

**IAQ**  
Indoor Air Quality

Comfortable **ventilation solution** for people and air  
**Himpel** is heading to the world.

**Himpel**, a **ventilation specialized company** established in  
 1989, is **realizing** a pleasant and healthy **ventilation culture**.

- |  |   |  |  |
|--|---|--|--|
| <p><b>1989</b></p> <ul style="list-style-type: none"> <li>Established Jindo Precision Chemicals Co., Ltd.</li> </ul>   | <p><b>1997</b></p> <ul style="list-style-type: none"> <li>Selected as a promising small entity (in GyeongGi-Do)</li> </ul>  | <p><b>1999</b></p> <ul style="list-style-type: none"> <li>Acquired KS (Korea Industrial Standards) mark (ventilation fan)</li> </ul>   | <p><b>2000</b></p> <ul style="list-style-type: none"> <li>Changed the company name to Jindo Living Tech Co., Ltd.</li> </ul>   |
| <p><b>2003</b></p> <ul style="list-style-type: none"> <li>Acquired ISO 9001</li> </ul>   | <p><b>2005</b></p> <ul style="list-style-type: none"> <li>Approved Lab affiliated with company (No. 051108)</li> </ul>  | <p><b>2006</b></p> <ul style="list-style-type: none"> <li>Certificated as INNO BIZ company (R6061-0049) by the Small and Medium Business Administration of Korea</li> </ul>  | <p><b>2008</b></p> <ul style="list-style-type: none"> <li>Received the small and Medium Business Administration Award</li> </ul>   |
| <p><b>2009</b></p> <ul style="list-style-type: none"> <li>Received the Small and Medium Business Award for Technology Innovation</li> <li>Selected as GOOD DESIGN (ventilation fan)</li> <li>Received the Minister of Knowledge and Economy prize</li> </ul>   | <p><b>2010</b></p> <ul style="list-style-type: none"> <li>Changed the company name to HIMPEL Co., Ltd.</li> <li>Acquired European Electrical Appliances Safety Certification CE</li> </ul>  | <p><b>2011</b></p> <ul style="list-style-type: none"> <li>Selected as a Top 500 HT Product of Small and Medium Business</li> </ul>   | <p><b>2012</b></p> <ul style="list-style-type: none"> <li>Won the Prime Minister's commendation as a small business contributor (in manufacturing division)</li> <li>Acquired KS (Korea Industrial Standards) mark (Heat recovery ventilation system)</li> </ul> |
| <p><b>2014</b></p> <ul style="list-style-type: none"> <li>Won the President of Korea Consulting as Company Renovation (the Korea Chamber of Commerce &amp; Industry)</li> <li>Selected as Small Hidden Champion (Ministry of Employment and Labor)</li> </ul>  | <p><b>2015</b></p> <ul style="list-style-type: none"> <li>Acquired Indonesian safety certification SNI</li> <li>Received a commendation from the Minister of Trade, Industry and Energy in the leadership section of the National Productivity Competition</li> <li>Selected as Excellent Job Company(GyeongGi-Do)</li> </ul>   | <p><b>2016</b></p> <ul style="list-style-type: none"> <li>Received the National Brand Promotion Agency Award for Best Reading Management Workplace</li> <li>Received a commendation from the Minister of Trade, Industry and Energy as Company Renovation</li> </ul> | <p><b>2017</b></p> <ul style="list-style-type: none"> <li>Delivered and completed the heat recovery ventilation system for the first zero energy house demonstration complex in Korea</li> <li>Selected as an excellent female employment company</li> </ul>     |
| <p><b>2018</b></p> <ul style="list-style-type: none"> <li>HUEZENTTE selected as Good Design</li> <li>Acquired China electrical product safety certification CCC</li> <li>Received a commendation from the Ministry of Gender Equality and Family for employment support business for women with career interruption</li> </ul> | <p><b>2019</b></p> <ul style="list-style-type: none"> <li>Awarded as an exemplary taxpayer from the Ministry of Strategy and Finance</li> <li>Received the Presidential Citation for the 40th anniversary of Korea Industrial Technology</li> <li>Received the 1 Million Dollar Export Tower award</li> <li>Completed the Zero Energy plant (first in Korea)</li> </ul> | <p><b>2020</b></p> <ul style="list-style-type: none"> <li>Awarded by Korea Facility Technology Association</li> </ul>  |  |

Himpel's mission is "Contributing to human health through air and energy technology."

In 2003, we were the first in the industry to obtain ISO9001 certification, which is certified by UKAS in the UK. The excellence of our technology and quality is being recognized worldwide through the KS certification of the Korea Standards Association, the constant air volume certification of the Korea Facility Technology Association, and the international standards CE, PSE, SNI, and CCC certification.

We have established a wide range of delivery records and the best professional network covering excellent domestic construction companies. Specialized products and sincere services are the best benefits that only Himpel customers can enjoy.

We will continue to provide and realize a pleasant and healthy ventilation culture with eco-friendly, high-quality ventilation specialty products in the future,

Sincerely yours, President **Jeong-Hwan Kim**



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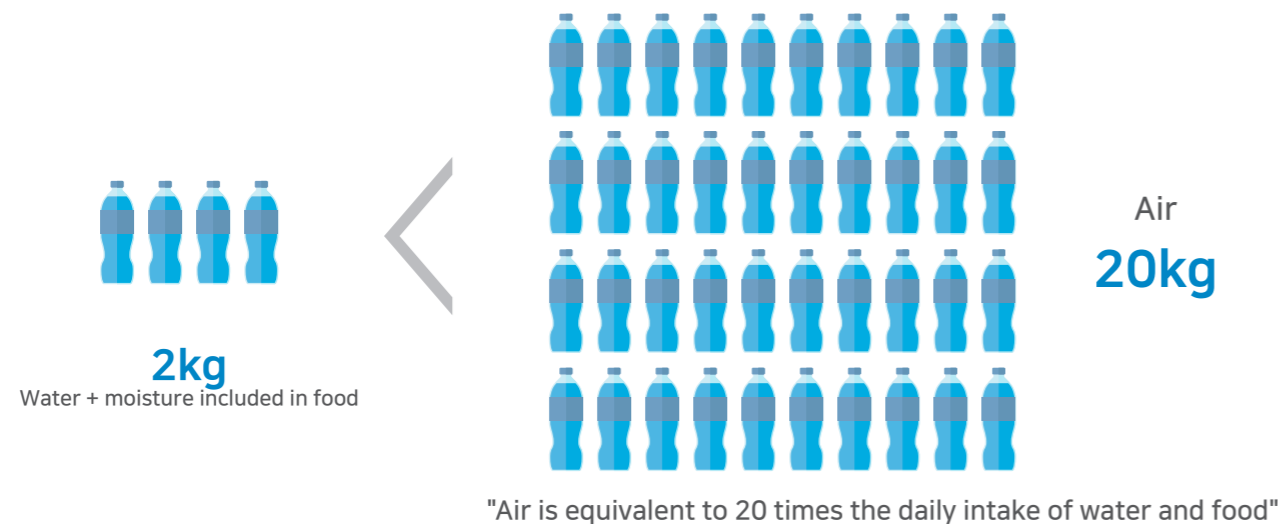


## You close the window because of fine dust. Is the indoor air you breathe safe?

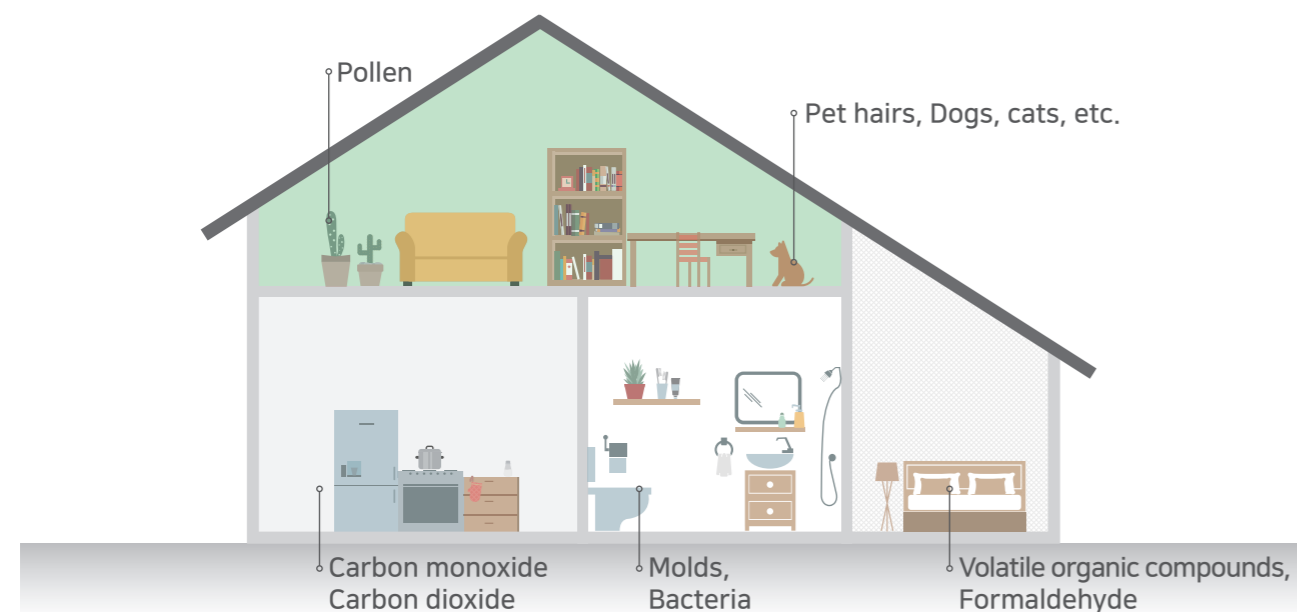
Modern men spend over **90% of the day indoors**. Indoor pollutants are 1,000 times more likely to be transmitted to human lungs than outdoor pollutants. Of the 7 million air pollution-related deaths (in 2012), 61% or 4.3 million deaths are attributed to 'indoor air' pollution, resulting in heart disease, stroke, and lung disease.

### What is the amount of air you breathe in a day?

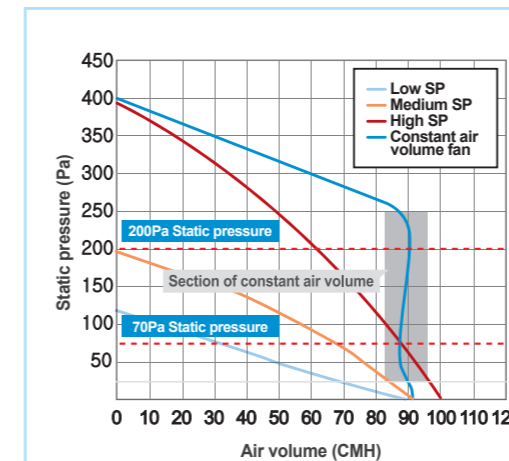
(Based on daily consumption amount per person)



### What are the causes of indoor pollution in the house?



## Indoor air to breathe Turn it into a Himpel ventilation appliance!



#### Constant air volume exhaust fan

The air volume is maintained to be more than 60CMH within the static pressure of 20-250Pa, and the variation of the max a minimum air volume is kept within  $\pm 10\%$  (always maintaining constant air volume). (KARSE B 0044)

#### High static pressure exhaust fan

The air volume is more than 60CMH at the static pressure of 200Pa.

#### Medium static pressure exhaust fan

The air volume is more than 60CMH at the static pressure of 70Pa.

#### Low static pressure exhaust fan

The air volume is more than 60CMH at the static pressure of 0Pa.

**Why** should I use a constant air volume fan?

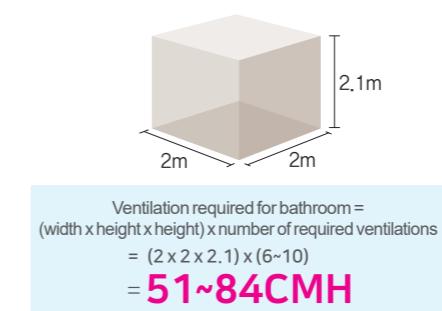
Even if the static pressure difference increases due to the high-rise and high-density of the building, the air volume does not decrease and ventilation is always constant, maintaining a comfortable bathroom throughout the four seasons.

### Calculation of ventilation volume by area

Required number of ventilations

Division	Number of times (per hour)
Bathroom	6 to 10 times
Bathroom	2 to 4 times
Living room	4 to 6 times
Kitchen	10 to 20 times
Hall/Stairway	4 to 6 times
Utility room (Storage)	15 to 20 times

Dimensions of bathroom space



\* Ventilation per room is based on the number of natural ventilations

\* The above calculation method was created to help you select a ventilation fan, and there may be differences in performance and experience due to external influences (installation location, duct length, duct bending degree, etc.) in actual use.

### Recommended ventilation fans by housing type

Housing type	Category	Recommended product
Apartment (Shared housing)	High rise (15th to 20th floors and above)	ZEROC
	Middle floor (Floors 10-15)	Firex / ZEROC
	Low floor (1-10 floors)	TURBO 747 / Firex / ZEROC
Villa	5th floor and below	Firex / ZEROC
Single	1st~2nd floor	Firex / ZEROC

\* Based on the highest number of floors

\* Product specifications may differ depending on the installation and construction conditions.

### How is HIMPEL Energy recovery ventilator different from the air purifier?

Category	Energy Recovery Ventilator	Air purifier
Installation space	Living room, regular room, utility room, outdoor unit room, balcony, veranda and others	living room, regular room
Clean space	Clean the entire household (within 2 hours with one equipment)	Clean only the layout space (requires products for each room)
Air volume	100 ~ 250 (Possible to set the desired air volume)	Not disclosed by the manufacturer (Cannot be set)
Noise	40dB or less	40-60dB
Filter	pre-filter, medium filter, HEPA filter	Pre-filter, Carbon filter, HEPA filter
Space restriction	None	Occupation of installation space and restriction of surrounding space
Advantages and Disadvantages	Removal of harmful gas and supply of oxygen	Cannot remove harmful gas and supply of oxygen

# ZEROC PRIME Design the ventilation system

Patent registration completed

We provide customized solutions for a comfortable and clean bathroom space 24 hours a day, 365 days a year.

Released in the second half of 2020



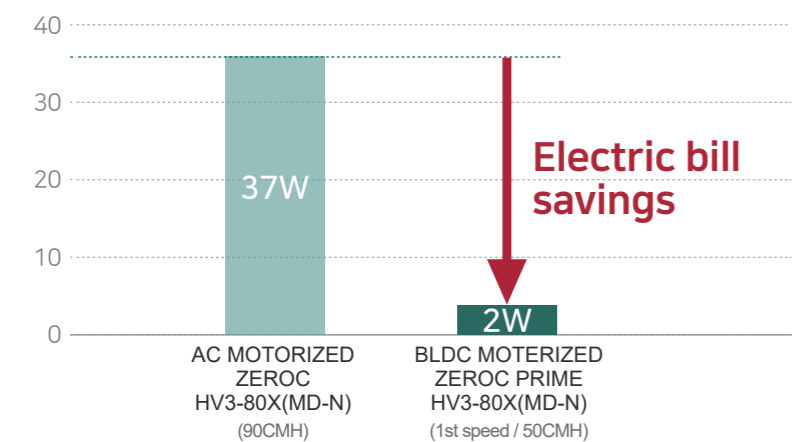
[Wireless remote control]

**Lowest 2W**  
power consumption  
(1st speed)

- Lowest 2W ultra-low power consumption (1st speed)
- 160CMH turbo (10th speed), which is twice as high as a general fan
- Low-noise ventilator quieter than a library-25dB (1st speed)
- Automatic humidity operation and humidity display for customer convenience
- Wireless remote control that can adjust the air volume according to the situation
- World's first 10-stage airflow control
- Triple ventilation system (optional)

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

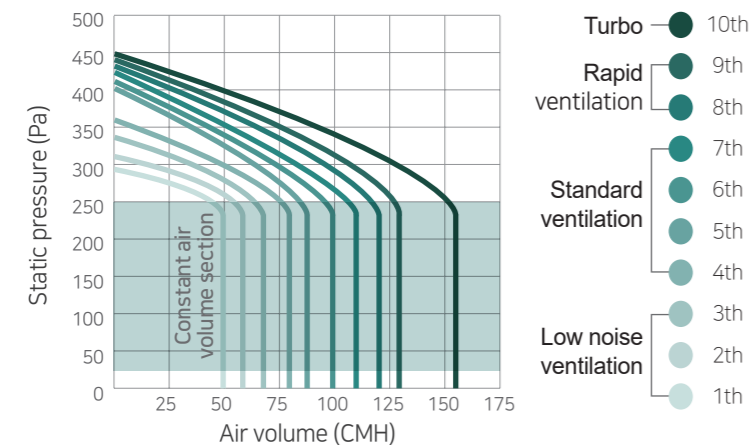
## 94.5% reduction in power consumption and energy



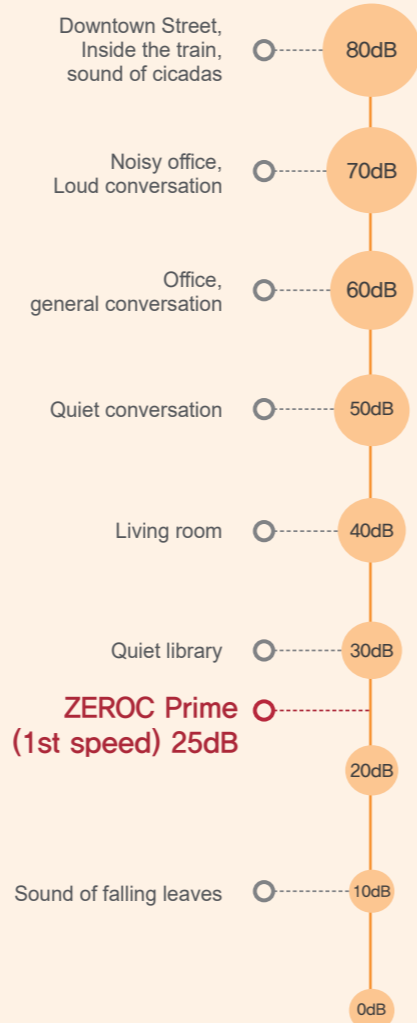
\* Electric consumption when using 24 hours for 30 days  
\* There may be a difference in rates depending on the high-voltage and low-voltage housing.

## The world's first 10-speed control constant air volume fan

This is a ventilator with a new concept that can control the air volume according to the bathroom environment from 50 to 160 air volumes.



## Ventilation fan quieter than the library



# LIVO Prime Add ventilation to ventilation

Patent pending

Customized ventilation solution expandable up to 3 branches in a ceiling-mounted body.

Released in the second half of 2020



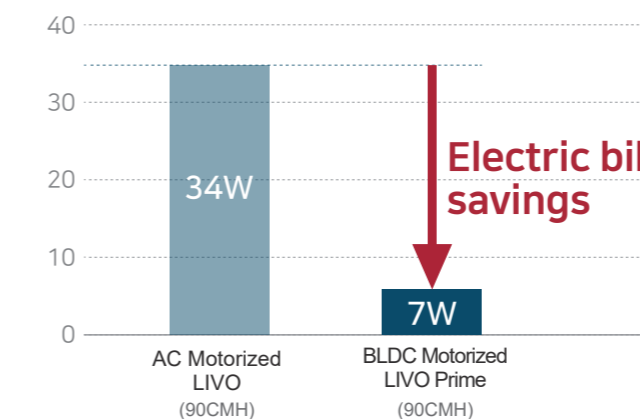
[Wireless remote control]

Low noise,  
low power  
**BLDC**  
LIVO Prime

- Highly convenient to install as a slim product with a height of 150mm
- Noise Down, Efficiency Up-31dB (90CMH based on 2 branches)
- Automatic humidity operation for customer convenience
- Wireless remote control that can adjust the air volume according to the situation

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

## 81% reduction in power consumption and energy



\* Electric consumption when using 24 hours for 30 days  
\* There may be a difference in rates depending on the high-voltage and low-voltage housing.

## Realizing the low noise constant air volume

Constant air volume	Single room (1 branch)	Two-room (2 branches)
70CMH	30dB	28dB
90CMH	37dB	31dB
120CMH	45dB	40dB

## Compact expandable ventilation appliance



Easy to install



Energy saving



Expandable ventilation system

### A new change to the existing bathroom fan Compact expandable ventilation appliance

- Luxurious design that enhances installation convenience with a slim product
- Noise Down, Efficiency Up- Ventilation appliance with low noise and low power
- Reflecting customer convenience-Automatic operation of humidity and humidity display

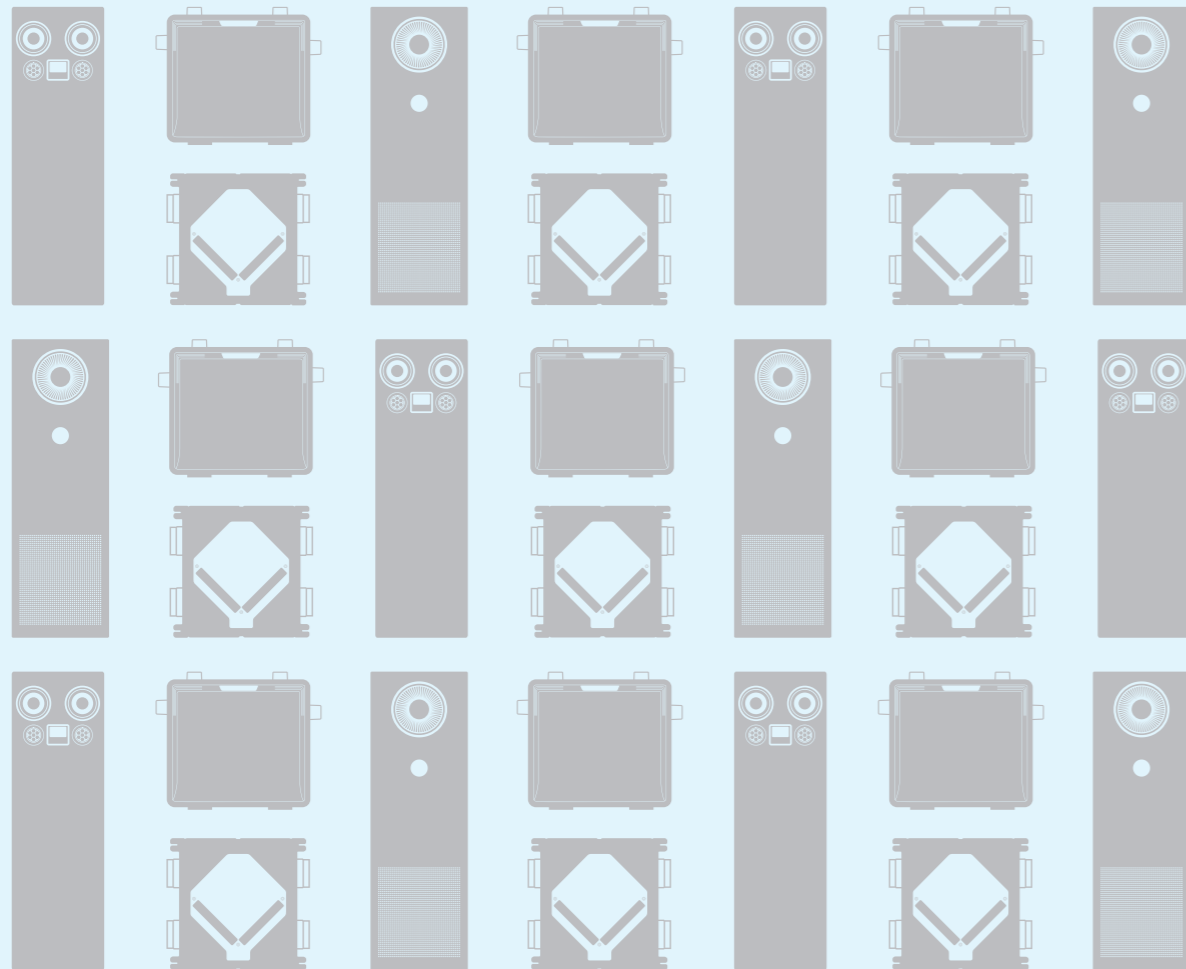
### LIVO Prime all over my house! Multiple expansion branches available

- Smells and moisture from several places such as shoe cabinets and dressing rooms at once!
- Three types of ventilation are possible for a comfortable living space
- A high airtight motorized damper is applied as a standard, ensuring even headwinds!








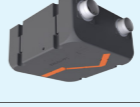



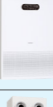


# Energy Recovery Ventilator

A device that discharges contaminated air from the inside to the outside for healthy indoor air quality and puts fresh air from outside into the room

There are energy recovery ventilator, air supply systems, exhaust systems, hybrid ventilation systems, and 3-stage control systems and others.



WWW.HIMPEL.CO.KR

	<b>HUEVEN C I (Ceiling-mounted type)</b> HRD-50C(SM), HRD-70C(SM)	11
	<b>HUEVEN C II (Ceiling-mounted type)</b> HRD-100C, HRD-100C(DS)	13
	<b>HUEVEN A (Suspended type)</b> HRD1-50PLI_BC, HRD1-100PLI_BC	15
	<b>HUEVEN E (Suspended type)</b> HRD-EP150(DS), HRD-EP200(DS), HRD-EP250(DS)	16
	<b>HUEVEN EBSN (Slim, Suspended type)</b> HRD-EP50IBSN, HRD-EP100IBSN, HRD-EP150IBSN	17
	<b>HUEVEN EBN (Suspended type)</b> HRD-EP100IBN, HRD-EP150IBN, HRD-EP200IBN, HRD-EP250IBN	18
	<b>HUEVEN EF (Slim, Suspended type)</b> HRD-EP100IBC, HRD-EP150IBCN	19
	<b>HUEVEN EF (Suspended type)</b> HRD-EP150IBC, HRD-EP200IBC, HRD-EP250IBC	20
	<b>HUEVEN EGI (Small)</b> HRE-S150, HRE-S250(D), HRE-350(D)	21
	<b>HUEVEN EGI (Medium, Large)</b> HRE-500(D), HRE-800(D), HRE-1000(D)	22
	<b>HUEVEN S II (Stand type)</b> HRD2-400EGS	23
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	<b>HUEVEN S I (Stand type)</b> HRD-EG400S	25
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HUEVEN C I (Ceiling-mounted type)



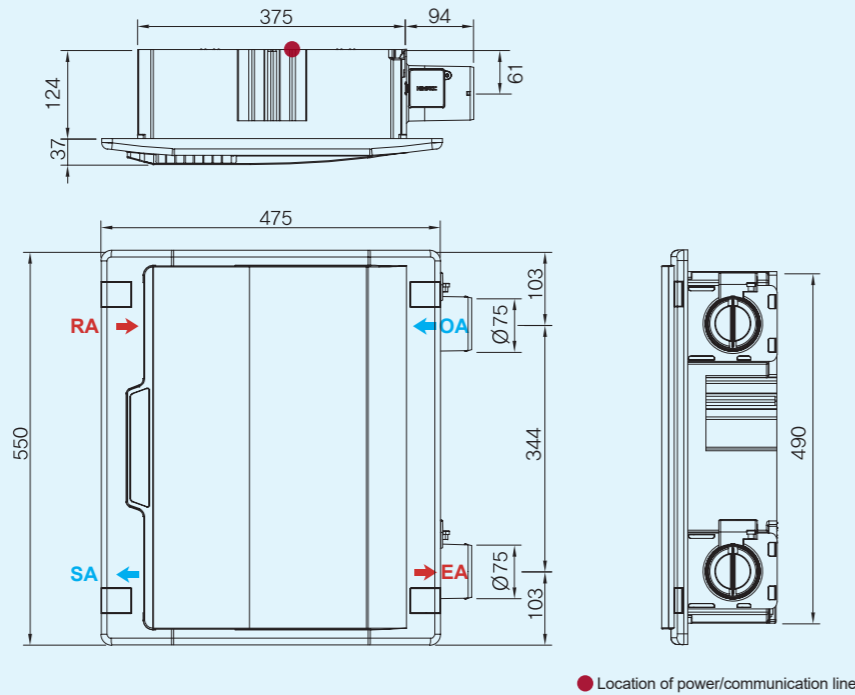
HRD-50C(SM)  
HRD-70C(SM)

Hole size	500 X 390mm (±5mm)
Connection duct	Outdoor : EA-OA: Ø75

- BLDC Fan-Motor (high efficiency/low noise)
- Minimization of energy loss due to energy recovery ventilator
- High-efficiency cross-flow type enthalpy recovery element
- 3 levels of air volume control (High/medium/low)
- Automatic ventilation / timer / filter check notification
- Air pollutant removal, dust, soot, Prevent yellow dust
- HEPA filter



Product dimensions (unit: mm)



Controller

■ Wireless remote control

- Card Remote control HUEVEN-RC50/RC70
- Remote control (Optional) HUEVEN-R50/R70

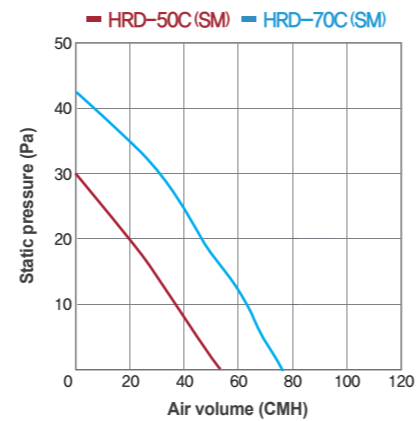
■ Wired remote control

- H Remote control HUEVEN-RH50/RH70
- J Remote control HUEVEN-RJ50/RJ70

■ Wired remote control (CO<sub>2</sub> + fine dust sensor)

- HUEVEN CO I (Optional) HUEVEN-RS50/RS70
- HUEVEN CO II (Optional) HUEVEN-RS250/RS270

Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD-50C(SM)			HRD-70C(SM)		
	Power	1Ø X 220V X 60Hz				
Mode	High	Medium	Low	High	Medium	Low
Air volume (CMH)	60	50	40	80	70	60
Power consumption (W)	16	14	11	28	24	16
Noise (dB)	Below 40			Below 40		
Filter	Pre + HEPA					
Enthalpy recovery efficiency (%)	71 for heating, 60 for cooling			77 for heating, 60 for cooling		
Product dimension (mm)	Product body 490(W)X375(D)X124(H), Grille cover 550(W)X475(D)X37(H)					
Weight (kg)	7					
Option	Wired remote control, RS485 communication, Home network linkage					

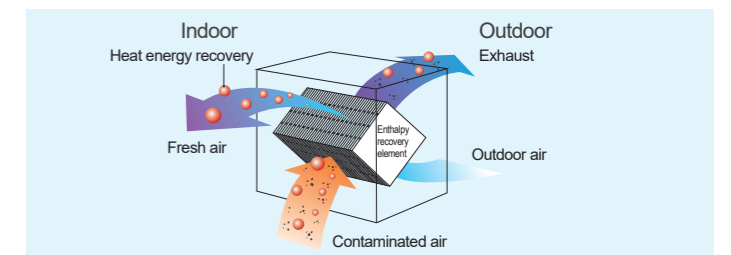


**Korea's first Ceiling-mounted type Energy Recovery Ventilator HUEVEN C**

Energy recovery ventilator for a pleasant indoor environment

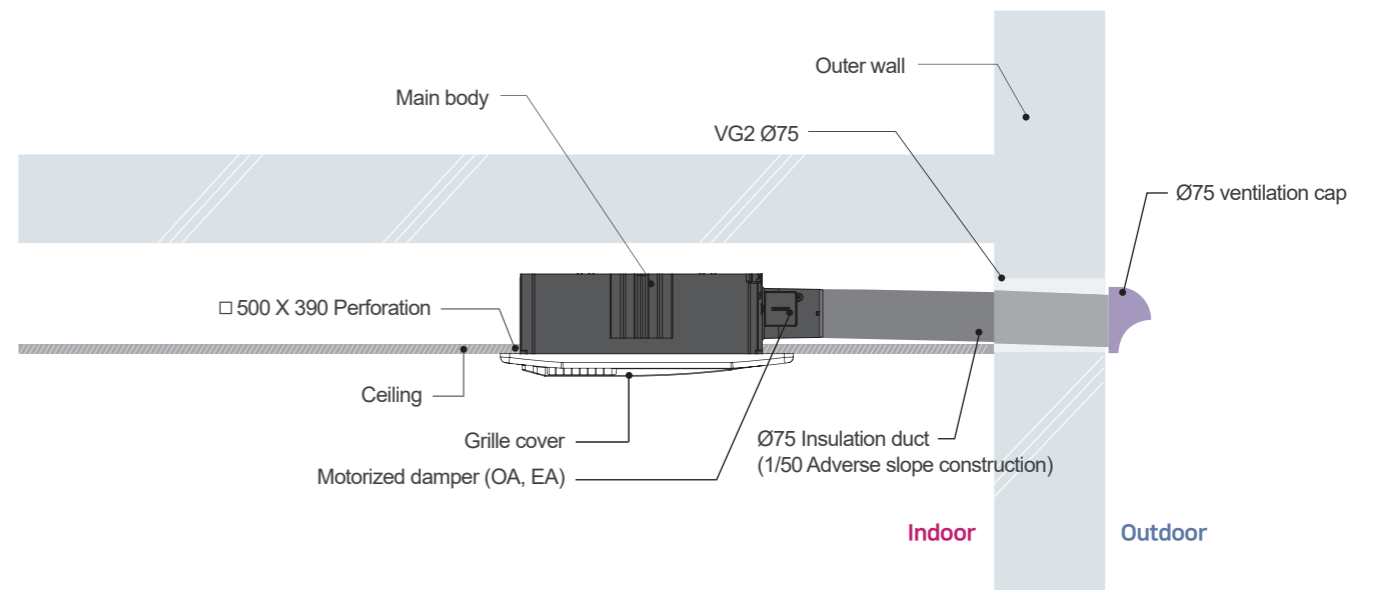
- Korea's first ceiling-mounted type energy recovery ventilator
- As each room can be controlled, only the necessary room can be operated, reducing unnecessary operating costs.
- In cold weather, when the indoor air supply (SA) temperature decreases, the air supply temperature is sensed to control the air supply and exhaust air volume. (Severe cold season operation mode)
- Condensation and inflow of outside air are prevented by applying an motorized damper (M.D) on the outside (OA)/exhaust (EA) side.
- The product height is 124mm, so there are few restrictions on installation.

Minimization of energy loss due to energy recovery ventilator



- When exhausting, heat energy is discharged to the outside along with contaminated air, and when supplying air, heat energy is recovered and fresh air is supplied to the room. By reducing the indoor cooling and heating load caused by ventilation, the cost for cooling and heating is reduced.

Ceiling-mounted type energy recovery ventilator installation details



HUEVEN C II (Ceiling-mounted type)

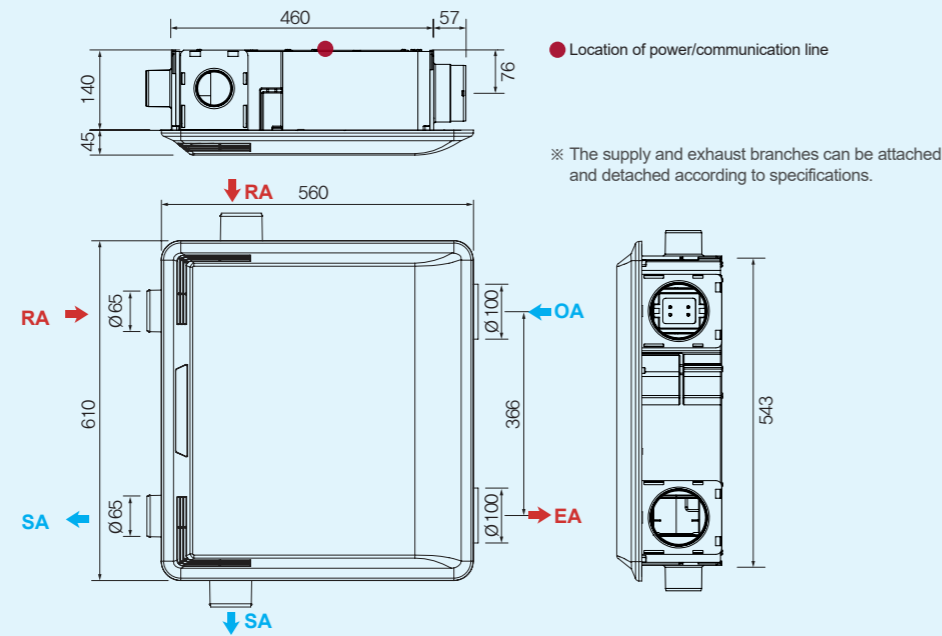


HRD-100C/HRD-100C(DS)

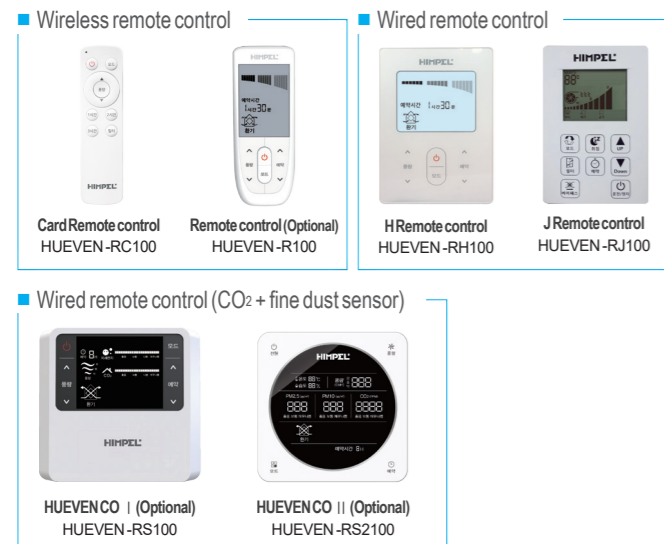
Hole size	500 X 470mm (±5mm)
Connection duct	• Outdoor: EA-OA: Ø100 • Indoor: RA-SA: Ø65

- BLDC Fan-Motor (high efficiency/low noise)
- Minimization of energy loss due to energy recovery ventilator
- High-efficiency cross-flow type enthalpy recovery element
- 3 levels of air volume control (High/medium/low)
- Multi-branch
- Automatic ventilation / timer / filter check notification
- Air pollutant removal, dust, soot, Prevent yellow dust
- HEPA filter

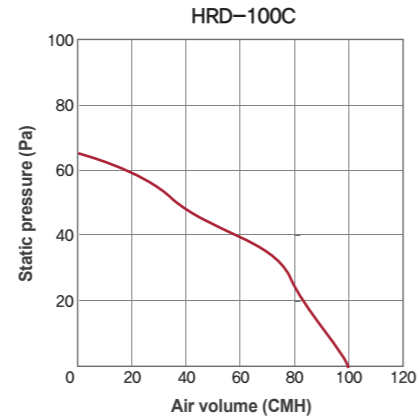
Product dimensions (unit: mm)



Controller



Performance



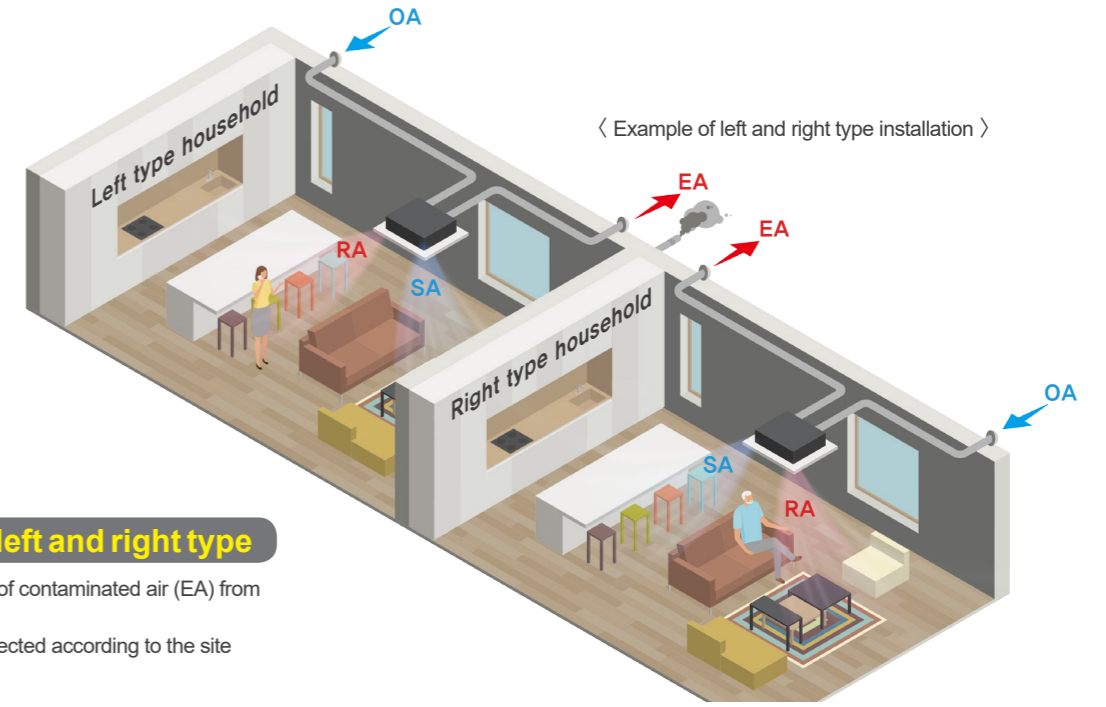
Grille



Model	HRD-100C	HRD-100C(DS)
Power	Ø1 X 220V X 60Hz	
Mode	High	Medium / Low
Air volume (CMH)	110	100 / 70
Power consumption (W)	33	27 / 20
Noise (dB)	Below 40	
Filter	Pre + HEPA	
Enthalpy recovery efficiency (%)	75 for heating, 70 for cooling	
Product dimension (mm)	Product dimensions (mm) product body 543(W) X 460 (D) X 140(H) / Refer to the image above for the grille cover	
Weight (kg)	9	
Option	Wired remote control, RS485 communication, Home network linkage, Bypass, Air cleaning	

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Energy recovery ventilator left and right type



Features of left and right type

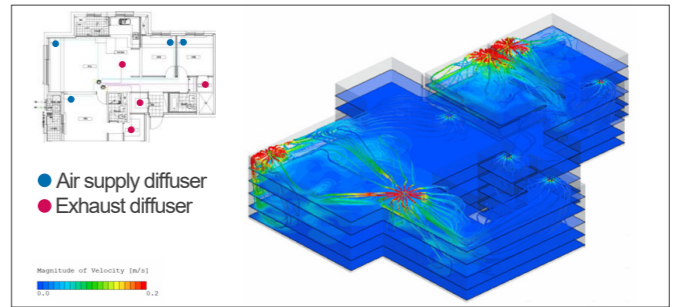
- Prevents the inflow of contaminated air (EA) from other households.
- The type can be selected according to the site situation.

