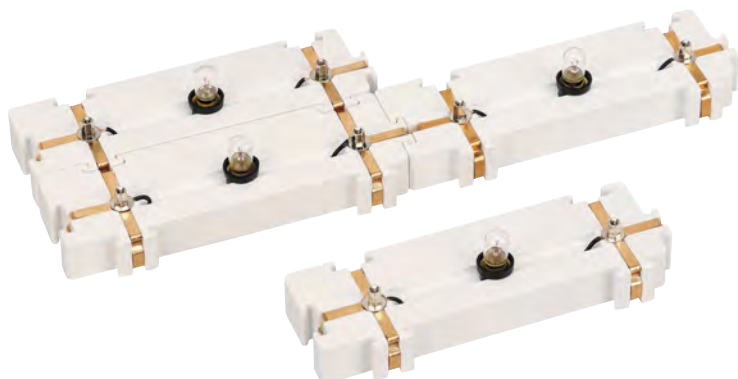


위치 · 운동에너지 충돌실험



DR-408

## Bulb Resistance Panel(4pcs/pack)



### 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.

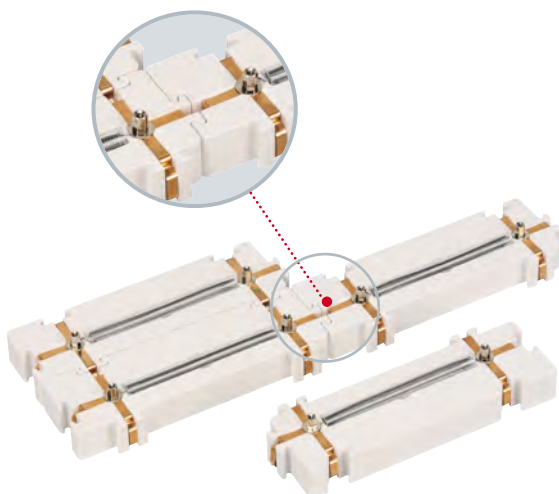
- Size : 115x50x20mm (WxDxH)
- 3V 4 in 1 set (may change with 1.5V, 6V, 9V)

### How to 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-413

## Nichrome Wire Resistor Block Set (4 pcs)



### FEATURE

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

To 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

### How to 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-417

## Electro Static Motor



### FEATURES

There is a possibility of knowing the movement electricity flowing. The electron leads and the wing of the motor it moves with an opposition polarity. Positive charge until when always arriving balanced. It moves with a negative charge side. The electrons are out of surface. The surface be at the end of sharp pointed (aluminum wing). And Positive charge can be move to the side of negative charge. It's calling peak effect.

#### (Example on the experiment)

When it dose a wing direction simultaneously in opposition and the rotary direction is exchanged.



High voltage



Genecon



DR-418

## Electro Static Bell



### FEATURES

- There is a possibility of doing a power failure badge experiment with the electrostatic bell which is very sensitive with the electrostatic bell where the battery is not a necessity.
  - The metal ball is being hung in the thread between two bells, while one bell is electrified, Another bell is becoming ground connection.
  - The bell which is electrified contact it pulls the metal which same signal is electrified and it pulls. It will see in order for the electrification which is identical jostle and with the bell in electrification condition of the bell again being bumped against and, is, or, it is running.
  - Like this actual condition repeats when the magnetic field between two bells which one ball as it moved subtracting until, continuously.
- The high voltage generator which is connected in the socket of the electrostatic bell or it operates with ebonite enormous.

(Example on the experiment)

High voltage  
power supply



content high  
voltage genecon

DR-419

## High Voltage power supply(10KV)

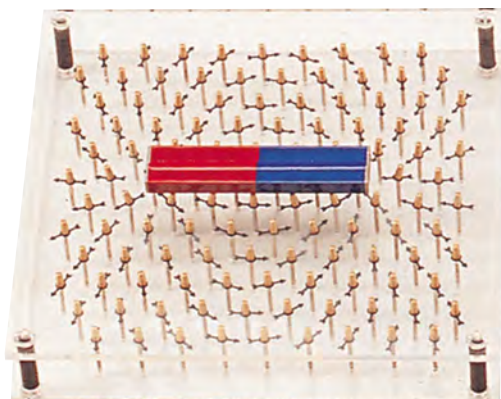


### FEATURES

- It's using various electrostatic experiment like for electrostatic motor, electrostatic bell & electric flux magnetic field, crookes tube, These are very safe and well operation.
- Size : 850 x 145 x 35mm
- Power source: 9V Adapter, High voltage output 5 KV
- Power source: 12V Adapter, High voltage output 12 KV

DR-420

## 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 × D × H), consists of 108 magnetic needles 1 Alnico bar magnet



DR-501

## Mini Surface Wave Projecting Device



### FEATURES

- **Vibration** : It means the object shaking in the center as one point.
- **The wave** : It means that vibration condition spreads out follow the object. the vibration connect with the wave and It's connect with water wave.
- It's made the Mini Surface Wave Projecting device that it can be observe delivery Process of the water wave.
- This experiment device forms a wave motion in the water surface that It can be study Several actual condition of wave motion, It's very easy to move and storage, assemble and disassemble, It's able to possibility of doing with surface wave for OHP.
- In order for the echo not to happen in the water tank's wall, the accuracy is high.
- The interference actual condition which it comes to make from two spaced planting circles of the water wave the disappearance interference where the constructive interference and the vibration where the vibration occur on a large scale happens.
- When occur two original wave, reiteration From the place which occur The place where the vibration occur on a large scale constructive interference and the place which occur destructive interference.
- The illuminant at brightness LED strobe it will use step and standstill of the water wave and it will flow and the person will be able to control, cleanly there is a possibility of seeing the wave shape which is clear.
- It's possible to replace old illuminant(glow lamp) and supply with low price.

Standard : Water tank : 400 x 400 x 230mm (WxD xH)  
Power : AC110 ~ 240V, Output : DC 5V

DR-807

## Adiabatic Expansion Tester (Type A)



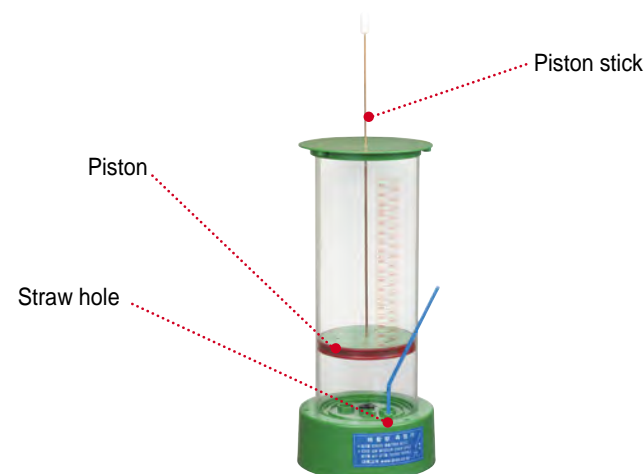
### FEATURES

- An adiabatic process is one in which there is no loss or gain of heat. In an adiabatic expansion external work is done at the expense of the internal energy of the gas and results in lower temperature of the gas molecules.
- According to the kinetic theory of gases, all gas molecules are in continuous motion and their kinetic energy is a measure of the absolute temperature of the gas. As the temperature increases, the molecules move faster. When a gas is expanded, as in the case of air being pumped from a vacuum system, the gas molecules will do work by expanding into vacated spaces in an attempt to equalize the pressure. The work to do this is obtained at the expense of the internal kinetic energy of the gas. The result is a decrease in the temperature of the gas molecules. If the expansion is so fast that very little heat energy can be transferred to the gas, it can be considered adiabatic.

Size :  $\Phi 10 \times 320\text{mm}$   
Component : Digital thermometer, pressurizing meter, depressurizing meter

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 :  $\Phi 90 \times 370\text{mm}$

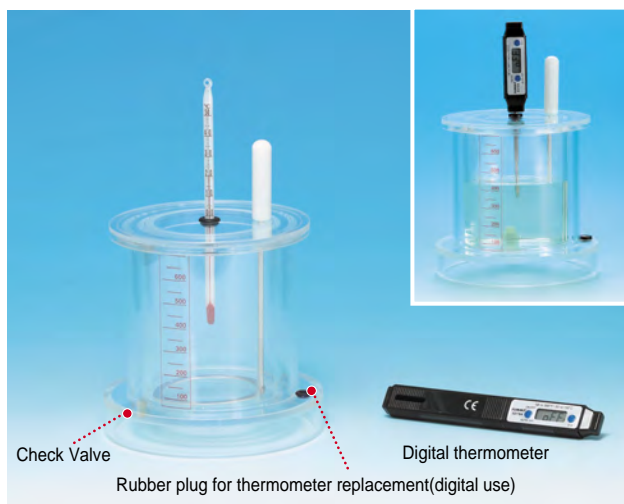
### How to use

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-803

## Calorimeter



## FEATURES

- It can be observed inner experiment as it's made the transparent cup which is possible to substitute the current Styrofoam cup.
- The cup is made as 2 layers and It's maintain vacuum condition
- It can thermally resist upto  $300^{\circ}\text{C}$  and can be put boiling water directly.
- Check Valve is installed to extract air between inner wall and outer wall to make vacuum. When air is inside, You can extract air by syringe.
- It is the rubber for digital thermometer.
- Size :  $\varnothing 130 \times 120\text{mm}$
- Component : Container, Thermometer, Stirrer

DR-804

## Specific Heat tester



## FEATURES

- There were many difficulties finding the right Position of specific heat measuring objects and stirrers since inner side of tester was not seen while test of specific heat, adiabatic reaction test and calory test.
- cup is made as 2 layers and It's maintain vacuum condition and same function as thermos. It can be substitutes Styrofoam cup. You can observe inner side and able to proceed the experiment more easily.
- It can thermally resist upto 300 °C and can be put boiling water directly.
- Check Valve is installed to extract air between inner wall and outer wall to make vacuum. When air is inside, You can extract air by syringe.
- It is the rubber for digital thermometer.
- Size :  $\varnothing$  130 x 120mm
- Component : Container, stirrer, Thermometer, Specific heat measuring objects(3).

DR-455

## Boyle's Law Mini-High Voltage Device



## FEATURES

- It is used in high-pressure tests, such as discharge tube, crooks tube, crooks tube, and spectrum tube, and a unit that can hold instruments is attached to the body so that tests can be carried out safely. To prevent damage to experimental equipment and for your safety, a timer is installed and works for about 20 seconds only when the output switch is pressed. press the switch again if you want to continue to use the high-voltage device. Output high-voltage is available between 2,600V and 16,000V. Try to conduct various experiments using high-voltage.
- Do not touch electrodes or lead tongs with bare hands when the output switch is pressed. Otherwise, you may get an electric shock.
- **Electric Field experiments can be conducted.**
- Size: 140 x 130 x 100mm, a pair of high-voltage lead tongs
- Input Voltage : DC12V 2A adapter
- Output High-Voltage : 2,600~16,000V



SG-K100

## Force and Momentum Kit



### Feature

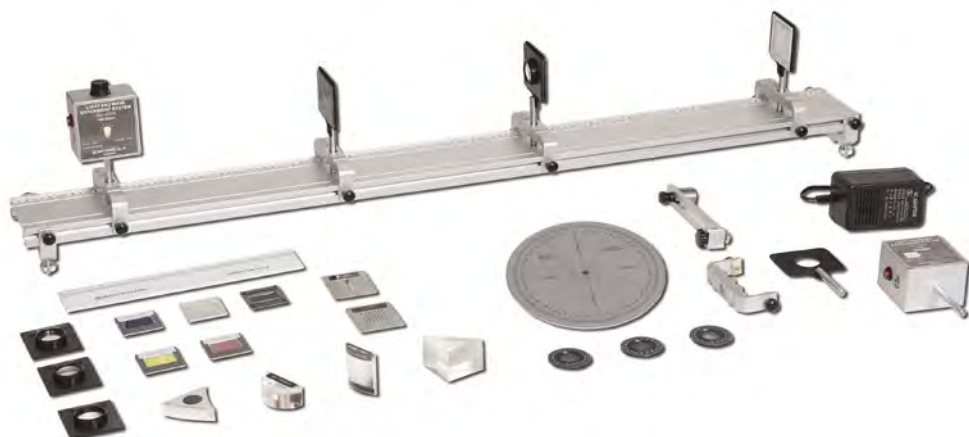
We can learn Mechanics used to Dynamic Track and Dynamic Car, MBL(Microcomputer Based Laboratory)

### Experiment

1. Speed and Acceleration
2. Coefficient of Friction
3. Work
4. Collision
5. Spring Pendulum
6. Simple Pendulum

SG-K500

## Light and Wave Experiment Kit



### Feature

We can learn various experiment used to Light and Wave experiment kit and MBL (Microcomputer Based Laboratory)

### Experiment

1. The Law of Reflection
2. The Law of Refraction and Total Internal Reflection
3. Reversibility
4. Light and Color
5. Image and Object Relationships
6. Single Slit Diffraction
7. Two-Slit Interference
8. Image Formation in a Plane Mirror
9. Image Formation with Spherical Mirror (Convex)
10. Image Formation with Spherical Mirror (Concave)
11. Polarization
12. The Telescope
13. The Projector
14. The magnifier

SG-K600

## Electricity and Magnetism Experiment Kit



### Feature

We can learn various experiment used to Electronic Block System and Accessories, MBL(Microcomputer Based Laboratory).

### Experiment

1. Ohm's Law
2. Series Resistor
3. Parallel Resistor
4. RC Circuit
5. RL Circuit
6. RLC Circuit
7. Wheatstone Bridge
8. Series Capacitor
9. Parallel Capacitor
10. Equipotential Line
11. Magnetic Field (Straight Conductive Wire)
12. Electromagnetic Induction



SG-M100A

## Segye Moving Picture System(SMPS)



### Feature

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

Digital Video Recorder(DVR)	CCD Camera	Software(SG-PRO)
Reading speed : 30 frame per second Resolution : the maximum : 704 x 480 Communication process : USB 2.0 & 1.0 Camera control unit Power : 220V	1/4" 1M picture elements high resolution CCD theminimumlux:0.005Lux, DAY & NIGHT realization, motion detector, OSD High resolution : Zoom of 30 magnifications (high efficiency AF zoom lens) Digital Zoom of 10 magnifications Outstanding compatibility : DVR direct connection Automatically wide area white balance(color thermometer) : 1,800 K~10,500 K Remote control : RS-485 remote control	OS : Windows XP, windows 7 CPU : more than Intel pentium4 2.0G, 1024Mb Object tracing method - Color detective - Six objects tracing at the same time

### Experiment

- |                               |                                  |                                  |
|-------------------------------|----------------------------------|----------------------------------|
| 1. Segye Air Table Experiment | 5. Spring Pendulum Experiment    | 9. Free Fall Experiment          |
| 2. Air Track Experiment       | 6. Projectile Experiment         | 10. Moment of Inertia Experiment |
| 3. Simple Pendulum Experiment | 7. Centripetal Force Experiment  |                                  |
| 4. Loop the loop experiment   | 8. Rotational Inertia experiment |                                  |

SG-M5124

## Segye Air Table Experiment System



### Experiment

1. Constant velocity motion (velocity vector sum)
2. Constant acceleration motion
3. Measuring the slope of the acceleration due to gravity
4. Elastic collisions
5. Inelastic collision
6. Measure the acceleration due to gravity using a simple pendulum experiment
7. Projectile Motion in slope
8. Coefficient of friction

### Feature

We can make a various kinds experiment such as Newton's laws, potential energy and kinetic energy conversion, centripetal force, simplicity harmony pendulum, accelerated motion course collision by possible device with Segye Air Table.



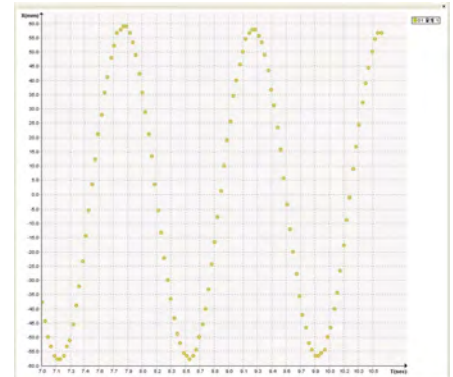
SG-M5130

## Single Pendulum(SG-PRO)



### Feature

To understand relations between period and length, to measure g factor



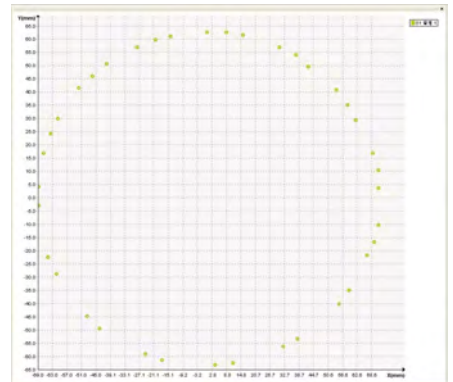
SG-M7146

## Centripetal Force Apparatus(SG-PRO)



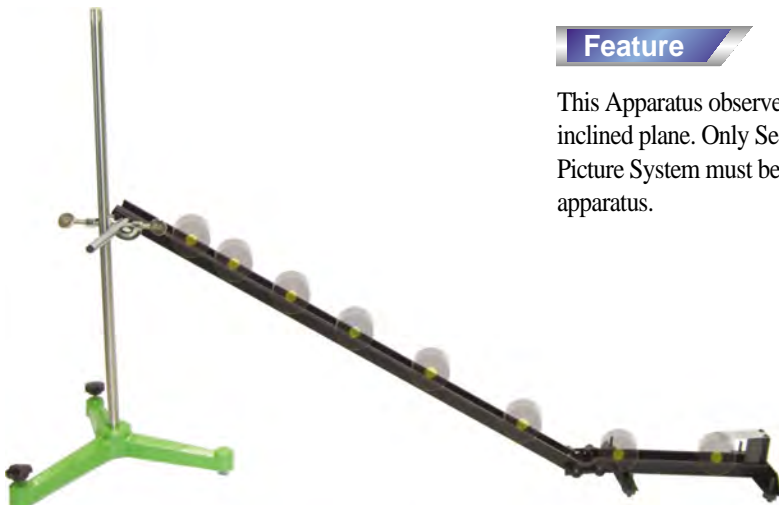
### Feature

This Product makes it possible to analyze of the centripetal force. There's a ball spring inside the body of rotation. Once the body of rotation begins to rotate, the camera takes it all and the system compares the data of each object's speeds with theoretical data



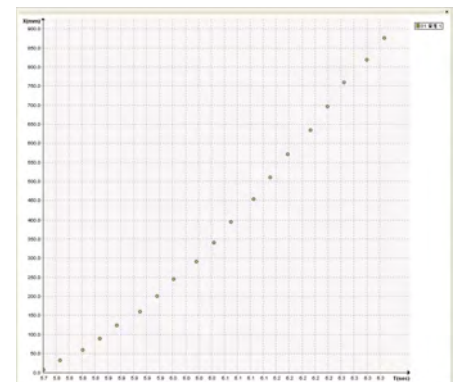
SG-M7166

## Rotational inertia experiment(SG-PRO)



### Feature

This Apparatus observe for object in inclined plane. Only Segye Moving Picture System must be applied in this apparatus.





SG-5156

## Experimental Apparatus for moment of inertia



### Feature

It measures the moment of inertia about gyration in a test comparing the result with a calculation in theory.

SG-5120

## Linear Air track Experiment System



### Experiment

1. Newton's second law
2. Measure the acceleration due to gravity
3. Average speed and instantaneous velocity measurements
4. One-dimensional collision experiments

### Feature

The Apparatus can demonstrate the Newton's Law.

Gliders, pulleys, weights and Weight connected by the action of gravity by observing the motion of a glider, Newton's second law, intended to be understood experimentally. Weight and the glider hanging from weight hooks on the experiment by changing the mass.

SG-7140

## Ballistic Pendulum



### Feature

A ballistic pendulum test and a parabolic motion test of a projectile can be performed. A launch device can be coordinated in 3 level power degrees of blast off. A projectile moves being combined with a pendulum. At this point, the angles of a pendulum can be measured and it's designed to connect this up to the photogate timer. If you dispose the location of a projectile, a test of a parabolic motion also can be performed.



SG-7136A

## Free fall experiment apparatus



### Feature

It's a device to measure an acceleration of a free falling object by gravity. It's easier to measure an acceleration of gravity with photogate timer system which spots times of the object free falling from an arbitrary place. And you can easily check on shifts of position of the free falling object

SG-7156

## Rotational Motion System



### Feature

This system is used for rotational inertia, centripetal force and conservation of angular momentum experiments.

SG-9630S

## Segye Photogate Timer System



### Feature

Portable timer for Photogates and Smart Pulleys  
Measures Time, Speed and Acceleration



SG-7250

## Mechanics experiment



### Feature

Understand classical mechanics through a basic experiment concerned with dynamics by using synthetic experimental device of dynamics.

SG-5306U

## Specific heat apparatus



### Feature

Measure the specific heat of a solid. A liquid calorimeter and a heating apparatus help you to measure the amount of heat

SG-7312

## Linear expansion Apparatus



### Feature

This device uses the method of heating up the inner side of the sample to measure the coefficient of linear expansion. It has a screw to connect the digital thermometer in the middle. At both ends, there are injection ports to inject the steam. In the measurement and supporting plates, there are pins to support the sample so that the expanded length can be measured. There are 3 sample holders for easy keeping and for comfortable usage during experiment.



SG-9320

## Mechanical Equivalent of Heat Apparatus



### Feature

Measure the mechanical equivalent of heat altering mechanical energy to heat. Wire the cylinder with a rope which is suspended to a pendulum, and rotate the cylinder to generate a frictional force. Measure the mechanical equivalent of heat when altering a mechanical energy which is rotating the cylinder into a thermal energy by friction.

SG-7502

## Optical generalization experiment set



### Feature

This device can perform experiments that become the basics of optics such as polarization, deflection, reflection and refraction. These experiments can be done using just this device. The light source is attached to the devices it self and it is magnetic. Thus this light source can be attached and detached making possible many different varieties of experiments. It also has a container attached allowing easy keeping and organizing. The table of light ray is tilted allowing the light path to be visible and it has a scale marked to find the exact degree of the light ray.

### Experiment

1. Introduction of Ray Optics.
2. The Law of Reflection.
3. Image Formation in a Plane Mirror.
4. The Law of Refraction.
5. Optical Reversibility.
6. Dispersion and Total Internal Reflection.
7. Converging Lens- Image and Object Relationships.
8. Light and Color.
9. Two Slit Interference.
10. Polarization
11. Image Formation: Concave Mirrors



SG-5548R, G, B

## Semiconductor Laser



### Feature

The semiconductor laser is a type of diode. When a voltage is applied across the junction from the coherent laser light is a semiconductor laser diode, the diode appearing hereinafter.  
RED, GREEN, BLUE laser

SG-9420

## Ripple Tank Apparatus



### Feature

Equipment set for demonstrating or investigating the basic properties of waves using waves in water.  
The ripple tank consists of a shallow basin with a glass bottom inside an aluminium frame. A halogen lamp operated via a stroboscope illuminates the tank from above.  
Underneath the tank is a diagonally aligned mirror that is used to project the waves onto a frosted glass screen. Waves in the water are produced via the oscillation of an electromagnetic vibrator, to which dippers for straight waves or up to three dippers for making concentric waves can be attached. A control unit sets the amplitude and frequency of the vibrations and the frequency of the stroboscope either synchronously or asynchronously.

SG-9330

## Sine wave Generator



### Feature

Operation of a large existing lines of difficult waveform generator waveform, melde, Supachai projection and a simple and portable so that you can use to make a variety of sizes to be used in vibration and wave experiment fabricated.



SG-9340

## Experimental waveforms of the line



### Feature

Experimental waveforms of the line and kind of sway oscillations using one device at the same time so that you can experiment experimental melde of the Most High, to relieve the discomfort that can be

SG-9350

## Forced Oscillations of a spring



### Feature

This spring, the spring force causing the vibration has its own frequency is obtained.

SG-YS5426

## Wave Driver



### Feature

Wave driver receive for signal from send frequency generator. Then wave driver oscillate to top and bottom.



SG-9111

## Ampere's Law Apparatus

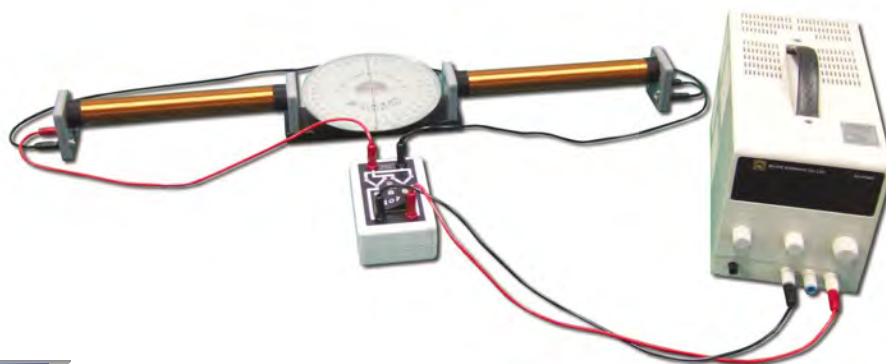


### Feature

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

SG-6128

## Magnetic Hysteresis Curve Measurement System

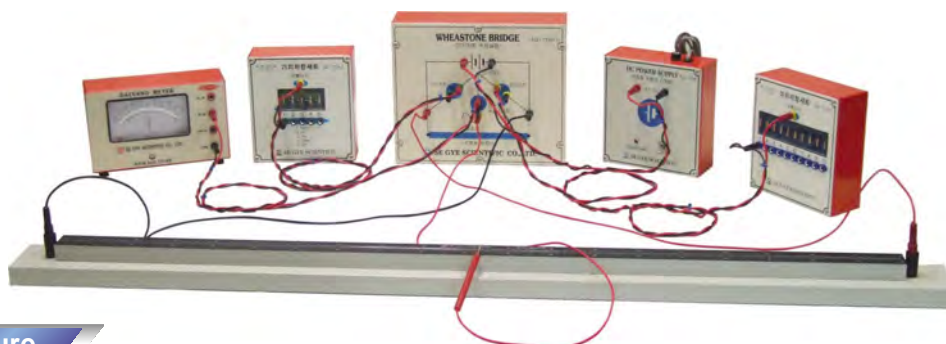


### Feature

You can draw the curvature of magnetization by measuring it. Strong magnet gives Magnetic field.

SG-7716U

## Wheatstone bridge system



### Feature

Conductivity of a matter is offering very important information about an electronical property. To determine this experimentally, you have to measure a resistance very precisely and correctly. Wheatstone bridge is usually used for this. This experiment to help you to learn how to use wheatstone bridge and its structure and to measure an electrical resistance.



SG-YS6119

## Current Balance



### Feature

The Inductive wire has force when current a flow to inductive wire in uniform magnetic fields. The force is called Lorentz force.

SG-9115

## Tesla meter



### Feature

It's measuring instrument which measures magnetic flux density by the hall sensor. It has a zero-point control function which initializes geomagnetic field, and offers 2 types of sensors which helps to measure an axis direction of the sensor and a magnetic field of tangential direction.

SG-7800

## Coulomb's Law System

### Feature

Parallel plates under the high voltage electrode plate using electronic scales to measure directly the Coulomb force is a new type of experiment. Existing test equipment and technical difficulties, but the environment, the device is at a glance Coulomb force of the test equipment.





SG-9600-A

## Basic Electrostatic Experiment System



### Feature

The Basic Electrostatics System includes all the component necessary for a quantitative investigation into the basics of electrostatics. With this integrated set of equipment, students can study:  
Production of charges, equal and opposite., Charge by induction, Principle of the Faraday Ice Pail, Charge transfer, Charge distribution in electric fields., Capacitors and the  $Q=CV$  relationship, Moving charges and current.

SG-7530

## Michelson's Interferential Apparatus



### Feature

Michelson Interferometer provides both a theoretical and a practical introduction to interferometry. Precise measurements can be made in two modes : Michelson mode, Febry-Perot mode.

SG-7744

## Microwave System



### Feature

With using microwave which is one of an electromagnetic wave, test peculiarity of an electromagnetic wave.



SG-9504

## Hall Effect Experiment (with Core)

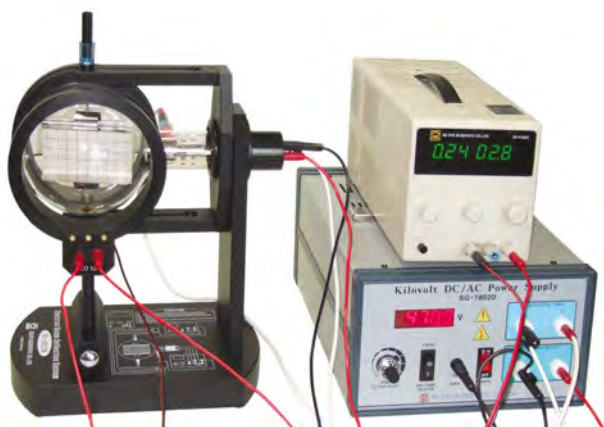


### Feature

The resistivity and Hall voltage of a rectangular Ge and GaAs sample are measured as a function of temperature and magnetic field. The band spacing, the specific conductivity, the type of charge carrier and the mobility of the charge carriers are determined from the measurements.

SG-6022N

## Electron beam deflection system



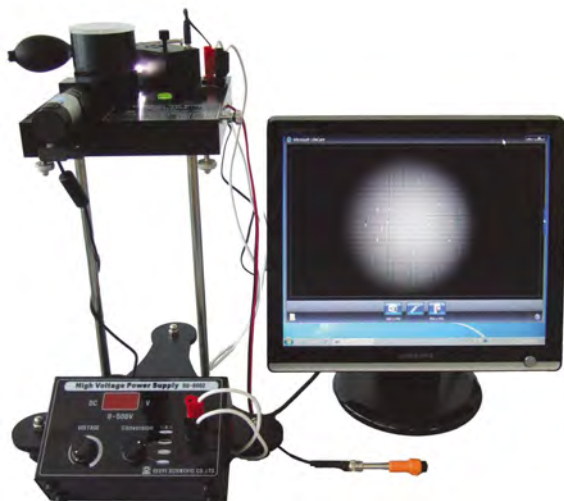
### Feature

For investigating electron beams in electric and magnetic fields and determining specific charge  $e/m$  through compensation of magnetic deflection by electrostatic deflection. Also for estimating the speed of electrons.

The integrated plate capacitor allows electron beams to be deflected electrostatically and - by using a set of demonstration Helmholtz coils- magnetically. The path taken by the electron beams is rendered visible on a fluorescent screen with a centimeter grid inclined by  $15^\circ$  with respect to the beam axis. Equipped with an integrated focusing electrode system.

SG-9646

## Millikan's Oil Drop Experiment System



### Feature

You can let a selected sphere fall through a measured distance with no electric field present, then apply an electric field and observe the velocity of the rising sphere. Or, you can allow a sphere to fall freely, then apply a high-voltage field until the sphere is suspended. The sphere does not need a radioactive source to charge.



SG-6142

## Frank Hertz Apparatus



### Feature

To learn discontinuous constant inner energy inside atom after collision.

SG-6138N

## Planck's constant Experiment Apparatus



### Feature

Examine light of diverse patterns of waves in the phototube, seek planck's constant by measuring a stopping potential for each cases. This device has to be connected to a light source and a galvanometer, a voltmeter when using it.

SG-6132D

## e/m Apparatus



### Feature

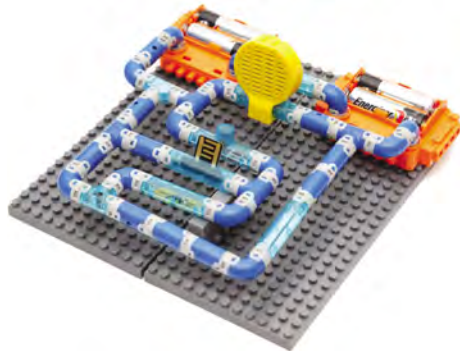
Measure an electric charge of an electron and mass rate, and understand Lorentz force when a charged particle have motion under geomagnetic field.



SHS1119

## TAKIT - 3D Electronic Kit

# TAKIT



### The most remarkable thing most TAKIT is differentiation

TAKIT is the educational kit learning the principle of electronic circuit by assembling blocks. This is an 'electronic assembly kit' by using blocks and it makes electronic circuit by assembling the blocks like a pipe. The inner part of block has electronic components such as resistance, condenser and diode. By assembling the components, 50 kinds of electronic products can be made like radio, lie detector, siren, etc.

By assembling them, the user can understand the principle of electronic circuit like a parallel/series connection and Ohm's law. The teachers can teach the principle easily through the vivid practice and the students can learn with interest by assembling the kit

## Main programs of TAKIT



Lie Detector



Recorder



Buqlar Alarm



Alarm



Radio



Siren



Electronic Bird



Interior Wiring

**Radio** You can make the AM radio which you can listen to by controlling a frequency converter.

**Lie Detector** This can be the machine for criminal investigation, easuring the change of physical function like blood pressure and sweat. You can make a lie detector using a touch plate.

## TAKIT Components – Main Functional Module

### Radio



It has a variable condenser and antenna to control frequency.

### Sound



Sound IC in the module can make various sounds.

**TAKIT** consists of a total of 33 components.

The main functional module components are 7EA, I type components are 17EA, connecting pipes are 5EA and supplementary components are 4EA.

### Switch



By opening or closing the circuit, the electricity flow is controlled.

### Variable Resistor



It controls the value of resistance from 0Ω to 10KΩ.

### Recording



It can record and replay sounds.

### Battery



It can use 3V power by putting in 2 batteries of 1.5V(AA).

### Amplification



It Saves electricity of audio by amplifying the electric pressure.



SHS7162

## Experimental apparatus of adiabatic change A-type



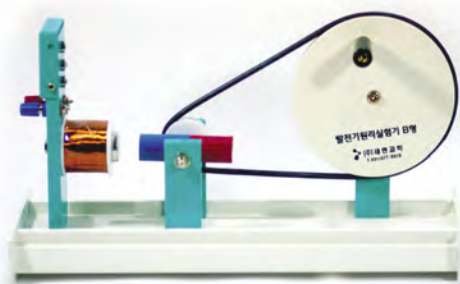
### Feature

It is possible as an experimental device to learn the principles of the occurrence of fog and generation of cloud condensation of water vapor due to adiabatic expansion of the air, and to understand the relationship of the change in relative humidity and adiabatic change.

- Size : 170 x 170 x 200mm, (-20℃~110℃)
- Temperature : -20℃~110℃

SHS4184

## Principle experimental apparatus of the generator



### Feature

Experimental apparatus in order to understand the principles of the generator. When reciprocating the magnet inside the air-core solenoid coil using a device, the magnetic field is changed, it induces a current in the coil. It is possible to confirm that the current flow by connecting the galvanometer the electrodes connected to the coil.

- Size : 370 x 180 x 140mm

SHS4265

## Slide resistor (Open type)



### Feature

Continuous adjustable nichrome wire resistor resistance. It can be possible to adjust the length of nichrome wire connected to the circuit with the slide bar of the top plate, to select a resistor free, I used to train the change in the voltage and current in accordance with the resistance value and the configuration of the circuit. Can be used as a variable resistor Wheatstone bridge configuration.

- Size : 0~50Ω, 6A

SHS5196

## Experimental apparatus of gas molecular motion



### Feature

Laboratory instruments for examine the relationship between the volume and pressure through the molecular motion of the gas. It is possible to understand the relationship between temperature, pressure and volume of the gas during the motion. Supplying power to the motor, to supply the thermal energy piston reciprocates up and down. At this time, the volume is in the range of movement of the ball of iron is determined between the plate and the piston.

- Size : 160 x 120 x 220mm
- Power : AC220V, DC 3~6V



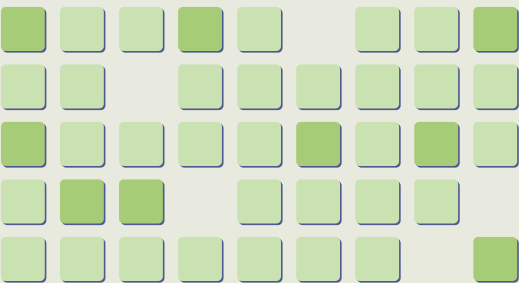


# 2

## Audio & Video Educational System







B&S MEDIA CO.,LTD.	66 ~ 71
BAROSNT CO.,LTD.	72 ~ 75
EARZONE CO., LTD.	76 ~ 77
MOCOM PLEX	78 ~ 79
OMAX CO., LTD.	80 ~ 83
PARAN OPTICAL CO.,LTD	84 ~ 85





## B&S MEDIA CO., LTD.



B&S MEDIA CO., LTD. is the leading educational ICT enterprise providing full services from hardware and software development to education system consulting, design, installation, training, and maintenance.

### Consulting

- Smart Learning solutions
- Video conferencing

### Creation

- Web site development
- On-offline educational service plan
- Education environment plan and design

### Programming

- Educational system & solutions development
- System integration & management

### Device Development

- Product interface design
- Offline educational system development
- Offline system integration & management

### Manufacturing

- Educational devices manufacturer
- Smart Podiums, Interactive LED displays

### Design

- Web design,
- Application design





## e-STATION S

The e-STATION S is single smart podium that has all-in-one power source and many other functions designed for optimal customer convenience. It centrally stores all its components and accessories such as a tablet monitor and an integrated controller in a rack type storage device.

The monitor screen height can be automatically adjusted by pressing a simple switch, and annotating and writing on the LCD are more natural.



### FEATURES

- Ergonomic and futuristic design
- International standard 19" rack for device storage
- One-touch and central device control (7" Control Touch Panel)
- 19" / 22" LCD tablet monitor with angle-adjustable stand
- Software : Lecture recording software
- Fan, additional I/O port, wheels, keyboard tray, and mouse pad
- Optional - RMS(Remote Management System)
  - Integrated Digital Controller(JPM C-210HD)



#### Good Design Selection by Ministry of Knowledge Economy

The e-STATION S won the Minister's award at '2012 Good Design Selection', sponsored by the Ministry of Knowledge Economy and organized by the Korea Institute of Design Promotion.





## e-STATION CUBE

The e-STATION CUBE is advanced and compact podium that offers all functions needed for classrooms, auditoriums and conference rooms. The viewing angle of pen-interactive monitor is electrical height adjust for user comfort when annotating the monitor screen.

The RFID recognition secures all devices and access system. A 7 inch control panel for controlling all equipment and slide out table on the right is to hold a document camera.

### e-STATION CUBE

#### FEATURES

- 22" LCD tablet monitor with angle-adjustable stand
- RFID card key for security and system management
- Sliding tray for utilizing other devices such as a document camera
- Software : Lecture recording software
- Additional I/O port, wheels, keyboard tray and mouse pad
- Optional - RMS(Remote Management System)
  - Sub Monitor / Drawer for document camera storage



#### COMPONENTS





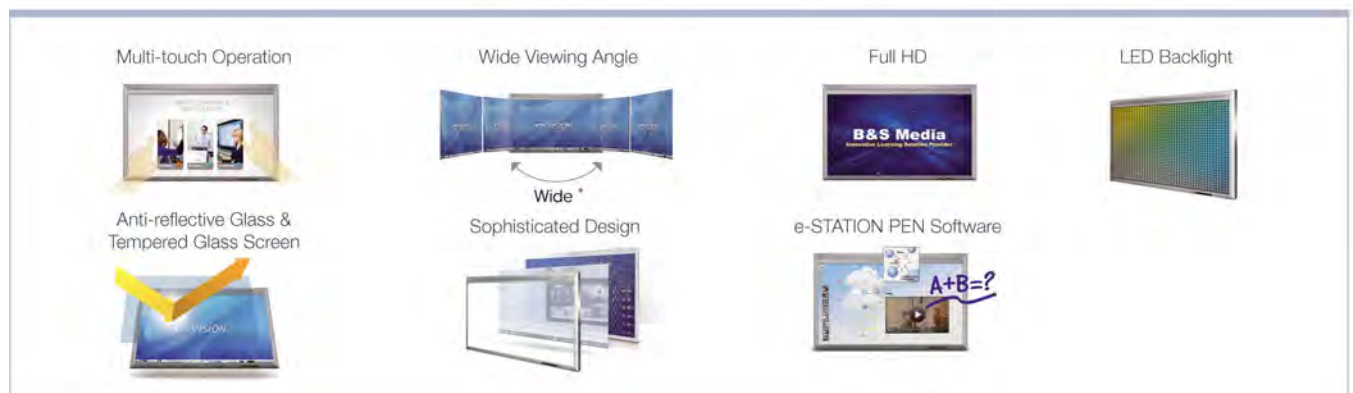
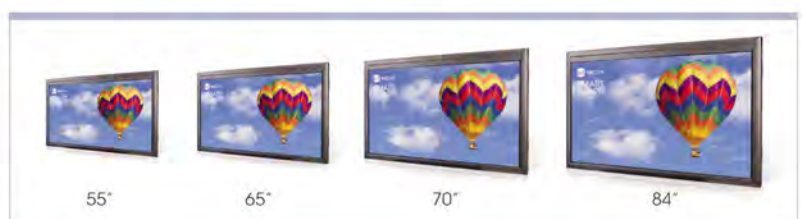
## e-VISION LED

The e-VISION LED is a smart LED interactive display that helps you create effective and eye-catching presentation materials, and enriches your educational environment with a variety of display screen content.

### e VISION LED

#### FEATURES

- **Multi-touch Operation**  
4 or 10 points can be simultaneously touched.
- **Full HD**  
Full High Definition(1982\*1080) image can be displayed.
- **LED Backlights**  
LED Backlights ensure reliable performance with low power consumption.
- **Anti-reflective Glass & Tempered Glass Screen**  
Anti-reflective glass provides clear image and reduces reflecting the light  
5mm tempered glass ensures safety from scratches and shock.
- **Sophisticated Design**  
All-in-one design(LED Panel + Screen + Optical Camera Sensor)  
helps you to use more convenient.





## SOLOMON TABLE

The SOLOMON Table is a multi-user interactive table designed to combine learning and play and to promote student collaboration. The touch interface allows up to ten users at once to access educational activities. Students can work and discuss together, and small group can collaborate to contribute toward the completion of a group project.



### FEATURES

- **Simultaneous multi-touch capability**  
SOLOMON Table supports up to 10 students to collaborate at the same time.
- **Full HD**  
SOLOMON Table features a 55" LED, 1080p display, with no shadows and virtually no glare.
- **Built-in PC**  
SOLOMON BOARD is built-in a high-performance PC can be used directly without the need to install separate.
- **Built-in Wi-Fi**  
Built-in Wi-Fi allows users to connect to the websites directly for more teaching materials and content.
- **RM Easiteach Next Generation software program**  
The localized and searchable media bank within Easiteach comprises over 4,500 curriculum-based resources including over 70 videos.





## e-MOTION HD / SD

The e-MOTION is an auto tracking camera system that automatically tracks the presenter's movement during presentations. It gives presenters and instructors the ability to provide dynamic presentations while the camera automatically follows their every move, and it is used in distance learning and video conferencing.



### FEATURES

- Motion detection camera
- Automatically returns to the original position if motion is not detected after a period of time
- Various modes support by presets
- Automatic zoom for multiple presenters
- Communicate via RS-232 and RS-485





## BAROCAM

### Portable Visual Presenter with HD Recording and Communicating.

- Implemented the soft image of 30 frames per second
- Imbedded the image compression chip for real-time storing of HD images
- Operated the Optical Zoom Lens only with USB 5V power.
- Provide remote control for your convenience
- Real-time image communication is available by Hardwired encoding method using the image compression chip



Model	BARO S&T
	BAROCAM
Pixel	8.0M(Software calibration)
Video Type	MJPEG(1920 x1080) 30fps
Video Recording	1280 x 720 (25fps)
Real Time Video Communication	1280 x 720 (15fps)
Lens Type	Glass
Zoom	Optical x3/ Digital x3
Power	USB (5V)

- Equipped with high- transmittance Glass Lens



(Glass lens of our products)

### Components

Visual Presenter	Accessories	Portable case
		



## Ravi-2000HDZ

1. Easy interface which even beginner can make lecture video easily



\*Screen when camera control window is loaded



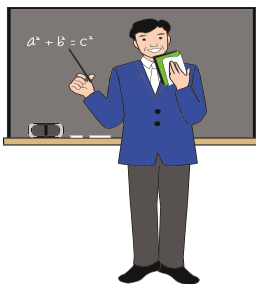
\*Screen when recording window is only loaded



This system can be unman-operated after setting one time camera control, so you can save images easily only with recording window loaded as shown in the right screen.

One click of record button, images are automatically saved in the set folder.

2. Automatic lecturer tracking by motion tracking



### · Motion tracking

By reading the motion of lecturer and transmitting the coordinate value to camera, it automatically carries out the left and right rotation and zoom function of camera according to the motion of lecturer.

The lecturer can get images data for good lecture without additional operation after starting record.

3. Wireless remote-control- Android application

- By providing the application which can be installed in Android-based tablet (optional), lecturer can control camera, or use the function of record start/stop, moving when the lecturer gives class.



(Pad control)

4. Functions

- Records 4 screens at the same time





Record resolution: 720\*480(SD grade)/ 1280\*720(HD grade) / 1920\*1080(Full HD grade) There is big difference in the file size depending upon the resolution and selective operation is available



## Ravi-220BS / 220BD

- Provided with 22 type tablet monitor
- Dual monitor (220BD)
- Easy to use space with beautiful design and delicate design
- Two racks installed on the inside are height-adjustable and facilitate to load the external devices
- Monitor angle is adjustable by manual shock absorber
- Provided with 7 inch LCD integrated controller (Digital amplifier built-in type)
- Provided with high performance amplifier(option)
- Provided with wire/wireless microphone (900MHz)

### Components

Gooseneck Microphone Wireless	microphone(900MHz)
 <ul style="list-style-type: none"> <li>• Cartridge:20mm (Condenser) • Impedance:220Ω</li> <li>• Connector:3-PIN XLR • Power:1.5V</li> <li>• Frequency response:40~20.000HZ</li> </ul>	 <ul style="list-style-type: none"> <li>• 925.125MHz~931.925MHz • Power consumption: 10W</li> <li>• 62Ch Variable type • Impedance: 400Ω(Hand mic)</li> <li>• PLL Sythesizer</li> </ul>
Speaker	Amplifier(options)
 <ul style="list-style-type: none"> <li>• frequency range:50Hz~19KHz • Output:50W~100W</li> <li>• Acoustic pressure:98dB • Impedance:8Ω</li> <li>• Output:50W~100W • Weight:1.9kg</li> </ul>	 <ul style="list-style-type: none"> <li>• 200Watts • 20Hz~20kHz +/-3dB</li> <li>• Balance Mic or Line Input • S.N Ratio: &gt;80dB</li> </ul>



## Ravi-220SH

- Provided with 22 type tablet monitor
- Easy to use space with beautiful design and delicate design
- Two racks installed on the inside are height-adjustable and facilitate to load the external devices
- Monitor angle is adjustable by manual shock absorber
- Provided with 7 inch LCD integrated controller (Digital amplifier built-in type)
- Provided with high performance amplifier(option)
- Provided with wire/wireless microphone (900MHz)



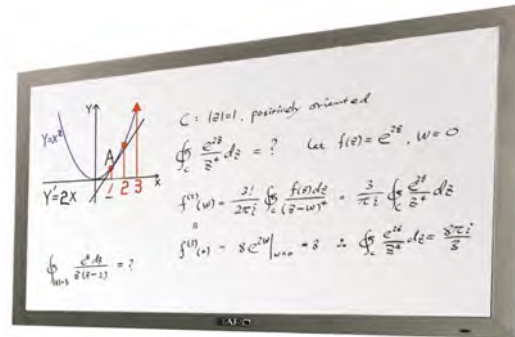
### Components

Gooseneck Microphone	Wireless microphone(900MHz)	Speaker
 <ul style="list-style-type: none"> <li>• Cartridge:20mm (Condenser) • Impedance:220Ω</li> <li>• Connector:3-PIN XLR • Power:1.5V</li> <li>• Frequency response:40~20.000HZ</li> </ul>	 <ul style="list-style-type: none"> <li>• 925.125MHz~931.925MHz • Power consumption: 10W</li> <li>• 62Ch Variable type • Impedance: 400Ω(Hand mic)</li> <li>• PLL Sythesizer</li> </ul>	 <ul style="list-style-type: none"> <li>• frequency range:50Hz~19KHz</li> <li>• Output:50W~100W</li> <li>• Acoustic pressure:98dB • Impedance:8Ω</li> </ul>



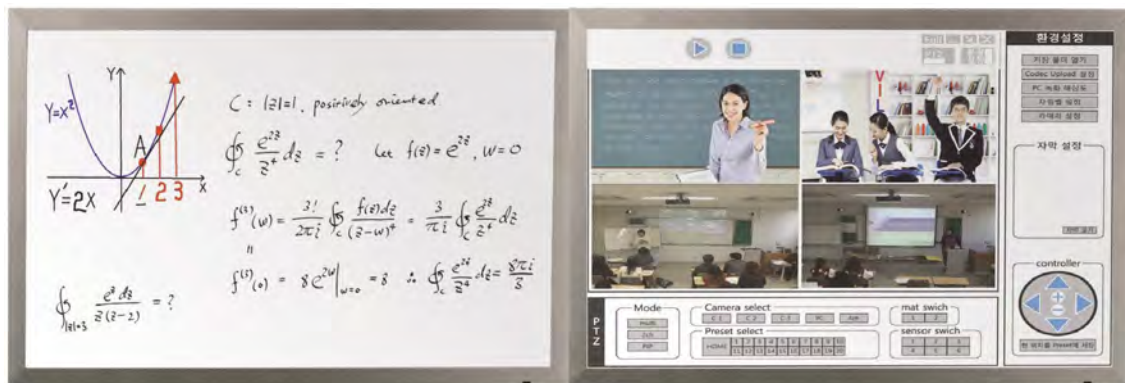
## BG-70LE / 82LE / 84LE

- Customized to user with variable utilization
- Full HD LED multi-touch interactive electronic board
- Bright and clear picture and wide angle of field
- Less power consumption and light weight with use of LED panel
- PNP(Plug in Play) type without requiring additional driver setting



Model	BARO S&T		
	BG-70LE	BG-82LE	BG-84LE
Panel	70 inch LED (SAMSUNG)	82 inch LED (SAMSUNG)	84 inch LED (LG)
Size	1,778mm (70inch)	2,082.8mm (82inch)	2134.62mm (84inch)
Fineness ratio	16 : 9 Wide	16 : 9 Wide	16 : 9 Wide
Resolution	1920(H) x 1080(V)	1920(H) x 1080(V)	3840(H) x 2160(V)
Angle of field	± 178°	± 178°	± 178°
Contrast range	4,000 : 1	5,000 : 1	1,400 : 1

## BG-70TLE



- Bright and clear picture and wide angle of field
- Full HD LED multi-touch interactive electronic board
- Patented product supporting excellent product performance
- Multi-functional writing program
- PNP(Plug in Play) type without requiring additional driver setting
- By utilizing the multimedia teaching data through dual structure of main-/sub-screen, provides state-of- the-art teaching service, latest teaching trend
- AG coated anti-glaze tempered glass enables you to teach without limiting in writing on the whiteboard

Model	BARO S&T
	BG-70TLE
Panel	70 inch LED (SAMSUNG)
Size	1,778mm (DUAL)
Fineness ratio	16 : 9 Wide
Resolution	1920(H) x 1080(V)
Angle of field	± 178
Contrast range	4,000 : 1



EARZONE CO., LTD is a professional wireless product manufacturer developing and producing Wireless Communication Devices, Wireless

Educational Equipments, Image Recognizing Digital Visualizer, Electronic Teaching Desk, Interactive Whiteboard, Electronic LED Blackboard and other related products of U-Learning System.

EARZONE has developed many ultramodern educational equipments based on its excellent technology and long accumulated Know-How, and has taken charge of the many diversifications for the educational environments.

EARZONE endeavors to become the best by upholding competitiveness in quality, service, and price in the midst of the ever changing digital era of the 21st century.

EARZONE aims to build a worldwide famous brand and invests all efforts in contributing to the industry and society by becoming the business partner.

We sincerely thank all our customers and we hope for your further supports and best relationships.

## EARZONE BUSINESS LINES

Digital Visualizer	Wireless System	U - Learning
<ul style="list-style-type: none"> <li>• EZ-CAM</li> <li>• EZ-300</li> <li>• EZ-500</li> <li>• EZ-500-1</li> <li>• EZ-500TTS</li> <li>• MT-130</li> </ul>	<ul style="list-style-type: none"> <li>• Remo's 500</li> <li>• Remo's 550</li> <li>• Remo's 900</li> <li>• BRXT-CA200</li> <li>• BRXT-R1</li> <li>• BRXT-R3</li> </ul>	<ul style="list-style-type: none"> <li>• Smart RFID System</li> <li>• White Board</li> <li>• Interactive LCD, LED Blackboard</li> <li>• Electronic Podium</li> <li>• E-Learning S/W</li> </ul>



“The Best Prize” was awarded to EzCam by the Minister of Education, Science and technology in the E-Learning Expo Korea 2008, “The Best Prize” was awarded to EARZONE for EzCam / EZ-300.



- World Didac Basel, Oct. 2012  
- World Didac Bangkok, Oct. 2013  
- World Didac Astana, April. 2013



- Gulf Educational Supplies & Solutions, Dubai UAE, Mar.2013



EZ-CAM ( EZ-500 / EZ-500TTS )

## Image Recognizing Digital Visualizer



### APPLICATION

First in the world Image Recognition System Versatile and powerful function  
Portability and storability by compact design

### FEATURES

- Media Center + Digital Visualizer
- Providing best learning solution connected with computer
- Providing various contents through recognizing image
- Various and Powerful function.(Zoom in/out , Image rotation, Image capture, Make video)
- Providing functions as digital Visualizer with high resolution ( EZ-500 : 5.0 Mega Pixel UXGA 2048 x 1536)

Remo s 900

## Wireless Guide, Communication System



### APPLICATION

Wireless Guide System for Plant and Factory Tour  
Guide and Simultaneous Interpretation

### FEATURES

- Instant monitoring of operating menu and state by LCD Display
- Selectable 28 channels, convenient channel switching
- Clear audio quality between 150m distance
- Short charge (3~4 hrs) & longer use (15hrs), High capacity lithium-ion battery

EZB-LED70WT/ LED82WT

## Electronic LED Blackboard



### APPLICATION

Provide intuitive and effective lecturing system Integrated control and writing function

### FEATURES

- Full HD LED 70 / 82 inch electronic blackboard
- Central role of audio-visual education by applying various outside-input
- Product of eco-environmental and saving energy (stand by power 0.4W)
- Applying various multimedia to system by providing multi-touch
- Effect of gesture with combined with IR sensor - writing program
- Hidden tool-bar menu for students to concentrate in the lecture  
- writing programs not only all kind of advanced and upgraded but also enhanced user's convenience
- Reducing the break and light reflected by applying anti-reflection and tempered-glass

EZD-22MA

## Electronic Teaching Desk



### APPLICATION

Lecturing system combined with practical design and integrated control

### FEATURES

- Practical and ergonomic design
- The plan and design considered the safety of appearance
- Controlling various monitor's angle
- Wide and clear tablet monitor leading electric magnetic induction
- The free-battery pen recognizing a writing pressure
- Providing various input-terminal from outside
- Providing Software which is controlled in teaching class (EZ-BOARD / EZ-DOC)
- Digital amplifier which has high output power (2.4 Ghz wireless microphone of integrated shape)



Super Bright Projection Screen System

## BRITE BOARD®

(9times Higher Resolution & 1/10 Power Consumption of L.E.D)

Patents in  
USA : No. 7.362.502  
7.237.683  
7.864.421  
UK, S.Korea, India, China, etc.



250"  
2D/3D



## High-Definition, Innovation, beyond compare large screen “Brite Board”



## Compare to LED Electronic Boards (indoor 3mm)

1. Super Brightness ( 1,000 ~ 2,000cd/m<sup>2</sup>)
2. Low power consumption at 1/10 ~ 1/20
3. Wide viewing angle (120° ~ 160°)
4. 9 times higher resolution
5. Easy installation
6. 1/4 of maintenance cost



Headquarters

Address : 40 Seombat-ro, Nowon-gu, Seoul 139-808

Tel. +82.2.739.9968 Fax. +82.2.739.9971

Email: info@mocomscreens.com



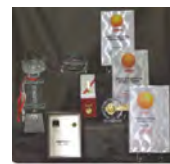


## MOCOM 3D PLEX

- 6 times higher 3D Image Definition than existing silver screens
- The only installable in a general buildings Multi-plex in the world
- Vibrating chair sensing low sound for outstanding sound quality
- Luxurious and delightful space

## Award winning screen Technology

Mocomtech has consistently introduced innovative, quality-driven screens to the market. Its innovation and quality have Received numerous accolades in the industry including CES innovation award for 3 consecutive years, Presidential Prize (Korea) for 2 years, Word first class product award, etc.



## ASIA / North America

### ASIA

- Dongducheon, South Korea
- Pocheon, South Korea

### North America

- Barstow, CA. USA (161,877m<sup>2</sup>)
- Planned factory site



Seoul Office



Korea Factory 1



Korea Factory 2



USA actory Site

## Great number of patents in screen technology

- ▶ Patents in USA, UK, S.Korea, China, India, Japan, Germany, ect
- ▶ Number of registered patents
  - 350 - Korea
  - 100 - International



■ Address : Mocom BLDG. Seombat-ro 40, Nowon-gu, Seoul, South Korea

■ Homepage : [www.mocomscreens.com](http://www.mocomscreens.com)



ProCam Laser

## Smart Visual Presenter

SINCE 1970

# OMAX

2014 New Smart Visual Presenter  
Procam Laser

# PROCAM LASER

## OMAX Smart Visual Presenter

OMAX SMART VISUAL PRESENTER : **PROCAM LASER**

- THE POSITION OF THE CAMERA CAN BE ADJUSTED FREELY
- THE LASER POINTER GUIDES ACCURATE DOCUMENT PLACEMENT
- TWO FULL HD CAMERAS CAPTURE TWO SEPARATE OBJECTS SIMULTANEOUSLY



### ● Specification

FOCUS	MAIN CAMERA(AUTO) SUB CAMERA(FIX)
Camera area	297X420mm(A3size)
Resolution	MAIN CAMERA(QSXGA 2592X1944) SUB CAMERA (QXGA 2048X1536)
Power	USB or DC 12V
Lighting/ Location settings	LED LAMP/LASER Point
Output	USB 2.0
Size	175x240x735mm

### ● Smart Visual Presenter



WELCAM-500  
CMOS 5.0M Camera  
LED STAND TYPE



SMP-9000  
FULL HD  
12X Optical Zoom



Dual-i501  
Dual Camera 5.0M/0.3M  
A3 Size Range Observation



## F series

## Microscope

### F SERIES



Model	Mono. 400X~1500X	AKS-1500MK	AKS-MV,MVS	AKS-1500VS,VK
Head	Mono. 45° inclined	Bino. 45° inclined CMOS Camera 1.3M(USB Port)	7" or 9" LCD Monitor CCD CAMERA	Bino. 45° inclined, 7" or 9" LCD Monitor, CCD Camera
Total Mag.	400X ~ 1500X	400X ~ 1500X	Monitor Real Mag.	400X ~ 1500X
Objective	3 hole type	4 hole type	3 hole type	4 hole type
Stage	Plain Stage, 0.65 Condenser	Double Layers Mechanical stage, Abbe condenser N.A1.25	Plain Stage + Sliding Ruler Mechanical	Double Layers Mechanical stage, Abbe condenser N.A 1.25
illumination	LED			
Output		USB	CVBS	USB, CVBS

## R series

## Microscope

### R SERIES



Model	Mono. 400~1500	Bino. 400 ~ 1500	AKS-1500RMK	AKS-RVK,RVS	AKS-RV,RS	AKS-RZ45, RZ90
Head	Mono. 30° inclined	Bino. 30° inclined	Bino. 30° inclined CMOS 3.0 M (USB Port)	Bino. 30° inclined CMOS 2.0M(7" or 9" Monitor Model)	7" or 9" LCD Monitor CMOS 2.0M	Bino. 45° inclined, 9" Monitor CMOS 2.0M
Total Mag.	400X ~ 1500X	400X ~ 1500X	400X ~ 1500X	400X ~ 1500X	Monitor Real Mag.	6.7~90X
Objective	3 hole type	4 hole type	4 hole type	4 hole type	3 hole type	Zooming 0.67 ~ 4.5X
Stage	Plain Stage, 0.65 Condenser	Double Layers Mechanical stage, Abbe condenser N.A 1.25	Double Layers Mechanical stage, Abbe condenser N.A 1.25	Double Layers Mechanical stage, Abbe condenser N.A 1.25	Double Layers Mechanical stage, Abbe condenser N.A 1.25	Stage Plate
illumination	LED					
Output			USB	USB, CVBS	USB, CVBS	USB, CVBS



## Magic Pen TQ22

## Tablet Monitor

### Magic pen TQ22

Screen size: 21.5inch

Supported O/S : WIN XP, VISTA, WIN7

Coordinate transmission method: USB

Supported board: Various board background supported  
(Various color backgrounds, English note, music note, manuscript paper, etc.)

Real-time recording : Records a video of the lecture on the board and saves the writing

Document conversion: MS PPT, MS EXCEL, Hangul

Mode: Mouse/Pen

Screen capture function & over 32 colors supported



#### Effective education

It allows students to focus better as the instructor can look at the students while lecturing and utilize various multimedia devices including projector, LCD, and TV to project on the writing on the large screen.

#### Convenient lesson plan making

When you are making a lesson plan, you can use websites, images, and programs like PowerPoint, Word, and Excel. Using existing resources, you can create your own educational content.

#### Lecture save, play

With a single click, you can save and play the lecture. You can save the writing on the board and upload on the internet. The file can be viewed multiple times by downloading or playing with video streaming. (separate server setup required)

## M Pen Desk K series

## Tablet Monitor Desk

### M Pen Desk K series

Writing monitor : 22" TFT LCD Panel, inductive coupling method

Integrated controller : LCD screen view, control: PROJECTOR, SCREEN, ELEVATION, Volume, MIC, source selection\_PC, NOTE,

TV, VIDEO, Gooseneck microphone

Reception- over 48dB, connector 3P XLR

Speaker : Standard input 50W, impedance 8Ω

S/W : Magic Pen @-various writing options and document conversion

Dimension (WxDxH) : 650 x 653 x 1,010mm (±100mm)

Lecture desk material : Wood + Steel

Sliding lecture desk top : Top panel sliding method

Monitor angle adjustment : Manual shock absorber method





EDU Board

Interactive Board

## EDU Board ACB 70,82,84

Making e-board popular and of high quality



### Easy to Use

Compact Writing software,  
10 point multi-touch, Connecting Other Devices

### Specialized Mobile Applications

Your mobile and can be used in conjunction

### Patented Product & Stable solution

We have completed a multi-year field test

### With The best Sensor

IR Sensors , 4CMOS camera Sensors (made in korea)

Model	ACB-7000L	ACB-8200L	ACB-8400L
Size	70 inch LED	82 inch LED	84inch LED
Contrast Ratio	4,000:1	5000:1	1000:1
Brightness	400 cd/m <sup>2</sup>	450 cd/m <sup>2</sup>	300 cd/m <sup>2</sup>
Writing	Finger Touch or any objects		
Screen Display	16:9		
Sensor	Camera image sensor	IR Touch	Camera & IR LED Frame
Resolution	1920x1080 Full HD	1920x1080 Full HD	3840x2160 Ultra HD

### LED TV-TYPE INTERACTIVE WHITEBOARD

LED TV-type interactive whiteboard provides optimal image without glares or shadows to support the best viewing experience

Wall-mounted type



Stand type





## Monitor MICROSCOPE

( PM-DM1200 )



## Contact-lens Inspector

( PM-CX15 )



## CELLPHONE MICROSCOPE

( PM-M600 )



## Monitor Capillary Microscope

( PM-C100VF )



## Monitor Biological Microscope

( PM-UB150V )



## Monitor Stereo Microscope

( PM-UZ45V )



## Digital Biological Microscope

( PM-UB150 )



## Digital Phase Contrast Microscope

( PM-PU3000 )



## Monitor Phase Contrast Microscope

( OT-U600V )





## Biological Microscope

( PM-BX1500 )



## Dental Stereo Microscope

( PM-G10 )



## Base Curve Measure Gauge

( PM-PR1000 )



## Biological Microscope

( PM-D600 )



## Biological Microscope

( PM-B600 )



## Polarizing Microscope

( PM-400P )



## Mono Microscope

( PM-S1 )



## Stereo Microscope

( PM-S2 )



## Stereo Microscope

( PM-S3 )



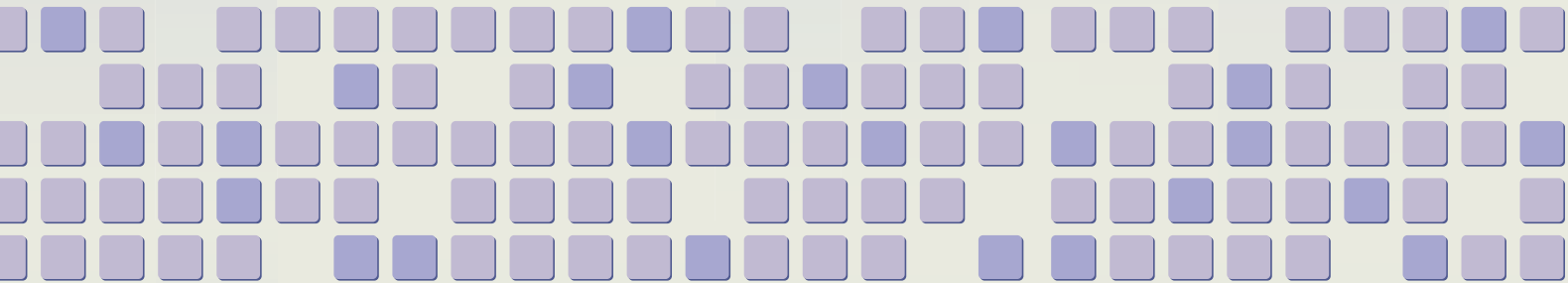
All products are manufactured in the Parano Optical.



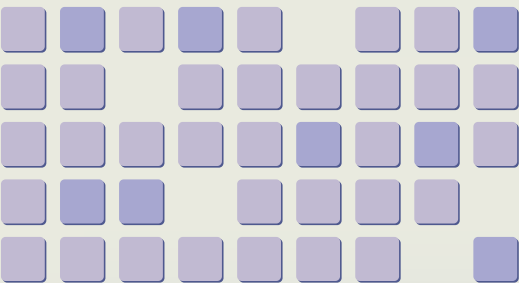


# 3

## Laboratory Equipments







CHC LABORATORY CO., LTD.	88 ~ 91
DAIHAN LABTECH CO., LTD.	92 ~ 93
DASOL SCIENTIFIC CO., LTD.	94 ~ 97
EUNHA FLUID SCIENCE	98 ~ 101
GMS CO., LTD.	102 ~ 103
GT SCIEN CO., LTD.	104 ~ 109
HAHNSHIN SCIENTIFIC CO.	110 ~ 111
HONGMYONG SCIENCE	112 ~ 113
Human Corporation	114 ~ 117
ILSHIN BIOBASE CO., LTD.	118 ~ 119
iSTEK. INC.	120 ~ 121
JEIO TECH CO., LTD.	122 ~ 151
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LABZONE CO., LTD.	158 ~ 161
MDM CO., LTD.	162 ~ 165
MIRAE ST CO., LTD.	166 ~ 167
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SAMIN SCIENCE CO., LTD.	170 ~ 171
THREE SHINE. INC.	172 ~ 173
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## Lab Center Table (hulab® LEVEL PRO)



The LEVEL PRO furniture system creates a high performance laboratory through the assembly height-adjustable shelves and tables. The table length is consist of 900mm, 1200mm, 1500mm and 1800mm, thus possible to install a variety of size on the laboratory place.

### FEATURE

1. Work Top : Phenolic Laminate (Option : Epoxy resin)
2. Structure : Epoxy powder coated steel and Aluminum
3. Drying rack : PP
4. Shelf : Tempered glass, (Option : PB, Phenolic Laminate)
5. Bracket : Steel plate controlling the setting position
6. Movable Cabinet : PB (Option : PB, Phenolic Laminate)
7. Movable Drawer : PB (Option : PB, Phenolic Laminate)
8. Sink Bowl : PP resin (Option : Epoxy resin)
9. Water faucet

### Lab Tables Include

1. Center Table
2. Side Table
3. Sink Table
4. Movable Cabinet
5. Movable Drawer

## Lab Table (hulab® HARD PRO)



The HARD PRO furniture has height-adjustable shelves and possible to choose the steel or aluminum table frames. The table length is consist of 900mm, 1200mm, 1500mm and 1800mm, thus possible to install a variety of size on the laboratory place.

### FEATURE

1. Work Top : Phenolic Laminate (Option : Epoxy resin)
2. Structure : Epoxy powder coated steel or Aluminum
3. Drying rack : PP
4. Shelf : Tempered glass, (Option : PB, Phenolic Laminate)
5. Bracker : Steel plate controlling the setting position
6. Movable Cabinet : PB (Option : PB, Phenolic Laminate)
7. Movable Drawer : PB (Option : PB, Phenolic Laminate)
8. Sink Bowl : PP resin (Option : Epoxy resin)
9. Water faucet

### Lab Tables Include

Lab Tables Include list

- |   |                   |
|---|-------------------|
| 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 (airos<sup>®</sup> A-MB)



CHC LAB fume hood is made under the standard and regulation of SEFA (Scientific Equipment & Furniture Association) and ASHREA110 standard.

Fume hood is designed to provide users with safety and healthy as well as a clean laboratory environment.

### Fume Hood Type

1. Bypass 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

## Arm Hood (airos<sup>®</sup> A-AD)



Arm Hood is a local exhaust system that can be ventilation of small contaminated air. It's possible to protect both user and a partial area in the laboratory.

### FEATURE

1. It is designed with a pivot structure that can revolve freely and easy to move specific area.
2. Arm hood has a damper controller, It possible to adjust airflow velocity according to user's needs.

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

### SPECIFICATIONS

Model No.	Dimensions
A-AD	$\phi 75 \times 1500$ Dia. x L (mm)

## Ductless Fume Hood (clair<sup>®</sup> C-DH)



Ductless Fume Hood can be used without duct system in the laboratory. It is maintaining the clean environment of the laboratory to protect researchers and environment from the contaminated and chemical substances.

### FEATURE

1. Easy to installation.
2. According to chemical gas or contaminated substance, Carbon, HEPA and pre-filters are equipped.
3. Polycarbonate door is easy to folding for users to examine inside.

### SPECIFICATIONS

Model no.	C-DH-03
Dimensions (External)	900 x 660 x 1854
W x D x H (mm) (Internal)	884 x 625 x 715
Filter	Pre-filter / Carbon, HEPA Filter (Option)
Body	Poly carbonate & Steel plate epoxy powder coated
Support stand	Steel square pipe with epoxy powder coated
Work top	Phenolic laminate 19mm
Power supply	110/220V, 50/60Hz
Noise level (dB)	≤ 65db(A)



## PCR WORKSTATION (biolus<sup>®</sup> B-PCR-900)



PCR workstation can be used at the DNA, RNA, PCR and other molecular experiment in laboratory. It is possible to provide a filtrated clean air through the HEPA Filter is formed vertically from the Ceiling area, It is protected reagents and samples

### SPECIFICATIONS

Model no.	B-PCR-900
Dimensions (External)	900 x 660 x 1854
W x D X H (mm) (Internal)	884 x 625 x 715
Filter	Pre-filter / Carbon, HEPA Filter (Option)
Body	According to chemical
Support stand	Poly carbonate & Steel plate epoxy powder coated
Work top	Steel square pipe with epoxy powder coated
Power supply	Stainless steel
Noise level (dB)	110/220V, 50/60Hz
	≤ 65db(A)

## 2in1 Chemical Storage Cabinet (clear<sup>®</sup> C-2in1)



2in1 chemical storage cabinet is a product you can freely replace filter and duct on a cabinet. You can remove or replace

readily in the easy replacement system and can add only duct for altering into exhaust type at ease and therefore it is easy to alter the type to the optimized style for the purpose of lab. clear<sup>®</sup> 2in1 giving easy maintenance as well as cost saving effect by the minimum maintenance is now available.

### SPECIFICATIONS

Model no.	C-2in1-F/F+D/D
Dimensions (External)	800 x 565 x 2000
W x D X H (mm) (Internal)	710 x 485 x 1430
Filter	CHC Hybrid carbon filter
External material	SPCC
Chamber material	SPCC + SPH
Air circulation speed (m/s)	C-2in1-F/F+D : 1.40 m/s, C-2in1-D : 2.26 m/s
Noise level (dB)	54dB
Power supply	110/220V, 50/60Hz
Duct (φ)	200φ

## ION Chemical Storage Cabinet (clear<sup>®</sup> C-ION)



ION Chemical storage cabinet is a hermetically sealed reagent cabinet in which air does not leak indoor/outdoor. Powerful oxidation by ion cluster removes polluted air (e.g. formaldehyde, toluene, benzene, xylene, organic solvent), harmful gases and malodorous substance so as to keep the cabinet fresh. This product is economical because an installation allows semi-permanent use. any gap (ION air flow chart)

### SPECIFICATIONS

Model no.	C-ION
Dimensions (External)	800 x 565 x 2000
W x D X H (mm) (Internal)	710 x 485 x 1430
Filter	Ozone filter
External material	SPCC
Chamber material	SPCC + SPH
Air circulation speed (m/s)	0.30 m/s
Noise level (dB)	48dB
Power supply	110/220V, 50/60Hz
Duct (φ)	X



## Biological Safety Cabinet Class II, Type A2 (biolus<sup>®</sup> CHC-777A2)



CHC-777 A2 is a product of BSC Class II Type A2, which can protect effectively all of the researcher, product and environment. 70% of the airflow at work space is re-circulated through the HEPA filter, and 30% of it is exhausted to the outside through HEPA filter, and the polluted airflow is not leaked as perfectly surrounded by the negative pressure. Especially, the inclined front structure reduces the glares, or burden on the neck, arms etc.

### SPECIFICATIONS

Model No.	CHC-777A2-03	CHC-777A2-04	CHC-777A2-05	CHC-777A2-06
Dimensions (External)	1060 x 810 x 2326	1385 x 810 x 2326	1690 x 810 x 2326	1995 x 810 x 2326
W x D X H (mm) (Internal)	925 x 615 x 655	1250 x 615 x 655	1555 x 615 x 655	1860 x 615 x 655
Avg. inflow velocity (m/s)	0.53 (105fpm)			
Avg. downflow velocity (m/s)	0.35 (70fpm)			
Filter efficiency	HEPA filter > 99.99% at 0.3 $\mu$ m			
Noise level (dB)	< 64dB(A)			< 65dB(A)
Exhaust volume	358 CMH	484 CMH	602 CMH	720 CMH

## Vertical Laminarflow Cabinet (biolus<sup>®</sup> B-CV)



### FEATURE

1. HEPA filter which efficiency is over 99.99% (Particle size 0.3 $\mu$ m) is equipped.
2. UV Lamp is equipped to sterilize the work surface.
3. Speed controller is equipped to adjust wind velocity
4. The upper equipment and the under frame can be separated..

### SPECIFICATIONS

Model No.	B-CV-03	B-CV-04	B-CV-05	B-CV-06
Dimensions (External)	1040 x 742 x 1946	1340 x 742 x 1946	1650 x 742 x 1946	1960 x 742 x 1946
W x D X H (mm) (Internal)	919 x 617 x 565	1219 x 617 x 565	1529 x 617 x 565	1839 x 617 x 565
Avg. downflow velocity (m/s)	0.3 ~ 0.4 (variable set speed)			
Filter efficiency	HEPA filter > 99.99% at 0.3 $\mu$ m / ISO Class 5			
Noise level (dB)	≤ 65dB(A)			
Sterilization	Germicidal UV Lamp			
Door	Tempered glass 5mm (Sliding Type)			
Work top	Stainless Steel			
Electrical supply	220V, 50/60Hz (110V is available)			
Electrical receptacle	1EA		2EA	
Power socket	1 EA		2 EA	

## Horizontal Laminarflow Cabinet (biolus<sup>®</sup> B-CH)



### FEATURE

1. HEPA filter which efficiency is over 99.99% (Particle size 0.3 $\mu$ m) is equipped.
2. UV Lamp is equipped to sterilize the work surface.
3. Speed controller is equipped to adjust wind velocity
4. The upper equipment and the under frame can be separated..

