

# CLEAN ROOM

**KYODO**



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## CONTENTS

<b>COMPANY OVERVIEW</b>	<b>2</b>
<b>Company Profile</b>	
<b>CLEAN ROOM</b>	<b>6</b>
<b>Introduction</b>	
<b>FAN FILTER UNIT</b>	<b>13</b>
<b>Fan Filter Unit (DC and AC types)</b>	
<b>AIR SHOWER</b>	<b>17</b>
<b>Personel Air Shower</b>	
<b>CLEAN BOOTH</b>	<b>21</b>
<b>Class 100, Class 1,000, Class 10,000</b>	
<b>CLEAN SUPPLY</b>	<b>24</b>
<b>Clean Supply Unit Without Fan</b>	
<b>Clean Supply Unit Complete with Fan</b>	
<b>PASS BOX</b>	<b>28</b>
<b>Standard Type</b>	
<b>Special Type Pass Box</b>	
<b>CLEAN HAND DRYER</b>	<b>31</b>
<b>CLEAN BENCH</b>	<b>32</b>
<b>Horizontal Cross Flow Type</b>	
<b>Vertical Down Flow Type</b>	
<b>POSITIVE PRESSURE DAMPER (KBD)</b>	<b>35</b>
<b>OTHER CLEAN ROOM EQUIPMENT</b>	<b>36</b>
<b>Special Clean Room Products</b>	

\* For constant product improvement, all product specifications shown in this catalog are subject to change without prior notice.

# COMPANY OVERVIEW

Founded in 1984, Kyodo-Allied Industries Ltd, a Singapore-Japan joint-ventured company, is a leading turnkey designer, manufacturer, sales, and maintenance service provider of Clean Room equipment and systems. Kyodo-Allied has become a public listed company in The Singapore Exchange in 2002 and is presently one of the top players in this industry in Asia.

Our company's full range of services offers one-stop convenience for our valued customers. Our principle business activities comprise mainly in the:

1. Design, manufacture and sale of Clean Room equipment.
2. Design, manufacture and sale of air diffusion and ventilation equipment.
3. Trading and distribution of Cooling Tower.

In the 1980's, following the rapid growth of manufacturer in the high technology, semi-conductor, chip and wafer fabrication, pharmaceutical and food production industries establishing their production operation in Asia, the demand for Clean Room equipment was greatly increased. To meet our customers' demand we have since been actively involved in the design, production and distribution of air diffusion products and Clean Room equipment.

Kyodo-Allied's business philosophy is to always be the market leader and create the best value-added services for our customers in terms of the most innovative and technologically enhanced products.

Besides benchmarking ourselves against international standards, we have also set and created our own industrial standards through R & D. By constantly improving our technology design capability, our company has now established outstanding industrial know-how, strong design and engineering expertise and reliable testing capabilities. We continuously invest in state-of-the-art technology and facilities; consequently, we always remain at the forefront of technological development.



Through collaborated efforts with our German, American and Japanese partners and professors from renowned universities, Kyodo-Allied, has successfully developed various innovative products. Among these is our Electronic Control Fan Filter Unit (FFU). It is quiet, cost-effective, provides absolute control flexibility, and delivers high quality air filtration and air distribution in a Clean Room. We are proud to be the first one to introduce this system into Asia, which has now become market's mainstream product.



In our effort to continuously improve our manufacturing process and production quality, we were awarded ISO 9001:2000 (formerly known as ISO 9002) certification in 1997 for quality system management in manufacturing. Our company is committed to total quality management to ensure a constant high level of quality and services for our customers.

Our products undergo stringent inspection and testing at all phases of development, from designing to manufacturing, through installation, are all systematically inspected by our experience assurance engineers.

At presently, the group has two manufacturing plants situated in Singapore and Johor, Malaysia. It has a total built-up area of approximately 186,032 sq ft designated for the manufacturing of air diffusion and Clean Room products.



Through our sales offices and service stations located in Singapore, Bangkok, Manila, Johor, Kuala Lumpur, Penang, Shanghai, Taiwan and Japan, our field specialist service engineers provide excellent sales and after sales services to our valued customers.

Information technology related, electronics and pharmaceutical are the world's fastest growing industries today. Our company will continue to provide our services and expand our presence in the Clean Room and air diffusion industry by expanding our network and locating our facilities regionally.

It has always been our company's mission and motto to achieve **"Total Customer Satisfaction"**.

By constantly improving on our services, and engaging and incorporating the most advanced Clean Room technology to our products, we are totally committed to delivering superior value, quality and efficient service network to meet our customer's full satisfaction.



## STRATEGIC PARTNERSHIP

Today, numerous multinational companies have chosen Kyodo-Allied as their strategic partners for the design, supply, and service of Clean Room products. Our major customers and partners are well known



M&E engineering contractors, Clean Room facilities contractors, construction companies, international distributors, and etc. Recognizing the superior value and the outstanding technology that we have demonstrated, various international companies have appointed Kyodo-Allied as their ODM Clean Room equipment supplier under their brand name and logo. These partnerships fully demonstrate our customers' best endorsement in our product quality, technology, and service level.

To-date, Kyodo-Allied has provided for countless high technology, big budget projects in countries and region which spans all over Asia Pacific, including Singapore, China, Taiwan, Japan, Malaysia, Thailand, Philippines, Indonesia, Vietnam and Hungary. These projects comprise Clean Room facilities for well known International Companies in various industries, including but not limited to, entities of the following companies:



Institute of  
Microelectronics

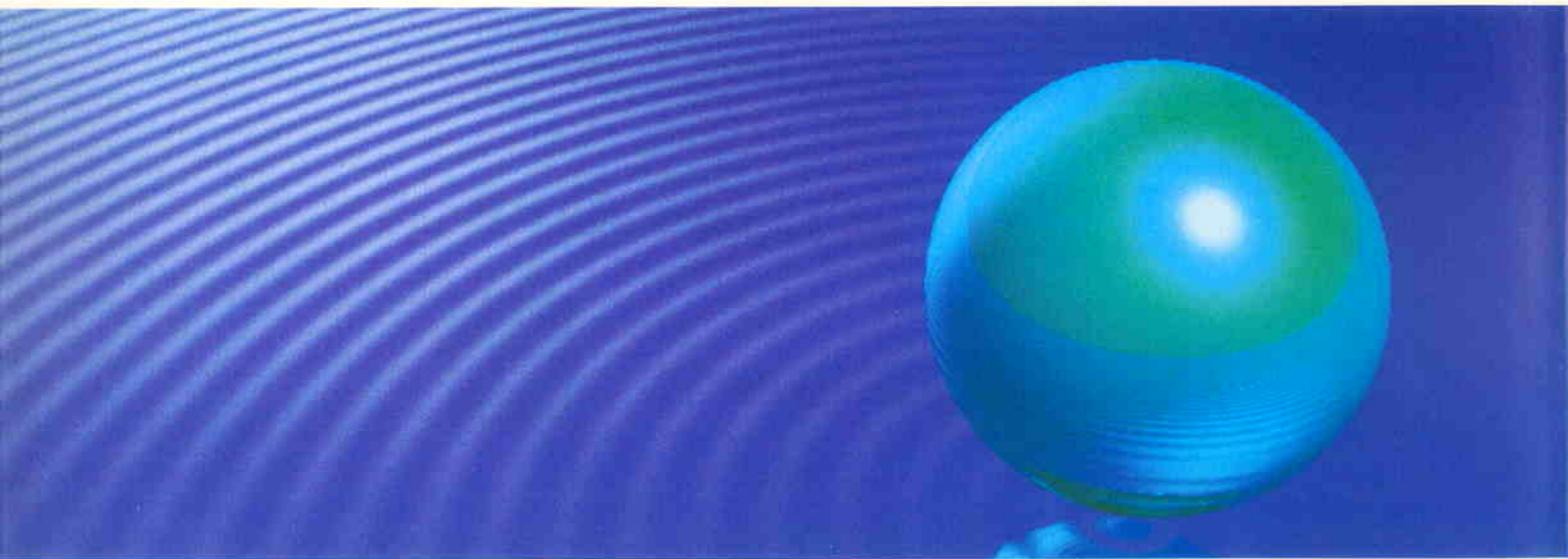


廣輝電子股份有限公司  
Quanta Display Inc.



# KEEP YOUR ROOMS SUPER-CLEAN!

Countless microscopic substances are suspended around you. In the dramatic development of electronic and precision machinery, their components have become miniaturized for better functions. So even air-borne microscopic matters adversely affect the quality of inprocessed products.



The production of foodstuffs and pharmaceuticals also requires an atmosphere with much less contamination. Thus you need to set up clean rooms in which major production factors can be well controlled; air borne microbial particulates, air temperature and humidity, air flowrate and distribution, and so on.

Microelectronics  
Semi-conductor



Pharmaceutical  
Factories &  
Hospitals

Plastic  
Molding Room



Food Product  
Manufacturing  
& Bioprocess

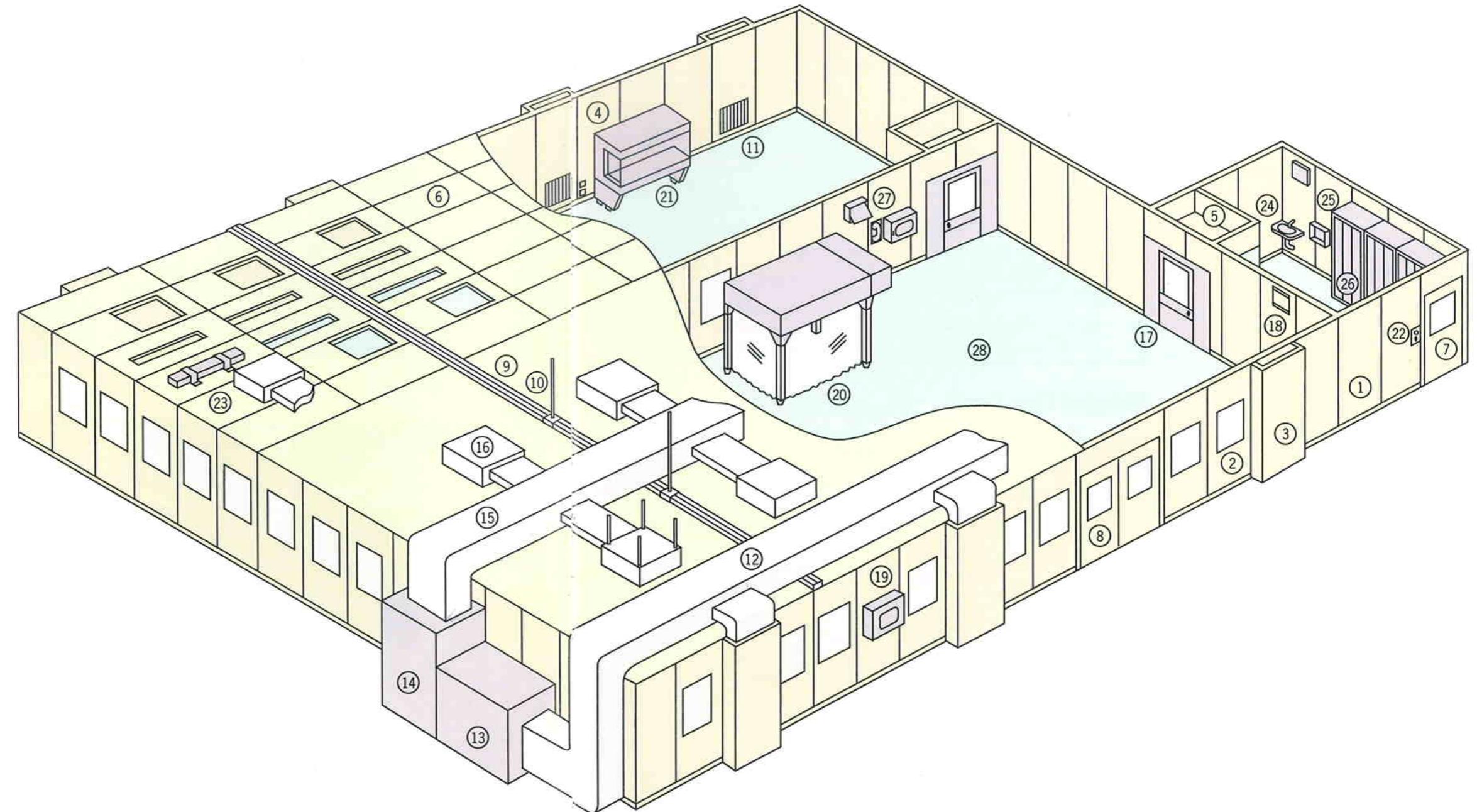
Spraying &  
Printing firm



High  
Precision  
Equipment

# OUR CLEAN ROOMS ARE BACKED UP BY OUR STATE-OF-THE-ARTS TECHNOLOGY

1	Panel	8	Double-swing door	16	Supply unit	24	Wash-stand
2	Panel with window	9	Raceway	17	Air shower	25	Air towel
3	Panel with duct- equipped	10	Hanger	18	Positive-pressure damper	26	Dressing lockers
4	Panel with wall outlet- equipped	11	Return grille	19	Pass through	27	Pass box with intercom
5	Transomed panel	12	Return duct	20	Clean booth	28	Floor
6	Ceiling panel	13	Intermediate filter	21	Clean bench		
7	Single-swing door	14	Air-conditioner	22	Lighting switches		
		15	Air supply duct	23	Fluorescent lamp		



# APPLICATIONS OF CLEAN ROOMS

Clean rooms are now required in various field ranging from precision, electronic, pharmaceutical and foodstuff plants to hospitals and laboratories. Clean rooms can be classified into two kinds - industrial and biological - according to the object to be controlled. The former is primarily applied to control fine particles, and the latter, to control microbial particulars such as fungi and bacteria. The cleanliness required varies from process to process. Typical levels of cleanliness are shown herein for your references.