Pleasant ventilation throughout the room with multi-branch function



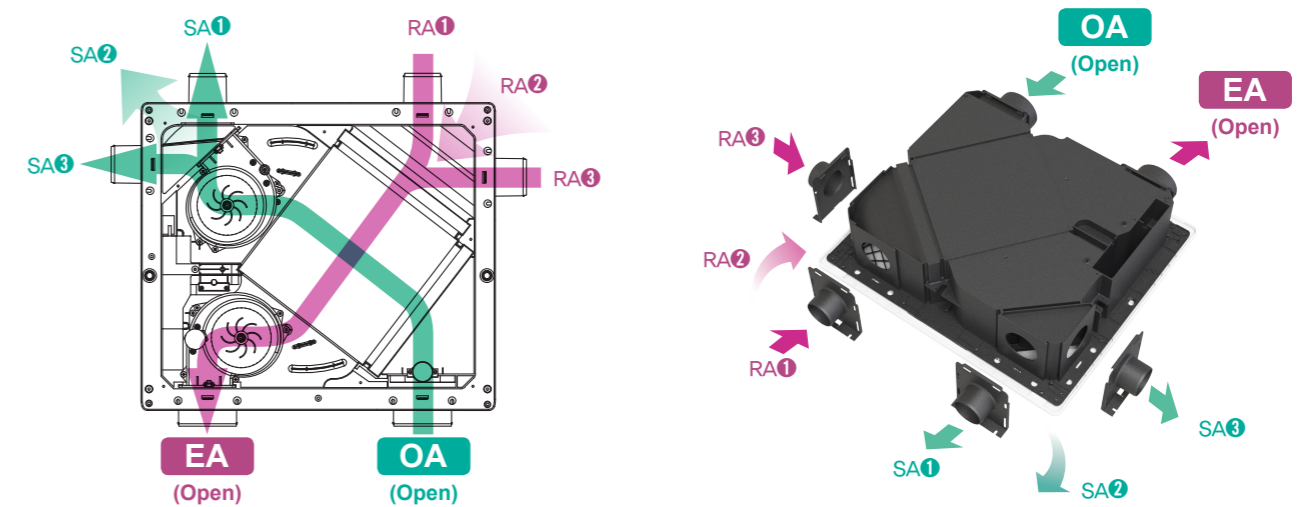
- HUEVEN C Multi-branch function allows 24 hours of constant ventilation through air supply and exhaust diffusers installed throughout the room.

Optimizing indoor flow by Himpel energy recovery ventilator



- HUEVEN C II multi-branch ventilation system is applied to rapidly circulate the entire indoor air through the air supply and exhaust diffuser and discharge harmful substances such as fine dust and carbon dioxide.
- ※ Analysis condition: Self flow analysis result based on general apartment of 82.64m<sup>2</sup> / 110CMH air volume

HUEVEN C II Energy recovery ventilation system



Normal energy recovery ventilation mode- 3 sides supply air, 3 sides exhaust

※ Freely selectable branch direction



HUEVEN A (Compact, Suspended type)



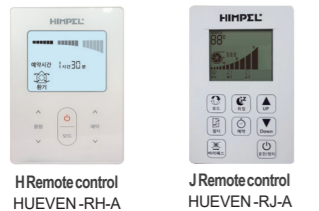
**HRD1-50PLI\_BC**  
**HRD1-100PLI\_BC**

Connection duct  
•HRD1-50PLI\_BC:Ø100  
•HRD1-100PLI\_BC:Ø125

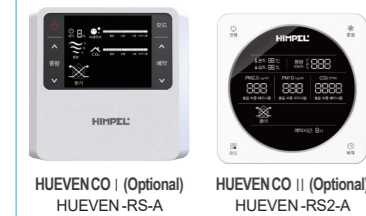
- BLDC Fan-Motor (high efficiency/low noise)
- ABS material product
- Maximization of sound absorption (minimizing noise)
- Convenience of filter replacement
- HEPA filter (H13 grade)
- Outlet replacement (Ø100, Ø125) possible
- Simple design

Controller

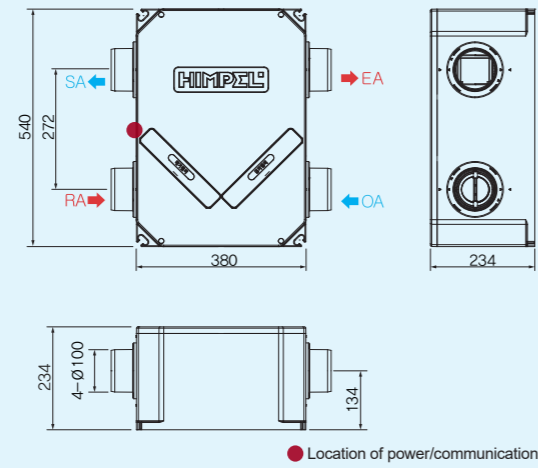
Wired remote control



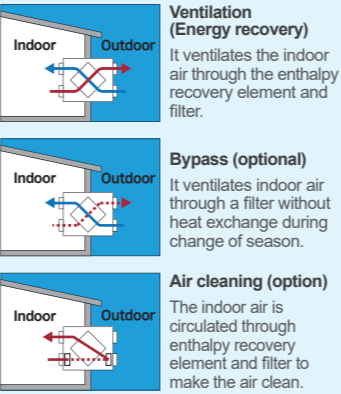
Wired remote control (CO<sub>2</sub> + fine dust sensor)



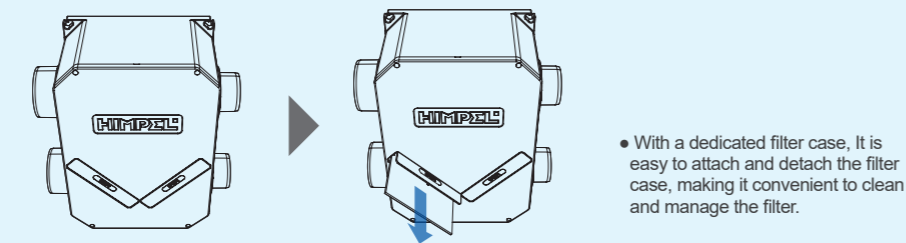
Product dimensions (unit: mm)



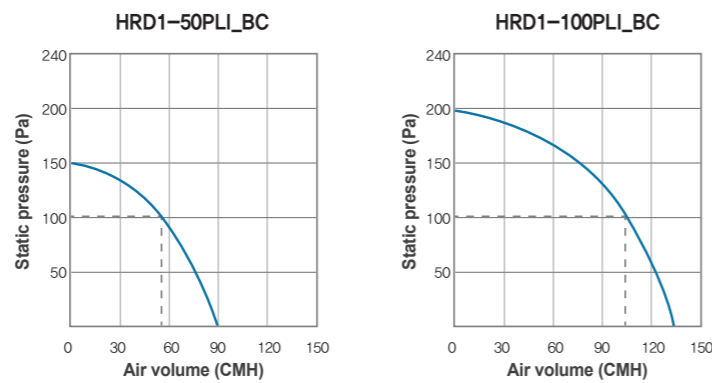
Mode details



Filter case



Performance

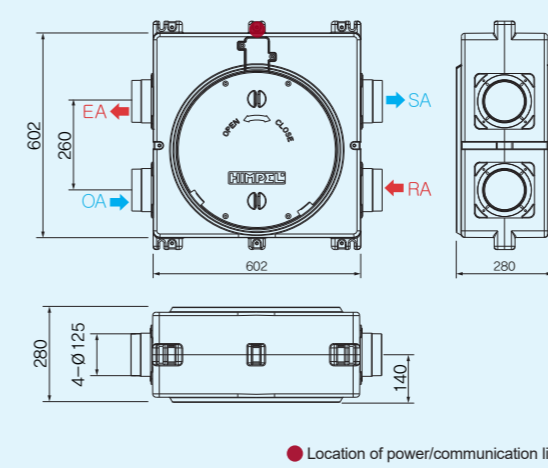


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

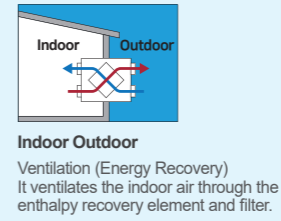
Model	HRD1-50PLI_BC			HRD1-100PLI_BC		
	Power	1Ø X 220V X 60Hz				
Mode	High	Medium	Low	High	Medium	Low
Air volume (CMH)	70	50	30	120	100	80
Power consumption (W)	30	24	18	46	40	33
Noise (dB)	Below 40					
Enthalpy recovery efficiency (%)	Heating	75			70	
	Cooling	65			56	
Filter	Pre + HEPA					
Weight (kg)	7					
Product dimension (mm)	380(W) X 540(D) X 234(H)					
Option	Bypass, Air cleaning					

HUEVEN E (Suspended type)

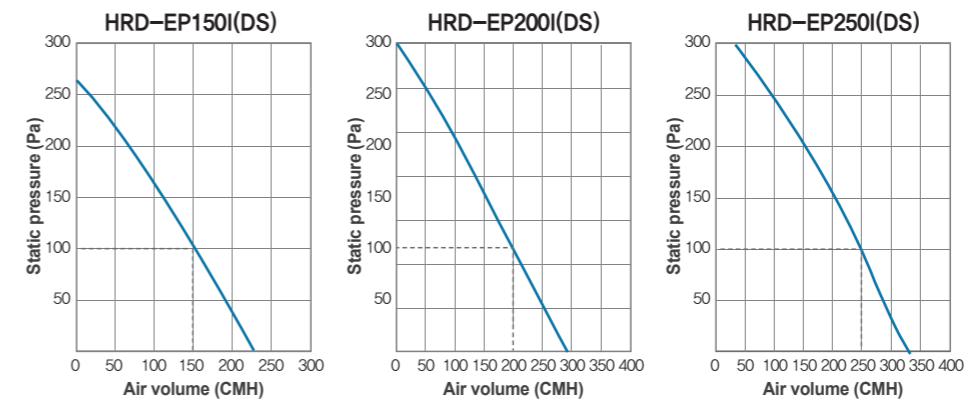
Product dimensions (unit: mm)



Mode details



Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD-EP150I(DS)			HRD-EP200I(DS)			HRD-EP250I(DS)			
	Power	1Ø X 220V X 60Hz								
Mode	High	Medium	Low	High	Medium	Low	High	Medium	Low	
Air volume (CMH)	170	150	130	220	200	180	270	250	230	
Power consumption (W)	62	49	37	90	77	66	119	109	98	
Noise (dB)	Below 50									
Enthalpy recovery efficiency (%)	Heating	77			72			71		
	Cooling	66			62			57		
Filter	Pre + HEPA									
Weight (kg)	9									
Product dimension (mm)	602(W) X 602(D) X 280(H)									



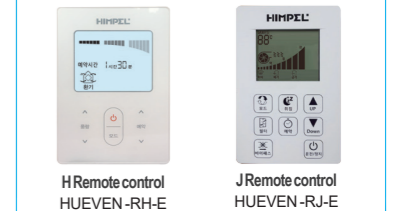
**HRD-EP150I(DS)**  
**HRD-EP200I(DS)**  
**HRD-EP250I(DS)**

Connection duct  
•HRD-EP150I(DS):Ø125  
•HRD-EP200I(DS):Ø125  
•HRD-EP250I(DS):Ø150

- Eco-friendly EPP material product
- Effective in areas with condensation and salt damage
- Free discharge direction
- Maximization of sound absorption (minimizing noise)
- HEPA filter (H13 grade)

Controller

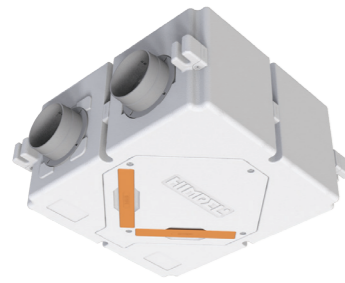
Wired remote control



Wired remote control (CO<sub>2</sub> + fine dust sensor)



HUEVEN EBSN (Slim, Suspended type)



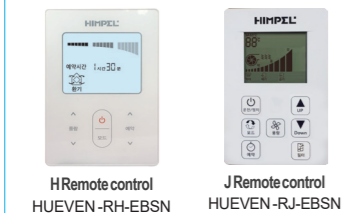
HRD-EP50IBSN  
HRD-EP100IBSN  
HRD-EP150IBSN

Connection duct Ø125

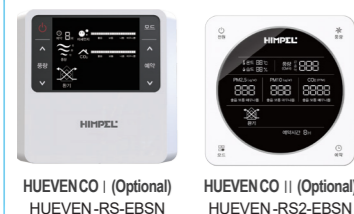
- BLDC Fan-Motor (high efficiency / low noise)
- Eco-friendly EPP material product
- Effective in areas with condensation and salt damage
- Free discharge direction
- Maximization of sound absorption (minimizing noise)
- Bypass, air cleaning (optional)
- HEPA filter (H13 grade)
- Slim type

Controller

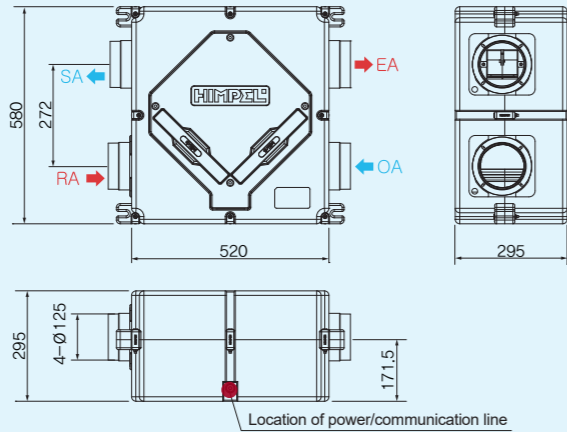
Wired remote control



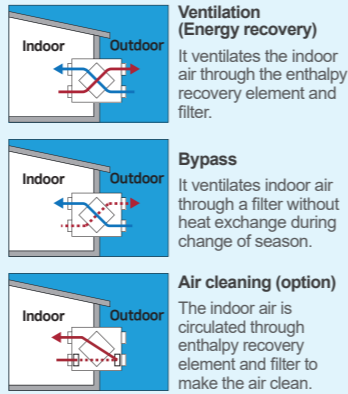
Wired remote control (CO<sub>2</sub> + fine dust sensor)



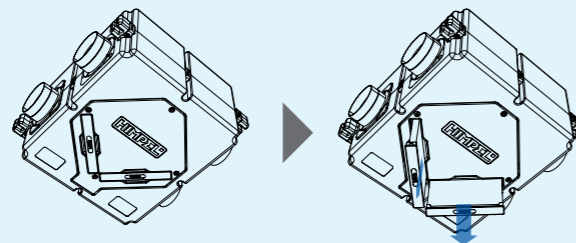
Product dimensions (unit: mm)



Mode details

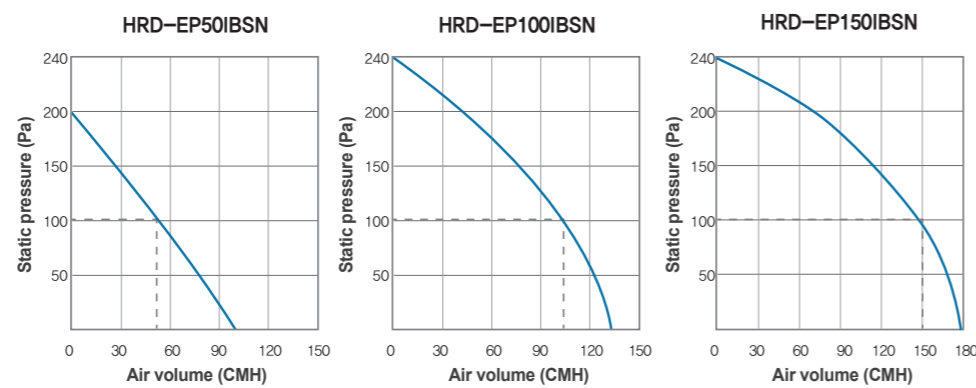


Filter case



• With a dedicated filter case, it is easy to attach and detach the filter case, making it convenient to clean and manage the filter.

Performance



\* Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD-EP50IBSN			HRD-EP100IBSN			HRD-EP150IBSN			
Power	1Ø X 220V X 60Hz									
Ventilation Mode	High	Medium	Low	High	Medium	Low	High	Medium	Low	
Air volume (CMH)	70	50	40	110	100	80	160	150	130	
Power consumption (W)	28	25	18	40	34	31	67	60	51	
Noise (dB)	Below 50									
Enthalpy recovery efficiency (%)	Heating	82			81			71		
	Cooling	72			70			60		
Filter	Pre + HEPA									
Weight (kg)	8									
Product dimension (mm)	580(W) X 520(D) X 295(H)									
Option	Air cleaning									

HUEVEN EBN (Suspended type)



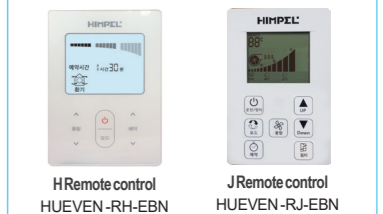
HRD-EP100IBN  
HRD-EP150IBN  
HRD-EP200IBN  
HRD-EP250IBN

Connection duct Ø125

- BLDC Fan-Motor (high efficiency / low noise)
- Eco-friendly EPP material product
- Effective in areas with condensation and salt damage
- Free discharge direction
- Maximization of sound absorption (minimizing noise)
- Bypass, air cleaning (optional)
- HEPA filter (H13 grade)

Controller

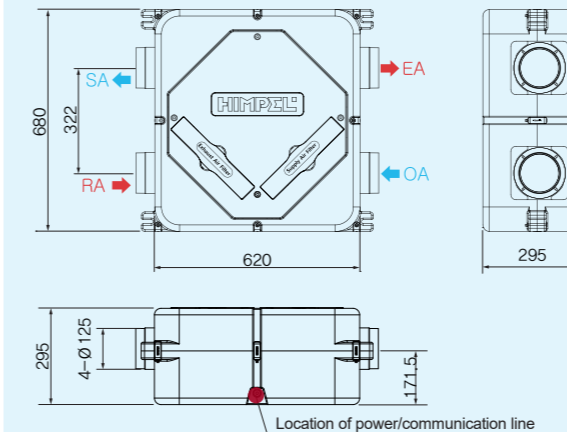
Wired remote control



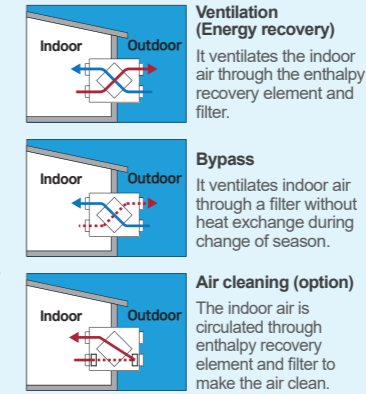
Wired remote control (CO<sub>2</sub> + fine dust sensor)



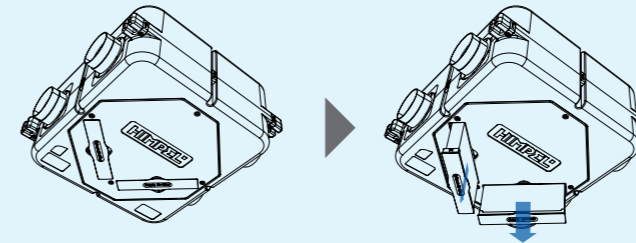
Product dimensions (unit: mm)



Mode details

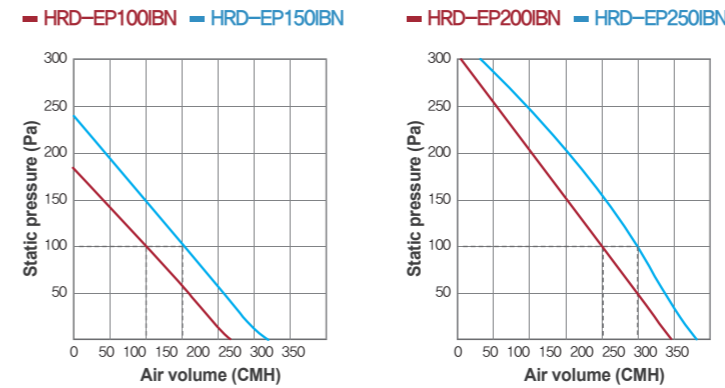


Filter case



• With a dedicated filter case, it is easy to attach and detach the filter case, making it convenient to clean and manage the filter.

Performance

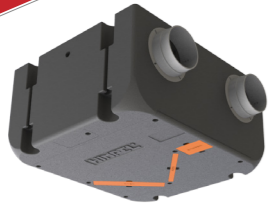


\* Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD-EP100IBN			HRD-EP150IBN			HRD-EP200IBN			HRD-EP250IBN			
Power	1Ø X 220V X 60Hz												
Ventilation Mode	High	Medium	Low	High	Medium	Low	High	Medium	Low	High	Medium	Low	
Air volume (CMH)	110	100	80	160	150	130	220	200	180	270	250	230	
Power consumption (W)	37	34	30	55	51	43	90	82	73	107	97	93	
Noise (dB)	Below 50												
Enthalpy recovery efficiency (%)	Heating	83			77			72			70		
	Cooling	72			65			59			54		
Filter	Pre + HEPA												
Weight(kg)	9												
Product dimension(mm)	680(W) X 620(D) X 295(H)												
Option	Air cleaning												

HUEVEN EF (Slim, Ceiling type)

NEW

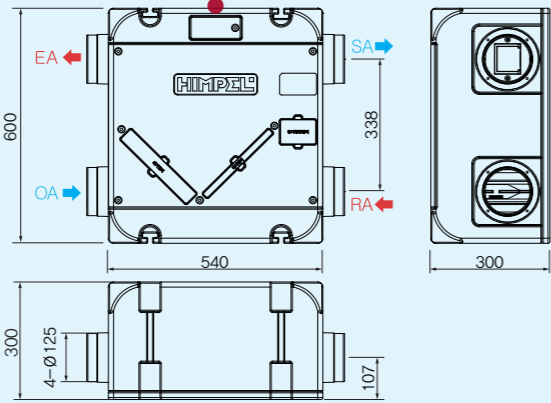


HRD-EP100IBC  
HRD-EP150IBC

Connection duct Ø125

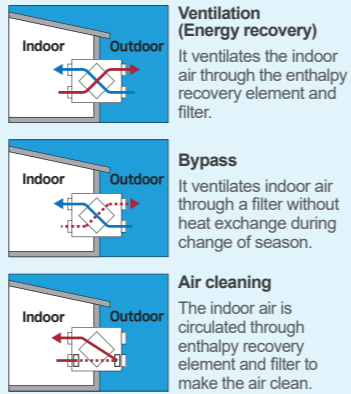
- BLDC Fan-Motor (high efficiency / low noise)
- Eco-friendly EPP material product
- Effective in areas with condensation and salt damage
- Free discharge direction
- Maximization of sound absorption (minimizing noise)
- Bypass, air cleaning (optional)
- High-performance 3-stage air cleaning filter system (Free + HEPA + Carbon Deodorant Filter)
- Slim type

Product dimensions (unit: mm)

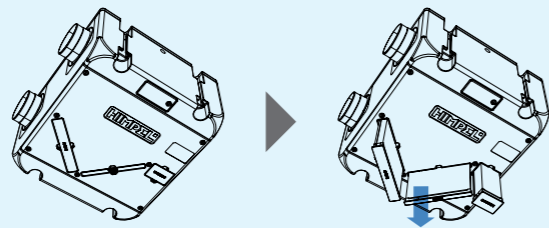


● Location of power/communication line

Mode details



Filter case

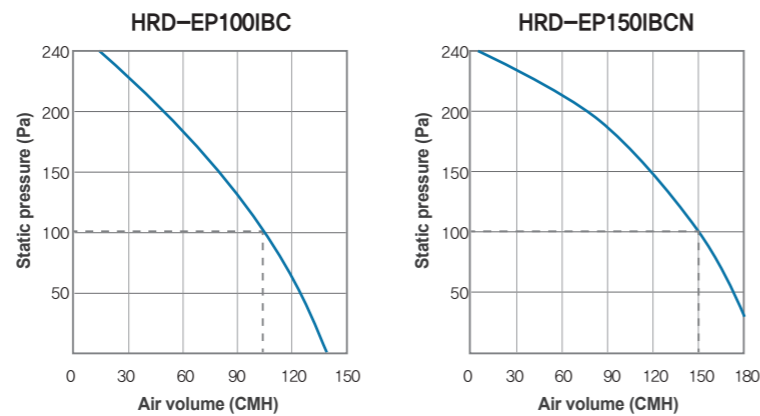


● With a dedicated filter case, it is easy to attach and detach the filter case, making it convenient to clean and manage the filter.

Controller



Performance

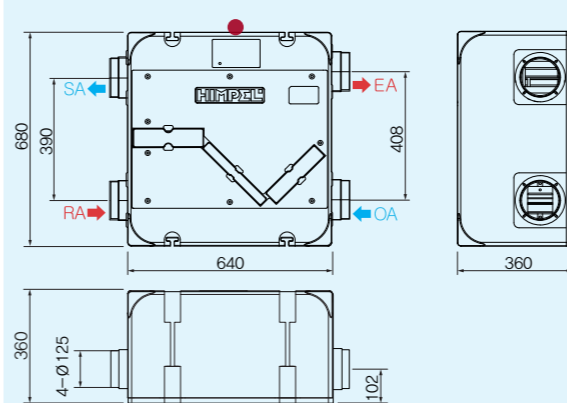


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD-EP100IBC			HRD-EP150IBC		
	Power	1Ø X 220V X 60Hz				
Ventilation Mode	High	Medium	Low	High	Medium	Low
Air volume (CMH)	120	100	80	170	150	130
Power consumption (W)	47	39	32	65	59	52
Noise (dB)	Below 50					
Enthalpy recovery efficiency (%)	Heating	79			74	
	Cooling	68			61	
Filter	Pre + HEPA + Carbon Deodorant					
Weight(kg)	9					
Product dimension(mm)	600(W) X 540(D) X 300(H)					

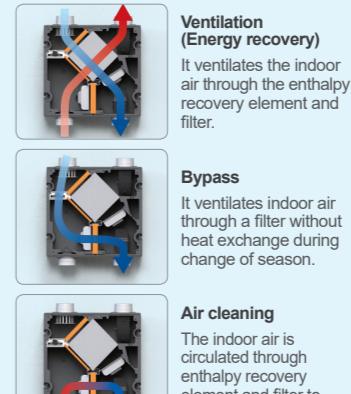
HUEVEN EF (Ceiling-mounted type)

Product dimensions (unit: mm)

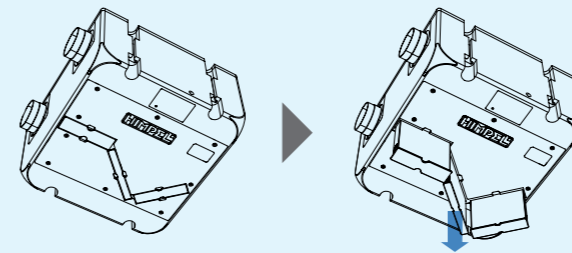


● Location of power/communication line

Mode details

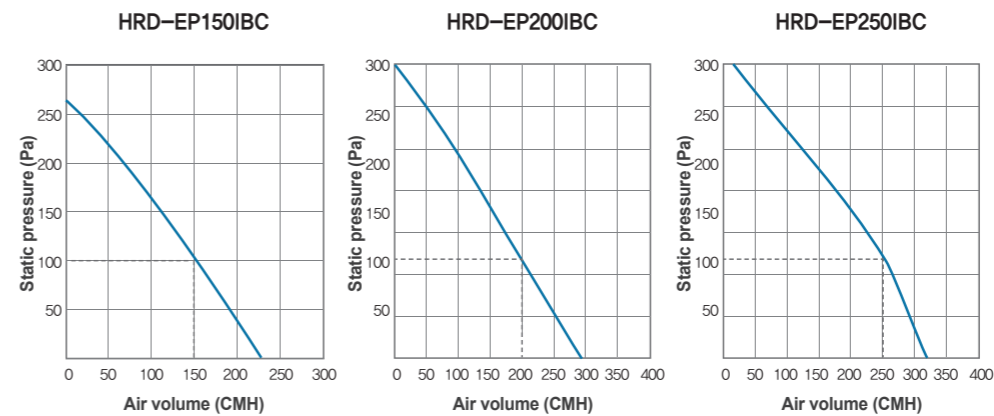


Filter case



● With a dedicated filter case, it is easy to attach and detach the filter case, making it convenient to clean and manage the filter.

Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD-EP150IBC			HRD-EP200IBC			HRD-EP250IBC			
	Power	1Ø X 220V X 60Hz								
Ventilation Mode	High	Medium	Low	High	Medium	Low	High	Medium	Low	
Air volume (CMH)	170	150	130	220	200	180	270	250	230	
Power consumption (W)	65	55	44	93	74	68	110	103	95	
Noise (dB)	Below 50									
Enthalpy recovery efficiency (%)	Heating	72			70			70		
	Cooling	63			60			59		
Filter	Pre + HEPA + Carbon Deodorant									
Weight(kg)	12									
Product dimension(mm)	680(W) X 640(D) X 360(H)									

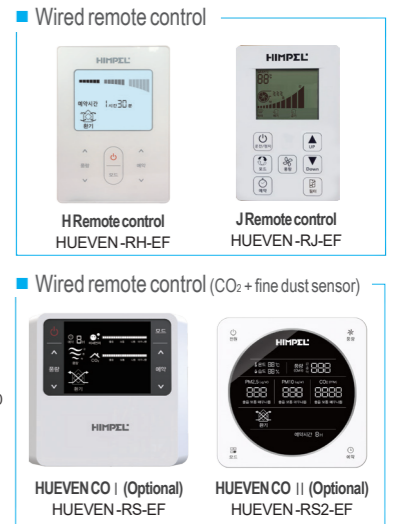


HRD-EP150IBC  
HRD-EP200IBC  
HRD-EP250IBC

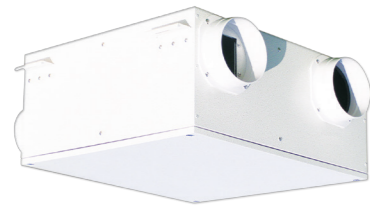
Connection duct Ø125

- BLDC Fan-Motor (high efficiency / low noise)
- Eco-friendly EPP material product
- Effective in areas with condensation and salt damage
- Maximization of sound absorption (minimizing noise)
- Bypass, air cleaning (optional)
- High-performance 3-stage air cleaning filter system (Free + HEPA + Carbon Deodorant Filter)
- Slim type

Controller



HUEVEN EGI (Small)

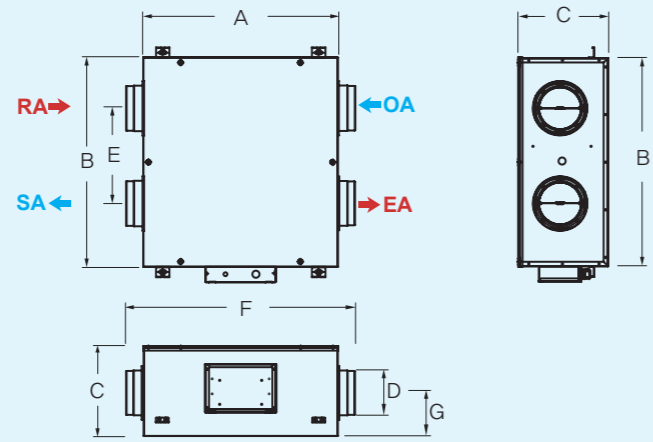


HRE-S150  
HRE-S250(D)  
HRE-350(D)

Connection duct Ø125, Ø150

- BLDC Fan-Motor (high efficiency/low noise)
- EGI material product
- High/Medium/Low 3-stage control
- Possible to set timer
- Possible to set sleep mode
- Possible to set automatic operation mode

Product dimensions (unit: mm)



	A	B	C	D	E	F	G
HRE-S150	450	550	230	125	275	570	115
HRE-S250(D)	580	600	270	150	370	695	106
HRE-350(D)	650	700	300	150	320	765	160

Dimension unit(mm)

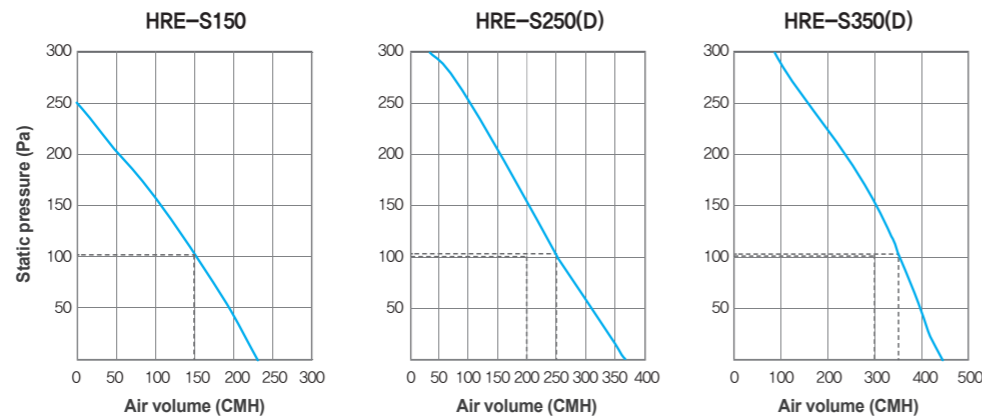
Controller

- Wired remote control



JM Remote control HUEVEN-RJM-EGI

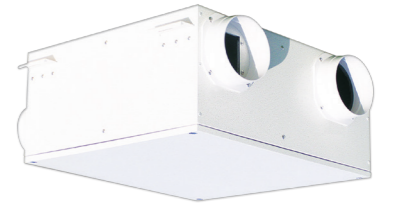
Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRE-S150			HRE-S250(D)			HRE-350(D)			
Power	1Ø X 220V X 60Hz									
Ventilation Mode	High	Medium	Low	High	Medium	Low	High	Medium	Low	
Air volume (CMH)	170	150	130	270	250	230	370	350	330	
Power consumption (W)	65	59	50	99	92	86	143	133	124	
External static pressure(Pa)	100			101			101			
Enthalpy recovery efficiency (%)	Heating	70			74			72		
	Cooling	60			63			60		
Noise (dB)	Below 50									
Filter	Pre + Medium									
Weight(kg)	23			25			32			
Product dimension(mm)	450(W)X550(D)X230(H)			600(W)X580(D)X270(H)			700(W)X650(D)X300(H)			

HUEVEN EGI (Medium, Large)

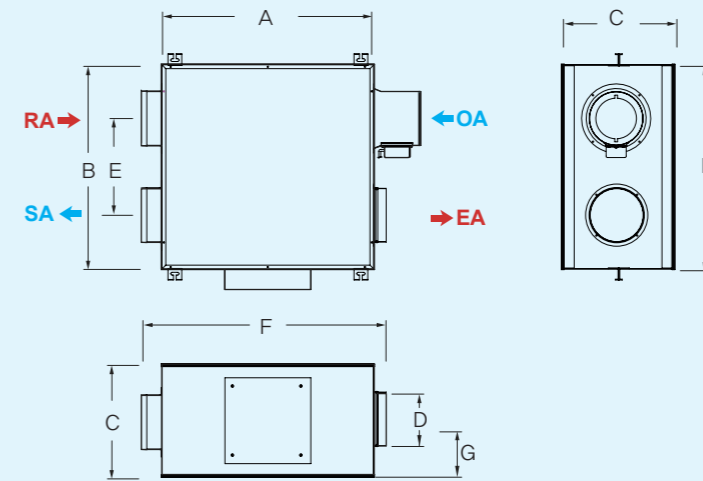


HRE-500(D)  
HRE-800(D)  
HRE-1000(D)

Connection duct Ø200, Ø250

- BLDC Fan-Motor (high efficiency/low noise)
- EGI material product
- High/Medium/Low 3-stage control
- Possible to set timer
- Possible to set sleep mode
- Possible to set automatic operation mode

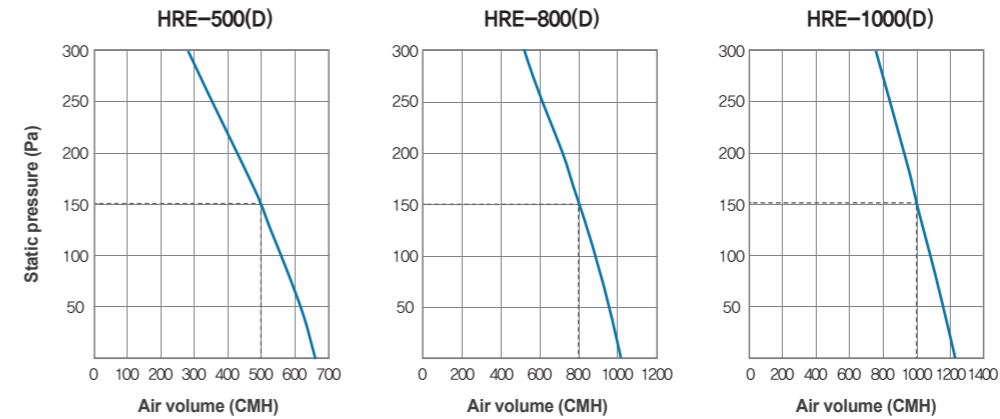
Product dimensions (unit: mm)



