

2011~2012

# Scientific Instruments of Korea



Basic Scientific Devices

Audio & Video Educational System

Laboratory Equipments

Machinery and Automobile Education

Electric & Electronic Measuring Device, Automatic Control



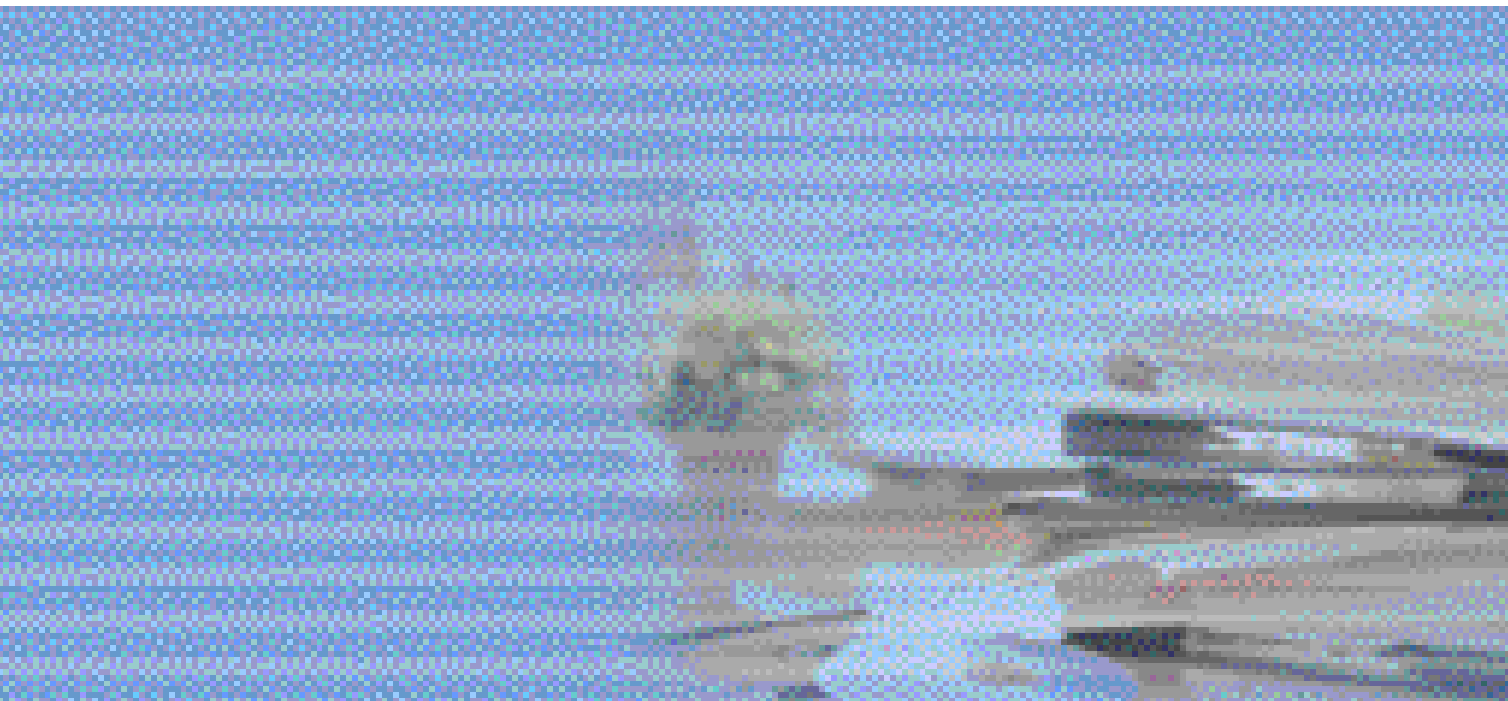
Korea Scientific Instruments Industry Cooperative

# Greeting



Today's world of information technology as a breakthrough in cross-border era of infinite competition is engaged in. Accordingly, using the world's leading information technology companies improve productivity and global competitiveness through the development of new business models to strengthen the efforts are the best.

However, information on around us, a company formed through a management innovation can be seen quite a lot of human resource training in the use situation is still weak. Also requires the development of informatization and the development of science and technology are important, but this combined with training of human resources, choose the best answer will be.



In South Korea, Education / Science / Technology sector by consolidating the three into a single government department, operating and emphasize the importance of the same weight as is. South Korea made the meantime, it is the rapid development of these technologies in education and science education is important because you want to vessels, the social climate.

Korea Scientific Instruments Industry Cooperative, we in the last 26 years to contribute to the development of domestic science education has been a member of this excellent product in the catalog of the collection was created. Korea's excellent human resources at the educational institutions and test laboratories, the highest level of lab equipment used to gather in one place is convenient to explore the configuration used for making a lot of hope.

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.

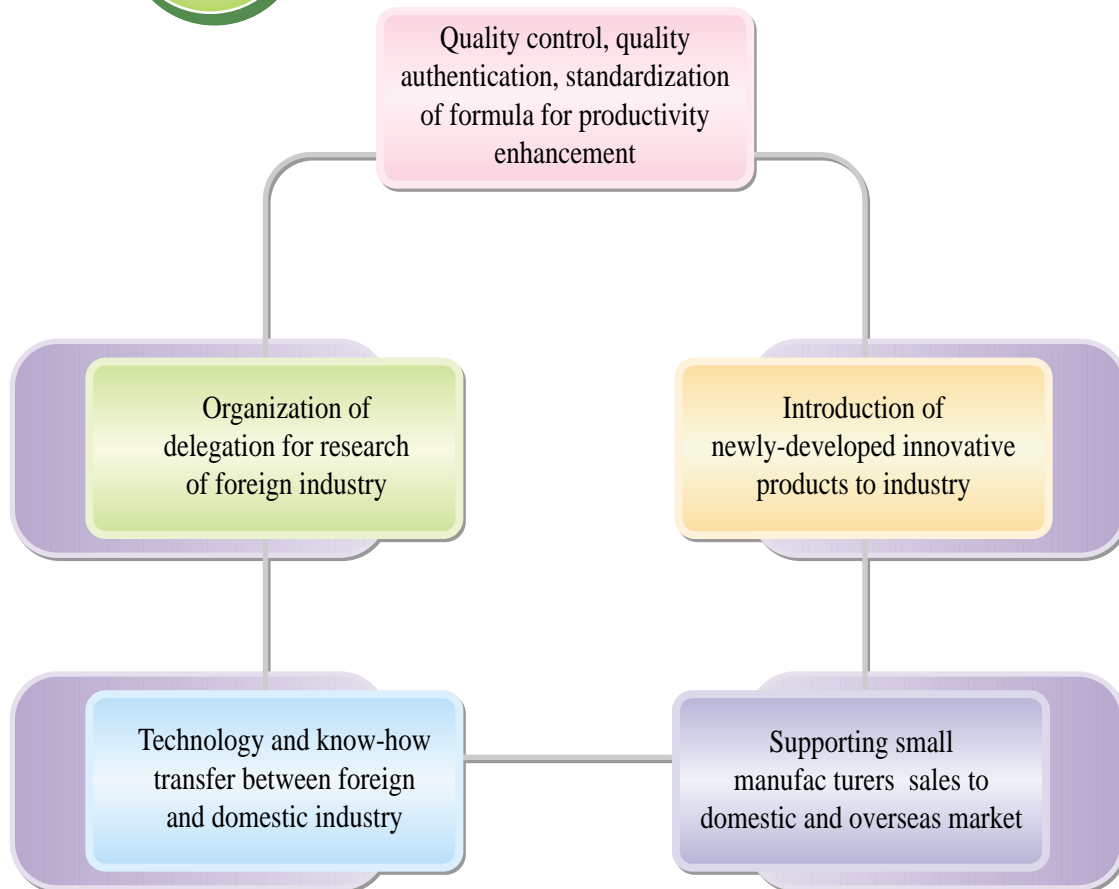
KSIIC hopes to join international efforts to enhance human standard of living by means of providing new technology and concept for students, teachers, trainers, and scientists.

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

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



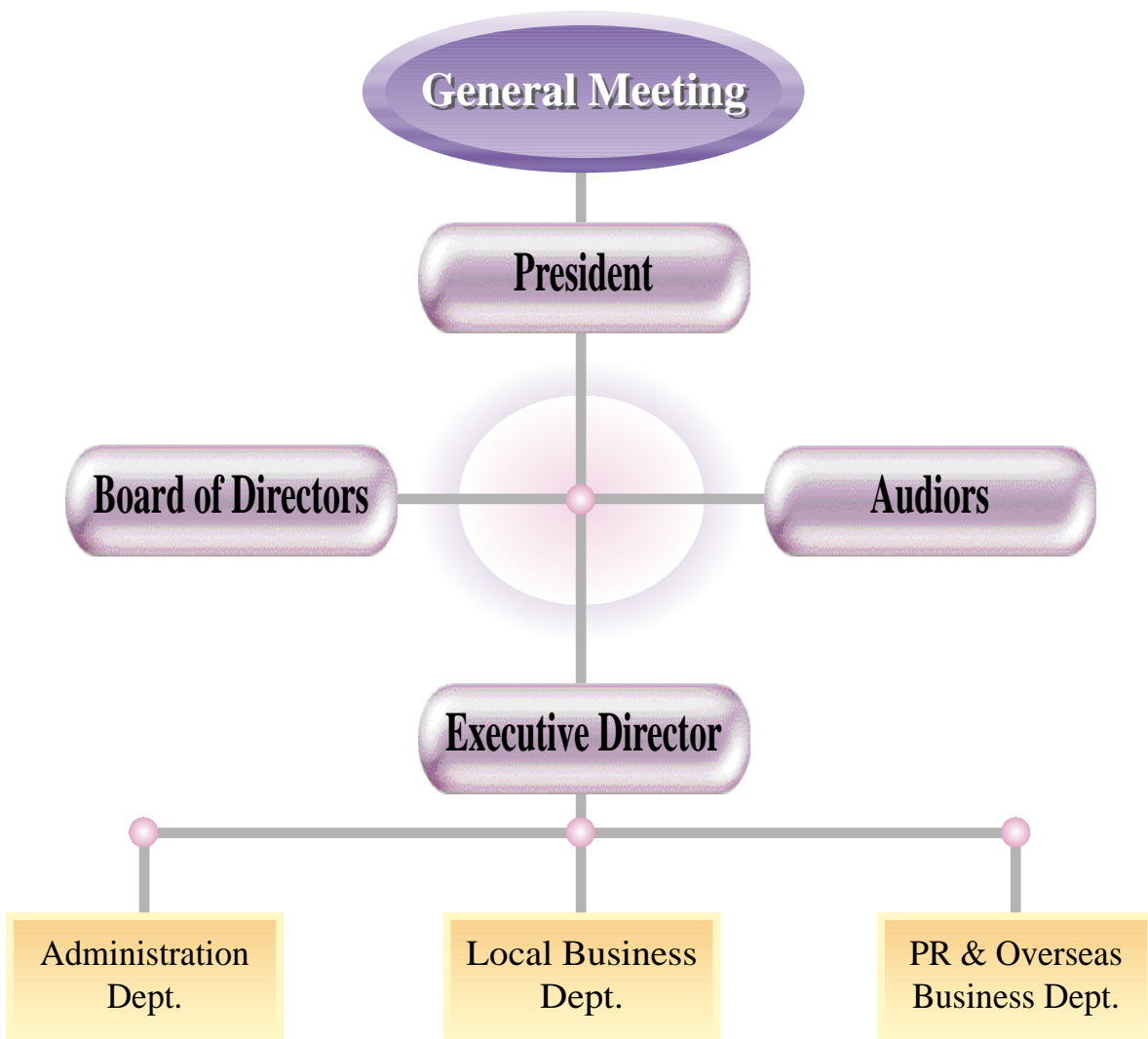
# Business



# History

- 
- 1984 Establishment of Korea Scientific Instruments Industry Cooperative
  - 1987 Appointed as Quality Inspection Institution by Industrial Avancement Administration of Korea
  - 1988 Acquired Export-Import License from Seoul City
  - 1991 Designated as a supplier of Military Equipment by Korean government
  - 1992 Opened the 1<sup>st</sup> International Scientific Instruments Exhibition at Seoul, Korea.
  - 1992 Awarded as the Best Cooperative from Korean the President
  - 1998 Established Institute of Scientific Instruments inside KSIIC
  - 2005 KOSIS 2005 (Korea Scientific Instruments Show 2005) was held in May
  - 2007 Strategic Export Market Trade Mission (Thailand and Singapore)
  - 2010 Awarded as contribute for science and education development from Ministry of Education, Science technology

# Organization







Name of Cultural Properties : **Honcheonsigye**  
(Astronomical instrument and clock)

Classification : National Treasures 230

Description : This is an astronomical clock made by Song Iyeong, who was an astronomy professor in the 10th year (A.D. 1669) of King Hyeonjong of the Joseon Dynasty. It is known that it was installed at Hongmungwan and used for measuring time and for educational purposes in the discipline of astronomy.



Name of Cultural Properties : **Cheomseongdae**  
(Astronomical Observatory)

Classification : National Treasures 31

Description : The astronomical observatory is estimated to have been built in the period of Queen Seondeok (632 ~ 647) in the Silla Era. It is presently a little tilted to the northeast, but remains almost as it used to be. It is highly valued as the oldest astronomical observatory in Asia. And, as a precious cultural property, it shows the development level of the technology at that time.

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

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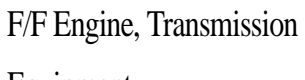

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*Basic Scientific Devices*



# Basic Scientific Devices

## Basic Scientific Devices

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Jhp-1500, 3000

## Power Supply



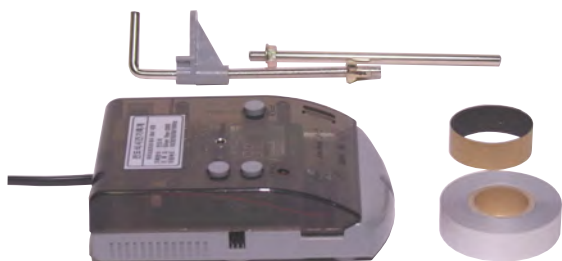
### FEATURE

- 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

Jh-9900, 10000

## Time Recorder



### FEATURE

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

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



Jh-11000

## Digital Stroboscope



### FEATURE

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

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

Jh-3008A, 5500

## Digital Stop Watch



### FEATURE

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



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



Jh-3600

## Magnetic Stirrer



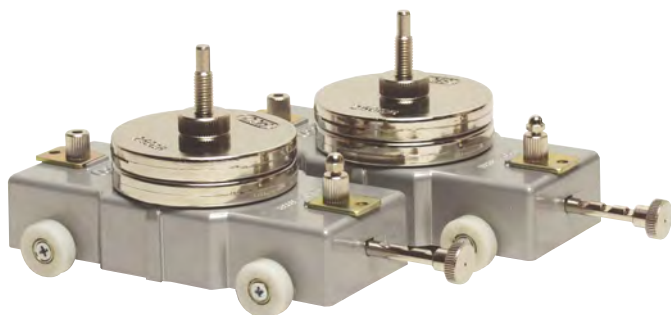
### FEATURE

- An instrument which 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

Jh-1500p

## Dynamic Cart



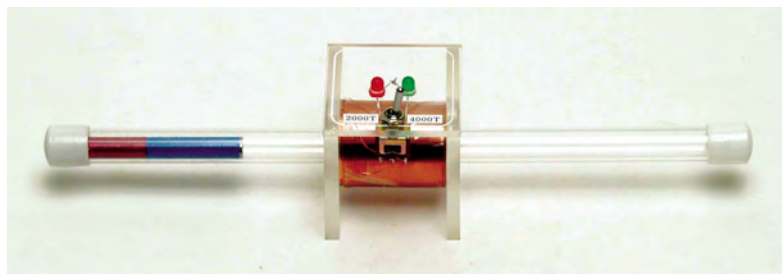
### FEATURE

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

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

Jh-4000T

## Electric Generator



### FEATURE

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

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

JHV-1999D, 1999A

## Digital Meter



### FEATURE

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

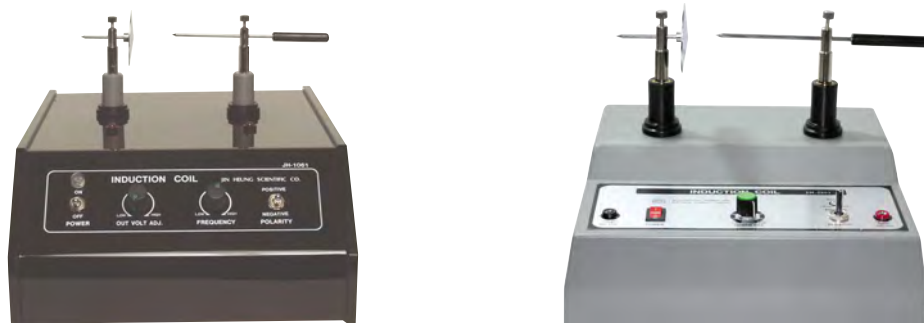
Model	Product name	Measuring range	Class	Power	Mode
JHV-1999D	DC VOLTMETER	0-199.9V	0.5%	DC 9V	L,C,D
JHV-1999A	AC VOLTMETER	0-300V	0.5%	DC 9V	L,C,D
JHA-1999D	DC AM METER	0-1.999A	0.5%	DC 9V	L,C,D
JHA-1999A	AC AM METER	0-19.99A	0.5%	DC 9V	L,C,D
JHG-1999	GALVANOMETER	0-1999uA	0.5%	DC 9V	L,C,D

Jh-1061, 2001

## Induction Coil

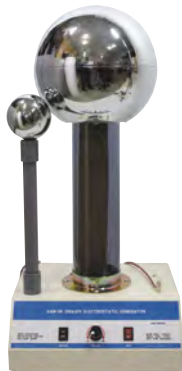
### FEATURE

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



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

## Van de graff Generator



### FEATURE

It's a belt-type generator for static electricity by collecting the electricity on a metal ball on the top after generating friction on rubber inside a transparent and charged cylinder. The stored electricity is discharged when a small ball with electricity approaches. The instrument is used for attraction and reaction by static electricity, electrification of human, line of electric force and static discharge.

Power : AC220V(50/60Hz)

Type : Vibration, embedding dry light

Dimension : 250x250x600mm

Weight : 5.25kg

## Sound Frequency Counter



### FEATURE

The instrument consists of frequency gauge and sound source microphone to measure frequency of the source. It's used for measuring frequency of tuning forks and musical instruments.

Power : AC220V, DC9~24V

Frequency : 1Hz to 20KHz

Dimension : 150x160x50mm

## Low Frequency Generator



### FEATURE

The instrument is used for sound source in sound wave experiments and for a vibration generator in wave experiment. It can be used for various experiments by connecting it to audio amplifier.

Power : AC220V, DC9~24V

Output Frequency : 1Hz to 100KHz

Output Power : 50mVp-p to 5Vp-p

Temperature for Use : 0°C to + 50°C

Dimension : 150x160x50mm

JHL-2000

## He-Ne LASER



### FEATURE

It's an instrument to generator He-Ne LASER for educational use.

The laser is used to observe direct motion, refraction, reflection, diffraction of single-color and interference of light.

Model: JHL-2000

Power : AC220V 50/60Hz

Beam Power : 2.0mW(max) 0.58mm

Wavelength : 632.8nm

Beam Divergence : 1.4mrad

He-Ne gas laser org.

JHR-5500

## Wheatstone Bridge



### FEATURE

It's an instrument to measure resistance precisely and can measure it in a proportional way by embedding standard resistance. If there is no proportion between the embedded resistance and the measured one, the meter gauge moves left and right.

Power : AC220 50/60Hz

Range : 4 Dial

Ammeter : 200uA

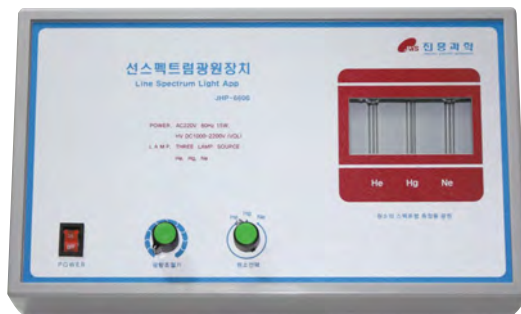
Composition : Resistance for measurement

Range : 1-11110Ω

Dimension : 330x160x120mm

JHP-6600

## Light Source for Line Spectrum



### FEATURE

It's an instrument to generate line spectrum by embedding high-voltage power in tubes for three different elements. It's possible to adjust proper voltage through voltage adjuster. It consists of standard light source to observe spectrum distribution of an element, spectrometer and samples for direct spectrometer.

Power : AC220V 50/60Hz

Lamp : Neon, helium, argon (3 kinds)

Dimension : 330x160x120mm

JHS-6060

## Stroboscope



### FEATURE

It's an instrument to observe motion of an object with optical stop or slow speed by taking advantage of stroboscopic phenomenon by a slit with 12 gaps attached to the generator for adjusting speed.

Power : AC220V 50/60Hz, DC 12V

Velocity : 10-600 rpm

Composition : Digital counter, a sloth with 12 gaps of  $\Phi$  180mm, speed adjuster

## Data logger for Education

### MAX V (KDS-MAX V)



MAX V is a device which is combined Lap-top computer and interface. It doesn't need to bring additional computer because MAX V is a complete lap-top computer. It maximizes space utilization of laboratory. 14 inch screen is adopted supplying wide and clear view. There's no limit to store data, because it has 160GB hard disk. It supports Wire/Wireless LAN, Bluetooth and USB to build perfect communication environment. It is possible to edit data by using document & graphic program of PC. User can make a report includes annotations and pictures. Also it's possible to share the report and data with others through internet. Especially it is ideal device to use Excel program based data-logging program of ScienceCube. All documents can be printed directly from MAX V, and it's compatible with any projectors. It's perfect device for ICT educational environment, because it supports network so teacher can monitor students' experiment progress.

Features	Model	Specifications
Processor	Intel CPU	Celeron M Processor (Merom based), 533MHz FSB, 1M L2 cache, Socket-P Type; Merom Duo core Processor, 533/667/800MHz FSB, 1/2/4M L2 cache, Socket-P Type.
Chipset	SIS M672	Support FSB 800, Support DDRII 667
	SIS 968	Support USB2.0 1.1
Graphic	Integrated	Support Dv:0.0, LVDS.
	SIS 307ELV	
Memory	DDRII SDRAM	SO-DIMM 200-pin Socket*1 support DDRII 667 SDRAM, up to 2GB total.
HDD		Support 2.5 inch 9.5mm 160GB HDD(SATA)
LCD		13.3" WXGA, 1280 x 800
Keyboard		Support New Win key, Number key
Power Adapter		Input : 100~240V, 50~60Hz
		Output : 20V, 3.25A, 65W
Battery		14.4V/2200mAh(AS/PI), 4 Cells
		14.8V/2200mAh(AS/PI), 4 Cells
O.S.		Supports Windows XP/VISTA
Physical Outline		Dimension : 342.7x245x33.95~36.25 mm
		Weight : less than 2.4Kg (6 cell battery)
		Color : A face : black
		B face : black C face : black & keyboard: black D face : black
Accessories		Hard Drive suppr (include screw) Optical Drive support (include screw) Driver Disc

### MAX III (KDS-MAX III)



#### Detailed Information

CPU	Intel Atom N270 1.6GHz	Port and Connectors	Audio output x 1(Stereo)
Memory	512MB DDR2 SDRAM(1GB optional)		External VGA port(D-Sub)
Network	Ethernet:10/100 Mbs		RJ45 LAN port
	Wireless LAN:802.11 b/g		USB 2.0 x 3
Storage Device	Harddisk : 120G (SATA)	O/S	Windows xp home edition
	Card reader:Support SD/MMC/MS/MS Pro(4 in 1)	Sensor Interface	Analog(or Digital) input 4 ports
Display	8.9" WXGA, 1024 * 600 pixels		12 bit ADC
	Non-Glare/Wide view type	*** each port can connect 2 sensors(optional)	
Pointing device : Touch Pad with 2 buttons	Digital in/output 2 ports, one port be alternate using serial communication		
Keyboard : 81 keys	Battery type : 11.1V/2200mAh (3 cells)		
Port and Connectors	DC-IN 20V, 2.0A, DC adaptor input		
	Mic input x 1		

### MAX Advance



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



## ScienceCube Mentor

### ScienceCube Mentor(Graphing Data Logger)

CPU	533 MHz SAMSUNG Mobile application processor
Display	320X240 pixel, Stylus and 3.5" TFT color touch screen
Power and Battery	Rechargeable, 3.7V 2,300mAh Lithium-Polymer battery Charging via USB to computer or power adapter Data reading time (Max.): up to 4 hours 72 hours on hibernate logging
Memory	256MB Flash ROM, 128MB RAN built-in storage External micro SD card slot, up to 16GB
Indicator	Data logging status LED and Power status LED
Button and Switch	5-button navigation and menu cluster Start/Stop button, Power On/Off switch
Audio	Built-in mono speaker and microphone Stereo headphone port and microphone port
Input and Output	I/O port 4 Physical channels, simultaneous and shared AI, DIO Fast ADC port : 16bit 200KHz/channel, 50KH/4channel
Sensor	AD 16bit resolution with digital filter Support for multi-dimensional sensor and virtual input
Connect to Computer	Using Microsoft ActiveSync/Windows Mobile Device Center
Mentor OS	Microsoft Windows CE 5.0 full version



## High School Package (for example)



1	KDS-MAX V	ScienceCube MAX V
2	KDS-MAX III	ScienceCube MAX III
3	KDS-ADVANCE	ScienceCube MAX Advance
4	KDM-1002	Interface - Pro
5	KDM-1002	Interface - Lite
6	KDS-1002	Thermocouple Probe
7	KDS-1005	pH Sensor
8	KDS-1007	Magnetic Field Sensor
9	KDS-1008	Relative Humidity Sensor
10	KDS-1009	Differential Voltage Probe
11	KDS-1010	Current Probe
12	KDS-1012	Microphone
13	KDS-1023	Photogate
14	KDS-1029	Dual Range Force Sensor II
15	KDS-1031	PT Temperature Probe
16	KDS-1032	Gas Pressure Sensor B
17	KDS-1033	Photometric Light Sensor
18	KDS-1035	Galvanometer
19	KDS-1041	Video
20	KDS-1042	Motion Sensor II
21	KDS-1054	Balance

### Available experiment list

#### Physics

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

#### Chemistry

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

#### Biology

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

#### Earth Science

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



# Sensor List for Data logger

## Accelerometer 5-g

(KDS-1014)



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

## Accelerometer 25-g

(KDS-1048)



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

## Absolute Pressure Sensor

(KDS-1061)



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

## Barometer Sensor

(KDS-1016)



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

## Balance I

(KDS-1053)



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

## Balance II

(KDS-1054)



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

## CO<sub>2</sub> Gas Sensor

(KDS-1020)



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

## High Concentration CO<sub>2</sub> Sensor

(KDS -1037)



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

## Conductivity Probe

(KDS-1038)



### Range:

- Low Range : 0 to 200  $\mu\text{s/cm}$  (0 to 100 mg/L TDS)
- Mid Range : 0 to 2000  $\mu\text{s/cm}$  (0 to 1000 mg/L TDS)
- High Range: 0 to 20,000  $\mu\text{s/cm}$  (0 to 10,000 mg/L TDS)

### Resolution :

- Low Range : 0.025  $\mu\text{s/cm}$  (0.05 mg/L TDS)
- Mid Range : 0.25  $\mu\text{s/cm}$  (0.5 mg/L TDS)
- High Range: 2.5  $\mu\text{s/cm}$  (5 mg/L TDS)

## Colorimeter II

(KDS-1044)



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

## Current Probe

(KDS-1010)



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

## Galvanometer

(KDS-1035)



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

## Differential Voltage Probe

(KDS-1009)



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

## DO Probe

(KDS-1022)



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

## Dual Range Force Sensor II

(KDS-1029)



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

## EKG (ECG) Set

(KDS -1040)



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

## Differential Gas Pressure Sensor A

(KDS-1034)



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

## Differential Gas Pressure Sensor B

(KDS-1032)



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

## Heart Rate Monitor

(KDS - 1046)



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

## Heart Rate Monitor [Hand Grip type]

(KDS-1069)



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

## Heart Rate Monitor [Ear Clip type]

(KDS-1070)



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

## Humidity Sensor

(KDS-1008)



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

## Microphone

(KDS-1012)



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

## Oxygen Gas Sensor

(KDS-1047)



- Range : 0 ~ 27% O<sub>2</sub>
- Output voltage range : 0 ~ 4 V in air at 25°C, sea level (standard) other range optional.
- Resolution : 0.03% (12 bit)

## Ion Selective Electrode Amplifier

(KDS-1043)



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

## Motion Sensor II

(KDS-1042)



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

## Photogate

(KDS-1023)



### Internal Gate

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

### External Gate

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

## Magnetic Field Sensor

(KDS-1007)



- Range : -50 ~ +50 G (-5mT ~ +5mT)
- Resolution : 0.024G (12 bit)
- Sensor depth : 5.0mm
- Sensor type : Radiometric, Linear Hall Effect Sensor
- Strobe Timing : changes according to interface (Max. 0.1ms)

## ORP Probe

(KDS-1039)



### ORP Electrode

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

### Electrode(ORP) Amplifier

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

## Magnetic Field Sensor II

(KDS-1063)



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

## Pulley

(KDA-15)



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



## pH Sensor

(KDS-1005)



- Range : pH 0 ~ 14
- Resolution :  $\pm 0.0036$  pH units

## Sound Level Meter

(KDS-1013)



- Accuracy:  $\pm 1.5$ dB
- Range: 35~130dB

## PT Stainless Steel Temperature Probe

(KDS-1031)



- Range :  $-50^{\circ}\text{C} \sim +180^{\circ}\text{C}$
- Resolution :  $\pm 0.06^{\circ}\text{C}$
- Sensor Properties : PT temperature element (RTD), Stainless steel covered.
- Response Time : 10s(90%)
- Chemical Resistance : 15 minutes (1M HCl)

## Photodiode Light Sensor

(KDS-1033)



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

## Stethoscope

(KDS-1051)



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

## Thermocouple Probe

(KDS-1002)



- Range :  $-200^{\circ}\text{C} \sim +1200^{\circ}\text{C}$
- Resolution :  $\pm 0.6^{\circ}\text{C}$
- Sensor Properties : Type K Thermocouple stainless steel covered.
- Linearity :  $0 \sim 400^{\circ}\text{C} (\pm 3^{\circ}\text{C})$ ,  
 $-200^{\circ}\text{C} \sim 0^{\circ}\text{C} (\pm 2^{\circ}\text{C})$
- Chemical Resistance : 15minutes (1M HCl)

## Radiation Monitor

(KDS-1030)



- Range : 0 ~ 20mR/hr (0 ~ 20,000 CPM)
- Resolution : 1 CPM
- Temperature Range : 0 ~  $50^{\circ}\text{C}$

## Spirometer

(KDS-1049)



- Range: -10 ~ +10 L/S

## Turbidity Sensor

(KDS-1017)



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

## Salinity Sensor

(KDS-1055)



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

## Stainless Steel Temperature Probe

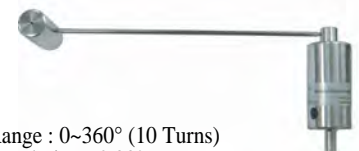
(KDS-1001)



- Range :  $-25^{\circ}\text{C} \sim +125^{\circ}\text{C}$
- Resolution :  $\pm 0.1^{\circ}\text{C}$
- Sensor Properties : Thermistor Stainless steel covered
- Response Time : 10s(90%)
- Chemical Resistance : 15 minutes (1M HCl)

## Rotary Motion Sensor [Analog]

(KDS-1071)



- Range : 0~360° (10 Turns)
- Resolution : 0.88°

KISCO-8055

## Thermometer Case



### FEATURE

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

### SPECIFICATION

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

KISCO-900

## Total Water Meter



### FEATURE

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

### Accessories

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

### SPECIFICATION

\* Component

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

KISCO-1

## Scoliometer Edu System



### SPECIFICATION

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

### FEATURE

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

### Accessories

- Descriptions
- Aluminum case

### Basic understanding of scoliosis

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

KISCO-8044

## Spring Scale



### FEATURE

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

### SPECIFICATION

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



SPE102

## V-styled Electrolysis Apparatus



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

### FEATURE

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

### Component and Size

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

SPE103

## The Law Of Boyle Experiment Equipment

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

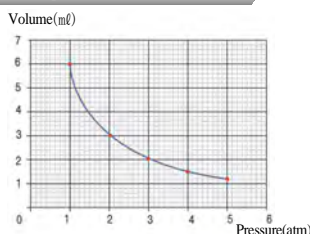
### Component and Size

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

### FEATURE

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

### Experiment data

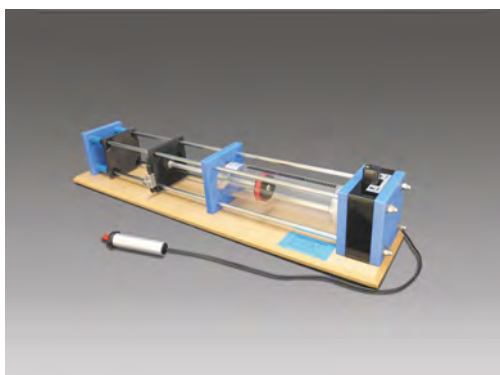


Reference)

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

SPE104

## Experiment Equipment On The Law Of Gaseous Reaction



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

### Component and Size

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

### FEATURE

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

SPE154

## Gas Generator (KIP Equipment)



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

### Component and Size

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

### FEATURE

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

SPE105

## Photosynthesis Experiment Equipment



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

### Component and Size

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

### FEATURE

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

SPE116

## Flame Reaction Experiment Equipment

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

### Component and Size

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

### FEATURE

We observed flame reaction of metal with combusting solid sample on existing flame reaction experimentation, but we couldn't observe in details since combustion time was very short. This flame experimentation equipment allows anybody to observe flame reaction of metal easily to extend combustion time with combustion method that changed liquid sample to gas not with method of combustion of existing solid sample. Also it allows experimenting easily by putting solution of  $BaCl_2$ ,  $NaCl$ ,  $KCl$ ,  $SrCl_2$ ,  $CuCl_2$  into each container.

- You don't need to prepare extra stuffs for experimentation since experimentation preparation is integrated.
- You can observe flame color of element in details with extending combustion time.
- You can separate and assemble body of experimentation equipment and liquid sample container easily on experimentation.



SPE117

## Expansion of Ion Experiment Equipment



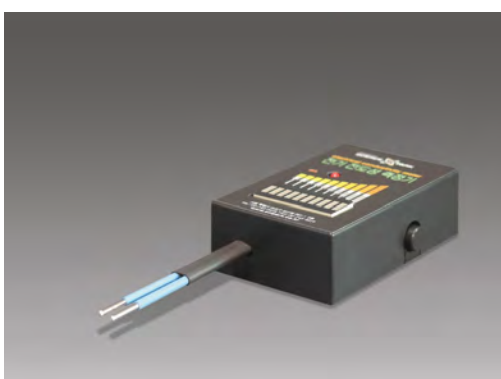
How work this equipment is that LED lamp is lighted by current of 2 electrodes after distilled water is changed to electrolyte solution by ion. Since ion speed meter is lighted on as soon as ion moves you can see movement of ion easily. Also you can measure movement speed of ion. You can measure movement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

### Component and Size

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

SPE115

## Electric Conductivity Apparatus



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

### Component and Size

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

### FEATURE

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

SPE111

## Micro Stirrer



### Component and Size

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

### FEATURE

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

SPE123

## Convection Complex Experiment Equipment



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

### Component and Size

- Component:
- Size: 145x46x120mm (LxWxH)

SPE120

## Multi Electrolysis Kit



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

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

### Component and Size

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

SPE113

## Observation Apparatus for Heat Conduction



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

### Component and Size

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

### FEATURE

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

SPE118

## Expansion of Gas Experiment Equipment



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

### Component and Size

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

### FEATURE

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



SPE124

## Gas Discharge Tube (Line Spectrum)



Now anyone can use the Line Spectrum Observation Device that you had to give up because of High price. This is the device to investigate Line Spectrum distribution of element from the gas discharge tube. You can observe Line Spectrum light of several elements such as Hydrogen, Neon, Argon and Nitro and so on.

### Component and Size

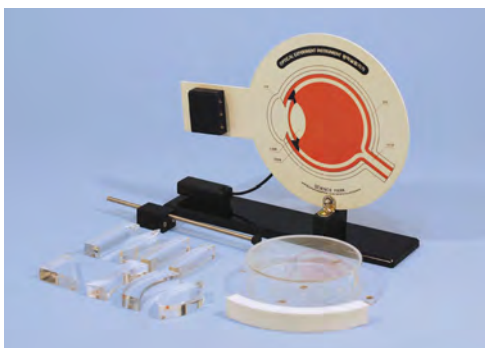
- Component: Main Device, 5 kinds of spectrum tubes
- Size: 410x140x200mm (LxWxH)

### FEATURE

- This device is designed safely not to get electric shock from the electrode having high-tension electricity since the electrode is covered when the discharge tube is installed differently from existing experimentation device.
- It gets more convenient without buying Stand, High-tension electricity device and discharge tube separately. You don't need to keep the discharge tube separately since the gas discharge tube has keeping case in the device.
- The discharge tube that can be broken on the gas discharge tube easily get shorten and banded as U shape, so we could reduce the risk from breaking.

SPE149

## Multi-optical Experimentation Device



This is the experimentation device to explain refraction of light with lens. It can explain function of eye lens with eyeball model on the front of the device. You can learn status of hyperopia and myopia with difference from refraction of light as thickness of eye lens and learn the reason why people wear glasses and the corrected eyesight. You can do several experimentations such as refraction, reflection, diffused reflection and total reflection with optical water tank and reflection plate on the back side.

### Component and Size

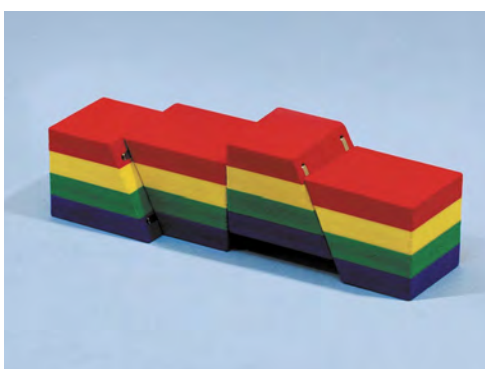
- Component: Main device, 3 Lights source device (1), 1 Light source device (1), convex lens (4), concave lens (1), reflection plate (2), Prism (1), Optical Water tank (1)
- Size: 300x60x230mm (LxWxH)

### FEATURE

- You can explain myopia, hyperopia and corrected eyesight by changing eye lens with experimentation device on the front.
- You can explain refraction angle of incidence and total reflection with optical water tank.
- You can do several experimentations such as straight, reflection, diffused reflection and prism phenomenon of light with reflection plate.

SPE153

## Fault Model



The stratum is cut by tension to the each side, lateral pressure from each side and gravity. It can move little bit (mm) or far away (Km).

This is the experimentation device to help your understanding with making model from moving stratum by physical tension.

### Component and Size

- Component: Main Device (4 pieces)
- Size: 160x40x40(LxWxH)

### FEATURE

- You can make and understand 4 kinds of fault structure (vertical-slip fault, strike-slip fault, reverse fault, normal fault) with this device only. There are 5 kinds of Pot color and you can choose the color what you want when you buy.

SPS104

## Ion reaction KIT (For 2 people)



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

SPE114

## Osmotic Pressure Apparatus



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

### Component and Size

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

### FEATURE

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

SPS102

## Detection of nutrient KIT (For 2 people)



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

SPS103

## Making aspirin KIT (For 2 people)



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

SPS109

## Neutralization reaction experiment KIT (For 2 people)



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



DR-103C

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



### FEATURE

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

- Size : 5  $\Omega$ , 10  $\Omega$  (Voltage 6V)

### How to use

- An experiment or measurement is not performed if no water for safety.
- Pour water up to scale ( more than 250cc for emerging cartridge).
- Measure current temperature.
- Connect the power
- Experiment the relation between jule's heat and mechanical equivalent heat.

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-820

## Ghost bank



### FEATURE

- It's the law of reflection and saving box that It's able to observe previous actual scene.

The reflecting telescope's principal is same as

This saving box.

We can use for decoration and quest.

- Size : 90 x 110 x 150mm

DR-103

## Jule's Heat, Exothermic reaction, apparatus



### FEATURES

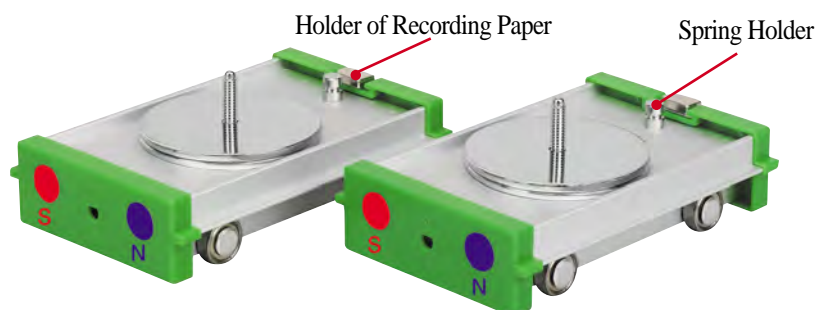
- This equipment shows transaction of energy by changing electric energy into kinetic energy and into heat energy again.
- Students are able to measure data quantitatively from LED indicator. Students can look inside and watch the mill rotating as the bowl is made from transparent plastic. This is a 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



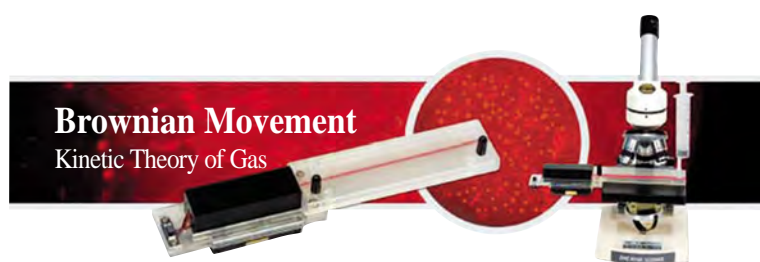
### FEATURE

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, neonium magnetic x 8, holder of recording paper

DR-105

## Brownian Movement (Kinetic Theory of Gas)



### 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 lens.
6. Proper magnification is to be magnifying power from 40 to 100.
7. Require prompt observation.

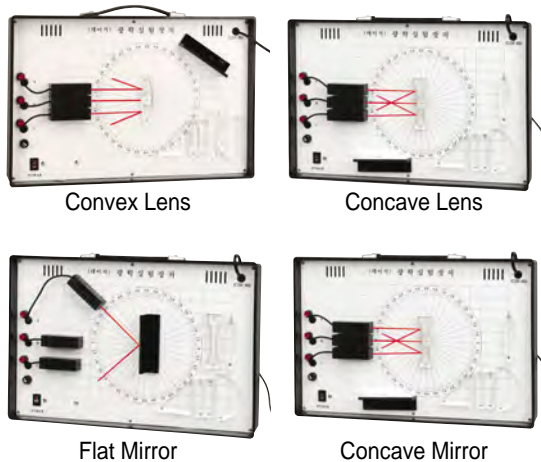
### FEATURE

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)

DR-201

## Laser Optics Experiment Device



### FEATURE

- Composed to be easy to understand for experts and novices. The laser can always maintain bright light taking advantage of AC even when battery is changed. And the screen coated with special material supports the brightness of light. The screen can stay standing or laid due to its magnetic characteristic. Neonium magnet is attached at the back of the screen for the magnetic function.
- Size : 440 × 290 × 70mm (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-202

## Lens Set



### FEATURE

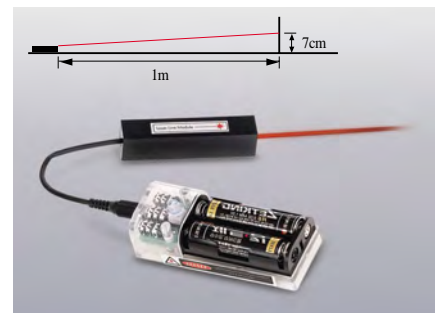
Easily attachable on the metal surface with magnets available for teaching.

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

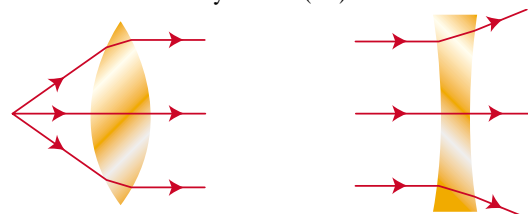
DR-203

## 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 x 20 x 22mm (W x D x H), Laser module x 1
- Power source : AA battery 1.5V x 2(3V)

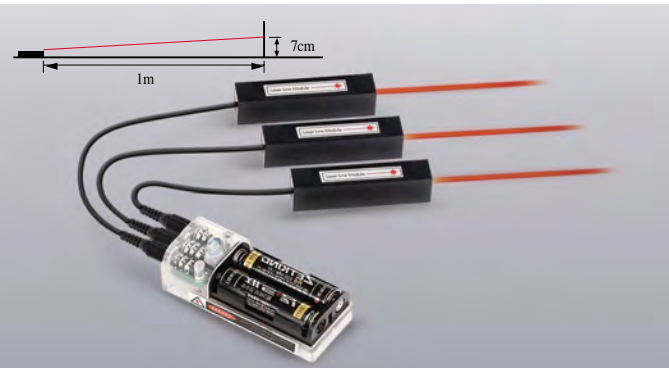


A convex lens gathers the light, and a concave lens spreads the light.



DR-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-214

## Slit Laser Lens Set

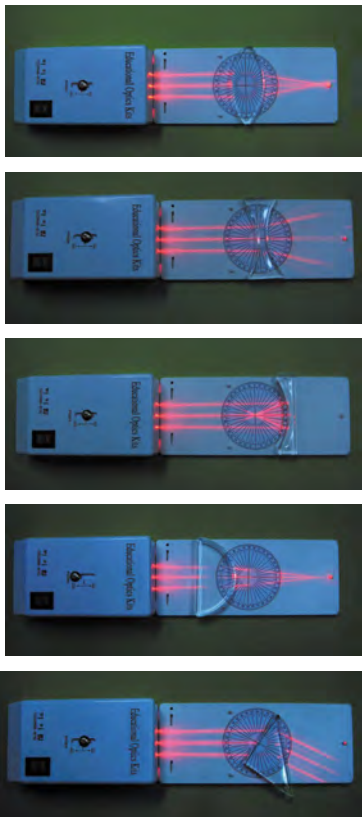


### FEATURE

- Easy attachable on the metal surface with magnets at the back side of laser box.
- And helps to understand how it°Øs bended and processing for the light.
- Size : 12 types 1 set
- Power source : AA battery 1,5V x 2(3V)

DR-205

## Educational Optics Kit



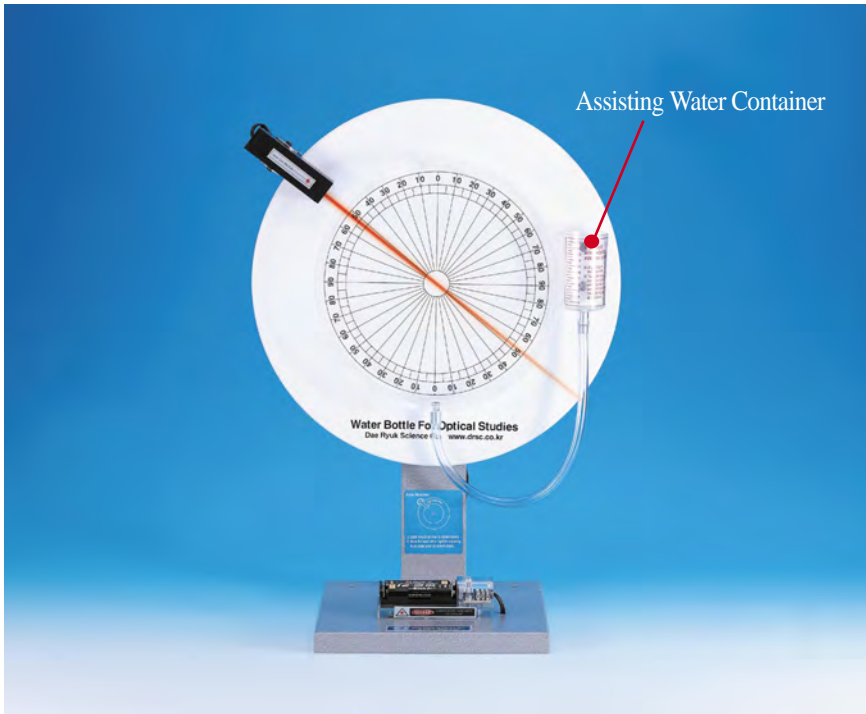
### FEATURE

- 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-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-207

## Light Composition Testing Equipment



### FEATURE

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

- Size : 320x200 x215mm (W xDxH)
- Power source : AC110 ~ 240V 50/60Hz

### How to use

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





DR-208

## Colored Top



### FEATURE

It makes various color composition by using various colors.