## Industrial Clean Rooms

Industry	Applicable process	Class 100	Class 1,000	Class 10,000	Class 100,000
IC. LS1	IC. LS1 Production line (diffusion, etching, deposition, surface treatment, and alignment)				
	Raw material handling				
	Semi-finished product stocking				
	Wrapping / packing				
Electronic and electronic components	Small relay				
	CRT				
	Precision ceramic				
	PCB				
	LCD element				
	Assembling/inspection				
Precision machinery	Rocket controller				
	Miniature bearing				
	Precision plate making				
	Standard bearing				
	Assembling / inspection				
Optical Instruments	Lens laminating				
	Micro-film developing/ drying				
	Lens grinding				
	Assembling / inspection				
Plastic molding, etc.	Medical parts				
	Medicine and foodstuff containers				
	Plastic lens				
	High-grade latex product				
	Clean room garments laundry				

## Biological Clean Rooms

Industry	Applicable process	Class 100	Class 1,000	Class 10,000	Class 100,000
Pharmaceutical Hospitals and medical labs	Injection ampul sealing				
	Blood and vaccine conservation				
	General pharmaceutical process				
	Bioclean operating room				
	Bioclean ward				
	Convalescent ward, ICU				
	Newborn and premature baby rooms				
	General inpatient and clinic rooms				
	Bacilliculture labs				
	Lab animal breeding				
Foodstuffs	Orchid growing point culture				
	Soft drink bottling				
	Slice ham packing				
	Diary products and cake packing				
	Fish meat paste packing				

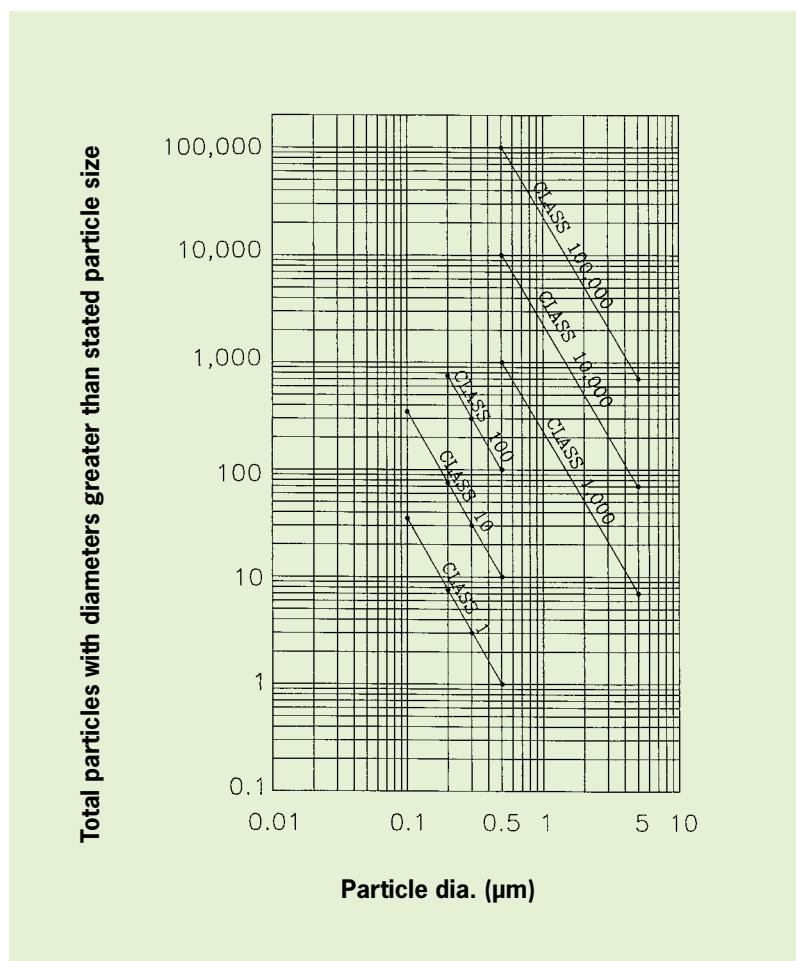
# CLEANLINESS OF CLEAN ROOMS

The cleanliness of clean rooms is specified in various standards. In general, "U.S. Federal Standard 209E" is most applied in industrial clean room, and "National Aeronautics and Space Administration Standard" is applied for the clean rooms of pharmaceuticals, hospitals or test animal breeding facilities where micro-organism is one of the main items to control.

According to "U.S. Federal Standard 209E", class 100 denotes that less than 100 fine particles with a diameter of not smaller than 0.5  $\mu\text{m}$  are contained in 1 cubic foot air (equivalent to less than 3,530 fine particles in 1 $\text{m}^3$  air).

In the atmosphere, 300,000 to 3,000,000 fine particles of more than 0.5  $\mu\text{m}$  diameters are usually involved in 1 cubic foot air.

## Particle diameter distribution curve



## NASA Cleanliness standards for micro-organisms.

Cleanliness class	Max. No of micro-organisms per $\text{ft}^3$	Max. No of micro-organisms per $\text{ft}^3$ per week
100	0.1	1,200
10,000	0.5	6,000
100,000	2.5	30,000

## U.S. Fed. Std. 209E at a glance

\* Maximum number of particles with minimum particle diameters

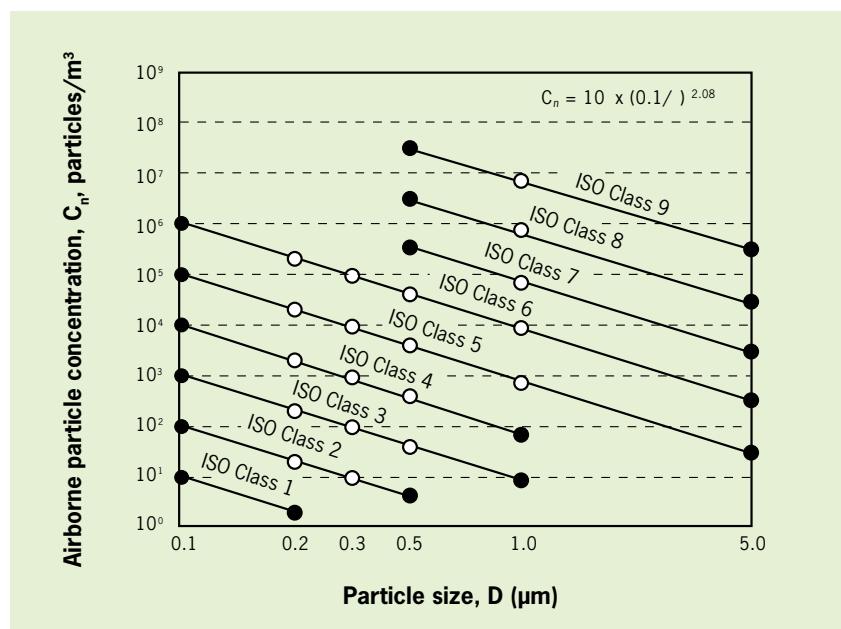
Cleanliness class	Maximum number of particles										
	0.1 $\mu\text{m}$		0.2 $\mu\text{m}$		0.3 $\mu\text{m}$		0.5 $\mu\text{m}$		5 $\mu\text{m}$		
	Unit volume		Unit volume		Unit volume		Unit volume		Unit volume		
( $\text{m}^3$ )	( $\text{ft}^3$ )	( $\text{m}^3$ )	( $\text{ft}^3$ )	( $\text{m}^3$ )	( $\text{ft}^3$ )	( $\text{m}^3$ )	( $\text{ft}^3$ )	( $\text{m}^3$ )	( $\text{ft}^3$ )	( $\text{m}^3$ )	( $\text{ft}^3$ )
1	1,240	35.0	265	7.5	106	3.0	35.3	1.0	---	---	---
10	12,400	350	2,650	75	1,060	30	353	10	---	---	---
100	---	---	26,500	750	10,600	300	3,530	100	---	---	---
1,000	---	---	---	---	---	---	35,300	1,000	247	7.0	
10,000	---	---	---	---	---	---	353,000	10,000	2,470	70	
100,000	---	---	---	---	---	---	3,530,000	100,000	24,700	700	

# CLEANLINESS OF CLEAN ROOMS

The cleanliness of clean rooms is specified in various standards. In general, "ISO 14644" is a worldwide standard, which consist of the following parts, under the general title Cleanrooms and associated controlled environments: Classification of air cleanliness, Specification for testing and monitoring, Metrology and test methods, Design construction and start-up, Operations, etc.

According to "ISO 14644", ISO Class 5 denotes that less than 3,520 fine particles with a diameter of not smaller than 0.5  $\mu\text{m}$  are contained in 1 $\text{m}^3$  air (equivalent to less than 100 fine particles in 1cubic foot air).

In the atmosphere, nearly 10,600,000 to 106,000,000 fine particles of more than 0.5  $\mu\text{m}$  diameter are usually involved in 1 $\text{m}^3$  air.



## Classification Number

Airborne particulate cleanliness shall be designated by a classification number,  $N$ . The maximum permitted concentration of particles,  $C_n$ , for each considered particle size,  $D$ , is determined from the equation:

$$C_n = 10^N \times \left( \frac{0.1}{D} \right)^{2.08} \quad (1)$$

where

$C_n$  is the maximum permitted concentration (in particles per cubic metre of air) of airborne particles that are equal to or larger than the considered particle size.  $C_n$  is rounded to the nearest whole number, using no more than three significant figures.

$N$  is the ISO classification number, which shall not exceed a value of 9. Intermediate ISO classification numbers may be specified, with 0.1 the smallest permitted increment of  $N$ .

$D$  is the considered particle size, in micrometres.

0.1 is a constant, with a dimension of micrometres.

**Table 1 – Selected airborne particulate cleanliness classes for cleanrooms and clean zones**

ISO Classification number (N)	Maximum concentration limits (particles/m³ of air) for particles equal to and larger than the considered sizes shown below (concentration limits are calculated in accordance with equation (1))					
	0.1 $\mu\text{m}$	0.2 $\mu\text{m}$	0.3 $\mu\text{m}$	0.5 $\mu\text{m}$	1 $\mu\text{m}$	5 $\mu\text{m}$
ISO Class 1	10	2				
ISO Class 2	100	24	10	4		
ISO Class 3	1 000	237	102	35	8	
ISO Class 4	10 000	2 370	1 020	352	83	
ISO Class 5	100 000	23 700	10 200	3 520	832	29
ISO Class 6	1 000 000	237 000	102 000	35 200	8 320	293
ISO Class 7				352 000	83 200	2 930
ISO Class 8				3 520 000	832 000	29 300
ISO Class 9				35 200 000	8 320 000	293 000

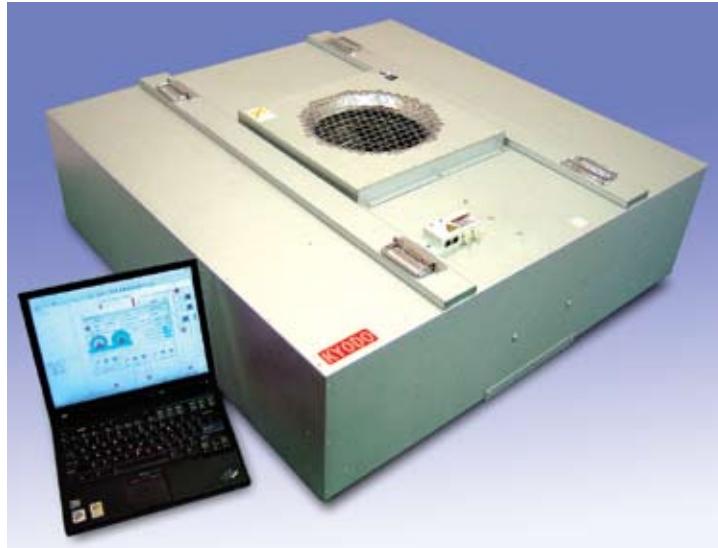
NOTE: Uncertainties related to the measurement process require that concentration data with no more than three significant figures be used in determining the classification level.