	A	B	C	D	E	F	G
HRE-500(D)	810	850	400	200	351	890	145
HRE-800(D)	1100	1200	400	250	720	1300	200
HRE-1000(D)	1100	1200	400	250	720	1300	160,230

Dimension unit(mm)

Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRE-500(D)			HRE-800(D)			HRE-1000(D)			
Power	1Ø X 220V X 60Hz									
Ventilation Mode	High	Medium	Low	High	Medium	Low	High	Medium	Low	
Air volume (CMH)	550	500	350	850	800	560	1100	1000	700	
Power consumption (W)	195	182	127	352	308	215	464	419	284	
External static pressure(Pa)	150			150			150			
Enthalpy recovery efficiency (%)	Heating	74			74			71		
	Cooling	63			63			60		
Noise (dB)	Below 50									
Filter	Pre + Medium									
Weight(kg)	38			65			65			
Product dimension(mm)	810(W)X850(D)X400(H)			1100(W)X1200(D)X400(H)			1100(W)X1200(D)X400(H)			

HUEVEN S II (Floor-mounted type)

NEW

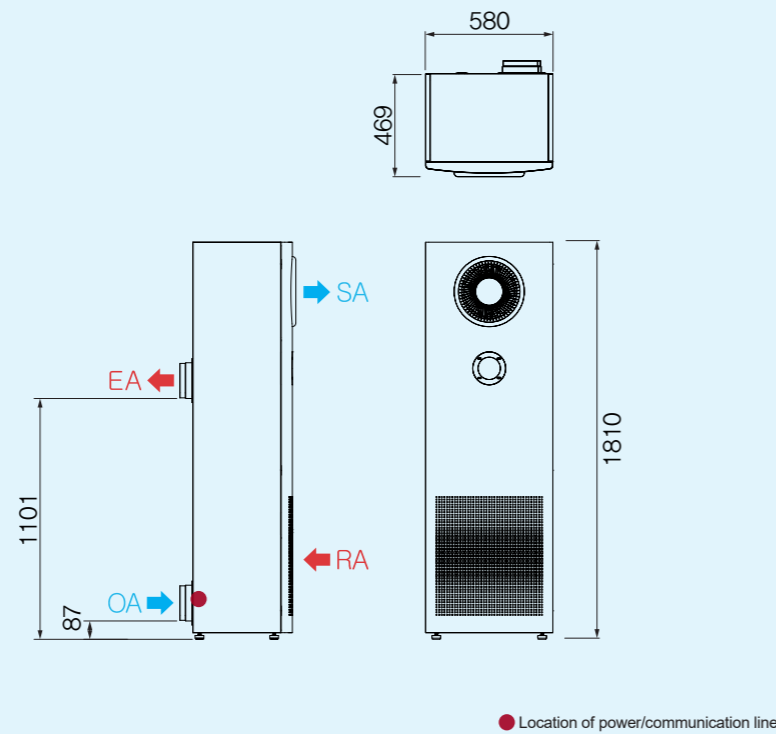


HRD2-400EGS

Connection duct Ø150

- EGI material product
- Economical installation cost
- 5 air quality sensors applied (Ultra-fine dust, fine dust, CO<sub>2</sub>, temperature, humidity)
- Bypass, air cleaning function
- High-performance air cleaning filter system (Pre+HEPA Filter 69T)
- Classroom, multi-purpose facilities, offices, hospitals, kindergarten

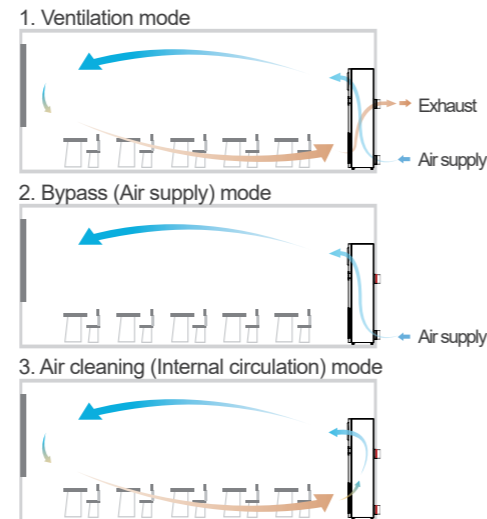
Product dimensions (unit: mm)



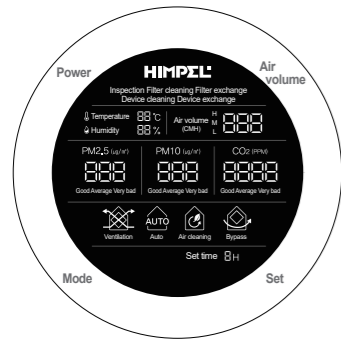
Performance



Ventilation system



Display



<Indicates 5 types of air quality>  
PM2.5, PM10, CO<sub>2</sub>, temperature, humidity

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD2-400EGS		
Power	1Ø X 220V X 60Hz		
Ventilation Mode	High	Medium	Low
Air volume (CMH)	400	250	150
Power consumption (W)	130	58	30
Noise (dB)	Below 48 (Based on High)		
Enthalpy recovery efficiency (%)	Heating	71	
	Cooling	52	
Filter	Pre(3) + HEPA(1)		
Weight(kg)	95		
Product dimension(mm)	580(W) X 469(D) X 1810(H)		
Option	Central control system, Interlocking (IoT)		

HUEVEN S II (Floor-mounted type)

NEW

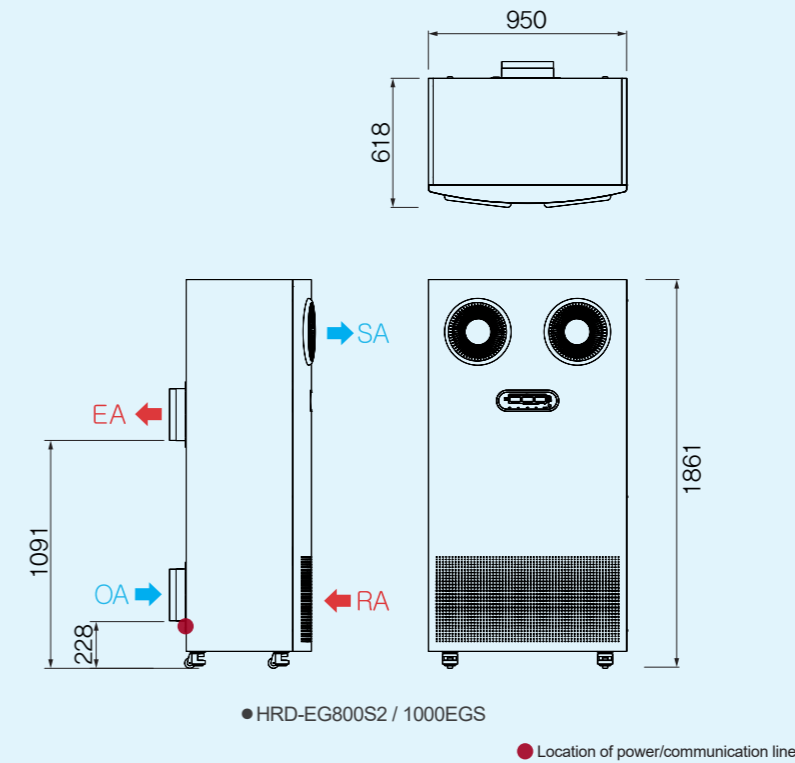


HRD-EG800S2  
HRD2-1000EGS

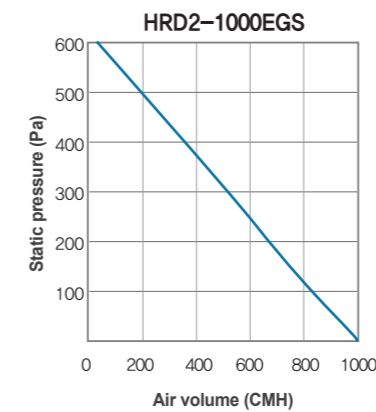
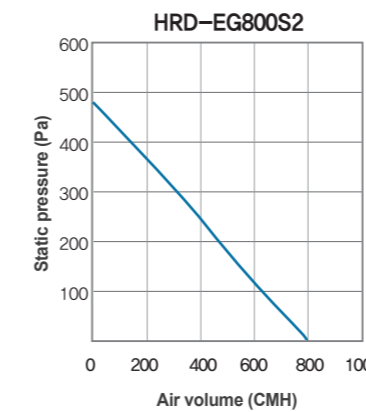
Connection duct Ø250

- EGI material product
- Economical installation cost
- 5 air quality sensors applied (Ultra-fine dust, fine dust, CO<sub>2</sub>)
- 5-stage air volume system
- High-performance air cleaning filter system (Pre+HEPA Filter 69T)
- Classroom, gym, multi-purpose hall

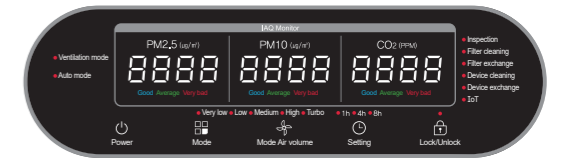
Product dimensions (unit: mm)



Performance



Display



<3 Air quality sensors displayed>  
PM2.5, PM10, CO<sub>2</sub>

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD-EG800S2					HRD2-1000EGS				
Power	1Ø X 220V X 60Hz									
Ventilation Mode	Turbo	High	Medium	Low	Very low	Turbo	High	Medium	Low	Very low
Air volume (CMH)	1000	800	500	300	200	1100	1000	500	300	200
Power consumption (W)	394	271	137	76	58	519	394	137	76	58
Noise (dB)	Below 52 (Based on High)					Below 53 (Based on High)				
Enthalpy recovery efficiency (%)	Heating	71				71				
	Cooling	56				52				
Filter	Pre(4) + HEPA(2)									
Weight(kg)	165									
Product dimension(mm)	950(W) X 618(D) X 1861(H)									
Option	Central control system, Interlocking (IoT), Carbon deodorant filter									

HUEVEN S I (Floor-mounted type)

HUEVEN S I (Floor-mounted type)

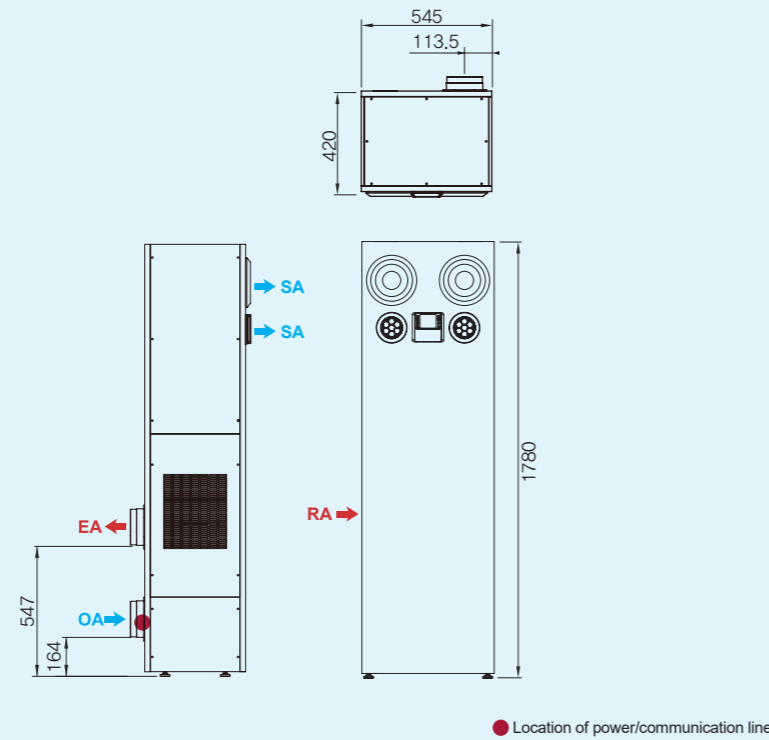


HRD-EG400S

Connection duct Ø150

- EGI material product
- Jet nozzle application
- Economical installation cost
- Air cleaning (optional)
- High-performance 3-stage air cleaning filter system (Pre + Medium 30T + HEPA Filter 55T)
- Recommended installation locations- daycare centers, senior citizens center, classrooms, multipurpose facilities, offices, hospitals, kindergarten

Product dimensions (unit: mm)



Controller

- Wired remote control (CO<sub>2</sub> + fine dust sensor)



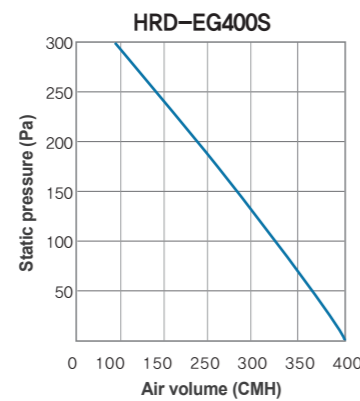
HUEVEN CO. HUEVEN-RS-S

- Wired remote control



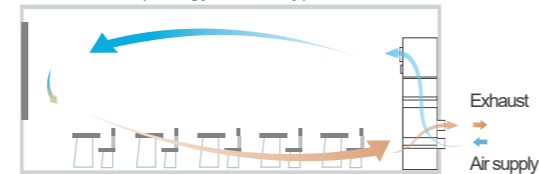
JRemote control (Optional) HUEVEN-RJ-S

Performance

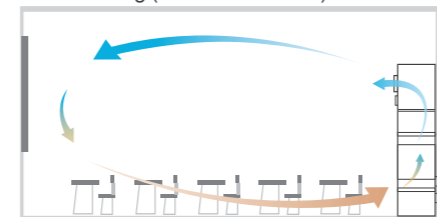


Mode details

1. Ventilation (Energy Recovery) mode



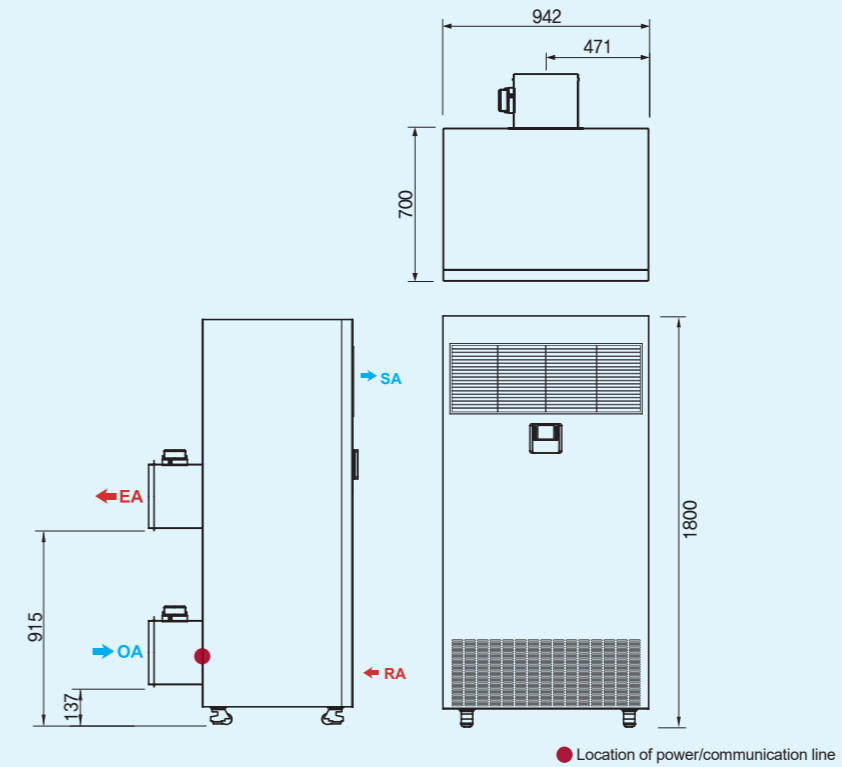
2. Air cleaning (Internal circulation) mode



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD-EG400S		
Power	1Ø X 220V X 60Hz		
Ventilation Mode	High	Medium	Low
Air volume (CMH)	400	250	150
Power consumption (W)	138	90	70
Noise (dB)	49 (Based on High)		
Enthalpy recovery efficiency (%)	Heating	71	
	Cooling	59	
Filter	Pre(2) +Medium(1) + HEPA(1)		
Weight(kg)	70		
Product dimension(mm)	545(W) X 420(D) X 1780(H)		
Option	Central control system, Air cleaning		

Product dimensions (unit: mm)

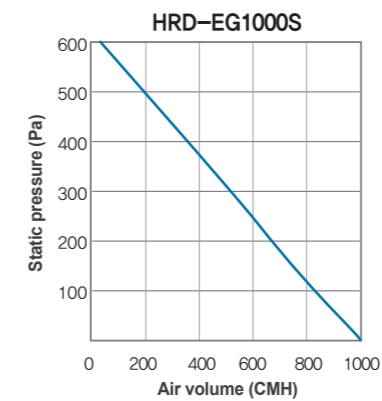
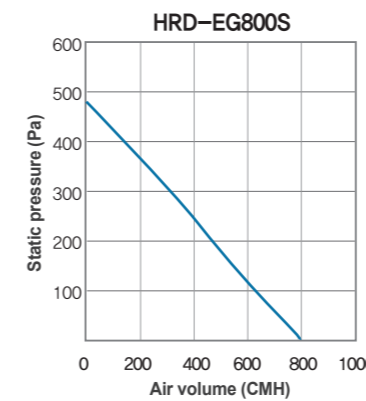


HRD-EG800S  
HRD-EG1000S

Connection duct Ø250

- EGI material product
- Economical installation cost
- High-performance 3-stage air cleaning filter system (Pre + Medium 10T + HEPA Filter 55T)
- Recommended installation locations- classrooms, gym, multi-purpose halls

Performance



Controller

- Wired remote control (CO<sub>2</sub> + fine dust sensor)



HUEVEN CO. HUEVEN-RS-S

- Wired remote control





















JRemote control (Optional) HUEVEN-RJ-S


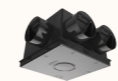










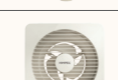

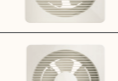



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HRD-EG800S			HRD-EG1000S		
Power	1Ø X 220V X 60Hz					
Ventilation Mode	High	Medium	Low	High	Medium	Low
Air volume (CMH)	800	500	300	1000	500	300
Power consumption (W)	250	170	120	396	170	120
Noise (dB)	Below 55 (Based on High)					
Enthalpy recovery efficiency (%)	Heating	76			74	
	Cooling	68			64	
Filter	Pre(4) +Medium(2) + HEPA(2)					
Weight(kg)	90					
Product dimension(mm)	942(W) X 700(D) X 1800(H)					
Option	Central control system					

# Himpel Thermo ventilator & Ventilation fan

For healthy air quality in the bathroom, polluted air is discharged to the outside, moisture is removed from the bathroom quickly, noise is reduced, and the efficiency is up, and there are high airtight backdraft prevention dampers.

	<b>HUEZENTTE II (Premium type)</b> FHD-P150S1	33
	<b>HUEZENTTE II (Premium type) IoT</b> FHD-P150S1-IoT	34
	<b>HUEZENTTE I (General type)</b> FHA-P180S, FHA-P130S	35
	<b>HUEZENTTE I (Freeze protection type)</b> FHA-S180DB	36
	<b>ZEROC (BLDC, Constant air volume, MD integrated type)</b> FZD-C90S	37
	<b>ZEROC (Constant air volume, Slim type, MD integrated type)</b> FZA2-C90_MD	38
	<b>ZEROC (Constant air volume, MD integrated type)</b> HV3-70X(MD-N), HV3-80X(MD-N)	39
	<b>ZEROC (Constant air volume)</b> HV3-70X, HV3-80X	40
	<b>ZEROC (Constant air volume, Hybrid)</b> HV3-80NV	41
	<b>CLEVER MD</b>	42
	<b>ZEROC (Constant air volume, Multi-branch type)</b> FZA-C110S	43
	<b>ZEROC (Constant air volume, Separate room ventilation type, MD integrated type)</b> HV3-80SF	44
	<b>ZEROC (High static pressure)</b> HV3-100, HV3-120, HV3-150	45
	<b>CYFLREX (LED light)</b> FFA-80L	47
	<b>ZEROC (LED light)</b> FZA-L110S1	48
	<b>ZEROC (LED light, MD integrated type)</b> FZD-L80S / HV3-81JG	49
	<b>ZEROC (High static pressure, Slim type)</b> FZA-C80	50
	<b>ZEROC (Constant air volume, MD integrated type)</b> FZA-C90SM	51

	<b>LIVO (BLDC, In-line, Constant air volume)</b> FLD2-C90	52
	<b>LIVO (In-line)</b> L2-100, L2-120, L2-150, FLA-C90	53
	<b>LIVO (In-line, Constant air volume, Slim type)</b> L2-80SM	54
	<b>LIVO (In-line, High air volume)</b> L2-250, L2-300	55
	<b>ZAION (High air volume)</b> HV-180, HV-220, HV-250	56
	<b>FLREX (Medium static pressure)</b> C2-100	57
	<b>TURBO 747 (Medium static pressure)</b> FZA-70S1	58
	<b>CYCLONE (Low static pressure)</b> JV-201	59
	<b>TURBO FAN / PIPE FAN (Low static pressure)</b> JV-102, PV-61	60, 61
	<b>ZEROC (Wall mounted type)</b> HV-81WF	62
	<b>Ventilation Fan (Wall mounted type)</b> FWA-R125D100, FWA-R125D150	63
	<b>Ventilation Fan (Wall mounted type)</b> FWA-R125W100	64
	<b>Ventilation Fan (Wall mounted type)</b> FWA-S200W540	65
	<b>Ventilation Fan (Wall mounted type)</b> FWA-S250W350, FWA-S250W460	66
	<b>Kitchen ventilation system</b> FDD1-C350I_MD	67, 68
	<b>Expandable (shoe cabinet, pantry, dressing room) ventilation system</b> FZA-C110S, L2-150, L2-250	69
	<b>Elevator hall ventilation system</b> L2-250(EV), L2-300(EV), HV3-80X(EV)	70
	<b>Hybrid ventilation system</b> HV3-80X, L2-150, L2-250	71, 72

# Thermal ventilator

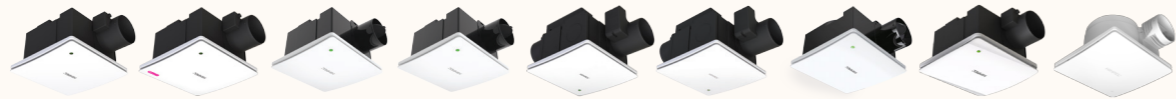
Constant air volume / High static pressure



		FHD-P150S1		FHD-P150S1-IoT		FHA-P180S		FHA-P130S		FHA-S180DB	
		Air volume	Power consumption(W)	Air volume	Power consumption(W)	Air volume	Power consumption(W)	Air volume	Power consumption(W)	Air volume	Power consumption(W)
Ventilation	High	120	9	120	9	180	64	180	64	180	68
	Medium	90	7	-	-	-	-	-	-	-	-
	Low	70	6	70	6	89	45	89	45	90	48
Warm air	High	90	1,200	90	1,200	150	1,700	150	1,350	110	1,500
	Low	70	1,100	70	1,100	110	1,000	110	1,000	-	-
Dehumidification		80	Heating : 600 Cooling : 30	80	Heating : 600 Cooling : 30	80	1,600	80	1,300	-	-
Dry	High	150	Heating:1,500/ Cooling:62	150	Heating:1,500/ Cooling:62	200	High:1,800/Low:84	200	High:1,400/Low:84	-	-
	Low	100	Heating:1,200/ Cooling:20	100	Heating:1,200/ Cooling:20	-	-	-	-	-	-
Natural wind		-	-	-	-	80	65	80	65	-	-
Freeze protection		-	-	-	-	-	-	-	-	150	1,800
IoT / AI		-	-	o	-	-	-	-	-	-	-
Constant air volume		o	-	o	-	-	-	-	-	-	-
Damper		High airtight motorized damper		High airtight motorized damper		Gravity type damper		Gravity type damper		Gravity type damper	
Safety device		5Medium		5Medium		3Medium		3Medium		3Medium	
Connection duct (Ø)		100		100		100		100		100	
Product dimension (mm) W x D x H		477x313x180		477x313x180		460x330x199		460x330x199		460x330x199	
Note		BLDC motor, Wall mounted type (optional), Wireless remote control type		IoT type, BLDC motor, Wireless remote control type		Wall mounted type (optional)		Wall mounted type (optional), Wireless remote control type		Freeze protection, Wireless remote control type, Wall mounted type (optional)	

# Ventilation fan

Constant air volume / High static pressure



		HV3-80X (MD-N)	HV3-80X (MD-N)-IoT	HV3-70X	HV3-80X	HV3-80NV	HV3-80SF	FZA-C80	FZD-C90S	FZA-C90_MD
Constant air volume		o	o	o	o	o	o	o	o	o
Air volume (CMH)		91	91	75	91	91	91	85	90	90
Damper		High airtight motorized damper	High airtight motorized damper	Magnetic damper (Optional)	Magnetic damper (Optional)	High airtight motorized damper	High airtight motorized damper	Magnetic damper (Optional)	High airtight motorized damper	Internal high airtight motorized damper
IoT / AI		-	o	-	-	-	-	-	-	-
Air volume control Grill		-	-	-	-	o	o	-	-	-
Expandable branch		-	-	-	-	o	o	-	o	-
High/Low control switch		-	-	-	-	o	o	-	-	-
Connection duct (Ø)		100	100	100	100	100	100	100	100	100
Product dimension (mm) W x D x H		270x270x166	270x270x166	270x270x166	270x270x166	270x270x168	270x270x168	270x270x131	270x270x168	270x270x139
Note		Various actions option	IoT type, various actions option	-	Various actions option	Various actions, Clever MD options	Various actions option	Slim type	BLDC motor	Slim type

High static pressure



		FZA-C90SM	HV3-100	HV3-120	HV3-150	FZA-C110S	FFA-80L	FZA-L110S1	FZD-L80S HV3-81JG	HV-81WF
Constant air volume		o	-	-	-	o	-	o	o	o
Air volume (CMH)		93	100	120	145	110	90	110	83	75
Damper		High airtight motorized damper	Magnetic damper (Optional)	Magnetic damper (Optional)	Magnetic damper (Optional)	Magnetic damper (Optional)	Magnetic damper (Optional)	Magnetic damper (Optional)	High airtight motorized damper	-
LED light		-	-	-	-	-	o	o	o	-
Air volume control Grill		-	o	o	o	o	-	-	-	-
Expandable branch		o	o	o	o	o	-	o	o	-
High/Low control switch		-	o	o	o	o	-	-	-	-
Connection duct (Ø)		100	100	100	100	100	100	100	100	100
Product dimension (mm) W x D x H		270x270x131	270x270x166	270x270x166	270x270x166	278x278x166	220x220x160	278x278x166	271x271x166 275x275x166	260x260x163
Note		Slim type, Various actions option	Various actions, Integrated MD option	Various actions, Integrated MD option	Various actions, Integrated MD option	Various actions, separated MD option	Various actions, separated MD option	-	-	Wall mounted type, 4-way installation possible

High static pressure



		L2-80SM	FLD2-C90	FLA-C90	L2-100	L2-120	L2-150	L2-250	L2-300
Constant air volume		o	o	o	-	-	-	-	-
Air volume (CMH)		82	90	90	100	120	150	250	300
Damper		Gravity type damper	Gravity type damper	Gravity type damper	Gravity type damper	Gravity type damper	Gravity type damper	Gravity type damper	Gravity type damper
Expandable branch		o	o	o	o	o	o	o	o
High/Low control switch		-	o	o	o	o	o	(High/Medium/Low)	(High/Medium/Low)
Connection duct (Ø)		100	100	100	100	100	100	100/125	100/125
Product dimension (mm) W x D x H		254 x 254 x 135	260 x 260 x 160	260 x 260 x 160	260 x 260 x 160	260 x 260 x 160	260 x 260 x 160	334 x 334 x 190	334 x 334 x 190
Note		Ceiling embedded type, Slim type	Ceiling embedded type, BLDC motor	Ceiling embedded type	Ceiling embedded type	Ceiling embedded type	Ceiling embedded type	Ceiling embedded type	Ceiling embedded type

High air volume | Medium static pressure | Low static pressure



		FWA-R125D100 FWA-R125D150	FWA-R125W100	FWA-S200W540	FWA-S250W350 FWA-S250W460	HV-180 HV-220	HV-250	C2-100	FZA-70S1	JV-201
Constant air volume		-	-	-	-	-	-	-	-	-
Air volume (CMH)		100 / 150	140	540	350 / 469.5	180 / 220	250	90	70	80
Damper		-	-	-	-	Gravity type damper	Gravity type damper	Gravity type damper	Magnetic damper	Gravity type damper
Connection duct (Ø)		125 / 150	200	250	250	100	125	100	100	100
Product dimension (mm) W x D x H		231x155x248	250x168x256	320x77x326	320x77x326	320x320x180	320x320x180	205x205x160	219x219x157	205x205x165
Note		Wall mounted type	Wall mounted type	Wall mounted type	Wall mounted type	High Air volume (CMH)	High Air volume (CMH)	M, F, L Grille	Free perforation size	M, C, S Grille





**4 functions at once!**

More Clean Ventilation appliance for bathroom



Pleasant Ventilation



Warm Air



Soft dehumidification (Dry)



Hair & Body Dry

6-step safety device applied

- 1st step**

**Product Waterproofing**

Urethane molding applied to the main PCB. Product waterproofing IPX3
- 2nd step**

**Current Fuse**

Automatically shuts off the product in case of overvoltage or overcurrent
- 3rd step**

**Bimetal**

Automatic power off when heater overheats
- 4th step**

**Temperature Sensor**

Temperature check and control when the warm air outlet is overheated
- 5th step**

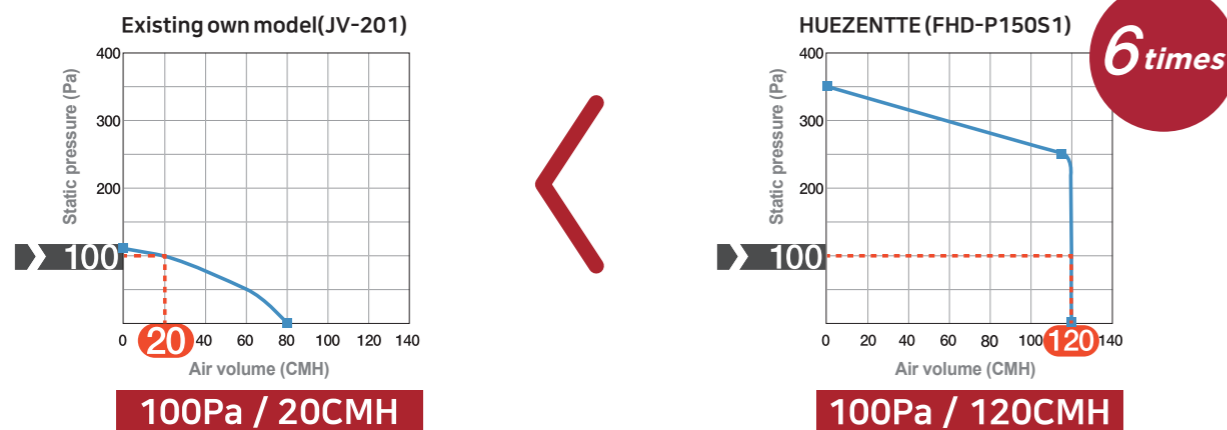
**Temperature Fuse**

Automatically cut off the heater when the warm air outlet is overheated
- 6th step**

**ON/OFF Power Switch**

Power off when not in use for a long time

Comparing Huezentte strong ventilation power!

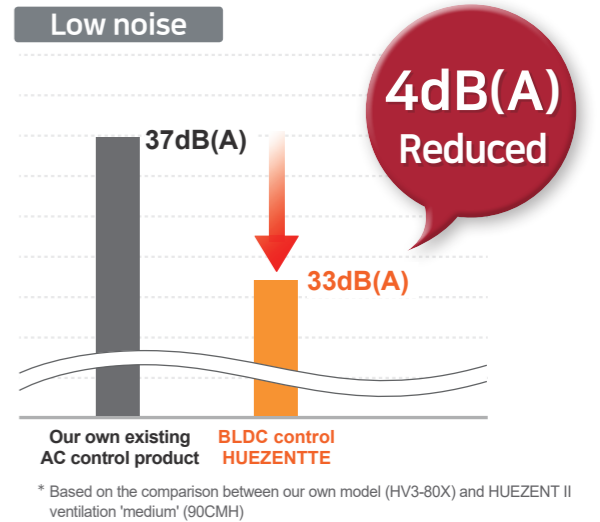
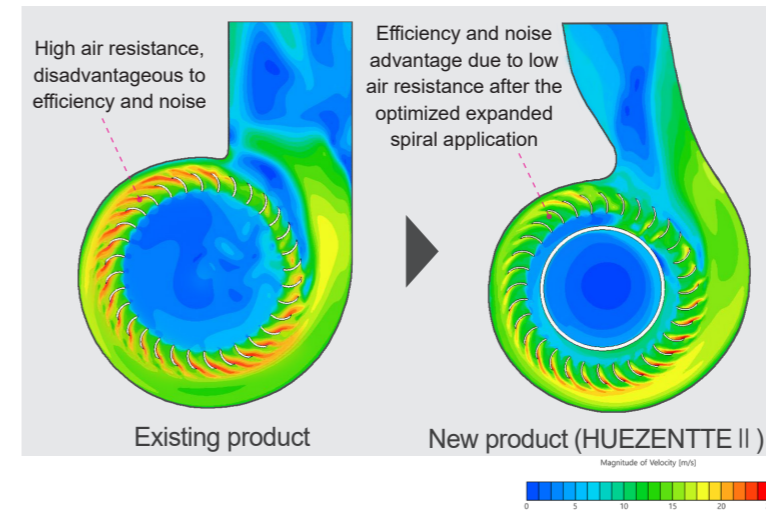


※ This is a comparison with our own model to help understand Huezentte 'Ventilation at high', which may vary depending on the environment.

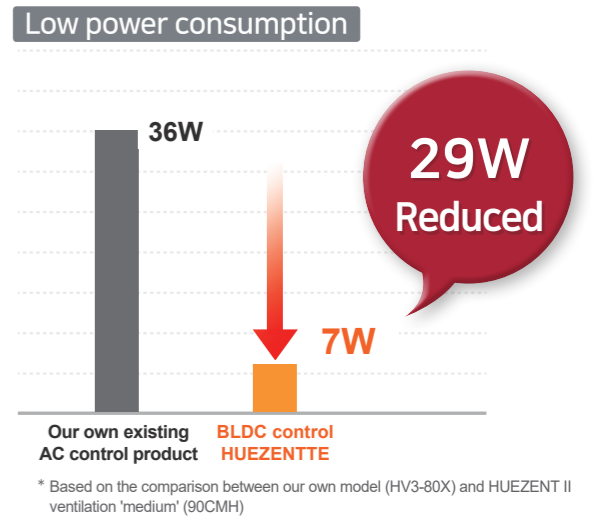
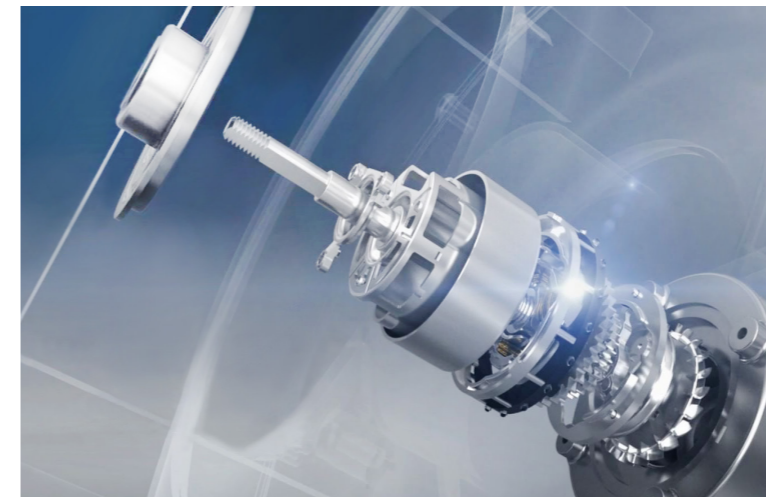
# HUEZENTTE Air Science and Technology

Computational Fluid Dynamics, ultra-precise NC machining BLDC motor realizes high efficiency, low noise, and low power.

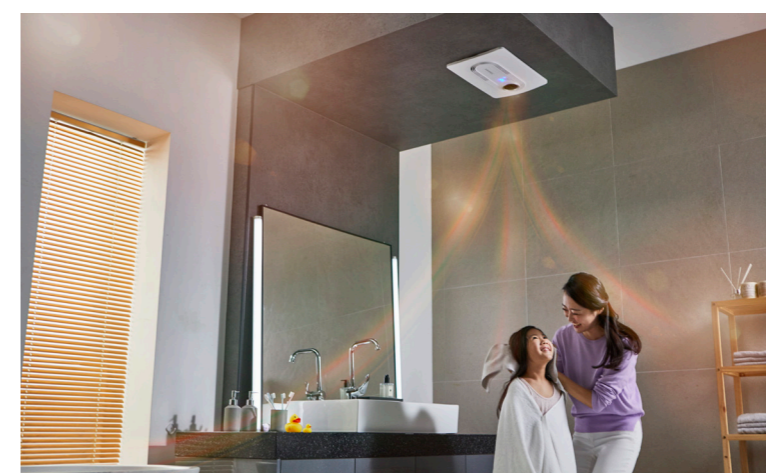
Optimized low-noise flow path technology



High efficiency, low power and low noise with the innovative motor control technology



Electricity bill you don't need to worry about!



**Electricity bill**

Based on the average monthly electricity bill for a family of 4, the estimated total electricity bill is 51.38\$ per month when using Hugen additionally.

When using Hugen's warm air as 'High' mode (1,200W) for 30 minutes every day for a month,

**+ 3.39\$**

on the previous electricity bill

\* Fees may vary depending on the high-voltage and low-voltage housing.  
 \* Source of the monthly electricity bill for a family of 4: The 8th Basic Plan for Power Supply and Demand by the Ministry of Trade, Industry and Energy  
 \* Source of the Monthly Average Fee using HUEZENTTE: Korea Electric Power Corporation [Calculation of the product fee used]

Energy recovery ventilator | Thermo Ventilator | Ventilation fan | Ventilation system | Ventilation materials

## HUEZENTTE II (Premium type)

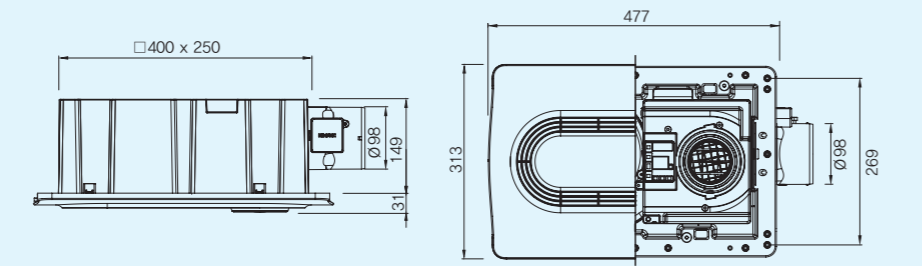


### FHD-P150S1

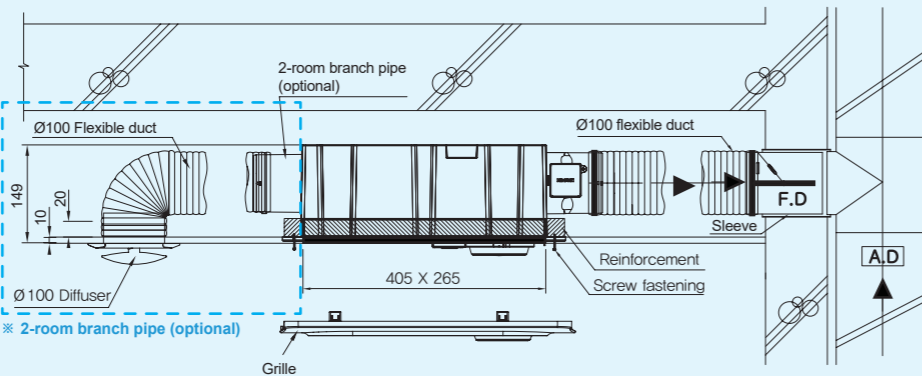
Hole size	405X265mm (±5mm)
Connection duct	Ø100

- BLDC Fan-Motor (high efficiency / low noise)
- Certified as a bathroom ventilation fan with constant air volume
- 6-fold safety device
- High/medium/low air volume control
- PTC heater applied
- High airtight motorized damper
- Two-room expandable exhaust (optional)
- Pre-filter / wireless remote control

#### Product dimensions (unit: mm)



#### How to install the product



#### Controller



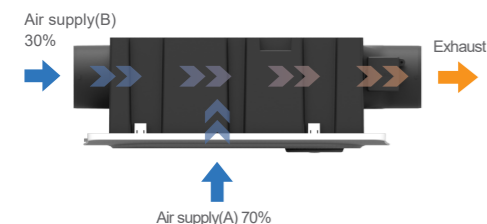
#### Product damper

High airtight motorized damper

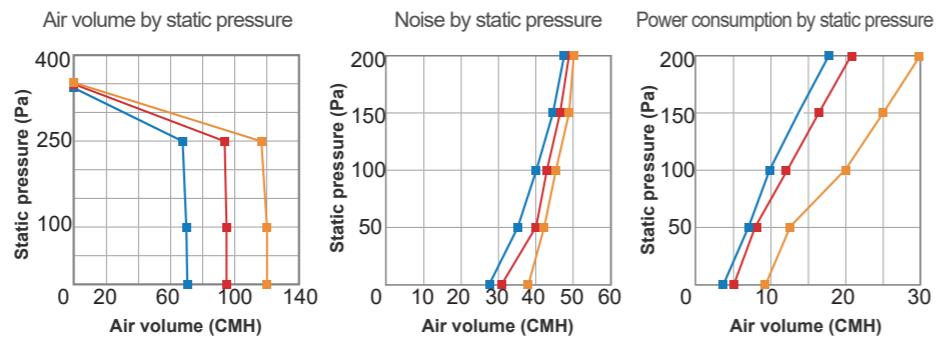


#### Air volume ratio by branch

※ The standard is within 2.0m of flexible, depending on the installation condition.



#### Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Item	Ventilation	Warm air	Dehumidification/Drying	Hair/Body dry
FHD-P150S1	○	○	○	○
Air volume (CMH)	H	120	90	150
	M	90	-	80
	L	70	70	100
Power consumption(W)	H	9	1,200	1,500(Heating) / 62(Cooling)
	M	7	-	600(Heating) / 30(Cooling)
	L	6	1,100	1,200(Heating) / 20(Cooling)
Noise (dB)	H	38	42	54
	M	33	-	46
	L	28	38	45
Max. static pressure(Pa)	H	350	-	-
	M	350	-	350
	L	350	-	-
Product dimension (mm)	477(W) X 313(D) X 149(H)			
Weight (kg)	4.9			
Option	Wall mounted type (External exposure of the flexible duct to activate the ventilation mode), 2-room expandable exhaust			

## HUEZENTTE II (Premium type)IoT

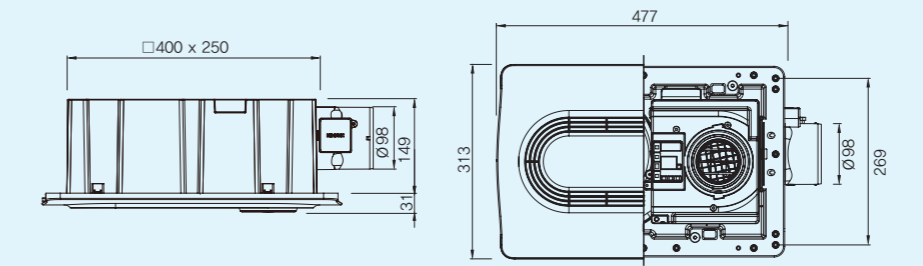


### FHD-P150S1-IoT

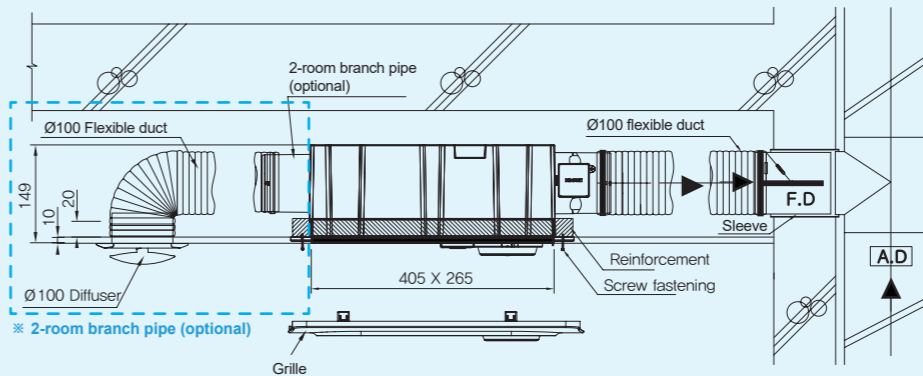
Hole size	405X265mm (±5mm)
Connection duct	Ø100

- BLDC Fan-Motor (high efficiency / low noise)
- 6-fold safety device
- High/medium/low air volume control
- PTC heater applied
- High airtight motorized damper
- Two-room expandable exhaust (optional)
- Pre-filter / wireless remote control
- Constant power connection required

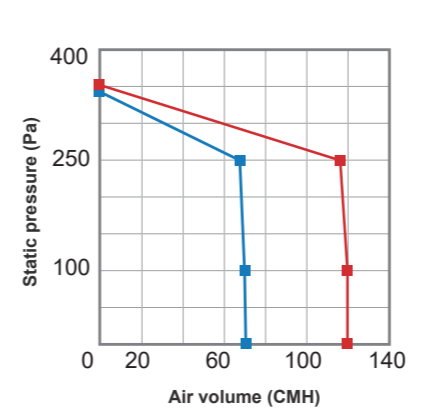
#### Product dimensions (unit: mm)



#### How to install the product



#### Performance



- Notification of bathroom cleanliness status (poor) App notification when the bathroom cleanliness status is poor
- Filter cleaning reminder Filter cleaning reminder after 300 hours of use
- Remote control setting Ventilation, dehumidification/drying, drying and warm air modes can be controlled and set anytime, anywhere
- Real-time bathroom monitoring Temperature, humidity and cleanliness can be checked anytime, anywhere

#### Controller



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	Ventilation	Warm air	Dehumidification/Drying	Hair/Body dry
Air volume (CMH)	High	120	90	150
	Low	70	70	100
Power consumption(W)	High	9	1,200	1,500(Heating) / 62(Cooling)
	Low	6	1,100	600(Heating) / 30(Cooling)
Noise (dB)	High	38	42	54
	Low	28	38	45
Static pressure (Pa)	High	350	-	-
	Low	350	-	350
Product dimension (mm)	477(W) X 313(D) X 149(H)			
Weight (kg)	4.9			
Option	2-room expandable exhaust			

HUEZENTTE I (General type)



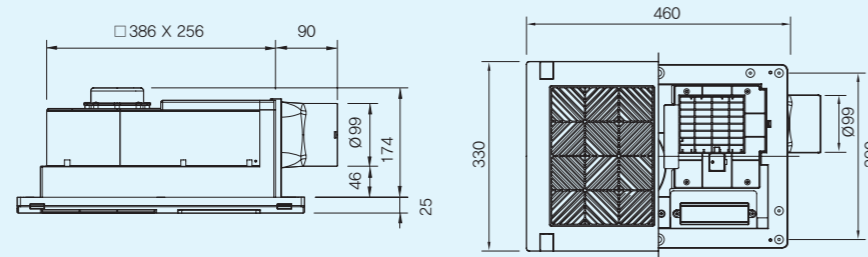
FHA-P180S / P130S

Hole size	390X260mm (±5mm)
Connection duct	Ø100

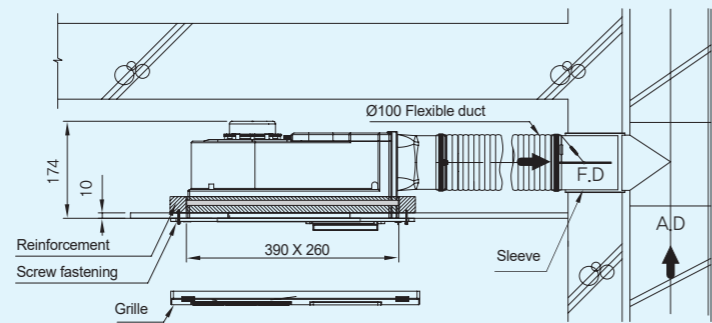
- 3-fold safety device (Bimetal, temperature sensor, current fuse)
- Gravity type damper
- High / low air volume control
- Pre-filter / wireless remote control
- PTC heater applied



Product dimensions (unit: mm)



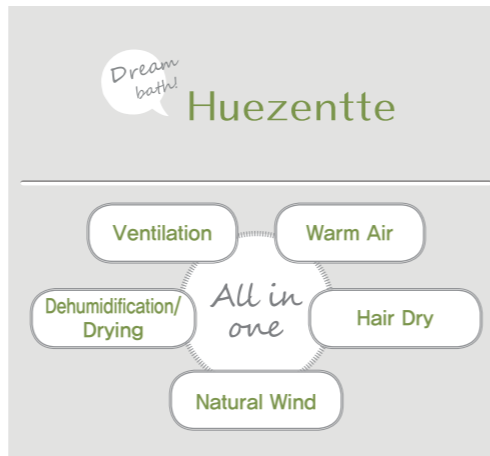
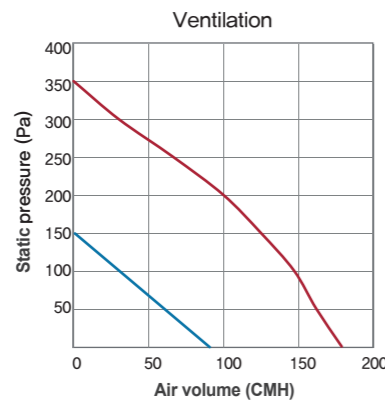
How to install the product



Controller



Performance

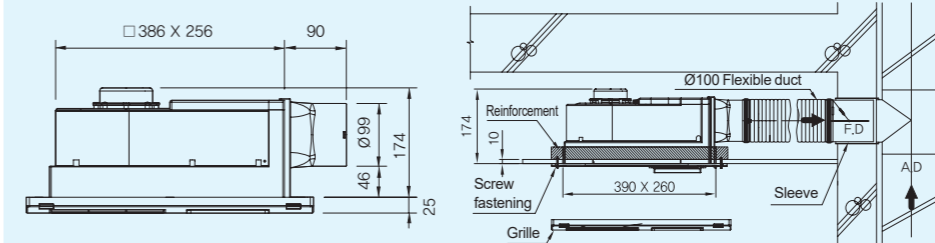


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Item	Ventilation	Warm air	Dehumidification/Drying	Hair dry	Natural wind
FHA-P180S / FHA-P130S	○	○	○	○	○
Air volume (CMH)	High	180	Circulation: 150	Ventilation: 80 / Circulation: 110	Ventilation: 80 / Circulation: 110
	Low	89	Circulation: 110	-	Circulation: 200
Power consumption (W)	High	64	1,700	1,600	1,800
	Low	45	1,000	-	84(Cold wind)
Power consumption(W)	High	64	1,350	1,300	1,400
	Low	45	1,000	-	84(Cold wind)
Noise (dB)	High	49	52	54	54
	Low	37	45	-	-
Max. static pressure (Pa)	High	350	-	130	-
	Low	150	-	-	-
Product dimension (mm)	460(W) X 330(D) X 174(H)				
Weight (kg)	5.5				
Option	Wall mounted type (External exposure of the flexible duct to activate the ventilation mode)				

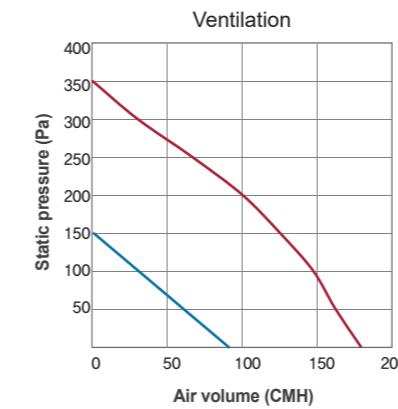
HUEZENTTE I (For freeze protection)

Product dimension (unit: mm) / How to install the product

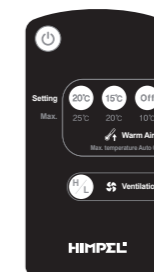


! When installing the reinforcement: The height of reinforcement to be 40mm or less

Performance



Controller



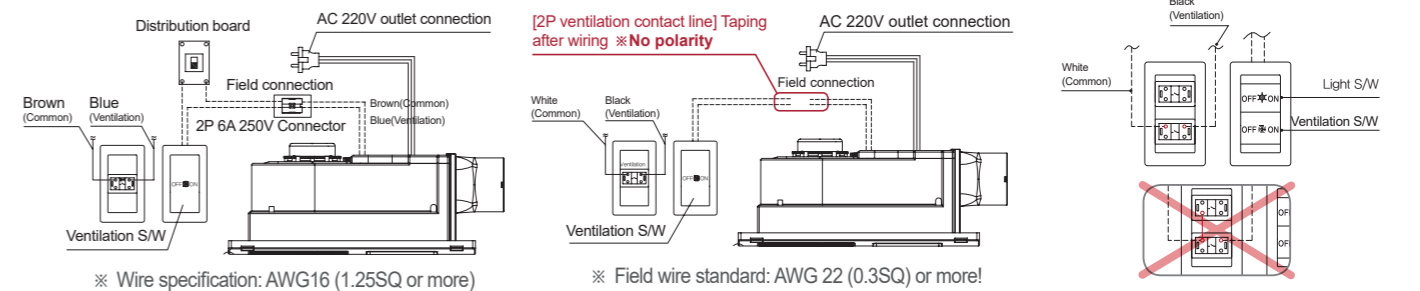
FHA-S180DB

Hole size	390 x 260mm (±5mm)
Connection duct	Ø100

- Freeze protection mode (Temperature detection and automatic operation)
- 3-fold safety device (Bimetal, temperature sensor, current fuse)
- Gravity type damper
- High / low air volume control
- Pre-filter / wireless remote control
- PTC heater applied

Wiring Diagram

- When connecting AC (220V) 1-hole switch
- When connecting DC contact 1 socket switch
- When connecting DC contact 2 socket switch



- ※ Ventilation general contact and ventilation AC contact point can be used in common (however, specifications are determined when ordering)
- ※ When the ventilation general contact switch is 2 holes and the light/ventilation 220V power is connected, wiring is prohibited.
- ※ S200DB/S250DB products must be directly connected to indoor wiring and equipped with dedicated switchgear and overcurrent circuit breaker (based on electrical equipment).

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Item	Ventilation	Warm air	Freeze protection(Automatic)
Power consumption(W)	High	68	1,500
	Low	48	1,800
Air volume (CMH)	High	180	110
	Low	90	150
Product dimension (mm)	460(W) X 330(D) X 174(H)		
Weight (kg)	5.5		

## ZEROC (Constant air volume, BLDC, MD Integrated type)

**NEW**



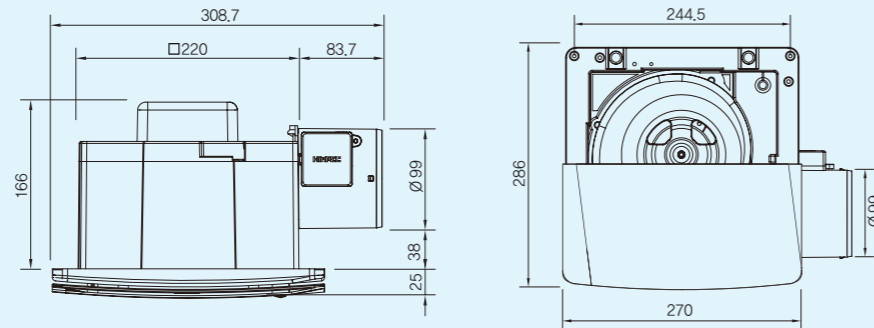
### FZD-C90S

Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

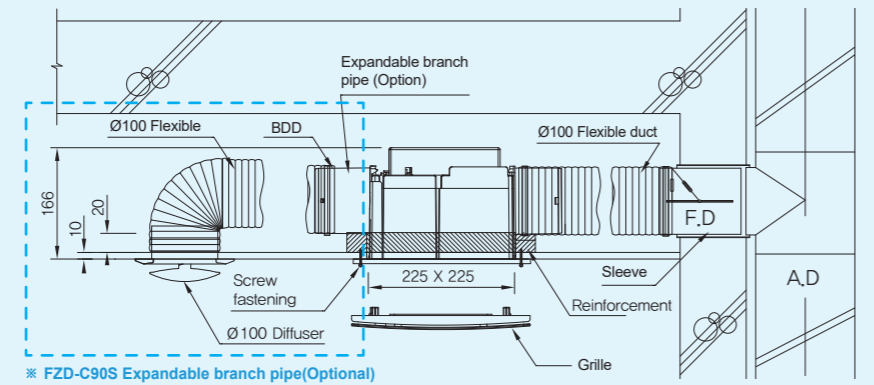
- BLDC Fan-Motor (high efficiency / low noise)
- Certified as a bathroom ventilation fan with constant air volume
- High airtight motorized damper
- Multi expandable branch (option)



### Product dimensions (unit: mm)

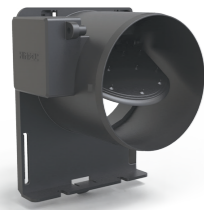


### How to install the product



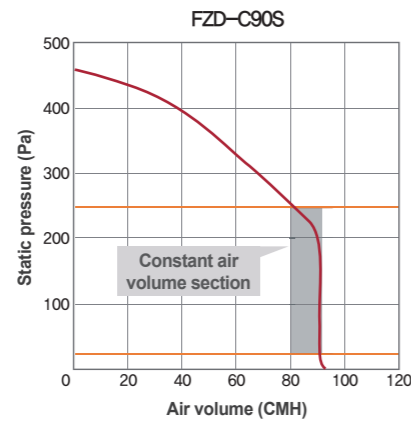
### Product damper

High airtight motorized damper



(MD-N)

### Performance



\* Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

### Grille



E Grille  
Size 286(W) X 270(D)

Model	FZD-C90S	
Static pressure (Pa)	25~250	
Air volume (CMH)	90	
Air volume (CMH)	81~99	
Power consumption(W)	6	
Noise (dB)	36	
Product dimension (mm)	270(W) X 270(D) X 166(H)	
Weight (kg)	2.6	
Power	1Ø / 220V / 60Hz	
Operation Option	-	
Option	Power lamp(L), multi expandable branch	
Motorized damper (MD-N)	Power consumption(W)	2.5
	Product dimension (mm)	Ø100 X 101L
	Material	ABS

## ZEROC (Constant air volume, Slim type)

**NEW**

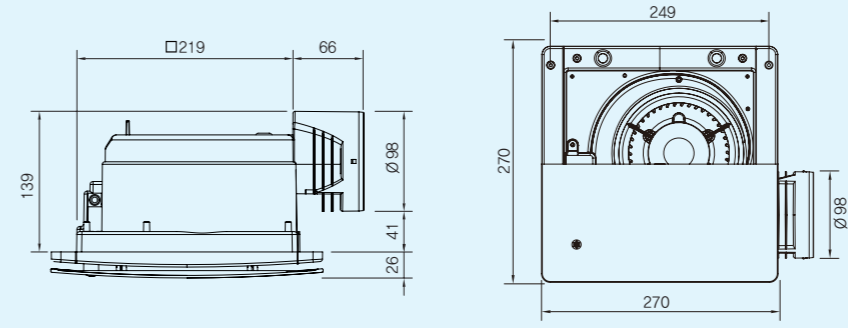


### FZA2-C90\_MD

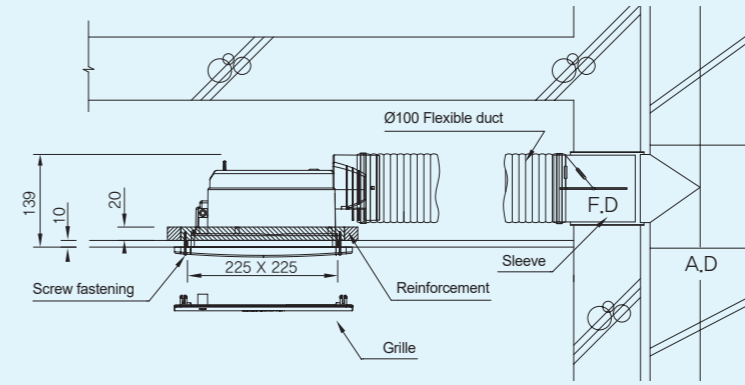
Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

- Convenient installation and maintenance
- Internal high airtight motorized damper

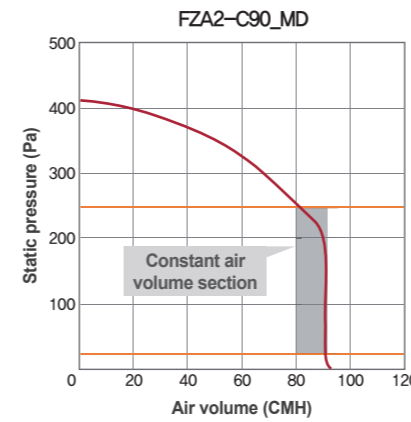
### Product dimensions (unit: mm)



### How to install the product



### Performance



\* Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

### Convenient installation of the ventilator

1. After fixing the flexible duct to the exhaust port with a fastening band, insert it vertically.
2. First fix the bent wing as shown in the picture with 2 screws and then connect the power plug.
3. Insert the main body into the ceiling in the direction of the arrow and fix it with 2 screws as shown in the picture.
4. Grill cover installation completed.

Model	FZA2-C90_MD
Static pressure (Pa)	25~250
Air volume (CMH)	90
Air volume (CMH)	81~99
Power consumption(W)	37
Noise (dB)	38
Product dimension (mm)	270(W) X 270(D) X 139(H)
Weight (kg)	2.1
Power	1Ø / 220V / 60Hz
Option	Power lamp (L)

## ZEROC (Constant air volume, MD Integrated type)



### HV3-70X(MD-N) HV3-80X(MD-N)

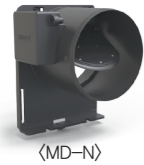
Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

- Certified as a bathroom ventilation fan with constant air volume
- Low noise
- Various operation options
- High airtight motorized damper
- Multi expandable branch (Option)
- IoT – Smartphone control (Option)

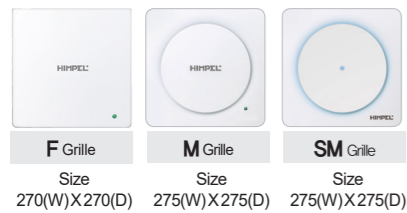


### Product damper

High airtight motorized damper

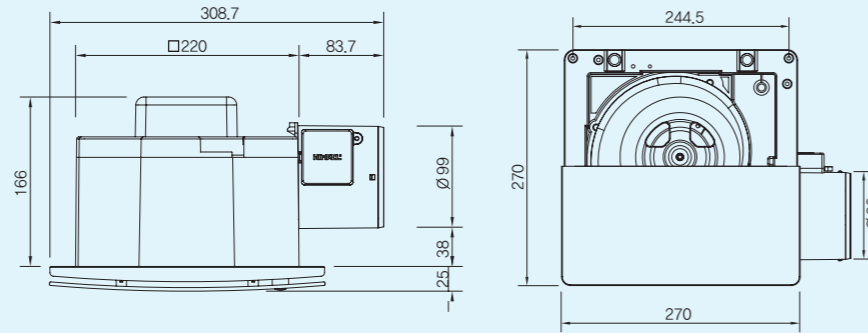


### Grille

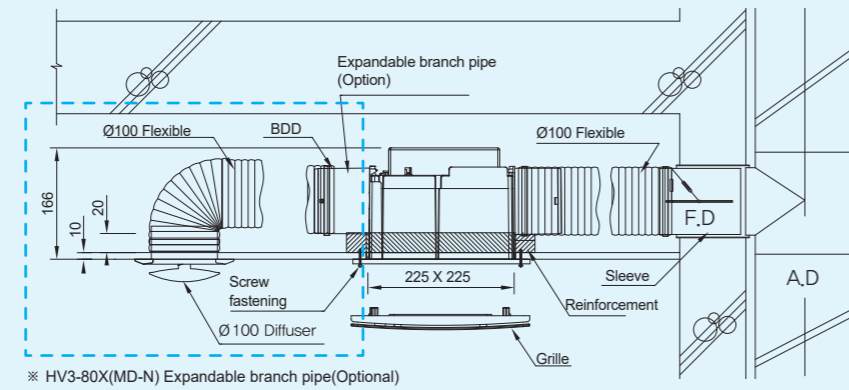


F Grille Size 270(W)X270(D) M Grille Size 275(W)X275(D) SM Grille Size 275(W)X275(D)

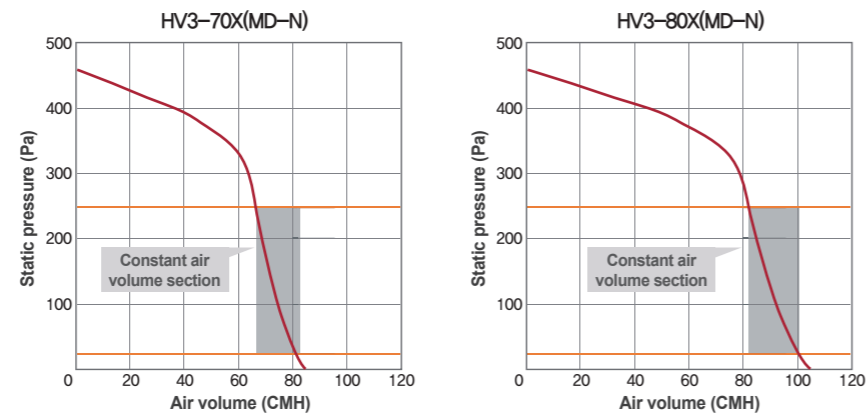
### Product dimensions (unit: mm)



### How to install the product



### Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HV3-70X(MD-N)	HV3-80X(MD-N)
Static pressure (Pa)	25~250	25~250
Air volume (CMH)	75	91
Air volume (CMH)	68~83	83~100
Power consumption(W)	31	37
Noise (dB)	32	37
Product dimension (mm)	270(W) X 270(D) X 166(H)	
Weight (kg)	2.6	
Power	1Ø / 220V / 60Hz	
Option	FGrille, MGrille, SMGrille, Power lamp (L), Multi expandable branch, IoT	
Motorized damper (MD-N)	Power consumption(W)	2.5
	Product dimension (mm)	Ø100 X 101L
	Material	ABS

## ZEROC (Constant air volume)



### HV3-70X / HV3-80X

Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

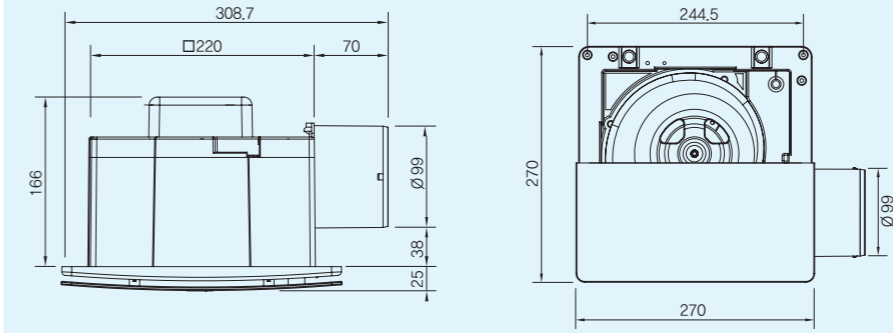
- Certified as a bathroom ventilation fan with constant air volume
- Low noise
- Various operation options
- Magnetic damper
- Multi expandable branch (Option)



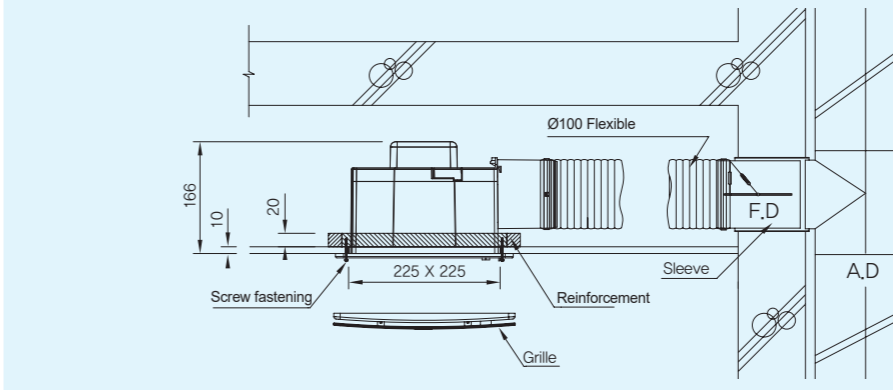
### Product damper

Magnetic damper

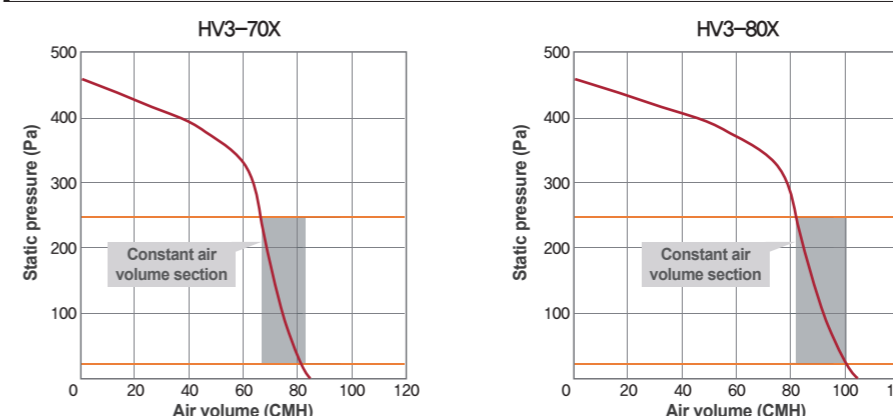
### Product dimensions (unit: mm)



### How to install the product

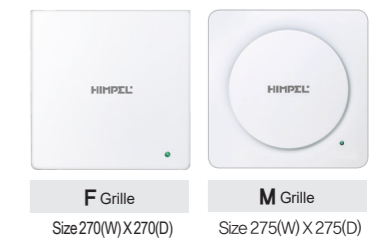


### Performance



- ① Airtight air room structure
- ② Neodymium magnet structure to prevent headwind

### Grille



F Grille Size 270(W)X270(D) M Grille Size 275(W)X275(D)

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HV3-70X	HV3-80X
Static pressure (Pa)	25~250	25~250
Air volume (CMH)	75	91
Air volume (CMH)	68~83	83~100
Power consumption(W)	31	37
Noise (dB)	32	37
Product dimension (mm)	270(W) X 270(D) X 166(H)	
Weight (kg)	2.2	
Power	1Ø / 220V / 60Hz	
Option	FGrille, MGrille, Power lamp (L)	

ZEROC (Constant air volume, Hybrid)



HV3-80NV

Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

- Certified as a bathroom ventilation fan with constant air volume
- Low noise
- Various operation options
- High airtight motorized damper

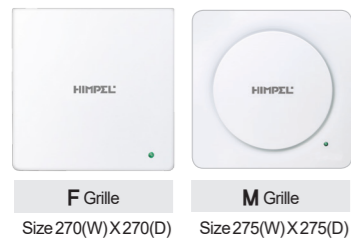
Product damper(Optional)

High airtight motorized damper



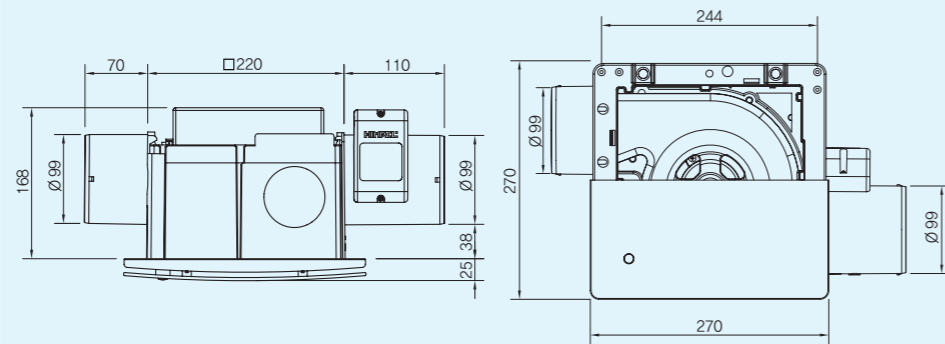
(MD)

Grille

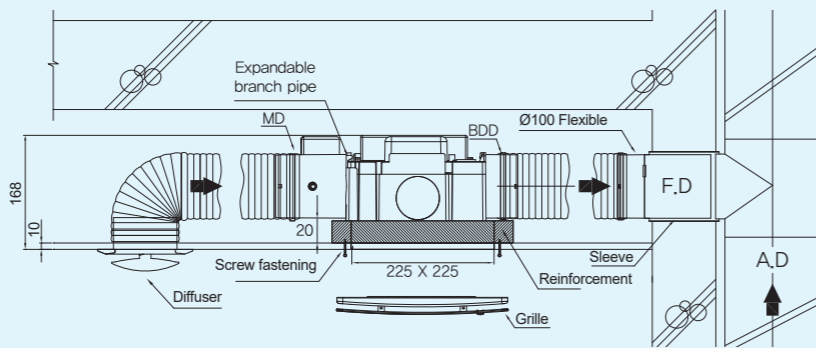


F Grille Size 270(W) X 270(D)  
M Grille Size 275(W) X 275(D)

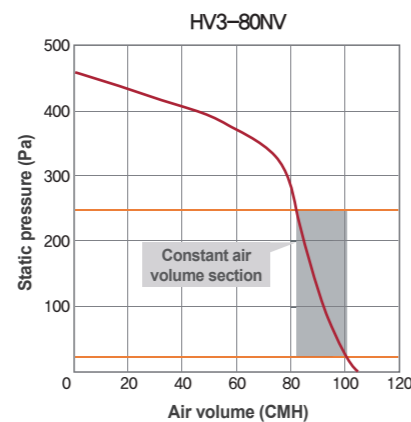
Product dimensions (unit: mm)



How to install the product



Performance



Controller

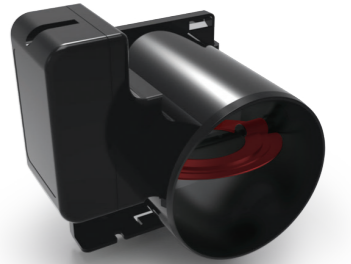
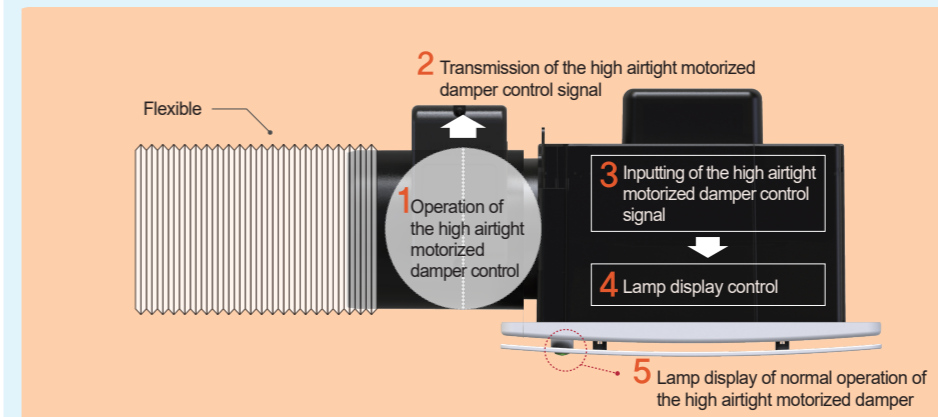


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model		HV3-80NV			
Static pressure (Pa)		25~250			
Air volume (CMH)		82~100			
Constant Air volume (CMH)		56	78	91	
Power consumption(W)	1st stage	29	36	42	
	Noise (dB)	29	33	36	
Product dimension (mm)		270(W) X 270(D) X 168(H)			
Weight (kg)		2.8			
Power		1Ø / 220V / 60Hz			
Option		FGrille, MGrille, Power lamp (L)			
Motorized damper (MD)	Power consumption(W)	3			
	Product dimension (mm)	Ø100 X 112L			
	Material	ABS			

CLEVER MD

Control configuration diagram



CLEVER MD

Connection duct Ø100

- High airtight motorized damper
- Lamp displaying the operation of the motorized damper

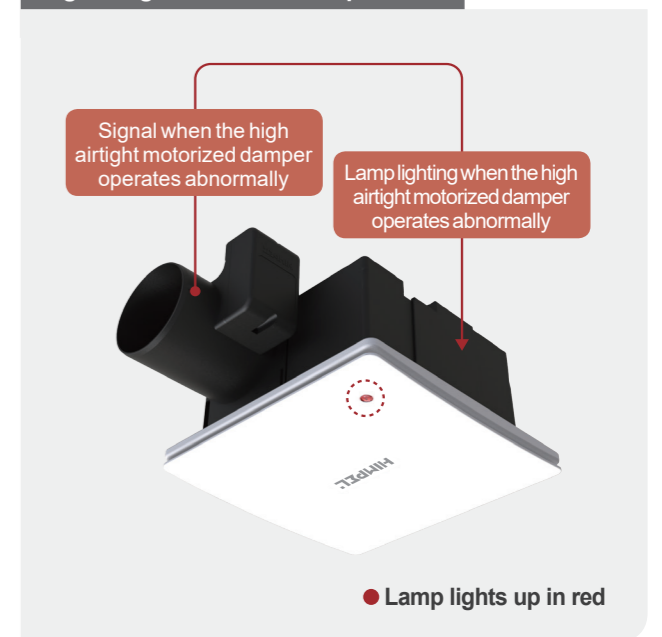
Lighting indication of the operation lamp

In case of failure or malfunction of the component motor or accessories of the high airtight motorized damper connected to the ventilation fan, or the case of damage to the connected wire, the information on whether the damper is operating abnormally through the operation indicator lamp in the ventilator grill is visually provided to increase the user's convenience.

