Panasonic

ONE-STOP
ECO IAQ SOLUTION

ENERGY SAVING
AIR PURIFICATION
THERMAL COMFORT

ENERGY RECOVERY VENTILATOR

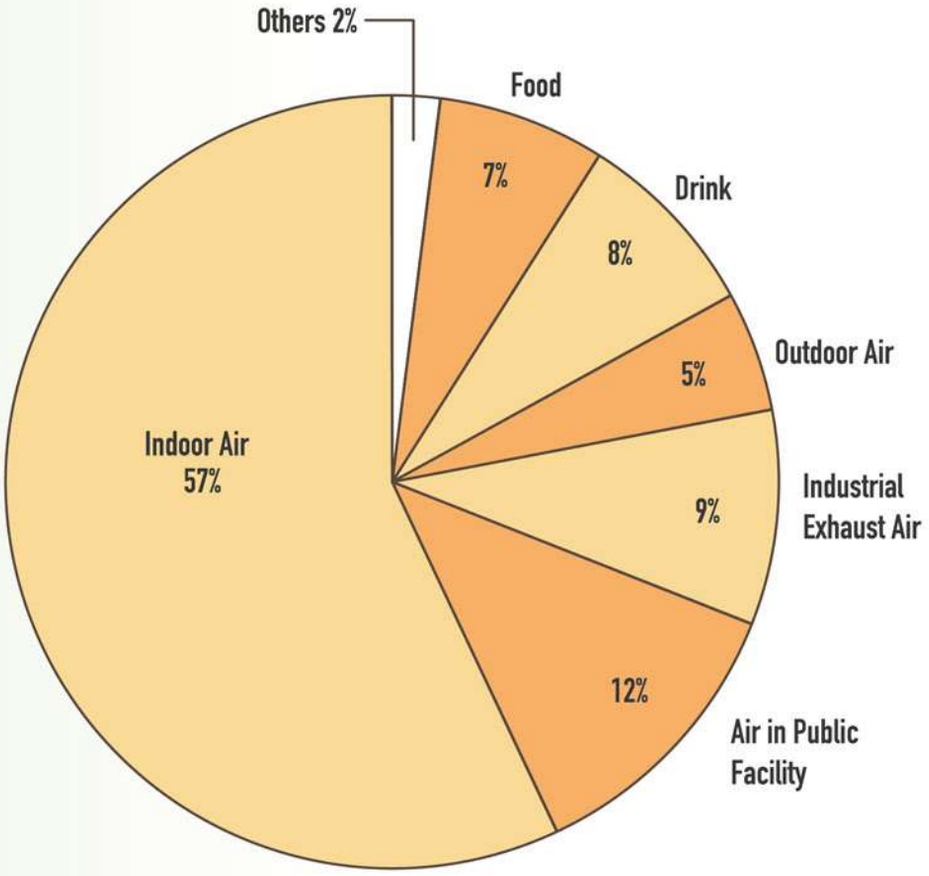


IMPORTANCE OF VENTILATION

Tightly sealed buildings are becoming increasingly common for energy efficiency purpose, reducing energy loss associated with heating and cooling. However, airtight buildings limited ingoing fresh air into the building results in poor indoor quality which adversely affects our health. Adequate ventilation, therefore, plays an essential role in maintaining a healthy living environment.

IMPORTANCE OF INDOOR AIR QUALITY(IAQ)

People spend a large part of time in indoor environment and the cleanliness of the air we breathe in is very important to our health. In airtight houses where windows are usually closed and air-conditioning is used, it is poorly ventilated. The poor indoor air quality leads to the discomfort of living in this housing condition.