## FAN FILTER UNIT

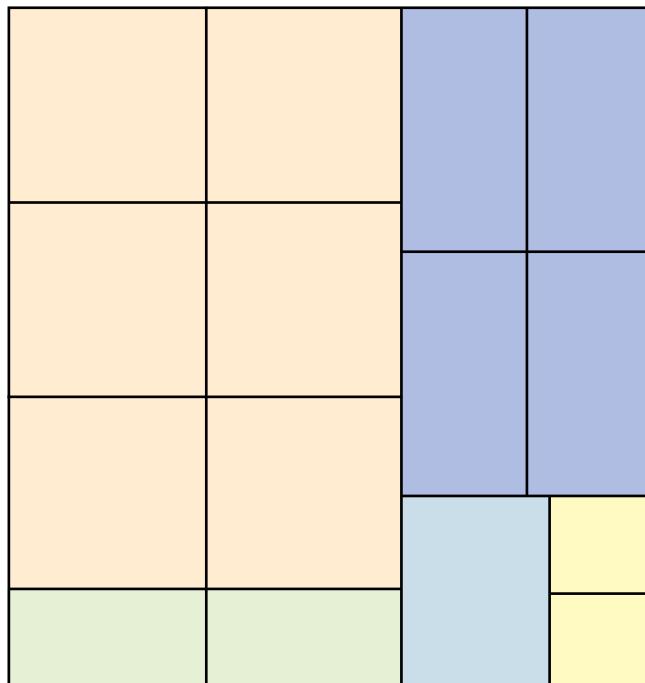
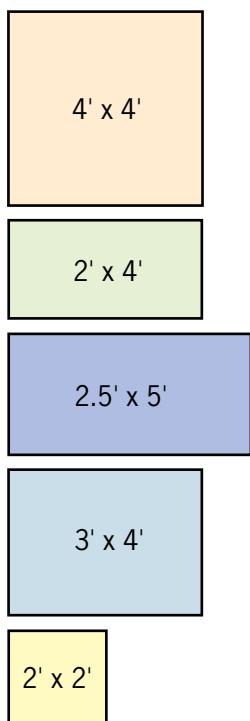
- High performance and excellent quality
- Low energy consumption reduces operating cost
- Advanced and reliable control system
- Easy installation in clean room grids

The KYODO Fan Filter Unit (FFU) is a self-contained ceiling unit for use in turbulent mixing and laminar flow clean room applications. The unit is designed with total flexibility for use with the ceiling grids. It can be easily upgraded and integrated into any ceiling configuration in accordance with design specification to achieve Clean Room Class 100, Class 10 and Class 1. We have 3 different types of FFU to meet customer's requirements:

- a) Basic type
- b) Low noise type
- c) Super low noise type



The KYODO FFU is one of the quietest and cost effective units on the market, that delivers high quality air filtration and air movement performance in clean room. It is suitable for semiconductor, electronics, TFTLCD, disk drives manufacturing, optical, biological industries and other applications where airborne contaminants must be carefully controlled.



## FAN FILTER UNIT (DC TYPE)

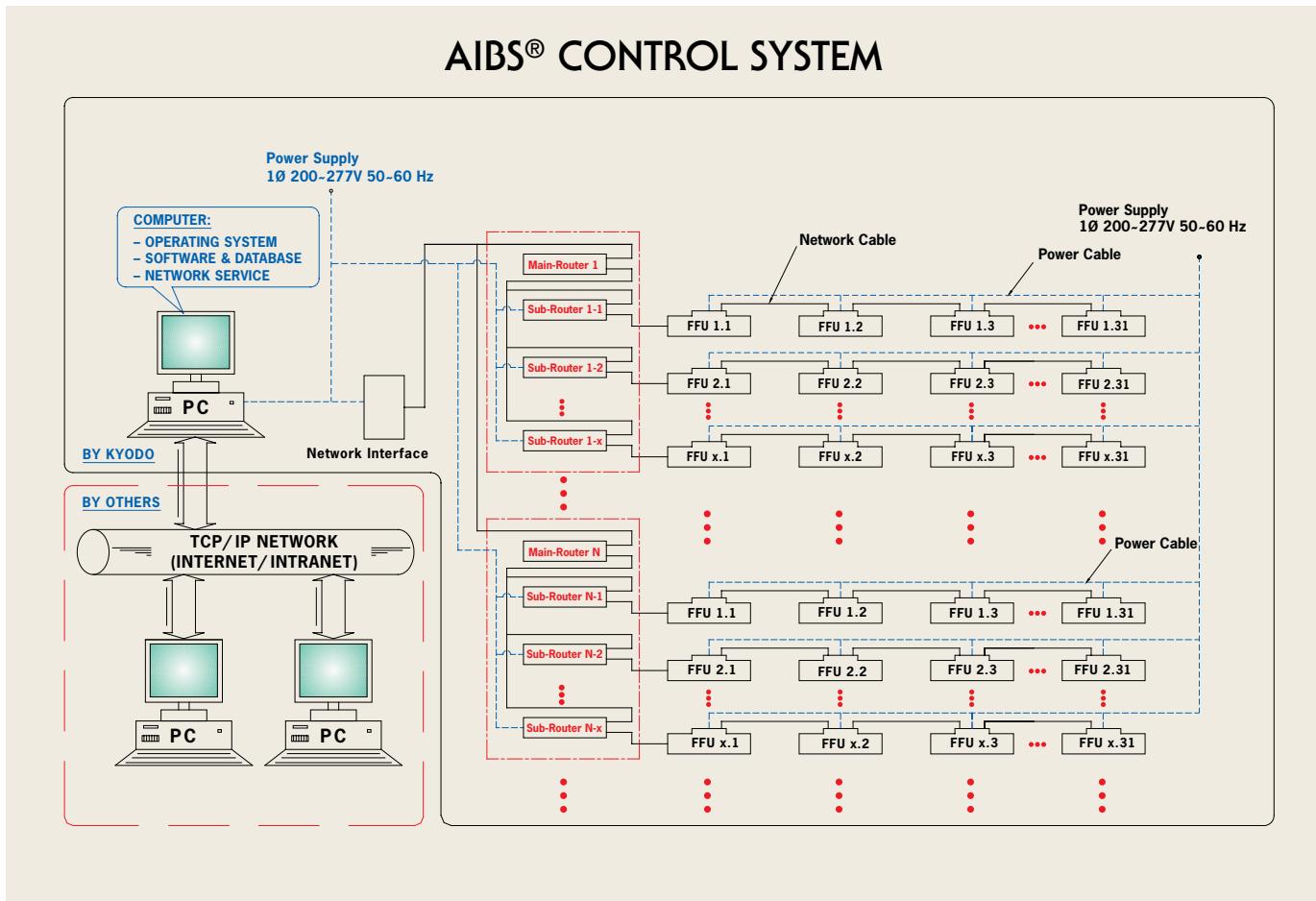
## FEATURE

- electronically commutated DC motor (External rotor motor type).
- high efficiency backward curved blade fan.
- grounded motor ball bearing seal for life.
- maximum vibration level to ISO 1940 G2.5 standard.
- complete with KYODO FFU control systems software.
- extremely even filtered air distribution.
- extremely compact in size and easy to install.

## CONTROL SYSTEM

Control System Based on Advanced Internet Based System (AIBS®)

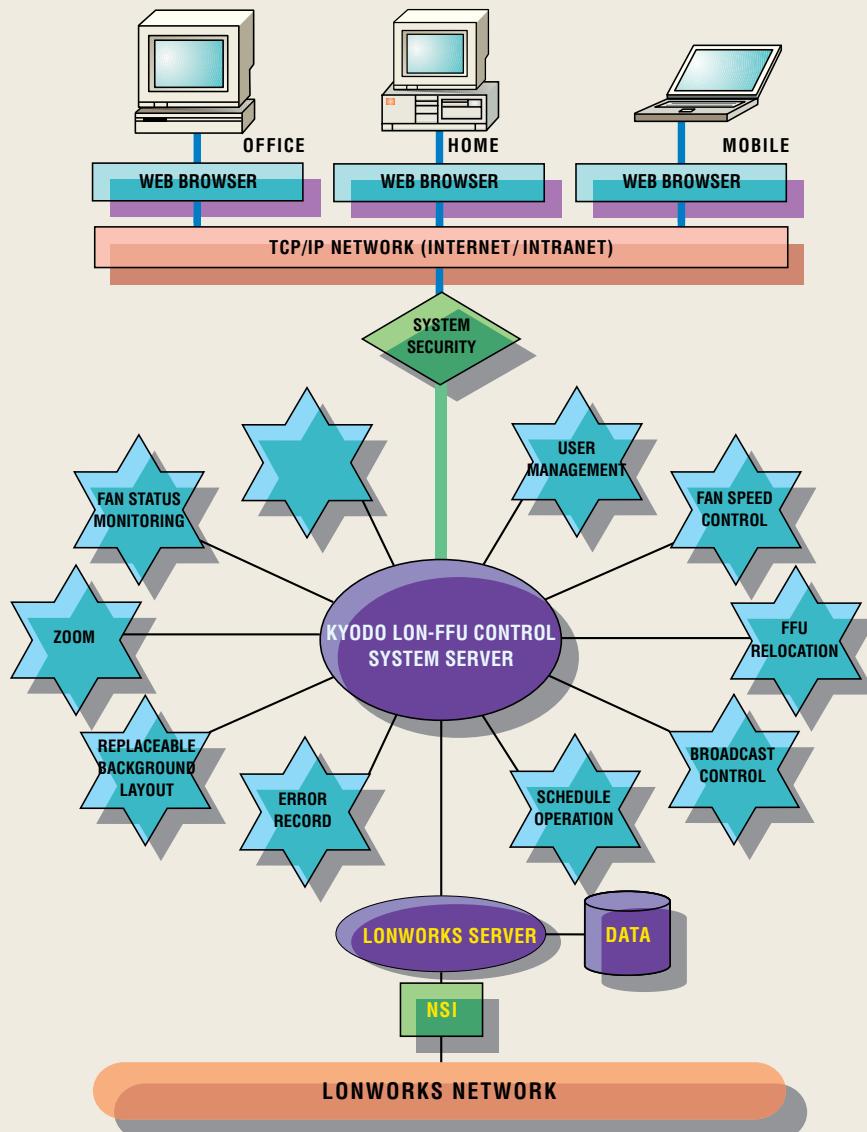
- only 2 wires needed for connection in series from PC to all fans.
- 2 ways communication for control & monitoring speed feedback.
- control capacity exceed 10,000 FFUs.
- colour changes for group / individual FFU displayed on PC in case of malfunctioning.
- error message can be sent out automatically to inform the maintenance staff.
- active contact provided for alarm signal.



## LonWorks Control System

- open Lontalk protocol.
- control capacity exceed 10,000 FFUs.
- bus topology with double terminator.
- acquisition of real-time data.
- advanced error signal handling configuration.
- windows style, friendly graphical user interface.
- 2-level control through broadcasting mode.
- precisely controlling & monitoring FFU.
- multi-level pass word for different access rights.
- automatic operation with programmable "time-switch".
- complete on-line control & configuration.

## LONWORKS CONTROL SYSTEM NETWORK ARCHITECTURE



## FAN FILTER UNIT

### SPECIFICATION

SIZE (mm)	600 x 1200, 900 x 1200, 1200 x 1200, 750 x 1500, etc		
CASING	Galvalume		Standard
	Aluminum, SUS 430		Optional
ELECTRICAL	Terminal Block		Standard
	Male-Female Connector with Pins		Optional
	3-Pin Plug for Single Phase		Optional
POWER SUPPLY	1Ø : 100~110V, 200~230V, 277V (50~60Hz)		
	3Ø : 200V, 220V, 380V, 415V, 480V (50~60Hz)		
MOUNTING	Horizontal		Standard
	Vertical (Wall Mounting)		Optional
FILTER ACCESS	Top Access		Standard
	Room Access		Optional
STEP SUPPORTER	Up to 80 kg load		Optional
CONTROL & MONITORING	DC Type	AIBS complete with software	
		LonWorks complete with software	
	AC Type	1Ø	Local Speed Controller
		3Ø	Motor Circuit Breaker or Relay
			Thermal Contact

# AIR SHOWER

The biggest contaminant in clean room is the particles attached to clean clothing and footwear. AIR SHOWER is installed to remove such fine particles by using air jet blowing at clean room clothing before entering into clean room.

## TYPE IDENTIFICATION

AS - 0810 - S - F

F : SUS FLOORING  
A : AUTO DOOR  
C : CEILING AIR JETTING  
L : SPECIAL WALKWAY  
M : DOUBLE-LEAF DOOR  
R : FLOOR RETURN  
T : TUNNEL SYSTEM

S : SINGLE SIDE JETTING  
D : DOUBLE SIDE JETTING

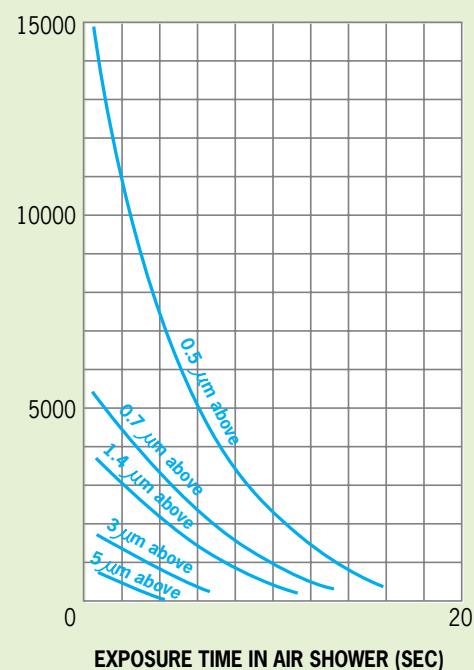
08 : EFFECTIVE WIDTH :  
800mm  
10 : EFFECTIVE LENGTH : 1000mm

AIR SHOWER

Recommended exposure time in air shower is 20 sec. During shower exposure, air jet turbulence created removes particle on the surface of clean uniform.