### SPECIFICATIONS

Model No.	B-CH-03	B-CH-04	B-CH-05	B-CH-06
Dimensions (External)	1040 x 777 x 2015	1340 x 777 x 2015	1650 x 777 x 2015	1960 x 777 x 2015
W x D X H (mm) (Internal)	919 x 520 x 584	1219 x 520 x 584	1529 x 520 x 584	1839 x 520 x 584
Avg. downflow velocity (m/s)	0.3 ~ 0.4 (variable set speed)			
Filter efficiency	HEPA filter > 99.99% at 0.3 $\mu$ m / ISO Class 5			
Noise level (dB)	≤ 65dB(A)			
Sterilization	Germicidal UV Lamp			
Door	Tempered glass 5mm (Sliding Type)			
Work top	Stainless Steel			
Electrical supply	220V, 50/60Hz (110V is available)			
Electrical receptacle	1EA		2EA	
Power socket	1 EA		2 EA	



## Water Bath (Analog / Digital)



Model	Capacity
LWB-106A/D	6L
LWB-111A/D	11L
LWB-122A/D	22L

► Temp Range : up to 99°C

## Shaking Water Bath



Model	Capacity
LSB-015S	22L
LSB-030S	30L
LSB-045S	45L

► Temp Range : up to 99°C

## Refrigerated Bath Circulator



Model	Capacity
LCB-R08	8L
LCB-R13	13L
LCB-R20	20L
LCB-R30	30L

► Temp Range : -30°C to 90°C  
※ Programmable type is available

## Automatic Water Still



Model	Capacity
LWD-3004	4L
LWD-3008	8L
LWD-3012	12L

※ Double Automatic water still is available

## Natural / Forced Convection Oven



Model	Capacity
LDO-030N	32L
LDO-080N	80L
LDO-150N	150L
LDO-250N	252L

※ Programmable Type is available

Model	Capacity
LDO-080F	80L
LDO-150F	150L
LDO-250F	252L

► Temp Range : RT +15°C to 250°C  
※ Various size is available

## Vacuum Drying Oven



Model	Capacity
LVC-2030	27L
LVC-2040	64L
LVC-2050	125L

► Temp Range : RT +15°C to 250°C  
※ Programmable type is available

## Incubator



### General Incubator

Model	Capacity
LIB-010M	9.3L
LIB-030M	32L
LIB-060M	56L
LIB-080M	80L
LIB-150M	150L
LIB-300M	300L

► Temp Range : RT +5°C to 70°C

### Low Temperature BOD Incubator

Model	Capacity
LBI-150E	150L
LBI-250E	250L
LBI-500E	420L
LBI-700E	700L
LBI-1000E	840L

► Temp Range : 0°C to 60°C

※ Programmable Type is available

## Shaking Incubator



Model	Temp. Range
LSI-3016A	RT +5°C to 60°C
LSI-3016R	10°C to 60°C

► Speed Range : 0 to 300 rpm  
※ Optional accessory  
Universal spring rack, various flask holder

## Multi-Stack Shaking Incubator



Model	Type
LSI-5002M	2 staks
LSI-5004M	4 staks

► Temp Range : 10°C to 60°C  
► Speed Range : 0 to 300 rpm  
※ Optional accessory  
Universal spring rack, various flask holder



## Autoclave / Bench Top Steam Sterilizer



Model	LAC-1012SN	LAC-1022SN	LAC-1032SN
Capacity	12L	25L	40L
Model	LAC-3011V	LAC-3021V	LAC-3031V
Capacity	11L	22L	44L

## Growth Chamber



Model	Capacity
LGC-4201	588L
LGC-4202	972L
LGC-4203	1512L

- Temp Range : 0℃ to 60℃  
(without Lamp)
- Humi : 30℃ % to 98% RH
- ※ Customized Chamber is available

## Autoclave / Sterilizer



Model	Capacity
LAC-5040S	40L
LAC-5060S	60L
LAC-5080SD	80L
LAC-5100SD	100L

- ※ PID digital controller with LED display
- ※ Various size up to 500L is available

## Fume Hood



Dimensions	Model	Model
1200mm	LFH-120SCI	LFH-2120V
1500mm	LFH-150SCI	LFH-2150V
1800mm	LFH-180SCI	LFH-2180V

## Bio Hazard Safety Cabinet Class II



Model	Dimensions
LCB-0103B-A2	890mm
LCB-0123B-A2	1190mm
LCB-0153B-A2	1490mm
LCB-0183B-A2	1790mm

Model	Dimensions
LCB-903B-A2/B2	890mm
LCB-1203B-A2/B2	1190mm
LCB-1503B-A2/B2	1490mm
LCB-1803B-A2	1790mm

## Blood Bank Refrigerator



Model	Capacity
LBB-102GR	295L
LBB-103GR	612L
LBB-104GR	1125L

- Temp Range : 4℃
- 7days chart recorder / drawer shelf
- ※ Laboratory Refrigerator / Freezer is Available

## Laminar Flow Clean Bench



Vertical Type



Horizontal Type

Model	Dimensions
LCB-0101V	890mm
LCB-0121V	1190mm
LCB-0151V	1490mm
LCB-0181V	1790mm

Model	Dimensions
LCB-0102H	890mm
LCB-0122H	1190mm
LCB-0152H	1490mm
LCB-0182H	1790mm

## Deep Freezer



- Temp Range : -40℃ to -86℃

### Upright

Model	Capacity
LDF-9010U	369L
LDF-9015U	492L
LDF-9020U	615L
LDF-9025U	730L

### Chest

Model	Capacity
LDF-9110C	210L
LDF-9115C	331L
LDF-9120C	456L
LDF-9125C	580L



DS-54GLPC

## CO<sub>2</sub> & Plant Growth Chamber



DS-54GLPC



DS-55G(LED)



DS-55GPS

### FEATURE & SPECIFICATION

#### DS-54GLPC

- LCD displayed full microprocessor program touch 11step control (Temperature, Humidity, Illumination, CO<sub>2</sub>)
- Temperature : 0℃ to 60℃ /  $\pm 0.2^\circ\text{C}$  at 25℃
- Humidity : 30 to 98% RH /  $\pm 2\%$  at 70%
- CO<sub>2</sub> : 0 ~ 5000 ppm /  $\pm 20$  ppm at 1000 ppm
- Illumination : HID 8ea, FL 40W x 12sets / 24hr10min / 0 ~ 50,000Lux
- Dimensions(in) : 1400 x 800 x 1600(WxDxH)mm
- Shelves : Coating 6ea, Adjustable
- Power : AC220V, 60/50Hz, 7Kw, 32A, 1phase

#### DS-55GPS

- Dimensions(in) : 400 x 600 x 500(WxDxH)mm  
(out) : 820 x 900 x 1900(WxDxH)mm
- Power : AC220V, 60/50Hz, 3Kw, 1phase

#### DS-55G

- Dimensions(in) : 400 x 400 x 300(WxDxH)mm  
(out) : 465 x 545 x 395(WxDxH)mm

DS-50CPLH

## LED Plant Growth Chamber



DS-50CPLH(LED)



DS-50CPLH(BLUE)

### FEATURE & SPECIFICATION

- LCD displayed full microprocessor program touch 11step control(Temperature, Humidity, Illumination)
- Temperature : 0℃ to 65℃ /  $\pm 0.1^\circ\text{C}$  at 25℃
- Humidity : 30 to 96% RH /  $\pm 1\%$  at 70%
- LED (Standard) : Red 660nm  $\pm 20$ nm(400ea),  
(Optional) : Blue 470nm, Far-red 735nm
- Dimensions(in) : 600 x 600 x 1200(WxDxH)mm  
(out) : 820 x 900 x 1900(WxDxH)mm
- Shelves : Coating 3ea, Adjustable
- Power : AC220V, 60/50Hz, 3Kw, 1phase



DS-10

## Personal Incubator



DS-10



DS-10SM



DS-10V

### FEATURE & SPECIFICATION

- Digital displayed full microprocessor control
- Temperature : Ambient. +5℃ to 80℃ /  $\pm 0.1^{\circ}\text{C}$  at 37℃
- Time. controller : 99Hr. 59min or Hold
- Dimensions(in) : 400 x 400 x 300(WxDxH)mm  
(out) : 600 x 470 x 370(WxDxH)mm
- Material(in/out) : SUS 304 / SCP-1
- Power : AC220V, 60/50Hz, 0.2Kw, 1A, 1phase

• DS-10VF	: 400 x 400 x 300mm(in)-Viewing window
• DS-10SS	: 250 x 230 x 155mm(IN)
• DS-10SM	: 400 x 500 x 500mm(IN)
• DS-10S	: 500 x 500 x 700mm(IN)
• DS-10L	: 500 x 500 x 1000mm(IN)

DS-11BPL

## BOD Incubator



DS-11TPL



DS-11BPL



DS-12BPL

### FEATURE & SPECIFICATION

- LCD displayed full microprocessor program touch 11step control(Temperature, Humidity, Illumination)
- Temperature : -5℃ to 70℃/  $\pm 0.1^{\circ}\text{C}$  at 25℃
- Dimensions(in) : 500 x 500 x 1000(WxDxH)mm
- Illumination lamp : C.L 40W 3sets
- Power : AC220V, 60/50Hz, 1.2Kw, 1phase
- Other chamber : DS-11T, DS-11BSS, DS-11B
- Program, Lamp type (in size)

DS-11TPL	: 400 x 400 x 400mm
DS-11BPSSL	: 400 x 300 x 300mm
DS-11BPSL	: 500 x 500 x 600mm

- Two chamber type (in size)

DS-12BPL	: 500 x 500 x 1000 x 2rooms
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DS-101CS

## CO2 Incubator



DS-101CS



DS-101CM

### FEATURE & SPECIFICATION

- Chamber type : Air jacket
- Temperature : Amb. 5°C to 70°C /  $\pm 0.1^\circ\text{C}$  at 37°C
- CO2 : 0 to 20% /  $\pm 0.1\%$  at 5%
- Humidity : Up to 98RH at 37
- In size : 330 x 350 x 370(WxDxH)mm / 43
- Out size : 480 x 460 x 645mm
- Shelves : Adjustable 1ea
- Power : AC220V, 60/50Hz, 0.2Kw
- Air jacket

DS-101C	: 475 x 530 x 713mm, 179ℓ
DS-101CM	: 650 x 600 x 1440mm, 560ℓ
DS-101CL	: 800 x 700 x 1540mm, 860ℓ

- Water jacket :

DS-102CS	: 330 x 300 x 340mm, 33ℓ
DS-102CM	: 400 x 430 x 555mm, 95ℓ
DS-102C	: 520 x 480 x 705mm, 176ℓ

DS-300SD

## Shaker



DS-300SD



DS-300L

### FEATURE & SPECIFICATION

- Speed range : 0 - 350 R.P.M
- Shaker Size : 360 x 360 x 155(WxDxH)mm
- Plate size : 360 x 330mm
- Flask holder : Slide platform
- Power : AC220V, 60/50Hz, 1Kw, 4.6A, 1phase
- Other

DS-300M	: 470 x 485 x 170mm
DS-300L	: 770 x 550 x 170mm

DS-310SN

## Shaking incubator



DS-310SN

### FEATURE & SPECIFICATION

#### Shaking incubator

- Temperature ranre : Ambient +5°C to 60°C
- Speed range : 0 - 350 R.P.M
- Dimensions(In) : 500 x 520 x 345(WxDxH)mm
- Flask holder : 250ml x 25ea

#### Other

DS-310F	: 500 x 500 x 490mm, 10°C to 60°C
DS-310R	: 700 x 650 x 450mm, 5°C to 60°C
DS-310FL	: 500 x 500 x 490mm, 10°C to 60°C, C.L40W, 30W 1Set
DS-310R	: 500 x 500 x 490mm, 5°C to 60°C, FL 20W 6Set



DS-86M

## Cold Wind Dry



DS-86M

### FEATURE & SPECIFICATION

- Temperature : 0 to 60°C /  $\pm 0.2^\circ\text{C}$  at 20°C
- Humidity : 40% below
- In size : 700 x 600 x 1200(WxDxH)mm / 504ℓ
- Out size : 1300 x 780 x 1600mm
- Power : AC220V, 60/50Hz, 1.5Kw



DS-89

Specimen Drying Oven

DS-60A

## Autoclave



DS-60A

### FEATURE & SPECIFICATION

- Type : Full automatic system & round vertical type
- Temperature : Ambient to 135°C / to  $\pm 0.5^\circ\text{C}$
- Pressure : 1.2Kgf/cm<sup>2</sup> / 121
- Dimensions(In) : 350 x 650, 63ℓ  
(Out) : 650 x 500 x 880, 63ℓ

### Other (in/out/Capacity)

DS-80A	: 400 x 630 / 700 x 550 x 850 / 80ℓ
DS-100A	: 450 x 630 / 750 x 600 x 860 / 100ℓ
DS-132A	: 500 x 680 / 800 x 650 x 790 / 132ℓ
DS-191A	: 500 x 960 / 800 x 650 x 1080 / 191ℓ

DS-71TH

## Clean bench



DS-71TH



DS-70SG

### FEATURE & SPECIFICATION

- Type : Horizontal air flow type
- In size : 760 x 600 x 700(WxDxH)mm
- Out size : 880 x 795 x 1880mm
- Main filter : Hepa filter/0.3 micron 99.99% efficiency
- Pre filter : High Efficiency Nylon material
- Flow rate : 32m<sup>3</sup>/min. Adjustable
- Power : AC220V, 60/50Hz, 0.3Kw
- Bio hazard safety type

DS-71TS, DS-71S, DS-70TS, DS-70S, DS-70TS2.5,  
DS-70S2.5, DS-70TS3, DS-70S3, DS-70TSG, DS-70SG  
Adjustable Flow type : 70% recirculation, 30% exhaust

- Horizontal air flow type

DS-71TH, DS-71H, DS-70TH, DS-70H, DS-70TH2.5,  
DS-70H2.5, DS-70TH3, DS-70H3

- Vertical air flow type

DS-71TV, DS-71V, DS-70TV, DS-70V, DS-70TV2.5,  
DS-70TV2.5, DS-70TV3, DS-70V3



EH-HB-140E, 140L

## Hydraulics Bench

EH-HB-140E



EH-HB-140L



### 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.

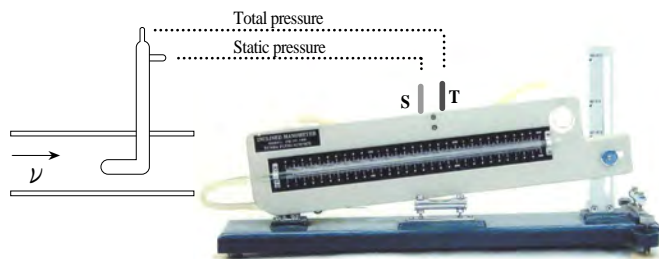
Supplied as standard Accessories, 3 type of weirs.

### SPECIFICATIONS

MODEL	EH-HB-140E	EH-HB-140L
Open channel	23W × 17H × 80L(cm)	23W × 17H × 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	35ℓ (Max)	
Sight tube & scale	0~40ℓ (Max)	
Weight	110kg	131kg
Pressure gauge	0~2 kg/cm <sup>2</sup>	
Flow meter	4~40ℓ /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

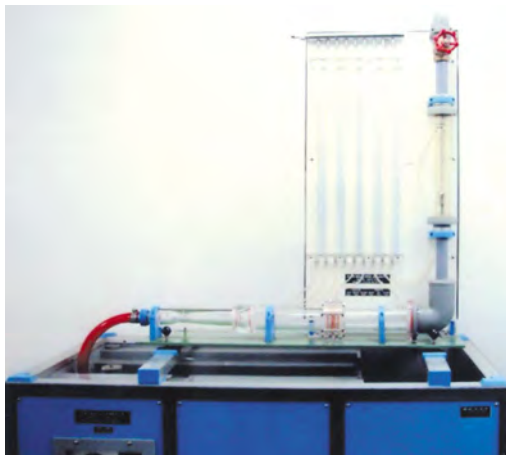
- Demonstrate the force of water jet impinging to stationary object.
- For the best performance, connect to Eunha Hydraulics bench(EH-HB-140/140E) is essential.
- On the upper end of this stem is mounted a weight container.
- The dead weight of the moving parts is counter-balanced by a compression spring.
- 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 $\phi$ Cone type : 40 $\phi$ (120 degree cone) Hemispherical cup : 40 $\phi$
Tank (Cylindrical)	150 $\phi$ (mm) $\times$ 300H (mm), Transparent acryl
Flow rate	20 $\ell$ /min (Max.)
Drain hole (Outlet)	25A
Dimension	250 $\phi$ (mm) $\times$ 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

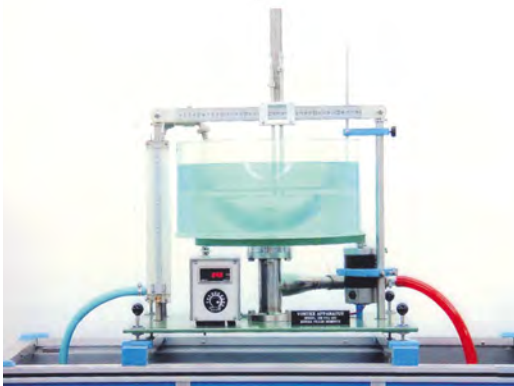


### FEATURE

- 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 $\times$ 700H $\times$ 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

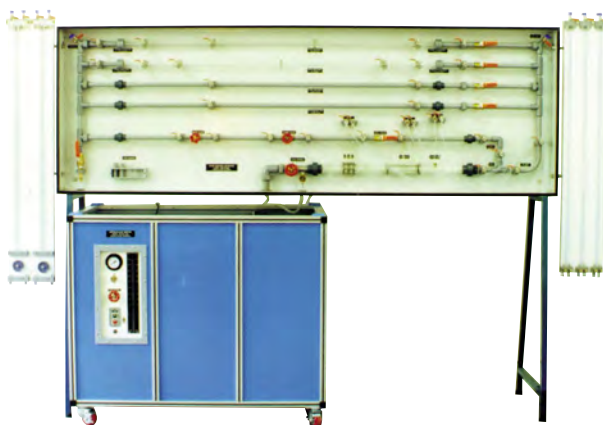
Standard orifice	13mm Dia.
Head (Max.)	390mm
Cylindrical tank (Acryl)	180 $\phi$ (mm) $\times$ 40H (cm)
Inlet pipe (With dissipator)	19mm
Overflow pipe (Variable head)	22mm
Overflow tank (Acryl)	100D $\times$ 110W $\times$ 270H (mm)
Flow rate (Approx.)	18 $\ell$ /min
Traverse mechanism	Lead screw with adjusting nut calibrated 1/10(mm) per division (With pitot tube)
Dimension (Approx.)	340 $\phi$ (mm) $\times$ 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.
- 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., Effective length : 1.5m,	Wall Thickness : 1.0mm Effective area : 0.071 m <sup>2</sup>
Working temperature	80°C (Max.)	
Temperature controller	Digital, Accuracy	: ± 0.5°C
Temperature indicator (Digital)	6 Points (6ea.) Accuracy approx. Thermocouple	: ± 0.5°C : Pt 100 Ω
Circulating pump	Magnetic coupling pump Capacity Max. temp	: 7ℓ /min : 80°C
Heater (Immersion type)	220V(60Hz), 2.4kw	
Heater regulator	Thyristor controlled	
Sump tank	Capacity : 24ℓ (Max.), Stainless steel	
Flow meters	0.3~3ℓ /min (Hot water), 0.5~5ℓ /min (Cold water)	
Weight	52.8kg	
Dimensions	125H × 85W × 60D (cm)	

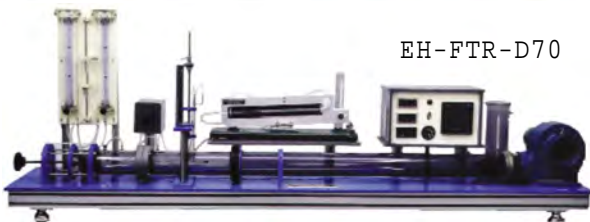
EH-FTR-D50, D70

## Fan Test Rig

EH-FTR-D50



EH-FTR-D70



### FEATURE

- Teaches basic principles of Fan Testing.
- Fan rotational speed widely changeable.
- Pitot tube is fully traversed in section of air duct.
- No special installation required.
- Incorporated orifice and inlet nozzle for measuring air flow.

### SPECIFICATIONS

Model	EH-FTR-D50	EH-FTR-D70
Electrical supply	A.C.220V(50/60Hz)1.5A	A.C.220V(50/60Hz)2A
Centrifugal Fan	Flow rate	60~90m <sup>3</sup> /h(max)
	Speed	0~3600rpm(4000rpm,max)
	Drive motor	DC90V, 100W
	Delivery Pressure	DC90V, 150W
Duct dia. (In)	100mmAq	120mmAq
Flow rate control	50mm	70mm
Panel meters (Control Box)	Throttle valve and rpm control	
	Watt meter(AC)	
	Volt meter(DC) & Amper meter(DC)	
	Tacho meter (With rpm control)	
Measuring Detector	Inclined Manometer (15,30,60,100mmAq)	
	U-Water monometer (300mm) : 2set	
	Pitot Tube (With vertical Traverse)	
	Orifice meter (Flow rate)	
Standard accessories	(1) Conical Inlet nozzle	
	(2) Thermometer (50%)	
	(3) Orifice plate	
Weight	40kg	50kg
Dimension(cm)	180L x 33D x 60H	190L x 40D x 70H

### RANGE OF EXPERIMENTS (Measurement of)

- Input energy to electric motor.
- Rotational speed of fan.
- Pressure drop across orifice and inlet nozzle.
- Air flow velocity by using pitot tube.
- Friction loss in duct by inclined manometer.
- Delivery air pressure and temperature through Fan.

EH-TFC-200

## Tilting Flow Channel



### SPECIFICATIONS

Perspex Channel	IN : 2200L × 200H × 80W (mm) OUT : 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.)
Weight	160kg
Overall dimensions	Height : 180cm (To top of point gauge)
	Width : 50cm
	Length : 310cm
Standard accessories	Hook & Point gauge(MODEL EH-HP-200) : 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.



## Total Blood & Medicine Solution



### SPECIFICATIONS

MODEL	FU-014/DFU-014	FU-016/DFU-016	FU-017/DFU-017	ULT-765
SET TEMPERATURE	-10℃ ~ -40℃ / -50℃ ~ -86℃			-10℃ ~ -86℃
CAPACITY	387 liter	587 liter	699 liter	765 liter
INTERIOR SIZE DIMENSION	620W x 1200H x 585Dmm	664W x 1,320H x 670Dmm	690W x 1,350H x 750Dmm	750W x 1,360H x 750Dmm
EXTERIOR SIZE DEMENSION	860W x 1,920H x 660Dmm	940W x 1,970H x 820Dmm	930W x 2,000H x 900Dmm	1,010W x 2,010H x 1,020Dmm
CONTROLLER	LCD Microprocessor Control			
RECORDER	Thermo type recorder or 7-days chart recorder			
POWER SOURCE	220-240V / 50Hz / 60Hz			
MATERIAL	Out : Galvanized Steel Plate In : Stainless Steel			



## Total Blood & Medicine Solution



GS-1



CBR-600S



CBR-1000S



CBR-1000SS

### SPECIFICATIONS

MODEL	GS-1	CBR-600S	CBR-1000S	CBR-1000SS
SET TEMPERATURE	2℃ ~ 8℃			
CAPACITY	420 liter	605 liter	1,350 liter	1,745liter
INTERIOR SIZE DIMENSION	576W x 1,445H x 494Dmm	610W x 1,450H x 680Dmm	1,370W x 1,450H x 680Dmm	1,770W x 1,450H x 680Dmm
EXTERIOR SIZE DEMENSION	650W x 1,850H x 590Dmm	740W x 1,950H x 800Dmm	1,500W x 1,950H x 800Dmm	1,900W x 1,900H x 800Dmm
CONTROLLER	LCD Microprocessor Control			
RECORDER	Thermo type recorder or 7-days chart recorder			
POWER SOURCE	220-240V / 50Hz / 60Hz			
MATERIAL	Out : Galvanized Steel Plate In : Stainless Steel			



TOGA-UGSR01

## U-based Toxic Gases Free Refrigerated Reagent Storage

### FEATURES

GT SCIEN develops and manufactures technologically advanced Air Clean Systems & Reagent Storages for the complete removal of toxic & harmful gases from laboratory environments.

Brand new for 2014 - U computing based Management System for the Reagent Storage units allowing secure tracking of reagents through RFID.

- Patented, built-in TOGA filtering system that reduces exposure to toxic gases from stored reagents. Three different types of filters neutralize and remove various kinds of toxic chemical fumes from VOCs to acids and bases.
- Temperature range of system is from 2°C to 25°C with a temperature variation of 1°C
- Heated pair of glass windows sealed with a vacuum prevents condensation and provide excellent insulation.
- Touchpad Control System continuous monitoring of all functions including fan operation status, exhaust chemical concentration, filter life, electromagnetic door lock, etc.
- Combined with the GT server program - a multi-unit server program which is based on wire/wireless communication, the lab administrator could management at least 10units TOGA products in the same laboratory.



TOGA-UGSR01

### SPECIFICATIONS

MODEL		TOGA-UGSR01
Dimensions	External	880(W)) x 795(D)) x 2070(H)mm
	Internal	660(W) x 560(D)) x 1450(H)mm
Capacity		536L
Temperature control		2°C ~ 25°C
Temperature uniformity		Less than 1°C at 10 points
Accessories		TOGAFIL A, B, C Type / Pre-Filter
Maintenance Schedule		Filter: Around 1 Year
Power		110V/220V, 50/60Hz, 800W
Noise		< 50dB
Unit Weight		250 Kg
Controller		7-inch Touch Pad Controller Reagent registration & management system Temperature, Filter Time, Alarm, Sensor record Barcode System, Electromagnetic door lock
Server Program		Multi unit control and management Real time data recording Print out records using Excel format



TOGA-GS01 & GS02

## Completely Closed Reagent Storage, Single&Double



TOGA-GS01



TOGA-GS02

### FEATURES

Completely Closed Reagent Storage is a completely closed designed reagent storage for keeping the reagent bottles with a built-in high efficiency filtration system for removing toxic gases, VOCs, offensive smells and fumes in laboratory environments.

- Easy installation and no heat loss with ductless type
- TOGA filter : removal of toxic gases volatilized from reagents
- More than 1 year of filter life time by chemical neutralization filtration
- Poly-carbonated window for safety and allows visual inspection
- LCD monitoring displays filter replace time, inside temperature and humidity
- Custom made filters according to different laboratory condition.
- Safety lock system
- Slide type and adjustable positions of the shelves

### SPECIFICATIONS

MODEL	TOGA-GS01	TOGA-GS02
Removal Efficiency	Better than 99.7% of Harmful and Toxic Gases, VOCs, Offensive Smells and Fumes	
Bottle storing capability	120 bottles(1L)	260 bottles(1L)
Noise level	< 50dB	
Replacement period of filters	Around 1 Year	
Power consumption	20W	47W
Power input	110/220V, 50/60Hz $\pm$ 10%	
Weight	150kg	250kg
External Dimension	800 x 540 x 1950 mm	1600 x 540 x 1950 mm
Internal Dimension	690 x 500 x 1580 mm	1480 x 500 x 1580 mm



TOGA-M02

## TOGA Clean System, Movable Type

### Harmful gas purification equipment



TOGA-M02

#### FEATURES

Movable type TOGA Clean System is a portable fume hood with a high efficiency filtration system and a renovated controller.

- 2 stages TOGA filter : more efficient removal of harmful gases, VOCs, offensive smell and fumes
- Pre-HEPA filter : removal of 0.3um fine dust provides for extended life of HEPA filter
- Ductless type : easy installation and prevention of heat-loss
- Control & Monitoring System
- Compact design with flexible arm rotating in a 360°
- Rolling casters allow for easy relocation for local cleaning and exhaustion
- Maintenance cost reduced by using longer life time filters
- 3-level air speed controlling for different experiment requirements
- Chemical concentration sensor monitors the filter adsorption capacities
- Filter life detection alarm and remaining life display to remind user of filter exchange

#### SPECIFICATIONS

Model	TOGA-M02
Removal Efficiency	Better than 99.7% of Harmful and Toxic Gases, VOCs, Offensive Smells and Fumes
Adsorption Capability	10m <sup>3</sup> /min
Maintenance Schedule	Filter: Around 1 Year
Controller	Fan Speed, Filter Time, Alarm & Sensor Record
Power Consumption	750W
Power Input	110/220V, 50/60Hz ± 10%
Weight	87kg
Dimension	400 x 400 x 950 mm



TOGA-S02

## TOGA Clean System, Stand Type



TOGA-S02

### FEATURES

Stand type TOGA Clean System is an air clean system specialized for whole room air cleaning with a high efficiency filtration system.

- 2 stages TOGA filter : more efficient removal of harmful gases, VOCs, offensive smell and fumes
- Motor : special coils and bearing for no chemical reaction
- Turbo blower : High efficient specially designed blower
- Pre-HEPA filter : removal of > 0.3um fine dust to prolong HEPA filter
- Low Noise and soundproofing : by melamine absorption board and vibration pad
- Ductless type : easy installation and prevention of heat-loss
- Lower maintenance cost by unique and renovated developed filters

### SPECIFICATIONS

Model	TOGA-S02
Removal Efficiency	Better than 99.7% of Harmful and Toxic Gases, VOCs, Offensive Smells and Fumes
Adsorption Capability	79.2m <sup>2</sup>
Maintenance Schedule	Filter: Around 1 Year
Controller	Fan Speed, Alarm &
Power Consumption	750W
Power Input	110/220V, 50/60Hz ± 10%
Weight	142kg
Dimension	500 x 450 x 1750 mm



## GFHP Series

## Fume Hood

### FEATURES

- Extraction of Fumes, Toxic gases, aerosols from the internal workplace to prevent dangerous amounts of pollutions from escaping into the laboratory.
- Exterior materials: Quality 1.2mm steel with powder coating perfect for resisting corrosion and heat.
- Interior materials: 4mm Trespa, it was developed to have excellent chemical-resistance and anti high temperature.
- Sash: Vertical sliding sash made by tempered glass
- Worktops: Equipped with phenolic resin, epoxy resin, stainless steel board or ceramics to meet customer's specific needs.
- Lighting: 30W lighting and switch, which can make the worktop to have the 450LUX lighting standards.
- Power: Multi-function power plug.



GFHP Series

### SPECIFICATIONS

Model	GFHP-1200	GFHP-1500	GFHP-1800	GFHP-2100	GFHP-2400
External Dimension (WxDxH, mm)	1200x800x2350	1500x800x2350	1800x800x2350	2100x800x2350	2400x800x2350
Internal Dimension (WxDxH, mm)	1000x630x1030	1300x630x1030	1600x630x1030	1900x630x1030	2200x630x1030
Airfoil	1.6T Steel Plate				
Air velocity monitor	Built-in Type (Option)				
Fan	Option				
Lower Frame	50 x 50 x 1.4T Steel tube				
Cabinet	Storage Cabinet				
Exhaust Port	200 Ø / 250 Ø / 300 Ø				
Controller	Selector Type (Lamp Switch, Blower switch)				
Utility	Gas Cock, Water Cock, Air Cock				
Power	AC 220V, AC 110V (Option)				
Distribution boxes	300 x 400mm				



## Laboratory Table



GSPC Series & GSPS Series

### FEATURES

- Worktop: made of phenolic resin, epoxy resin, Trespa Top or ceramics to meet customer's specific needs
- Frame: use 50x50x1.4mm Steel tube finished with powder coating
- Outlet: 220V (protruding type outlet for basic table, built-in type for shelf table)
- Adjustable Foot: 36mm round foot can adjust height of the table
- Drawer: movable 4steps drawer, three section slide rail, aluminum protruded-type handle
- Cabinet: movable cabinet, 18mm Plywood P.B, aluminum protruded-type handle
- Shelves: 18mm Plywood P.B
- Sink: PP sink or 304 SUS

### SPECIFICATIONS

Model	GSPC (Center Table)	GSPS (Side Table)
Basic Type	2400 x 1500 x 800 mm	1200 x 750 x 800 mm
	3000 x 1500 x 800 mm	1500 x 750 x 800 mm
	3600 x 1500 x 800 mm	1800 x 750 x 800 mm
	4200 x 1500 x 800 mm	2100 x 750 x 800 mm
		2400 x 750 x 800 mm
Shelf Type	2400 x 1500 x 800/1800 mm	1200 x 750 x 800/1800 mm
	3000 x 1500 x 800/1800 mm	1500 x 750 x 800/1800 mm
	3600 x 1500 x 800/1800 mm	1800 x 750 x 800/1800 mm
	4200 x 1500 x 800/1800 mm	2100 x 750 x 800/1800 mm
		2400 x 750 x 800/1800 mm



HS-20SP/ HS-10SP

## Rotary Evaporator



HAHNVAPOR HS-20SP/10SP is specially designed for distilling a large capacity of material, which is recommended to use 20L/10L flask. Depend upon the material kinds or the user's choice, one can install a cold trap additionally.

### FEATURES

- Visual display can indicate important status of the machine such as rotating speed, bath temperature, vapor temperature, etc.
- Excellent durability of the body and the vapor contacting area.
- Borosilicate glass
- PTFE sealing method is adopted for glass contacted area
- Large diameter (82mm) of evaporating flask enables users to easily wash and remove viscous materials in the flask.

### SPECIFICATIONS

- Power Consumption: 3500W (This capacity can be increased on customer's requests)
- Motor drive: Equipped with both motor and fan
- Rotation speed: 10-180 RPM
- FND Display: Display can indicate the bath temperature, rotation speed, rotation amount, etc.
- Bath temperature: 95°C
- Up-down control switch.
- Condenser: three fold coil (multiflux type)
- Evaporating flask: 20L / 10SP-10L
- Receiving flask: 10L / 10SP-5L
- Final vacuum pressure: 710~760mmHg
- Dimension (W x D x H): 1,000 x 550 x 1,900 mm
- Weight: 78kg
- Weight and size of the machine could be slightly changed from the above specification in order to optimize the performance of the machine

HS-2005V-N (CE)

## Rotary Evaporator



Dimension (W x D x H): 620 x 410 x 870mm  
 Power source: AC 220V 50/60Hz 2.5A / Weight: 19.5kg  
 Distinguished Features  
 6 different types of flasks are attachable (from 50ml to 3000ml)  
 Digital speed control  
 Digital R.P.M Display / Speed control range: 20~280 R.P.M  
 Vertical type condenser  
 Digital interior temperature measure and display  
 (It catches the temperature changes caused by the interior pressure drops)  
 Motorized UP- DOWN control switch  
 Easy to utilize standard distillation solution

**Included Water bath HS-3001** (PTFE coating)  
 Heater: 1000W / Bath Material: SUS304 / Weight: 2.8kg  
 Bath Dimension (φ x H) mm: 245 x 120 (Capacity: 4.3 ℓ)  
 Required Power Source: AC 220V 50/60Hz 3.5A

Distinguished Features  
 If the amount of water goes down under the certain threshold in the heating bath, the system automatically turns off its power for the safety purpose  
 Temp. Control range: Amb.~180 °C  
 Temp. Setting/Display: Digital control (controlled by the main controller)  
 ※ Double jacketed bath body (Safe to touch)



HS-2005V (CE)

## Rotary Evaporator



Dimension(W x D x H) : 610 x 340 x 730mm  
 Power source : AC 220V 50/60Hz 2.5A  
 Weight : 21kg  
 Distinguished Features  
 6 different types of flasks are attachable (from 50ml to 3000ml)  
 Digital speed control  
 Digital R.P.M Display  
 Speed control range : 20~280 R.P.M  
 Vertical type condenser  
 Digital interior temperature measure and display (It catches the temperature changes caused by the interior pressure drops)  
 Motorized UP- DOWN control switch  
 Easy to utilize standard distillation solution

**Included Water bath HS-3001** (PTFE coating)  
 Heater: 1000W / Bath Material: SUS304 /  
 Weight: 2.8kg  
 Bath Dimension( $\phi$  x H)mm:  
 245 x 120(Capacity:4.3  $\ell$  )  
 Required Power Source :  
 AC 220V 50/60Hz 3.5A  
 Distinguished Features  
 If the amount of water goes down under the certain threshold in the heating bath, the system automatically turns off its power for the safety purpose  
 Temp.Control range : Amb.~180 $^{\circ}$ C  
 Temp.Setting/Display : Digital control (controlled by the main controller)  
 ※ Double jacketed bath body (Safe to touch)  
**Included vacuum controller**  
 Vacuum range : 0~760mmHg(0~101.3bar)

HS-3005N(CE) , HS-3005

## Cooling Water Circulator



### FEATURE

As a source of cooling water to the Rotary Evaporator and as a heat-emitting equipment it supplies sufficient quantity of cooling water as highly efficient chemical pumps are installed and does not contaminate other instruments as it does not get corroded.

### SPECIFICATIONS

	HS-3005N(CE)	HS-3005
Capacity	4 $\ell$	15 $\ell$
Bath Dimension(D x H)	$\phi$ 190 x 200	$\phi$ 280 x 270
Circulator Pump	Magnet 20W Max. flow 15 $\ell$ /min	
Temp.Range	Down to~ -20 $^{\circ}$ C	
Controller	FND Controller	
Refrigerator	1/3HP	3/4HP
Refrigerant	134A	
Dimension (W x D x H)	250 x 510 x 510mm	350 x 390 x 840mm
Gross weight	28kg	40kg
Power consumption	334W	920W
Power Supply	AC 230V 50/60Hz	

HS-0153 (CE)

## Diaphragm Vacuum pump



### Diaphragm Pumps for Air, Gases and Vapors

#### Technical features;

- 100% oil-free transfer
- Highly compatible with vapors and condensation
- Therefore suitable for highly aggressive and corrosive gases or vapors
- Maintenance-free
- Pure transfer, evacuation and compression
- Chemically-resistant
- Environmentally friendly

### Technical data

Delivery( $\ell$ /min)I	20
Ultimate vacuum (mmHg.)	730
Connectors for tube (mm)	OD 10
Voltage / Frequency	230V/50Hz
Power	180W
Operating current	0.5A
Weight	9.3kg
Dimension(L x H x W)mm	270 x 180 x 220



## MULTIPURPOSE BASKET

### FEATURE OF PRODUCT

This product made of polypropylent is so strong after assembled.

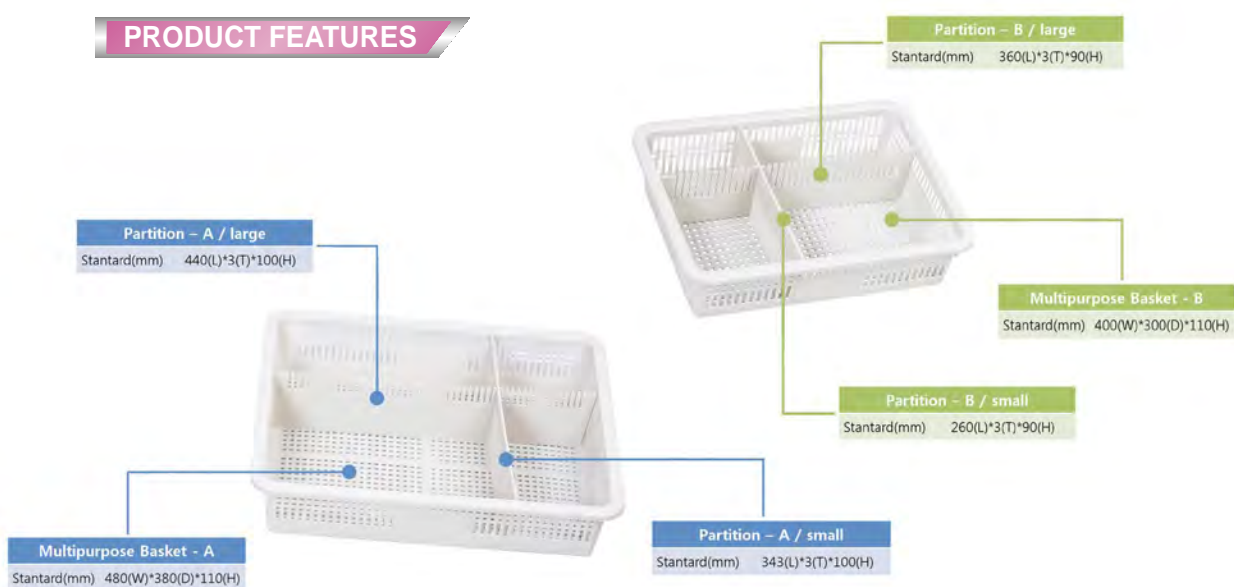
Anyone can assemble that product according to standards and sized so usefully, and it is easy to store



**HONGMYONG SCIENCE**

<http://www.hongmyong.co.kr/>

### PRODUCT FEATURES





## MULTIPURPOSE BASKET

### PRODUCT COLORS



(GRAY)



(SKY)



(PURPLE)



(GREEN)

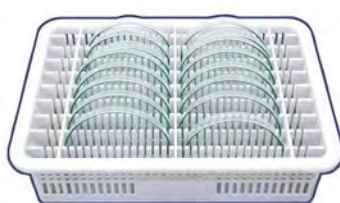


Higher level of  
**design** and **quality** oriented  
only to the **best**.

### EXAMPLE



(BEAKER)



(SCHALE)



(ERLENMEYER FLASK)



(TEST TUBE)



(ALCOHOL LAMP)



(FNNEL)



## Ariosso Power Series (RO & UP)

## Water Purification System



### Features

- Certified CE, NRTL, ISO 9001, ISO 14001
- Large color 70x52 touch screen
- 3, 5 steps water level sensor

### Specifications

	Ariosso Power I	Ariosso Power I +70	Ariosso Power II	Ariosso Power II +70	Ariosso Power III	Ariosso Power III +70
Product (RO, UP)	Max. 15L/Hr	RO:15L/Hr UP:70L/Hr	Max. 25L/Hr	RO:25L/Hr UP:70L/Hr	Max. 35L/Hr	RO:35L/Hr UP:70L/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 valves, sensor system 2) Auto cleaning and monitoring function 3) Filter exchange indicator 4) Auto calibration for water sensors					
Dimensions(W×D×H)	320 × 490 × 475mm					
Power	230V(110V on request), 50/60Hz, 60W					

\* TOC monitoring system is also available

## Ariosso RO Series

## Pure Water System



### Features

- Certified CE, NRTL, ISO 9001, ISO 14001
- Self-diagnosis functions
- 3, 5 steps water level sensor

### Specifications

	Ariosso RO 180	Ariosso RO 280	Ariosso RO 380
Product (RO, UP)	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 calibration for water sensors		
Dimensions(W × D × H)	320 × 490 × 475mm		
Power	230V(110V on request), 50/60Hz, 60W		

## Ariosso UP Series

## Ultra Pure Water System



### Features

- Certified CE, NRTL, ISO 9001, ISO 14001
- time/ volume dispensing
- Extensible point of use

### Specifications

	Ariosso UP 900	Ariosso UP 900 TOC
Product (UP)	1 ~ 1.2L/min	
Water Quality	-Ultra Pure: Up to 18.3M $\Omega$ /cm	
TOC monitoring	-	0-200ppb
Controller functions	1) Self test for external & internal system 2) Auto recirculation function 3) Filter/UV Lamp exchange indicator 4) Auto calibration for water sensors	
Dimensions(W × D × H)	320 × 490 × 475mm	
Power	230V(110V on request), 50/60Hz, 60W	



## Zeneer Power Series (RO & UP)

## Water Purification System



### FEATURES

- Certified CE, NRTL, ISO 9001, ISO 14001, GD, QD, SD mark
- Built-in TOC monitoring system (option)
- Built-in Volumetric dispensing function by timer

### SPECIFICATIONS

	Zeneer Power I	Zeneer Power I +70	Zeneer Power II	Zeneer Power II +70	Zeneer Power III	Zeneer Power III +70
Product (RO, UP)	Max. 15L/Hr	RO:15L/Hr UP:70L/Hr	Max. 25L/Hr	RO:25L/Hr UP:70L/Hr	Max. 35L/Hr	RO:35L/Hr UP:70L/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 and monitoring function 3) Filter exchange indicator 4) Auto monitoring of Feed water quality					
Dimensions(W×D×H)	390 × 460 × 470mm					
Power	230V(110V on request), 50/60Hz, 60W					

## Zeneer RO Series

## Pure Water System



### FEATURES

- Certified CE, NRTL, ISO 9001, ISO 14001, 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 × D × H)	300 × 460 × 470mm		
Power	230V(110V on request), 50/60Hz, 60W		

## Zeneer UP Series

## Ultra Pure Water System



### FEATURES

- Certified CE, NRTL, ISO 9001, ISO 14001, GD, QD, SD mark
- Built-in TOC monitoring system (option)
- 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 × D × H)	300 × 460 × 470mm
Power	230V(110V on request), 50/60Hz, 60W



## Zenix RO Series

## Pure Water System



### Features

- Certified CE, ISO 9001, ISO 14001, GD, QD mark
- Built-in RS 232C Port
- Built-in Volumetric dispensing function by timer

### Specifications

	Zenix RO 180	Zenix RO 280	Zenix 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 × D × H)	300 × 480 × 470mm		
Power	230V(110V on request), 50/60Hz, 60W		

## Zenix UP Series

## Ultra Pure Water System



### Features

- Certified CE, ISO 9001, ISO 14001, GD, QD mark
- Built-in RS 232C Port
- Built-in Volumetric dispensing function

### Specifications

	Zenix 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 × D × H)	300 × 480 × 470mm
Power	230V(110V on request), 50/60Hz, 60W

## New PNIX Power Series (RO & UP)

## Water Purification System



### FEATURES

- Certified CE, ISO 9001, ISO 14001, GD, QD mark
- Built-in TOC monitoring system (option)
- Built-in Volumetric dispensing function by timer

### SPECIFICATIONS

	New P.NIX Power I	New P.NIX Power II	New P.NIX 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/UV Lamp exchange indicator 4) Auto monitoring of Feed water quality		
Dimensions(W × D × H)	390 × 460 × 470mm		
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, ISO 14001, 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×D×H)	400×567×510mm		
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, ISO 14001
- 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×D×H)	400×570×500mm			
Power	230V(110V on request), 50/60Hz, 60W			

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

## X-ma 6000/3000/1000 series

## UV / VIS Spectrophotometer



### FEATURES

- Built-in 8 cell holder • High resolution scanning (X-ma 6000/3000 series)
- Double beam (X-ma 6000 series) • Single beam (X-ma 3000/1000 series)
- Built-in USB or Parallel Port

### SPECIFICATIONS

	X-ma 6300	X-ma 3200	X-ma 1200
Wavelength Range	190-1100nm	190-1100nm	200-1000nm
Wavelength Accuracy	±0.3nm	±0.5nm	±1.0nm
Wavelength Repeatability	0.2nm	0.3nm	0.5nm
Spectral Bandwidth	1.0nm	2.0nm	2nm
Photometric accuracy	±0.3%T	±0.3%T	±0.5%T
Photometric repeatability	±0.15%T	±0.2%T	±0.3%T
Display	Large LCD Display		
Sample Compartment	Auto 8 Cell holder		4 Cell holder
Dimensions (WxDxH)	600x450x200mm	480x360x160mm	480x360x160mm



## ULT FREEZERS - JABA (CRYO-PRIDE SERIES)



### Explicit TFT LCD Cluster

JABA series provides user friendly environment with 7" full sized touch screen LCD control panel. Advanced user interface allows entire information management by functional interface.

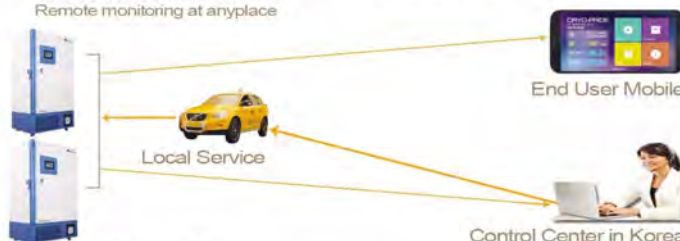


### BLACK BOX SYSTEM

Remote monitoring at anyplace

### Inventory management system

JABA series presents unique inventory management system that contains storage information of sample down to box level. Operator will never need any memo attachment or leaving the door open while searching for the sample. Minimizing the hassle as well as energy consumption for recovery of target temperature.



Standard Specification JABA COSCOM System : -65°C ~ -95°C

model	DF8510	DF8514	DF8517	DF8520	DF8524	DF8530
capacity	276 Liters	369 Liters	484 Liters	605 Liters	730 Liters	840 liter
Ext. Dimensions (WxDxH mm)	920*805*1660	920*805*1980	920*955*1980	1070*955*1980	1070*1065*1980	1070*1245*1980
Int. Dimensions (WxDxH mm)	600*480*970	600*480*1288	600*630*1288	750*630*1288	750*740*1288	750*925*1288
Insulation	High Density polyurethane with VIP					
Electrical	110V , 220V 60Hz , 230V 50Hz					
Certificate	ISO9001 / ISO 14001 / ISO 13485 / CE / KGMP / ETL					
Weight (kg)	274	314	360	390	430	500
Refrigeration	1*1.25HP					
2" Cryo boxes	15boxes /rack	15boxes /rack	20boxes /rack	20boxes /rack	25boxes /rack	30boxes /rack
3" Cryo boxes	9boxes /rack	9boxes /rack	12boxes /rack	13boxes /rack	15boxes /rack	18boxes /rack
Racks /Freezer	12racks total	16racks total	16racks total	20racks total	20racks total	20boxes /rack

## ULT FREEZERS - POCKET (CRYO-PRIDE SERIES)



### Feature

- \* Applied COSCOM System
- \* Counter top / Under storage
- \* Minimized Energy consumption
- \* Low Noise level
- \* CFC- Free Refrigerant

model	DF8502	DF8503
capacity	54 Liters	94 Liters
Ext. Dimensions (WxDxH mm)	470*620*780	720*620*780
Int. Dimensions (WxDxH mm)	350*440*355	600*440*355
Insulation	High Density polyurethane+VIP	
Electrical	110V , 220V 60Hz , 230V 50Hz	
Certificate	ISO9001/ 14001/ 13485/ CE	
Weight (kg)	79	99
Refrigeration	3/8 HP	5/8 HP
2" Cryo boxes	36 boxes	72 boxes
3" Cryo boxes	24 boxes	48 boxes
Racks /Freezer	2 racks total	4 racks total



## FREEZE DRYER (LYOPH-PRIDE LAB SCALE SERIES)



### Feature

- \* Flexible Unit, vial or bulk product through the connection of different manifold or drying chamber.
- \* 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.
- \* 3 select of temperature : -65 / -90 / -120°C
- \* Timer Function ( For operation time of vacuum pump , provide easily maintenance )
- \* Alarm Functions (condenser temperature , vacuum)
- \* Standard PTFE coating (Anti- corrosion) chamber.

Standard Specification FD : -65°C / -90 °C / -120°C

model	FD5508	FD5512	FD5518	FD8508	FD8512	FD8518	FD12008
Ice capacity / Process	5 Liters	10 Liters	12 Liters	5 Liters	10 Liters	12 Liters	5 Liters
Totally Ice capacity	8 Liters	12 Liters	18 Liters	8 Liters	12 Liters	18 Liters	8 Liters
Condenser Temperature	-50 ~-65'c			-75 ~-90'c			-120'c
Ext. Dimensions (WxDxH mm)	805 * 750 * 885						
Refrigeration system	1 1/2 Hp						1 1/2 Hp *2
Electrical	220V 60Hz , 230V 50Hz						
Certificate	ISO9001 / ISO 14001 / CE						
Weight (kg)	120	122	130	130	138	145	180
Drying Chamber	12 Port	16 Port	16 Port	12 Port	16 Port	16 Port	12 Port
Manifold Chmaber	4-24 Port						
Product Heater	PH1212	PH1316	PH1316	PH1212	PH1316	PH1316	PH1316
Vacuum pump	ISL136 (165 L/min)		ISL201(240L/min)	ISL136 (165 L/min)		ISL201(240L/min)	ISL201(240L/min)

## PROGRAMMABLE FREEZE DRYER(LYOPH-PRIDE SERIES)

### 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 and useful monitoring system (optional)
- \* Automatic Stoppering System (optional)
- \* Automatic CIP - SIP Function (patented CIP system / optional)
- \* Lowest temperature below -120°C of coldtrap performance(optional)
- \* Shelf Range : -40 ~ 75°C (patented spiral oil path plate)





## Portable Series

### ■ pH/mV/ORP/Ion DO/O<sub>2</sub>/Air Conductivity/TDS/Salinity/Temp Multi Meter

#### EcoMet

- Affordable and good design
- Clear custom LCD display
- Simple & Easy operation
- Automatic calibration & buffer recognition
- Simultaneous displays of Data and Temperature
- Automatic (Manual) compensation for Temperature
- Provide carrying case and standard buffer solution



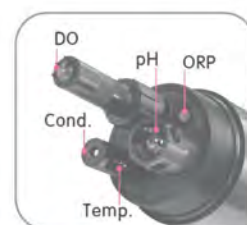
[Ecomet]



[Neomet]

#### NeoMet

- Advanced performance with modern design
- Waterproof(IP66) housing, Backlit custom LCD display
- Fast, Accurate and Easy to use
- Simultaneous display of Data, temperature and current time
- Auto (Manual) calibration & buffer recognition
- Automatic compensation for Temp and Self diagnostics
- Low Battery Alarm, Rechargeable Battery
- Able to connect to PC and external printer (RS 232C communication)



[Multi-90i]

#### Multi 90i

- Measured Parameters: pH/ORP/DO/Cond./Salinity(TDS)/Temp
- Simultaneous measurement up to 6, or A singular item
- Real time monitoring through SMSD program
- Simple, Intuitive operation
- Store the data up to 500,000 points
- Vivid 4.3" color TFT LCD
- Application : Multi 90i can be used in a wide range of applications including; Lakes, Rivers, Fish Farming, Ground water, Oceans
- Simple easy icons showing battery level, calibration history and other functions
- Available to use in a dark place by controlling the brightness of LCD
- Providing 3 meter cable (Option: 5m, 10m, 20m)
- Providing a Impact resistant & Waterproof case with portable Neck Strap
- IP 68: Waterproof, Dustproof
- 5 years on warranty for instrument; sensor is covered by a 6 month warrant

\* SMSD (Simultaneously Measuring & Saving Data System) :

SMSD program enables data to be transferred to the PC in real time. It can be compatible with Excel

#### Series models

Model	EcoMet					NeoMet				Multi			
	P15	O15	D35	C65	S60	pH-20N	pH-25N	DO-30N	EC-40N	CP-50N	PD-60N	CPD-65N	Multi-90i
pH	●						●			●	●	●	●
mV	●					●	●			●	●	●	●
ORP		●				●	●			●	●	●	●
Ion							●			●	●	●	
DO			●					●			●	●	●
O <sub>2</sub>			●					●			●	●	●
Air(%)								●			●	●	●
Conductivity				●					●	●		●	●
TDS				●					●	●		●	●
Salinity					●				●	●		●	●
Temperature	●	●	●	●	●	●	●	●	●	●	●	●	●
Waterproof						●	●	●	●	●	●	●	●
Certificate	GD					CE, GD				CE, GD			



## Laboratory Series

### ■ pH/mV/ORP/Ion DO/O<sub>2</sub>/Air Conductivity/TDS/Salinity Multi Meter

#### EcoMet

- Affordable and easy operation
- Clear & Vivid custom LCD display
- Simultaneous display of Data with Temp
- Automatic compensation for Temperature
- Data-log up to 50 Points
- Self diagnostics, Auto-hold, Auto-read stable Data



[Ecomet]

[Neomet]

#### NeoMet

- Wide & Clear LCD applying white backlight
- Automatic compensation for Temperature
- Simultaneous display of Data, temp and current time
- Able to connect to PC and external printer
- Data-log up to 100 Points

- Wide & Clear backlit graphic color LCD display
- Simultaneous display of Data, temp and current time
- Unlimited data storage with SDIS program
- Automatic compensation for Temp, Alarm displays at high/low limit
- Self diagnostics, Auto-hold, Auto-read stable Data
- Built-in printer (Option)

#### Multi Meter

- Wide & Clear backlit graphic LCD display
- Simultaneous display of Data, temperature and current time
- Measure and display 2 items or 3 items simultaneously
- Unlimited Data storage with SDIS program
- Self diagnostics, Auto hold
- Automatic compensation for Temp
- Alarm displays at high/low limit
- Built-in printer (Option)



[Multi Meter]



#### Series models

Model	EcoMet			NeoMet									Multi Meter				
	P25	D45	C75	pH				DO		Cond			pH	pH	CP	PD	PDC
				200L	220L	240L	250L	300L	350L	400L	450L	470L	270L	290L	500L	600L	700L
pH	●			●	●	●	●						●	●	●	●	●
mV	●			●	●	●	●						●	●	●	●	●
ORP					●	●	●						●	●	●	●	●
Ion						●	●						●	●	●	●	●
DO		●						●	●							●	●
O <sub>2</sub>		●						●	●							●	●
Air(%)								●	●							●	●
Conductivity			●							●	●	●			●		●
TDS												●			●		●
Salinity										●	●	●			●		●
Temperature	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SDIS program							●		●		●	●	●	●	●	●	●
Built in Printer							●		●		●	●	●	●	●	●	●
Channel													Dual	Dual	Dual	Dual	Triple



## Baths & Circulators



Economy Heating Bath  
-analog (BW-B)



Economy Heating Bath  
-digital (BW-H)



Economy Heating Bath  
-dual (BW-H)



General Heating Bath (BW-G)



Shaking & Heating Bath (BS)



Viscometer Heating Bath (VB-G)



Heating Bath Circulator (CW-G)



Refrigerated & Heating  
Bath Circulator (RW-G)



Programmable Refrigerated & Heating  
Bath Circulator (RW-P)



## Baths & Circulators

### Safety Features

- 1) Built-in power cutoff circuit with audible and visual alarms.
  - Over temperature limit.
  - Two separate fuses.
- 2) Time setting functions for both Automated Run and Off. (except for BW-B and BW-H Models)
  - Integrated time setting function for Delayed ON/OFF.
  - Operation mode selection between Automated Run and Manual Run.
- 3) Protection against low fluid level and dry running. (except for BW-B and BW-H Models)
  - Intermittent alert sounds along with a visual alarm.
  - Automatic shut down of the heater.

### User-friendly Control Features

- 1) Advanced control features. (except for BW-B Models)
  - Microprocessor PID temp. control.
  - Preset three most commonly used temp. settings.
- 2) Intuitive control display based on HMI (Human Machine Interface) design. (except for BW-B and BW-H Models)
  - Colorful LCD display with interactive input system. (only for RW-P Models)
  - A quick lock button.
- 3) Intelligent program control feature. (only for RW-P Models)
  - 10 Programs / 10 Steps. (99h 59m per step)
  - Scheduler function. (Repeat & Link operation)
  - Pre-Heating function.

### Constructional Features

- 1) High-quality 304 grade stainless steel interior bath and dirt-repellent powder coating for all external surface.
- 2) Corrosion-resistant stainless steel construction of all wetted parts allowing other bath fluids as well as water.
- 3) Corrosion-resistant, seamless, leak-proof, round-cornered, and easy-to-clean stainless steel reservoir.



CE Certification except for RW-P, CTB

Heating Baths		Working Temp. Range (°C/°F)	Bath Volume (L/cu.ft)	Temperature Stability (± °C/°F)
Analog Models (Economy)	BW-05B	Amb. +7 to 100 / Amb. +12.6 to 212	3.5 / 0.1	0.5 / 0.9
	BW-10B		11.5 / 0.4	
	BW-20B		20 / 0.7	
Digital Models (Economy)	BW-05H	Amb. +5 to 100 / Amb. +9 to 212	3.5 / 0.1	0.1 / 0.18
	BW-10H		11.5 / 0.4	
	BW-20H		20 / 0.7	
Dual Models (Economy)	BW-0505H	Amb. +5 to 100 / Amb. +9 to 212	3.5 & 3.5 / 0.1 & 0.1	0.1 / 0.18
	BW-0510H		3.5 & 11.5 / 0.1 & 0.4	
	BW-1010H		11.5 & 11.5 / 0.4 & 0.4	
	BW-1020H		11.5 & 20 / 0.4 & 0.7	
General Purpose	BW-05G	Amb. +5 to 100 / Amb. +9 to 212	5 / 0.2	0.2 / 0.36
	BW-10G		10 / 0.4	
	BW-20G		20 / 0.7	
Shaking & Heating	BS-06	Amb. +5 to 100 / Amb. +9 to 212	17 / 0.6	0.2 / 0.36
	BS-11		25 / 0.9	
	BS-21		37 / 1.3	
Viscometer	BS-31	Amb. +5 to 150 / Amb. +9 to 302	55 / 1.9	0.05 / 0.09
	VB-25G		25 / 0.9	
	VB-40G		40 / 1.4	
Bath Circulators		Working Temp. Range (°C/°F)	Bath Volume (L/cu.ft)	Temperature Stability (± °C/°F)
Heating	CW-05G	Amb. +5 to 150 / Amb. +9 to 302	5 / 0.2	0.05 / 0.09
	CW-10G		10 / 0.4	0.05 / 0.09
	CW-20G		20 / 0.7	0.1 / 0.18
	CW-30G		30 / 1.1	0.1 / 0.18
Refrigerated & Heating	RW-0525G	-25 to 150 / -13 to 302	5 / 0.2	0.05 / 0.09
	RW-1025G		10 / 0.4	0.05 / 0.09
	RW-2025G		20 / 0.7	0.05 / 0.09
	RW-3025G		30 / 1.1	0.08 / 0.14
	RW-0540G	-35 to 150 / -31 to 302	5 / 0.2	0.05 / 0.09
	RW-1040G		10 / 0.4	0.05 / 0.09
	RW-2040G		20 / 0.7	0.05 / 0.09
	RW-3040G		30 / 1.1	0.08 / 0.14
Refrigerated & Heating (Programmable)	RW-0525P	-25 to 150 / -13 to 302	5 / 0.2	0.05 / 0.09
	RW-1025P		10 / 0.4	0.05 / 0.09
	RW-2025P		20 / 0.7	0.05 / 0.09
	RW-3025P		30 / 1.1	0.08 / 0.14
	RW-0540P	-35 to 150 / -31 to 302	5 / 0.2	0.05 / 0.09
	RW-1040P		10 / 0.4	0.05 / 0.09
	RW-2040P		20 / 0.7	0.05 / 0.09
	RW-3040P		30 / 1.1	0.08 / 0.14
Cold Trap Bath		Working Temp. Range (°C/°F)	Bath Volume (L/cu.ft)	
Cold Trap	CTB-10	Down to -40 / -40	4.8 / 0.17	



## Autoclaves



Autoclave-vertical (ST-G)

### Safety Features

- 1) Mechanical Safety Devices.
  - Over current protection.
  - Over temperature protection by automatic power cutoff.
  - Over pressure protection by automatic and manual safety valve.
- 2) Safety Warning Systems.
  - Over temperature warning, Low temperature warning.
  - Low heat warning if the temperature does not reach the sterilization or melting temperature.
  - Sterilization fail warning if the operation is unexpectedly stopped during sterilization process.

### User-friendly Control Features

- 1) Microprocessor controller and temperature calibration function allows for high precision temperature control.
  - Sterilization temp. at 110 to 123°C
  - Melting\* temperature at 60 to 100°C
- 2) Automatic sterilization system for unattended operation.
- 3) Convenient operation modes for various uses.
  - Standard modes and program modes.
- 4) Conveniently monitored by independent control display, sterilization process display, and pressure gauge.
- 5) Temperature calibration function.

### Constructional Features

- 1) Vertical type autoclaves which allow for top loading are suitable for high volume sterilization.
  - Baskets are stackable two high or even more levels, which secure inside the chamber space requirements.
- 2) Slide opening door with plastic cover of low thermal conductivity prevents burns from the contact.
- 3) The chamber is constructed of stainless steel which is superiorly resistant to corrosion.
- 4) Convenient documentation with the optional data recorder.

Autoclaves	Chamber Volume (L / cu ft)	Sterilization Temp. (C / F)	Melting Temp. (C / F)	No. of Baskets (Standard / Max)	Load per Baskets (Kg / lbs)
ST-50G	50 / 1.8	110 to 123 / 198 to 221.4	60 to 100 / 108 to 180	2 / 2	10 / 22.0
ST-65G	65 / 2.3				
ST-85G	85 / 3.0				

1) Technical data according to EN 554 / BS EN 285:1997.



## Desiccators



Vacuum Desiccators (VDC / VDR / VDP)



Desiccators (SDC)

### Vacuum Desiccators

- 1) Maximum vacuum of 1 Torr ( $1.33 \times 10^{-4}$  Mpa) for more than 72 hours.
- 2) High quality silicone gasket ensures greaseless airtight seal for the clean and cost effective test environment.
- 3) Highly transparent, shatterproof, non-corrosive, and easy to clean polycarbonate construction.
- 4) Three-way stopcock provides great convenience for consistent and uniform vacuum draw, vacuum release, or gas exchange. The barbed fitting on each side secures attachment of tubing.
- 5) Minimizing damages or discoloration of light-sensitive samples. (only for U models)
- 6) Four built-in ports allowing easy attachment of tubing.
- 7) Maximized utilization of internal space using maximum four to six shelves depending on product sizes. (only for VDR Models)
- 8) Stackable space-saving design allowing efficient usage of cramped lab space. (only for VDR Models)
- 9) Easy vacuum level checking with the standard vacuum gauge. (only for VDC, VDR-G/GU, VDP-G/GU Models)
- 10) Flange lock holding the top and the bottom together during non-vacuum conditions (only for VDR, VDP Models)
- 11) The top and bottom of round vacuum desiccators and cylindrical vacuum desiccators are compatible with each other for diverse use. (only for VDR, VDP Models)

### Desiccators

- 1) One molded design enables virtually no leakage and exceptional durability.
- 2) High quality silicone gasket ensures greaseless airtight seal for the clean and cost effective test environment.
- 3) Highly transparent, shatterproof, non-corrosive, and easy to clean polycarbonate construction.
- 4) Maximized utilization of internal space using maximum three to five shelves depending on product sizes.
- 5) Stackable space-saving design allowing efficient usage of cramped lab space.
- 6) Easy humidity level checking with the hygrometer attached to the front door.
- 7) Minimizing damages or discoloration of light-sensitive samples. (only for U models)



RoHS compliant except for SDC

Vacuum Desiccators		Internal Volume (L / cu ft)	Vacuum Range (Mpa)	Body Material
Cubic Models	VDC-11/11U	11 / 0.4	1.33 × 10 <sup>-4</sup> Mpa (Analog)	PC (Polycarbonate)
	VDC-21/21U	23 / 0.8		
	VDC-31/31U	35 / 1.2		
	VDC-41/41U	45 / 1.6		
Round Models	VDR-20 / 20U / 20G / 20UG	6 / 0.2		
	VDR-25 / 25U / 25G / 25UG	10 / 0.4		
	VDR-30 / 30U / 30G / 30UG	20 / 0.7		
Cylindrical Models	VDP-25 / 25U / 25G / 25UG	16 / 0.6		
	VDP-30 / 30U / 30G / 30UG	25 / 0.9		

Desiccators		Internal Volume (L / cu ft)	Body Material
Cubic Models	SDC-30/30U	35 / 1.2	PC (Polycarbonate)
	SDC-45/45U	50 / 1.8	



## Incubators



General Incubator (IB-G)



Economy Incubator (IB-E)



Low Temperature Incubator  
-forced convection or air-jacketed (IL, IL-A)



Low Temperature Incubator  
-four chamber (IL-11-4C)



## Incubators



Low Temperature Incubator-personal (ILP)



Hybridization Oven (HO-10)



Mini Incubator (IM-10)

## Incubated Shakers



Incubated Shaker-floor standing (SI-R/RF, SI)



Incubated Shaker-benchtop (SI, SI-R)



Incubated Shaker-chamber (SIF, SIF-R)



## Incubators

### Optimum Control Features

- 1) Microprocessor PID control.
- 2) Simple calibration and auto-tuning functions.
- 3) Built-in digital timer with Delayed ON/OFF function.
- 4) Timer range: 1 min ~ 99 hr 59 min.
- 5) Operation mode selection after power interruption: either Automatic Run or Manual Run.
- 6) Convenient preset function for 3 most commonly used temperature settings.
- 7) Easy conversion between °C and °F
- 8) Self-diagnostic function identifying errors.
- 9) Intuitive control panel design based on HMI(Human Machine Interface) system:
  - bright LED displays as well as splashproof and easy-to-clean keypads.
  - Quick-lock button preventing accidental parameter changes. (for IB, IL, and ILP Models only)
  - Separate power switches for shaker and independent incubation. (IS-971RF, SIF Models only)

### Safety Features

- 1) Open door alert:
  - Audible and visible alarms.
  - Automatic power cutoff from the heater and the fan if the door is open to minimize heat loss and also to protect the operator.
- 2) Protection against overheating by automatic power cutoff from the heater controller before shutting down the unit.
- 3) Two separate fuses to protect against over current.

### Constructional Features

- 1) High-quality 304 grade stainless steel chamber interior and dirt-repellent external surface with power coating.
- 2) Perfectly sealed door gasket minimizing heat loss and fully insulated chambers.
- 3) Adjustable and electropolished stainless steel wire shelves allowing efficient air-flow and easy cleaning. (except for SI and IS Models)



### 2 & 4-chamber

- 1) Suitable for conducting each different experiments in two or four chamber incubators.
  - each chamber is independently controlled by each controller.
- 2) Efficient to use with the limited laboratory environment.
- 3) Over temperature limit protection and open door alert.
- 4) Microprocessor PID control.
- 5) Simple calibration and auto-tuning functions.
- 6) Built-in digital timer with Delayed ON/OFF function.
- 7) Timer range: 1 min ~ 99 hr 59 min.
- 8) Convenient preset function for 3 most commonly used temperature settings.
- 9) Corrosion-resistant incoloy sheath heating element and stainless steel interior.
- 10) Built-in cable port to use other instruments inside the chamber

### Mini Incubator & Hybridization Oven

- 1) Over temperature limit protection and open door alert.
- 2) Microprocessor PID control.
- 3) Simple calibration function.
- 4) Ease operation provided by a bright VFD, responsive touch buttons, and a jog dial.
- 5) Memory function of programmed protocols allowing relevant parameters (such as temperature, rocking speed, time, etc) of each protocol step to be stored. (HO-10 only)





## Incubators



CE Certification except for IB-02G-2C/4C

Incubators		Operating Temp. Range (°C/°F)	Chamber Volume (L/gal.)	Temperature Fluctuation at 37°C (°C/°F)	Temperature Variation at 37°C (°C/°F)
General Models	IB-05G	Amb. +5 to 70 / Amb. +9 to 158	60 / 2.1	0.1 / 0.18	0.6 / 1.08
	IB-15G		102 / 3.6		0.2 / 0.36
	IB-25G		151 / 5.3		0.6 / 1.08
Economy Models	IB-01E	Amb. +3 to 60 / Amb. +5.4 to 140	65 / 2.3	0.2 / 0.36	0.6 / 1.08
	IB-11E		150 / 5.3		0.8 / 1.44
	IB-21E		205 / 7.2		1.1 / 1.98
2 & 4-chamber Models	IB-02G-2C	Amb. +5 to 70 / Amb. +9 to 158	60 / 2.1 x 2 chambers	0.1 / 0.18	0.6 / 1.08
	IB-02G-4C		60 / 2.1 x 4 chambers		



CE Certification except for IL-11-2C/4C

Low Temperature Incubators		Operating Temp. Range (°C/°F)	Chamber Volume (L/gal.)	Temperature Fluctuation at 25°C (°C/°F)	Temperature Variation at 25°C (°C/°F)
Forced Convection Models	IL-11	0 to 60 / +32 to 140	150 / 5.3	0.1 / 0.18	0.5 / 0.9
	IL-21		244 / 8.6		0.4 / 0.72
Air-jacketed Models	IL-11A	+4 to 60 / +39.2 to 140	162 / 5.7	0.2 / 0.36	0.5 / 0.9
	IL-21A		254 / 9		
Personal Models	ILP-02	+10°C to 40°C at ambient temperature of 25°C	14 / 0.5	0.1 / 0.18	0.5 / 0.9
	ILP-12		48 / 1.7		0.4 / 0.72
2 & 4-chamber Models	IL-11-2C	"0 to 60 / + 32 to 140"	150 / 5.3 x 2 chambers	0.1 / 0.18	0.5 / 0.9
	IL-11-4C		150 / 5.3 x 4 chambers		



CE Certification except for IS-971RF

Incubated & Refrigerated & Illuminated Shakers			Operating Temp. Range (°C/°F)	Speed Range (RPM)	Maximum Amplitude Size (dia.)
Benchtop Models	SI-300	Incubated Shakers	Amb. +5 to 60	10 to 300	40mm (1.6" dia)
	SI-600		/ Amb. +9 to 140		
	SI-300R	Incubated & Refrigerated Shakers	+15 to 60		
	SI-600R		/ +59 to 140		
Floor Standing Models	IS-971	Incubated Shakers	Amb. +5 to 60		70mm (2.8" dia)
	IS-971R	Incubated & Refrigerated Shakers	+4 to 60 / +40 to 140		
	IS-971RF	Incubated & Refrigerated & Illuminated Shakers	Amb. -15 to 60 / Amb. -27 to 140		
Chamber Models	SIF-5000	Incubated Shakers	Amb. +5 to 80	10 to 300 (Stackable Top: 10 to 250)*	19 mm dia (0.75" dia)
	SIF-6000		/ Amb. +9 to 176		25 mm dia (1.0" dia)
	SIF-5000R	Incubated & Refrigerated Shakers	Amb. -20 to 80		25 mm dia (1.0" dia)
	SIF-6000R		/ Amb. -36 to 176		38 mm dia (1.5" dia)

\* If two products are stacked up, the upper one's shaking speed range is from 10 to 250 rpm.

Mini Incubator & Hybridization Oven		Operating Temp. Range (°C/°F)	Chamber Volume (L/gal.)	Temperature Fluctuation (°C/°F)	Temperature Variation (±°C/°F)
Mini Incubator	IM-10	Amb. +5 to 65 / Amb. +9 to 140	10 / 0.4	0.5 / 0.9 (at 37°C)	0.5 / 0.9 (at 37°C)
Hybridization Oven	HO - 10	Amb. +5 to 65 / Amb. +9 to 149	10 / 0.4	0.5 / 0.9 (at 50°C with 9RPM)	0.5 / 0.9 (at 50°C with 9RPM)



## Ovens



Programmable Oven (OF-P)



General Oven (OF-G / ON-G)



Economy Oven (OF-E / ON-E)



Vacuum Oven (OV)



Forced Convection Oven-2&4 chamber (OF-02G-2C/4C)



Forced Convection Oven-large chamber (OF-G)



## Ovens

### Safety Features

- 1) Open door alert (except for OV Models):
  - Activation of audible and visible alarms.
  - Automatic power cutoff from the heater and the fan (only OF Models) if the door is open for the minimize heat loss and also to protect the operator.
- 2) Protection against overheating by automatic power cutoff from the heater and controller in sequence.
- 3) Two separate fuses for protecting against overcurrent.  
(without OF-300, 450, 750 G/H Models)

### Optimum Control Features

- 1) Microprocessor PID control.
- 2) Intuitive and easy-to-operate control panel design using HMI (Human Machine Interface) network system.
- 3) Simple calibration and auto-tuning function.
- 4) Convenient presetting function for 3 most commonly used temperature settings.
- 5) Max. 10 programmable patterns of 10 segments each are settable for easy program control. (only for OF-P Models)
- 6) Delayed ON/OFF digital timer range: 1 min ~ 99 hr 59 min
- 7) Operation mode selection after power interruption: either Automatic or Manual Run.

### Constructional Features

- 1) Grade 304 Stainless Steel chamber interior and dirt-repellent external surface with power coating. (without OV Models)
- 2) Air-tight door gasket minimizing heat loss.
- 3) Fully insulated oven chamber maintaining the exterior at a safe temperature.
- 4) Adjustable and electro polished stainless steel wire shelves allowing efficient airflow and easy cleaning. (without OV Models)



CE Certifications only for OF-02G/12G/22G, OF-E, ON-G, ON-E

Forced Convection Ovens (Mechanical)		Operating Temp. Range (°C/°F)	Chamber Volume (L/cu.ft)	Temperature Fluctuation (at 100°C/32°F)	Temperature Variation (at 100°C/32°F)
Programmable Models	OF-02P	Amb. +10 to 250 / Amb. +18 to 482	60 / 2.1	0.5 / 0.9	1.0 / 1.8
	OF-12P		102 / 3.6	0.6 / 1.08	1.3 / 2.3
	OF-22P		151 / 5.3	0.8 / 1.44	1.7 / 3.1
General Models	OF-02G	Amb. +10 to 250 / Amb. +18 to 482	60 / 2.1	0.5 / 0.9	1.0 / 1.8
	OF-12G		102 / 3.6	0.6 / 1.08	1.3 / 2.3
	OF-22G		151 / 5.3	0.8 / 1.44	1.7 / 3.1
	OF-300G	Amb. +10 to 200 / Amb. +18 to 392	314 / 11	0.2 / 0.36	0.9 / 1.6
	OF-450G		450 / 15.9	0.1 / 0.18	0.7 / 1.3
	OF-750G		760 / 26.8	0.2 / 0.36	1.5 / 2.7
	OF-300H	Amb. +10 to 300 / Amb. +18 to 572	314 / 11	0.2 / 0.36	0.9 / 1.6
	OF-450H		450 / 15.9		0.8 / 1.4
	OF-750H		760 / 26.8		1.9 / 3.4
2&4-chamber Models	OF-02G-2C	Amb. +10 to 200 / Amb. +18 to 392	60 / 2.1 x 2 chambers	0.5 / 0.9	1.0 / 1.8
	OF-02G-4C		60 / 2.1 x 4 chambers		
Economy Models	OF-01E	Amb. +10 to 220 / Amb. +18 to 428	52 / 1.8	0.4 / 0.72	3.3 / 5.94
	OF-11E		100 / 3.5		3.3 / 5.94
	OF-21E		150 / 5.3		2.3 / 4.14
Natural Convection Ovens (Gravity)		Operating Temp. Range (°C/°F)	Chamber Volume (L/cu.ft)	Temperature Fluctuation (at 100°C/32°F)	Temperature Variation (at 100°C/32°F)
General Models	ON-02G	Amb. +15 to 250 / Amb. +27 to 482	52 / 1.8	0.3 / 0.54	5.9 / 10.62
	ON-12G		91 / 3.2		7.5 / 13.5
	ON-22G		135 / 4.8		6.9 / 12.42
Economy Models	ON-01E	Amb. +15 to 220 / Amb. +27 to 428	52 / 1.8	0.3 / 0.54	6.5 / 11.7
	ON-11E		100 / 3.5	0.4 / 0.72	4.1 / 7.38
	ON-21E		150 / 5.3	0.5 / 0.9	7.3 / 13.14
Vacuum Ovens		Operating Temp. Range (°C/°F)	Chamber Volume (L/cu.ft)	Temperature Fluctuation (at 100°C/32°F)	Temperature Variation (at 100°C/32°F)
Vacuum	OV-11	Amb. +5 to 250 / Amb. +9 to 482	28 / 1	0.1 / 0.18	3.7 / 6.66
	OV-12		65 / 2.3	0.3 / 0.54	



## Refrigerators & Freezers



Medical Cooling (BSR/BSF/PSR/PSF)

### International Standards for Medical Devices

Blood Bank Refrigerators (BSR)

#### ISO13485

Our Blood Bank Refrigerator is designed and tested in accordance with the International Standard.