Source: Murakami Shuzo,
"Indoor Environments and Air Pollutants"

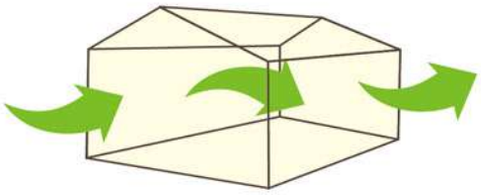
Besides "Sick House Syndrome", insufficient ventilation also affects human's health and aging of building

- Yellow strain on wall caused by tobacco smoking
- Allergic illnesses caused by mold and mite as a result of high humidity
- Discomfort due to smells from toilet and cooking
- Low concentration of oxygen due to lack of fresh air intake
- Building deterioration resulting from condensation and mold

DOWNSIDE OF AIRTIGHT HOUSE

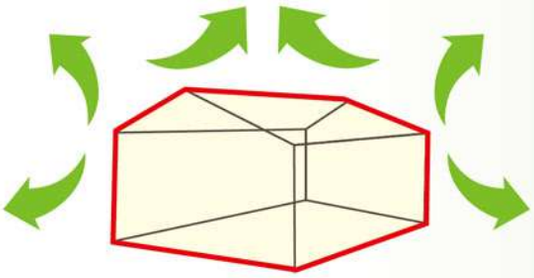
Home Airtightness

Homes designed and built in recent years are more airtight and energy efficient than in the past. To obtain an airtight design, house wraps, newly designed windows and doors, sealing caulks and other insulating materials are used to create a seal for optimum energy efficiency. It results in cost saving of heating and air-conditioning at home, but pollutants retained in airtight buildings can be hazardous to our health and can jeopardize structural integrity.



Older Houses

Natural and wooden building materials are adopted that allow air exchange between interior and exterior

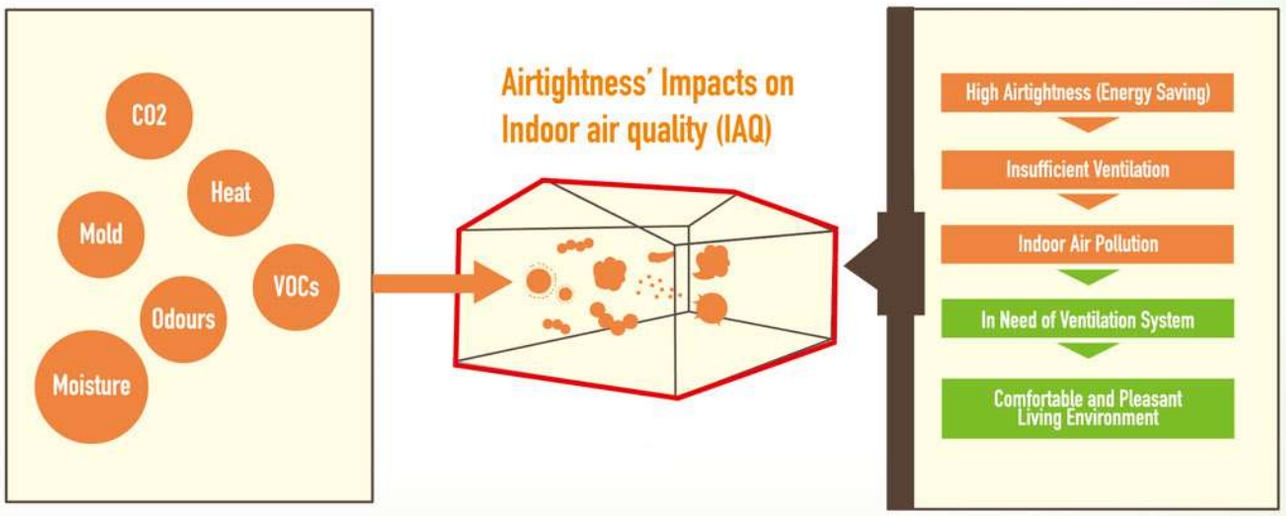


Modern Houses

Chemical made building materials and sashes are employed to ensure high airtightness

Disadvantages of Airtight Buildings

Highly airtight house restricts air ingress from outside that can closely retain the expected indoor temperature for energy saving. However, airtightness also introduces the problems of indoor air quality (IAQ) which may be a cause of sick house syndrome.