PARTICLES REMOVAL IN CLEAN AIR SHOWER

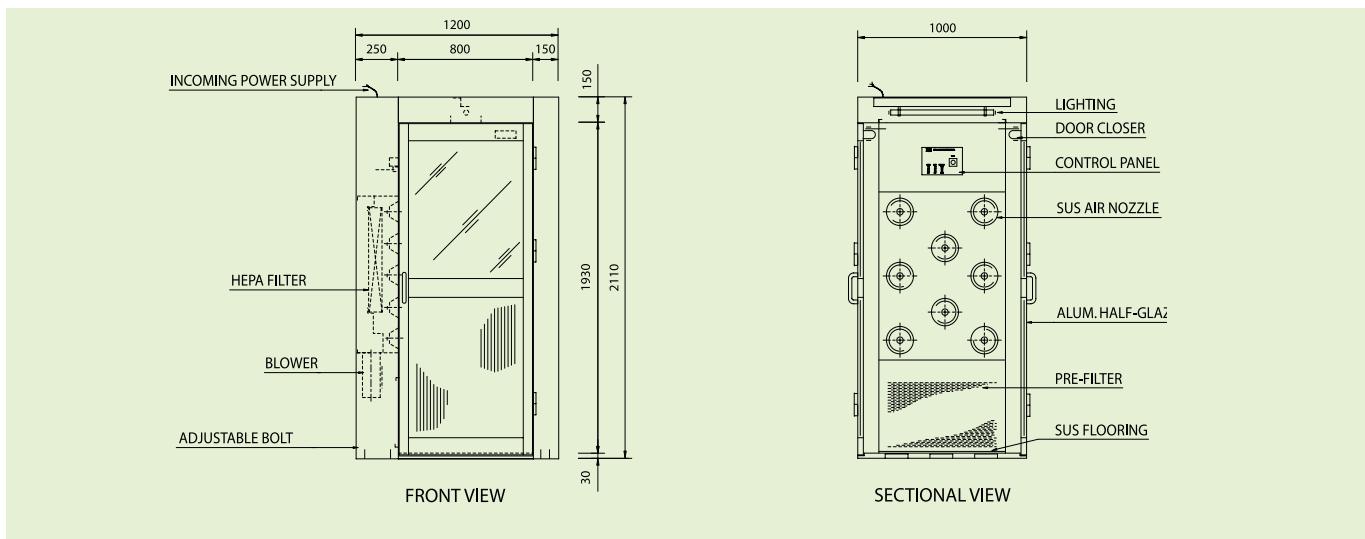


# PERSONNEL AIR SHOWER

## SPECIFICATION

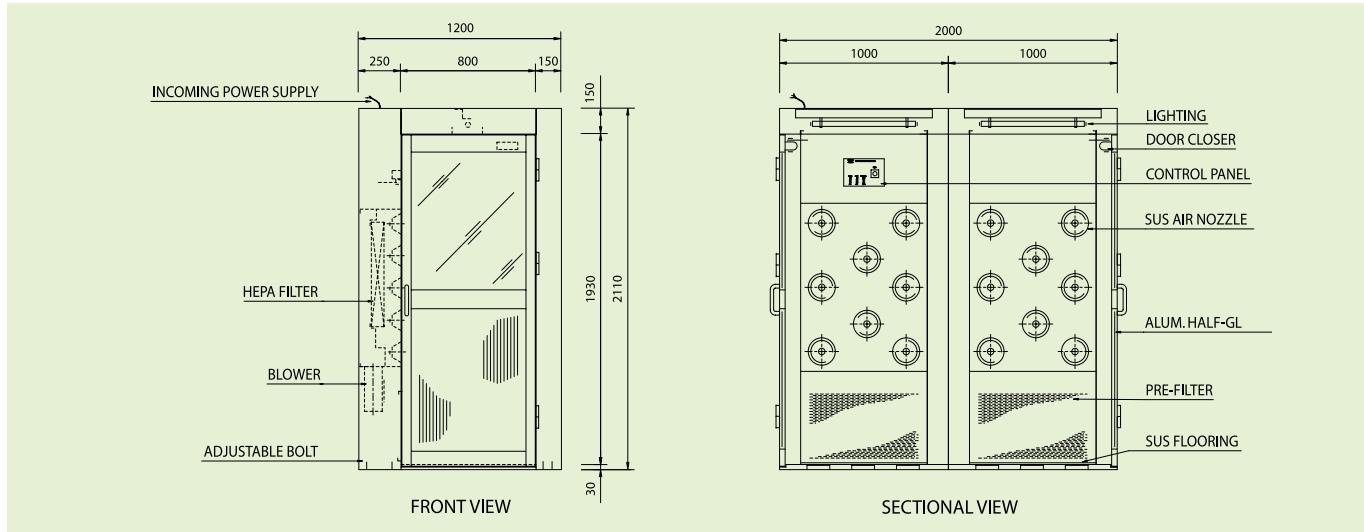
SPECIFICATION	MODEL	AS-0810SF	AS-0820SF	AS-0810DF	AS-0820DF
AIR VOLUME		9m <sup>3</sup> /Min	18m <sup>3</sup> /Min	18m <sup>3</sup> /Min	36m <sup>3</sup> /Min
JET SPEED			23m/Sec AND ABOVE		
HEPA FILTER EFFICIENCY			99.99% OR MORE AT 0.3 µm PARTICLE		
PRE FILTER			NON-WOVEN		
CONSTRUCTION			CASING : STEEL SHEET METAL FLOOR : STAINLESS STEEL PLATE DOOR : ALUMINIUM HALF-GLAZE MANUAL SWING		
FINISHING			POWDER BAKED EPOXY FINISHING		
NO. OF JET NOZZLES	8		16		32
NO. OF BLOWERS	1		2		4
OPERATION		AIR JET (AUTO/MANUAL) SW, LIGHTING SWITCH, JETTING TIMER			
POWER SUPPLY		AC, 1 PH, 230V, 50 / 60 Hz			
LIGHT FITTING	20W x 1	20W x 2	20W x 1	20W x 2	
POWER CONSUMPTION (APPROX.)	450W	880W	845W	1650W	
WEIGHT (APPROX.)	190kg	380kg	230kg	460kg	

## AS-0810SF

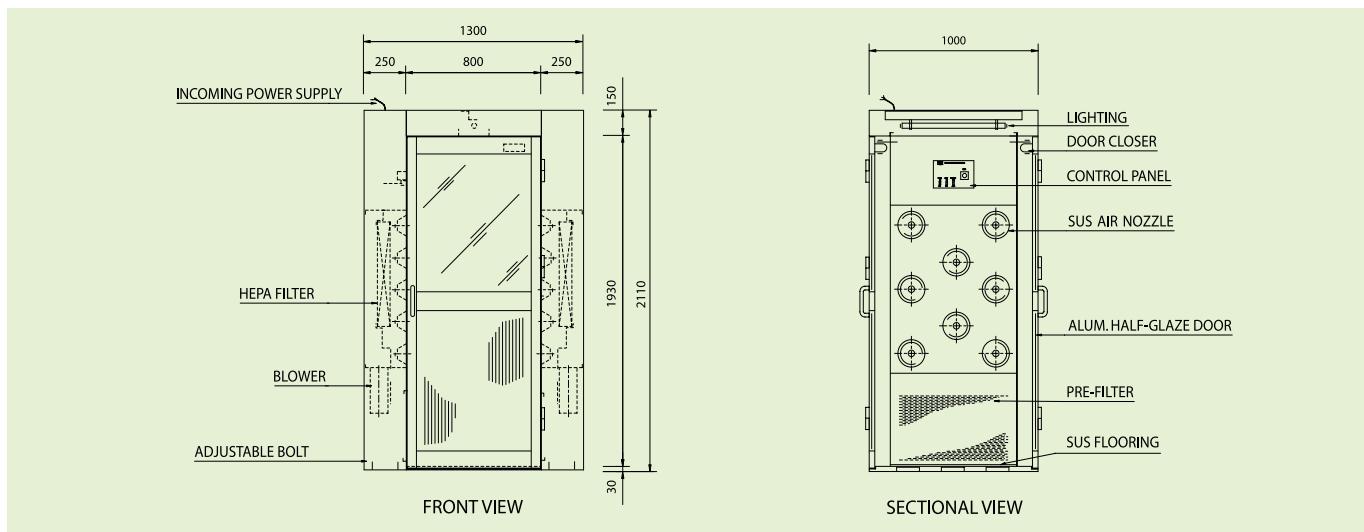


\* Custom - built dimensions & specifications are also acceptable.

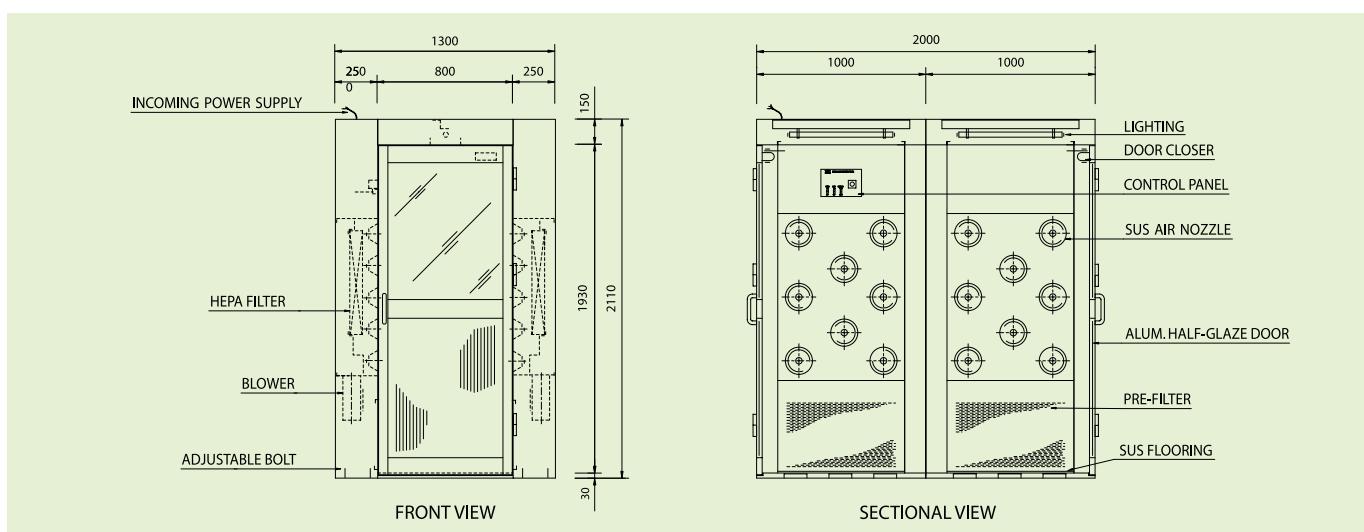
## AS-0820SF



## AS-0810DF



## AS-0820DF



\* Drawing for other models are available upon request.

## ALSO AVAILABLE .....



**TUNNEL SYSTEM**



**SPECIAL WALK "L" WAY TYPE**



**SPECIAL WALK "S" WAY TYPE**



**CARGO USE TYPE**

\* Custom - built dimensions & specifications are also acceptable.

# CLEAN BOOTH

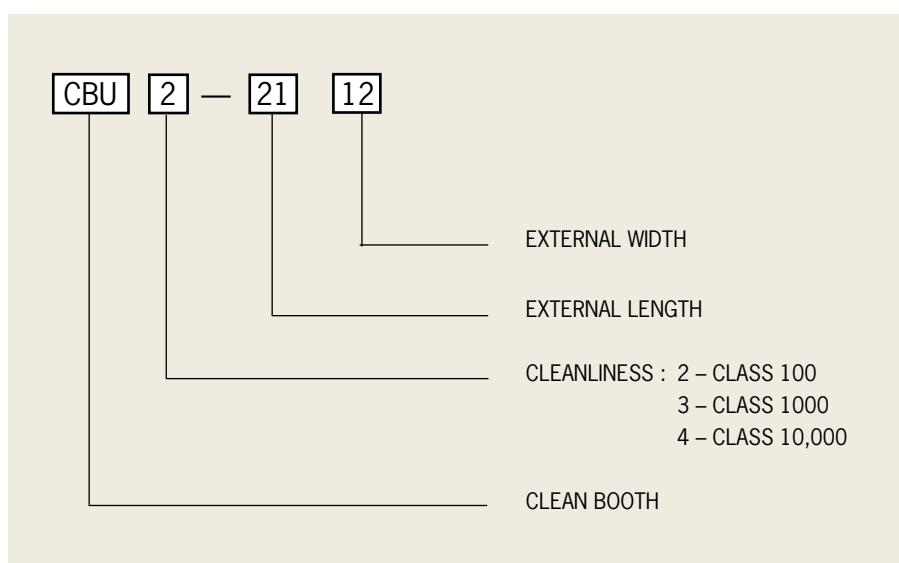
CLEAN BOOTH is constructed of steel structure with a vinyl transparent curtain as enclosure. This equipment is complete with HEPA filter module mounted on ceiling structure for downward vertical clean air flow. It facilitates the creation of a clean environment of a higher level of cleanliness within a clean room area.