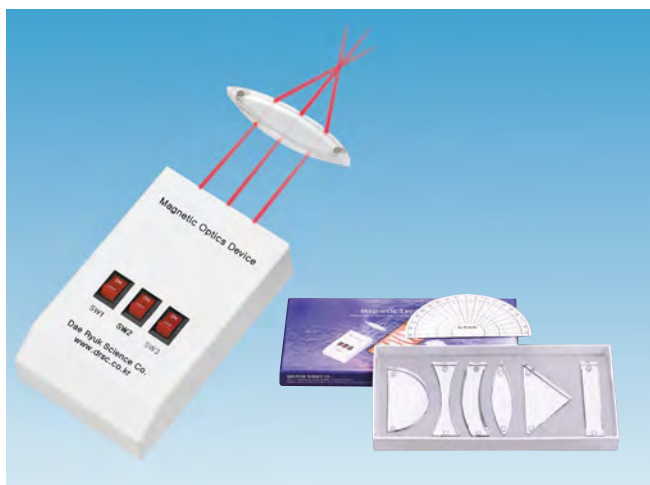
- Size : 10 monochromatic color, 1 three primary color filter board (red, blue, yellow)

### 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.

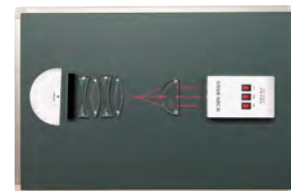
- Size: Optic device 150 x 90 x 40mm,

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-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)

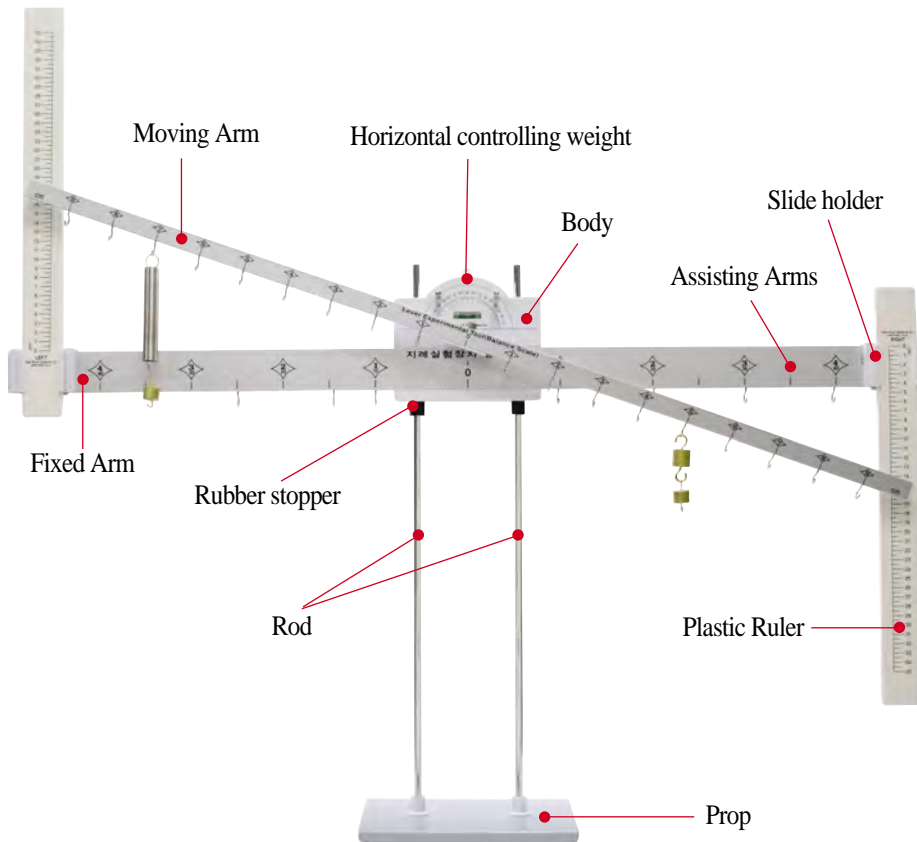
- Component: Laser, main laser power

Attachment example for magnet Blackboard



DR-302

## Lever Experimental Tool (Balance Scale)

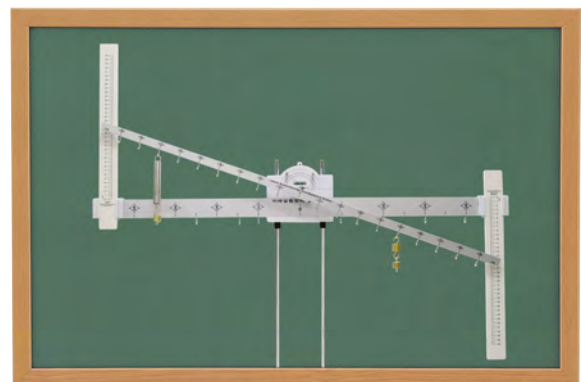
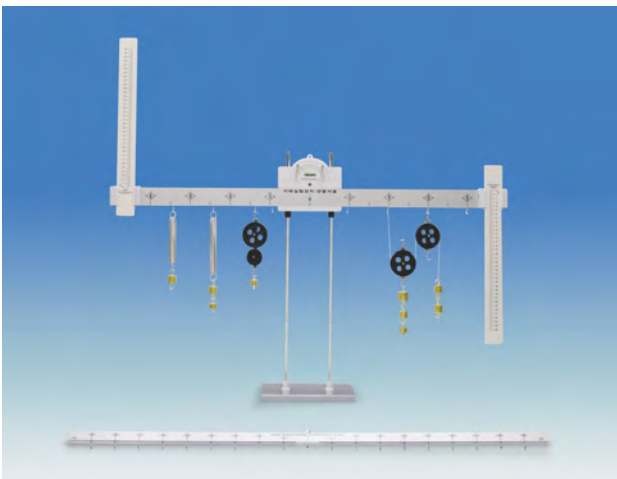


### FEATURE

Example of Statics Experiment

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 disjoined 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)

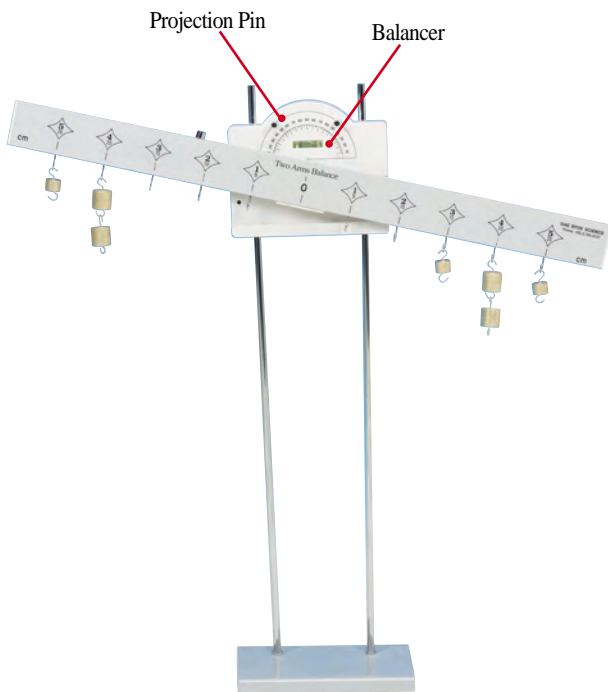


Example of Using Magnetic Blackboard



DR-301

## Two Arm Balance



### FEATURE

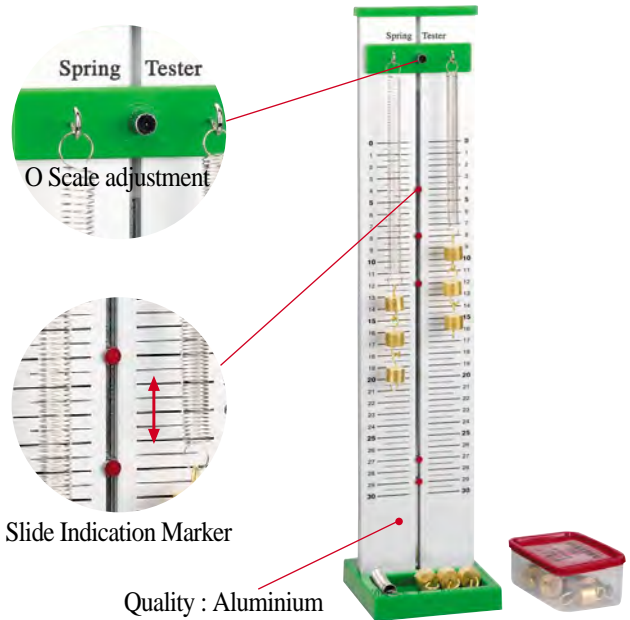
It was made to hang objects at a hook which is divided into both sides with a central point of 600mm of the arm as a standard, and there is a balancer and balance adjustment knob at the bottom and head parts to adjust balance. Also

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 : 600x50x100mm (WxDxH)

DR-303

## Spring Tester



### 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.

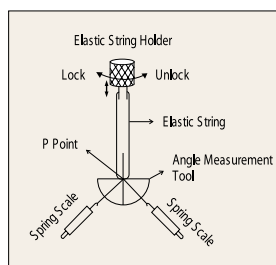
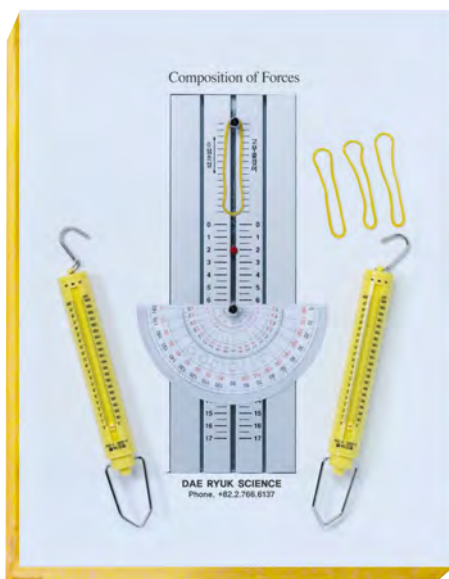
- Parts : 20g weightx5, 30x3, two types of springs, 5 side indication markers

### 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

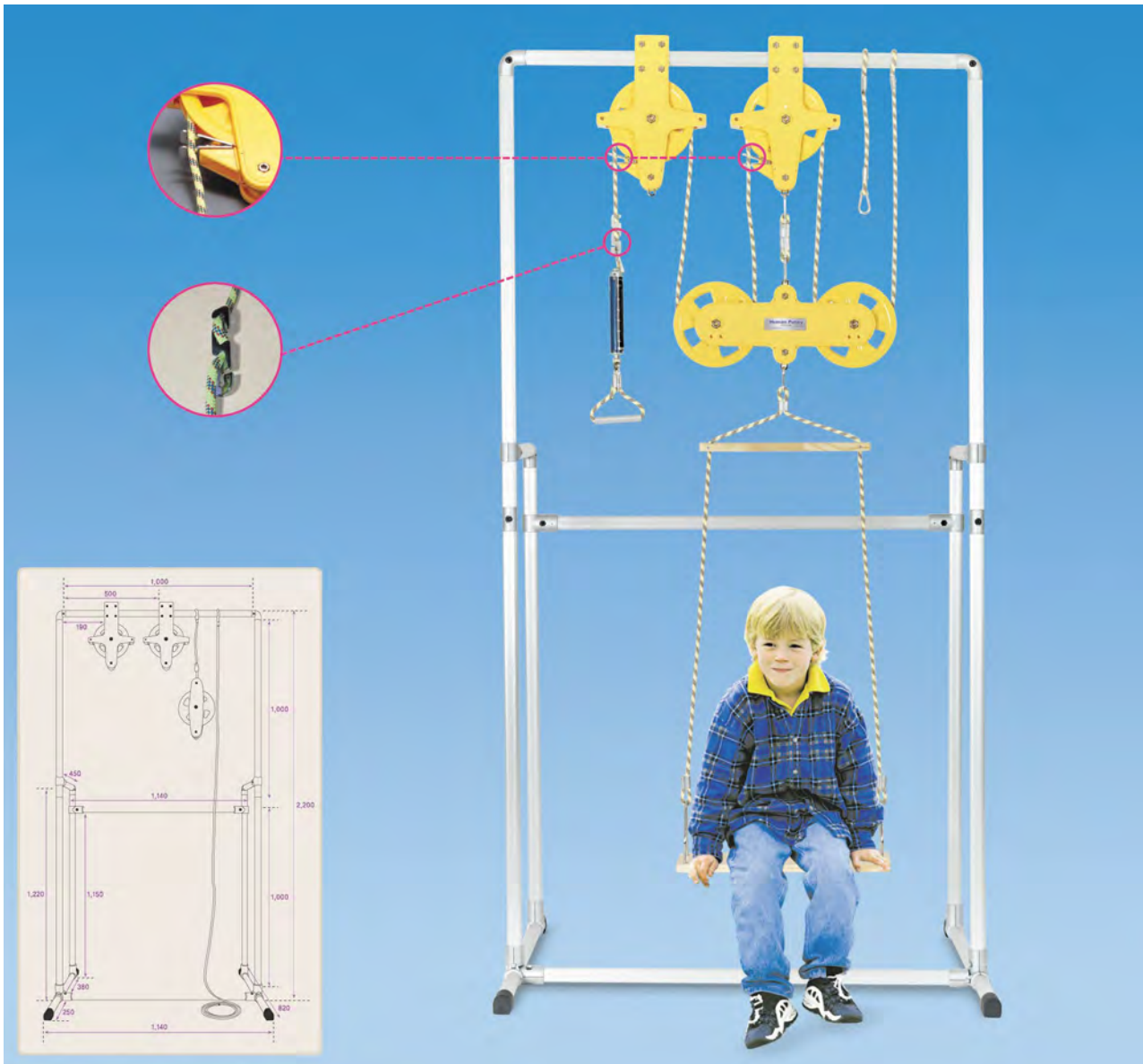
- When you turn the handle left and right after hanging the gum band to a elastic string holder, it becomes locking and unlocking, and adjusts 0 scale (  $\uparrow$  up  $\leftarrow$  down).

※ 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)
- 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-401

## Battery Voltage Measuring Apparatus

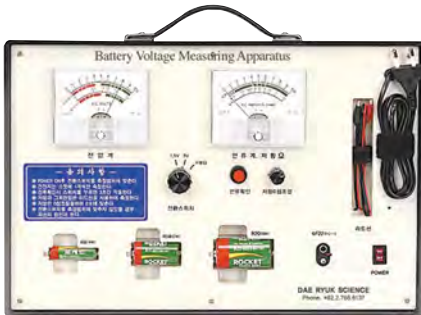
### FEATURE

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

- Size : 440x290x70mm (WxDxH)      • Power source : AC110 ~ 240V 50/60Hz

### How to use

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



DR-402

## Electric Resistance Experiment Circuit

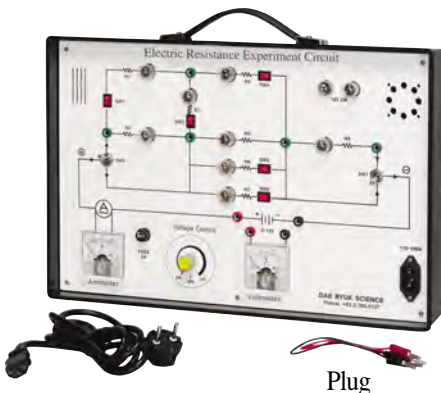
### FEATURE

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.



DR-403

## Spring Board

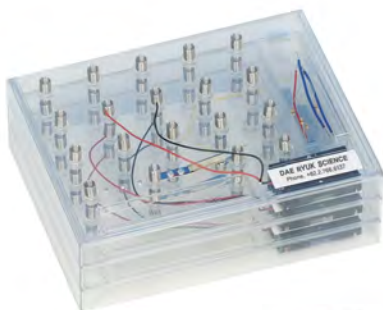
### FEATURE

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

- Size : 220x175x25mm (WxDxH)



Method of Connecting Wire



\*Spring Board\*





DR-404

## Bulb Resistor Block



Size : 155 × 50 × 20mm

DR-405

## Fuse Block



Size : 155 × 50 × 20mm

DR-406

## Buzzer Block



Size : 155 × 50 × 20mm

DR-407

## Battery Socket Block



Size : 155 × 50 × 20mm

DR-408

## Bulb 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-409

## Motor Block



Size : 155×50×20mm

DR-410

## Switch Block



Size : 155×50×20mm

DR-411

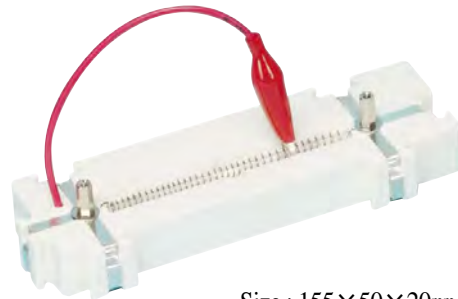
## Nichrome Wire Resistor Block



Size : 155×50×20mm

DR-412

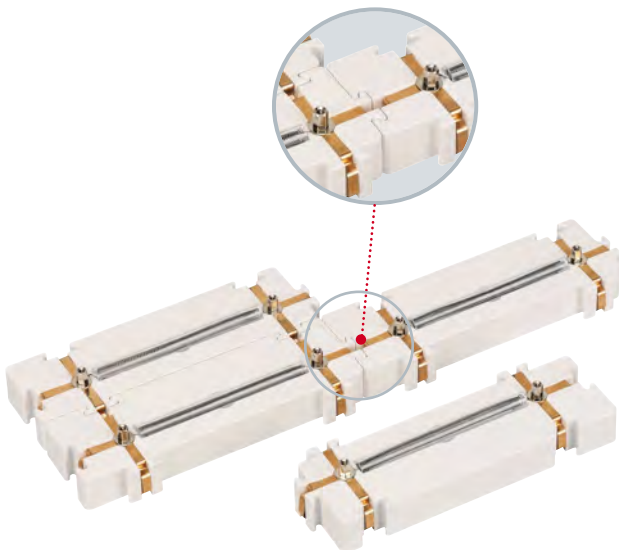
## Variable Resistor Block



Size : 155×50×20mm

DR-413

## Nichrome Wire Resistor Block Set (4 pcs)



### FEATURE

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.

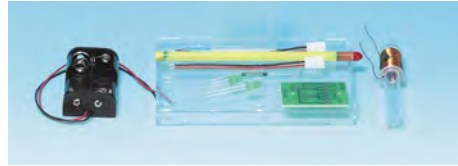
- Size : 115x50x20mm (WxDxH)  
5Ω, 10Ω, 15Ω, 20Ω, 1 each

### 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-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-416

## Magnetic Buoyancy Experiment

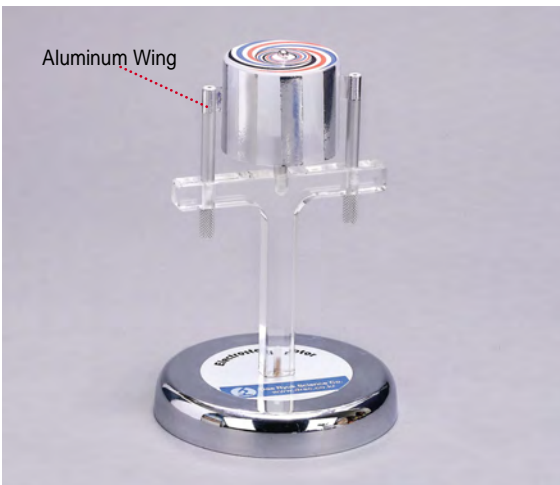


### FEATURES

- To the respectively different pipe (copper, acryl and aluminum 3 type) it can be experiment for Magnetic field of electric current and eddy current as to be under falling experimenting neonium magnet that is a possibility of experiment. Especially, for the acryl pipe attached three coils with LED sticks
- It will be able to observe the current intensity direct in the lucidity and the terminal of the light in compliance with a falling speed.
- Size: 350 x 200 x 500mm
- Component : Pipe 3 types ( Copper, Acrylic aluminum ) 3 pcs coil, Electrode, Neonium magnet

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)

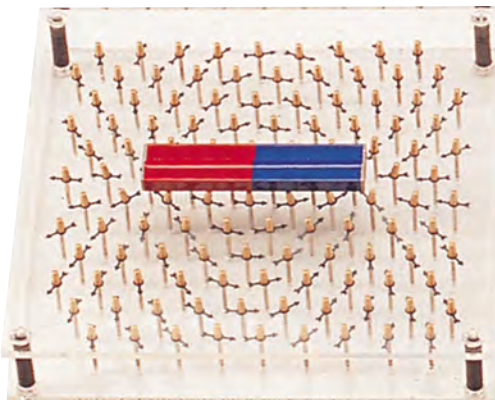


### FEATURES

- 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 battery, High voltage output 10 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.

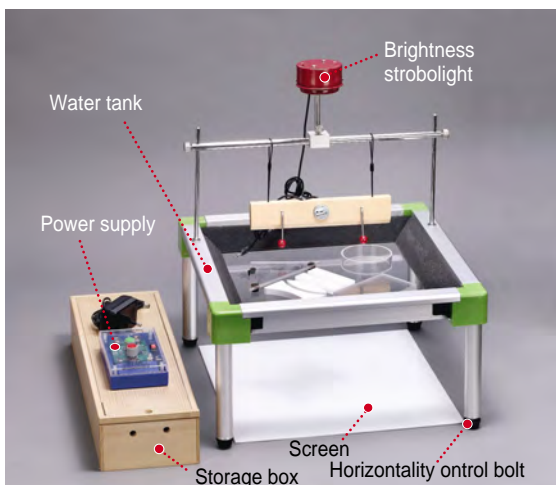
- Size : 150 x 150 x 25mm (W × D × H),  
consists of 108 magnetic needles 1 Alnico bar magnet



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-601

## Measuring Instrument for Diffusion Speed of Gas

### How to use



### FEATURE

It allowed to smear sample ore to each cotton by improving construction of the glass tube while it improved accuracy of speed.

- Size :  $\Phi 24 \times 600$ mm

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

DR-701

## Breathing Capacity Meter

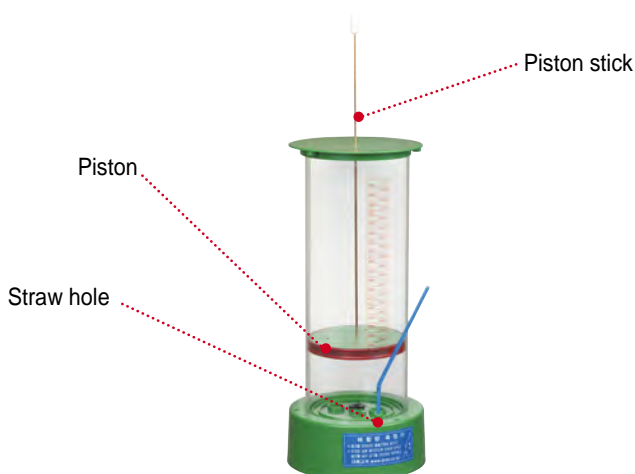
### FEATURE

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

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

### 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 °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 :  $\Phi$  130 x 120mm
- Component : Container, Thermometer, Stirrer

DR-804

## Specific Heat tester

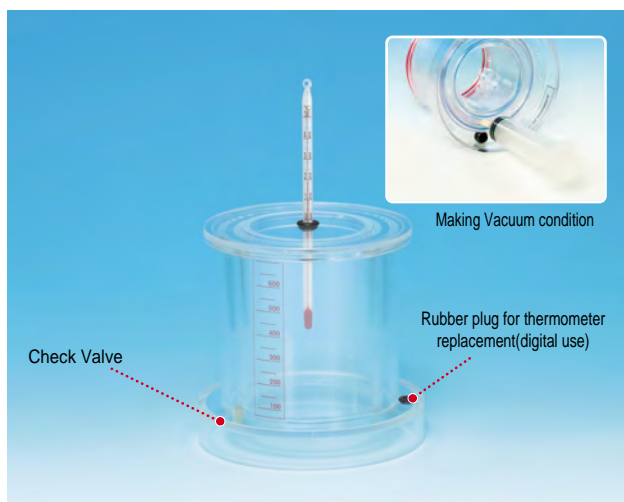


### FEATURES

- 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 :  $\Phi$  130 x 120mm
- Component : Container, stirrer, Thermometer, Specific heat measuring objects(3).

DR-805

## Transparent Vacuum Cup

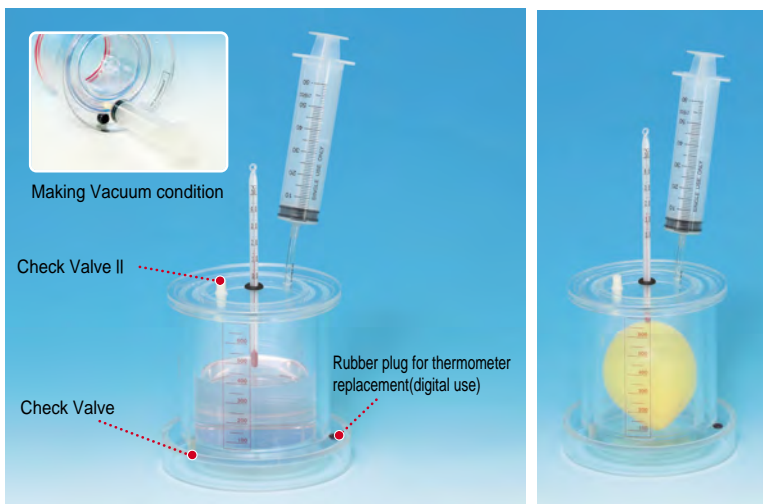


### FEATURES

- 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 °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 :  $\Phi$  130 x 120mm
- Component: Container

DR-806

## Decompression Boiling Point Tester



### FEATURES

- It can be experimented difference the boiling point as it's put the boiling water in transparent container.
- The temperature of inner container is 300°C and can be Together with vacuum experiment.
- After experimented, When you open the cover, It's to be Push check valve II, then, the air will be removed.
- 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

DR-808

## Adiabatic Expansion tester (Type B)



### FEATURES

- It can be use big capacity(around 10 liter) of lower hole Bottle as it's possible to compress the air, can see cloud occurrence & moving in transparent glass bottle.. This product approved by the teacher's experiment and Investigation in the schools.
- There is a exhaust valve at the part of head that is to be full out big volume's air in a flash and to be operate safety valve for the protection for excessive pressure.
- It can be see cloud occurrence clearly that it's to be move inner air of the container by large exhaust hole Instantly.
- Size: lower hole 10 liter container.
- Component: Lower hole bottle, exhaust valve, safety valve, compressor, digital thermometer, air pump

DR-809

## Boyle's Law Demonstrator



### FEATURES

- It can be observed the relation with pressure of gas and the volume.
- It combines and builds PVC injection to wooden holder, Use the check valve to be control the air at the end of Injection using the hose. Then, It can be adjust easily for Scaled level control.
- Boyle's law is one of law as made the name of Robert boyle. It shows the relation between the volume and Pressure.

### Boyle's law is expressed as follows.

If it's fixed the volume and temperature of gas, pressure(P) And volume(V) is in inverse each other.' In other words, if Pressure will be grow big, the volume will be shrink and If pressure will be grow smaller, then the volume will be Grow big.

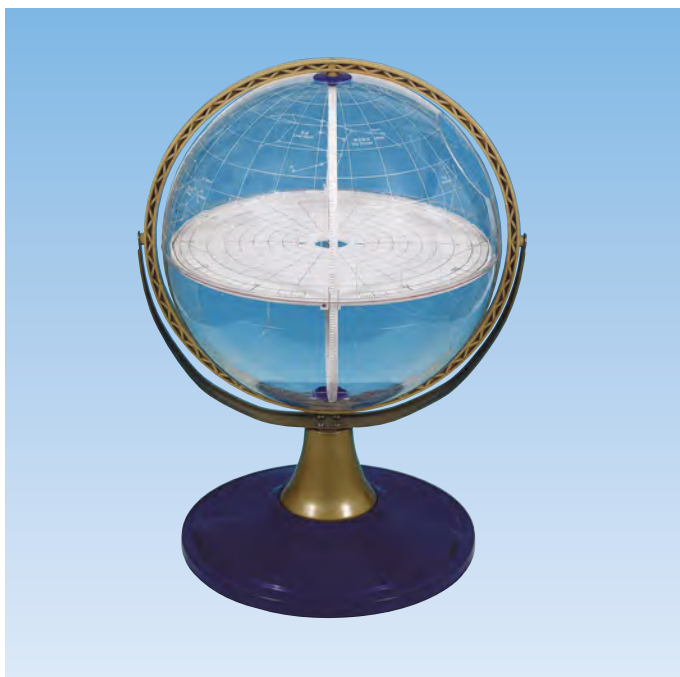
- Size: 130 x 130 x 170mm
- Component: Wooden material, 1 kg pendulum 3ea





DR-952

## Multi Celestial Globe

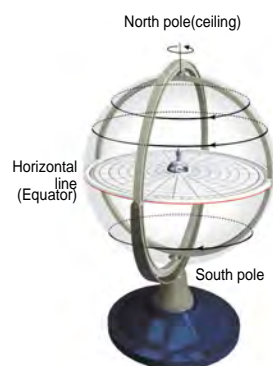


### FEATURES

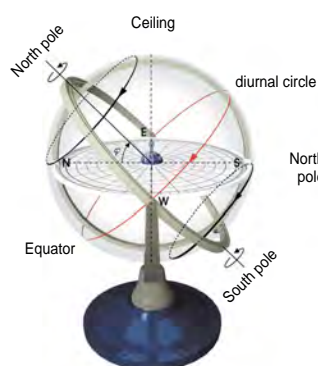
#### [different point than current celestial Globe |

- Entrance is at the surface of Celestial Globe, meridian and circular board is in Celestial Globe.
- Circular board rotating freely and It's classifiable as Horizontal plate, equator and ecliptic depends on Learning service.
- Available to process the simulation on the various Movement of heavenly bodies as attach the Subcomponent to attachment hole of circular board.
- The hole is pierced at the surface of Celestial Globe. It can be insert the stick to get the result meridian Altitude formula and terrestrial radius.
- It's sky and horizontal plate, standing the observer (doll) in small space and It's template for solid Constellation.
- Information on the experiment: Report 23 type, Astrology experiment book as mentioned the instruction Manual and right answer(160 page)
- Size:  $\Phi$  400mm

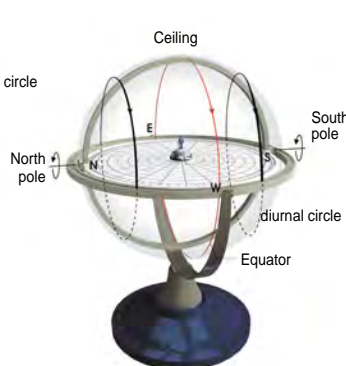
### Diurnal motion of the star depends on latitude



North pole region

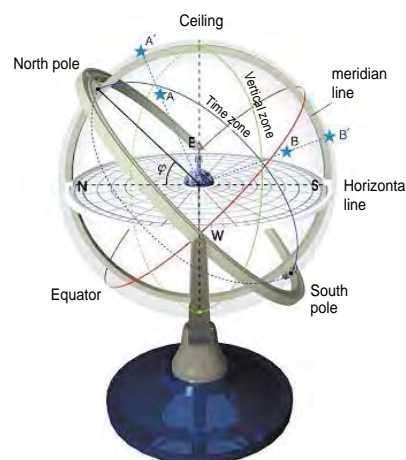


Middle latitude region



Equator region

### Structure and the name of celestial Globe



DR-608

## Funnel Dish



### FEATURES

- No concerning remains liquid or the material as it's made the figure to be spill out, be a matter of liquid or powder. When it's moving the liquid and powder, can be clearly Treatable as it's pick up with the finger for both side.
- It can be use easily when it take out of the medicines Or small divide.
- It's able to use instead of wrapping paper of the medicine when measuring the weight through the balance.
- Size: No 1(small)  $\Phi$  65mm No2(Medium)  $\Phi$  76mm No 3(Big)  $\Phi$  87mm



SG-K100

## Force and Momentum Kit



### FEATURE

The Force and Momentum Kit of Physics Experiment and Electric Circuit Set, students can learn to theoretical force and momentum through various experiments. Also we can understand Newton's law using by Dynamic Car and Track form the Force and Momentum Kit.

SG-K500

## Light and Wave Kit



### FEATURE

The Electricity and Magnetism Kit of Physics Experiment and Electric Circuit set, students can learn to theoretical Electricity and Magnetism through various experiments. Also we can understand Amepere's law and Ohm's law using by The Electricity and Magnetism Kit.

SG-K600

## Electricity and Magnetism Kit



### FEATURE

The Light and Wave Kit of Physics Experiment and Electric Circuit Set, students can learn to theoretical Light and Wave through various experiments. Also we can understand various optically principle using by the Light and Wave Kit.

SG-M100A

## Segye Moving Picture System (SMPS)



### FEATURE

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

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

### Experiment

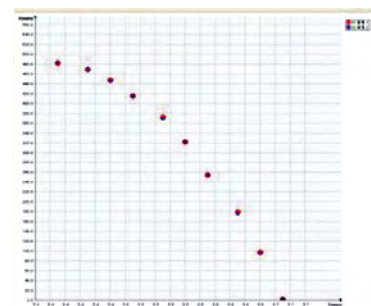
- |                               |                                  |                                  |
|-------------------------------|----------------------------------|----------------------------------|
| 1. Segye Air Table Experiment | 5. Spring Pendulum Experiment    | 9. Free Fall Experiment          |
| 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-M7136

## Free-fall experiment apparatus

### FEATURE

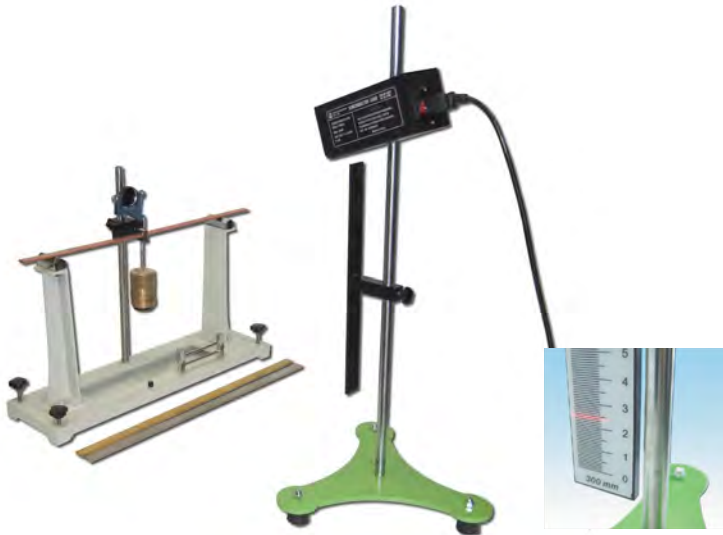
This Free-Fall experiment apparatus is used to Segye moving picture system.



Y-T Graph

SG-5206

## Ewing's apparatus(optical lever)

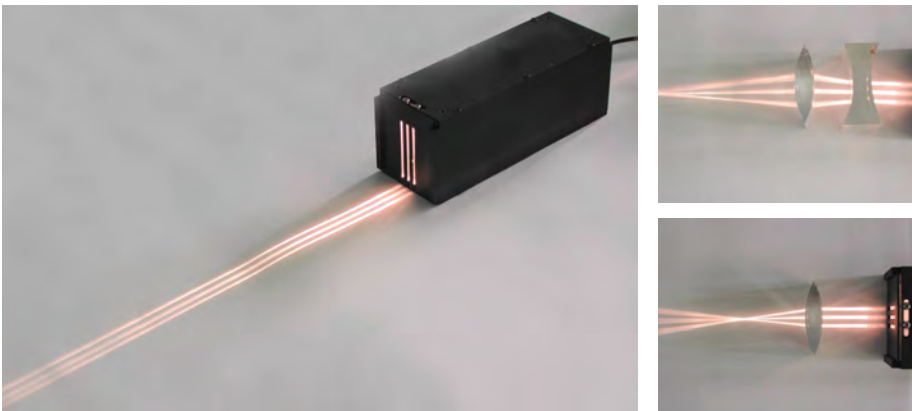


### FEATURE

Mass is suspended at the center of metal stick by Ewing's apparatus.  
The distance of center point measures Young's rate of metal stick.

SG-9502S

## Basic optics experiment system



### FEATURE

This apparatus consists of three laser and various lenses. It is used for the experiment of reflection and refraction of light. Students can observe the travel of beam.

SG-9111

## Ampere's law system



### FEATURE

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

SG-7800

## Potentiometer system



### FEATURE

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



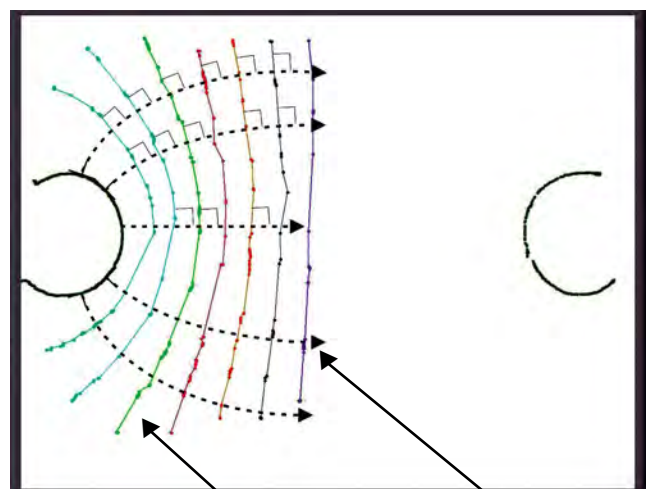
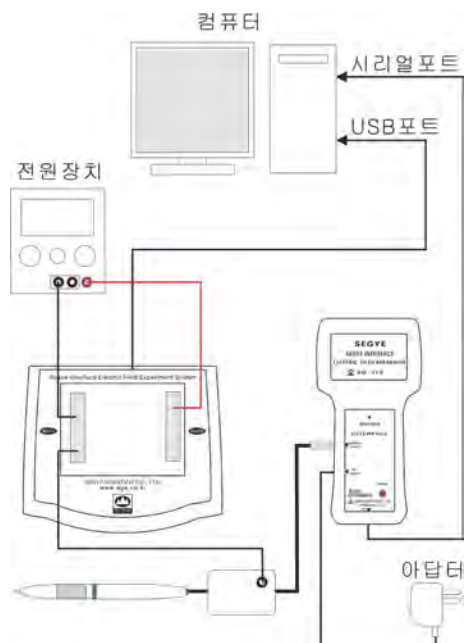
SG-IT2

## Segye interface electric field apparatus system



### FEATURE

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



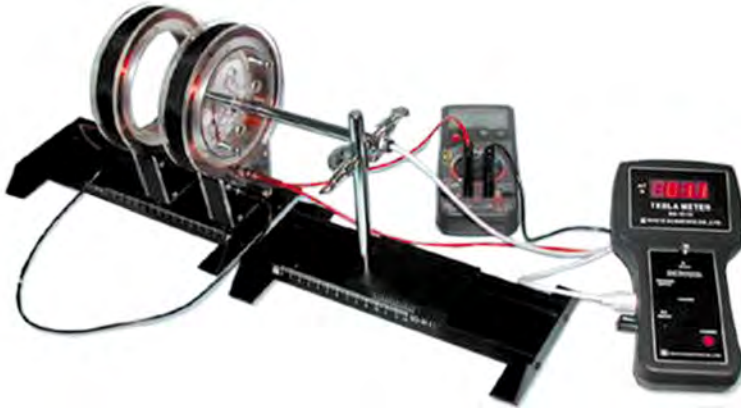
Equipotential line

Electric field



SG-9602S

## Helmholtz coil system



### FEATURE

The dependence of the magnetic field strength of current-carrying coils on the distance from the coil along the perpendicular axis is determined and compared to the theoretical curve. In addition, the effect of varying the coil separation on the shape of the magnetic field between the Helmholtz coils is examined.

SG-S6119

## Segye magnetic induction (The current balance)



### FEATURE

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

SG-6022N

## Segye magnetic induction (The current balance)



### 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-IT3

## Segye digital oscilloscope interface

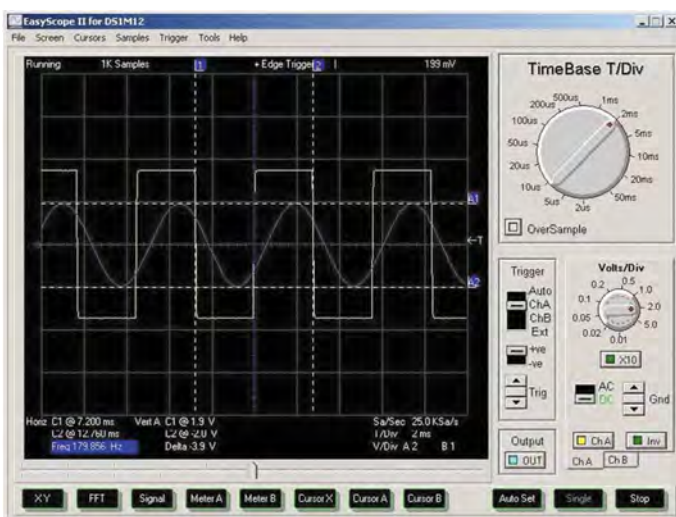


### FEATURE

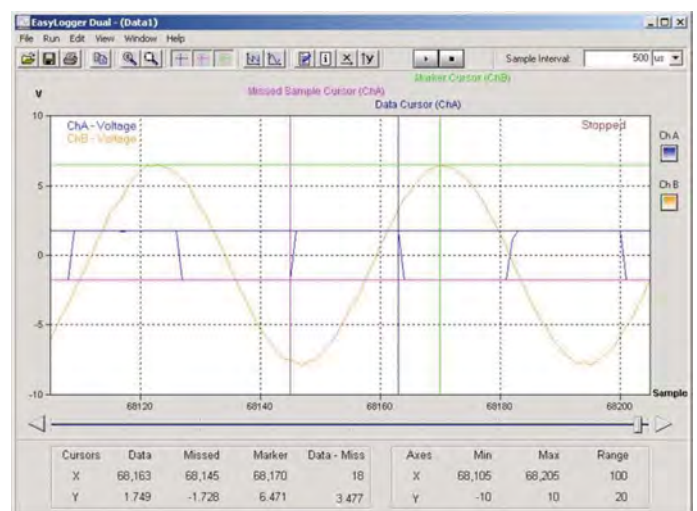
Segye Digital Oscilloscope read in voltage by computer. Input Voltage analyzed by our program. In addition it is possible to measure current, temperature, intensity of illumination and magnetic field. This holds measured from 0 up to 10V. This generate signal like a Function generator. 2 Channel for measuring voltage

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

### ● SG-IT3 Function



Oscilloscope



Logger

## Light Reflection & Refraction Experiment Kit Set (Comprehensive optical experiment set)

- **Experiment purpose** : This experiment kit set allows experimenting various characteristics of light; including rectilinearity, independent movement, absorption, reflection, regular reflection and diffused reflection of light, light's reflection law, light's reflection on a spherical mirror and the formation of shape by a reflex lens.

- Dimensions: 440 x 390 x 80 mm



Name of item	Specification	Quantity
Laser point	650 $\mu\text{m}$	3
Laserlight source	120 x 80 mm	1
Concave lens	20 x 80	1
Convex lens	20 x 80	1
Triangular prism	60° Triangle	1
Concave mirror	20 x 80	1
Convex mirror	20 x 80	1
Surface mirror	20 x 90	2
Round water tank	$\phi$ 100	1
Experiment stand (plate type)		1

### FEATURE

The laser beam generator for experiment, which can be easily attached or removed by a simple device and magnet, can be freely moved up, down, left and right; multiple experiments can be carried out with one sample (for example, light refraction experiment in a water tank, experiment of light reflection on the surface of water, levitation experiment, etc.); a device that allows adjusting the degree of light's clarity is included.

## ECO Saver (WM)

- **EZ WM Test Kit Set (WM : WATER MONITORING )**

EZ WM test kit set consists of the test kits, other components to measure water quality and case; the test kit set is used to identify the water contamination level by accurately and easily measuring the concentration of chemical oxygen demand (COD), dissolved oxygen (DO), (PO<sub>4</sub>) phosphorus and nitrogen (ammonia nitrogen and nitrate nitrogen), pH and water temperature.

- **Features: The product**

1. allows easy measuring of water contamination level in the field such as a river without having additional measuring devices or electrical power,
2. is not expensive, generates little error and has high reproducibility,
3. is easy to handle by anyone and good for environmental monitoring activities of environment protection organizations or groups; can be used as a study material of environment related subject or field experience study for students.



- **Measuring items and range and product composition**

chemical oxygen demand (COD)	0 ~ 20 ppm, (0/ 2/ 3/ 4/ 5/ 8/ 10/ 15/ 20) reagent①, reagent② and test tubes
dissolved oxygen (DO)	0 ~ 10 ppm, (0/ 1/ 2/ 4/ 6/ 8/ 10) reagent①, reagent② and test tubes
(PO <sub>4</sub> ) phosphorus	0 ~ 20 ppm, (0/ 0.05/ 0.1/ 0.2/ 0.4/ 0.6/ 0.8/ 1.5/ 2.0) reagent①, reagent② two and test tubes
NH <sub>4</sub> (ammonia nitrogen)	0 ~ 5 ppm, (0/ 0.025/ 0.05/ 0.1/ 0.2/ 0.4/ 0.6/ 0.8/ 1.0) reagent①, reagent②, reagent③ and test tubes
NO <sub>2</sub> (nitrite nitrogen)	0 ~ 80 ppm, (0/ 0.5/ 1/ 5/ 10/ 15/ 30/ 50/ 80) reagent①, reagent② and test tubes
pH (hydrogen ion concentration)	1 ~ 11 (1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 9/ 10/ 11)
Water temperature	0 ~ 50°C Thermometer
Other components	Two comparator blocks, one spoon, two beakers, two syringes for injecting specimens, one COD syringe, ballpoint pen, Post-it and carrying case





## ECO Saver (DO)



### • EZ DO Test Kit Set (Dissolved Oxygen: DO) introduction

Dissolved oxygen refers to the amount of oxygen dissolved in water (ppm). The DO level is lower in more contaminated water because oxygen is consumed when organisms breathe or dissolved materials are oxidized in the water. In general, fish cannot survive in a water of which DO level drops below 4 ~ 5ppm.

- EZ DO test kit set is composed of kits and components that are useful in measuring the concentration level of DO in water in order to identify the contamination level of water quickly and accurately.

• **Measuring range** : 0~10ppm (0/ 1/ 2/ 4/ 6/ 8/ 10)

• **Product components** : reagent ① reagent ② syringes for injecting specimens, beaker, test-tube, user manual and case.

※ Additional reagent for refill

## ECO Saver (COD)



### • EZ COD test kit set introduction

- COD (Chemical Oxygen Demand) :  
COD indicates the amount of oxygen (ppm) required when oxidizing contaminating materials such as organic matters. The bigger COD value is, the more organisms exist contaminating the water; on the other hand, less COD value indicates fewer amount of organisms and low contamination.

- EZ COD test kit set is composed of kits and components that are useful in measuring the concentration level of COD (Chemical Oxygen Demand) in water in order to identify the contamination level of water quickly and accurately.

• **Measuring range** : 0~20ppm (0/2/3/4/5/8/10/15/20)

• **Product components** : reagent①, reagent②, syringes (for injecting specimens and reagent), beaker, test-tube, user manual and case.

※ Be careful when using reagent② (if the color of the reagent is changed, it can be replaced for free)

※ Additional reagent for refill



A large, stylized number '2' in a light green color, positioned centrally on the page. The background features a green and white striped pattern at the top, a textured green background below, and a blue and white abstract design in the bottom left corner.

*Audio & Video  
Educational System*



# Audio & Video Educational System

## Audio & Video Educational System

AHA I&C CO., LTD.	72 ~ 73
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## LCD Tablet Monitor 17" 19" 20" 22"



The LCD tablet monitor is an educational system that enables the user to display what is written on the tablet monitor with an electronic pen.

It supports various writing functions as well as saving both images and voices.

### Specifications

Product	LCD Tablet Monitor 4:3	LCD Tablet Monitor 16:9(WIDE)			
Model Name	AHALTM-171	AHALTM-192W(G)	AHALTM-192W	AHALTM-202W	AHALTM-222W
Screen Size	43.2cm(17" 4:3)	47cm(19" wide)	48.5cm(19" wide)	51cm(20" wide)	55.8cm(22" wide)
Active Area(mm)	337.9(H)*270.3(V)	409.8(H)*230.4(V)	408.24(H)*255.15(V)	408(H)*306(V)	473.76(H)*296.1(V)
Resolution	1,280*1,024	1,366*768	1,440*900	1,680*1,050	1,680*1,050
Max. Brightness	280cd/m <sup>2</sup>	300cd/m <sup>2</sup>			
Contrast	1,000 : 1				
Viewing Angle	160° (Top/Bottom/Left/Right)				
Recognition Height	8mm				
Default S/W	Lecture Tool and Application Software (Driver, Eduplus and Edupen)				



## Maestro (Digital Podium System)



### Maestro (Digital Podium System)

The maestro system enables the user to write on the LCD tablet monitor which built-in podium. The cutting-edge system allows that the user write on a multimedia teaching plan and save the images along with the voice for easy multimedia learning contents.

Maestro has built-in the sound system (Amplifier, Wired/Wireless microphone. Etc.) which is essential for E-learning, and enables to interface with all the multi media devices.

### Components

- LCD TABLET MONITOR
- POWER AMPLIFIER (AMX-3020W/200W+200W)
- WIRELESS Microphone system (AWM-U82)
- Wired Microphone (Gooseneck)
- Intergrated Controller (AMC-6000L, 7" LCD TOUCH TYPE)
- Lecture Writing & Save Software ( Eduplus v 5.0)

## LCD Interactive Touch Screen 65" 70" 82"



The LCD Interactive board is a multimedia display for classrooms or meeting rooms, effectively saves the system management time of the lecturer and increases the desire for learning of the participants.

The LCD screen can accept writing by hand or by a tool. The lecturer or speaker can write on the screen while giving a speech.



## SMART PODIUM e-STATION



The e-STATION is advanced smart podium and workstations address technology-based learning environments. It has the latest technology for presenting in Classrooms, Auditoriums, Meeting Rooms, and Lecture Halls. It is equipped with a user-friendly control panel, a tablet LCD monitor, a personal computer, a DVD/VCR, and audio systems such as a microphone and an amplifier.

### BASIC COMPONENT



System Console  
JPM-Console(S or Z or T)x1



Tablet Monitor  
JPM-T19(19")x1



System Controller  
JPM-C210+CL7x1



Power Amplifier  
JPM-PA200x1



LECTURE RECORING S/W  
e-STATION PRO4.0x1



Speakers  
JPM-SP80x4



Condenser MIC.  
JPM-MC100x1

### FEATURE

- International standard 19" Rack type
- All in one cabinet style
- Locking system to secure burglarproof
- Control touch panel
- Tablet LCD monitor
- Easy to use GUI interface
- Microphone and I/O port for external devices
- Futuristic and cutting edge design

## INTEGRATED CONTROLLER e-MANAGER



As high-tech devices, such as projectors, screens, DVD/VCRs, Lightening, Air-conditionings, etc., developed as much as their complicated functions and directions, the actual maintenance or operation cost for e-Learning classroom could be more expensive than the installation cost.

- USER INTERFACE drawing set demands of user (One-Touch)
- Present each classroom and all classroom management plan
- 7" color TOUCH PANEL of PROGRAMMABLE TYPE
- Diversification of USER INTERFACE
- Convenience of classroom device control
- Compatibility with smart podium
- Remote control function through Internet
- Theft prevention function

## AUTO TRACKING CAMERA SYSTEM e-MOTION



### FEATURE

#### Exact Target Tracking

It provides the exact tracking of target movement.

#### Wide Range of Tracking

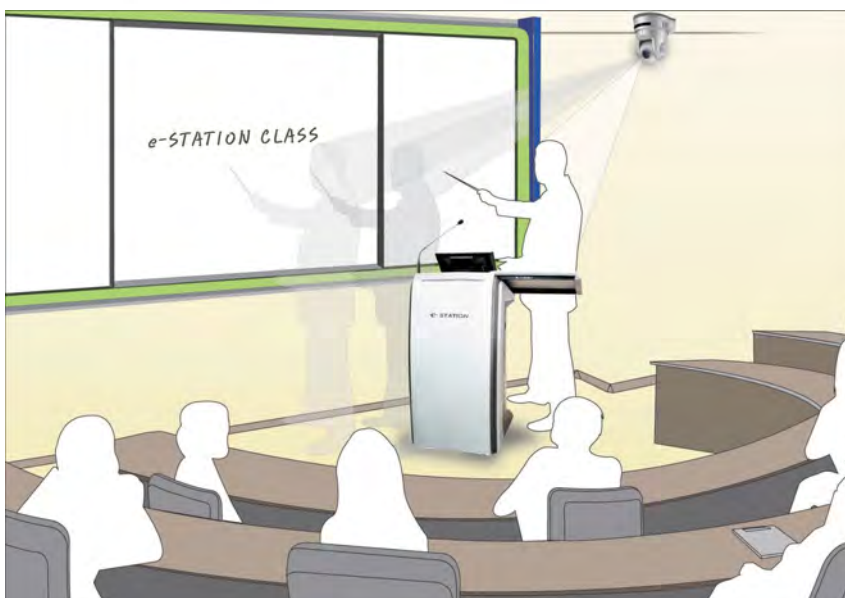
It enables an instructor to move more freely and widely, and it also provides smooth and silky pan-tilt.

#### Easy-to-control

Tracking and camera sensors can be controlled in detail based on the locations and environmental conditions.

#### Easy-to-Install

It is easy to install and operate system through the simple procedure.



## MATRIX SWITCHER JPM-X500



### FEATURE

- RS-232/485 control port (6 port), IO control Port (6 port)
- Relay control port (15ea) VGA 6x6, A/V 8x8
- Remote Control through Ethernet
- Easy maintenance
- Built-in memory(NAND FLASH 128MB)
- Easy to setup Preferences and Monitor operating status with front graphic LCD
- Separate operation for Video and Audio
- Audio output volume adjustment

## Tablet LCD Monitor JPM-T19



### FEATURE

The JPM-T19 is a fully digitized Tablet that enables user to directly make hand-writing on screen, interact with PC on screen and enjoy every kind of computing style like using a Tablet PC, but on a screen much bigger.

- Make annotations and notes on the screen.
- Use a cordless Tablet Pen to control PC.
- Use on a podium or lectern allowing you create interactive lectures.