Laboratory Cooling (CLG/FHG/FMG/FCG)



## Refrigerators & Freezers

### Safety Features

- 1) High as well as low temperature alerts with visual and audible alarms when the temperature exceeds the set temperature limits.
- 2) Open door alert
  - 1st: visible alarm for two minutes after the door is opened.
  - 2nd: audible alarm thereafter if the door is still opened.
- 3) Two separate fuses protecting against over current.
- 4) Built-in door lock.
- 5) Eco-friendly refrigerant: non-ozone.
- 6) Additional features of Medical Cooling Devices.
  - Dual temperature controllers. If one controller fails to adjust temp., then the other automatically activates to counteract the failure.
  - Battery back up system.
  - Built in auto-dialing remote alarm to alert abnormal temperature changes.

### Optimum Control Features

- 1) Intuitive and easy-to-operate control panel with vivid and colorful vacuum fluorescent display (VFD), touch-sensitive buttons, and a jog dial.
- 2) Optimizing temperature control system
  - All 150, 300, 650 Models with Automatic defrost system minimize temperature change.
  - All 850, 1400 Models with highly efficient dual refrigeration system minimize temperature change itself. (no defrost system needed)
  - Additional manual defrost system also allows for immediate control. (except for CLG Models)
- 3) Keypad lock button preventing inadvertent parameter changes.
- 4) Easy temperature unit conversion between °C and °F
- 5) Precise documentation is available with the included chart type recorder. (Included only for Medical Cooling Devices)

### Constructional Features

- 1) High-quality 304 grade stainless steel chamber interior and dirt-repellent external surface with powder coating.
- 2) Double-pane tempered glass door with built-in wire heater providing clear inside view of the chambers. (for the models with glass doors only)
- 3) Door seal packing
  - Refrigerators : magnetic door seal for absorbing impact from opening and closing the door.
  - Freezers : air-tight silicone door seal with vice lock door closing mechanism for safe storage of samples.
- 4) Fully insulated chamber ensuring minimal chamber temperature fluctuation.
- 5) High thermal efficiency evaporation system made of low corrosion material.
- 6) Built-in casters for easy transport. (except for all 150 Models)



CE Certification only for CLG

Medical Cooling		Operating Temp. Range (°C)	Chamber Volume (L, cu.ft.)	Door type	Shelve or Drawer
Blood Bank Refrigerators <sup>1)</sup>	BSR-300	4 / 39.2	308 / 10.9	Glass	Drawer
	BSR-650		667 / 23.6		
Plasma Freezers <sup>2)</sup>	BSF-300	-40 to -25 / -40 to -13	297 / 10.5	Solid	Drawer
	BSF-650		647 / 22.8		
Pharmacy Refrigerators <sup>3)</sup>	PSR-300	2 to 10 / 35.6 to 50	308 / 10.9	Glass	Shelve
	PSR-650		667 / 23.6		
Pharmacy freezer	PSF-300	-40 to -20 / -40 to -4	297 / 10.5	Solid	Shelve
	PSF-650		647 / 22.8		

1) Technical data according to DIN 58371    2) Technical data according to DIN 58375    3) Technical data according to DIN 58345

Laboratory Cooling		Operating Temp. Range (°C)	Chamber Volume (L, cu.ft.)	Door type	Shelve or Drawer
Laboratory Refrigerators	CLG-150	2 to 10 / 35.6 to 50	156 / 5.5	Glass or Solid	Shelve
	CLG-300		319 / 11.3		
	CLG-650		636 / 22.5		
	CLG-850		843 / 29.7		
	CLG-1400		1395 / 49.3		
Laboratory Freezers <sup>1)</sup>	FHG-150	-15 to 0 / 5 to 32	156 / 5.5	Solid	Shelve
	FHG-300		319 / 11.3		
	FHG-650		636 / 22.5		
	FMG-150	-25 to -15 / -13 to 5	156 / 5.5		
	FMG-300		319 / 11.3		
	FMG-650		636 / 22.5		
	FCG-150	-35 to -25 / -31 to -13	156 / 5.5		
	FCG-300		319 / 11.3		
	FCG-650		636 / 22.5		

1) Technical data according to 12880



## Recirculating Coolers (chillers)



Recirculating Cooler (RC / HX)



Recirculating Cooler (HL/HS/HH)

### Safety Features

- 1) Self - protecting cut-off function and signal
  - For over temp. the power supply is automatically cut from controller systematically before the unit shuts down. (except for HH Models)
  - Over current circuit breaker for user safety.
- 2) Low fluid level and dry-running protection:
  - Intermittent tone alert sounds and optical signals alarms display on the control panel.
- 3) Double service valve provided to prevent refrigerant leakage.

### Optimum Control Features

- 1) Functional LCD (resolution 0.1 °C) keypad type display (only for RC-05, HX Models)
  - Clear and easy-to-use LCD display.
- 2) Designed to simplify operation with a VFD touch screen type display. (only for HL / HS / HH Models)
  - Self-diagnostic function identifies equipment errors.
  - Recognizable and convenient keypad.
- 3) Bright LED water level indicator.
- 4) Pump pressure gauge. (except for RC-05)
- 5) Run, compressing, pumping visual indicator.
- 6) Eco-friendly R-404A or R507 refrigerant.
- 7) Hot gas by-pass. (only for HL Models)
- 8) Integrated heaters with high temp. stability. (only for HH Models)

### Constructional Features

- 1) High quality #304 grade stainless inner bath and dirt repellent powder coated external surface.
- 2) Stainless steel submerged parts are resistant to corrosion against all usual bath fluids.
- 3) Pump pressure can be controlled using a bypass function. (only for HX-H type)
- 4) Removable gridded vent for reducing condenser contamination and to facilitate cleanliness.
- 5) Wheels allow for easy mobility. (except for RC-05)
- 6) Computer Interface. (only for HS / HH Models)
- 7) Warning alarm/monitoring system.
  - Over temperature.
  - Lack of bath solutions.
- 8) Pressure gauge comes standard with recirculating units to provide fluid system diagnostics at a glance and for observing the pump pressure.



## Recirculating Coolers (chillers)



Recirculating Coolers (General Models)	Working Temp. Range (°C / °F)	Cooling Capacity at 20 °C (kW)	Pump (50Hz)	
			Max. Flow Rate (L / min, gal / min)	Max. Pressure (bar / psi)
HX-20	3 to 40 / 37.4 to 104	1.9	38 / 10.03	1.58 / 22.92
HX-25		2.4		
HX-20H		1.9	28 / 7.39	4.3 / 62.37
HX-25H		2.4		
HX-35H		3.6		
HX-45H		4.7		
HX-55H		7.1		



CE Certification except for HL-45H / 55H

Recirculating Coolers (Low Temp. Models)	Working Temp. Range (°C / °F)	Cooling Capacity at 20 °C (kW)	Pump (50Hz)	
			Max. Flow Rate (L / min, gal / min)	Max. Pressure (bar / psi)
HL-05	-20 to 40 / -4 to 104	0.6	50 / 13.2	1 / 14.50
HL-10		0.7		
HL-15		1.45		
HL-20		1.8		
HL-15H		1.45	40 / 10.57	2.8 / 40.61
HL-20H		1.8		
HL-25H		2.5		
HL-35H		3.3		
HL-45H		6.5	70 / 18.49	6 / 87.02
HL-55H		7.1		

Recirculating Coolers (Advanced Low Temp. Models)	Working Temp. Range (°C / °F)	Cooling Capacity at 20 °C (kW)	Pump (50Hz)	
			Max. Flow Rate (L / min, gal / min)	Max. Pressure (bar / psi)
HS-15	-20 to 40 / -4 to 104	1.45	40 / 10.57	3.3 / 47.86
HS-20		1.8		
HS-25		2.5		
HS-35		3.3		
HS-45		6.5	70 / 18.49	6 / 87.02
HS-55		7.1		
HS-45H		6.5		
HS-55H		7.1		

Recirculating Coolers (High Temp. Models)	Working Temp. Range (°C / °F)	Cooling Capacity at 20 °C (kW)	Pump (50Hz)	
			Max. Flow Rate (L / min, gal / min)	Max. Pressure (bar / psi)
HH-15	-20 to 80 / -4 to 176	1.45	40 / 10.57	3.3 / 47.86
HH-20		1.8		
HH-25		2.5		
HH-35		3.3		
HH-45H		6.5	70 / 18.49	6 / 87.02
HH-55H		7.1		

Recirculating Cooler (Compact Model)	Working Temp. Range (°C / °F)	Cooling Capacity at 20 °C (kW)	Pump (50Hz)	
			Max. Flow Rate (L / min, gal / min)	Max. Pressure (bar / psi)
RC-05	-20 to 30 / -4 to 86	0.58	26 / 6.87	0.7 / 10.15



## Pumps



Electrical Aspirator Pump (VE-11)



Rotary Vacuum Pump (MVP-6)

### Electrical Aspirator Pump

- 1) Built-in circulating pump and water tank.
- 2) Circulating pump continuously pumps water quietly across a set of aspirators, and is therefore clean and efficient.
- 3) Built-in check valve prevents backflow of water into the aspirator pump.
- 4) Corrosion-resistant construction with 304 stainless steel polypropylene, silicone, or nickel-coated brass.
- 5) Drain port and a spigot for easy water replace.



Electrical Aspirator Pump	VE-11
Bath Volume (L / cu ft)	9.5 / 0.3
Max. Vacuum (Mpa / Hg)	0.0998 / 29.5"
Free-air Capacity	18L / minute (0.6 cfm) ×2ea
Optional Accessories	
Vacuum Gauge with Regulator	
Cooling Coil	
Aspirator (1 ea)	
Aspirator (10 ea)	

### Rotary Vacuum Pump

- 1) Rotary vacuum pump equipped with direct connect oil seal prevents air reflux, essentially used with vacuum ovens to achieve a higher level of vacuum pressure.
- 2) Oil mist trap, an optional feature, prevents oil in-flow.

Rotary Vacuum Pump	MVP - 6	
	60 Hz	50 Hz
Pumping Speed (L / min)	100	80
Max. Pressure (Pa)	6.7×10 <sup>-4</sup>	
Motor Power (W)	400	
Motor Speed (rpm)	1750	1450
Recommended Oil (L)	1.1	
Inlet / Outlet Port (DN)	25KF	
Optional Accessories		
Oil Mist Trap		

## Ultrasonic Cleaners



Ultrasonic cleaner  
-SUS tank with ABS cover (UCP)



Ultrasonic cleaner  
-SUS tank (UCS)

### Ultrasonic cleaner- SUS tank with ABS cover

- 1) Flame resistance ABS material cover and durable 304 stainless steel tank.
- 2) Over-temperature alarm. (except for UCP-02)
- 3) Digital LED display.
- 4) High-frequency 40 kHz sound waves provide greater cleaning power.
- 5) Multiple output mode(Normal/Pulse/Sweep) with power selection(Low/Middle/ High). (except for UCP-02)
- 6) Before cleaning, dissolved gas removed by degas function. (except for UCP-02)

### Ultrasonic cleaner- SUS tank type

- 1) Durable 304 stainless steel tank
- 2) Over-temperature alarm.
- 3) Digital LED display.
- 4) High-frequency 40 kHz sound waves provide greater cleaning power and increased reliability.
- 5) Multiple output mode(Normal/Pulse/Sweep) with power selection (Low/Middle/ High).

Ultrasonic Cleaners		Bath Volume (L / cu ft)	Temperature Range (°C / °F)	Ultrasonic Power (W)
UCP Models	UCP - 02	2 / 0.07	Amb. to 70 / Amb. to 158	100
	UCP - 10	10 / 0.35		300
	UCP - 20	20 / 0.70		500
UCS Models	UCS-05	5.7 / 0.20	Amb. to 70 / Amb. to 158	200
	UCS-10	10 / 0.35		300
	UCS-20	20 / 0.70		500



## Heating & Cooling Blocks



Heating & Cooling Block (CCB-350)



Heating Block (CHB-350S / CHB-350T)

### Common Features

- 1) Precision accuracy of  $\pm 0.1^{\circ}\text{C}$  is ensured by its PID controller.
- 2) Automatic power cutoff.
- 3) Two types of timer modes:
  - Timer 1 starts immediately after the timer setting.
  - Timer 2 starts only after reaching the set temperature.
- 4) High chemical-resistant polypropylene main body.
- 5) Optimal heat transfer is achieved by the tight coupling design of the main body and the corrosion-resistant anodized aluminum blocks.
- 6) Bright VFD display.
- 7) Transparent lid for easy monitoring.
- 8) Blocks can be easily interchanged by the included block lifter.

### Features for only Heating & Cooling Block

- 1) Wide temperature control range from Amb.  $-20$  to  $95^{\circ}\text{C}$  with rapid cool down and heat-up times.
- 2) Simple temperature calibration.
- 3) Memory function of programmed protocols allowing relevant parameters of each protocol step to be stored.
  - Up to 10 protocols allowed for memory storage.
  - Up to 10 steps allowed for each protocol.
- 4) Cooling is controlled by Peltier elements for an energy efficient compact design.



Heating & Cooling Blocks		Temperature Range (°C)	Temperature Fluctuation (°C)	Temperature Variation (°C)
Heating & Cooling Block	CCB-350	Amb. $-20$ to $95$ / Amb. $-36$ to $203$	$0.06 / 0.11$ at $37^{\circ}\text{C}$	$0.15 / 0.27$ at $37^{\circ}\text{C}$
Heating Blocks	CHB-350S	Amb. $+5$ to $130$ / Amb. $+41$ to $266$	$0.1 / 0.18$ at $80^{\circ}\text{C}$	$0.2 / 0.36$ at $80^{\circ}\text{C}$
	CHB-350T			

## Vortex Mixers



Vortex Mixer (VM-96B / VM-96E)

### Features

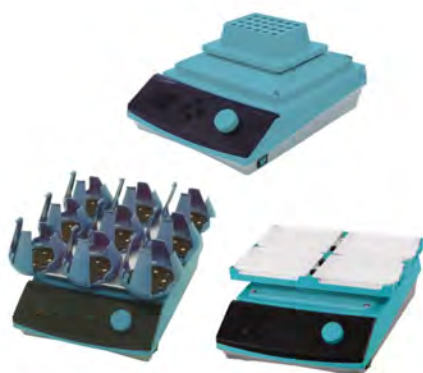
- 1) Well-balanced design and optimized safety features.
- 2) Low-profile with small footprint ideal for use on lab benches and within fume hoods or clean benches.
- 3) Real-time mixing for thanks to highly touch sensitive switch.
- 4) Selective mixing modes with Variable speed control knob.
  - VM-96B: Touch, Continuous, High-continuous
  - VM-96E: Touch, Continuous.
- 5) Built-in LED lamps in case of VM-96B for easy recognition of the mixing mode selected.
- 6) Sparkless BLDC motor adopted for safety, quick acceleration, and low maintenance.
- 7) Built-in safety features against overload and over current.
- 8) Chemically resistant PP (polypropylene) molded exterior.



vortex Mixers		Speed range (min)	Max. Load (kg / ltr)
Basic Model	VM-96B	$0 - 3,000$	$0.5 / 1.1$ (incl. attachment)
Economy Model	VM-96E	$200 - 3,000$	$0.5 / 1.1$ (incl. attachment)



## Shakers



Heating Shaker (CBS)

Mini & Microplate Shaker (CMS/CPS)



Rocking & Waving Shaker (CRS/CWS)



Advanced Orbital Shaker (SKC)



Dual-Action Shaker (SK)



Economy Shaker (SKF)



## Shakers

### Safety Features

- 1) Automatic power cut-off in case of over current.
- 2) User settable operation mode after power interruption: either Automatic Run or Manual Run.  
(only SKC models)
- 3) Special acceleration and deceleration circuitry. (except for RS, CPS, CMS, CWS, CBS, CRS models):
  - Stopping the shaking table always at the center using a position sensor.
  - Smooth start and smooth stop preventing chemical spills from flasks or test tubes.
- 4) Automatic adjusted shaking speed when load imbalance or unusual vibration is detected by the sensor.  
(only SKC models)
- 5) Over heat protection.
  - : mechanical and electric circuits.  
(only CBS models)

### Optimum Control Features

- 1) Microprocessor PID control.
- 2) Wide speed range suitable for most applications.
- 3) Self-diagnostic function identifying errors. (audible and visible alarms)
- 4) Diverse shaking features.
  - Dual shaking actions: orbital and reciprocating. (only SK models)
  - Multi-function shaking system.
  - Forward & Backward, Pause.
- 5) Intuitive, splash-proof, and easy to clean control panel.
  - Bright LED displays with touch-sensitive keypad. (for SK and SKF models)
  - Vivid and colorful vacuum fluorescent display (VFD) with touch-sensitive buttons and a dial knob. (for SKC, CMS, CPS, CBS, CWS CRS, and CBS models)
- 6) Audible alarm at the end of each shaking session. (for RS models)

### Constructional Features

- 1) Low-profile design minimizing vibration or sliding caused by the high speed shaking motion.
- 2) Smooth, quiet, and uniform shaking motion thanks to the maintenance-free BLDC motor which also supports high-speed applications and heavy workloads. (except for SKC, CWS, CRS models)
- 3) Innovative and durable triple-cam shaking mechanism. (SKC models)
- 4) Dirt-repellent external surface with power coating.
- 5) DD(Direct drive) motor allows the shaker to hold heavy loads, is quiet, high rpm, and durable. (SKC models)
- 6) Wide range of accessories.



RoHS compliant, except for CMS, SKC, SK, SKF, RS.  
CE Certification except for SKF-2000, RS-1

Shakers		Speed Range (mm/s)	Maximum Amplitude Size (mm/s, mm/s <sup>2</sup> )	Net Weight (kg/lb)
Advanced Orbital Shakers	SKC-6075	30 to 500	19 / 0.75	65 / 143.3
	SKC-6100		25 / 1	
	SKC-6200		50 / 2	
	SKC-7075		19 / 0.75	75 / 165.4
	SKC-7100		25 / 0.1	
	SKC-7200		50 / 2	
Dual-action Shakers	SK-300	10 to 300	40 / 1.6	24 / 52.9
	SK-600		29 / 63.9	
	SK-71		70 / 2.4	50 / 110.2
Economy Shakers	SKF-2025	10 to 500	7 / 0.25	20 / 44.1
	SKF-2050	10 to 400	13 / 0.5	
	SKF-2075	10 to 300	19 / 0.75	
	SKF-2025R	10 to 450	7 / 0.25	
	SKF-2050R	10 to 350	13 / 0.5	
	SKF-2075R	10 to 250	19 / 0.75	
	SKF-3050	10 to 400	13 / 0.5	24 / 52.9
	SKF-3075	10 to 300	19 / 0.75	
	SKF-3100	10 to 300	25 / 1	
	SKF-3050R	10 to 350	13 / 0.5	
	SKF-3075R	10 to 250	19 / 0.75	
	SKF-3100R	10 to 250	25 / 1	
Mini Shaker	CMS-350	50 to 300	13 / 0.5	8 / 17.6
Microplate Shakers	CPS-350	150 to 1200	3 / 0.1	7.7 / 17
Rocking Shaker	CRS-350	5 to 100	(Tilt 7~13° adjustable)	3.7 / 8.16
Waving Shaker	CWS-350	8 to 100	(Tilt 0~13° adjustable)	3.7 / 8.16
Heating Shaker		Speed Range (mm/s)	Temperature Range (°C)	Net Weight (kg/lb)
Heating Shaker	CBS-350	150 to 1500 (Speed range from 150 to max. 1500rpm according to the choice of interchangeable block)	Amb. +5 to 100 / Amb. 41 to 212	8.3 / 18.3
Separatory Funnel Shaker		Speed Range (mm/s)	Vertical Stroke Length (mm)	Net Weight (kg/lb)
Separatory Funnel Shaker	RS-1	50 to 300	40 / 1.6	24 / 52.9



## Hotplates & Stirrers



Hotplate Stirrer (T/TM/TS)



Hotplate Stirrer-multi position (MS-MH)



Magnetic Stirrer (MS-B/T/G)



Overhead Stirrer (MSE/MSM/MSP)



Magnetic Stirrer-multi position (MS-M)



## Hotplates & Stirrers

### Hotplates & Hotplate Stirrers

- 1) Microprocessor PID temperature control.  
(only for T-S/R, TS-S models)
- 2) Advanced hotplate stirrers(only for TS-S models) come with a temperature probe.  
(PT100, Max. 250℃, SN-8-4 connector sensor)
- 3) Virtually no decoupling of stir bars.  
(only for Hotplate Stirrers)
- 4) Fast and precise stirring speed even at high temperatures. (only for Hotplate Stirrers)
- 5) High heat transfer rate.
- 6) Non-slip heating bath preventing accidental spills. (optional)
- 7) Hot top warning indicator and multiple overheat prevention features.
- 8) Smooth start and quick stop.
- 9) Bright digital display panel.  
(except for TM-SB/RB models)

### Magnetic Stirrers

- 1) Easy to use.
- 2) Microprocessor PID controls.  
(MS-G/M Models only)
- 3) Equipped with a durable and silent BLDC motor.
- 4) Wide speed range.
- 5) Accurate speed control regardless of the sample weight.
- 6) Safe control even at low speed.
- 7) Quick real-time start of the stirring action. (MS-B/T Models only).
- 8) Multi-position magnetic stirrers(only for MS-M/MH models) provide user-friendly operation and time setting modes allowing various ways of multi-position stirring to meet users' demands.  
(single point, multiple point, whole row, whole column)

### Overhead Stirrers

- 1) Powerful torque capable of handling high viscosity tasks.
- 2) Maintenance of constant motor speed by PID feedback control system even under conditions of changing viscosity.  
(MSM and MSP Models only)
- 3) Wide speed range.
- 4) Bright FND digital display panel.  
(MSM and MSP Models only)
- 5) Compact and slim head design.
- 6) Sturdy aluminum main body efficiently absorbing and emitting the heat generated by the motor.



Hotplates & Hotplate Stirrers		Temperature Range (℃)	Speed Range (rpm)	Stirring Capacity, Max. (L 2000 RPM)	Positions
Hotplates	T-14S/R <sup>1)</sup> T-17S/R <sup>1)</sup>	Max. 350 / 662	-	-	Single
Hotplate Stirrers (Basic)	TM-14SB/RB <sup>1)</sup> TM-17SB/RB <sup>1)</sup>	Max. 350 / 662	50 to 2,000	20 / 0.7	Single
Hotplate Stirrers (Advanced)	TS-14S <sup>1)</sup> TS-17S <sup>1)</sup>	Max. 350 / 662	30 to 2,000	20 / 0.7	Single
Hotplate Stirrers (Multi-position)	MS-33MH MS-53MH	Max. 120 / 248	30 to 2,000	2.25* 3.75*	9 15
Magnetic Stirrers		Speed Range (rpm)		Stirring Capacity, Max. (L 1000)	Positions
Magnetic Stirrers (Scale)	MS-12B/T <sup>1)</sup>	150 to 2,500		2	Single
	MS-17B/T <sup>1)</sup>			4	
	MS-22B			5	
Magnetic Stirrers (Digital)	MS-17G MS-22G	30 to 2,000		4 5	Single
	MS-23M			1.5*	
Magnetic Stirrers (Multi-position)	MS-32M	30 to 2,000		1.5*	6
	MS-33M			2.25*	9
	MS-51M			1.25*	5
	MS-52M			2.5*	10
	MS-53M			3.75*	15
Overhead Stirrers		Speed Range (rpm)		Stirring Capacity, Max. (L 1000)	
Overhead Stirrers (Economy)	MSE-1	up to 1,400		20	
	MSE-2	up to 1,200		30	
	MSE-3	up to 900		50	
Overhead Stirrers (Analog)	MSM-1	50 to 1,400		20	
	MSM-2	50 to 1,200		30	
	MSM-3	50 to 900		50	
Overhead Stirrers (Digital)	MSP-1	50 to 1,400		20	
	MSP-2	50 to 1,200		30	
	MSP-3	50 to 900		50	

1) S/SB Models: straight type, R/RB Models: round type with handles.

\* Erlenmeyer flask: usable under 250ml in case full positions.



## Temperature Chambers



Heating Chamber (LBV/LTV)



Heating & Cooling Chamber (KBD/KMV)



Heating & Cooling Chamber (JMV)



Heating & Cooling Chamber (PBV/PMV)



Heating & Cooling Chamber (LCH)



Heating & Cooling Chamber  
Table Top Model (TC-KE/ME)



## Temperature Chambers

### Heating chamber (LBV/LTV) Heating & Cooling chamber (KBD/KMV/JMV/PBV/PMV)

- 1) Designed and tested in accordance with the international standards.
- 2) Temperature values of all chambers are measured according to DIN 12880 and IEC 60068-3-5.
- 3) Horizontal airflow and vertical airflow models can be selected depending on the volume and loading.
  - Horizontal airflow chamber (LBV / LTV / KBD / KMV / PBV / PMV)
  - Vertical airflow chamber (JMV)
- 4) Forced convection increases temperature uniformity by flowing heated air throughout the whole chamber and all around samples.
- 5) Colorful interactive touch type LCD controller.
- 6) Sufficient programmable control support.
- 7) Automatic start/stop for unattended operations.
- 8) Three different language support. (English / Chinese / Korean)
- 9) RS-485 communication port(optional) for connection up to maximum 32 units.
- 1) Air-tight door closure with perfectly sealed packing.
  - Two-point door latch also enhances tightness to door closure.
  - Non-conducting ceramic and heat resistant silicone packing completely blocks high heat leakage from the inner chamber. (only for LTV Models)
- 2) Energy efficiency due to optimization of the insulation system.
  - Surface of the unit doesn't allow high temperatures of over 51 °C. (DIN EN 563)
- 3) Corrosion resistance stainless steel inner chamber.
- 4) Space efficient and easy loading chamber design.
  - Included two shelves for loading of large amounts of samples.
  - Heavy load shelving, rated for 40kg are also available. (optional)
- 5) Advanced safety features.
  - Over-current & Current Leakage.
  - Protection, Independent Safety Fuse.
  - Reversed-phase Protection.
  - Over-current Protection of Motor.
  - Door Open Warning.
  - Electric wiring panel access warning.

### Heating & Cooling chambers(LCH)

- 1) Microprocessor PID control, Auto-tuning, Calibration.
- 2) Three temperature preset functions.
- 3) Programming operation.
- 4) LED display with touch-sensitive keypad.
- 6) Great temperature uniformity by forced air convection.
- 7) Two chamber type for space saving.
- 8) Surface temperature is not allowed to go higher than 60 °C.

### Heating & Cooling chambers(TC-KE/ME)

- 1) Compact design with efficient corrosion resistant evaporating system.
- 2) Microprocessor PID control, Auto-tuning, Calibration.
- 3) LCD display with touch-sensitive keys.
- 4) Programming operation
- 5) RS-485 communication port(optional) for connection up to maximum 32 units.



CE Certification only for TC All

Heating Chambers		Operating Temp. Range (°C)	Chamber Volume (L / cu ft)
Heating Chambers (Floor Standing Models)	LBV Models	Amb. +45 to 250 / Amb. +113 to 482	125 to 1000 / 4.4 to 35.3
	LTV Models	Amb. +45 to 350 / Amb. +113 to 662	
Heating & Cooling Chambers		Operating Temp. Range (°C)	Chamber Volume (L / cu ft)
Heating & Cooling Chambers (Floor Standing Models)	KBD Models	-70 to 180 / -94 to 356	125 to 420 / 4.4 to 14.8
	KMV Models	-35 to 180 / -31 to 356	125 to 1000 / 4.4 to 35.3
Heating & Cooling Chambers (Floor Standing Models)	JMV Models	-35 to 180 / -31 to 356	125 to 990 / 4.4 to 34.9
	PBV Models	-25 to 100 / -13 to 212	125 to 1000 / 4.4 to 35.3
	PMV Models	-5 to 100 / 23 to 212	
Heating & Cooling Chambers (Floor Standing Models)	LCH Models	-20 to 100 / -4 to 212	150 to 485 / 5.3 to 17.1
	LCH-11-2C		150 / 5.3 x 2 chambers
	LCH-G Models		150 to 485 / 5.3 to 17.1
	LCH-11G-2C	0 to 100 / 32 to 212	150 / 5.3 x 2 chambers
Heating & Cooling Chambers (Tabletop Models)	TC-KE Models	-35 to 150 / -31 to 302	25 to 100 / 0.9 to 3.53
	TC-ME Models	-20 to 120 / -4 to 248	



## Temperature & Humidity Chambers



Temp. & Humid. Chamber (TH-G model)



Temp. & Humid. Chamber (TH-I/GU model)



Temp. & Humid. Chamber (TH-TG model)



Temp. & Humid. Chamber (TH-ICH model)



Temp. & Humid. Chamber  
Table Top Model (TH-KE/ME/PE model)



Fingerprint Development  
Chamber (TH-PF model)



Clean Temp. & Humid  
Chamber (TH-CR model)



Plant Growth  
Chamber (GC model)



## Temperature & Humidity Chambers

### Safety Features

- 1) Self-protecting cut-off function
  - Over temperature, electrical leakage or over voltage automatically cuts the power from the unit, in an orderly fashion, starting with the heating element then the controller unit.
- 2) Time setting function for automated RUN / OFF
  - Enable automatic start and shut off of a unit at any specific time.
  - A timer can be set for a month and data can be recorded in time, day, or week intervals.
- 3) Low fluid level protection water leakage alarm
  - Intermittent toned audible alarm and visual alarms.
  - Water supply and circuit compartment separate from each other to ensure safety.
- 4) Door-open warning alarm
  - Intermittent audible alarm and visual alarms.
  - Heating element, fan, and platform auto-matically stops when the door is opened to minimize heat loss and to ensure users safety.

### Optimum control Features

- 1) Microprocess PID control / Auto-tuning / Calibration.
- 2) Optimize CPU logic control system.
  - Optimum control of temperature / humidity with economical controls that reduces power consumption.
- 3) Touch screen type display.
  - 5.7-inch Color LCD display with inter-active input system.  
(Floor Standing Models only)
  - Temperature & humidity timer settings, and operation condition.
  - Temperature & humidity and other operating parameters can be recorded using a recorder.
  - Easily visible set value: set point value (SV) / present value (PV) are also added on the colorful LCD controller.

### Protect the Global Environment

- 1) Use of HFC refrigerant prevents damage to the ozone layer.
- 2) Complies with the Montreal Protocol on Substances That Deplete the Ozone Layer control measures.

### Plant Growth chamber

- 1) Max. to 35,000Lux for GC-1000. Max. to 20,000Lux for GC-300 Models.
- 2) 40 to 80% RH for GC-300TLH. (at 20~35 °C)  
50 to 90% RH for GC-1000TLH. (at 20~35 °C)
- 3) Max. 5,000ppm CO2 ON/OFF system. (optional)
- 4) Microprocessor PID control, Auto-tuning, Calibration.
- 5) Programming operations.
- 6) High quality #304 grade stainless steel interior and dirt repellent powder coated exterior surface.
- 7) Wide inner tempered glass door provides a full view of the samples.
- 8) Air flow system very efficient for plant growth.
- 9) High frequency electronic ballast lamps.
- 10) Unique construction to minimize the heat from rising due to the luminous light source.
- 11) Easy cleaning of condenser air-filter.
- 12) Fast acting and easy calibrate electronic humidity sensor.
- 13) Dual type water level sensor.



CE Certification only for TH, TH-KE/ME/PE, TH-GC

Temperature & Humidity Chambers		Operating Temp. Range <sup>1)</sup> (°C)	Operating Humid. Full Range <sup>2)</sup> (%)	Chamber Volume <sup>3)</sup> (L)
Temp. & Humid. Chambers (Floor Standing Models)	TH-G Models	-35 to 150 / -31 to 302	25 to 98	189 to 1000 / 7.4 to 35.3
	TH-I Models		20 to 98	180 to 408 / 6.4 to 14.4
	TH-GU-300	-60 to 150 / -76 to 302	25 to 98	300 / 10.6
	TH-TG Models	-5 to 100 / 23 to 212	10 to 95	190 to 1500 / 6.7 to 53
	TH-ICH <sup>3)</sup> Models	-5 to 85 / 23 to 185	20 to 85	300, 760 / 10.6, 26.8
Temp. & Humid. Chambers (Tabletop Models)	TH-KE Models	-35 to 150 / -31 to 302	20 to 95	25 to 100 / 0.9 to 3.53
	TH-ME Models	-20 to 150 / -4 to 302	20 to 95	
	TH-PE Models	0 to 120 / 32 to 248	30 to 95	
Fingerprint Development Chamber	TH-PF-100	40 to 100 / 104 to 212	50 to 95	100 / 3.53
Clean Temp. & Humid. Chamber	TH-CR-270	-35 to 100 / -31 to 212	30 to 90	270 / 9.5
Plant Growth Chambers		Operating Temp. Range <sup>1)</sup> (°C)	Operating Humid. Full Range <sup>2)</sup> (%)	Chamber Volume <sup>3)</sup> (L)
Plant Growth Chambers (Floor Standing Models)	GC-300TL	5 to 50 / 41 to 122 - Lamp off	-	300 / 10.6
	GC-300TLH	10 to 50 / 50 to 122 - Lamp on	40 to 90	
	GC-1000TLH		50 to 90	1000 / 35.3

1) Operating temperature ranges obtained without using humidity. 2) Please, refer to the specification details in the catalog. 3) TH-ICH Models temperature ranges obtained w/o using light or humidity.



## Hoods



Clean Benche-Advanced (BC-H)



Clean Benche-Basic (BC-B)



Ductless Fume Hood (DLH-G)



Extraction Arm Hood (MAH)



Bench Top Fume Hood (PMH)



PCR Workstation (PW)



UV Sterilization Cabinet (UVC)



Filtering Storage Cabinet (FSC)



## Hoods

### Clean Benche

- 1) UV-blocking tempered glass sliding door.
- 2) Automatic switch off of the UV lamp when the door is opened.
- 3) 99.99% efficient HEPA filter.
- 4) Separate fuses protecting against overcurrent.
- 5) Dirt-repellent powder coating on the external surface.
- 6) Grade 304 stainless steel work surf-ace with high chemical resistance.
- 7) BLDC motor in the blower provides a quiet working environment.
- 8) Digital airflow rate sensor for autom-ated airflow speed control. (BC-H model)
- 9) Each digital display is equipped inside and front. (BC-H model)

### Bench Top Fume Hood

- 1) Compact design for easy moving and space saving.
- 2) Transparent polycarbonate front door for observation.
- 3) door opens to five positions.
- 4) One molded design for leak-tight and exceptional durability.

### Ductless Fume Hood

- 1) Easy-to-operate control panel:  
- Consist of fluorescent lamp, Fan Start/ Stop, Blower speed controller, alarm, menu and etc.
- 2) Built-in anemometer for visually monitoring real time input air velocity.
- 3) Transparent front door and both sides made of acrylic resin providing clear inside view.
- 4) Door Stay: fixture to fix it when door open at 2 steps.
- 5) Protection against overcurrent.
- 6) Optional mobile stand with lockable casters for easy relocation.

### Extraction Arm Hood

- 1) Two choices for superior extraction.  
- When the mobility is important, select MAH models. Extraction Arm Hood comes with Filter Box.  
- When there is a ventilation system in your lab, select AH models. They are mountable on any surface such as ceiling, wall, roof.
- 2) Extraction arm hood can be used with bench top fume hood.

### PCR workstation & UV Sterilization Cabinet

- 1) Powerful and uniformly distributed UV-C illumination.  
(average lifespan: 8,000 hours)
- 2) Automatic switch off of the UV lamp when the door is opened unintentionally.
- 3) 99.99% efficient HEPA filter.
- 4) Protection against overcurrent.
- 5) Pre-filter extending the life of main HEPA filters. (PW models)
- 6) Intelligent digital controller for timer, alarm, and blower speed. (PW models)
- 7) Chemical-resistant work surface. (UVC-models)

### Fitering Storage Cabinet

- 1) Compliance with the strict international standard filter capacity and efficiency. (BS 7989 2001)
- 2) Continuous air recirculation without any outside air into the cabinet results in less chemical filter consumptions .
- 3) Various chemical filters are available for the evironments and stored samples.
- 4) Corrosion resistant epoxy coated steel.



CE Certification number for MAH, AH, PMH, FSC

Clean Benches		Filter	Work Surface
Clean Benches (Advanced Models)	BC-01H / BC-11H / BC-21H	Pre filter, HEPA filter	Grade 304 Stainless Steel
Clean Benches (Basic Models)	BC-01B / BC-11B / BC-21B		
Fume Hoods		Filter	Work Surface
Ductless Fume Hoods	DLH-01G	Pre filter	6 Different Work Surface Types (optional) SUS #304, SUS #316, Ceramite, Polypropylene, Bakelite, PVC
	DLH-11G	6 Different Filter Types (optional) - Activated carbon filter, Acid filter, Halogen compounds filter, Formaldehyde filter, Ammonia / Amines filter, HEPA filter	
Bench Top Fume Hoods	PMH-720	-	Polyethylene
Extraction Arm Hoods	MAH models	FB-50 Filter Box with Pre filter, HEPA filter, Activated carbon Filter	PMH-720, Bench Top Fume hood (optional)
	AH models	-	PMH-720, Bench Top Fume hood (optional)
Workstations & Cabinets		Filter	Work Surface
PCR Workstations	PW-01 / PW-11 / PW-21	Pre filter, HEPA filter	Transparent Acrylic Resin (10mm/0.39" thick)
UV Sterilization Cabinets	UVC-01 / UVC-11 / UVC-21	-	Grade 304 Stainless Steel
Filtering Storage Cabinets	FSC-120	Pre filter, Activated Carbon Filter -VOC type 3 Different Filter Types (optional) HEPA Filter, Activated Carbon Filter - MA/MB type	Corrosion resistant epoxy coated steel



## Furniture

Impressive range of cabinet Models to choose from for creating the most ideal lab environments









The world professional organization for providing leadership in issues involving the design, specification and utilization of laboratory furniture and equipment.










### Tall Cabinets








Stand Type (DS-SL)				Stand Type (DS-S)				
(mm)	476	560	644	476	560	644	686	938
(mm)		2400				1800		
(mm)		700				700		
	24047-D6	24056-D6	24064-D6	18047-D4	18056-D4	18064-D4	18068-D6	18093-D6
(mm)		-				550		
	-	-	-	18047-N4	18056-N4	18064-N4	18068-N6	18093-N6

Combi Type (DS-C)				Window Type (DS-OW)			
(mm)	476		560	472	556	915	1083
(mm)		1800				1800	
(mm)		700				-	
	18047-D4	18047-D5	18056-D4	18056-D5	-	-	-
(mm)		550				550	
	18047-N4	18047-N5	18056-N4	18056-N5	18047-N1	18055-N1	18091-N2
							18108-N2

Open Rack Type (DS-OR)				Gas Cylinder Type (DS-GC)		
						
(mm)	472	556	915	1083	740	1070
(mm)			1800			1800
(mm)			550			550
	18047-N1	18055-N1	18091-N2	18108-N2	18074-N2	18107-N2

### Base Cabinets

Tabletop Type (DS-TT)			Tabletop Type (DS-TW)				
							
(mm)	476	560	644	472	556	915	1083
(mm)		900				900	
(mm)		700				-	
	09047-D2	09056-D2	09064-D2	-	-	-	-
(mm)		550				550	
	09047-N2	09056-N2	09064-N2	09047-N1	09055-N1	09091-N2	09108-N2

Under Table Type (DS-UT)			Under Table Type (DS-UD)				
							
(mm)	476	560	644	476		560	
(mm)		650				650	
(mm)		700				700	
	06047-D2	06056-D2	06064-D2	06047-D2	06047-D3	06056-D2	06056-D3
(mm)		550				550	
	06047-N2	06056-N2	06064-N2	06047-N2	06047-N3	06056-N2	06056-N3



## Furniture

### Technical Benefits

#### Manufactured with PP trays and dividers



- 8 different tray dimensions
- Impact resistant, durable, and excellent chemical resistance rating
- Adjustable trays can be placed at different heights
- The tray divider keeps stuff tidy and organized

#### Easily removable name plates



- Convenient and useful for keeping track of inventory
- 3 different sizes

#### Ventilation system



- Hexagonal or trapezoidal ventilation space is formed between the innovatively designed cabinet side structures
- Exhaust fan(optional) : Radial ventilators great for filtering out fumes lighter or heavier than air
- Exhaust fan and filter(optional): Ductless air filter system with active carbon filter absorbs the toxic chemicals

#### Epoxy powder coated

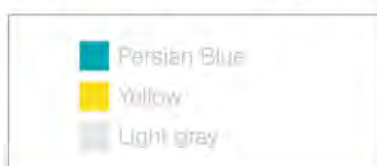
- High-grade steel constructed completely with galvanized and power coated surface for high protection against corrosion, and chemicals

#### Locking mechanism



- Adopted self-lock handle convenient for keeping things secure, comes standard with lock for protection against unauthorized users
- Comes standard with lock for protection against unauthorized personnel

#### 3 types of color choices



#### Anchoring kit

- All tall cabinets include anchoring kits to fix the cabinet to the floor to prevent the cabinet from tipping over

#### Gas cylinder cabinets are constructed for storage of gas cylinders inside building



- DS-GC Models: Essentially convenient and standard safety functions are incorporated in the cabinets



## Carboy & Ice Pan



Round / Rectangular Carboy



Ice Pan

### Carboy

- 1) Space-saving design for storing liquid solvent.
- 2) Polypropylene container features durable and excellent chemical resistance.
- 3) Spigot provides easy dispensing and leak resistance.
- 4) The amount of liquid solvent is easily adjustable by spigot tap's angle.
- 5) Molded in shoulder handles provide great convenience and strength.
- 6) Gradations at two sides for easy checking.

Carboy	DBR-05	DBR-10	DBR-20
Description	Round type		
Volume (L / gal)	5 / 1.32	10 / 2.64	20 / 5.28
Material	Polypropylene		
Dimension (WxDxH, mm / inch)	180 x 242 x 333 / 7.1 x 9.5 x 13.1	225 x 277 x 399 / 8.9 x 10.9 x 15.7	260 x 317 x 539 / 10.2 x 12.5 x 21.2

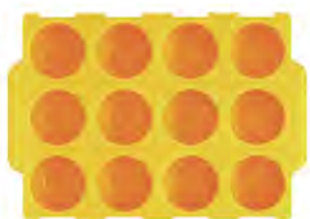
Carboy	DBC-05	DBC-10
Description	Rectangular type	
Volume (L / gal)	5 / 1.32	10 / 2.64
Material	Polypropylene	
Dimension (WxDxH, mm / inch)	114 x 387 x 305 / 4.5 x 15.2 x 12	204 x 387 x 317 / 8 x 15.2 x 12.55.7

### Ice Pan

- 1) Rigid one molded urethane foam construction provides high durability.
- 2) Water proof, leak proof, unbreakable.
- 3) Rim enables safe handling and transport.
- 4) Ice pan can be used with On-ice racks(optional) for higher heat transfer. Scratch-proof and high heat transfer aluminum rack with easy tube identification.(numbers carved into the rack)

Ice Pan	IBS-310
Material	Urethane Foam
Volume (L / cu ft)	4 / 0.14
Dimension (WxDxH, mm / inch)	347x257x132 / 13.7x10.1x5.2

## Flask Support



Flask Support

### Flask Support

- 1) Flask size :  
100ml, 250ml, 500ml, 1000ml, 2000ml
- 2) Chemically resistant to various organic solvents.
- 3) Material : Polypropylene
- 4) Heat Resistance: -30℃ ~ +121℃

Model	FT 010 13	FT 010 34	FT 025 12	FT 025 23
Hole Capacity (ml)	100	100	250	250
Hole (Dia, xH) (mm / inch)	70x91 / 2.76x3.58	70x91 / 2.76x3.58	98x122 / 3.86x4.8	98x122 / 3.86x4.8
Dimension (WxDxH) (mm / inch)	310x100x100 / 12.2x3.94x3.94	384x265x98 / 15.12x10.43x3.86	280x125x130 / 11.02x4.92x5.12	389x239x130 / 15.31x9.41x5.12

Model	FT 050 12	FT 100 12	FT 200 12
Hole Capacity (ml)	500	1000	2000
Hole (Dia, xH) (mm / inch)	121x128 / 4.76x5.04	148x156 / 5.83x6.14	183x188 / 7.2x7.4
Dimension (WxDxH) (mm / inch)	360x146x135 / 14.17x5.75x5.31	415x192x165 / 16.34x7.56x6.5	503x223x199 / 19.8x8.78x7.83



## Electrophoresis System



Electrophoresis System



Electrophoresis System with power supply

### Electrophoresis System

- 1) Superior shock-resistance, transparent, and durability to acrylic adhesives
- 2) UV-transparent gel trays allow for viewing bands on UV-transilluminator without removing gel tray.
- 3) Diverse-sized molded gel trays and casters for leak-free casting.
- 4) Double-sided combs are provided depending on each model.
- 5) 31-well comb and 16-well comb for matching multichannel pipettes.

### Power Supply

- 1) Four pairs of outlet terminals enable running 4 cells simultaneously.
- 2) Compact and stackable design.
- 3) 100~240V, 50/60Hz, 5.0A(max)



Electrophoresis System		EP-05	EP-10	EP-18
Buffer capacity (L / cu ft)		0.5 / 0.02	1.0 / 0.04	1.8 / 0.07
Material	Tank, Lid, Gel tray, Gel Caster	PC (Polycarbonate)		
	Comb	ABS (Acrylonitrile-butadienestyrene)		
	Electrode	Platinum wire		
Dimension	Electrophoresis tank (mm / inch)	219x134x70 / 8.6x5.3x2.8	219x214x70 / 8.6x8.4x2.8	387x214x70 / 15.2x8.4x2.8
	Gel caster (WxDxH) (mm / inch)	254x87x17 / 10x3.4x0.7	167x264x30 / 6x10.4x1.2	167x264x30 / 6.6x10.4x1.2
	Gel tray (WxDxH) (mm / inch)	82x81x17 / .2x3.2x0.7	180x102x29 / 7.1x4.0x1.1	180x205x29 / 7.1x8.1x1.1
	Comb (WxD) (mm / inch)	225x45 / 8.9x1.8	158x46 / 6.2x1.8	158x46 / 6.2x1.8
	Net Weight (Kg / lbs) <sup>1)</sup>	0.39 / 0.86	0.60 / 1.32	0.93 / 2.05

1) Electrophoresis unit's weight

\* Included Electrophoresis unit, Gel caster unit, Combs in one system, (power supply is not included)

## Clamp Holder & Magnetic Drive



Clamp Holder



Magnetic Drive

### Clamp Holder

- 1) Adjustable to fit support rods up to 5/8" in. diameter.
- 2) Lightweight, also selectable aluminum or polypropylene clamp holders.
- 3) One-molded knob with fixing screw for strong support
- 4) Nonskid contact surface tightens stand rod stably.
- 5) C-20, C-10 for overhead stirrers and C-10, C-7, C-5 for hotplate stirrers.

Clamp Holder	C-20	C-10	C-7	C-5
Dimension				
Max. (Ø, mm)	27	17	12	12
Open (Ø, mm)	20	15	-	-
Material				
Body	Aluminum			PP
Knob	Polypropylene			
Bolt	Stainless Steel			

### Magnetic Drive

- 1) Use of rare-earth elements which is Neodymium (Nd), Samarium (Sm-Co) magnet.
- 2) High-speed rpm, vibration free.
- 3) Specifically designed with permanent magnets which has a dynamic torque rating.

Magnetic Drive	MD-T6-24	MD-T6-29	MD-T6-34
Ground Joint	24 / 40	29 / 42	34 / 45
Material			
Body / Housing	SUS316L / CR-PLATE		
Bushing / Seal	PTFE / Viton		
Driving			
Vacuum	Max. 1×10-4 mmHg		
Pressure	Max. 5kg / cm2		
Temp	Max. 70 ℃ (without cooling), Max. 300 ℃ (with cooling)		
Shaft Size (Ø, mm)	Ø8		
Cooling in / out Size (Ø, mm)	Ø3.2		
Dimension (ØxL, mm)	Ø50×200		



J-300SF / 300MF

## Forced convection drying oven



Model		J-300SF	J-300MF
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		TRIAC	
Thermocouple		K type (CA)	
Heater	W	1,200	1,200
Circulation fan & motor	W	Φ 150×60×24W	
Safety device		Self diagnosis function (Memory error, Temp. overheating, SSR short circuit, Sensor short circuit), E.L.B. (Electric Leakage Breaker)	
Shelves		3ea	
Material	Interior	Stainless steel plate	
	Exterior	Steel plate with powder coated finish	
Power source		AC 230V, 50/60Hz, 1 Phase	

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℃ ~ 28℃	
Overall size (W×D×H)	mm	635×625×1000	635×625×930
Bath inner size (W×D×H)	mm	440/470×420/470×700	440/470×470×660/700
Using capacity	ℓ	129/154	136/154
Temperature	range	Ambient+ 5.0℃ ~ 60.0℃	
	accuracy	± 0.5℃ at 37.0℃	
	uniformity	± 1.0℃ at 37.0℃	
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 (incoloy sheath)	W	400	650
Safety device		Self diagnosis functions (Memory error, Temp. overheating, SSR short circuit, Sensor short circuit), E.L.B. overheating protection, water level display	
Shelves		3ea	
Power source		AC 230V, 50/60Hz, 1Phase	
Certification		CE, RoHS	

J-IWL

## Inspissator



Model		J-IWL
Overall size (W×D×H)	mm	800×720×1,750
Chamber size (W×D×H)	mm	450×500×750
Capacity	ℓ	169
Temperature	range	95℃ (Max.)
	controller	PID controller
	regulator	SSR type
Thermocouple		Pt 100 ohms
Heater (sheath)	W	2,000
Insulation		Glass wool
Function		PID control chamber & water bath
Safety device		Self Diagnosis function (Memory error, temp. overheating, SSR short circuit, Sensor short circuit), E.L.B.
Shelves		5ea
Material	interior	Stainless steel plate
	exterior	Steel plate with powder coated finish 9A
Power source & consumption		AC 220V 60Hz 1phase 9A
Net weight	kg	136



J-NIB4

## Gravity convection incubator

CE



Model		J-NIB4
Type		Gravity convection system
Environmental temp. range		5℃ ~ 28℃
Overall size(W×D×H)	mm	1,270 × 710 × 1,920
Chamber size(W×D×H)	mm	475 × 560 × 640 × 4ea
Capacity	ℓ	680 (170 × 4 chamber)
Temperature	range	35.0℃ ~ 40.0℃
	accuracy	± 0.5℃ at 37.0℃
	uniformity	± 2.0℃ at 37.0℃
	controller	PID controller x 4ea
	regulator	SSR type
Thermocouple		Pt 100 ohms
Heater(Ni-Cr)	W	1,200 (300 × 4 ea)
Door	inner	Clear safety glass inner door
	outer	Magnetic door closure with positive sealing gasket
Safety device		Self diagnosis function(Memory error, Temp. overheating, SSR short circuit, Sensor short circuit), ELB
Shelves	quantity	40 ea (10 ea of 16cm Ogawa medium rack / chamber)
	system	Rail system
Material	interior	Stainless steel plate
	exterior	Steel plate with powder coated finish
Power source & consumption		AC 220V 50/60Hz 1phase
Certification		CE

J-RHC1-LCD-T

## Constant temp. & humidity chamber

CE



Model		J-RHC1-LCD-T
Overall size (W×D×H)		1,070×1,020×1,760
Chamber size (W×D×H)		500×500×600
Capacity		150
Temperature	range	-20.0℃ ~ 150.0℃
	controller	LCD touch screen programmable logic controller
Humidity	range	35% ~ 95% (Basic range)
	controller	LCD touch screen programmable logic controller
	sensor	Electronic sensor (4~20mA)
Thermocouple		Pt 100 ohms
Heater	drying bulb W	2,000
	humidity bulb W	2,000
Refrigerator	condenser system	One stage (air cooling)
	compressor Hp	1/3 × 1ea, 3/4 × 1ea
Safety device		Overload prevent, alarm, overheating prevent, E.L.B., 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, 1Phase
Certificate		CE

※Option : Temp. & Humidity recorder





J-NSIL-R / J-SISN-R

## Shaking incubator

CE



Model		J-NSIL-R (cooling)	J-SISN-R
Shaking type		Rotation type	
Overall size (W×D×H)	mm	540×680×580/600	540×615×435/460
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 37.0℃	
	Uniformity	± 1.0℃ at 37.0℃	
	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	15 ~ 350	
Refrigeration compressor	Hp	1/8	-
Safety device		Self Diagnosis function (Memory error, temperature overheating, SSR short circuit, Sensor short circuit), E.L.B. (Electrical Leakage Breaker), Sound alarm	
Material	interior	Stainless steel plate	
	exterior	Steel plate with powder coated finish	
Power source		AC 230V, 50/60Hz, 1Phase	
Certificate		CE	-

J-SWB19 / J-SWB29

## Water bath shaker

CE



Model		J-SWB19	J-SWB29
Type		Reciprocating type	
Overall size (W×D×H)	mm	580×503×445	780×553×445
Bath inner size (W×D×H)	mm	400×350×250	600×400×250
Capacity	ℓ	35	60
Temperature	range	Ambient+ 5℃ ~ 99℃	
	accuracy	± 0.1℃ at 50.0℃	
	uniformity	± 0.5℃ at 50.0℃	
	controller	PID controller	
Thermocouple		Pt 100 ohms	
Shaking	speed range	rpm	35 ~ 250
	stroke	mm	30
	motor	W	25
	capacity	mℓ	250×9ea 500×12ea or 250×15ea
Heater(sheath)	W	2,000	3,000
		Self diagnosis function (Memory error, temp. overheating, SSR short circuit, Sensor short circuit), E.L.B.	
Material	interior	Stainless steel plate	
	exterior	Steel plate with powder coated finish	
Power source & consumption		AC 230V, 50/60Hz, 1Phase	AC 230V, 50/60Hz, 1Phase
Certificate		CE	-

※ Option : Shaking plate (spring wire rack)

J-FM28 / FM38 / FM48

## Electric muffle furnace



Model		J-FM28	J-FM38	J-FM48
Overall size (W×D×H)	mm	435×610×575	580×655×695	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	kW	3	4.5	12
Heating element		Molded Kanthal A1		
Insulation		Fiber & ceramic		
Power source		AC 220V, 50/60Hz, 1phase		AC 220V, 50/60Hz, 3phase



J-NAS45 / NAS62 / NAS81 / NAS103

## Automatic autoclave, sterilizer

CE



Model		J-NAS45	J-NAS62	J-NAS81	J-NAS103
Overall size(W × D × H)	mm	650 × 450 × 1,060	700 × 500 × 1,060	750 × 550 × 1,115	800 × 600 × 1,115
Inner size(ø × H)	mm	300 × 650	350 × 650	400 × 650	450 × 650
Capacity	ℓ	45.9	62.5	81.6	103
Temperature	using range	115℃ ~ 125℃			
	accuracy	± 1℃			
	controller	PID controller			
	regulator	SSR type			
Thermocouple		Pt 100 ohms			
Using pressure		0.117 Mpa			
Heater(sheath)	W	3,000	3,000	3,500	4,000
Basket		2ea			
Safety device	heating	Self diagnosis function (Memory error, temp. overheating, SSR short circuit, sensor short circuit), ELB			
	pressure	Double safety valve			
Material	basket	Stainless steel			
	exterior	Steel plate with powder coated finish			
Power source		AC 230V 50/60Hz, 1 phase			
Net weight	kg	74	87	116	130
Certification		CE			

※ Option : J-HAS series (Max. 135℃ products) CE certified

J-MSFS

## Separatory funnel shaker

CE



Model		J-MSFS
Shaking type		Reciprocating type (vertical or horizontal shaking)
Overall size (W × D × H)	mm	660 × 500 / 515 × 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) Funnel flask holders (max. additional 4ea : 250ml)
Power source & consumption		AC 230V 50/60Hz 1Phase
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	15~350
Motor (BLDC) W	15
Controller	Digital setting / feedback system
Capacity(flask) ml	100×16ea or 250×9ea or 500×6ea
Power source	230V, 50/60Hz, 1Phase
Certification	CE

※ Option : Reciprocating type. ※ Accessories (option)

Flask clamp rack : 100ml. 250ml. 500ml

Option



J-CBWW1, 2

## Clean bench



Model	J-CBWW1	J-CBWW2
Type	Vertical type	
Overall size (W×D×H) mm	880×850×1,945	1,340×850×1,945
Inner size (W×D×H) mm	780×630×720	1,240×630×720
Main filter	HEPA filter(99.97% efficient on particle of 0.3μ)	
Filter efficiency(purity)	Class 100	
FL lamp W	20×2ea	40×2ea
Germicidal lamp(UV) W	20×2ea	40×2ea
Fan motor Hp	1/4	1/2
Air flowing volume m³/min	16	32
Velocity m/sec	0.5 ± 0.2	
Utility	socket	AC 220V 1ea
	gas cock	1ea
Window	Reinforced glass 5T	
Material	working table	Stainless steel plate
	cabinet	Steel plate with powder coated finish
Power source	AC 220V 60Hz 1phase	

J-BSCV2

## Clean bench / Bio safety cabinet

CE



Model		J-BSCV2
Type		Class II A2
Overall size (W×D×H)	mm	1,380×785×2,230/2,280
Inner size(W×D×H)	mm	1,230×645×730
Working size(W×D)	mm	1,190×475
Main control		LCD microprocessor control with membrane touch type
Main filter		HEPA filter(99.97% efficient on particle of 0.3μ)
FL lamp	W	40×2ea
Germicidal lamp(UV)	W	30×1ea
Air flowing volume	m³/min	45 ± 5
Velocity	m/sec	0.5 ± 0.2
Utility	socket	AC 220V 2ea
	gas cock	1ea
Material	working table	Stainless steel plate
	cabinet	Steel plate with powder coated finish
Power source		AC 230V, 50/60Hz, 1phase
Certification		CE



J-PVS

## Vibratory sieve shaker



Model		J-PVS
Shaking type		Vibration type(up/down)
Overall size(W×D×H) mm		410×410×230/600
Shaking(vibration)	control system	Frequency control
	controller	Digital setting / display
	mode	1) Interval vibration mode 3 cycles of 1:1, 3:1, 5:1 second. then continuous. 2) Interval vibration mode repeats cycle 1:1 second. 3) Continuous mode 4) vibratory motion (130 cycles per min.)
Power consumption W		500
Power source		AC 230V 50/60Hz 1Phase
Net weight kg		26.7
Sieve(option)	size( Ø × H) mm	Ø203 × 41
	quantity	Max stack no. : 7ea

※Option : sieve, pan & cover

J-MSB-S

## Shatter box



Model		J-MSB-S
Type		Shattering system
Size	overall(W×D×H) mm	815×635/675×1,015
	vessel(in)( Ø × H) mm	145°ø58
	outer rotator mm	ID: Ø74.5×OD: Ø93.5×40H
	inner rotator mm	Ø58.5×40H
Capacity g		50~200/batch
Motor(6p) Hp		1
Particle size	before shatter mm	Ø5 ~ 7
	after shatter	100 ~ 325 mesh
Material	vessel rotator	SKH (high speed tool steel)
	body	Steel plate with powder coated finish
Power source & consumption		AC 220V 60Hz 3phase 2A

J-HSWD

## Slide warmer



Model		J-HSWD
Overall size (W×D×H) mm		635×270×150
Plate size (W×D×H) mm		630×270
Temperature	range	Ambient+5℃ ~ 60℃
	controller	PID controller
Heater(sheath) W		150
Material	plate	Aluminum plate
	body	Stainless steel plate
Power source		AC 220V, 50/60Hz, 1Phase
Net weight		12.1





TAMREIN

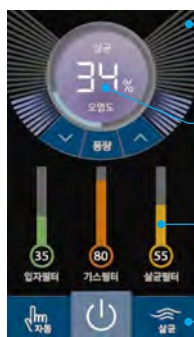
## Laboratory & Medical Air Purifier



TAMREIN-CEIL

### FEATURES

- Removal high toxic chemicals, odor, bacteria, microorganisms, viruses
- A high efficiency, long life Hybrid filter
- 4-Step Composite Filter System (dust, particle (HEPA), sterilization, gas filter)
- Hybrid filter of new technology to adsorb and photocatalyst decomposition
- Anion generation 3million particles/cc
- Sterilization filter (Ozone / Anion) sterilizing bacteria, microorganisms, viruses
- No ozone remains indoors
- Covers large space (approximately 1,600 CMH)
- Long life UV LED lamp (50,000 hours, 10 times longer than glow lamp)
- Touch screen display control panel



- Touch screen display
- Display of real-time indoor pollution
- Display of remaining filter life
- Operating mode setting



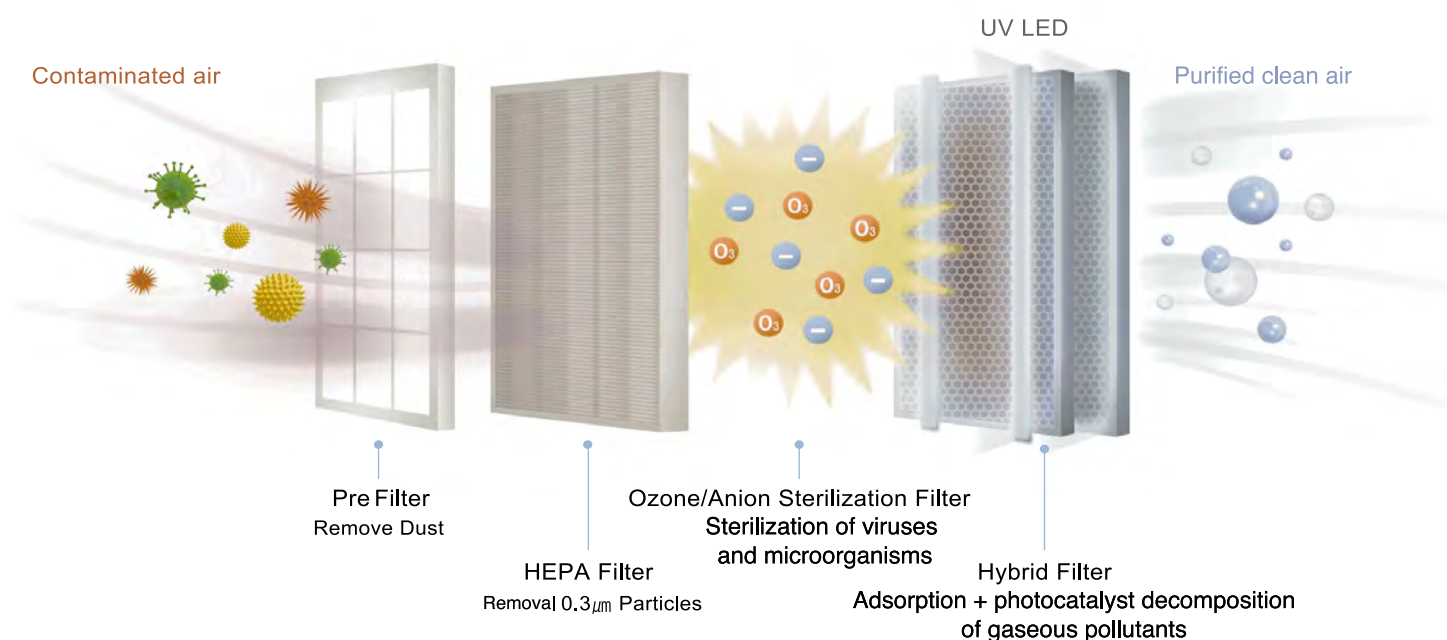
TAMREIN-LAB



TAMREIN

## Laboratory & Medical Air Purifier

### ULTRA HIGH EFFICIENCY FILTER SYSTEM



### SPECIFICATION

PRODUCTS	TAMREIN-LAB	TAMREIN-CEIL
Dimension	550(w) x 470(D) x 1,770(H)mm	620(w) x 620(D) x 450(H)mm
Air volume	1,600CMH	1,200CMH
Filter system	Particle filter : Pre filter / HEPA filter Hybrid filter : Nanocrystalline Metallic Oxides + Photocatalysts filter Sterilization filter : Ozone / Anion filter	
Lamp	UV LED Lamp (50,000hours lifespan)	
Control	Manual Mode : 3 step speed control Auto Mode : Automatic operation by real-time sensing of the pollution sterilization mode	
voltage / Power	220V-60Hz / Max. 400W	220V-60Hz / Max. 300W



### Filtration Reagent Storage Cabinet

LABSTORE - SINGLE



LABSTORE - DOUBLE



#### FEATURES

- Ductless filtering reagent storage system
- For keeping Noxious reagent, Toxic materials safely in Laboratory
- Efficiently purify the air in laboratory without any ventilation system
- Unbreakable door window and safety locking device
- Low electricity consume, and silent (below 49 dB)

#### SPECIFICATION

PRODUCTS	LABSTORE-SINGLE	LABSTORE-DOUBLE
Dimension	800(W) x 500(D) x 2,100(H)mm	1,600(W) x 500(D) x 2,100(H)mm
Filter system	Chemical Filter	
Retention capacity	More than 2,000g	
Air volume	90CMH	
Storage capacity	More than 100 bottle(1Liter)	More than 200 bottle(1Liter)
Shelves	5ea(Adjustable)	10ea(Adjustable)
Safety device	Filter check, Velocity monitor, Fan failure, Spill tray, Lock System	
voltage / Power	115V-50Hz, 220V-60Hz / 500W	



LABCARE

## Filtration Fume Cupboard

LABCARE - 900



### FEATURE

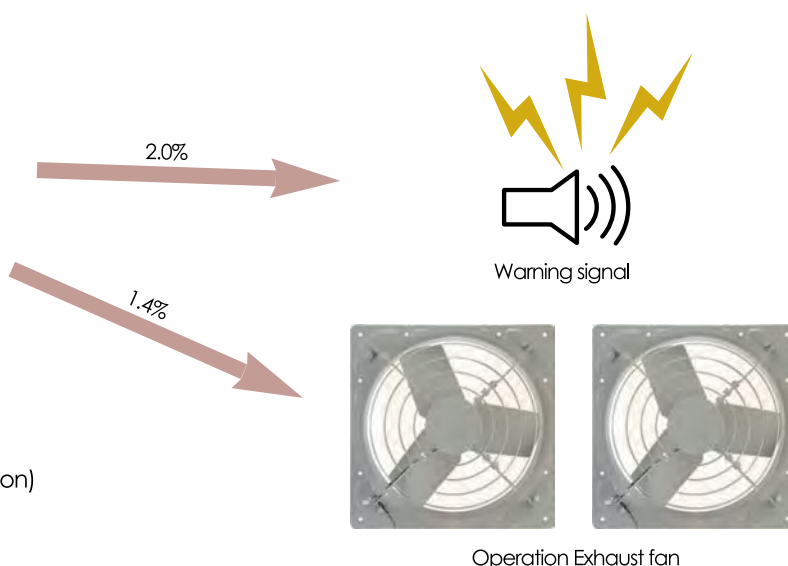
- Movable ductless filtering fume cupboard system
- For protection of user's experiment from noxious and harmful chemical gas
- Fully transparent door & side panels offering a good vision (Anti-acid)
- Purified room air by filtration system
- Designed silent sound level (below 49 dB)

### SPECIFICATION

PRODUCTS	LABCARE-900
Dimension	900(w) x 750(D) x 2,000(H)mm
Filter system	Chemical Filter
Retention capacity	More then 3,000g
Air volume	300CMH
Lamp	36W x 2ea
Safety device	Time Filter check, Velocity monitor, Fan failure, Spill tray
voltage / Power	115V-50Hz, 220V-60Hz / 100W(Except lamp)

LAB GUARDIAN

## Hydrogen Gas Detection System



### SPECIFICATION

- Detection range : 0~4% (Hydrogen gas concentration)
- Warning condition : 2.0% (Adjustable)
- Exhaust fan control : 1.4% (Automatic)
- Detection resolution : 50ppm
- Detection accuracy : 50ppm
- Warning signal sound : more than 85dBA
- Warning system : Flashing light & warning signal
- Display : Luminance LED (8 point)
- Analog output : 2 channel SSR output (220V)

### FEATURE

- Real time hydrogen gas monitoring system
- Fully automatic operation
- Warning signal
- Exhaust fan control



## Water Purification Systems : Pure Water Systems

### Wellix Pure



#### Features

- 20 x 4 characters with blue backlight LCD display
- Real time display feed water purity (conductivity) and Temp.
- Safe filter pack replacements : Remove residual pressure in filters automatically
- Display when water purity lower than setting value with alarm for replacement
- Equipped automatic drain control function
- Display incorrect filter pack position (Error display)
- Easy filters replacements : Front door access to replace filters
- Display simultaneous water quality (Pure Water) and temp.
- Power on automatic diagnostic test
- Display total run time
- Easy to replace filters on pack type
- Voice announcement as time to replace filter pack
- Display filter pack life in %

### Dream Pure



#### Features

- 16 x 2 line LCD display with blue backlight
- Real time display pure water purity (conductivity)
- Power on automatic diagnostic test
- Display filter pack life as %
- Display message when water purity lower than setting value with alarm
- Mode Key check (Run time) for P.W filter life (%), Alarm off during normal operation
- Equipped automatic drain control function
- Automatic drain water control
- Filters installation status display (Error display)
- Easy to replace filter on pack type
- Easy filter pack replacements : Front door access to replace filter pack
- User friendly design, space save due to compact size

### Mini Pure



#### Features

- 16 x 2 characters, Blue back light LCD display
- Power on automatic diagnostic test
- Display message when water purity lower than setting value with alarm for replacement
- Easy to replace filters on pack type
- Real time display feed water purity (conductivity)
- Mode Key check (run time) for P.W filter pack life (%), alarm off during normal operation
- User friendly design, space save due to compact size



## Water Purification Systems : Ultra Pure Water Systems

Wellix Mega



### Features

- 20 x 4 characters with blue backlight LCD display
- Real time display feed water purity(conductivity) and Temp.
- Safe filter pack replacements : Remove residual pressure in filters automatically
- Display when water purity lower than setting value with alarm for replacement
- Display incorrect filter pack position(Error display)
- Easy filter pack replacements : Front door access to replace filters
- Display simultaneous water quality and temperature
- Power on automatic diagnostic test
- Display total run time
- Voice announcement as time to replace filter pack
- Display filter pack life in %

Dream Mega



### Features

- 16 x 2 characters with blue backlight LCD display
- Real time display water purity display
- Power on automatic diagnostic test
- Display message when water purity lower than setting value with alarm for replacement
- Filters installation status display (error check)
- Easy filter pack replacements : Front door access to replace filters
- Display filter pack life in %
- Mode key check life time of U.W pack and alarm off during normal operation
- Easy to replace filter on pack type
- User friendly design, space save due to compact size

Mini Mega



### Features

- 16 x 2 characters, Blue back light LCD display
- Power on automatic diagnostic test
- Display message when water purity lower than setting value with alarm for replacement
- Easy to replace filters on pack type
- Real time display feed water purity (resistivity)
- Mode Key check (run time) for U.W filter pack life (%), alarm off during normal operation
- User friendly design, space save due to compact size



## Water Purification Systems : Pure & Ultra Pure Water Systems

### Wellix Plus



#### Features

- 20 x 4 characters, Blue backlight LCD display
- Display simultaneous water quality (Pure & Ultra pure water and temperature)
- Safe filter pack replacements : remove residual pressure in filters automatically
- Display total run time
- Display message when water purity lower than setting value with alarm for replacement
- Checking life time of filter pack and alarm off during normal operation
- Equipped automatic drain control function
- Voice announcement time to replace filter pack(s)
- Display incorrect filter pack position(Error display)
- Easy to replace filters on pack type
- Easy filters replacements : Front door access to replace filters
- Display filter life as %

### Dream Plus



#### Features

- 16 x 2 characters, Blue back light LCD display
- Real time display input water conductivity and temperature
- Safe filter replacements : Remove residual pressure in filters automatically
- Display message when water purity lower than setting value with alarm for replacement
- Equipped automatic drain control function
- Display simultaneous water quality and temperature
- Power on automatic diagnostic test
- Display total run time
- Easy to replace filter pack type
- Display filter pack life as %
- Display incorrect filter pack position (error display)
- Easy filters replacements : Front door access

### Plus & Mega Systems Selection Guide

Type	Simple	TOC	Cella	Finesta
<b>Features</b>				
0.2 $\mu$ m Final filter	Standard	Standard	Standard	Standard
254/185 UV Lamp	-	Standard	-	Standard
0.05 $\mu$ m UF Filter	-	-	Standard	Standard
<b>Water Quality</b>				
TOC (ppb)	5 ~ 10	1 ~ 5	5 ~ 10	1 ~ 5
Pyrogens	-	-	< 0.001 Eu/ml	< 0.001 Eu/ml
Particle (0.2 $\mu$ m)	< 1/ml	< 1/ml	< 1/ml	< 1/ml
Bacteria	< 1cfu/ml	< 1cfu/ml	< 1cfu/ml	< 1cfu/ml



## Water Purification Systems : Specifications

Model	Wellix Series				
	Plus I	Plus II	Pure I	Pure II	Mega
Products	Pure Water Ultra Pure Water		Pure Water		Ultra Pure Water
Flow rate	27L/hr	37L/hr	27L/hr	37L/hr	50L/hr
Display	Pure Water (P.W) : 0 ~ 200 $\mu$ S/cm Ultra Pure Water (U.W) : 0~ 18.2M $\Omega$ /cm Input Water (I.W) : 0 ~ 600 $\mu$ S/cm Input Temperature (I.T) : 0 ~ 99℃		Pure Water (P.W) : 0 ~ 200 $\mu$ S/cm Input Water (I.W) : 0 ~ 600 $\mu$ S/cm Input Temperature (I.T) : 0 ~ 99℃		U.W : 0~ 18.2M $\Omega$ /cm I.W : 0 ~ 600 $\mu$ S/cm I.T : 0 ~ 99℃
Functions	- 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 - Check key function - Filter Replace function - Filter Replace display

Model	Dream Series				
	Plus I	Plus II	Pure I	Pure II	Mega
Products	Pure Water Ultra Pure Water		Pure Water		Ultra Pure Water
Flow rate	15L/hr	25L/hr	15L/hr	25L/hr	45L/hr
Display	Pure Water (P.W) : 0 ~ 200 $\mu$ S/cm Ultra Pure Water (U.W) : 0~ 18.2M $\Omega$ /cm		Pure Water (P.W) : 0 ~ 200 $\mu$ S/cm		U.W : 0~ 18.2M $\Omega$ /cm
Functions	- 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 - Filter Replace function - Filter Replace display

Model	Mini Series		
	Pure I	Pure II	Mega
Products	Pure Water		Ultra Pure Water
Flow rate	13L/hr	23L/hr	40L/hr
Display	Pure Water (P.W) : 0 ~ 200 $\mu$ S/cm		U.W : 0~ 18.2M $\Omega$ /cm
Functions	- System Auto Test - Machine protection function - Auto control function for drain		- System Auto Test - Filter Replace function - Filter Replace display



Evo-CB Dio VFT

## Evo-CB System



### FEATURES

- Produces Type I and III grade by one system.  
The water quality satisfies relevant regulation such as ASTM, ISO3696, CLSI, EP and USP.
- By utilizing multiple (max. 3units) dispensers can be connected and also, you can choose the type of the Final filter by applications.
- It is able to monitor TOC and PH level of Ultra pure water.(option)

Evo-UP Dio VFTPH

## Evo-UP System



### FEATURES

- Produces Type I and III grade by one system.  
The water quality satisfies relevant regulation such as ASTM, ISO3696, CLSI, EP and USP.
- By utilizing multiple (max. 3units) dispensers can be connected and also, you can choose the type of the Final filter by applications.
- The produced water can be utilized for precision analysis instruments such as HPLC, AA, ICP, LC-MS and ICP-MS as well as in the fields of Electrochemistry, TOC analysis, Molecular biology and Semiconductor engineering.

Evo-ROP Dico20

## Evo-RO&ROP System



### FEATURES

- Produces Type II , and III , IV grade water which can be utilized for formulating microbe culturing media, Final rinsing of experimental equipment and materials, Thermo-hygrostats, Sterilizers and as feeding water for Ultrapure water producing equipment.
- The 4.3" wide graphic display enables identification of Pure water quality, Filter pack utilization condition, level of storage tank etc.



Expe-CB UV90

## Expe-CB System



### FEATURES

- Produces type I and III grade water by one system.
- Easy to use and convenient maintenance
- Wide graphic LCD display.

Expe-RO EDI15

## Expe-EDI System



### FEATURES

- Produces type II by EDI module. Ion particles in the module are regenerated by electric current and a little water and energy are required during the treatment process.
- It does not require a particular maintenance, repair and chemical regeneration of Ion.

Model: Eco-UP9000

## Eco-UP System



### FEATURES

- Easy filter replacement
- Economic for maintenance
- Simple function.





## Operon products Group

Operon is manufacturer and Exporter specialized in the Cryogenic temperature & Ultra high vacuum technologies since 1991.

The Products lines are Cryogenic freezer ( $-156^{\circ}\text{C} \sim -140^{\circ}\text{C}$ ), ULT / Power plus / Shelf cooling / Twin

Heart Freezers ( $-90^{\circ}\text{C} \sim -40^{\circ}\text{C}$ ), Lab & Production Lyophilizers ( $-120^{\circ}\text{C} \sim -50^{\circ}\text{C}$ ), Speed vacuum centrifugal concentrator ( $-120^{\circ}\text{C} \sim -70^{\circ}\text{C}$ ), Cryogenic test chamber ( $-165^{\circ}\text{C} \sim -20^{\circ}\text{C}$ ), Water vapor cryo pump ( $-203^{\circ}\text{C} \sim -150^{\circ}\text{C}$ ), Industrial Chiller ( $-120^{\circ}\text{C} \sim +250^{\circ}\text{C}$ ), Cold trap ( $-120^{\circ}\text{C} \sim -50^{\circ}\text{C}$ ), Blast freezer ( $-80^{\circ}\text{C} \sim -40^{\circ}\text{C}$ ), Immersion cooler ( $-120^{\circ}\text{C} \sim -40^{\circ}\text{C}$ ), Chemical-free freeze dryer ( $-120^{\circ}\text{C}$ ), with achievement from 24 Countries.