## FEATURE

- low installation cost, modular design for fast and easy assembly.
- compact design, light weight complete with castor wheel for mobility, four sides vinyl transparent curtain.
- can be set up by modulars for larger clean environment area.
- can achieve class 100 – 10,000 cleanliness with easy assembly.
- energy saving design for purpose of localised clean environment.



## TYPE IDENTIFICATION



## GENERAL SPECIFICATION

SPECIFICATION	MODEL	CBU 2 - □□□□	CBU 3 - □□□□	CBU 4 - □□□□
CLEANLINESS		CLASS 100	CLASS 1,000	CLASS 10,000
AIR CHANGE/HOUR		APPROX. 425	APPROX. 160	APPROX. 70
HEPA FILTER EFFICIENCY			99.99% @0.3µm AND ABOVE	
PRE FILTER			NON-WOVEN	
CONSTRUCTION			CASING - STEEL SHEET METAL ENCLOSURE - VINYL CURTAIN	
FINISHING			POWDER BAKED EPOXY FINISHING	
POWER SUPPLY			AC, 1 PH, 230V, 50 / 60 Hz	

## CBU2 (CLASS 100) SPECIFICATION

SPECIFICATION	MODEL	2112	2124	2136	4224	4236
AIR VOLUME		40m³/Min	80m³/Min	120m³/Min	160m³/Min	240m³/Min
HEPA FILTER QUANTITY		3	6	9	12	18
LIGHT FITTING		(40W X 1Tube) X2	(40W X 1Tube) X4	(40W X 1Tube) X6	(40W X 1Tube) X8	(40W X 1Tube) X10
POWER CONSUMPTION		APPROX. 600W	APPROX. 1200W	APPROX. 1800W	APPROX. 2400W	APPROX. 3600W
POWER SUPPLY (APPROX.)				AC, 1 PH, 230V, 50 / 60 Hz		
WEIGHT (APPROX.)		320kg	640kg	960kg	1,280kg	1,920kg

## CBU3 (CLASS 1,000) SPECIFICATION

SPECIFICATION	MODEL	2718	2736	2754	5436	5454
AIR VOLUME		30m³/Min	60m³/Min	90m³/Min	120m³/Min	180m³/Min
HEPA FILTER QUANTITY		2	4	6	8	10
LIGHT FITTING		(40W X 1Tube) X2	(40W X 1Tube) X4	(40W X 1Tube) X6	(40W X 1Tube) X8	(40W X 1Tube) X10
POWER CONSUMPTION		APPROX. 450W	APPROX. 900W	APPROX. 1350W	APPROX. 1800W	APPROX. 2250W
POWER SUPPLY (APPROX.)				AC, 1 PH, 230V, 50 / 60 Hz		
WEIGHT (APPROX.)		240kg	480kg	720kg	960kg	1,440kg

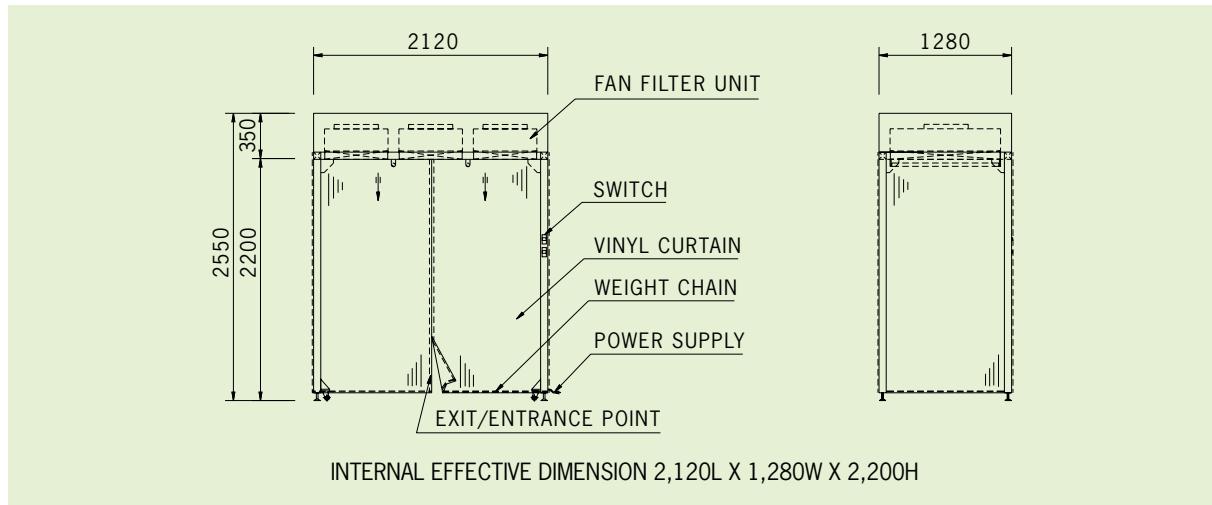
## CBU4 (CLASS 10,000) SPECIFICATION

SPECIFICATION	MODEL	2718	2736	2754	5436	5454
AIR VOLUME		13m³/Min	26m³/Min	39m³/Min	52m³/Min	78m³/Min
HEPA FILTER QUANTITY		1	2	3	4	5
LIGHT FITTING		(40W X 1Tube) X2	(40W X 1Tube) X4	(40W X 1Tube) X6	(40W X 1Tube) X8	(40W X 1Tube) X10
POWER CONSUMPTION		APPROX. 300W	APPROX. 600W	APPROX. 900W	APPROX. 1200W	APPROX. 1500W
POWER SUPPLY (APPROX.)				AC, 1 PH, 230V, 50 / 60 Hz		
WEIGHT (APPROX.)		200kg	400kg	600kg	800kg	1,200kg

\* Custom - built dimensions & specifications are acceptable.

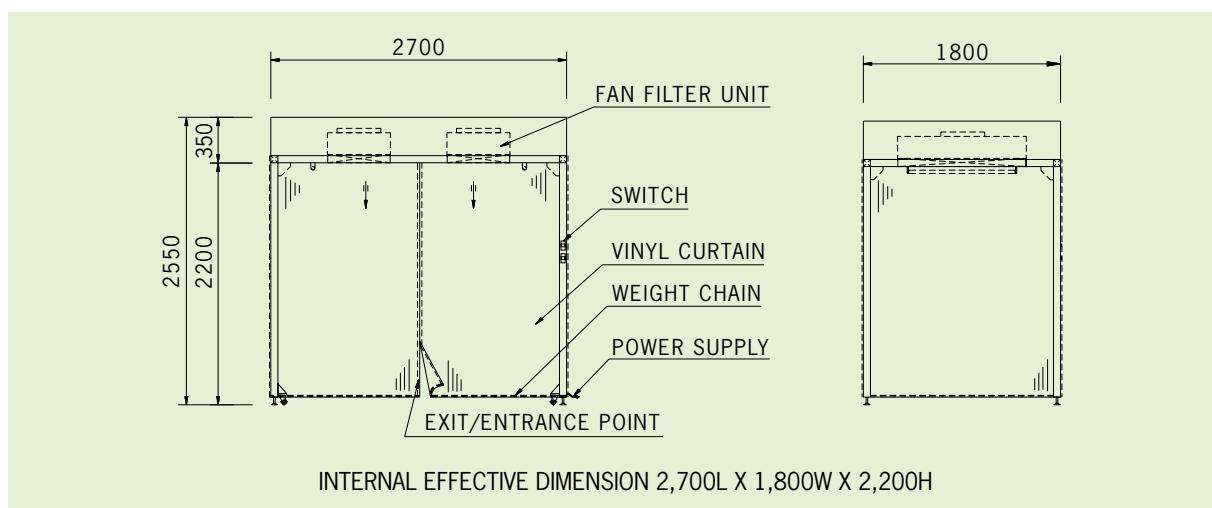
## CBU2

### CBU2-2112



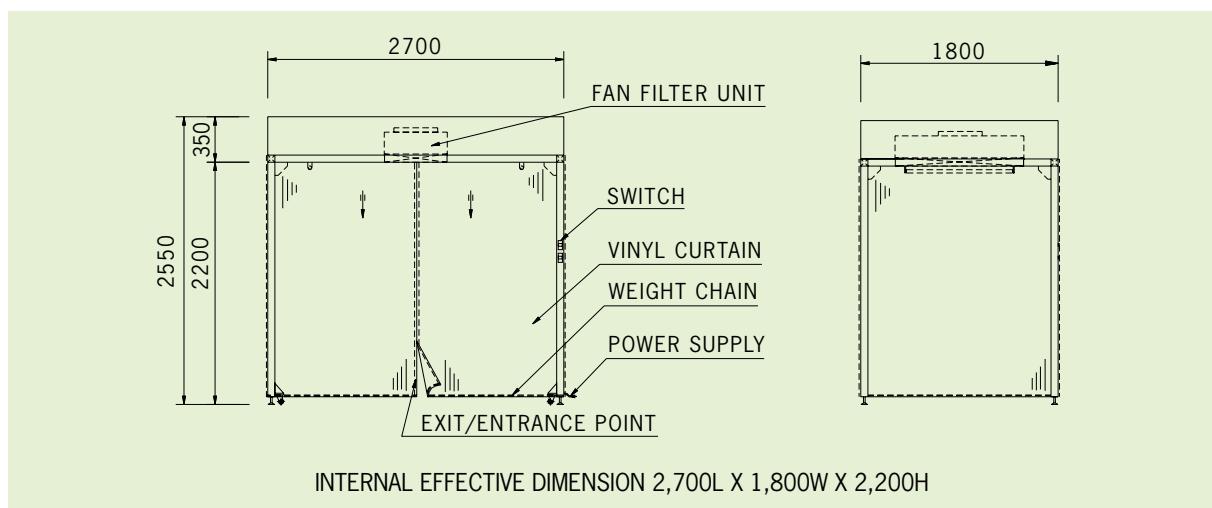
## CBU3

### CBU3-2718



## CBU4

### CBU4-2718



\* Drawings for other models are available upon request.

# CLEAN-SUPPLY

Clean supply unit comprises of concealed ceiling mount HEPA filter unit. It creates a clean environment which is dust free and bacteria free. It is suitable for clean room with turbulent flow. Two choices: ATTACHED WITH FAN or FILTER ONLY. Two type of discharge: FLAT or WIDE type.

## TYPE IDENTIFICATION

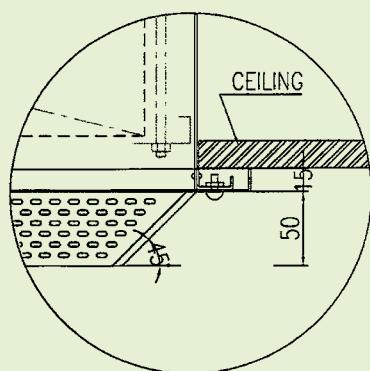
CS F - 28 1 W

BLOW-OUT SURFACE TYPE  
W : WIDE TYPE  
F : FLAT TYPE  
HEPA FILTER QUANTITY  
AIR VOLUME m<sup>3</sup>/min  
COMPLETE WITH FAN  
CLEAN SUPPLY UNIT

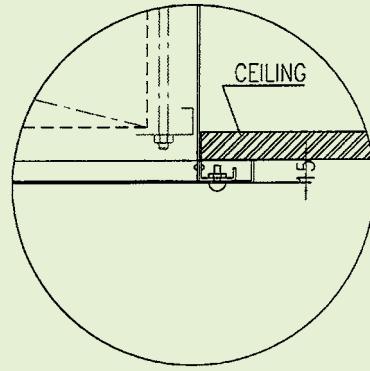


## BLOW-OUT SURFACE TYPE

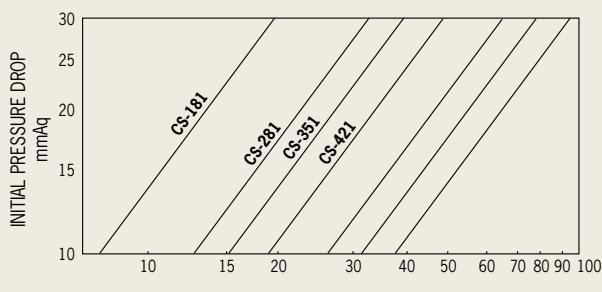
### WIDE TYPE



### FLAT TYPE



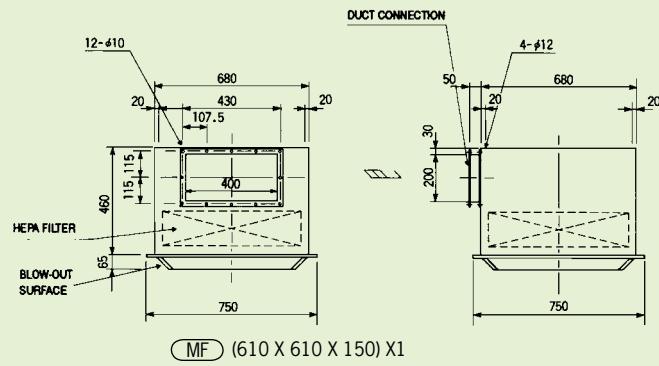
## AIR HANDLING VOLUME AND INITIAL PRESSURE DROP



AIR VOLUME M<sup>3</sup>/MIN  
The choice of fanless model depends on stated air volume