AIR PURIFICATION

ENHANCED IAQ

The Energy Recovery Ventilator draws fresh air from outside while stale indoor air is exhausted. With 24-hour continuous ventilation, Indoor Air Quality [IAQ] is enhanced by exhausting out harmful indoor air contaminants.



Pre Filter

Filter outdoor large dust particles and insects

MERV 16 Filter



Filter dust and particles as tiny as 0.3μm

Efficient Filter

High-density purifying filter removal of particles as tiny as 0.3μm

MERV16 Filter



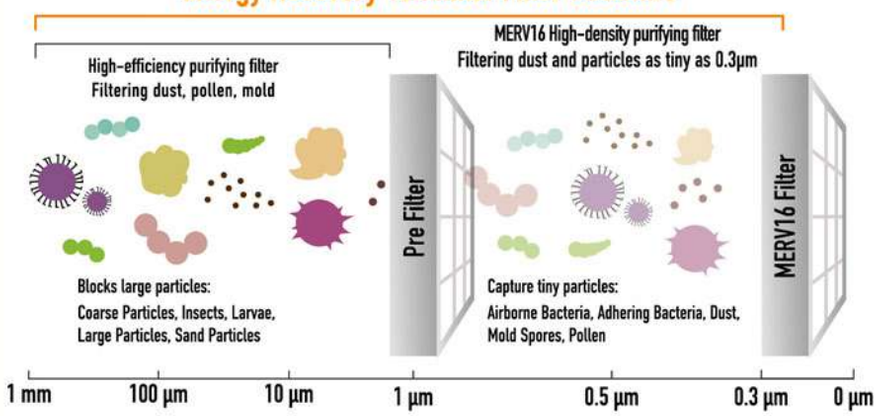
Able to filter particles as tiny as 0.3μm up to

≥95%*

* Tested by using MERV16 filter for model FV-35ZY1, following ANSI/ASHRAE Standard 52.2-2017 [Testing Institution: Blue Heaven Technologies, Test report no. 23-105-1]

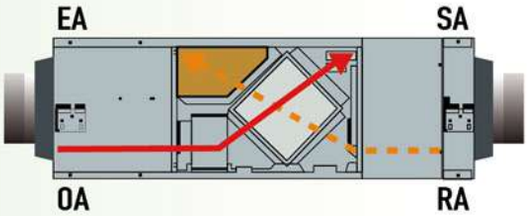
Recommended to change filter every 4-6 months and clean every month

Energy Recovery Ventilator Filter Structure



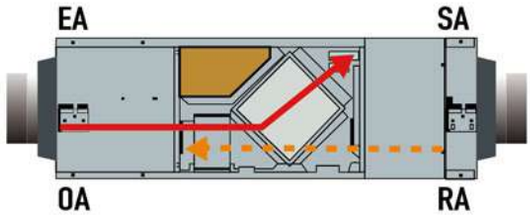
Speedy Bypass Ventilation

Diversion damper is equipped for bypass ventilation. Return airflow (RA) is greater than supply airflow (SA). It allows speedy exhaust of indoor polluted air. By using bypass ventilation during season change, it can be more comfortable and achieve better energy saving.



[Heat Exchange Mode]

- In heat exchange mode, it pre-cools the hot outdoor air before entering the house. Thus, energy is saved while providing fresh air.



[Normal Ventilation Mode]

- Bypass ventilation
- When outdoor air is highly polluted, it is not recommended to use bypass ventilation. It may cause negative pressure and polluted outdoor air may ingress into the houses through the gaps at the doors and windows.

WIDE LINE-UP FOR VARIOUS APPLICATIONS

The latest series of Panasonic ERV consists of a wide line-up to cater different application scenarios.