Especially Operon's the Cryogenic Refrigeration Systems which are International Patent registered in Korea, USA, Germany and China achieved the lowest interior temperature of  $-156^{\circ}\text{C}$  utilized in the Conqueror Cryo freezer, ISO Certificated, CE marked, KFDA approved.

## $-156^{\circ}\text{C}$ Cryogenic Freezers

CFQ-156 / CFQ-152 / CFQ-150 / CFQ-232 / CFQ-300



## $-120^{\circ}\text{C}$ Chemical-free freeze dryer

FDCF-12012 / FDCF-12006 / FDCF-12003



## $-120^{\circ}\text{C}$ Cold trap / Vapor trap

CT-120 / CT-90 / CT-70 / CT-50





## **-165°C Cryogenic Treatment / test chamber**

C TC-165 / CTC-150 / CTC-130



## **-120°C Production Scale Chemical-free freeze dryer**

FDT-12050 / FDT-12032 / FDT-12012



## **-90°C Ultra safe(Twin Heart) freezer**

DFU-740CUS / DFU-657CUS / DFU-558CUS



## **-120°C Circulation Chiller / Aircraft Fuel Test Chiller**

HC / CnH / IC / CSA





## LABSIS - BASIC TABLE



### FEATURE

A basic type table of LABSIS system. The work top style made of various materials with high chemical resistivity can be applied. A height adjustment system that is strong enough to hold heavy weight has been adopted. Utilities or other options can be added depending on the use.

## LABSIS - SHELVES TABLE



### FEATURE

Additional frames for utilities and control panel and shelves are included in a basic table on which various pre-process devices and basic laboratory equipment can be set.

## LABSIS - REAGENT CABINET



### FEATURE

This ventilation reagent cabinet is composed of a self circulation purification module which does not need to replace a filter. The self circulation purification method in which ion clusters are embedded has not only dramatically reduced operation and maintenance costs but also adopted a modularized system of individual component so that users are allowed setting the system to meet the space and size requirements of their work areas. In addition, the independently developed touch screen facilitates even easier operation of all the functions.



## LABSIS - SAFETY CABINET



### FEATURE

This modularized safety cabinet is developed for the purpose of preventing important materials from a fire or incident in a laboratory. Entire parts of the product have been painted with powder painting, so the painted surface is highly resistant to contamination and the materials inside the cabinet with sealed structure can be safely kept from being damaged when any liquid is leaked on the floor. In addition, internal shelves can be moved up and down in level. It can be replaced with reagent cabinets and tables when necessary.

## LABSIS - LOCAL CLEANER For POLLUTANTS



### FEATURE

This equipment is a portable hazardous gas collector which protects users from contaminated materials by quickly purifying contaminated air in a small area; it is useful for a work that generates hazardous gases and dust in a non-fixed place. It consists of a flexible arm which moves up and down freely, turbo fan and highly effective filter.

## LABSIS - FUME HOOD



### FEATURE

The fume hood has been designed focusing not only the safety and environmental features but also the efficient use of limited working space. The management effectiveness has been maximized by adopting an integrated control part. When installing additional options such as gas, water, electricity, etc, the function can be easily added to the panel type control part. The face velocity control device allows maintaining the most suitable face velocity. Users can set additional safety cabinets, drawers, storage cabinet, etc. under the fume hood.



SK-G1200-STD

## VACUUM GLOVE BOX Single Type



### FEATURES

- Vacuum Glove Box Single Type
- Standard Type
- Single type unit which is for experiment in a anaerobic and a no humid environment by unalive gas exchange.
- Equipped with a Regeneration System. a Dry Trap is operated by PLC Auto Control.
- Inside environment can be monitored with a Humidity Digital Display(ppm) unit.
- Oxygen Concentration level can be monitored with a Oxygen Digital Display(ppm) unit.
- Photohelic Gauge controls the pressure of chamber
- Equipped with an Antechamber and an Mini Antechamber for use of variable size of test sample.

### SPECIFICATION

- Dimension : 1200W x 760D x 850H mm(Main Chamber), 1500W x 760D x 900H mm(Table)
- Remarks : Φ360 x 600L(SUS-304)(Ante Chamber), Dry Trap : Φ110 x 400L(38ℓ)

SK-G001-STD

## ANAEROBIC GLOVE BOX Single Type



### FEATURES

- Anaerobic Glove Box, Single type
- Gas exchange model, completely sealed type. Gas exchange is executed by using Pass Box on the right side
- Large door opens at front side for use of inserting large equipment
- On the right side, Pass Box is equipped to put things without changing the inside condition of chamber
- Made of special MMA acryle plate which features good visibility and safe experiment

### SPECIFICATION

- Dimension : 800W x 500D x 500H mm (OD), 770W x 470D x 470H mm (ID)(Main Chamber)

SK-G-2600-FE

## Lithium battery cleaning liquid filling equipment



### FEATURES

- For filling the lithium battery cleaning liquid
- Unit for Auto scaling, auto charging and auto filling system of lithium battery manufacturing process

### SPECIFICATION

- Dimension : 2,620W x 800D x 1,970H m/m, 1,300W x 760D x 950H m/m(Main Chamber), 2,600W x 800D x 850H m/m(Table)
- Remarks : 660W x 450D x 420H m/m(SUS-304)(Ante Chamber)

SK-G2000-VP

## Vacuum Packing unit of Synthetic Absorbable Bicomponent Monofilament



### FEATURES

- Vacuum Packing unit of Synthetic Absorbable Bicomponent Monofilament
- For vacuum packing in an anaerobic and no-humid environment
- For use of packing of Bio-associated products, and it is capable of maintaining under 20m Torr of vacuum environment and dry the chamber environment

### SPECIFICATION

- Dimension : 2,000W x 760D x 850H m/m(Main Chamber)
- Remarks : Laxan 10T Clean Plate(Window Glass), 32W x 2ea, 18W x 2ea (Lamp Set) 816W x 300D x 280H m/m (Right Control Box), 900W x 290D x 440H m/m (Right Ante Chamber)



## M VCS 70 RAC K



## MICRO 70 RACK(top type)

### FEATURES

- As a standard type, it is optimised for the purpose of Individually ventilated cage system
- Increased space efficiency which allows a maximised number of cage installed in a limited space
- With a mobile phone, data of control system can be monitored worldwide. Alarm function (Option)

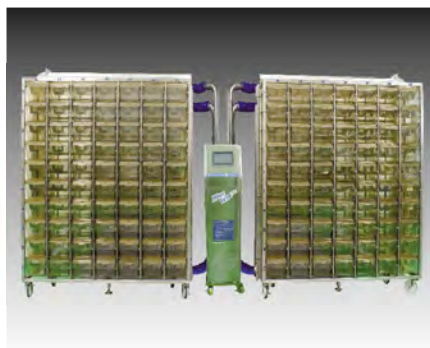
### COMPOSITION

- MVCS RACK (10 shelves x 7rows 70Cage Set / STD)
- Control Unit (Touch Screen Type)
- Cage Set (Cage, Cover, Bottle, Wire Lid, Name Plate)
- Exhaust Hose

### SEPCIFICATION

- Dimension : 1654W x 460D x 1802 mm, · Occupancy : 420(<30g)
- Remarks : 70 Cages, 10 x 7 Single
- \*Other size & specification are available upon request.

## M VCS Separated Type



## MVCS Separated Type(Touch Screen)

### FEATURES

- Mainly used when installing each rack at the side wall
- Rack for mouse & rack for rat can be combined together
- More than 2 sets can be installed in a way of uniting racks
- Since a Air Control Unit occupies its own space, not recommed for a large animal lab whose space efficiency is critical issue.

### COMPOSITION

- MVCS RACK (Mouse 70Rack x 2Set, Rat 35Rack x 2Set / STD)
- Air Control Unit (Separated Type)
- Cage Set (Cage, Cover, Bottle, Wire Lid, Name Plate)

## SK-WS-1300



## Work Station

### FEATURES

- For use of both a cage change station & a bio safety cabinet
- Light weight and simplified exterior
- Quiet operation
- Up / Down Lift
- 100% stainless steel for durability
- This unit can be used for both a cage change station and a bio safety cabinet(Class- II A2). With ISO Cage, breeding and experiment cab be executed at the same time.
- While doing a experiment, workers can monitor the pressure of inside chamber.
- (Option : With mobile phone, up to five people can receive a alarm message which enables you to check the condition of the unit outside
- To prevent corss contamination, a Laminer Flow Type is adopted for the purpose of experiment
- A lift is adopted(H300) to adjust the height of table.

## SK-BD-1200



## Bedding Dispenser

### FEATURES

- Dispense the bedding for lab animal
- For a usage of large-size animal lab which saves lot's of working time
- Easy control with a touch screen panel
- Convenient operation with a way of filling bedding into the front hopper
- By adopting vacuum system, bedding is not damaged at all
- Hepa filter of cyclone chamber collects dust of bedding
- Air cylinder controlled by touch sensor provides a fixed amount of bedding
- Amount of bedding can be adjusted by time control function
- Equipped with roller castors for easy moving and a height-adjustment lift
- Detachable stand is good for cleaning



VS-91G09M

## Growth Chamber



### FEATURE

- Temp. Humidity & Lighting : Multiple setting Possible
- 11 steps' program possible
- Light Bank structure
- Safety devices
- Light bank's Q'ty, location Control
- Touch screen (option)
- Temp's recording function (option)

### SPECIFICATION

Model	VS-91G09M-HL	VS-91G09M-1300	VS-91G09M-800	VS-91G09M-600
Dimension (IN)	1400 x 800 x 1200	1400 x 800 x 1200	800 x 800 x 1200	700 x 700 x 1200
W x D x H mm (OUT)	1800 x 1090 x 2300	2020 x 940 x 2160	1420 x 945 x 2160	1320 x 845 x 2160
Capacity	1344 L	1344 L	768 L	588 L
Light Bank	3 Side	Upper Side	Upper Side	Upper Side
Illuminance	50,000 Lux	23,000 Lux	15,000 Lux	15,000 Lux
Shelves	6 EA	6 EA	4 EA	4 EA
Power	220V, 40A, 9.5kW, 60Hz	220V, 28A, 6.5kW, 60Hz	220V, 22A, 5kW, 60Hz	220V, 20A, 4.5kW, 60Hz
<b>Specification</b>				
Main control	Multi channel Step Programmable Control			
Display	Back-lit LCD display			
Temperature Range	0℃ to 60℃ (Light ON : 10℃ to 60℃)			
Temperature Accuracy	±0.5℃ at ±25℃			
PID Auto Tuning	One touch Auto Tuning			
Temperature Program	10 Step program			
Humidity Range	35 to 98%RH			
Humidity Accuracy	±1% at 70%			
Humidity Program	10 Step program			
Humidity Sensor	Electronic Device			
Humidifier	Evaporation by motor with SUS 316 Pipe heater			
Light Control	Photo-period control, 10step			
Material (IN)	Stainless steel, SUS 304			
(OUT)	Steel plate with powder coating			
(Ceiling)	Vacuumed Triple pair Glass			
Door	Silicon packing magnet door with window			
Cooling Device	Hermetically sealed Compressor, Auto exchange Dual Evaporator			
Safety Device	Over / Under Temperature Protector, Water Level monitor, Power Breaker			



VS-1321-60

## Auto steam sterilizer

### Control Panel Layout



### FEATURE

- Microprocessor control
- water Level Monitor
- Full Automatic procedure
- Appointment sterilization
- Ideal Construction
- Programmability
- Self Diagnostic
- Safety Device

### SPECIFICATION

Model	VS-1321-60	VS-1321-80	VS-1321-100
Dimension (In)	Dia. 350 x 630 mm	Dia. 400 x 630 mm	Dia. 450 x 630mm
(Out)	600 x 530 x 950(h)mm	700 x 580 x 950(H)mm	810 x 630 x 950(H)mm
Capacity	60 Liter	80 Liter	100 Liter
Heater	2.4KW	3.6KW	4.0KW
Power	220V, 11A, 60Hz	220V, 16A, 60Hz,	220V, 18A, 60Hz
<b>Specification</b>			
Temp. Range	Ambient to 135 °C		
Temp. Accuracy	± 1 °C		
Operating Pressure	1.0 to 2.0kg/cm <sup>2</sup>		
Temp. Controller	Microprocessor controller		
Display	Back light LCD 20 character display		
Program	10 Program		
Timer	0 - 60min.		
Appointment	Pre-appointment function		
Pressure Gage	0 - 5 kg/cm <sup>2</sup>		
Air Vent selection	Automatic selectable		
Air Vent type	3 type / Fast, Slow & no vent		
Water level monitor	Level sensor, Auto refill Function		
Safety Device	Over Heat / Over Pressure protector, water level monitor		
Monitor unit	Audible & Visible Device		
Basket	Standard Type, 2EA		

VS-1205SW2

## Constant-temperature shaking water bath



### FEATURE

- Orbital type shaking constant-temperature water bath
- Brushless motor 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

### SPECIFICATION

Model	VS-1205SW2
Temp. Range	Ambient+5 °C to 99 °C
Temp. Accuracy	± 0.1 °C at 37 °C
Temp. Controller	Digital P.I.D. Controller
Speed Range	0-250RPM
Speed Controller	Solid state Electronic controller
Drive Motor	Brushless Motor
Shaking motion	Orbital
Dimension (IN)	400x450x245(H)mm
(OUT)	600x560x620(H)mm
Capacity	44 Liter
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



VS-9160C, VS-9160GC

## CO<sub>2</sub> / Incubator / CO<sub>2</sub> O<sub>2</sub> Incubator



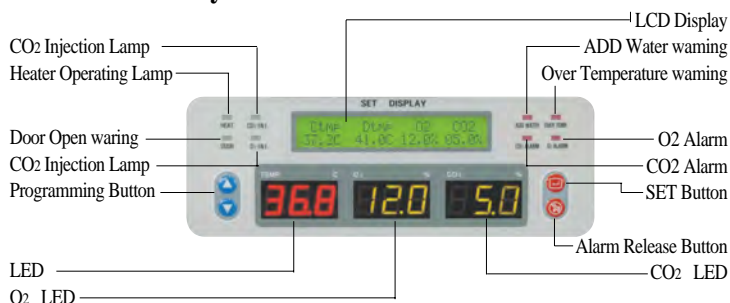
### FEATURE

- Invariable temperature
- Accurate Infra red sensor
- Safety protector
- Water Jacket type
- Compact design

### SPECIFICATION

Model VS-9160C	
Temperature Control	Digital PID Controller
Temperature Range	Ambient +5℃ to 50℃, +/-0.1℃ at 37℃
CO <sub>2</sub> Range	0 to 20%, +/- 0.1% at 5%
CO <sub>2</sub> Sensor	Dual-Beam Non dispersive Infra-red sensor
Humidification	Up to 96% RH at 37℃
Display	Dual Display, Set - LCD & Run - LED
Dimension (In)	510 × 480 × 705(H)mm
(Out)	600 × 600 × 990(H)mm
Capacity	173 Liter
Materials (In)	Stainless steel
(Out)	Steel plate with powder coating
Water Jacket Volume	34 Liter
Door	Double, Silicone magnetic packing door
Inner door	Safety glass door with U-groove packing
Door Heater	Silicone heater, Independent control
Shelves	3EA, Stainless steel plate, adjustable type
Safety device	Over Temp. protector, Gas monitor alarm
	Water level monitor, Power breaker
Utility	sample port, access hole, drain port
Net Weight	114 kg
Power	220A, 4,2A, 60Hz

### Control Panel Layout



VS-130SHE

## Hot plate & Magnetic stirrer

### FEATURE

- Two digital type to Choice from Customer
- Chemically resistant ceramic coated
- Control Methods of setting & spin
- Micro processor control for accurate Temperature setting & RPM
- Constructed for a long & durable life
- Charming feature which statute indicator
- Clearly visible LED display suiting all lighting conditions

### SPECIFICATION

Model VS-130SHE	
Speed Range	100 - 1500 RPM
Temperature Rang	Ambient to 350℃
Temp. Controller	PID Controller (LED)
Heater	Interchangeable plate heater
Plate Area	180 x 180 mm
Top Plate	Ceramic coated plate
Dimension	335 x 230 x 90(H)mm
Power	AC220V, 3.0A, 60Hz



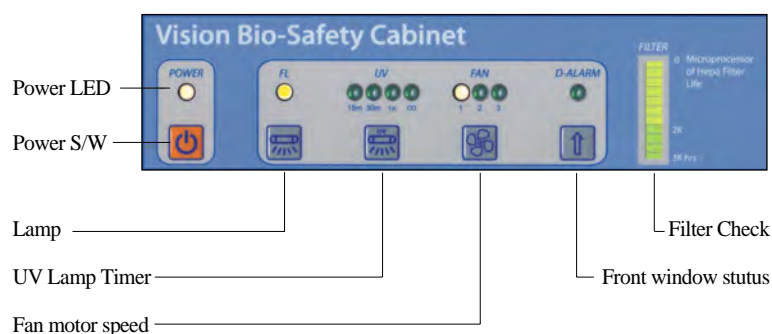


VS-161BS/161BS3

## Bio Hazard Safety Cabinet



### Control Panel Layout



### MAIN FEATURE

- CLASS II TYPE A2
- Efficient HEPA Filter
- Convenient utility ports
- Tested for safety & Reliability
- Validation Service (Option)

### SPECIFICATION

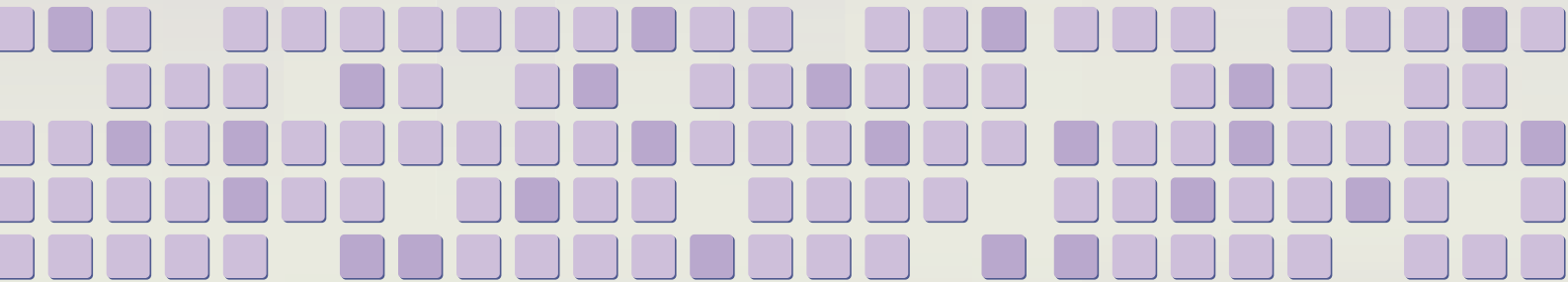
Model	VS-161BS	MVS-161BS3
Dimension(In)	1185(W) × 622(D) × 640(H)mm	1720(W) × 622(D) × 640(H)mm
(Out)	1365(W) × 800(D) × 2032(H)mm	1900(W) × 800(D) × 2032(H)mm
HEPA Filter	1160 × 490 × 90t	1695 × 490 × 90t
	305 × 305 × 150t	610 × 305 × 150t
UVG Lamp	30W × 1EA	40W × 1EA
Fan	AS - 880D × 2EA	AS - 880D × 2EA
FL Lamp	20W × 2EA	32W × 2EA
Glass	Sliding Safety Tempered Glass 5t	
Casing (in)	Stainless Steel (SUS 304) 1.2t	
(Out)	SCP1 1.2t + Powder Coating	
Inflow Velocity	0.5m/sec	
Downflow Velocity	0.3m/sec	
UV Timer	15, 30, 60min & Constant	
Manometer	0 ~ 50mmAq	
Safety Device	Auto Change FL/UV S/W	
	Door Limit Alarm / 8"	
	Filter Change Warning	
	Auto Gas Locking Valve	
Utility	Gas Faucet, Air Faucet, Power Outlet	
Power	220V, 4.2A, 60Hz	



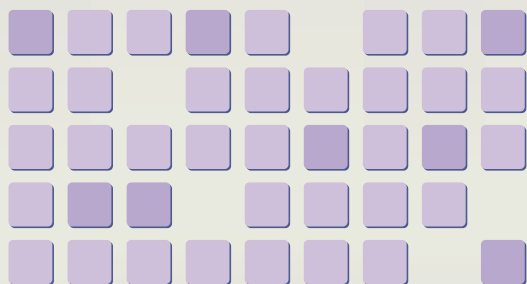


# 4

## Machinery and Automobile Education







DAE SUNG G-3 CO., LTD.	180 ~ 199
HWANWOONG MECHATRONICS CO., LTD.	200 ~ 201
POSTECH CO., LTD.	202 ~ 211
YOUNGIL EDUCATION SYSTEM CO., LTD.	212 ~ 231



G-060102

## Structure Educational System Hybrid Car

### FEATURES



- Gasoline 1,500cc 50HP electric 40HP Hybrid PRIUS by Toyota Motor Co.
- It is educational system of automotive structure for display by precisely cross-sectioning body and chassis.
- It is effective for understanding and explaining functions of hybrid system's engine, transmission, electric motor, power cable, battery, charging system, inverter, converter, etc.
- Design and operating principles of vehicle can be explained systematically.
- It is educational equipment of power train system including engine, transmission, differential gear, drive shaft, 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.
- Block, head, starting motor, alternator, air-conditioning compressor, fuel, cooling system, lubricating system, manifold, muffler, and actual body are cross-sectioned, and operated for better educational quality.
- Internal structure of clutch, transmission, differential gear, brake system, etc. can be seen by directly operating pedal and lever, and also, detailed power system education can be done.
- Structure and operating principle of auxiliary device, 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.
- 4 jack stands for safe and effective education and motor speed control type structure.
- Control box, single phase 220V 180W of motor, 0~15 rpm, two lamps, additional safety device
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Product size ≒ (L)445×(W)173×(H)149cm, Wt≒1,330kg

G-080501

## Hybrid System Structure Educational Equipment

### FEATURES



- It is exhibit educational training model for understanding engine motor of hybrid system by cross-sectioning components
- It is hybrid system for gasoline 50HP and electricity 40HP of 1500cc vehicle of PRIUS by Toyota Co.
- It can be systematically educated for operating principle of hybrid system such as engine, transmission, electric motor, etc., and it is effectively manufactured for understanding.
- It is equipped in control box for manufacturing by special module to educate operating each parts of hybrid system such as low/high speed, acceleration, deceleration, brake and charging.
- It is operating system of each engine and motor part for changing process on hybrid system of 6 types of driving condition, and it has high effect on education using LED system to color circuit panel.
- It is operating educational system to be shown operating structure of power system by cross-sectioning of engine, motor, transmission, differential gear, drive shaft.
- The model is printed by our company's detailed specification 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.
- Module for system, control box, single-phase 220V, 2 of 180W motor, RPM: 0~5, additional safety devices, aluminum name plate.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Product size ≒ (L)154×(W)94×(H)165cm, Wt≒350kg

G-260202

## Electronic Control Suspension System Educational Training Equipment

### FEATURES



- It is an educational equipment for integrated training of 20 different type functions of active ECS system installed to a high class passenger car.
- 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.
- 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.
- By installation of DM diagnosis error control unit to ECU circuit, it controls input and output condition.
- 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.
- 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 designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 6-wheel frame panel stand
- Product size ≒ (L)250×(W)140×(H)157cm, Wt≒800kg



G-110302

## Hybrid Car System Simulator Educational Training Equipment

### FEATURES



- Engine specifications: Gasoline 50Hp, 1,500cc, electricity 40Hp, hybrid Prius by Toyota Motor Co.
- Engine starts only with electric motor and when it accelerates, motor converts into generator and become charged. Then depending on driving condition, it converts into engine, motor, and generator which efficiently saves fuel.
- A consecutive operating system that is equipped with components such as engine electronic fuel, cooling system, intake and exhaust system, CVT.
- 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.
- Electric-control function of EOBD and instruction of diagnostic system and data can be trained through DLC
- Hydraulic circuits of CVT transmission to instruct operation of hydraulic circuits according to each range.
- It is a high quality educational equipment mounted on a stand with operation of starting, driving, charging, etc.
- Principal components: gasoline engine, electric motor, power cable, battery, charging device, inverter, converter, A/C compressor, electric circuit system, etc.
- By installing check point to the principal operating sensor, and it makes easier for diagnosis and test.
- 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.
- An user's manual, and a cover
- Product size ≒ (L)202×(W)180×(H)137cm, Wt≒600kg

G-210501

## Hybrid Transmission System Structure Exhibit Educational Equipment

### FEATURES



- It is an educational equipment for display of electronic-controlled transmission of hybrid vehicle. (Prius by Toyota Motor Co.)
- It is for internal and external structure display of hybrid transmission's motor, generator, gear, trans axle, etc.
- It is very effective for functional explanation and operating principle new hybrid system.
- 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.
- Display lamp, reinforced glass cover, 4-wheel stand with advanced design.
- Product size ≒ (L)90×(W)70×(H)160cm, Wt≒150kg

G-240303

## ABS System Educational Training Equipment

### FEATURES



- 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 an inverter and each tire is composed of tire grip force, rotation inertia, and hydraulic control system.
- The input and output condition can be controlled by installing 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.
- 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 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, 15HP 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.
- Product size ≒ (L)160×(W)136×(H)150cm, Wt≒460kg



G-070201

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

### FEATURES



- 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 manual transmission and detailed power system education can be done.
- Block, head, starting motor, alternator, 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  $\approx$  (L)314 $\times$ (W)157 $\times$ (H)138cm, Wt $\approx$ 450kg

G-090106

## V6 Engine Structure Exhibit Educational Equipment

### FEATURES



- Gasoline 3,000cc V 6-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  $\approx$  (φ)100 $\times$ (H)138cm, Wt $\approx$ 363kg

G-090311

## SOHC Engine Structure Educational Equipment

### FEATURES



- Gasoline 1,500~1,800cc 4-cylinder electric-control 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  $\approx$  (L)94 $\times$ (W)65 $\times$ (H)133cm, Wt $\approx$ 220kg



G-080201

## F/F Engine, Transmission Structure Educational Equipment

### FEATURES



- Gasoline 1,800~2,000cc 4-cylinder, DOHC, electronic-controlled engine, front drive vehicle by Hyundai Motor Co.
- It is educational equipment for understanding internal structure and operating principle of engine, clutch, transaxle, etc. by cross-sectioning components.
- It is an educational structure that is operated by motor with block, cylinder, and head of 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.
- 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.
- Internal structure of clutch, 5 speed manual transmission can be seen and it can be educated systematically by directly operating it with pedal and lever.
- 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, and controlling-type structure of motor speed.
- Single phase 220V 180W 4-pole motor, 0~5.5 rpm, lamp, control box, additional safety device
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- A robust frame, made of steel and painted, can be easily moved and stopped by 4 wheels.
- Product size ≒ (L)110×(W)94×(H)115cm, Wt≒220kg

G-090702

## Diesel Engine Structure Educational Equipment

### FEATURES



- 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)94×(W)65×(H)150cm, Wt≒150kg

G-210601

## Automatic Transmission Structure Educational Equipment

### FEATURES



- 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, clutch, planetary gear, band, servo, 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)60×(W)50×(H)100cm, Wt≒100kg



G-110304

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

### FEATURES



- Training engine stand with 2,000cc class gasoline engine + A/T + A/T hydraulics + brake system(EF Sonata Engine)
- It is high standard educational system of gasoline 2,000cc engine with 4speed automatic transmission.
- 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
- 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, accelerate pedal, 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
- An user's manual and a cover
- Product size ≒ (L)183×(W)163×(H)123cm, Wt≒570kg

G-110601

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

### FEATURES



- It is high standard educational system of gasoline 2,000cc 4-cylinder VVT engine 4 speed automatic transmission. (NF Sonata)
- 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 circuit.
- By installation of check terminal to ECU 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)150×(W)136×(H)125cm, Wt≒470kg

G-130201

## Diesel Engine Educational Training Equipment

### FEATURES



- 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 exhaust gas, intake pipe, cylinder pressure, radiator, timing, fan belt, fuel, oil, charging, moving circuit, etc.
- By installing check terminal for each it is convenient to use tester and also, it protects the circuit.
- Instruments, oil pressure gauge, voltmeter, 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)150×(W)136×(H)120cm, Wt≒400kg



G-120301

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

### FEATURES



- It is high standard educational system of gasoline 2,000cc 4-cylinder VGT 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 circuit.
- By installation of check terminal to ECU 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, 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  $\approx$  (L)150 $\times$ (W)136 $\times$ (H)122cm, Wt $\approx$ 565kg

G-140201

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

### FEATURES



- It is high standard educational system of LPI 2,000cc 4-cylinder engine, 4 speed automatic transmission. (LPI: Liquid Petroleum Injection) NF Sonata.
- 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 diagnosis error control module to ECU circuit.
- By installation of check terminal to ECU 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, starting 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, etc. are installed.
- Control panel has excellent durability with aluminum plate, CNC engraver, and color.
- Manufacturing vehicle's LPG tank as a separate type stand facilitates charging and maintenance.
- 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  $\approx$  (L)150 $\times$ (W)136 $\times$ (H)137cm, Wt $\approx$ 500kg
- LPG tank stand size  $\approx$  (L)112 $\times$ (W)40 $\times$ (H)65cm, Wt $\approx$ 80kg

G-210201

## Automatic Transmission Educational System Training Equipment

### FEATURES



- It is an educational training equipment of 2 new-type HIVEC 5 speed automatic transmissions that is manufactured as same as actual vehicle and cross-sectioned internal structure.
- The shift lever positions are P, R, N, and D(+,-). conditions, timing and pattern for shift can be compared, analyzed, and tested by inverter and controller.
- Hydraulic condition can be seen visually during automatic speed change and lever control. And also, real-time hydraulic route can be trained with manometer.
- It has educational training function that controls condition of input and output by installing diagnosis error control module to TCU circuit.
- By installation of diagnosis terminal to TCU circuit and sensors, input and output data can be measured and trained conveniently with multimeter or oscilloscope.
- EOBD and automatic transmission can be controlled and analyzed by DLC and data analysis can be trained.
- Cross-sectioned automatic transmission is operated by pneumatic pressure control system and it is very effective for education of internal structure.
- Precisely cross-sectioned valve body and vibration-resistant system at high speed is installed to the internal structure.
- Control panel and color circuit diagram have excellent durability and are effective for education with aluminum plate engraved with CNC.
- AC 380V, variable inverter 10HP motor, geared motor system, air from outside.
- Powder coated 4-wheel panel stand with 2 door cabinet.
- Product size  $\approx$  (L)190 $\times$ (W)110 $\times$ (H)165cm, Wt $\approx$ 400kg



G-170407

## Automotive Electric, Electronic Integrated Component System, Educational Training Equipment

### FEATURES



- 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, 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.
- It has educational training function that controls condition of input and output by installing Button diagnosis error control unit to ECU, circuit.
- By installation of check terminal to ECU, circuit, input and output data can be measured and trained conveniently with multimeter or oscilloscope.
- 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.
- 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.
- Powder-coated 4 door cabinet 6 wheel panel stand.
- Product size  $\approx$  (L)250 $\times$ (W)80 $\times$ (H)180cm, Wt $\approx$ 350kg

G-180303

## Motronic Electronic Control System Educational Training Equipment

### FEATURES



- 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.
- 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  $\approx$  (L)122 $\times$ (W)50 $\times$ (H)160cm, Wt $\approx$ 110kg

G-180331

## Common Rail Direct Injection System Educational Training Equipment

### FEATURES



- The newest model of 2,000~2,900cc RV vehicle CRDI electronic-controlled Diesel engine system. (Delphi)
- It is a high standard educational training equipment of CRDI fuel injection system such as ECU, high pressure pump, injector, fuel pump, filter, fuel tank, fuel line, etc.
- By controlling injection time and injection amount with installation of data variable controller to APS, MAFS, IATS, ECTS, and RPM, data change of input and output can be analyzed, and theory & practice of CRDI system can be educated.
- Injection condition for each nozzle can be seen visually through high pressure transparent glass. Also, injection amount for each nozzle can be measured.
- By installation of diagnosis terminal to ECU circuit and sensors, input and output data can be measured and trained conveniently with multimeter or oscilloscope.
- Education can be efficiently done by indicating engine rpm and pressure of rail's high pressure as digital meter.
- EOBD and CRDI function can be controlled and data instruction can be trained with DLC.
- Diagram panel is effective for training theory and test, and has excellent durability with aluminum plate designed and engraved with CNC.
- Constant-voltage transformer with high efficiency, designed and manufactured for automotive electric control, is installed.
- It is composed of safety cover and control box such as key, power lamp, automatic cutout, fuse, safety switch, etc.
- Single phase 220V, 2HP motor, inverter speed variable system.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- 4-wheel panel stand with powder-coated 2-door cabinet.
- Product size  $\approx$  (L)122 $\times$ (W)80 $\times$ (H)160cm, Wt $\approx$ 200kg



G-190101

## Automotive Integrated Electrical System, Training Equipment

### FEATURES



- It is an integrated educational training equipment for training of automotive electric device.
- It is effective for study and training with 12 types of panel for each circuit.
- It has operating function for circuit education and training function of circuit connection for each system.
- During education, it converts into operating circuit and function of circuit and parts can be educated and tested with diagnosis terminal.
- During training this equipment disconnects internal circuit and it completes the circuit with Lab Connection Cable to diagnosis terminal.
- Color circuit diagram, parts name, special connector, and pin number has excellent durability with aluminum coated plate engraved with CNC.
- Panel is composed for training of circuit components, in-out power terminal, key switch, control switch, etc. (Please refer to G-190107~190118 for circuits)
- Power source: AC 220V (Alternator system motor 1/2HP)
- The whole system operates with DC 12V constant-current transformer.
- Connection terminal per panel is used for training power source.
- This structure can be easily assembled and disassembled during the practice.
- Integrated education and maintenance are easier with A, B set type.
- Two 100P Lab Connection Cable display stands are provided.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Aluminum panel powder-coated 4 wheel stand.
- User's manual for teacher, student, and maintenance and a cover
- A Type Product size  $\approx$  (L)220×(W)80×(H)180cm, Wt $\approx$ 300kg
- B Type Product size  $\approx$  (L)220×(W)80×(H)180cm, Wt $\approx$ 250kg

G-240501

## Brake System Synthesis Educational Training Equipment

### FEATURES



- It is an integrated educational training equipment of hydraulic brake system installed to a passenger car by cross-sectioning components for effective education.
- Components: disk drum brake assembly, master cylinder, vacuum brake booster, etc.
- As an operating type of brake system and low speed operation of front drive shaft, it is effective for understanding hydraulic brake system.
- The function of each components are explained on a color circuit diagram panel for education of structure. Disk drum brake assembly, wheel cylinder, etc. are precisely cross-sectioned and parking lever is installed to the panel.
- Control panel has excellent durability with installation of master cylinder, 12 pressure gauge, vacuum system, brake pedal, parking brake lever, key switches, power lamp, etc and aluminum plate engraved with CNC.
- It is manufactured as a miniature which facilitates maintenance training and theoretical education of assembly and disassembly such as brake shoe, pad adjustment and replacement, air removal, etc.
- The model is painted by our company's detailed specifications for painting to enhance educational quality. Cut face: dark red, etc.
- AC 220V, 2HP motor, 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, 2 door cabinet, 4-wheel frame stand.
- Product size  $\approx$  (L)160×(W)136×(H)150cm, Wt $\approx$ 350kg

G-270401

## Automotive Air Conditioning System Educational Training Equipment

### FEATURES



- 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.
- 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.
- An user's manual and a cover.
- Product size  $\approx$  (L)190×(W)140×(H)170cm, Wt $\approx$ 300kg



G-310102

## Two Stroke Engine Structure Educational Model



### FEATURES

- It is an educational model for understanding internal structure of 2 stroke 1 cylinder air-cooling actual gasoline engine by cross-sectioning components.
- The operating principle and cycle of intake, compression, expansion and exhaust strokes can be explained systematically and seen visually so that enhances educational effect for 2 stroke theory and practice.
- Internal structure of engine such as cylinder, head, crank chamber, fuel tank, intake/exhaust manifold, carburetor, muffler, generator, etc. are precisely cross-sectioned and it is manufactured as a 5rpm motor operating type in order to facilitate education.
- Power generating principle of 2 stroke engine such as scavenging, compression, expansion and exhaust strokes can be educated and components' function can be understood by attaching cross-sectioned part.
- AC 220V, DC12V transformer and LED light operating during the combustion stroke with micro switch.
- 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.
- Mirror stainless stand with adjustable base frame.
- Product size  $\approx$  (L)40 $\times$ (W)30 $\times$ (H)45cm, Wt $\approx$ 25kg

G-320102

## Four Stroke Engine Structure Educational Model



### FEATURES

- It is an educational model for understanding internal structure of 4 stroke 1 cylinder air-cooling actual 3HP gasoline engine by cross-sectioning components.
- The operating principle and cycle of intake, compression, expansion and exhaust strokes can be explained systematically and seen visually so that enhances educational effect for 4 stroke theory and practice.
- Internal structure of engine such as cylinder, head, crank chamber, fuel tank, intake/exhaust manifold, carburetor, muffler, generator, etc. are precisely cross-sectioned and it is manufactured as a 5rpm motor operating type in order to facilitate education.
- Power generating principle of 4 stroke engine such as lubricating, fuel, ignition system, etc. and operation of piston, crank, cam, and valve can be educated and components' function can be understood with cross-sectioned part.
- AC 220V, DC12V transformer and LED light operating during the combustion stroke with micro switch.
- 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.
- Mirror stainless stand with adjustable base frame.
- Product size  $\approx$  (L)40 $\times$ (W)30 $\times$ (H)45cm, Wt $\approx$ 23kg

G-320701

## Four Stroke Diesel Engine Structure Educational Equipment



### FEATURES

- It is an educational model for understanding internal structure of 4 stroke 1 cylinder water-cooling actual cultivator Diesel engine by cross-sectioning components.
- The operating principle and cycle of intake, compression, expansion and exhaust strokes can be explained systematically and seen visually so that enhances educational effect for 4 stroke theory and practice.
- Internal structure of engine such as cylinder, head, crank chamber, fuel pump, nozzle, intake/exhaust manifold, air filter, muffler, etc. are precisely cross-sectioned and it is manufactured manual operating type in order to facilitate education.
- Power generating principle of Diesel engine such as lubricating, fuel, etc. and operation of piston, crank, cam, and valve can be educated and components' function can be understood with cross-sectioned part.
- 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.
- Mirror stainless stand with adjustable base frame.
- Product size  $\approx$  (L)80 $\times$ (W)55 $\times$ (H)58cm, Wt $\approx$ 72kg



G-340101

## Tractor Structure Educational Training Equipment

### FEATURES



- 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  $\approx$  (L)340×(W)152×(H)254cm, Wt  $\approx$  1,945kg

G-341501

## Combine Structure Educational Training Equipment (3 ROW Type)

### FEATURES



- 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.

G-360101

## Multi-Functional Training Stand

### FEATURES



- It is multi function training stand for practical training of disassembly, and assembly of engine and transmission, and starting of engine and they can be rotated by 360°.
- It is designed for functional, mechanical, dynamic relationship and manufactured by Korean patent.
- It is the safest educational multi function stand with main shaft rotating system and brake system of patent no. 0251812.
- Supporting capacity : 500kg(700kg with assistant 6 taps), supporting range : 180~430mm, supporting plate : Ø200mm, block : 220mm(2ea), 150mm(2ea), block pin : 120mm(4ea), left&right handles, connecting bracket, bolt tray, oil tray, drain cock.
- Robust and integrated main shaft of 45mm is made of S45C and precisely machined with CNC. In addition, installation of brake provides excellent supporting without any vibration.
- Internal worm gear is a rotating equipment for right and left all in one type, and it is operated in safe and easy way for high-weighted engine that it uses the most efficient rotational ratio of NC 134:1 and Ø208 × Ø38mm S45C.
- Stand is made of high strength material and assembled with bearings and special bolts.
- 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.
- It is easily moved and stopped by 4 wheels.
- Product size  $\approx$  (L)122×(W)80×(H)95cm, Wt  $\approx$  85kg



G-240101

## TCS, ABS System Computer Educational Training Equipment

### FEATURES



- It is an educational equipment that enables integrated training and education by using 4 sensor 4 channel ABS, TCS system and control system installed to a passenger car.
- Components: ABS brake system and TCS system's 4 wheel hydraulic actuator assembly, control module, wheel speed sensor, master cylinder, vacuum brake booster, etc.
- RPM can be controlled with 4 inverters 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 operating principle of ABS TCS hydraulic circuit system and additional maintenance can be trained and educated.
- ABS TCS education is systematic and effective with installation of 4 wheel digital rpm gauge, brake pressure gauge, master cylinder 1.2 pressure gauge, etc. to color circuit diagram panel.
- Input, control function for real-time system and input, output, diagnosis, saving of data can be done by PC interface. And also, by inspecting circuit diagram standard value and graph, it can be efficiently done by comparison and analysis of education.
- By directly providing breakdown to ECU or actuator control with PC, engine, and automatic transmission equipment, it measures data of before and after period of breakdown.
- Input/output of ECU and actuators can be controlled manually with control connection system and it could be measured easily with multimeter and oscilloscope through diagnosis terminal.
- PC Specification (Window XP, Ram 1G, HDD 160G, LCD monitor 17", Printer)
- Running program, S/W setting, English version (Korean-optional)
- Simultaneous measurement of oscilloscope 4-channel
- Data sampling speed 500kHz
- Voltage measurement DC 0~±150V Max
- Frequency 1Hz~100KHz
- Duty ratio 0~99.9%
- Voltage frequency variable output simulation function
- Measuring probe and adaptor are provided for equipment use.
- This model is designed and manufactured according to ISO 9001 and our company's technical spec.
- PC size ≈ (L) 60 × (W) 75 × (H) 160cm, Wt ≈ 120kg
- Product size ≈ (L) 165 × (W) 155 × (H) 150cm, Wt ≈ 480kg

G-210101

## Automatic Transmission System Computer Educational Training Equipment

### FEATURES



- It is an integrated educational training equipment using hives 5 speed automatic transmission system and computer control system.
- Input, control function for real-time system and input, output, diagnosis, saving of data can be done by PC interface. And also, by inspecting circuit diagram standard value and graph, it can be efficiently done by comparison and analysis of education.
- The shift lever positions are P, R, N, and D(+,-), conditions, timing and pattern for shift can be compared, analyzed, and tested by inverter and controller.
- Cross-sectioned automatic transmission is operated by pneumatic pressure control system and it is very effective for education of internal structure.
- Control panel and color circuit diagram have excellent durability and are effective for education with aluminum plate engraved with CNC.
- Control panel is composed of digital meter for TPS, ECU, ETS, oil thermometer, voltmeter, rpm, and key, APS, switches, inverter, power lamp, automatic breaker, fuse, safety switch, DLC, etc. And also, control box and safety cover are installed inside.
- By directly providing breakdown to ECU or actuator control with PC and equipment, it measures data of before and after period of breakdown.
- Input and output of ECU and actuators can be manually controlled with control connection system and it can be measured easily by multimeter and oscilloscope with diagnosis terminal.
- PC Specification (Window XP, Ram 1G, HDD 160G, LCD monitor 17", Printer)
- Running program, S/W setting, English version (Korean-optional)
- Simultaneous measurement of oscilloscope 4-channel
- Data sampling speed 500kHz
- Voltage measurement DC 0~±150V Max
- Frequency 1Hz~100KHz
- Duty ratio 0~99.9%
- Voltage frequency variable output simulation function
- Measuring probe and adaptor are provided for equipment use.
- This model is designed and manufactured according to ISO 9001 and our company's technical spec.
- PC size ≈ (L) 60 × (W) 75 × (H) 160cm, Wt ≈ 120kg
- Product size ≈ (L) 190 × (W) 150 × (H) 170cm, Wt ≈ 530kg

G-260101

## ECS System Computer Educational Training Equipment

### FEATURES



- It is an educational equipment that enables integrated training and education by using electronic control suspension system and computer control system.
- 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.
- 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.
- 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.
- Input, control function for real-time system, and input, output, diagnosis, saving of data can be done with PC interface. And also, by sharing related information such as circuit diagram, standard value, etc. comparison and analysis can be efficiently done with graph or figure.
- By directly providing trouble to ECU or actuator control with PC and equipment, it measures data of before and after period of trouble.
- Input and output of ECU and actuators can be controlled manually with control connection system and also it could be easily measured with multimeter and oscilloscope by diagnosis terminal.
- PC Specification (Window XP, Ram 1G, HDD 160G, LCD monitor 17", Printer)
- Running program, S/W setting, English version (Korean-optional)
- Simultaneous measurement of oscilloscope 4-channel
- Data sampling speed 500kHz
- Voltage measurement DC 0~±150V Max
- Frequency 1Hz~100KHz
- Duty ratio 0~99.9%
- Voltage frequency variable output simulation function
- Measuring probe and adaptor are provided for equipment use.
- This model is designed and manufactured according to ISO 9001 and our company's technical spec.
- PC size ≈ (L) 60 × (W) 75 × (H) 160cm, Wt ≈ 120kg
- Product size ≈ (L) 250 × (W) 140 × (H) 176cm, Wt ≈ 800kg



G-180601

## Electric Car Educational Training Equipment



### FEATURES

- It is an training equipment of electric car training simulator
- A operating system that is equipped with components such as motor electrical system,
- By exposing electronic, etc. during the test education, it facilitates education of system.
- Actual operation and diagnostic condition can be monitored conveniently during the training and education of starting condition.
- Educational check point terminal and connector are installed to each sensor and part of electronic circuit.
- It is a road type vehicle which can be efficiently used for maintenance & inspection training and diagnostic test education.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Product size ≈ (L) 113 × (W) 96 × (H) 143 cm, Wt ≈ 392kg

G-100501

## Electric Car Body Structure and Diagnostic Educational Equipment



### FEATURES

- Electric passenger car education test system.
- It is an educational equipment that enables convenient integrated education of open car structure and engine test.
- By exposing electronic, etc. during the test education, it facilitates education of system.
- Actual operation and diagnostic condition can be monitored conveniently during the training and education of starting condition.
- Educational check point terminal and connector are installed to each sensor and part of electronic circuit.
- It is a road type vehicle which can be efficiently used for maintenance & inspection training and diagnostic test education.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- \* kiosk specification
  - CPU : dual core
  - CPU(Ghz) : 2.0Ghz FSB 800Mhz L
  - MB : 2GB DDR2 667Mhz SDRAM
  - GB : 160GB SATA (7200rpm)
  - Monitor : TOCUH SCREEN-
  - Monitor size : 17"
  - Main board : intel 945GC

G-060104

## Structure Educational System Hybrid Car



### FEATURES

- Gasoline 1,500cc 50HP electric 40HP Hybrid PRIUS by Toyota Motor Co.
- It is educational system of automotive structure for display by precisely cross-sectioning body and chassis.
- It is effective for understanding and explaining functions of hybrid system's engine, transmission, electric motor, power cable, battery, charging system, inverter, converter, etc.
- Design and operating principles of vehicle can be explained systematically.
- 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.
- Block, head, starting motor, electric generator, air-conditioning compressor, fuel, cooling system, lubricating system, manifold, muffler, and actual body are cross-sectioned, and operated for better educational quality.
- Internal structure of Clutch, transmission, differential gear, brake system, etc. can be seen by directly operating pedal and lever, and also, detailed power system education can be done.
- Structure and operating principle of auxiliary device, 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.
- Steel plate stand
- Control box, single phase 220V 180W of motor, 0~15 rpm, two lamps, additional safety device
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Product size ≈ (L) 445 × (W) 173 × (H) 149 cm, Wt ≈ 1.370kg
- \* kiosk specification
  - CPU : dual core
  - CPU(Ghz) : 2.0Ghz FSB 800Mhz L
  - MB : 2GB DDR2 667Mhz SDRAM
  - GB : 160GB SATA (7200rpm)
  - Monitor : TOCUH SCREEN-
  - Monitor size : 17"
  - Main board : intel 945GC



G-120204

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

### FEATURES



- It is high standard educational system of 2,000cc 4-cylinder CRDI Diesel engine, 4-speed automatic transmission for passenger car.
- A consecutive operating system that is equipped with components such as engine electrical system, fuel, cooling system, intake and exhaust system, automatic transmission, wheel, 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 circuit.
- 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, 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)187 × (W)163 × (H)123cm, Wt ≈ 650kg

G-120401

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

### FEATURES



- It is high standard educational system of 2,500cc 4-cylinder CRDI Diesel engine, 4-speed automatic transmission for passenger 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 diagnosis error control module to ECU circuit.
- 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, 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)180 × (W)140 × (H)120cm, Wt ≈ 600kg

G-160201

## Gasoline ENG, Air Conditioning Control System Educational Training Equipment

### FEATURES

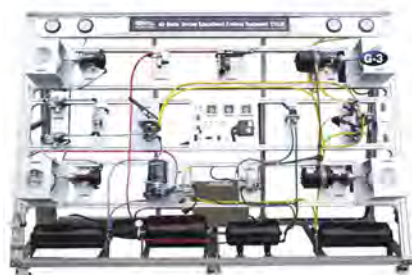


- It is an integrated educational training equipment of gasoline, 2,000cc, engine and FATC air-conditioning system.
- A consecutive operating Full Automatic Temperature Control type air-conditioning system that is fully equipped with components such as engine electrical system, fuel, cooling system, intake and exhaust system, automatic transmission, etc.
- It is manufactured as an educational structure with same condition of actual vehicle for efficient education.
- It is for education of automotive air-conditioning system's principle, and training of inspectors on refrigerant exchange (HFC-134a), trouble, diagnosis, disassembly, inspection, maintenance, etc.
- It has educational training function that controls condition of input and output by installing button diagnosis error control Module to ECU, FATC circuit.
- Electric-control function of EOBD and instruction of diagnostic system and data can be trained through DLC and BU.
- 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.
- By color-coating circuit diagram of air conditioning to a panel, it advances theoretical educational efficiency.
- Control panel has excellent durability with aluminum plate, CNC engraver, and color.
- Pressure gauge for each cycle, sight glass, thermometer, control valve are optional.
- 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)170 × (W)150 × (H)123cm, Wt ≈ 480kg



G-240803

## Air Brake System Educational Training Equipment



### FEATURES

- It is an educational training equipment of air brake and ABS, ARS system installed to a truck and Bus.
- Components : air compressor, air tank, pressure controller, relay valve, quick release valve, brake chamber, diaphragm, push rod, shoe, pressure control valve, pressure gauge, parking valve, air dryer, pedal, etc.
- The functional education and operating principle of air brake system can be efficiently done.
- Each air line is indicated with color for understanding flow of air pressure system and pressure gauge are installed to the equipment.
- 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.
- 6-wheel aluminum profile stand.
- Product size ≒ (L) 283 × (W) 115 × (H) 198cm, Wt ≒ 420kg

G-240801

## Air, Hydraulic Combined Brake System Educational Equipment



### FEATURES

- It is an educational system of air and hydraulic combined brake system installed to a truck and Bus.
- Components: air compressor, air tank, pressure controller, relay valve, quick release valve, brake chamber, diaphragm, push rod, shoe, pressure control valve, pressure gauge, parking valve, air dryer, pedal, etc.
- The functional education and operating principle of air brake system can be efficiently done.
- Each air line is indicated with color for understanding flow of air pressure system, and circuit diagram panel and pressure gauge are installed to the equipment.
- 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.
- Powder coated, 6-wheel stand.
- Product size ≒ (L) 250 × (W) 80 × (H) 180cm, Wt ≒ 500kg

G-180401

## Automotive Sensor Diagnostic System Educational Training Equipment



### FEATURES

- It is an educational training equipment of sensor with installation of diagnostic system arranged by electronic-controlled vehicle's sensor and components.
- Components: crank angle sensor, automatic transmission pulse generator sensor, cam position sensor, ABS wheel sensor, CAS&CMP sensor (Optical type), ECS G sensor steering angle sensor, rain sensor, humidity sensor, rear sensor, AQS sensor, engine temperature sensor, automatic transmission oil sensor, auto-light sensor, daylight sensor, knock sensor, SRS impact sensor, vehicle speed sensor, accelerator position sensor, oxygen sensor (zirconia, titania), throttle position sensor, air-flow sensor, air sensor, etc.
- Sensor's name and function are explained on color printed panel to educate theory and operating function of sensors more efficiently and systematically.
- Operating voltage, resistance, pulse, AC waveform can be easily measured and trained with multimeter, oscilloscope, etc. by installing operating system per sensor and diagnosis terminal.
- Constant-current transformer, operating switch, controllers, fuse, safety switch, thermometer, etc. are installed for sensor operation. Single phase 220V.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated 6-wheel panel stand with 4-door cabinet
- Product size ≒ (L) 250 × (W) 80 × (H) 180, Wt ≒ 250kg



G-210301

## Automatic Transmission Simulator System Educational Training Equipment (5P)

### FEATURES



- It is an educational training simulating equipment for understanding transmission principle and control system of new-type HIVEC 5 speed front drive automatic transmission.
- Clutch, planetary gear trains, etc. can be seen by operating high speed, low speed and stop of precisely cross-sectioned automatic transmission with automatic and manual control system. Therefore it is very effective for understanding operating principle of automatic transmission.
- Operating speed and rpm of input&output shaft are indicated by monitor.
- During automatic mode education, it automatically changes speed and rotates in order of D, 1, 2, 3, 4, and 5. At this moment, this system precisely controls P.R.N.D and L to maintain adequate speed for education.
- By controlling control switch when rotation of automatic transmission is stopped during the manual mode education, function and operating process of internal transmission's one way clutch, brake, gear, etc. can be seen and educated.
- For manual mode education, it rotates automatic transmission in low speed for education with RPM control switch. During the rotation, internal transmission's operating process can be seen as well as operating function for each speed.
- Shift lever positions are P, R, N, D, 2, and L. RPM digital sensor is installed to input/output shaft.
- Actuator control panel is composed of power lamp, key, transmission switch, auto/manual switch, transmission fixing switch, transmission operating button, speed control switch, etc. Operating system, control box, fuse, automatic breaker, safety cover, etc. are installed inside.
- AC 220V, transmission DC 90~180V 1HP motor control system, air module connected from outside.
- Patent 5488, automatic transmission operating control system and program, is installed.
- Valve body and automatic transmission's one way clutch, brake, gear are precisely cross-sectioned and powder coated to see internal structure more closely.
- Control panel and color diagram have excellent durability and are effective for education with aluminum plate engraved with CNC.
- Product size ≒ (L) 135 × (W) 132 × (H) 142cm, Wt ≒ 320kg

G-210904

## Automatic Transmission Structure Arrangement Educational Equipment

### FEATURES



- It is educational model for understanding internal structure of FF type 4 speed automatic transmission.
- A panel effective for understanding function and operating principle of automatic transmissions.
- It is manufactured with precisely cross-sectioned torque converters, stator, clutch, planetary gear, band, servo, valve body, trans axels, etc.
- It is cross-sectioned and colored to see fixed internal gear.
- 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.
- Power-coated 4-wheel panel stand with 2 door cabinet.
- Product size ≒ (L) 122 × (W) 80 × (H) 160cm, Wt ≒ 150kg

G-210806

## CVT System Educational Training Equipment

### FEATURES



- It is an educational training equipment for understanding transmission principle and function of continuously variable transmission.
- Conditions, timing and pattern for shift can be compared and tested by controlling rpm with inverter.
- It is cross-sectioned and has transparent cover to see transmission function, internal driving pulley and steel V belt structure.
- Hydraulic and electric circuit diagram, educational panel and control box of constant-voltage transformer, inverter and switches.
- By installation of diagnosis terminal for each CVT circuit, sensor, and part, input and output data can be measured and trained with multimeter, oscilloscope, diagnostic system, etc.
- Control panel and color circuit diagram have excellent durability and are effective for education with aluminum plate engraved with CNC.
- AC 380V, Variable inverter 5 HP motor control system, Vibration-resistant system at high speed, cooling system.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder coated 4-wheel panel stand with 2-door cabinet.
- Product size ≒ (L) 142 × (W) 132 × (H) 158cm, Wt ≒ 420kg



G-270204

## Automotive Air Conditioning System Educational Training Equipment

### FEATURES



- It is the latest educational training equipment of full automatic temperature control (FATC) air conditioning system installed to a 2000cc high-class passenger car.
- This equipment is effective for professional training and systematic education of FATC operating principle.
- It is manufactured to facilitate training of refrigerant circulating process, temperature and pressure of cooling and heating related processes by operation of all devices and sensors under training driving condition of actual vehicle.
- Digital thermometer - 4ea, high low pressure gauge - 3ea, side glass - 2ea, pressure relief valve - 3ea and evaporating part - transparent cover are installed to the equipment.
- Control panel has excellent durability with installation of photo sensor, AQS, indoor and outdoor temperature sensor, inverter, power lamp, safety switch, key switch, A/C switch, display, etc. to an aluminum panel engraved with CNC.
- With temperature, pressure gauge installed at each air conditioning cycle of color circuit diagram panel and FATC circuit diagram, education is systematic and effective.
- By using diagnosis terminal and self-diagnostic instrument installed to DLC, data value can be seen and tested.
- Operating principle of FATC system can be educated and additional maintenance training and testing of refrigerant can be done.
- Components: compressor, condenser, dryer, expansion valve or orifice tube, evaporator, ventilator, pipe cooler, fan, unit, control panel, etc.
- Compressor operating part - AC 380V 7.5HP motor and 7.5HP inverter rpm control system
- Air condition. Refrigerant - R134a. - HFC (Hydro Fluoro Carbon)
- Heating - 5kw, hot-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  $\approx$  (L) 190  $\times$  (W) 152  $\times$  (H) 170cm, Wt  $\approx$  390kg

G-250301

## Electronic Power Steering System Educational Training Equipment

### FEATURES



- It is an educational training equipment for understanding operating principle and diagnostic test of electronic power steering system.
- TPS operating, and function can be tested and diagnosed efficiently and systematically by controlling earthing power of tire and EPS operational simulating system.
- Components: EPS, ECU, instrument, car speed sensor, solenoid valve, power pump, pressure pipe, control valve, chamber rack, booster cylinder, wheel, tire, etc.
- Speed sensitive variable assist power steering system is operated with inverter and TPS, VSS variable controller. And power pump pressure, thermometer, and TPS values are indicated with digital volt meter.
- By installation of diagnosis error control module and diagnosis terminal to ECU and circuit, input and output condition can be controlled. Also, input and output data can be measured and trained conveniently with multimeter, oscilloscope, diagnostic system, etc.
- EPS electric control function and instruction of diagnostic devices and data can be trained with DLC.
- Control panel has excellent durability with installation of main switch, power lamp, power connector, key switch, safety switch, TPS, VSS, variable controller, digital meter, inverter, cluster, DLC, DM, etc. to an aluminum plate engraved with CNC.
- The operating principle education of hydraulic circuit system installed to EPS power steering system and additional maintenance training can be done.
- AC 380V 3HP motor, power pump driven, inverter 3HP 0-60Hz control system.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 4-wheel panel stand with 2-door cabinet.
- Product size  $\approx$  (L) 200  $\times$  (W) 193  $\times$  (H) 129cm, Wt  $\approx$  400kg

G-300601

## Mechanical Elements Actuate Educational Equipment

### FEATURES



- It is an educational equipment manufactured as a simultaneous operating type and composed of operational mechanical elements by integrately connecting them for effective education.
- The operating principle can be easily educated with composition of straight shaft, crank shaft, flexible shaft, coupling, universal joint, clutch, spur, helical, rack, bevel, worm gears, V-belt, pulley, chain, link, plate, etc.
- By operating the operational switch for each element on control panel, relevant element's blinker is operated.
- Control panel has excellent durability by installing switches, control circuit, key switch, safety switch, etc. on an aluminum coated plate engraved with CNC.
- 'Built-in' operating device of AC 220V motor and operational system of R.F safety warning lamp.
- It is effective for operating principle and function instruction of 8 types of bearing by cross-sectioning components.
- Panel is effective for exhibition with color printed name indication.
- Parts are coated for durability.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 4-wheel panel stand with 3 door cabinet.
- Product size  $\approx$  (L) 188  $\times$  (W) 60  $\times$  (H) 16cm, Wt  $\approx$  240kg



G-190118S

## Ignition Circuit Training Model

### FEATURES



- It is an effective model for study and training education of ignition circuit system.
- Components: circuit educational system, ignition switch, high tension cable, spark plug, distributor, VS motor, power transistor, relays, diagnosis terminal, etc
- Product size  $\approx$  (L) 70  $\times$  (W) 50  $\times$  (H) 22cm, Wt  $\approx$  13kg
- \* **Training Adjustable Stand Specification**
  - An educational training adjustable stand.
  - The angle can be freely adjusted within 0-90 for convenient education and training.
  - A robust frame, made of steel and painted, can be stopped according to the size of panel.
  - A power-coated 4-wheel stand.
  - Product size  $\approx$  (L) 65  $\times$  (W) 54  $\times$  (H) 135cm, Wt  $\approx$  15kg
- \* **Lab Connection Cable Display Stand Specification**
  - It is an educational cable display stand for electric circuit test and training.
  - It is displayed and kept in order by size which makes it easy to train.
  - Lab Connection Cable is provided by order for each model.
  - Product size  $\approx$  (L) 63  $\times$  (W) 45  $\times$  (H) 122cm, Wt  $\approx$  13kg

G-250201

## Air Bag System Educational Training Equipment

### FEATURES



- It is an educational training equipment for understanding operating principle and diagnostic test of air bag system.
- It is very effective for operating principle education of air bag by simulating immediate operation of sensor, seat belt and air bag at the instant of crash.
- Components: crash sensor, air bag ECU, safety sensor, air bag module, clock spring, PPD sensor, G sensor, steering wheel, etc.
- A single operating function during crash is designed and manufactured with control circuit and technical operating system.
- By installation of diagnosis error control module and diagnosis terminal to ECU and circuit, input and output condition can be controlled. Also, input and output data can be measured and trained conveniently with multimeter, oscilloscope, diagnostic system, etc.
- Air bag electrical control function and instruction of diagnostic system and data can be trained with DLC.
- It is effective for education and training with color circuit diagram panel and crosssectioned components.
- A storage tank with commercial compressed air and single/continuous operating control system are installed.
- An internal high-efficiency constant voltage transformer is designed for AC 220V automotive electronic control.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 4-wheel panel stand with 2-door cabinet.
- Product size  $\approx$  (L) 122  $\times$  (W) 50  $\times$  (H) 160cm, Wt  $\approx$  100kg

G-180211

## Automotive ETACS, IMS System Educational Training Equipment

### FEATURES



- It is an educational training equipment for test and diagnosis of high class passenger car's electric time and alarm control system and integrated memory system. (Grandeur XG by 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, power seat, combination switch, wiper motor, washer motor, wiper relay, door switch lamp, instrument panel, left door module, right door module, power window relay, motor, hot-wire switch, seat belt, door lock actuator, start relay, buzzer, key lamp, room lamp, lightning 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 4-door cabinet.
- Product size  $\approx$  (L) 250  $\times$  (W) 80  $\times$  (H) 180cm, Wt  $\approx$  270kg



G-070307

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

### FEATURES



- Gasoline, 1,500cc, 4-cylinder, electronic-controlled engine front drive automotive power train system structure.
- It is educational equipment for understanding internal structure and operating principle of engine, clutch, transaxle, wheel and tire by cross-sectioning components.
- It is an educational structure that is operated by motor with block, cylinder and head of engine cross-sectioned.
- 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.
- 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, ignition, exhaust and compression.
- Internal structure of clutch, 5 speed manual transmission can be seen and it can be educated systematically by directly operating it with pedal and lever.
- Steering, suspension system, etc. are educational structure with frame stand type.
- 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, 0~5.5 rpm, lamp, control box, safety device, control module.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- A robust frame, made of steel and painted, can be easily moved and stopped by 6 wheels.
- Product size ≈ (L) 270 × (W) 150 × (H) 140cm, Wt ≈ 400kg

G-070502

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

### FEATURES



- 2,500cc 4-cylinder rotary injection diesel engine rear drive, Porter by Hyundai Motor Co.
- It is educational equipment for understanding internal structure of power train of diesel engine, clutch, transmission, differential, rear axle drum 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 engine.
- Engine intake and exhaust manifold, injection pump, starting motor, alternator, fuel system, cooling system, lubricating system, etc. are cross-sectioned and operated for better educational quality.
- Internal structure of Clutch, transmission, differential gear, brake system, etc. can be seen by directly operating pedal and lever and also, gear ratio of manual transmission and detailed power system education can be done.
- 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 motor, 0 ~ 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 frame, made of steel and painted, can be easily moved and stopped by 6 wheels.
- Product size ≈ (L) 230 × (W) 140 × (H) 130cm, Wt ≈ 420kg

G-070403

## 4WD Diesel Automotive Power Train System Structure Frame Educational Equipment

### FEATURES

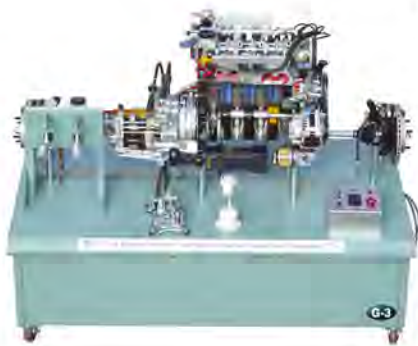


- 5-cylinder, Bens Diesel Engine, 2,874~3,000cc. 4 WD Musso by Ssangyong Motor Co.
- It is educational equipment for understanding internal structure of 4 WD power train of Diesel engine, transmission, differential gear, axle, tire by cross-sectioning components.
- It is very effective for explanation and understanding of function for every part of 4 WD vehicle.
- Design and operating principles of RV vehicle can be explained systematically.
- Internal structure and operating principle of piston, valve, crank, etc. can be educated effectively by cross-sectioning cylinder and head of 4-stroke 5-cylinder engine.
- Intake and exhaust system, starting motor, alternator, air-conditioning compressor, fuel system, cooling system, lubricating system, etc. are cross-sectioned and operated for better educational quality.
- Internal structure of clutch, transmission, differential gear, brake system, etc. can be seen by directly operating pedal and lever and also, gear ratio of 4 WD manual transmission and detailed power system can be trained.
- Structure and operating principle of auxiliary device, steering, suspension system 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.
- 4 jack stands for safe and effective education, and motor speed control type structure.
- Single phase 220V 180W motor, 0~5.5 rpm, lamp, control box, additional safety device.
- The model is designed and manufactured according to ISO 9001 our company's technical spec.
- Product size ≈ (L) 390 × (W) 180 × (H) 150cm, Wt ≈ 1,200kg



G-070303

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



### FEATURES

- Gasoline 2,000cc 4-cylinder, DOHC electric-controlled engine, front drive. Sonata by Hyundai Motor Co.
- It is educational equipment for understanding internal structure and operating principle of engine, clutch, transaxle, driver wheel by cross-sectioning components.
- Internal structure and operating principle of piston, valve, crank, etc. can be educated effectively by cross-sectioning cylinder and head, and exhaust system can be educated using 4-stroke 4-cylinder LED indicator.
- Block, head, starting motor, alternator, air-conditioning compressor, fuel system, cooling system, lubricating 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.
- Single phase 220V 180W motor, 0~5.5 rpm, lamp, control box, additional safety device
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- A robust frame, made of steel and painted, can be easily moved and stopped by 4 wheels.
- Product size  $\approx$  (L) 160  $\times$  (W) 94  $\times$  (H) 115cm, Wt  $\approx$  340kg

G-220101

## Clutch & Manual Transaxles Structure Educational Training Equipment



### FEATURES

- It is an educational equipment of manual F/F type clutch and transmission for passenger car by cross-sectioning components.
- Operation of master cylinder, release cylinder, release fork, pressure plate, clutch plate, etc. can be seen when operating clutch pedal so that the operating principle of clutch can be educated efficiently.
- By manually operating transmission lever, transmission process and operating structure of main drive gear, synchronizers, N,1,2,3,4,5,R speed gear, output shaft, etc can be educated.
- It is very effective for education and understanding of gear function for each clutch, power transfer, gear ratio, etc.
- The education of clutch and transmission is easy with low speed rotation of AC 220V geared motor.
- The model is painted by our company's detailed specifications for painting to enhance educational quality. Cut face: dark red, lubricating system: yellow, etc.
- 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.
- Powder coated 4-wheel stand.
- Product size  $\approx$  (L) 94  $\times$  (W) 64  $\times$  (H) 98cm, Wt  $\approx$  100kg

G-080301

## Powertec CRDI Engine Transmission Exhibit Equipment



### FEATURES

- 12,920cc 320HP 6-cylinder CRDI diesel Powertec engine, manual transmission structure for exhibition, heavy vehicle (bus, truck, etc.) by Hyundai Motor Co.
- It is exhibit equipment that shows operating process of internal components by cross-sectioning block, cylinder, and head of big-size CRDI diesel engine and also by motor rotation.
- Transmission, 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.
- 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.
- 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.
- Control box, Single phase 220V geared motor, 4.5~5.5 rpm, lamp, additional safety device.
- Injection pump(EUI), ECU, unit injector, brake, exhibit sensor module, timer module, and LED lamp for each stroke is installed.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- 6-wheel stand, powder-coated
- Product size  $\approx$  (L) 240  $\times$  (W) 120  $\times$  (H) 150cm, Wt  $\approx$  1,400kg

G-090502

## BUS Engine Exhibit Structure Educational Equipment



### FEATURES

- 6-cylinder 196-225HP diesel engine for bus and truck.
- It is exhibit equipment that shows operating process of internal components by cross-sectioning block, cylinder, and head of big-size diesel engine and also by motor rotation.
- Starting motor, alternator, air-conditioning compressor, fuel system, cooling system, lubricating system, intake system, exhaust system, manifold, etc. are 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.
- 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, nickel, and chrome for exhibit effect.
- Single phase 220V 180W 4-pole motor, 4.5~5.5 rpm, control box, lamp, 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  $\approx$  (L) 160  $\times$  (W) 110  $\times$  (H) 150cm, Wt  $\approx$  624kg



G-280401

## Diesel Fuel System Educational Training Equipment



### FEATURES

- It is an educational training equipment of rotary distributor injection pump of Diesel fuel system.
- Components: fuel tank, fuel pipe, fuel supply pump, fuel filter, injection pump, high pressure pipe, injection nozzle, etc.
- Rotary distributor injection pump rpm is controlled by inverter and geared motor, and injection pressure, injection condition and injection amount for each line can be efficiently measured and educated.
- A special pipe and high pressure gauge of 150kg/cm<sup>2</sup> are installed to 4 high pressure lines, which facilitates training education of checking injection pressure and analyzing high pressure pump operation.
- Theoretical education such as control of governor and timer, and maintenance training can be practiced systematically.
- Injection condition for individual nozzle can be seen and checked, and by exchanging injection nozzles, it can be compared and analyzed.
- Injection amount and condition can be seen through a transparent cylinder and it uses safe oil.
- Installation of fuel pressure gauge to in line of fuel pump facilitates education and 'built-in' fuel tank is installed.
- Color circuit diagram has excellent durability with an aluminum plate engraved with CNC.
- AC 220V, key, ON/OFF light, automatic breaker, fuse, safety switch, safety cover, etc.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 4-wheel panel stand with 2-door cabinet.
- Product size ≈ (L)122 × (W) 50 × (H) 160cm, Wt ≈ 120kg

G-280501

## In Line Plunger Injection Pump Structure Educational Model



### FEATURES

- It is an educational model for understanding internal structure of in-line plunger injection pump of 6 cylinder direct nozzle by cross-sectioning components.
- Fuel supply pump, governor, timing device, cam shaft, roller tappet, plunger, in let port, and needle valve of nozzle are precisely cross-sectioned and manufactured for easy education.
- The operating principle of injection pump can be educated systematically and explained efficiently by manual operation.
- The model is painted by our company's detailed specifications to enhance educational quality.
- Mirror stainless stand with adjustable base frame.
- Product size ≈ (L) 49 × (W) 40 × (H) 44cm, Wt ≈ 21kg

G-280701

## Rotary Distributor Injection Pump Structure Educational Model



### FEATURES

- It is an educational model for understanding internal structure of rotary type distributor injection pump of 4 cylinder indirect nozzle by cross-sectioning components.
- Cam, plunger, rotor, inlet passage, and needle valve of nozzle are precisely cross-sectioned and manufactured for easy education.
- The operating principle of injection pump can be educated systematically and explained efficiently by manual operation.
- The model is painted by our company's detailed specifications to enhance educational quality.
- Mirror stainless stand with adjustable base frame.
- Product size ≈ (L) 30 × (W) 20 × (H) 38cm, Wt ≈ 18kg

G-290501

## Turbocharger Structure Educational Model



### FEATURES

- It is an educational model for understanding internal structure of high output turbocharger by cross-sectioning components.
- Turbocharger rotates turbine by exhaust gas pressure, to rotate compressor and it provides air so that it enhances education of compressed air's supplying principle.
- Internal operating principle of 100,000~150,000rpm high speed rotary part can be seen by cross-sectioning components such as turbine, floating bearing, thrust collar, compressor, waste gate valve, etc. to facilitate education.
- 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, etc.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Mirror stainless stand with adjustable base frame.
- Product size ≈ (L) 30 × (W) 20 × (H) 20cm, Wt ≈ 6kg

## By order type



### FEATURES

- Preceding Technology, Prototype Development Mock-up
- Exhibit Equipment
- Agriculture equipment, Heavy & Industrial Machinery
- Customized production by the requests of demanding side
- Development of all kind of exhibit products and test prototypes



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 3100

## Dynamometer Main Control System



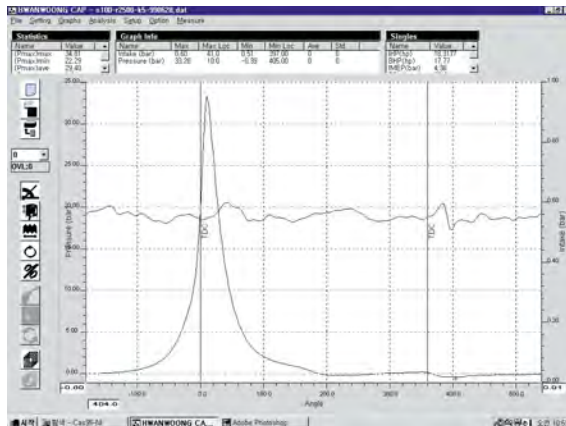
### FEATURE

- 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

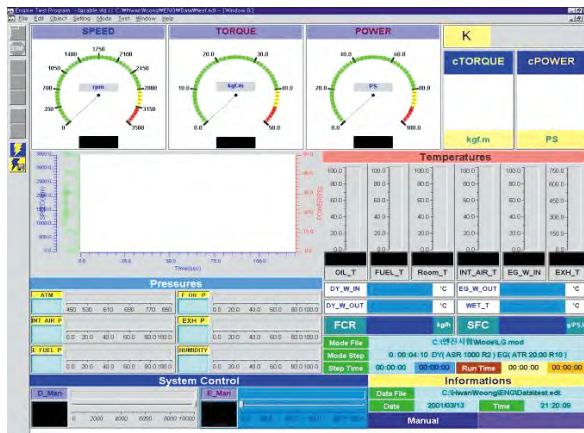


### FEATURE

- 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

## 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.

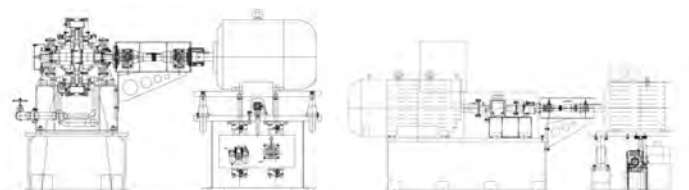
DYTEK 7000

## Motor Test Dynamometer



### Motor Performance Test

- Rated Torque, Rated Current
- Max continuous Torque & Current
- Max moment Torque & Current
- Continuous Rating
- Periodic Rating, etc
- Adjustable height motor test table by electric hydraulic for each motor specification
- AC or EC Dynamometer is organized with dynamometer controller and auto driving software





RH-R-1000

## Standard Refrigeration trainer



### Features

- The possibility of the experiment on temperature, pressure, automatic control and mechanical trouble
- The possibility of experiment and theoretical education related to automatic control ,refrigeration system and refrigerator accessories.
- The experiment on cycle change of refrigeration equipment according to temperature and Mollier diagram drawing in P-I diagram drawing part.
- Theoretical education of efficiency test and experiment while operating
- The sequence screen attached to the graphic module control department and power automatic control machine for experiment on temperature, pressure and automatic control and operation
- The control department is made up of visual lamps separated system from machine department
- Automatic control with graphic panel and two automatic control modules
- Data formation by data auto-saving and P-I diagram auto-operation in the system with control program

### Specifications

- |   |  |   |
|---|--|---|
| • Compressor : 1/2HP,                   | • Electronic valve : 3/8" nut clamp type | • Thermostat range: -40℃~100℃               |
| • Condenser : Air-cooled type           | • Manometer                              | • Pressure switch range:                    |
| • Evaporator: pin, Tube air-cooled type | • fitting nipple                         | Low side: 0bar~5bar / High side: 5bar~30bar |
| • Evaporator chamber, damper            | • Sight Glass                            | • Size(LxWxH): 1200x730x1720mm              |
| • Expansion Valve : manual type         | • Electric control module: DC24V         | • Weight: 150kg                             |
| • Liquid receiver : 1HP                 | • Graphic module: digital DC24V          |   |
| • Accumulator : 1/2HP                   | 595 * 595 Al                             |   |