## CLEAN SUPPLY UNIT WITHOUT FAN

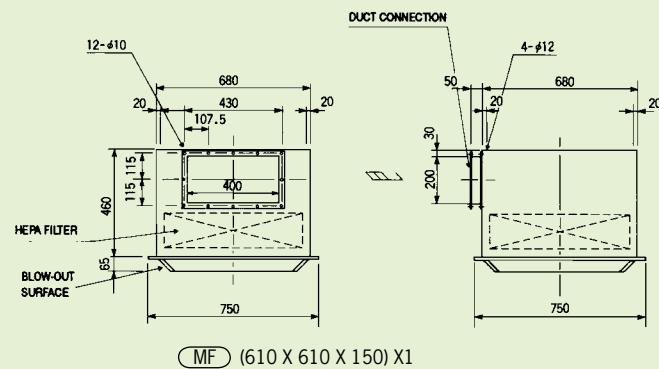
### CS-181W



### SPECIFICATION

AIR VOLUME	18m³/Min
HEPA FILTER EFFICIENCY	99.99% AT 0.3 µm PARTICLE
CONSTRUCTION	STEEL SHEET METAL CASING
BLOW OUT SURFACE	PERFORATED STEEL SHEET
FINISHING	POWDER BAKED EPOXY
WEIGHT	39kg

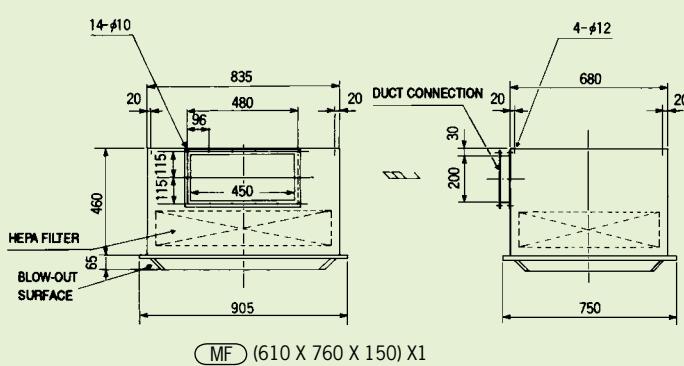
### CS-281W



### SPECIFICATION

AIR VOLUME	28m³/Min
HEPA FILTER EFFICIENCY	99.99% AT 0.3µm PARTICLE
CONSTRUCTION	STEEL SHEET METAL CASING
BLOW OUT SURFACE	PERFORATED STEEL SHEET
FINISHING	POWDER BAKED EPOXY
WEIGHT	47kg

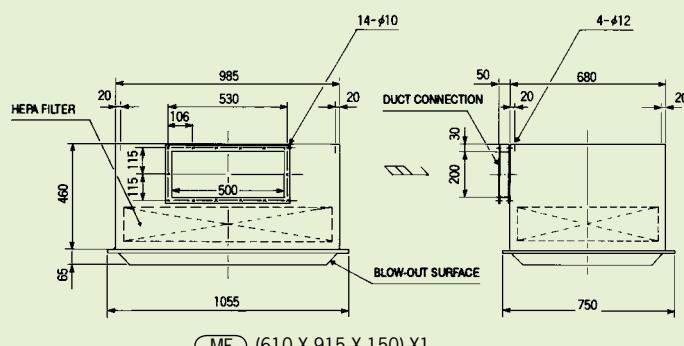
### CS-351W



### SPECIFICATION

AIR VOLUME	35m³/Min
HEPA FILTER EFFICIENCY	99.99% AT 0.3µm PARTICLE
CONSTRUCTION	STEEL SHEET METAL CASING
BLOW OUT SURFACE	PERFORATED STEEL SHEET
FINISHING	POWDER BAKED EPOXY
WEIGHT	55kg

### CS-421W

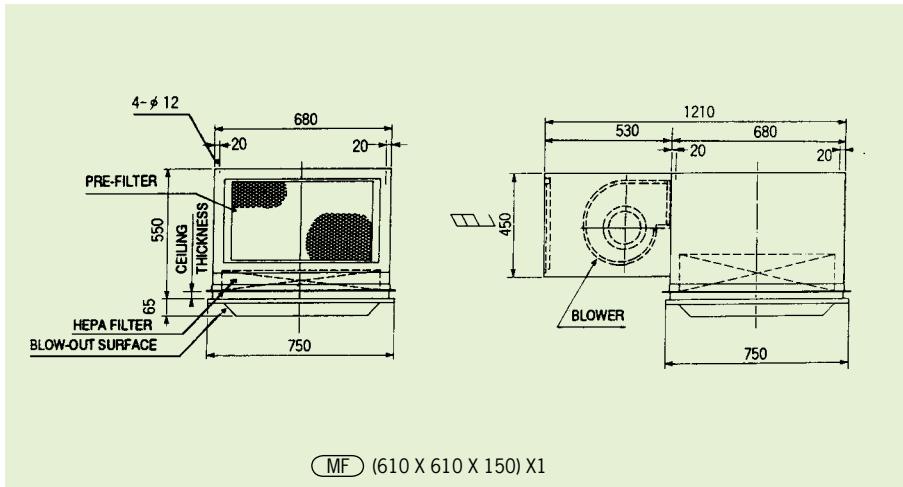


### SPECIFICATION

AIR VOLUME	42m³/Min
HEPA FILTER EFFICIENCY	99.99% AT 0.3µm PARTICLE
CONSTRUCTION	STEEL SHEET METAL CASING
BLOW OUT SURFACE	PERFORATED STEEL SHEET
FINISHING	POWDER BAKED EPOXY
WEIGHT	61kg

## CLEAN SUPPLY UNIT COMPLETE WITH FAN

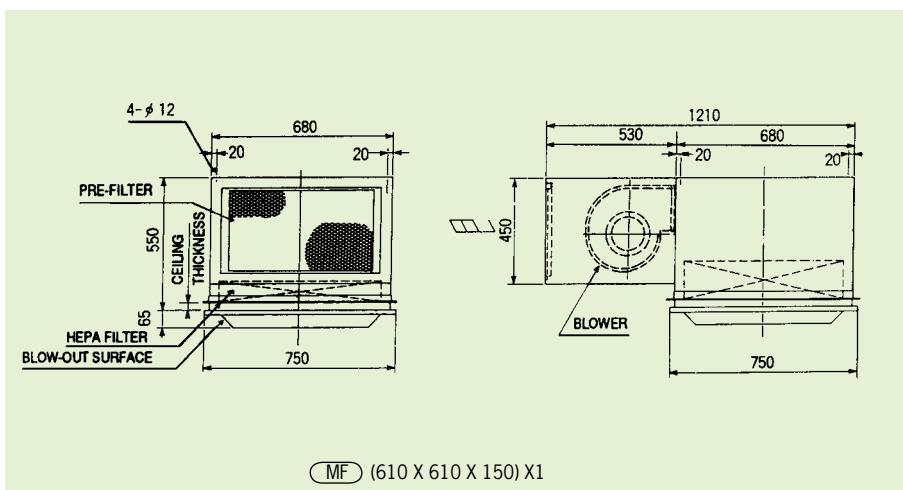
### CSF-181 W



### SPECIFICATION

AIR VOLUME	18m³/Min
HEPA FILTER EFFICIENCY	99.99% AT 0.3 µm PARTICLE
PRE FILTER	NON WOVEN
CONSTRUCTION	STEEL SHEET METAL CASING
BLOW OUT SURFACE	PERFORATED STEEL SHEET
FINISHING	POWDER BAKED EPOXY
POWER SUPPLY	AC, 1 PH, 230V, 50 / 60Hz
POWER CONSUMPTION	380/495W
WEIGHT	65kg

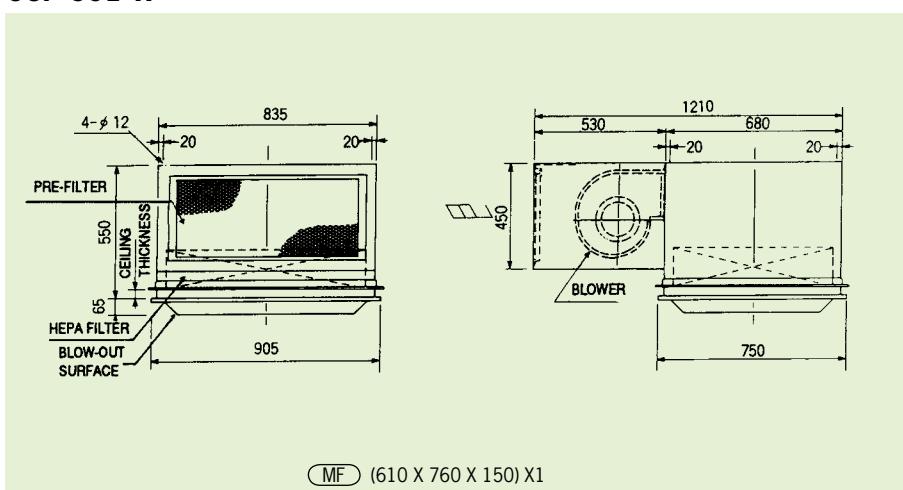
### CSF-281 W



### SPECIFICATION

AIR VOLUME	28m³/Min
HEPA FILTER EFFICIENCY	99.99% AT 0.3 µm PARTICLE
PRE FILTER	NON WOVEN
CONSTRUCTION	STEEL SHEET METAL CASING
BLOW OUT SURFACE	PERFORATED STEEL SHEET
FINISHING	POWDER BAKED EPOXY
POWER SUPPLY	AC, 1 PH, 230V, 50 / 60Hz
POWER CONSUMPTION	490/525W
WEIGHT	75kg

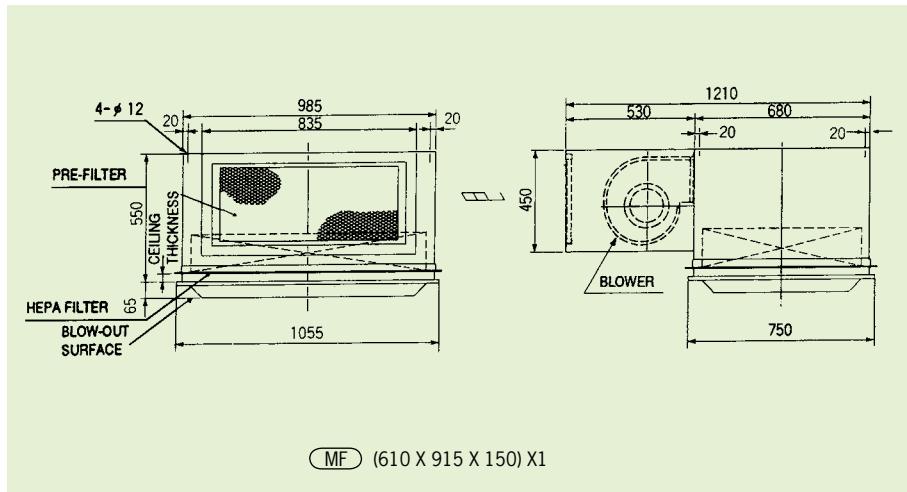
### CSF-351 W



### SPECIFICATION

AIR VOLUME	35m³/Min
HEPA FILTER EFFICIENCY	99.99% AT 0.3 µm PARTICLE
PRE FILTER	NON WOVEN
CONSTRUCTION	STEEL SHEET METAL CASING
BLOW OUT SURFACE	PERFORATED STEEL SHEET
FINISHING	POWDER BAKED EPOXY
POWER SUPPLY	AC, 1 PH, 230V, 50Hz
POWER CONSUMPTION	650W
WEIGHT	85kg

## CSF-421 W



## SPECIFICATION

AIR VOLUME	42m <sup>3</sup> /Min
HEPA FILTER EFFICIENCY	99.99% AT 0.3 $\mu$ m PARTICLE
PRE FILTER	NON WOVEN
CONSTRUCTION	STEEL SHEET METAL CASING
BLOW OUT SURFACE	PERFORATED STEEL SHEET
FINISHING	POWDER BAKED EPOXY
POWER SUPPLY	AC, 1 PH, 230V, 50 / 60Hz
POWER CONSUMPTION	1060/1085W
WEIGHT	95kg

\* Custom - built dimensions & specifications are also acceptable.

# PASS BOX

PASS BOX facilitates the transfer of work items in and out of the clean room. Pass box is essential for the swift transfer of goods and to minimise the movement of personnel and unnecessary human traffic in and out from clean room. Besides the standard type pass box, U. V. light and air shower facility are optional.