Smaller Air Volume → Large Air Volume





FV-15ZY1 150 m³/h	FV-25ZY1 250 m³/h	FV-35ZY1 350 m³/h	FV-50ZY1 500 m³/h	FV-65ZY1 650 m³/h	FV-80ZY1 800 m³/h	FV-1KZY1 1000 m³/h	FV-1HZY1 1500 m³/h	FV-2KZY1 2000 m³/h



Individual room | Living room | Villa



Individual room | Dining area | Leisure area | Lobby



Meeting room (small size) | Meeting room (Medium ~ Large size) | Office area



Individual room | Common area

※ Number of unit to install might vary depending on the actual situation

EFFICIENCY

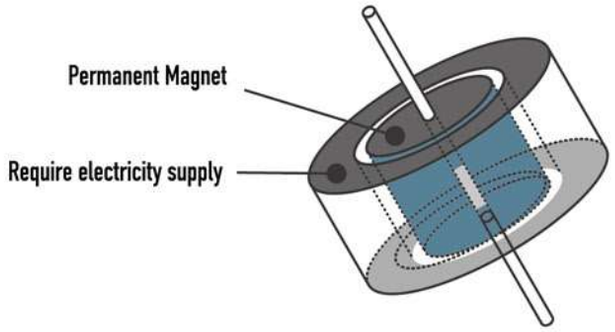
ENERGY AND COST SAVINGS

Motor Efficiency

DC (Direct Current) motor is used which consumes less power, thus achieves energy savings. In addition, the temperature rise of DC motor is lower when compared with AC (Alternating Current) motor, which results in longer life expectancy of DC motor.

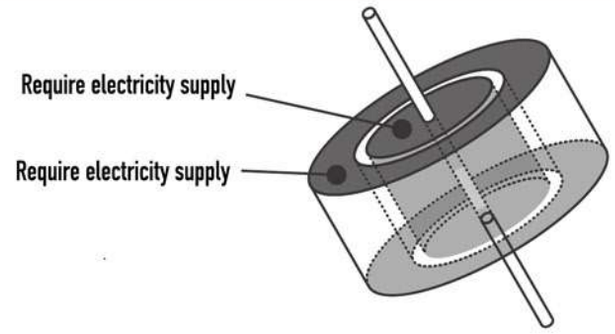
DC Motor

Stator uses electrical magnet while rotor uses permanent magnet



AC Motor

Both stator & rotor uses electrical magnet



Dual DC Motors

Dual DC motors achieve energy savings by over 43%*

Motors	AC Motors	DC Motors	Energy usage
Electricity use (W)	315	180	-43%

* Comparison between DC model (FV-50ZY1) 180W vs AC old model (FY-E50DZ1) 315W

Common Issues with Traditional Ventilation System

One common issue with traditional "air-in-air-out" ventilation system is that huge amount of heating and cooling energy can be lost when indoor air is constantly exhausted out of the building. Little could be done to make up for this energy loss, except keep adjusting the room temperature by the air conditioning equipment. Air conditioning solution may help maintain indoor temperature at tolerable level, but it drives heating and cooling bills much higher than necessary.

Green Ventilation Solution for Green Building

With the adoption of DC motor in the existing energy recovery ventilator line-up, Panasonic is designated to tackle the energy issues found with traditional ventilation system. Panasonic ERV is providing building owners with a cost-effective way to achieve good ventilation while controlling costs incurred by heating and cooling.

Panasonic ERV can achieve high efficiency in air purification and energy saving, making it one of the green ventilation solutions to be implemented in building projects that concern about eco-friendly environment.