Normal operation of the high airtight motorized damper



Abnormal operation of the high airtight motorized damper



Model		CLEVER MD
Motorized damper (MD)	Power consumption (W)	3
	Product dimension (mm)	Ø100 X 112L
	Material	ABS

ZEROC (Constant air volume, multi branch type)



FZA-C110S

Hole size	235 X 235mm (±5mm)
Connection duct	Ø100

- Certified as a bathroom ventilation fan with constant air volume
- Magnetic damper
- Multi expandable branch (optional)

Product damper

Magnetic damper



- ① Airtight air room structure
- ② Neodymium magnet structure to prevent headwind

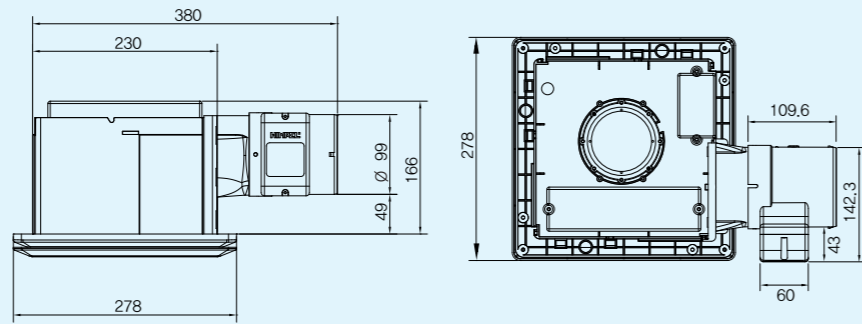
Product damper(Optional)

High airtight motorized damper

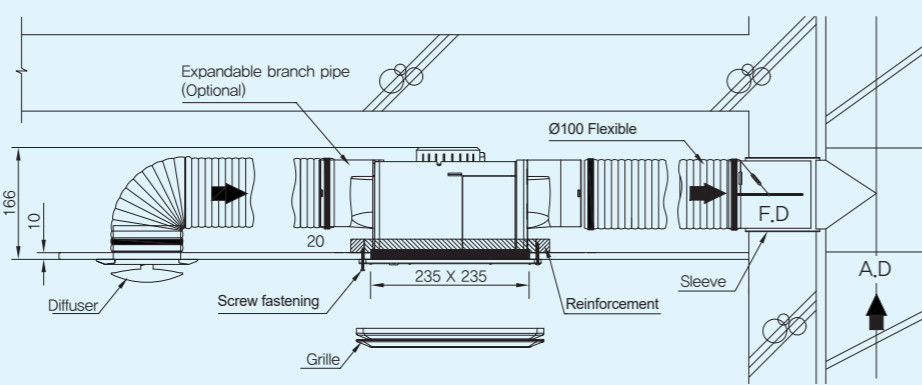


(MD)

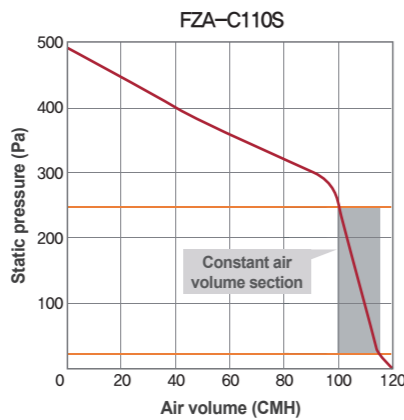
Product dimensions (unit: mm)



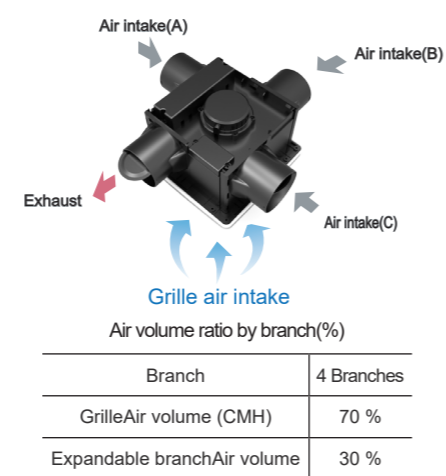
How to install the product



Performance



Multi expandable branch (Optional)



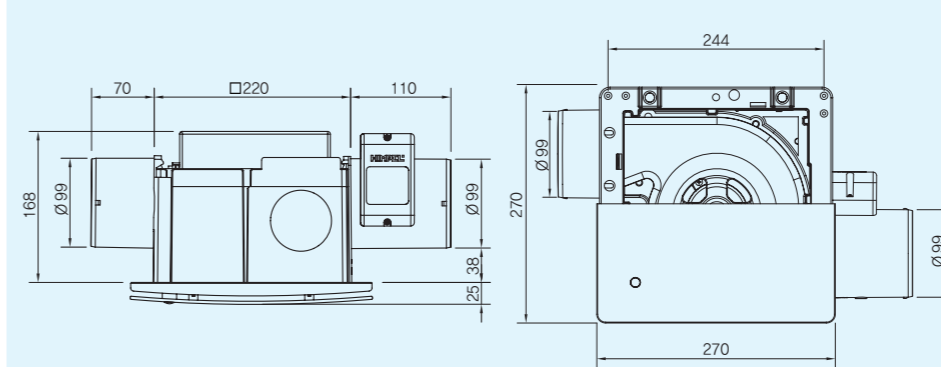
※ The standard is within 2.0m of flexible, depending on the installation condition.

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

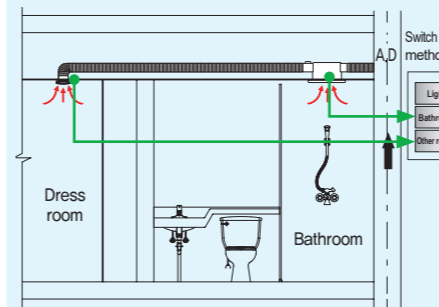
Model	FZA-C110S
Static pressure (Pa)	25~250
Constant Air volume (CMH)	110
Air volume (CMH)	103~119
Power consumption (W)	45
Noise (dB)	38
Product dimension (mm)	278(W) X 278(D) X 166(H)
Weight (kg)	2.8
Power	1Ø / 220V / 60Hz
Option	Multi expandable branch

ZEROC (Constant air volume, separate room ventilation type)

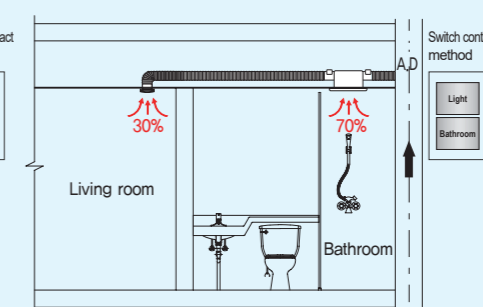
Product dimensions (unit: mm)



Control of each room in bathroom and other rooms

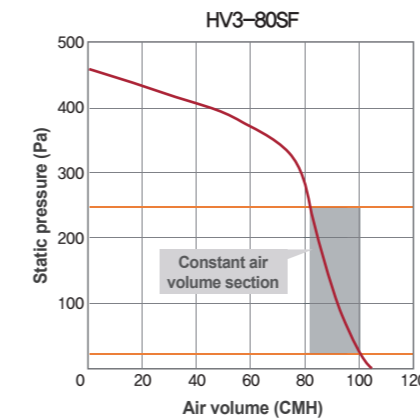


Interlocking control of bathroom and ventilation unit (ERV, floor ventilation)

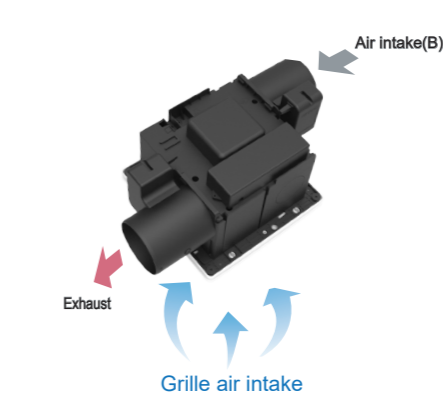


※ The air volume ratio varies depending on the flexible installation condition.

Performance



Multi expandable branch (Optional)



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HV3-80SF	
Static pressure (Pa)	25~250	
Constant Air volume (CMH)	91	
Air volume (CMH)	83~100	
Power consumption(W)	36	
Noise (dB)	37	
Product dimension (mm)	270(W) X 270(D) X 168(H)	
Weight (kg)	2.6	
Power	1Ø / 220V / 60Hz	
Option	Ventilation unit interlocking type, Power lamp (L)	
Motorized damper (MD)	Power consumption (W)	3
	Product dimension (mm)	Ø100 X 112L
	Material	ABS



HV3-80SF

Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

- Low noise
- Various operation options
- High airtight motorized damper
- Multi expandable branch
- Automatic air volume control (motor)

Product damper(Optional)

High airtight motorized damper



(MD)

Grille

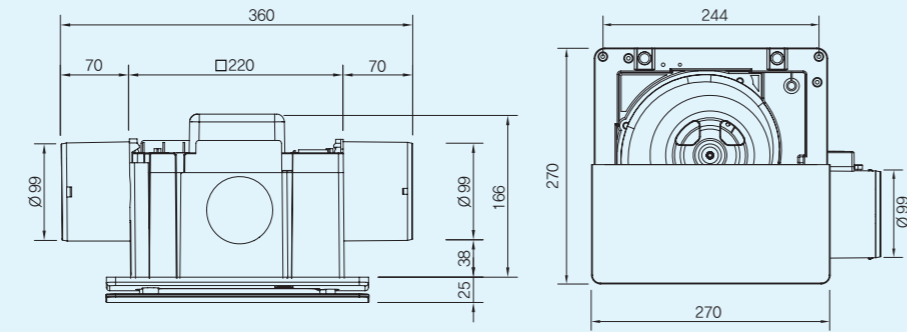


F Grille Size 270(W) X 270(D) Multi-expansion air volume control damper (optional) \*Expanded intake and grille air volume ratio control

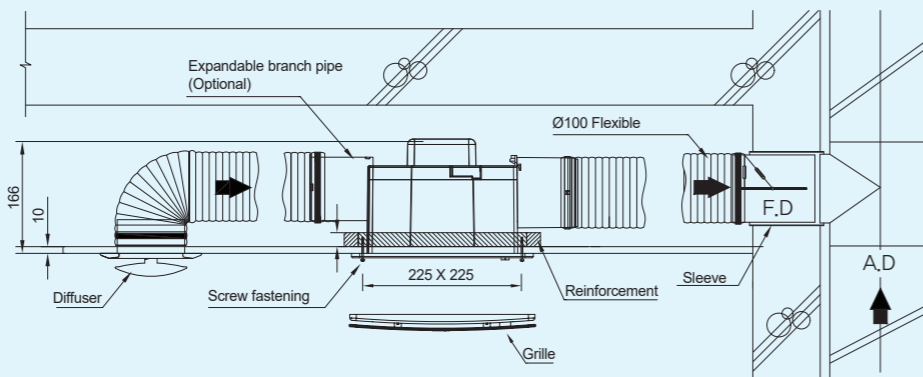
## ZEROC(High static pressure)



### Product dimensions (unit: mm)



### How to install the product



### HV3-100, HV3-120, HV3-150

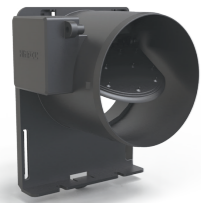
Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

- Low noise
- Magnetic damper
- Various operation options
- Multi expandable air volume control damper
- High/Low adjustment with switch (optional)
- Multi expandable branch (optional)



### Product damper

High airtight motorized damper



〈MD-N〉

### Grille

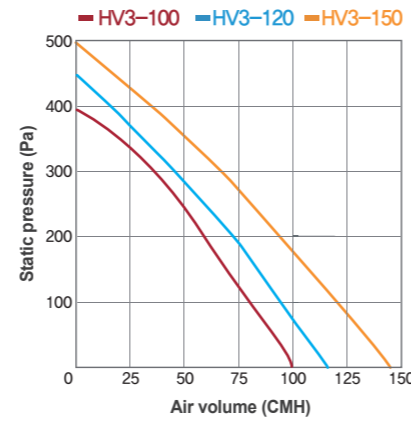


**F Grille**  
Size 270(W) X 270(D)



**M Grille**  
Size 275(W) X 275(D)

### Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HV3-100			HV3-120			HV3-150		
	Static pressure (Pa)	0	100	200	0	100	200	0	100
Air volume (CMH)	100	80	60	120	90	70	145	120	90
Power consumption (W)	27			31			39		
Noise (dB)	37			40			44		
Product dimension (mm)	Basic type : 270(W) X 270(D) X 166(H)								
Weight (kg)	2.4								
Power	1Ø / 220V / 60Hz								
Option	F grille, M grille, power lamp (L), Multi expandable branch, Multi expandable air volume control damper, High/low control switch								
Operation	H (humidity type), T (timer type), V (ventilation unit interlocking type), HT (humidity, timer type)								

### High/low control switch (Optional)

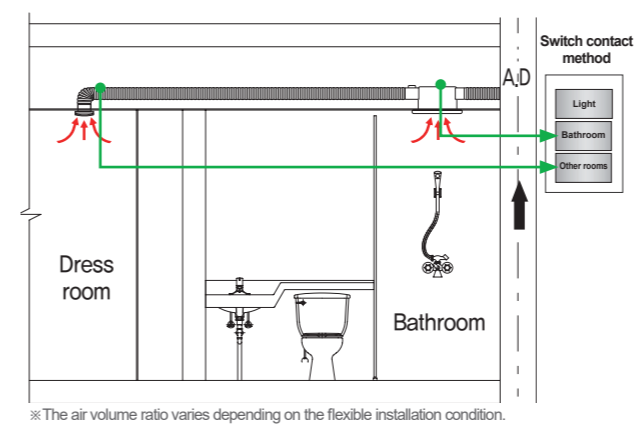
High/low control of the air volume is possible using a switch.



### Products with high/low control switch

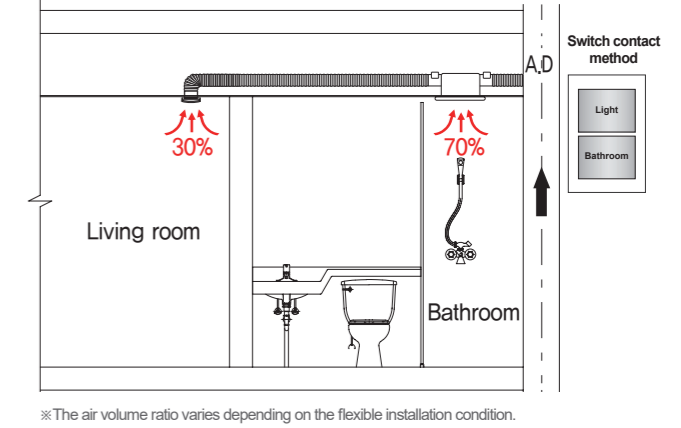
ZEROC	HV3-100	HV3-120	HV3-150
LIVO	L2-100	L2-120	L2-150

### Control of each room in bathroom and other rooms



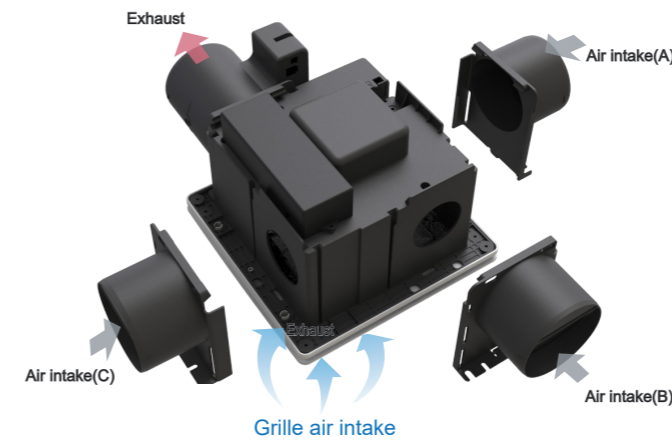
※ The air volume ratio varies depending on the flexible installation condition.

### Interlocking control of bathroom and ventilation unit (ERV, floor ventilation)



※ The air volume ratio varies depending on the flexible installation condition.

### Multi expandable branch (Optional)



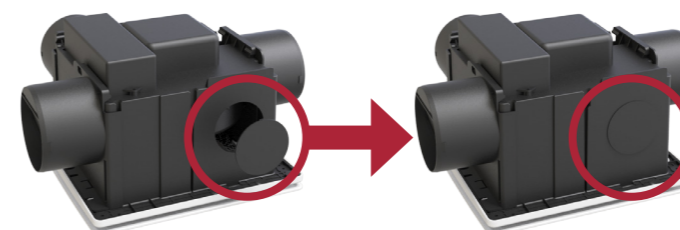
### Air volume ratio by branch(%)

Branch	4 Branches
Grille Air volume	70 %
Expandable branch Air volume	30 %

※ The standard is within 2.0m of flexible, depending on the installation condition.  
 ※ The branch direction can be adjusted freely

### Blind Cap

Possible to set the desired branch direction and number by applying a blind cap



### Multi expandable air volume control damper (Optional)

Expandable air intake and grill air volume ratio control





CYFLREX (LED light type)



FFA-80L

Hole size	165 X 165mm (±5mm)
Connection duct	Ø100

- High-end ventilation fan with complex type lighting
- Magnetic damper
- Low power LED applied



Product damper(Optional)

High airtight motorized damper



(MD)

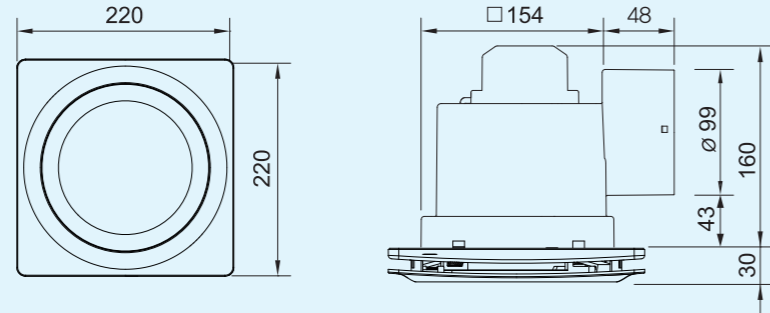
Grille



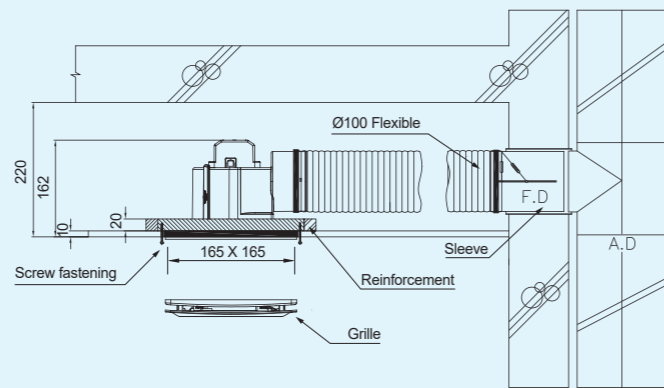
LED light ON LED light OFF

Size 278(W) X 278(D)

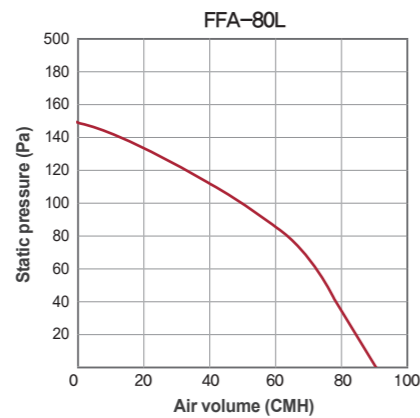
Product dimensions (unit : mm)



How to install the product



Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	FFA-80L
Air volume (CMH)	90
Power consumption (W)	Ventilation fan : 23 / LED light : 12W
Noise (dB)	38
Intensity of illumination (Lumen)	800
Product dimension (mm)	220(W) X 220(D) X 160(H)
Weight (kg)	1.6
Power	1Ø / 220V / 50Hz
Option	-

ZEROC (LED light type)



FZA-L110S1

Hole size	235 X 235mm (±5mm)
Connection duct	Ø100

- High-end ventilation fan with complex type lighting
- Magnetic damper
- Multi expandable branch
- Low power LED applied



Product damper(Optional)

High airtight motorized damper



(MD)

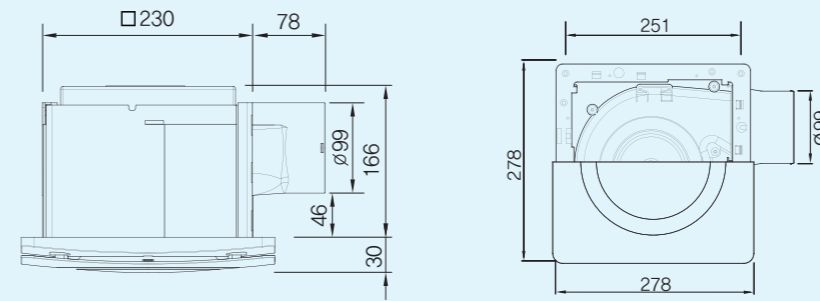
Grille



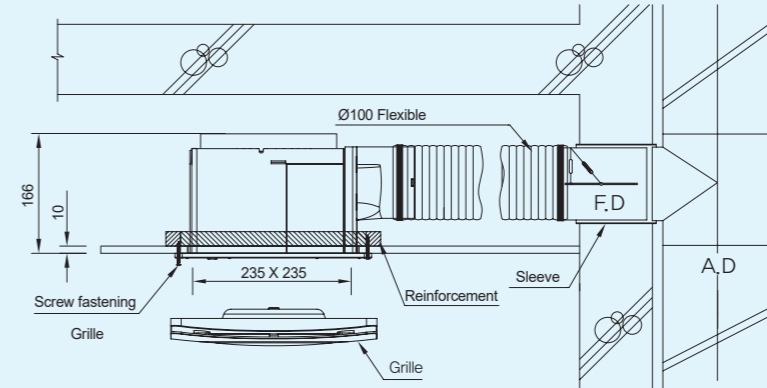
LED light ON LED light OFF

Size 278(W) X 278(D)

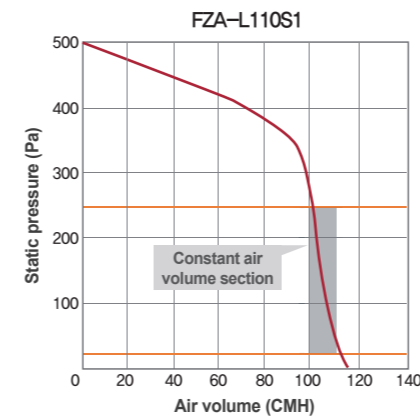
Product dimensions (unit: mm)



How to install the product



Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	FZA-L110S1
Static pressure (Pa)	25~250
Constant Air volume (CMH)	110
Air volume (CMH)	103~119
Power consumption(W)	Ventilation fan : 40 / LED light : 9
Noise (dB)	39
Illuminance (Lux)	130~150
Product dimension (mm)	278(W) X 278(D) X 166(H)
Weight (kg)	3
Power	1Ø / 220V / 60Hz
Option	Multi expandable branch , High airtight motorized damper



Installation example | MODEL. FZA-L110S1

## ZEROC (LED light type)



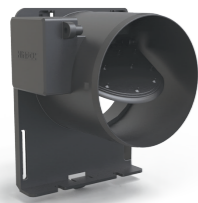
### FZD-L80S / HV3-81JG

Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

- High static pressure, constant air volume
- Ventilation fan with complex type lighting
- Gravity damper
- Multi expandable branch
- Low power LED application
- Certified as Good Design (GD)

### Product damper

High airtight motorized damper



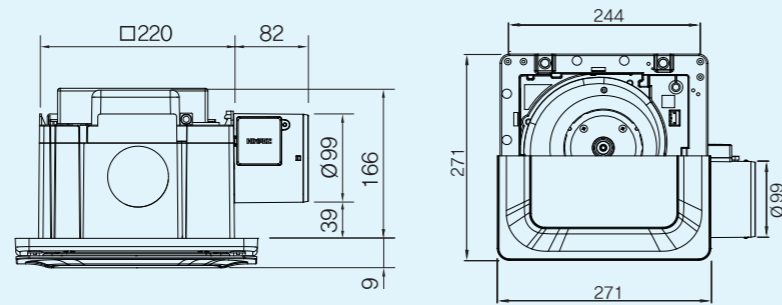
(MD-N)

### Grille

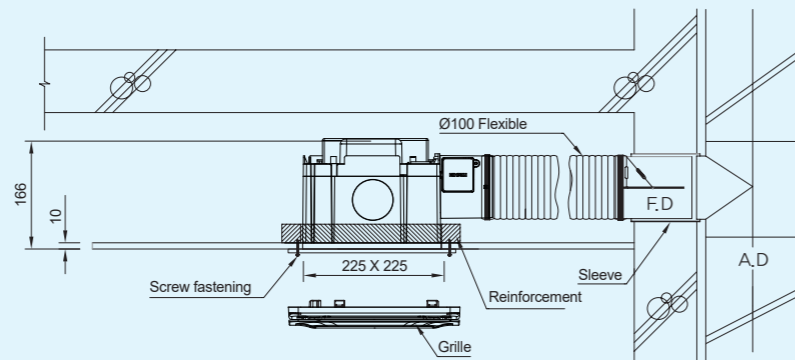


HV3-81JG Grille Size 275(W) X 275(D)  
FZD-L80S Grille Size 271(W) X 271(D)

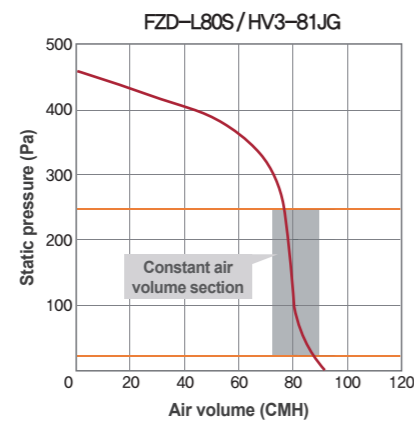
### Product dimensions (unit: mm)



### How to install the product



### Performance



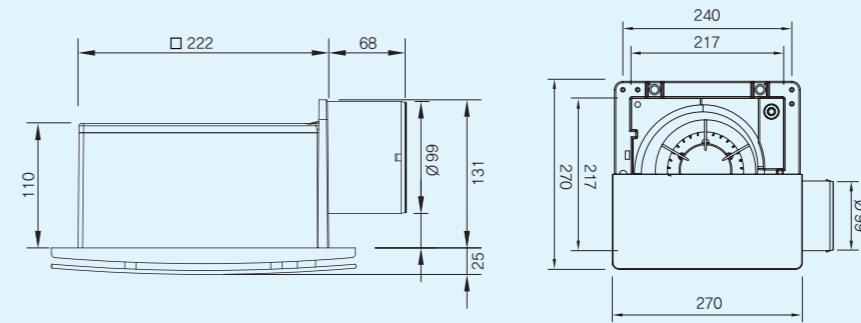
Installation example | MODEL. FZD-L80S

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

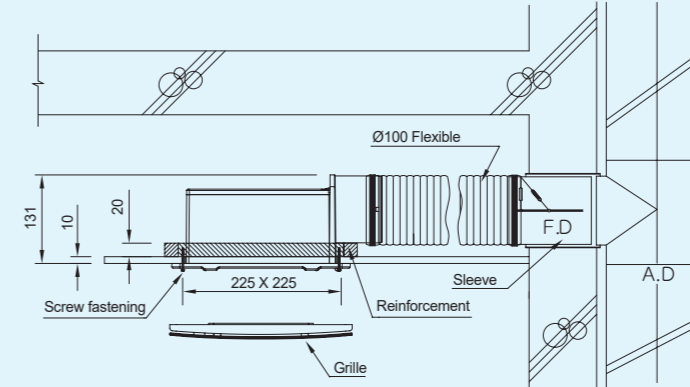
Model	FZD-L80S	HV3-81JG
Static pressure (Pa)	25~250	
Constant Air volume (CMH)	83	
Air volume (CMH)	75~91	
Power consumption(W)	Ventilation fan : 38 / LED light : 12	
Noise (dB)	39	
Illuminance (Lux)	130~150	
Product dimension (mm)	271(W) X 271(D) X 166(H)	275(W) X 275(D) X 166(H)
Weight (kg)	2.6	
Power	1Ø / 220V / 60Hz	
Option	-	Power lamp (L)

## ZEROC (Constant air volume, Slim type)

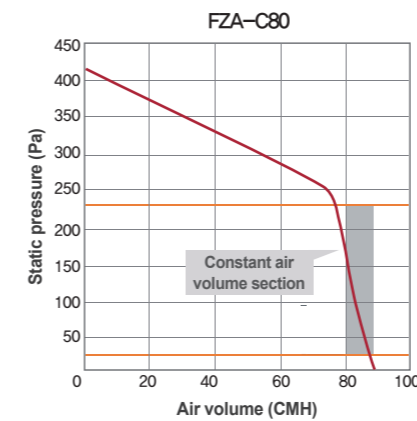
### Product dimensions (unit: mm)



### How to install the product



### Performance



### FZA-C80

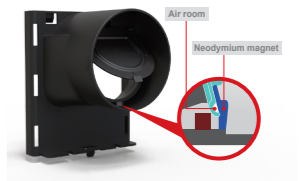
Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

- Certified as a bathroom ventilation fan with constant air volume
- Slim type
- Two-room expandable exhaust function
- Magnetic damper



### Product damper

Magnetic damper



- ① Airtight air room structure
- ② Neodymium magnet structure to prevent headwind

### Grille



F Grille Size 270(W) X 270(D)  
M Grille Size 275(W) X 275(D)

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	FZA-C80
Static pressure (Pa)	25~250
Constant Air volume (CMH)	84.5
Air volume (CMH)	79~90
Power consumption(W)	34
Noise (dB)	36
Product dimension (mm)	270(W) X 270(D) X 131(H)
Weight (kg)	2.1
Power	1Ø / 220V / 60Hz
Option	F Grille, M Grille

## ZEROC (Constant air volume, MD Integrated type)



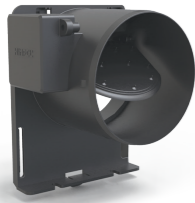
### FZA-C90SM

Hole size	225 X 225mm (±5mm)
Connection duct	Ø100

- Certified as a bathroom ventilation fan with constant air volume
- Low noise
- Various operation options
- High airtight motorized damper
- Multi expandable branch

### Product damper

High airtight motorized damper



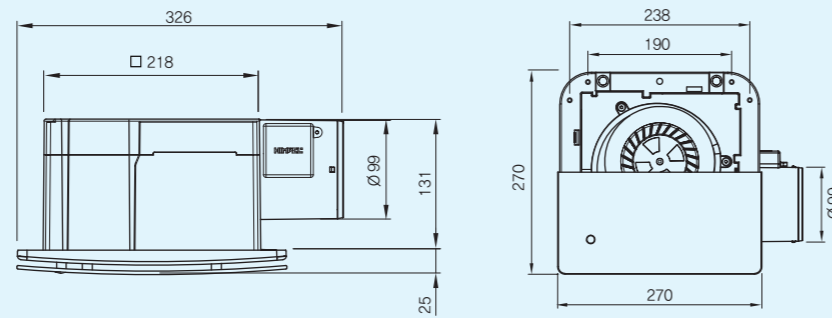
(MD-N)

### Grille

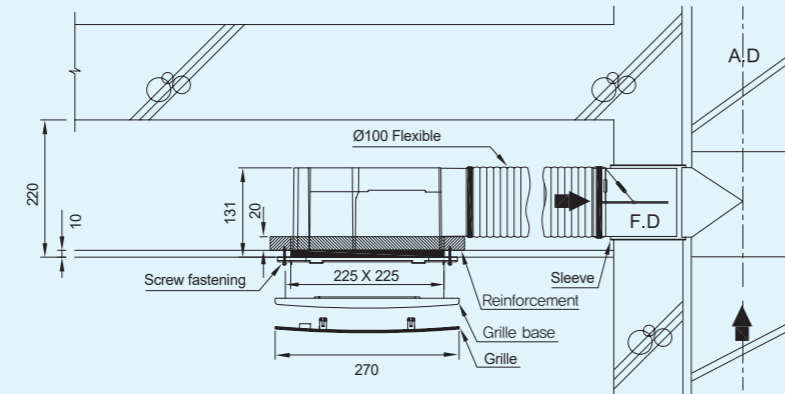


**F Grille** Size 270(W) X 270(D)  
**SM Grille** Size 275(W) X 275(D)

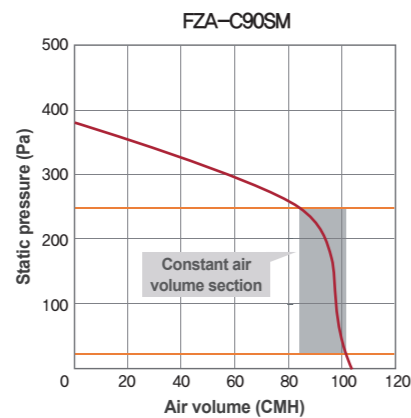
### Product dimensions (unit: mm)



### How to install the product



### Performance

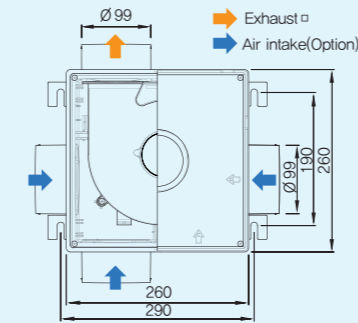


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	FZA-C90SM	
Static pressure (Pa)	25~250	
Constant air volume (CMH)	92.7	
Air volume (CMH)	83~102	
Power consumption (W)	35	
Noise (dB)	38	
Product dimension (mm)	270(W) X 270(D) X 131(H)	
Weight (kg)	2.4	
Power	1Ø / 220V / 60Hz	
Option	FGrille, SMGrille, Power lamp (L), Multi expandable branch	
Motorized damper (MD-N)	Power consumption (W)	2.5
	Product dimension (mm)	Ø100 X 101L
	Material	ABS

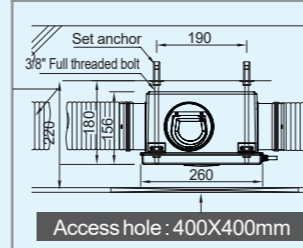
## LIVO (BLDC)

### Product dimensions (unit: mm)

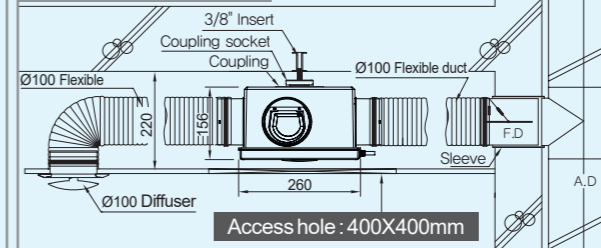


### How to install the product

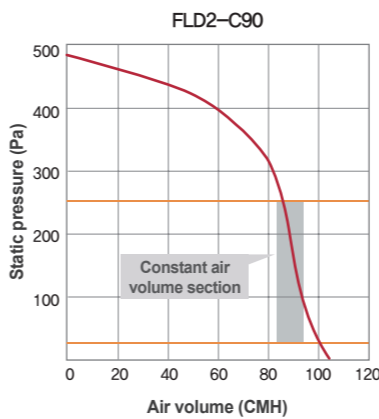
#### Full threaded bolt installation



#### Coupling installation



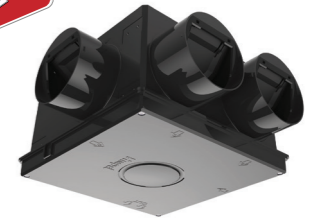
### Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	FLD2-C90
Static pressure (Pa)	25~250
Constant air volume (CMH)	90
Air volume (CMH)	81~99
Power consumption (W)	10
Noise (dB)	38
Product dimension (mm)	260(W) x 260(D) x 160(H)
Weight (kg)	2.2
Power	1Ø / 220V / 60Hz
Option	Multi expandable branch, High/low control switch

**NEW**



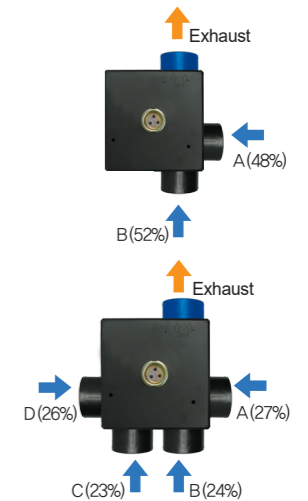
### FLD2-C90

Connection duct Ø100

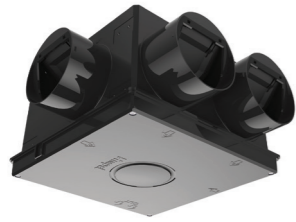
- BLDC Fan-Motor (high efficiency / low noise)
- In-line (embedded ceiling type)
- Gravity damper
- Multi expandable branch

### Air volume ratio by branch

※ The standard is within 2.0m of flexible, depending on the installation condition.



LIVO (High static pressure)



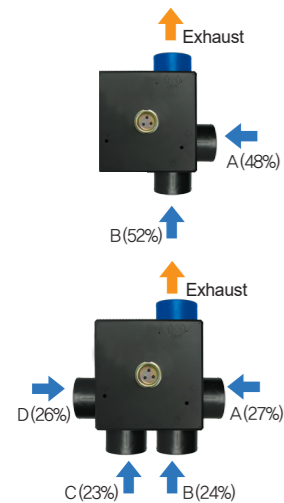
L2-100, L2-120, L2-150  
FLA-C90

Connection duct Ø100

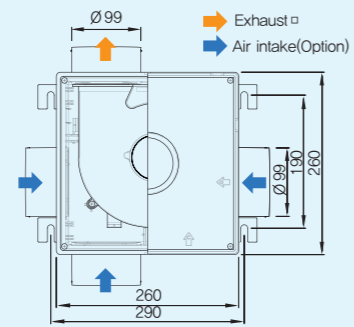
- Certified as a bathroom ventilation fan with constant air volume (FLA-C90)
- High static pressure low noise
- In-line (embedded ceiling type)
- Various operation options
- Gravity damper
- Multi expandable branch

Air volume ratio by branch

※ The standard is within 2.0m of flexible, depending on the installation condition.

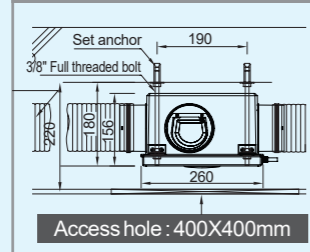


Product dimensions (unit: mm)

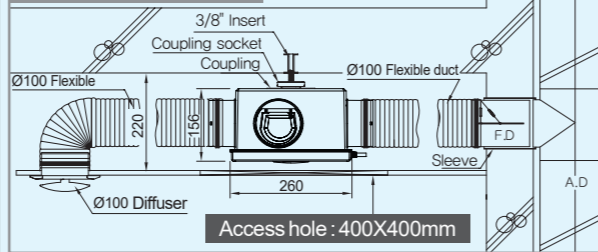


How to install the product

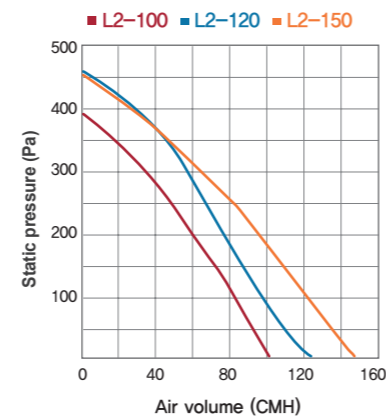
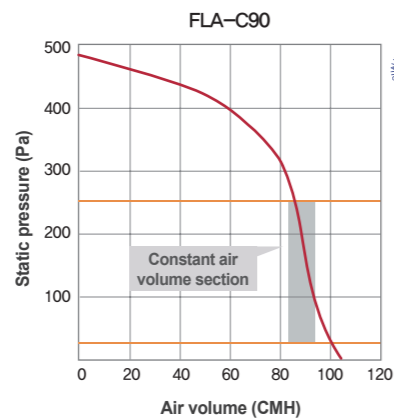
Full threaded bolt installation



Coupling installation



Performance

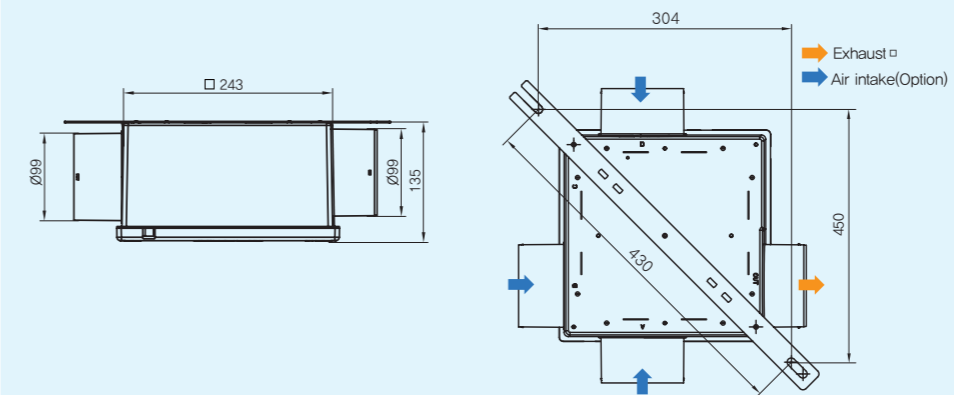


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	FLA-C90(Constant air volume)	L2-100			L2-120			L2-150		
Static pressure (Pa)	25~250	0	100	200	0	100	200	0	100	200
Constant air volume (CMH)	90	-								
Air volume (CMH)	83~97	100	80	60	120	90	70	150	120	90
Power consumption (W)	34	27			31			39		
Noise (dB)	38	35			40			44		
Product dimension (mm)	260(W) X 260(D) X 160(H)									
Weight (kg)	2.2									
Power	1 Ø / 220V / 60Hz									
Operation Option	-	V (Ventilation unit interlocking type), U(High/low 2-stage)								
Option	Multi expandable branch, High/low control switch, high/Medium/Low control room control									

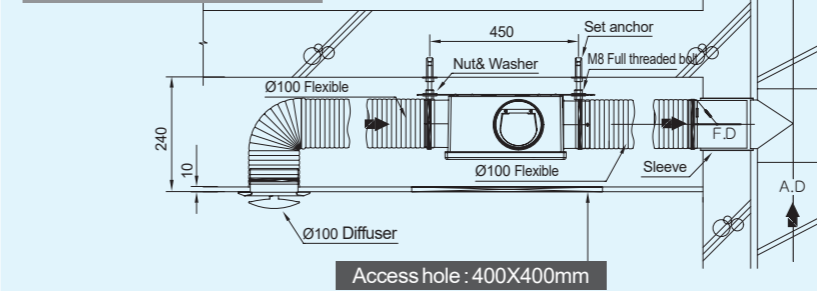
LIVO (Constant air volume, Slim type)

Product dimensions (unit: mm)

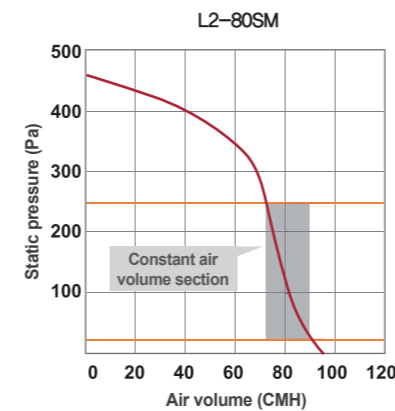


How to install the product

Full threaded bolt installation



Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	L2-80SM
Static pressure (Pa)	25~250
Air volume (CMH)	82
Power consumption (W)	38
Noise (dB)	36
Product dimension (mm)	254(W) X 254(D) X 135(H)
Weight (kg)	2.2
Power	1 Ø / 220V / 60Hz
Option	Multi expandable branch



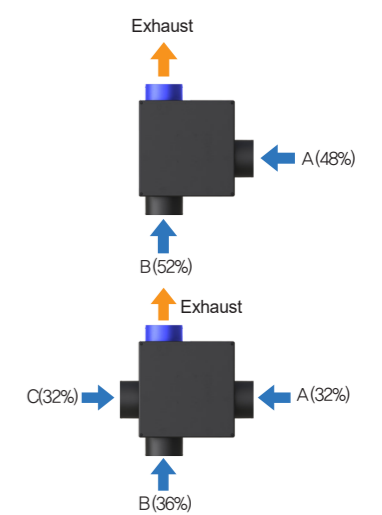
L2-80SM

Connection duct Ø100

- High static pressure, constant air volume, low noise
- In-line (embedded ceiling type)
- Gravity damper
- Multi expandable branch

Air volume ratio by branch

※ The standard is within 2.0m of flexible, depending on the installation condition.