## LECTURE RECORDING S/W e-STATION PRO



### FEATURE

- Easy-to-create content
- Easy to install any exclusive program to attend the contents as playing by Window Media Player.
- Highly reusable contents
- Authoring of quick, easy and high-definition contents
- Auto upload (linkage with CMS) function support after saving lectures
- Play promptly on the web without installing the exclusive viewer program
- Telecommunication Technology Association software quality certificate (GS : Good Software) goods

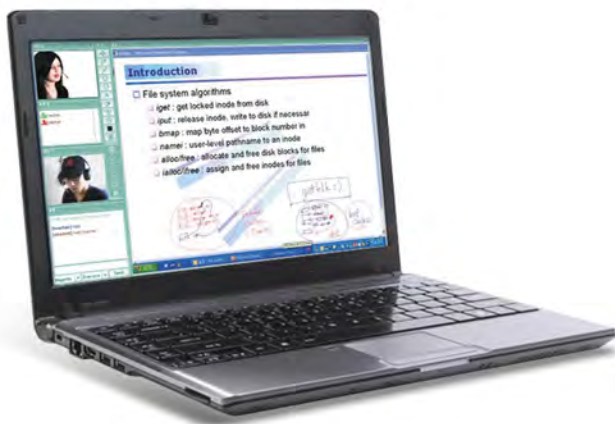
## CONTENT MANAGEMENT SYSTEM e-STATION CMS



### FEATURE

- Web-based education platform
- Stable and user-friendly design
- Automatic content registration and management support
- ASP-based development
- Various Interfaces implementation
- User request application

## DISTANCE LEARNING SOLUTION e-STATION LIVE



### FEATURE

- Website call
- Live screen sharing
- Teaching plan & Interaction
- Teaching plan control
- User Control Function
- Live data registration
- Share date registration
- User DB link
- Multilingual chatting
- Text writing on a screen



## Biological Microscope



M Type



DM Type



DUM Type



DW-THSP(U)

## Instructional Microscope / Optical Microscope

Model number	M 400	M 600	M 900	M 1200	M 1500
Total Magnification	40x~400x	40x~600x	100x~900x	100x~1200x	100x~1500x
Head	Monocular				
Eyepiece Lens	10x	10x, 15x	10x, 15x	10x, 20x	10x, 15x
Objective Lens	4x, 10x, 40x		4x, 10x, 60x		4x, 10x, 100x
Illuminator	MIRROR / LED Illuminator				
Focusing Mechanism	Coaxial coarse and Fine focus				

Model number	DM 400	DM 600	DM 900	DM 1200	DM 1500
Total Magnification	40x ~ 400x	40x ~ 600x	100x ~ 900x	100x ~ 1200x	100x ~ 1500x
Head	Monocular				
Eyepiece Lens	10x	10x, 15x	10x, 15x	10x, 20x	10x, 15x
Objective Lens	4x, 10x, 40x		4x, 10x, 60x		4x, 10x, 100x
Illuminator	MIRROR / LED illuminator				
Focusing Mechanism	Coaxial coarse and Fine focusing knob				

## Digital Microscope

Model number	DUM 400U	DUM 600U	DUM 900U	DUM 1200U
Total Magnification	40x ~ 400x	40x ~ 600x	100x ~ 900x	100x ~ 1200x
Head	Monocular			
Eyepiece Lens	10x	10x, 15x	10x, 15x	10x, 20x
Objective Lens	4x, 10x, 20x, 40x		10x, 20x, 40x, 60x	
Illuminator	Built in Light Intensity Control Device & Transformer, 6V 20W Halogen Lamp			
Focusing Mechanism	3-gear adjustment with helical, rack and spire gears, coaxial coarse & fine focusing knob			
CCD CAMERA	1/3", 410,000 Picture elements, COLOR, Electronic shutter 1/60 ~ 1/100,000sec, White Balance : AUTO			
Image storage method	Still image storage and editing (BMP File), animated file storage (AVI)			
Resolution	720 x 480(USB 2.0), 320 x 240(USB 1.0)			
Output terminal	Video/S-video/USB			

## Professional Microscope

Model number	DW-THSP	DW-THSP(U)
Total Magnification	40X ~ 1500X	
Head	Trinocular	
	"Interpupillary Distance : 55 ~ 75mm Dioptric Adjustment : Left Eyepiece Tube(±5Diopter) Antifungal Treatment"	"Interpupillary Distance : 55 ~ 75mm Dioptric Adjustment : Left Eyepiece Tube(±5Diopter) Antifungal Treatment"
Objective Lens	Semi - Plan 4x, 10x, S40x, S100x(OIL) : DIN	Semi-plan 4x, 10x, 40x(spring), 100x(spring, oil) (DIN)
Eyepiece Lens	Wide Field 10x, 15x	Wide Field 10x, 15x
Stage	Rectangular Plate( 140(W) X 160(D)mm ), Travel Range ( 50(Y) X 75(X)mm )	
Focusing Mechanism	Coaxial Coarse & Fine Focusing Knobs, Focusing Limited KNOB, Tension Adjustment Available, Ball Sliding Mechanism, Parfocal Function, Fine Focusin Knob : Min Division 0.002mm	
Revolving nosepiece	Quadruple Revolueing Mechanism With Outward Tilt	
Illuminator	Type of Illumination : White LED Lamp built in Light Intensity Control Royalty Switch & Transformer Luminous-Field Diaphragm	
CAMERA SYSTEM	Output terminals	
	S-Video X 1, Video X 1, USB X 1	
	Picture elements CCD, 1/3", 410,000 Picture elements	
	Resolution "720 X 480(USB 2.0), 320 X 240(USB 1.0)"	
	Image storage method Still Image Storage and Editin (BMP File), animated file storage (AVI)	
Operating systems Windows 2000, X P		
Network USB 2.0		

## Stereoscopic Microscope



OAM 60SR

### Instructional Microscope

Model number	OAM-30SR	OAM-60SR
Total Magnification	10x, 30x	20x, 30x, 40x, 60x
Eyepiece Lens	10x	10x
Objective Lens	1x, 3x	2x, 4x
Head	Binocular, Interpupillary distance adjustment	Binocular, 45° Inclination, Dioptric adjustment, 360° Rotationable, Interpupillary distance adjustment
Focusing Mechanism	Coarse focus knob	Coarse focus knob



OAM Type

### Instructional Microscope

Model number	OAM-13SR	OAM-24SR
Total Magnification	10x, 30x	20x, 40x
Eyepiece Lens	10x	10x
Objective Lens	1x, 3x	2x, 4x
Head	Binocular, Interpupillary distance adjustment	Binocular, 45° Inclination, 180° Rotationable, Interpupillary distance adjustment(55~75mm)
Illuminator	Incident Light : 6V 12W, Transmitted Light : 6V 15W Halogen Lamp, Built in Light Intensity Control, Rotary Switch & Transformer, 3-step adjustable light source attached ( Incident light, Transmitted light, Incident & transmitted light)	



OSM -1(U)



OSM -1

### Professional Microscope

Model number	OSM-1(U)	OSM-1
Total Magnification	10x, 20x, 40x	
Eyepiece Lens	Super Wide Field, HWF10X : FIELD NO. 24mm	
Objective Lens	3Step Turret(1X, 2X, 4X) Achromat	
Binocular Body	Interpupillary Distance : 54 ~ 74mm Dioptric Adjustment : ± 6.4 Diopter(Available On Both Eyepiece Tube)	
Working Distance	100.6mm	
Stand	309(W) X 250(D) X 36(H)mm	309(W) X 250(D) X 20(H)mm
Weight	9.7Kg	7.5Kg
Output terminals	S-Video x 1, Video x 1, USB x 1	
CAMERA SYSTEM	Picture elements	CCD, 1/3", 410,000 Picture elements
	Resolution	"720 x 480(USB 2.0), 320 x 240(USB 1.0)"
	Image storage method	Still image storage and editing (BMP File), animated file storage (AVI)
	Operating systems	Windows 2000, XP
Network	USB 2.0	

## LCD Projector (10,000 ~ 5,000 ANSI Lumens)



Model number	DVM-J90M	DVM-F100M	DVM-E100M
Brightness	10,000 ANSI lumens	6,000 ANSI lumens	5,000 ANSI lumens
LCD panel	Size	0.8" TFT p-si LCD x 3	0.8" TFT p-si LCD x 3
	Pixel Count	1,024x768 dots /Total pixels 2,359,296	1,024 x 768 dots /Total pixels 2,359,296
Contrast Ratio(Full On/Full Off)	3,000 : 1	1,000 : 1	1,000 : 1
Screen Size(Projection Distance)	40" ~ 600"	40" ~ 400"	40" ~ 400"
Light Source	330W x 2	330W	275W
Power Consumption	950W	460W	400W
Dimensions(WxHxD)	530 x 267.5 x 757 mm	489.5 x 164 x 434.8 mm	489.5 x 164 x 434.8 mm
Weight	27.6 kg	9.7 kg	9.7 kg
Terminals	- DVI-D / D-sub 15 pin - 5-BNC - Open for input	- DVI-D(HDCP) x 1(Digital RGB) - D-sub 15 x 1(RGB, Scart RGB) - 5BNC x 1(G B R H/V V) (Video/Y Pb/Cb Pr/Cr) - Mini DIN 4pin x 1(S-Video) - RCA x 1(Composite Video, Y) - RCA x 2(Pb/Cb Pr/Cr)	- DVI-D(HDCP) x 1(Digital RGB) - D-sub 15 x 1(RGB, Scart RGB) - 5BNC x 1(G B R H/V V) (Video/Y Pb/Cb Pr/Cr) - Mini DIN 4pin x 1(S-Video) - RCA x 1(Composite Video, Y) - RCA x 2(Pb/Cb Pr/Cr)

## LCD Projector (4,000 ~ 2,700 ANSI Lumens)



Model number	DVM-D95M	DVM-C95M	DVM-US927A
Brightness	4,500 ANSI lumens	3,500 ANSI lumens	2,700 ANSI lumens
LCD panel	Size	0.8" TFT p-si LCD x 3 with Micro Lens	0.8" TFT p-si LCD x 3
	Pixel Count	1,024x768 dots /Total pixels 2,359,296	1,024x768 dots /Total pixels 2,359,296
Contrast Ratio(Full On/Full Off)	1,000 : 1	500 : 1	1,200 : 1
Screen Size(Projection Distance)	40" ~ 300"	40" ~ 300"	60" ~ 80"
Light Source	275W	225W	275W
Power Consumption	327W	300W	390W
Dimensions(WxHxD)	334.2 x 78.4 x 257.5 mm	326 x 83.1 x 237 mm	374 x 196.8 x 495 mm
Weight	3.4 kg	2.6 kg	7.7 kg
Terminals	- D-sub 15 x 1(RGB) - D-sub 15 x 1 (RGB, Component, Scart RGB) - Mini DIN 4pin x 1(S-Video) - RCA x 1(Composite Video)	- D-sub 15 x 2(RGB, Component) - Mini jack x 2(Audio input, stereo) - Mini DIN 4pin x 1(S-Video) - RCA x 1(Composite Video) - RCA x 1(Audio input, R/L-mono)	- D-sub 15 pin for input - D-sub 15 pin for input - RCA x 1:Video - Mini DIN 4pin x 1(S-Video) - RCA x 3:Y-Pb/Cb-Pr/Cr) - RCA (L/R) for Video input - Mini Jack(Stereo) for Computer input - Mini Jack(Stereo) output(variable)

## Visual Projector



Model number	DVP-422U	DVP-416U
Camera	1/4 " CCD	1/4 " CCD interline-transfer CCD
Gross Pixel	410,000	
Shooting Area	A4 Size (210mm)	330 ~ 250mm
Zooming	2X Optical Zoom + 2X Digital Zoom (Total 4X Zoom)	22 x (optical) x 8 x (digital) : 176X
Input Terminals	S-Video x 1, Video/Audio x 2, Mic x 1	Video RCA x 2, Audio RCA x 2, Mic x 1
Output Terminals	Volume(knob) x 1, Power x 1	Video RCA x 2, Audio RCA x 2, S-video x 1
Power Source	AC 100~240V / 50~60Hz, 5W (Max.)	AC 90~260V free volt, 50~60Hz, 30W (Max.)
Main Function	Detachable Camera Head with handle grip, Nega/Posi, Color/B&W ,White Balance, Shutter Speed Control, Back Light, Digital Zoom, Image Transfer	
Size	300 x 250 x 350mm(L x W x H) 3.2Kg	420 x 510 x 140mm(W x D x H)
White Balance		Automatic / Manual
Brightness Balance		Automatic / Manual

## Monitor / Lecture Desk



Model number	DEB-M190S	DEB-KA190S
Desk Type	Standing	Standing
Touch Method	Electromagnetic method	Electromagnetic method
Display Type	TFT LCD Monitor	TFT LCD Monitor
Size	19"	19"
Optimum Resolution	1280 X 1024(XGA)	1280 X 1024(XGA)
Contrast Ratio	1000 : 1	1000 : 1
Brightness	280cd / ms	280cd / ms
Aspect Ratio	16 : 9	16 : 9
Viewing Angles	160°	160°
Pen	Wireless Pen	Wireless Pen
Connector	USB	Power, VGA, RGB, USB
Desk Board Size(w*d*h)(m)		1190 x 700 x 40
Desk Body Size(w*d*h)(m)		1140 x 660 x 600
Gooseneck Microphone		3pin Connector, 50Hz~18KHz, 4.5Volt
Speaker		15W, Frequency Range 60Hz, Impedance 8Ω
Amp		120W, MIC Input 3, 3 Band EQ, AUX 2,



EZ-300

## IMAGE RECOGNIZING DIGITAL VISUALIZER EZ-CAM



### SPECIFICATION

sensor	1/4° Auto Focus
Max. resolution	2045 * 1536 High resolution
Lens angle	F2.9 / 8Cm~ / 63.5
Photography range	3.2 Mega pixel , A4 Size
Image output	20fps@800*600, 10fps@2048*1536
Weight	1.2 Kg
Interface	USB 2.0 Interface

### APPLICATION

Educate in classroom, science lab and language lab  
Meeting report and presentation  
School, College, University

### FEATURE

- Versatile and powerful function, excellent conveniently
- Portability and storability by compact design
- Image recognizing technology for providing effective lecture
- Easy distribution of E-learning contents and study contents
- Take photo & make video is available by one click simply
- Compatible with electronic board and electronic desk
- Digital Visualizer function can be improved by program upgrade.
- Operated multilingual language (English, Chinese, Arabic, Thailand, Korean)

M T-130

## IMAGE RECOGNIZER MOM TEACHER



### SPECIFICATION

sensor	1/4° Auto Focus
Max. resolution	1900 * 1200
Lens angle	F2.9 / 8Cm~ / 63.5
Photography range	1.3 Mega pixel
Animation	24fps@640 * 480
Weight	1.0 Kg
Interface	USB 2.0 Interface

### APPLICATION

Home education  
Educate in kindergarten

### FEATURE

- Easy readable image recognizer Mom-Teacher
- Show Mom-Teacher books, it read any books
- Kids can learn by themselves
- Kids have an interest in study
- Mom-Teacher can edit any books
- Take photo & make video is available

REMO S 550

## WIRELESS GUIDE, COMMUNICATION SYSTEM



### SPECIFICATION

Frequency	UHF (740.00MHz~752.00MHz)
Channel	40 Channels
BAT capacity	20 Hours
Reception	100Meter
Certification	KCC, CE
Demension	42 × 15 × 85mm, 54g
Contents	Transmitter 1ea, Receiver 23ea Charging case 1ea

### APPLICATION

Tour Guide, Plant & Factory Guide, Exhibition,  
Museum, Simultaneous Interpretation, Religious Event

### FEATURE

- Clear guide and explanation are available even in heavy noise.
- No interruption to operators working in the site.
- Interpretation can be provided not only in interpretation booth, but in any places
- Explanation and guide are available in where still is required.
- Allows to control numbers of students easily and quickly
- Instant monitoring of operating menu and state by LCD Display
- Advanced digital circuit design presents clear audio quality under any environment.
- Transmitting and receiving is available between 100m distance clearly.
- Compatible to variety audio devices connecting with external input terminal.

REMO S 700

## WIRELESS STEREO STUDY HEADPHONE



### SPECIFICATION

Frequency	UHF (740.12MHz~752.88MHz)
Channel	16 Channels
BAT capacity	12 Hours
Reception Range	50 Meter
Contents	Transmitter & Receiver

### APPLICATION

Listen to audio and watching TV in fitness center,  
hospital and public places, Multimedia room

### FEATURE

- Wireless headphone for Internet entrance examination, educational listening
- School, institutes, lecture room, reading room
- Wireless learning device, especially for EBS educational listening
- Conveniently fit due to ergonomic design
- Clean sound with advanced digital method (CD-level stereo sound)
- Max. 50m transmission/reception range (30~40m for indoor)
- Easy and convenient charging.
- Can be used without any installation.
- Multiple headphones can be available due to its multi-channel implementation (using several receivers for one transmitter)

OAC -7700,  
OAC- 337 / 337SONG

## Air purge steriliaer v



OAC -7700



OAC- 337 / 337SONG

Removal of pollutants in the air

- Killing various virus and Colon bacillus(Fungus, Colon bacillus, E.Coli O-157, ammonia, bacteria, AI, SARS)
- Purifying toilet odors in restroom
- Removal of formaldehyde which is the cause of sick house syndrome
- Removal of odors and foul smells

TMHS-2000, TMHS-5000  
TMHS-777, TMHS-6000S

## Hand Sanitizer

Prevent infectious diseases with tecomax's Hand Sanitizer!

- Safe sterilizer from natural substances: The product guarantees safety approved by Korea Food & Drug Administration.
- Highly sensitive infrared sensor: Automatic spraying on skin by the infrared sensor
- Killing 99.6% of the surface Bacteria with Strong sterilizing power!



TMHS-2000



TMHS-5000



TMHS-777



TMHS-6000S

SMP- 16/16PS, Procam-3600/3300  
M A XCAM-200, M A XCAM-LED200/300

## Visual presenter

auto-focusing Clean display by high-resolution 3.0 megapixel (UXGA 1,600x1,200) of High-definition  
Photo and video recording function Writing function on image and video clip screen, simultaneous recording function  
Recording even teacher's writing contents on board in the class  
Zoom/enlarge, mirror effect, screen rotation



SMP- 16/16PS



Procam-3600/3300



MAXCAM-200



MAXCAM-LED200/300

AKS-III, AKS-400~ 1500  
OMB-400~1500L, AKS-BL-A

## Microscope



AKS-III



AKS-400~ 1500  
OMB-400 ~ 1500L



AKS-BL-A

Education experts from the various line-up  
Low-power LED lamps mounted in a way  
Free movement without charge in a way  
connected with the power  
Advanced lens to use with clear samples  
observed

AJ-CM300, OMB-CM1500R  
OMB-CV1500, OMS-ZV50

## Monitor Microscope

Connecting to a PC for editing and image storage 7-inch high-definition LCD monitors mounted to the many people at once can be observed.

Advanced lens to use with clear samples observed Equipped with 41 megapixel CCD lens to provide sharp screen



AJ-CM300



OMB-CM1500R



OMB-CV1500

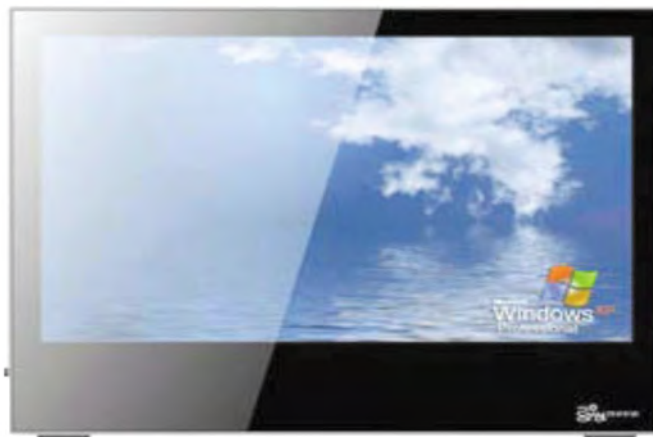


OMS-ZV50



Magic Pen Delta - 3

## Tablet Monitor



- H/W TYPE : Pressure touch / Electromagnetic induction method
  - Display : TFT LCD Panel
  - Screen size : 19 Inch(480mm) / 16:9
  - Resolution : 1400 X 900
  - Interface : USB
  - Written : PEN Type
  - S/W : Lecture assistance and Save class software
- Direct write capability to monitor  
Accurate and smooth writing feeling

M Pen Desk 11

## Tablet Monitor Desk



- H/W TYPE : Pressure touch
- Display : TFT LCD Panel
- Screen size : 19 Inch(480mm) / 16:9
- Resolution : 1400 X 900
- Interface : USB
- Written : Hand or a hard object(Pressure touch)
- S/W : Lecture assistance and Save class software
- Specification : Intelligent Controllers  
(Project,Screen,DVD Player Control)  
Goose-neck microphone, Speaker
- By Use : Intelligent Peripheral using the controller can be easily controlled Presentation, while allowing the screen write directly to the screen can be explained High-performance amplifier and has a built-in microphone  
Locking devices are available to protect the internal equipment.

ACB 63PC (PDP Type), ACB 6500 (LCD Type)  
ACB-70LHK (LCD Type)

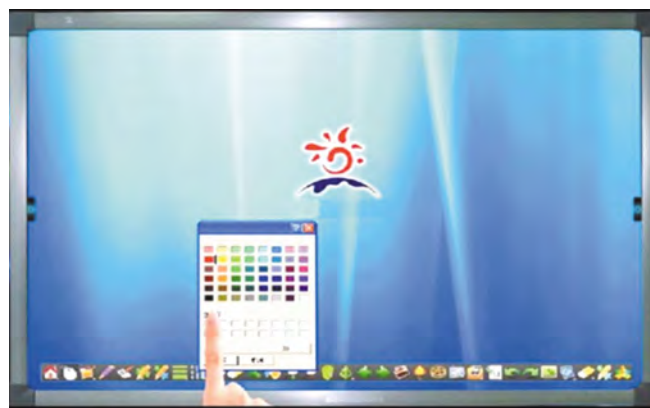
## TOUCH Board (MONITOR Type)



- H/W Type : Wall Attaching Offset Type
- Screen Size : 63 inch (1600mm)  
65 inch (1650mm)  
70 inch (1770mm)
- Resolution : 1920 X 1080p (Full HD)
- Written : Hand or a hard object
- S/W : Lecture assistance and Save class software
- Features : AR Screen, Display with more than 50,000 hours
- By Use : Free write on any PC screen  
Touch the screen to direct all of the content will improve educational efficiency. Writing and teaching details of progress on the screen capture videos and images can be stored.

ACB - 100SF

## TOUCH Board



- H/W Type : Projector Screen Board Type
- Display : Projector options Screen
- Size : 100 Inch (2540mm)
- Written : Hand or a hard object / IR method
- S/W : Lecture assistance and Save class software
- SIZE : 2310 X 1322 mm
- Features : Equipped with a special anti-reflective contrast screen brightness is excellent.
- By Use : Large touch screen can be configured at low cost  
**Free write on any PC screen**  
Touch the screen to direct all of the content will improve educational efficiency.  
Writing and teaching details of progress on the screen capture videos and images can be stored

## NuriNET-NF System Master Side (NFA)

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



NuriNET-NFA Main Display

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

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

### Functions

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

### Main Components of Master's side

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

## NuriNET-NF System Student Side(NFS)

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



NuriNET-NFS Media Controller &  
Main Display

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

### Functions

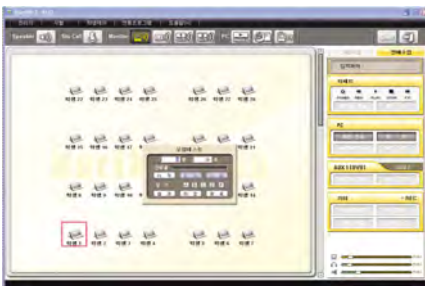
- Support of almost all types of video file formats
- Media player
- Web browser viewer with electronic board function
- Content compatibility that maximizes use of data
- Teacher calling & Help function
- Recording of sound of teaching material/teacher's & student voice
- Messenger function
- Sound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

### Main Components of Student side

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

## NuriNET-AOD System Master Side(AO DA)

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



NuriNET-AODA Main Display

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

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

### Functions

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

### Main Components of Master's side

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

## NuriNET-AOD System Student Side(AODS)

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



NuriNET-AODS Digital Recorder

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

### Functions

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

### Main Components of Student side

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

### Optional

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



TTV-5.0

## HIGH RESOLUTION TOUCH VISION **NEW!**



### FEATURES

- 5 MEGA pixels high-definition CMOS camera
- Shooting a sharp image quality at Max 30 frame speed
- Inner 1GB memory and 7" Full touch screen interface
- Letter/Voice convertible program(English learning function)
- Individual operating without PC
- Various output : USB, RGB, HDMI, DVI, S-video, Composite, RS-232C & Audio

### SPECIFICATION

- 5 MEGA pixels CMOS Sensor
- Auto Focus, MAX 30fps, Resolution:Max. 2592x1944
- Inner memory : 1GB Flash memory
- Output : USB, RGB, HDMI, DVI, S-video, Composite, RS-232C & Audio
- Software : Letter/Voice recognition, Electronic board, Nega/Posi, Color/Mono, Up & Down / Right & Left inversion, Capture, Record, Zoom in & Zoom out, Picture division, PIP & etc.,
- Size : 195x228x615(mm), 1.8kgs

TCS-2.0

## DIGITAL VIDEO PRESENTER **NEW!**



### FEATURES

- 2 MEGA pixels high resolution digital video presenter
- Can move a image up, down, left & right with Pan/Tilt function
- All-featured remote control operation
- Full support for A4 view. Max A3 is possible
- Convenience with the installed main functions(AF, LED & CAPTURE) on the unit body
- User-friendly GUI software

### SPECIFICATION

- 1/3" CMOS sensor, 2M pixels
- Digital 6X, MAX. SXGA(1600x1200)
- WMV video format, Pan/Tilt, Nega/Posi, Color/Mono
- Output : USB2.0 and support all functions with remote control
- Size : 140x170x630(mm), 1.7kgs

TFV-300/400

## FLEX VISION **World Didac Award 2000!**



### FEATURES

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

### SPECIFICATION

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

CEI-700

## CHEMICAL ELEMENT INFORMATION



### FEATURES

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

### SPECIFICATION

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

LSP-500

## MICROSCOPIC PROJECTOR



### FEATURES

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

### SPECIFICATION

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

TVP-2300

## DESKTOP VIDEO PRESENTER



### FEATURES

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

### SPECIFICATION

- 1/4" color CCD 410,000 pixels
- Resolution : Horizontal 450 TV lines
- Zoom : 22X optical, 4X digital, Total 88X zoom
- Input : Video 2, Audio 2, Mic 1
- Output: Video 2, Audio 2, S-VHS 1
- PC interface : USB2.0





3

***Laboratory Equipments***





# Laboratory Equipments

## Laboratory Equipments

CHC LABORATORY CO., LTD.	94 ~ 97
DAIHAN Scientific Co., Ltd.	98 ~ 99
EUNHA FLUID SCIENCE	100 ~ 103
Universal Scientific Co., Ltd.	104 ~ 105
HONGMYONG SCIENCE	106 ~ 107
Human Corporation	108 ~ 111
LSHIN BIOBASE CO., LTD.	112 ~ 113
JISICO CO., LTD.	114 ~ 119
JEIO TECH CO., LTD.	120 ~ 139
LABZONE CO., LTD.	140 ~ 141
MDM INSTRUMENTS	142 ~ 143
MIRAE ST CO., LTD.	144 ~ 145
SAMIN SCIENCE CO., LTD.	146 ~ 147
THREE SHINE. INC.	148 ~ 149
VISION SCIENTIFIC CO., LTD.	150 ~ 153



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



### FEATURE

1. HEPA Filter which efficiency is over 99.99% (Particle size 0.3um) 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.	CLB-201S-03	CLB-201S-04	CLB-201S-05	CLB-201S-06
Dimensions (External) W x D x H (mm) (Internal)	1040 x 745 x 2000 920 x 630 x 565	1340 x 745 x 2000 1220 x 630 x 565	1650 x 745 x 2000 1530 x 630 x 565	1960 x 745 x 2000 1840 x 630 x 565
Downflow Velocity	Approx. 0.3 m/s ~ 0.4 m/s (Variable Set Speed)			
Filter Efficiency	HEPA Filter $\geq$ 99.99% at 0.3 $\mu$ m / Class 100			
Noise Level	$\leq$ 65dB(A) at Normal Speed			
Sterilization	Germicidal UV Lamp			
Door	5 mm Tempered Glass (Sliding Type)			
Work Top	Stainless Steel			
Electrical Supply	120/240 V, 50/60Hz (Available)			
Power Socket	1ea		2ea	

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



### FEATURE

1. HEPA Filter which efficiency is over 99.99% (Particle size 0.3um) 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.	CLB-202D-03	CLB-202D-04	CLB-202D-05	CLB-202D-06
Dimensions (External) W x D x H (mm) (Internal)	1040 x 745 x 2150 920 x 510 x 585	1340 x 745 x 2150 1220 x 510 x 585	1650 x 745 x 2150 1530 x 510 x 585	1960 x 745 x 2000 1840 x 510 x 585
Downflow Velocity	Approx. 0.3 m/s ~ 0.4 m/s (Variable Set Speed)			
Filter Efficiency	HEPA Filter $\geq$ 99.99% at 0.3 $\mu$ m / Class 100			
Noise Level	$\leq$ 65dB(A) at Normal Speed			
Sterilization	Germicidal UV Lamp			
Door	5 mm Tempered Glass (Sliding Type)			
Work Top	Stainless Steel			
Electrical Supply	120/240 V, 50/60Hz (Available)			
Power Socket	1ea		2ea	

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



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

### FEATURE

1. HEPA Filter which efficiency is over 99.99% (Particle size 0.3um) 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.
5. Acrylic door is easy to fold in order for users to examine inside.

### SPECIFICATIONS

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

## Biological Safety Cabinet Class II, Type A2

NSF UL CE EN 12469



(CHC-777A2-03)

### Class II, Type A2 Biological Safety Cabinet

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

#### How It Works

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

#### FEATURE

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

#### Offers 3 Forms of protection

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

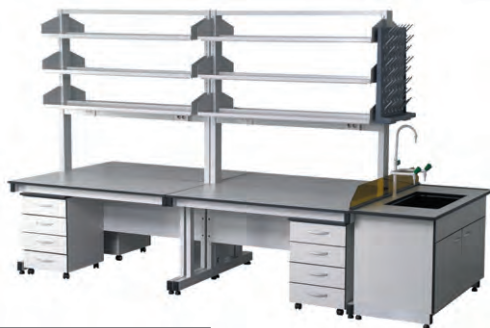
### SPECIFICATIONS

Model No.	CHC-777A2-03	CHC-777A2-04	CHC-777A2-05	CHC-777A2-06	Model No.	CHC-222A2-03	CHC-222A2-04	CHC-222A2-05	CHC-222A2-06
Dimensions (External) W x D x H (mm)	1060 x 810 x 1520	1385 x 810 x 1520	1690 x 810 x 1520	1995 x 810 x 1520	Dimensions (External) W x D x H (mm)	1060 x 810 x 1520	1385 x 810 x 1520	1690 x 810 x 1520	1995 x 810 x 1520
Chamber Dimensions W x D x H (mm)	925 x 610 x 760	1250 x 610 x 760	1555 x 610 x 760	1860 x 610 x 760	Chamber Dimensions W x D x H (mm)	925 x 610 x 760	1250 x 610 x 760	1555 x 610 x 760	1860 x 610 x 760
Average Airflow Velocity	(Nominal set point) Inflow 0.53 m/s(105 fpm),Downflow 0.35 m/s(70 fpm)				Average Airflow Velocity	(Nominal set point) Inflow 0.53 m/s(105 fpm),Downflow 0.35 m/s(70 fpm)			
Supply HEPA/ULPA Typical Efficiency	ULPA :> 99.999% for particle size between 0.1 to 0.3 microns HEPA :> 99.99% at 0.3 microns				Supply HEPA/ULPA Typical Efficiency	ULPA :> 99.999% for particle size between 0.1 to 0.3 microns HEPA :> 99.99% at 0.3 microns			
Exhaust HEPA Filter Typical Efficiency	> 99.99% at 0.3 microns				Exhaust HEPA Filter Typical Efficiency	> 99.99% at 0.3 microns			
Electrical Supply	110V/60HZ, 220V/50HZ, 220V/60HZ				Electrical Supply	110V/60HZ, 220V/50HZ, 220V/60HZ			
Noise Level	< 64 dB(A)				Noise Level	< 64 dB(A)			
Accessories	User's manual, Power cord Option : I.V.Bar, Gas / Air / Water / Vacuum Vakes, Drain valve assembly, Support stand, Canopy, Differential Pressure Gauge				Accessories	User's manual, Power cord Option : I.V.Bar, Gas / Air / Water / Vacuum Vakes, Drain valve assembly, Support stand, Canopy, Differential Pressure Gauge			

\* The product might be different as the shown above

**Address** : 520-1 Yongsan-dong, Yuseung-gu, Daejeon 305-500 Korea  
**Phone & Fax** : Phone (+82-42-933-0887) Fax (+82-42-933-0039)  
**E-mail** : info@chclab.com **URL** http://www.chclab.com

## Lab Center Table (CLF-1110F)



### Lab Tables Include

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

All the furniture and laboratory equipment of CHC Lab are designed under the standard of SEFA (Scientific Equipment & Furniture Association).

### FEATURE

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

## Ductless Storage Cabinet (CLE-061)



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

### FEATURE

1. Ductless storage Cabinet is equipped with a filter system for keeping clean laboratory environment without duct system.
2. Spill tray is set at the bottom of the cabinet to prevent an outflow of the harmful chemical substance.
3. The brown color door helps the reagent to be protected by lights from outside which may occur in a chemical reaction.
4. An alarm system informs users when the blower of the cabinet operates improperly.
5. Users can easily check the saturation of filter by using a detection-kit through Filter test hole at the top of the cabinet.

### SPECIFICATIONS

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

## Movable Arm Hood (CLE-020)



This is movable exhaust system that ventilates small contaminated air.

### FEATURE

1. Easy to move to work places for ventilating contaminated air happened during the examination and filtering through movable filter box including Carbon, HEPA, and pre-filters.
2. Speed controller is equipped to adjust wind velocity.

### SPECIFICATIONS

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

Pipe Holder : PP Resin

Pipe : PP Resin

Dome Hood : PP, PE (Selectable)

Bracket : SCP2 Steel Plate With Epoxy Powder Coated

## Fume Hood (CLE-101AN)



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

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

### - Fume Hood types.

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

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



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

### FEATURE

1. Easy to install in the laboratory
2. According to chemical gas or contaminated substance, Carbon, HEPA and pre-filters are equipped.
3. Acrylic door is easy to fold in order for users to examine inside.

### SPECIFICATIONS

Model No.	CLE-051F-03	CLE-051F-04
Dimensions (External)	900 x 650 x 1970	1200 x 650 x 1970
W x D x H (mm) (Internal)	884 x 622 x 730	1184 x 622 x 730
Filter	Pre-Filter / Carbon, HEPA Filter (Option)	
	According to Chemicals	
Blower	Centrifugal Blower	
Noise Level	≤ 65dB(A) at Normal Speed	
Volume of Air Treated	180m <sup>3</sup> /h	320m <sup>3</sup> /h
Electrical Supply	120/240 V, 50/60Hz (Available)	
Power Consumption	130W	266W

## Arm Hood (CLE-001-05)



Arm Hood is a local exhaust system that can ventilate small contaminated air to protect both user and a partial area in the laboratory from harmful substances.

### FEATURE

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

Pipe Holder : PP Resin

Pipe : PP Resin

Dome Hood : PP, PE (Selectable)

Bracket : SCP2 Steel Plate With Epoxy Powder Coated

### SPECIFICATIONS

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



## Wisdom Ultra-Low Temperature Freezer



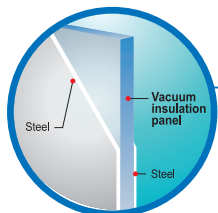
• Triple-layer Gasket for Perfect Insulation



• Automatic Vacuum Dissolver making Door Opening Easy



• Robust & Flexible Design of Power Door Handle with Locking Function

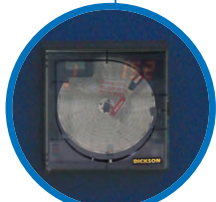


• Insulation Panel packed in Housing and Door Ensures Defrosting around outer surface

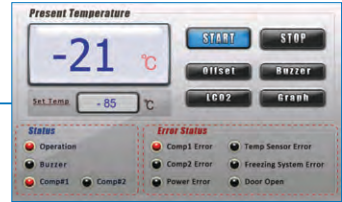
• Filter-Free Mechanism  
Significantly Lowers Heat Generated by the Compressor.  
Block Condenser (without pins)  
Realizes Filter Free Structures



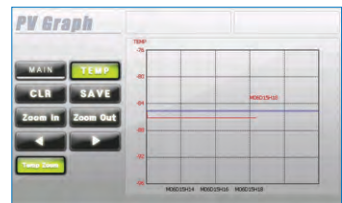
WUF - D500



• Temperature Recorder (Optional)  
Large and vivid LED display



Main Screen of Controller



**Touch-Screen TFT LCD**  
- Ease-of-use the Touch-Screen TFT LCD Controller  
- All Operating Status and Errors on LCD Display

**DATA Storage Function and USB Port Support**  
- Temp. data could be stored for 2 years and maintained in the controller.  
- Available to back-up the data into USB memory stick.

**Safe and Smart Operation**  
- Temporary maintainance in unexpected power failure by embedded Battery,  
- Available to optional LCO2 back-up system.

• CFC-Free  
HFC Refrigerants are Used

• Maintenance-free Cooling Device with Fully Hermetic High-Capacity Compressor

• Alarm  
Built in Standard Warning and Alarm Functions



• Standard Back up Battery System for Data logger and Alarm System

※ Visit our website for more information about [www.DAIHAN-Sci.com](http://www.DAIHAN-Sci.com) or [ALLforLAB.com](http://ALLforLAB.com)



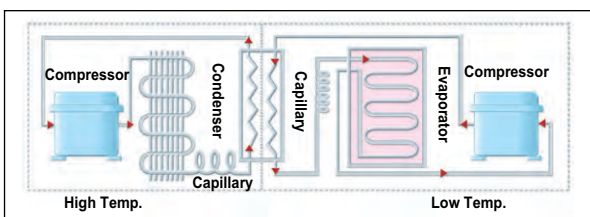
## Innovative SHFS™ (Simplified Hi-Efficiency Freezing System)

Most of the Ultra-Low Temperature Freezers have two compressors cooperating with each other to drop the internal temperature down to  $-86^{\circ}\text{C}$  as shown in the following figure, and its overall freezing mechanism is very complicated.

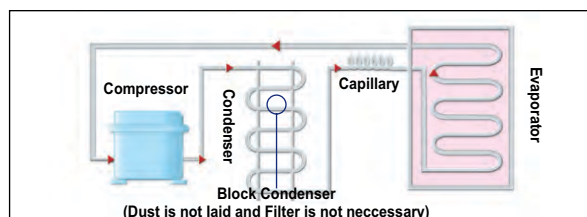
But, our **New SHFS™** uses only single compressor. Even though single set of a compressor, a capillary tube, a condenser and an evaporator is incorporated, it ensures the temperature down to  $-86^{\circ}\text{C}$  by an **Advanced Control Technology** of the compressor and the process of **Specially Mixed Refrigerants**. SHFS™ overcomes technical complexity of the typical cascaded double compressor system. Simplification of the freezing mechanism and electricity minimizes the noise, power consumption and failure.

- ▶ Only single freezing cycle works to reach down to  $-86^{\circ}\text{C}$       ▶ Much simpler mechanism
- ▶ Advanced Compressor Control Technology + Specially Mixed Refrigerants
- ▶ Dramatically lowered noise, power consumption and fail rate
- ▶ Oil separator free, Expansion tank free
- ▶ Block condenser against typical pin-type condenser : Dust free, Filter free

### Simplified Hi-Efficiency Freezing System Mechanism : Easy Maintenance



Typical Cascaded Compressor System  
Two Freezing cycles contribute Complicated mechanism

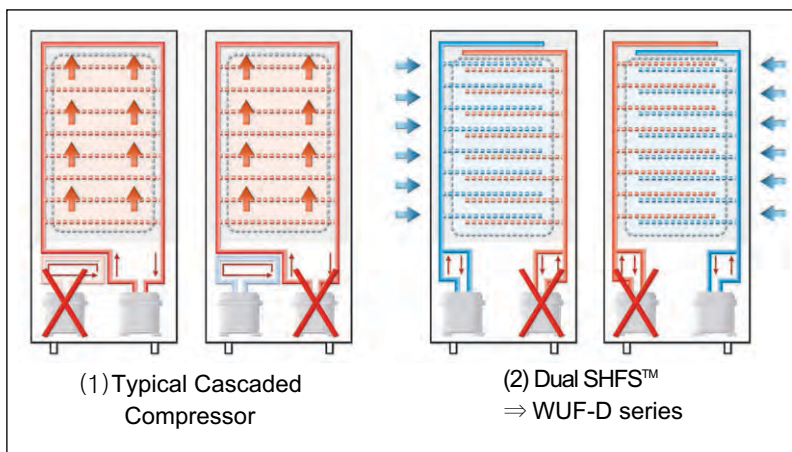


New **Simplified Hi-Efficiency Freezing System**  
Single freezing cycle works only!!



## Doubled Stability and Robustness!! Dual SHFS™

We offer an extraordinary high-stability system powered by two **Simplified Hi-Efficiency Freezing System** operating independently. Normally, both of the two compressors are running, and it drops the temperature inside the storage chamber down to  $-95^{\circ}\text{C}$ . Even if one SHFS™ fails in operation by a certain unexpected problem, the other SHFS™ still works and maintains ultra-low temperature down to  $-80^{\circ}\text{C}$ . It means one SHFS™ works as a 'backup' of the other SHFS™. This innovative mechanism realizes doubled stability, robustness and fault tolerance, which are the most important feature of the ULT freezer needed by all the customers.



- ▶ **The lowest temperature** of  $-95^{\circ}\text{C}$  is ensured by Dual SHFS™ system running independently and simultaneously
- ▶ **Fault Tolerance System**  
- Realization of doubled stability and robustness
- ▶ **Incomparable Fast and Powerful Freezing**  
- Fast Recovery of Target Temperature

- (1) **Complicated mechanism**  
⇒ If one of compressor fails, temperature would go up
- (2) **Even if one the two SHFS™ fails to run, the other is still running properly**  
⇒ **Minimum  $-80^{\circ}\text{C}$**

Model	Ultra Low Temperature Freezer								
	Dual SHFS™ Type				SHFS™ Type			Personal Type	
	WUF-D300	WUF-D400	WUF-D500	WUF-D700	WUF-300	WUF-400	WUF-500	WUF-25	WUF-80
Capacity	308Lit.	393Lit.	503Lit.	683Lit.	308Lit.	393Lit.	503Lit.	25Lit.	82Lit.
Temperature	$-95^{\circ}\text{C} \sim -65^{\circ}\text{C}$			$-86^{\circ}\text{C} \sim -65^{\circ}\text{C}$	$-86^{\circ}\text{C} \sim -65^{\circ}\text{C}$			$-90^{\circ}\text{C} \sim -65^{\circ}\text{C}$	
Refrigerant	HFC(CFC Free Refrigerant System)								

## 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.

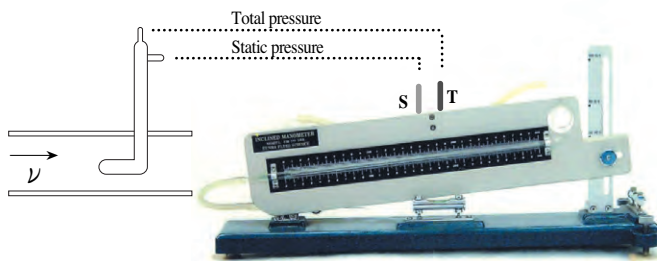
Supplied as standard Accessories, 3 type of weirs.

### SPECIFICATIONS

MODEL	EH-HB-140E	EH-HB-140L
Open channel	23W × 17H × 80L(cm)	23W × 17H × 120L(cm)
	Magnetic coupling pump	
Pump & motor	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

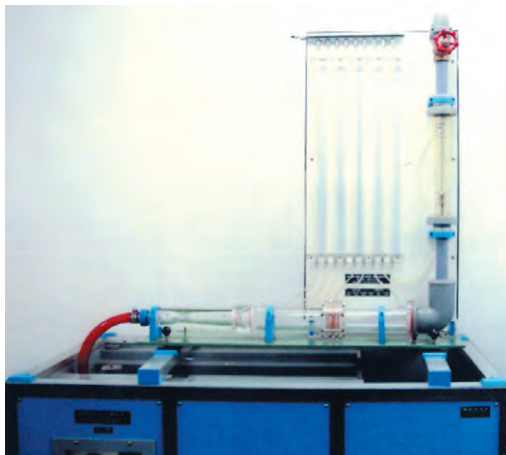
- Demonstrate the force of water jet impinging to stationary object.
- For the best performance, connect to Eunha Hydraulics bench(EH-HB-140/140E) is essential.
- On the upper end of this stem is mounted a weight container.
- The dead weight of the moving parts is counter-balanced by a compression spring.
- 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 φ Cone type : 40 φ (120 degree cone) Hemispherical cup : 40 φ
Tank (Cylindrical)	150 φ (mm) × 300H (mm), Transparent acryl
Flow rate	20ℓ /min (Max.)
Drain hole (Outlet)	25A
Dimension	250 φ (mm) × 50H (cm)
Standard accessories	<ul style="list-style-type: none"> <li>• Weight : 100gr - 2 ea, 50gr - 2 ea, 20gr - 3 ea, 10gr - 3 ea, 5gr - 2 ea.</li> <li>• Target : Flat plate, Cone (120 Degree), Hemispherical cup - 1 ea.</li> <li>• L-Wrench : 5/32" - 1 ea.</li> </ul>

## EH-FVO-G

## Flow Measuring Apparatus

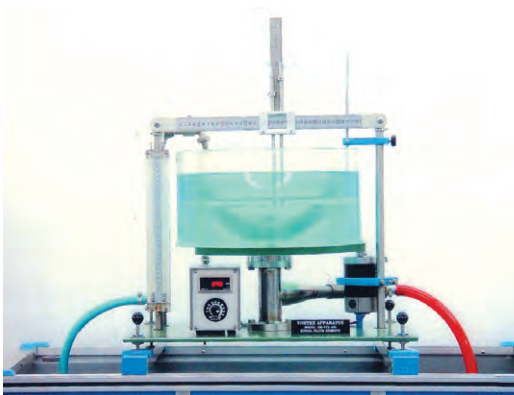


### FEATURE

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

## EH-VTX-400

## Vortex Apparatus



### SPECIFICATIONS

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



**EH-OJ-400H**

## Orifice and Jet Apparatus



### FEATURE

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

### RANGE OF EXPERIMENTS

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

**EH-FO-13M**

## Flow Through an Orifice



### SPECIFICATIONS

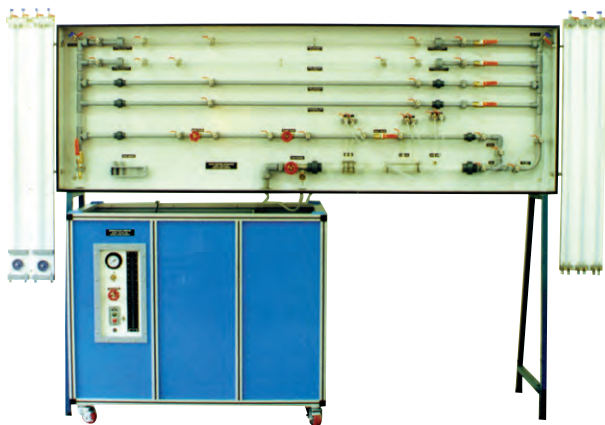
Standard orifice	13mm Dia.
Head (Max.)	390mm
Cylindrical tank (Acryl)	180 $\phi$ (mm) $\times$ 40H (cm)
Inlet pipe (With dissipator)	19mm
Overflow pipe (Variable head)	22mm
Overflow tank (Acryl)	100D $\times$ 110W $\times$ 270H (mm)
Flow rate (Approx.)	18 $\ell$ /min
Traverse mechanism	Lead screw with 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

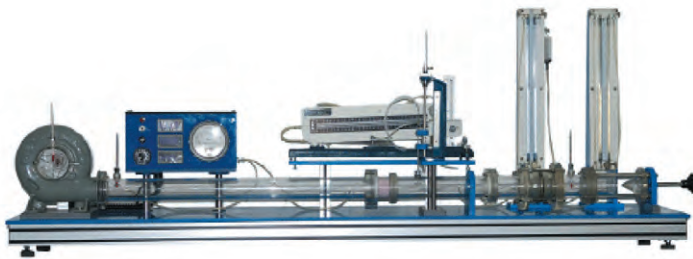


### SPECIFICATIONS

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. : ±0.5 °C Thermocouple : Pt 100Ω	
Circulating pump	Magnetic coupling pump Capacity : 7ℓ /min Max. temp : 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-C50

## Fan Test Rig

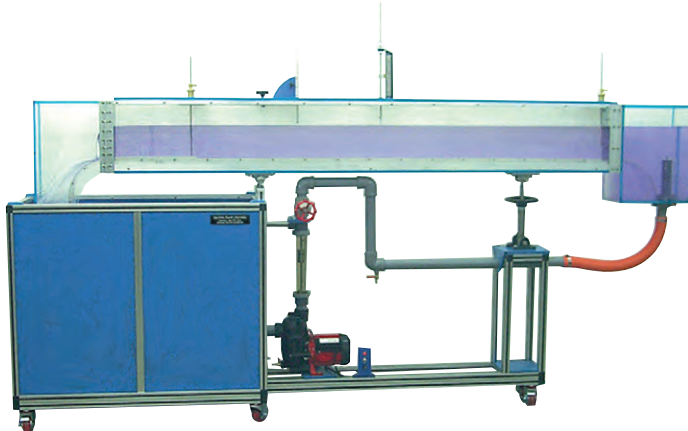


### SPECIFICATIONS

Electrical supply	220Volts (60Hz), 1.5A	
Centrifugal Fan	Flow rate	: 60~90cm <sup>3</sup> /h
	Rotational speed	: 0~3600rpm
	Drive motor	: DC 90V, 0.1KW
Duct (In)	50mm	
Flow rate control	Throttle Valve	
Flow rate measuring detector	Orifice meter (Orifice Diameter 30mm)	
Velocity measuring detector	Pitot tube (with Vertical Traverse)	
Panel meters (Control Box)	DC volt meter (Digital), DC Ampere meter (Digital)	
	Tacho meter (Digital), Differential pressure gauge (Analog)	
Standard accessory	Inclined Manometer	
	U-Water Manometer(400mm) 2set	
	Thermometer (50 °C) 3ea	
Weight	39.7kg	
Dimension	180L × 33D × 68H(cm)	

## 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 crests 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.

**U W C**

## Universal Washing Chamber



### SPECIFICATION

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

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

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

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

### FEATURE

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



**US - VM**

## Vortex Mixer



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

### FEATURE

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

### SPECIFICATION

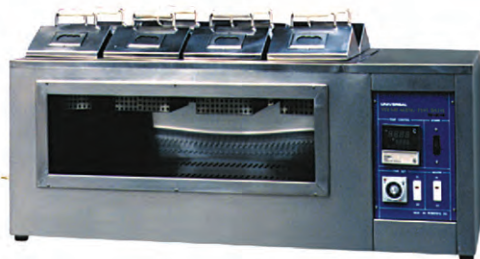
- Speed Range : 1000 ~ 3500 rpm
- Mixing Plate :  $\varnothing$  90mm
- Mixing Method : Vibration Type
- Plate Stroke : 4mm
- Power Consumption : 0.5A
- Power Source : 220V/60Hz
- Use Container : Test Tube and Flask

**TW - SC - D/DS**

## Steam Aging Test Bath



TW - SC - DS



TW - SC - D

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

### FEATURE

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

### SPECIFICATION

- Temp. Range : Amb. +5°C ~ 95°C
- Temp. Control : Digital Set Readout PID Control
- Temp. Stability :  $\pm 0.3^\circ\text{C}$  at 90°C
- Dimension(W×D×H) : (in size) 685×285×240mm  
(out size) 965×345×475mm
- Material : All SUS #304
- Timer & Buzzer : auto start, auto stop, 99.9/hr, digital display
- Heater : 1KW × 4
- Safety Device : Power Breaker Switch
- Power Source : AC 100 or 220V/60Hz



## MULTIPURPOSE BASKET

### FEATURE OF PRODUCT

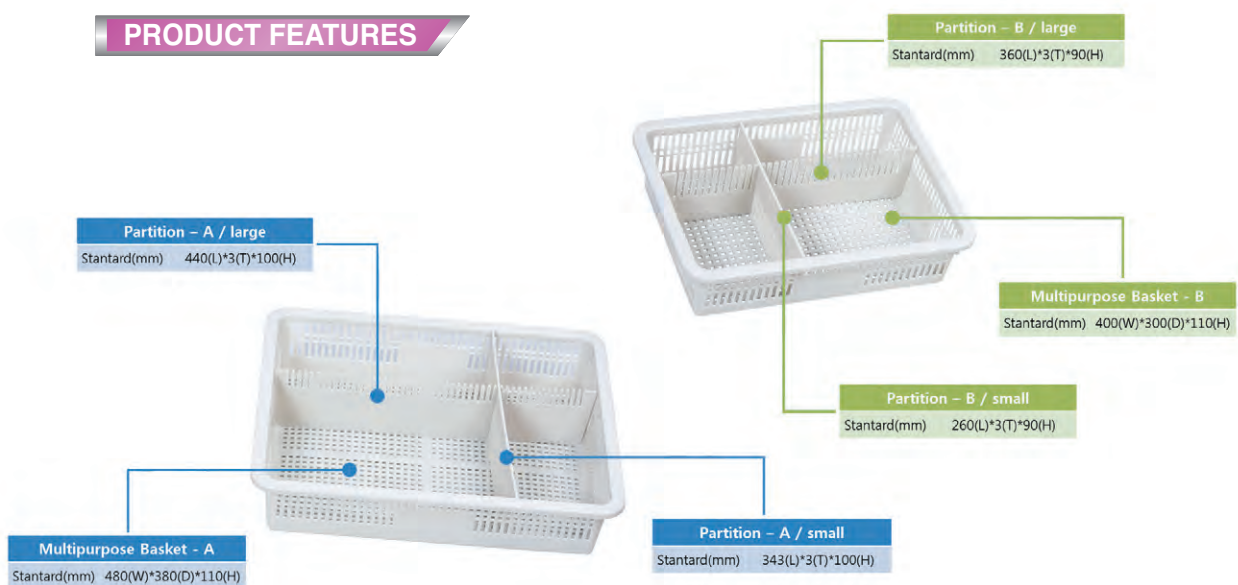
This product made of polypropylent is so strong after assembled. Anyone can assemble that product according to standards and sized so usefully, and it is easy to store



**HONGMYONG SCIENCE**

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

### PRODUCT FEATURES



# MULTIPURPOSE BASKET

## PRODUCT COLORS



(GRAY)



(SKY)