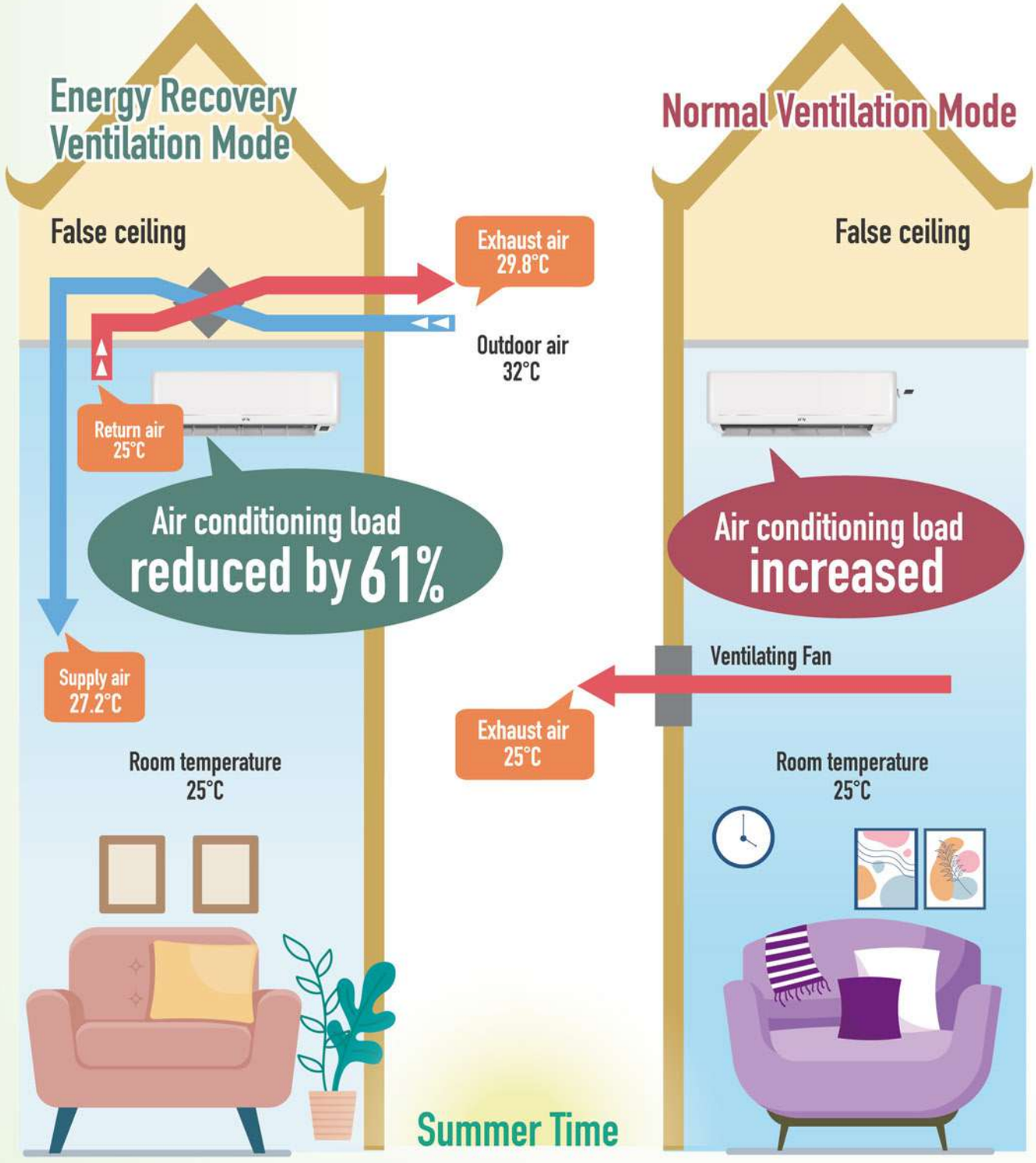


EFFICIENCY

ENERGY AND COST SAVINGS

Energy Efficiency

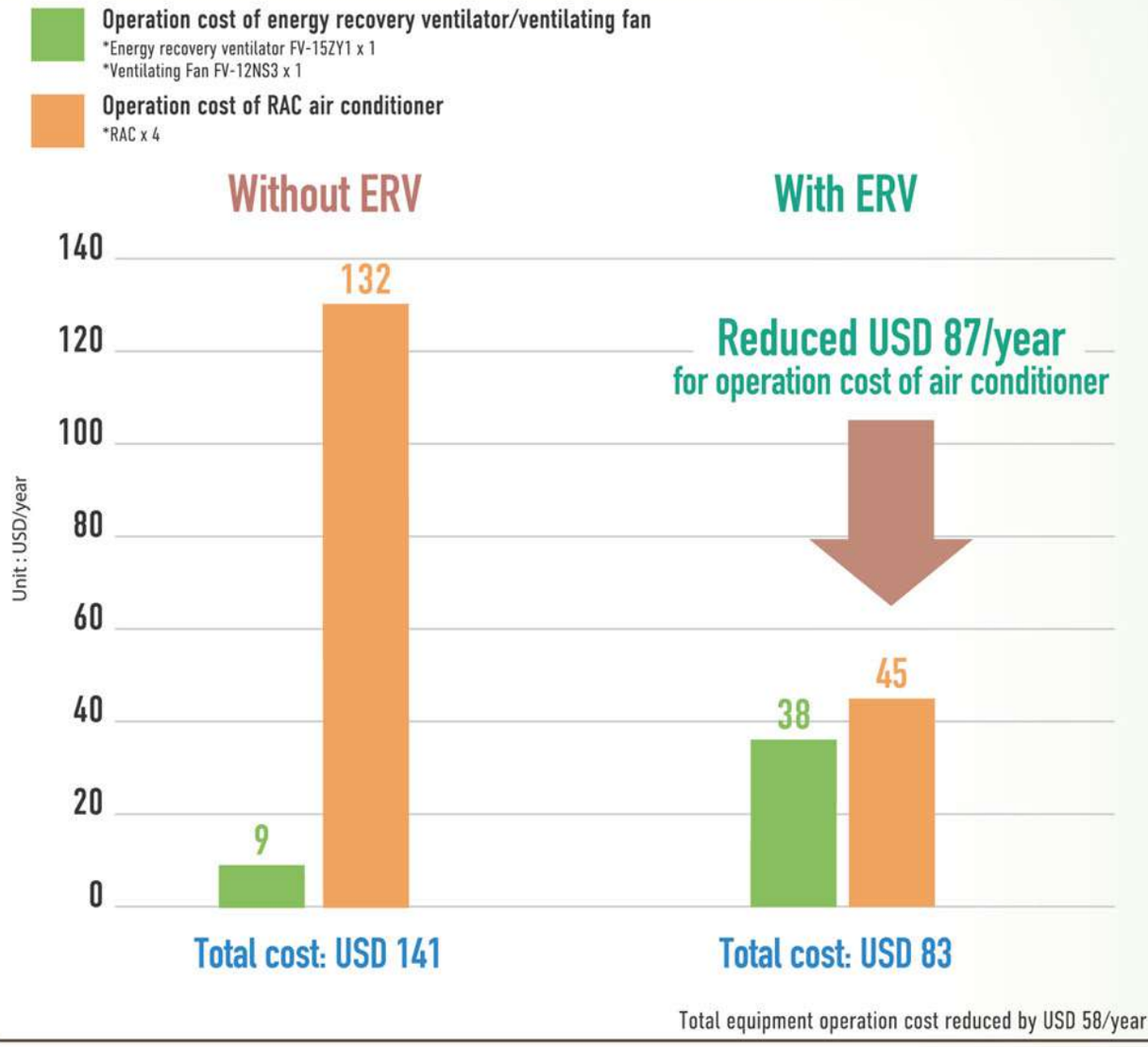
Highly efficient Energy Recovery Ventilator reduces energy loss during ventilation, thus achieves energy saving. [Example: FV-15ZY1] Below is an example in summer. By utilizing indoor return cool air to cool down outdoor air before intake to indoor, the indoor cooling effort is significantly reduced.