RH-R-2000

## Refrigeration & Freezing trainer



### Features

- The possibility of the experiment on temperature, pressure, defrosting auto control of automatic pressure control device and mechanical trouble
- A check of change of the refrigeration system according to expansion valve's shape and function with connecting expansion valve of other types
- The experiment on cycle change of refrigeration equipment according to temperature and Mollier diagram drawing in P-I diagram drawing part.
- Theoretical education of efficiency test and experiment while operating
- The sequence screen attached to the graphic module control department and power automatic control machine for experiment on temperature, pressure and automatic control and operation
- The control department is made up of visual lamps separated system from machine department
- Automatic control with graphic panel and two automatic control modules
- Data formation by data auto-saving and P-I diagram auto-operation in the system with control program

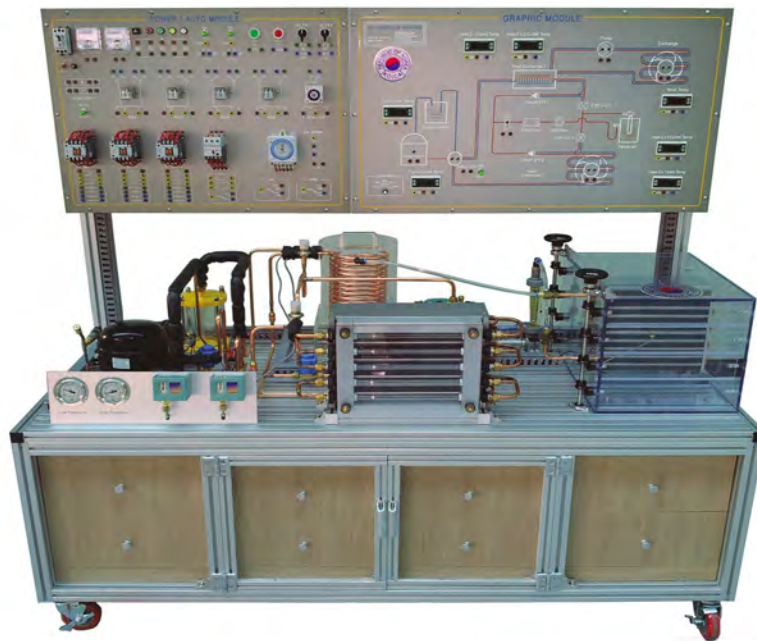
### Specifications

- |   |  |   |
|---|--|---|
| • Compressor : 1/2HP,                   | • Liquid receiver : 1HP                  | • Graphic module: digital DC24V             |
| • Condenser : Air-cooled type           | • Accumulator : 1/2HP                    | 795 * 595 A1                                |
| • Evaporator: pin, Tube air-cooled type | • Electronic valve : 3/8" nut clamp type | • Thermostat range(7ea): -40℃~100℃          |
| • Evaporator chamber, damper            | • Manometer                              | • Pressure switch range:                    |
| 320*350*500, damper                     | • Fitting nipple                         | Low side: 0bar~5bar / High side: 5bar~30bar |
| • Expansion Valve : manual type 1ea ,   | • Sight Glass                            | • Size(LxWxH): 1600x730x1720mm              |
| capillary tube type 1ea                 | • Electric control module: DC24V         | • Weight: 180kg                             |



RH-R-3000

## Heat Pump heat accumulation trainer



### Features

- The possibility of the experiment on temperature, pressure, defrosting auto control of heat accumulation pump device and mechanical trouble
- The possibility of experiment and theoretical education related to automatic control, refrigeration system and refrigerator accessories .
- The experiment on cycle change of refrigeration equipment according to temperature and Mollier diagram drawing in P-I diagram drawing part.
- Secondary heat exchange through heat accumulation tank
- The possibility of heat carrier's flow control and flow's quantity check
- Digital pressure switch (high and Low pressure) with the most accurate data
- Visual heat accumulation tanks by transparent acryl and cool-warm heat system with circulation part
- The structure to heat accumulation with heat pump and the design to know heat circulation or state and control
- Data formation by data auto-saving and P-I diagram auto-operation in the system with control program

### Specifications

- |                                     |  |   |
|-------------------------------------|--|---|
| • Compressor : 1/2HP,               | • Check V/V                              | • Graphic module: digital DC24V             |
| • Condenser : Air-cooled type       | • Heat exchanger: tube type              | 795 * 595 Al                                |
| • Evaporator: Tube type Chamber     | • Electronic valve : 3/8" nut clamp type | • Thermostat range: -40℃~100℃               |
| • Evaporator                        | • Manometer                              | • Pressure switch range:                    |
| • Expansion Valve : manual type     | • Fitting nipple                         | Low side: 0bar~5bar / High side: 5bar~30bar |
| • Liquid receiver : 1HP             | • Sight Glass                            | • Size(LxWxH): 1600x730x1720mm              |
| • Accumulator : 1/2HP               | • Electric control module: DC24V         | • Weight: 150kg                             |
| • 4way reversing V/V : welding type |  |   |



RH-R-4000

## Air handling unit trainer



### Features

- The possibility of experiment on ventilation system (4-type) and cool - warm condition with heat pump
- Assistant heat source with heat pump and humidification for both cooling and heating water
- Humidification device made up of watering or air crossing type, inhalation and emission of conditioning damper and inside made up of inhalation and emission part
- The structure of humidified cooling or heating water according to user's temperature control
- The structure to operating system from outside and the structure to control inside temperature and humidity
- Automatic control by systematic temperature and humidity
- The sequence screen attached to the graphic module control department and power automatic control machine for experiment on temperature, pressure and automatic control and operation
- The possibility of cutting the overload, working the pressure switch, alarm bell and a pilot lamp and safe operation with occurring the problem of a thermo-hygrostat
- Application to refrigeration system for compressor of variable types

### Specifications

- |  |  |   |
|--|--|---|
| • Duct                                   | • Expansion Valve : manual type          | • Graphic module: digital DC24V             |
| • intake / exhaust/ return: transparency | • Liquid receiver : 1/2HP                | 1205 * 600 Al                               |
| • Blower: 2ea                            | • Accumulator : 1HP                      | • Thermostat range: -40℃~100℃               |
| • Water pump: 3ea                        | • Electronic valve : 3/8" nut clamp type | • Pressure switch range:                    |
| • Humidifier: spray type                 | • Manometer                              | Low side: 0bar~5bar / High side: 5bar~30bar |
| • Compressor : 1/2HP,                    | • Fitting nipple                         | • Size(LxWxH): 1850x700x1900mm              |
| • Condenser : Air-cooled type            | • Sight Glass                            | • Weight: 250kg                             |
| • Evaporator: pin, Tube air-cooled type  | • Electric control module: DC24V         |   |



RH-R-5000

## Refrigerator system trainer



### Features

- The possibility of the experiment on temperature, pressure, defrosting automatic control and mechanical trouble in the automatic pressure control device
- The comprehension of principle to refrigerator and study to refrigeration and cold system
- The experiment on cycle change of refrigeration equipment according to temperature from two parallel evaporators and Mollier diagram drawing in P-I diagram drawing part.
- Theoretical education of a fundamental circuit, application circuit and experiment with evaporation pressure control device
- The compatibility and expandability of the graphic module control
- Unlike separated system from machine department, the control department is visual automatic control with graphic panel and two automatic control modules
- Data formation by data auto-saving and P-I diagram auto-operation in the system with control program

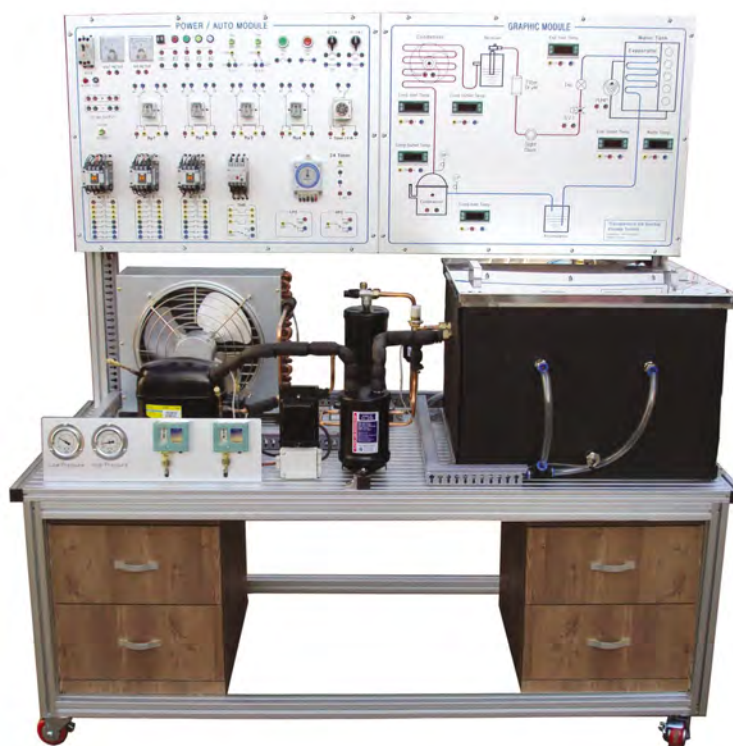
### Specifications

- |   |  |   |
|---|--|---|
| • Compressor : 1/2HP,                           | • Accumulator : 1/2HP                    | • Thermostat range: -40℃~100℃               |
| • Condenser : Air-cooled type                   | • Electronic valve : 3/8" nut clamp type | • Pressure switch range:                    |
| • Evaporator chamber: pin, Tube air-cooled type | • Fitting nipple                         | Low side: 0bar~5bar / High side: 5bar~30bar |
| • Evaporating Pressure Regulator: IEA           | • Sight Glass                            | • Size(LxWxH): 1800x730x1720mm              |
| • Expansion Valve : manual type                 | • Electric control module: DC24V         | • Weight: 200kg                             |
| • Liquid receiver : 1HP                         | • Graphic module: digital DC24V          |   |
|   | 1205 * 600 Al                            |   |



RH-R-6000

## ICE-Maker system trainer



### Features

- The possibility of the experiment on temperature, pressure, automatic control of the device with Ice Accumulation and mechanical trouble
- The comprehension of refrigeration system with Ice thermal storage and device's principle
- The experiment on cycle change of refrigeration equipment according to temperature and Mollier diagram drawing in P-I diagram drawing part.
- Theoretical education and experiment related to efficiency test of device and Ice storage
- Theoretical education of a fundamental circuit, application circuit and experiment with Ice storage
- The sequence screen attached to the graphic module control department and power automatic control machine for experiment on temperature, pressure and automatic control and operation
- Unlike separated system from machine department, the control department is visual
- Automatic control with graphic panel and two automatic control modules
- Data formation by data auto-saving and P-I diagram auto-operation in the system with control program

### Specifications

- |   |  |   |
|---|--|---|
| • Compressor : 1/2HP,                   | • Liquid receiver : 1HP                  | • Graphic module: digital DC24V             |
| • Condenser : Air-cooled type           | • Accumulator : 1/2HP                    | 795 * 600 Al                                |
| • Evaporator: pin, Tube air-cooled type | • Electronic valve : 3/8" nut clamp type | • Thermostat range: -40℃~100℃               |
| • Evaporator chamber, Brine tank        | • Manometer                              | • Pressure switch range:                    |
| • Ice maker: cylinder type              | • Fitting nipple                         | Low side: 0bar~5bar / High side: 5bar~30bar |
| • Brine pump: 1EA                       | • Sight Glass                            | • Size(LxWxH): 1600x730x1720mm              |
| • Expansion Valve : manual type         | • Electric control module: DC24V         | • Weight: 200kg                             |



RH-R-7000

## Binary Refrigeration trainer



### Features

- The possibility of the experiment on temperature, pressure, automatic control and mechanical trouble using cascade refrigeration
- The comprehension of refrigeration system with an extremely low temperature
- The experiment on cycle change of refrigeration equipment according to temperature and Mollier diagram drawing in P-I diagram drawing part.
- Low temperature side's evaporator is range of between  $-50^{\circ}\text{C}$  and  $-70^{\circ}\text{C}$
- Theoretical education of a fundamental circuit, application circuit and experiment by cascade refrigeration system
- The sequence screen attached to the graphic module control department and power automatic control machine for experiment on temperature, pressure and automatic control and operation
- Transparent accessories to observe refrigerant state or flow and principle of accessories
- The control department is made up of visual lamps separated system from machine department
- Automatic control with graphic panel and two automatic control modules
- Data formation by data auto-saving and P-I diagram auto-operation in the system with control program

### Specifications

- |   |   |   |
|---|---|---|
| • Compressor : 1HP, 2ea                             | • Electronic valve : 3/8" nut clamp type                          | • Pressure switch range:                    |
| • Condenser : Air-cooled type                       | • Manometer   | Low side: 0bar~5bar / High side: 5bar~30bar |
| • Evaporator: Tube Air-cooled type                  | • fitting nipple  | • Size(LxWxH): 1600x730x1720mm              |
| • Cascade: plate type heat exchanger                | • Sight Glass   | • Weight: 200kg                             |
| • Expansion Valve : manual type Capillary tube type | • Electric control module: DC24V                                  |   |
| • Liquid receiver : 1HP                             | • Graphic module: digital DC24V                                   |   |
| • Accumulator : 1HP                                 | 795 * 600 AI  |   |
|   | • Thermostat range: $-80^{\circ}\text{C}$ ~ $100^{\circ}\text{C}$ |   |



RH-R-7100

## Two stage-expansion system trainer



### Specifications

- Compressor : 1/2HP 1ea, 1HP 1ea
- Condenser : Air-cooled type
- Evaporator: pin, Tube air-cooled type
- Evaporator chamber
- Middle cooler
- Expansion Valve : manual type
- Liquid receiver : 1/2HP

- Accumulator : 1HP 2ea
- Electronic valve : 3/8" nut clamp type
- Manometer
- fitting nipple
- Sight Glass
- Electric control module: DC24V
- Graphic module: digital DC24V

### Features

- Available to experiment and test by temperature or pressure control in two-stage compressing and expansion system.
- Using solo coolant for two-stage compressing and expansion system.
- As variable pressure at middle cooling device, available to check temperature change.
- The sequence screen attached to the graphic module control department and power automatic control machine for experiment on temperature, pressure and automatic control and operation
- The experiment on cycle change of refrigeration equipment according to temperature and Mollier diagram drawing in P-I diagram drawing part.
- The control department is made up of visual lamps separated system from machine department
- Automatic control with graphic panel and two automatic control modules
- Data formation by data auto-saving and P-I diagram auto-operation in the system with control program

RH-R-1100

## Water Cooling Refrigeration Cycle System



### Specifications

- SIZE : 1100 x 450 x 800
- Weight : 60kg
- Power : 230V, 50~60Hz, 1Phase
- Hermetic Compressor : 1/2Hp
- Condenser capacity : 3.3ℓ
- Evaporator capacity : 3.3ℓ
- Water Flow rate : 1~5ℓ /min
- Temp Display : 2point
- R-134A

### Features

- Basic principle of water cooling system may be able to an experiment which makes students understanding by applying water cooling system to condensation part and evaporation part.
- Experiment on condensed quantity of compressor discharge gas flowing into condensation part and experiment on heat exchange of heat media supplied for condensation are available.
- Experiment on evaporation quantity of coolant flowing in through expansion valve of evaporation part and experiment on heat exchange of heat media supplied for making variation of evaporation part are available.
- Pressure of low pressure part(evaporator) may be adjusted by applying manual expansion valve.
- As flow control of heat media flowing into condensation part and evaporation part is available, synchronous or separate experiment of condensation part and evaporation part may be executed, enabling various experiments of heat exchange.
- As coolant gas flows into transparent chamber directly, status change of coolant occurring at the heat change between inflow coolant and heat media flowing to heat exchanger may be observed.
- With pressure sensors attached to each part and temperature sensors attached to inlet and outlet, changes of overall status of experiment equipment may be checked.
- By application of pressure sensor and temperature sensor within transparent chamber, changes of status occurring at the heat exchange may be checked.
- Interfacing with a computer is available, which enables monitoring and saving of data generated in the experiment.
- Other Options
  - 1) Using built-in pump and tank, heat exchange quantity may be generated with cross circulation of heat media below normal temperature generated at heat media and evaporation part generated at condensation part.
  - 2) Applying thermostat system, the experiment may be executed while circulating heat media at certain temperature.



HYWEL-350A

## MULTI-FUNCTIONAL Welding machine



### Features

- As inverter type welding machine, welding current & voltage are displayed digitally and waveform control is available by inverter. Minimized spatter.
- Embedded protecting circuit and self-diagnosis functions protect from detected abnormal vector.
- Low noise & stable current. Performing rapid welding by the low welding current under the high input current.
- Excellent duty circle
- Stable arc start and constant current.
- Low spatters and dross by welding control signal and control power.
- Made by an International certified manufacturer such as ISO 9001
- Drastic reduction of spatter in entire current range
- Gas check, Select function for wire size and diameter
- Digital display for current and voltage
- Protection function for over current and over temperature

### Specifications

CO <sub>2</sub> MIG/MAG	HYWEL-350A
Rated Input Voltage	1~3 $\Phi$ 220/380V
Rated Input Power	17.5kVA (14kW)
Rated Output Current	350A
Rated Load Voltage	14 ~35V
Output range	40 ~350A
Welding Crater	
Output voltage range	14 ~35V
Welding Crater	
Duty Cycle	60%

AC TIG / DC TIG	HYWEL-350A
Rated output current(A)	350
Rated input	1~3 $\Phi$ 220/380V
TIG welding	11.8(9.4kW)
Manual arc welding(kVA)	13.5(10.8kW)
Rated duty cycle(%) (10minute duty cycle)	85
Welding current adjustment range TIG welding(A)	5 - 350
Manual arc welding(A)	5 - 290
Rated load voltage(V)	32
Low pulse frequency(Hz)	0.5~15
Middle pulse frequency(Hz)	15~350
pulse width adjustment range(%)	15~85
After-flow time(Sec)	0.1~25

DC ARC	HYWEL-350A
Rated Output Current(DCA)	300
Rated Input Voltage(ACV)	1~3 $\Phi$ 220 /380V
Rated Frequency(Hz)	50/60
Rated Input(kVA)	13(10.4kW)
No-Load Voltage(DCV)	80
Rated Load Voltage(DCV)	30
Rated Duty Cycle(%)	70



S M A R T-400A

## LATHE



### Specifications

ITEM		SPECIFICATION	
		SMART-400A	
CAPACITY	SWING OVER BED	$\Phi$ 400	
	SWING OVER CARRIAGE	$\Phi$ 238	
	DISTANCE BETWEEN CENTER	750	1000
SPINDLE	SPINDLE NOSE (TYPE, NO)	A2-6	
	TAPER OF SPINDLE (TYPE, NO)	MT # 6	
	HOLE THROUGH SPINDLE	$\Phi$ 52	
	TAPER OF SPINDLE CENTER (TYPE, NO)	MT # 4	
	NO. OF SPINDLE SPEEDS	12 Steps	
	SPINDLE SPEEDS	45 - 1800 r.p.m	
CARRIAGE	MAX. TRAVELS OF CROSS SLIDE	250 mm	
	MAX. TRAVELS OF UPPER SLIDE	120 mm	
	SIZE OF BITE HOLDER (b * h)	20 * 20	
	TYPE OF TOOL POST	SQUARE TOOL POST	
FEED AND THREAD	LONGITUDINAL FEEDS (Z-AXIS)	32 Changes 0.059 - 0.831 mm/rev	
	CROSS FEEDS (X-AXIS)	32 Changes 0.019 - 0.271 mm/rev	
	METRIC THREAD	0.5 - 7 mm/p	
	INCH THREAD	4 - 56 $\theta$ /in	
	MODULE THREAD	0.5 - 7 mm/ $\pi$	
	D.P. THREAD	4 ~ 56 $\pi$ /in	
	LEAD SCREW	TM 32 * 6	
TAIL STOCK	DIA. OF TAIL STOCK SPINDLE	$\Phi$ 52	
	TAPER OF TAIL STOCK SPINDLE	MT # 4	
	MAX. TRAVELSE OF TAIL STOCK SPINDLE	150 mm	
MOTOR	MAIN DRIVE MOTOR	4P * 3.7kW (5HP)	
BED	WIDTH OF BED	300mm	
	LENGTH OF BED	1700	1950
MACHINE SIZE	FOOL SPACE REQUIRED (L*W*H)	2008 * 960 * 1383	2258 * 960 * 1383
	NET. WEIGHT(kg)	1400	1500



YESA-1508

## Hybrid Automotive structure actuated simulator



### Feature and benefits

- Hybrid engine for educational structure equipment.
- The equipment is proper to explain each parts and operating principle of hybrid engine.
- Some of sections are cutaway and painted with different colors for educational effect.
- It is possible to check inside of hybrid engine by precise cutting
- The equipment has the same operating method with a real vehicle.
- Piston, Valve, Crank, hybrid transmission, inverter, battery and others are possible to check inside structure.
- The simulator is operated by each operating mode with manipulating touch panel of Kiosk.
- The condition will be output on monitor screen by connecting between Kiosk and simulator.

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.

YESA-1503

## Prius Hybrid Engine with Drive Shaft



### Feature and benefits

- Hybrid engine for educational structure equipment
- The equipment is proper to explain each parts and operating principle of hybrid engine
- Operated by AC 220V motor like a real vehicle.
- Some of sections are cutaway and painted with different colors for educational effect
- It is possible to check inside of hybrid engine by precise cutting
- The equipment has the same operating method with a real vehicle
- Piston, Valve, Crank, hybrid transmission, inverter, battery and others are possible to check inside structure

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-1507

## Prius Hybrid Transmission System with 6 different position control panel



### Feature and benefits

- Hybrid engine for educational structure equipment and operating method
- The equipment is operated by motor, so it make it to adjust torque
- The equipment has various training method similar with real vehicle driving
- Easy to understand hybrid principle using real diagram on the panel
- The operating flow is shown with LED when the equipment is operated
- Understanding configuration and principle of hybrid power transmitting with exposure actual vehicle fram
- The flow of electricity is displayed by LED to understand hybrid operation easily
- Optionally adjusting the rotation of the motor to reproduce the operating conditions
- Can see operating conditions of hybrid car at a glance
- Use inverter to control motor speed and operate conditions
- Motor, Brake, Generator, battery, power control unit such as proper coordination friendly design for education

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand >company.

YESA-2812

## Car Forecarriage with Mc Pherson Suspension Equipment



### Feature and benefits

- Educational structure equipment for suspension system
- The equipment is proper to explain each parts and operating principle of suspension system
- Frame, Suspension, Strut bar, Steering gear, Brake disk, Reducer, handle
- Size : Approx. 1,800 X 1,200 X 1,700 (L x W x H, mm)
- Weight : Approx. 200kg

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand >company.



YESA-4901

## Electronic Controlled Suspension ( ECS ) System with 4 real wheels



### Feature and benefits

- The parts can be inspected and measured to be simulate so that can be checking when driving actual cars.
- ECS, ECU control terms G sensor in high speed and mobile-height adjustment in changing mobile-height are visible to the naked eye.
- Used for single fault diagnostic.
- Make actual vehicle for reduced model as like same condition
- Manufactured all switch signal same as actual vehicle.
- ECS and ECU control checking can be done when Accelerating from high-speed to constant speed.
- ECU control condition can be checked by installing check pin and switch.
- Installed pressure gauge to visible check the ECS control condition.
- Inner power supply: BAT 12V, variable motor
- In condition of installing engine and transmission, the ECS can be operated.
- Applied vehicles: manufactured by reduced EQUUS
- Data storage function, I/O device installation.

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-4929

## Automatic Transmission Training Equipment



### Feature and benefits

- It is high standard educational system of automatic transmission.
- Effective understanding functions and operation principle when teaching auto transmission.
- Checking of rpm at gear transmission in auto mode and understanding of transmission type.
- Three phase 3HP motor operating equipment.
- The equipment are installed automatic transmission operating parts.
- Can be used by adjusting the grounding force of the wheel.
- Supplied theory manual with experiments.

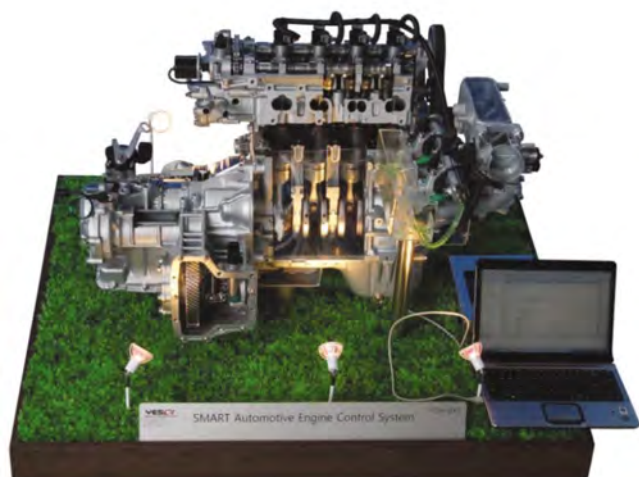
### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-1001

## SMART Automotive Engine Control System



### Feature and benefits

- A training equipment enabling education with naked eyes using precisely sectioned engine + gearbox of real vehicle of 1500cc or above grade with direct ignition and injection
- A training equipment to educate by adjusting the amount of fuel injection and timing of ignition of the equipment after connecting fuel injection and ignition system with a PC and manipulating the program according to the condition of engine operation
- Supplying ECU circuit, ECU program, source and textbook
- Available Experiments
  1. Control Fuel Injection, Ignition
  2. CPS signal modulation
  3. ISG control function
  4. Abrupt acceleration & deceleration control
  5. Control fuel pump control
  6. Starting control
- Supplied User Manual with theory

#### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-1002

## UVO Smart Control System



### Feature and benefits

- The all Automotive sensors controlled by Smart Phone through YES01 application software.
- A convenient application for an autocar to perform parking check, air conditioning control, door control, horn control, escort light control, remote door opening control, wiper and trunk manipulation with a smart phone.
- Opening and Closing of car door may be checked with naked eyes through LED display.
- Using a small size motor, RPM of the equipment may be controlled to perform door lock function.
- Headlight and taillight are manufactured so that the condition may be checked using LED. By installing diagnostic terminals at each movable part, the state of operation may be diagnosed.
- Supplied with theory & student experiment manual

#### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.



YESA-3300

## Hybrid LPI engine diagnostic simulator

### Feature and benefits

- Manufacturing hybrid starting simulation with Avante 1.6 engine, Hybrid control Unit.
- Attached sensor of slant angle, brake boost pressure
- To check the operation such as start of hybrid engine, power support by idle or slow move, driving force support when speed up, energy retrieve decreasing speed (battery charge) with brake switch
- With the center of HCU (hybrid control unit), connect each control unit, ECU, TCM, BMS ECU, MCU, LDC with CAN communication.
- Panel display engine start - engine status
- With diagnosis equipment, check sensor, short circuit, failure diagnosis and output power
- Display panel, ECU circuit, education check terminal and toggle switches are set up in the front control panel, it is convenient to check failure, diagnosis, test and experiment.
- Supplied with theory & student experiment manual

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-4530

## Electric Vehicle Training Equipment

### Feature and benefits

- Checking the power supply
- Checking the sensors
- Checking the actuators
- Determining the influence of the different sensors on the different actuators
- Recording and evaluating the control of the actuators with regard to the input information
- Representing the pressure conditions with regard to the sensor signals and the engine speed
- Representing, recording and evaluating errors which occur in practice
- Supplied with theory & student experiment manual

### • Remark

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YESA-1101T

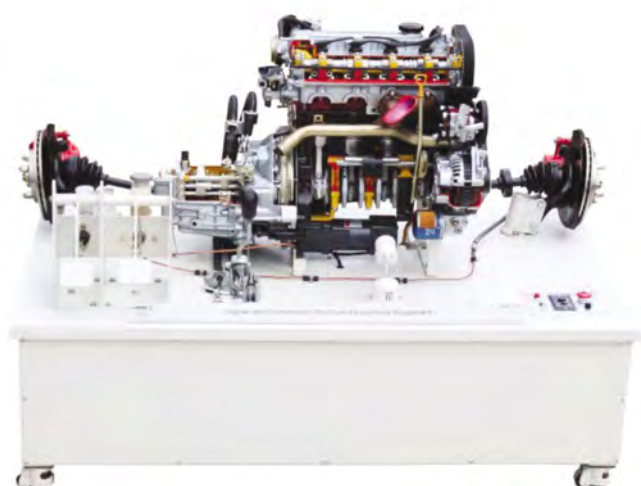
## Engine and Transmission with Control System

### Feature and benefits

- An educational training equipment for teaching inner structure and performance property of gasoline engine, transmission, clutch, transaxle, and others using cross-section of components.
- 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.
- Manual operation of clutch enables transmission.
- Engine: 1,800~2,000cc, gasoline, 4-cylinder, DOHC
- Single phase 220V 180W powered motor drive with various rpm, control box, and lamp,
- The model is painted with different colors to better differentiate the various parts.
- Supplied User Manual with theory

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.



YESA-4801

## Electric Vehicle with Test System

### Feature and benefits

- Without operating real automotive.
- Diagnosis system shall provide fundamental diagnosis and failure checking features by modifying common settings of an electric car.
- Simulator shall be manufactured so that handling sense and follow-up experiment by mounting the steering system.
- Analysis on waveform measured with environment metering system shall be available using oscilloscope and spectrum.
- Trainees may actually execute test operation of vehicle, deletion of defective code, direct checking of vivid built-in data, command of acknowledge against sensor and actuator using laboratory use tools and so on.
- Using built-in database, trainees are able to check typical comparative data through data and component.
- Supplied User Manual with theory & Experiment

### • Remark

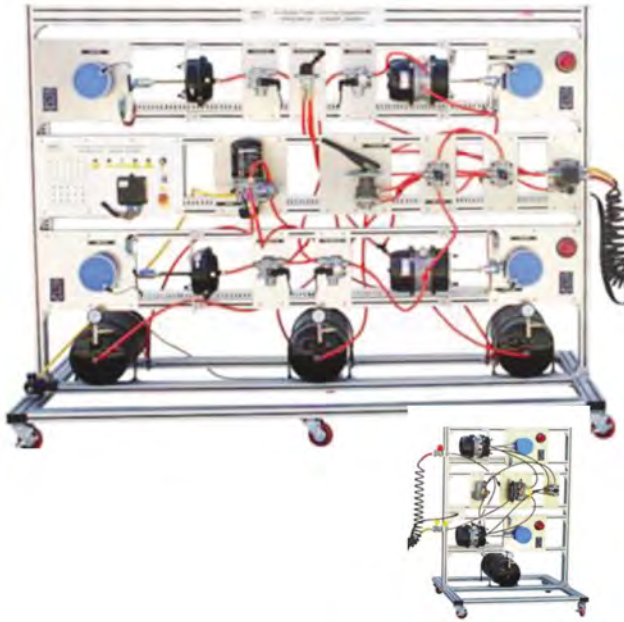
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YESA-4915

## Air Brake Training Equipment\_ Heavy Trailer Type



### Feature and benefits

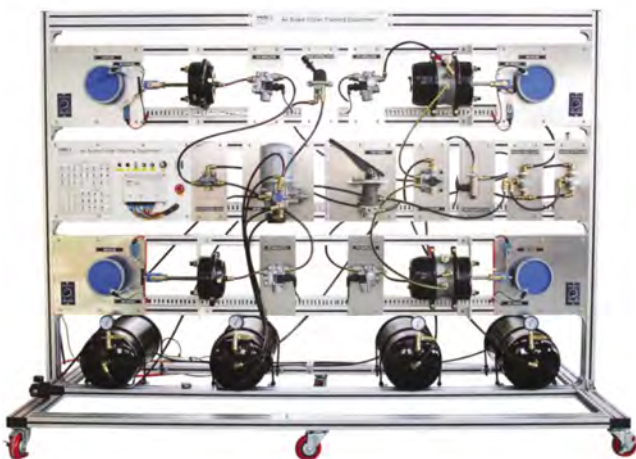
- Trailer air brake system
- Using motor, rotation and speed of the wheel are controlled.
- Actual operation and test by mounting every parts of Air Tank and Air Brake System
- Training of brake and side brake operation status and air line wiring
- Confirmation of actual parts by using names of each part
- Effective control of air brake operation during every movement of air brake and vehicle traveling
- Supplied User Manual with theory

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-4912

## Air Brake System Training Equipment



### Feature and benefits

- Truck air brake system
- Using motor, rotation and speed of the wheel are controlled.
- Actual operation and test by mounting every parts of Air Tank and Air Brake System
- Training of brake and side brake operation status and air line wiring
- Confirmation of actual parts by using names of each part
- Effective control of air brake operation during every movement of air brake and vehicle traveling
- Supplied User Manual with theory

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.



YESA-2611

## Injection Pump with 6 Cylinders in line and Speed Control panel



### Feature and benefits

- Educational structure equipment for diesel inline injection pump
- The equipment is proper to explain each part and operating principle of diesel injection pump
- Some of sections are painted with different colors for educational effect
- In-line diesel injection fuel pump
- Size : Approx. 500 X 400 X 400 (L x W x H, mm)
- Weight : Approx. 20kg

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.

YESA-4240

## Gasoline Fuel Injection System with EOBD



### Feature and benefits

- Includes all injection parts used in gasoline engines.
- Includes: fuel pump, fuel tank, pressure regulator, ruler, injectors, fan, crank gear, cam gear, and testers to show fuel injection.
- Ignition circuits : coil, spark plugs, and air inlet.
- Ability to discover faults using multi-meters to measure resistance and voltage of all sensors including temperature sensor, oxygen sensor, air volume sensor, air temperature sensor, engine temperature sensor, exhaust sensor, crank sensor, and cam sensor.
- All electronic circuits for ECU unit for electronic control of the circuit.
- On stand including cabinet with 4 wheels.
- Optional Function: touch screen that can be used to teach all parts of the equipment using sound and Animation with questions to evaluate each student and ability to control and generate faults.

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.



YESA-3330

## Gasoline Engine Diagnostic Simulator\_ Auto Fault

### Feature and benefits

This equipment can make up to 20 faults diagnosis training of Gasoline engine using AutoSim system.

- The simulator is manufactured for effective training with ergonomic design and also the control panel is able to adjust degree 3 stages
- The control panel is able to open for inside circuit structure training, and 2 lock-up system are attached on back side for teacher's training purpose
- Stages PCB board is consist of keyboard, relay board, slave board, there for strong from heat and has good durability.
- Supplied the simulation software that is consist of insert automotive 20 kinds Faults, display, 8 different Theory power point, Animation.
- It is able to training for student level with 20 kinds of different fault at the same time insertion
- Supplied theory and 10 kinds of exercise manual

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-3301

## CRDI Engine with Turbo-Intercooler, Diagnostic Simulator-Auto Fault

### Feature and benefits

This equipment can make up to 20 faults diagnosis training of diesel engine using AutoSim system.

- The control panel is able to open for inside circuit structure training, and 2 lock-up system are attached on back side for teacher's training purpose
- Stages PCB board is consist of keyboard, relay board, slave board, there for strong from heat and has good durability.
- Supplied the simulation software that is consist of insert automotive 20 kinds Faults, display, 8 different Theory power point, Animation.
- It is able to training for student level with 20 kinds of different fault at the same time insertion
- Supplied theory and 10 kinds of exercise manual

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.





YESA-3000

## ECU Control and Diagnostic Training for Real Vehicle



### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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### Feature and benefits

- It is the purpose to maintenance and diagnosis of vehicle from
- The simulator is able to training components and operating state which are difficult to check inside by open the parts.
- Supplied control unit including various check points for education and diagnosis with scanner.
- Checking by self-diagnostic
- Controlled by electronically gasoline engine tune-up
- Measurement exhaust gas, cylinder compressed pressure
- Measurement pressure and leak of radiator cap.
- Operating test for fuel pump and oil pressure.
- Measurement current and voltage of front circuit such as charging, starting and various types.
- Connector check terminal for inspection sensor and actuators
- Checking air intake and exhaust system
- Checking fuel system, front panel, ECU
- Checking cooling system, belt, and pump
- Checking and maintenance any other systems
- Adjustment timing chain and tension of fan belt

YESA-4610

## Automotive Air Conditioning Simulator with Heavy Engine



### Feature and benefits

- The simulator is manufactured for effective training with ergonomic design and also the control panel is able to adjust degree 3 stages
- The control panel is able to open for inside circuit structure training, and 2 lock-up system are attached on back side for teacher's training purpose 3 stages PCB board is consist of keyboard, relay board, slave board, there for strong from heat and has good durability.
- Supplied the simulation software that is consist of insert automotive 20 kinds Faults, display, 8 different Theory power point, Animation.
- It is able to training for student level with 20 kinds of different fault at the same time insertion
- Supplied theory and 10 kinds of exercise manual

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-4234

## Ignition System Bench type



### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a <Hi Seoul Brand> company.

### Feature and benefits

- The equipment is effective training about ignition system and operating principle.
- 6 type of ignition system are able to compare the evolution for education and training.
- Sensor checking mode is able to do inspection about voltage and resistance of various sensor by change data and can be training logical maintenance method to meet understanding of sensor and exercise concurrently by practice manual.
- Ignition system is mounted on the panel and also attached power supply and wiring for understanding whole system
- The Equipment is composed of system which is can make wiring exercise and checking waveform with installing sensor, circuit, connecting terminal by parts.
- Data of RPM speed and changes are check with controller adjustment
- Understanding the overall flow of the circuit and to solve problem with understanding of cause and change.
- Ignition circuit panel is showed on aluminum board by CNC

YESA-4241

## Diesel Fuel Injection System with EOBD control panel



### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a <Hi Seoul Brand> company.

### Feature and benefits

- Includes all injection parts used in diesel engines.
- Power supply: 220V
- Shows the cycle from taking the fuel from the tank until its injected into the tubes (testers).
- Shows all the sensors for the diesel injection circuit for diesel engines.
- Includes: operating key, voltage display, LED indicators for faults, fuse box for all parts.
- Ability to discover faults using multi-meters to measure resistance and voltage of all sensors including camshaft sensor, crankshaft sensor, oxygen sensor, air inlet sensor, temperature sensor, water temperature sensor.
- All electronic circuits for ECU unit for electronic control of the circuit.
- On stand including cabinet with 4 wheels.
- Optional Function: touch screen that can be used to teach all parts of the equipment using sound and Animation with questions to evaluate each student and ability to control and generate faults.



YESA-1401

## CRDI Power Train Chassis\_FR manual, 4WD



### Feature and benefits

- FR manual type transmission, power train system of diesel engine for cut-way model
- The equipment is proper to explain each parts and operating principle of power train system
- It is possible to check inside of power train by precise cutting
- Some of sections are cut-way and painted with different colors for educational effect
- Operated by AC 220V motor like a real vehicle
- Brake lining / Replace pad and tuning
- Replace oil filter
- Replace other various belts and control tension
- Replace suspension and spring
- Replace tire
- Attach / Detach fuel pump and inspection

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.

YESA-1300

## CRDI Diesel Engine System with stand\_DOHC type



### Feature and benefits

- 2,000cc DOHC gasoline engine for educational structure equipment
- The equipment is proper to explain each parts and operating principle of gasoline engine
- Some of sections are cut-way and painted with different colors for educational effect
- It is manufactured with the same operating method like a real vehicle
- It is operated such as real vehicle and possible to check inside of engine by precise cutting
- Piston, Valve, Crank and others are possible to check inside operating
- Replace timing belt and other various belts / Control belt tension
- Attach / Detach generator and starting motor
- Replace oil filter

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.



YESA-1402

## Diesel Power Train Chassis\_FR manual, Lighting system



### Feature and benefits

- Effective learning of inner structure and operating principle of piston, valve, crank, and others. is available using cross-sectioned head of 4-stroke 4-cylinder engine.
- Inner structure of clutch, 5 stages manual transmission, differential gear, brake system, and others may be checked by directly manipulating pedal and lever, and also, gear ratio of 4 Wheel Drive manual gearbox and detailed power system may be taught successfully.
- Single phase 220V, 180W motor with various rpm, two lamps, control box, and separate safety device.
- Supplied User Manual with theory

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.

YESA-1106

## V-6 Gasoline Engine System with 360 degree turntable



### Feature and benefits

- An educational structure which may be operated by a motor with block, cylinder, and head of cross-sectioned V-type engine.
- An excellent demonstration effect using an engine stand device to rotate crank and shaft with a motor rotating synchronously.
- The product has superior durability with planting treatment.
- Gear part of the motor is heat treated and durable against prolonged training and exhibition.
- Driving speed of engine may be controlled by adjustment of engine driving motor.
- Gasoline, 3,000cc, V 6-cylinder, electronic-controlled engine
- Single phase 220V 180W 4-pole motor, 0~5.5 rpm, stand, 4-pole 250W motor with various halogen lamp, control box, control module, additional safety device
- The model is painted with different colors to better differentiate the various parts.
- Supplied User Manual with theory

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.



YESA-4311

## Automotive Central Locking System Simulator



### Feature and benefits

- All sensors and actuators should be installed on the trainer panel, full data measurements needed should be taken from the control, OBD II data link connector should be provided, should be able to demonstrate the total construction and operation of automotive “central locking system”, Should be able to measure the input and output data of each sensors and actuators , all measurement points should be accessible for the use of multi meters, oscilloscopes, should be able to study the principles of analog / digital conversion
- Supplied User Manual with theory

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-4101

## Automotive Accessories with Electric circuit \_ Gasoline Engine, Battery, Folding Panel Type



### Feature and benefits

- Half folding type panel should be reduced freight cost.
- The structure design that is can be understanding overall wirings of vehicles easily.
- Installing movable wheels to move easily.
- Available checking circuits
  - installed ignition circuit, charging circuit, direction instructions and emergency light, horn circuit, door-lock circuit, headlight circuit, wiper circuit, starting circuit, Fuel circuit, Automatic mission circuit and sidelight circuit, antenna circuit, audio system circuit, variable sensor and switch, ECU, key box, combination switch and relay box, battery, combination switch relay, fuse box and fuel tank light.
  - Distributor, wiper is operated normally using motor and the spark is visible to the naked eye.
  - Steering wheel, surge tank, throttle body, injector A/S and AFS etc are working normally.

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-4951

## Electronic power steering and Suspension Simulator



### Feature and benefits

- The parts can not be inspected and measured to be simulate so that can be checking when driving actual cars.
- Installed ECU, vehicle speed sensor, solenoid valve and power steering education of electronic control rate response, flow control method can be done.
- EPS system used in educational equipment.
- Using fault diagnose type of variable single part.
- Manufactured all switch signal same as actual vehicle.
- User can randomly control sensor and actuator values and the I/O values.
- Driving power pump by using motor.
- It is composed power pump, pressure pipe, control valve, chamber left-right rack, servo cylinder, wheel etc.
- Installed KEY, TPS, inverter, cluster, diagnostic connector, circuit panel.

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-3151

## Body electrical System simulator



### Feature and benefits

- Automotive body electrical system simulator.
- Substantial, realistic, practical and durable to maximize educational effect in the electric field of vehicle.
- Input/output and coil are manufactured same as those of real vehicle using general relay.

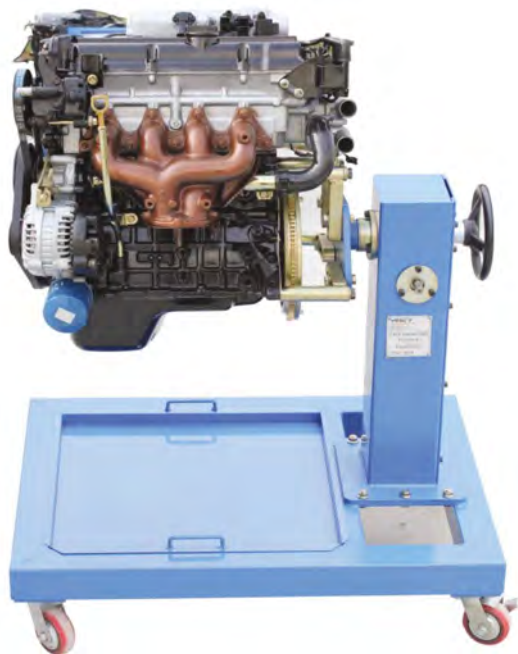
### • Remark

- Supplied by YES01, the company that has certification for ISO9001
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YESA-2960

## Gasoline Engine with stand Assemble and Disassemble



### Feature and benefits

- With a system having a robust main shaft brake and NC100:1 inner rotating device, this engine stand is manufactured into a safe and patented product with no vibration. Gasoline ENG practice equipment
  - 1) Stroke : 4 Stroke gasoline engine
  - 2) Cylinder : 4 Cylinder Cam Shaft type
  - 3) Cooling : Water cooling system
  - 4) Engine
    - HP: over 1500CC
    - Engine rotary stand for 100:1(Installed safety break)
    - 360 degree rotating main axle break installed
    - Weight adjusting range: 180mm~430mm
    - Weight capacity: under 500kg, under 4tab 700kg with additional buttress
- Gasoline Engine Assembly/Disassembly Training Equipment.
- Supplied User Manual with theory

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.

YESA-2982

## CRDI Diesel Engine with stand Assemble and Disassemble



### Feature and benefits

- With a system having a robust main shaft brake and NC100:1 inner rotating device, this engine stand is manufactured into a safe and patented product with no vibration..
- Diesel ENG practice equipment
  - 1) Stroke : 4 Stroke Diesel engine
  - 2) Cylinder : 4 Cylinder Cam Shaft type
  - 3) Cooling : Water cooling system
  - 4) Engine
    - Engine rotary stand for 100:1(Installed safety break)
    - 360 degree rotating main axle break installed
    - Weight adjusting range: 180mm~430mm
    - Weight capacity: under 500kg, under 4tab 700kg with additional buttress
    - Engine assemble with safety and stable structure
- Diesel Engine Assembly/Disassembly Training Equipment.
- Supplied User Manual with theory

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.



YESA-5200

## Heavy Machinery Axle Equipment



### Feature and benefits

- The model is painted with different colors to better differentiate the various parts.
- Differential gear of heavy vehicles may be checked with naked eyes and educated.
- The model is painted with different colors to better differentiate the various parts.
- Supplied User Manual with theory

YESA-5201

## Tractor Front Axle Equipment



### Feature and benefits

- An educational system to understand the structure of front axle of a tractor using cross-sectioned components.
- Aluminum control box comprising AC 220V, motor-operated system with various rpm, circuit breaker, fuse, emergency switch, power lamp is provided.
- The model is painted with different colors to better differentiate the various parts.
- Supplied User Manual with theory

YESA-2710

## Diesel Alternator Model



### Feature and benefits

- Effective learning of inner structure of power steering pump and cylinder system using cross-sectioned components.
- The model is painted with different colors to better differentiate the various parts.
- Available to select stand type of wooden, steel, and mirror stainless by customer.
- Supplied User Manual with theory

YESA-2501

## Power Steering Model\_Ball circulation



### Feature and benefits

- Power steering is cut precisely to understand operating relationship of rack pinion, operating concept of power pump and operating structure at the transmission of the driving power.
- Sight glass, suction accumulator, high and low pressure transducer, high and low pressure gauge, high /low pressure switch, head pressure control valve, controller, O/I board box, load center.
- The model is painted with different colors to better differentiate the various parts.
- Supplied User Manual with theory



YESA-2804

## Universal Joint Model



### Feature and benefits

- Effective learning of the principle of universal joint and rotational angle during off-axis operation.
- Operation mechanism
- Operation structure of manual type universal joint can be understood.
- The model is painted with different colors to better differentiate the various parts.
- Supplied User Manual with theory

YESA-2306

## Drum Brake Model

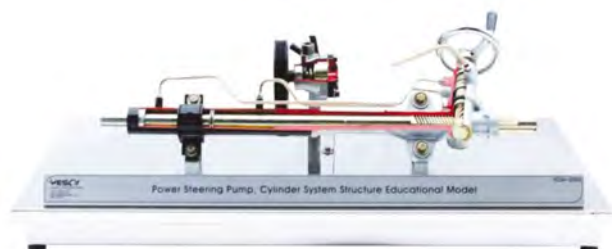


### Feature and benefits

- Effective learning of inner structure and operating principle of drum brake and wheel cylinder using cross-sectioned components.
- The model is painted with different colors to better differentiate the various parts.
- Available to select stand type of wooden, steel, and mirror stainless by customer.
- Supplied User Manual with theory

YESA-2503

## Diesel Engine Fuel Injection Pump



### Feature and benefits

- Effective learning of inner structure of power steering pump and cylinder system using cross-sectioned components.
- The model is painted with different colors to better differentiate the various parts.
- Available to select stand type of wooden, steel, and mirror stainless by customer.
- Supplied User Manual with theory

YESA-2202

## Auto Rear Drive Type Transmission



### Feature and benefits

- Effective learning of inner structure of F/R type passenger car's 4 speed automatic transmission.
- Rear wheel auto transmission and torque converter are cut precisely to understand structure
- The model is painted with different colors to better differentiate the various parts.
- Available to select stand type of wooden, steel, and mirror stainless by customer.
- Supplied User Manual with theory



YESA-2611

## Injection Pump with 6 Cylinders in line and Speed Control panel



### Feature and benefits

- Effective learning of inner structure of in-line plunger injection pump of 6 cylinders direct nozzle using cross-sectioned components.
- The model is painted with different colors to better differentiate the various parts.
- Available to select stand type of wooden, steel, and mirror stainless by customer.
- Supplied User Manual with theory

YESA-2637

## Involute Gear Pump Model



### Feature and benefits

- Effective learning of inner structure of engine's involute gear pump using cross sectioned components.
- The model is painted with different colors to better differentiate the various parts.
- Available to select stand type of wooden, steel, and mirror stainless by customer.
- Supplied User Manual with theory

YESA-2714

## Worm Gear Model



### Feature and benefits

- Effective learning of Operating concept and structure of worm gear within the reduction gear
- Operating relationship may be checked with naked eyes by manual driving.
- The model is painted with different colors to better differentiate the various parts.
- Available to select stand type of wooden, steel, and mirror stainless by customer.
- Supplied User Manual with theory

YESA-2715

## Turbocharger - Intercooler Model



### Feature and benefits

- Effective learning of inner structure of intercooler and turbocharger for high output using cross-sectioned components.
- The model is painted with different colors to better differentiate the various parts.
- Available to select stand type of wooden, steel, and mirror stainless by customer.
- Supplied User Manual with theory



YESA-1202

## 4 Stroke Gasoline Engine



### Feature and benefits

- 4 stroke engine for educational structure equipment
- The equipment is proper to explain each parts and operating principle of 4 stroke engine
- Some of sections are cut-way and painted with different colors for educational effect
- It is manufactured with real 4 stroke engine and possible to check inside of engine by precise cutting
- Piston, Valve, Crank and others are possible to check inside operating
- For display

### • Remark

- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.

YESA-1200

## 2 Stroke Gasoline Engine



### Feature and benefits

- 2 stroke engine for educational structure equipment
- The equipment is proper to explain each parts and operating principle of 2 stroke engine
- Some of sections are cut-way and painted with different colors for educational effect
- It is manufactured with real 2 stroke engine and possible to check inside of engine by precise cutting
- The equipment has the same operating method with a real vehicle
- Piston, Valve, Crank and others are possible to check inside operating
- For display

### • Remark

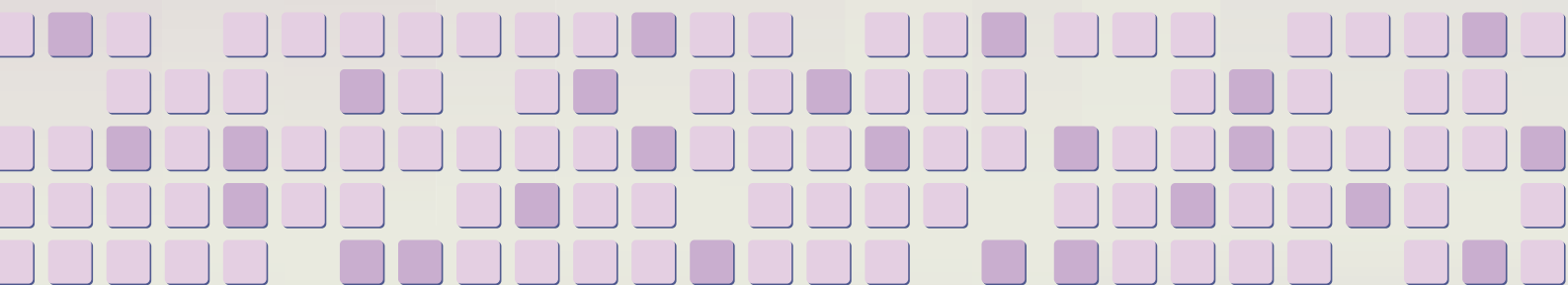
- Supplied by YES01, the company that has certification for ISO9001
- Seoul Metropolitan Government and Seoul Business Agency certify that YES01 is a < Hi Seoul Brand > company.



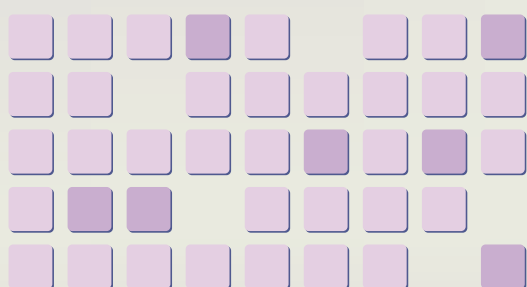


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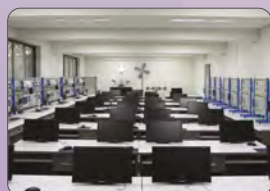
Electric & Electronic Measuring Device,  
Automatic Control







ANIVYS CO., LTD.	234 ~ 237
AONE Technology Co., Ltd.	238 ~ 239
CHUNGPA EMT CO., LTD.	240 ~ 249
ED CO., LTD.	250 ~ 251
FESTECH CO., LTD.	252 ~ 255
FESTOONE CO., LTD.	256 ~ 257
Hanback Electronics Co., Ltd.	258 ~ 259
IEG Co., Ltd.	260 ~ 263
KTENG	264 ~ 271
ROBOROBO Co., Ltd.	272 ~ 273
WOOSUN CONTROL CO., LTD.	274 ~ 279





## Pneumatic training system



Pneumatic basic training set (AVP-P-P11)  
Pneumatic advanced training set (AVP-P-P12)  
Electro-pneumatic basic training set (AVP-P-E21)  
Electro-pneumatic advanced training set (AVP-P-E22)  
Patent acquired horizontal & vertical installable 2-way clamp  
SMC compartment & 4mm safety socket adopted



### Training contents

- Basic principle and physical fundamentals of pneumatics
- Fundamentals and terminology of pneumatic control technology
- Programmed control with a sequencer
- Assembly of controls with relays
- Design & function of electric sensors

## Hydraulic training system



Hydraulic basic training set (AVP-H-P51)  
Hydraulic advanced training set (AVP-H-P52)  
Electro-hydraulic basic training set (AVP-H-E61)  
Electro-hydraulic advanced training set (AVP-H-E62)  
Proportional hydraulic training set (AVP-H-C71)  
Servo-hydraulic training set (AVP-H-S73)  
Patent acquired horizontal & vertical installable 2-way clamp  
Safety socket adopted



### Training contents

- Physical principle of hydraulics
- Structure, function and application of hydraulic actuators & components
- Composition and drawing electrical and hydraulic control circuits
- Recording characteristics for the proportional discharge valve
- Setup of a control circuit with setting of control quality, empirical parameterization



## NEW RELEASE

### Portable electro-pneumatic training set

Compact & portable electro-pneumatic training set



Relay type

PLC type (with any compact type PLC)

#### Training contents

Item	Q'ty	Item	Q'ty
Double cylinder (with magnetic s/w)	2ea	Double cylinder	2ea
Regulator	1ea	Relay	3ea
Electrical Limit switch (right & left)	2set	Push button switch set	2ea
Inductive sensor module	1set	Power supply	1ea
5/2 solenoid valve (4-fold)	1set	Proximity sensor module	1ea
5/2 double solenoid valve (4-fold)	1set	Digital counter	1ea
Suit type case (with profile)	1ea	Time delay	1ea
Cable set (2mm)	1set	Hose set (20M)	1set
* PLC unit (for PLC type)	1set		

\* Custom-made 'Portable (Suitcase-type) FA Application training systems' are available.

### PLC training set



Ideal control system for various FA application devices  
With 4mm safe socket  
Custom-made for all kinds of PLC



## Multi-Function PLC trainer (AV-MT-P1000)



Independent type PLC trainer  
4mm safety socket  
Wide compatibility with various block type compact PLC  
Adjustable angle  
Selectable function modules



## Modular product system (MPS)



Actual training for production, automation and control  
Controlled by various devices as like PLC, PC or software  
Customer-made combinations between the stations:

Distributing station	Robot station
Testing station	Assembly station
Processing station	Punching station
Handling station	Separating station
Buffer station	Storing station
Pick & Place station	Sorting station

## Mobile Robot (AV-MRP3MV4)



Microprocessor control autonomous mobile robot platform is complete learning system of micom system design and C programming with a round and rigid steel frame, three omnidirectional drive units and comprehensive workbook.

### Composed of

- 3dof open type mobile service robot platform
- Color sensing camera
- Battery charger
- Training workbook and CD
- Mobile hard case
- Basic tools and brackets



AV-BC-AC210

## bCube-Analog Circuit



- Complex experiment of electronic circuit and digital logic circuit
- Simulation function with USB DAQ
- USB Oscilloscope
- Experiment without additional measuring equipment

AV-BC-LC220

## bCube-Digital Logic Circuit



- Practicing circuit implementation through breadboard and electronic circuit module
- Simulation function with USB DAQ
- USB Oscilloscope
- Experiment without additional measuring equipment

AV-BC-FG250

## bCube-FPGA



- Android Jelly Bean 4.2.2, Linux Kernel 3.4.39
- 10.1 Inch, 1280x800 LCD
- Practice making of Android application

AV-BC-CC240

## bCube-Communication



- Experiment platform for AM, FM, ASK, FSK, PCM, TDM, optical communication and wire/wireless communication
- Wire/wireless modem, data transfer, application tests
- Analog/digital signal generator and measuring instrument

AV-EC-EN110

## eCube-Exynos 4412



- Complex experiment of electronic circuit and digital logic circuit
- Simulation function with USB DAQ
- USB Oscilloscope
- Experiment without additional measuring equipment

AV-MC-MC310

## mCube-Microprocessor



- Available selection between AVR, Cortex-M4, 8051 Processor
- Simulation S/W through USB
- Supply needed education themes for microprocessor practice

AV-RC-MR110

## rCube-Mobile Robot



- Wireless mobile robot trainer
- Voice recognition robot control through Wi-Fi function from smart device
- Extension connector for sensors
- Independent processor for sensors
- Control mobile robot body and independent communication processor
- Easy to change the wheel size (65mm, 90mm, 110mm, 130mm)



CT6200

## Mechatronics trainer



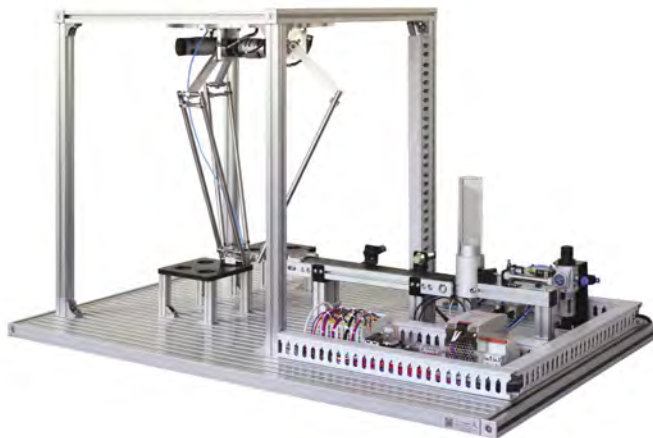
Mechatronics is complex field of automation technology. Mechatronics trainer from AONE technology is composed of various FA devices. 4mm safety plug and sockets are adapted for electrical connection

### Main components

- PLC module
- HMI touch panel
- Data control & DC motor control module
- PC-based control EtherCAT module
- Mini automation trainer  
(above modules are selectable)

RT1100

## Delta-robot trainer



Delta-robot trainer is controlled by TwinCAT which is the world famous PC-based control software made by Beckhoff Germany. EtherCAT industrial network technology is adapted for data communication between robot and control PC

### Main components

- PC interface module(EtherCAT)
- Supply unit
- Conveyor unit
- Sensor unit
- Delta-robot unit
- Pallet unit

CT3200

## PLC trainer(portable type)



AONE technology is developing PLC trainer which is composed of various components demand on customers. 4mm safety plug and sockets are adapted for electrical connection.

### Main components

- PLC (model: on demand)
- DC Power supply
- Push-button & toggle switch
- LED lamps
- digital switch(2-digit)
- FND display(2-digit)
- DC motor control



AT1000 / AT2000

## Pneumatic/Hydraulic trainer



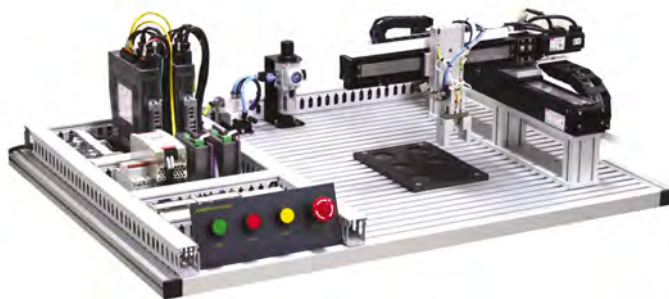
Pneumatic & hydraulic trainer is composed of various parts to experiment a lot of pneumatic and hydraulic circuits. Every components have push-clamp for convenient attachment and demounting

### List of trainer packages

- Basic pneumatics
- Advanced pneumatics
- Electro-pneumatics
- Basic hydraulics
- Advanced hydraulics
- Electro-hydraulics
- Proportional/Servo hydraulics

MT7300

## Motion trainer(AC Servo)



Motion trainer is normally used for intermediate or advanced level of PLC training course. With 2-axis 100W AC servo motor and air gripper, you can experiment various working scenario.

### Main components

- 2-axis cartesian robot
- 100W AC servo motor and drive
- air cylinder for Z-axis
- air gripper for end effector
- air service unit
- DC power supply
- push-button switch unit

CT3400

## PLC trainer(desktop type)



AONE technology is developing PLC trainer which is composed of various components demand on customers. 4mm safety plug and sockets are adapted for electrical connection.

### Main components

- PLC (model: on demand)
- DC Power supply
- Push-button & toggle switch
- LED lamps
- digital switch(2-digit)
- FND display(2-digit)
- DC motor control
- Traffic signal simulator



## AReS-Advanced / Smart Trainer

All-in One Real time Instruments & Educational System



### >> Features

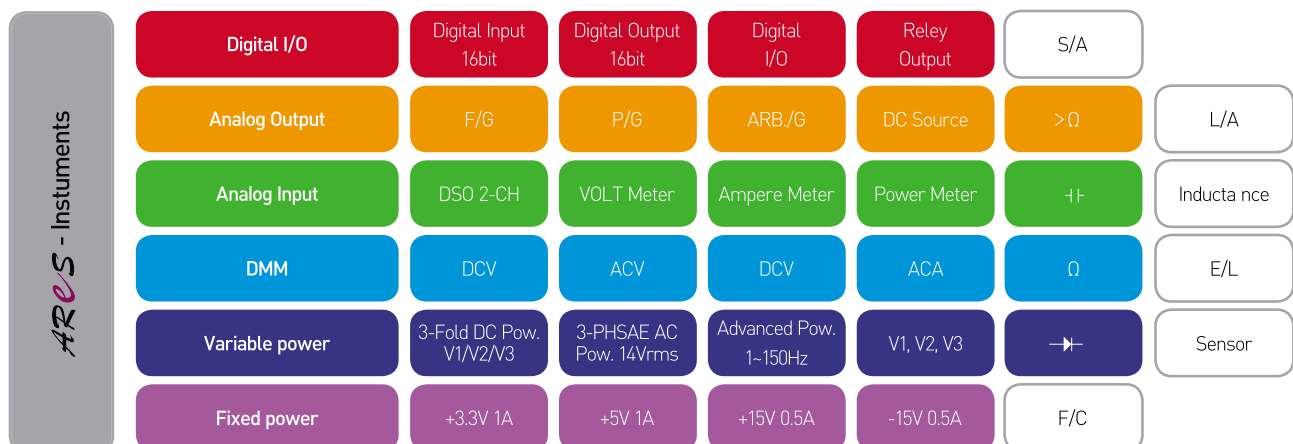
- Real-Smart Learning Platform
- Embedded OS Microsoft XP Standard
- All-in-One Measuring Application Program
- TCP/IP Ethernet and WiFi Wireless Internet Communication
- Very Easy and Simple Education Platform
- Theory and Experiment Book Support
- e-book Support
- Smart Learning Contents through Cloud Computing Support
- Simulations Software Support
- Test and Instrument Software Included
- Full-color TFT Touch LCD Display
- 6-USB & 2 Series Communication Interface
- Full-color HD Video and Electric Contents Played in One Screen
- Smart Learning Contents Management Software
- Various Language Support

### >> Embedded Software

- Embedded OS Software standard and Measuring Application Software Adopted (AReS-Advanced)
- PC-based Real Time Measuring Application Software Standard Adopted (AReS-Basic)
- Cloud computing by Internet and Wireless Communication Support
- Easy and Simple Smart Touch Screen, Wireless Mouse and Keyboard Support
- Smart Learning Application Software Adopted Fundamentally
- e-book Application Software Adopted Fundamentally
- Design and Simulation Program Support
- Audio and Video Support

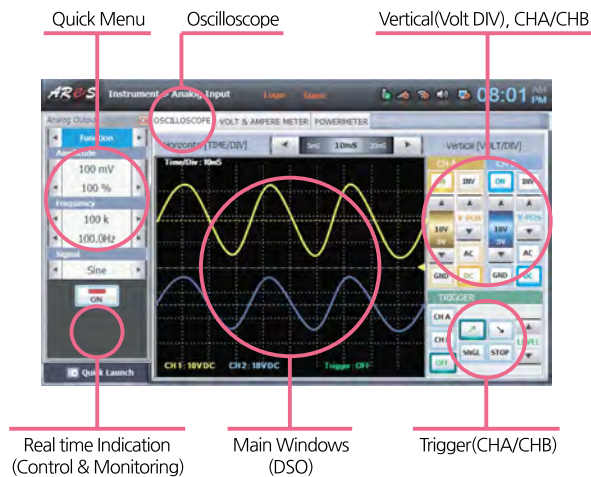


### >> AReS Instrument Function Structure





## >> AReS Advanced Embedded Instrument Program



Smart Trainer AReS has various multitasking functions. Smart Trainer adopting more than 13 types of precise measuring instruments is prepared with easy and comfortable software for users. Measuring software of Smart Trainer uses the user interface with which students can operate all functions easily and quickly by simple control. All software are similar to general meta screen. Each channel is designed to be chosen easily and quickly and to support measuring performance. The menu key can be chosen easily by mouse or touch pen. Now you can be the best engineer with superior application software of AReS.



Function Generator



Pulse Generator



DC Source Generator



Oscilloscope



Volt and Ampere Meter



Power Meter

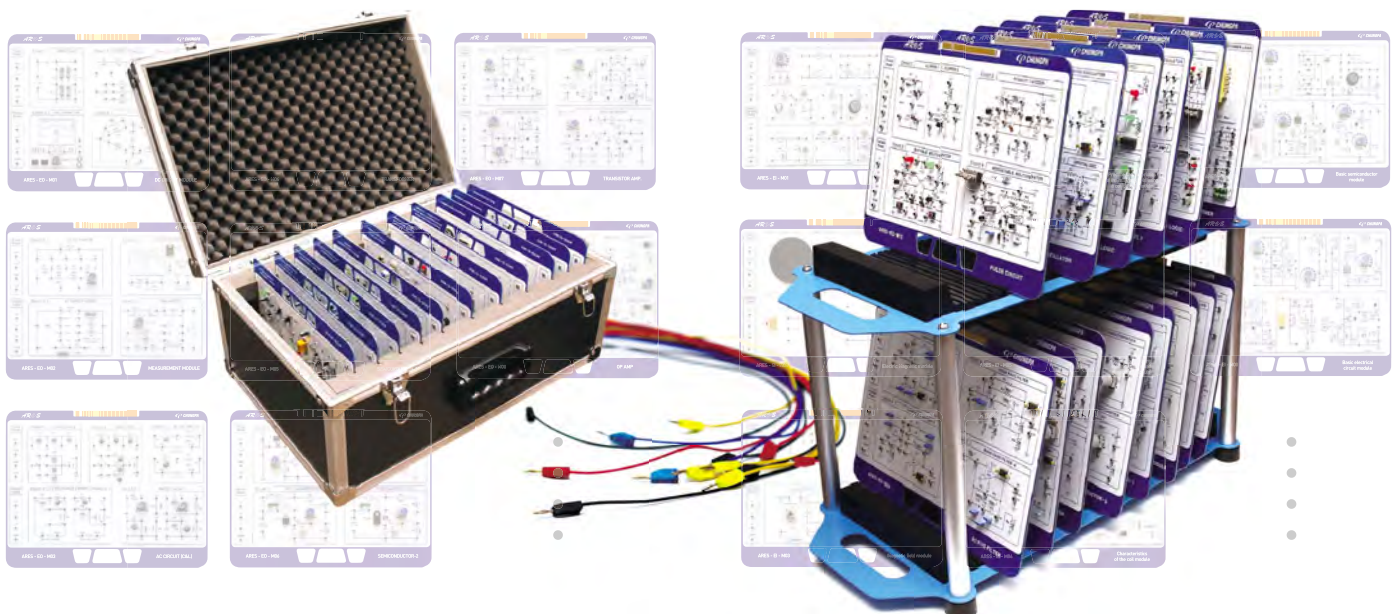


3-CH Variable DC Power Supply



Advanced 3 Phase Power

## >> AReS Experimental Modules (Basic Electronics / Electricity)





## RSL Series / Learning System



### >> Features

- RSL-series is the effective system for someone who wants to make Contents easily with low cost.
- Any lecture and class can be made a video data and it can be a Contents.
- RSL System can be moved anywhere and made a Contents.
- Video and Presentation data automatically tied to one Content and real-time distribute. Also, it is possible to edit data in existing.
- The contents can show in real time or anytime through internet and mobile devices. It is possible that two-way communication by Tagging function.
- RSL System is not one-side Contents. It is centered around the user that provides communication and convergence Contents which is gathering advantages of existing e-learning, mobile learning, social learning.

### >> Specifications

- OS : Windows 7
- CPU : Intel Core i7-3770
- RAM : 4GB DDR3 SDRAM
- HDD : 1TB, SATA
- ODD : SATA Super-Multi DVD
- Power : 500W
- PCIe : x16 2 slot
- Monitor : 22", 1920\*1080
- Wireless Mouse/ Wireless Keyboard/ Wireless LAN Card
- A/V Capture Card : Osprey 260e, Component, Y/C (S-Video), Composite video inputs, Balanced/Unbalanced Stereo audio inputs
- VGA Capture Card : Datapath Vision RGB-E1S, 170Mpixels/s analog RGB or 165 MHz DVI
- Camera : Sony EVI-D70 PTZ camera (RSL-500), 18x optical zoom, 12x digital, Remote control, Fully operable via RS-232C (VISCA) or RS-422, Tripod (RSL-500)
- Wireless Mic. : 2CH, 925 ~ 932MHz, Pin Mic., Handy Mic.
- UTP VGA & Audio Extender : EXVA-12LR
- Audio Mixer : XENYX 802, Premium 8-Input 2-Bus Mixer
- Software : Presentations 2GO Pro (RSL-500)  
Presentations 2GO Lite (RSL-300, RSL-100)  
Rich Media Editor

### >> Real Smart Learning System



#### Two in One Content

Video file and PT file synchronize with one content, and existing video files and PT files can be edited.  
Image size and position of the contents can be adjusted by user.



#### Live Streaming

RSL system is able to do recording and live streaming at the same time and can be watched through the internet and mobile network.



#### Live Tagging Communications

It is able to communicate through Tagging function that includes Question and answers. Tagging data can be used as a note to download and can link with SNS.



#### Easy and Comfortable Creation

Anyone can easily create high-quality contents.  
It is easy to set the property of contents, setting and screen configuration is simple and easily accessible.



## CPE-EN4500 / Smart Grid (Solar/Wind/Fuel Cell) Training System



### >> Features

- Integrated equipments that is available in theory verification by renewable energy and circuit configuration.
- Possible practicing solar energy test by various angles with angle PV module.
- Plane PV module is additionally installed.
- Designed modules to easily fix on the rack and taken off.
- Changing controller and charging battery with protection device.
- Possible practicing AC load test with AC power output through the inverter.
- Displaying the voltage and current values of testing module on the monitoring module.
- Composed of table, module rack, modules and accessories.
- Designed for indoor practicing.
- Possible measuring voltage, current, and load of both solar and wind.
- All-in-one trainer with strong aluminum frame, wheel, module rack and modules.
- Insulated connecting cables and I/O terminals for the safety.

### >> Experimental Contents

- Basic principles of solar and wind power generation
- Principles and system of solar and wind power generation
- Characteristics of power generation by the quantity of light
- V-I characteristics and load of solar power generation by series and parallel connection
- Charging and discharging of storage battery by charging controller
- Power converting by stand-alone inverter
- Street-light controlling by the time of sunup and sunset
- Smart-grid monitoring the values of voltage and current by power systems
- Other various practices about the generation of solar and wind power

### >> Configurations

- Experimental Table Set
- AC Power Source Module
- Photovoltaic Cell Module-A
- Photovoltaic Cell Module-B
- IND Generator Module
- Charging Controller Module
- Battery Module
- Stand-Alone Inverter Module
- DC Load Module
- AC Load Module
- Time Controller Module
- Automatic Charger Module
- Smart Grid Monitoring Module
- Arm-typed Light Source Module





## CP-Solar110 / Solar Generating System



### >> Features

- 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-WS300 / Solar/Wind Power Training System



### >> Features

- 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

- Wind & solar generating trainer configuration
- 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



## CPE-PN7000/7500 / Pneumatics Training System



- Basic Pneumatic Training System / CPE-PN7000
- Electro- Pneumatic Training System / CPE-PN7500

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

### >> Features

- Basic and application circuits with various electronic-pneumatic control components.
- One-touch lever type clamp attaches to the control module to safe of various experiments and simple operation.
- Safe drawers to store, clean up, and quick arrange components.
- Field education for on-site practice including competitions.
- Enhance efficiency with industrial standard signals and names in control module.
- Field industry education system with actual industrial control components.

### >> Experimental Contents

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

## CPE-HY8000/8500 / Hydraulics Training System



- Basic Hydraulics Training System / CPE-HY8000
- Electro- Hydraulics Training System / CPE-HY8500

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

### >> Features

- Prevent environmental pollution with eco-friendly coupling to restrain leakage.
- Basic and application circuits with various electro-hydraulic components.
- Guarantee of convenience and compatibility with quick coupling standard connection plumbing.
- Freely installation in direction of vertical/parallel of experiments and module control components.
- Safe drawers to store, clean up, and quick arrange components.
- Provide hydraulic hoses and hose holder for experiments for experiments.
- Electro control and pressure control with attached hydraulic power pack : Power switch, a pressure limiting valve, hydraulic pump, oil tank, shut-off valves, flow meters.
- Educations of electric/proportional/servo hydraulic control are available with electric control components.

### >> Experimental Contents

- Hydraulics principal and practice (more than 30types)
- Electro hydraulics principal and practice (more than 25types)
- PLC hydraulics principal and practice (more than 45 types)



## CPE-AT8030N / Factory Automatic Trainer



### >> Features

- Air Pressure and electrical air pressure practice.
- Possible to train with every module individually.
- Ø4 fitting connection.
- Possible to train with all modules generally.
- Used DC power for the safety of control signal.
- PLC control design education of factory automatic control system.

### >> Configurations

- Line movement process
- Conveyor & Separation process
- Conveyor & Stopper process
- Pick & Place Process
- PLC controller & Operation Table

## CPE-FMS100 / Flexible Manufacturing System



### >> Features

- Individual PLC Programming Training is available with various types of PLC.
- Robot Control Training with assembly part.
- Vision Camera Adjust Training with inspection.
- Servo motor Control Training with storage.
- Good/Bad Test with Sensor Control.
- Conveyor Control Training.
- Factory Manufacturing System control and programming.
- Practical experiment with theoretical studying.

### >> FMS 10 Stations System Consists

- Conveyor station
- Distribution station
- Testing station
- Vision station
- CNC station
- Robot station
- Assembly station
- Automatic Storage & Retrieval
- Handling station
- Sorting station
- HMI (Human Machine Interface)



## CPS-AT3450U / Integrated Mini Multi Programming System Trainer



### >> PLC Control Trainer

- Power Supply Section
- CPU Section
- Input Module Section
- Output Module Section
- Digital Input Section
- 7 Segment Display (Option)

### >> Configuration of PC Based Control Part (Control Board Part)

- USB BUS generator : USB generator, Micro controller (Atmega128)
- BUS Interface Unit
- LED Control Board
- Switch Input Control Board
- 8-channel Digital Input Terminal 24V DC : TR control B/D
- 8-channel Digital Output Terminal 24V DC : TR control B/D
- 7Segment Control Board
- DC Motor Drive Board
- Step Motor Drive Board

### >> Features

- Design for the purpose of studying comprehensive and professional engineering technology.
- Excellent tool for qualifying examination of mechatronics and practical affairs.
- Very useful for the mechatronics and automation department.
- Compos of the Mini MPS system, PLC, Bus interface and USB Bus creator.
- Convenient for user interface and easy usage.
- Design with the safety and solidity.