(PURPLE)



(GREEN)

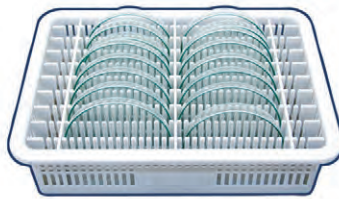


Higher level of  
**design** and **quality** oriented  
only to the **best.**

## EXAMPLE



(BEAKER)



(SCHALE)



(ERLENMEYER FLASK)



(TEST TUBE)



(ALCOHOL LAMP)



(FNNEL)

## 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 $\mu\text{s}/\text{cm}$		
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 TOC monitoring system (option)

### 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

## Zenix EDI System

## Electrodeionization system



### FEATURES

- High Quality water, to over 10M $\Omega$  -cm from tap water
- EDI does not require the exchange of Ion filter pack
- Simple & Compact System

### SPECIFICATIONS

	Zenix EDI 180
Product (RO, EDI)	Max. 10L/Hr
Water Quality	-RO Water : 0.0 to 30 $\mu\text{s}/\text{cm}$ -EDI Water : Up to 15M $\Omega$ -cm
Controller functions	1) Self test for external & internal system 2) Filter/UV Lamp exchange indicator 3) Auto monitoring of Feed water quality
Dimensions(W × D × H)	300 × 480 × 470mm
Power	230V(110V on request), 50/60Hz, 60W



## Zeneer Power Series (RO & UP)

## Water Purification System



### FEATURES

- Certified CE, 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 II	Zeneer PowerIII
Product (RO, UP)	Max. 15L/Hr	Max. 25L/Hr	Max. 35L/Hr
Water Quality	-Pure Water: 0.0 to 30.0 $\mu\text{s}/\text{cm}$ -Ultra Pure: Up to 18.3 M $\Omega$ -cm		
Controller functions	1) Self test for external & internal system 2) Auto cleaning and monitoring function 3) Filter exchange indicator 4) Auto monitoring of Feed water quality		
Dimensions(W × D × H)	390 × 460 × 470mm		
Power	230V(110V on request), 50/60Hz, 60W		

## Zeneer RO Series

## Pure Water System



### FEATURES

- Certified CE, 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 $\mu\text{s}/\text{cm}$		
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, 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



## New P.NIX 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 $\mu\text{s}/\text{cm}$ -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 P.NIX 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

	New P.NIX RO 180	New P.NIX RO 280	New P.NIX RO 380
Product (RO)	Max. 15L/Hr	Max. 25L/Hr	Max. 35L/Hr
Water Quality	-Pure Water: 0.0 to 30.0 $\mu\text{s}/\text{cm}$		
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		

## New P.NIX UP Series

## Ultra Pure Water 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 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

## New Human Power Series (RO & UP)

## Water Purification System



### 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 available

## 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
Product(RO, UP)	Max. 15L/Hr	Max. 25L/Hr	Max. 35L/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)	400×570×510mm		
Power	230V(110V on request), 50/60Hz, 60W		

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

## 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

## DEEP FREEZER(CRYO - PRIDE SERIES)



### FEATURE

- Hermetically sealed cooling system with very durable compressors
- Cold air loss is minimized by insulated inner doors
- 130 mm polyurethane foamed insulation
- Cabinet with round corners for easy cleaning
- Quiet running fans and compressors create a very low noise level (+/- 60 dBA)
- Light adjustable HDPE shelf with air circulation hole(No wrenched in -120°C)

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

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

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

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

## ICE - MAKER (FLAKE TYPE)



### FEATURE

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

### SPECIFICATION

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

## FREEZE DRYER(LYOPHILIZER SERIES)



### FEATURE

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

Model no:	TFD5503	FD55508	FD5512	FD518	TFD8503	FD8508	FD8512	FD8518
ICE Capacity/day	2 liters	5 liters	10 liters	12 liters	2 liters	5 liters	12 liters	18 liters
Total Ice Capacity	3 liters	8 liters	12 liters	18 liters		8 liters	12 liters	18 liters
Cabinet Dimensions	805W × 750D × 885H mm							
Weight	68kg	120 kg	122 kg	130 kg	86 kg	145 kg	147 kg	155 kg
Condenser Temperature	-50℃ to -55℃				-75℃ to -85℃			

## PROGRAMMABLE VACUUM 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

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



## J-300S / 300M

## Forced convection drying oven

CE



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

## J-100S / 100M

## Gravity convection incubator

CE



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

## J-IBO1 / IBO2 / IBO3

## BOD incubator

CE



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

## J-IRW300 / IRA200

## CO<sub>2</sub> incubator

CE



Model		J-IRW300	J-IRA200
Type		Water jacketed system	Air jacketed system
Environmental temperature range		5°C ~ 25°C	
Overall size (W×D×H)	mm	620×615/625×960/980	620×615×900/920
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+ 10.0°C ~ 50.0°C	
	accuracy	± 0.5°C at 37.0°C	
	uniformity	± 1.0°C at 37.0°C	
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)	ℓ	400	650
Safety device		Self diagnosis functions (Memory error, Temp. overheating, SSR short circuit, Sensor short circuit), ELB, overheating protection, water level display	
Shelves		3ea	
Power source		AC 230V, 50/60Hz, 1Phase	
Certification		CE	

## J-NSIL-R/SISN-R

## Shaking incubator

CE



Model		J-NSIL-R (cooling)	J-SISN-R
Shaking type		Rotation type	
Overall size (W×D×H)	mm	540×680×580/600	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°C ~ 60.0°C	Ambient + 10.0°C ~ 60.0°C
	accuracy	± 0.5°C at 37.0°C	
	uniformity	± 1.0°C at 37.0°C	
	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), ELB (Electrical Leakage Breaker), Sound alarm	
Material	interior	Stainless steel plate	
	exterior	Steel plate with powder coated finish	
Power source		AC 230V, 50/60Hz, 1Phase	
Certification		CE	-

## J-RHC1-LCD-T

## Constant temp. & humidity chamber

CE



Model		J-RHC1-LCD-T
Overall size (W×D×H)	mm	1,070×1,020×1,750
Chamber size (W×D×H)	mm	500×500×600
Capacity	ℓ	150
Temperature	range	-20.0°C ~ 150.0°C
	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 (sheath)	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, ELB, water empty, current leak, over current, circuit breaker
Shelves		3 ea
Material	interior	Stainless steel plate
	exterior	Steel plate with powder coated finish
Power source & consumption		AC 230V, 50/60Hz, 1Phase
Certification		CE

\*Option : Temp. & Humidity recorder

## J-SWB19 / SWB29

## Water bath shaker

CE

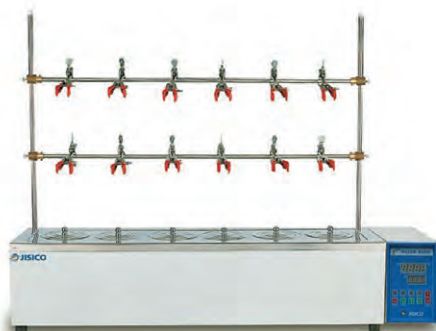


Model		J-SWB19	J-SWB29
Type		Reciprocating type	
Overall size (W×D×H) mm		580×503×445	780×553×445
Chamber size (W×D×H) mm		400×350×250	600×400×250
Capacity ℓ		35	60
Temperature	range	Ambient+ 5℃ ~ 99℃	
	accuracy	± 0.1℃ at 50.0℃	
	uniformity	± 0.5℃ at 50.0℃	
	controller	PID controller	
regulator		SSR type	
Thermocouple		Pt 100 ohms	
Shaking	speed range rpm	35 ~ 250	
	stroke mm	30	
	motor Hp	1/8	
	capacity ml	250×9ea	500×12ea or 250×15ea
Heater/sheath W		2,000	3,000
Safety device		Self diagnosis function (Memory error, temp. overheating, SSR short circuit, Sensor short circuit)	
Material	interior	Stainless steel plate	
	exterior	Steel plate with powder coated finish	
Power source & consumption		AC 230V, 50/60Hz, 1Phase	AC 230V, 50/60Hz, 1Phase
Net weight kg		34	37
Certificate		CE	-

※ Option : Shaking plate (spring wire rack)

## J-BS3D

## Soxhlet water bath



Model		J-BS3D
Type		6 hole opening type
Overall size (W×D×H) mm		1,080×230 / 260×220 / 870
Bath inner size (W×D×H) mm		890×170×130
Capacity ℓ		19
Temperature	range	Ambient + 5℃ ~ 100℃
	controller	PID controller
	regulator	SSR type
Thermocouple		Pt 100 ohms
Heater/sheath W		2,000
Safety device		Self diagnosis function (Memory error, temp. overheating, SSR short circuit, Sensor short circuit)
Material	interior	Stainless steel plate
	exterior	Steel plate with powder coated finish
Power source		AC 220V, 50/60Hz, 1Phase
Net weight kg		20.7

## J-BAL8 / BAG8 / BAS8 / BA08

## Water bath with PID controller

CE



Model		J-BA08	J-BAS8	J-BAG8	J-BAL8
Size	bath inner(W×D×H) mm	300×200×110	350×250×150	320×260×200	450×300×200
	overall(W×D×H) mm	460×260×280	510×310×350	510×360×370	610×360×395
Capacity ℓ		6.6	13	16.6	27
Temperature	range	Ambient+ 5℃ ~ 100℃			
	controller	Digital setting & display			
	regulator	SSR type			
Thermocouple		Pt 100 ohms			
Heater/sheath W		550	1,000	1,500	1,500
Material	interior	Stainless steel plate			
	exterior	Steel plate with powder coated finish			
Power source & consumption		AC 220V 60Hz 1Phase			
Net weight kg		9	10.6	11	16
Certificate		-	-	-	CE

## 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, 50Hz or 60Hz, 1 ∅		AC 220V, 50Hz or 60Hz, 3 ∅

## J-NAS62 / NAS81 / NAS103

## Automatic autoclave, sterilizer

CE



Model		J-NAS62	J-NAS81	J-NAS103
Overall size (W×D×H)	mm	700×500×880/1,075	750×550×880/1,165	800×600×880/1,165
Inner size (∅×H)	mm	350×650	400×650	450×650
Capacity	ℓ	62.5	81.6	103
Method sterilization		High pressure system		
Temperature	range	121℃		
	controller	PID controller		
	regulator	SSR type		
Thermocouple		Pt 100 ohms		
Using pressure		1.15kgf/cm <sup>2</sup>		
Heater (sheath)	W	3,500	4,000	4,500
Pressure gauge	kgf/cm <sup>2</sup>	Mechanical type 0 ~ 2 (JAPAN)		
Basket		2ea		
Safety device	heating	Self diagnosis function (Memory error, temp.overheating, SSR short circuit, Sensor short circuit), ELB		
	pressure	Double safety valve (U.S.A)		
Material	basket	Stainless steel		
	exterior	Steel plate with powder coated finish		
Power source		AC 230V, 50/60Hz, 1 ∅		
Certification		CE		

## J-USRC

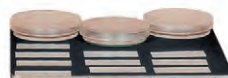
## Shaker

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	40
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





**J-MF**

## Vortex tube mixer

CE



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

**J-MSFS**

## Separatory funnel shaker

CE



Option



Model		J-MSFS
Shaking type		Reciprocating type (vertical or horizontal shaking)
Overall size (W×D×H)	mm	660×500 / 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-NMS / MS4**

## Hot-plate magnetic stirrer



Model		J-NMS	J-MS4
Overall size (W×D×H)	mm	200×225×120	460×380×175
Size (top-plate) (W×D)	mm	180×180	∅ 150×4ea
Temperature (surface)		380℃(Max)	400℃(Max)
Speed	rpm	100~1,500	2,000(Max)
Heater(sheath)	W	680	300×4
Material (top-plate)		Ceramic coated	Aluminum die-casting with ceramic coated
Power source		AC 220V, 50/60Hz, 1Phase	AC 220V, 50/60Hz, 1Phase
Net weight	kg	3.5	11.7

※ Option : J-MS6, J-MS8 can be available

## J-VSS

## Vibratory sieve shaker

CE

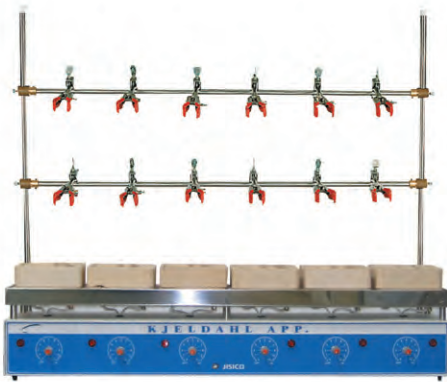


Model		J-VSS	
Shaking type		Vibration type(up/down)	
Overall size(W×D×H) mm		360×460×620(170/450)	
Shaking(vibration)	control system	Frequency control	
	controller	Digital setting / display	
	mode	Interval vibratory motion :3.2.1sec Continuous & vibratory motion (4 mode)	
vibration speed		130 cycles per min.	
Power consumption	W	500	
	size(∅×H) mm	203×41	
Sieve(option)	quantity	7ea	
	material	Brass or stainless steel plate	
Power source		AC 230V 50/60Hz 1∅	
Certification		CE	

※Option : Sieves

## J-H6S

## Kjeldahl digesting equipment



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

## J-JT6S

## Jar-tester

CE



Model		J-JT6S	
Overall size (W×D×H) mm		950×340×450/475	
Impeller	blade(W×L) mm	75×25	
	up-down mm	250	
Speed controller		Digital setting/display	
Speed (digital display) rpm		28 ~ 300(Max.)	
Motor (AC) W		25	
Stirrer		6ea	
Function		Digital PID speed controller and timer, digital RPM meter	
Timer (digital setting & display)		99hr 59min. or infinity	
Fluorescent lamp W		30×2ea	
Material	body	Steel plate with powder coated finish	
	stirrer	Stainless steel plate	
Power source & consumption		AC 230V 50/60Hz 1Phase	
Net weight Kg		40	
Certification		CE	

## Baths & Circulators



Economy Heating Baths - Dual type (BW-D series)



Economy Heating Baths (BW-B series)



Viscometer Heating Baths (VB-G series)



Shaking & Heating Baths (BS series)



Heating Bath Circulators (CW-G series)



Refrigerated & Heating Bath Circulators (RW-G series)

## Baths & Circulators

### Technical Benefits

#### Safety functions

- 1) Self-protecting cut-off function and signal:
    - Over temperature limit.
    - 2 separated over-current fuses for user safety.
  - 2) Time setting function for automated run / off:
    - Integrated time setting: Delayed ON / OFF.  
(from 1 min to 99 hr 59 min)
    - Operating settable function: After a power interruption, select automated run or manual run.
  - 3) Low fluid level and dry-running protection:
    - Intermittent tone rings and optical signal alarm.
    - Heating element automatically stop soon after alarm ringing to protect operators and sample.
- \* Except for BW-B/E/D series.

#### Optimum control performance

- 1) Professional control electronics and program control: \* Except for BW-B series
  - Microprocessor PID temperature control with very simple calibration and auto-tuning.
  - Frequently use 3 different temperatures memorable for convenient use.
  - Selectable measuring temperature in °C or °F.
- 2) Applicable control display considering MMI (Man Machine Interface) network system:
  - Splash-proof / easy-to-clean keypads and clear LED displays.
  - A speed lock key prevents accidental resetting of parameters. \* Except for BW-B/E/D series.

### Selection Guide

#### Heating Baths



Description	Working Temp. Range [°C/°F]	Bath Volume [L/cu ft]	Temperature Stability [± °C/°F]
Economy - Analog type	BW-05B	3.5 / 0.1	0.5 / 0.9
	BW-10B	11.5 / 0.4	
	BW-20B	20.0 / 0.7	
Economy - Digital type	BW-05E	3.5 / 0.1	0.3 / 0.54
	BW-10E	11.5 / 0.4	
	BW-20E	20.0 / 0.7	
Economy - Dual type	BW-0505D	3.5 & 3.5 / 0.1 & 0.1	0.3 / 0.54
	BW-0510D	3.5 & 11.5 / 0.1 & 0.4	
	BW-1010D	11.5 & 11.5 / 0.4 & 0.4	
General Purpose	BW-1020D	11.5 & 20.0 / 0.4 & 0.7	0.2 / 0.36
	BW-05G	5.0 / 0.2	
	BW-10G	10.0 / 0.4	
Shaking	BW-20G	20.0 / 0.7	0.2 / 0.36
	BS-06	17.0 / 0.6	
	BS-11	25.0 / 0.9	
Viscometer	BS-21	37.0 / 1.3	0.05 / 0.09
	BS-31	55.0 / 1.9	
	VB-25G	25.0 / 0.9	
	VB-40G	40.0 / 1.4	0.1 / 0.18

#### Bath Circulators



Description	Working Temp. Range [°C/°F]	Bath Volume [L/cu ft]	Temperature Stability [± °C/°F]
Heating	CW-05G	5.0 / 0.2	0.05 / 0.09
	CW-10G	10.0 / 0.4	0.05 / 0.09
	CW-20G	20.0 / 0.7	0.1 / 0.18
	CW-30G	30.0 / 1.1	0.1 / 0.18
Refrigerated & Heating (to -25°C)	RW-0525G	5.0 / 0.2	0.05 / 0.09
	RW-1025G	10.0 / 0.4	0.05 / 0.09
	RW-2025G	20.0 / 0.7	0.05 / 0.09
	RW-3025G	30.0 / 1.1	0.08 / 0.14
Refrigerated & Heating (to -35°C)	RW-0540G	5.0 / 0.2	0.05 / 0.09
	RW-1040G	10.0 / 0.4	0.05 / 0.09
	RW-2040G	20.0 / 0.7	0.05 / 0.09
	RW-0540G	30.0 / 1.1	0.08 / 0.14

#### Cold Trap Bath

Description	Working Temp. Range [°C/°F]	Bath Volume [L/cu ft]
Cold Trap	CTB-10	Down to -40/-40
		4.8 / 0.17

\* Our Web-site includes detailed information of all JEIOTECH products with recent technical data.



## Desiccators



Round Vacuum Desiccators (VDR series)



Cubic Vacuum Desiccators (VDC)

### Constructional features

- Fitted with an airtight silicon gasket to maintain vacuum condition without any grease.
- Highly transparent PC (Polycarbonate) that is strong, allows for clear sample viewing, is non-corrosive, is easy to clean and maintain.
- The basic component of the drying agent tray with desiccant allows the desiccators to be used in various experiments.
- Convenient 3-Way stopcock provide easy vacuum release during operating.
- Lock holds the bottom and top lid together under non vacuum conditions. (only VDR Series)
- Detachable analog vacuum gauge fitted at the center of the top lid. (optional for VDR Series)
- These heavy-duty desiccators are made of advance structure with for durability.(only VDC Series)
- Offered 4 ports allow user to be able to attach another vacuum gauge or stopcock (only VDC Series)
- Up to five units can be stacked to save space in the laboratory. (only VDC Series)

## Selection Guide

### Desiccators

Description	Internal volume (L)	Vacuum range (MPa)	Body Material	
Round type	VDR-20 [20G]	6	0 ~ -0.1 (Analog)	
	VDR-25 [25G]	10		
	VDR-30 [30G]	20		
Cubic type	VDC-31	35	0 ~ -0.1 (Analog)	PC (Polycarbonate)

\* VDR-G Type is with gauge

\* Our Web-site includes detailed information of all JEIOTECH products with recent technical data.

## Fume Hoods



Clean Benches (BC-E series)



Ductless Fume Hoods (DLH-G series)

## Technical Benefits

### Clean benches

#### Safety functions

- 2 separated over-current fuses for user safety.
- Toggle switch provided can be selective one of them. (UV, off, and fluorescent)
- Tempered glass sliding sash window and intercept the UV light for user safety. (Automated UV lamp switch off when unintended window opening)
- Permanent magnetic differential pressure gauge displays across the HEPA filter to check the exchange period. (optional)
- Using a 99.99% efficient supply HEPA filter.
- Partial-free ISO14644-1 Class 4 air. (formerly Class 10 per Federal Standard 209E)

#### Ideal construction

- Optimum PWM (pulse width modulation) control performance.
- Dirt-repellent powder coating external surface.

### Ductless fume hoods

#### Filtration

- Activated carbon filter applies to most extensive range of chemicals. (Optional)
- Pre-filter mounted makes it longer the main filter's life span.

#### Ideal construction

- Side viewing Panel made in transparent acryl in 6 thicknesses, visual at both side of view point enable to look.
- Lower Stand mounted fixable casters easy for moving & fixing. (Optional)
- F.L. Lamp (INNER) : To prevent contamination and damage when using, it's located at inside of lower part of front cover away from working zone.
- Control Panel : Consist of fluorescent lamp, Fan Start/Stop, Blower speed controller, alarm, menu and etc.
- Anemometer : Visual for the input air velocity at real time.
- Door Stay : Fixture to fix it when door open at 2 step.

## Selection Guide

### Fume Hoods



CE Certification only for the BC Series.

Description		Filter	Work Surface
Clean Benches	BC-01E	HEAP Filter	Stainless Steel #304
	BC-11E		
	BC-21E		
Ductless Fume Hoods	DLH-01G	Optional 6 Different Filters	Optionl 6 Different Work Surface
	DLH-11G		

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## Incubators



General Incubators (IB-G series)



Economy Incubators (IB-E series)



Incubated Shakers - Benchtop type (SI series)



Low Temperature Personal Incubators (ILP series)



Low Temperature Incubators (IL-21/IL-21A)



Incubated Shakers - Floor type (IS series)

## Incubators

### Technical Benefits

#### Safety functions

- 1) Self-protecting cut-off function and signal:
  - Over temperature limit.
  - 2 separated over-current fuses for user safety.
- 2) Time setting function for automated run/off:
  - Integrated time setting: Delayed ON / OFF.
  - Operating settable function: After a power interruption, select automated run or manual run.
- 3) Door-open warning alarm:
  - Intermittent tone and optical signal alarm 5 min. after automated cut-off.
  - Heating element and fan automatically stop when door opening to minimize heat loss and protect operator.

#### Optimum control performance

- 1) Professional control electronics and program control:
  - Microprocessor PID temperature control with very simple calibration and auto-tuning features.
  - Selectable measuring temperature in °C or °F.
  - Self-diagnostic function identifies any errors and advises correction procedures.
- 2) Applicable control display considering MMI (Man Machine Interface) network system:
  - Very similar key arrangement throughout the whole temperature chambers, bath, circulators and shakers series.
  - Shaker and lamp mechanism have their own on/off buttons for independent incubating use. (Only SI, IS-971RF shakers)

### Selection Guide

#### Incubators



Description		Operating Temp. Range (°C/°F)	Chamber Volume (L /cu ft)	Temperature Fluctuation at 37 °C [±°C/°F]	Temperature Variation at 37 °C [±°C/°F]
General Purpose	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	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	0.3 / 0.54	0.8 / 1.44
	IB-21E		205 / 7.2	0.1 / 0.18	1.1 / 1.98

#### Low Temperature Incubators



Description		Operating Temp. Range (°C/°F)	Chamber Volume (L /cu ft)	Temperature Fluctuation at 25 °C [±°C/°F]	Temperature Variation at 25 °C [±°C/°F]
Forced (Mechanical Convection)	IL-11	0 to 60 / +32 to 140	150 / 5.3	0.1 / 0.18	0.5 / 0.9
	IL-21		224 / 8.6		0.4 / 0.72
Natural (Gravity) Convection-Air Jacketed	IL-11A	+4 to 60 / +39.2 to 140	162 / 5.7	0.2 / 0.36	0.5 / 0.9
	IL-21A		254 / 9.0		
Personal (Compact)	ILP-02	10~40 °C at ambient temperature 25 °C	14 / 0.5	0.1 / 0.18	0.5 / 0.9
	ILP-12		48 / 1.7		0.4 / 0.72

#### Incubated&Refrigerated&Illuminated Shakers



CE Certification without the IS-071RF.  
© Certification only for the SI Series.

Description		Operating Temp. Range [°C/°F]	Speed Range [RPM]	Maximum Orbit Size	
Benchtop type	SI-300	Incubated Shakers Amb. +5 to 60 / Amb. +9 to 140	10 to 300	40mm dia (1.6 "dia)	
	SI-600				
	SI-300R				Incubated & Refrigerated Shakers +15 to 60 / +59 to 140
	SI-600R				
Floor type	IS-971	Incubated Shakers Amb. +5 to 60 / Amb. +9 to 140	10 to 300	70mm dia (2.8 "dia)	
	IS-971R				Incubated & Refrigerated Shakers +4 to 60 / +40 to 140
	IS-971RF				

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## Ovens



Forced Convection Ovens (OF-G series)



Economy Forced Convection Ovens (OF-E series)



Natural Convection Ovens (ON-G series)



Economy Natural Convection Ovens (ON-E series)



Vacuum Ovens (OV series)

## Ovens

### Technical Benefits

#### Safety functions

- 1) Self-protecting cut-off function and signal :
  - Over temperature limit.
  - 2 separated over-current fuses for user safety.
- 2) Time setting function for automated run / off :
  - Integrated time setting: Delayed ON / OFF.  
(from 1 min to 99 hr 59 min)
  - Operating settable function: After a power interruption, select automated run or manual run.
- 3) Door-open warning alarm (except for OV series) :
  - Intermittent tone and optical signal alarm 5 min. after automated cut - off.
  - Heating element and fan automatically stop when door opening to minimize heat loss and protect operator.

- 2) Applicable control display considering MMI (Man Machine Interface) network system :
  - Very similar key arrangement throughout the whole temperature chambers, bath circulators and shakers series.
  - Operator-friendly controller with the splash-proof / easy-to-clean keypads and clear LED displays.
  - A speed lock key prevents accidental resetting of parameters conveniently.

#### Optimum control performance

- 1) Professional control electronics and program control :
  - Microprocessor PID temperature control with very simple calibration and auto-tuning features.
  - Frequently use 3 different temperatures memorable for convenient use.
  - Selectable measuring temperature in °C or °F.

#### Ideal construction

- 1) High quality 304 stainless steel inner chamber and dirt-repellent powder coating external surface. (except for OV series)
- 2) Perfectly sealed door gasket minimizes heat loss and fully insulated chambers keep exterior at a safe temperature.
- 3) Adjustable stainless steel and electro polished wire shelves for better air-flowing and easy cleaning.

## Selection Guide

### Convection Ovens



CE Certification without the ON-G Series.

Description		Operating Temp. Range (°C/°F)	Chamber Volume (L / cu ft)	Temperature Fluctuation at 100 °C [±°C/°F]	Temperature Variation at 100 °C [±°C/°F]
Forced [Mechanical]	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		
	OF-22G		151 / 5.3		
Economy Forced [Mechanical]	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		
	OF-21E		150 / 5.3		
Natural (Gravity)	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		
	ON-22G		135 / 4.8		
Economy Natural (Gravity)	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		
	ON-21E		150 / 5.3		

### Vacuum Ovens



Description		Operating Temp. Range (°C/°F)	Chamber Volume (L / cu ft)	Temperature Fluctuation at 100 °C [±°C/°F]	Temperature Variation at 100 °C [±°C/°F]
Vacuum	OV-11	Amb. +5 to 250 / Amb. +9 to 482	28 / 1.0	0.1 / 0.18	3.7 / 6.66
	OV-12		65 / 2.3		

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## Recirculating Coolers [Chillers]



Low Temperature Recirculating Coolers [Chillers] (HL series)



General Recirculating Coolers [Chillers] (HX series)

## Recirculating Coolers [Chillers]

### Technical Benefits

#### Safety functions

- 1) Self - protecting cut-off function and signal :
  - For over temperature, automated cut the power supply for heater and controller orderly before the unit shuts down.
  - Over - current Circuit breaker for user safety.
- 2) Low fluid level and dry - running protection :
  - Intermittent tone rings and optical signal alarm displays on the control panels.
- 3) Eco-friendly R-404A, R-507 refrigerant is used to prevent environmental pollution. Double service valve is provided to prevent refrigerant leakage.
- 4) Double service valve is provided to prevent refrigerant leakage.

#### Optimum control performance

- 1) Functional LCD(HX type) & VFD (HL type) keypad type display : (resolution 0.1 °C )
  - Self-diagnostic function will identify equipment troubles.
  - Recognizable keypad type of input which is convenient and easy to use was adopted.
- 2) Water level can be easily identified by bright LED lamp indicator.
- 3) Adopted identifying pump pressure gauge.

#### Ideal construction

- 1) High quality 304 stainless steel interior bath and dirt repellent powder coating external surface.
- 2) Main wetted parts are made of stainless steel, providing resistance against all usual bath fluids.
- 3) Pump pressure control are available using by-pass function. (only for HX-H type)
- 4) Drain port : to drain bath fluid.
- 5) Removable venting grid for reducing condenser contamination and to facilitate cleaning.
- 6) Pressure gauge provide the fluid system diagnostics at a glance, and identifying the pump pressure.
- 7) Attached High / Low Pressure gauge (only for HL-25H,35H,45H,55H)



<VFD HL type Controller>

## Selection Guide

### Recirculating Cooler



CE Certification only for the HX Series.

Description		Working Temp. Range (°C / °F)	Bath Volume (L / cu ft)	Pump
General Recirculator	HX-20	+3 to 40 / +37.4 to 104	35.0 / 1.24	Magnetic
	HX-25			
	HX-20H			
	HX-25H		45.0 / 1.59	Centrifugal
	HX-35H			
	HX-45H			
HX-55H	-20 to 40 / -4 to 104	10.0 / 0.35	Stainless steel housing plastic pump (ABS)	
HL-05				
HL-10				
HL-15		15.0 / 0.53	Submersible pump	
HL-20				
HL-15H				
HL-20H		25.0 / 0.88		
HL-25H				
HL-35H				
HL-45H	40.0 / 1.41			
HL-55H				

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## Laboratory Refrigerators & Freezers



General Purpose Laboratory Refrigerators (CLG series)  
Pharmacy Refrigerators (CLP series)



General purpose Laboratory Freezers (FLG series)

## Laboratory Refrigerators & Freezers

### Technical Benefits

#### Safety functions

- 1) Visual and audible function.
  - High / low temperature.
- 2) 2 separate over-current fuses for user safety.
- 3) Door-open warning alarm :
  - 2 min optical signal. After then, intermittent tone alarm.
  - Fan automatically stops when the door is opened to minimize heat loss and protect operator.
  - Door lock equipment.

#### Ideal construction

- 1) High quality #304 stainless steel inner chamber and dirt-repellent powder coating to external surfaces.
- 2) Perfectly magnetic sealed door minimizes temperature loss and the fully insulated chamber keeps the casing at a safe temperature.
- 3) Adjustable electro polished stainless steel and for better air-flow and easy cleaning.
- 4) Heated glass door for observation provides a clear view of samples during operation.

#### Protect the global environment

- 1) HFC refrigerant causes no damage to ozone layer.
  - Complies with the measures for ozone layer protection specified by the Montreal Protocol.

#### Optimum control performance

- 1) Selectable measuring temperature in °C or °F.
- 2) Optimize CPU logic control system.
  - Optimum control for temperature with economic economic power consumption control.
- 3) Operator-friendly controller with the splash-proof / easy clean keypads and clear VFD displays.
- 4) Screen lock button prevents accidental reset of parameters.
- 5) Touch screen type monitor.
  - Wide Color VFD with interactive input system using touches keys and dial knob.
  - Easily recognizable set values; set point (SP) / proportional value are also displayed on the (PV) color VFD controller.
- 6) Optimizing defrost system.
  - Advanced defrost sensor (dual sensor) manages the defrost cycle by detecting the trace amount of frost build-up to the evaporator and not a conventional defrost cycle.  
(Only for CLG / CLP / FLG-150, 300, 650 series)
  - Unique dual system defrosts initiates only as required so maintaining internal temperature uniformity during operation.  
(Only for CLG / CLP-850, 1400 series)



## Selection Guide

### Laboratory Refrigerators & Freezers



CE Certification without the CLP Series.

Description		Operating Temp. Range (°C/°F)	Chamber Volume (L/cu ft)	Door type	Shelve or Drawer
General Purpose Laboratory Refrigerators	CLG-150	2 ~ 10 / 35.6 ~ 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		
Pharmacy Refrigerators	CLP-650	-20 ~ -30 / -4 ~ -22	636 / 22.5	Solid	Drawer
	CLP-850		843 / 29.7		
	CLP-1400		1395 / 49.3		
General Purpose Laboratory Freezer	FLG-150	-20 ~ -30 / -4 ~ -22	156 / 5.5	Solid	Shelve
	FLG-300		319 / 11.3		
	FLG-650		636 / 22.5		

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## Shakers



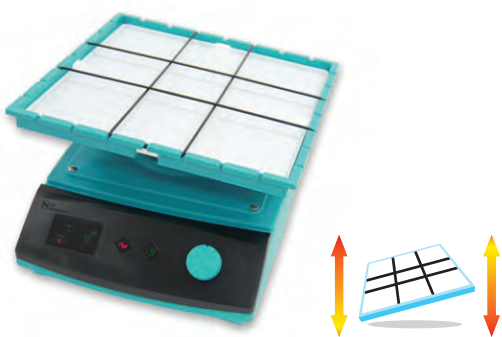
Shakers (SKC series)



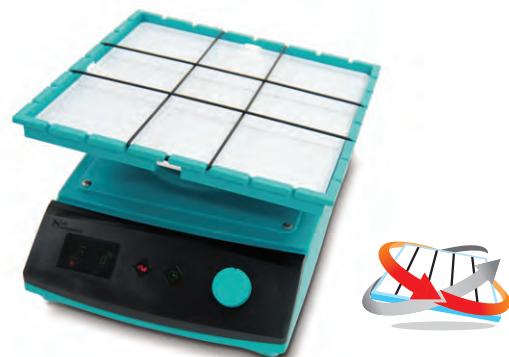
Shakers (SK series)



Separatory Funnel Shaker (RS-1)



Rocking Shaker (CRS-250)



Waving Shaker (CWS-250)

## Shakers

### Technical Benefits

#### Safety functions

- 1) Self-protecting cut-off function :
  - Over-current fuses for user safety. (SK models)
- 2) Operating settable function : After a power interruption, select automated run or manual run.
- 3) Acceleration / deceleration circuit : (without RS, CWS & CRS models)
  - For stable operating and always stops at a same position for user convenience.
  - Prevents sudden start / stop.
- 4) Unbalanced load sensor limits shaking motions. (SKC models)
- 5) Slowly increases speed to desired set-point to avoid splashing.

#### Optimum control performance

- 1) Easy to operate, wide range of rpm covers most applications.
- 2) Professional control electronics and programmable control :
  - Microprocessor PID controls.
  - Self-diagnostic function identifies any errors and advises correction procedures.
- 3) Multi-function shaking system : (SK, SKC models)
  - Run time, Forward & Backward, Pause.

- 4) Very similar key arrangement throughout all products.
  - Splash-proof / easy-to-clean keypads and clear LED displays. (SK models)
  - Bright and recognizable VFD display, and useful capacitive touch sensor button. (SKC, CWS & CRS models)
- 5) End of session is marked by audible alarm. (RS models)

#### Ideal construction

- 1) Dual shaking action - orbital or reciprocating motion selectable. (SK models)
- 2) Slim and low-profile design, it can minimize the vibration and sliding caused by the process of high speed mixing.
- 3) Brushless DC motor applications for smooth and uniform shaking. (SK, CWS & CRS models)
- 4) Innovative triple-cam shaking system. (SKC models)
- 5) It possible Heavy loads, Silent, and high speed, reduces noise, and improves durability by using the Ideal DD motor. (SKC models)
- 6) Dirt-repellent powder coating external surface.
- 7) Easy to set or detach tray from Shaker. (CWS, CRS models)

## Selection Guide

### Shakers



UL Certification only for the SK Series.

Description		Speed Range [RPM]	Maximum Orbit Size [mm / inch, dia]	Net Weight [kg/lbs]
Benchtop type	SKC-6075	30 to 500	19.1 / 0.75	65 / 143.3
	SKC-6100		25.4 / 1.0	
	SKC-6200		50.8 / 2.0	
	SKC-7075		19.1 / 0.75	
	SKC-7100	10 to 300	25.4 / 1.0	75 / 165.4
	SKC-7200		50.8 / 2.0	
	SK-300		40 / 1.6	24 / 52.9
	SK-600		70 / 2.4	29 / 63.9
SK-71	50 / 110.2			

Description			Speed Range [RPM]	Maximum Tilt Angle	Net Weight [kg/lbs]
Benchtop type	CRS-250	Rocking Shaker	10 to 100	Tilt 7~13°adjustable	3.68 / 8.11
	CWS-250	Waving Shaker		Tilt 0~13°adjustable	

### Separatory Funnel Shakers

Description			Speed Range [RPM]	Vertical Stroke Length [mm / inch]	Net Weight
Benchtop type	RS-1	Separatory Funnel Shakers	50 to 300	40 / 1.6	24.0 / 52.9

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## Stirrers & Vortex Mixer



Magnetic Stirrers - Scale Type (MS-B series)



Magnetic Stirrers - Digital Type (MS-G series)



Hotplate Stirrers/ Hotplate (HP series)



Multi Position Magnetic Stirrers (MS-M series)



Vortex Mixer (VM-96B)



Overhead Stirrers (MSM, MSP series)

## Stirrers & Vortex Mixer

### Technical Benefits

#### Magnetic Stirrers

(MS-B/G/M types)

- Easy to operate, wide range of rpm.
- Microprocessor PID controls. (MS-G/M types)
- Controlling of the speed is possible regardless of the weight of the experimental sample.
- Magnetic stirrer rapidly works in real-time according to the RPM and safety. (MS-B type)
- It controls more safety in use of low speed rotation.
- It reduces noise and improves durability by using the BLDC motor.

#### Magnetic Stirrers with Hotplates

(HP-types)

- Ceramic-coated top plates.
- Temperature which uses the SCR method.
- With low RPM setting and soft stirring, Magnetic Bar in stable condition.  
(HP-3000S, 3000, 2000S, 2000 for 100~1500 RPM  
HP-3000L, 2000L for 100~1200 RPM)
- Temperature range : Up to +380°C / +716°F for Hot plate.

#### Overhead Stirrers

(MSM/MSP types)

- Wide speed range, high viscosity, and powerful torque cover various applications.
- PID feedback controller system provides motor to maintain constant speed under conditions of changing viscosity.
- Bright and recognizable FND display.
- Compact and slim head design.
- Aluminum main body is sturdy and efficiently emits the heat generated by motor.

#### Vortex Mixer

(VM-96B)

- It makes immediate Vortex less than 4 sec with Amplitude of rotation.  
: 4mm and rate of rotation : 0 ~ 3,000 rpm.
- Easy converter mode between touch and continuous.
- High sensitive touch switch offer to reduce wrist stress.
- Functional BLDC motor offers controlling speed correctly, keeping speed, and safety.

## Selection Guide

### Magnetic Stirrers



Description		Speed Range [RPM]	Stirring Capacity, Max. [L, H <sub>2</sub> O]	Positions
Scale Type	MS-12B	150 ~ 2,500	2	-
	MS-17B		4	-
	MS-22B		5	-
Digital Type	MS-17G	30 ~ 2,000	4	-
	MS-22G		5	-
Multi-Position	MS-51M		1.25*	5
	MS-52M		2.5*	10
	MS-53M		3.75*	15

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

### Overhead Stirrers



Description		Speed Range [RPM]	Stirring Capacity, Max. [L, H <sub>2</sub> O]
Analog Type	MSM-1	50 ~ 1,400	20
	MSM-2	50 ~ 1,200	30
	MSM-3	50 ~ 900	50
Digital Type	MSP-1	50 ~ 1,400	20
	MSP-2	50 ~ 1,200	30
	MSP-3	50 ~ 900	50

### Vortex Mixer



Description	Speed Range [RPM]	Orbit Size [mm/inch, Ø]	Operating Mode
VM-96B	0 ~ 3,000	4 / 0.16	Touch, Continuous, High-Continuous

\* Our Web-site includes detailed information of all JEIOTECH products with recent technical data.

## Temperature [& Humidity] Chambers



Temperature [& Humidity] Chambers (TH-ME/ TH-PE/ TC-ME series)



Temperature [& Humidity] Chambers (TH-G/ TH-I/ TC-G series)



Temperature & Humidity Chambers (TH-TG/ TH-ICH series)



Plant Growth Chambers (GC series)

## Temperature [& Humidity] Chambers

### Technical Benefits

#### Safety functions

- 1) Self-protecting cut-off function:
  - Over temperature, leakage electric or overvoltage automated cut the power supply for operating, heating element.
- 2) Time setting function for automated run / off:
  - Enable to be started or shut down automatically
  - A timer operation can be set for month, data, day of the week and time.
- 3) Low fluid level protection, water leakage alarm:
  - Intermittent tone rings and optical signal alarm.
  - Water supply circuit compartment is completely separate from the others for safe operation.
- 4) Door-open warning alarm:
  - Intermittent tone rings and optical signal alarm
  - Heating element, fan and platform automatically stop when door opening to minimize heat loss and protect operator.

#### Optimum control performance

- 1) Microprocess PID control / Auto-tuning / Calibration.
- 2) Optimize CPU logic control system.
  - Optimum control for temperature / humidity with economical control in power consumption.
- 3) Touch screen type monitor.
  - 5.7-inch Color LCD with interactive input system using touch keys.  
(Floor Type-witchoot TH-TG, ICH)
  - Temperature & humidity / timer settings and operating condition.
  - Temperature, humidity, other operating parameters, and a record of previous operation are also displayed in graph form.
- 4) The TH-ICH Chambers for test results is in compliance with the ICH Guideline.  
( hotostability Testing Q1B (Option 2))

### Selection Guide

#### Temperature (& Humidity) Chambers



CE Certification without the TH/TC-G-800,1000 Series, TH/TC-GU-300 Series, TH-PF-100, and TH-CR-270.

Description	Operating Temp. Range (°C/°F)	Operating Humid. Full Range (%RH)	Chamber Volume (L / cu ft)
Temperature & Humidity Chamber (Floor type)	TH-G Series	-35 to 150 / -31 to 302	25 to 98
	TH-I Series		20 to 98
	TH-GU-300	-60 to 150 / -76 to 302	25 to 98
	TH-TG Series	-5 to 100	10 to 95
	TH-ICH Series	-5 to 85	20 to 85
Temperature & Humidity Chamber (Tabletop type)	TH-ME Series	-20 to 150 / -4 to 248	30 to 95
	TH-PE Series	0 to 100 / 32 to 212	35 to 95
	TH-PF-100	40 to 100 / 104 to 212	50 to 90
Temperature Chamber (Floor type)	TC-G Series	-35 to 150 / -31 to 302	-
	TC-GU-300	-60 to 150 / -76 to 302	-
Temperature Chamber (Tabletop type)	TC-ME Series	-20 to 120 / -4 to 248	-
Clean Temperature & Humidity Chamber (Floor type)	TH-CR-270	-35 to 100 / -31 to 212	30 to 90

#### Plant Growth Chambers



Description	Operating Temp. Range <sup>1)</sup> (°C/°F)	Operating Humid. Full Range (%RH)	Chamber Volume (L / cu ft)
Plant Growth Chambers (Floor type)	GC-300TL	-	300 / 10.6
	GC-300TLH		300 / 10.6
	GC-1000TL	50 to 90	1000 / 35.3

\* Our Web-site includes detailed information of all JEIOTECH products with recent technical data.



## Pumps



### Rotary Vacuum Pump

- Direct connecting oil sealed and backward flow preventive equipped rotary vacuum pumps, which are essentially used with vacuum ovens to get high-degree vacuuming condition.
- Oil mist trap preventing oil in-flowing is optional.

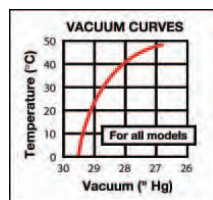
Model	MVP-6
Pumping speed (L / min)	100
Ultimate pressure (Pa)	$6.7 \times 10^{-2}$
Motor power (W)	400
Motor speed (rpm)	1750



### Electrical Aspirator Pump

Portable dual-channel, water-jet aspirator pump.

- VE-11 creates vacuum by an aspirator pump that is dependent on the vapor pressure of water; which, in turn, is a function of temperature.
- Ideal for rotary vacuum evaporator, decompressing, distillation, vacuum drying, and vacuum filtering.



Model	VE-11
Bath volume (L / cu ft)	9.5 / 0.3
Max. vacuum range (Mpa / Hg)	0.0998 / 29.5 "
Free-air capacity	18L / minute (0.6cfm) × 2ea

\* Our Web-site includes detailed information of all JEIOTECH products with recent technical data.

## Other Products



### Flask Supports

- Flask size : 100ml, 250ml, 500ml, 1000ml, 2000ml.
- Excellent chemical resistance to various organic solvents
- Material : PP (Polypropylene)
- Heat Resistance : -30°C ~ +121°C

Model	FT 010 13	FT 010 34	FT 025 12	FT 025 23
Each Hole Capacity(ml)	100	100	250	250
Hole (Dia. × H)(mm/inch)	70×91 / 2.76×3.58	70×91 / 2.76×3.58	98×122 / 3.86×4.8	98×122 / 3.86×4.8

Model	FT 050 12	FT 100 12	FT 200 12
Each Hole Capacity(ml)	500	1000	2000
Hole (Dia. × H)(mm/inch)	121×128 / 4.76×5.04	148×156 / 5.83×6.14	183×188 / 7.2×7.4



### Ultrasonic Cleaners

- Industrial B.L.T type ultrasonic transducer (Bolt Clamped Langevin Type Transducer) generates high-frequency sound waves that provide maximum cleaning power. UC/ US-P types are increased the frequency to improve cleaning ability.



CE Certification only for the UC Series.

Model	UC - 02	UC - 10 [10P]	UC - 20 [20P]
Bath volume (L / cu ft)	2.0 / 0.07	10.0 / 0.35	20.0 / 0.70
Temperature range (°C / °F)	Amb. ~ to 50 Amb. ~ to 122	Amb. ~ to 70 / Amb. ~ to 158	
Ultrasonic power (W)	70	200 [300]	400 [500]

Model	US-05 (05P)	US-10 (10P)	US-20 (20P)
Bath volume (L / cu ft)	5.7 / 0.20	10.0 / 0.35	20.0 / 0.70
Temperature range (°C / °F)	Amb. ~ to 70 / Amb. ~ to 158		
Ultrasonic power (W)	150 [200]	200 [300]	400 [500]



### Magnetic Drives

- Use of rare-earth element which is Neodymium(Nd), Samarium(Sm-Co) magnetic.
- High-speed RPM, vibration-free operation.
- Specially designed permanent magnets which have dynamic torque rating of drive throughout it's operation.

Model	MD-T6-24	MD-T6-29	MD-T6-34
Ground joint	24 / 40	29 / 42	34 / 45

## Labstore-Single

## Filtration Reagent Storage Cabinet



### FEATURE

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

### SPECIFICATION

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

## Labstore-Double

## Filtration Reagent Storage Cabinet



### FEATURE

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

### SPECIFICATION

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

## Labcare-900

## Filtration Fume Cupboard



### FEATURE

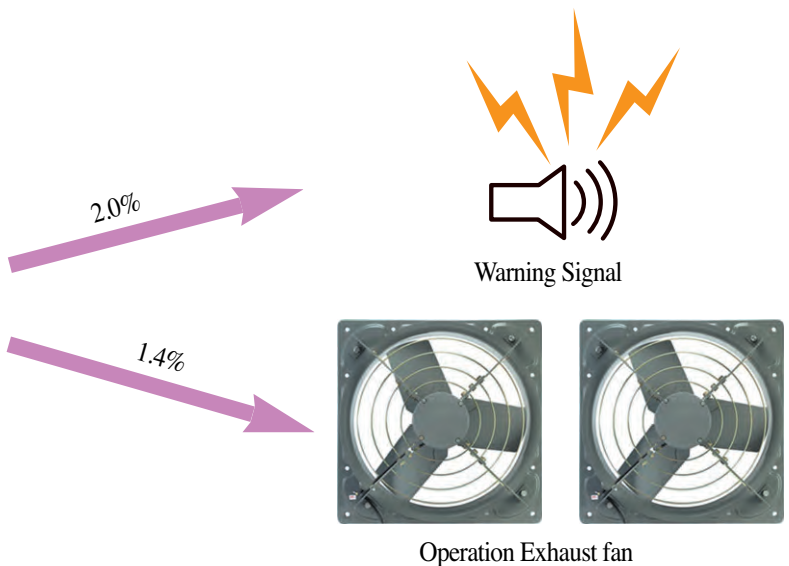
- Ductless Filtering Fume Cupboard System
- Toxic Gas & Odor Eliminated by Chemical Filter System
- Purified Room Air by Filtration System

### SPECIFICATION

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

## 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
- Gas detection, Warning signal, Exhaust fan control



## Water Purifier System (Wellix Series)



### FEATURE

- 20X4 Line Blue backlight LCD is adjusted, so quality of water and temperature are shown in one screen.

Model	Wellix Plus I	Wellix Plus II	Wellix Pure I	Wellix Pure II	Wellix Mega
Product	P.W, U.W	P.W, U.W	P.W	P.W	U.W
Product flow	Max. 15L/Hr	Max. 25L/Hr	Max. 15L/Hr	Max. 25L/Hr	Max. 50L/Hr
Quality display	Input water(I.W) : 0 ~ 600 $\mu$ s/cm Pure water (P.W) : 0 ~ 200 $\mu$ s/cm Ultra pure water (U.W) : 0 ~ 18.3M $\Omega$ .cm Input Temp(I.T) : 0 ~ 99.9 $^{\circ}$ C	Input water(I.W) : 0 ~ 600 $\mu$ s/cm Pure water (P.W) : 0 ~ 200 $\mu$ s/cm Input Temp(I.T) : 0 ~ 99.9 $^{\circ}$ C	Input water(I.W) : 0 ~ 600 $\mu$ s/cm Pure water (P.W) : 0 ~ 200 $\mu$ s/cm Input Temp(I.T) : 0 ~ 99.9 $^{\circ}$ C	Input water(I.W) : 0 ~ 600 $\mu$ s/cm Ultra pure water (U.W) : 0 ~ 18.3M $\Omega$ .cm Input Temp(I.T) : 0 ~ 99.9 $^{\circ}$ C	Input water(I.W) : 0 ~ 600 $\mu$ s/cm Ultra pure water (U.W) : 0 ~ 18.3M $\Omega$ .cm Input Temp(I.T) : 0 ~ 99.9 $^{\circ}$ C
Function	- System auto test - Flushing function - Machine protection function - Check key function - Auto / Manual Recycle - Filter replace function - Filter replace display - Auto control function for drain	- System auto test - Flushing function - Machine protection function - Check key function - Filter replace function - Filter replace display - Auto control function for drain	- System auto test - Flushing function - Machine protection function - Check key function - Filter replace function - Filter replace display - Auto control function for drain	- System auto test - Auto Recycle - Machine protection function - Check key function - Filter replace function - Filter replace display	- System auto test - Auto Recycle - Machine protection function - Check key function - Filter replace function - Filter replace display
Dimensions	400(W) $\times$ 492(D) $\times$ 517(H)	400(W) $\times$ 492(D) $\times$ 517(H)	400(W) $\times$ 492(D) $\times$ 517(H)	400(W) $\times$ 492(D) $\times$ 517(H)	400(W) $\times$ 492(D) $\times$ 517(H)
Power	110Vac or 220Vac, 50/60Hz, 80W	110Vac or 220Vac, 50/60Hz, 80W	110Vac or 220Vac, 50/60Hz, 60W	110Vac or 220Vac, 50/60Hz, 60W	110Vac or 220Vac, 50/60Hz, 60W

## Water Purifier System (Dream Series)



### FEATURE

- 16  $\times$  2 Line Blue backlight LCD is adjusted.
- When error occurs during the working, error message is shown.
- Quality of water is displayed in real-time, because sensor for correction about quality of water is attached.
- Filter life can be expected, because run time and remainder % of filter are shown during the working.