Utilize indoor return air to cool down
incoming outdoor air at the heat exchange unit

Cost Efficiency

Operating cost comparison with or without Panasonic Energy Recovery Ventilator



Based on following test condition **Location: Thailand**

- Indoor: Cooling 25°C (RH 50%)
- Outdoor: 32°C (RH 72%)
- Ventilation air volume: 100m² x 3m 0.5 times/hr = 150m³/h
- Operation Time:
  Air Conditioner: 12 hrs/day x 180 days = 2,160 hrs
  Ventilation: 12 hrs/day x 365 days = 4,380 hrs
- Electricity charge (business): USD 0.113/kW.h

RAC air conditioner
Brand: Panasonic
Model: CS-RE12MKA
Power Input: [Cooling] 1.01Kw / [Heating] 1.12Kw
Capacity: [Cooling] 3,009Kcal/h / [Heating] 3,651Kcal/h

Above calculation is based on ventilation load only. Heating load is not included.

Remark: Testing was carried out in a controlled environment.
Actual result might vary.

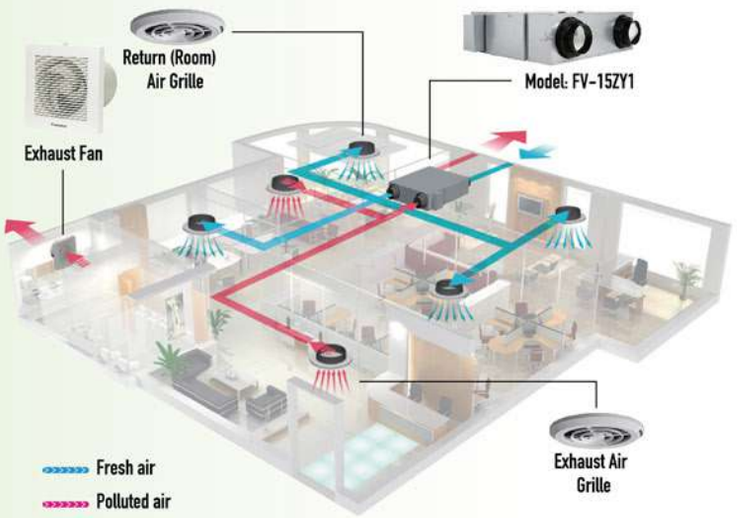
COMFORT

OPTIMUM INDOOR AIR COMFORT

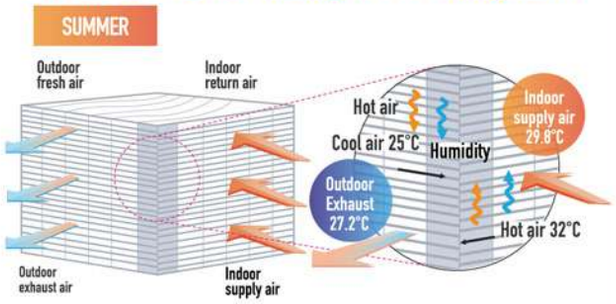
An Energy Recovery Ventilator employs energy recovery technology, which uses balanced airflows and recovers otherwise-expended total energy comprised of heat (sensible energy) and humidity (latent energy). Subsequently, less energy is needed for conditioning while maintaining high-level ventilation.

Thermal Comfort

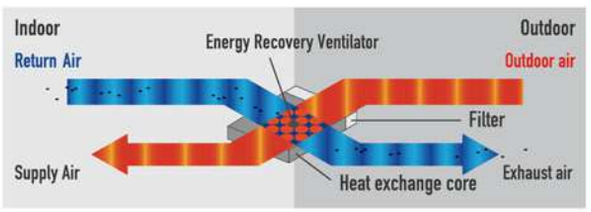
The newly developed Energy Recovery Ventilator can be interlocked with air conditioning system. It offers balance, humidity control and comfort. Indoor occupants get to enjoy fresh air currents while maintaining optimal temperature.



Inside of Heat Exchange Core (diagram)



Principle of Heat Exchange



Easy Installation and Maintenance

Slim Design

Installation has never been easier. With the height of only 450mm, Energy Recovery Ventilator is compact to fit into small spaces.