## TYPE IDENTIFICATION

PB - 5 5 4 - M □

OPTIONAL FEATURE  
L : LAMP (TRAFFIC INDICATION)  
P : INTER-PHONE  
B : BUZZER  
R : ROLLER CONVEYOR

TYPE  
M : MECHANICAL INTERLOCK  
E : ELECTRICAL INTERLOCK

EFFECTIVE LENGTH  
4 : 400mm  
5 : 500mm  
6 : 600mm

EFFECTIVE HEIGHT  
4 : 400mm  
5 : 500mm  
6 : 600mm

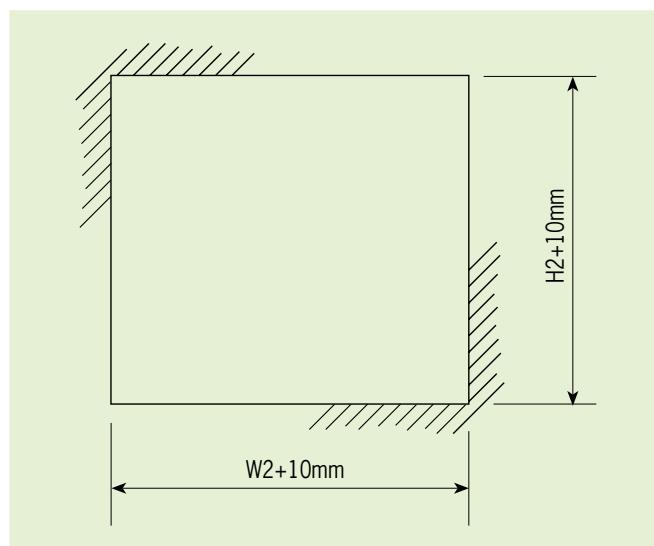
EFFECTIVE WIDTH  
4 : 400mm  
5 : 500mm  
6 : 600mm

PASS BOX

## SPECIFICATION

DOOR INTERLOCK	MECHANICAL / ELECTRICAL
CONSTRUCTION	CASING : STEEL SHEET METAL BASE : STAINLESS STEEL BASE PLATE WINDOW : COLOURLESS TRANSPARENT GLASS
FINISHING	POWDER BAKED EPOXY
WEIGHT	REFER TO ATTACHED SHEET

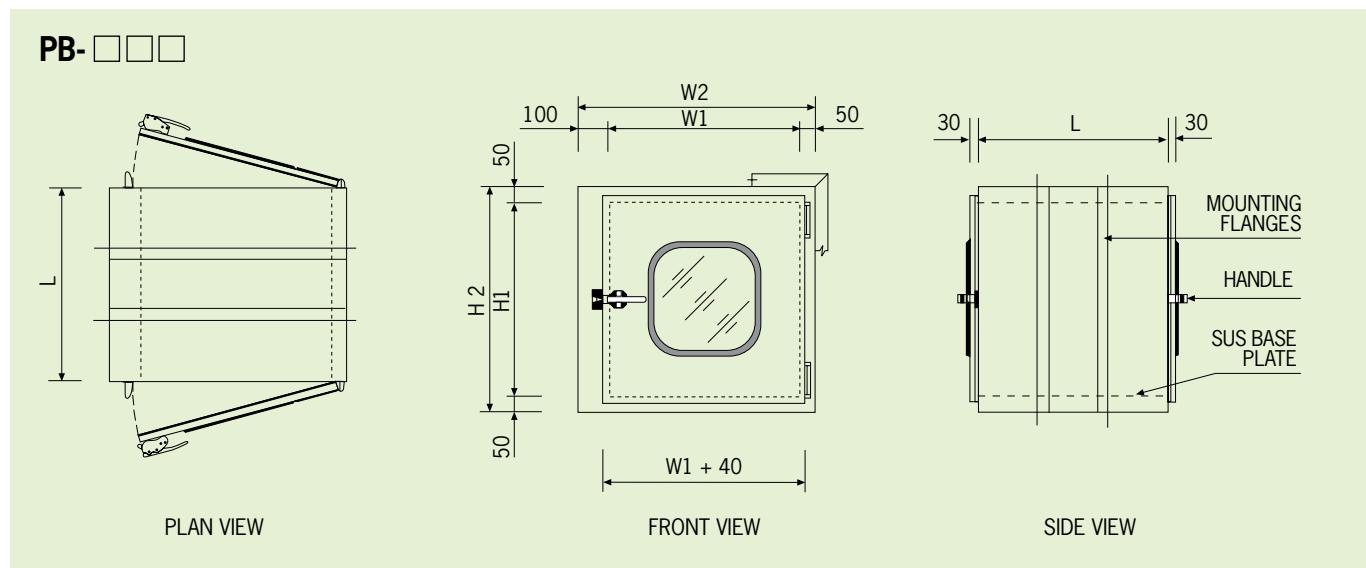
## OPENING DIMENSION



## DIMENSION

MODEL	W1	W2	H1	H2	L	WEIGHT
PB-444	400	550	400	500	400	39kg
PB-544	500	650				48kg
PB-555			500	600	500	53kg
PB-665	600	750	600	700		63kg
PB-666					600	69kg

## STANDARD TYPE



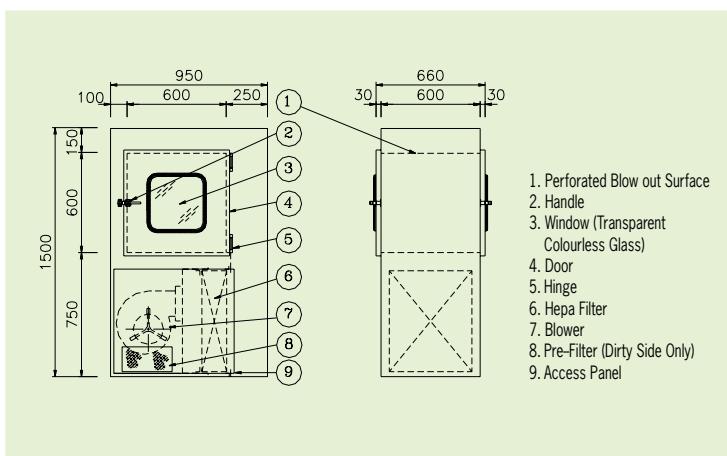
\* Custom - built dimensions & specifications are also acceptable.

## SPECIAL TYPE PASS BOX



This is a PASS BOX  
incorporated with a blower  
and HEPA filter.

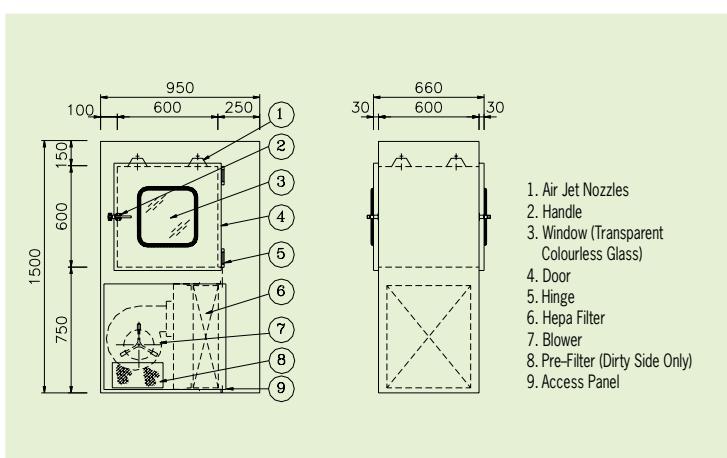
### CIRCULATING TYPE PASS BOX



#### SPECIFICATION

HEPA FILTER EFFICIENCY	99.99% OR MORE AT 0.3μm PARTICLES
CIRCULATED AIR FLOW	APPROX. 9.5m <sup>3</sup> /Min
PRE FILTER	NON-WOVEN
CONSTRUCTION	STEEL SHEET METAL
	INT. BASE : 304 PUNCHING POLISHED PLATE WINDOW : COLOURLESS TRANSPARENT GLASS
FINISHING	POWDER BAKED EPOXY
POWER SUPPLY	AC, 1 PH, 230V, 50 / 60 Hz
POWER CONSUMPTION	350 W
WEIGHT	120 kg

### PASS BOX WITH AIR SHOWER



#### SPECIFICATION

HEPA FILTER EFFICIENCY	99.99% OR MORE AT 0.3μm PARTICLES
AIR FLOW	APPROX. 5.6m <sup>3</sup> /Min
JET SPEED	APPROX. 23 m/sec OR MORE
PRE FILTER	NON-WOVEN
CONSTRUCTION	STEEL SHEET METAL
	INT. BASE : 304 PUNCHING POLISHED PLATE WINDOW : COLOURLESS TRANSPARENT GLASS
FINISHING	POWDER BAKED EPOXY
POWER SUPPLY	AC, 1 PH, 230V, 50 / 60 Hz
POWER CONSUMPTION	350 W
WEIGHT	120 kg

\* Custom - built dimensions & specifications are also acceptable.

# CLEAN HAND DRYER

MODEL : KHD

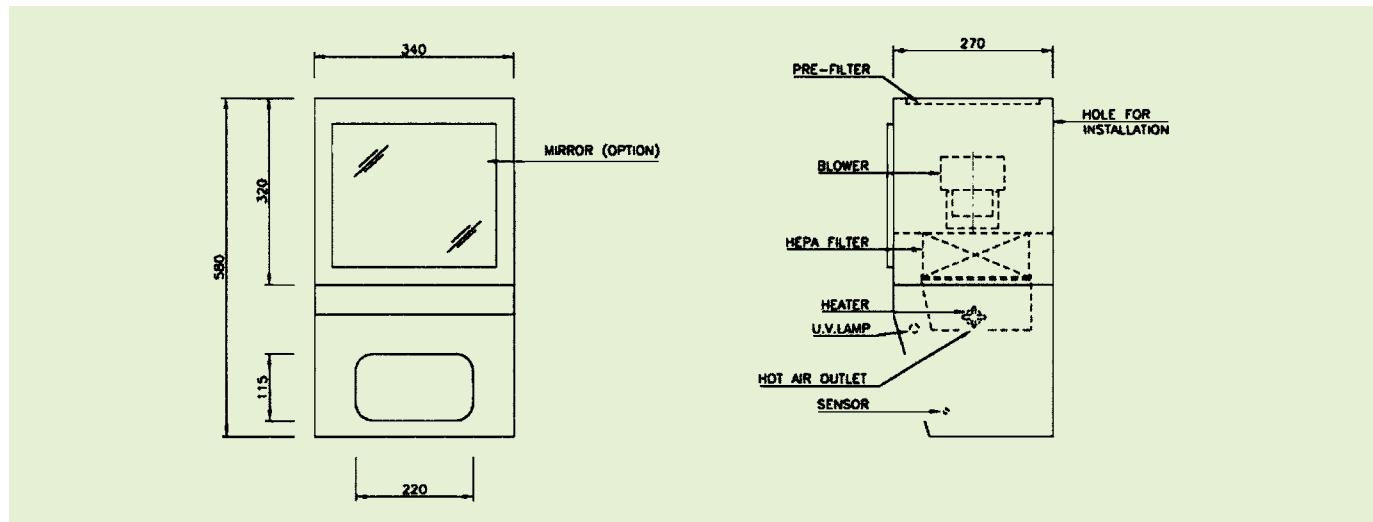
Clean Hand Dryer enables you to dry and clean your hands under a clean environment which is particles free and bacteria free. It is suitable to use in all classes of clean rooms.

## FEATURE

- can achieve Class 100 cleanliness.
- compact design for fast and easy installation.
- low weight, low power consumption, low noise level.
- optional ultraviolet radiation for sterilization purpose.



## SPECIFIED DRAWING



## SPECIFICATION

CLEANLINESS	FEDERAL STANDARD 209E CLASS 100
FILTER ELEMENT	PRE FILTER : NON-WOVEN HEPA FILTER : 99.99% AND ABOVE @ 0.3 $\mu$ m PARTICLES
HOT AIR VELOCITY	APPROX. 55 m/s AND ABOVE
HOT AIR TEMPERATURE	APPROX. 40 - 50 °C
DRY TIME	APPROX. 20 - 40 SEC.
CASING CONSTRUCTION	STEEL SHEET METAL CASING
FINISHING	POWDER BAKED EPOXY FINISHING
POWER SUPPLY	AC, 1 PH, 230V, 50 / 60 Hz
POWER CONSUMPTION	0.65 KW
NOISE LEVEL	APPROX. 58 dB(A)
WEIGHT	APPROX. 20 KGS
OPERATION PROCEDURE	JETTING ACTIVATED BY SENSOR BEAM

# CLEAN BENCH

CLEAN BENCH is the clean equipment which enable you to create low cost clean environment for a particular area. It prevents the localized contamination at a particular spot. It creates unidirectional clean laminar flow at downstream of HEPA filter on the work bench. Two choices of clean bench: VERTICAL FLOW or HORIZONTAL FLOW.