Model	Dream Plus I	Dream Plus II	Dream Pure I	Dream Pure II	Dream Mega
Product	P.W, U.W	P.W, U.W	P.W	P.W, U.W	U.W
Product flow	Max. 15L/Hr	Max. 25L/Hr	Max. 15L/Hr	Max. 25L/Hr	Max. 50L/Hr
Quality display	Pure water (P.W) : 0 ~ 200 $\mu$ s/cm Ultra water (U.W) : 0 ~ 18.3M $\Omega$ .cm	Pure water (P.W) : 0 ~ 200 $\mu$ s/cm Ultra water (U.W) : 0 ~ 18.3M $\Omega$ .cm	Pure water (P.W) : 0 ~ 200 $\mu$ s/cm	Pure water (P.W) : 0 ~ 200 $\mu$ s/cm	Ultra water (U.W) : 0 ~ 18.3M $\Omega$ .cm
Function	- System auto test - Machine protection function - Filter replace display - Auto control function for drain	- System auto test - Machine protection function - Filter replace display - Auto control function for drain	- System auto test - Machine protection function - Filter replace display - Auto control function for drain	- System auto test - Auto Recycle - Machine protection function - Filter replace function - Filter replace display	- System auto test - Auto Recycle - Machine protection function - Filter replace function - Filter replace display
Dimensions	400(W) $\times$ 505(D) $\times$ 517(H)	400(W) $\times$ 505(D) $\times$ 517(H)	400(W) $\times$ 505(D) $\times$ 517(H)	400(W) $\times$ 505(D) $\times$ 517(H)	400(W) $\times$ 505(D) $\times$ 517(H)
Power	110Vac or 220Vac, 50/60Hz, 80W	110Vac or 220Vac, 50/60Hz, 80W	110Vac or 220Vac, 50/60Hz, 60W	110Vac or 220Vac, 50/60Hz, 60W	110Vac or 220Vac, 50/60Hz, 60W

## Water Purifier System (Chosim Series)



### FEATURE

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

Model	Chosim Plus I	Chosim Plus II	Chosim Pure I	Chosim Pure II
Product	P.W, U.W	P.W, U.W	P.W	P.W
Product flow	Max. 15L/Hr	Max. 25L/Hr	Max. 15L/Hr	Max. 25L/Hr
Quality display	Pure water (P.W) : 0 ~ 200 $\mu$ s/cm Ultra water (U.W) : 0 ~ 18.3 Mb.cm		Pure water (P.W) : 0 ~ 200 $\mu$ s/cm	
Function	- Machine protection function - Filter replace display - Auto control function for drain		- Machine protection function - Filter replace display - Auto control function for drain	
Dimensions	400(W) $\times$ 470(D) $\times$ 517(H)		400(W) $\times$ 470(D) $\times$ 517(H)	
Power	110Vac or 220Vac, 50/60Hz, 80W		110Vac or 220Vac, 50/60Hz, 80W	

## Water Purifier System (Max Series)



### FEATURE

- 20  $\times$  4 Line Blue backlight LCD is adjusted, quality and temperature of water are displayed in one screen.
- When error occurs during the working, error message is shown.
- Pressure of input water and Membrane can be confirmed in front.

Model	Max Pure 50/100	Max Pure 200/400	Max Pure 600/1000
Product	P.W	P.W	P.W
Product flow	50,100L/Hr	200,400L/Hr	600,1000L/Hr
Quality display	Input water (I.W) : 0 ~ 600 $\mu$ s/cm Pure water (P.W) : 0 ~ 200 $\mu$ s/cm Ultra pure water (U.W) : 0 ~ 18.3 Mb.cm Input Temp (I.T) : 0 ~ 99.9 $^{\circ}$ C		
Function	- System auto test - Machine protection function - Check key function - Filter replace display		
Dimensions	500(W) $\times$ 500(D) $\times$ 800(H)	570(W) $\times$ 570(D) $\times$ 1500(H)	900(W) $\times$ 800(D) $\times$ 1500(H)
Power	110Vac or 220Vac, 50/60Hz, 1kW	110Vac or 220Vac, 50/60Hz, 1.5kW	380Vac/3,50/60Hz, 3kW



## Eco-UP9000

## Eco-Series : Economic to save you laboratory cost



### FEATURES

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

### SPECIFICATION

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

## Esse-RO Basic

## Esse-Series : Post DI System



### FEATURES

Puris, RO Water System is a instrument to make basic pure water in laboratory and you can use this pure water in general chemical test, final washing and rinsing for glassware, making the media and feed in Ultra water purification system.

(This systems are produced under ISO9001, CE certified quality meangement system and NEP mark for the best product quality and security)

### SPECIFICATION

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

## Esse-UP Analysis

## Esse-Series : TOC Monitoring System and Quantative Dispenser



### FEATURES

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

### SPECIFICATION

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

## Expe-RO Ele

## Expe-Series : EDI System and Graphic display



### FEATURES

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

### SPECIFICATION

- |                                      |  |
|--------------------------------------|--|
| 1. Product Rate (up to) : 10L/Hr     | 5. Automatic drain for low quality           |
| 2. Product Quality : 1-25 $\mu$ S/cm | 6. Power : 110/230V, 50/60Hz, 85A            |
| 3. Filter pack exchange message      | 7. Printer with interface for data output    |
| 4. RO Membrane cleaning timer        | 8. Display : Wide graphic LCD(128X64 digits) |

## Expe-UP Ele UV

## Expe-Series : Graphic display and Data System



### FEATURES

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

### SPECIFICATION

- |   |  |
|---|--|
| 1. Flow Rate (up to) : 1.5L/Min                         | 5. Protection for high temp. & feed water      |
| 2. Resistivity (at25°C) : 18.2M $\Omega$ -cm            | 6. Filter pack exchange message                |
| - Inorganics : <0.05ppb - TOC : 1-5ppb                  | 7. UV Lamp exchange message                    |
| - Particles (0.2 $\mu$ m) : <1/ml - Bacteria : <1cfu/ml | 8. Power : 110/230V, 50/60Hz, 100VA            |
| 3. Volumetric time setting                              | 9. Printer with interface for data output      |
| 4. protection for low water quality                     | 10. Display : Wide graphic LCD (128X64 digits) |

## Expe-CB Ele

## Expe-Series : Graphic display and Data System



### FEATURES

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

### SPECIFICATION

- |   |   |
|---|---|
| 1. Product Rate : (RO-10L/Hr, UP-1.5L/Min)              | 4. Automatic drain for low quality            |
| 2. Conductivity (RO) : 1-25 $\mu$ S/cm                  | 5. Filter pack exchange message               |
| - Resistivity (UP) : 18.2M $\Omega$ -cm                 | 6. Power : 110/230V, 50/60Hz, 20VA            |
| - Inorganics : <0.1ppb - TOC : 20ppb                    | 7. Printer with interface for data output     |
| - Particles (0.2 $\mu$ m) : <1/ml - Bacteria : <1cfu/ml | 8. Display : Wide graphic LCD (128X64 digits) |
| 3. RO Membrane cleaning timer                           |   |



## 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 concent 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

## VACUUM GLOVE BOX



### FEATURE

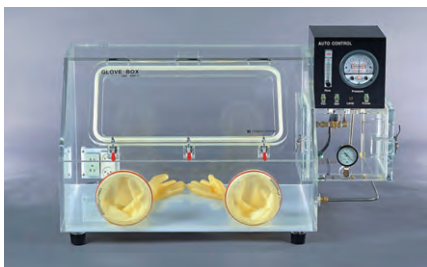
- This model provides Oxygen-free, No-humidity, Germfree & Constant Temps/Humidity conditions with its unique Box, closed type.  
It can be applied to both vacuum & de-airation purpose of the experimentation.
  1. Equipped with transparent specially coated PMMA window, front side.
  2. Regeneration control system with automatic control exerts the maximization of De-humidity & De-acidification of the chamber of the equipment by providing constant air flow inside.
  3. Special Gloves adopted will increase the effectiveness of the operation by researchers.

### SPECIFICATION

- Dimension : 1200W × 760D × 850H mm (Main Chamber), 1500W × 760D × 900H mm (Table)
- Remarks : Ante Chamber ø360 × 600L (SUS-304), Dry Trap : ø110 × 400L (38ℓ )
- ※ Other size & specification are available upon request.

## SK-G001

## ANAEROBIC GLOVE BOX



### FEATURE

- This model provides Oxygen-free, No-humidity, Germfree & Constant Temp/Humidity conditions with its unique Box, closed type.  
It can be applied to both vacuum & de-airation purpose of the experimentation.
  1. Equipped with transparent specially coated PMMA chamber & Gloves.
  2. Main chamber exchangeable with gas. Pass Box provides vacuum.
- ※ Dry trap, automatic controller & work table are optional.
- ※ Other size & specification are available upon request.

## SK-G1200

## VACUUM GLOVE BOX



### FEATURE

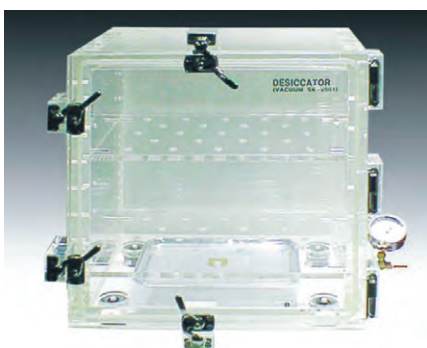
- Features the vacuum operation of Main chamber as well as Pass Box up to 1 torr.

### SPECIFICATION

- Dimension : 800W × 500D × 500H mm (Main Chamber)  
260W × 240D × 240H mm (Pass Box) : SK-G001,2
- Option : Dry trap, automatic controller & work table are optional. (G001,2)
- ※ Other size & specification are available upon request.

## SK-V001

## VACUUM DESICATOR



### FEATURE

- This model is applicable for both vacuum experimentation & de-airation purpose.
  1. No need for greasing at door position due to Silicone Packing for the perfect closing.
  2. De-pressurization is available up to 1torr. (-760mmHg) Therefore, it can be used for the sample storage under vacuum, exchange of gas etc.
  3. This equipment is so made of special grade PMMA, much resistance to abrasiveness, transparency that it exerts long duration time.

### SPECIFICATION

- Dimension : 400W × 300D × 400H mm (ID)
- Remarks : Shelf - 2ea, Valve - 2ea, Gauge - 2ea, Tray - 1ea
- ※ Other size & specification are available upon request.



## MVCS 140 RACK



## Micro (Mouse) Ventilation Cage System

### FEATURES

- Equipping many animals within small floor area by providing S.P.F. circumstances over all of the cages in the Rack. Individually Ventilated Caging System (IVC)
  - Dual filter system of Cage Top eliminates the noise, no catch on the Cage Top leads easy handling & maintenance.
  - Even to power off, no problem of suffocation death as it maintains CO<sub>2</sub> concentration under 1,000 ppm.
  - No cross contamination among the cages on the rack, also no pressure differentiation among the cages.
  - No detaching of the cages on the rack in case of transportation & earth quake.
  - Size : 1803W × 765D × 1991H mm (+330H for Controller on top)  
Cage : Polysulfone (P.S.F), Polycarbonate (P.C) for MOUSE
- ※ Other size & specification are available upon request.

## RVCS 60 RACK



## MICRO(Rat) Ventilation Cage System

### FEATURES

- Equipping many animals within small floor area by providing S.P.F. circumstances over all of the cage in the Rack. Individually Ventilated Caging System (IVC)
  - Dual filter system of Cage Top eliminates the noise, no catch on the Cage Top leads easy handling & maintenance.
  - Even to power off, no problem of suffocation death as it maintains CO<sub>2</sub> concentration under 1,000 ppm.
  - No cross contamination among the cages on the rack, also no pressure differentiation among the cages.
  - No detaching of the cages on the rack in case of transportation & earth quake.
  - Size : 1742W × 891D × 1683H mm (+330H for Controller on top)  
- Cage : Polysulfone (P.S.F), Polycarbonate (P.C) for RAT
- ※ Other size & specification are available upon request.

## AH-READER



## AH-READER

### FEATURES

- AH-READER is a mobile RFID Reader designed to identify an individual lab animal according to ISO 11784 and 11785.
- The RFID Chip is put in a lab animal body through a syringe type injector.
- Base RFID frequency is 125 Khz.
- Internal rechargeable battery included.
- The body temperature of a lab animal can be measured with the temperature sensing RFID chip.
- The chip data can be displayed and stored at the AH-READER and seen at a PC through an USB cable.

## SK-WS-1500D



## Workstation(Double Type)

### FEATURES

- Features the very stable laminar flow of air circulation, no cross contamination among the cages
  - Equipped with Inter Lock System
  - Easily exchangeable Pre-filter of roll type
  - Easily exchangeable Hepa-filter from outside
  - Equipped with POT Lamps for sterilization at front Pre-filter and Hepa-filter possible to clean filters.
  - Upper exhaust type will improve the circumstances better.
  - Size: 1500W \* 1000D \* 2250Hmm      • Material : SUS-304 Stainless steel Frame
- ※ Other size & specification are available upon request.



**VS-550**

## Multi purpose Refrigerated Centrifuge

CE



### FEATURE

- Compacted Design
- Multi usable Swing Rotor
- Inverter Motor
- Micro process control
- RPM & RCF calculate automatically

### SPECIFICATION

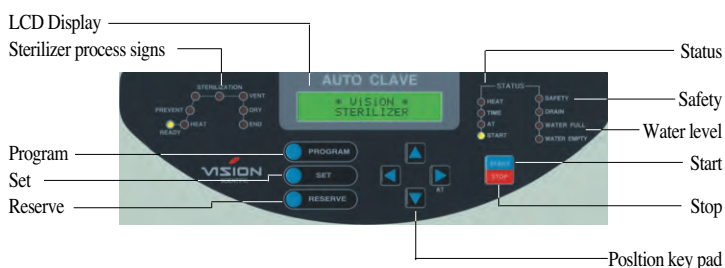
Model VS-550	
Max. RPM	15,000RPM (Swing 4,500 RPM)
Max. RCF	21,130 × g (Swing 3,735 × g)
Max. Capacity	1000ml, 250ml × 4 Tubes
Main control	Microprocessor controller
Running mode	RPM/RCF
Programmability	10 memory
Timer	99Hr. 59min. & Hold for long run
Temperature Range	-20℃ to 60℃
Drive system	Inverter Motor drive
Accel rates	Fast / Slow
Decel rates	Fast / Normal / Slow
Safety device	Over speed protect., Over load protect, Unbalance detector, Temp. protector,
Dimension	675 × 548 × 366(H)mm
Weight	96kg
Power	220V, 2Kw, 60Hz
Certification	CE, KGMP, ISO9001, ISO14001



## 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 °ø 630 mm	Dia. 400 °ø 630 mm	Dia. 450 °ø 630mm
(Out)	600°ø530°ø950(h)mm	700°ø580°ø950(H)mm	810°ø630°ø950(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-1300V

## Vortex Mixer (VS-1300V)



### FEATURE

- Touch pad
- Constant function
- Several plate kinds

### SPECIFICATION

Model	VS-1300V
Speed Range	0 - 3000 RPM
Operation Mode	Touch On & Constant On
Material	Aluminum Die-casting & ABS
Head	Rubber Mixing Cup
Dimension	130 × 155 × 155(H)mm, 2.7kg
Power	AC220V, 0.14A, 60hz

## VS-9160C, VS-9160GC

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



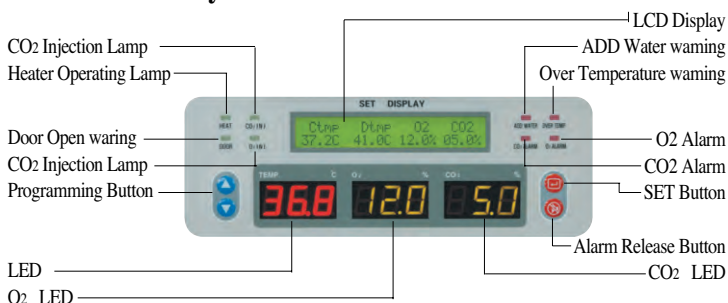
### FEATURE

- 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
Utility	Water level monitor, Power breaker
Net Weight	114 kg
Power	220A, 4,2A, 60Hz

### Control Panel Layout



## VS-130DSH

## Hot plate & Magnetic stirrer



### FEATURE

- Microprocessor adjustable
- Compacted size
- Gentle Optimum progression

### SPECIFICATION

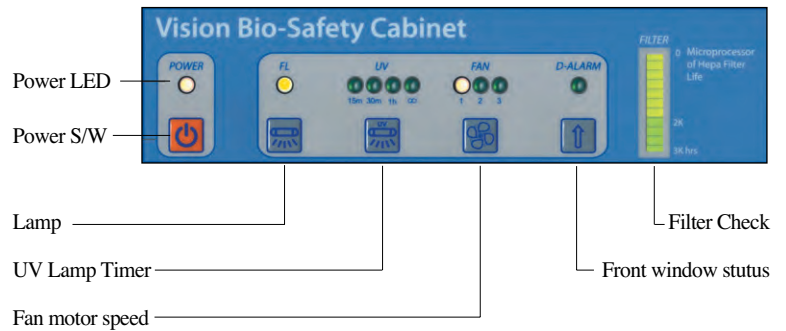
Model VS-130DSH	
Speed Range	30 - 1500 RPM
Temperature Range	Ambient to 350℃
Temp. Controller	Hydraulic Thermostat
Heater	Interchangeable plate heater
Plate Area	180 × 180 mm
Top Plate	Ceramic coated plate
Dimension	185 × 260 × 120(H)mm
Power	AC220V, 3.7A, 60Hz

**VS-151BS**

## Bio Hazard Safety Cabinet



### Control Panel Layout



### SPECIFICATION

<b>Model VS-151BS</b>	
Inflow Velocity	0.5m/sec
Down flow Velocity	0.3m/sec
Dimension (In)	1230 × 648 × 660(H)mm
(Out)	1387 × 809 × 1523 / 2164(H)mm
Body	SUS 304
Decorate panel	Steel Plate with powder coating
Door	Sliding Safety Glass Door
Illumination	40W F.L. × 1 EA
UVG Lamp	30W × 1 EA
Velocity Meter	Electronic type, 10 stage display
UV Timer	30, 60min & constant
Safety Device	Auto Change FL/UV S/W, Door limit Alarm /8" Filter change warning Auto Gas locking valve
Utility	Gas faucet, Vacuum faucet, Power Outlet
Power	220V, 60Hz 4.2A
Certification	ISO9001, ISO14001

### MAIN FEATURE

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



# 4

*Machinery and  
Automobile Education*



# Machinery and Automobile Education

## Machinery and Automobile Education

DAE SUNG G-3 CO., LTD.	156 ~ 165
H WAN WOONG MECHATRONICS CO., LTD.	166 ~ 167
POSTECH CO., LTD.	168 ~ 173



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 Simulate 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 a 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 ≙ (L)314×(W)157×(H)138cm, Wt≙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 ≙ (φ)100×(H)138cm, Wt≙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 ≙ (L)94×(W)65×(H)133cm, Wt≙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 4-speed 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 ≈ (L)150×(W)136×(H)122cm, Wt≈565kg

G-140201

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

### FEATURES



- It is high standard educational system of LPI 2,000cc 4cylinder 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 ≈ (L)150×(W)136×(H)137cm, Wt≈500kg
- LPG tank stand size ≈ (L)112×(W)40×(H)65cm, Wt≈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 ≈ (L)190×(W)110×(H)165cm, Wt≈400kg

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 ■ Phone & Fax : Phone (+82-53-854-2400) Fax (+82-53-854-2406)  
 ■ E-mail : dsg-3@dsg-3.co.kr ■ URL <http://www.g-3.co.kr>



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 ≙ (L)250×(W)80×(H)180cm, Wt≙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 ≙ (L)122×(W)50×(H)160cm, Wt≙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 ≙ (L)122×(W)80×(H)160cm, Wt≙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 ≒ (L)220×(W)80×(H)180cm, Wt≒300kg
- B Type Product size ≒ (L)220×(W)80×(H)180cm, Wt≒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 ≒ (L)160×(W)136×(H)150cm, Wt≒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 ≒ (L)190×(W)140×(H)170cm, Wt≒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 ≒ (L)40×(W)30×(H)45cm, Wt≒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 ≒ (L)40×(W)30×(H)45cm, Wt≒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 ≒ (L)80×(W)55×(H)58cm, Wt≒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 ≒ (L)340×(W)152×(H)254cm, Wt ≒ 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° C.
- 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 ≒ (L)122×(W)80×(H)95cm, Wt ≒ 85kg

DYTEK 40/70/130  
/230/400

## Eddy Current Dynamometer - Machine



### FEATURE

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

DYTEK 2000

## Dynamometer Main Control System



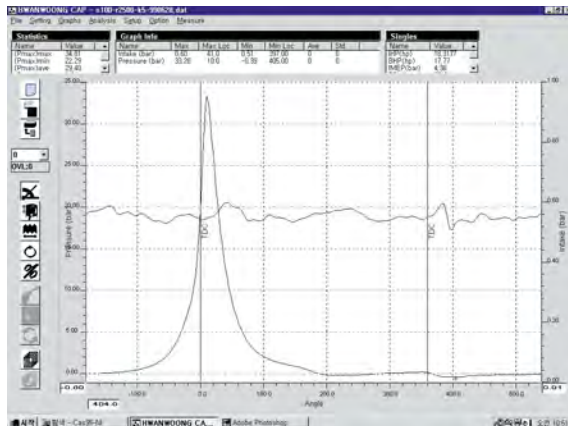
### FEATURE

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



DYTEK 5200

## Engine Combustion Analysis System

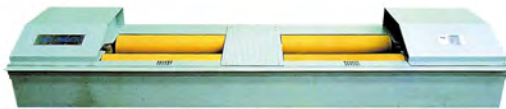


### FEATURE

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

DYTEK 6000

## Chassis Dynamometer



DYTEK-6000



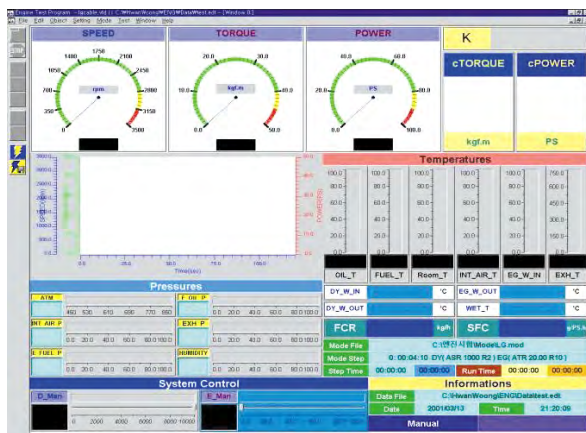
### FEATURE

- Our chassis dynamometer is a system to fulfill accurate measurements through simulating on-road driving conditions of four-wheel drive vehicles by giving flywheel inertia and electrical control. Nothing can carry out correct test performance better than our advanced measurement technology. Our product enables the operator to capture quite precise measurement values such as the number of roller rotation and torque by measuring damping force gained from break work. Applications, depending on the vehicle type and performance aims, can be classified according to the missions such as assessment of exhaust gas components, endurance test, general function measurement and further research.

- Among various chassis dynamometers for exhaust gas component measurement, our product is engineered essentially with flywheel-130kw(180ps)/200kw(260ps) Eddy Current Dynamometer equipped with widely accepted  $\odot$ TM220mm twin roller which not only answers the E.P.A. standards but offers significant strengths in ease of control, durability covering specific range and competitive cost frames. Materials are carefully adopted by our analyzers through perfect examinations and thorough research on the structure and functional characteristics of chassis dynamometer system. Key parts like flywheel and roller are uncomparatively designed with sophisticated design know-how.

DYTEK 5000

## Automation System for Dynamometer



### FEATURE

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

UR-351

## CO2 Welder



### FEATURES

- IGBT element-based AUTO welding Machine is designed to control CC-CVC waveform and to ensure little spatter and unmatched arc features in the overall range of current, thus proving their superiority.
- You can choose a welding method from CO2/MAG arc welding to aluminum MIG welding by shifting Fe-Al toggle switch in the PCB.
- For aluminum welding, you need to replace the feeder and the torch with ones for aluminum welding only.
- The machine can be employed to more numbers of robots than any other products for the first time in the nation, proving its high reliability.
- Interface embedded in main body, Arc sensing, Inverse/reverse wire inching and gas checking, Abnormality display : Broken arc, faulty welding machine, no remaining gas, and no wire found

### SPECIFICATION

- Rated welding current : 350A
- Rated input power : 16kVA(15.8kW)
- Welding current range : 40~350A
- Output voltage range : 14~38V
- Feeder duty cycle : 40(CO2), 20(MAG)

EP-350A

## ACDC TIG welder



### FEATURES

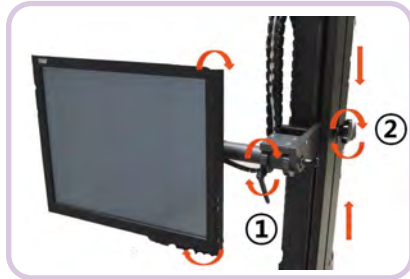
- Capable most metal welding : stainless steel, copper, aluminum, brass, cast iron, nickel, soft steel, titanium steel and etc.
- Must display TCP(Tool Center Point) which is the most important element of Torch Movement
- Mixed TIG welding ?Adopted advantages of AC and DC TIGs by periodical combination of DC waveform to AC waveform, suitable for welding of aluminum plates with thick and intermediate thickness.

### SPECIFICATION

- Rated welding current : 350A
- Rated input power : TIG 10.7kVA(MMA12.2kVA)
- Welding current range : TIG 5~350A MMA 5~380A
- Pulse width : 15~85%
- After-flow time /Down slope time : 0.1~10sec
- Pulse frequency : High 15~500Hz Low 0.5 ~ 15Hz

GAME-TIG

## TIG welding Simulator



### FEATURES

- "TIG Welding Simulator for Education" is able to practice the virtual TIG welding Practice by tracing the welder's motion.
- This system is based on the MEMS technology which shows the welding result proceeding by a student through the TFT LCD touch screen sensors.
- Data acquisition is done by the TFT LCD touch screen sensors which shall be transferred the data and feedback to the system.
- System consists of Data acquisition circuit, graphic software, communication module and sound system, multimedia contents.
- This system ensures safety training environment and less material cost.

### SPECIFICATION

- Data acquisition circuit
- Graphic software
- Communication module and sound system
- Multimedia contents

### ADVANTAGES FOR THIS SYSTEM

- infinite training and practice without any practical materials waste
- Various working result data generation and storage.
- Searching and reply the past practice result dat.
- Simple installation environment -No need to install the welder machine for training.
- No welding ARC, No, welding FUME, No burn: To protect eyes and health, clean training environment at welding education training center.

HIT-200A

## DC Arc welder



### FEATURES

- Available for the house hold electricity.
- Latest inverter technology simple transportation due to the compact design and low weight.
- The fine welding is possible even on the long holder cable usage longer than 50m.
- Ensure safety by having the built-in function for the electric chock prevention.

Model	HIT-160	HIT-180	HIT-200	HIT-300
Rated Output Current(DCA)	160	180	200	300
Rated Input Voltage(ACV)	1 $\Phi$ 220	1 $\Phi$ 220	1 $\Phi$ 220	1 $\Phi$ 220
Rated Frequency(Hz)	50/60	50/60	50/60	50/60
Rated Input(kVA)	4(3.2kW)	5(4.2kW)	6(4.8kW)	13(10.4kW)
No-Load Voltage(DCV)	70	72	75	80
Rated Load Voltage(DCV)	25	25	28	30
Rated Duty Cycle(%)	40	40	50	70



W elbeing weld

## Welding Table for instructor



### FEATURES

- To consider for safety and health of welding worker as absorb welding fume as well as to protect the students eye from welding arc.
- Shade glass plate is lifted up by electronic controller when the user needs.
- Bottom of upper plate has holes which inspires welding fume Gas from the lower part so that Removing harmfulness gas and trash during welding work.
- This equipment shall consist of a welding work part, tool drawers, slag storage part, ducts, fume collecting parts.

### SPECIFICATION

- Body : Steel 1.6t, 1000\*600\*1200
- Motor : 220V, 50Hz, 300W, Stroke 500mm, height adjusting function
- Fume Ventilation system
  - Rated suction : 230mmAq, Volume : 12m<sup>3</sup>/min, Power : 1hp
  - Fume suction hole :  $\phi$  100, Propelled Hose :  $\phi$  65Ax1000 $\ell$  , hod :  $\phi$  6Ax130 $\phi$
  - P.V.C hose :  $\phi$  100x2000 $\ell$  ,  $\phi$  100 bandx2EA,  $\phi$  65bandx2EA

P WC-D-1000

## Welding Camera



### FEATURES

- SPECIALLY DESIGNED FOR EXTREMELY BRIGHT LIGHT SOURCES like ARC/CO<sub>2</sub>/TIG WELDING or FURNACE.
- Rugged Aluminum housing, PIXIM DPS RGB color sensor, 540TVL High Resolution, Supports CS mount DC drive lens
- Focus adjustable up to 25cm with f=50mm CS lens with very wide back focus mechanism.
- Offers unparalleled image quality across all lighting conditions especially at high-contrast environments.
- All adjustment by OSD menu on back, RS-485 Remote control for Menu, Circuit protection against faulty connection



ARC WELD



TIG WELD



CO<sub>2</sub> WELD

Green BUS

## Clean welding bench



### FEATURES

- Less space and movable rather than the welding Booth
- Installing a partition wall in order to cut off the welding area from the outside
- Removing harmfulness gas and trash during welding work.
- The hole cap is a fume pipe the fume gas, impurities and others shall pass out of the booth.
- Arc Ray is the light mixed with the visibleray, ultra-violet ray and etc, however the shade film shall blocked the strong Arc and make it gentle.

### SPECIFICATION

- Size (H X D X W, mm) : 2350 X 1000 X 800
- Constitution : Hopper, Partition wall, Vertical & Horizontal pipe, Slag drawer for welding crater.
- Window (for instructor) with protective film on the back plate phase
- Electric Cabinet panel
- Circuit breaker from floor
- Ventilation Duct Facility

H B T-50(30)T

## Hydraulic bending Tester



### FEATURES

- Designed the flexible structure to control a proper pressurizing force by materials' thickness
- Strong Power with hydraulic motor
- Safety using by quick stop of Emergency stop switch
- Easy to use for every user even beginner
- Dual type -operation : Automatic-manual type.
- The hole cap is a fume pipe the fume gas, impurities and others shall pass out of the booth.
- Arc Ray is the light mixed with the visible ray, ultra-violet ray and etc, however the shade film shall blocked the strong Arc and make it gentle, so which make

### SPECIFICATION

- Input Power : 220V 3phase, 50Hz
- Motor : 5.5(7.5)kW
- Hydraulic cylinder : dia. 150
- Standard Pressure : 350Bar
- Flexible pressure : 3- 30(50)ton
- Roller JIG 160\*110\*190

PH-A-4000

## Constant Temperature and Humidification, Air-Conditioner System

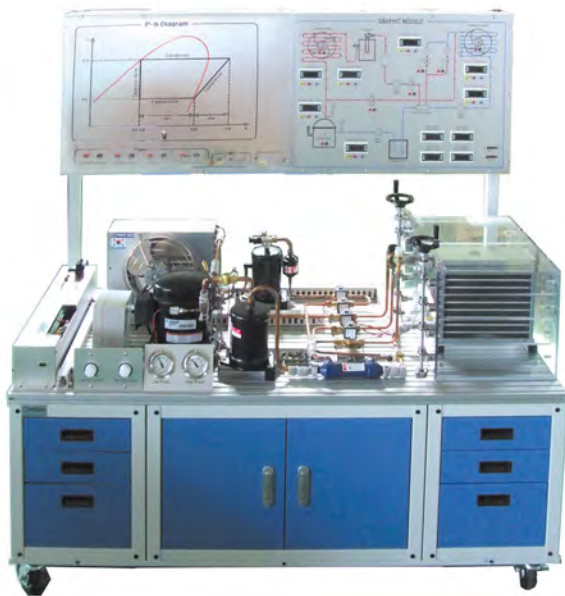


### FEATURES

- The possibility of experiment on ventilation system (4-type) and cool - arm 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

PH-R-2000

## Air Conditioning & Freezing System



### 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 from evaporator and Mollier diagram drawing in P-I diagram drawing part.
- Theoretical education of a fundamental circuit, application circuit and experiment by various circuit composition
- The comprehension of principle of hot gas defrost, passive, capillary tube and temperature sensor type of expansion valve
- The machine department is made up of power connection with graphic module control in the mobile lack and jack of more 24 pins for temperature automatic control and is possible to interchange with electric wiring system
- 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.
- The printed PH-Diagram on the front panel shall improve the educational effects for the Training and the efficiency test of Refrigeration.



PH-R-1000

## Basic Refrigeration system



### FEATURES

- To experiment with automatic temperature and pressure controller and to investigate refrigerator defrosting and module for theory/experiment of refrigeration system for Automatic control experiment.
- The Circuit arrangement : Compressor - Condenser - Filter Dryer - Sight Glass Expansion Value - Evaporator - Compressor.
- 24pin jack between machine module and Graphic module set up on a mobile rack.
- Components on Control panel are replaceable. Manual and/or automatic operations mode is able for basic, defrosting, evaporation experiment
- Mollier's chart is able to be drawn with the data taken with current arrangement.
- Controlling temperature and pressure (high/low) are possible.
- The printed PH-Diagram on the front panel shall improve the educational effects for the Training and the efficiency test of Refrigeration.

PH-R-3000

## Heat Pump & Heat Accumulation System



### FEATURES

- Operate various circuit as heating or cooling manual, automatic operation by heat pump, pump down operation etc.
- Basic theory of cooling, heating system and to practice compositing the system.
- Practice and to understand composition the system.
- Automatic control operation circuit by heat pump.
- Leak test, Vacuum test, Refrigerant charging, recovery & transfer.
- Automatic control sequence circuit of refrigeration.
- Exercise sequence circuit design.
- Automatic operation circuit configuration to control cooling, heating manual operation, temperature control, automatic control and pump down operation.
- A circuit to display error by pressure switch or buzzer.
- The printed PH-Diagram on the front panel shall improve the educational effects for the Training and the efficiency test of Refrigeration.

# 5

*Electric & Electronic Measuring  
Device, Automatic Control*





# *Electric & Electronic Measuring Device, Automatic Control*

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

CHUNGPA EMT CO., LTD.	176 ~ 185
FESTECH CO.,LTD.	186 ~ 189
FESTOONE CO., LTD.	190 ~ 191
Hanback Electronics Co., Ltd.	192 ~ 193
IEG CO., LTD.	194 ~ 195
KMC Robotics Co., Ltd.	196 ~ 197
KTENG	198 ~ 205
RO BO RO BO Co., Ltd.	206 ~ 207
W OOSUN CONTROL CO., LTD.	208 ~ 211



CPE-EN4500

## Smart Grid Solar & Wind Power Trainer



### Features

- Composed of table, module rack, modules and accessories
- Designed for indoor practicing
- Possible measuring voltage, current and load of both solar and wind
- Possible practicing solar energy test by angles due to angle PV module
- Plane PV module is additionally installed
- Designed modules to easily fix on the rack and taken off
- All-in-one trainer with strong aluminum frame, wheel, module rack and modules
- Charging controller and charging battery with protection device
- Possible practicing AC load test due to AC power output through the inverter
- Displaying the voltage and current value of testing modules on the monitoring module
- 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

### Specifications

• Experimental table set :	1ea
• AC power source module :	1ea
• Photovoltaic cell module-A :	1ea
• Photovoltaic cell module -B :	1ea
• IND generator module :	1ea
• Charging controller module :	1ea
• Battery module :	1ea
• Stand-alone inverter module :	1ea
• DC load module :	1ea
• AC load module :	1ea
• Time controller module :	1ea serial receiver
• Automatic charger module :	1ea
• Smart grid monitor module :	1ea
• Arm-typed light source module :	1ea



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-WIN300

## Wind & Solar Generating Trainer



### 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

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

CP-Solar900

## Stand-alone Solar Power Generation Trainer



### Features

- Possible to understand loading principles and practice its characteristics by solar power generation
- Possible to practice the characteristics of electric power by solar power generation
- Possible to practice controlling facilities by lighting system through display board
- Possible to practice actual solar power generation by charging controller, inverter and switch box
- Possible to analyze and remote control data in real-time through display board
- Photovoltaic panel to be installed at the optimum place by lighting angles
- Effective distribution according to electric power quantity and consumption
- Control timer to set changing time and power using time 2 units of streetlight system
- Displaying real-time data such as voltage / temperature / current / humidity / electric power / power generation and etc
- Strong solar power generation display board

### Specifications

Solar cell module	2000W
Power conversion device	2000W
Storage battery	12V-100Ah, 2ea
Display unit	Voltmeter, ammeter, frequency meter
DC/AC load panel	Voltmeter, ammeter, resistance load, lamp, buzzer, motor
Size	570(W) × 1540(H) × 590(D)mm
Solar power display board	Voltage, temperature, humidity, current, electric power, power display
Solar streetlight	Streetlight, lamp(60W) × 2EA
Software	Web monitoring software

CPE-ST10

## Automatic light-Source Tracking Trainer

### Features

- Possible to practice automatic light-source tracking by PLC
- Possible to control in real-time according to the change of light quantity and position
- Possible to track the position by 2 axes using sensor
- Possible to directly control ON/OFF with control unit
- Possible to practice light-source controller, terminal box and solar cell unit separately
- Possible to interface with PC by installing position control software
- Easy to handle and keep due to small and separable units

### Simulation light-Sourcing Lamp

- Composed of 5 lamps and aluminum frame
- Possible to practice simulation of the Sun location

### Specifications

Light-source tracking control unit	GLOFA GM4 system control(Available various kinds of machine) Halogen lamp ON/OFF switch Solar cell voltage meter Analog input (CDS input, 8ch) Limit input DC output (lamp, motor)
Terminal box unit	CDS sensor output Motor horizontal control Motor vertical control Limit horizontal control Limit vertical control DC 24V input
Solar cell unit	GLOFA GM4 system control (Available various kinds of machine) Analog input (CDS input, 8ch)





CP-S22

## Portable Solar Power Trainer



### Features

- Possible to practice any places by the bag type with small size
- Possible to understand the principle of electric power conversion by energy flow due to stand-alone solar generation system
- Possible to practice various conditions by solar panel angles and quantities of light due to separable solar panel
- Possible to analyze and remote control data in real-time through display board
- Easy to get real-time data and high visible by built-in digital meter
- Possible to practice DC load test such as lamp and buzzer and AC load test through outlet
- Selector switch to control storage battery and inverter
- Round connectors for easy wiring
- Built-in DC/AC digital meter

### Specifications

Solar cell	22W / 17.2V
Battery	12V-7Ah
Inverter	250W
Charge controller	DC 12V
Digital meter	DC voltage meter (0~199.9V) DC current meter (0~1999A)
DC load	DC 12V lamp / buzzer
AC load	AC 220V lamp / outlet-2ea
Circuit breaker unit	15A
Size	750(W) × 400(D) × 300(H)mm
Weight	11Kg

CPS-GTS1.2K

## Grid-tie Solar Power Training System



### Features

- Circuit wiring and module practice
- Block diagram for the system of inverter, watt-hour meter and etc.
- Built-in DC(5~100V) power supply
- Built-in 1.2KW grid-tie inverter
- Solar battery module installation practice
- RS-485 communication
- PC monitoring and data analysis

### Specifications

- Solar panel : 4ea
- Module fixing and practice supporter : 1set
- Solar power module
- Grid-tie inverter module
- Export & Import Watt-Hour Meter Module
- Display & AC outlet module
- AC Outlet & Digital Timer
- Case
- New and renewable energy generation program

CP-Win400, CP-Win900,  
CP-Win1000

## Wind Power Generation Trainer



### Features

- Understanding of the principles of wind power generation
- Possible to practice the characteristics of wind power generation
- Possible to control wind power generation
- Possible to used at the schools or the company institutes

### Specifications

Description	CP-WIN400	CP-WIN900	CP-WIN1000
Rotor size	1.15m	2.1m	2.7m
Weight	5.85Kg	22.56Kg	39.46Kg
Start-up wind speed	3.85m/s	3.4m/s	3.1m/s
Voltage	12,24,24 or 48VDC	12,24,24 or 48VDC	12,24,24 or 48VDC
Rated power	400watts(12,5m/s)	900watts(12,5m/s)	1000watts(12,5m/s)
Over-speed protection	Electronic torque control	Side-furling	Side-Furling
Watt hours/month	Max. 38Kwh	Max. 100Kwh	Max. 158Kwh

CPE-MP100

## Micro Computer Training Kits



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

### Features

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

### Main configurations

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

CPE-PN7000 / 7500

## Pneumatics Training System



- Basic Pneumatics Training System  
| CPE-PN7000
- Electro-Pneumatics 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 electrical pneumatics circuit practice using various pneumatics parts
- Relay, PLC, Microprocessor practice
- Suitable to study from basic to high grade technology
- One-touch lever 2 site clamps (convenient to handle)
- The module is movable vertically and horizontally
- Industrial symbols and names are printed on the module panel
- Various optional modules and various parts for FMS

### Experimental contents

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

CPE-HY8000 / 8500

## Hydraulics Training System



- 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

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

### Experimental contents

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



CPS-AT3450

## Mini-MPS(Multi-Programming System) Trainer



### Features

- Designed 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
- Composed of the Mini MPS system, PLC, Bus interface and USB Bus creator
- Convenient for user interface and easy usage
- Designed with the safety and solidity

### Experimental contents

- AND/OR circuit
- Output sequential control by analog switch signal input
- Output lamp group control by analog switch signal input
- Interlock circuit
- Buzzer sound control by input signal
- Feeding process
- Conveyor transportation
- Metal/non-metal detection
- Automatic/ manual operation for each step

### Specifications

- Table
- Product Supply Process
- Product Transfer Process (Conveyor Section)
- Inspection Process (Sensor Section)
- Stopper Section
- Product Sorting Process (Adsorption Transfer Section)
- Loading Process (Loading Section)
- Control Panel
- Program Controller (Legitimate) : 1set (Option)

### Accessories

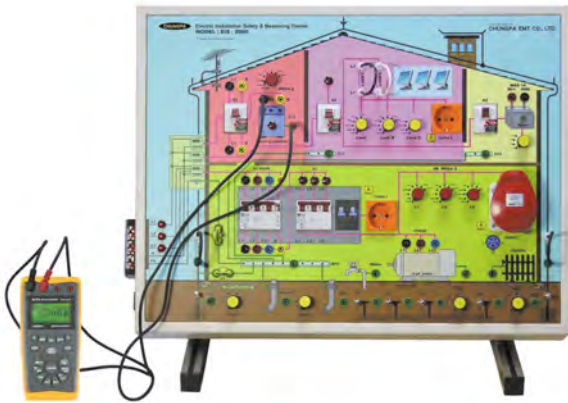
- Training instructions : Each 1set
- Connection Cable : Each 1set
- Learning Program (Flowchart Language) : 1copy
- Tools : - Wrench : Each 1set  
- Screwdriver (phillips and flat-head screwdriver) : Each 1set



EIS-2000

## Electric Installation Safety Measurement Trainer

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



### Features

- 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

## Multifunctional Electric Meter

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



### Features

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

CPE-ER1100

## Intelligent Light Control Trainer



### Features

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

### Experimental contents

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

CSN-2005

## Integrated Sensor Application Trainer



### Main configurations

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

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

### Features

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



MPS - MFL 7

## Multimedia Total Visual System



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

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

Solution for more combined usage and manages  
Total system eliminates limitation of Multimedia total visual system with Sliding type LCD monitor, keyboard and industrial PC.

### Main configurations

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

ISO / ISOS Series

## Digital Supersonic Cleaner



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

### Features

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

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

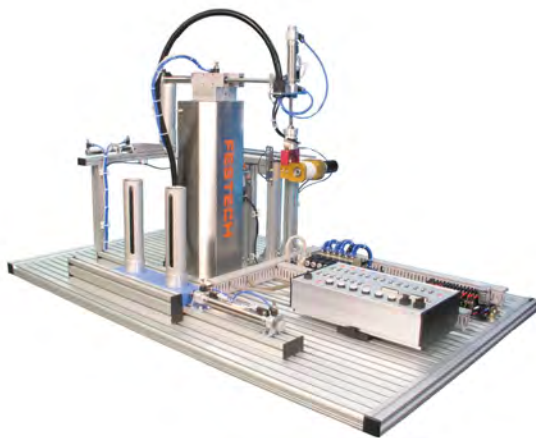
- Each module has a mounting clamp
- Variable module combination
- Open structure for practical training
- 4mm standard electric socket

### 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

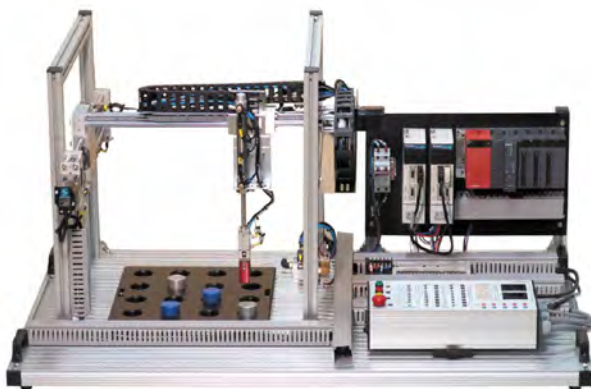
- Pneumatic transfer and sorting system
- Real industrial parts
- Basic and advanced training
- Open structure for practical training
- Control module for Auto/Manual
- 4mm standard electric socket

### MAIN COMPONENTS

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

FATK series

## Motion Control Trainer



### FEATURES

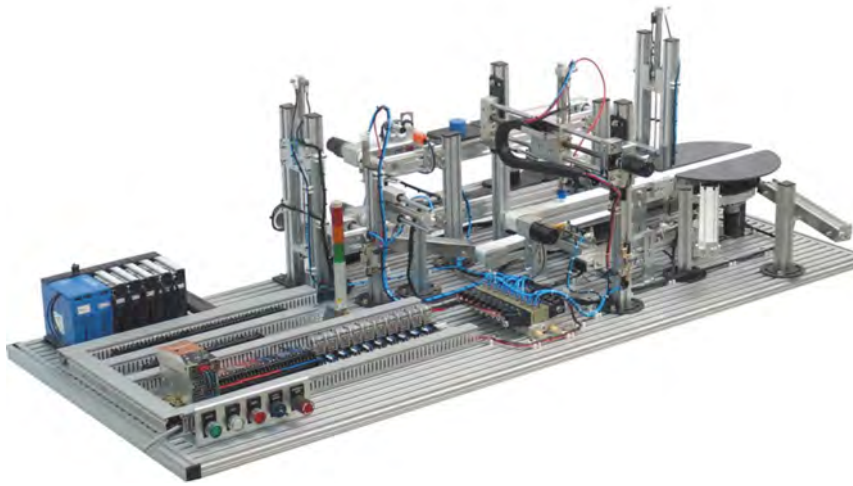
- 2 axes servo motor system
- Linear spindle drive type
- Pneumatic hand gripper for workpiece handling
- Basic and advanced training
- Open structure for practical training

### 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

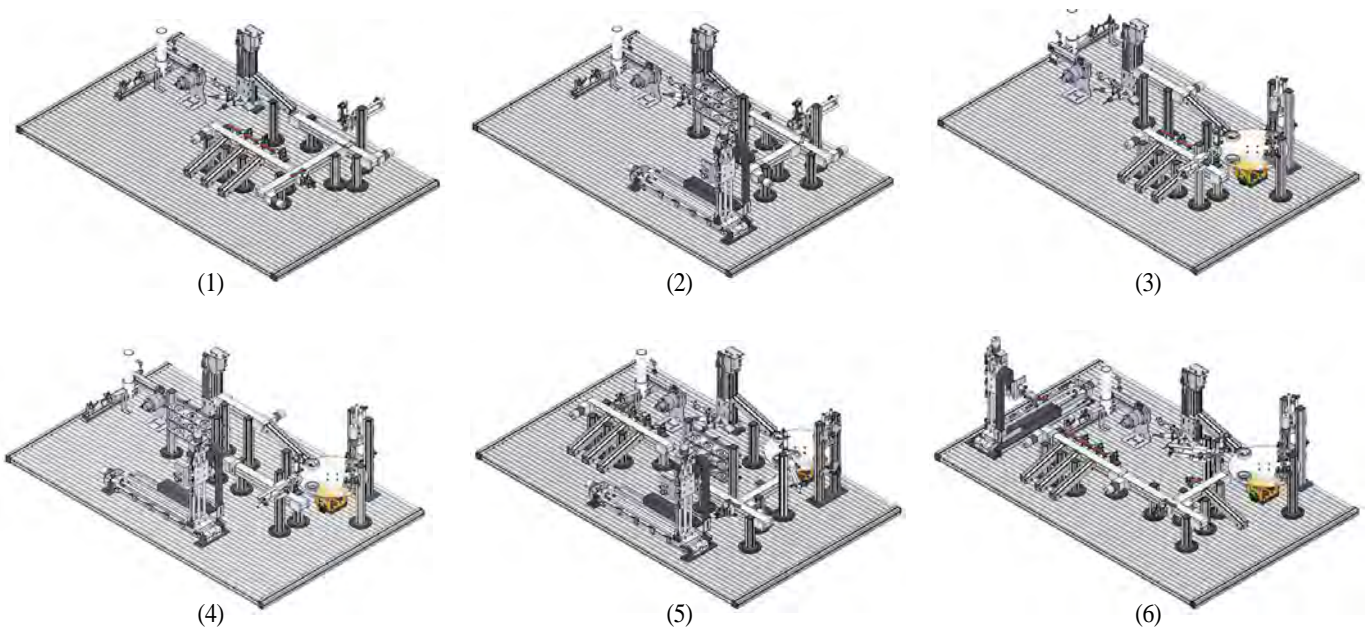
### Variable processes

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.