### >> Configuration of Mini MPS Trainer

- Product Supply Process (Supply Section)
- Product Transfer Process (Conveyor Section)
- Inspection Process (Sensor Section)
- Stopper Process (Stopper Section)
- Product Sorting Process (Adsorption Transfer Section)
- Loading Process (Loading Section)
- Control Panel

## CPE-ER1500 / Electric Machine Trainer



### >> Features

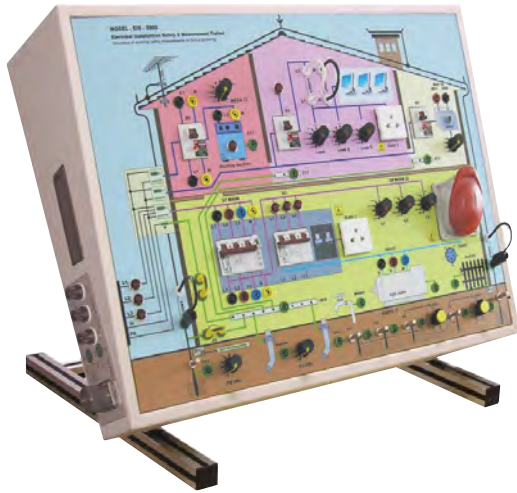
- Experiments about structure, operation, and control characteristics of various generators and motors are available.
- Operation principles and characteristics experiments are available with various modules.
- Overheat protection function by circuit breaker and rotor.
- External Open-type structure with components that are required in electricity rotation devices.
- Ease understanding of basic principle and structure characteristics by own assembling rotors.
- Simple experiments and ease of understanding structures with a graphic board.
- Operation and load experiments are available with 1Ø and 3Ø structures.

### >> Experimental Modules

- Field Rheostat
- Starting Rheostat
- AC/DC Machine Load Unit
- 3-Phase (Y-Δ) Load Unit
- Variable R, L, C Load Unit
- AC/DC Power supply
- AC Volt/Ampere Meter
- DC Volt/Ampere Meter
- DC Milliammeter
- AC/DC Machine Field Frame
- Auto Driving Unit
- Pole Changing Controller Unit



## EIS-2000 / Electric Installation Safety Measurement Trainer



### >> Features

The ideal tool for engineering, training and the simulation of measurement on electrical installations.

- Training for earth-to-earth, and earth-to-neutral
- Training for insulation-to-installations
- Training for electrical safety measurements
- Training for the most common electrical faults

### >> Experimental Contents

- 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

## CEM-2200 / Multifunction Electrical Safety Meter



### >> Features

The device co-developed with KESCO(Korea Electrical Safety Corporation) for portable, small size and light weight digital multifunctional electrical meter which can use to check electrical safety of electrical facility and communication facility.

- Digital graphic LCD and backlight
- $\pm 0.2\%$  precision
- Fast and accurate response rate
- Effective measure of RMS values
- Minimum, Maximum and Average values measured
- Two-point and Three-point ground resistance measurement
- Automatic power saving feature
- IrDA communication
- Lead wire connection display
- Auto/Manual range selection function
- Calibration by key buttons on the device
- Compact size and light weight
- KESCO(Korea Electrical Safety Corporation), KEPCO(Korean Electric Power Corporation) test & inspection equipment



## CPE-MP100B / Microprocessor Training Kits



CPE-MP100B is basically composed of 3 MCU boards, 1 microprocessor master unit (MP100B Master), and 6 interface control experimental modules. In addition, the training kit is supplied with various cables and an experimental guidebook as well. CPE-MP100B has 11 optional experimental control modules like peripheral expand 8255 module by which users are able to learn various studies like industrial facility control and automatic control.

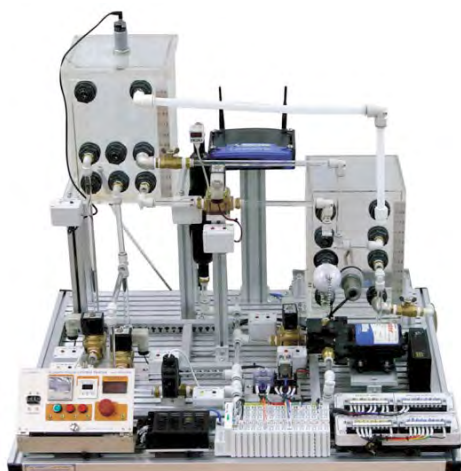
### >> Main Configurations

1. Microprocessor master unit(MP100B Master) : 1set
2. MCU board : 3ea
3. Experimental control module : 6ea
4. Interface cable and high strength jump wire set : 1set

### >> Features

- MCU (AT89S51 or 8051/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
- AC I/O port additional function
- Interrupt control
- Analog comparator
- Analog to digital converter(ADC)
- Digital to analog converter(DAC)
- SPI(Serial peripheral interface)
- RS232, Parallel, and USB interface control
- USART(Universal synchronous and asynchronous serial receiver and transmitter)
- 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

## CPE-AT3620 / PC Based Analog Control Trainer



### >> Features

- Possible to do various analog control training by simulation.
- Designed to be actual training about automatic system like programming and FMS, etc. due to PLC based control.
- Designed to study the theory of automatic system and practice flow control, electric control, motor control, sensor control.
- PID control system by analog control.

### >> System Configurations

1. Experimental table and experimental panel
2. Power supply
3. Control panel
4. XGB Series Controller
5. Analogue control system
6. Fluid box



# Leader of Smart Learning

## E3 Exciting Education E-book

E3 System supplies smart educational environment

Just one E3 Platform enables many users to do learning and to share learning material according to user's control.

E3 System supplies the educational environment using HTML5 on various OS Platform (Android, iOS, OSX, MS-WINDOWS, Linux)



### Electricals/Electronics/Sensor



MULTI-PURPOSE  
ENGINEERING TRAINER  
ED-2110



PC-BASED POWER  
ELECTRONICS TRAINER  
ED-1430



PC-BASED DIGITAL  
COMMUNICATION TRAINER  
ED-1440



SENSOR APPLICATION  
TRAINER  
ED-6830

### Renewable Energy & LED



NEW&RENEWABLE ENERGY  
TRAINER  
ED-9710



NEW&RENEWABLE ENERGY  
TRAINER  
ED-9720



LED(LIGHT EMITTING  
DIODE) LAMP TRAINER  
ED-9810



LED TRAINER  
(MODULAR TYPE)  
ED-9820



## Communication / Test & Measurement



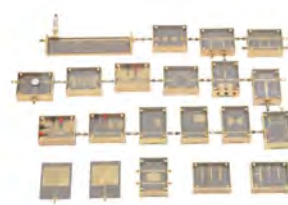
6.2GHz SPECTRUM ANALYZER  
PSA-6000



COMBO TESTER  
ED-4770



ANTENNA TRAINER  
ED-3200



MICROSTRIP LINE TRAINER  
ED-3300

## Intelligent Robot&Simulation



INTELLIGENT EDUCATION  
ROBOT PLATFORM  
ED-7270



5-AXIS ARM ROBOT TRAINER  
ED-7255



ROBOT ASSEMBLY KIT  
TRAINER  
ED-7271



INTELLIGENT ROBOT  
DEVELOPMENT KIT  
ED-7273

## Simulation Software



ROBOT CONTROL  
SIMULATION SOFTWARE  
EDS-EDRS



PNEUMATICS & HYDRAULICS  
SIMULATION SOFTWARE  
EDS-PHLEGO Plus



SIMULATION SOFTWARE PRO-  
GRAMMABLE LOGIC CONTROLLER  
EDS-SIMPL



ELECTRONIC SEQUENCE CON-  
TROL SIMULATION SOFTWARE  
EDS-ESS

## Mechatronics & FA



UNIVERSAL PLC TRAINER  
ED-UPLC



COMPUTER-INTEGRATED  
MANUFACTURING TRAINER  
ED-CIM



PNEUMATICS TRAINER  
ED-7860



HYDRAULICS TRAINER  
ED-7960

## Pneumatics/Hydraulics



FP-100 series

## Pneumatics training set



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



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



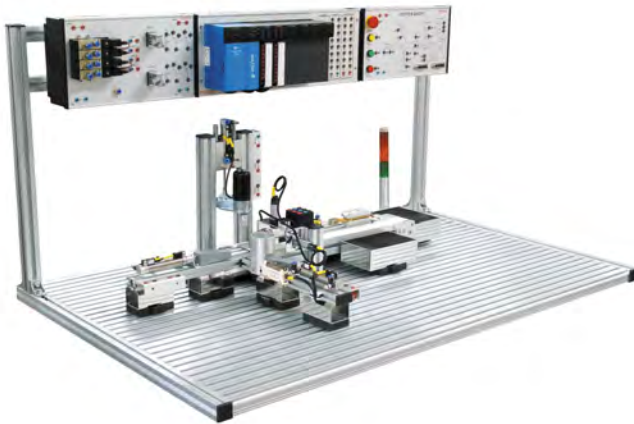
Sensor training package is consist of FS110, FS120, FS130.

FS110 is Poximity 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



### FEATURES

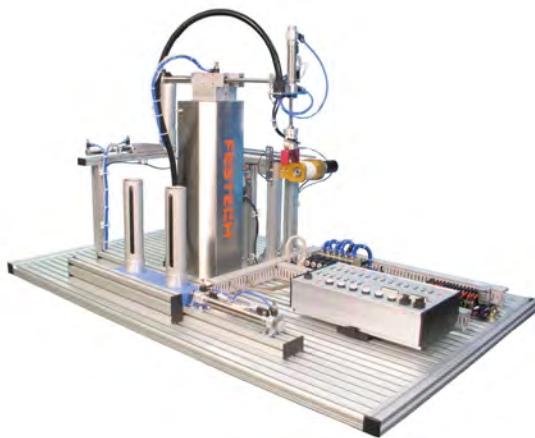
- Each module has a mounting clamp
- Variable module combination
- Open structure for practical training
- 4mm standard electric socket

### 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



### FEATURES

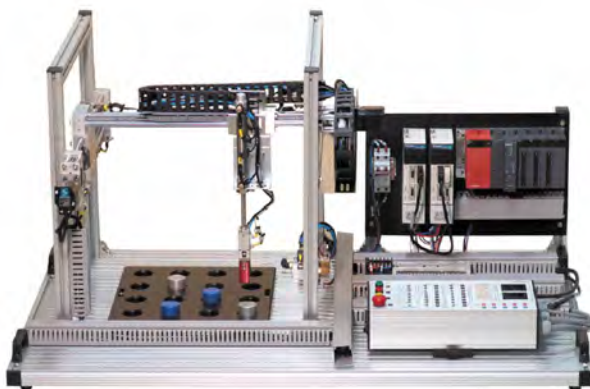
- Pneumatic transfer and sorting system
- Real industrial parts
- Basic and advanced training
- Open structure for practical training
- Control module for Auto/Manual
- 4mm standard electric socket

### MAIN COMPONENTS

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

FATK series

## Motion Control Trainer



### FEATURES

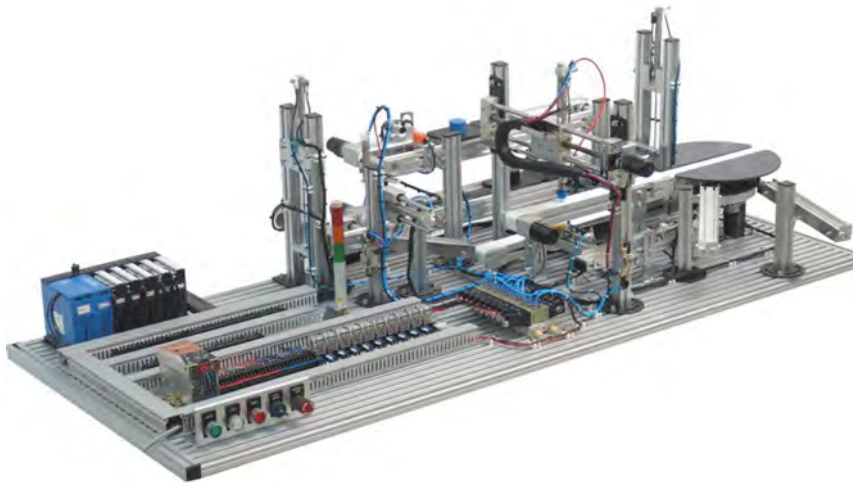
- 2 axes servo motor system
- Linear spindle drive type
- Pneumatic hand gripper for workpiece handling
- Basic and advanced training
- Open structure for practical training

### MAIN COMPONENTS

- Linear spindle drive module
- Pneumatic gripper module with double-acting cylinder
- Servo drive and PLC
- I/O control module
- Graphic touch panel (option)



## VMS (Variable Mechatronics System)



VMS is a basic step to learn the advanced technologies for the FMS, and a training equipment to develop the mechatronics experts. VMS consists of module components, so as to be used for the practice of assembly/disassembly. VMS is expandable equipment that allows the trainees realistically simulating the industrial field increasingly complicated.

VMS allows the reconfiguration of process and system in steps from a simple and basic operation to the complicated operation to suit the ability of trainees. A variety of workplace practices in the production system, including design, assembly, programming, operation, maintenance and repair, are available in VMS.

In addition to the expertise of mechatronics, VMS provides the system to develop a project based integrated personal abilities, including teamwork, cooperation, education, unique design and comprehensive analysis.

### Training purpose

- Work Plan
- Control and Operation
- Assembling Machines and Systems
- Maintenance
- Programming
- Troubleshooting

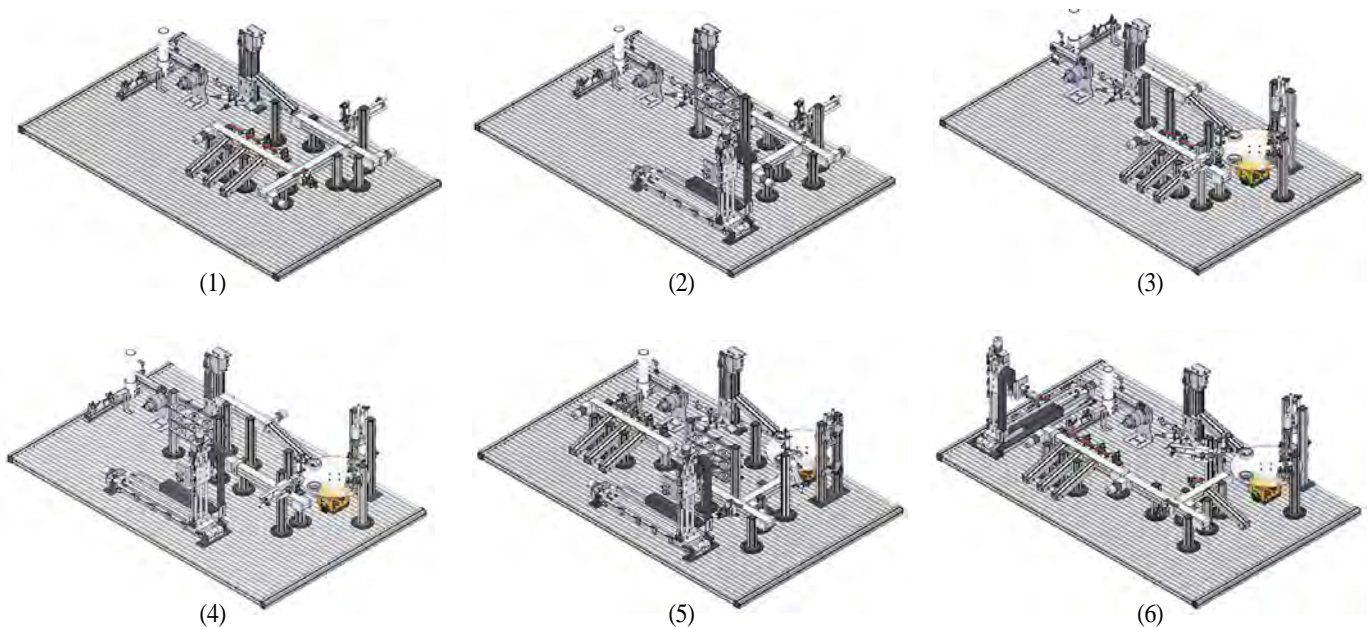
### Variable processes

VMS includes processes with different operating conditions and scenarios. A variety of configurations and combinations of processes are available to meet the user's needs. It is possible to customize the practice equipment from module and a single process to the integrated processes.

### < Example of processes >

- Distribution : Sequentially distributes the workpieces stored in a magazine.
- Testing : Determines the material, color and height of workpieces.
- Processing : Uses a rotary index table to process the workpieces, and test the processing condition.
- Handling : Pneumatic actuators arranged on orthogonal axis delivers the workpieces to the next process.
- Buffer : Controls the flow of workpieces for a flexible operation between the stations based on the waiting time and operating time.
- Sorting and storing : Sorts and stores the workpieces into slider or warehouse based on the information of workpieces.

### VMS Scenarios














## MPS (Modular Product System)

- MPS was developed for actual training of production field technology and automation system.
- Not only theoretical knowledge but also practical technology for system designing, making, operating and maintenance is mastered with this training set.
- MPS is composed of various modules for easy separating, assembling and maintenance.
- It is possible to obtain overall knowledge of electro-pneumatics, control engineering, sensor and mechatronics.

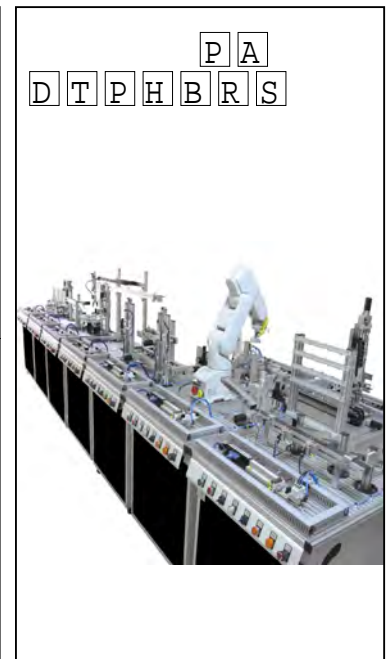
### FEATURES

- Various stations
- Industrial parts and practical connection
- Selectable controller
- High compatibility and expansion
- Customer order made solution
- Creative project for apprentices
- Easy combine with robot controller

### Combination of stations

<p>There are 9 stations which can be combined each other.</p> <p>Basically all the parts on the station are completely fixed and electrically wired.</p> <p>Example of combination</p> <p>D+T+P</p> <p>D+T+S</p> <p>D+T+P+H</p> <p>D+T+P+H+B</p> <p>D+T+P+H+B+R</p> <p>D+T+P+H+B+R+S</p> <p>D+T+P+H+B+R+S+P+A</p>	<p><b>D</b> Distribution</p>  <p>Distributes a source material from its magazine</p>	<p><b>T</b> Testing</p>  <p>Tests material and status of work-piece with sensors</p>	<p><b>P</b> Processing</p>  <p>Makes a drill hole and test it on rotary index table</p>	<p><b>H</b> Handling</p>  <p>Transfers the work-piece into another place with a rotary cylinder</p>
	<p><b>B</b> Buffering</p>  <p>Delays time for sequential processing</p>	<p><b>R</b> Robot</p>  <p>Assembles and handles work-piece</p>	<p><b>S</b> Sorting</p>  <p>Sorts and stores work-piece according to product data</p>	<p><b>Pr</b> Pressing</p>  <p>Press and distribute work-piece cap</p>
				<p><b>A</b> AS/RS</p>  <p>Distribute cylinder piston &amp; spring from storage rack</p>

### MPS-9 Stations



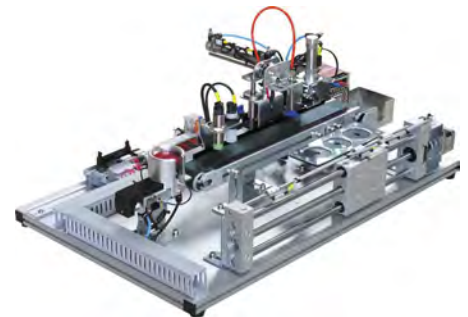
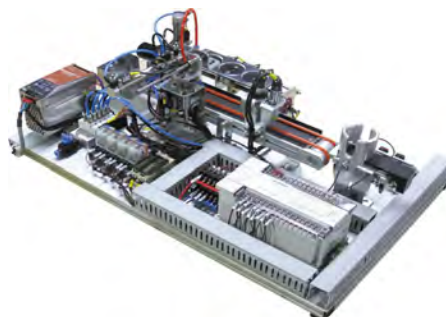
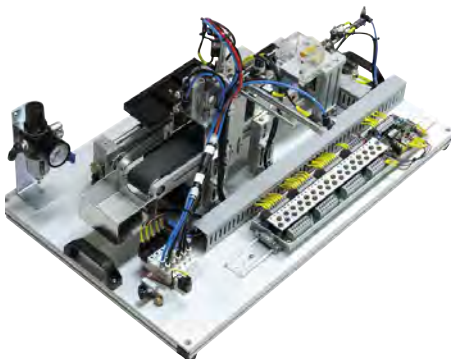
### FATK series

## MMPS (Mini Multi Programming System)

■ Standard model (ON:25036)

■ New-Basic model (ON:25037)

■ New-Advanced model (ON:25038)



### FEATURES

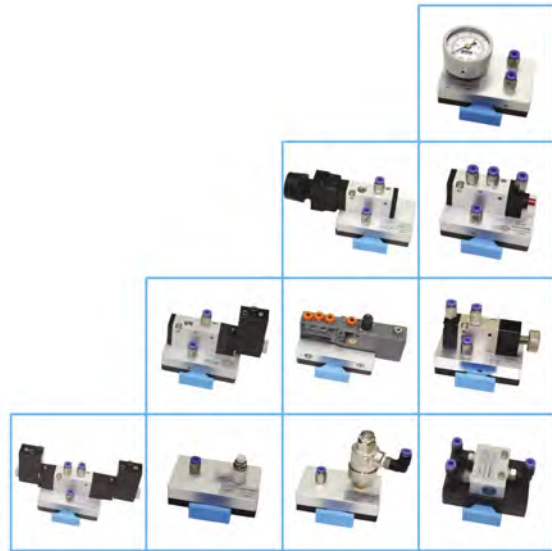
- Simulation system for production
- DC motor and belt conveyor
- Stepping motor drive
- Various industrial sensors
- Basic and advanced training
- Open structure for practical training

### Main Components

- Distribution unit
- Sensor & conveyor unit
- Handling unit
- Storage unit for stepping motor
- Solenoid valve unit
- I/O control module



## Pneumatics System Training Kit



### FEATURE

Pneumatics System Training Kit enables combining theory and practice of Pneumatics.

This kit provides sufficient training from basic knowledge and applies knowledge of Pneumatics 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. Pneumatic training kit is consist of FOPn101, FOPn102, FOPn201, FOPn202, FOPn301, FOPn302, FOPn401 and FOPn402.

FOPn101 is for basic level of pneumatics and FOPn102 is for advanced level.

FOPn201 is for basic level of Electric pneumatics and FOPn202 is for advanced level.

FOPn301 is for pneumatic compact level and FOPn302 is for electric pneumatic compact level.

FOPn401 is for Mobile pneumatic system and FOPn402 is for Mobile electric pneumatic system.

## Hydraulics System Training Kit



### FEATURE

Hydraulics System Training Kit enables combining theory and practice of Hydraulics.

This kit provides sufficient training from basic knowledge and applies knowledge of 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. Hydraulics system training kit is consist of FOHY501 and FOHY502.

FOHY501 is for basic level for hydraulics and FOHY502 is for basic level of Electric hydraulics.



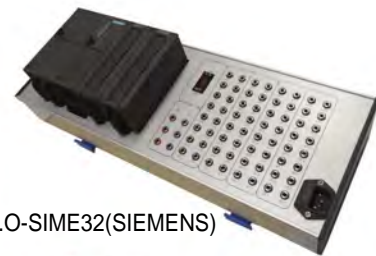
## PLC Training Kit



F.O-MP.TK300



F.O-MP.TK400



F.O-SIME32(SIEMENS)



F.O-GP.TK200



F.O-GP.FD-32



F.O-MPU16(MITSUBISHI)

### FEATURE

All the PLC practical equipments of FESTOONE are designed to enhance the training effects for both theory and actual performance with user friendly manufacture of diverse on-market products.

able to select&combine the proper control module in accordance with the training target.

Variable utilization with compatible combination for the environment of the diverse automatic practical equipments and training mechatronics such as electric, pneumatic control, etc.

easy&simple connection by using of 4mm banana jack for all the wiring of equipments.

able to reduce the practice time with easy attachment/detachment to the profile system by applying the one-touch clamp device to PLC practical equipment. PLC training kit is consist of SIEMENS PLC

(F.O-SIME32), MITSUBISHI PLC(F.O-MPU16), PLC Touch screen system(F.O-MP.TK300), PLC motor system

(F.O-MP.TK400), Module-type PLC(F.O-GP.FD-32) and Multi modular PLC(F.O-GP.TK200), etc.

## Production Automatic 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.

## 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.



## Intelligent Robot System



1. HBE-Robo-Ex

2. HBE-SmartCAR



3. HBE-RoboCAR-Embedded II



4. HBE-RoboCAR



5. HBE-RoboCAR-Vision



6. HBE-RoboCAR-Arm



7. HBE-ROBONOVA-AI II

### 1. HBE-Robo-Ex : 2014 New

Modular Design Basic Robotics Training Kit  
Available to connect each other with CAN/LIN

### 2. HBE-SmartCAR : 2014 New

Intelligent Mobile Robot Platform with Arduino2560

### 3. HBE-RoboCAR-Embedde II :

ARM Cortex A-8(SV210) based Embedded Systems based on Real Intelligent Robot Platform

### 4. HBE-RoboCAR :

4wheel Mobile Robot Platform with 8-bit microprocessor (ATmega128L)

### 5. HBE-RoboCAR-Vision :

Real-Time Robot Image Processing (Acquisition, Tracing, Recognition) Training Kit

### 6. HBE-RoboCAR-ARM :

Servo motor control training using six joint arm with RoboCAR

### 7. HBE-ROBONOVA-AI II :

Intelligent two-legs walking robot with 32bit embedded board, CCD camera.

## Wireless Sensor Network & Optical Communication



1. HBE-ZigbeX II

2. HBE-Ubi-HomeNet

3. HBE-Ubi-House II



4. HBE-Ubi-Box III



5. HBE-OPT-303

### 1. HBE-ZigbeX II :

Ubiquitous Sensor Network(USN) Training Kit based TinyOS 2.x

### 2. HBE-Ubi-HomeNet :

New Ubiquitous Home Network Test-beds based on Wireless Sensor Networks

### 3. HBE-Ubi-House II :

The Applications Platform of Home Network

### 4. HBE-Ubi-Box III :

Base station for wireless sensor network

### 5. HBE-OPT-303

Optical Communication Trainer  
Light Source (1310/1550/650nm), Including Dual Optical Receiver, Optical Power Meter and Digital Oscilloscope

## FPGA / RFID / DSP Trainer



1. HBE-COMBO II-DLD

2. HBE-RFID-REX II

3. HBE-DSPLAB II

### 1. HBE-COMBO II-DLD (2014 New)

FPGA(ALTERA Cyclone IV / XILINX Spartan 6)  
Device design training kit

### 2. HBE-RFID-REX II :

RFID(Radio Frequency Identification)Training platform

### 3. HBE-DSPLAB II :

TMS320F28335 DSP(Digital Signal Processing) Trainer



## Green IT Experiment System



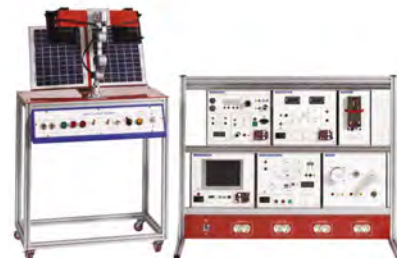
- **HBE-Green-Energy**  
New Energy and Renewable Energy Integrated test Platform



- **HBE-Green-HomeNet**  
Green Home Test & Monitoring Platform with Smart Meter applying Photovoltaic Power Generation and USN



- **HBE-Green-ETS-Solar**  
It is composed of modules by function blocks both Stand alone System and Grid connected System. We can do Monitoring test using USN and PLC and test Consumption part through Load Devices.



## LED Experiment System



- **HBE-Green-LED**  
Basic LED training Platform



- **HBE-LED-Lighting**  
Smart LED Lighting Platform (Panel & Bag type)



- **HBE-SM7-S4412 (2014 New)**  
Quad-core(Samsung Exynos 4412) Embedded/Android Training Platform : Standard Embedded/Android Trainer for 4 years Univ. in Korea

### 5 kinds of text books

1. ARM Embedded System
2. Android Application Programming
3. Embedded Linux & APP based System Bus (M3)
4. Embedded Linux & APP based direct control by process (M2)
5. ADK-2560 Firmware & APP

## Electric & Electronics Experiment



- **HBE-B3E-SE (2014 New)**  
PC-based Electrical & Electronic circuits integrated lab Kit



- **HBE-Comm (2014 New)**  
Modular basic Analog & Digital Communication Training Kit



- **HBE-LogicCircuit-Digital**  
Modular Digital logic circuits Experiment kit



- **HBE-Electronic Circuit**  
Modular basic Electronic Circuit Experiment Kit



- **HBE-LogicLAB-D**  
Basic Digital logic circuits Experiment kit

## Sensor & Microprocessor Trainee



- **HBE-Sensor-Multi**  
practicing application of various sensors



- **HBE-Arduino-Sensor(2014 New)**  
Support Arduino 1.05 version Simple operation with ArduBlock (no programming experience)



- **HBE-MCU-Multi**  
AVR/ 8051/PIC microprocessor trainer consist of various modules for convergence concept



- **HBE-MCU-AVR (2014 New)**  
Low cost Basic 8 bit MCU Training Kit based ATMEL CPU(ATmega128A)



IEG 2211

## Advanced 6 Axis Multi-Joint Robot System Trainer



RobotStudio 5

ABB Industrial  
Software



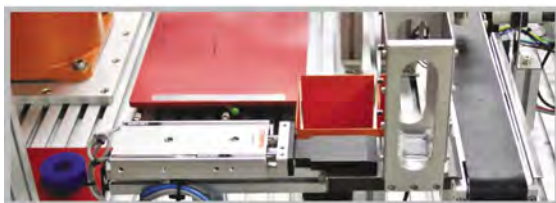
### Features

- Advanced 6 axis multi joint robot Training System provides the PEM fuel cell producing line by 6-axis multi joint robot.
- This system provides 6-axis multi joint robot with high performance robot controller, warehouse for storing covers of fuel cell, automatic conveyor belt with auto-feeder to feeding PEM fuel cell materials, fuel cell detecting sensor, fuel cell production line, finished product storage, two auto changeable robot hands, and one auto changeable screw driver.
- All fences covered with transparency materials can surveillance the whole robot movement from all directions.
- Robot Studio software support pre-education before students using this advanced multi joint robot training system in practice, and very useful to design more complex co-working robot systems. More useful industrial robots are provided in this software.

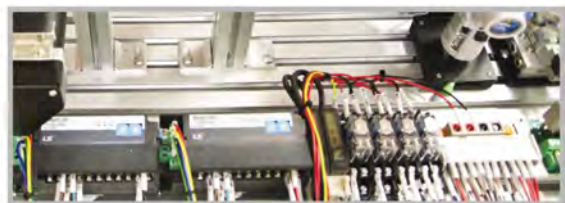


### Auto Changeable Robot Hands

Automatic tool changer makes 6-axis multi joint robot can changes 2 grippers and 1 automatic screw driver for specific working.



Basic Material Auto Feeding



Basic Material Auto Inspection

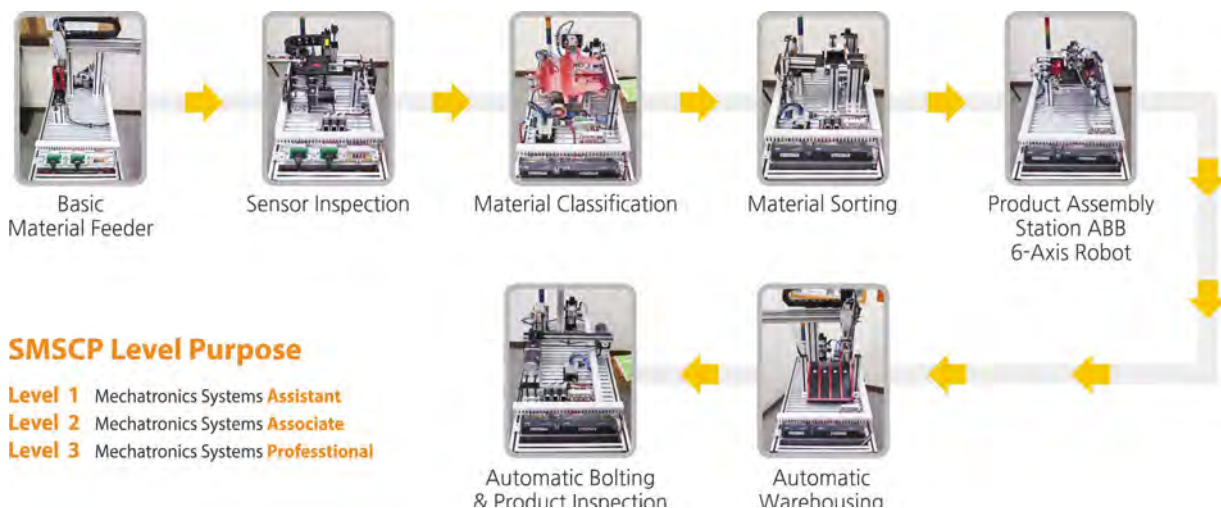




S M S C P  
Siemens  
Mechatronics  
Systems  
Certification  
Program

### Features

- This is the equipment used to license SMSCP Level 1,2,3 of SIEMENS, Germany from which it is possible to learn electrical / mechanical requisite control technology, HMI control technology based on touch panels, analog sensor control technology, and pneumatic control technology.
- Practice equipment operation of 9 stations individually or in combination of more than 2 stations.
- Compose and practice DP Port-based Profibus PLC Network by applying Siemens S7-300 Series 314C-2DP model to each station.
- Understand and learn the mechanism through users' practice of hardware disassembling/assembling.
- Pellet transfer method based on conveyor logistics of the production system





IEG 4000

## Pneumatics System Trainer

- Common, Essential, Electro, Advanced, Advanced Electro -

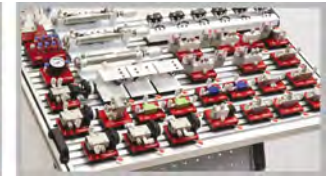
### Features

# Basic Pneumatics

# Electro Pneumatics

# Advanced Electro Pneumatics

- Suitable for education to improve an automation job ability based on real industry fields and Certification Training Device relating to pneumatic
- Safer and faster composition of pneumatic circuits (Vertical and horizontal installation is possible) on a profile working board is available through a hand-lever fixing device with one-touch cam type
- Composed with various electrical and electronic control units, all sorts of sensors and pneumatic components
- Composed with a pneumatic automation system by basic and application steps
- One-Touch CAM type Hand Lever Clamping



IEG 4100

## Hydraulics System Trainer

Common, Essential, Electro, Advanced, Advanced Electro, Transparency -

### Features

# Basic Hydraulics

# Electro Hydraulics

# Advanced Electro Hydraulics

- Continually providing various valves to an application set in order to experience a basic practice on hydraulics and electro-hydraulic and an additional practice on a high-level application hydraulic system applied to automation fields
- Suitable for education to improve an automation job ability based on on-site and training device for Certification Test
- Composed with various electrical and electronic control units, all sorts of sensors and hydraulic components
- Composed with a hydraulic automation system by each procedure, Basis, Application, Proportion, Servo Control
- Providing a hydraulic simulation system for education
- One-Touch CAM type Hand Lever Clamp





IEG 6310

## Electronics Application Trainer with NI ELVIS II

### + Analog Modules

IEG 6310-01  
DC Circuits



IEG 6310-02  
BJT\_FET Circuits



IEG 6310-03  
BJT\_FET Circuits



IEG 6310-04  
Oscillator Circuits



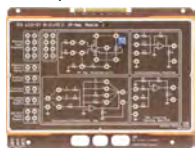
IEG 6310-05  
Diode Circuits



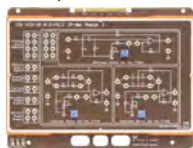
IEG 6310-06  
AC Circuits



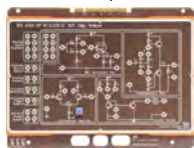
IEG 6310-07  
OP Amp Circuits 1



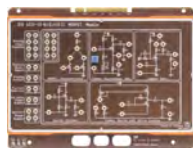
IEG 6310-08  
OP Amp Circuits 2



IEG 6310-09  
BJT Power Amp.

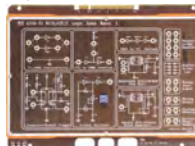


IEG 6310-10  
MOSFET Circuits

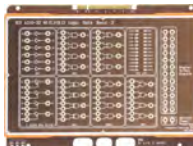


### + Digital Modules

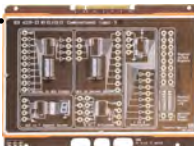
IEG 6310-31  
Logic Gate Basic 1



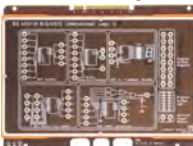
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Logic Gate Basic 2



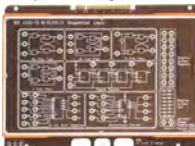
IEG 6310-03  
BJT\_FET Circuits



IEG 6310-34  
Combinational Logic 2



IEG 6310-35  
Sequential Logic



IEG 6310-36  
AD/DA Converter



### + Biomedical Modules

IEG 6310-31  
Logic Gate Basic 1



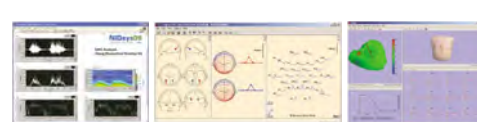
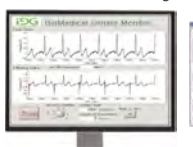
IEG 6310-32  
Logic Gate Basic 2



IEG 6310-03  
BJT\_FET Circuits



Monitoring Software  
Biomedical Monitoring



ECG / EMG / EEG / EOG Monitoring software

## IEG 6010 Motor Generator Trainer



### <Features>

- It is possible to practice the internal structure of various motors, and the operation principle characteristics and control of generators.
- Practice of various loads (Resistance, L/C, Reactance and Torque)
- The over-heating protection function is installed at rotational machines and circuit breakers, and it is possible to control a constant speed and torque.
- It is possible to practice the principle and characteristics while directly watching such motor internal structures as a Transparency 3 SQ. Cage Inductance Motor, Transparency DC Machine Motor, Transparency Synchro Machine Motor, Transparency Multi-Function, Transparency Wound Rotor Motor, Transparency Repulsion Motor
- Motor input voltage
  - AC Motor : 110V, 60Hz (2-Phase)
  - 220V, 60Hz (3-Phase)
  - DC Motor : 110V DC
- Generator output voltage
  - AC Generation : 110 / 220V, 60Hz
  - DC Generation : 110V





## Renewable Electric Generating System

KTE-HB520

### Hybrid power conversion experimental equipment



- Real wiring training kit connected with solar PV and wind power generating system
- Test on wind power generation using a fan
- Test on the performance of a wind power generator using a motor
- Conversion of DC power collected through power generation test equipment to high-voltage DC
- 2-channel junction box capable of receiving up to 250V
- Configuration of power generation systems such as solar PV generation test system and wind power generation test system into 2-channel hybrid
- Test on power conversion without power generation test equipment
- Test on grid connection which returns power to Electricity company
- Test on capacity estimation depending on load capacity
- Test on circuit design such as inverter and Joint Box
- Available in education and training of control programs such as inverter and Joint Box
- SQ and PLC-based system remote control enabled

KTE-7000WG

### Wind power generation experimental equipment



- Real wiring training kit connected with wind power generating system
- Test on wind power generation using a fan
- Test on performance of the wind power generator using a motor
- Conversion of DC power which has been collected through the power generation test equipment to AC and high-voltage DC power
- Test on power conversion without power generation test equipment
- Test on grid connection which returns power to Electricity company
- Test on capacity estimation depending on load capacity
- Test on circuit design such as inverter and Joint Box
- Available in education and training of control programs such as inverter and Joint Box
- SQ and PLC-based system remote control enabled

KTE-7000ISG

### Solar power generation practice experiment equipment



- A photovoltaic power generation practice device
- A practice device with actual parts used in the photovoltaic power generation device
- Stand-alone inverter system
- Grid-connected inverter system
- Sequence control
- Capacity calculation of system equipment
- Practice of dual-axis tracking control



KTE-7000SH

## Solar-hydrogen fuel cell experimental equipment



- Basic energy conversion process test and practice
- Education on solar cell module structure and operating principle
- Measurement of power depending on lamp distance and intensity of light sources
- Power generation test using solar PV at natural sunlight conditions
- Education on electricity generation principle and structure using electrolysis and hydrogen
- Education on fuel cell stack structure and operating principle and operating test on the load of LED and motor
- Collection of test data through data monitoring in each unit

KTE-7000HS

## Hydrogen fuel cell experiment equipment



- This equipment is designed for consol-type, practice is available anywhere if there is electric power.
- As a unit of fuel cell practice, basic characteristic experiment of fuel cell is practicable.
- This equipment is practicable to measure electric & thermal efficiency of fuel cell
- This equipment is for understanding of fuel cell's basic principle.
- This equipment is adjustable to generate hydrogen and oxygen.
- This equipment is practicable to control load and to practice the fuel cell's performance.

KTE-7000P:L1K

## Plasma artificial sun experimental equipment

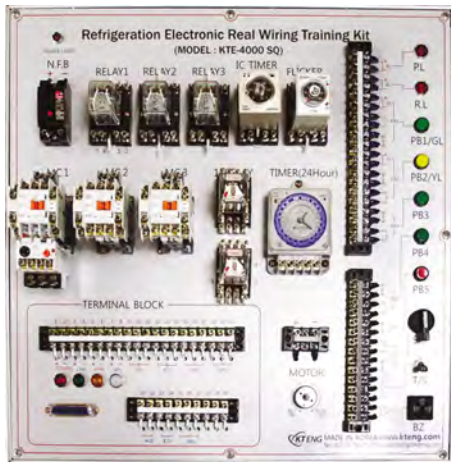


- An artificial sun testing device designed to provide similar performance of photovoltaic energy for wide use in indoor tests for photovoltaic power generation.
- Increased suitability for photovoltaic power generation test
- 1KW plasma lamp
- Heightened similarity to the light source of natural sun (color rendition  $\geq 80$ , color temperature  $> 7500K$ , luminous flux = 8500lm)
- Excellent suitability for indoor test by easier system configuration and simple erection



KTE-7000SQ

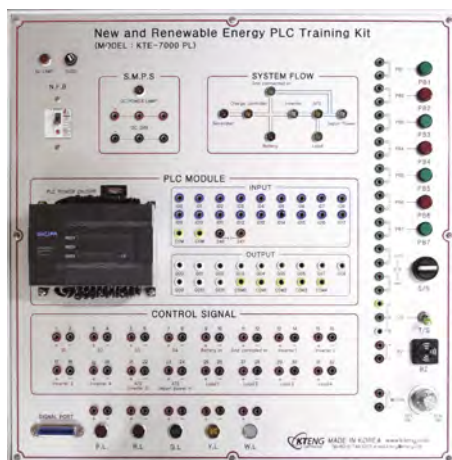
## New & Renewable energy real wiring training kit



- Electrical real wiring practice based on the past national technical license test
- Portable test equipment which will be available anywhere if power is available
- Composition of connectors such as round connector and banana jack to save connection time at wiring
- Safe real wiring test and practice after adopting DC 24V input power
- Test on power generation systems such as solar PV generation test system, wind power generation test system and tidal power generation system after configuring them in 4-channel hybrid
- Control of new & renewable energy generation test systems such as solar PV generation test system, wind power generation test system, tidal power generation system and hydrogen power generation system through electric wiring
- Display of measurements such as voltage, current and power on the touch screen and monitoring of power generation, inverter voltage, current and voltage in graphs

KTE-7000PL

## New & Renewable energy real wiring training Kit



- Electrical real wiring practice based on the past national technical license test
- Portable test equipment which will be available anywhere if power is available
- Composition of connectors such as round connector and banana jack to save connection time at wiring
- Safe real wiring test and practice after adopting DC 24V input power
- Test on power generation systems such as solar PV generation test system, wind power generation test system and tidal power generation system after configuring them in 4-channel hybrid
- Control of new & renewable energy generation test systems such as solar PV generation test system, wind power generation test system, tidal power generation system and hydrogen power generation system through electric wiring
- Display of measurements such as voltage, current and power on the touch screen and monitoring of power generation, inverter voltage, current and voltage in graphs

## Renewable Heat Energy System

KTE-7000PVT

## PVT performance measuring equipment



- A practice device of data acquisition & saving & control related to heat/electric generation using solar energy.
- A performance test of PVT heat collector using artificial sun & natural light.
- A comparative experiment of heat/electric generation according to entrance temperature of PVT collector.
- Understanding of heat/electric generation principle using solar energy
- A various practice according to each load control.
- A operating characteristic experiment according to differential-temperature control of PVT collector's entrance & exit



KTE-7000GH

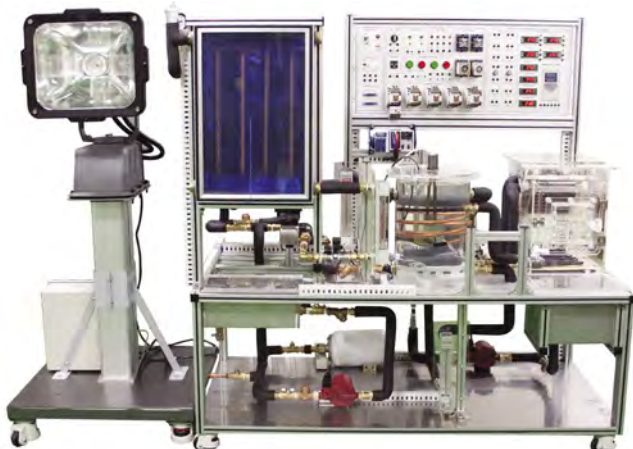
## Geothermal heat pump experimental equipment



- This equipment generates heat energy by vapor-condensing coolant while maintaining relatively constant temperature all the year round in ground circulating circuit.
- It consists of ground circulating heat and coolant circuit.
- It is designed for test and practice on the composition of the system based on the conventional vapor-compression cooling cycle and various basic automatic controls.
- It is also possible to experience the conversion of heating and cooling operations using the 4-way valve.
- Test and practice of the 4-way valve control sequence circuit
- Test on forced geothermal heat pump using artificial ground
- Education on the structure and principle of heat pump using geo-heat
- Heat pump performance depending on the burying method of geothermal exchanger

KTE-7000SB

## Solar heating hot water boiler experimental equipment



- Understanding of the collection, storage and control of heat, comparative test and practice after calculating heat by each load through installation of three types of loads
- Test on the performance of solar heat boiler using artificial and natural suns
- Understanding of the structure and operating principles of solar heat boiler
- Test under each condition using different load equipment
- Measurement of heat consumption by load
- Measurement of stored heat depending on the intensity of light sources using artificial sunlight
- Education on system control by controlling the system using the control system

KTE-7000SR

## Solar radiation energy experimental equipment



- It is designed to test and practice the basic principles of solar radiation energy. In addition, a test can be carried out using both artificial and natural suns.
- The temperature in the inside of the insulation box can be kept at a constant level.
- Since materials with different emission rates are installed in the inside of insulation box with different angle of incidence, the efficiency of the test is raised.
- Principle of collecting solar radiation energy using artificial and natural suns
- Measurement and comparative test of the emission rates in different materials
- Measurement of temperature distribution by point depending on angle of incidence
- Measurement of temperature change in light sources by installing temperature sensor on the slots of the halogen lamp which is used as light source at the use of artificial sunlight
- Calculation and comparative analysis of the amount of transmission of radiation heat depending on the angle of incidence of solar PV



KTE-7000SW

## Solar energy saving system control equipment



- This equipment is used to measure the performance of solar heat which is used as the energy source for cooling and heating in architecture. It consists of artificial sun-related test equipment and building miniature window shielding solar collector.
- Heat measurement test and practice depending on angle of incidence and height of both artificial and natural suns
- Heat test and practice depending on temperature at each point in the inside of insulation box
- Heat comparative test depending on solar collection
- Heat test depending on the replacement of solar collector

## LED Light Source System

KTE-LD120

## LED light source basic practice equipment



- portable test equipment which will be available anywhere if there is electric power
- Composition of the LED devices practice module
- Available of LED drive methods and Luminous efficiency practice
- Characteristics practice of configuration depending on the type of LED

KTE-LD220

## LED optical wireless communication practice equipment



- portable test equipment which will be available anywhere if power is available
- LED application technology practice, configuration
- Communication status monitoring from the PC
- Program design and practice of LED
- LED Lighting device configuration and practice available



## Refrigeration & Air-conditioning Energy System

KTE-1000BA

### Standard refrigeration experimental equipment



- 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, 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-1000AHU

### Air-conditioning unit automatic control equipment



- Cycle composition : Preheater - Precooler - Blower Humidifier - Reheater - Recooler - Control Volume - Outside. With controlling mount of air.
- Refrigerant : R-22.
- The chamber of air-conditioning trainer should be a controled and the duct is visible so that an user can see inside of the trainer, also user can control the temperature of inside and outside using amount of air.
- A experimental equipment can make understanding about air conditioning, and it can draw the data acquisition, temperature and humidity from change of state in operation of real time.
- It is possible for operation with making variable running circuit on control panel.
- It is possible for drawing psychrometric chart through temperature and humidity control.
- Understanding about component part of air conditioner.
- Understanding of change process at psychrometric chart according to outdoor air temperature and humidity conditions
- It is possible for drawing psychrometric chart according to air volume.
- It is possible for wiring to electrical units for sense of realism.

KTE-2000EP

### Evaporation pressure parallel control experimental equipment



- Basic Experiment of Standard Refrigeration system.
- Operating test for air-cooling of the refrigeration and freezing simulate easily.
- Performance test by changing pressure of the high pressure evaporator, while keeping temperature of the low pressure evaporator.
- Refrigerant distribution measuring test by changing temperature of the low and high pressure 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 low pressure evaporator keeping high pressure evaporator.
- Pump down operating test for the low pressure evaporator keeping a pressure of the high temperature.



KTE-2000EV

## Refrigerant parallel expansion refrigeration experimental equipment



- 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-3000HD

## 4-Way reverse valve control heat pump heating & cooling experimental equipment



- 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-5000LT

## Binary refrigeration experimental equipment



- 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



KTE-6000BR

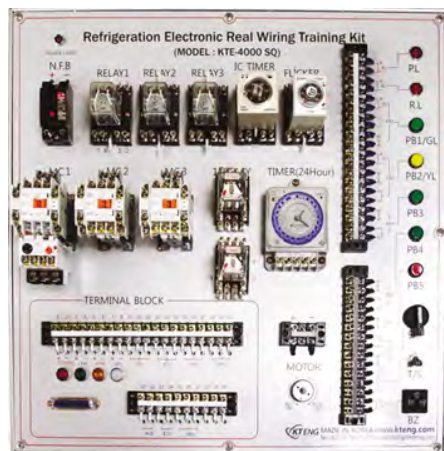
## Brine refrigeration experimental equipment



- 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

KTE-4000SQ

## Air-conditioning & refrigeration wiring control training kit



- 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-4000PL

## Air-conditioning & refrigeration PLC training kit



- 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



Educational Robot Kit

## RoboKit (No.1~ No.5)



**Beginner Course**  
[total : 12 robots]

**Intermediate Course**  
[total : 12 robots]

**Advance Course**  
[total : 12 robots]

**HIGH GRADE Course 1**  
[total : 6 robots]

**HIGH GRADE Course 2**  
[total : 6 robots]

RoboKit series are an educational robot kit that can be applied from a primary school to a university. Using various shapes of frames, sensor, and circuits, Children can assemble 12 robots at each level.



### FEATURE

- **Product** : Robokit for each level(Iv.1~Iv.5), Workbook, Rogic program
- Build **48 robots** using five **ROBOKIT** series with software **ROGIC**.
- In the whole process of assembling & programming of your own robot, users can strengthen spatial perception, activate their brain and easily understand programming skill.
- **Process** : Design → Build up the robot → Programming → Download → Run

### WORKBOOK

- **Step-by-step curricula** : English Workbook 1 ~ 5 (For each level)
- Various illustrations and character for fun and efficient learning
- Various examples for Self-learning

### ROGIC PROGRAM

- **Graphic User Interface** : Icon-based programming.
- **Flowchart concept** : Children can make a program just by drag-and-drop and they can easily understand complex algorithm.
- **Various function icon** : Icons can be used as functions, variables and control statements such as WHILE, IF, BREAK, LOOP and so on.
- **C-language Controllable** : To improve the learning, higher grade students can program directly by C-language.





### • Detailed product description

It is important to form a good learning attitude from early childhood because children soak up knowledge like sponges in the period. ROBOROBO designs the Robotic kit called ROBOKIDS, intended for the children of 37~72 months who are too little to use 'Robokit', another ROBOROBO's robot series. While working out a way to assemble robots, children can activate their brain and develop the creativity.



<Assembling>



<programming>



<operating>

- Up to 16 robots can be assembled.(each kit, kids 1, 2)
- Kit for age of 5 to 7
- Learning period : 32 weeks Curriculum



### FEATURE

- Block type kit : Easy to interlock and control.
- Various types of the part : CPU block, IR sensor block, touch sensor block etc
- 32 different robots by every chapter
- Teamwork and spatial perception can be improved throughout assembling process



### WORKBOOK

- Encourage children's imaginative play through characters and systematic episodes
- Story-telling situation in the illustration motivates children to make the robot naturally.



### PROGRAM

- Using ROBOROBO's own card reader, children can program without a computer.
- There are many types of program cards called 'funny card'.
- Interesting robotic actions by only swiping the card
- Try to combine various funny cards and make various application motions.
- Various games can be set up.



## 1. New Renewable Energy(Solar & Wind Power) Educational Equipment

WS-SGIC

### Solar Power Generation System



#### Feature

It allows users to carry out experiments for stand-alone and grid-connected system, the principle of street lamp and general energy conversion process. Grid-connected inverter is 200W and it converts DC voltage for 1 or 2 solar cells to 220V AC.

#### Experimental List

- Solar Cell V-I Characteristic and Load Experiment
- Solar Cell Boost Experiment
- Stand-alone Inverter Experiment
- Emergency Power Control Experiment
- Overcharge, Overdischarge Control Experiment
- Analog MPPT Control Experiment
- Solar Street lamp Experiment
- Solar Grid Connected Inverter Experiment

WS-SCS-1K

### Wind & Solar Hybrid Generation System



#### Feature

This trainer is designed to study characteristic and principle of hybrid(wind & solar generation) system. To boost a voltage, chopper is used and 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-SGIP10

### Basic Energy Conversion Trainer



#### Feature

Electric energy which is converted from solar energy is used in energy source. It is designed to carry out experiments safely although students make a fault wire. It allows students to assemble solar cells on the working table and carry out experiments according to incidence angle of solar cells.

#### Experimental List

- Load Experiment of a Solar Cell  
- 7 Experiment
- Stand - Alone Circuit Experiment  
- 4 Experiment
- Circuit Learning Experiment for a Stand Alone Inverter



## 2. Power Electronics Educational Equipment

W S T-23

### Power Electronics Trainer (Board Type)



#### Feature

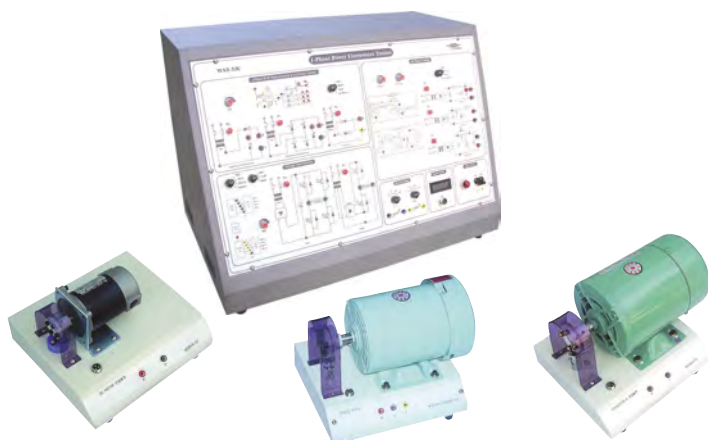
This equipment is designed for Power Electronics and it consists of 10 experiment board.

#### Experiment Board

- Diode Rectification Board
- Three Phase Control Board
- Three Phase AC Control Board
- DC Power Control Board
- Three Phase Inverter Board
- Single Phase Control Board
- Single Phase AC Control Board
- SCR Switching Board
- Single Phase Inverter Board
- Single Phase Cyclo Converter Board

W S T-33A

### Power Electronics Trainer (Board Type)



#### Feature

This equipment is designed for Power Electronics and it is possible to study from diode rectification to inverter experiment.

#### Experimental List

- Diode Rectification
- 1-Phase SCR Phase Control Rectification & AC Power Control
- 3-Phase SCR Phase Control Rectification & AC Power Control
- DC Power Control
- Single Phase Inverter Circuit
- Three Phase PWM Voltage Type Inverter Circuit

W S T-9

### DC Servo Motor Trainer



#### Feature

This equipment could be test out principle and introduction of DC servo PID controller operation and position control.

#### Experimental List

- Basic Operations Practice of Servo Motor
- What is PIC Control?
- Position Control Practice

W S T-10

### Setpper Motor Trainer



#### Feature

There are block diagrams for oscillator circuit, control circuit and drive circuit etc. The LED shows the polarity of rotor and stator

#### Experimental List

- JOG. Mode Experiment
- RUN Mode Experiment
- INDEX Mode Experiment
- Application of a Step Motor (C.N.C Operation)



## 3. Mechatronics & Automation Educational Equipment

WSB-60P

### Series P.L.C Trainer (GLOFA GM4)



#### Feature

It allows users to do 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

- PLC Module : - CPU & Power Module - Digital Input & Output Module : Each 32 points
- Power Supply
- Sensor Unit : DC Motor / Photo Sensor / Proximity Sensor
- Input Switch Unit / Output Lamp Unit / Digital Switch Unit

WSB-90P

### Series P.L.C Trainer (MITSUBISHI MELSEC-Q)



#### Feature

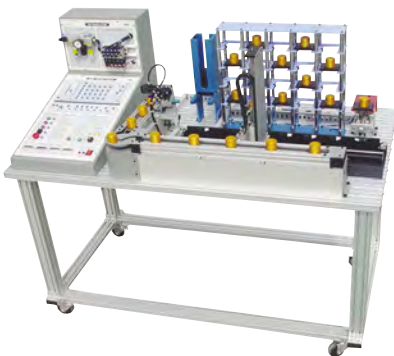
It is designed to learn MELSEC-Q PLC from basic to application. It basically contains approach sensor, photo sensor and DC motor. Users can carry out experiments conveniently with built-in DC power supply.

#### Specification

- PLC Module : - CPU & Power Module - Digital Input & Output Module : Each 32 points
- Power Supply
- Sensor Unit : DC Motor / Photo Sensor / Proximity Sensor
- Input Switch Unit / Output Lamp Unit / Digital Switch Unit

WSR-6

### Storage System Trainer



#### Feature

This equipment drives induction motor and air cylinder system to auto storage and take out storage goods with 3 axis control auto storage ware house system for accuracy actuating.

#### Experimental List

- |   |  |
|---|--|
| • Store house(20House) : 1 Set                            | • Air Unit : 1 Set                                       |
| • Induction Motor : 1 $\phi$ 220V, 15W(Break Type) : 1 EA | • Reduction Gear : Left/Right : 30 : 1, Up/Down : 30 : 1 |
| • Air Cylinder : $\phi$ 20-90 mm Double Type-1EA          | • Slide Cylinder : $\phi$ 20-100 mm, Auto Switch : 2 EA  |
| • Select Switch : 1 EA / Proximity Sensor : 4 EA          | • Select Lamp & Buzzer : 4 EA / Relay : 4 EA             |
| • DC Gear Motor : X Axis, Y Axis                          | • Control Box : 1 Set                                    |

WSE-0

### Elevator Trainer



#### Feature

It is an application training device of P. L. C Trainer. It uses real three-phase induction motor with electronic controlled breaker as if real elevator.

#### Experimental List

- |   |   |
|---|---|
| • Experiment : CAR's winding machine operation exercise | • CAR's location indication exercise    |
| • Winding machine's automatic stop exercise             | • CAR's High/low limit driving exercise |
| • Winding machine's operation exercise                  | • Freight elevator's call exercise      |
| • Passenger elevator's operation exercise.              |   |



## 4. Electricity · Electronics & Automatic Control Educational Equipment

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-M System Controller

- Power : 1[ $\phi$ ], AC 220[V], 50/60[Hz]
- System Software : AT MARS T25 V3.0
- System Control Block : 16 set
- Computer Interface : 1RS-232C

#### WST-25A-L Level Control System

- Lever Range : 0~300mm / 0~10[V]
- Liquid & Voltage : 1.9 $\ell$  / min & 10[V]
- Variable Method : Continuous Variable
- Level Sensor

#### WST-25A-T Temperature Control System

- Heater : 100[V], 100[W]
- Temperature Sensor : PT 100[ $\Omega$ ]
- 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

W S T-50

### PC Based Electricity & Electronics Exp. Trainer

#### Feature

The SmaTra is basically PC Based Electricity, Electronics & Power Electronics Exp. and it is possible to interface with PC. This trainer consist of 14 items and 50 modules. Modules are classified into Lower, Midle 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.

#### Experiment Module

- |                                      |                                    |
|--------------------------------------|------------------------------------|
| • DC Circuit : 4ea                   | • Oscillation Circuit : 2ea        |
| • AC Circuit : 3ea                   | • Magnetic Circuit : 3ea           |
| • Semiconductor Circuit : 4ea        | • A/D & D/A Converter : 2ea        |
| • Digital Circuit : 7ea              | • Sensor Circuit : 4ea             |
| • Transistor Amplifier Circuit : 4ea | • Photo Electronics Circuit : 1ea, |
| • Power Circuit : 4ea                | • DC Servo : 1ea                   |
| • OP-Amp Circuit : 4ea               | • Power Electronics Circuit : 7ea  |

WS-S100

### Sensor Trainer

#### Feature

This equipment is designed to learn the characteristic of sensor circuit. Main controller contains the power supply, A/D & D/A converter, interface, position meter, motor drive amp, P controller, etc. By connecting with main unit, data measured from modules can be displayed on CRT and printed out

#### Experiment Module

- |                           |                             |                               |
|---------------------------|-----------------------------|-------------------------------|
| • Infrared Sensor Module  | • Humidity Sensor Module    | • Proximity Sensor Module     |
| • CDS Sensor Module       | • Temperature Sensor Module | • Supersonic Sensor Module    |
| • Pressure Sensor Module  | • Current Sensor Module     | • Voice Control Sensor Module |
| • Load Cell Sensor Module | • Encoder Module            |                               |
| • Gas Sensor Module       | • Photo Sensor Module       |                               |





## 5. Electric Machine & Hydraulic · Pneumatic Educational Equipment

WSM-1

### Electric Machine Exp. Trainer



#### Feature

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[ $\phi$ ], AC 220[V], 50/60[Hz]
- Electric Machines : 7set
- Experimental Modules : 10set
- Main Device Unit / Electric Machine Storage Cabinet / Working Table / Frame
- Graphic Board (Insulation Plate) : 1unit

WSM-7 ~ WSM-20

### Series Motor & Generator Trainer



WSM-7	Wound Induction Motor & DC Shunt Ge. Trainer	WSM-14	DC Shunt Motor & DC Compound Ge. Trainer
WSM-8	Synchronous Motor & Synchronous Ge. Trainer	WSM-15	Wound Induction Motor & DC Compound Ge. Trainer
WSM-9	DC Compound Motor & Compound Ge. Trainer	WSM-16	Synchronous Motor & DC Compound Ge. Trainer
WSM-10	DC Shunt Motor & Synchronous Ge. Trainer	WSM-17	Induction Motor & DC Shunt Ge. Trainer
WSM-11	Induction Motor & DC Compound Ge. Trainer	WSM-18	DC Compound Motor & Synchronous Ge. Trainer
WSM-12	Dynamometer Trainer	WSM-19	DC Shunt Motor & DC Shunt Ge. Trainer
WSM-13	DC Series Motor & DC Compound Ge. Trainer	WSM-20	1-Phase Induction Motor & DC Shunt Ge. Trainer

WSM-24

### Transformer Trainer



#### Feature

This equipment is designed for principle of a transformer. 3 single phase transformers are built in an equipment and a circuit diagram is printed on the front panel of the equipment.

#### Experimental List

- Measuring Coil Resistance of Transformer.
- Saturation curve and voltage ratio of Transformer.
- Impedance of Transformer.
- Current Ratio and Impedance of Transformer.
- Voltage regulation curve of transformer.
- Polarity of Transformer.
- The No-load experiment of a single phase Transformer.
- Short experiment of a single phase Transformer.
- Load experiment of a single phase Transformer.
- Parallel operation experiment of a single phase transformer.
- Three phase connection experiment of single phase transformer.
- Vconnection practice experiment of single phase transformer.
- The No-load experiment of a three phase transformer.
- Short experiment of a three phase Transformer.
- Load experiment of a three phase Transformer.



## 5. Electric Machine & Hydraulic · Pneumatic Educational Equipment

WSM-2310

### Inverter Experimental Trainer



#### Feature

This equipment is used to study a principle of an inverter system. Each meters are built in the equipment and users can check change of voltage and frequency during the equipment is operated. It is easy to control output voltage and frequency with a LCD loader. This equipment can be connected to an external device. To check rotation direction of a motor, coupling is equipped at the motor.

#### Experimental List

- The operation by key-pad
- The operation by control a terminal plate
- The operation by control a terminal plate and key-pad
- The setting of accelerating-decelerating time
- Speed command
- The multi-stage operation
- The a stop-method of the matter happen time
- Full-territory DC braking of stop-command input time

WSP-4

### Electro-Pneumatic Trainer (Quick Module Type)



#### Feature

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[ $\phi$ ], AC 220[V], 50/60[Hz]
- Electric Modules : 3 unit
- Pneumatic Modules : 35 unit
- Electric Control Panel : 9 Block

WSH-4

### Application Hydraulic Trainer(Quick Module Type)



#### Feature

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[ $\phi$ ], AC 220[V], 50/60[Hz]
- Hydraulic Modules : 38 unit
- Electric Modules : 3 unit
- Electric Control Panel : 9 Block

#### ※ Option : Excavator trainer

It is made to control the excavator's working by using hydraulic cylinders-swing, arm, boom and bucket cylinder.





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# MEMBER'S PRODUCT



Korea Scientific Instruments Industry Cooperative



## Basic Scientific Instruments

Astrolabe kit



1 - 001

I.P.S balance arm



1 - 002

Periscope



1 - 003

Time recorder



1 - 004

Dynamic cart



1 - 005

Incline lane



1 - 006

Stopwatch



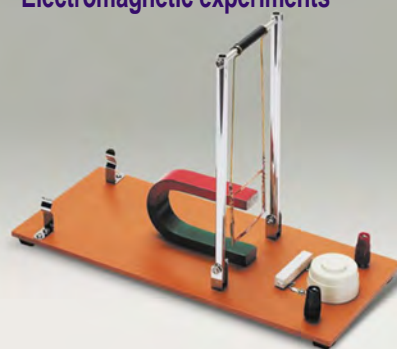
1 - 007

Solar cell experiment



1 - 008

Electromagnetic experiments



1 - 009

Power supply (digital)



1 - 010

Power supply (analog)



1 - 011

Induction coil



1 - 012



AC ammeter (digital)



1 - 013

AC voltmeter (digital)



1 - 014

DC ammeter (digital)



1 - 015

DC voltmeter (digital)



1 - 016

Galvanometer (digital)



1 - 017

Electrical circuit tester



1 - 018

Balance arm



1 - 019

Metal weight



1 - 020

Weight



1 - 021

Pulley (brass)



1 - 022

Pulley apparatus



1 - 023

Hydrostatic test set



1 - 024



Pendulum experiment



1 - 025

Wheel axle



1 - 026

Ball (3 kinds 1)



1 - 027

Spring for simple harmonic motion



1 - 028

Steel beads



1 - 029

Elastic collision



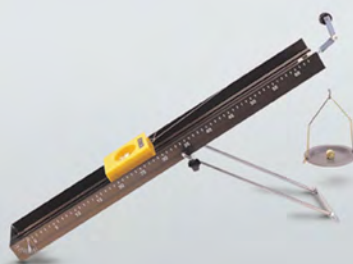
1 - 030

Two-dimensional collision devices



1 - 031

Inclined plane apparatus



1 - 032

Bevel bench



1 - 033

Friction experiment



1 - 034

Elastic view cart



1 - 035

Air vehicle



1 - 036



Vehicle magnets



1 - 037

C-type clamp



1 - 038

Non rubbing experiment



1 - 039

Spring (pushing)



1 - 040

Spring (Pulling)



1 - 041

Spring set



1 - 042

Spring (3 kinds)



1 - 043

Centripetal force apparatus (electric)



1 - 044

Rotating



1 - 045

Standstill inertia



1 - 046

Projection surface wave devices



1 - 047

Laboratory wave spring



1 - 048



Melde's experiment



1 - 049

Metal density meter



1 - 050

Surface tension



1 - 051

Boyle's law



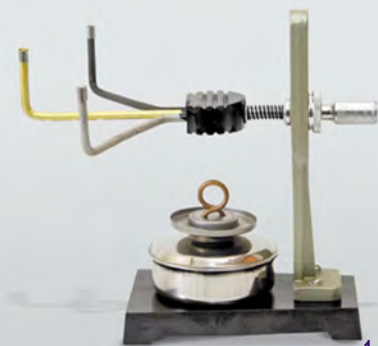
1 - 052

Pascal's principle



1 - 053

Thermal conduction apparatus A type



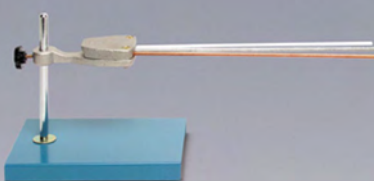
1 - 054

Thermal conduction apparatus B type



1 - 055

Thermal conduction apparatus C type



1 - 056

Expansion ball and ring



1 - 057

Linear expansion apparatus



1 - 058

Radio meter



1 - 059

Heat measurement devices



1 - 060



Calorimeter



1 - 061

Joule's heat apparatus



1 - 062

Laser abuse



1 - 063

Laser generator



1 - 064

Bucket for optical



1 - 065

Light comprehensive test kit



1 - 066

Lighting source



1 - 067

Colorless glass rod



1 - 068

Light synthetic test kit



1 - 069

7 color plates



1 - 070

Magnifier



1 - 071

Convex, concave mirrors for both



1 - 072



Convex lens



1 - 073

Triangular prism



1 - 074

Flat mirror



1 - 075

Floor lamp



1 - 076

Lighting system



1 - 077

Spectrometer



1 - 078

Extra spectroscopy



1 - 079

Newton ring



1 - 080

Face spectroscopy



1 - 081

Polarizer



1 - 082

Photocurrent measurement system



1 - 083

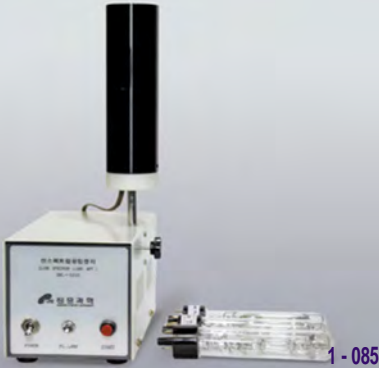
Line spectrum light Source



1 - 084



Line spectrum light source



1 - 085

Multiple flash devices



1 - 086

Stroboscope



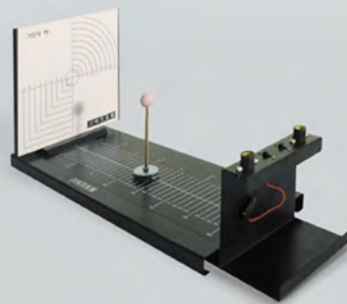
1 - 087

Linear light source



1 - 088

Shadow observation kit



1 - 089

Ultraviolet rays lamp



1 - 090

Convection box



1 - 091

Pinhole camera



1 - 092

Shadow box



1 - 093

Diapason



1 - 094

Standard tuning



1 - 095

Host resonance apparatus



1 - 096



Organ pipes



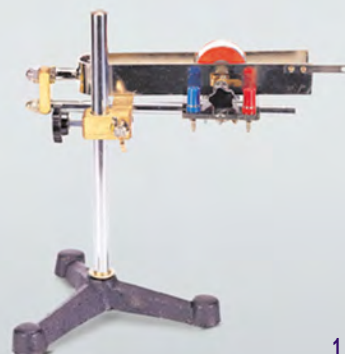
1 - 097

Wave interference



1 - 098

Electronic tuning



1 - 099

Model lyra



1 - 100

Bar magnet



1 - 101

Horseshoe magnet (force, alriko)



1 - 102

Simple electromagnet (not) for each



1 - 103

Powerful magnet plates



1 - 104

Magnetizer



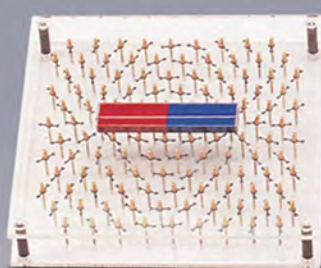
1 - 105

Magnetic compass (a compass stand)



1 - 106

Observations on 3D magnetic needle



1 - 107

Dip the room hierarchy



1 - 108



Erester kit



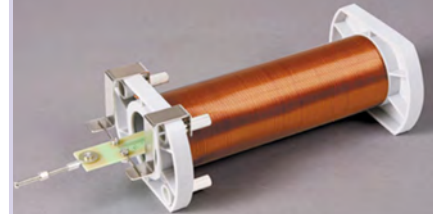
1 - 109

Acupuncture



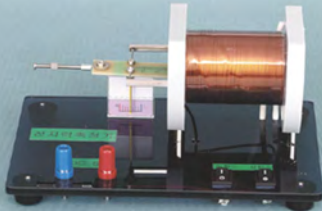
1 - 110

Solenoid



1 - 111

Electromagnetic meter



1 - 112

Bicycle generator



1 - 113

Light bulbs



1 - 114

Choke coils



1 - 115

Electric condenser



1 - 116

Slide resistor



1 - 117

Ohm's law descriptor



1 - 118

Wheatstone bridge



1 - 119

Charge-ray lane experiments



1 - 120



Fast switch



1 - 121

Double switch



1 - 122

Cable tongs



1 - 123

Friction electrical test instruments



1 - 124

Metal foil electroscope



1 - 125

Electrical pendulum



1 - 126

Van de graff



1 - 127

Spectrum tube



1 - 128

Vacuum tubes



1 - 129

Expression of electrolysis



1 - 130

Gas molecule movement apparatus



1 - 131

Measuring osmotic



1 - 132



Fireworks set of reaction



1 - 133

Branched round flask



1 - 134

Round bottom flask



1 - 135

Beaker



1 - 136

Erlenmeyer flask



1 - 137

Reagent bottle (wide-mouth White)



1 - 138

Reagent bottle (wide-mouth Brown)



1 - 139

Reagent bottle (narrow-mouth White)



1 - 140

Reagent bottle (narrow-mouth Brown)



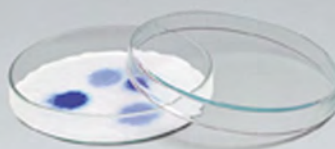
1 - 141

Funnel



1 - 142

Chalet



1 - 143

Watch glass



1 - 144



**Connection tube**



1 - 145

**Basis weight bottles**



1 - 146

**Test tube**



1 - 147

**Glass tube**



1 - 148

**Desicator**



1 - 149

**Lampshade**



1 - 150

**Dropper**



1 - 151

**Pnumetic bottle**



1 - 152

**Chick sensible atmosphere**



1 - 153

**Burette**



1 - 154

**Safety funnel**



1 - 155

**Mass cylinder**



1 - 156



Pipette scalpel



1 - 157

Hall pipette



1 - 158

U tube



1 - 159

Libby hebrews cooler



1 - 160

Rubber stopper



1 - 161

Cork stopper



1 - 162

Crucible



1 - 163

Mortar



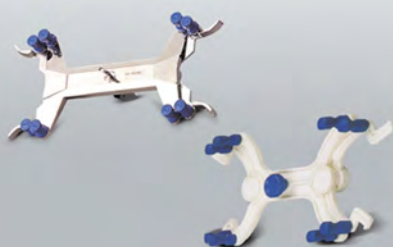
1 - 164

Evaporating dish



1 - 165

Burette clamp



1 - 166

Iron stand



1 - 167

Clamp



1 - 168



Test tube stand



1 - 169

Funnel stand



1 - 170

Pipette stand



1 - 171

Stirrer (Magnetic heating)



1 - 172

Stirrers (Magnetic)



1 - 173

Sieve



1 - 174

Burette brush



1 - 175

Beaker brush



1 - 176

Tube brush



1 - 177

Cork borer



1 - 178

Spatula



1 - 179

Pincette



1 - 180



Pinch cork



1 - 181

Pinch clamp



1 - 182

Tripod



1 - 183

Spirit-lamp



1 - 184

Ceramic safety net



1 - 185

Tube clamp



1 - 186

Filter paper



1 - 187

litmus test of paper



1 - 188

PH testing paper



1 - 189

Assembled a set of molecular models



1 - 190

Assembled a set of molecular models



1 - 191

Insect toolset



1 - 192



Plants collected a set of tools



1 - 193

Room type template



1 - 194

Durham Tube



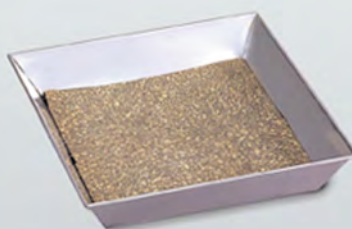
1 - 195

Dissect set



1 - 196

Dissecting dish



1 - 197

Insect specimen boxes



1 - 198

Display pannel



1 - 199

Microtome



1 - 200

Slide glass (glass support)



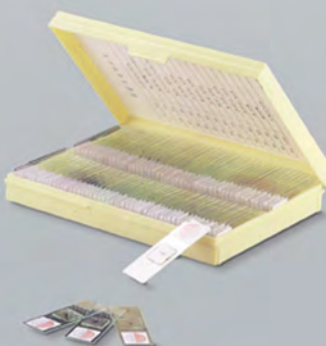
1 - 201

Cover glass



1 - 202

Permanent preparat set



1 - 203

Human skeleton muscle model



1 - 204



Human skeleton model



1 - 205

Human circulatory system model(LED)