LIVO (High static pressure, High air volume)



L2-250, L2-300

Connection duct Air supply : Ø100  
Exhaust : Ø125

- High static pressure, high air volume, low noise
- In-line (embedded ceiling type)
- Gravity damper
- Multi expandable branch
- Possible to select the inlet direction and number

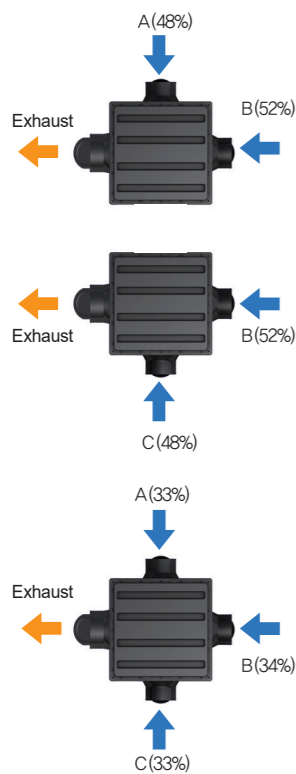
Controller (Optional)



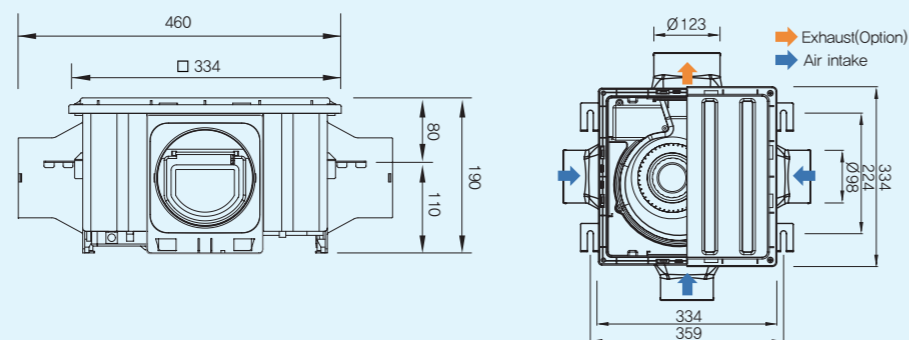
HRC-30 Room Controller

Air volume ratio by branch

※ The standard is within 2.0m of flexible, depending on the installation condition.



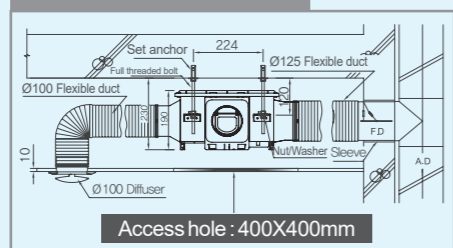
Product dimensions (unit: mm)



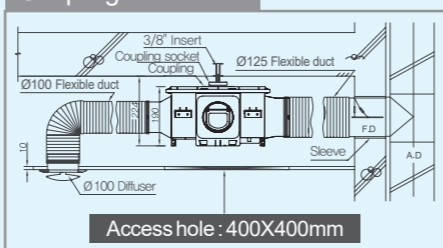
※ Possible to select the desired inlet direction and number

How to install the product

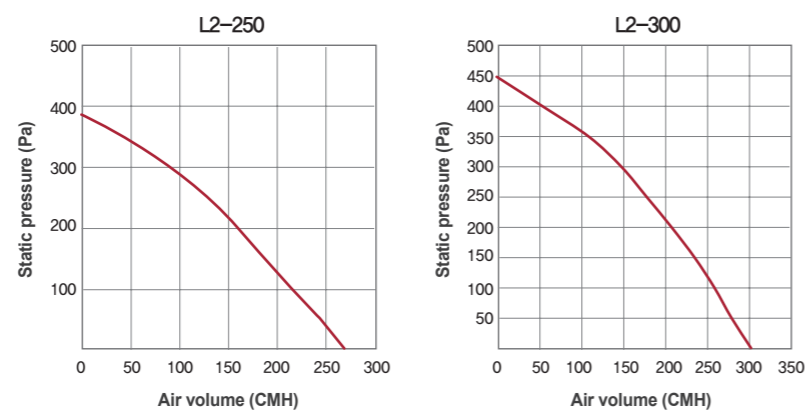
Full threaded bolt installation



Coupling installation



Performance

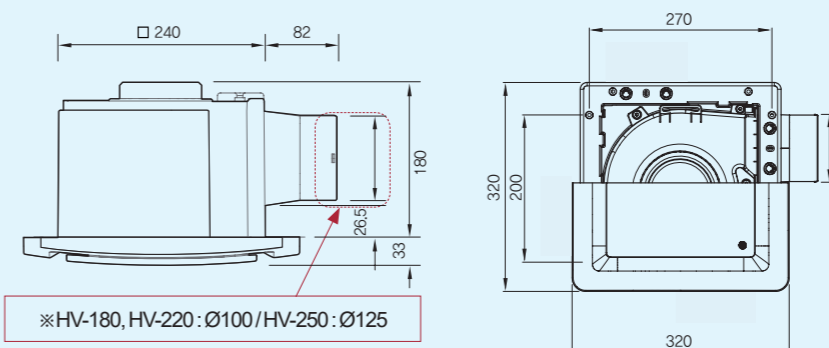


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	L2-250			L2-300		
Static pressure (Pa)	0	100	200	0	100	200
Air volume (CMH)	250	205	155	300	250	200
Power consumption (W)	68			84		
Noise (dB)	39			45		
Product dimension (mm)	334(W) X 334(D) X 190(H)					
Weight (kg)	3.2					
Power	1Ø / 220V / 60Hz					
Option	Multi expandable branch, High/medium/low control room control					

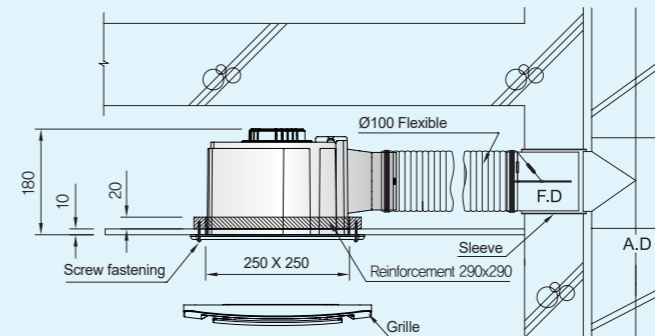
ZAION (High air volume)

Product dimensions (unit: mm)



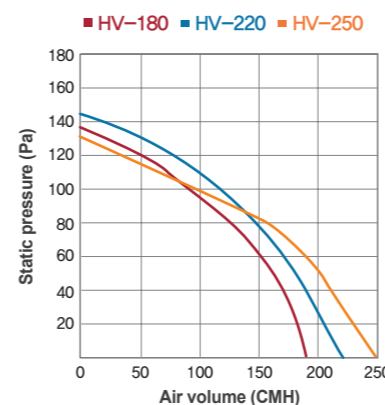
※HV-180, HV-220 : Ø100 / HV-250 : Ø125

How to install the product



※ Caution : Install the reinforcement thickness less than 20mm.

Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HV-180	HV-220	HV-250
Air volume (CMH)	180	220	250
Power consumption (W)	30	33	39
Noise (dB)	36	40	46
Product dimension (mm)	320(W) X 320(D) X 180(H)		
Weight (kg)	2.7		
Power	1Ø / 220V / 60Hz		
Option	Power lamp (L)		



HV-180, HV-220, HV-250

Hole size 250 X 250mm (±5mm)

Connection duct  
• HV-180 : Ø100  
• HV-220 : Ø100  
• HV-250 : Ø125

- High air volume
- Low noise
- Gravity type damper



Product damper (Optional)

High airtight motorized damper



(MD)

Grille



Basic Grille

Size 320(W) X 320(D)

FLREX (Medium static pressure)



C2-100

Hole size	165 X 165mm (±5mm)
Connection duct	Ø100

- Low noise
- Gravity type damper



Product damper(Optional)

High airtight motorized damper

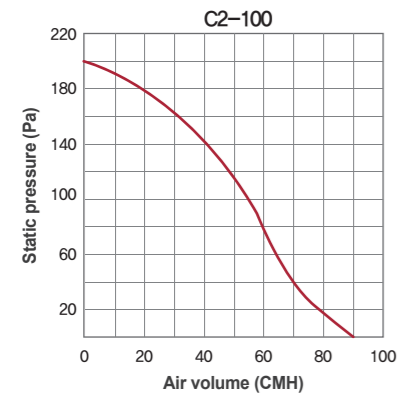


(MD)

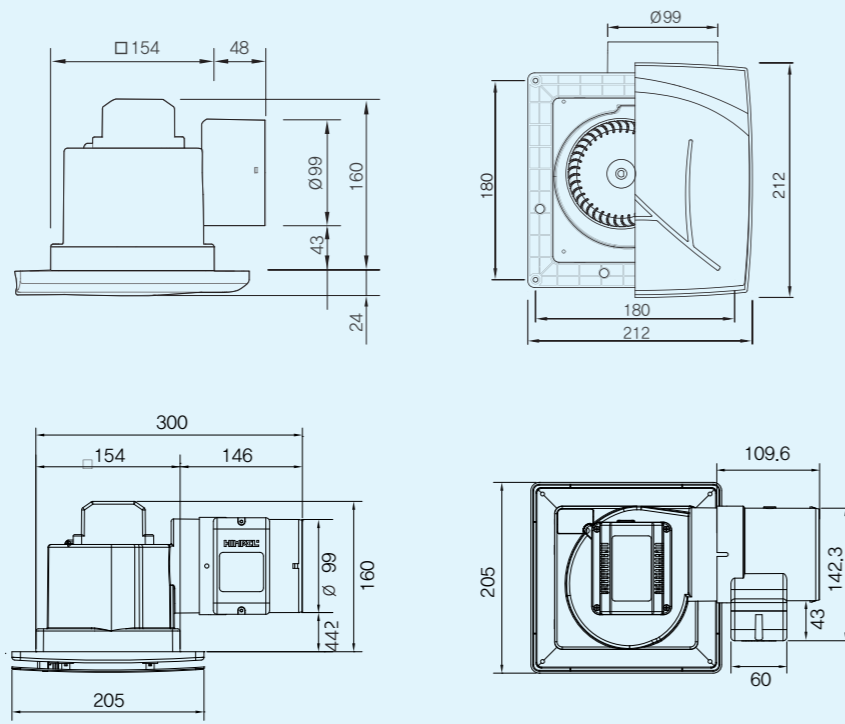
Grille



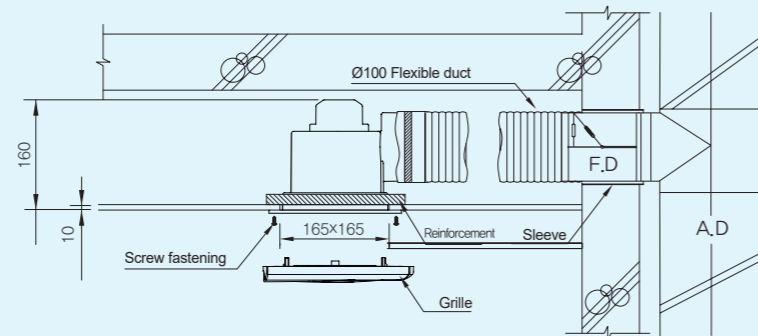
Performance



Product dimensions (unit: mm)



How to install the product

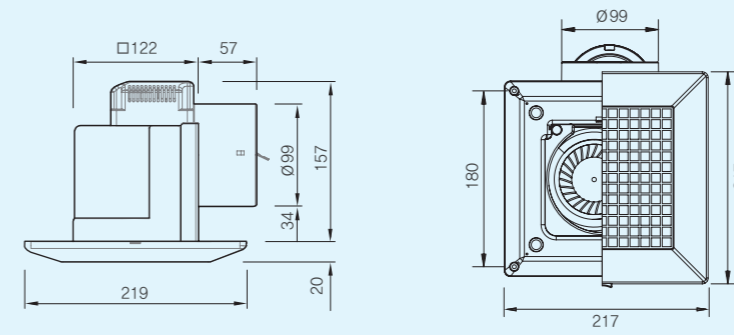


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

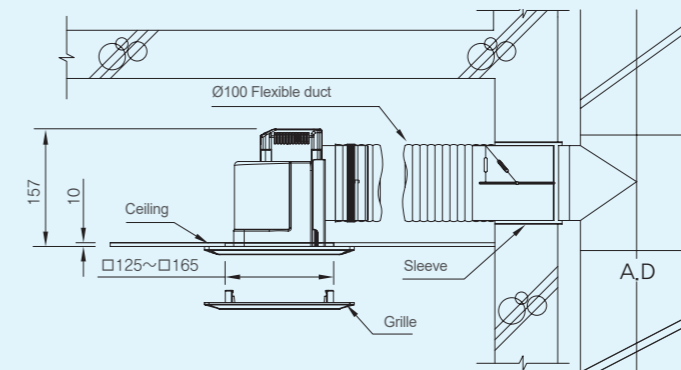
Model	C2-100
Air volume (CMH)	90
Power consumption (W)	22
Noise (dB)	38
Product dimension (mm)	205(W) X 205(D) X 160(H)
Weight (kg)	1.4
Power	1Ø / 220V / 60Hz
Option	Power lamp (L)

TURBO 747 (Medium static pressure)

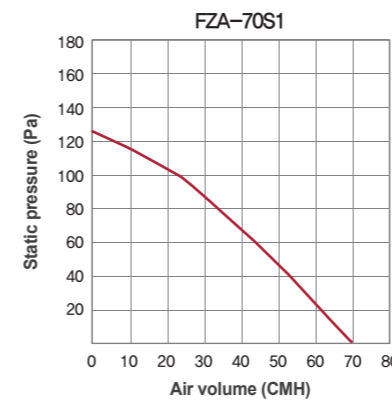
Product dimensions (unit: mm)



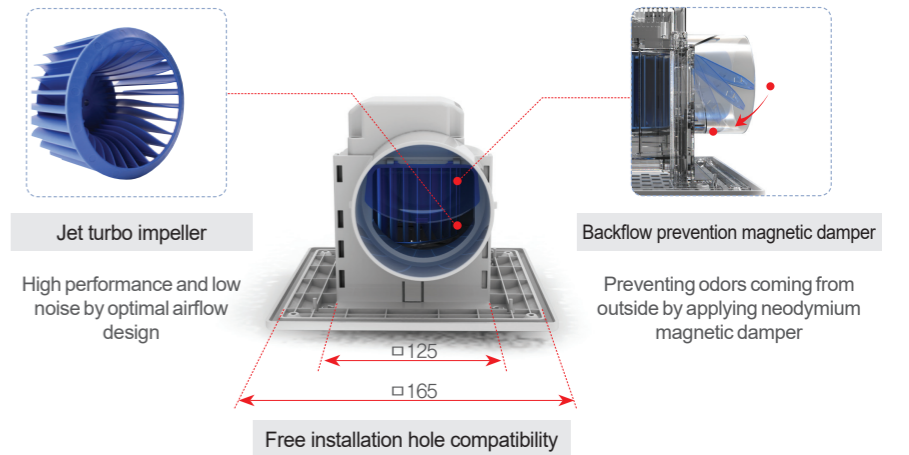
How to install the product



Performance



Feature



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	FZA-70S1
Air volume (CMH)	70
Power consumption (W)	16.5
Noise (dB)	37
Product dimension (mm)	219(W) X 219(D) X 157(H)
Weight (kg)	1.2
Power	1Ø / 220V / 60Hz
Option	-



FZA-70S1

Perforation range	□125~□165mm
Connection duct	Ø100

- Jet turbo impeller
- Magnetic damper
- Free installation perforation (□125~□165)



Grille



Basic Grille  
Size 219(W) X 219(D)

**CYCLONE (Low static pressure)**



**JV-201**

Hole size	160 X 160mm (±5mm)
Connection duct	Ø100

- Low noise
- Gravity type damper

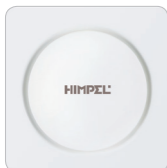


**Product damper(Optional)**


High airtight motorized damper




**Grille**



**M Grille**  
Size 205(W) X 205(D)

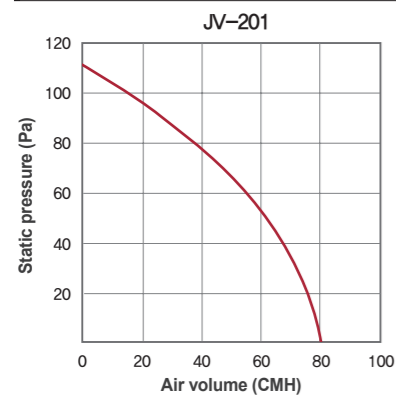


**C Grille**  
Size 195(W) X 225(D)

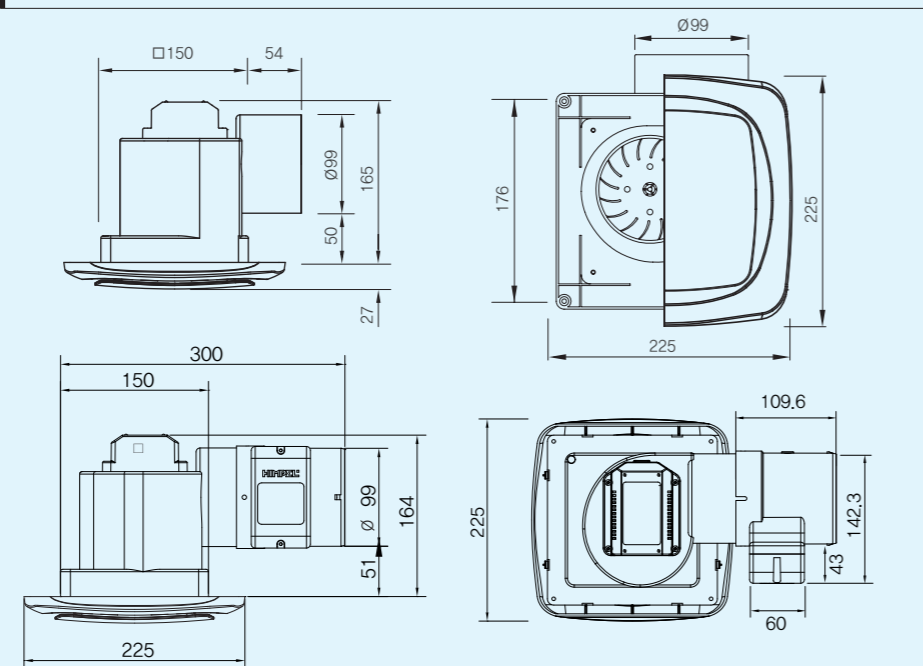


**S Grille**  
Size 225(W) X 225(D)

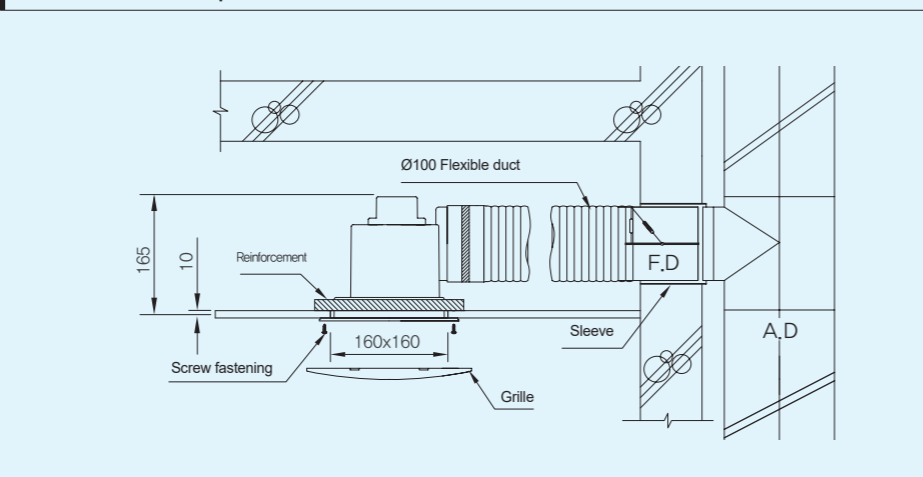
**Performance**



**Product dimensions (unit: mm)**



**How to install the product**



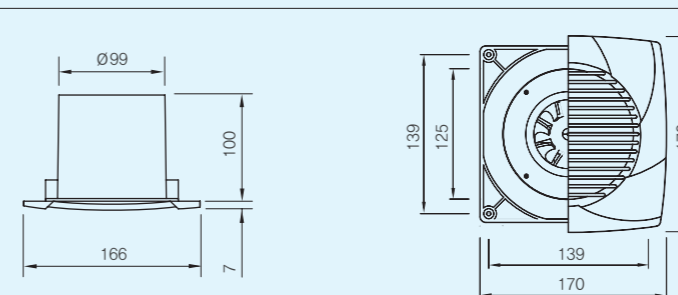
※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	JV-201
Air volume (CMH)	80
Power consumption (W)	12
Noise (dB)	38
Product dimension (mm)	205(W) X 205(D) X 165(H)
Weight (kg)	0.9
Power	1Ø / 220V / 60Hz
Option	M Grille, C Grille, S Grille

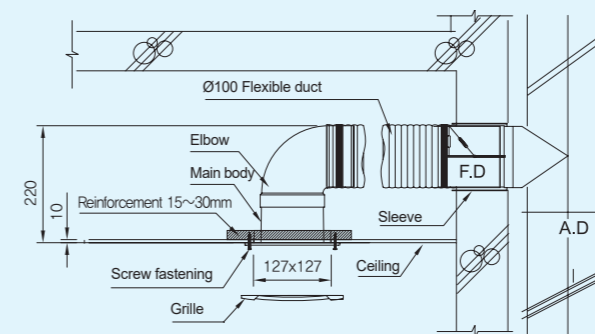
**Turbo Fan**

**TURBO FAN (Low static pressure)**

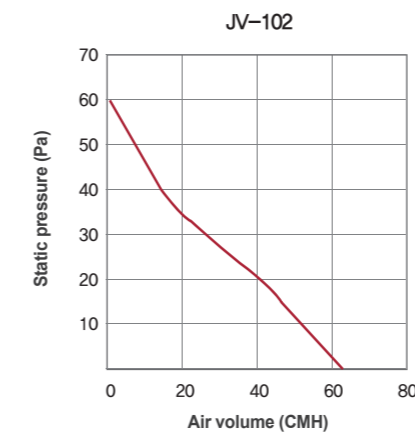
**Product dimensions (unit: mm)**



**How to install the product**



**Performance**



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	JV-102
Air volume (CMH)	60
Power consumption (W)	10
Noise (dB)	38
Product dimension (mm)	170(W) X 170(D) X 100(H)
Weight (kg)	0.72
Power	1Ø / 220V / 60Hz
Option	Elbow

**JV-102**

Hole size	127 X 127mm (±5mm)
Connection duct	Ø100

- Axial flow type turbo fan

**Grille**



**Basic Grille**  
Size 170(W) X 170(D)

PIPE FAN (Low static pressure)

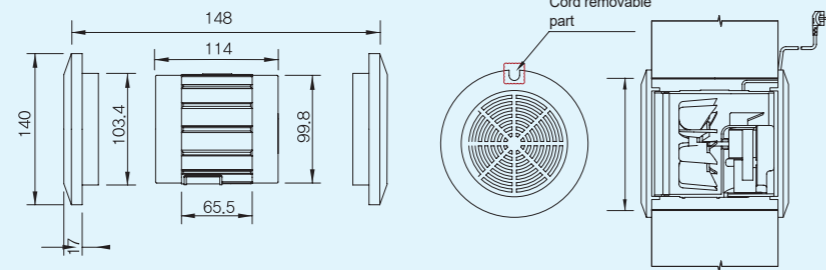


PV-61

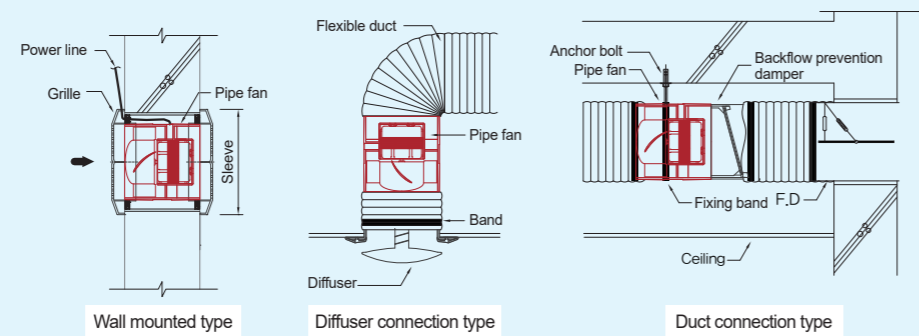
Hole size	Ø115~Ø120
Connection duct	Ø100

- Multipurpose pipe fan
- Multi-purpose installation possible such as wall mounted, ceiling, etc.

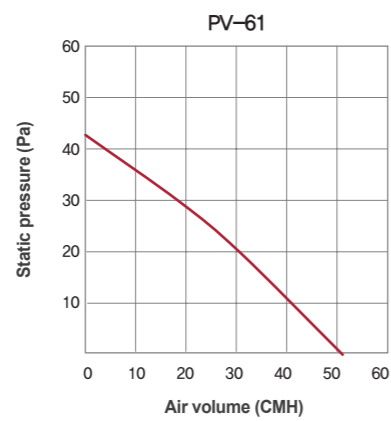
Product dimensions (unit: mm)



Use example



Performance

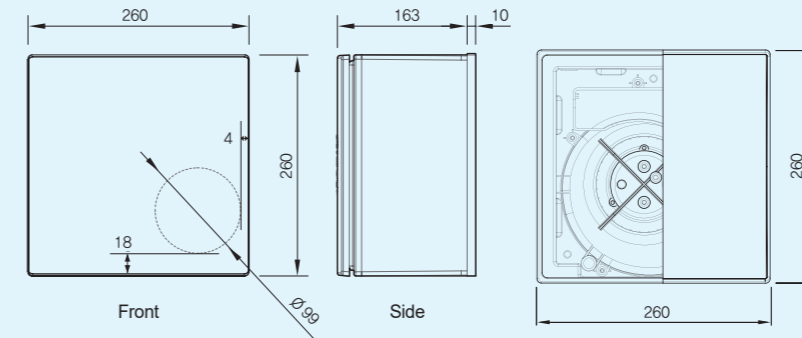


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	PV-61
Air volume (CMH)	50
Power consumption (W)	10
Noise (dB)	33
Product dimension (mm)	140(W) X 140(D) X 148(H)
Weight (kg)	0.64
Power	1Ø / 220V / 60Hz

ZEROC (Wall mounted type)

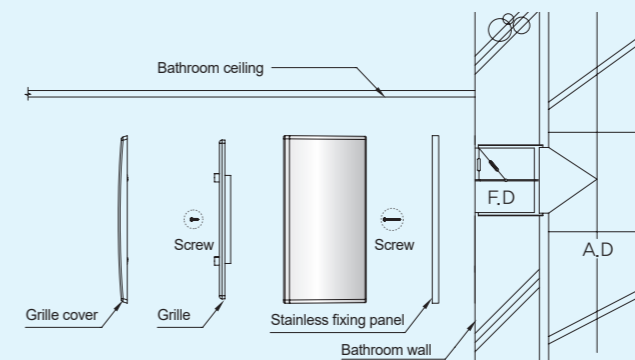
Product dimensions (unit: mm)



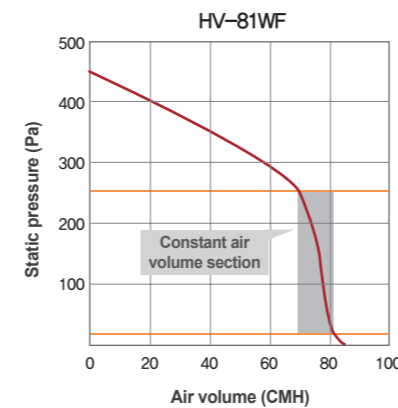
HV-81WF

- High static pressure
- Wall-mounted installation
- Easy installation (360° rotation 4-way installation possible)

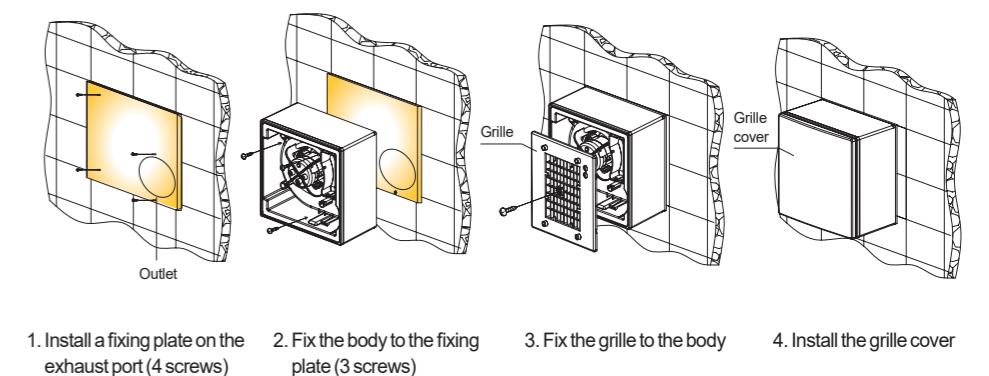
How to install the product



Performance



Grille Installation



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	HV-81WF(Wall mounted type)
Static pressure (Pa)	25~250
Constant air volume (CMH)	75
Air volume (CMH)	68~83
Power consumption (W)	31
Noise (dB)	39
Product dimension (mm)	260(W) X 260(D) X 163(H)
Weight (kg)	3.3



## Ventilation Fan (Wall mounted type)



**FWA-R125D100**

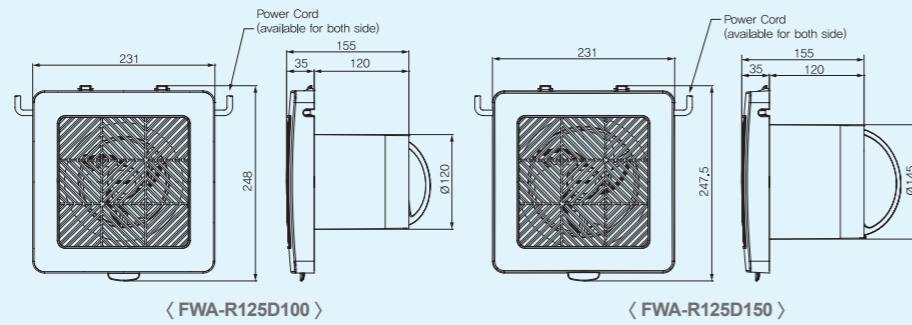


**FWA-R125D150**

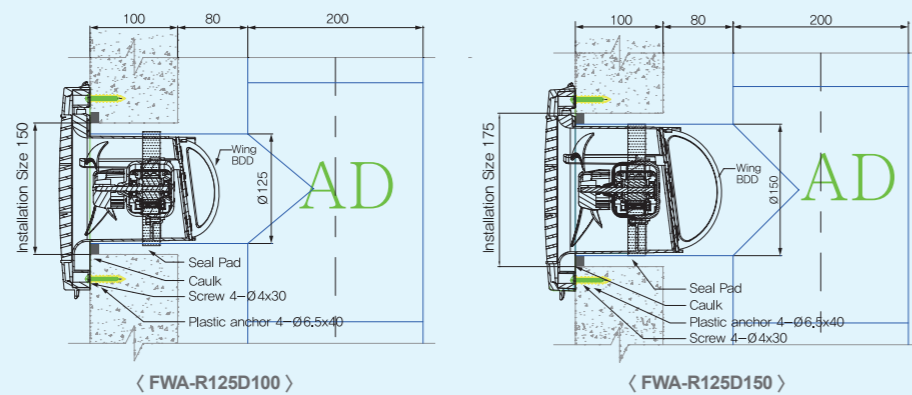
- Highly air tight damper preventing back flow
- Low power consumption low noise
- Easy installation
- Simple and luxurious design
- Duct type



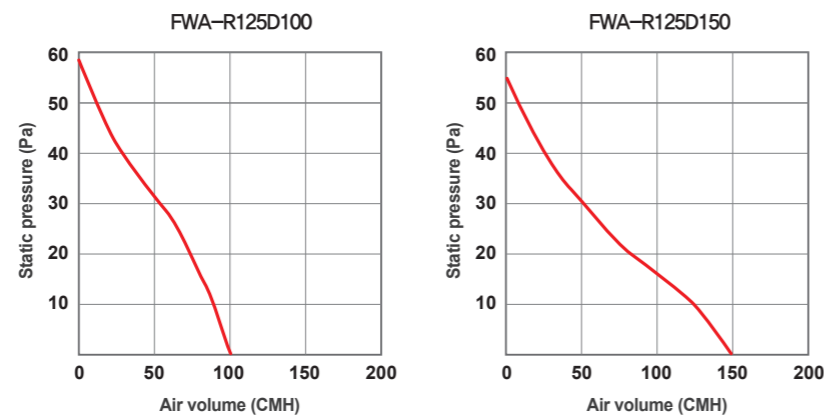
### Product dimensions (unit: mm)



### How to install the product



### Performance

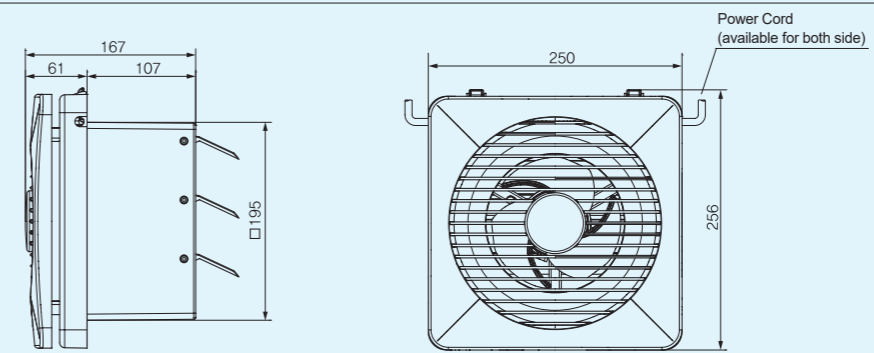


※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

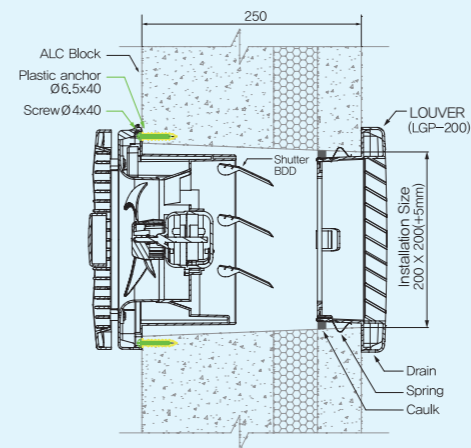
MODEL	FWA-R125D100	FWA-R125D150
Static Pressure (Pa)	59	55
Air Volume (CMH)	100 (58.9CFM)	150 (88.3CFM)
Power Consumption (W)	22	25
Noise (dB)	45	45
Product dimension (mm)	231(W) x 155(D) x 248(H)	231(W) x 155(D) x 248(H)
Weight (kg)	1.1kg	1.1kg

## Ventilation Fan (Wall mounted type)

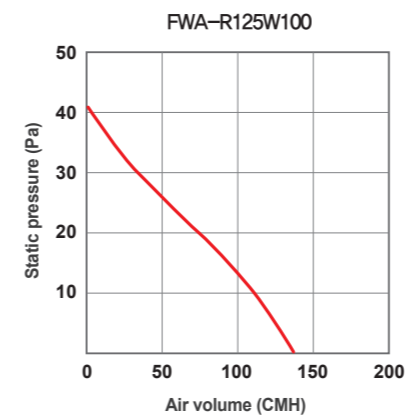
### Product dimensions (unit: mm)



### How to install the product



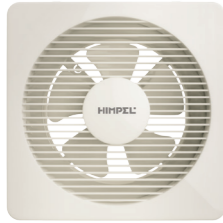
### Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

MODEL	FWA-R125W100
Static Pressure (Pa)	41
Air Volume (CMH)	140 (82.4CFM)
Power Consumption (W)	25
Noise (dB)	45
Product dimension (mm)	250(W) x 168(D) x 256(H)
Weight (kg)	1.5

## Ventilation Fan (Wall mounted type)



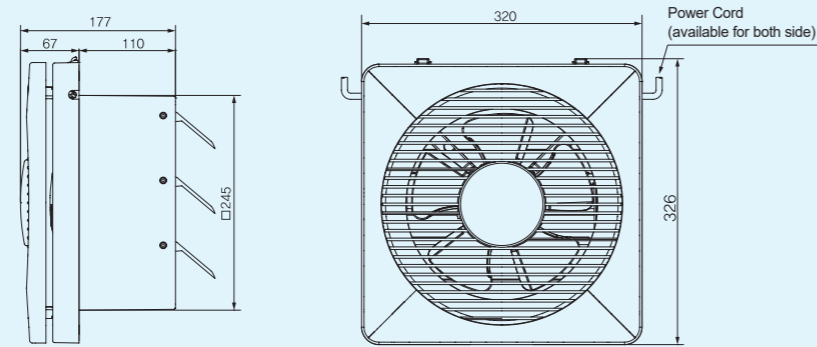
### FWA-S200W540

Hole size 250 X 250mm (±5mm)