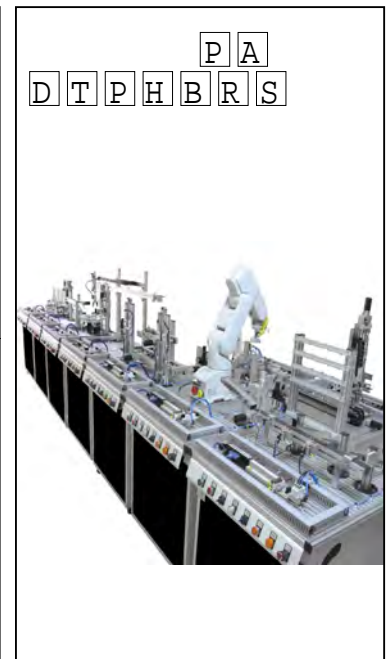
### FEATURES

- 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 D+T+S D+T+P+H D+T+P+H+B D+T+P+H+B+R D+T+P+H+B+R+S 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>

### MPS-9 Stations



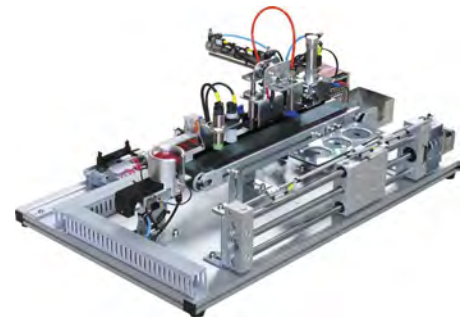
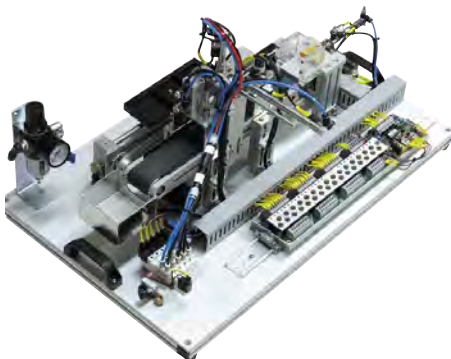
### FATK series

## 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&Hydraulics System Training Kit



### FEATURE

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

## Multi Modular PLC Training Kit



### FEATURE

All the PLC practical of FESTOONE are designed to enhance the training effects for both theory and actual performance with user friendly manufacture of diverse on-market products also able to select & combine the proper control module in accordance with the training target(Multi-type PLC Practical Equipment) and able to practice the additional links such as air pressure, sensor, oil pressure by the combination of one-touch mounting & profile

## 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.

## Quality Vision Control System Training Kit

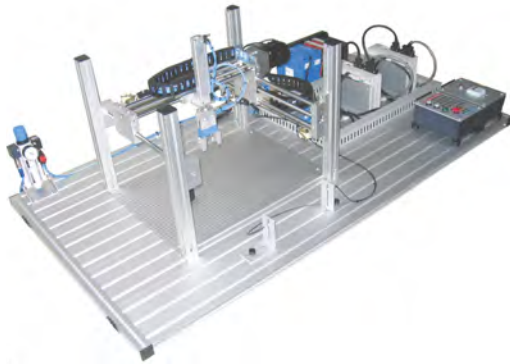


### FEATURE

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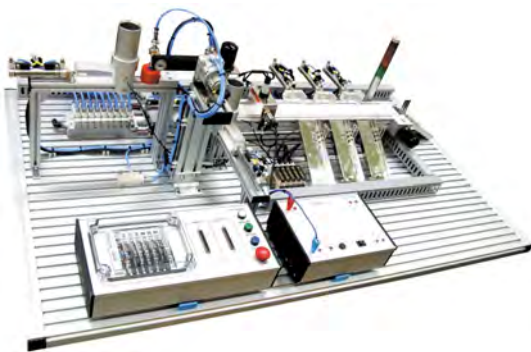
## Motor System Training Kit



### 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.

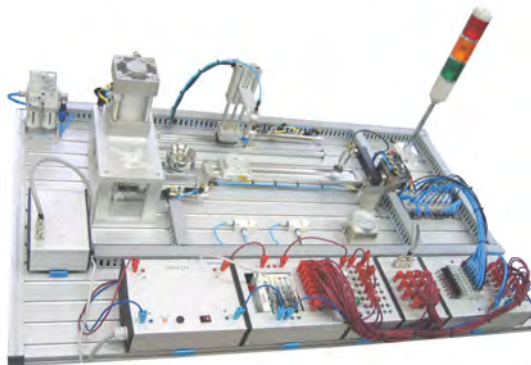
## Mechatronics System Training Kit



### FEATURE

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

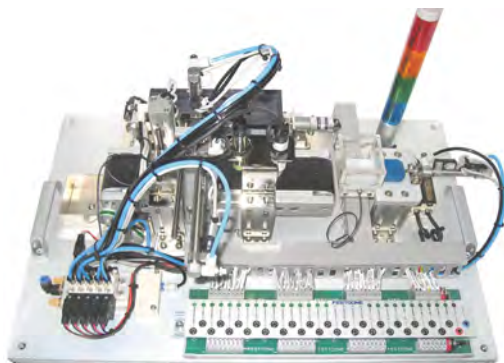
## Curing System Training Kit



### FEATURE

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

## Mechatronics Programming System Training Kit



### FEATURE

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

## Intelligent Robot System



HBE-RoboCAR-Embedded



HBE-RoboCAR\_Arm



HBE-RoboCAR-Vision



HBE-RoboCAR\_SM II



HBE-RoboCAR-MCU-Multi



HBE-RoboCAR\_USN



HBE-RoboCar



HBE-RoboMotor



HBE-ROBONOVA-AI



HBE-ERobo-Tank

- **HBE-RoboCAR** : 8-bit microprocessor (ATmega128L)based Robot, driving unit enabling various sensors and motor control experiment, Converged with HBE-SM2/HBE-COMBO2/HBE-MCU-Multi /HBE-ZigbeX/
- **HBE-RoboCAR-Vision** : Real-Time Robot Image Processing(Acquisition, Tracing, Recognition) Training Kit
- **HBE-RoboCAR-Embedded** : ARM9 (PXA272) based Embedded Systems based on Real Intelligent Robot Platform
- **HBE-RoboCAR-ARM** : the servo motor control training for six joint arm
- **HBE-EROBO-Tank** : Intelligent Caterpillar Traction Tank Robot System
- **HBE-RoboMotor** : Best Robotics Training Platform for Systematic Learning Robot Motors and Robot Sensors
- **HBE-ROBONOVA-AI** : Intelligent two-legs walking robot equipped - CCD camera (Robot eyes) / 32 bit embedded board (robot brain) installed with 32 bit embedded system Real-time image processing using FPGA

## Network Educational Platform



HBE-ZigbeX



HBE-Ubi-nanoLOC



HBE-Ubi-HomeNetII



HBE-Ubi-Box 2

- **HBE-ZigbeX** : Ubiquitous Sensor Network or Wireless Sensor A New Efficient Base Station for Wireless Sensor Networks
- **HBE-Ubi-NanoLOC** : CSS (chirp spread spectrum) technology is used to measure the Distance!
- **HBE-Ubi-HomeNet** : New Ubiquitous Home Network Test-beds based on Wireless Sensor Networks
- **HBE-Ubi-BOX2** : A New Efficient base station for Wireless Sensor Networks

## Green IT Experiment System



HBE-Green-Energy



HBE-Green-HomeNet



HBE-Green-ETS-Solar



HBE-Green-LED

- **HBE-Green-Energy** : New Energy and Renewable Energy Integrated Test Platform
- **HBE-Green-HomeNet** : Green Home Test Platform applying Photovoltaic Power Generation and USN
- **HBE-Green-ETS-Solar** : Platform for Photovoltaic System Experimental Test and Basic Test
- **HBE-Green-LED** : Platform for LED basic test and LED application test

## RFID



HBE-RFID-REX

- **HBE-RFID-REX** : Radio Frequency Identification

## FPGA



HBE-COMBO2

- **HBE-COMBO2** : Selectable ALTERA, XILINX device

## Electric and Electronics Experiment



HBE-B3E

- **HBE-B3E** : Implement all the instruments for circuit practice into one equipment oscilloscope, function generator, power supplier and digital multimeter function
- **HBE-LogicCircuit-Digital**



HBE-LogicCircuit-Digital

## Embedded System



HBE-SM2-P270 P320



HBE-MCU-Multi



HBE-Sensor-Multi

- **HBE-SM2** - Marvell PXA270 application processor installed Provides various experiment themes using the basic and application modules
- **HBE-MCU-Multi** : various functionality modules for technological convergence concept wised Lab experiments
- **HBE-Sensor-Multi** : practicing application of various sensors

## DSP



HBE-DSPLAB2000



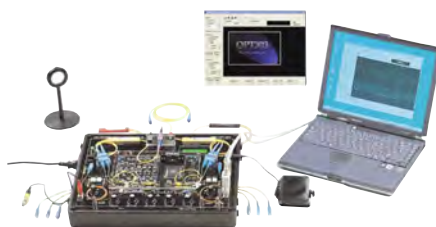
HBE-LogDSP

- **HBE-DSPLAB2000** : Standard Digital Signal Processing Platform
- **HBE-LogDSP** : High-Speed DSP Solution to Enable Image Signal Processing

## Optical Fiber Communication



HBE-OPT-202



OPT-303

- **HBE-OPT202** : Basic Experiment of Optic Fiber Communication using 650nm
- **HBE-OPT303** : Function Generator, Light Source (1310/1550/650nm), Dual Optical Receiver (power meter), and Digital Oscilloscope



IEG 1701

## Hybrid Generation System Trainer (Solar / Wind / Fuel Cell)



Hybrid Generation System Trainer



Embedded Monitoring System Module



DC Multi Meter



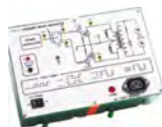
Charge Controller Module



Square Wave Inverter Module



DC Load Module



Square Wave Inverter Module



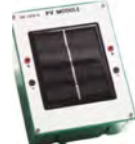
Fuel Cell Stack Module



PEM Electrolyzer Module



Power Monitor Module



PV Module



RS-485 COM Module



Manual Resistor Loader Module

### FEATURES

Modular designed IEG-1701 allows hybrid renewable energy experiments with photovoltaic, wind and fuel cell technology from its basic theory to combined hybrid generation system in university and vocational school. Specially developed embedded control module includes wireless Zigbee, power line communication, TCP/IP network and I-V curve tracer function.

Control modules	Embedded monitoring module / Square wave Inverter module / Charge controller
PV cells and artificial light source modules	0.67W PV module 10W PV module with one 300W halogen lamp 50W PV module with two halogen lamp
Wind generator	Wind Generator 50W with movable rack
PEM fuel cell modules	2W PEMFC stack and 15W electrolyzer
Load	DC load module Auto resistor loader module Manual resistor loader module AC load and terminal block module
Measuring instruments	DC multi meter module Power monitor module
Communication modules	RS-485 communication module Zigbee module PLC Module (option)

IEG 1010

## Big-Eye ® Intelligent Robot Trainer (Real-time control based on LabVIEW)

### FEATURES

Big-Eye ® a intelligent mobile robot trainer moving with two wheels, and for intelligent movement includes seven sonar sensors, three axis gyro sensor, two RF color cameras, two arms with 3DOF and Bluetooth. cRIO ® a embedded real-time controller of National Instruments ® used for operated and educated based on LabVIEW for basic and further training, research and development for universities and colleges.

### TUTORIALS

#### 1st step(Foundation / Basics)

- Introduction to robotics and mechatronics
- Overview of LabVIEW
- Understanding the needs of the learners

#### 2nd step(Practical Education)

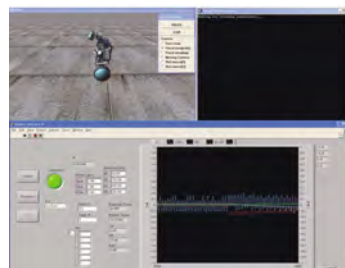
- Mechanical Design
- Electric Circuit Design
- Networks between devices
- Basic control theory

#### 3rd step(Advanced Education)

- Rigid body Kinematics and dynamics
- System design
- Robot application



Big-Eye ®



Robot Simulation S/W (LabVIEW)

Dimension	(W)32cm x (D)22cm x (H)42cm
Max Speed	20cm/s
Controller	cRIO® (National Instruments)
Camera	RF color Micro CMOS
Sonar Sensor	15cm ~500cm
Gyro Sensor	± 75~300°/s 3 Axis
Actuator Wheel	50W BLDC motor, Harmonic Drive
Battery	Li-Po 22.2V 4000mA
Simulation Software	VRML 3D simulation software

IEG 3300

## PC Based Sensor Trainer

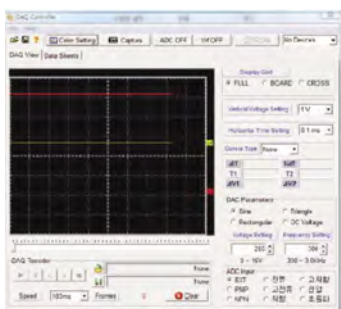


PC Based Sensor Trainer

### FEATURES

- Various sensors are included extensively in the IEG 3300 pc based sensor trainer. Tutorials includes sensor characteristics, function, configuration, areas of application and the selection of sensors based on the requirements of an application.
- The equipment set contains electricity, electronics, automation, robotics, renewable energy and basic science sensors with experimental examples to educate the operational principles of different sensors.

Measure and control modules
DAQ controller module with pc monitoring software, Power supply & breadboard module
Sensor modules
Motor speed control module, Lamp/buzzer module, Counter module Lamp control application module, Motor control application module, Input/output module, OP-Amp & comparator module Voltage/current measurement module, Load cell module, Acceleration sensor Module, Renewable energy sensor module, CdS sensor module, Photo diode module, Photo transistor module, Transmissive photosensor module, Reflective photosensor module, Mirror reflective photosensor module, Optical fiber sensor with amplifier module, Hall sensor module, Hall IC sensor module, Thermistor(NTC) module, Thermocouple module, PT thermistor module, Pyro-electricity sensor module, Ultrasonic sensor module, 2 Inductive proximity sensor modules, Capacitive proximity sensor module, Gas sensor module(LPG/LNG/Methane), Humidity sensor module, Heating module, Spindle drive unit, Motor control module, Optical transform module, Weight-load set for load cell test, Slide unit, Specimen set,



IEG DAQ Viewer (Monitoring S/W)

EG 4000 / 4100

## Pneumatic / Hydraulic System Trainer

### FEATURES

- Workstation system for basic and advanced electro-pneumatics and hydraulics training. This conventional training system equipped with brand-new industrial components, enables learning latest industrial standard technologies.
- The universal aluminum profile working board used in conjunction with workstation system easily change slope angles for convenience training. Ergonomically designed training components can be flexibly positioned and securely mounted in the universal aluminum profile working board using our unique designed one touch hand lever clamp.
- The new version of simulation software for training industrial automation is optionally provided. Pneumatic system simulation software, hydraulic system simulation software, PLC simulation software, sequence circuit simulation software.



Pneumatics System Trainer



Hydraulic System Trainer

Pneumatic Training System	Working table (W)1400cm x (H)1600cm x (D)800cm Working board (W)1100cm x (D)760cm Pneumatic cylinders, Pneumatic valves Electro-pneumatic valves, Sensors, Relay units, Counter and switch units
Hydraulic Training System	Working table (W)1500cm x (H)1650cm x (D)850cm Working board (W)1100cm x (D)760cm Hydraulic cylinders, Hydraulic valves Electro-hydraulic valves, Sensors, Relay units, Counter and switch units
Pneumatic simulation S/W	Option
Hydraulic simulation S/W	Option
PLC simulation S/W	Option
Sequence circuit simulation S/W	Option

KMC-89S51L  
KMC-8535L  
KMC-877L

## Microprocessor education equipment with terminal stand



### FEATURE

- KMC-COMBO indicated integrated trainer ok KMC-89S51L, KMC-8535L, and KMC-877L
- Easy to conduct experiment due to separation of CPU and experiment module
- Programming and hardware practice with 14 types of modules
- Easy to use with one-touch connector
- Control experiment with microprocessor and attachment of various sensors and motors
- Interchangeable CPU module among 8051, AVR, PIC

### TEXTBOOK



KR-TMS23

## Sensor education equipment



### FEATURE

- Sensor module - 23 ea, Application module-3ea, Display module - 5 ea, Actuator module- 5 ea
- Each module is equipped with output connector and indicator for user convenience
- Ergonomic arrangement to facilitate the wiring between main and application module
- Jog shuttle lever for easier transition of CPU module
- Only use USB for program downloading method
- Integrated program downloading method for CPU via USB
- 4 CPUs are available (largest selection of CPU module among comparable model)
- Actual signal checking by allowing test point per module

KMC-ROBI

## Line Tracer education equipment with MCS-51

### FEATURE

- Education equipment for ROBI(Line Tracer)
- Easy to carry and store by attaching body and main board of ROBI to case
- Same hardware composition with ROBI
- Adopting same MDS(Microprocessor Developing System), circuit and mechanism of ROBI
- Utilize ROBI station with Rom-Emulation feature
- User created program can be downloaded from PC
- Composed to be easily utilized by after-hour activity and educational institute

### TEXTBOOK

- Chapter 1 Basic theory on robot
- Chapter 2 Robot running by C language
- Chapter 3 ROBI hardware
- Chapter 4 ROBI assembly

### Appendix

- A IAR-C compiler installation
- B Compiler usage
- C ROBI STATION program
- D ROBI circuit diagram





KMC - E X R P

## Facial Expression Robot



### FEATURE

- Can express the emotion of robot via facial expression and voice
- Using 11 servo motors, various movements such as laughing, angry, startled look, etc can be expressed.
- Visual recognition with camera and voice output
- Serial interface between computer and robot via RS-232
- Motion control on robot by Visual C++
- Motion control board with greater expansion capability

Product	KMC-EXRP
CPU	PC (Windows XP), Sub CPU - ATmega128
Display	17" Color LCD Screen (Touch Screen - Option)
RC Servo Motor	HDS-877 x 6ea / HS-5645 x 5ea
Camera	Quick Cam Pro4000 with 1.3mega pixels 2ea
Power	AC220V

Product	KMC-EXRP
Power Supply	Input AC 220V / Output DC 5V 10A
S/W	Robot real-time controlling Program
Body	face - 60 series 5T Aluminum / eye, eyebrow, lip frame - Plastic
Compiler	Visual c++
Accessory	Keyboard, Mouse

KMC - K O B I

## Inchworm with AV (Wriggler)



### FEATURE

- Robot that expresses the movement of snake and inchworm using 10 servo motors
- By utilizing the algorithm and programming capability on snake and inchworm, it can be helpful for education on microprocessor.
- Recently spotlighted micro controller, AVR8535, is adopted.
- User can easily program using ISP feature.
- Sturdy aluminum frame can add processed design capability.
- Robot that can educate mechanical and microprocessor related issues at the same time.

Product	KMC-KOBI
CPU	AT90LS8535, AT90S8535, ATmega 8535(AVR)
Memory	Internal Flash Memory
Display	2 Digital High light LED
RC Servo Motor	DGS-1188 Metal Type RC Servo Motor 10ea
Battery	AA Size Rechargeable Battery 5 ea
S/W	Code Vision
Buzzer	1ea
Sensor	SRF04(Optional)

Product	KMC-KOBI
Body	Material- Al alloy 50series 1.5t / fabrication - Laser Cutting & bending
Compiler	Code Vision C Compiler
Usage	Program Download
Accessory	ISP Board & Printer Cable
	charger
	Bluetooth controller (Option)
	ultrasonic module (Option)

KMC - L R P 6

## 6 legged robot with multi articulation (Spider robot)



### FEATURE

- Autonomously moving 6 legged robot with more than 20 DOF
- Video transmission and control using video input device
- Motion control board with greater expansion capability
- More than 30 minutes of operation when battery is full
- Robot frame for higher DOF
- Robot platform/user control method
- Image capturing while standing or moving due to tilting feature

Product	KMC-LRP6
CPU	ATmega 128
PC Communication	Bluetooth, Serial Controller
RC Servo Motor	DGS-1188 Metal Type RC Servo Motor 20ea
Camera	Small sized high speed (3-F/s) precision camera (Option)
Walking	6 legged walking
Power	6V / 2.7A Ni-MH charger (2700mh)
Battery	AA Size Rechargeable Battery 5 ea

Product	KMC-LRP6
S/W	Real-time Controlling Program, 3D Simulation Program
Body	600mm x 600mm x 245mm Material- Al alloy 50series 1.5t fabrication - Laser Cutting & bending
Accessory	charger
	Bluetooth Module
	S/W CD
	Bluetooth Controller

## New & Renewable Energy Experimental Equipment

KTE-HB520

### Hybrid Generation (Solar PV+Wind Power)



Patent No.0952928 - Wind Power Generation Apparatus

- Real wiring training kit connected with solar PV module and wind power generation module (800W)
- Conversion of DC power collected through power generation test equipment to high-voltage AC
- Configuration of 2-channel hybrid system by connection with both of a solar PV generation test module and a wind power generation test module.
- Wind power source is from a blower fan with 3-blades
- Test on hybrid power generation (solar PV, wind power)
- Solar PV: 400W, wind power: 400W

KTE-7000WG

### Wind Power Generation



Patent No.0952928 - Wind Power Generation Apparatus

- Test on power production after collecting power from the wind power generator through power conversion test equipment, test on 400W power production
- Test on performance of the wind power generator using a motor
- Real wiring training kit connected with wind power generating system
- Wind power source is from a blower fan with 3-blades
- SQ and PLC-based system remote control enabled

KTE-CP520

### Power Conversion



Application Patent No.447670 - Educational Energy Acquisition Apparatus

- Power control test, power generation system composition and capacity estimation, efficiency test, system control and maintenance, control technology
- Conversion of DC power collected through power generation test equipment to high-voltage DC
- 4-channel junction box capable of receiving up to 250V
- Test on power conversion without power generation test equipment
- Available in education and training of control programs such as inverter and joint box

KTE-7000SG

### Solar Power Generation



Application Patent No.0447670 - Educational Energy Acquisition Apparatus

- Grid-connection and general load startup power
- Test on solar PV generation system control
- Test on solar PV generation system composition using banana jack
- Series and parallel control circuit composition and load power input circuit
- Automatic transfer circuit configuration at electric discharge or power failure
- Grid-connected inverter circuit configuration

KTE-7000AS

## Artificial Sunlight



Application Patent No.0447670 - Educational Energy Acquisition Apparatus

- It is artificial sun specially designed to generate solar energy. It can be used in diverse indoor tests such as solar PV power generation test and solar heat test.
- Metal halide lamp (2.5kw) used
- Artificial sun with light sources similar to natural sun (Color rendering: 90 or above, color temperature: 5,000K or above, illuminance: 6,000Lx or above)
- Classification into 2.5kw, 5kw and 7.5kw depending on capacity

KTE-7000PL

## New & Renewable Energy PLC Training Kit

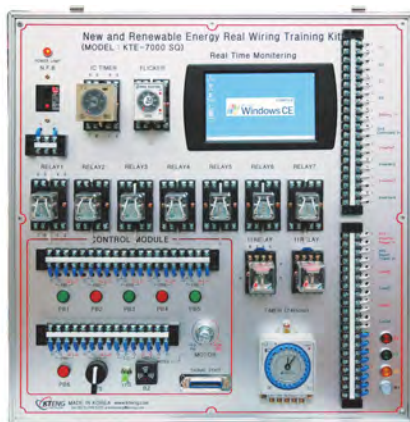


Patent No.0802437 - Refrigeration PLC training Kit

- New & renewable energy power generation PLC control test
- Power generation can be monitored on a real time basis through the new & renewable energy power generation system PLC control programming practice screen
- PLC control of the past national technical license test
- Safe PLC test and practice after adopting DC 24V input power
- Monitoring of the power generated by each new & renewable energy power generation test system such as solar PV, wind power, tidal power and hydrogen power generation systems on a real time basis using the mobile or wired touch screen

KTE-7000SQ

## New & Renewable Energy Real Wiring Training Kit



Patent No.0802437 - Refrigeration PLC training Kit

- New & renewable energy power generation control real wiring sequence control test equipment, basic electric circuit practice, national technical license test circuit practice, practice using new & renewable energy power generation system sequence control real-wiring jack, screen real time power generation power monitoring
- Electrical real wiring practice based on the past national technical license test
- 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



KTE-7000SH

## Solar Beam Hydrogen Fuel Cell



Patent No.0854131 - Solar Heat Radiation Energy Apparatus

- Solar PV-used hydrogen fuel cell test equipment in console type / 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 / electrolysis test system for the safe production and storage of hydrogen
- Education on solar cell module structure and operating principle
- Measurement of power depending on lamp distance and intensity of light sources
- 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-DX520

## Solar PV Tracker Dual-axis



Application Patent No.0447670 - Educational Energy Acquisition Apparatus

- It tracks down sun light using slew driver and actuator. To decrease error probability, a program tracking method has been used. In terms of sunlight source, artificial sunlight has been used. A test can be performed on the power which has been generated through the power conversion test equipment.
- Installation of two 200W solar PV modules enabled
- Program tracking method (sensor-based tracking method)
- Improvement of power generation efficiency using actuator and single axis of slew driver
- Available in PV tracker control education
- Available in PV tracker control circuit education.
- Fit for an indoor test thanks to easy system configuration and convenient installation.
- Available in PV tracker development and education

KTE-7000SR

## Solar Radiation Energy



Patent No.0854131 - Solar Heat Radiation Energy Apparatus

- 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



Patent No.0776333 - Wind blind against Solar heat by Natural or Artificial Sunlight Apparatus

- 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

KTE-7000SB

## Solar Heating Hot Water Boiler

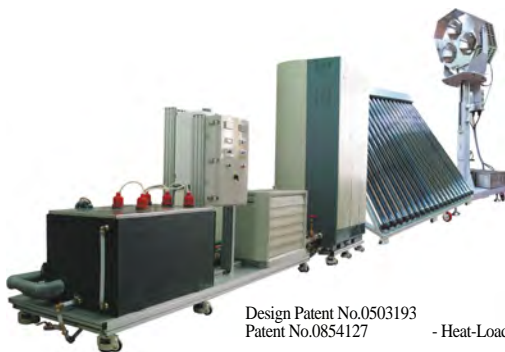


Patent No.0935943 - Boiler Heating System by Solar heat Apparatus

- 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-7000AB

## Aid-Solar Heat Absorbing Type Combined Cooler & Heater of Water



Design Patent No.0503193  
Patent No.0854127 - Heat-Load of Heating or Cooling system Apparatus

- This apparatus is designed to use solar energy as auxiliary heat source by installing a solar heat collector in the existing absorbing-type cooling and heating system.
- Adjustment of concentration of corrosion inhibitors
- Practice of the inspection on bleed pumps
- Practice on heating and cooling load treatment
- Real time saving of temperature and pressure at cooling and heating
- Practice on the outlet temperature control of the absorbing-type system

KTE-7000GH

## Geothermal Heat Pump



Patent No.0948337 - Heat-Pump System by Geothermal Apparatus

- 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

## Refrigeration & Air-conditioning Experimental Equipment

KTE-1000BA

### Standard Refrigeration



Design Patent No.0336786 - Educational Refrigeration Experimental Equipment

- Real-time temperature and pressure data view & graph view
- Real-time temperature and pressure data view on the variety of refrigeration cycle
- Real-time enthalpy view on the temperature measuring point of the variety of refrigeration cycle
- Refrigerating efficiency, Heat equivalent of compression load, Emission heat quantity of condenser, Evaporating latent heat, Heat equivalent of flash gas, Quantity of saturated vapor, Quantity of wet vapor and Theoretical Coefficient Of Performance of the variety of refrigeration cycle
- All data automatically can be saved intended every minute by interval data saving time
- All data automatically can be saved in MS excel format

KTE-1000AHU

### Air-conditioning Unit for Automatic Control

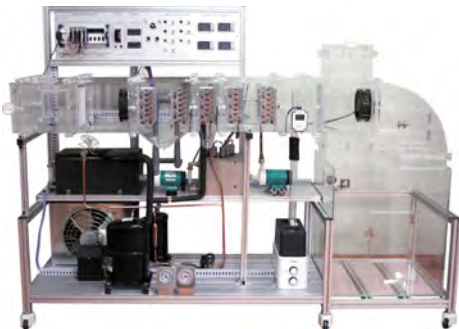


Patent No.0510745 - Air Handling Unit Apparatus

- Cycle composition : Preheater - Precooler - Blower - Humidifier - Reheater - Recooler - Control Volume - Outside. With controlling mount of air.
- Refrigerant : R-22.
- The construct of air-conditioning trainer should be a controlled chamber, the duct is visual so that an user can see inside of the trainer, and an user can control amount of inside and outside air temperature.

KTE-2000AHU

### Air Handling Unit + NI DAQ



Patent No.0854130 - Air Handling Unit by lab-view control Apparatus

- Study for the principle of air-conditioning in construct field.
- Experiment cooling and heating with control of intake, exhaust and return air.
- Measurement performance of individual device in mechanical air-conditioning.
- Control Air-conditioning with electric penal or computing programming software.
- Measurement performance of refrigeration system.
- Obtaining data and control the system with NI DAQ equipment.
- Experiment with computing programming of NI LabView.
- Drawing psychrometric chart and analysis with real time.

KTE-8000AB

### Absorbing Type Combined Cooler and Heater of Water



Design Patent No.0503193, Patent No.0854127 - Heat Load of Absorption Heating or Cooling system Apparatus

- Operation for chilling and Heating of absorption refrigeration.
- Operation as condition of thermal lord.
- Experimental charging of absorption liquid.
- Performance test for absorption refrigeration system.
- Monitoring experiment operation performance with web site in real time.
- Understanding about operation principle of absorption refrigeration system.



KTE-1000TP

## Temperature, Pressure & Defrost Control Refrigeration

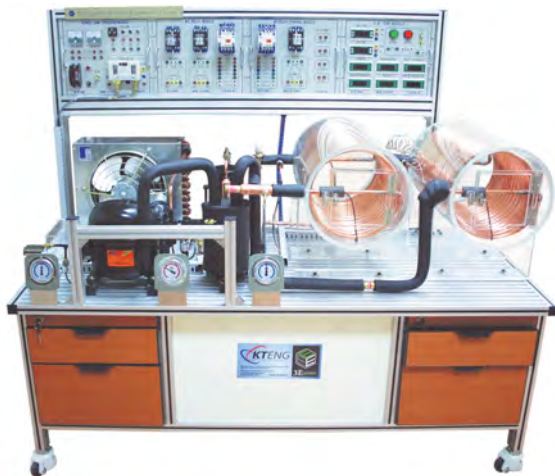


Application Patent No.0293063, Patent No.0473494 - Temperature, Pressure, and Defrost control Refrigeration System Apparatus

- Measuring heat exchanging quantity in the Liquid-gas exchanger
- Operating performance test of air-cooling and cold-storage
- Performance test by increasing and decreasing air-cooling and cold-storage load
- Performance test about temperature variable of finned evaporator cooling coil
- Operating performance test about evaporating pressure variable
- Degree of superheat test about the decrease refrigerant charging
- Wet compression experiment about the increase of refrigerant charging
- Performance test for the proper refrigerant charging

KTE-2000EP

## Evaporation Pressure Parallel Control (E.P.R Control)



Patent No.0473494 - Evaporation Pressure Parallel Control System Apparatus

- Operating test for air-cooling of the high temperature evaporator and freezing for the low temperature evaporator
- Performance test by changing temperature of the high temperature evaporator, while keeping temperature of the low temperature evaporator
- Refrigerant distribution measuring test by changing temperature of the low and high temperature evaporator
- Testing refrigerant distribution effect for the refrigerator
- Operating test about variation of evaporating pressure by using the Evaporator Pressure Regulator(E.P.R)

KTE-2000EV

## Refrigerant Parallel Expansion Refrigeration



Patent No.0463030 - Refrigerant Parallel Expansion Refrigeration Apparatus

- 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

KTE-3000HD

## 4-Way Reverse Valve Control Heat Pump Heating & Cooling



Patent No.0432527 - Heat Pump Heating and Cooling System Apparatus

- 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



Patent No.0463027 - Binary Refrigeration System Apparatus

- 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-4000PL

## Air-conditioning & Refrigeration PLC Training Kit



Patent No.0802437 - 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

KTE-4000SQ

## Air-Conditioning & Refrigeration Wiring control Training Kit



Design Patent No.0424765, Patent No.0802437 - Refrigeration Sequence Training Kit, Refrigeration PLC 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-6000BR

## Brine Refrigeration (Ice Maker)



Patent No.0458070 - Brine Refrigeration System Apparatus

- 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-9000AU

## Car Air-conditioner(A/C)



Patent No.0854132 - Car Air conditioning System Apparatus

- Study for the principle of air-conditioning and refrigeration with a car
- Study for assembling of air-conditioning system in a car.
- Operation and experiment of every element for air-conditioning in a car.
- Experiment for cooling and heating in a car.
- Training for repair of air-conditioning system in a car.
- Understanding of the principle and operation for FATC (Full Automatic Temperature Control).
- Measurement refrigeration ability when the system is in an abnormal condition.
- Measurement refrigeration ability as RPM of Compressor.
- Monitoring and recording for data from hardware to computer through software as real time
- Operation of each element through control panel.



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.

## Robokids(No.1, No.2)



### • 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.



## New Renewable Energy(Solar & Wind) Educational Equipment (Module Type)

WS-SFG1

### Solar Generation System



#### Virtual solar light controller

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- Lighting Mode ( Manual / Auto )
- Solar light auto control ability by set pattern
- The halogen lamp 500W

#### Solar Module

- Max Power Output : 24W
- Open Circuit Voltage : 21.5 V
- Short Circuit Current : 1.28 A
- Max Output Voltage : 17.3 V
- Max Output Current : 1.5 A

WS-WFG1

### Wind Generation System



This trainer is designed to study construction and principle of wind generation system for permanent magnetic type and winding type. It is easy to take apart and assemble components. Poles and field winding are attached to circle yoke and armature is at the middle.

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- variable power : AC 6/12/24/50V
- DC variable power
- York Block : Circle Type, 6 poles
- Driving Block : DC Motor, Continuously Variable Transmission
- 2 poles, 3poles rotor
- 2 kinds of pole

WS-SGIC

### Solar or Wind System Educational Equipment (Module Type)



This trainer is designed to study construction and principle of solar and wind generation system from basic to application. It is combined with Solar Generation System and Wind Generation System. This trainer can be used for studying for grid and independent system and streetlamp. The capacity for power converter(grid system) is over than 1.5KW.

#### SPECIFICATION

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- MCCB : DCP-32PR

WS-SFG1 + WS-SGIC Solar Generation Trainer  
WS-WFG1 + WS-SGIC Wind Generation Trainer

WS-SCS-1K

### Wind & Solar Hybrid Generation System



Real Time Measuring Software



This trainer is designed to study characteristic and principle of hybrid(wind & solar generation) system. To boost a voltage, a chopper is used and an inverter changes DC to AC. It is designed by a brushless type from a permanent magnetic and structure is made to absorb an oscillation.

#### SPECIFICATION

- Rated Capacity : 400W, Output Voltage : DC 24V
- Operation Wind Speed : 2.7m/s
- Inner Wind Speed : 50m/s
- Type of Solar Cell : Single Crystalline Silicon Solar Cell.  
Built-in bypass diodes.
- Open Circuit Voltage : 21.8 V / Short Circuit Current : 4.75 A
- Max Output Voltage : 17.3 V / Max Output Current : 1.5 A
- Max Output : 480 W

WS-SC1K

### Solar Trainer(Portable Type)



It is designed as a bag and portable to move elsewhere. The both sides of bag are useful for storage and solar cells are arranged safely. It is used to study for charging a battery, load test, inverter practice by using Photovoltaic(PV).

#### SPECIFICATION

- Type of Solar Cell : Single Crystalline Silicon Solar Cell.
- Open Circuit Voltage : 21.5 V / Short Circuit Current : 1.28 A
- Max Output Voltage : 17.2 V / Max Output Current : 1.32 A
- Max Output : 22 W



W S T-23

## Power Electronics Trainer (Board Type)



Every experimental board contains transformer, gate circuit, drive circuit, variable resistance, variable reactance, DC motor and AC motor.

### SPECIFICATION

- Diode Rectification Board(WST-2301)
- Single Phase Control Board(WST-2302)
- Three Phase Control Board(WST-2303)
- Single Phase AC Control Board(WST-2304)
- Three Phase AC Control Board(WST-2305)
- Switching Board(SCR)(WST-2306)
- DC Power Control Board(WST-2307)
- Single Phase Inverter Board(WST-2308)
- Three Phase Inverter Board(WST-2309)
- Single Phase Cyclo Converter Board(WST-2310)

WS - PET

## Basic Energy Conversion Trainer



The gate circuit and the driver circuit should be formed as block type so that it is easy to connect with power and signal line. It should be formed with check point to measure waveform according to function. All element of main circuit should be formed with module, as plug type which is easy to remove, adhere or replace.

### SPECIFICATION

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- Inner Power : AC 12V, DC 5V/15V/80V
- Signal Generator : 1/10/100[Hz], 5V
- Meter : DC 300V/DC 2A/AC 300V/AC 2A
- Rotation Speed Meter : 5 digits, 60p/rev encoder
- DC Motor : 30W, 90V, 3000rpm
- AC Motor : 25W, 220V, 4 poles

W S T-9

## DC Servo Motor Trainer



This equipment could be test out principle and introduction of DC servo PID controller operation and position control.

### SPECIFICATION

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- DC Power :  $\pm$ DC15V
- Speed Position : LCD Display
- Computer Interface : RS-232C
- Training Content : 12 Items

W S T-10

## Setpper Motor Trainer



The Cover of each panel shows oscillator circuit, control circuit and circuit etc. The LED display shows polarity of stepping motor rotor and stator.

### SPECIFICATION

- Power : 1[ $\phi$ ] AC 220[V], 50/60[Hz]
- Application Motor : 2-Phase, Unipolar Type
- Excitation Type : 1-Phase, 2-Phase, 1~2 Phase
- Driving Method : PWM Drive Method
- Software : ST MERCURY T10 V3.0

W S T-25A

## Automatic Control Trainer (P.I.D Control, Board Type)



P.I.D device installed separately part the Level control system that belong to driver part establish not cyber real things.

### WST-25A-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 : RS-232C

### WST-25A-L Level Control System

- Lever Range : 0~300mm / 0~10[V]
- Liquid & Voltage : 1.98 $\%$  / min & 10[V]
- Variable Method : Continuous Variable
- Level Sensor

### WST-25A-T Temperature Control System

- Heater : 100[V], 100[W]
- Temperature Sensor : PT 100[ $\bullet$ y]
- Temperature & Voltage Ratio : 50 $^\circ$  & 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



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, Middle and High Class. Therefore users can study circuit and principle in a step. First of all, the SmaTra has the troubleshooting ability and it helps users to understand a circuit easily.

### MODULE GROUPS

DC Circuit, AC Circuit, Semiconductor Circuit, Digital Circuit, Transistor Amplifier Circuit, Power Circuit, OP-Amp Circuit, Oscillation Circuit, Magnetic Circuit, A/D & D/A Converter, Sensor Circuit, Photo Electronics Circuit, DC Servo, Power Electronics Circuit

W S M - 1

## Electric Machine Exp. Trainer



The electric machine experiment set contains series, shunt, wound DC machine that classify connection way, single induction motor that used condenser run type and phase splitting induction type, 3 phase squirrel motor, slip ring motor that used synchronous motor and wound induction motor, universal motor that used as AC and DC braking machine that used brake and dynamometer. These parts can assembly use to DC machine, induction motor and synchronous motor.

### SPECIFICATION

- Power : 3[ $\phi$ ], 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

※ **Motor & Generator Trainer Series** : WSM - 6 : Heavy Current Machine Exp. Trainer, WSM - 7 : Wound Induction Motor&DC Shunt Ge. Trainer, WSM - 9 : DC Compound Motor & Compound Ge. Trainer, WSM - 10 : DC Shunt Motor & Synchronous Ge. Trainer, WSM - 24 : Transformer Experimental Trainer



WSB-60P

## P.L.C Trainer (Portable Type)



It can be P.L.C training without other devices.

The approach switch, photo sensor and small induction motor combined and display revolution detecting. The push button switch, output lamp and buzzer can assist program simulator. The input output module and sensor contain power supply.

### SPECIFICATION

- Power Supply : Main Power, P.L.C Power, DC Out Power, AC Out Power
- Input Terminals / 32 Point, Output Terminals / 32 Point
- Sensor Unit : DC Motor / Photo Sensor / Proximity Sensor
- Input Switch Unit / Output Lamp Unit / Digital Switch Unit
- Noise Situation

WSP-4

## Electro-Pneumatic Trainer(Quick Module Type)



This equipment contains solenoid valve, all sorts of switch, relay, sensor for basic pneumatic to application practice. This equipment is designed pneumatic modular type & modular type that use at the AL injection molding board. Attach method of each kind module is quick & easy type. It is plastic injection molding type and its size is 100(W)X 85(D)X15(H)mm. Clearance of AL injection molding board is 30mm.

### SPECIFICATION

- Power : 1[ $\phi$ ], AC 220[V], 50/60[Hz]
- Pneumatic Modules : 35 unit
- Electric Modules : 3 unit
- Electric Control Panel : 9 Block
- Dimension : 1600(W) X 950(D) X 1500(H) mm

WSH-4

## Application Hydraulic Trainer(Quick Module Type)



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
- Dimension : 1600(W) X 950(D) X 1500(H) mm

### OPTION

**Excavator trainer :** It is made to control the excavator's working by using hydraulic cylinders-swing, arm, boom and bucket cylinder.



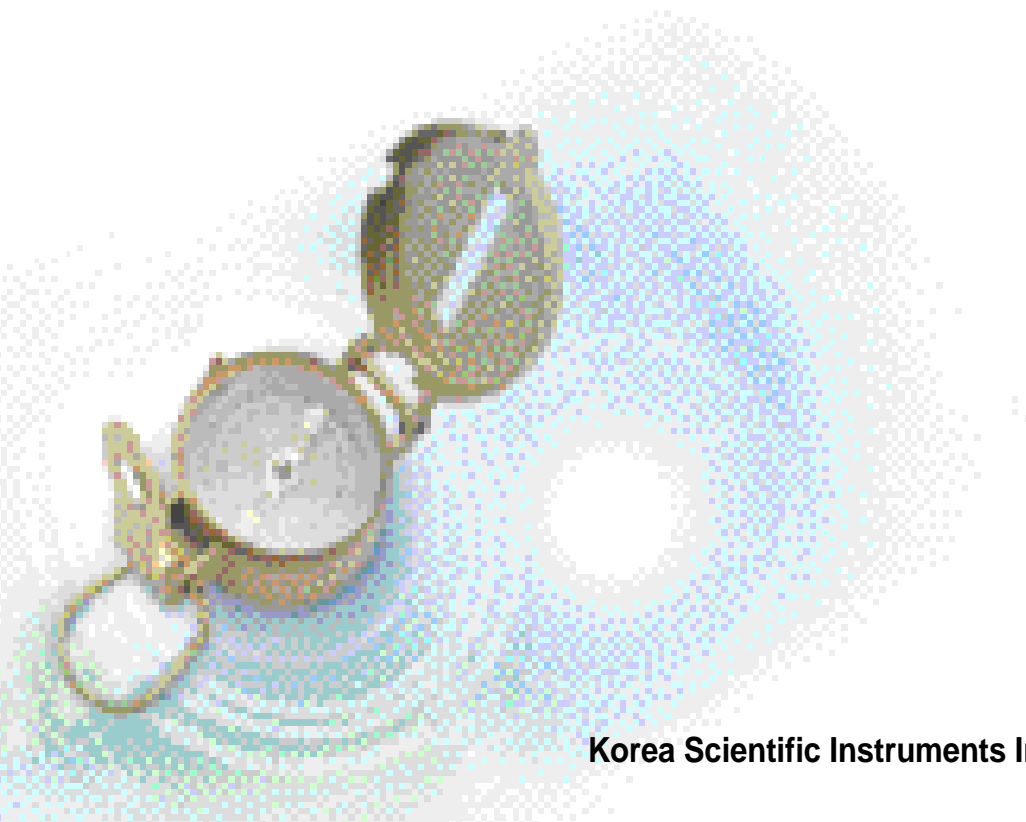
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**Korea Scientific Instruments Industry Cooperative(KSIIC)**

# MEMBER'S PRODUCT

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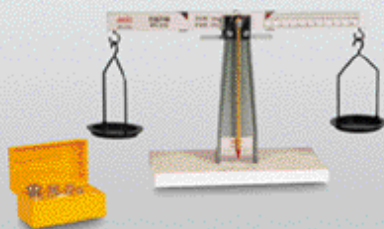
**Korea Scientific Instruments Industry Cooperative**

Basic Scientific Instruments

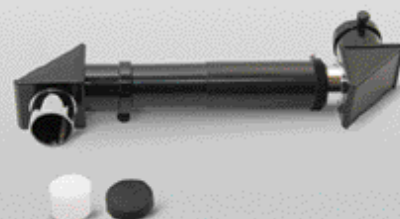
Astrolabe kit



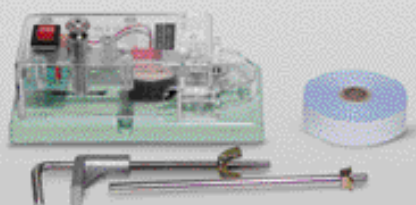
I.P.S balance arm



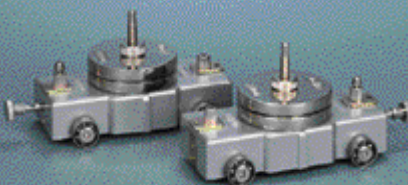
Periscope



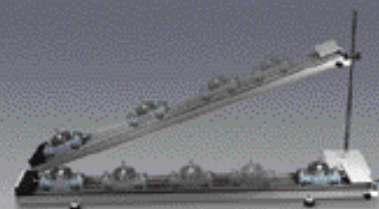
Time recorder



Dynamic cart



Incline lane



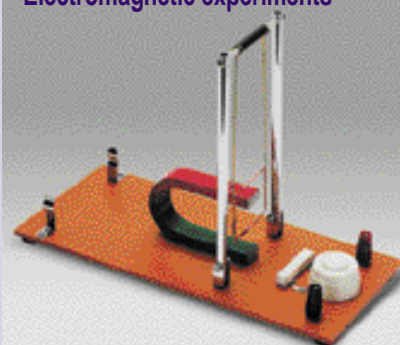
Stopwatch



Solar cell experiment



Electromagnetic experiments



Power supply (digital)



Power supply (analog)



Induction coil





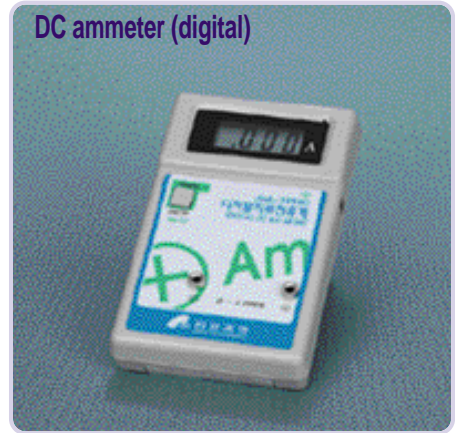
AC ammeter (digital)



AC voltmeter (digital)



DC ammeter (digital)



DC voltmeter (digital)



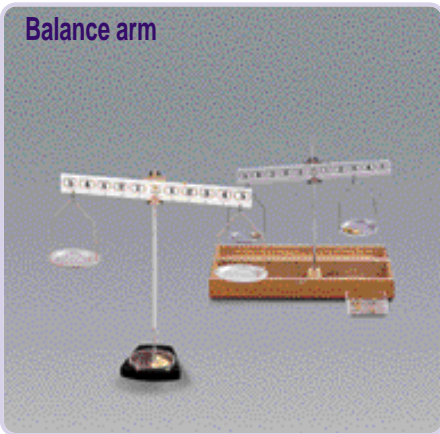
Galvanometer (digital)



Electrical circuit tester



Balance arm



Metal weight



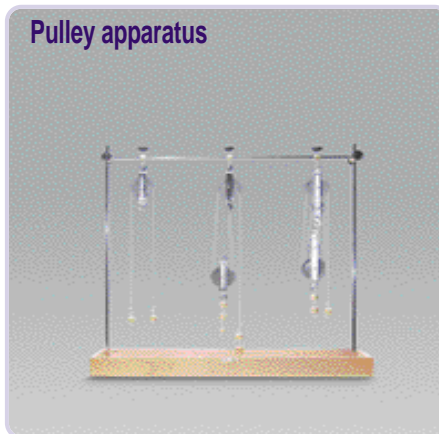
Weight



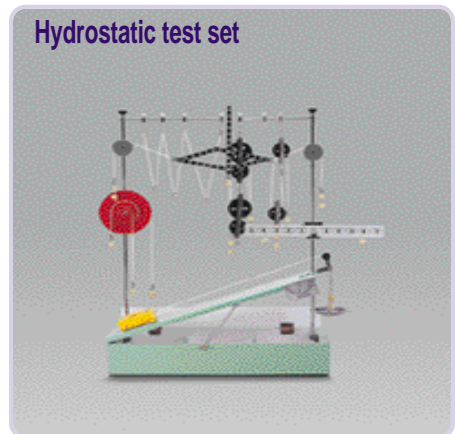
Pulley (brass)



Pulley apparatus



Hydrostatic test set





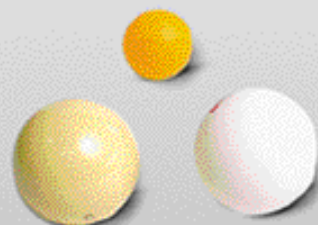
Pendulum experiment



Wheel axle



Ball (3 kinds 1)



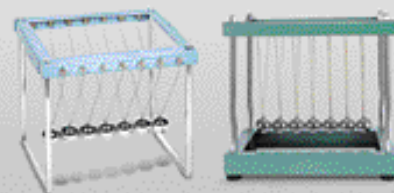
Spring for simple harmonic motion



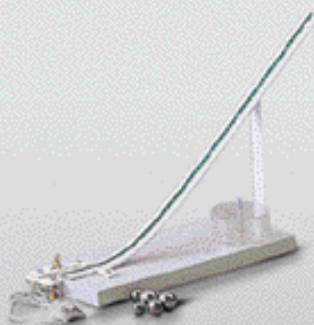
Steel beads



Elastic collision



Two-dimensional collision devices



Inclined plane apparatus



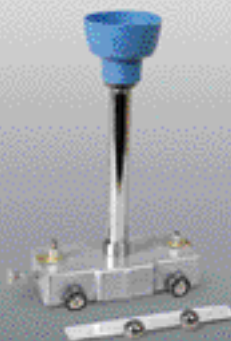
Bevel bench



Friction experiment



Elastic view cart



Air vehicle



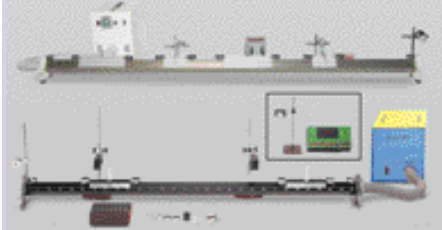
Vehicle magnets



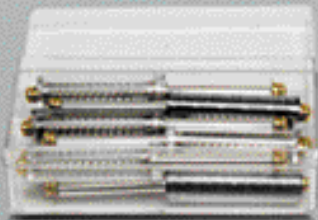
C-type clamp



Non rubbing experiment



Spring (pushing)



Spring (Pulling)



Spring set



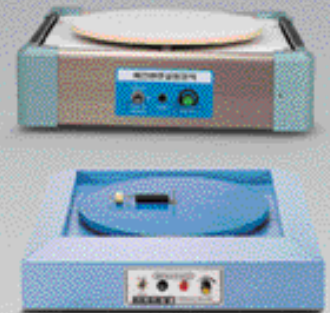
Spring (3 kinds)



Centripetal force apparatus (electric)