## GENERAL SPECIFICATION

CLEANLINESS	CLASS 100
EFFICIENCY	99.99% @0.3μm AND ABOVE
FILTER	PRE FILTER : NON WOVEN
	MAIN FILTER : HEPA FILTER
CONSTRUCTION	CASING : STEEL SHEET METAL
	WORK TOP : STAINLESS STEEL 304
FINISHING	POWDER BAKED EPOXY
POWER SUPPLY	AC, 1 PH, 230V, 50 / 60 Hz
LIGHTING LEVEL	1,000 LUX

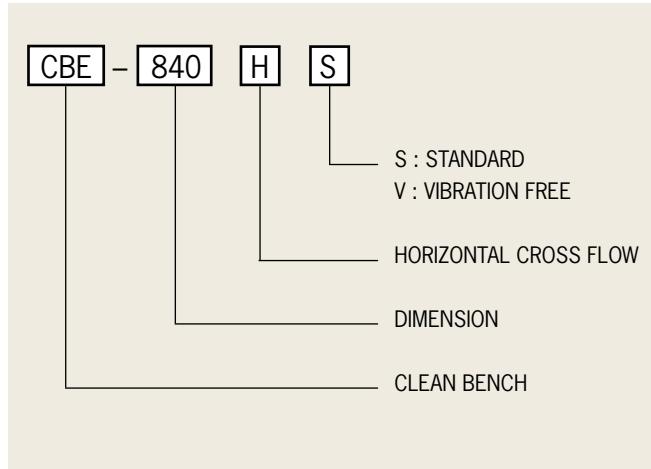
## SPECIFICATION

SPECIFICATION	MODEL	840	1300	1600	1900
AIR VELOCITY			~ 0.5m/Sec		
AIR VOLUME (APPROX.)		16m <sup>3</sup> /Min	25m <sup>3</sup> /Min	31m <sup>3</sup> /Min	37m <sup>3</sup> /Min
HEPA FILTER QUANTITY		1 PC	2 PCS	2 PCS	2 PCS
LIGHT FITTING		20WX4	30WX4	40WX4	40WX4+20WX4
POWER CONSUMPTION (APPROX.)		395W	590W	790W	944W

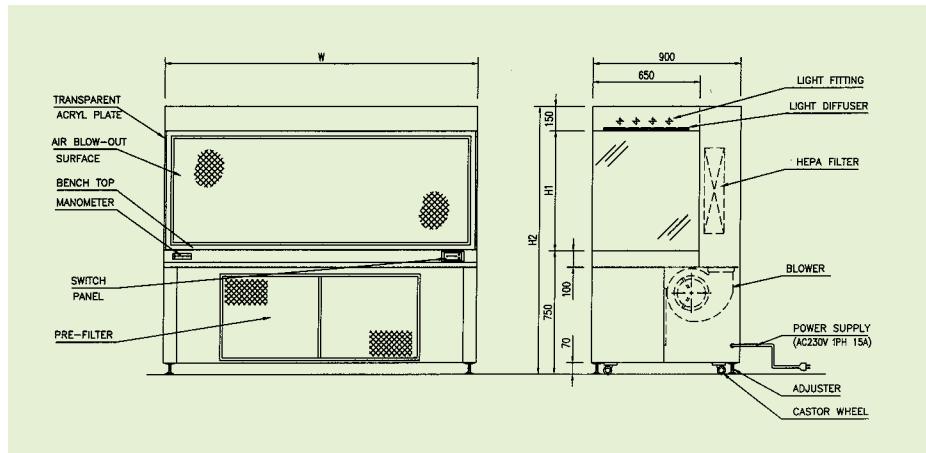
\* Custom - built dimensions & specifications are also acceptable.

## HORIZONTAL CROSS FLOW TYPE

### TYPE IDENTIFICATION

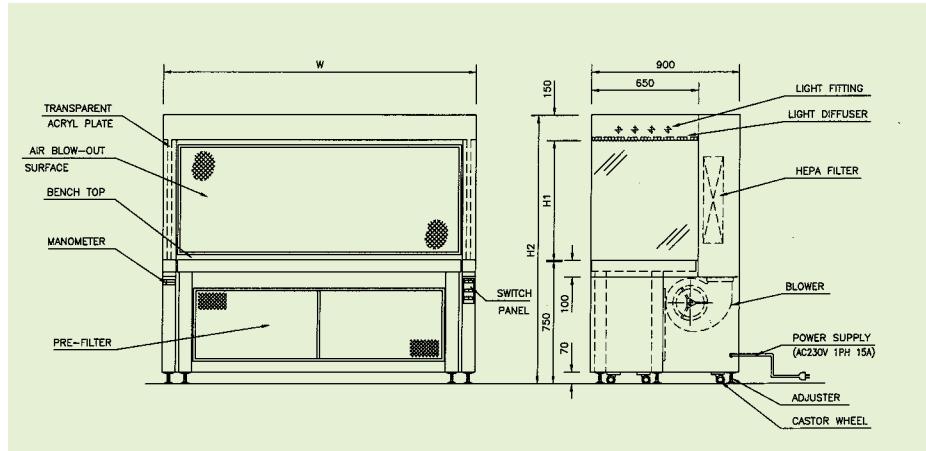


### STANDARD CBE - □ HS



MODEL DIMENSION	840HS	1300HS	1600HS	1900HS
W	840	1,300	1,600	1,900
H <sub>1</sub>			720	
H <sub>2</sub>			1,620	
WEIGHT	160kg	200kg	235kg	265kg

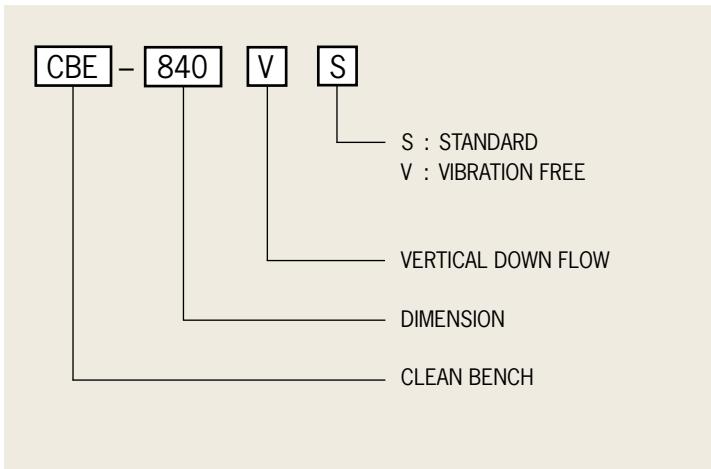
### VIBRATION FREE CBE - □ HV



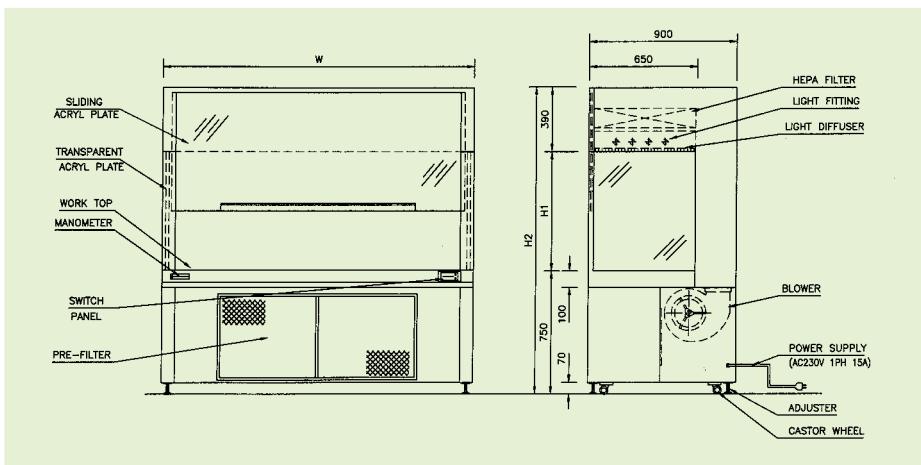
MODEL DIMENSION	840HV	1300HV	1600HV	1900HV
W	840	1,300	1,600	1,900
H <sub>1</sub>			720	
H <sub>2</sub>			1,620	
WEIGHT	185kg	225kg	270kg	300kg

## VERTICAL DOWN FLOW TYPE

### TYPE IDENTIFICATION

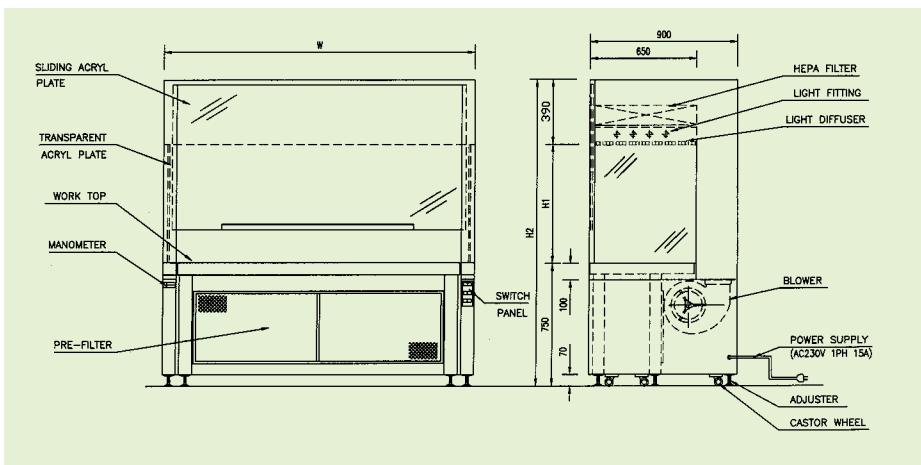


### STANDARD CBE - □ VS



MODEL DIMENSION	840VS	1300VS	1600VS	1900VS
W	840	1,300	1,600	1,900
H <sub>1</sub>			720	
H <sub>2</sub>			1,860	
WEIGHT	175kg	215kg	250kg	280kg

### VIBRATION FREE CBE - □ VV



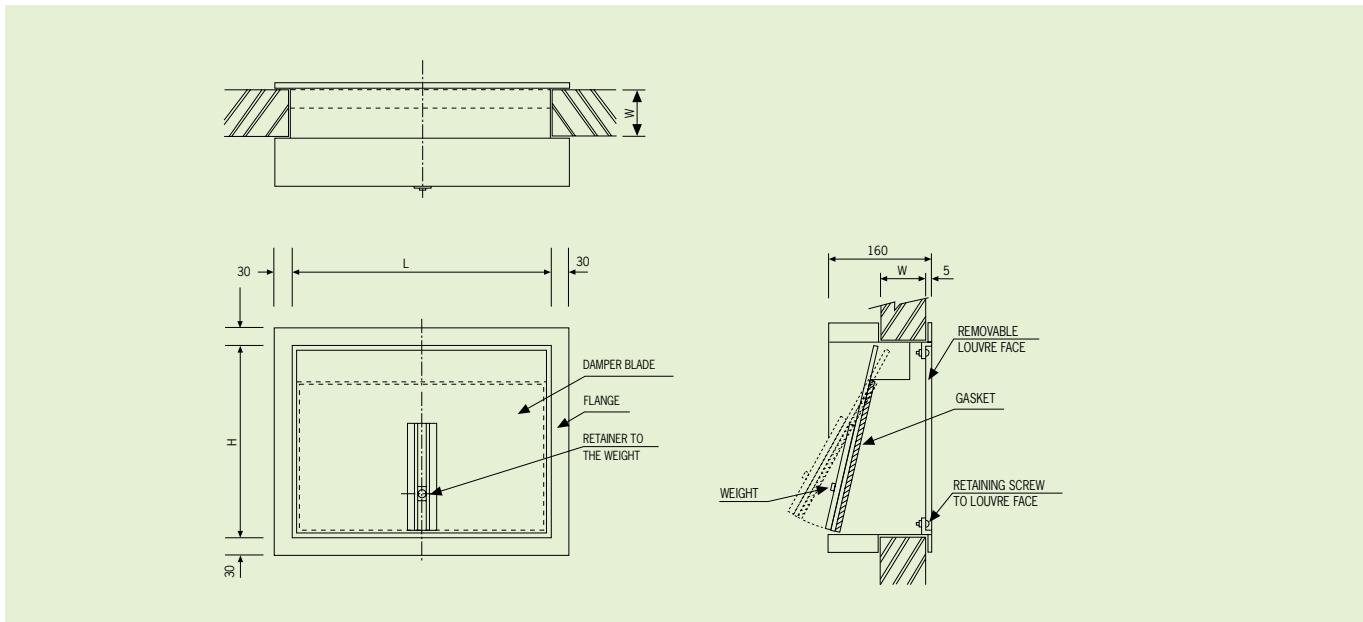
MODEL DIMENSION	840 VV	1300 VV	1600 VV	1900 VV
W	840	1,300	1,600	1,900
H <sub>1</sub>			720	
H <sub>2</sub>			1,860	
WEIGHT	200kg	245kg	290kg	325kg

# POSITIVE PRESSURE DAMPER (KBD)



This is used to maintain the inside pressure of a clean room.

## EXTERNAL DIMENSIONS



## STANDARD SPECIFICATION

SPECIFICATION	MODEL/TYPE		KBD-5			KBD-10			KBD-15										
	A	B	A	B	C	A	B	C	D										
ADJUSTABLE PRESSURE DIFFERENCE (Pa)	5-25	20-35	5-15	10-20	20-35	5-15	10-20	15-25	20-30										
AIR FLOW RATE	5m³/Min		10m³/Min			15m³/Min													
SIZE (L X H)	300 x 200		400 x 300			500 x 300													
CONSTRUCTION	ALUMINIUM / STEEL SHEET METAL BALANCER : MOVABLE FINE ADJUSTABLE BALANCER																		
FINISHING	POWDER BAKED EPOXY																		
APPLICABLE WALL THICKNESS	TO SUIT (CUSTOMER TO SPECIFY)																		
WEIGHT	4 kg		6 kg			8 kg													

# OTHER CLEAN ROOM EQUIPMENT

## SPECIAL CLEAN ROOM PRODUCTS

Besides standard products, we are also specialized in the custom-made orders to meet your special needs at competitive prices. With many years of experience and proven track records, all our products are made 100% in-house to ensure superior quality and prompt delivery.

PASS BOX WITH PNEUMATIC LIFT



WALL PANEL



PASS BOX WITH AIR SHOWER FOR CONVEYOR



AIR SHOWER WITH LOCKERS





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