1 - 206

Human torso model



1 - 207

Human leg muscle model



1 - 208

Human digestion organ model



1 - 209

Human respiratory organ model



1 - 210

Ear structural models



1 - 211

Eye structure model



1 - 212

Tooth structure model



1 - 213

Heart structure model



1 - 214

Tooth model



1 - 215

DNA models



1 - 216



Plants samples



1 - 217

Insect samples



1 - 218

Frog specimen



1 - 219

Sea sponge specimen



1 - 220

Sea urchin specimen



1 - 221

Apple snail specimen



1 - 222

Jellyfish specimen



1 - 223

Grapsid crab specimen



1 - 224

Illuminated orbital planetarium



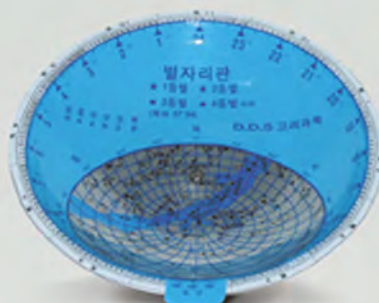
1 - 225

Illuminated orbital planetarium



1 - 226

Planisphere



1 - 227

Semi-transparent set



1 - 228



Vertical globe



1 - 229

Bearing plate



1 - 230

Fault model



1 - 231

Fold model



1 - 232

Earth's interior structure models



1 - 233

Volcano model



1 - 234

Contact goniometer



1 - 235

Geological survey, a set of instruments



1 - 236

Marble samples



1 - 237

Samples of sandstone



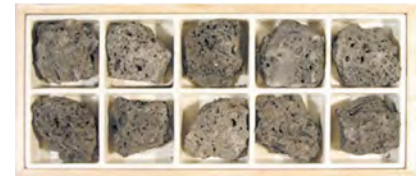
1 - 238

Mudstone samples



1 - 239

Basalt samples



1 - 240

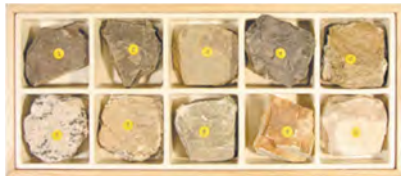


**Granite samples**



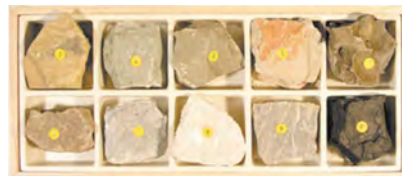
1 - 241

**Metamorphic samples**



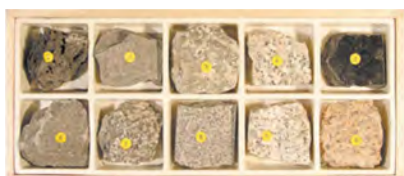
1 - 242

**Sedimentary samples**



1 - 243

**Igneous rock samples**



1 - 244

**Mohs hardness**



1 - 245

**Dual Temperature**



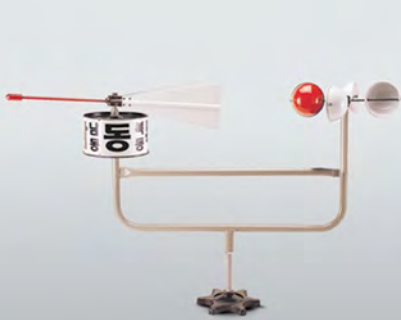
1 - 246

**Shelter(set)**



1 - 247

**Wind vane**



1 - 248

**Wind vane(Portable digital)**



1 - 249

**Rain gauge**



1 - 250

**Dry bulb thermometer**



1 - 251

**Maximum-minimum thermometer**



1 - 252



Soil Thermometer



1 - 253

Sundial



1 - 254

Changes in insulation apparatus



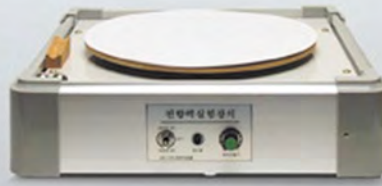
1 - 255

Vertical distribution of temperature



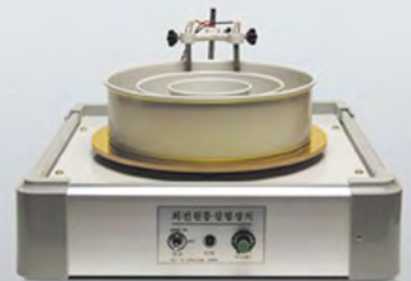
1 - 256

Deflecting force apparatus



1 - 257

Rotating cylinder apparatus



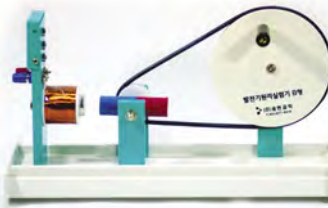
1 - 258

Experimental apparatus of adiabatic change A-type



1 - 259

Principle experimental apparatus of the generator



1 - 260

Slide resistor (Open type)



1 - 261

Experimental apparatus of gas molecular motion



1 - 262

Coulomb's Law System



1 - 263

Microwave System



1 - 264



## Audio & Video Educational System

**Interactive Whiteboard (Touch input)**



2 - 001

**Interactive Whiteboard (LCD Type)**



2 - 002

**Electronic LED Blackboard**



2 - 003

**Electric lectureTABLE**



2 - 004

**Automated lecture recording system**



2 - 005

**lecture recording Camera**



2 - 006

**Wireless Microphone System**



2 - 007

**Tablet Monitor**



2 - 008

**Multimedia Learning System**



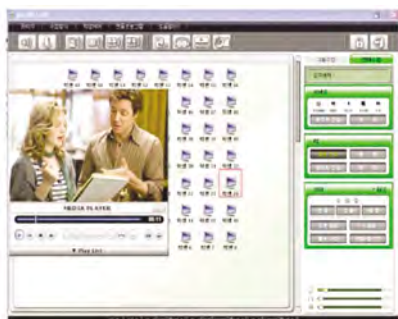
2 - 009

**Learning Kiosk System**



2 - 010

**Language Laboratory System**



2 - 011

**Portable Language Laboratory System**



2 - 012



Chemical Element Table



2 - 013

High-Definition large screen



2 - 014

3D Screen



2 - 015

Screen (Wall Mount)



2 - 016

Screen (stand)



2 - 017

Elevation Screen Stand



2 - 018

Electric Teaching Desk



2 - 019

Electric Teaching Table



2 - 020

Educational Science Content



2 - 021

Mono Microscope



2 - 022

Stereo Microscope



2 - 023

Monitor Microscope



2 - 024



**Stereo Monitor Microscope**



2 - 025

**Student Microscope**



2 - 026

**Polarizing Microscope**



2 - 027

**CELLPHONE MICROSCOPE**



2 - 028

**Contact-lens Inspector**



2 - 029

**Digital Phase Contrast Microscope**



2 - 030

**Monitor MICROSCOPE**



2 - 031

**Dental Stereo Microscope**



2 - 032

**Base Curve Measure Gauge**



2 - 033

**Monitor Capillary Microscope**



2 - 034

**Monitor Biological Microscope**



2 - 035

**USB Microscope**



2 - 036



**Astronomical Telescope(reflector)**



2 - 037

**Astronomical Telescope(refractor)**



2 - 038

**Student Telescope**



2 - 039

**Over Head Projector**



2 - 040

**Over Head Projector(Portable)**



2 - 041

**Flexible Visual Presenter**



2 - 042

**Digital Visual Presenter**



2 - 043

**Analog Visual Presenter**



2 - 044

**Image Recognizing Digital Presenter**



2 - 045

**LCD Projector**



2 - 046

**LCD Projector(High Resolution)**



2 - 047

**White / Black Board**



2 - 048



## Laboratory Instruments

**Center Table**



3 - 001

**Side Table**



3 - 002

**Corner Table**



3 - 003

**Sink Table**



3 - 004

**Working Table**



3 - 005

**Balance Table**



3 - 006

**Storage Cabinet**



3 - 007

**Wall Mounted Cabinet**



3 - 008

**Mobile Cabinet**



3 - 009

**Reagent Storage**



3 - 010

**Filtration Reagent Storage Cabinet**



3 - 011

**Laminar Flow Cabinet (Clean Bench)**



3 - 012



**Biological Safety Cabinet**



3 - 013

**Fume Cupboard (Fume Hood)**



3 - 014

**Filtration Fume Cupboard  
(Ductless Fume Hood)**



3 - 015

**Mobile Filtration Hood System**



3 - 016

**Extraction Arm System**



3 - 017

**Autoclave**



3 - 018

**Sterilizer for Medical**



3 - 019

**Shaking & Heating Bath**



3 - 020

**Heating Bath Circulator**



3 - 021

**Refrigerated Circulating Bath**



3 - 022

**Shaking Water Bath**



3 - 023

**Immersion Circulator**



3 - 024



**Recirculating Coolers (chillers)**



3 - 025

**Refrigerated Bath Circulator**



3 - 026

**Aspirator Pump**



3 - 027

**General Purpose Centrifuge**



3 - 028

**Clinical Centrifuge**



3 - 029

**Refrigerated Centrifuge**



3 - 030

**High Speed Centrifuge**



3 - 031

**Ultrasonic Cleaners**



3 - 032

**Pipette Cleaner**



3 - 033

**Glassware Washing Machine**



3 - 034

**Cubic Vacuum Desiccator**



3 - 035

**Hydraulic Bench**



3 - 036



Inclined Manometer



3 - 037

Flow Visualization Apparatus



3 - 038

Jet Impact



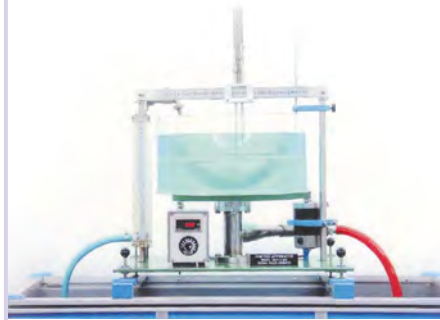
3 - 039

Flow Measuring Apparatus



3 - 040

Vortex Apparatus



3 - 041

Orifice & Jet Apparatus



3 - 042

Flow Through Orifice



3 - 043

Fluid Friction Apparatus



3 - 044

Heat Exchanger



3 - 045

Fan Test Rig



3 - 046

Tilting Flow Channel



3 - 047

Muffle Furnace



3 - 048



**Tube Furnace**



3 - 049

**Electric muffle furnace**



3 - 050

**Glove Box**



3 - 051

**Heating Mantle**



3 - 052

**Hotplates & Stirrers**



3 - 053

**Hotplates & Stirrers**



3 - 054

**Magnetic Stirrer-Multi position**



3 - 055

**Shaking Incubator**



3 - 056

**Gravity Convection Incubator**



3 - 057

**Forced Convection Incubator**



3 - 058

**CO2 Incubator**



3 - 059

**BOD Incubator**



3 - 060



Low Temperature Incubator



3 - 061

Constant Temperature & Humidity Chambers



3 - 062

Growth Chamber



3 - 063

Incubated Shaker



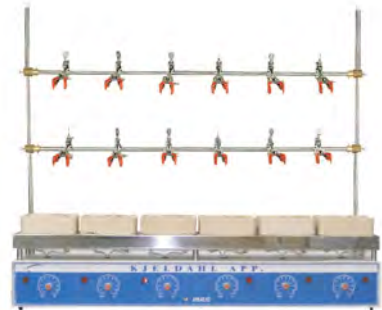
3 - 064

Jar Test Apparatus



3 - 065

Kjeldahl Digestion System



3 - 066

Gravity Convection Oven



3 - 067

Forced Convection Oven



3 - 068

Vacuum Oven



3 - 069

Laboratory Refrigerator



3 - 070

Ultra-Low Temperature Freezer (Deep Freezer)



3 - 071

Blood Bank Refrigerator



3 - 072



**Pharmaceutical Refrigerator**



3 - 073

**Ice Maker**



3 - 074

**Freezer Dryer**



3 - 075

**Rotary Evaporator**



3 - 076

**Orbital Shaker**



3 - 077

**Reciprocating Shaker**



3 - 078

**Rocking Shaker**



3 - 079

**Rolling Shaker**



3 - 080

**Platform Shaker**



3 - 081

**Funnel Shaker**



3 - 082

**Vertex Mixer**



3 - 083

**Vibratory sieve shaker**



3 - 084



Soxhlet Apparatus



3 - 085

Pure Water System



3 - 086

Evo-UP System



3 - 087

Pure & Ultra Pure Water Systems



3 - 088

Acidity Meter



3 - 089

COD Analyser



3 - 090

Conductivity Meter



3 - 091

DO Meter



3 - 092

Moisture Meter



3 - 093

PH Meter



3 - 094

Refractor Meter



3 - 095

Electrophoresis System with power supply



3 - 096



**UV / VIS Spectrophotometer**



3 - 097

**PH / Ion Meter**



3 - 098

**Animal Breeding Facilities & Equipment**



3 - 099

**Fume Cupboard**



3 - 100

**Clean Benche-Advanced**



3 - 101

**Desiccators**



3 - 102

**Temp. & Humid. Chamber**



3 - 103

**Blood Bank Refrigerator & Plasma Freezer**



3 - 104

**Economy Heating Bath -dual model**



3 - 105

**Overhead Stirrer**



3 - 106

**Laboratory & Medical Air Purifier**



3 - 107

**Hydrogen Gas Detection System**



3 - 108



## Vocational Training Instruments

### Machinery and Automobile

Combine structure educational system(Cutting parts)



4 - 001

Power tiller structure educational system



4 - 002

Tractor structure educational system



4 - 003

4 stroke gasoline engine structure educational system



4 - 004

2 stroke gasoline engine structure educational system



4 - 005

Dynamometer



4 - 006

Standard Triaxial Apparatus



4 - 007

Digicom Motorized Vane Tester



4 - 008

Digicom Consolidation Apparatus



4 - 009

Automatic Mechanical Compactor



4 - 010

Gasoline engine educational system



4 - 011

MOTRONIC educational system



4 - 012



**Diesel 4WD automotive power train educational system**



4 - 013

**Engine & A/T simulation educational system**



4 - 014

**Engine practical training educational system**



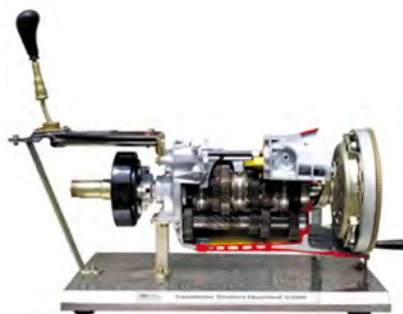
4 - 015

**CRDI Diesel engine & A/T simulation educational system**



4 - 016

**M/T structure educational system**



4 - 017

**4 x 4 Diesel engine educational system**



4 - 018

**F / R automotive power train educational system**



4 - 019

**Air conditioner simulation educational system**



4 - 020

**Integrated electric & electronic components educational system**



4 - 021

**ECS simulation educational system**



4 - 022

**Engine stand for practical training**



4 - 023

**ABS simulation educational system**



4 - 024



V6 engine exhibition system



4 - 025

Ro-Tap Sieves Shaker



4 - 026

75mm Motorized Sieve Shak



4 - 027

Motorized Sieve Sahker



4 - 028

Concrete Creep Apparatus



4 - 029

Precision Large Sample Cutting Machine



4 - 030

Three Dimension Sieve Shaker



4 - 031

Concrete Mold Grinding Machine



4 - 032

Refrigeration & Freezing trainer



4 - 033

ICE-Maker system trainer



4 - 034

MULTI-FUNCTIONAL Welding machine



4 - 035

LATHE



4 - 036



**Prius Hybrid Engine with Drive Shaft**



4 - 037

**Car Forecarriage with Mc Pherson Suspension Equipment**



4 - 038

**SMART Automotive Engine Control System**



4 - 039

**Electric Vehicle with Test System**



4 - 040

**ECU Control and Diagnostic Training for Real Vehicle**



4 - 041

**Ignition System Bench type**



4 - 042

**CRDI Diesel Engine System with stand\_DOHC type**



4 - 043

**V-6 Gasoline Engine System with 360 degree turntable**



4 - 044

**Automotive Central Locking System Simulator**



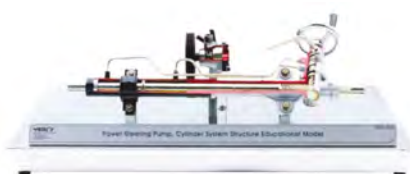
4 - 045

**CRDI Diesel Engine with stand\_Assemble and Disassemble**



4 - 046

**Diesel Engine Fuel Injection Pump**



4 - 047

**4 Stroke Gasoline Engine**



4 - 048







## Electric & Electronic Measuring Device, Automatic Control

**Smart-grid Solar & Wind Power Trainer**



5 - 001

**Portable Solar Power Trainer**



5 - 002

**Grid-tie Solar Power Training System**



5 - 003

**Stand-alone Solar Power Generation Trainer**



5 - 004

**Multifunctional Electrical Meter**



5 - 005

**Pneumatics Training System**



5 - 006

**Hydraulics Training System**



5 - 007

**Flexible Manufacturing System**



5 - 008

**Mini-MPS Trainer**



5 - 009

**Sensor training set**



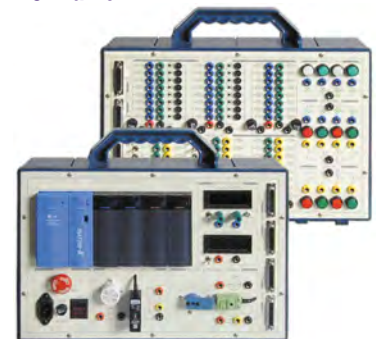
5 - 010

**Transparent model**



5 - 011

**PLC Trainer**



5 - 012



Digital Logic Lab Unit



5 - 013

Analogue Lab Unit



5 - 014

Analogue & Digital Circuit Trainer



5 - 015

Factory Pneumatic Robot Trainer



5 - 016

Electronic Demonstration Trainer



5 - 017

Temperature Control Trainer



5 - 018

Elevator Trainer



5 - 019

Building Parking Trainer



5 - 020

PLC Sensor Circuit Trainer



5 - 021

Photovoltaic Assemble & Disassemble Trainer



5 - 022

Wireless Communication & Antenna Trainer



5 - 023

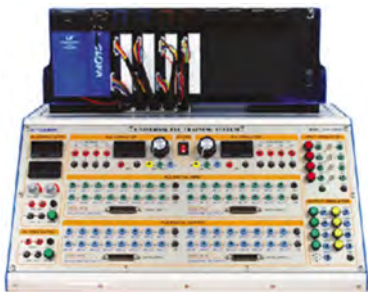
Smart PLC Trainer



5 - 024



**Universal PLC Training System**



5 - 025

**Module Type PLC Application Trainer**



5 - 026

**Sequence Control Trainer**



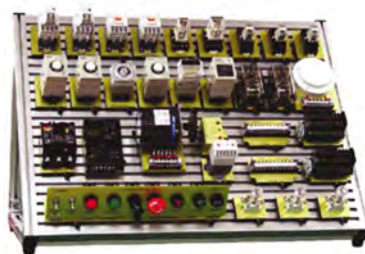
5 - 027

**Basic Energy Conversion Trainer**



5 - 028

**Module Type Sequence Control Trainer**



5 - 029

**Intelligence Servo Control Trainer**



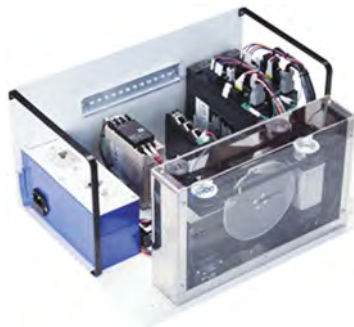
5 - 030

**Digital Oscilloscope**



5 - 031

**Motion Demo Kit**



5 - 032

**IPLC Demo Kit**



5 - 033

**Hybrid Automobile Training System**



5 - 034

**Led Dimming Control Trainer**



5 - 035

**Media Facade Trainer**



5 - 036



Label Printing Scale



5 - 037

Precision Weighing Scale



5 - 038

Precision Loadcell Balance



5 - 039

Precision Loadcell Balance



5 - 040

Parts Counting Scale



5 - 041

Price Computing Scale



5 - 042

Sensor module



5 - 043

CO2 & Temp. Indicator



5 - 044

CO2 Monitor



5 - 045

Oxygen Gas Monitor



5 - 046

Stainless Steel Temperature Sensor



5 - 047

Photodiode Light Sensor



5 - 048



**Voltage Sensor**



5 - 049

**PH Sensor**



5 - 050

**CO2 Sensor**



5 - 051

**Force Sensor**



5 - 052

**Science cube - LITE**



5 - 053

**Gas Pressure Sensor-B**



5 - 054

**Current Sensor**



5 - 055

**Microphone**



5 - 056

**Gas Pressure Sensor-A**



5 - 057

**Magnetic Field Sensor**



5 - 058

**Motion Detector**



5 - 059

**Galvanometer**



5 - 060



Thermocouple Probe



5 - 061

PT Stainless Steel Temperature Sensor



5 - 062

Dissolved Oxygen Probe



5 - 063

Photogate Probe



5 - 064

Relative Humidity Sensor



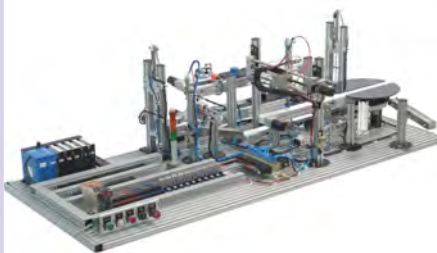
5 - 065

Intelligent Robot System



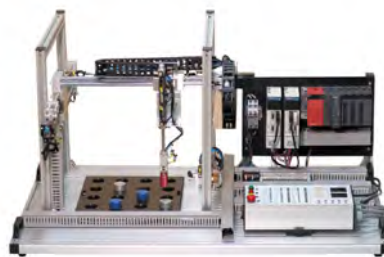
5 - 066

Variable Mechatronics System



5 - 067

Motion Control Trainer



5 - 068

Motor Generator Trainer



5 - 069

Standard refrigeration experimental equipment



5 - 070





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# MEMBER LIST



Korea Scientific Instruments Industry Cooperative



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**Phone** +82-02-766-6406  
**Fax** +82-02-766-6408  
**Website**  
**e-mail** science21c\_@yahoo.co.kr  
**Product** switch, stand

## 4MDIDACTIC CO., LTD.

**Address** C-1106 Kwangmyung technoPark, 60, Haan-ro, Gwangmyeong-si, Gyeonggi-do, Korea  
**Phone** +82-02-2083-1774  
**Fax** +82-02-2083-1776  
**Website** www.4mdid.com  
**e-mail** info@4mdid.com  
**Product** Production automation experimental Device etc.

## ACOM INC.

**Address** 15, Yugyo-ro 101beon-gil, Gunnae-myeon, Pocheon-si, Gyeonggi-do, Korea  
**Phone** +82-031-531-2205  
**Fax** +82-031-531-9199  
**Website** www.acominc.co.kr  
**e-mail** sale@acominc.co.kr  
**Product** Elec Scale

## AD POWER CO., LTD.

**Address** 402-1304 bucheon techno-park, 655, Pyeongcheon-ro, Wonmi-gu, Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-070-7777-0330  
**Fax** +82-032-234-3793  
**Website** www.adpower21.com  
**e-mail** adc@adpower21.com  
**Product** Power Meter. Power Quality Analyzer. Analog Oscilloscope. Signal Generator. DC Power Supply. Power Factor & Frequency Meter

## AHA INC CO., LTD.

**Address** 67, Hwanggeum-ro 109beon-gil, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea  
**Phone** +82-031-8048-7100  
**Fax** +82-031-997-0911  
**Website** www.ahainc.co.kr  
**e-mail** gdkoo@ahainc.co.kr  
**Product** video presenter language lab system, cyber computer board

## AN SUNG SCIENTIFIC CO.

**Address** 172, Deogi-ro, Ilsanseo-gu, Goyang-si, Gyeonggi-do, Korea  
**Phone** +82-031-919-4721  
**Fax** +82-031-919-9144  
**Website**  
**e-mail** kkkss4721@hanmail.net  
**Product** Pulley

## ANIVYS CO., LTD.

**Address** 10th FL. #A-1005-GaHo,Gasan Digital 1st 131,Geumcheon-gu,Seoul,Korea  
**Phone** +82-02-6947-7676  
**Fax** +82-02-6947-7677  
**Website** www.anivys.com  
**e-mail** sales@anivys.com  
**Product** Hydraulic-Pneumatic Training set. Sensors training set. Automation training set

## AONE TECHNOLOGY CO., LTD.

**Address** #1105, Mecha-zone, SK-technopark, 50, Wanam-road, Sungsan-gu, Changwon-city, Seoul  
**Phone** +82-070-7854-8877  
**Fax** +82-055-289-8874  
**Website** www.aonetechonology.kr  
**e-mail** help@aonetechonology.kr  
**Product** Microprocessor Trainer

## B&S MEDIA CO., LTD.

**Address** #703 JNK Digital Tower, 111, Digitalro 26gil, Guro-Dong, Guro-gu, Seoul, Korea  
**Phone** +82-02-588-3323  
**Fax** +82-02-588-3659  
**Website** www.bnsmedia.com  
**e-mail** basic@bsmedia.co.kr  
**Product** A/V SYSTEM, Broadcast Solution, Educational Product

## BAROSNT CO., LTD.

**Address** 9, Gajaeul-ro, Seo-gu, Incheon, Korea  
**Phone** +82-032-565-8589  
**Fax** +82-032-575-8581  
**Website** www.barosnt.com  
**e-mail** yskim@barosnt.com  
**Product** Video Present System, Interactive White Board

## BMS CO., LTD.

**Address** #607 Central building 2, Chungjang-ro, Deogyang-gu, Goyang-si, Gyeonggi-do, Korea  
**Phone** +82-031-972-2513  
**Fax** +82-031-972-2517  
**Website** www.bmstelecom.com  
**e-mail** bmslove96@daum.net  
**Product** Screen Video Presentor

## BnB TEK CO., LTD.

**Address** 446 Life sangga 237, Gurojungang-ro, Guro-gu, Seoul, Korea  
**Phone** +82-02-2068-6992  
**Fax** +82-02-2068-6991  
**Website** www.mmieng.com  
**e-mail** mmieng@hanmail.net  
**Product** Slide. PLC Trainer.

## BORA GYOGU CO.

**Address** 99, Jungang-ro 200beon-gil, Dong-gu, Daejeon, Korea  
**Phone** +82-042-256-  
**Fax** +82-042-256-2612  
**Website**  
**e-mail** braa2526@hanmail.net  
**Product** Lab Table. Fume Hood

## BOSUNG ELECTRONICS CO., LTD.

**Address** 74-12, Saemaeul-ro, Gumi-si, Gyeongsangbuk-do, Korea  
**Phone** +82-054-452-4584  
**Fax** +82-054-455-0034  
**Website** www.bse.co.kr  
**e-mail** kmbse@chol.com  
**Product** Interactive White Board

## C&C INSTRUMENTS CO., LTD.

**Address** 203-806,Techno-Park, 388, Songnae-daero, Wonmi-gu, Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-032-327-3344  
**Fax** +82-032-327-3348  
**Website** www.cncinst.co.kr  
**e-mail** bscho@anypa.com  
**Product** Wibro/HSDPA/802.11a/b/g/e Simulator & Analyzer, Ubiquitous, u-Smart Home, Embedded, U-Smart Robot,



**CASPI CO., LTD.**

**Address** 175, Namol 1-gil, Paju-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-943-0541  
**Fax** +82-031-943-0543  
**Website** www.caspihome.com  
**e-mail** caspihome@naver.com  
**Product** Projector Screen, Projector Lift,  
Portable Screen

**CHC LAB CO., LTD.**

**Address** 139, Techno 2-ro, Yuseong-gu,  
Daejeon 305-500, Republic of  
Korea  
**Phone** +82-042-933-0036  
**Fax** +82-042-933-0039  
**Website** www.chclab.com  
**e-mail** chc@chclab.com  
**Product** Laboratory furniture, fume hood,  
clean bench and biological safety  
cabinet, storage cabinet

**CHEIL SCIENCE CO., LTD.**

**Address** 1301ho, 219, Yeongsin-ro,  
Yeongdeungpo-gu, Seoul, Korea  
**Phone** +82-02-3667-9512  
**Fax** +82-02-3667-9515  
**Website** www.cheilsci.com  
**e-mail** cheilsci@korea.com  
**Product** Fume Hood, Convection Drying  
Oven, Clean bench, Constant  
Temp. & Humidity Chamber, etc

**CHONGWON COMPANY**

**Address** 123-3, Seosulla-gil, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-741-5078  
**Fax** +82-02-766-4079  
**Website** www.krscience.com  
**e-mail** yhn9339@naver.com  
**Product** electrolysis Apparatus

**CHUNG BUK SCIENCE CO., LTD.**

**Address** 86, Toseong-ro, Songpa-gu, Seoul,  
Korea  
**Phone** +82-043-234-6200  
**Fax** +82-043-231-4499  
**Website**  
**e-mail** cbsci@kornet.net  
**Product** Incubator, Shaker

**CHUNGPA EMT CO., LTD.**

**Address** No.906, Daeryung Technotown 6th,  
648, Seobusaet-gil, Geumcheon-gu,  
Seoul, Korea  
**Phone** +82-02-2108-5980  
**Fax** +82-02-2108-5988  
**Website** www.chungpaemt.co.kr  
**e-mail** sale@chungpaemt.co.kr  
**Product** Electric Installation Safety  
Measurement Trainer, Integrated  
Sensor Application Trainer, Micro  
Processor Trainer. Multifunctional  
Electric Meter.

**CINUCO CO., LTD.**

**Address** 1107ho, 60, Haan-ro,  
Gwangmyeong-si, Gyeonggi-do,  
Korea  
**Phone** +82-055-263-2065  
**Fax** +82-055-263-2066  
**Website** www.cinco.co.kr  
**e-mail** soyoun.kim@cinuco.co.kr  
**Product** Training equipment

**CNDI CO., LTD.**

**Address** 33-13, Eunhaeng-ro 218beon-gil,  
Siheung-si, Gyeonggi-do, Korea  
**Phone** +82-031-313-2246  
**Fax** +82-031-313-2248  
**Website** www.cndi.co.kr  
**e-mail** jeff@cndi.co.kr  
**Product**

**COMBUSTECH CO., LTD.**

**Address** Eiseuhaiendeutawo 612-ho, 234,  
Beotkkot-ro, Geumcheon-gu, Seoul,  
Korea  
**Phone** +82-02-6299-5151  
**Fax** +82-02-6299-5158  
**Website** www.combus.co.kr  
**e-mail** info@combus.co.kr  
**Product** Cyber computer board, Electronic  
Desk & Visual Presenter, Cyber  
Lecture Solution, Multimedia  
Learning System

**COMMBOX TECHNOLOGY CO., LTD.**

**Address** 63, Tapsil-ro 35beon-gil,  
Giheung-gu, Yongin-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-205-5577  
**Fax** +82-031-205-5077  
**Website** www.commtek.co.kr  
**e-mail** jslee@ckvision.co.kr  
**Product** Interactive White Board

**COURSE AUTO**

**Address** 765, Daegyeong-ro, Hayang-eup,  
Gyeongsan-si, Gyeongsangbuk-do,  
Korea  
**Phone** +82-070-8290-3354  
**Fax** +82-053-853-2515  
**Website**  
**e-mail** qpue@naver.com  
**Product** Engine Simulator

**DAE KYUNG ENGINEERING CO., LTD.**

**Address** Seokcheollo 398Beongil 32  
(Samjeong-dong), Ojeong-gu  
Bucheon-si, Gyeonggi-do Korea  
**Phone** +82-032-677-2931  
**Fax** +82-032-675-8774  
**Website** www.dktester.com  
**e-mail** dktester@dktester.com  
**Product** Tensile Testing Machine

**DAE RIM SCIENCE**

**Address** Saebyeongno 187  
(Gwaebeop-dong), Sasang-gu,  
Busan, KOREA  
**Phone** +82-051-637-8912  
**Fax** +82-051-637-8914  
**Website**  
**e-mail** daerim8912@hanmail.net  
**Product** Table

**DAE SUNG G-3 CO., LTD.**

**Address** 43-15, Hansa-gil, Hayang-eup,  
Gyeongsan-si, Gyeongsangbuk-do,  
Korea  
**Phone** +82-053-854-2400  
**Fax** +82-053-854-2406  
**Website** www.dsg3.co.kr  
**e-mail** dsg-3@dsg-3.com  
**Product** Automotive power train, engine,  
electric system, transmission,  
clutch, brake, steering, suspension,  
axle, air conditioning, fuel system,  
automotive parts,

**DAE YANG ETS CO., LTD.**

**Address** Sagimalgil 27Beongil 87-15,  
Ujeong-eup, Hwaseong-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-351-7023  
**Fax** +82-031-351-7026  
**Website** www.daeyangets.com  
**e-mail** info@daeyangets.com  
**Product** Dry oven, Vacuum  
Oven, Incubator, Heating  
block, Refrigerator etc.



## DAEBONG TECHONE CO., LTD.

**Address** Chungmillo 52 Garden Five  
B-Dong 807, Songpa-gu, Seoul  
Korea  
**Phone** +82-02-2047-  
**Fax** +82-02-2047-0389  
**Website** www.dbtechone.com  
**e-mail** dbt1@hanmail.net  
**Product** Analog Experimental device

## DAEJUNG CHEMICALS & METALS CO., LTD.

**Address** Seohaello  
186(Jeongwang-dong, Sihwagongda  
n 1Da107), Siheung si,  
Gyeonggi-do, Korea  
**Phone** +82-031-488-8822  
**Fax** +82-031-433-6117  
**Website** www.daejungchem.co.kr  
**e-mail** dhhan@daejungchem.co.kr  
**Product** reagent

## DAI HEUNG INSTRUMENT CO.

**Address** Yulgongno10Gil 63, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-743-2779  
**Fax** +82-02-741-6450  
**Website**  
**e-mail** dhpark2779@hanmail.net  
**Product** sedimentation experiment,

## DAIHAN LABTECH CO., LTD.

**Address** 35, Gagok-ro 89beon-gil,  
Hwado-eup, Namyangju-si,  
Gyeonggi-do, KOREA  
**Phone** +82-031-593-9561  
**Fax** +82-031-593-9563  
**Website** www.labtech.co.kr  
**e-mail** info@labtech.co.kr  
**Product** Autoclave, Phourmaceutical  
Refrigerators, Thermo-hygrostat

## DAIHAN Scientific CO., LTD.

**Address** Sinpyeongseokwaro 326,  
Jijeong-myeon, Wonju-si,  
Gangwon-do, Korea,  
**Phone** +82-033-737-7502  
**Fax** +82-033-737-7575  
**Website** www.DAIHAN-Sci.com  
**e-mail** daihan@daihansci.co.kr  
**Product** Temperature & Humidity chamber,  
Incubator, Water bath, Shaker,  
Shaking incubator,  
Culture chamber, Dew chamber,  
Cold wind seed dry, Clean bench,

## DASOL SCIENTIFIC LTD.

**Address** 10, Samsung 1-ro 2-gil,  
Hwaseong-si, Gyeonggi-do, Korea  
**Phone** +82-031-376-1526  
**Fax** +82-031-377-4264  
**Website** www.dasolltd.co.kr  
**e-mail** dasolltd@unitel.co.kr  
**Product** Growth chamber, Temperature &  
Humidity chamber, Incubator,  
Water bath, Shaker, Shaking  
incubator, Culture chamber, Dew  
chamber, Seed germinator,

## DEAMYUNG SCIENCE

**Address** Yulgongno10Gil 32  
(Waryong-dong), Jongno-gu, Seoul  
Korea  
**Phone** +82-02-744-1178  
**Fax** +82-02-747-0212  
**Website**  
**e-mail** dmsci@hanmail.net  
**Product** Molecular Model Kit, Variable  
Rheostat

## DESTEK

**Address** 146-5, Baksagangbyeon-ro,  
Wachon-myeon, Gyeongsan-si,  
Gyeongsangbuk-do, Korea  
**Phone** +82-053-753-5477  
**Fax** +82-053-753-5477  
**Website**  
**e-mail** focus310@hanmail.net  
**Product** Automotive educational system,  
Automotive simulator system

## DIDATEK CO., LTD.

**Address** Gongdandongno 41Beongil 10  
Borimpaektopia 704-ho,  
Geumjeong-gu, Busan, Korea  
**Phone** +82-051-638-1271  
**Fax** +82-051-638-1274  
**Website** www.eddidatek.co.kr  
**e-mail** sales@eddidatek.co.kr  
**Product** Educational Trainer & measuring  
equipmet

## DILLI INCORPORATED

**Address** Gangbyeonno 702Beongil 30,  
Dongducheon-si, Gyeonggi-do  
Korea  
**Phone** +82-031-860-5500  
**Fax** +82-031-860-5590  
**Website** www.dilli.co.kr  
**e-mail** gschoi@dilli.co.kr  
**Product** Drafting Machine.

## DONG JIN E&T CO., LTD.

**Address** Dijiteollo 30Gil 31 (Ko-O-Rong  
Digital tower Building Unit2 1301),  
Goro-Gu. Seoul.  
Korea  
**Phone** +82-02-585-3565  
**Fax** +82-02-585-3566  
**Website** www.djmt.co.kr  
**e-mail** djm3565@naver.com  
**Product** Educational Training Equipment,  
Hydraulics Trainer,  
Electricity & Electronics  
Educational Equipment  
Electronics Educational Equipment,

## DONG SHIN INSTRUMENT PLANT CO., LTD.

**Address** Dongillo 187Gil 13, Nowon-gu,  
Seoul, Korea  
**Phone** +82-02-975-6201  
**Fax** +82-02-977-8360  
**Website** www.dongshinipc.com  
**e-mail** dsp6202@naver.com  
**Product** Chloride Analyzer

## DONGAH TESTING MACHINE

**Address** Ttukseomno1Gil 25 3Fl. 308-ho  
(Seongsudong1Ga), Sungdong-Gu,  
Seoul, Korea  
**Phone** +82-02-463-7231  
**Fax** +82-02-469-0553  
**Website** www.dongahtest.com  
**e-mail** da@dongahtest.kr  
**Product** universal test machine, water  
testing machine, civil construction  
testing machine

## DONGIL SCIENCE CORP.

**Address** Heukgyoro 25Beongil  
16-6(Bupyeong-dong4Ga),  
Jung-gu, Busan, Korea  
**Phone** +82-051-257-1010  
**Fax** +82-051-257-1040  
**Website** www.dongilsci.com  
**e-mail** tcg1010@hanmail.net  
**Product** Dry Oven, Incubator

## DONGWON CNS CORP.

**Address** 71, Nonhunro, Seocho-gu, Seoul,  
Korea  
**Phone** +82-070-7860-1950  
**Fax** +82-02-589-4750  
**Website** www.dongwonsns.com  
**e-mail** eibbm@dongwon.com  
**Product** Interactive White Board,  
MicroScope



**DONGWON SCIENTIFIC**

**Address** Jungguro 23Beongil 14, Jung-gu, Busan, Korea  
**Phone** +82-051-245-7521  
**Fax** +82-051-246-8521  
**Website** www.dongwonsm.co.kr  
**e-mail** dw9912@naver.com  
**Product** Universal Testing Machine, Ball mill, Furnace, Friction Experiment Apparatus, Incubator

**DONGWON SYSTEMS CO., LTD.**

**Address** Mabangno 68(Yangjae-dong, Dongwon Industries Bldg. 5F ), Secho-gu, Seoul, Korea  
**Phone** +82-02-589-4755  
**Fax** +82-02-589-4760  
**Website** www.dongwonsystems.com  
**e-mail** ilcho@dongwon.com  
**Product** Microscope, Visual-Projector, Over Head Projector, LCD-Projector, Screen, Telescope, Computer Sys.

**DONGYOO ELECTRONICS CO., LTD.**

**Address** Gonghangdaero 65Gagil 31(Yeomchang-dong), Gangseo-gu, Seoul, Korea  
**Phone** +82-02-3662-5234  
**Fax** +82-02-3664-0763  
**Website** www.dymix.co.kr  
**e-mail** dongyoo27@hanafos.com  
**Product** Language Lab System, Interactive White Board

**EARZONE CO., LTD.**

**Address** #706, 7TH FL.STX V-TOWER,128 GASAN DIGITAL 1 RO, GEUM CHEON-GU, SEOUL, KOREA  
**Phone** +82-02-811-3500  
**Fax** +82-02-811-3533  
**Website** www.earzone.co.kr  
**e-mail** ear@earzone.co.kr  
**Product** wireless education system video presenter

**ED CO., LTD.**

**Address** 14, Dunchon-daero 457beon-gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, Korea  
**Phone** +82-031-730-7300  
**Fax** +82-031-730-7319  
**Website** www.ed.co.kr  
**e-mail** trade@trade.co.kr  
**Product** PLC Trainer. Automatic control Trainer, Hydraulics Pneumatics Trainer, FMS Industrial Trainer, DMM DC Power Supply, Spectrum Analyzer

**EMAX GREEN CO., LTD.**

**Address** STX V-TOWER 1402ho, 128, Gasan digital 1-ro, Geumcheon-gu, Seoul, Korea  
**Phone** +82-02-857-0123  
**Fax** +82-02-857-0890  
**Website**  
**e-mail** emaxe0123@yahoo.co.kr  
**Product** Sensor Trainer.

**ESOL Information & Communication CO., LTD.**

**Address** 59, Jungdong-ro 22beon-gil, Sosa-gu, Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-02-548-5172  
**Fax** +82-02-547-2493  
**Website** www.esolgroup.co.kr  
**e-mail** bgkang@esolgroup.co.kr  
**Product** Interactive White Board

**eTHE CO., LTD.**

**Address** 37, Oksan-ro 178beon-gil, Wonmi-gu, Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-032-684-4616  
**Fax** +82-032-684-4615  
**Website** www.ethe.co.kr  
**e-mail** 310kmh@mail.ethe.co.kr  
**Product** Process control system, Servo control system, Computer control system, Circuit Testing machine, Fluid Control system

**EUNHA FLUID SCIENCE**

**Address** 7, Sangwon 12-gil, Seongdong-gu, Seoul, Korea  
**Phone** +82-02-463-0407  
**Fax** +82-02-462-0971  
**Website** www.ehf.co.kr  
**e-mail** ykw@ehf.co.kr  
**Product** Hydraulics Bench. Inclined Manometer. Flow Through an Orifice. Tilting Flow Channel

**FESTECH CO., LTD.**

**Address** Rm 706, Daeryung Technotown 5, 632, Seobusaet-gil, Geumcheon-gu, Seoul, Korea  
**Phone** +82-02-2107-7800  
**Fax** +82-02-2107-7801  
**Website** www.festech.co.kr  
**e-mail** festech@festech.co.kr  
**Product** Hydraulic-Pneumatic Training set. Sensors training set.

**FESTOONE CO., LTD.**

**Address** #1305, Byeoksan Digital Valley 2 Cha, 184, Gasan digital 2-ro, Geumcheon-gu, Seoul, Korea  
**Phone** +82-02-2113-0660  
**Fax** +82-02-2113-0664  
**Website** www.festoone.co.kr  
**e-mail** festoone@naver.com  
**Product** Microprocessor Trainer. Basic Electronics

**GMS CO., LTD.**

**Address** #201-22, Geomjun-2gil, Eunhyun-myeon, Yangju-si, Gyeonggi-do, Korea  
**Phone** +82-031-858-6344  
**Fax** +82-031-868-6344  
**Website** www.gsmedical.co.kr  
**e-mail** domestic@gsmedical.co.kr  
**Product** chemical fridge, deep-freezer etc.

**GREEN CORE SYSTEM CO., LTD.**

**Address** Seokcheollo 397 (Bucheon-tekeunopakeu Ssangyong 3cha 202-1006), Ojeong-gu, Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-032-624-3495  
**Fax** +82-032-624-3497  
**Website** www.green-core.co.kr  
**e-mail** g-core@hanmail.net  
**Product** Video Presenter, Air Quality Monitor, Air Circulator



## GREENFLOW TECH

**Address** 74-1, Gisanmal-gil, Hwaseong-si, Gyeonggi-do, Korea  
**Phone** +82-031-221-4616  
**Fax** +82-031-221-4615  
**Website** www.gftech.kr  
**e-mail** 2214616@naver.com  
**Product** Laboratory equipment

## GTSCIEN CO., LTD.

**Address** 222, Hanshinsmecha, 65 Techno 3-ro, Yuseong-gu, Daejeon, Korea  
**Phone** +82-042-936-4520  
**Fax** +82-042-621-2892  
**Website** www.gtscien.com  
**e-mail** gtscien@gtscien.com  
**Product** Lab Table, TOGA Clean System.

## GYROZEN.CO.,LTD.

**Address** 30-12, Gyeryong-ro 141beon-gil, Yuseong-gu, Daejeon, Korea  
**Phone** +82-042-719-8200  
**Fax** +82-042-826-9848  
**Website** www.gyrozen.co.kr  
**e-mail** info@gyrozen.com  
**Product** Centrifuge, Shaker

## H.I SYSTEM CO., LTD.

**Address** 124, Sagimakgol-ro, Jungwon-gu, Seongnam-si, Gyeonggi-do, Korea  
**Phone** +82-031-737-5544  
**Fax** +82-031-737-5548  
**Website** www.hi-sys.co.kr  
**e-mail** hi-typark@hanmail.net  
**Product** Embedded Linux System, Ubiquitous, Robot, Network, Microprocessor, DVR

## HAHNSHIN SCIENTIFIC CO.

**Address** 39, Oksan-ro 278beon-gil, Ojeong-gu, Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-032-675-6276  
**Fax** +82-032-678-9652  
**Website** www.hssscience.co.kr  
**e-mail** hahnshin78@naver.com  
**Product** Rotary evaporator, Cooling water bath, Electric aspirator

## HAN IL DIS

**Address** 9, Geumbu-ro 95beon-gil, Seo-gu, Gwangju, Korea  
**Phone** +82-062-383-7744  
**Fax** +82-062-383-7746  
**Website**  
**e-mail** hanil7744@hanmail.net  
**Product** pitchfork Stimmgabel tuning fork

## HAN IL LAB TECH CO., LTD.

**Address** 26-38, Pyeonghwa-ro 1677beon-gil, Yangju-si, Gyeonggi-do, Korea  
**Phone** +82-031-867-1426  
**Fax** +82-031-867-1464  
**Website** www.hanillab.co.kr  
**e-mail** hanillab@naver.com  
**Product** Fume Hood

## HAN JIN QUARTZ

**Address** 6-1, Donhwamun-ro, Jongno-gu, Seoul, Korea  
**Phone** +82-02-2267-2108  
**Fax** +82-02-2267-2106  
**Website** www.hjquartz.com  
**e-mail** redkim99@naver.com  
**Product** quartz tube, quartz cell, quartz crucible

## HAN KOOK AV SCIENTIFIC CO., LTD.

**Address** Centerm IS tower 902-ho, 60, Centum buk-daero, Haeundae-gu, Busan, Korea  
**Phone** +82-051-808-5566  
**Fax** +82-051-803-1413  
**Website** www.hankookscience.com  
**e-mail** hk5566@hanmail.net  
**Product** Screen, aerovane, test tube rack

## HAN KYO YEON CO., LTD.

**Address** 201ho. 396, Hambangmoe-ro, Namdong-gu, Incheon, Korea  
**Phone** +82-1544-0582  
**Fax** +82-032-252-0506  
**Website** www.lams007.com  
**e-mail** webmaster@speed05.co.kr  
**Product** Multimedia Learning System

## HANBACK ELECTRONICS CO., LTD.

**Address** 35, Daehak-ro, 76beon-gil, Yuseong-gu, Daejeon, Korea  
**Phone** +82-042-610-1111  
**Fax** +82-042-610-1199  
**Website** www.hanback.com  
**e-mail** scjin@hanback.co.kr  
**Product** Ubiquitous Sensor Network, Embedded System, Intelligent Robot

## HANBAEK SCIENTIFIC CO.

**Address** 68, Jomaru-ro 427beon-gil, Wonmi-gu, Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-032-654-9772  
**Fax** +82-032-654-0070  
**Website** www.hanbaeksci.co.kr  
**e-mail** hanbaek@hanbaeksci.co.kr  
**Product** dry oven incubator clean bench

## HANIL SCIENCE INDUSTRIAL

**Address** 26, Bongo-daero 651beon-gil, Gyeyang-gu, Incheon, Korea  
**Phone** +82-032-543-6906  
**Fax** +82-032-542-7124  
**Website** www.ihanil.com  
**e-mail** hanil@ihanil.com  
**Product** Centrifuge

## HANJIN MULTIMEDIA

**Address** 25, Jeongjo-ro 945 beon-gil, Jangan-gu, Suwon-si, Gyeonggi-do, Korea  
**Phone** +82-031-242-8833  
**Fax** +82-031-242-7117  
**Website** www.기상전광판.kr  
**e-mail** kimjss6677@hanmail.net  
**Product** human body model,

## HANKOOK LAB. EQUIPMENT MFG CO.

**Address** 122 Sansuri, Buyong Myon Chong won kun, Chung buk  
**Phone** +82-043-277-6650  
**Fax** +82-043-237-6654  
**Website** www.fumehood.co.kr  
**e-mail** hk6653@hanmail.net  
**Product** Fume Hood, Clean Bench, Forced Air Sender, Lab Table



**HANKOOK SCIENCE CO.**

**Address** 37, Yulgok-ro 8-gil, Jongno-gu, Seoul, Korea  
**Phone** +82-02-764-2948  
**Fax** +82-02-742-0479  
**Website**  
**e-mail** kwg2948@naver.com  
**Product** easy switch

**HANSHIN KUMPUNG CO., LTD.**

**Address** 96, Yulma-ro, Daegot-myeon, Gimpo-si, Gyeonggi-do, Korea  
**Phone** +82-031-989-9991  
**Fax** +82-031-989-9994  
**Website** www.han-shin.co.kr  
**Product** Universal Testing Machine  
**e-mail** park0784@empal.com

**HINICS CO., LTD.**

**Address** 346, Dongil-ro, Gwangjin-gu, Seoul, Korea  
**Phone** +82-02-468-5900  
**Fax** +82-02-2205-0005  
**Website** www.  
**e-mail** hinics55@hanmail.net  
**Product** simulator, a cloud chamber etc.

**HONGIK CORPORATION**

**Address** 80, Dongsulla-gil, Jongno-gu, Seoul, Korea  
**Phone** +82-02-762-4551  
**Fax** +82-02-742-8870  
**Website**  
**e-mail** hi1545@hanmail.net  
**Product** Power Relay, Eol Relay, Set Reset

**HONGMYONG FURNITURE CO., LTD.**

**Address** 49-1, Mujini 1-gil, Daedeok-gu, Daejeon-city, Korea  
**Phone** +82-042-822-2734  
**Fax** +82-042-932-7100  
**Website**  
**e-mail** hmf88@hanmail.net  
**Product** Testing bench, show case

**HUMAN CORPORATION**

**Address** 11, Dogok-ro 62-gil, Songpa-gu, Seoul, Korea  
**Phone** +82-02-418-4182  
**Fax** +82-02-423-6430  
**Website** www.humancorp.co.kr  
**e-mail**  
**Product** Water Purification System, UV/VIS Spectrophotometer, Kjeldahl System, Washing Machine, Camera for microscope

**HUSTEM CO., LTD.**

**Address** 14, Teheran-ro 88-gil, Gangnam-gu, Seoul, Korea  
**Phone** +82-02-6262-1000  
**Fax** +82-02-508-6399  
**Website** www.hustem.co.kr  
**e-mail** hsysun@sindoh.com  
**Product** Interactive White Board(CreaBoard)

**HWA SUNG INDUSTRIAL CO., LTD.**

**Address** 47, Gareubaengi-ro 6-gil, Seo-gu, Daegu, Korea  
**Phone** +82-053-526-6701  
**Fax** +82-053-521-2937  
**Website** www.hscaster.co.kr  
**e-mail** hs02938@naver.com  
**Product** Automobile Education Electric Welding

**HWANWOONG MECHATRONICS CO., LTD.**

**Address** 24, Sinsan-ro, Sanin-myeon, Haman-gun, Gyeongsangnam-do, Korea  
**Phone** +82-055-582-7970  
**Fax** +82-055-582-7975  
**Website** www.dytek.co.kr  
**e-mail** dynohw@chol.com  
**Product** Dynamometer, Engine Performance Test System  
 Combustion Analysis System

**HWASHIN TECHNOLOGY CO.**

**Address** 680-9, Poeun-daero, Gwangju-si, Gyeonggi-do, Korea  
**Phone** +82-031-765-2530  
**Fax** +82-031-765-2540  
**Website** www.hwashin.net  
**e-mail** tech@hwashin.net  
**Product** Ultrasonic Cleaner, Ultrasonic Pipet Cleaner, Roller Mixer, Vortex Mixer, Rattator

**ICAN CO., LTD.**

**Address** 65, Techno 3-ro, Yuseong-gu, Daejeon, Korea  
**Phone** +82-042-934-6928  
**Fax** +82-042-934-6927  
**Website** www.icankorea.co.kr  
**e-mail** ican@icankorea.co.kr  
**Product** power supply

**IEG CO., LTD.**

**Address** 1107 & 1108 Tech-center SK(n)Techno-Park, 124 Sagimacgol-road Jungwon-gu, Sungnam-city, Gyeonggi-do, South KOREA  
**Phone** +82-1644-3263  
**Fax** +82-031-776-4448  
**Website** www.ieg.pe.kr  
**e-mail** jklee@ieg.kr  
**Product** Hybrid Generation System Trainer. Intelligent Robot Trainer. PC Based Sensor Trainer

**IKEON SCIENTIFIC CO.**

**Address** 59, Nonhyeon-ro 8-gil, Gangnam-gu, Seoul, Korea  
**Phone** +82-02-529-5901  
**Fax** +82-02-529-5905  
**Website**  
**e-mail** iksc5901@hanmail.net  
**Product** Dry Oven, Fume Hood

**IL DONG CHEMICAL CO., LTD.**

**Address** 110, Wolpyeongjung-ro 13beon-gil, Seo-gu, Daejeon, Korea  
**Phone** +82-042-621-5260  
**Fax** +82-042-621-5261  
**Website**  
**e-mail** idc52600@naver.com  
**Product** Dry Oven, Fume Hood, Autoclave, incubator,

**IL SHIN SCIENCE CO., LTD.**

**Address** 56, Gwajeong-ro 132beon-gil, Yeonje-gu, Busan, Korea  
**Phone** +82-051-759-0731  
**Fax** +82-051-759-0734  
**Website** www.일신과학.co.kr  
**e-mail** ksh7590731@hanmail.net  
**Product** Double Coil, wind gauge



## ILSHIN BIOBASE CO., LTD.

**Address** 84, Samyuksa-ro 548beon-gil, Dongducheon-si, Gyeonggi-do, Korea  
**Phone** +82-031-867-1384  
**Fax** +82-070-7950-3911  
**Website** www.1sbb.com  
**e-mail** jkhong@1sbb.com  
**Product** Deep Freeze. Freeze Dryer. Ice Maker. Programmable Vacuum Freeze Dryer

## ILSIN BIOBASE Seoul-Kyunggi Branch Office

**Address** 101, Sangbong officetel, 77, Jungnangcheon-ro, Jungnang-gu, Seoul, Korea  
**Phone** +82-02-491-1328  
**Fax** +82-02-491-1329  
**Website** www.1sbb.com  
**e-mail** isbb@hanmail.net  
**Product** Deep Freeze. Freeze Dryer

## IS BIO CO.

**Address** 79, Noeunseo-ro, Yuseong-gu, Daejeon, Korea  
**Phone** +82-042-824-1145  
**Fax** +82-042-824-1147  
**Website**  
**e-mail** ilshinbiodj@naver.com  
**Product** Deep Freeze. Freeze Dryer

## ISTEK INC.

**Address** Room 1011, 272, Digital-ro(Hanshin IT-Tower), Guro-gu, Seoul, Korea  
**Phone** +82-02-2108-8400  
**Fax** +82-02-6442-8430  
**Website** www.istek.co.kr  
**e-mail** ky24940@istek.co.kr  
**Product** pH/ISE/DO/EC Meter TMS(COD, Chlorine, TN, Turbidity)

## JEIL INDUSTRIAL CO.

**Address** 36, Yulgok-ro 10-gil, Jongno-gu, Seoul, Korea  
**Phone** +82-02-766-6058  
**Fax** +82-02-764-7850  
**Website** www.jeilsience.com  
**e-mail** ycs6058@hananet.net  
**Product** Wind Vane & Anemometer

## JEIL PRECISION INDUSTRIAL INSTRUMENTS CO., LTD.

**Address** 8, Majang-ro 42-gil, Seongdong-gu, Seoul, Korea  
**Phone** +82-02-2293-2325  
**Fax** +82-02-2296-6608  
**Website** www.jeil1981.co.kr  
**e-mail** jeil81@hanmail.net  
**Product** Testing Machine

## JEIO TECH CO., LTD.

**Address** #1005, Byucksan Digital valley 6-cha, 219, Gasan digital 1-ro, Geumcheon-Gu, Seoul 153-704, Korea  
**Phone** +82-02-2627-3811  
**Fax** +82-02-325-2335  
**Website** www.jeiotech.com  
**e-mail** overseas@jeiotech.com  
**Product** Baths & Circulators. Desiccators. Fume Hoods. Incubators. Ovens. Chillers. Laboratory Refrigerators & Freezers. Shakers. Strers & Vortex Mixer. Temperature Chambers. Flask Supports

## JHONSAM CORPORATION

**Address** Chowonbilla 202-ho, 42-18, Nambusunhwan-ro 287-gil, Seocho-gu, Seoul, Korea  
**Phone** +82-02-586-3069  
**Fax** +82-02-586-3074  
**Website** www.johnsam.co.kr  
**e-mail** johnsam1@kornet.net  
**Product** Incubator, thermostat,

## JIN HEUNG SCIENTIFIC CO.

**Address** 26, Yulgok-ro 10-gil, Jongno-gu, Seoul, Korea  
**Phone** +82-02-742-3555  
**Fax** +82-02-742-3348  
**Website** www.jico.co.kr  
**e-mail** 7879jin@naver.com  
**Product** ACV(alternating current voltmeter),

## JINGU SCIENTIFIC CO., LTD.

**Address** 50, Beolmal-ro 70beon-gil, Guri-si, Gyeonggi-do, Korea  
**Phone** +82-031-566-0758  
**Fax** +82-031-566-0768  
**Website** www.jingusci.com  
**e-mail** jung4167@naver.com  
**Product** Soil analyser

## JISICO CO., LTD.

**Address** 62, Ahasan-ro, Seongdong-gu, Seoul, Korea  
**Phone** +82-02-467-7071  
**Fax** +82-02-464-1962  
**Website** www.jisico.co.kr  
**e-mail** s67@jisico.co.kr  
**Product** Drier, Shaker, Glove box, Water bath, Autoclave, incubator

## JOENBIO CO.

**Address** 74, Siheung-daero 90-gil, Geumcheon-gu, Seoul, Korea  
**Phone** +82-02-893-7831  
**Fax** +82-02-893-7832  
**Website**  
**e-mail** mskim1244@naver.com  
**Product** Anatomy Sample

## JS RESEARCH INC.

**Address** 69, Geomsanggogae-gil, Gongju-si, Chungcheongnam-do, Korea  
**Phone** +82-041-856-3677  
**Fax** +82-041-856-3679  
**Website** www.jsresearch.co.kr  
**e-mail** info@jsresearch.co.kr  
**Product** CLEAN BENCH, OVEN, CLIMATIC CHAMBER, GROWTH CHAMBER

## JUNG DO TEST INSTRUMENT CO.

**Address** 3-18, Gyeongin-ro 80-gil, Yeongdeungpo-gu, Seoul, Korea  
**Phone** +82-02-2675-4431  
**Fax** +82-02-2671-3856  
**Website** www.jungdo21.com  
**e-mail** jungdo21@daum.net  
**Product** Mini/Pilot Plating Plants. Hull Cell Testing Equipments .Analyzers of Plating olution. Testing Instruments for Plating & Painting. Salt Spray & Cass Testing Instruments

## KCT CO., LTD.

**Address** Startower 502ho, Sagimakgol-ro 37 62beon-gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, Korea  
**Phone** +82-070-4163-6100  
**Fax** +82-031-702-3113  
**Website** www.kctn.co.kr  
**e-mail** kweonsk@empal.com  
**Product** power supply, Hydraulics Pneumatics Trainer.



**■ KMC ROBOTICS CO., LTD.**

**Address** 424ho, 65, Techno 3-ro,  
Yuseong-gu, Daejeon, Korea  
**Phone** +82-042-933-8305  
**Fax** +82-042-933-8309  
**Website** www.kmrobot.com  
**e-mail** dyoung@kmrobot.com  
**Product** Micro-Processor Evaluation Kit,  
Micro-robot, Humanoid Robot,  
electronic Evaluation  
Kit, etc

**■ KOGENEBIOTECH CO., LTD.**

**Address** 1203 Woolim Lions Valley  
C-dong, Gasandigital 1ro 168,  
Geumcheon-gu, Seoul, Korea  
153-786  
**Phone** +82-02-2026-2150  
**Fax** +82-02-2026-2155  
**Website** www.kogene.co.kr  
**e-mail** info@kogene.co.kr  
**Product** HPV, Influenza virus, Respiratory  
virus, CT, NG, MTB, NTM

**■ KOREA AUTOMATION TECHNOLOGY CO., LTD.**

**Address** #809, Daerung Technotown3, 115,  
Gasandigital 2-ro, Geumcheon-gu,  
Seoul, Korea  
**Phone** +82-02-2107-3300  
**Fax** +82-02-2107-3304  
**Website** www.katco.co.kr  
**e-mail** katco@katco.co.kr  
**Product** Hydraulic-Pneumatic Training set,  
Sensors training set, Automation  
training

**■ KOREA DIGITAL CO., LTD.**

**Address** #804, AceTwin Tower2, 273  
Digital-ro, Guro-gu, Seoul, Korea  
**Phone** +82-02-2109-8877  
**Fax** +82-02-2109-8878  
**Website** www.koreadigital.com  
**e-mail** info@koreadigital.com  
**Product** sensor control apparatus. MBL

**■ KOREA MATERIAL SCIENTIFIC CO., LTD.**

**Address** Rm 107 Hyundai Tresbien #55, 59,  
Donhwamun-ro 11ga-gil,  
Jongno-gu, Seoul, Korea  
**Phone** +82-02-764-1673  
**Fax** +82-02-764-1675  
**Website** www.kmscience.co.kr  
**e-mail** syjang@kmscience.co.kr  
**Product** NICKEL PLATE, ALUMINA  
POWDER, MAGNESIA POWDER

**■ KOREA SCIENTIFIC TECHNIQUE INDUSTRY CO., LTD.**

**Address** 67, Saneop-ro 92beon-gil,  
Gwonseon-gu, Suwon-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-291-4055  
**Fax** +82-031-291-4066  
**Website** www.gaooze.com  
**e-mail** gaooze@hanmail.net  
**Product** Constant Temp & Humid Chamber

**■ KTENG CORPORATION**

**Address** 170, Munhyeongsan-gil, Opo-eup,  
Gwangju-si, Gyeonggi-do, South  
Korea  
**Phone** +82-031-749-5373  
**Fax** +82-031-749-5376  
**Website** www.kteng.com  
**e-mail** kteng@kteng.com  
**Product** Heating & Air Conditioning  
Education Equipment

**■ KU RYONG SCIENTIFIC CO., LTD.**

**Address** 113, Seosulla-gil, Jongno-gu, Seoul,  
Korea  
**Phone** +82-02-742-0659  
**Fax** +82-02-744-9489  
**Website** www.kuryong.co.kr  
**e-mail** ksic0659@naver.com  
**Product** Earth Model Kit

**■ KWANG DONG INDUSTRIAL CO., LTD.**

**Address** Seounsingil 116-13,  
Seoun-myeon, Anseong-si,  
Gyeonggi-do Korea  
**Phone** +82-031-677-2141  
**Fax** +82-031-677-5945  
**Website** www.forlab.co.kr  
**e-mail** kdico@forlab.com  
**Product** Fume Hood, Clean Bench. Lab  
Table

**■ KYUNG SUNG INDUSTRIAL ARTS CO.**

**Address** 615, Seoksil-ro, Namyangju-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-592-9664  
**Fax** +82-031-591-6586  
**Website**  
**e-mail** yasayo@naver.com  
**Product** Test Tube Stand, black box, Insect  
sample

**■ KYUNGJIN SCIENCE CO., LTD.**

**Address** Donhwamullo11Gagil  
59(Ikseon-dong  
Hyeondae-tteurebiang 118-ho),  
Jongno-gu, Seoul  
Korea  
**Phone** +82-02-3675-0088  
**Fax** +82-02-3675-0087  
**Website** www.kiscoshop.co.kr  
**e-mail** kiscoshop@hanmail.net  
**Product** Balance, Thermometer Case,  
Scoliometer Edu System

**■ LAB DESIGN CO.,**

**Address** Imullo 12(Hwigyeong-dong Usan  
Bldg. 203-ho), Dongdaemun-ku,  
130-090 Seoul, Korea  
**Phone** +82-02-957-8442  
**Fax** +82-02-957-8443  
**Website** www.labdesign21.co.kr  
**e-mail** labdesign@hanmail.net  
**Product** Lab Furniture, Storage Cabinet,  
Safety Reagent Cabinet, Sink  
Table, Fume Hood,  
Ductless Fume Hood

**■ LABZONE CO., LTD.**

**Address** 6th FL, MEDJIN Bldg, 129  
Munhwawon-ro, Yuseong-gu,  
Daejeon, Korea  
**Phone** +82-042-334-4664  
**Fax** +82-042-334-4670  
**Website** www.safelab.co.kr  
**e-mail** labzone4664@hanmail.net  
**Product** Toxic Gas Filtration System

**■ MASTER EDU CO.**

**Address** 202ho Daeseong Building 5,  
Supyo-ro 28-gil, Jongno-gu, Seoul,  
Korea  
**Phone** +82-031-593-6658  
**Fax** +82-031-593-6659  
**Website** www.masteredu.co.kr  
**e-mail** youngdong203@hanmail.net  
**Product** Tripod, IQ Traffic Signal,



## MDM CO., LTD.

**Address** 2F, 31, Saneop-ro 156beon-gil,  
Gwonseon-gu, Suwon-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-252-9755  
**Fax** +82-031-252-9756  
**Website** www.themdm.co.kr  
**e-mail** lab13@hanmail.net  
**Product** Hoom Food. Incubator. Dry Oven,  
Clean Dry Shel, Water Purification  
System

## MINISOLAR

**Address** 20-38, Mugunghwa-ro,  
Ilsandong-gu, Goyang-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-906-7500  
**Fax** +82-031-906-7502  
**Website** www.minisolar.co.kr  
**e-mail** mini@minisolar.co.kr  
**Product** solar cell making kit, mini windmill  
generator

## MIRAE EDUPIA CO., LTD.

**Address** 15, Yulgok-ro 8-gil, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-765-1101  
**Fax** +82-02-765-1103  
**Website** www.edu4u.biz  
**e-mail** edupia1101@naver.com  
**Product** adiabatic expansion device, metal  
leaf electroscope

## MIRAE SCIENCE CO.

**Address** 58, Donhwamun-ro 11na-gil,  
Jongno-gu, Seoul, Korea  
**Phone** +82-02-744-1280  
**Fax** +82-02-764-8885  
**Website** www.miraes.co.kr  
**e-mail** mrs1280@naver.com  
**Product** Spring appartus Surface test  
appartus Breath tester

## MIRAE ST CO., LTD.

**Address** #717, Anyang-Megavalley, 268,  
Hagui-ro, Dongan-gu, Anyang-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-420-5753  
**Fax** +82-031-420-5978  
**Website** www.miraest.co.kr  
**e-mail** mrst@mrst.kr  
**Product** Reverse Osmosis Water System,  
Ultrature Water System, Ultrasonic  
Pipet Cleaner

## MOCOMTECH CO., LTD.

**Address** Mocom BLDG. Seombat-ro 40,  
Nowon-gu, Seoul, South Korea  
**Phone** +82-02-739-9968  
**Fax** +82-02-739-9971  
**Website** www.mocomscreens.com  
**e-mail** mocom50@naver.com  
**Product** high-gain projection screen

## MODNNET CO., LTD.

**Address** 111, Secheon-ro, Dasa-eup,  
Dalseong-gun, Daegu, Korea  
**Phone** +82-053-218-8777  
**Fax** +82-053-218-8778  
**Website** www.modnnet.co.kr  
**e-mail** best@modnnet.co.kr  
**Product** Interactive White Board, Wireless  
Microphone

## MOON SUNG CO.

**Address** 15-3, Yulgok-ro 10-gil, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-764-2246  
**Fax** +82-02-743-3138  
**Website**  
**e-mail** cosby114@hanmail.net  
**Product** Molecular Model Kit

## MYEONG JI SCIENTIFIC INDUSTRY CO.

**Address** 127, Seosulla-gil, Jongno-gu, Seoul,  
Korea  
**Phone** +82-02-741-8513  
**Fax** +82-02-741-8516  
**Website** www.labeledu.co.kr  
**e-mail** mjs8513@naver.com  
**Product** mechanical energy apparatus

## NAMBUK TRADING COMPANY

**Address** Sangnokgu Haeallo 705  
(Gyeonggitekeunopakeu RITSenteo  
710), Ansan-si, Gyeonggi-do  
Korea  
**Phone** +82-031-506-0047  
**Fax** +82-031-506-0008  
**Website**  
**e-mail** binho05@hanmail.net  
**Product** Application Trainer, Hydraulics  
Trainer, Industrial Automation  
Trainer, Casting Machine

## NANOHELIX CO., LTD.

**Address** 36, Expo-ro 446beon-gil,  
Yuseong-gu, Daejeon, Korea  
**Phone** +82-042-867-9055  
**Fax** +82-042-867-9057  
**Website** www.nanohelix.net  
**e-mail** info@nanohelix.net  
**Product** Enzyme for gene amplification

## NEOPOWERTECT CO., LTD.

**Address** LSro161 (401), Gunpo-si,  
Kyungki-do, 435-040, Korea  
**Phone** +82-031-382-9474  
**Fax** +82-031-382-9422  
**Website** www.neopwr.co.kr  
**e-mail** namo@neopwr.co.kr  
**Product** digital osiloscope, AC-DC POWER  
SUPPLY

## NOVAPRO CO., LTD.

**Address** Donggyoro 107 (Seogyo-dong, 5F),  
Mapo-gu, Seoul Korea  
**Phone** +82-02-326-5545  
**Fax** +82-02-326-5549  
**Website** www.novapro.co.kr  
**e-mail** novapro@daum.net  
**Product** Bio safety cabinit, Fume hood,  
Auto clave, Dry oven etc.

## NOVATEC

**Address** Daehwaro 139Beongil 14-26  
, Daedeok-gu, Daejeon, Korea  
**Phone** +82-042-628-4363  
**Fax** +82-042-623-5341  
**Website** www.nova-tec.co.kr  
**e-mail** ji.kim@nova-tech.co.kr  
**Product** Reactor system, Fume hood,  
Wet-station



**OMAX CO., LTD.**

**Address** 25, SamJak-ro, 79beon-gil,  
Ojeong-gu, Bucheon-Si,  
Gyeonggi-do, Korea  
**Phone** +82-032-682-8811  
**Fax** +82-032-675-6959  
**Website** www.omax.co.kr  
**e-mail** clash20@omax.co.kr  
**Product** Video Presenter, screen,  
microscope, LANGUAGE STUDY  
UNIT, Cyber Computer Board

**OPERON CO., LTD.**

**Address** 54, Hwanggeum-ro 89beon-gil,  
Yangchon-eup, Gimpo-City,  
Gyeonggi-do, Korea  
**Phone** +82-031-989-  
**Fax** +82-031-989-9017  
**Website** www.operon.co.kr  
**e-mail** operon@operon.co.kr  
**Product** Stem cell Freezer-156. Cryo  
Freezer-156, Freeze Dryer.  
Chemical Free Freeze Dryer-120,  
Ultra Low Temperature  
Petrochemistry Chiller-120

**ORIENT AV CO., LTD.**

**Address** 6-3, Pyeongchangmunhwa-ro,  
Jongno-gu, Seoul, Korea  
**Phone** +82-02-396-0880  
**Fax** +82-02-396-0850  
**Website** www.orientav.co.kr  
**e-mail** sky@orientav.co.kr  
**Product** Digital Lab System, NuriNET  
System, Language Lab System

**ORIENT SCIENCE**

**Address** 30, Yulgok-ro 10-gil, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-765-3937  
**Fax** +82-02-744-7963  
**Website**  
**e-mail** yoo3937@hanmail.net  
**Product** magnetic compass,

**ORIENTAL INTERGRATED  
ELECTRONICS CO., LTD.**

**Address** 181, Oksan-ro, Wonmi-gu,  
Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-032-675-2247  
**Fax** +82-032-671-2244  
**Website** www.viewway.co.kr  
**e-mail** viewway@hotmail.com  
**Product** CCTV, Power Supply. Video  
Presenter

**OSUN HI TECH CO., LTD.**

**Address** 401ho, Yuntekeubil, 142, Ilsan-ro,  
Ilsandong-gu, Goyang-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-902-9006  
**Fax** +82-031-902-9109  
**Website** www.osunhitech.co.kr  
**e-mail** osunhitech@hanmail.net  
**Product** MicroScope, Video Present System

**PARAN OPTICAL CO., LTD.**

**Address** Bucheon technopark,  
302dong-202ho 345, Seokcheon-ro,  
Ojeong-gu, Bucheon-si,  
Gyeonggi-do  
**Phone** +82-032-321-1592  
**Fax** +82-032-321-1593  
**Website** www.paranopt.co.kr  
**e-mail** ldygo@paran.com  
**Product** MicroScope,

**POSTECH CO., LTD.**

**Address** 73, Bugwon-ro 2425beon-gil,  
Wonju-si, Gangwon-do, Korea  
**Phone** +82-033-732-8200  
**Fax** +82-033-731-0989  
**Website** www.pos-tech.com  
**e-mail** postech@pos-tech.com  
**Product** Automobile Education Electric  
Welding

**PRINCE CO.**

**Address** Ga-gong 665ho 159,  
Cheonggyecheon-ro, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-2267-6542  
**Fax** +82-02-2278-9551  
**Website** www.princelab.co.kr  
**e-mail** labprince@hanmail.net  
**Product** Language Lab System

**RNU CO., LTD.**

**Address** Sampoong St.27 508-B Kyungsan  
city Kyungsangpook province  
South Korea.  
**Phone** +82-053-428-2091  
**Fax** +82-053-428-2095  
**Website** www.irnu.co.kr  
**e-mail** bjspjy@irnu.co.kr  
**Product** Educational equipment

**ROBOROBO CO., LTD.**

**Address** 5F Roborobo Bldg, 6, Dobong-ro  
54-gil Gangbuk-gu, Seoul, Korea  
**Phone** +82-02-909-5050  
**Fax** +82-02-917-3511  
**Website** www.roboboro.co.kr  
**e-mail** btpark@roboboro.co.kr  
**Product** Educational Robot Kit

**ROBOTIS CO., LTD.**

**Address** #1506 ACE HIGH END TOWER  
NO.3, 145, Gasan digital 1-ro,  
Geumcheon-gu, Seoul, Korea  
**Phone** +82-070-8671-2600  
**Fax** +82-070-8230-1336  
**Website** www.robotis.com  
**e-mail** secretary@robotis.com  
**Product** Educational Robot Kit

**SAMDUK SCIENCE CO., LTD.**

**Address** 76, Eungdalmal-ro 52beon-gil,  
Guri-si, Gyeonggi-do, Korea  
**Phone** +82-031-563-3590  
**Fax** +82-031-563-4665  
**Website** www.samduck-lab.com  
**e-mail** samduk@samduk-lab.com  
**Product** Beaker, Glasss ware

**SAMHEUNG ENERGY CO., LTD.**

**Address** 92, Jangukjin-ro, Yeondong-myeon,  
Sejong, Korea  
**Phone** +82-044-866-5172  
**Fax** +82-044-866-5174  
**Website** www.samheung21.net  
**e-mail** jaeholee@samheung21.net  
**Product** Incubators. Ovens

**SAMHO SYSTEC CO., LTD.**

**Address** 3-7, Hanamsandancheonbyeonjwa-ro,  
Gwangsan-gu, Gwangju, Korea  
**Phone** +82-062-961-3277  
**Fax** +82-062-961-3278  
**Website** www.samhosystec.co.kr  
**e-mail** samho3277@naver.com  
**Product** Automotive power train, electric  
system, fuel system, automotive  
parts,



## SAMIN SCIENCE CO., LTD.

**Address** 27, Emtibeui 4-ro 48beon-gil,  
Danwon-gu, Ansan-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-433-8941  
**Fax** +82-031-433-8943  
**Website** www.saminsci.com  
**e-mail** saminsci@korea.net  
**Product** low-noise & vibration-free oilless  
compressors, laboratory work  
benches

## SAMJIN ENGINEERING

**Address** 201, Daehwa-ro, Daedeok-gu,  
Daejeon, Korea  
**Phone** +82-042-622-8055  
**Fax** +82-042-670-4005  
**Website** www.samjineng.com  
**e-mail** samjin@kebi.com  
**Product** Centrifugal Caster, Electroplating  
Processor, hydraulic press

## SAMJIN UNICHEM CO., LTD.

**Address** 338, Yangji-ro, Onam-eup,  
Namyangju-si, Gyeonggi-do, Korea  
**Phone** +82-031-575-7736  
**Fax** +82-031-575-1900  
**Website** www.samjinuc.com  
**e-mail** samjinuc@daum.net  
**Product** heat exchanger

## SAMKI LAB CO., LTD.

**Address** 81, Seokgok 1-gil,  
Seongnam-myeon, Dongnam-gu,  
Cheonan-si, Chungcheongnam-do,  
Korea  
**Phone** +82-041-552-6770  
**Fax** +82-041-552-6771  
**Website** www.samkilab.co.kr  
**e-mail** samkilab@korea.com  
**Product** LABORATORY, FURNITURE,  
Fume Hood

## SCIENCETOVE IND., CO.

**Address** Todangno130 (Heoseupuraja-B1  
2ho), Deogyang-gu,  
Goyang-si, Kyonggi-Do 411-722  
Korea(South)  
**Phone** +82-031-938-9494  
**Fax** +82-031-938-9694  
**Website** www.sciencetoove.co.kr  
**e-mail** desk@sciencetoove.co.kr  
**Product** power supply.