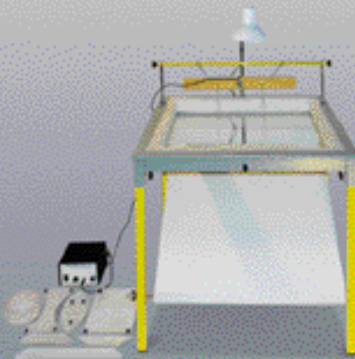
Rotating



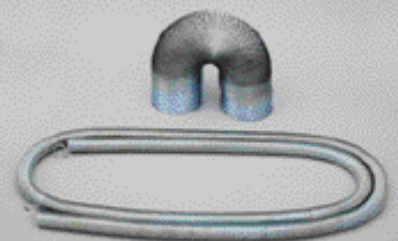
Standstill inertia



Projection surface wave devices



Laboratory wave spring





Melde's experiment



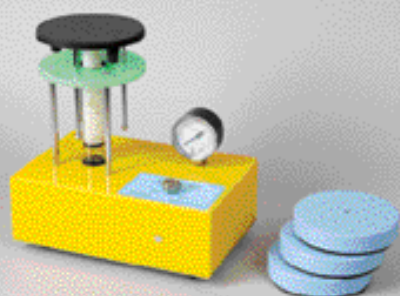
Metal density meter



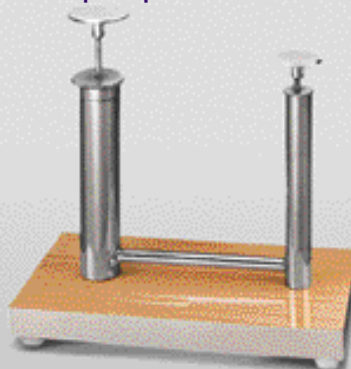
Surface tension



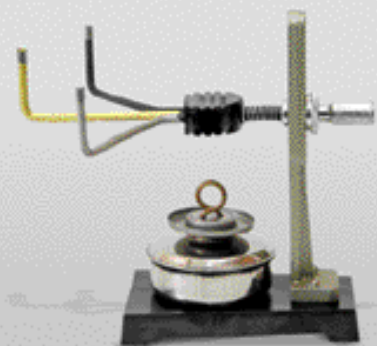
Boyle's law



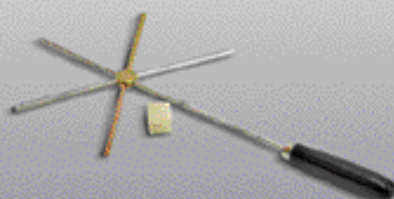
Pascal's principle



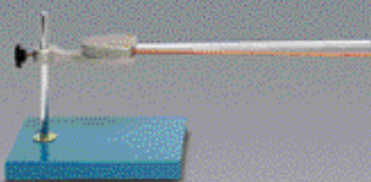
Thermal conduction apparatus A type



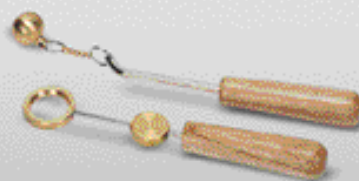
Thermal conduction apparatus B type



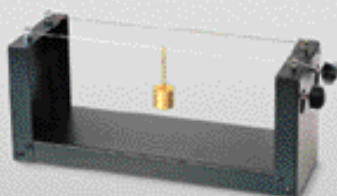
Thermal conduction apparatus C type



Expansion ball and ring



Linear expansion apparatus



Radio meter



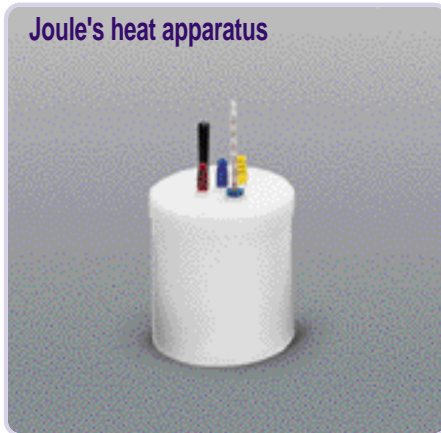
Heat measurement devices



Calorimeter



Joule's heat apparatus



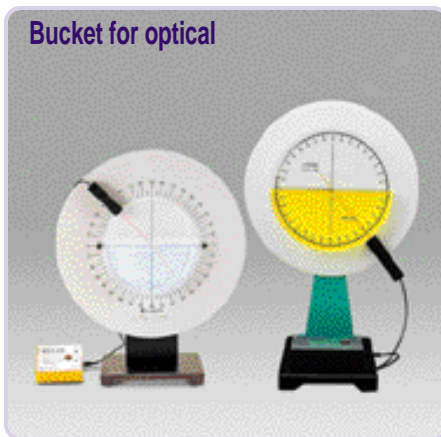
Laser abuse



Laser generator



Bucket for optical



Light comprehensive test kit



Lighting source



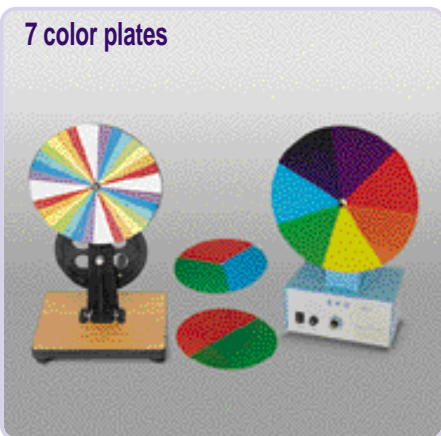
Colorless glass rod



Light synthetic test kit



7 color plates



Magnifier

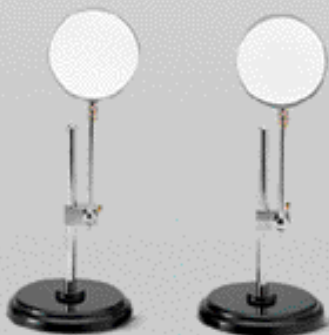


Convex, concave mirrors for both

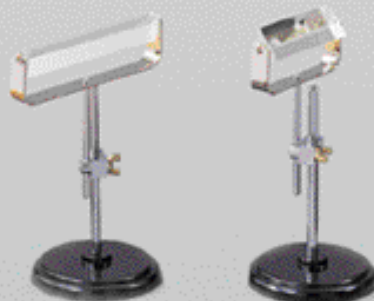




Convex lens



Triangular prism



Flat mirror



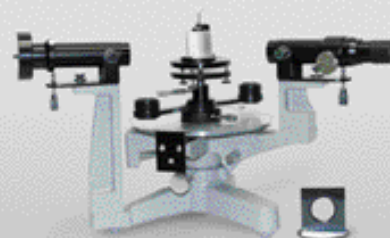
Floor lamp



Lighting system



Spectrometer



Extra spectroscopy



Newton ring



Face spectroscopy



Polarizer



Photocurrent measurement system



Line spectrum light Source





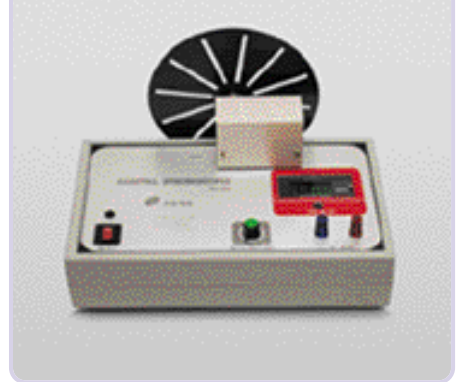
Line spectrum light source



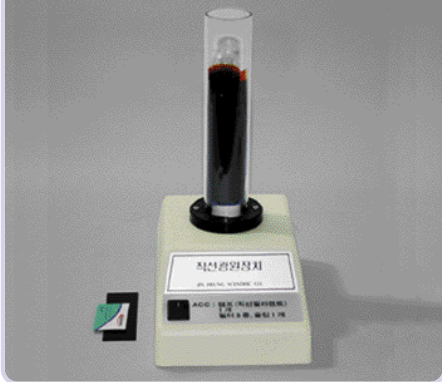
Multiple flash devices



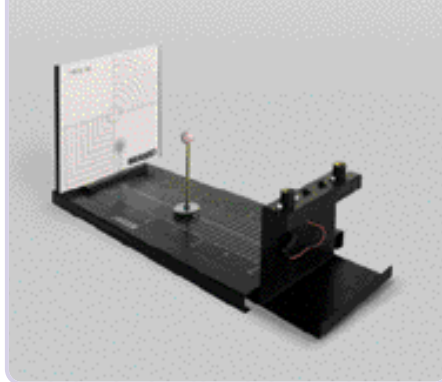
Stroboscope



Linear light source



Shadow observation kit



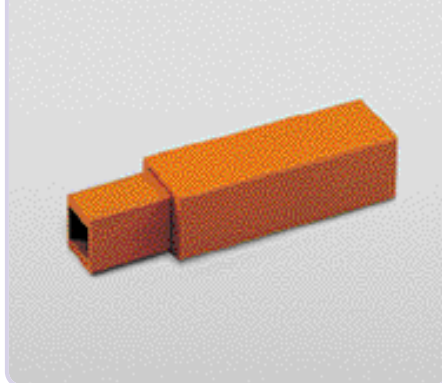
Ultraviolet rays lamp



Convection box



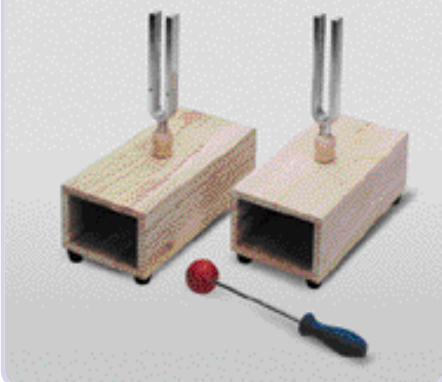
Pinhole camera



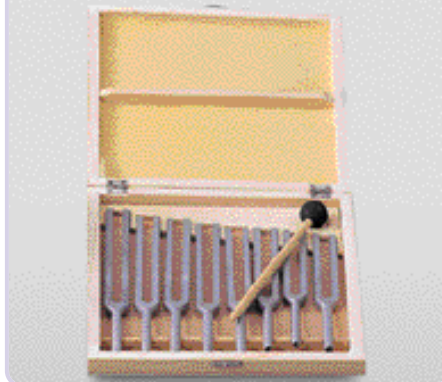
Shadow box



Diapason



Standard tuning



Host resonance apparatus



Organ pipes



Wave interference



Electronic tuning



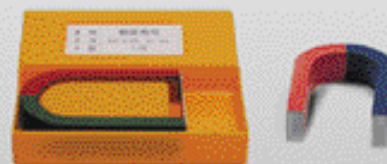
Model lyra



Bar magnet



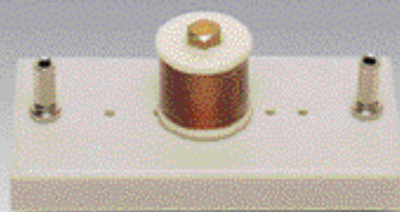
Horseshoe magnet (force, alriko)



Simple electromagnet (not) for each



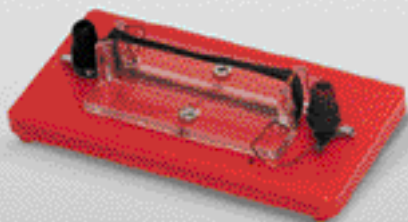
Powerful magnet plates



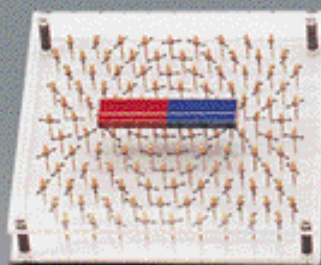
Magnetizer



Magnetic compass (a compass stand)



Observations on 3D magnetic needle



Dip the room hierarchy





Erester kit



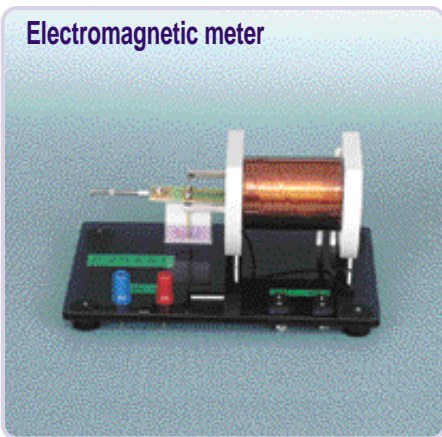
Acupuncture



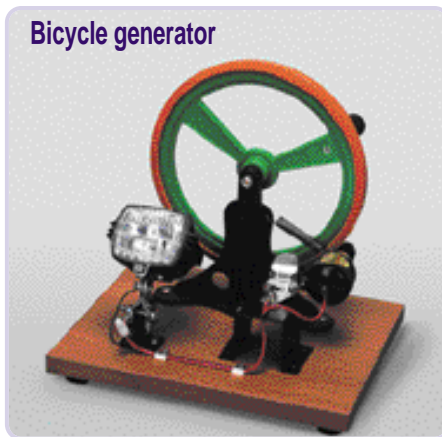
Solenoid



Electromagnetic meter



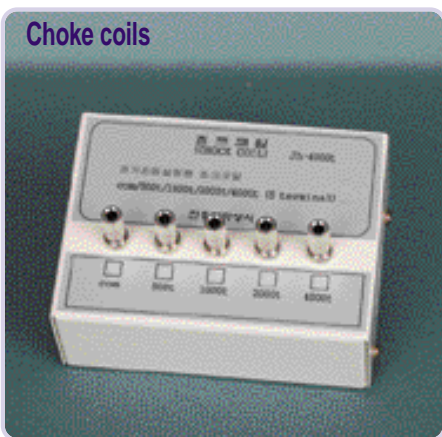
Bicycle generator



Light bulbs



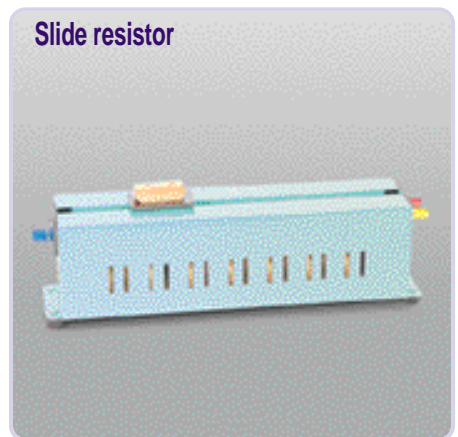
Choke coils



Electric condenser



Slide resistor



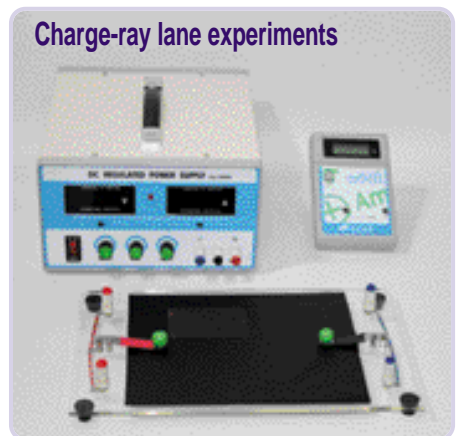
Ohm's law descriptor



Wheatstone bridge



Charge-ray lane experiments





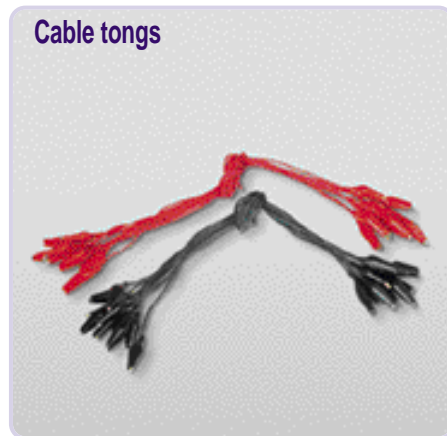
Fast switch



Double switch



Cable tongs



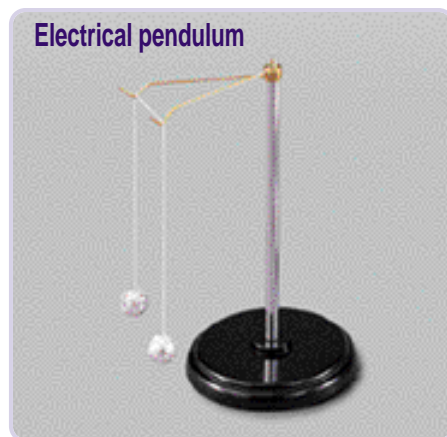
Friction electrical test instruments



Metal foil electroscope



Electrical pendulum



Van de graff



Spectrum tube



Vacuum tubes



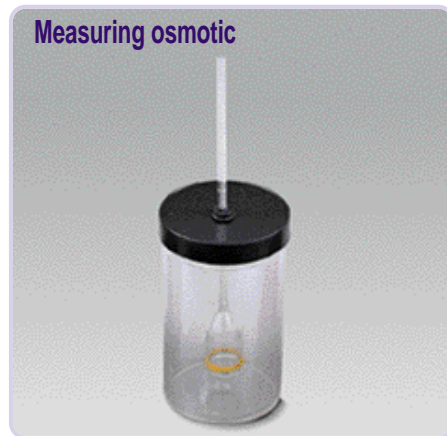
Expression of electrolysis



Gas molecule movement apparatus



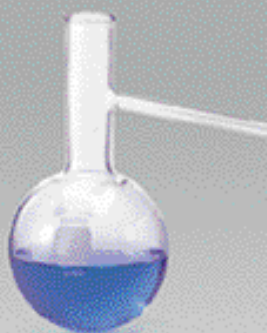
Measuring osmotic



Fireworks set of reaction



Branched round flask



Round bottom flask



Beaker



Erlenmeyer flask



Reagent bottle (wide-mouth White)



Reagent bottle (wide-mouth Brown)



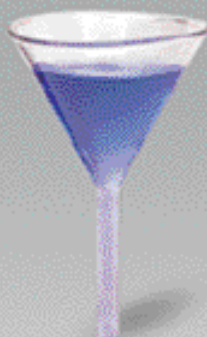
Reagent bottle (narrow-mouth White)



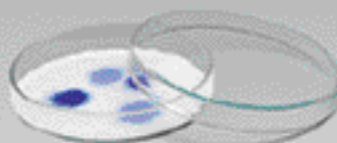
Reagent bottle (narrow-mouth Brown)



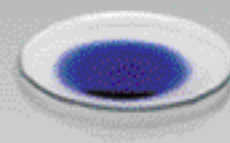
Funnel



Chalet



Watch glass





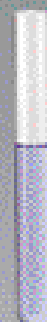
Connection tube



Basis weight bottles



Test tube



Glass tube



Desicator



Lampshade



Dropper



Pnumetic bottle



Chick sensible atmosphere



Burette



Safety funnel



Mass cylinder





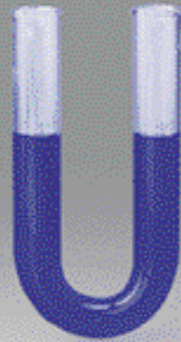
Pipette scalpel



Hall pipette



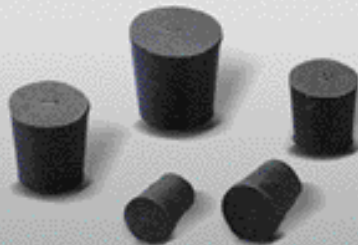
U tube



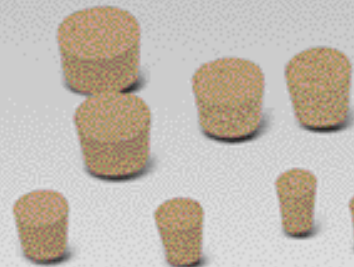
Libby hebrews cooler



Rubber stopper



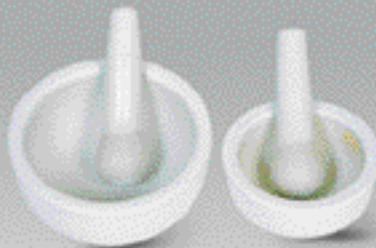
Cork stopper



Crucible



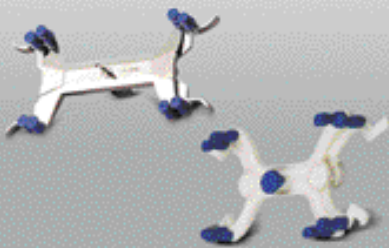
Mortar



Evaporating dish



Burette clamp



Iron stand



Clamp





Test tube stand



Funnel stand



Pipette stand



Stirrer (Magnetic heating)



Stirrers (Magnetic)



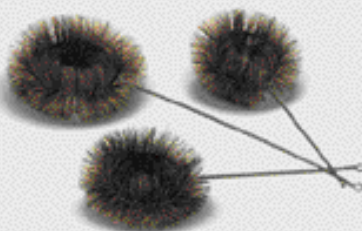
Sieve



Burette brush



Beaker brush



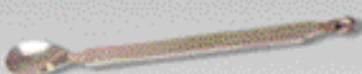
Tube brush



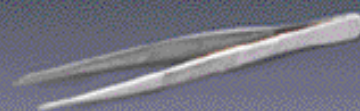
Cork borer



Spatula



Pincette

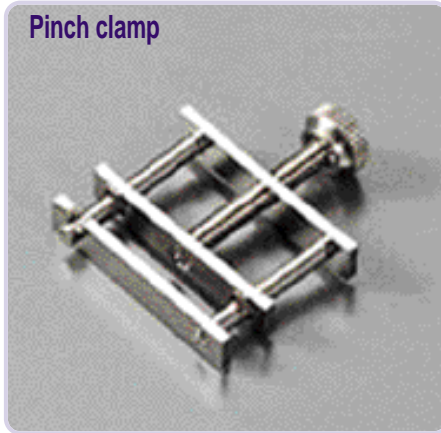




Pinch cork



Pinch clamp



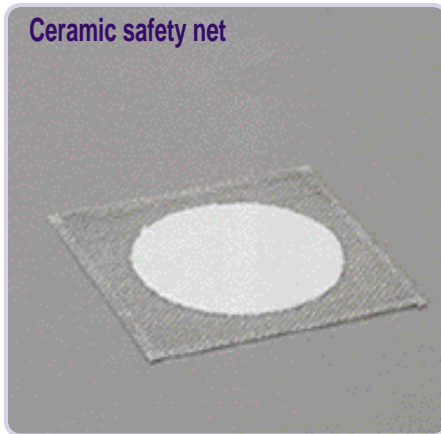
Tripod



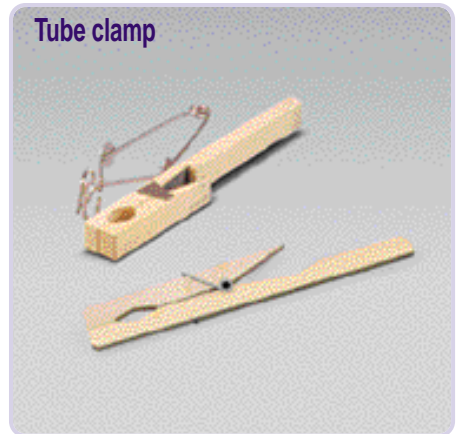
Spirit-lamp



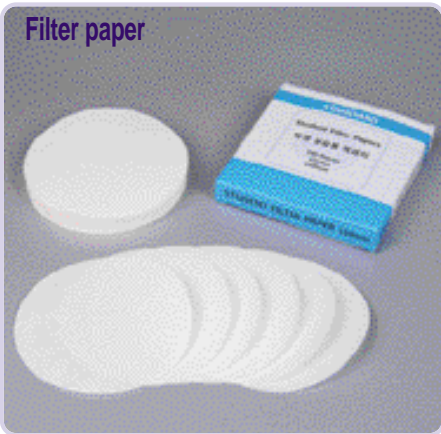
Ceramic safety net



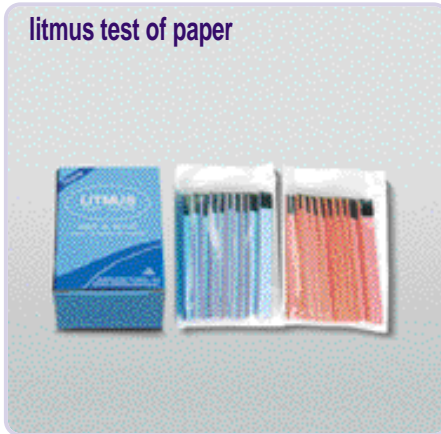
Tube clamp



Filter paper



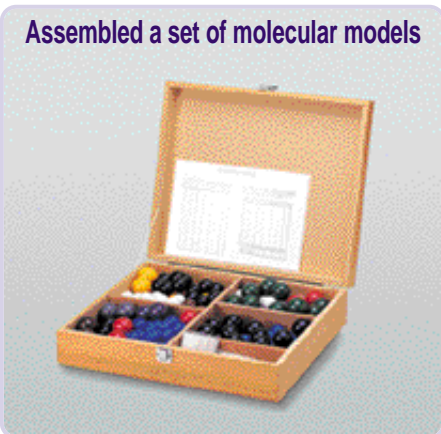
litmus test of paper



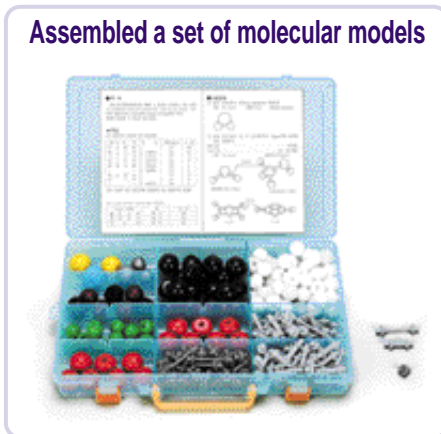
PH testing paper



Assembled a set of molecular models



Assembled a set of molecular models

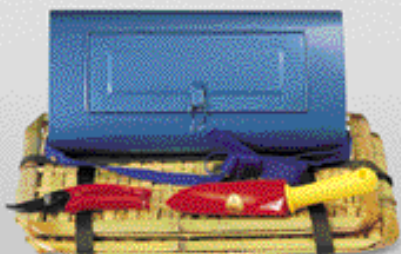


Insect toolset

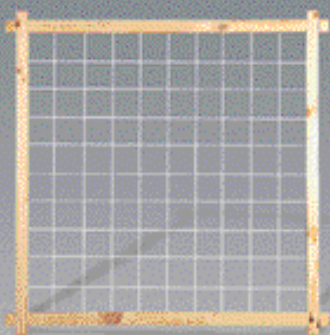




Plants collected a set of tools



Room type template



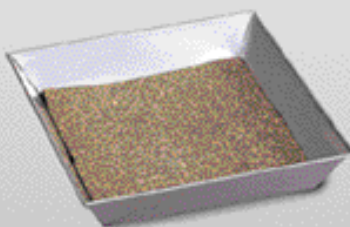
Durham Tube



Dissect set



Dissecting dish



Insect specimen boxes



Display panel



Microtome



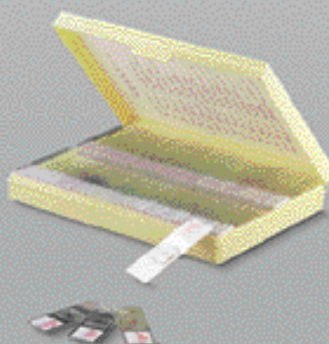
Slide glass (glass support)



Cover glass



Permanent preparat set



Human skeleton muscle model



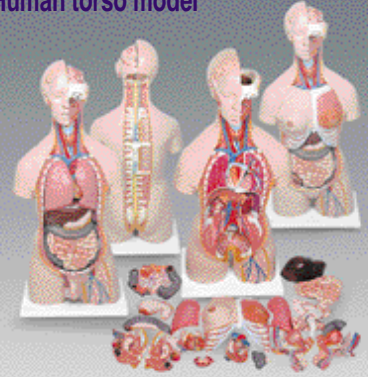
Human skeleton model



Human circulatory system model(LED)



Human torso model



Human leg muscle model



Human digestion organ model



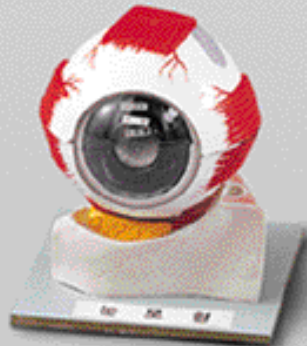
Human respiratory organ model



Ear structural models



Eye structure model



Tooth structure model



Heart structure model



Tooth model



DNA models





Plants samples



Insect samples



Frog specimen



Sea sponge specimen



Sea urchin specimen



Apple snail specimen



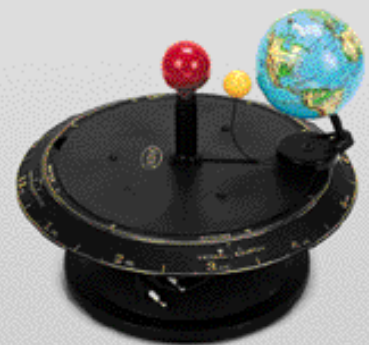
Jellyfish specimen



Grapsid crab specimen



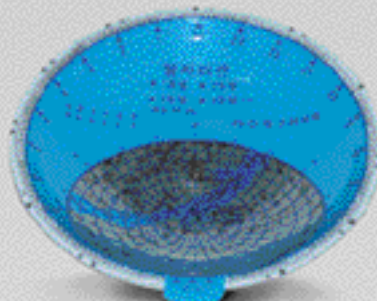
Illuminated orbital planetarium



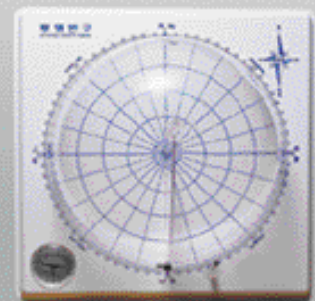
Illuminated orbital planetarium



Planisphere



Semi-transparent set

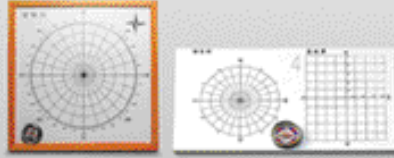




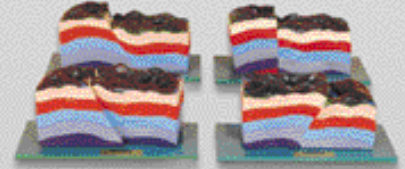
Vertical globe



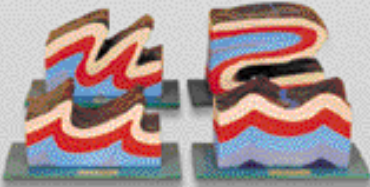
Bearing plate



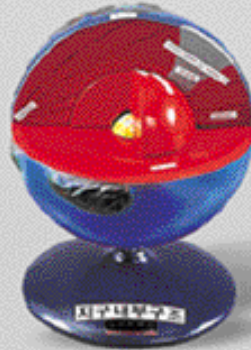
Fault model



Fold model



Earth's interior structure models



Volcano model



Contact goniometer



Geological survey, a set of instruments



Marble samples



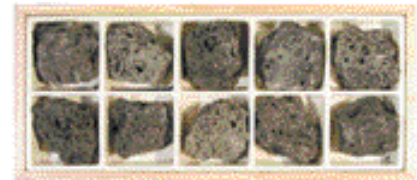
Samples of sandstone



Mudstone samples



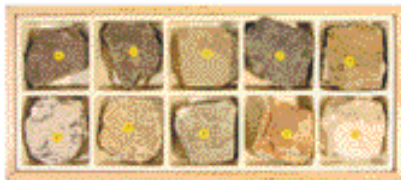
Basalt samples



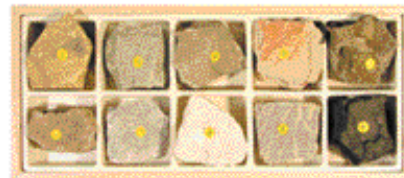
Granite samples



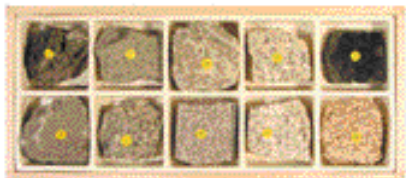
Metamorphic samples



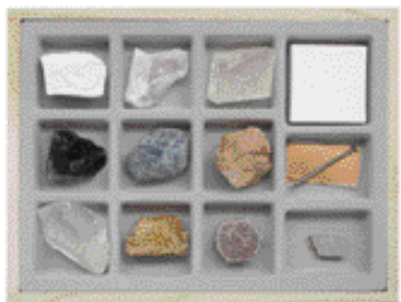
Sedimentary samples



Igneous rock samples



Mohs hardness



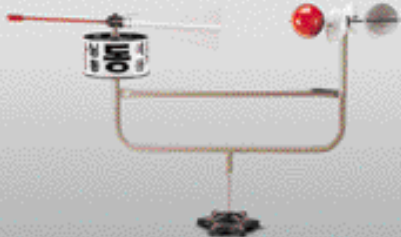
Dual Temperature



Shelter(set)



Wind vane



Wind vane(Portable digital)



Rain gauge



Dry bulb thermometer



Maximum-minimum thermometer





Soil Thermometer



Sundial



Changes in insulation apparatus



Vertical distribution of temperature



Deflecting force apparatus



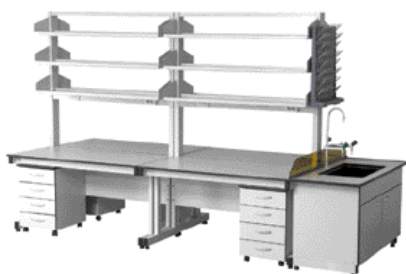
Rotating cylinder apparatus





Laboratory Instruments

Center Table



Side Table



Corner Table



Sink Table



Working Table



Balance Table



Storage Cabinet



Wall Mounted Cabinet



Mobile Cabinet



Chemical Reagent Cabinet



Filtration Reagent Storage Cabinet



Laminar Flow Cabinet (Clean Bench)



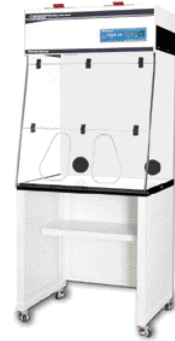
Biological Safety Cabinet



Fume Cupboard (Fume Hood)



Filtration Fume Cupboard (Ductless Fume Hood)



Mobile Filtration Hood System



Extraction Arm System



Autoclave



Sterilizer for Medical



General Purpose Water Bath



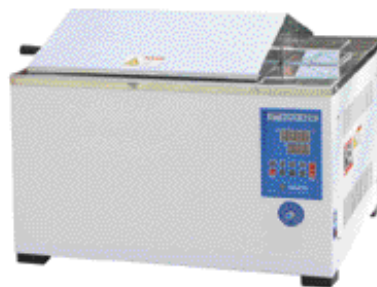
Heated Circulating Bath



Refrigerated Circulating Bath



Shaking Water Bath



Immersion Circulator



Refrigerated Chiller



Refrigerated Recirculator



Aspirator



General Purpose Centrifuge



Clinical Centrifuge



Refrigerated Centrifuge



High Speed Centrifuge



Ultrasonic Cleaner



Pipette Cleaner



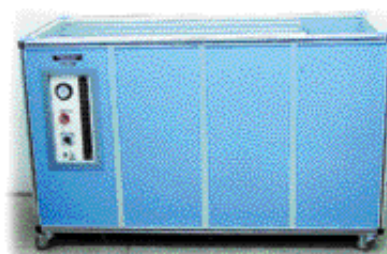
Glassware Washing Machine



Desiccator

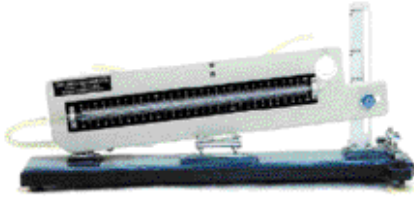


Hydraulic Bench





Inclined Manometer



Flow Visualization Apparatus



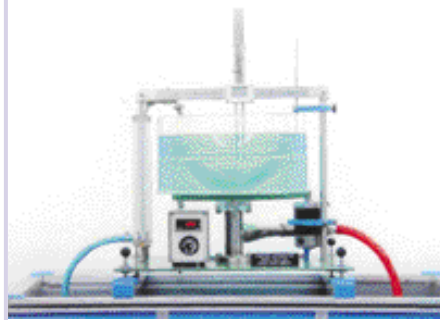
Jet Impact



Flow Measuring Apparatus



Vortex Apparatus



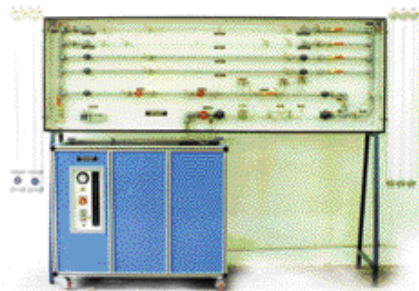
Orifice & Jet Apparatus



Flow Through Orifice



Fluid Friction Apparatus

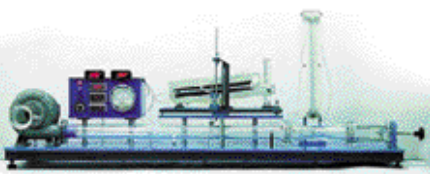


page

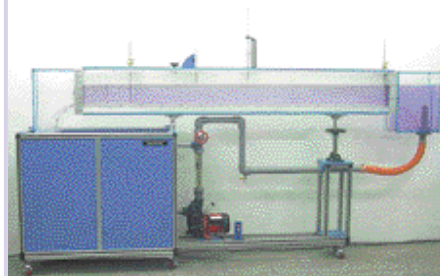
Heat Exchanger



Fan Test Rig



Tilting Flow Channel



Muffle Furnace



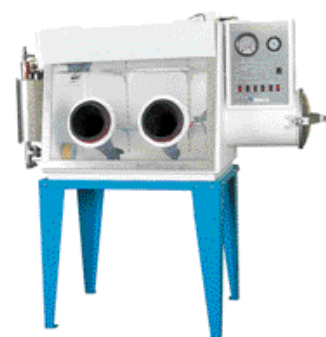
Tube Furnace



High Temperature Furnace



Glove Box



Heating Mantle



Hot Plate



Hot Plate & Magnetic Stirrer



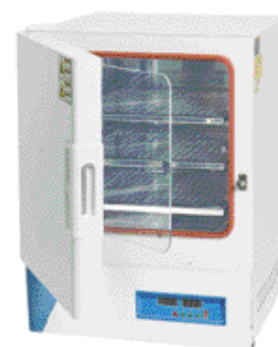
Magnetic Stirrer



Immersion Stirrer



Gravity Convection Incubator



Forced Convection Incubator



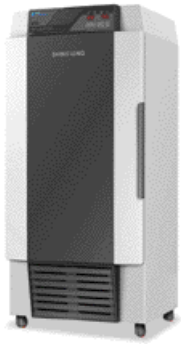
CO2 Incubator



BOD Incubator



Low Temperature Incubator



Constant Temperature & Humidity Chamber



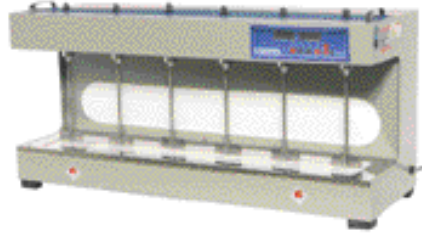
Growth Chamber



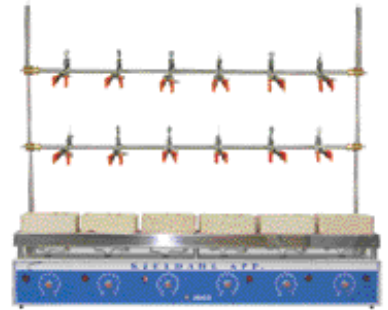
Shaking Incubator



Jar Test Apparatus



Kjeldahl Digestion System



Gravity Convection Oven



Forced Convection Oven



Vacuum Oven



Laboratory Refrigerator



Ultra-Low Temperature Freezer (Deep Freezer)



Blood Bank Refrigerator





Pharmaceutical Refrigerator



Ice Maker



Freezer Dryer



Rotary Evaporator



Orbital Shaker



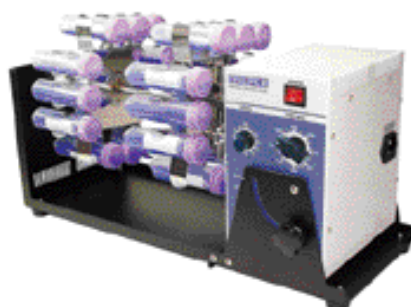
Reciprocating Shaker



Rocking Shaker



Rolling Shaker



Platform Shaker



Funnel Shaker



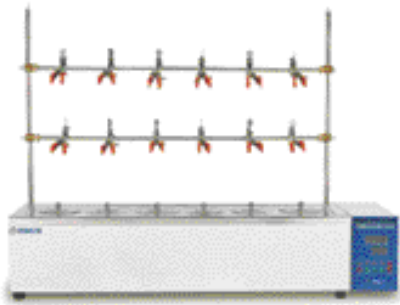
Vertex Mixer



Sieve Shaker



Soxhlet Apparatus



Pure Water Purification System



Ultra Pure Water Purification System



Pure & Ultra Pure Water Purification System



Acidity Meter



COD Analyser



Conductivity Meter



DO Meter



Moisture Meter



PH Meter



Refractor Meter



Salt Meter



**Spectrophotometer**



**PH / Ion Meter**



**Animal Breeding Facilities & Equipment**





Vocational Training Instruments

Machinery and Automobile

Combine structure educational system(Cutting parts)



Power tiller structure educational system



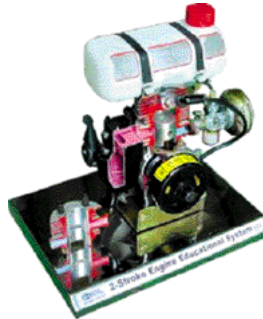
Tractor structure educational system



4 stroke gasoline engine structure educational system



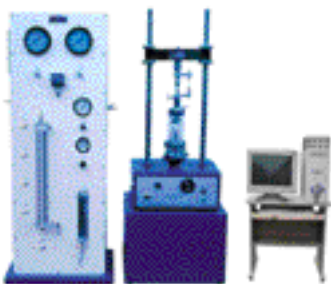
2 stroke gasoline engine structure educational system



Dynamometer



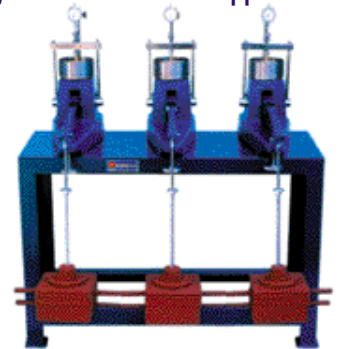
Standard Triaxial Apparatus



Digicom Motorized Vane Tester



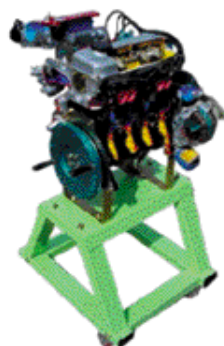
Digicom Consolidation Apparatus



Automatic Mechanical Compactor



Gasoline engine educational system



MOTRONIC educational system



**Diesel 4WD automotive power train educational system**



**Engine & A/T simulation educational system**



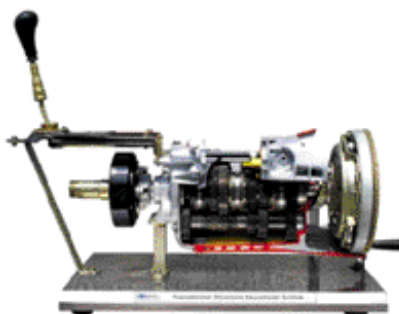
**Engine practical training educational system**



**CRDI Diesel engine & A/T simulation educational system**



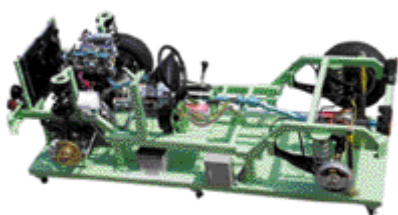
**M/T structure educational system**



**4 x 4 Diesel engine educational system**



**F / R automotive power train educational system**



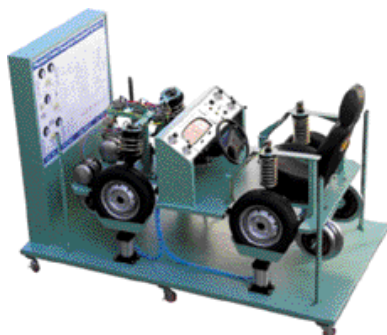
**Air conditioner simulation educational system**



**Integrated electric & electronic components educational system**



**ECS simulation educational system**



**Engine stand for practical training**



**ABS simulation educational system**



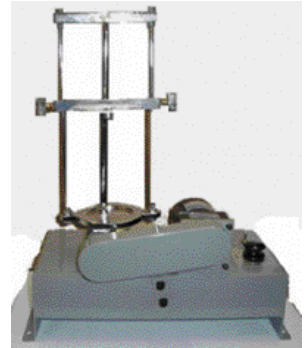
V6 engine exhibition system



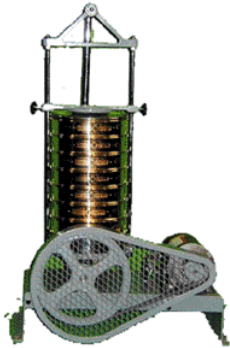
Ro-Tap Sieves Shaker



75mm Motorized Sieve Shak



Motorized Sieve Sahker



Concrete Creep Apparatus



Precision Large Sample Cutting Machine



Three Dimension Sieve Shaker



Concrete Mold Grinding Machine





Electric & Electronic Measuring Device, Automatic Control

**Smart-grid Solar & Wind Power Trainer**



**Portable Solar Power Trainer**



**Grid-tie Solar Power Training System**



**Stand-alone Solar Power Generation Trainer**



**Multifunctional Electrical Meter**



**Pneumatics Training System**



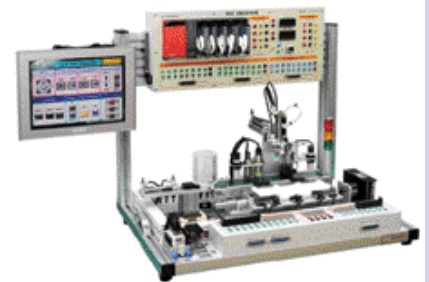
**Hydraulics Training System**



**Digital Supersonic Cleaner**



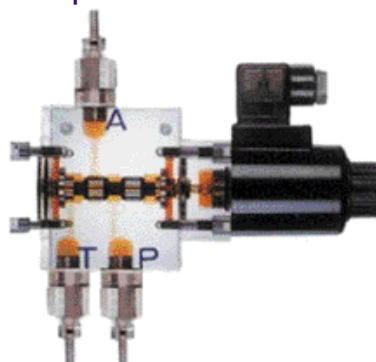
**Mini-MPS Trainer**



**Sensor training set**



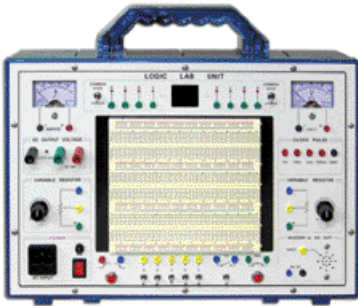
**Transparent model**



**PLC Trainer**



Digital Logic Lab Unit



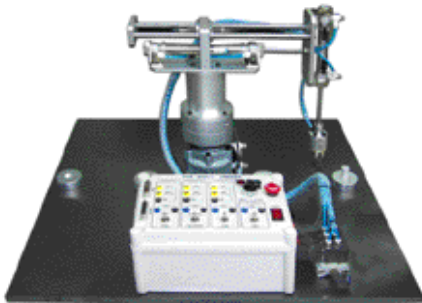
Analogue Lab Unit



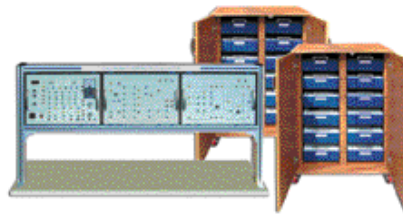
Analogue & Digital Circuit Trainer



Factory Pneumatic Robot Trainer



Electronic Demonstration Trainer



Temperature Control Trainer



Elevator Trainer



Building Parking Trainer



PLC Sensor Circuit Trainer



Function generator



DC Switching Power Supply



Computing Scale

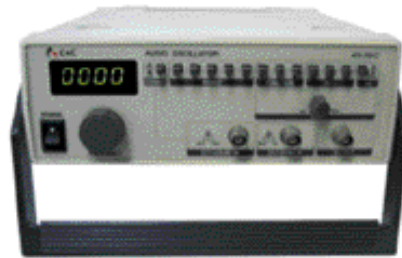




All In One Instrument



1MHz Audio Oscillator



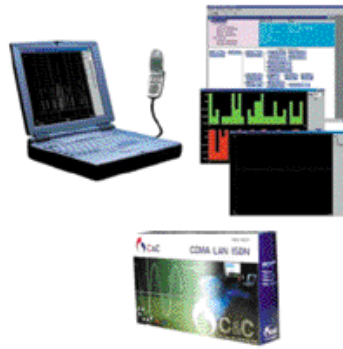
100MHz Real Time Analog Oscilloscope



Analyzer Wireless LAN Protocol Analyzer



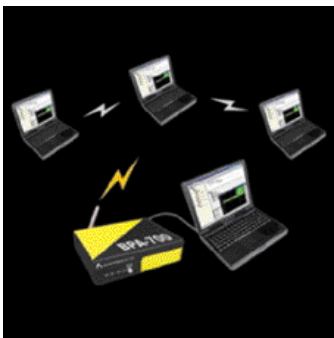
CDMA Win DM Protocol



Bluetooth Analyzer



Embedded Training System



Analyzer ANYPA-LAN Protocol Analyzer



IMT-2000 DM & Protocol Analyzer



20MHz Function Generator



Function Generators



Transistor Curve Tracer





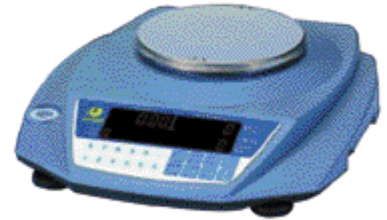
Label Printing Scale



Precision Weighing Scale



Precision Loadcell Balance



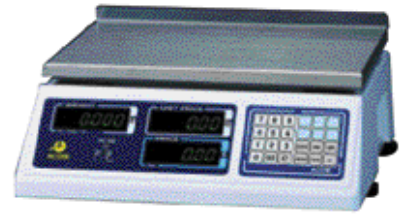
Precision Loadcell Balance



Parts Counting Scale



Price Computing Scale



Sensor module



CO2 & Temp. Indicator



CO2 Monitor



Oxygen Gas Monitor



Stainless Steel Temperature Sensor



Photodiode Light Sensor



Voltage Sensor



PH Sensor



CO2 Sensor



Force Sensor



Science cube - LITE



Gas Pressure Sensor-B



Current Sensor



Microphone



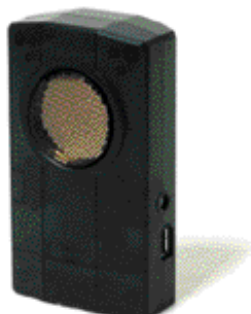
Gas Pressure Sensor-A



Magnetic Field Sensor



Motion Detector



Galvanometer



Thermocouple Probe



PT Stainless Steel Temperature Sensor



Dissolved Oxygen Probe



Photogate Probe



Relative Humidity Sensor





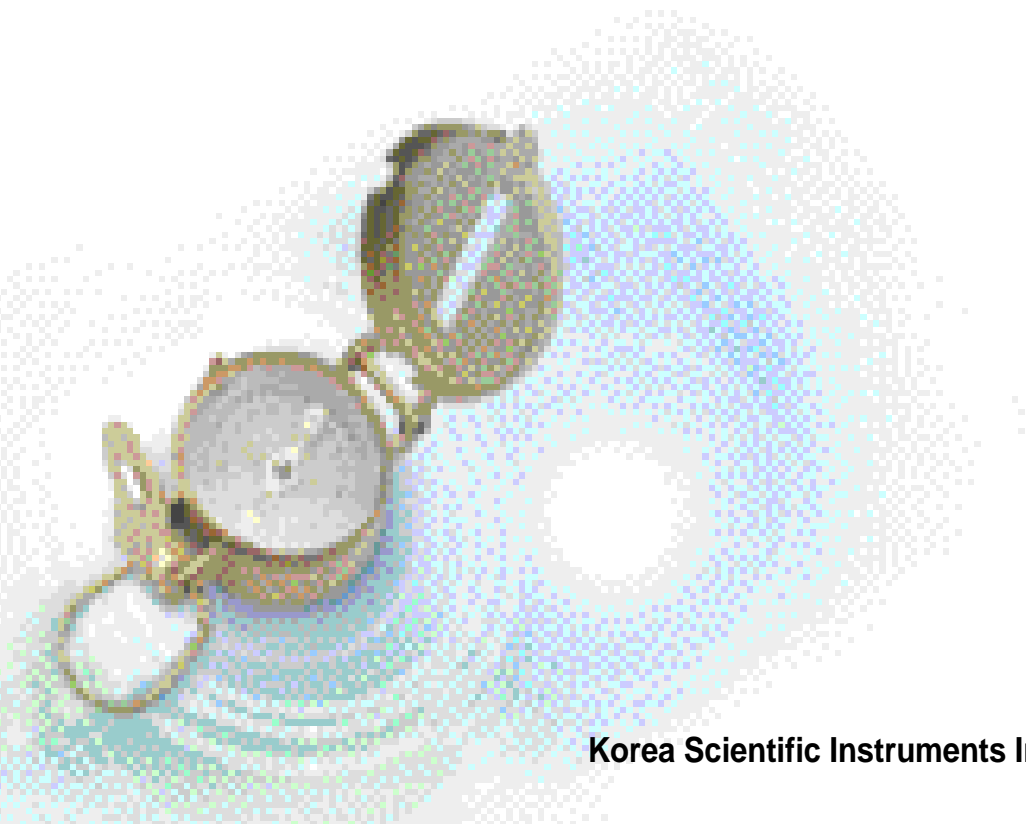
#131, Changsungdong Jongnogu, Seoul 110-034, KOREA

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e-mail : [ksiic@ksiic.or.kr](mailto:ksiic@ksiic.or.kr)



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

# MEMBER LIST



## 21 SCIENCE

Phone +82-2-766-6406  
 Fax +82-2-766-6408  
 Website  
 Product switch, stand

## ACOM INC.

Phone +82-31-531-2205  
 Fax +82-31-531-9199  
 Website www.acominc.co.kr  
 Product Elec Scale

## AD POWER CO., LTD.

Phone +82-32-234-3791  
 Fax +82-32-234-3793  
 Website www.adpower21.com  
 Product Power Meter. Power Quality Analyzer. Analog Oscilloscope. Signal Generator. DC Power Supply.  
 Power Factor & Frequency Meter

## AERO TECH

Phone +82-32-564-7601  
 Fax +82-32-564-7607  
 Website www.dtn.co.kr  
 Product Dry oven

## AHA I&C CO., LTD.

Phone +82-31-997-0909  
 Fax +82-31-997-0911  
 Website www.ahainc.co.kr  
 Product video presenter language lab system, cyber computer board

## AN SUNG SCIENTIFIC CO.

Phone +82-31-919-9155  
 Fax +82-31-919-9144  
 Website  
 Product pulley

## A-SUNG CO.

Phone +82-2-765-8404  
 Fax +82-2-747-3622  
 Website www.asunglab.com  
 Product Mini Lamp Socket

## B&S MEDIA CO., LTD.

Phone +82-2-588-3323  
 Fax +82-2-588-3659  
 Website www.bnsmedia.co.kr  
 Product A/V SYSTEM, Broadcast Solution, Educational Product

## BnB Tek

Phone +82-2-2068-6992  
 Fax +82-2-2068-6991  
 Website www.mmieng.com  
 Product Slide. PLC Trainer.

## BORA GYOGU CO.

Phone +82-42-256-2526  
 Fax +82-42-256-2612  
 Website  
 Product Lab Table. Fume Hood

## C&C INSTRUMENTS CO., LTD.

Phone +82-32-327-3344  
 Fax +82-32-327-3348  
 Website www.cncinst.co.kr  
 Product Wibro/HSDPA/802.11a/b/g/e Simulator & Analyzer, Ubiquitous, u-Smart Home, Embedded, U-Smart Robot,

## CASPI CO., LTD.

Phone +82-31-943-0541  
 Fax +82-31-943-0543  
 Website www.caspihome.com  
 Product Projector Screen, Projector Lift, Portable Screen

## CEN KOREA CO., LTD.

Phone +82-2-732-3800  
 Fax +82-2-735-6300  
 Website www.wicom.co.kr  
 Product Multimedia Language laboratory system, Dr.wicom Language Tutor

## CHC LABORATORY CO., LTD.

Phone +82-42-933-0887  
 Fax +82-42-933-0039  
 Website www.chclab.com  
 Product Ductless Hood, Arm Hood, Clean Bench.  
 Ductless Storage Cabinet

## CHEIL SCIENCE CO., LTD.

Phone +82-2-3667-9512  
 Fax +82-2-3667-9515  
 Website www.cheilsci.com  
 Product Fume Hood, Convection Drying Oven, Clean bench, Constant Temp. & Humidity Chamber, etc

## CHONGWON COMPANY

Phone +82-2-741-5078  
 Fax +82-2-766-4079  
 Website www.krscience.com  
 Product electrolysis Apparatus

## CHUNG BUK SCIENCE CO., LTD.

Phone +82-43-234-6200  
 Fax +82-43-231-4499  
 Website  
 Product Incubator, Shaker

## CHUNGGYE INDUSTRIAL MFG., CO.

Phone +82-2-2266-9037  
 Fax +82-2-2277-5183  
 Website www.chunggye.com  
 Product Testing Sieve, Ro-Tap Sieve Shaker, Motorized Sieve Shaker

## CHUNGPA EMT CO., LTD.

Phone +82-2-2108-5980  
 Fax +82-2-2108-5988  
 Website www.chungpaemt.co.kr  
 Product Electric Installation Safety Measurement Trainer, Integrated Senor Application Trainer, Micro Processor Trainer. Multifunctional Electric Meter.