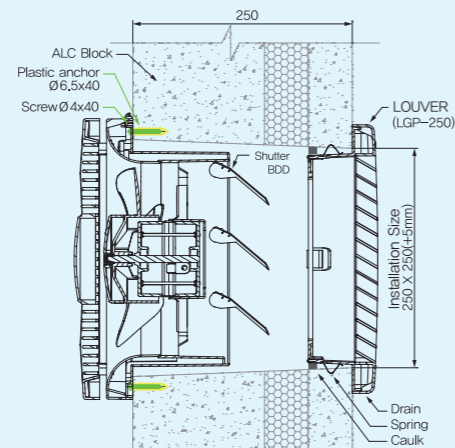
- Preventing inflow of dust and sand with gravity shutter
- Low power consumption low noise
- Easy installation
- Simple and luxurious design
- Wall mounted type



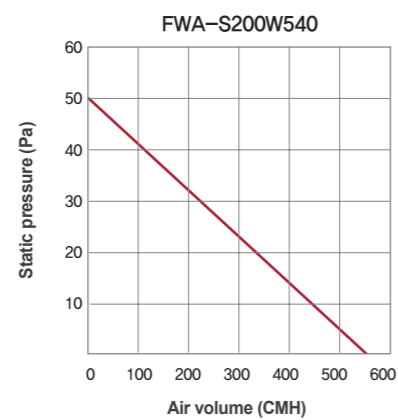
### Product dimensions (unit: mm)



### How to install the product



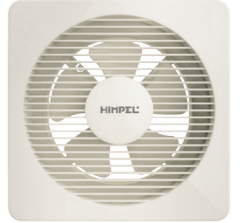
### Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	FWA-S200W540
Static Pressure(Pa)	50
Air volume (CMH)	540
Power consumption (W)	33
Noise (dB)	45
Product dimension (mm)	320(W) X 177(D) X 326(H)
Weight (kg)	2.7
Power	1Ø / 230V / 50Hz

## Ventilation Fan (Wall mounted type)



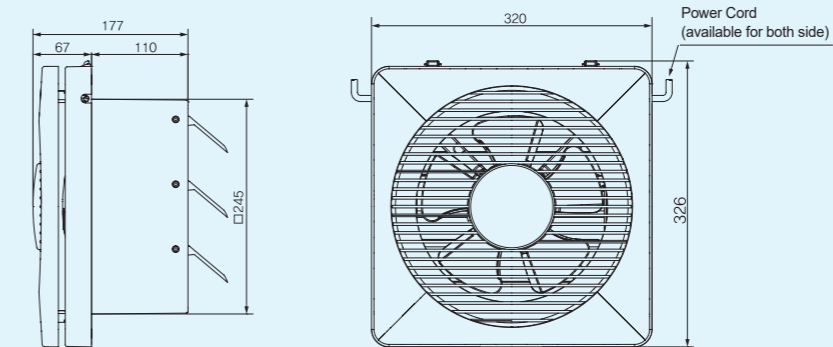
### FWA-S250W350 FWA-S250W460

Hole size 250 X 250mm (±5mm)

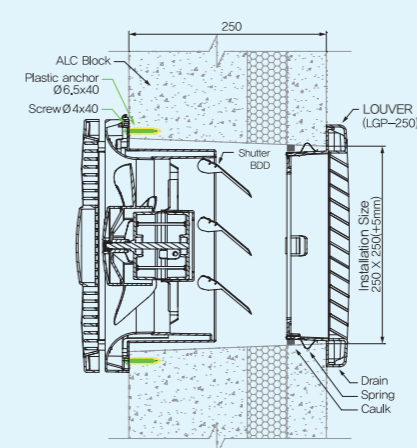
- Preventing inflow of dust and sand with gravity shutter
- Low power consumption low noise
- Easy installation
- Simple and luxurious design
- Wall mounted type



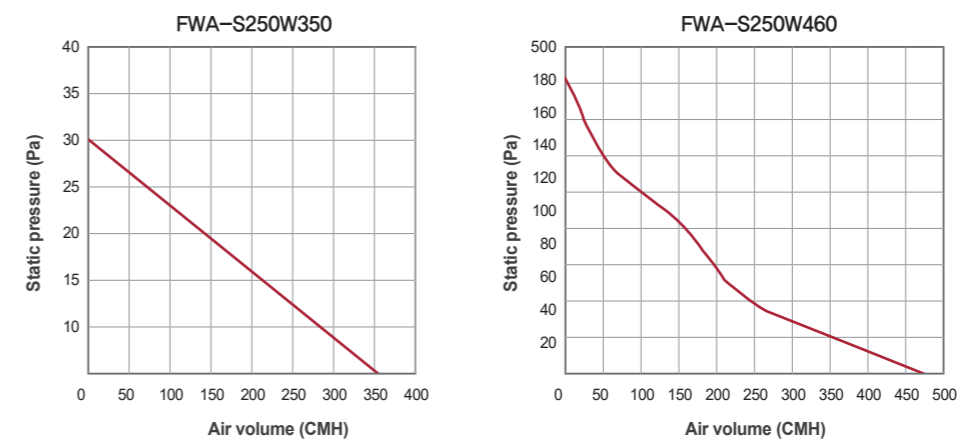
### Product dimensions (unit: mm)



### How to install the product



### Performance



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model	FWA-S250W350	FWA-S250W460
Static Pressure (Pa)	30	41.7
Air volume (CMH)	350	469.5
Power consumption (W)	19	25.3
Noise (dB)	40	50
Product dimension (mm)	320(W) X 177(D) X 326(H)	320(W) X 177(D) X 326(H)
Weight (kg)	2.7	2.7
Power	1Ø / 230V / 50Hz	1Ø / 230V / 50Hz

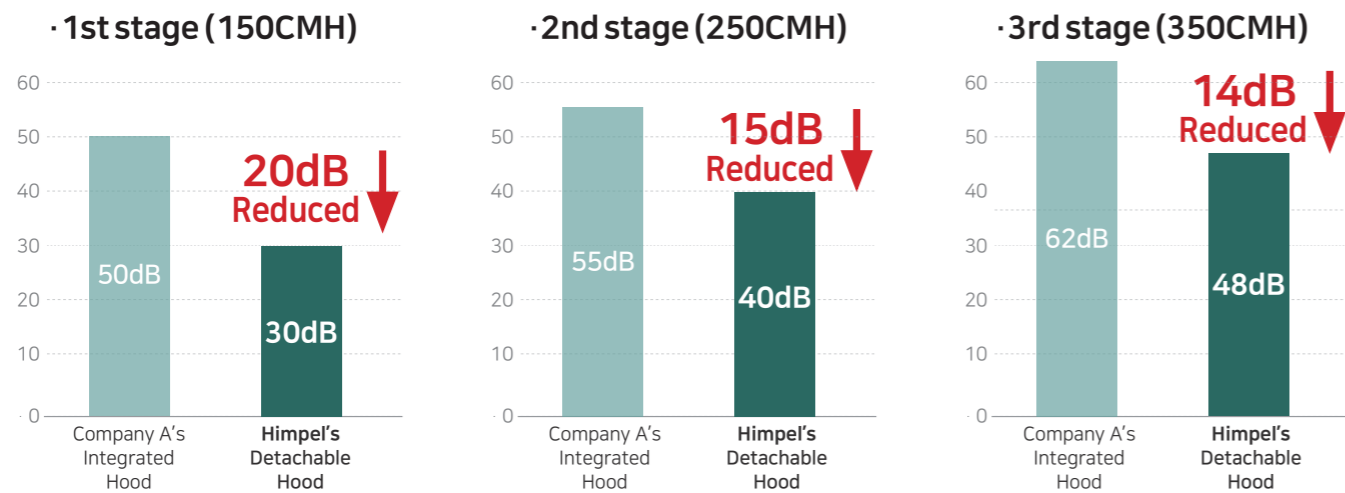
HUEVEN H (Kitchen ventilation system)



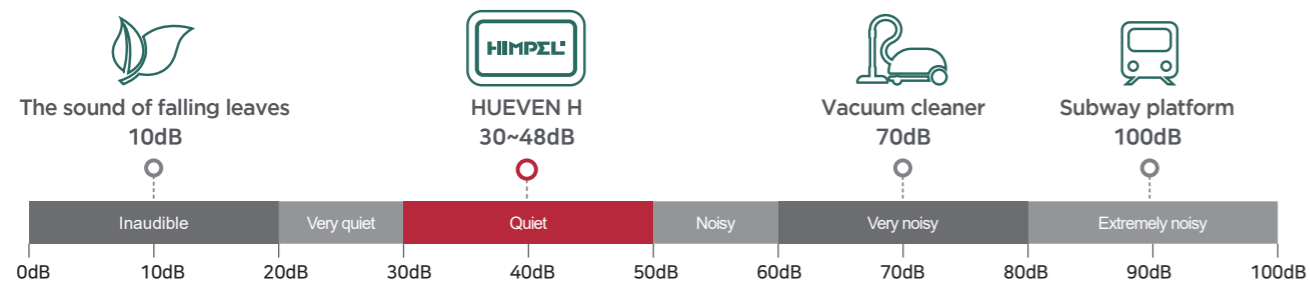
The fan detachable hood **HUEVEN H** ensures even kitchen ventilation of with low noise!

Noise comparison by air volume

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

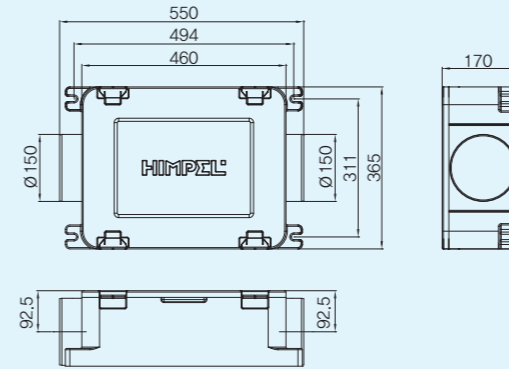


Comparison of noise in everyday life

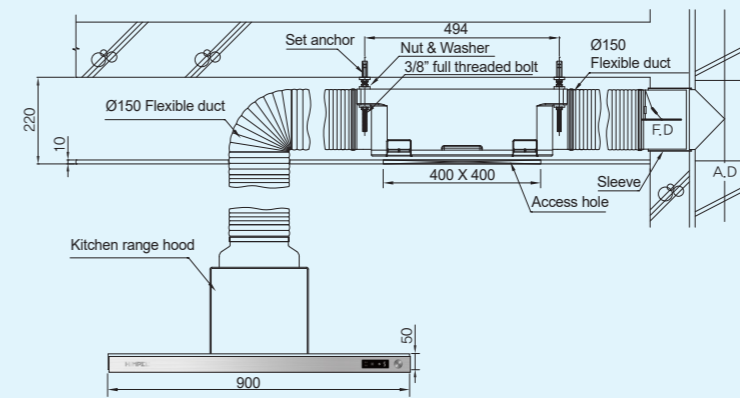


HUEVEN H (Kitchen ventilation system)

Product dimensions (unit: mm)



How to install the product



NEW

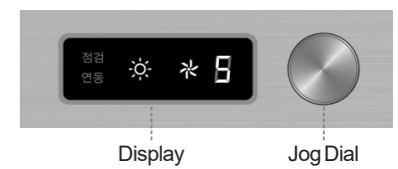


FDD1-C350I\_MD

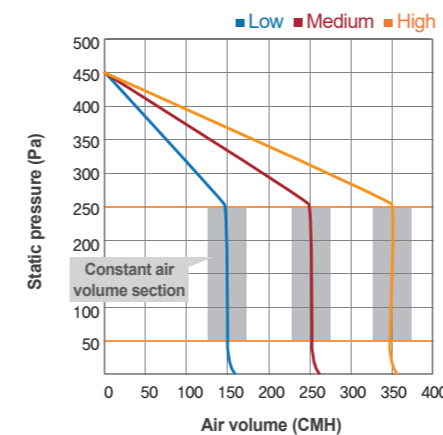
Connection duct Ø150

- BLDC Fan-Motor (high efficiency/low noise)
- Eco-friendly EPP material product
- Maximization of sound absorption (minimizing noise)
- Slim, inline type
- Constant air volume

Range hood control



Performance



Installation concept diagram



※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

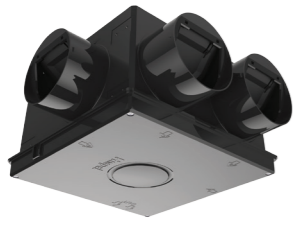
Model	FDD1-C350I_MD		
Power	Ø1 X 220V X 60Hz		
Stage	High	Medium	Low
Air volume (CMH)	350	250	150
Power consumption (W)	50	20	7
Noise (dB)	48	40	30
Product dimension (mm)	460(W) X 365(D) X 170(H)		
Weight (kg)	5		
Option	-		

Energy recovery ventilator | Thermo Ventilator | Ventilation fan | Ventilation system | Ventilation materials

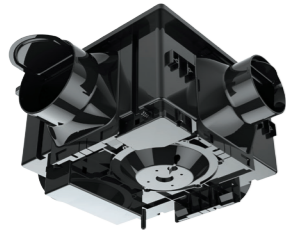
## Expandable (Shoe Cabinets, Pantries, Dress Room) Ventilation System



ZEROC | FZA-C110S



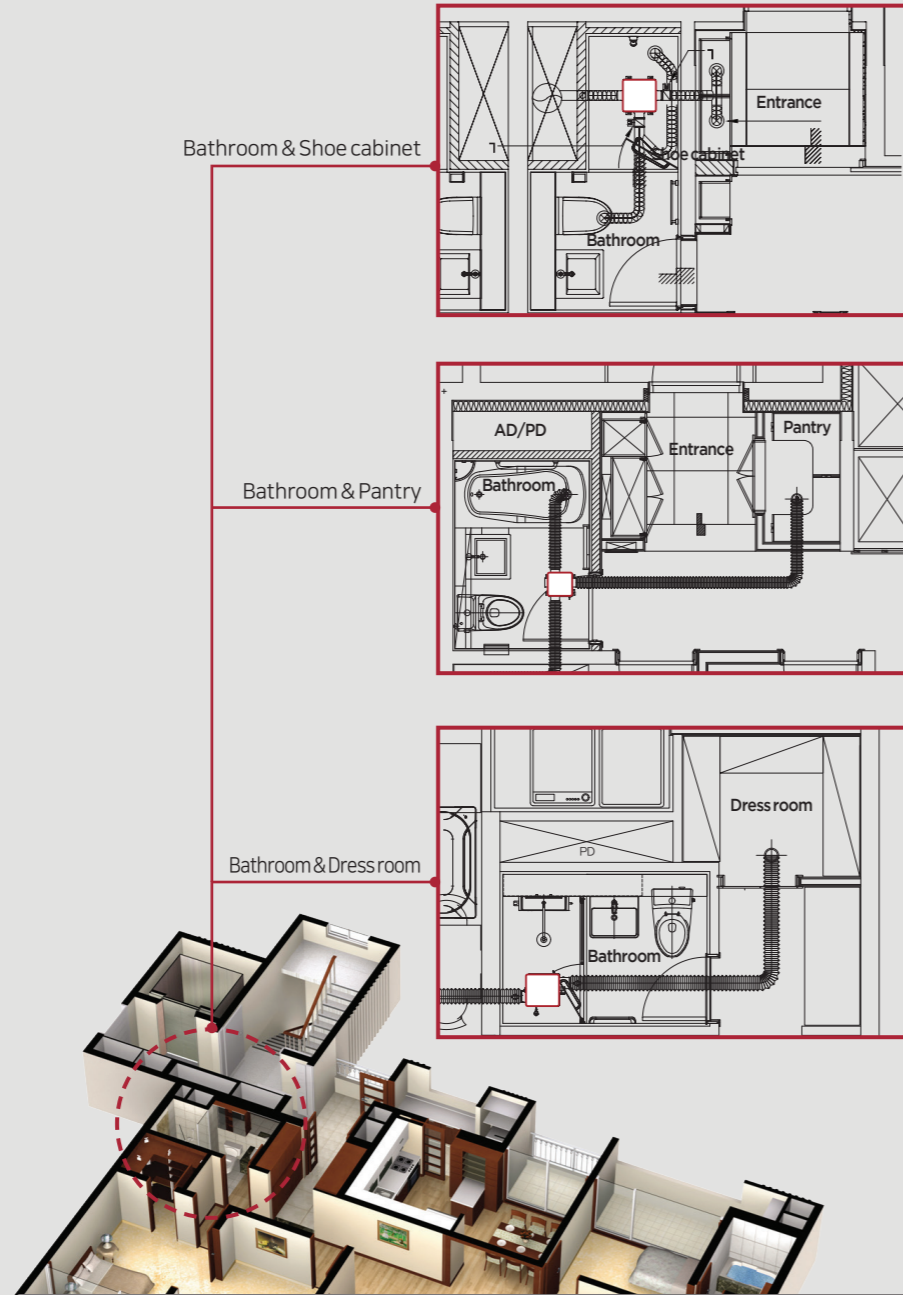
LIVO | L2-150



LIVO | L2-250



It is effective in removing moisture in the bathroom, odor and mold in local spaces by connecting it with a bathroom ventilation fan



**System Description** | The bathroom fan control switch enables ventilation for the bathroom, shoe cabinet, pantry, and dressing room at the same time.

### Operation description

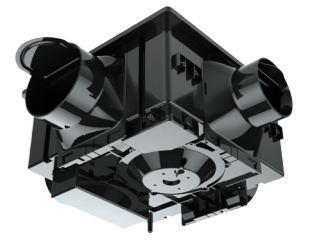
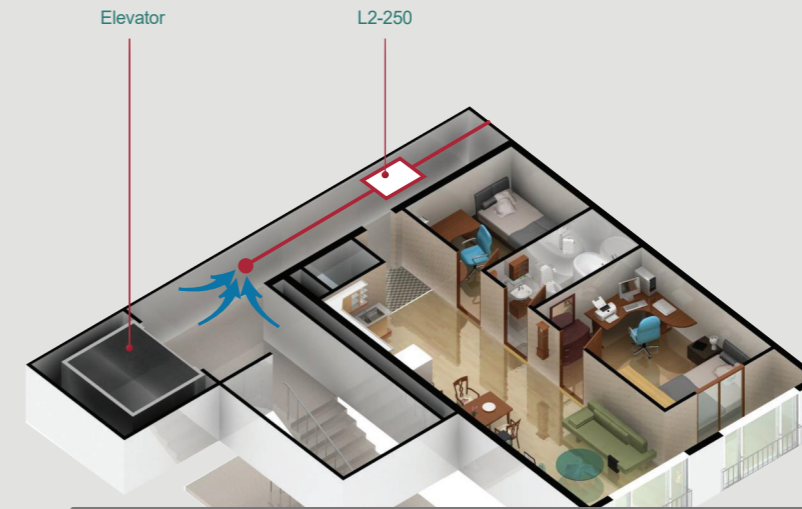
Switch setting		Operation status		
Bathroom fan S/W	Shoe cabinet S/W	FAN	Bathroom M.D	Shoe cabinet M.D
ON	OFF	1st stage	OPEN	CLOSE
ON	ON	2nd stage	OPEN	OPEN
OFF	ON	1st stage	CLOSE	OPEN
OFF	OFF	Stop	CLOSE	CLOSE

**Applicable Models** ZEROC series, LIVO series

## Ventilation System For Elevator Halls



It creates a pleasant environment by removing the smell of mold and condensation inside the elevator hall.

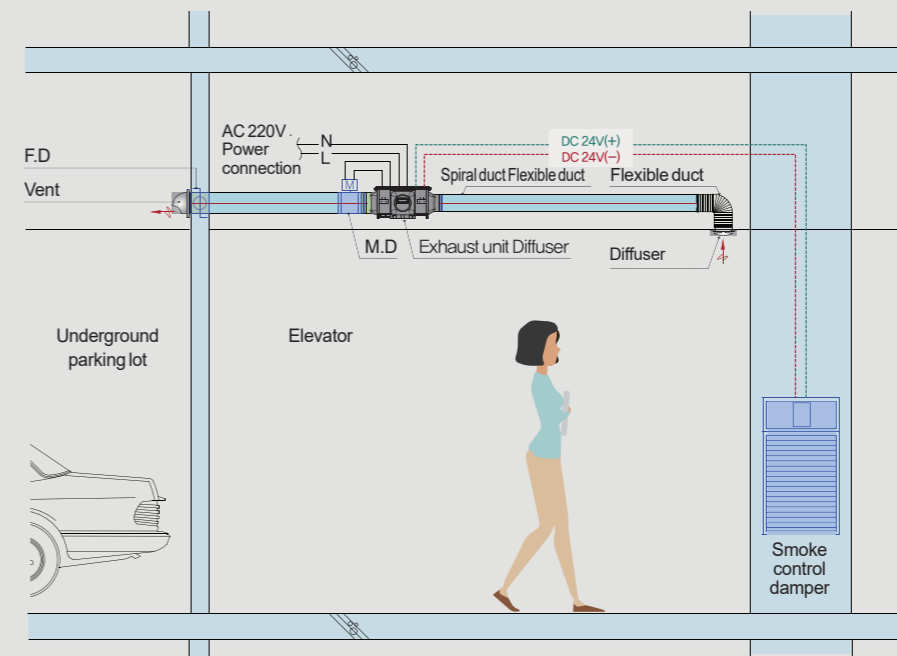


L2-250(EV), L2-300(EV)



HV3-80X(EV)

### Operation description

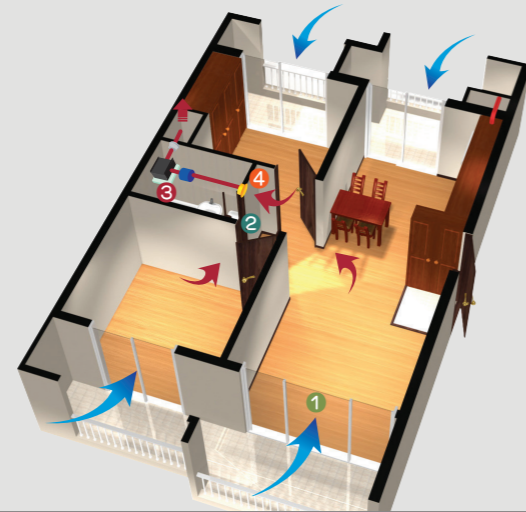
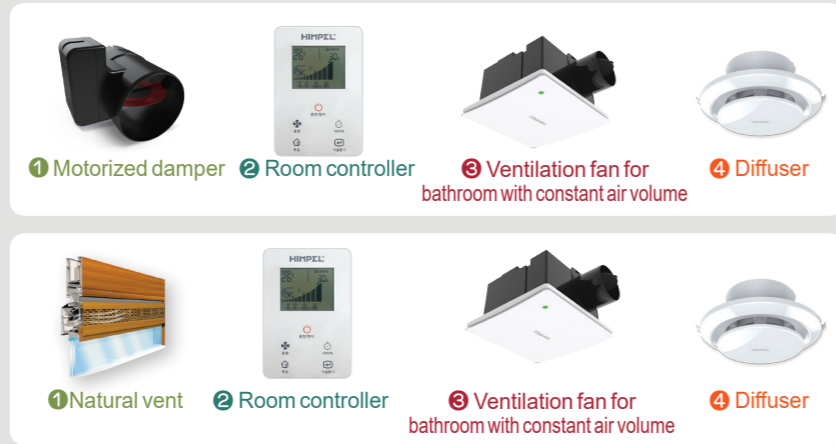


\* In case of fire, the fan operation is stopped by interlocking with smoke control damper.

## Hybrid (3 kinds) Ventilation System

### What is a hybrid Ventilation system?

Hybrid ventilation is the most common ventilation system, which refers to a system that provides a pleasant indoor environment by harmonizing natural ventilation and mechanical ventilation.



#### Bathroom ventilation system with Constant air volume

With a constant air volume bathroom ventilation fan applied, the 24-hour ventilation system removes moisture from the bathroom and makes the room comfortable.

#### Natural Supply Forced Exhaust

This is a ventilation system in which fresh outdoor air is supplied from the natural ventilation system, and contaminated air is guided into the bathroom, and forced exhaust is performed with the bathroom ventilation fan with a constant air volume.

#### Reservation timer (off reservation) function

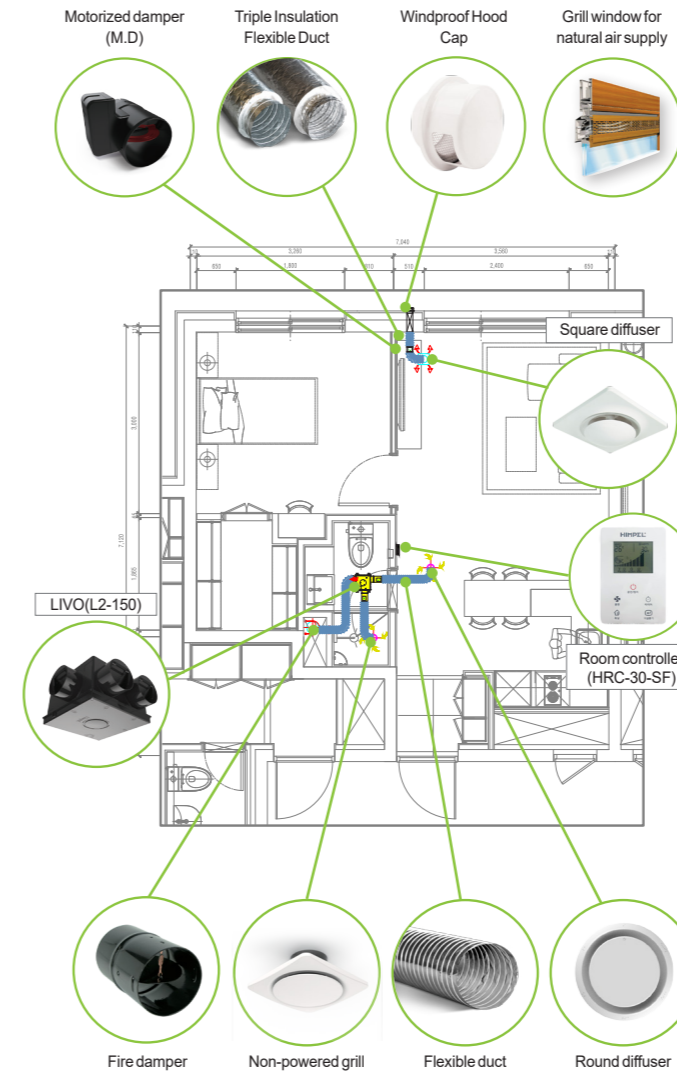
Possible to operate the ventilation system for as long as necessary by using the timer.

### Advantages of hybrid system

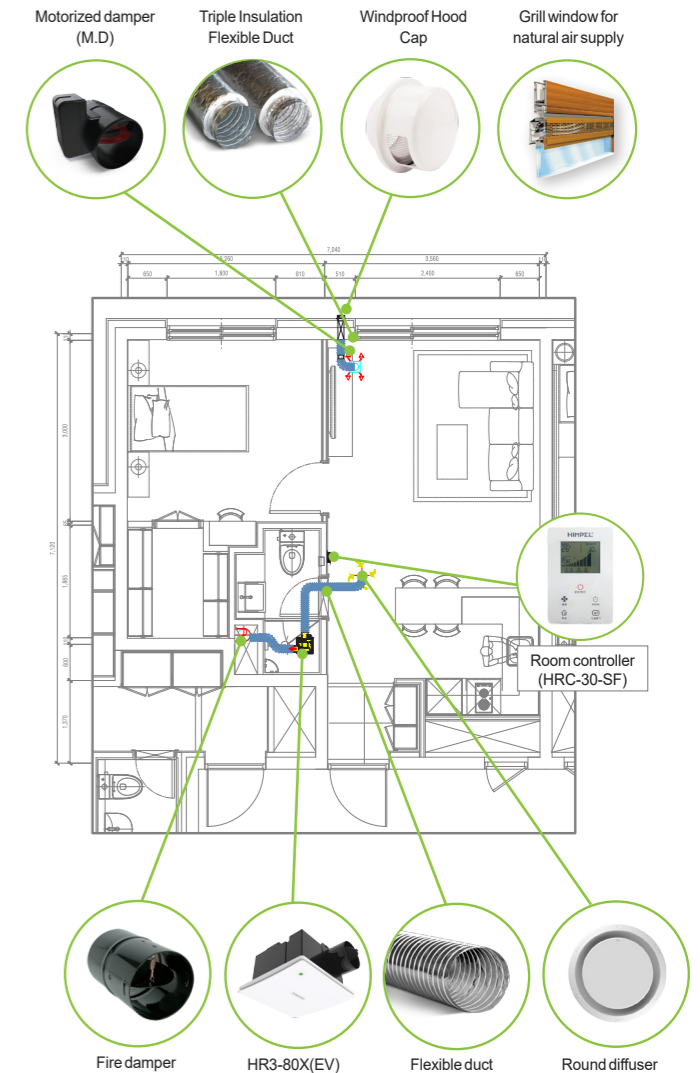
Natural air supply and forced exhaust	The natural air supply using natural ventilation and the forced exhaust using an exhaust fan maintain a pleasant environment
High static pressure constant air volume fan	Maintains stable ventilation by applying LIVO and ZERO C
Maintenance	Unlike ventilation purifiers, system configuration is simple and maintenance is easy.
Installation according to site conditions	Reduced construction cost by selecting a method suitable for the site conditions of the duct or no duct method
Prevention of condensation	Effective in preventing condensation with regular ventilation by natural ventilation

## System Configuration

### Ceiling embedded hybrid system



### Ceiling hybrid system



### Room controller

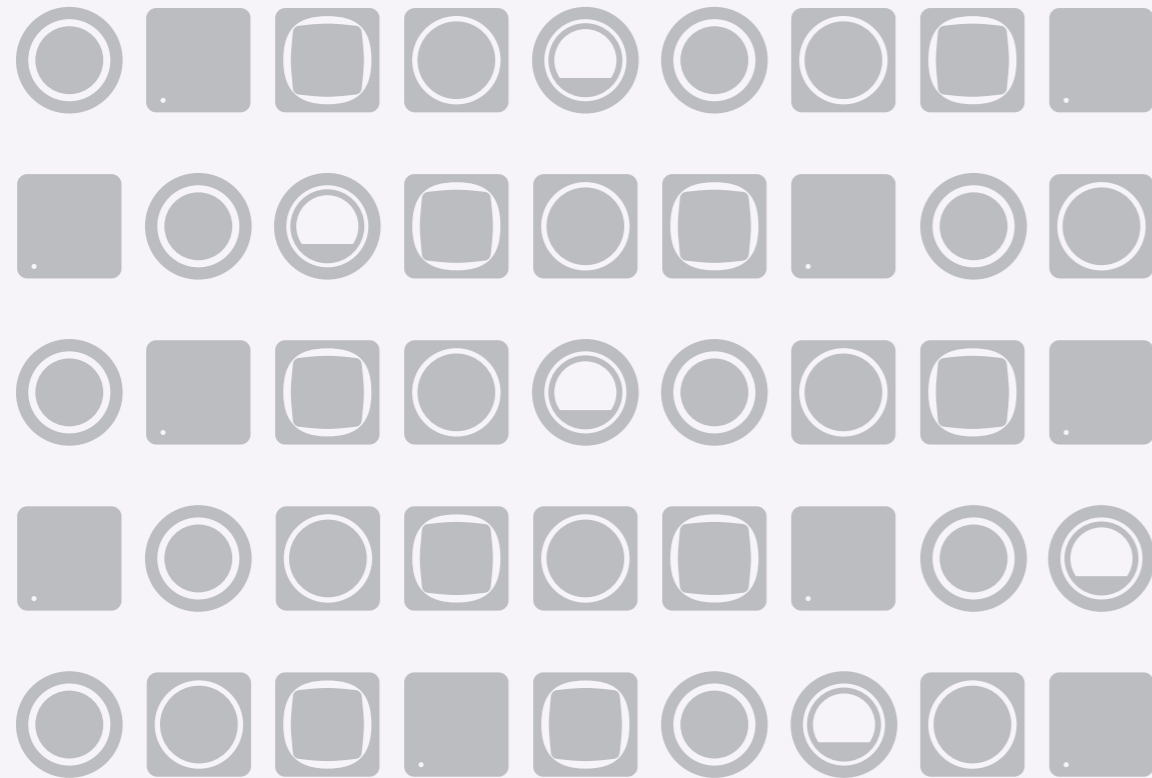


- High/Medium/Low 3-stage control
- Integrated switch for bathroom lights
- For bathroom/indoor ventilation
- Timer function (off reservation, 30/60/90 minutes, continuous)
- Home network support available (Power, communication) -RS485


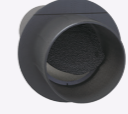









# Ventilation materials

Auxiliary materials to help efficient ventilation of the ventilation fan and ventilation purifier.

There are noise reduction device that reduces inter-floor noise, dampers that prevent backflow of pollutants from entering the room, fire damper installed to prevent the spread of toxic substances from fire, connection socket for BDD direct exhaust that blocks the inflow of rainwater, materials that connect or provide space for air to flow, etc.



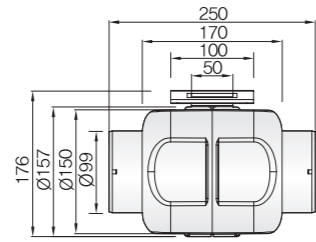
WWW.HIMPEL.CO.KR

	<b>Noise reduction device between floors of bathroom in apartment houses</b> SR3-S100, SR-S100	75
	<b>BDD backflow/backwind prevention damper</b> Connection socket for direct exhaust in kitchen and bathroom + magnet BDD Connection socket for direct exhaust in kitchen, connection socket for direct exhaust in kitchen and bathroom (to prevent water inflow), Gravity type BDD	76
	<b>Diffuser</b> DGS-100D, DGS-65D, DGH-100C, DGH-100R, DGH-75R, DGH-65R DGS-100P, DGS-65P, DGS-100R, DGS-100S, DGP-110S	77 78
	<b>Diffuser filter</b> DPP-100E	78
	<b>Non-powered grille</b> DGS-100M, DGS-100LM, DGS-100U, DGS-100F, DGS-100LF	79
	<b>Motorized damper</b> MDA-100, MDD-100, MD-N, JMD-100H, JMD-125HLD, JMD-150HLD	80
	<b>Fire damper</b> Spiral duct, masonry, elbow type, eccentric type	81
	<b>Sleeve</b> Access hole sleeve and stopper, sleeve (for retaining wall), H sleeve (hanger type) Y-TEE connector, reducer	82
	<b>Vent/vent cap</b> • Vent: bathroom/kitchen, energy recovery ventilator, general type, double type, louver type • Vent cap: mesh type	83 84
	<b>Louver</b> LGP-250	84
	<b>Flexible</b> SK-A2, SK-A2V, SK-A4, SK-A2K, SK-Square SK-A2PA, SK-A2VPA SK-A2VP, SK-A4VP, SK-A2VG	85 86
	<b>Ventilation related laws</b>	87 ~89

## Noise Reduction Device Between Floors Of Bathroom In Apartment Houses



### Dimension Standard

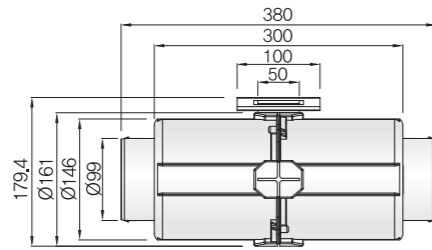


- Connection duct : Ø100
- Material : PP

SR3-S100



### Dimension Standard



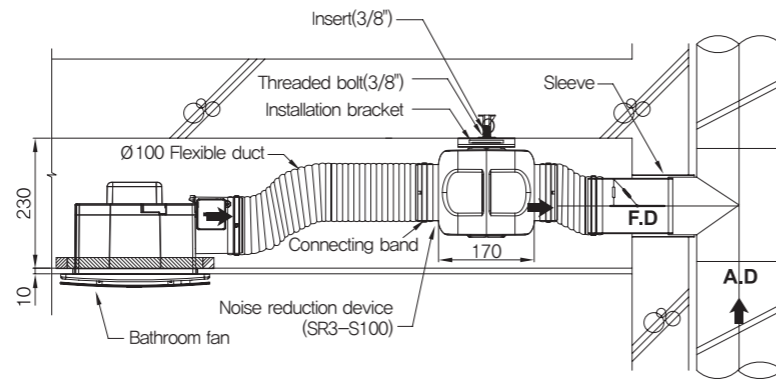
- Connection duct : Ø100
- Material : PP

SR-S100

### Noise-blocking exhaust port

- A noise-blocking exhaust port is an exhaust port that can reduce noise while allowing ventilation in an open state.
- Acquiring 2 additional points for green building certification standards (bathroom noise) by applying noise reduction devices between floors of bathrooms in apartment houses

### How to install



### Green Building Certification Standard-Bathroom Noise

#### Evaluation index

Grade	Grade criteria
1st grade	9 points or more
2nd grade	7~8 points
3rd grade	5~6 points
4th grade	4 points or below

#### Additional points

Noise reduction method	Score
Maintain water supply pressure for each household below 2.5 kg/cm <sup>2</sup>	3
Adoption of water-saving toilet	2
Insulation construction such as cushioning material on the pipe penetration part	1
Use of low-noise drain pipe	2
Adoption of the piping method of the corresponding floor for sewage and drainage pipes	4
Establishment of measures to prevent noise transmission between the upper and lower floors of the exhaust AD	2

Measures to prevent noise transmission between upper and lower floors through exhaust AD (Air Duct) refers to the installation of independent supply and exhaust pipes, installation of multiple ADs so that the exhaust ports between adjacent upper and lower floors do not pass directly, or when noise-blocking exhaust ports are installed. Here, the noise-blocking type exhaust port refers to an exhaust port with a difference in noise-blocking performance of 5 dB (A) or more with a general exhaust port.