## SCIENCESTAR CO., LTD.

**Address** Seosullagil 133 Saieonseu Bldg,  
Jongno-gu, Seoul, Korea  
**Phone** +82-02-766-6136  
**Fax** +82-02-766-6139  
**Website** www.sciencestar.biz  
**e-mail** drsc59@hanmail.net  
**Product** Water Bottle For Optical Studies,  
Mini Surface Wave Projecting  
Device, Sound Wave  
Monitoring Device

## SCINCO CO., LTD.

**Address** 627, Bongeunsa-ro, Gangnam-gu,  
Seoul, Korea  
**Phone** +82-02-2143-8200  
**Fax** +82-02-2143-8355  
**Website** www.scinco.com  
**e-mail** scinco@scinco.com  
**Product** UV-Vis Spectrophotometer, Color  
Spectrophotometer, Fluorescence  
Spectrometer

## SEGERO GLOBE

**Address** 752, Dongil-ro, Jungnang-gu,  
Seoul, Korea  
**Phone** +82-02-968-5915  
**Fax** +82-02-968-5920  
**Website** www.segeroglobe.com  
**e-mail** segero00@daum.net  
**Product** globe, celestial globe etc.

## SEGYE INDUSTRY CO., LTD.

**Address** 709,710ho RIT Centre , 705,  
Haean-ro, Sangrok-gu, Ansan-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-507-8800  
**Fax** +82-031-507-0011  
**Website** www.sictop.com  
**e-mail** sictop@daum.net  
**Product** Intelligent Robot, Educational  
Application Trainer, Work Table,  
Air Compressor, Hydraulic Shear  
Machine, Hydraulic Press Brake,  
Hydraulic Press

## SEGYE SCIENTIFIC CO., LTD.

**Address** 813 Tech Center, 124(SK Techno  
Park), Sagimakgol-ro, Jungwon-gu,  
Seongnam-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-776-0015  
**Fax** +82-031-776-0019  
**Website** www.sgs.co.kr  
**e-mail** segye@sgs.co.kr  
**Product** Physics Instrument, PC Interface  
unit, Electronic Instrument,  
Educational Trainers and etc.

## SEHYUN SCIENTIFIC CO., LTD.

**Address** 376-7, Soraebi-ro, Sudong-myeon,  
Namyangju-si, Gyeonggi-do, Korea  
**Phone** +82-031-577-5418  
**Fax** +82-031-577-5418  
**Website** www.shscience.kr  
**e-mail** sehyun9@nate.com  
**Product** Electric Stand, Sola Energy Car

## SEJONG SCIENTIFIC CO.

**Address** 34, Ojeong-ro 133beon-gil,  
Ojeong-gu, Bucheon-si,  
Gyeonggi-do, Korea  
**Phone** +82-032-676-6631  
**Fax** +82-032-673-6631  
**Website** www.sejongsci.co.kr  
**e-mail** sejong6631@hanmail.net  
**Product** Incubator, Dryoven,  
chamber, Constant Temp.  
WaterBath, Clean Beach, Shaker

## SEO JEON GLOBE CO., LTD.

**Address** 501ho Adong 42, Beolmal-ro  
102beon-gil, Dongan-gu,  
Anyang-si, Gyeonggi-do, Korea  
**Phone** +82-031-423-6122  
**Fax** +82-031-424-6030  
**Website** www.seojeon-globe.com  
**e-mail** jhkim@seojeon-globe.com  
**Product** terrestrial globe, celestial azimuth

## SEOUL SCIENTIFIC INSTRUMENTS

**Address** 24, Yongmasan-ro 115na-gil,  
Jungnang-gu, Seoul, Korea  
**Phone** +82-02-741-3330  
**Fax** +82-02-741-3332  
**Website** www.physicspro.co.kr  
**e-mail** ssi@physicspro.co.kr  
**Product** physics experimental instruments



**SEOULIN BIOSCIENCE CO., LTD.**

**Address** 4F KoreaBiopark A, 700,  
Daewangpangyo-ro, Bundang-gu,  
Seongnam-si, Gyeonggi-do,  
Korea  
**Phone** +82-031-628-3000  
**Fax** +82-031-628-3007  
**Website** www.seoulin.co.kr  
**e-mail** jybaek@seoulin.co.kr  
**Product** Vortex Mixer, 3D Mini Shaker,  
Orbital Shaker, Intelli Mixer

**SEWON SCIENCE INDUSTRY**

**Address** 139, Seosulla-gil, Jongno-gu, Seoul,  
Korea  
**Phone** +82-02-762-0356  
**Fax** +82-02-762-0357  
**Website** www.swsciencemall.com  
**e-mail** swkdj@hanmail.net  
**Product** Solar Car Model

**SHIN GANG PRECISION MFG. CO., LTD.**

**Address** 67, Seongsui-ro, Seongdong-gu,  
Seoul, Korea  
**Phone** +82-02-499-7835  
**Fax** +82-02-467-4585  
**Website** www.singang.co.kr  
**e-mail** wooya5@nate.com  
**Product** Universal Testing Machine, tensile  
strength Testing Machine,  
compression Testing  
Machine

**SHIN SAENG SCIENTIFIC CO., LTD.**

**Address** 21, Myeongbongsan-ro  
114beon-gil, Jori-eup, Paju-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-943-1961  
**Fax** +82-031-943-1964  
**Website** www.shinsaeng.com  
**e-mail** contact@shinsaeng.com  
**Product** The depository of reagent, Fume  
Hood, Clean  
Bench, Thermo-hygrostat, Dry Oven

**SHINHAN BIOLOGICAL-SPECIMEN**

**Address** 55, Baekbeom-ro 17-gil, Mapo-gu,  
Seoul, Korea  
**Phone** +82-02-393-2613  
**Fax** +82-02-393-2615  
**Website** www.shslab.co.kr  
**e-mail** shslab@naver.com  
**Product** Viscera. Specimen of dissection of  
entire body of frog

**SHINIL CORPORATION**

**Address** 49, Samil-daero 30-gil, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-3676-4335  
**Fax** +82-02-3673-5123  
**Website**  
**e-mail** sl4335@hanmail.net  
**Product** Anatomy Model

**SHINSEGI SCIENCE CO.**

**Address** 49-4, Samil-daero 32-gil,  
Jongno-gu, Seoul, Korea  
**Phone** +82-02-765-5700  
**Fax** +82-02-766-3474  
**Website** www.ssgedu.co.kr  
**e-mail** ssglyc@hanmail.net  
**Product** Tripod Stand, Iron Stand,  
Elementary Twopan Balance,  
Simple Switch, Electric  
Wiretongs

**SHIN-SUNG PHYSICAL AND  
CHEMICAL CO.**

**Address** 26, Yulgok-ro 10-gil, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-743-8387  
**Fax** +82-02-743-8385  
**Website** www.shin-sung.co.kr  
**e-mail** ksm3260@naver.com  
**Product** Glass ware

**SIDAE CO.**

**Address** 24-10, Sure-ro 964beon-gil,  
Hwado-eup, Namyangju-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-593-8675  
**Fax** +82-031-595-4463  
**Website**  
**e-mail** sideaco@hanmail.net  
**Product** Water Bottle For Optical Studies,  
wind vane

**SO JUNG MEA- INS CO.**

**Address** Anyangmegavelly 106ho, 268,  
Hagui-ro, Dongan-gu, Anyang-si,  
Gyeonggi-do, Korea  
**Phone** +82-070-8230-5727  
**Fax** +82-031-420-5719  
**Website** www.sojung.co.kr  
**e-mail** sojung@sojung.co.kr  
**Product** Dry Oven, temp and humidity  
chamber thermal shock chamber

**SUDO TEACHING AIDS CO.**

**Address** 65-2, Bungmunno 2-ga,  
Sangdan-gu, Cheongju-si,  
Chungcheongbuk-do, Korea  
**Phone** +82-043-252-2983  
**Fax** +82-043-221-2983  
**Website**  
**e-mail** sudo2983@naver.com  
**Product** Lab Table,

**SUNG KWANG CO., LTD.**

**Address** 64-1, Paldalbuk-ro 8-gil, Buk-gu,  
Daegu, Korea  
**Phone** +82-053-358-2297  
**Fax** +82-053-354-0755  
**Website** www.skeng.tv  
**e-mail** chaa11@daum.net  
**Product** FMS System, VLC System, PLC

**TAMTUS CO., LTD.**

**Address** 301-1406 Bucheon Techno Park  
345, Seokcheon-ro, Ojeong-gu,  
Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-032-328-0244  
**Fax** +82-032-328-0242  
**Website** www.tamtus.com  
**e-mail** kschoi@tamtus.com  
**Product** video presenter, language lab  
system, multipurpose microscope

**THE SCIENTIFIC & EDUCATION  
INSTRUMENTS STORE**

**Address** 57-1, Yulgok-ro 10-gil, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-741-3420  
**Fax** +82-02-741-4288  
**Website** www.xn--9d0b408a1b357a4xbzz0b.kr  
**e-mail** youngja3420@naver.com  
**Product** Optical instrument, Cloud chamber,  
ECD Saver

**THREE SHINE INC.**

**Address** 37-3, Techno 1-ro, Yuseong-gu,  
Daejeon, Korea  
**Phone** +82-042-933-3361  
**Fax** +82-042-933-3398  
**Website** www.threeshine.com  
**e-mail** sk@threeshine.com  
**Product** Micro Ventilation Cage System,  
Vacuum Dessicator, Isolator



## TOPEX Corporation

**Address** 64, Sandan-ro 132beon-gil,  
Uijeongbu-si, Gyeonggi-do, Korea  
**Phone** +82-031-852-1991  
**Fax** +82-031-852-2992  
**Website** www.topec.com  
**e-mail** admin@topec.com  
**Product** Video Presenter, Flex Vision,  
O.H.P., Microscopic Projector,  
Microscope

## TOPIANET CO., LTD.

**Address** 27, Ahasan-ro 11-gil,  
Seongdong-gu, Seoul, Korea  
**Phone** +82-02-466-6080  
**Fax** +82-02-466-6464  
**Website** www.topianet.co.kr  
**e-mail** eunlee1218@hanmail.net  
**Product** Video Presenter

## TREEM CO., LTD.

**Address** 320, Gangnam-daero, Gangnam-gu,  
Seoul, Korea  
**Phone** +82-02-2024-1900  
**Fax** +82-02-565-9079  
**Website** www.treem.co.kr  
**e-mail** jinhark0325@treem.co.kr  
**Product** Screen Video Presenter, Interactive  
White Board

## UNION ENTERPRISE CO., LTD.

**Address** 274, Bucheon-ro, Wonmi-gu,  
Bucheon-si, Gyeonggi-do, Korea  
**Phone** +82-032-678-7021  
**Fax** +82-032-678-7026  
**Website** www.unionkr.co.kr  
**e-mail** unionkr@unionkr.co.kr  
**Product** Astronomical Telescope

## UNIVERSAL SCIENCE CO., LTD.

**Address** 39-57, Jorimi-ro, Gimpo-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-982-1804  
**Fax** +82-031-984-1804  
**Website** www.woojusc.co.kr  
**e-mail** hyunwoo-sin@hanmail.net  
**Product** Washing Chamber, Dry Oven,  
Culture Chamber, Stem Aging Test  
Bath, Fume Hood, Flask  
Shaker

## VISION SCIENTIFIC CO., LTD.

**Address** 33, Samjak-ro 121beon-gil,  
Ojeong-gu Bucheon-City, Kyunggi  
province, Korea  
**Phone** +82-032-672-3091  
**Fax** +82-032-672-3098  
**Website** www.visionbionex.com  
**e-mail** info@visionbionex.com  
**Product** Centrifuge, Incubator, Growth  
chamber, Shaker, Autoclave, Clean  
bench, Water bath

## VISION SCIENTIFIC CO., LTD.

**Address** 260, Techno 2-ro, Yuseong-gu,  
Daejeon, Korea  
**Phone** +82-042-714-7700  
**Fax** +82-042-714-7720  
**Website** www.visionsci.co.kr  
**e-mail** vision@visionsci.co.kr  
**Product** centrifugal separation, refrigerator  
for blood, chemical instrument etc.

## WELLPIX CO., LTD.

**Address** Yuntekeubil 828-ho, 142, Ilsan-ro,  
Ilsandong-gu, Goyang-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-962-4437  
**Fax** +82-031-962-4439  
**Website** www.wellpix.com  
**e-mail** tax@wellpix.com  
**Product** Video Presenter, Auto planisphere

## WON IL SCIENTIFIC CO.

**Address** 44, Yulgok-ro 10-gil, Jongno-gu,  
Seoul, Korea  
**Phone** +82-02-743-6602  
**Fax** +82-02-743-6603  
**Website**  
**e-mail** wounil@naver.com  
**Product** Experience Cart, Aero vane

## WOOSIN CO., LTD.

**Address** 20, Gyejok-ro 586beon-gil,  
Daedeok-gu, Daejeon, Korea  
**Phone** +82-042-633-7101  
**Fax** +82-042-634-7101  
**Website** www.woosinfirm.co.kr  
**e-mail** woosinfirm@hanmail.net  
**Product** Wet Duplex Grinder, Dry Duplex  
Grinder

## WOOSUN CONTROL CO., LTD.

**Address** 279, 1284-Gil Daedeokdaero,  
Daedeok-Gu, Daejeon 306-230  
Rep. of Korea  
**Phone** +82-042-935-2143  
**Fax** +82-042-935-2147  
**Website** www.woosun.com  
**e-mail** office@woosun.com  
**Product** Educational Training Equipment  
1. Electricity & Electronics  
Educational Equipment  
2. Power Electronics Educational  
Equipment

## WOWSYSTEM CO., LTD.

**Address** #411, MEGA Center, SKn  
Technopark, 1124, Sagimakgol-ro,  
Jungwon-gu, Seongnam-si,  
Gyeonggi-do, Korea  
**Phone** +82-070-8193-7410  
**Fax** +82-0303-0799-  
**Website** www.wowsystem.co.kr  
**e-mail** ihko@wowsystem.co.kr  
**Product** smart grid lab equipment, LED lab  
equipment

## YEONHEUNG ENTERPRISE CO.

**Address** 332-15, Daewon-ro, Jori-eup,  
Paju-si, Gyeonggi-do, Korea  
**Phone** +82-031-944-9980  
**Fax** +82-031-944-9982  
**Website** www.yhlab.co.kr  
**e-mail** roh1004@hanafos.com  
**Product** Lab Table. Job Table

## YES01, YOUNGIL EDUCATION SYSTEM CO., LTD.

**Address** #604, Samhwan Digital Venture  
Tower 52, Ahasan-ro 15-gil,  
Seongdong-gu, Seoul,  
Korea  
**Phone** +82-02-2024-0077  
**Fax** +82-02-2024-0070  
**Website** www.yes01.co.kr  
**e-mail** sales@yes01.co.kr  
**Product** Educational Elec. Electronic  
Measuring devices, Automobile  
Education System



**YOUNGLIN INSTRUMENT CO., LTD.**

**Address** 60, Anyangcheondong-ro,  
Dongan-gu, Anyang-si,  
Gyeonggi-do, Korea  
**Phone** +82-031-428-8700  
**Fax** +82-031-428-8787  
**Website** www.younglin.com  
**e-mail** younglin@younglin.com  
**Product** Acme 6000 GC, Water Purification,  
Gas Chromatography, Liquid  
Chromatography

**YUIL TRADING CORPORATION**

**Address** 19, Bongcheon-ro 14-gil,  
Gwanak-gu, Seoul, Korea  
**Phone** +82-02-882-0117  
**Fax** +82-02-882-1131  
**Website** www.yuilcorp.co.kr  
**e-mail** master@yuilcorp.co.kr  
**Product** Ultrasonic Cleaner

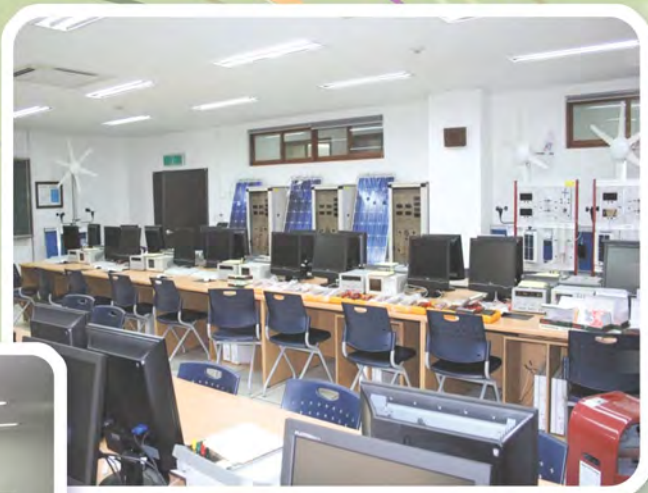




**Korea Scientific Instruments Industry Cooperative(KSIIC)**  
**7, Jahamun-ro 10-gil, Jongno-gu, Seoul, 110-034, Korea**  
**Phone : +82-2-725-4495**  
**Fax : +82-2-725-6111**  
**Website : [www.ksiic.or.kr](http://www.ksiic.or.kr)**  
**e-mail : [ksiic@ksiic.or.kr](mailto:ksiic@ksiic.or.kr)**



# STANDARD INSTRUMENTS FOR SCHOOL





## Elementary School

No	Equipments	Specification	Unit	Qun'ty	No	Equipments	Specification	Unit	Qun'ty
1	Stand	$\Phi$ 12 x 600mm, Clamp, Ring (large, medium, small), including 2 in 1	ea	4 per 1	43	Goggles	Safety	ea	1 per 1
2	Tripod	Height adjustment, 2 in 1	ea	4 per 1	44	Mass cylinder	$\Phi$ 120mm or more, 2 in 1	ea	4 per 1
3	Heat Safety Net	Seramik Net, 130 x 150mm	ea	4 per 1	45	Lab coats	Cotton	ea	1 per 1
4	Spirit-lamp	Stainless, 2 in 1	ea	4 per 1	46	Mortar	$\Phi$ 90mm Glassware, including Muller, $\Phi$ 90mm	ea	4 per 1
5	Bar Thermometers	-20°C ~ 110°C, 3 in 1	ea	4 per 1	47	Evaporating dish	$\Phi$ 70mm	ea	4 per 1
6	Platform balance	Weihgtng 200g, weight loss 100mg	ea	4 per 1	48	Sieve	Three kinds (holes 1mm, 3mm, 5mm or so) 1 set	ea	4 per 1
7	Bar magnet	2 in 1	ea	4 per 1	49	Lampshade	HOYA, lamp	ea	4 per 1
8	Magnifier	6 x or more, 60mm or more, grip chin	ea	2 per 1	50	Combustion spoon	Length of 200mm or more	ea	4 per 1
9	Test Tube ( $\Phi$ 15mm)	$\Phi$ 21 x 200mm, $\Phi$ 15 x 150mm, 10 in 1	ea	4 per 1	51	Tray	Rectangular or circular	ea	4 per 1
10	Test Tube Stand	Spring (20)	ea	4 per 1	52	Crucible tongs	200mm 200mm	ea	4 per 1
11	Beaker (100mL)	Rigid Level 2 or above, 3 in 1	ea	4 per 1	53	Hydrometer		ea	1 per school
12	Beaker (250mL)	Rigid Level 2 or above, 2 in 1	ea	4 per 1	54	Mini blender		ea	1 per school
13	Beaker (500mL)	Rigid Level 2 or above, 2 in 1	ea	4 per 1	55	Portable stove		ea	1 per test
14	Beaker (1,000 mL)	Rigid Level 2 or above, 2 in 1	ea	8 per 1	56	pH meter	Digital, pH 0 ~ 14 +0.01pH	ea	1 per school
15	Funnel	Glass $\Phi$ 60mm, 120mm 2 in 1	ea	4 per 1	57	Syringe	20 ~ 100mL, 2 in 1	ea	4 per 1
16	Funnel stand	More than six loops	ea	4 per 1	58	Electronic scales	Digital, Weighting 200g, 0.1g for reduce	ea	1 per school
17	Erlenmeyer flask	2 in 1, 4 in 1	ea	4 per 1	59	Iron plate	15 x 15cm 15 x 15cm	ea	4 per 1
18	Branched flask	250mL 250mL	ea	4 per 1	60	Finch Cork	Spring	ea	4 per 1
19	Chalet	Glass level $\Phi$ 150mm, 2 in 1	ea	4 per 1	61	Balance Arm	Arm 40 x 40mm, Plate 2,	ea	4 per 1
20	Dropper	The grid will, 5 ~ 10mL, 2 in 1	ea	4 per 1	62	weight (10g)	Vertical adjust, 10 in 1	ea	4 per 1
21	Dropper Reagent bottle	Brown, about 50mL, glass, 2 in 1	ea	4 per 1	63	weight (20g)	Vertical adjust, 10 in 1	ea	4 per 1
22	Reagent bottle	Brown, 100 ~ 250mL, 2 in 1	ea	4 per 1	64	weight (30g)	Vertical adjust, 10 in 1	ea	4 per 1
23	Glass rod	$\Phi$ 5mm, 300mm, 2 in 1	ea	2 per 1	65	weight (50g)	Vertical adjust, 10 in 1	ea	4 per 1
24	Glass	15 x 15mm 4 in 1	ea	4 per 1	66	Spring scale		ea	4 per 1
25	Pnumetic Bottle	(500mL) (1000mL) 2 in 1	ea	4 per 1	67	Pulley	Fixed, move the pulley combined (5 in 1)	ea	4 per 1
26	Tank (round)	$\Phi$ 300mm 2 in 1	ea	4 per 1	68	Spring	Danggimyong, 2 in 1	ea	4 per 1
27	Tank (rectangular)	300 x 200 x 200mm or more	ea	8 per 1	69	equilibrium of force	Plank, stand, wood coating	ea	4 per 1
28	Spatula	Stainless steel, 4 in 1	ea	4 per 1	70	Shadow observation kit	Light Source, object, screed	ea	4 per 1
29	Pincette	Stainless steel, 4 in 1	ea	4 per 1	71	Shadow Box	Combined convection box	ea	4 per 1
30	Stopwatch	Digital, 1 / 100 seconds	ea	4 per 1	72	Flashlight	Rechargeable	ea	4 per 1
31	Transparent glass	About 250mL, 2 in 1	ea	4 per 1	73	Solar Cells	Simplicity	ea	8 per 1
32	Tube brush	Test tubes, each three kinds 3 in 1	ea	4 per 1	74	Motor	Vane includes	ea	2 per 1
33	Cripples the scale	Weighting 2kg, loss 0.1g	ea	1 per test	75	Thermal conduction apparatus		ea	4 per 1
34	Round Magnets	$\Phi$ 10 ~ 30mm degree	ea	2 per 1	76	Plank	Length 70cm or more	ea	4 per 1
35	Tube clamp	Wood	ea	4 per 1	77	Linear expansion apparatus	Wire, copper wire, including additional	ea	4 per 1
36	Tape Measure (50m or more)		ea	8 per 1	78	Expansion ball and ring		ea	4 per 1
37	Tape Measure (5 ~ 10m)		ea	8 per 1	79	light bulbs	1.5 ~ 3V, 10 in 1	ea	2 per 1
38	Magnetizer	AC for	ea	1 per school	80	Pinhole camera		ea	4 per 1
39	Tank	Rectangular 600 x 400 x 400mm or more	ea	1 per class	81	Lighting	300W or more, AC only	ea	2 per school
40	Air inflator	For Balloon	ea	8 per 1	82	Diapason	including the grip chin	ea	4 per 1
41	Sandbox	250 x 250mm, 2 in 1	ea	4 per 1	83	Wire with tongs	DC, 2 in 1	ea	1 per 1
42	Alcohol Lamp	Length 200 ~ 300mm, lighter	ea	1 per test					



No	Equipments	Specification	Unit	Qun'ty
84	light bulb socket	10 in 1	ea	1 per 1
85	Battery holder	1.5V batteries, 4 in 1	ea	2 per 1
86	Various mirror	3 types (concave, convex, flat) 1,	ea	4 per 1
87	Fast Switch	DC, 120 x 60mm	ea	2 per 1
88	Metal Plate	Copper, iron	ea	4 per 1
89	Various lenses	2 in 1 (concave, convex)	ea	4 per 1
90	wheel axle		ea	1 per test
91	Buzzer	DC 1.5V DC 1.5V	ea	4 per 1
92	Laser Points	For Teacher	ea	2 per school
93	Transparent acrylic	40 x 40mm, 10 in 1	ea	4 per 1
94	Speaker		ea	1 per test
95	Planisphere	Ø 200mm or more, saucers,	ea	2 per 1
96	Illuminated orbital planetarium	sun, Earth, Moon, electric	ea	1 per Lab
97	Floor lamp	110 ~ 220V compatible	ea	4 per 1
98	Compass	Ø 38mm level, 8 in 1	ea	4 per 1
99	Astronomic Telescope	Refracted reflections, Ø 6-inch or Inspector macrophages	ea	1 per school
100	Dry bulb thermometer	-20°C ~ 50°C, -20°C ~ 50°C,	ea	4 per 1
101	Maximum-minimum thermometer	30°C ~ 50°C, U-shaped Plate Member	ea	1 per school
102	Soil Thermometer	3 in 1	ea	1 per school
103	Shelter(set)	600 x 600mm	ea	1 per school
104	Rain gauge	Stainless steel	ea	1 per school
105	Anemometer	For Child, Digital	ea	1 per school
106	Aneroid	Analog	ea	1 per school
107	Diary of a blackboard	900 x 900mm 900 x 900mm	ea	1 per school
108	Conglomerate	More than 70mm in diameter	ea	8 per 1
109	Sandstone	More than 70mm in diameter	ea	8 per 1
110	Mudstone	More than 70mm in diameter	ea	8 per 1
111	Basalt	More than 70mm in diameter	ea	8 per 1
112	Granite	More than 70mm in diameter	ea	8 per 1
113	Marble	More than 70mm in diameter	ea	8 per 1
114	Gneiss	More than 70mm in diameter	ea	8 per 1
115	Quartzite	More than 70mm in diameter	ea	8 per 1
116	Limestone	More than 70mm in diameter	ea	8 per 1
117	Hammer for rock samples		ea	8 per 1
118	Strata model	Three kinds (faults, folds, flat) 1	ea	1 for Lab
119	Volcano Model	330 x 570 x 330mm	ea	1 for Lab
120	structure models	Earth's interior 320mm 320mm diameter	ea	1 for Lab
121	Volcanic bomb	5 in 1	ea	1 for Lab
122	Animal fossils specimens	5 in 1	ea	1 for Lab
123	Plant Fossil specimens	5 in 1	ea	1 for Lab
124	Globes	Ø 300mm or more	ea	4 per 1
125	Sundial		ea	1 per school

No	Equipments	Specification	Unit	Qun'ty
126	Portable Sundial		ea	1 per school
127	Celestial glove	Ø 300mm or more	ea	1 per school
128	Plank	45cm x 45cm 45cm x 45cm	ea	2 per 1
129	Digital Thermometer		ea	1 per school
130	Liquid Crystal Thermometer		ea	1 per school
131	Infrared Thermometer		ea	1 per school
132	Stereoscopic microscope	10X ~ 30X 10X ~ 30X	ea	4 per 1
133	Microscope	Eyeiece 10X, 20X, objective lens 5X, 10X, 40X, will not saeksuchaga,	ea	4 per 1
134	Microscope Lights	"110V ~ 220V, 20W or more"	ea	4 per 1
135	Microscopic Projector	If the projection integral (Ø 150mm or more)	ea	1 for Lab
136	Plants collected a set of tools		ea	6 per school
137	Landing net		ea	4 per 1
138	Insect toolset		ea	6 per school
139	Human body model	Prefab	ea	1 per school
140	Human Skeleton Model	Prefab	ea	1 per school
141	Joint Model	Prefab	ea	1 per school
142	Structural model of the skin	Prefab	ea	1 per school
143	Circulation models	Prefab circulation features	ea	1 per school
144	Structural model of the nose	Prefab	ea	1 per school
145	Eye structure model	Prefab	ea	1 per school
146	Ear structural models	Prefab	ea	1 per school
147	Digestive System Models	Prefab	ea	1 per school
148	Its structure model	Prefab	ea	1 per school
149	Respiratory tract model	Prefab	ea	1 per school
150	Excretory organ models	Prefab	ea	1 per school
151	Heart Model	Prefab	ea	1 per school
152	Muscle Model	Prefab	ea	1 per school
153	Respiratory Model	Prefab	ea	1 per school
154	Computer (Teacher)	Pentium 3 more (RAM 512M or more), sound card, internet access	ea	1 per school
155	Computer (Student)	Pentium III more	ea	6 per school
156	Video Presentor	410,000 pixels or more	ea	1 for Lab
157	TV Projection TV	45 inches or more	ea	1 per school
158	LCD projector	2000ANSI more	ea	1 per school
159	VTR		ea	1 for Lab
160	Electric Screen	180cm above the horizontal	ea	1 per school
161	Refrigerator		ea	1 per school
162	Equipment cart		ea	1 per school
163	OHP	740 x 600 x 735mm	ea	1 for Lab
164	Waste Water Disposal		ea	1 per school



## Middle School

No	Equipments	Specification	Unit	Qun'ty
1	pH Meter (Digital)	pH 0 ~ 14 ± 0.01pH	ea	1 per school
2	Grinders		ea	1 per school
3	Desiccator		ea	1 per school
4	Vise		ea	1 per school
5	G cm scale	Weight 311g, weight loss 10mg	ea	1 per school
6	Cripples the scale	Weight 2kg, loss 0.1g	ea	1 per school
7	Centrifugal		ea	1 per school
8	Electric drill		ea	1 per school
9	Cork Borer	Automatic	ea	1 per school
10	Waste Disposal		ea	1 per school
11	Constant Chamber(drying)		ea	1 per school
12	Vernier calipers		ea	1 per school
13	Electronic scales	Weight 200g, 0.1g loss	ea	1 per school
14	LCD projector		ea	Are per room 1
15	Tool Set		ea	Are per room 1
16	Screen	Electric	ea	Are per room 1
17	Video Presenter		ea	Are per room 1
18	Computer (Teacher)	Pentium 3 more (RAM 128M or more), MPEG card, sound card, internet access	ea	Are per room 1
19	OHP OHP		ea	Are per room 1
20	Mortar		ea	6 per 1
21	Volumetric flask (1000mL)		ea	6 per 1
22	Volumetric flask (500mL)		ea	6 per 1
23	Computer (Student)	Pentium 3 more	ea	6 per 1
24	Tank (rectangular)		ea	4 per 1
25	Reagent bottle (100mL)	White and brown (2 in 1)	ea	4 per 1
26	Reagent bottle (250mL)	White and brown (2 in 1)	ea	4 per 1
27	Floor lamp	Adjustable intensity	ea	4 per 1
28	Heater		ea	4 per 1
29	Branched tube		ea	4 per 1
30	Branched flask (250mL)		ea	4 per 1
31	Spritz bottle	Plastic	ea	4 per 1
32	Brush (3 in 1)		ea	4 per 1
33	Tank (round)		ea	4 per 1
34	Balance Arm	Weight 200g, 0.1g loss	ea	4 per 1
35	Electric Iron		ea	4 per 1
36	Tape Measure (2m or more)	Iron	ea	4 per 1
37	Heating safety net (a net asbestos-iron)		ea	4 per 1
38	Funnel		ea	4 per 1
39	Funnel Steand	2 in	ea	4 per 1
40	Round Bottom flask (250mL)		ea	4 per 1
41	Ring	Three kinds (large, medium, small) 1	ea	4 per 1
42	Mass cylinder (250mL)		ea	4 per 1
43	Metz pipette (10mL)		ea	4 per 1
44	Trowel		ea	4 per 1
45	Burette (50mL)		ea	4 per 1
46	Burette clamp	2 in	ea	4 per 1
47	Erlenmeyer flask (500mL)		ea	4 per 1
48	Tube clamp		ea	4 per 1
49	Test Tube Stand	Iron (20)	ea	4 per 1
50	Spring scale	weight 200g	ea	4 per 1
51	Platform balance	Weight 200g, weight loss 100mg	ea	4 per 1
52	Stopwatch	1 / 100 seconds	ea	4 per 1
53	Compass		ea	2 per 1
54	Magnifier		ea	2 per 1
55	Mass cylinder (100mL)		ea	2 per 1

No	Equipments	Specification	Unit	Qun'ty
56	Mass cylinder (10mL)		ea	2 per 1
57	Erlenmeyer flask (100mL)		ea	2 per 1
58	Erlenmeyer flask (250mL)		ea	2 per 1
59	Tripod	height adjustment	ea	2 per 1
60	Chalet	2 in 1	ea	2 per 1
61	Dropper (10mL)		ea	2 per 1
62	Watch glass		ea	2 per 1
63	Spirit-lamp		ea	2 per 1
64	Spatula		ea	2 per 1
65	Combustion spoon		ea	2 per 1
66	Ruler (1m or more)	Transparent resin	ea	2 per 1
67	Magnet	Bar, horseshoe, circular magnets(3 in 1)	ea	2 per 1
68	Syringe		ea	2 per 1
69	Pnumetic Bottle		ea	2 per 1
70	Iron stand		ea	2 per 1
71	Pincette		ea	2 per 1
72	Pinchikok		ea	2 per 1
73	Hall pipette (10mL)		ea	2 per 1
74	Goggles		ea	1 per 1
75	Lab Cloth	Cotton	ea	1 per 1
76	Thermometer (alcohol)	-20℃ ~ 110℃ -20℃ ~ 110℃	ea	1 per 1
77	DC Power Supply		ea	1 per school
78	Inclined plane apparatus	rotractor attached, pulley, cart, including additional	ea	1 per school
79	Wave projection devices		ea	1 per school
80	Free-fall experiment		ea	1 per school
81	Joule's Heat Apparatus	200ml, DC6V 200ml, DC6V	ea	1 per school
82	Electrical circuit tester		ea	Are per room 1
83	Hydrostatic test set	Lever, pulley, including additional	ea	6 per 1
84	wing Type electromagnetic Smeasuring devices	DC 3 ~ 6V, including bar magnet	ea	4 per 1
85	Slide resistor	Closed Type	ea	4 per 1
86	DC Power Supply		ea	4 per 1
87	Pendulum experiment	Stand Type	ea	4 per 1
88	Time Recorder		ea	4 per 1
89	Metal Weight	5 in 1	ea	4 per 1
90	Dynamic cart		ea	4 per 1
91	Potential Energy-measuring devices	100, 200, 300g, including additional	ea	4 per 1
92	Laboratory wave spring	2 in 1	ea	4 per 1
93	Laser Pointer		ea	4 per 1
94	C-type clamp	3 in 1	ea	4 per 1
95	Pulley	5 in 1	ea	4 per 1
96	Heat measurement devices	130 x 130mm diameter	ea	4 per 1
97	convex Lenses		ea	4 per 1
98	Diapason	Including rubber mallet (1 in 2)	ea	4 per 1
99	Double-sided mirror		ea	4 per 1
100	Concave lens		ea	4 per 1
101	Resistive Nichrome Wire	Exposed	ea	2 per 1
102	Metal foil electroscope		ea	2 per 1
103	Friction electrical test instruments	Set	ea	2 per 1
104	Ammeter	DC for	ea	2 per 1
105	Voltmeters	DC for	ea	2 per 1
106	Transparent half-cylinder	Plastic	ea	2 per 1
107	Prism		ea	2 per 1
108	Boyle's law experiment	Including three additional	ea	1 per school



No	Equipments	Specification	Unit	Qun'ty
109	V expression of electrolysis	85 x 95 x 290mm, AC 110/220 Combined, power supplies	ea	6 per 1
110	Gas molecule movement apparatus	DC 3 ~ 6V	ea	6 per 1
111	Gas diffusion rate meter		ea	6 per 1
112	Grid tray	Aluminium	ea	6 per 1
113	Crucible		ea	6 per 1
114	Crucible tongs		ea	6 per 1
115	Libby Hebrews Cooler		ea	6 per 1
116	Spectroscope	Diameter, 20 x 110mm, slit gap adjustment	ea	6 per 1
117	Triangle Grill		ea	6 per 1
118	Line spectrum Light Source	He, Ne, Ar lamp (3 in 1)	ea	6 per 1
119	Water bath		ea	6 per 1
120	Torch Lamps	Recurrence touch	ea	6 per 1
121	Assembled a set of molecular models	355 pieces	ea	4 per 1
122	U tube		ea	4 per 1
123	Y tube	φ20 x 20mm φ20 x 20mm	ea	4 per 1
124	Discern the funnel (250mL)		ea	4 per 1
125	Electrode	Copper, stainless steel, zinc and carbon electrodes, jeonhaejilyong	ea	4 per 1
126	Evaporating dish		ea	4 per 1
127	Clamp		ea	4 per 1
128	Platinum Wire	Anti-fireworks applications	ea	2 per 1
129	Household sample	10 x 30cm	ea	1 per school
130	Sampling occurred during the frog	10 x 40cm	ea	1 per school
131	Frog specimens	10 x 40cm	ea	1 per school
132	Ear Model		ea	1 per school
133	Eye Model		ea	1 per school
134	Chicken samples	11 x 53cm	ea	1 per school
135	Animal Book	Primary color	ea	1 per school
136	seaweed samples	11 x 50cm	ea	1 per school
137	Snake specimens	11 x 53cm	ea	1 per school
138	Thermos		ea	1 per school
139	Carp samples	10 x 40cm	ea	1 per school
140	Plant Book	Primary color	ea	1 per school
141	Kidney samples dissected	10 x 40cm	ea	1 per school
142	Heart dissection specimens	11 x 50cm	ea	1 per school
143	Aquarium (Aquarium)		ea	1 per school
144	Squid samples	12 x 40cm	ea	1 per school
145	Book protist	Primary color	ea	1 per school
146	Human body model		ea	1 per school
147	Human cerebrospinal nervous system models		ea	1 per school
148	Shellfish samples	10 x 40cm	ea	1 per school
149	Earthworm sampling	10 x 40cm	ea	1 per school
150	Iron plate		ea	1 per school
151	Thermometer	Mercury film formation	ea	1 per school
152	Rabbit samples	12 x 40cm	ea	1 per school
153	grasshoppers the sample	10 x 40cm	ea	1 per school
154	Microscopic Projector		ea	1 per school
155	Poison bottle		ea	3 per school
156	Plant Collecting cage		ea	3 per school
157	Plant press		ea	3 per school
158	Insect net		ea	3 per school
159	Permanent Preparat (cell division)	Three kinds of	ea	1 per school
160	Permanent Preparat (animal cell)	More than 10 kinds of sets	ea	1 per school
161	Permanent Preparat (blood)	Set	ea	1 per school

No	Equipments	Specification	Unit	Qun'ty
162	Permanent Preparat (Plant Cell)	10 kind set	ea	1 per school
163	Pruning shears		ea	6 per 1
164	specimens bottle		ea	4 per 1
165	Breathing Capacity Meter	Plastic Cylindrical	ea	4 per 1
166	Dissect Set	10 kinds 1set	ea	4 per 1
167	Dissecting dish		ea	4 per 1
168	Dissecting microscope		ea	4 per 1
169	Rubber mallet		ea	2 per 1
170	Microscope	Eyepiece 10 x 20 x objective lens 5 x 10 x 40 x, saeksuchaga will not, copy source device	ea	2 per 1
171	Optical bench		ea	1 per school
172	Set of meteorological	6 in 1 (portable)	ea	1 per school
173	Fault Model	4 in 1	ea	1 per school
174	Shelter		ea	1 per school
175	Star Spectrum Pictures	30 kinds	ea	1 per school
176	Camera	B-timer, tripod, release sheet	ea	1 per school
177	Illuminated orbital planetarium		ea	1 per school
178	Mercury barometers		ea	1 per school
179	Fold the model mismatch	3 in 1	ea	1 per school
180	Binoculars	7 x 50 or more	ea	1 per school
181	Aneroid		ea	1 per school
182	Weather blackboard		ea	1 per school
183	Hair hygrometer		ea	1 per school
184	Introducing the device automatically		ea	1 per school
185	Crustal Structure Model		ea	1 per school
186	Earth's interior structure models		ea	1 per school
187	celestial globe		ea	1 per school
188	Astronomic Telescope	102mm or more, and automatic tracking device,	ea	1 per school
189	Ejecta of volcano specimen	5 in 1	ea	1 per school
190	Iron mortar	Cast iron	ea	1 per school
191	Globes		ea	1 per school
192	Mineral samples	10 in 1	ea	4 per 1
193	Aluminum Cup	Black, White (2 in1)	ea	4 per 1
194	Thermal conductivity apparatus		ea	4 per 1
195	Glass bell	Cap attached	ea	4 per 1
196	Solar radiation measuring devices		ea	4 per 1
197	Wet and dry hygrometer	-20℃ ~ 50℃, Plate Department	ea	4 per 1
198	Changes in insulation apparatus	Part Thermometer	ea	4 per 1
199	Mohs Hardness	10 in 1	ea	4 per 1
200	Metamorphic rock samples	10 in 1	ea	4 per 1
201	Rectangular tank	Compartment attached	ea	4 per 1
202	Earth model		ea	4 per 1
203	Neonatology Hammer	Steel	ea	4 per 1
204	Sieve	4 in 5	ea	4 per 1
205	Sedimentary samples	10 in 1	ea	4 per 1
206	Fossil specimens	10 in 1	ea	4 per 1
207	Igneous rock samples	10 in 1	ea	4 per 1
208	Astro Photo Sets	30 in	ea	2 per 1
209	Astronomical map		ea	2 per 1
210	Galaxy wide photos	30 in	ea	2 per 1
211	streak plate		ea	2 per 1
212	Planisphere		ea	1 per 1



## High School

No	Equipments	Specification	Unit	Qun'ty	No	Equipments	Specification	Unit	Qun'ty
1	pH Meter (Digital)	pH0~14±0.01pH pH0~14 ± 0.01pH	ea	1 per school	40	Heating appliances		ea	6 per 1
2	AC ammeter	0 ~ 19.99A 0 ~ 19.99A	ea	1 per school	41	Mass cylinder (1000mL)		ea	6 per 1
3	AC voltmeter	0 ~ 199.9V 0 ~ 199.9V	ea	1 per school	42	Platform balance	weight 200g, weight loss 100mg	ea	6 per 1
4	Agitator		ea	1 per school	43	Mortar		ea	4 per 1
5	Desiccator		ea	1 per school	44	Volumetric flask (100mL)		ea	4 per 1
6	Beckman thermometer	-6 ~ 0℃, 0 ~ 6℃(2 Items 1 Act)	ea	1 per school	45	Branched flask (500mL)		ea	4 per 1
7	Noise Meter	35~130dB	ea	1 per school	46	Volumetric flask (500mL)		ea	4 per 1
8	Mercury barometers	860 ~ 1090hPa	ea	1 per school	47	Sensible funnel (250mL)		ea	4 per 1
9	Laboratory Ice Machines		ea	1 per school	48	Branched flask (200mL)		ea	4 per 1
10	Electric drill		ea	1 per schoo	49	Volumetric flask (200mL)		ea	4 per 1
11	Electric Iron		ea	1 per school	50	Branched flask (100mL)		ea	4 per 1
12	Electronic scales	Weight 200g, loss 0.1g	ea	1 per school	51	Face spectroscopy		ea	4 per 1
13	Light Meter	0 ~ 20,000Lux	ea	1 per school	52	Water tank		ea	4 per 1
14	Water maker		ea	1 per school	53	Holpipet (10mL)		ea	4 per 1
15	Maximum, minimum thermometer	-30℃ ~ 50℃, U-shaped Plate	ea	1 per school	54	Holpipet (20mL)		ea	4 per 1
16	Cork Borer	Automatic	ea	1 per school	55	Funnel		ea	4 per 1
17	Waste Disposal		ea	1 per school	56	Funnel Stand		ea	4 per 1
18	Constant Chamber (drying)		ea	1 per school	57	DC Power Supply	Output 0 ~ 30V, 0 ~ 3A	ea	4 per 1
19	Environmental Meter		ea	1 per school	58	Ring	Φ50, 70, 90mm (3 species in 1)	ea	4 per 1
20	Hood		ea	1 per school	59	Floor lamp	Adjustable intensity	ea	4 per 1
21	Tap Connection Pnumetic		ea	1 per school	60	Burette clamp		ea	4 per 1
22	Tool sets		ea	1 per school	61	Flashlight		ea	4 per 1
23	LCD projector		ea	per room 1	62	Platinum Wire		ea	4 per 1
24	OHP OHP		ea	per room 1	63	Iron stand		ea	4 per 1
25	Screen	Electric	ea	per room 1	64	Tape Measure (2m)	Steel	ea	4 per 1
26	Video Presenter		ea	per room 1	65	Metz pipette (20mL)		ea	4 per 1
27	Computer (Teacher)		ea	per room 1	66	Mass cylinder (100mL)		ea	4 per 1
28	pH meter	pH0~14 ± 0.1pH pH0~14 ± 0.1pH	ea	6 per 1	67	Mass cylinder (200mL)		ea	4 per 1
29	G cm scale	Weight 311g, weight loss 10mg	ea	6 per 1	68	Mass cylinder (20mL)		ea	4 per 1
30	Test tube Stand	Iron (20)	ea	6 per 1	69	Mass cylinder (500mL)		ea	4 per 1
31	Tape Measure (50m)	cotton	ea	6 per 1	70	Metz pipette (10mL)		ea	4 per 1
32	Computer (Student)		ea	6 per 1	71	Burette (50mL)	White	ea	4 per 1
33	Pipetdae		ea	6 per 1	72	Syringe		ea	4 per 1
34	Galvanometer	± 1999mA ± 1999mA	ea	6 per 1	73	Stopwatch	1 / 100 seconds	ea	4 per 1
35	Micrometer	0.01 ~ 25mm, 0.01mm error	ea	6 per 1	74	DC Ammeter	0 ~ 1999mA 0 ~ 1999mA	ea	3 per 1
36	Bath pot		ea	6 per 1	75	DC voltmeter	0 ~ 199.9V 0 ~ 199.9V	ea	3 per 1
37	Gas burner		ea	6 per 1	76	Compass		ea	2 per 1
38	Volumetric flask (1000mL)		ea	6 per 1	77	Tripod		ea	2 per 1
39	Vernier calipers		ea	6 per 1	78	Triangle Grill		ea	2 per 1
					79	Heat Safety Net		ea	2 per 1



No	Equipments	Specification	Unit	Qun'ty
80	Spatula		ea	2 per 1
81	Burette (50mL)	Brown	ea	2 per 1
82	Chalet		ea	2 per 1
83	Alcohol Lamp		ea	2 per 1
84	Dropping bottle(100mL)	Brown	ea	2 per 1
85	Dropping bottle(100mL)	White	ea	2 per 1
86	Evaporating dish		ea	2 per 1
87	Magnet	Bar, horseshoe, round (3 in 1)	ea	2 per 1
88	Clamp		ea	2 per 1
89	Pipette Filler		ea	2 per 1
90	Pincette		ea	2 per 1
91	Pinchikok		ea	2 per 1
92	Magnifier		ea	2 per 1
93	Tube clamp		ea	1 per 1
94	Lab coats	Cotton	ea	1 per 1
95	Dropper (5 ~ 10mL)	The grid will	ea	1 per 1
96	Goggles		ea	1 per 1
97	Thermometer (alcohol)	-20°C ~ 110°C -20°C ~ 110°C	ea	1 per 1
98	Geiger Miller Counter		ea	1 per school
99	Phototube		ea	1 per school
100	Optical bench		ea	1 per school
101	DC Power Supply		ea	1 per school
102	Newton ring		ea	1 per school
103	Multiple flash devices		ea	1 per school
104	Laser optical bench	Aluminum reil	ea	1 per school
105	Laser generator		ea	1 per school
106	Non Rubbing Top experiment		ea	1 per school
107	Bimetal	DC for	ea	1 per school
108	Boyle's law experiment		ea	1 per school
109	Spectrometer	Metal	ea	1 per school
110	Inclined plane apparatus		ea	1 per school
111	Strobe		ea	1 per school
112	Spectrum Tube	5 in 1	ea	1 per school
113	Cloud chamber		ea	1 per school
114	Induction coil		ea	1 per school
115	Magnetizer	AC for	ea	1 per school
116	Infrared lamp		ea	1 per school
117	Vacuum drop apparatus	2 in 1	ea	1 per school
118	Vacuum tubes	6 in 1	ea	1 per school
119	Vacuum Pump		ea	1 per school

No	Equipments	Specification	Unit	Qun'ty
120	Crookes tube	3 in 1	ea	1 per school
121	Elastic Collision	7 in 1	ea	1 per school
122	Rotating Disk (turntables)	Afferent Mounted	ea	1 per school
123	Photocurrent measurement system		ea	6 per 1
124	Swing-type electromagnetic S measuring devices		ea	6 per 1
125	Laser Pointer		ea	6 per 1
126	Wave projection devices		ea	6 per 1
127	Heat measurement devices	Box in	ea	6 per 1
128	Triangular	PrismPerpendicular, the dot (2 in 1)	ea	6 per 1
129	Slide resistor	0 ~ 50Ω, Hermetic	ea	6 per 1
130	Ultraviolet		ea	6 per 1
131	Linear light source	includes a color filter	ea	6 per 1
132	Capacitors	Set	ea	6 per 1
133	Wheatstone Bridge		ea	6 per 1
134	Cripples the scale		ea	6 per 1
135	Time Recorder	AC for	ea	6 per 1
136	Dynamic cart		ea	6 per 1
137	Solenoid	Including balance	ea	6 per 1
138	Weight	Set(10 ~ 1000g) Sets (10 ~ 1000g)	ea	6 per 1
139	Resistive Nichrome Wire	Exposed	ea	6 per 1
140	Diode (LED)	Set	ea	6 per 1
141	Spring for simple harmonic motion	Weight, spring-set	ea	6 per 1
142	Pendulum experiment	Stand Type	ea	6 per 1
143	Pulley	5 in 1	ea	6 per 1
144	Dual Coil		ea	6 per 1
145	Diapason	Including the hammer	ea	6 per 1
146	Two-dimensional collision devices	Standard	ea	6 per 1
147	C-type clamp	3 in 1	ea	6 per 1
148	Concave mirror		ea	6 per 1
149	Concave lens		ea	6 per 1
150	Electrical circuit tester		ea	6 per 1
151	Choke coils	Terminal 4, 12V	ea	6 per 1
152	Convex Lenses		ea	6 per 1
153	Convex mirror		ea	6 per 1
154	Transparent half-cylinder		ea	4 per 1
155	Electric pendulum		ea	4 per 1
156	Metal foil electroscope		ea	4 per 1



No	Equipments	Specification	Unit	Qun'ty
157	Electrical test set friction	Set	ea	4 per 1
158	Centripetal force apparatus		ea	4 per 1
159	Laboratory wave spring	2 in 1	ea	4 per 1
160	Spring scale		ea	4 per 1
161	The crystal structure model	2 in 1	ea	1 per school
162	Mixer		ea	1 per school
163	Hydrometer1	9 in 1	ea	1 per school
164	Line spectrum Light Source	He, Ne, Ar lamp (three kinds)	ea	1 per school
165	Liquid nitrogen soils		ea	1 per school
166	Periodic Table of Elements		ea	1 per school
167	The atomic structure descriptor		ea	1 per school
168	Libby Hebrews Cooler		ea	1 per school
169	Soksiretchuchulgi (250mL)		ea	1 per school
170	Air Absorption Funnel		ea	1 per school
171	Absorption Bottle (500mL)	Glass	ea	1 per school
172	U tube		ea	6 per 1
173	Y tube		ea	6 per 1
174	U tube branched		ea	6 per 1
175	Extra gas buret		ea	6 per 1
176	Gas molecule movement apparatus		ea	6 per 1
177	Thigh bottom flask (100 ~ 500mL)		ea	6 per 1
178	Crucible		ea	6 per 1
179	Crucible tongs		ea	6 per 1
180	Round bottom flask (1000mL)		ea	6 per 1
181	Round bottom flask (100 ~ 500mL)		ea	6 per 1
182	Erlenmeyer flask (1000mL)		ea	6 per 1
183	Erlenmeyer flask (500mL)		ea	6 per 1
184	Erlenmeyer flask (50mL)		ea	6 per 1
185	Stainless steel spoon		ea	6 per 1
186	Stainless Steel Electrodes		ea	6 per 1
187	Styrofoam tube		ea	6 per 1
188	Watch glass		ea	6 per 1
189	Safety funnel		ea	6 per 1
190	Calorimeter		ea	6 per 1
191	Chloride Calcium tube		ea	6 per 1
192	Electrolysis		ea	6 per 1

No	Equipments	Specification	Unit	Qun'ty
193	Poultry conductivity		ea	6 per 1
194	Conical beaker (250mL)		ea	6 per 1
195	Torch Lamps	Recurrence touch	ea	6 per 1
196	Molecular models		ea	6 per 1
197	Gas-side articles		ea	6 per 1
198	Gas diffusion rate meter		ea	6 per 1
199	Spritz bottle		ea	6 per 1
200	Tap Funnel		ea	6 per 1
201	Combustion spoon		ea	6 per 1
202	Elemental Card Set		ea	6 per 1
203	Branched tube	Ø 21 x 200mm	ea	4 per 1
204	Assembled a set of molecular models	355 pieces	ea	4 per 1
205	Reagent bottle	Brown 100, 250mL	ea	4 per 1
206	Pnumetic Bottle		ea	4 per 1
207	DNA Models		ea	1 per school
208	DO meter		ea	1 per school
209	Coelenterata	Ø 100 x 410mm	ea	1 per school
210	High-pressure autoclave	Heating	ea	1 per school
211	Ear Model		ea	1 per school
212	Echinoderms	Ø 110 x 510mm	ea	1 per school
213	Eye Model		ea	1 per school
214	Animal Book	Primary color	ea	1 per school
215	Book protist	Primary color	ea	1 per school
216	Plant Book	Primary color	ea	per school
217	Kidney samples dissected	Ø 100 x 410mm	ea	1 per school
218	Heart dissection specimens	Ø 110 x 510mm	ea	1 per school
219	Amphibian sampling	Ø 00 x 410mm	ea	1 per school
220	Fish samples	Ø 110 x 510mm	ea	1 per school
221	Mollusc	Ø 110 x 510mm	ea	1 per school
222	Centrifuge		ea	1 per school
223	Human cerebrospinal nervous system models		ea	1 per school
224	Human circulatory system modelea		ea	1 per school
225	Human body model		ea	1 per school
226	Arthropods	Ø 110 x 510mm	ea	1 per school
227	Bird specimens	Ø 120 x 410mm	ea	1 per school
228	Stethoscope		ea	1 per school



No	Equipments	Specification	Unit	Qun'ty
229	Lamprey specimens	Ø 110 x 510mm	ea	1 per school
230	Reptile specimens	Ø 100 x 410mm	ea	1 per school
231	Flatworm	Ø 100 x 410mm	ea	1 per school
232	Mammal specimens	Ø 120 x 410mm	ea	1 per school
233	Sponge	Ø 100 x 310mm	ea	1 per school
234	Microscopic projection devices		ea	1 per school
235	Sphygmomanometer		ea	1 per school
236	Annelid	Ø 100 x 410mm	ea	1 per school
237	Permanent Preparat (animal cell)	10 in 1	ea	1 per school
238	Permanent Preparat(Plant Cell)	10 in 1	ea	1 per school
239	Permanent Preparat (blood)	Set	ea	1 per school
240	Permanent Preparat (cell division)	Three kinds	ea	1 per school
241	Poison bottle		ea	6 per 1
242	Trowel		ea	6 per 1
243	Plant Collecting cage		ea	6 per 1
244	Plant press		ea	6 per 1
245	Pruning shears		ea	6 per 1
246	Insect net		ea	6 per 1
247	BOD bottles (300mL)		ea	4 per 1
248	Dissecting dish		ea	4 per 1
249	Dissecting microscope		ea	4 per 1
250	Dissect Set		ea	4 per 1
251	Microscope	Eyepiece 10 x , 20 x , objective lens 5 x , 10 x , 40 x , chromatic aberration, no light most bookings	ea	2 per 1
252	Micrometer microscopes	Eyepiece, objective (2 in 1)	ea	2 per 1
253	Extra seismograph	Horizontal	ea	1 per school
254	Raised a cloud experiment		ea	1 per school
255	Set of meteorological instruments	Portable	ea	1 per school
256	Adiabatic change in the board graph		ea	1 per school
257	Fault Model	4 in 1	ea	1 per school
258	Shelter		ea	1 per school
259	Dip the room hierarchy		ea	1 per school
260	Coal samples	10 in 1	ea	1 per school
261	World Map		ea	1 per school
262	The currents of the world		ea	1 per school
263	Global ocean floor topography		ea	1 per school

No	Equipments	Specification	Unit	Qun'ty
264	Folding model	4 in 1	ea	1 per school
265	Binoculars		ea	1 per school
266	Aneroid		ea	1 per school
267	Fossil Model brachiopod	5 in 1	ea	1 per school
268	Mica Flakes	2 in 1	ea	1 per school
269	Weather blackboard		ea	1 per school
270	Geological Survey, a set of instruments	Clinometer, including	ea	1 per school
271	Astronomic Telescope	102 mm or more, jeokdosik trestle, auto tracking device, observing sunspots, including equipment	ea	1 per school
272	Semi-transparent		ea	1 per school
273	Polarizing microscope projectors		ea	1 per school
274	Fossil specimens	10 in 1	ea	1 per school
275	Minerals determined		ea	6 per 1
276	Mineral samples	10 in 1	ea	6 per 1
277	Mohs Hardness	10 in 1	ea	6 per 1
278	Azimuth Altitude Meter		ea	6 per 1
279	Metamorphic rock samples	15 in 1	ea	6 per 1
280	Sedimentary samples	15 in 1	ea	6 per 1
281	Transparency celestial globe		ea	6 per 1
282	gneous rock samples	15 in 1	ea	6 per 1
283	Fast Foucault pendulum		ea	4 per 1
284	Wet and dry hygrometer	20 °C ~ 50°C Plate Member	ea	4 per 1
285	Changes in insulation apparatus		ea	4 per 1
286	Astronomical map		ea	4 per 1
287	Crystal	The size of three others	ea	4 per 1
288	The vertical distribution of temperature measuring devices	Adjustable	ea	4 per 1
289	Aluminum Cup	Black and White 2 in 1	ea	4 per 1
290	Galaxy Pictures		ea	4 per 1
291	Galaxy Spectrum Pictures		ea	4 per 1
292	Globes		ea	4 per 1
293	Sieve		ea	4 per 1
294	Deposition apparatus		ea	4 per 1
295	Rotating cylinder apparatus		ea	4 per 1
296	Contact goniometer		ea	4 per 1
297	Polarization device		ea	4 per 1



## Machinery Education

No	Equipments	Specification	Unit	Qun'ty
1	Lathe	More than SW380mm	ea	17
2	Milling machine	Universal, vertical, horizontal	ea	17
3	Cylinder grinding machine	More than SW x L: 200 x 400	ea	1
4	Plane grinding machine	More than 450 x 250mm	ea	2
5	Drilling machine	Less than $\phi$ 13mm	ea	2
6	Electric welding machine	More than 10kw	ea	1
7	Band sawing machine	3660 x 0.95 x 25mm	ea	1
8	Double-head grinder	0.37~1.5KW	ea	2
9	Stone plate	More than 300 X 300	ea	2
10	Vice with working plate	150	ea	17
11	CNC lathe	More than SW380mm	ea	2
12	Machining center	More than 510 x 300mm	ea	6
13	Programmanipulator	More than 32bit	ea	34
14	CNC discharging machine	More than 300 x 200mm	ea	1

No	Equipments	Specification	Unit	Qun'ty
15	CNC wire cutting machine	More than 260 x 160mm	ea	1
16	Air compressor	More than 5HP	ea	1
17	Duplicator	More than A3	ea	1
18	Scanner	More than A4	ea	1
19	Computer	Pentium 4 or more	ea	34
20	Printer	More than A3	ea	4
21	Plotter	A0(color)	ea	1
22	LAN	More than 50 Port	set	1
23	Air conditioner	Considering room size	ea	1
24	Projector	More than 1024 x 768	ea	1
25	Office work software	MS office	copy	34
26	CAD(2D) Software	CAD(2D)	copy	34
27	CAD(3D) Software	CAD(3D)	copy	34

## Electric Education

No	Equipments	Specification	Unit	Qun'ty
1	Computer	Pentium 4 or higher level	ea	34
2	Printer	A3	ea	4
3	Projector	More than 1024 x 768	ea	1
4	Air conditioner	Considering room sizeea	1	
5	Electric device structure trainer	Module type	set	1
6	Voltage controller		ea	1
7	Winding machine (electro-motion)	1 $\phi$ 220V	ea	2
8	Transformer	Less than 1 $\phi$ , 10KVA	ea	2
9	Sequence trainer	AC 220V	ea	2
10	Electric circuit trainer	Module type	set	5
	Electric device			
11	characteristictrainer	Module type	set	1
12	Electric device circuit trainer	Module type	set	1
13	Phase Sequence Indicator	100-600V	ea	1
14	Ammeter	AC,DC 0-30A	ea	8
15	Voltmeter	AC, DC 0-300V	ea	8
16	Wattmeter	Less than 6kw	ea	8
17	Galvanometer	$\pm 50 \mu A$	ea	2
18	Power-factor meter	90 Lead 0 ~ Lag 0	ea	2
19	Single-phase energy meter	220V,40(10)A, 1 $\phi$ 2W	ea	4
20	Three-phase energy meter	220V,40(10)A 3 $\phi$ 4W	ea	4
21	Insulation resistance tester	500V, 1000M $\Omega$	ea	2
22	Earth tester	0-1K $\Omega$	ea	1
23	Photoelectric tachometer	100-10,000rpm	ea	1
24	Illumination photometer	0-3000Lx	ea	2
25	Analog lab unit	For education	ea	17
26	Microprocessor trainer	For education	ea	8

No	Equipments	Specification	Unit	Qun'ty
27	AD/DA converter	More than 8Bit	set	5
28	DC power supply	More than 0-30V, 3A, 2CH	ea	8
29	Digital lab unit	For education	ea	17
30	Semiconductor trainer	Module type	set	3
31	Electronic circuit trainer	Module type	set	4
32	Electric power trainer	OP AMP	set	5
33	Logic circuit trainer	Module type	set	3
34	Sensor trainer	For education	set	2
35	Digital oscilloscope	More than 100MHz	ea	2
36	Variable AC/DC power supply	0-250V, 20A	ea	8
37	Digital multi-meter	For desk use	ea	17
38	Function generator	3waves, 0.02Hz-2MHz	ea	4
39	Digital oscilloscope	More than 2CH, 40MHz	ea	17
40	Frequency counter	10Hz-1GHz	ea	2
41	LCR bridge	Digital	ea	2
42	Digital IC tester	TTL, CMOS IC check	ea	1
43	Inverter	PWM type	set	2
44	Electro pneumatic trainer	For education	ea	2
45	Electro hydraulic trainer	For education	ea	2
46	Servo motor trainer	For education	ea	3
47	Stepping motor trainer	For education	ea	3
48	PLC Trainer	I/O 128P (PC included)	ea	17
49	PLC application trainers	5 trainers including elevator trainer	set	1
50	Plotter	A0	ea	1
51	Automatic control trainer	Module type(PID)	set	1
52	Electric CAD S/W	For education	copy	34
53	Power SIM S/W	Transformer, Sequence	copy	10
54	Simulation S/W	Pneumatic, Hydraulic, PLC, MICOM	copy	34



## Electronic Education

No	Equipments	Specification	Unit	Qun'ty
1	Power Supply	DC0-30V, 3A, 2CH	ea	17
2	Digital oscilloscope	2CH,40MHz	ea	17
3	Low-frequency characteristic tracer	20Hz-200KHz GPIB	ea	1
4	Digital Multi-meter	AVR(bench type)	ea	17
5	OP Amp. IC tester	Short-circuit, voltage, current, gain, Generation 0-90dB	ea	2
6	Transistor tester	hfe: 50,250,500	ea	2
7	Frequency counter	10Hz-2.1GHz(Digital)	ea	3
8	Function generator	More than 0.1Hz-20MHz(3 waves)	ea	17
9	LCR meter	Less than Accuracy 0.2%	ea	1
10	Portable double-bridge	0.1Hz-110KHz	ea	1
11	Piston bridge	1 $\Omega$ -10M $\Omega$	ea	1
12	Distortion meter	20Hz-200KHz	ea	1
13	Digital Lab unit	Digital	ea	17
14	Analog Lab unit	Analog	ea	17
15	Attenuation meter	0-90dB	ea	4
16	Electronic circuit trainer	Module type	set	4
17	Logic circuit trainer	Module type	set	4
18	Electric circuit trainer	Module type	set	4
19	Operational amplifier	24 circuit, $\pm 15V \pm 10\%$	ea	4
20	Digital IC tester	TTL, CMOS IC check	ea	1
21	Curve tracer	100Hz	ea	1
22	Drilling machine	$\Phi 13$	ea	1
23	Sensor trainer	Communication 28 kinds	set	4
24	PCB machine	60,000rpm	ea	1
25	Projector	1024 x 768	set	1
26	Microprocessor trainer	More than 8bit	set	17
27	EP-ROM programmer	8-64 bit	set	1
28	EP-ROM remover		set	2
29	Computer	Pentium 4 or high level	set	34
30	Printer	A3	ea	4
31	Plotter	A0	ea	1
32	Plus generator	1MHzvariable	ea	3
33	A/D converter	More than 8Bit	ea	5

No	Equipments	Specification	Unit	Qun'ty
34	D/A converter	More than 8Bit	ea	5
35	Logic Analyzer	More than sampling 100MHz	ea	1
36	Duplicator	A3	ea	1
37	FPGA Trainer	FPGA logic/VHDL design	ea	17
38	PLC trainer	PC included	set	33
39	Sequence trainer	For education	set	33
40	TV generating electric field meter	PLL type	ea	2
41	Level meter	100 $\mu$ V~300V, $\pm 3\%$ 10MHz	ea	2
42	Air conditioner	According to room size	ea	1
43	FM stereo signal generator	100KHZ-110MHZ	ea	2
44	TV-FM marker generator	More than 2-300MHz	ea	2
45	High- frequency signal generator	100kHz-1GHz	ea	4
46	Function generator	More than 0.1Hz-20MHz (3 waves)	ea	6
47	Recorder	VHS	ea	2
48	Audio system	AF/FM, CD, LDP, cassette Amp.	ea	2
49	Digital TV	20 inches	ea	3
50	DVD player		ea	3
51	Color pattern generator	NTSC	ea	2
52	TV trainer	Digital	ea	2
53	Video camera	VHS	ea	2
54	Ultrasonic trainer	Output 200W, 28KHz	ea	2
55	Sensor application trainer	8051,AVR,PIC	set	2
56	Digital illumination photometer	Response time: Automatic/Manual(5/2 sec.)	ea	1
57	Insulation resistance tester	5000V, 1000M $\Omega$	ea	2
58	Noise meter	100mv	ea	1
59	Antenna trainer	For education	set	4
60	Wireless communication trainer	For education	set	1
61	Router	More than 128KB	ea	8
62	Hub	More than 16P	ea	8
63	Digital signal generator/Analyzer	For education	ea	1
64	CAD program	For education	copy	34
65	Simulation software	For education	copy	34



## Automation Education

No	Equipments	Specification	Unit	Qun'ty	No	Equipments	Specification	Unit	Qun'ty
1	Computer	More than Pentium 4	ea	34	26	Hydraulic trainer	For education	set	6
2	Projector	More than 5200ANSI	ea	1	27	Servo hydraulic trainer	For education	set	6
3	Printer	Laser, A4	ea	4	28	Air compressor	5HP	ea	1
4	Air-conditioner	Considering room size	ea	1	29	Pneumatic equipment	36 kinds	set	1
5	Lathe	More than SW38	ea	17	30	Programmanipulator	More than 32 bit	ea	17
6	Milling machine	#2	ea	17	31	PLC applicable trainer	More tha I/O 32 points	set	17
7	Drilling machine	Less than $\Phi 13$	ea	4	32	Pneumatic applicable trainer	For education	set	17
8	Working plate	1800 x 900	ea	8	33	Production automation trainer	Standard	set	6
9	Double-head grinder	0.37-1.5KW	ea	2	34	Sensor trainer	For education	set	6
10	Stone plate	More than 300 x 300	ea	8	35	Servo motor trainer	For education	set	6
11	Drilling machine	More than $\Phi 13$	ea	1	36	Mechatronic trainer	Standard	set	6
12	Band sawing machine	Cutting ability more than 350	ea	1	37	Microprocessor trainer	For education	set	17
13	Plane grinding machine	More than 450 x 250	ea	2	38	Electro circuit trainer	Module type	set	17
14	Finishing-touch grinding machine	More than 300 x 150	ea	1	39	Electric circuit trainer	Module type	set	17
15	Tool grinding machine	More than SWXL200 x 400	ea	1	40	DC power supply	0-30V, 3A, 2CH	ea	17
16	Vacuum cleaner	50L	ea	1	41	Digital muti-meter	Desk use	ea	17
17	CNC Lathe	SW300	ea	2	42	Function generator	3waves, 0.02-2MHZ	ea	17
18	CNC machining center	510 x 300	ea	2	43	Digital oscilloscope	2CH, 40MHZ	ea	17
20	CNC discharging machine	300 x 200	ea	1	44	CAD software	2D software	copy	34
21	CNC wire cutting machine	250 x 160	ea	1	45	CAM software	NC processing	copy	34
22	Scanner	More thanB4	ea	1	46	3D modeling software	3D modeling	copy	34
23	Vacuum cleaner	More than 50L	ea	1	47	DNC processing software	DNC processing	copy	2
24	Plotter	More than A0	ea	1	48	Simulation S/W	For pneumatic and hydraulic training	copy	34
25	Pneumatic trainer	For education	set	6					



## Automobile Education

No	Equipments	Specification	Unit	Qun'ty
1	Air Conditioner		ea	1
2	PC Viewer	HD resolution	ea	1
3	Personal Computer		ea	41
4	Printer	A3 then more	ea	2
5	Measuring tools		set	Required
6	Measuring tools		set	Required
7	Finishing Tools		set	Required
8	Cleansing Tools		set	Required
9	Welding Tools		set	Required
10	Special Tools for Automobile		set	Required
11	Work Table		set	Required
12	Work Tools		set	Required
13	Metal Plate Tools		set	Required
14	High Speed Cutting M/C	2.2-3.7KW	ea	1
15	Nozzle Tester	0.6ℓ	ea	4
16	Oil Pressure Tester	high / low	ea	2
17	Electronic Control Diesel Engine	6 Cylinder then more	ea	5
18	Overhead Traveling Crane	1ton then more	ea	1
20	Air Compressor	5HP over	ea	1
21	Spray Booth	Closed type	ea	1
22	Excavator	Small	ea	1
23	Fork Lift	Small	ea	2
24	Radiator Cap Tester	10 kg/cm2	ea	2
25	Air Compressor	3.75Kw	ea	1
26	Air Conditioner		ea	1
27	Specialist Checker	PC include	ea	2
28	Basic Electronic	OP-AMP circuit tester	ea	2
29	Diesel Injection Pump Tester	4 Cylinder over	ea	1
30	Diesel Timing Light And Tachometer	10,000rpm	ea	2
31	Oscillo Scope		ea	3
32	ECU Tester	Elec. Control for Car	ea	5
33	Hydraulic Tester	10 then more	ea	2
34	Air Conditioner		ea	1
35	Scopemeter	For Car	ea	5
36	Scanner	Elec. Control for Car	ea	2
37	Ammeter	AC,DC 0 - 30A	ea	2
38	Total Distributing Board	General circuit	ea	2
39	Gasoline Engine	4 Cylinder then more	ea	10
40	Combustible Gas Detector	LPG, Air conditioner Gas	ea	1
41	Multi Press	10-50Ton then more	ea	1
42	Diesel Engine	4 Cylinder then more	ea	5

No	Equipments	Specification	Unit	Qun'ty
43	Smoke Tester	0 - 100%	ea	2
44	Battery Capacity Tester	200AH	ea	2
45	Battery Charger	6-24V	ea	2
46	Exhaust Gas Tester		ea	2
47	Transmission Jack	0.5Ton more	ea	4
48	Antifreeze Recycliner	70ℓ	ea	1
49	Brake Tester	3-10Ton	ea	1
50	Side Slip Tester	3-10Ton	ea	1
51	Chassis Dynamometer		ea	1
52	Speedmeter Tester	9999rpm	ea	1
53	Camber Caster Gauge	Magnetic type	ea	1
54	Air-Con Gas Charger	rechargeable	ea	1
55	Engine Systhesis Tester	combine use for Gasoline Diesel	ea	3
56	Fuel Tester	20ℓ	ea	1
57	Oil Exchanger	20ℓ more	ea	2
58	Stand Specal Tool For A/T	108item	ea	4
59	Car	ECS,ABS,A/T, Airbag	ea	10
60	Heavyweight Conveyance Car	2Ton more	ea	1
61	Car Lifter	2t then more	ea	5
62	Wheel Alignment Tester	left include	ea	1
63	Common rail nozzle tester	Ultra High Pressure	ea	5
64	Common rail engine pressure tester	High Pressure	ea	1
65	Common rail fuel pressure tester	High Pressure	ea	1
66	Wheel Balance Tester	10 - 24 "	ea	2
67	Tire Changer	Air type	ea	1
68	Portable Crane	1ton then more	ea	1
69	Head Light Tester	3m	ea	1
70	Shock absorber	Portable	ea	2
71	Copy M/C	A3 then more	ea	1
72	Automatic Voltage Regulator		ea	1
73	Oxy-Acce Gas Welder Set	Portable	ea	5
74	AC Arc Welder	32-300A	ea	5
75	Body Frame Repair System	For pit	ea	1
76	Double Ended Bench Grinder	0.37-1.5KW	ea	2
77	Electrope Drying Oven	350-600℃	ea	1
78	Spot Welder	15KVA	ea	5
79	Bench Drilling M/C	Ø 13mm Under	ea	2



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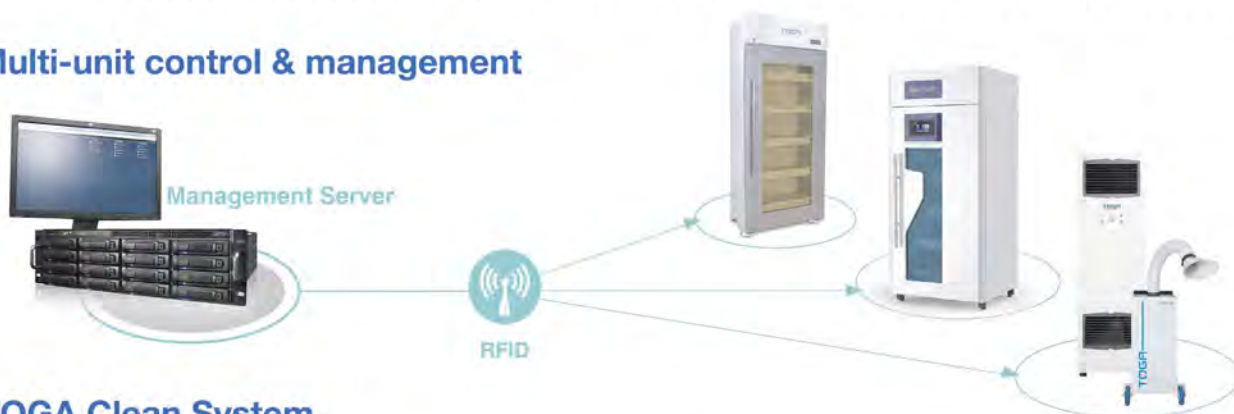
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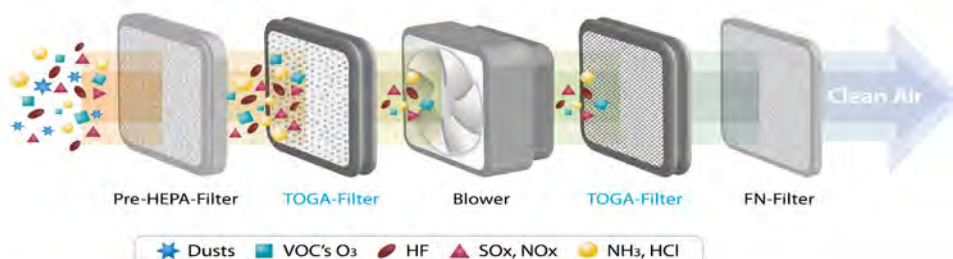
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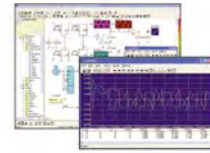
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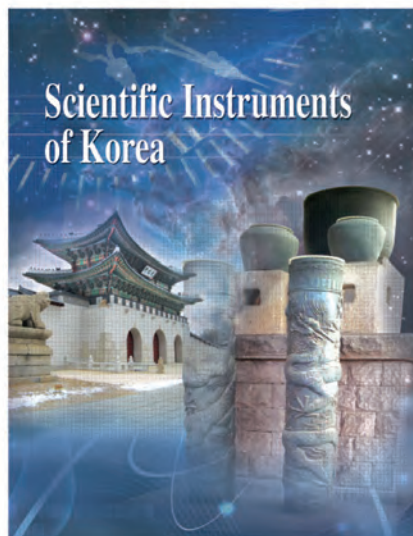
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