## COMBUSTECH CO., LTD

Phone +82-2-6299-5151  
 Fax +82-2-6299-5158  
 Website www.combus.co.kr  
 Product Cyber computer board, Electronic Desk & Visual Presenter, Cyber Lecture Solution, Multimedia Learning System

## COMMBOX TECHNOLOGY

Phone +82-31-205-5577  
 Fax +82-31-205-5077  
 Website www.commtek.co.kr  
 Product Interactive Whiteboard

## COURSE AUTO

Phone +82-53-8290-3354  
 Fax +82-53-853-2515  
 Website  
 Product Engine Simulator

## DAE KYUNG ENGINEERING CO., LTD.

Phone +82-32-677-2931  
 Fax +82-32-675-8774  
 Website www.dktester.com  
 Product Tensile Testing Machine

## DAE RIM SCIENCE

Phone +82-51-637-8912  
 Fax +82-51-637-8914  
 Website  
 Product Table

## DAE SUNG G-3 CO., LTD.

Phone +82-53-854-2400  
 Fax +82-53-854-2406  
 Website www.g-3.co.kr  
 Product Automotive power train, engine, electric system, transmission, clutch, brake, steering, suspension, axle, air conditioning, fuel system,



## DAEBONG TECHONE CO., LTD.

Phone +82-2-2047-0388  
 Fax +82-2-2047-0389  
 Website  
 Product Analog Experimental device

## DAEIL TRADING COMPANY

Phone +82-2-2265-1088  
 Fax +82-2-2265-2089  
 Website  
 Product Fume Hood, Lab Table, incubator, Clean Bench

## DAI HEUNG INSTRUMENT CO.

Phone +82-2-743-2779  
 Fax +82-2-741-6450  
 Website  
 Product sedimentation experiment,

## DAIHAN LABTECH CO., LTD.

Phone +82-31-593-9561  
 Fax +82-31-593-9563  
 Website www.labtech.co.kr  
 Product Autoclave, Phourmaceutical Refrigerators, Thermo-hygrostal

## DAIHAN Scientific Co., Ltd.

Phone +82-2-967-5235  
 Fax +82-2-963-5231  
 Website www.DAIHAN-Sci.com  
 Product Temperature & Humidity chamber, Incubator, Water bath, Shaker, Shaking incubator, Culture chamber, Dew chamber, Cold wind seed dry, Clean bench

## DASOL KOREA CO., LTD.

Phone +82-31-957-0297  
 Fax +82-31-957-1039  
 Website www.dasolko.co.kr  
 Product model etc

## DASOL SCIENTIFIC CO., LTD.

Phone +82-31-376-1526  
 Fax +82-31-377-4264  
 Website www.dasolltd.co.kr  
 Product Growth chamber, Temperature & Humidity chamber, Incubator, Water bath, Shaker, Shaking incubator, Culture chamber, Dew chamber, Seed germinator,

## DEAMYUNG SCIENCE

Phone +82-2-744-1178  
 Fax +82-2-747-0212  
 Website  
 Product Molecular Model Kit, Variable Rheostat

## DESCO Lns LNC.

Phone +82-2-745-8009  
 Fax +82-2-745-8010  
 Website www.desco.co.kr  
 Product Mirror&Lens App. Kit, Light ffect Teaching App.Star Chart, Role Play Teaching Kit, e-pen Board, ETC.

## DESTEK

Phone +82-53-753-5477  
 Fax +82-53-753-5477  
 Website  
 Product Automotive educational system, Automotive simulator system

## DILLI INCORPORATED

Phone +82-31-860-5500  
 Fax +82-31-860-5590  
 Website www.uvprinter.com  
 Product Drafting Machine.

## DONG A ELTEK CO., LTD.

Phone +82-31-345-1500  
 Fax +82-31-421-4053  
 Website www.dongaeltk.co.kr  
 Product TFT-LCD Aging System, TFT-LCD LCD Aging Tester

## DONG SHIN INSTRUMENT PLANT CO., LTD.

Phone +82-2-975-6201  
 Fax +82-2-977-8360  
 Website www.dongshinipc.com  
 Product Chloride Analyzer

## DONGAH TESTING MACHINE

Phone +82-2-463-7231  
 Fax +82-2-469-0553  
 Website www.dongahtest.com  
 Product universal test machine

## DONGIL SCIENCE CORP.

Phone +82-51-257-1010  
 Fax +82-51-257-1040  
 Website www.dongilsci.com  
 Product Dry Oven, Incubator

## DONGWON SCIENTIFIC SYSTEM

Phone +82-51-245-7521  
 Fax +82-51-246-8521  
 Website www.dongwonsm.co.kr  
 Product Universal Testing Machine, Ball mill, Furnace, Friction Experiment Apparatus, Incubator

## DONGWON SYSTEMS CO., LTD.

Phone +82-2-589-4754  
 Fax +82-2-589-4750  
 Website www.dwp.co.kr  
 Product Microscope, VisualProjector,Over Head Projector, LCD-Projector, Screen, Telescope, Computer Sys.

## DONGYOO ELECTRONICS CO., LTD.

Phone +82-2-3662-5234  
 Fax +82-2-3664-0763  
 Website www.dymix.co.kr  
 Product Language Lab System, Interactive White Board

## DOO SAN SCIENTIFIC CO.

Phone +82-2-747-3176  
 Fax +82-2-763-2286  
 Website  
 Product In-line type injection pump educational system

## DREAM INFOTECH CO., LTD.

Phone +82-2-3397-3939  
 Fax +82-2-3397-3930  
 Website www.dreamlab.co.kr  
 Product computer, monitor, language lab system

## EARZONE CO., LTD.

Phone +82-2-2109-6770  
 Fax +82-2-2109-6776  
 Website www.earzone.co.kr  
 Product wireless education system video presenter

## ED CO., LTD.

Phone +82-31-730-7300  
 Fax +82-31-730-7312  
 Website www.ed.co.kr  
 Product PLC Trainer. Automatic control Trainer, Hydraulics Pneumatics Trainer, FMS Industrial Trainer, DMM DC Power Supply, Spectrum Analyzer

## ED DIDATEK CO., LTD.

Phone +82-51-638-1271  
 Fax +82-51-638-1274  
 Website www.eddidatek.co.kr  
 Product Educational Lab System

## E-MAX ELECTRONICS

Phone +82-2-857-0123  
 Fax +82-2-857-0890  
 Website  
 Product Sensor Trainer.

## ■ e-SCIENCE CO., LTD.

Phone +82-31-386-0871  
 Fax +82-31-386-0873  
 Website www.e-science.co.kr  
 Product PH Meter, Centrifuge

## ■ ESOL Information & Communication CO., LTD.

Phone +82-2-548-5172  
 Fax +82-2-547-2493  
 Website www.esolgroup.co.kr  
 Product Interactive White Board

## ■ EUNHA FLUID SCIENCE

Phone +82-2-463-0407  
 Fax +82-2-462-0971  
 Website www.ehf.co.kr  
 Product Hydraulics Bench, Inclined Manometer, Flow Through an Orifice, Tilting Flow Channel

## ■ FESTECH CO., LTD.

Phone +82-2-2107-7800  
 Fax +82-2-2107-7801  
 Website www.festech.co.kr  
 Product Hydraulic-Pneumatic Training set, Sensors training set.

## ■ FESTOONE CO., LTD.

Phone +82-2-2113-0660  
 Fax +82-2-2113-0664  
 Website www.festoone.co.kr  
 Product Microprocessor Trainer, Basic Electronics

## ■ FINEPCR

Phone +82-31-429-7471  
 Fax +82-31-429-7470  
 Website www.finepcr.com  
 Product Shaker, Incubator, Heating block etc

## ■ FURSIS, INC.

Phone +82-2-3400-6469  
 Fax +82-2-3402-0713  
 Website www.fursys.com  
 Product Lab Furniture, Interactive White Board

## ■ GMP CO., LTD.

Phone +82-31-943-5000  
 Fax +82-31-942-8812  
 Website www.gmp.co.kr  
 Product Lamination

## ■ Green Core System CO., LTD.

Phone +82-32-624-3495  
 Fax +82-32-624-3497  
 Website www.green-core.co.kr  
 Product Video Presenter, Air Quality Monitor, Air Circulator

## ■ G-WON HITECH CO., LTD.

Phone +82-2-2108-1641  
 Fax +82-2-2108-1649  
 Website www.g-won.co.kr  
 Product Moisture Meter, Refract meter, Acidity Meter, Salt Meter

## ■ H.I SYSTEM CO., LTD.

Phone +82-31-737-5544  
 Fax +82-31-737-5548  
 Website www.hi-sys.co.kr  
 Product Embedded Linux System, Ubiquitous, Robot, Network, Microprocessor, DVR

## ■ HAHNSHIN SCIENTIFIC CO.

Phone +82-32-675-6276  
 Fax +82-32-678-9652  
 Website www.hsscience.co.kr  
 Product Rotary evaporator, Cooling water bath, Electric aspirator

## ■ HAN IL LAB TECH CO., LTD.

Phone +82-2-2265-1426  
 Fax +82-2-2277-5106  
 Website www.hanillab.co.kr  
 Product Fume Hood

## ■ HAN IL SCIENTIFIC CO.

Phone +82-62-383-7744  
 Fax +82-62-383-7746  
 Website www.hanilsci.com  
 Product pitchfork Stimmgabel tuning fork

## ■ HAN KOOK AV SCIENTIFIC CO., LTD.

Phone +82-51-808-5566  
 Fax +82-51-803-1413  
 Website www.hankookav.com  
 Product Screen, aerovane, test tube rack

## ■ HAN SUNG F&C CO., LTD.

Phone +82-32-872-0846  
 Fax +82-32-563-6697  
 Website www.hansungfc.com  
 Product Dry Oven, Stirrers

## ■ HAN WON INDUSTRIAL CO.

Phone +82-2-2267-2936  
 Fax +82-2-2277-7522  
 Website www.hanwonind.com  
 Product Beaker Dyeing Apparatus with IR radiator  
 Launder O Meter(Model:HT-700)

## ■ HANBACK ELECTRONICS CO., LTD.

Phone +82-2-839-7030  
 Fax +82-2-830-3103  
 Website www.hanback.com  
 Product Ubiquitous Sensor Network, Embedded System, Intelligent Robot

## ■ HANBAEKSCIENTIFIC CO.

Phone +82-32-654-9772  
 Fax +82-32-654-0070  
 Website www.hanbaeksci.co.kr  
 Product dry oven incubator clean bench

## ■ HANIL SCIENCE INDUSTRIAL

Phone +82-32-543-6906  
 Fax +82-32-542-7124  
 Website www.ihamil.com  
 Product centrifuge

## ■ HANJIN MULTIMEDIA

Phone +82-31-242-8833  
 Fax +82-31-242-7117  
 Website www.과학교재.com  
 Product human body model,

## ■ HANKOOK LAB.EQUIPMENT MFG CO.

Phone +82-43-277-6650  
 Fax +82-43-277-6654  
 Website www.fumehood.co.kr  
 Product Fume Hood, Clean Bench, Forced Air Sender, Lab Table

## ■ HANKOOK SCIENCE CO.

Phone +82-2-764-2948  
 Fax +82-2-742-0479  
 Website www.hankooksci.com  
 Product easy switch

## ■ HANRA PRECISION ENGINEERING CO., LTD.

Phone +82-2-2619-3637  
 Fax +82-2-2619-3639  
 Website www.hanra.co.kr  
 Product Micro Hi-Vision System

## ■ HANSHIN KUMPUNG CO., LTD.

Phone +82-31-989-9991  
 Fax +82-31-989-9994  
 Website www.han-shin.co.kr  
 Product Universal Testing Machine

## ■ HO NAM SCIENCE CO., LTD.

Phone +82-62-222-8700  
 Fax +82-62-227-2219  
 Website www.honamsci.com  
 Product Tripod Stand, Double Switch

**HONGMYONG SCIENCE**

Phone +82-42-822-2734  
 Fax +82-42-932-7100  
 Website www.hongmyong.co.kr  
 Product Testing bench, show case

**HUMAN CORPERATION**

Phone +82-2-418-4182  
 Fax +82-2-423-6430  
 Website www.humancorp.co.kr  
 Product Water Purification System, UV/VIS Spectrophotometer, Kjeldahl System, Washing Machine, Camera for microscope

**HWA SUNG INDUSTRIAL CO., LTD.**

Phone +82-53-526-6701  
 Fax +82-53-521-2937  
 Website www.hscaster.co.kr  
 Product Automobile Education System

**HWANWOONG MECHATRONICS CO., LTD.**

Phone +82-55-582-7970  
 Fax +82-55-582-7975  
 Website www.dytek.co.kr  
 Product Dynamometer, Engine Performance Test System  
 Combustion Analysis System

**HWASHIN INSTRUMENTS CO., LTD.**

Phone +82-2-2267-6854  
 Fax +82-2-2274-6854  
 Website www.hsworks.co.kr  
 Product Volt am meter, resist meter

**HWASHIN TECHNOLOGY CO.**

Phone +82-31-765-2530  
 Fax +82-31-765-2540  
 Website www.hwashin.net  
 Product Ultrasonic Cleaner, Ultrasonic Pipet Cleaner, Roller Mixer, Vortex Mixer, Ratator

**IEG CO., LTD.**

Phone +82-31-698-2200  
 Fax +82-31-776-4448  
 Website www.ieg.kr  
 Product Hybrid Generation System Trainer. Intelligent Robot Trainer. PC Based Sensor Trainer

**IKEON SCIENTIFIC CO.**

Phone +82-2-529-5901  
 Fax +82-2-529-5905  
 Website  
 Product Dry Oven, Fume Hood

**IL DONG CHEMICAL CO.**

Phone +82-42-621-5260  
 Fax +82-42-621-5261  
 Website  
 Product Dry Oven, Fume Hood, Autoclave, incubator,

**IL SHIN SCIENCE CO., LTD.**

Phone +82-51-759-0731  
 Fax +82-51-759-0734  
 Website www.일신과학.com  
 Product Double Coil, wind gauge

**ILSHIN BIOBASE CO., LTD.**

Phone +82-31-867-1384  
 Fax +82-31-867-1387  
 Website www.1sbb.com  
 Product Deep Freeze. Freeze Dryer. Ice Maker.  
 Programmable Vacuum Freeze Dryer

**iSTEK. INC.**

Phone +82-2-2108-8400  
 Fax +82-2-6442-8430  
 Website www.istek.co.kr  
 Product pH/ISE/DO/EC Meter TMS(COD, Chlorine, TN, Turbidity)

**JEIL INDUSTRIAL CO.**

Phone +82-2-766-6058  
 Fax +82-2-764-7850  
 Website www.jeilscience.com  
 Product Wind Vane & Anemometer

**JEIL MACHINE CO., LTD.**

Phone +82-31-632-8060  
 Fax +82-31-632-8068  
 Website www.jeilm.co.kr  
 Product Dry Oven, Mixer Filter, Autoclave

**JEIL PRECISION INDUSTRIAL INSTRUMENTS CO., LTD.**

Phone +82-2-2293-2325  
 Fax +82-2-2296-6608  
 Website www.jeil1981.co.kr  
 Product Testing Machine

**JEIO TECH CO., LTD.**

Phone +82-2-2627-3816  
 Fax +82-2-3143-1824  
 Website www.jeioitech.com  
 Product Baths & Circulators. Desiccators. Fume Hoods. Incubators. Ovens. Chillers. Laboratory Refrigerators & Freezers. Shakers. Strrs & Vortex Mixer.

**JHONSAM CORPORATION**

Phone +82-2-586-3069  
 Fax +82-2-586-3074  
 Website www.johnsam.co.kr  
 Product Incubator, thermostat,

**JIN HEUNG SCIENTIFIC CO.**

Phone +82-2-742-3555  
 Fax +82-2-742-3348  
 Website www.jico.co.kr  
 Product ACV(alternating current voltmeter)

**JIN IL SCIENTIFIC CO.**

Phone +82-2-3672-7303  
 Fax +82-2-766-2385  
 Website  
 Product Switch, Periodic Table of the Elements

**JINGU SCIENTIFIC. CO., LTD.**

Phone +82-31-566-0758  
 Fax +82-31-566-0768  
 Website www.jingusci.com  
 Product Soil analysiser

**JISICO CO., LTD.**

Phone +82-2-461-7071  
 Fax +82-2-464-1962  
 Website www.jisico.co.kr  
 Product Drier, Shaker, Glove box, Water bath, Autoclave, incubator

**JOENBIO CO.**

Phone +82-2-893-7831  
 Fax +82-2-893-7832  
 Website  
 Product Anatomy Sample

**JOONG HEUNG INC.**

Phone +82-2-2265-6284  
 Fax +82-2-2273-4743  
 Website  
 Product Polarizer, direct vision spectroscope, deflecting force experiment

**JOOYOUNG OPTICAL SCREEN CO. LTD.**

Phone +82-2-466-7953  
 Fax +82-2-466-7954  
 Website www.rearscreen.co.kr  
 Product Screen, interactive White Board



## ■ JUNG DO TEST INSTRUMENT CO.

Phone +82-2-2675-4431  
 Fax +82-2-2671-3856  
 Website www.jungdo21.com  
 Product Mini/Pilot Plating Plants. Hull Cell Testing Equipments. Analyzers of Plating Solution. Testing Instruments for Plating & Painting. Salt

## ■ KMC ROBOTICS CO., LTD

Phone +82-42-933-8305  
 Fax +82-42-933-8309  
 Website www.kmrobot.com  
 Product Micro-Processor Evaluation Kit, Micro-robot, Humanoid Robot, electronic Evaluation Kit, etc

## ■ KOREA DIGITAL CO., LTD.

Phone +82-2-2109-8877  
 Fax +82-2-2109-8878  
 Website www.koreadigital.com  
 Product sensor control apparatus. MBL

## ■ KOREA ELECTRONIC PARTS

Phone +82-2-2274-4284  
 Fax +82-2-2274-4285  
 Website www.korea-e-parts.com  
 Product Power Supply

## ■ KOREA SCIENTIFIC TECHNIQUE INDUSTRY CO., LTD.

Phone +82-31-291-4055  
 Fax +82-31-291-4066  
 Website www.gaooze.com  
 Product Constant Temp & Humid Chamber

## ■ KOVET INC.

Phone +82-2-391-0227  
 Fax +82-2-722-7412  
 Website  
 Product Digital Lab System

## ■ KT ENG CORPORATION

Phone +82-31-749-5373  
 Fax +82-31-749-5376  
 Website www.kteng.co.kr  
 Product Heating & Air Conditioning Education Equipment

## ■ KU RYONG SCIENTIFIC CO., LTD.

Phone +82-2-742-0659  
 Fax +82-2-744-9489  
 Website www.kuryong.co.kr  
 Product Earth Model Kit

## ■ KWANG DONG INDUSTRIAL CO., LTD.

Phone +82-31-677-2141  
 Fax +82-31-677-5945  
 Website www.forlab.co.kr  
 Product Fume Hood, Clean Bench. Lab Table

## ■ KYUNG SUNG INDUSTRIAL ARTS CO.

Phone +82-31-592-9664  
 Fax +82-31-591-6586  
 Website  
 Product Test Tube Stand, black box, Insect sample

## ■ KYUNGIN SCIENCE CO.

Phone +82-2-3675-0088  
 Fax +82-2-3675-0087  
 Website www.kiscoshop.co.kr  
 Product Balance, Thermometer Case, Scoliometer Edu System

## ■ LAB DESIGN CO., LTD.

Phone +82-2-957-8440  
 Fax +82-2-957-8443  
 Website www.labdesign21.co.kr  
 Product Lab Furniture, Storage Cabinet, Safety Reagent Cabinet, Sink Table, Fume Hood, Ductless Fume Hood

## ■ LABZONE CO., LTD.

Phone +82-42-670-4664  
 Fax +82-42-670-4670  
 Website www.safelab.co.kr  
 Product Filtration Reagent Storage Cabinet. Filtration Fume Cupboard. Hydrogen Gas Detection System

## ■ MANIX CO., LTD.

Phone +82-2-3474-8765  
 Fax +82-2-3474-7008  
 Website www.manix.co.kr  
 Product CNC Engrving Machine. CNC Milling Machine Mini Lathe Machine. Mini Milling Machine Acrylic Bender. Hotwire Foam Cutter

## ■ MASTER GENERALI EDUCATION COMPANY

Phone +82-31-593-6658  
 Fax +82-31-593-6659  
 Website www.masteredu.co.kr  
 Product Tripod, IQ Traffic Signal,

## ■ MDM INSTRUMENTS CO., LTD.

Phone +82-70-8244-2018  
 Fax +82-70-252-9756  
 Website www.mdm-ins.com  
 Product Hoom Food. Incubator. Dry Oven, Clean Dry Shel, Water Purification System

## ■ MIMIOKOREA CO.,LTD.

Phone +82-2-572-2008  
 Fax +82-2-572-2208  
 Website www.mimio.co.kr  
 Product Interactive White Board

## ■ MIRAE EDUPIA

Phone +82-2-765-1101  
 Fax +82-2-765-1103  
 Website www.edu4u.biz  
 Product adiabatic expansion device, metal leaf electroscope

## ■ MIRAE ST CO., LTD.

Phone +82-31-420-5753  
 Fax +82-31-420-5978  
 Website www.miraest.co.kr  
 Product RReverse Osmosis Water System, Ultrapure Water System, Ultrasonic Pipet Cleaner

## ■ MIT ZONE CO., LTD.

Phone +82-2-992-4300  
 Fax +82-2-992-4303  
 Website www.mitzone.co.kr  
 Product story pen, electric board

## ■ MOCOMTECH CO., LTD.

Phone +82-2-739-9968  
 Fax +82-2-739-9971  
 Website www.mocomtech.com  
 Product high-gain projection screen

## ■ MODNNET CO., LTD.

Phone +82-53-600-8777  
 Fax +82-53-600-8778  
 Website www.modnnet.co.kr  
 Product interactive White Board, Wireless Microphone

## ■ MOON SUNG CO., LTD.

Phone +82-2-764-2246  
 Fax +82-2-743-3138  
 Website  
 Product Molecular Model Kit

## ■ MYEONG JI SCIENTIFIC INDUSTRY CO.

Phone +82-2-741-8513  
 Fax +82-2-741-8516  
 Website www.labeledu.co.kr  
 Product mechanical energy apparatus

**■ NAMBUK TRADING COMPANY**

Phone +82-31-506-0047  
 Fax +82-31-506-0008  
 Website  
 Product Application Trainer, Hydraulics Trainer, Industrial Automation Trainer, Casting Machine

**■ NICOM INTERNATIONAL CO., LTD.**

Phone +82-31-706-0947  
 Fax +82-31-706-0946  
 Website www.nicom.co.kr  
 Product variable resistor/rheostat,

**■ OMAX CO., LTD.**

Phone +82-32-682-8811  
 Fax +82-32-675-6959  
 Website www.omax.co.kr  
 Product Video Presenter, screen, microscope, LANGUIGE STUDY UNIT, Cyber Computer Board

**■ OPERON CO., LTD.**

Phone +82-31-989-9012  
 Fax +82-31-989-9017  
 Website www.operon.co.kr  
 Product Stem cell Freezer-156. Cryo Freezer-156, Freeze Dryer. Chemical Free Freeze Dryer-120, Ultra Low Temperature Petrochemistry Chiller-120

**■ ORIENT AV CO., LTD.**

Phone +82-2-396-0880  
 Fax +82-2-396-0850  
 Website www.orientav.co.kr  
 Product Digital Lab System, NuriNET System, Language Lab System

**■ ORIENT SCIENCE**

Phone +82-2-765-3937  
 Fax +82-2-744-7963  
 Website  
 Product magnetic compass

**■ ORIENTAL INTERGRATED ELECTRONICS CO., LTD.**

Phone +82-32-675-2247  
 Fax +82-32-671-2244  
 Website www.vieway.co.kr  
 Product CCTV, Power Supply. Video Presenter

**■ OSUN HI TECH CO., LTD.**

Phone +82-31-902-9006  
 Fax +82-31-902-9109  
 Website www.osunhitech.co.kr  
 Product MicroScope, Video Present System

**■ POSTECH CO.,LTD.**

Phone +82-33-732-8200  
 Fax +82-33-731-0989  
 Website www.pos-tech.com  
 Product Automobile Education ElectricWelding

**■ PRINCE CO.**

Phone +82-2-2267-6542  
 Fax +82-2-2278-9551  
 Website www.princelab.co.kr  
 Product Language Lab System

**■ ROBOROBO CO., LTD.**

Phone +82-2-909-5050  
 Fax +82-2-917-3511  
 Website www.roborobo.co.kr  
 Product Educational Robot Kit

**■ ROBOTIS CO., LTD.**

Phone +82-70-8671-2600  
 Fax +82-70-8230-1336  
 Website www.robotis.com  
 Product Educational Robot Kit

**■ SAE HAN LAB**

Phone +82-2-766-1303  
 Fax +82-2-766-1304  
 Website www.saehanlab.co.kr  
 Product Beaker, Flask, Cylinder, Condenser, Test tube, Funnel

**■ SAM JEE INTERNATIONAL CORP.**

Phone +82-2-743-0381  
 Fax +82-2-744-2658  
 Website www.samjeeintl.com  
 Product optic communication tester

**■ SAMDUK SCIENCE CO., LTD.**

Phone +82-31-563-3590  
 Fax +82-31-563-4665  
 Website www.samduk-lab.com  
 Product Beaker, Glass ware

**■ SAMIN SCIENCE CO., LTD.**

Phone +82-2-2163-8940  
 Fax +82-2-2163-8942  
 Website www.saminsci.com  
 Product low-noise & vibration-free oilless compressors, laboratory work benches

**■ SAMJIN ENGINEERING**

Phone +82-42-622-8055  
 Fax +82-42-621-9953  
 Website www.samjineng.com  
 Product Centrifugal Caster, Electroplating Processor, hydraulic press

**■ SAMJIN TECH CO., LTD.**

Phone +82-51-818-0571  
 Fax +82-51-816-7052  
 Website www.samjintech.co.kr  
 Product variable resistor/rheostat,

**■ SAMJIN UNICHEM**

Phone +82-31-575-7736  
 Fax +82-31-575-8307  
 Website www.samjinuc.com  
 Product heat exchanger

**■ SAMKI LAB**

Phone +82-41-552-6770  
 Fax +82-41-552-6771  
 Website www.samkilab.co.kr  
 Product LABORATORY, FURNITURE, Fume Hood

**■ SAMYEON TECH CORP.**

Phone +82-53-592-3053  
 Fax +82-53-591-4226  
 Website www.samyeon.co.kr  
 Product HYD. Servo Actuator, HYD. Servo Fatigue tester, Rock tester, UTM. Strain meter

**■ SCIENCE PARK**

Phone +82-2-742-6518  
 Fax +82-2-745-6519  
 Website www.scipark.co.kr  
 Product Waste water management instrument  
 - Electrolysis apparatus  
 - The law of boyle experiment equipment

**■ SCIENCESTAR CO., LTD.**

Phone +82-2-766-6136  
 Fax +82-2-766-6139  
 Website www.sciencestar.biz  
 Product Water Bottle For Optical Studies, Mini Surface Wave Projecting Device, Sound Wave Monitoring Device

**■ SCINCO CO.,LTD**

Phone +82-2-545-7300  
 Fax +82-2-548-5984  
 Website www.scinco.com  
 Product UV-Vis Spercrophotometer, Color Spercrophotometer, Fluorescence Spectrometer

**■ SE JIN CORPORATION**

Phone +82-2-745-2815  
 Fax +82-2-745-2816  
 Website  
 Product Arm blanching Scale, Coulomb's law, compound pulley

## ■ SEGYE INDUSTRY CO., LTD.

Phone +82-31-507-8800  
 Fax +82-31-507-0011  
 Website www.sictop.com  
 Product ntelligent Robot, Educational Application Trainer, Work Table, Air Compressor, Hydraulic Shear Machine, Hydraulic Press Brake, Hydraulic Press

## ■ SEGYE SCIENTIFIC CO., LTD.

Phone +82-31-776-0015  
 Fax +82-31-776-0019  
 Website www.sgs.co.kr  
 Product Physics Instrument, PC Interface unit, Electronic Instrument, Educational Trainers and etc.

## ■ SEHYUN SCIENCE CO., LTD..

Phone +82-31-577-5418  
 Fax +82-31-576-5418  
 Website www.shscience.kr  
 Product Electric Stand, Sola Energy Car

## ■ SEO JEON GLOBE CO., LTD.

Phone +82-31-423-6122  
 Fax +82-31-424-6030  
 Website www.seojeon-globe.com  
 Product terrestrial globe, celestial azimuth

## ■ SEOUL OPTICAL CO., LTD.

Phone +82-2-577-9804  
 Fax +82-2-574-0483  
 Website www.selopt.com  
 Product Microscope, Stereo Microscope

## ■ SEOULIN BIOSCIENCE CO., LTD.

Phone +82-2-478-5911  
 Fax +82-2-2041-1020  
 Website www.seoulin.co.kr  
 Product Vortex Mixer, 3D Mini Shaker, Orbital Shaker, Intelli Mixer

## ■ SEWON SCIENCE INDUSTRY

Phone +82-2-762-0356  
 Fax +82-2-762-0357  
 Website www.swsciencemall.com  
 Product Solar Car Model

## ■ SHIN GANG PRECISION MFG CO., LTD.

Phone +82-2-499-7835  
 Fax +82-2-467-4585  
 Website www.singang.co.kr  
 Product Universal Testing Machine, tensile strength Testing Machine, compression Testing Machine

## ■ SHIN IL METER CO.

Phone +82-2-462-0008  
 Fax +82-2-499-1013  
 Website www.eshinill.co.kr  
 Product Tester

## ■ SHIN WEOL ROCK TEACHING MATERIAL CO.

Phone +82-2-428-0422  
 Fax +82-2-481-7952  
 Website  
 Product mine sample, rock sample, fossil sample,

## ■ SHINHAN BIOLOGICAL-SPECIMEN

Phone +82-2-393-2613  
 Fax +82-2-393-2615  
 Website www.shslab.co.kr  
 Product Viscera. Specimen of dissection of entire body of frog

## ■ SHINIL CORPORATION

Phone +82-2-3676-4335  
 Fax +82-2-3673-5123  
 Website  
 Product Anatomy Model

## ■ SHINSAENG INSTRUMENTS CO., LTD.

Phone +82-31-943-1961  
 Fax +82-31-943-1964  
 Website www.shinsaeng.com  
 Product The depository of reagent, Fume Hood, Clean Bench, Thermo-hygrostat, Dry Oven

## ■ SHINSEGI SCIENCE CO.

Phone +82-2-765-5700  
 Fax +82-2-766-3474  
 Website www.ssgedu.co.kr  
 Product Tripod Stand, Iron Stand, Elementary Twopan Balance, Simple Switch, Electric Wiretongs

## ■ SHIN-SUNG PHYSICAL AND CHEMICAL CO.

Phone +82-2-743-8387  
 Fax +82-2-743-8385  
 Website  
 Product Glass ware

## ■ SIDAE CO.

Phone +82-31-593-8675  
 Fax +82-31-595-4463  
 Website  
 Product Water Bottle For Optical Studies, wind vane

## ■ SO JUNG MEA- INS CO.

Phone +82-31-420-5715  
 Fax +82-31-420-5719  
 Website www.sojung.co.kr  
 Product Dry Oven

## ■ SOMYUNGTECH

Phone +82-2-873-8982  
 Fax +82-2-873-8983  
 Website  
 Product PLC Trainer

## ■ SUDO TEACHING AIDS CO.

Phone +82-43-252-2983  
 Fax +82-43-221-2983  
 Website  
 Product Lab Table

## ■ SUMOK FURNITURE CO., LTD.

Phone +82-2-742-5003  
 Fax +82-2-765-5126  
 Website  
 Product Computer Table, Connecting Line, Machnical Cart, collisions in two demensions

## ■ SUNDOO INDUSTRY CO.

Phone +82-2-766-8765  
 Fax +82-2-766-8766  
 Website www.sdnet.co.kr  
 Product Safety Tripod , Tape Timer, Helical Spring

## ■ SUNG KWAMG CO., LTD.

Phone +82-53-358-2297  
 Fax +82-53-354-0755  
 Website www.skeng.tv  
 Product FMS System, VLC System, PLC

## ■ SUNGHWHA INDUSTRY

Phone +82-2-762-4551  
 Fax +82-2-742-8870  
 Website  
 Product Power Relay, Eol Relay, Set Reset

## ■ SUNG-SU SCIENCE CO., LTD.

Phone +82-62-372-2293  
 Fax +82-62-372-2294  
 Website  
 Product Dry Oven, Clean Bench, Fume Hood

## ■ TAMTUS CO., LTD.

Phone +82-32-328-0244  
 Fax +82-32-328-0242  
 Website www.educos.co.kr  
 Product video presenter, language lab system, multipurpose microscope



**THE SCIENTIFIC & EDUCATION INSTRUMENTS STORE**

Phone +82-2-741-3420  
 Fax +82-2-741-4288  
 Website www.xn--  
 Product Optical instrument, Cloud chamber, ECD Saver

**THREE SHINE INC.**

Phone +82-42-933-3361  
 Fax +82-42-933-3398  
 Website www.threeshine.com  
 Product Micro Ventilation Cage System, Vacuum Dessicator, Isolator

**TOPEX Corporation**

Phone +82-31-852-1991  
 Fax +82-31-852-2992  
 Website www.topex.com  
 Product Video Presenter, Flex Vision, O.H.P., Microscopic Projector, Microscope

**TOPIANET CO., LTD.**

Phone +82-2-466-6080  
 Fax +82-2-466-6464  
 Website www.topianet.co.kr  
 Product Video Presenter

**TREEM CO., LTD.**

Phone +82-2-2024-1900  
 Fax +82-2-565-9079  
 Website www.treem.co.kr  
 Product Screen Video Presenter, Interactive White Board

**UCREA. INC. CO., LTD.**

Phone +82-2-6420-3000  
 Fax +82-2-6262-1099  
 Website www.ucrea.co.kr  
 Product Interactive White board

**UNION ENTERPRISE CO., LTD.**

Phone +82-32-678-7021  
 Fax +82-32-678-7026  
 Website www.unionkr.co.kr  
 Product Astronomical Telescope

**UNIVERSAL SCIENTIFIC CO., LTD.**

Phone +82-31-982-1804  
 Fax +82-31-984-1804  
 Website www.woojusc.co.kr  
 Product Washing Chamber, Dry Oven, Culture Chamber, Stem Aging Test Bath, Fume Hood, Flask Shaker

**VISION SCIENTIFIC CO., LTD.**

Phone +82-32-672-3091  
 Fax +82-32-672-3098  
 Website www.visionbionex.com  
 Product Centrifuge, Incubator, Growth chamber, Shaker, Autoclave, Clean bench, Water bath

**WEED ELECTRONICS CO.**

Phone +82-51-552-4711  
 Fax +82-51-553-4712  
 Website www.weedcam.co.kr  
 Product Video Presenter

**WELLPIX CO., LTD.**

Phone +82-31-962-4473  
 Fax +82-31-962-4439  
 Website www.wellpix.com  
 Product Video Presenter, Auto planisphere

**WITHLIGHT CO., LTD.**

Phone +82-31-776-0282  
 Fax +82-31-776-0286  
 Website www.databoard.co.kr  
 Product Interactive White Board

**WON IL SCIENTIFIC CO.**

Phone +82-2-743-6602  
 Fax +82-2-743-6603  
 Website  
 Product Experience Cart, Aero vane

**WOOSIN CO., LTD.**

Phone +82-42-633-7101  
 Fax +82-42-634-7101  
 Website www.woosinfirm.co.kr  
 Product Wet Duplex Grinder, Dry Duplex Grinder

**WOOSUN CONTROL CO. LTD.**

Phone +82-42-935-2143  
 Fax +82-42-935-2147  
 Website www.woosun.com  
 Product Educational Training Equipment  
 1. Electricity & Electronics Educational Equipment  
 2. Power Electronics Educational Equipment

**YEONHEUNG ENTERPRISE CO.**

Phone +82-31-944-9980  
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 Product Lab Table, Job Table

**YOUNGIL EDUCATION SYSTEM CO., LTD.**

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 Website www.yes01.co.kr  
 Product Educational Elec. Electronic Measuring devices, Automobile Education System

**YOUNGLIN INSTRUMENT CO., LTD.**

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 Website www.younglin.com  
 Product Acme 6000 GC, Water Purification, Gas Chromatography, Liquid Chromatography

**YOUSONG SCIENCE INDUSTRIAL CO., LTD.**

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 Website www.yousung.kr  
 Product Autoclave, Dry Oven

**YUIL TRADING CORPORATION**

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 Product Ultrasonic Cleaner

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

# STANDARD INSTRUMENTS FOR SCHOOL





## Elementary School

No	Equipments	Specification	Unit	Qun'ty	No	Equipments	Specification	Unit	Qun'ty
1	Stand	Φ12 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	Φ 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	Φ90mm Glassware, including Muller, Φ90mm	ea	4 per 1
5	Bar Thermometers	-20°C ~ 110°C, 3 in 1	ea	4 per 1	47	Evaporating dish	Φ70mm	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 (Φ15mm)	Φ21 x 200mm, Φ15 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 Φ60mm, 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 Φ150mm, 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	Φ5mm, 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)	Φ300mm 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	Φ10 ~ 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 in1 (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	∅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	∅38mm level, 8 in 1	ea	4 per 1
99	Astronomic Telescope	Refracted reflections, ∅6-inch or Inspector macrophages	ea	1 per school
100	Dry buld 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	∅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	∅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 (∅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	No	Equipments	Specification	Unit	Qun'ty
1	pH Meter (Digital)	pH 0 ~ 14 ± 0.01pH	ea	1 per school	56	Mass cylinder (10mL)		ea	2 per 1
2	Grinders		ea	1 per school	57	Erlenmeyer flask (100mL)		ea	2 per 1
3	Desiccator		ea	1 per school	58	Erlenmeyer flask (250mL)		ea	2 per 1
4	Vise		ea	1 per school	59	Tripod	height adjustment	ea	2 per 1
5	G cm scale	Weight 311g, weight loss 10mg	ea	1 per school	60	Chalet	2 in 1	ea	2 per 1
6	Cripples the scale	Weight 2kg, loss 0.1g	ea	1 per school	61	Dropper (10mL)		ea	2 per 1
7	Centrifugal		ea	1 per school	62	Watch glass		ea	2 per 1
8	Electric drill		ea	1 per school	63	Spirit-lamp		ea	2 per 1
9	Cork Borer	Automatic	ea	1 per school	64	Spatula		ea	2 per 1
10	Waste Disposal		ea	1 per school	65	Combustion spoon		ea	2 per 1
11	Constant Chamber(drying)		ea	1 per school	66	Ruler (1m or more)	Transparent resin	ea	2 per 1
12	Vernier calipers		ea	1 per school	67	Magnet	Bar, horseshoe, circular magnets(3 in 1)	ea	2 per 1
13	Electronic scales	Weight 200g, 0.1g loss	ea	1 per school	68	Syringe		ea	2 per 1
14	LCD projector		ea	Are per room 1	69	Pnumetic Bottle		ea	2 per 1
15	Tool Set		ea	Are per room 1	70	Iron stand		ea	2 per 1
16	Screen	Electric	ea	Are per room 1	71	Pincette		ea	2 per 1
17	Video Presenter		ea	Are per room 1	72	Pinchikok		ea	2 per 1
18	Computer (Teacher)	Pentium 3 more (RAM 128M or more), MPEG card, sound card, internet access	ea	Are per room 1	73	Hall pipette (10mL)		ea	2 per 1
19	OHP OHP		ea	Are per room 1	74	Goggles		ea	1 per 1
20	Mortar		ea	6 per 1	75	Lab Cloth	Cotton	ea	1 per 1
21	Volumetric flask (1000mL)		ea	6 per 1	76	Thermometer (alcohol)	-20℃ ~ 110℃ -20℃ ~ 110℃	ea	1 per 1
22	Volumetric flask (500mL)		ea	6 per 1	77	DC Power Supply		ea	1 per school
23	Computer (Student)	Pentium 3 more	ea	6 per 1	78	Inclined plane apparatus	rotractor attached, pulley, cart, including additional	ea	1 per school
24	Tank (rectangular)		ea	4 per 1	79	Wave projection devices		ea	1 per school
25	Reagent bottle (100mL)	White and brown (2 in 1)	ea	4 per 1	80	Free-fall experiment		ea	1 per school
26	Reagent bottle (250mL)	White and brown (2 in 1)	ea	4 per 1	81	Joule's Heat Apparatus	200ml, DC6V 200ml, DC6V	ea	1 per school
27	Floor lamp	Adjustable intensity	ea	4 per 1	82	Electrical circuit tester		ea	Are per room 1
28	Heater		ea	4 per 1	83	Hydrostatic test set	Lever, pulley, including additional	ea	6 per 1
29	Branched tube		ea	4 per 1	84	wing Type electromagnetic Smeasuring devices	DC 3 ~ 6V, including bar magnet	ea	4 per 1
30	Branched flask (250mL)		ea	4 per 1	85	Slide resistor	Closed Type	ea	4 per 1
31	Spritz bottle	Plastic	ea	4 per 1	86	DC Power Supply		ea	4 per 1
32	Brush (3 in 1)		ea	4 per 1	87	Pendulum experiment	Stand Type	ea	4 per 1
33	Tank (round)		ea	4 per 1	88	Time Recorder		ea	4 per 1
34	Balance Arm	Weight 200g, 0.1g loss	ea	4 per 1	89	Metal Weight	5 in 1	ea	4 per 1
35	Electric Iron		ea	4 per 1	90	Dynamic cart		ea	4 per 1
36	Tape Measure (2m or more)	Iron	ea	4 per 1	91	Potential Energy-measuring devices	100, 200, 300g, including additional	ea	4 per 1
37	Heating safety net (a net asbestos-iron)		ea	4 per 1	92	Laboratory wave spring	2 in 1	ea	4 per 1
38	Funnel		ea	4 per 1	93	Laser Pointer		ea	4 per 1
39	Funnel Steand	2 in	ea	4 per 1	94	C-type clamp	3 in 1	ea	4 per 1
40	Round Bottom flask (250mL)		ea	4 per 1	95	Pulley	5 in 1	ea	4 per 1
41	Ring	Three kinds (large, medium, small) 1	ea	4 per 1	96	Heat measurement devices	130 x 130mm diameter	ea	4 per 1
42	Mass cylinder (250mL)		ea	4 per 1	97	convex Lenses		ea	4 per 1
43	Metz pipette (10mL)		ea	4 per 1	98	Diapason	Including rubber mallet (1 in 2)	ea	4 per 1
44	Trowel		ea	4 per 1	99	Double-sided mirror		ea	4 per 1
45	Burette (50mL)		ea	4 per 1	100	Concave lens		ea	4 per 1
46	Burette clamp	2 in	ea	4 per 1	101	Resistive Nichrome Wire	Exposed	ea	2 per 1
47	Erlenmeyer flask (500mL)		ea	4 per 1	102	Metal foil electroscope		ea	2 per 1
48	Tube clamp		ea	4 per 1	103	Friction electrical test instruments	Set	ea	2 per 1
49	Test Tube Stand	Iron (20)	ea	4 per 1	104	Ammeter	DC for	ea	2 per 1
50	Spring scale	weight 200g	ea	4 per 1	105	Voltmeters	DC for	ea	2 per 1
51	Platform balance	Weight 200g, weight loss 100mg	ea	4 per 1	106	Transparent half-cylinder	Plastic	ea	2 per 1
52	Stopwatch	1 / 100 seconds	ea	4 per 1	107	Prism		ea	2 per 1
53	Compass		ea	2 per 1	108	Boyle's law experiment	Including three additional	ea	1 per school
54	Magnifier		ea	2 per 1					
55	Mass cylinder (100mL)		ea	2 per 1					



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	∅20 x 20mm ∅20 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	Eyeiece 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	ea	1 per school	40	Heating appliances		ea	6 per 1
2	AC ammeter	0 ~ 19.99A	ea	1 per school	41	Mass cylinder (1000mL)		ea	6 per 1
3	AC voltmeter	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°C, 0 ~ 6°C (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 school	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°C ~ 50°C, 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	∅50, 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	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	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	ea	3 per 1
36	Bath pot		ea	6 per 1	75	DC voltmeter	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 mirrer		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	No	Equipments	Specification	Unit	Qun'ty
157	Electrical test set friction	Set	ea	4 per 1	193	Poultry conductivity		ea	6 per 1
158	Centripetal force apparatus		ea	4 per 1	194	Conical beaker (250mL)		ea	6 per 1
159	Laboratory wave spring	2 in 1	ea	4 per 1	195	Torch Lamps	Recurrence touch	ea	6 per 1
160	Spring scale		ea	4 per 1	196	Molecular models		ea	6 per 1
161	The crystal structure model	2 in 1	ea	1 per school	197	Gas-side articles		ea	6 per 1
162	Mixer		ea	1 per school	198	Gas diffusion rate meter		ea	6 per 1
163	Hydrometer1	9 in 1	ea	1 per school	199	Spritz bottle		ea	6 per 1
164	Line spectrum Light Source	He, Ne, Ar lamp (three kinds)	ea	1 per school	200	Tap Funnel		ea	6 per 1
165	Liquid nitrogen soils		ea	1 per school	201	Combustion spoon		ea	6 per 1
166	Periodic Table of Elements		ea	1 per school	202	Elemental Card Set		ea	6 per 1
167	The atomic structure descriptor		ea	1 per school	203	Branched tube	$\phi 21 \times 200\text{mm}$	ea	4 per 1
168	Libby Hebrews Cooler		ea	1 per school	204	Assembled a set of molecular models	355 pieces	ea	4 per 1
169	Soksiretchuchulgi (250mL)		ea	1 per school	205	Reagent bottle	Brown 100, 250mL	ea	4 per 1
170	Air Absorption Funnel		ea	1 per school	206	Pnumetic Bottle		ea	4 per 1
171	Absorption Bottle (500mL)	Glass	ea	1 per school	207	DNA Models		ea	1 per school
172	U tube		ea	6 per 1	208	DO meter		ea	1 per school
173	Y tube		ea	6 per 1	209	Coelenterata	$\phi 100 \times 410\text{mm}$	ea	1 per school
174	U tube branched		ea	6 per 1	210	High-pressure autoclave	Heating	ea	1 per school
175	Extra gas buret		ea	6 per 1	211	Ear Model		ea	1 per school
176	Gas molecule movement apparatus		ea	6 per 1	212	Echinoderms	$\phi 110 \times 510\text{mm}$	ea	1 per school
177	Thigh bottom flask (100 ~ 500mL)		ea	6 per 1	213	Eye Model		ea	1 per school
178	Crucible		ea	6 per 1	214	Animal Book	Primary color	ea	1 per school
179	Crucible tongs		ea	6 per 1	215	Book protist	Primary color	ea	1 per school
180	Round bottom flask (1000mL)		ea	6 per 1	216	Plant Book	Primary color	ea	per school
181	Round bottom flask (100 ~ 500mL)		ea	6 per 1	217	Kidney samples dissected	$\phi 100 \times 410\text{mm}$	ea	1 per school
182	Erlenmeyer flask (1000mL)		ea	6 per 1	218	Heart dissection specimens	$\phi 110 \times 510\text{mm}$	ea	1 per school
183	Erlenmeyer flask (500mL)		ea	6 per 1	219	Amphibian sampling	$\phi 00 \times 410\text{mm}$	ea	1 per school
184	Erlenmeyer flask (50mL)		ea	6 per 1	220	Fish samples	$\phi 110 \times 510\text{mm}$	ea	1 per school
185	Stainless steel spoon		ea	6 per 1	221	Mollusc	$\phi 110 \times 510\text{mm}$	ea	1 per school
186	Stainless Steel Electrodes		ea	6 per 1	222	Centrifuge		ea	1 per school
187	Styrofoam tube		ea	6 per 1	223	Human cerebrospinal nervous system models		ea	1 per school
188	Watch glass		ea	6 per 1	224	Human circulatory system modelea		ea	1 per school
189	Safety funnel		ea	6 per 1	225	Human body model		ea	1 per school
190	Calorimeter		ea	6 per 1	226	Arthropods	$\phi 110 \times 510\text{mm}$	ea	1 per school
191	Chloride Calcium tube		ea	6 per 1	227	Bird specimens	$\phi 120 \times 410\text{mm}$	ea	1 per school
192	Electrolysis		ea	6 per 1	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	igneous 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 multi-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	∅ 13mm Under	ea	2



# Hi~ Robot Buddy!

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▶ Intelligent Robot  
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▶ Mobile Robotics Robot  
(Official Robot by KR2008)



▶ Intelligent Robot Simulator  
EDRS



Interactive Whiteboard

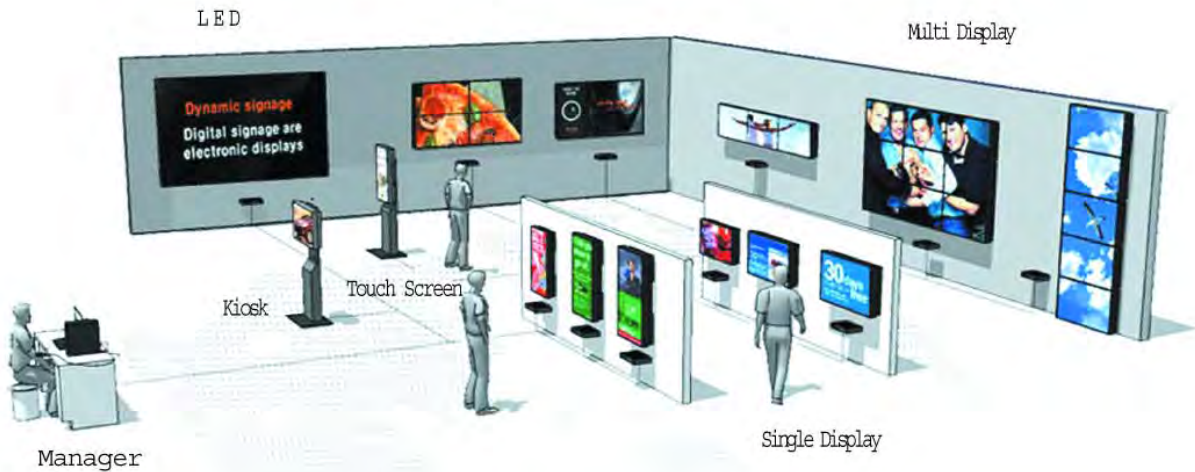
**BUSINESS :** Intelligent Robot / Educational Equipment / Cutting edge measuring machine /  
Overseas vocational training project

**PRODUCTS :** New & Renewable Energy / Intelligent Robot / Electricity & Electronics /  
Communication / Simulation Software / Fluid Mechanics / Mechatronics /  
Automation / Test & Measurement / Interactive Whiteboard

# Public Information Display Solution

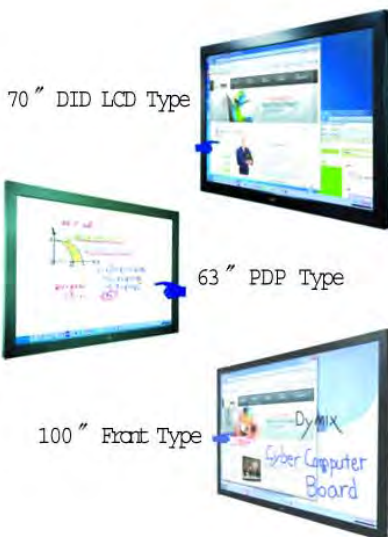
Large Format Display is optimized for public displays, catering to both business and public needs

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Dymix Interactive Whiteboard includes an infrared sensor.



## Digital Information Display



<Multi display Type>

In-door type, Out-door type, and other types Available.

Any kind of display demanded in various public places is available.



<built-in Type>

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Model : Zenix RO / Zenix UP

New

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First developed 2 in 1 System in the world.  
(Produce RO and UP water in one system)
- Developed TOC monitoring system!  
(Range: 0~200ppb)
- Developed EDI System!  
(Produce UP water by electrodeionization system without ion filters)
- Developed economic & compact Pyrogen free filter
- Exporting to around 30 countries as a result of continuous R&D
- Choice of various designs and colors!

- Certified ISO 9001, 14001
- Acquired CE Mark
- Top 100 Excellent Product Award - The Korean Intellectual Property Office
- Designated as a Promising Export Firm by the Small & Medium Business Administration



Zeneer Power



New P.NIX RO&UP



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Nex Power



Pilot



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- PLC
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- Solar & Wind
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CEM-2200



Pneumatics Training System  
CPE-PN7000/CPE-PN7500



Hydraulics Training System  
CPE-HY8000/CPE-HY8500



Smart Grid Solar & Wind Power Trainer  
CPE-EN4500



Intelligent Light Control Trainer  
CPE-ER1100



Solar Generating System  
CP-S110



Wind & Solar Generating trainer  
CP-WS300

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- KSA 9001:2001, CE
- INNO-BIZ Company
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