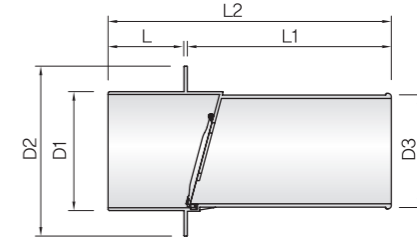
## BDD Backflow / Backwind Prevention Damper

### Connection socket for direct exhaust in bathroom and kitchen + magnetic BDD

- Material and composition
  - PP
  - Clean hose, outer wall sleeve connection socket
  - Magnetic high airtight damper (optional)

Model name	L	L1	L2	D1	D2	D3	Note
BDG-80M	67	180	250	Ø105	Ø150	Ø79	Magnetic
BDG-100M	67	180	250	Ø105	Ø150	Ø99	
BDG-125M	67	180	250	Ø130	Ø175	Ø123	

\* When used as a connection socket for direct exhaust, the magnetic BDD is removed.  
\* Unit: mm

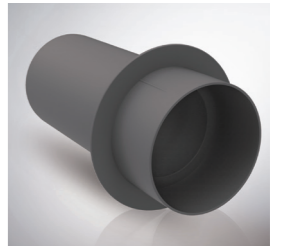
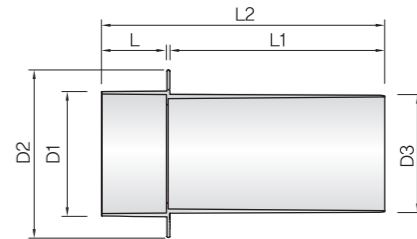


### Connection socket for direct exhaust in kitchen

- Material and composition
  - PP

Model name	L	L1	L2	D1	D2	D3
BDK-125M	67	220	290	Ø130	Ø175	Ø124

\* Unit: mm

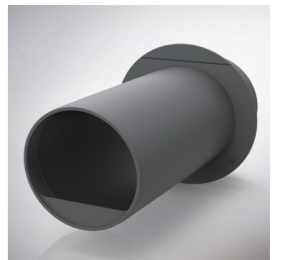
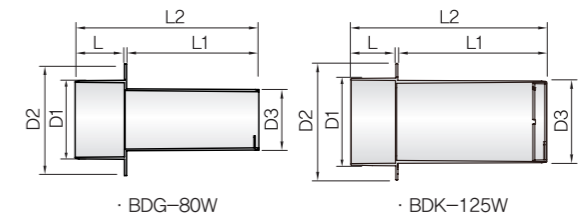


### Connection socket for direct exhaust in bathroom and kitchen (Preventing water intake)

- Material and composition
  - BDG-80W : Body, Bracket - ABS
  - BDK-125W : Body - PP / Bracket - ABS

Model name	L	L1	L2	D1	D2	D3
BDG-80W	67	180	250	Ø106.2	Ø150	Ø81.3
BDK-125W	67	222.5	292.5	Ø130	Ø175	Ø123

\* Unit: mm

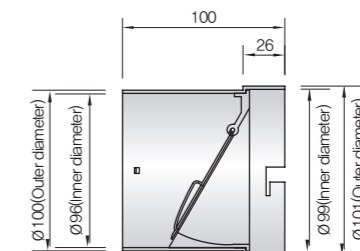


### Gravity type BDD

- Material and composition
  - PP
  - Gravity type single wing (with sound insulation)

Model name	Size	Product size	Note
BDG-100V	Ø100	Ø100 x L100	Gravity type

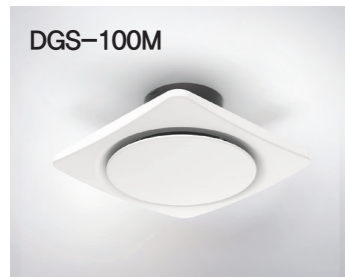
\* Unit: mm





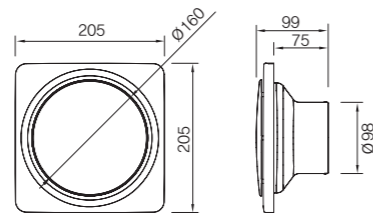


## Non-Powered Grille



DGS-100M

### Dimension Standard



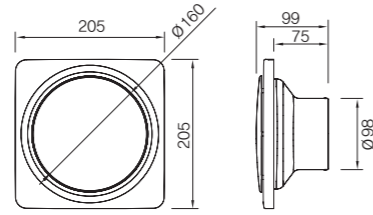
- Connection duct : Ø100
- Material : ABS
- Perforated dimensions : 160X160(±5mm)



DGS-100LM

※ Option : Operation indicator lamp type

### Dimension Standard

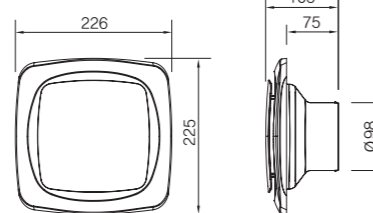


- Connection duct : Ø100
- Material : ABS
- Perforated dimensions : 160X160(±5mm)



DGS-100U

### Dimension Standard

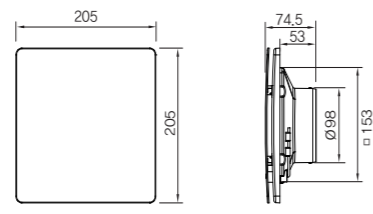


- Connection duct : Ø100
- Material : ABS
- Perforated dimensions : 160X160(±5mm)



DGS2-100NF

### Dimension Standard



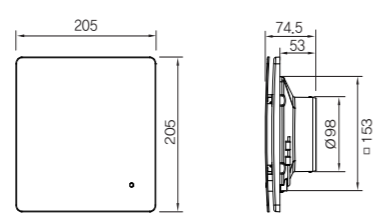
- Connection duct : Ø100
- Material : ABS
- Perforated dimensions : 160X160(±5mm)



DGS2-100NLF

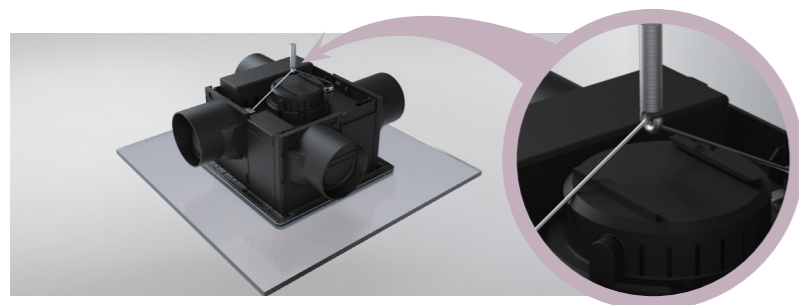
※ Option : Operation indicator lamp type

### Dimension Standard



- Connection duct : Ø100
- Material : ABS
- Perforated dimensions : 160X160(±5mm)

## High Static Pressure (Constant Air Volume) Ventilation Fan Reinforcement Bracket



- Applicable model: ZEROC
- Product model: BRK-200

## Motorized Damper

### Motorized damper (ABS)

- Material : ABS
- TORQUE : 150N·cm or more  Reduction ratio=1 : 300(3RPM)

Model name	D1(∅)	L(mm)	L1(mm)	L2(mm)	Power consumption(W)	Weight(g)
MDA-100	99	130	110	35	3	260

- Material : ABS
- TORQUE : 150N·cm or more  Reduction ratio=1 : 40(4RPM)

Model name	D1(∅)	L(mm)	L1(mm)	L2(mm)	Power consumption(W)	Weight(g)
MDD-100DP	99	130	110	35	3	440

- Material : ABS
- TORQUE : 150N·cm or more  Reduction ratio=1 : 40(4RPM)

Model name	D1(∅)	L(mm)	L1(mm)	L2(mm)	Power consumption(W)	Weight(g)
MDD-100DP-P	99	130	137.5	35	3	461

※ DP-P (flange type) is compatible with other companies' ventilator outlet Ø98.5~Ø100

- Material : ABS
- TORQUE : 150N·cm or more  Reduction ratio=1 : 40(4RPM)

Model name	D1(∅)	L(mm)	L1(mm)	L2(mm)	Power consumption(W)	Weight(g)
MDD-100D	99	177	112	41	3	490

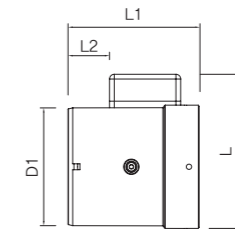
- Material : ABS
- TORQUE : 98mN·m or more

Model name	D1(∅)	L(mm)	L1(mm)	L2(mm)	Power consumption(W)	Weight(g)
MD-N	99	153	100.9	30	2.5	167

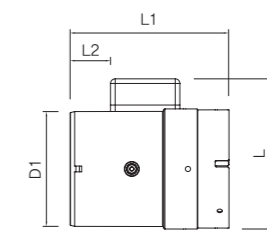
### Motorized damper (EGI)

- Material: EGI 1.0T / Powder coating
- Motor type: DC Geared motor
- TORQUE : 150N·cm or more  Reduction ratio=1: 1660(4RPM)

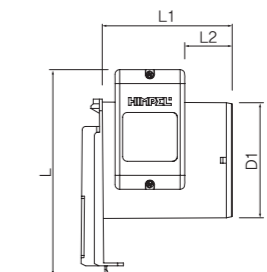
Model name	D1(∅)	L(mm)	L1(mm)	L2(mm)	Power consumption(W)	Weight(g)
JMD-S100HLD	99	145	138	30	4	745
JMD-S125HLD	123	167	158	36	4	900



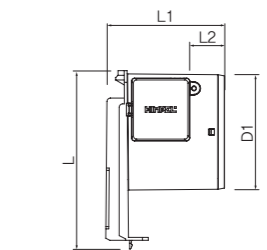
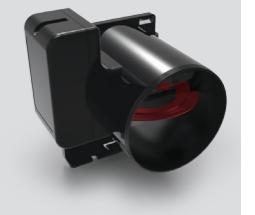
DP(Press-fit type)



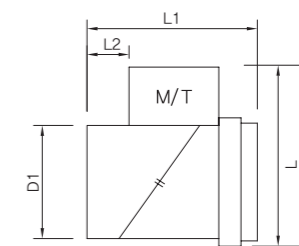
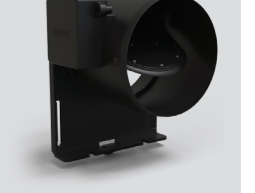
DP-P(Flange type)



D(Integrated type)



MD-N (Integrated type)

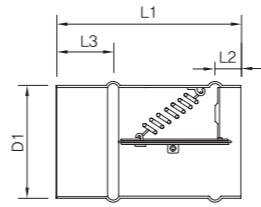


## Fire Damper



### For spiral duct

- B : 72°C fuse in bathroom
- K : 103°C fuse, inserted into spiral duct tube in kitchen
- Material: STEEL 1.6T / powder coating

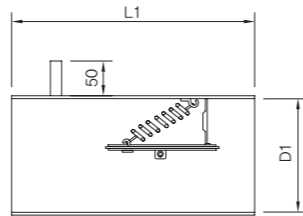


Model name	Size(Ø)	D1(Ø)	L1(mm)	L2(mm)	L3(mm)
			Custom-made possible	Flexible locking jaw	Duct pipe insertion part (adjustable)
FDB-100S / FDK-100S	100	98	150	20	60
FDB-125S / FDK-125S	125	123	150	20	50
FDB-150S / FDK-150S	150	148	170	20	-
FDB-200S / FDK-200S	200	198	230	20	-



### For masonry

- 3/8" Threaded socket attachable, threaded socket welding, position adjustable
- B : 72°C fuse in bathroom
- K : 103°C fuse in kitchen
- Material: STEEL 1.6T / powder coating

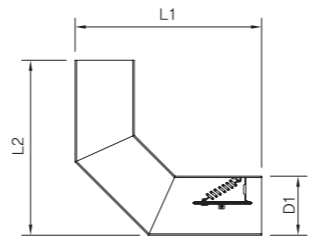


Model name	Size(Ø)	D1(Ø)	L1(mm)
			Length adjustable
FDB-100M / FDK-100M	100	98	170
FDB-125M / FDK-125M	125	123	170
FDB-150M / FDK-150M	150	148	170
FDB-200M / FDK-200M	200	198	230



### Elbow type

- 90° Elbow
- B : 72°C fuse in bathroom
- K : 103°C fuse in kitchen
- Material: STEEL 1.6T / powder coating

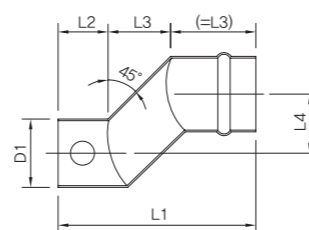


Model name	Size(Ø)	D1(Ø)	L1(mm)	L2(mm)
FDB-100E / FDK-100E	100	98	Custom-made	Custom-made
FDB-125E / FDK-125E	125	123	Custom-made	Custom-made



### Eccentric type

- 90° Elbow
- B : 72°C fuse in bathroom
- K : 103°C fuse in kitchen
- Material: STEEL 1.6T / powder coating

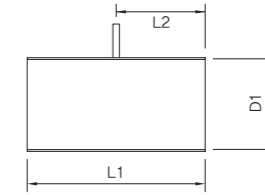
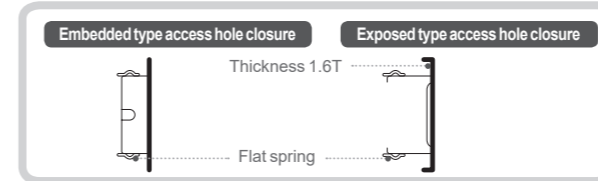


Model name	Size(Ø)	D1(Ø)	L1(mm)	L2(mm)	L3(mm):Eccentric	L4(mm)
			Adjustable	Adjustable	Adjustable	Adjustable according to the situation
SLP-100	100	98	230	75	50	50
SLP-125	125	123	240	85	50	50

## Sleeve

### Access hole sleeves and closures

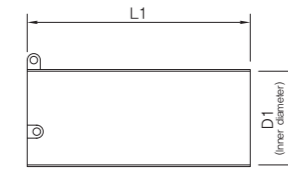
- Use: Using an endoscope camera to understand the internal situation of the A.D duct
- Material: STEEL 1.6T / white, black powder coating (color changeable)



Model name	Size(Ø)	D1(Ø)	L1(mm)Length adjustable	L2(mm)Length adjustable
SLR-75I	75	75	Custom-made	Ø75 X 150(Center socket)
SLR-100I	100	100	Custom-made	Ø100 X 150(Center socket)

### Sleeve (for retaining wall)

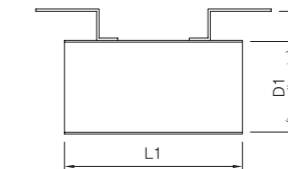
- Used when the retaining wall is Euroform, and used for F.D insertion and through sleeve
- Material: STEEL 1.6T / Powder coating, custom-made available for the length and size



Model name	Size(Ø)	D1(Ø) Custom-made	L1(mm)
SLR-100C	100	100	Custom-made (Retaining wall thickness)
SLR-125C	125	125	
SLR-150C	150	150	
SLR-175C	175	175	
SLR-200C	200	200	
SLR-250C	250	250	

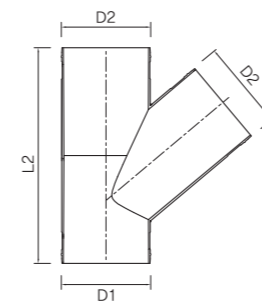
### H sleeve (hanger type)

- Used as a damper insertion and through sleeve, easy workability as it works on Alform
- Material: STEEL 1.6T / powder coating



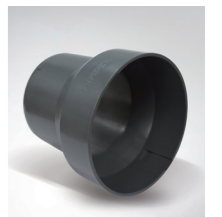
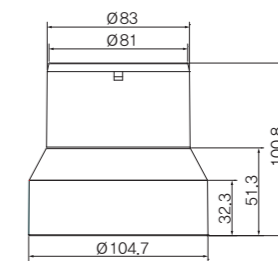
Model name	Size(Ø)	D1(Ø)	L1(mm)Length adjustable	H(mm) height adjustable
SLR-100H	100	100	Custom-made	Custom-made
SLR-125H	125	125		
SLR-150H	150	150		

### Y-TEE connector



Model name	Size(Ø)	L1(mm)	D1(Ø)	D2(Ø)	Material
VCS-100E	100 X 100 X 100	240	98	98	PP
VCS-85E	100 X 85 X 85	308	98	85	PP
VCS-80E	100 X 80 X 80	323	98	78	PP

### Reducer



Model name	Size(Ø)	Material
VCS-85R	85	PP

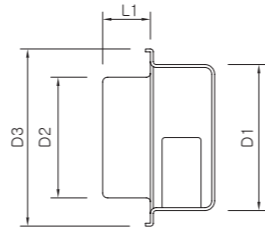
## Vent (Ventilation Cap)



### Ventilation cap (windproof)-for bathroom and kitchen

□ Material : AL (Powder coating)

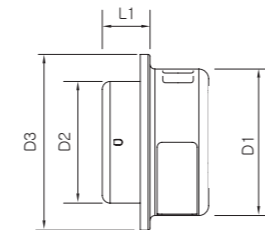
Model name	Size(Ø)	D1(Ø)	D2(Ø)	D3(Ø)	L1(mm)	Use
VCW-75	75	100	73	120	40	-
VCW-100	100	122	98	146	45	-
VCW-100A	100	150	98	182	45	Bathroom
VCW-125	125	150	123	182	50	-
VCW-125A	125	170	123	182	50	Kitchen
VCW-150	150	182	148	210	50	-
VCW-200	200	250	198	300	80	-
VCW-250	250	250	248	300	80	-



### Ventilation cap (windproof)-for bathroom and kitchen

□ Material: AL (Powder coating)

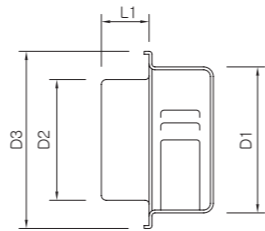
Model name	Size(Ø)	D1(Ø)	D2(Ø)	D3(Ø)	L1(mm)	Use
VCW-100DS	100	150	99	180	50	Bathroom
VCW-125DS	125	150	124.5	180	50	Kitchen



### Ventilation cap (windproof)-for energy recovery ventilator

□ Material : AL (Powder coating)

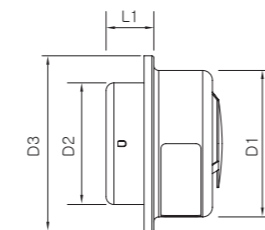
Model name	Size(Ø)	D1(Ø)	D2(Ø)	D3(Ø)	L1(mm)	Use
VCW-125L	125	150	123	182	50	Left
VCW-125R	125	150	123	182	50	Right



### Ventilation cap (windproof)

□ Material : AL (Powder coating)

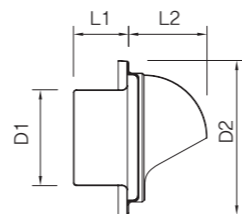
Model name	Size(Ø)	D1(Ø)	D2(Ø)	D3(Ø)	L1(mm)	Use
VCW-100N	100	150	99	180	50	Bathroom
VCW-125N	125	150	124.5	180	50	Kitchen



### Ventilation cap (General type)

□ Material : AL (powder coating) / SUS

Model name	Size(Ø)	D1(Ø)	D2(Ø)	L1(mm)	L2(mm)
VCS-50	50	54	90	40	50
VCS-75	75	73	120	40	80
VCS-100	100	98	144	45	80
VCS-125	125	123	180	50	100
VCS-150	150	148	180	50	100
VCS-200	200	198	300	80	185
VCS-250	250	248	300	80	185
VCS-300	300	295	400	100	200
VCS-350	350	345	400	100	200

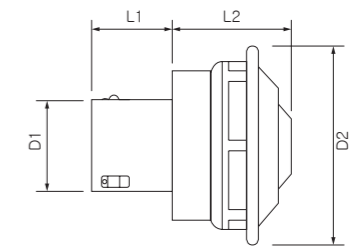


## Vent (Ventilation Cap)

### Ventilation cap (Dual type)

□ Material : AL (Powder coating)

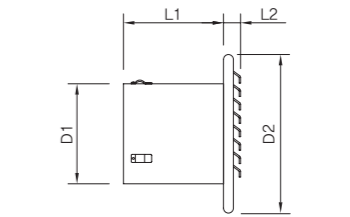
Model name	Size(Ø)	D1(Ø)	D2(Ø)	L1(mm)	L2(mm)
VCW-100A2	100	98	200	45	100
VCW-125A2	125	123	200	70	100
VCW-150A2	150	148	200	80	100



### Ventilation cap (Louver type)

□ Material : AL (Powder coating)

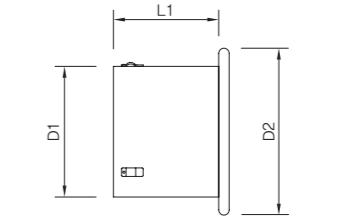
Model name	Size(Ø)	D1(Ø)	Connector Outer Diameter	D2(Ø)	L1(mm)	L2(mm)
VCL-75	75	73	144	40	12	
VCL-100	100	98	144	45	12	
VCL-125	125	123	182	50	12	
VCL-150	150	147	182	50	12	
VCL-200	200	197	300	80	12	



### Vent cap (Mesh type)

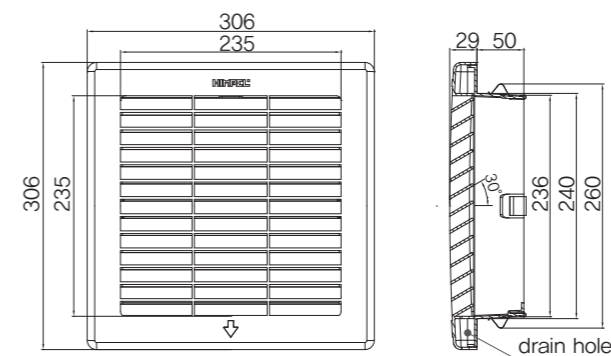
□ Material : AL (Powder coating)

Model name	Size(Ø)	D1(Ø)	D2(Ø)	L1(mm)
VCM-50	50	50	70	40
VCM-75	75	73	90	40
VCM-100	100	98	120	40



## Louver

### Dimensions (LGP-250)

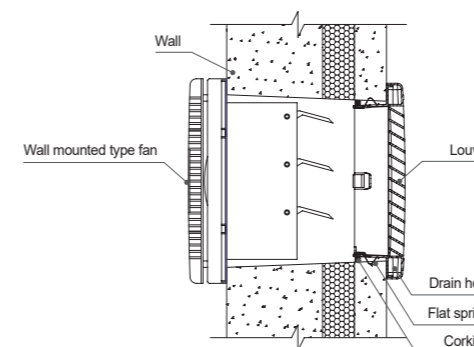


### LGP-250

Perforated dimension □250mm

- Easy installation and maintenance
- Excellent stability
- Suitable for any appearance

### How to install (Wall mounted type)

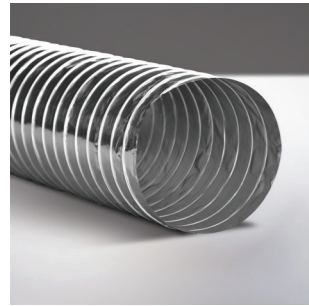


### Product specifications

※ Product specifications and performance are subject to change depending on the quality improvement or installation conditions.

Model name	LGP-250	LGP-200
Product size (mm)	306 x 306	256 x 256
Material	Louver	PP + UV stabilizer
	Flat spring	Stainless steel plate

Flexible



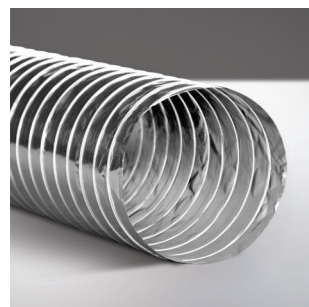
SK-A2 (AL silver foil 2P)

- Material: Aluminum Foil/Polyester Film Laminated X 2ply/copper-plated steel wire
- Adhesion: Self-hardening Type
- Operating temperature/pressure: -30°C~120°C / 30m/sec
- Production standard: 50mm~ standard size
- Usage: APT toilet, household air supply and exhaust / Kitchen range hood exhaust air conditioning facility / air supply and exhaust of sanitary facilities



SK-A2V (AL silver foil 2P absorption)

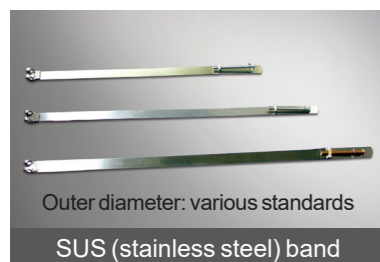
- Material: Perforated Aluminum Foil/Polyester Film Laminated X 2ply/Copper plated steel wire/ Moisture-proof external cylinder-Aluminum Foil, Vaper Barrier
- Adhesion: Self-hardening Type
- Operating temperature/pressure: -30°C~140°C / 30m/sec
- Production standard: 100mm~ Standard size / ① Sound-absorbing pipe (compressed/integrated)- automatic production ② Sound-absorbing pipe (general)-manual production
- Usage: APT toilet, household air supply and exhaust / air supply and exhaust of air conditioning facilities



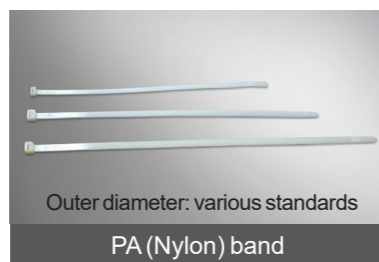
SK-A4 (AL silver foil 4P)

- Material: Aluminum Foil/Polyester Film Laminated X 4ply/Copper plated steel wire
- Adhesion: Self-hardening type / double-sided bonding method
- Operating temperature/pressure: -30°C~140°C / 30m/sec
- Production standard: 50mm~ standard size
- Use: Air supply and exhaust of smoke controlling and air conditioning facilities / Kitchen range hood exhaust /

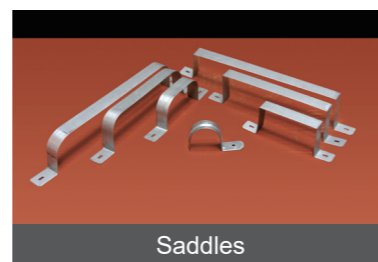
Materials: EGI, GI, Steel  
 Production standard: 110X54, 204X60, 300X60, other custom-made  
 Length: For fixing APT household ventilation ducts



Outer diameter: various standards  
 SUS (stainless steel) band



Outer diameter: various standards  
 PA (Nylon) band



Saddles

SK-A2K (Flame-Retardant Double Clean Hose)

Certified as the best eco-friendly building material HB

- Material: Aluminum Foil 4ply + Polyester Film + Soft PVC Laminated Spring Copper Wire (copper-plated steel wire)/hard steel wire
- Specification: Flame-retardant double clean hose
- Adhesion: Special Thermal Fusion Part / Special thermal bonding method
- Production standard: 65mm / 85mm / 100mm / ~ 150mm
- Usage: For direct exhaust in bathroom / household ventilation air supply exhaust / other air supply exhaust piping



SK-square/Square+Circle/Square insulating

- Production standards / materials: All square duct standards / All duct hose materials 75X40 / 100X40 / 110X54 / 204X60 / 250X80 / 300X60
- Use: APT toilet, household ventilation, shoe cabinet ventilation, supply and exhaust of air conditioning facilities

Size(Ø)	Width x Height (mm)
65	75 x 40
75	85 x 40
85	100 x 40
100	120 x 54
108	110 x 54
125	150 x 50
165	204 x 60



square insulating

SK-A2PA (silver foil triple poly wool insulation)

SK-A2VPA (Silver foil triple sound absorption poly wool insulation)

- Material: Aluminum Foil/Polyester Film Laminated X 2ply / Copper-plated steel wire
- Specifications: ① AL hose ② AL sound absorption hose + compressed poly wool + AL hose (white / yellow / pink)
- Adhesion/Use temperature/pressure: Self-hardening type/ -30°C~120°C / 30m/sec
- Insulation: Flame-retardant compressed poly wool (the weight of the poly wool increased) + AL hose (white / yellow / pink)
- Production standard: 100mm~ 300mm Other order specifications
- Usage: air supply/exhaust for energy recovery ventilator in APT households / air supply and exhaust of air conditioning facilities



SK-A2VP (AL silver foil 2P sound absorption Poly wool insulation)

SK-A4VP (AL silver foil 4P absorption Poly wool insulation)

SK-A2VG (AL silver foil 2P sound absorption glass wool insulation)

- Material: Perforated Aluminum Foil/Polyester Film Laminated X 2, 4ply / Copper-plated steel wire
- Specification: ① AL sound absorption hose ② AL 4P sound absorption hose + polycotton ③ AL sound absorption hose + glass wool
- Adhesion / Temperature / Pressure: Self-hardening Type/ -30°C~140°C / 30m/sec
- Insulation: Poly wool / Glass wool / Moisture-proof outer casing-Aluminum Foil / Vaper Barrier
- Production standard: 100mm~ 500mm / other order specifications
- Use: For building facility air conditioning / air supply/exhaust for energy recovery ventilator in APT households / Air conditioning facilities that require soundproofing/absorption performance (department store / music hall / etc.)



## Ventilation Related Laws

### Under criteria for installation of mechanical ventilation facilities such as new apartment houses

(related to Article 11, Paragraph 1)-Over 100 households (**Enforced on October 10, 2020-Over 30 households**)

The design, construction, and performance evaluation methods of mechanical ventilation equipment installed to ensure the number of ventilation times for new apartment houses, etc. pursuant to Article 11 (1) shall comply with the following standards.

- In order to control the ventilation volume of the household, a system must be in place to adjust the rated air volume of the ventilation facility in the minimum, appropriate and maximum three stages or more, and the required ventilation volume at an appropriate stage should ensure an air volume capable of ventilating households such as new apartment houses 0.5 times per hour.
- The air supply system that supplies outside air or the air intake port through which outside air is introduced must be equipped with an air filter or dust collector of a certain level or higher to remove or filter particulate and gaseous pollutants. In this case, the air filter must ensure the ventilation efficiency that the particle collection rate [referring to the efficiency of collecting particles in the air passing through it by an air cleaning device] specified in the Korean Industrial Standard (KS B6141) is 80% or more when measured by the colorimetric method and light scattering integration method, and 40% or more when measured by the counting method. To extend the life of the filter, a pre-filtration device must be installed at the front end of the filter, and the filter device must be easily cleaned or replaced. However, in cases where the ventilation system pursuant to item 7 (c) is equipped, attached Table 1-4, No. 5 shall be followed.
- In principle, the measurement of noise generated by mechanical ventilation equipment is in accordance with the Korean Industrial Standard (KS B 6361). The measurement location should be measured at a representative length of 1 meter (vertical or horizontal bottom) and the noise should be less than 40dB, and the dark noise should be corrected. However, if the main body (noise source) of the ventilation equipment is installed outside the living space, it is measured at a representative length of 1 meter (vertical or horizontal bottom) and is 50dB or less, or less than 40dB measured at a height of 1.0 to 1.2 meters from the center floor inside the living space.
- The air intake and exhaust ports facing the outside must be separated by a distance of 1.5 meters or more to prevent cross-contamination, or installed in a location where the directions of the air intake and exhaust ports are 90 degrees or more. The Structure and performance that can prepare for safety in case of an emergency such as fire must be secured.
- In the case of installing a waste heat recovery type ventilation system to save energy of a mechanical ventilation system, the effective ventilation amount of the waste heat recovery type ventilation system tested according to the Korean Industrial Standard (KS B 6879) must be at least 90% of the indicated capacity, and the inside and outside of the waste heat recovery ventilation system should have a structure and performance that minimizes the occurrence of water condensation.

### Under construction standards for health-friendly [Enforced on 11. 20, 2018.] [Ministry of Land, Infrastructure and Transport Notice No. 2018-697, 2018. 11. 20., partially revised]-500 households or more

- In the case of mechanical ventilation facilities, certifications recognized by national systems such as green technology certification (Ministry of Land, Infrastructure and Transport, Ministry of Environment), new construction technology (Ministry of Land, Infrastructure and Transport), new technology certification (NET: Ministry of Trade, Industry and Energy), and new environment technology (Ministry of Environment) or technical data that can objectively confirm that the performance is equivalent to or higher through a test report issued by an accredited testing institution must be attached, or the result of a test report issued by an accredited testing institution in accordance with KS B 6879 should conform to the following criteria.

Classification	Test Condition	Evaluation Criteria
Effective ventilation amount	KS B 6879 Annex A	Tested measured value is more than 90% of the indicated capacity (KS B 6879 3.2)
Enthalpy recovery efficiency	KS B 6879 Annex B	Cooling: 45% or more
		Cooling: 70% or more
Energy coefficient	KS B 6879 Annex C	Cooling: 8.00 or more
		Heating: 15.00 or more

- In the case of a heat recovery ventilation system, a bypass function (applying at least one of supply or exhaust) must be secured, and a preheater (including a system capable of operating in cold weather such as a preheater) must be installed to prevent condensation. Or, a condensation test should be conducted in accordance with KS B 6879 Annex C and meet the following criteria.
- The filter installed in the ventilation facility should be easy to maintain and manage, such as replacement and cleaning, and the replacement cycle should be specified on the body of the ventilation facility or a filter replacement notification sensor should be installed so that the occupant can easily check the filter replacement cycle.
- A high-performance outdoor air cleaning filter must satisfy one or more of the following criteria, and a pre-filtration device must be installed at the front end of the filter to extend its life, and the filter device must be easily cleaned or replaced.
  - More than 95% by measuring the particle collection rate (referring to the efficiency of collecting particles in the air passing through the air cleaning device) specified in the Korean Industrial Standard (KS B6141) by the colorimetric method or light scattering integration method.
  - More than 60% by measuring the particle collection rate specified in the collective standard (SPS-KACA-0026-7175) under Article 27 of the Industrial Standardization Act by the counting method.

### Under the rules on the facility standards of buildings

[Will be enforced on 10. 10, 2020.] [Ministry of Land, Infrastructure and Transport Decree No. 715, 2020. 4. 9., partially revised]

#### Article 11 (Standards for Ventilation Facilities, etc. for Shared Housing and Multi-Use Facilities)

- Houses or buildings falling under any of the following subparagraphs (hereinafter referred to as "newly built apartment houses") that are newly constructed or remodeled pursuant to Article 87 (2) of the Decree Natural ventilation equipment or mechanical ventilation equipment should be installed so that ventilation can be performed at least 0.5 times per hour. <Revised on 4. 9, 2020>
  - Apartment houses with 30 or more households
  - In the case of building a house with the same building as facilities other than the house, a building with 30 or more houses
- A special mayor, metropolitan mayor, special autonomous mayor, special autonomous provincial governor, or mayor, county, or district mayor (referring to the mayor of the autonomous district, hereinafter referred to as the "permitted person") may recommend the installation of natural ventilation equipment or mechanical ventilation equipment to allow ventilation of 0.5 times per hour or more for buildings and detached houses with less than 30 households. <Newly inserted on 4. 9, 2020>

### Enforcement Regulations of the School Health Act [Appendix 4-2] <Revised on October 24, 2019> Standards for maintenance and management of air quality, etc. (Related to Article 3 (1) 3-2)

#### 1. Maintenance standards

Pollutant items	Standard (below)	Applicable facilities	Note
A. Fine dust	35 $\mu$ g/m <sup>3</sup>	School buildings and food service facilities	Dust less than 2.5 $\mu$ m in diameter
	75 $\mu$ g/m <sup>3</sup>	School buildings and food service facilities	Dust less than 10 $\mu$ m in diameter
	150 $\mu$ g/m <sup>3</sup>	Gym and auditorium	Dust less than 10 $\mu$ m in diameter
B. Carbon dioxide	1,000ppm	School buildings and food service facilities	1,500ppm or less if the classroom is mainly ventilated using mechanical ventilation
C. Formaldehyde	80 $\mu$ g/m <sup>3</sup>	School buildings facilities, dormitories (limited to dormitories less than 3 years since the time of construction), and food service facilities	
D. Total and culturable bacteria	800CFU/m <sup>3</sup>	School buildings and catering facilities	
E. Failing bacteria	10CFU/room	Health room and food service facility	
F. Carbon monoxide	10ppm	Individual heating and roadside classrooms	For heating classrooms, limited to the ones using direct combustion method.
G. Nitrogen dioxide	0.05ppm	Individual heating and roadside classrooms	For heating classrooms, limited to the ones using direct combustion method.
H. radon	148Bq/m <sup>3</sup>	Dormitory (limited to dormitories less than 3 years after construction), first floor and school buildings in 1F or basement	Construction includes extension and renovation
I. Total Volatile Organic Compounds	400 $\mu$ g/m <sup>3</sup>	Schools that have not passed 3 years since the time of construction	Construction includes extension and renovation
J. asbestos	0.017 $\mu$ l/cc	Schools falling under asbestos buildings pursuant to the latter part of Article 22 (1) of the Asbestos Safety Management Act.	
K. ozone	0.06ppm	School Office and Administration Office	Limited to office equipment (copiers, etc.) that generates ozone in the applied facility
L. mite	100 $\mu$ l/m <sup>2</sup>	Health room	
M. benzene	30 $\mu$ g/m <sup>3</sup>	Dormitories less than 3 years since the time of construction	Construction includes extension and renovation
N. toluene	1,000 $\mu$ g/m <sup>3</sup>	Dormitories less than 3 years since the time of construction	Construction includes extension and renovation
O. Ethylbenzene	360 $\mu$ g/m <sup>3</sup>	Dormitories less than 3 years since the time of construction	Construction includes extension and renovation
P. Xylene	700 $\mu$ g/m <sup>3</sup>	Dormitories less than 3 years since the time of construction	Construction includes extension and renovation
Q. Styrene	300 $\mu$ g/m <sup>3</sup>	Dormitories less than 3 years since the time of construction	Construction includes extension and renovation

#### 2. Management standard

Applicable facilities	Priority Management Standard
Newly built school	1) In accordance with Article 11 (1) of the Indoor Air Quality Management Act., construction materials that emit pollutants shall not be used. 2) Ventilation facilities should be installed for smooth ventilation in the school building 3) For school fixtures such as desks, chairs, and tops, products certified for Korean industrial standards in accordance with Article 15 of the Industrial Standardization Act should be used. 4) Take and use necessary measures to ensure that formaldehyde and volatile organic compounds in the school building meet the maintenance standards.
Schools within 3 years after opening	Priority management of formaldehyde and volatile organic compounds to comply with the maintenance standard
Schools that have passed more than 10 years after opening	1) Priority management to ensure that fine dust and airborne bacteria meet the maintenance standards 2) When renovating or repairing existing facilities, construction materials that discharge pollutants shall not be used in accordance with Article 11 (1) of the Indoor Air Quality Management Act. 3) For school fixtures such as desks, chairs, and tops, products certified for Korean industrial standards in accordance with Article 15 of the Industrial Standardization Act should be used.
Total and culturable bacteria. Schools corresponding to asbestos buildings pursuant to the latter part of Article 22 (1) of the Asbestos Safety Management Act.	Asbestos should be managed intensively so that it meets the maintenance standards.
Classrooms with individual heating (limited to direct combustion heating) and roadside classrooms	Priority management to ensure that carbon monoxide and nitrogen dioxide meet the maintenance standards.
Food service facilities	Priority management to ensure that fine dust, carbon dioxide, formaldehyde, total culturable bacteria and falling bacteria meet the maintenance standards.
Health room	Priority management to ensure that falling bacteria and mite to meet the maintenance standards

## Ventilation Related Laws

### ■ Under the rules on housing construction standards, etc.

[Enforced on 1. 16, 2019.] [Ministry of Land, Infrastructure and Transport Decree No. 584, 2019. 1. 16, partially revised]

Article 11 (Exhaust Facilities) Exhaust facilities installed in the kitchen, bathroom, and toilet of a house pursuant to Article 44 of the Decree shall comply with the following items. <Revised on 11. 5, 2009, 3. 17, 2015.>

1. The exhaust port should be installed at a height of less than 80cm below the half-width or half-width and be structured to be open all the time.
2. Exhaust pipes and exhaust ports should have a structure that does not interfere with the exhaustion by the airflow of the outside air.
3. Except for the uppermost part of the exhaust pipe and the exhaust port, no openings shall be provided.
4. The top of the exhaust pipe should be opened directly to the outside air, but facilities to prevent the rainwater, etc. should be provided.
5. Electric ventilation equipment should be installed at the exhaust port installed in the kitchen.
6. The exhaust pipe should have a structure corresponding to any of the following items to prevent the backflow of smoke or odor into the room.
  - A) An automatic backflow prevention damper in the exhaust tank in the household (referring to a facility that is automatically opened and closed by electric or mechanical force when the exhaust port in the household is opened or the electric ventilation facility is activated) or an exhaust facility with the same function should be install.
  - B) Install so that the exhaust bins between households are not connected to each other and are directly open to the outside air.

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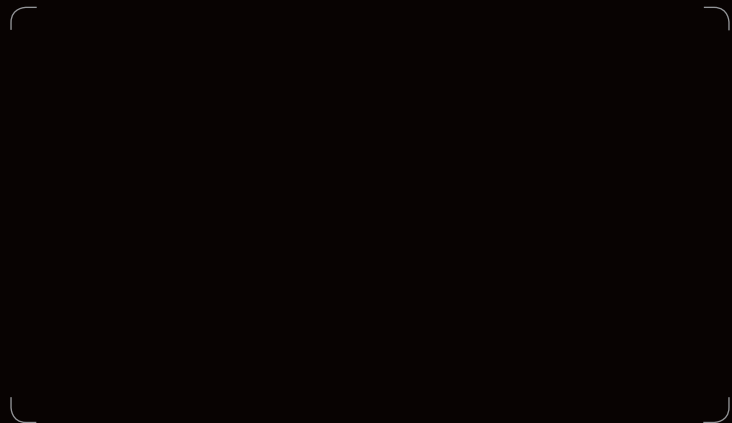
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