Flexible Mounting

Compact design and flexible mounting allow for easy installation in various indoor setting. It can be ceiling-mounted or installed upside-down.



Ceiling Mounted | Upside-down Mounted

LCD Control Panel

LCD Control Panel can be mounted on the wall, with a screen displaying circulation mode, airflow, filter maintenance reminder, etc. It offers simplified control buttons for ease of use, all necessary information with a touch of button.



LCD Control Panel (requires separate purchase)

ENERGY RECOVERY VENTILATOR

FV-15ZY1





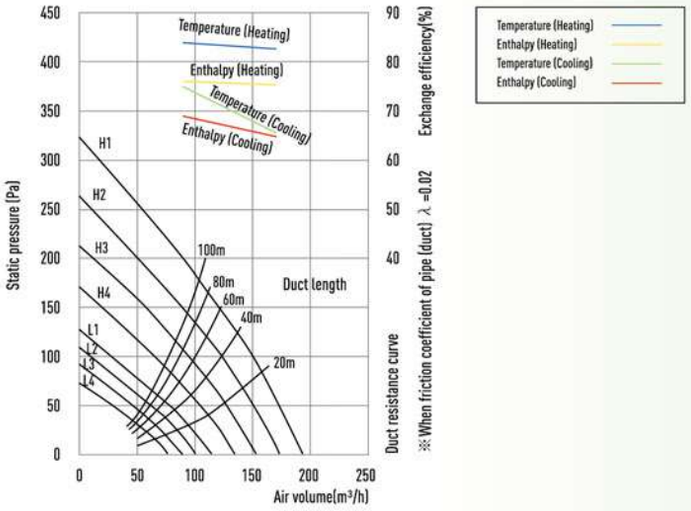
Replacement Filter
Part No.: FV-FP15ZY1
Cleaning period: once per month
Replacement period: every 4 to 6 months

Features

Air Volume up to
150 m³/h

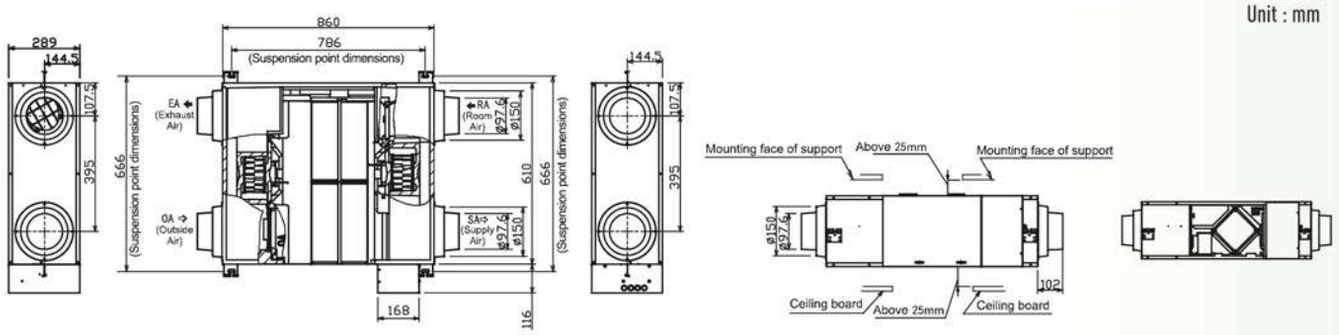
MERV16 Filter	Air-Con Connection	Two Ventilation Modes
High Efficiency	24 Hours Vent	Low Noise

Performance



Dimensions

Unit : mm



Model: FV-15ZY1

Voltage & Hz	Notch	Static pressure (Pa)	Air Volume (m³/h)	Input power (W)	Temperature Exchange Efficiency (%)		Enthalpy Exchange Efficiency (%)		Noise (dB(A))	Applicable duct diameter	Net Weight (kg)
					Cooling	Heating	Cooling	Heating			
220V-50Hz	Hi	100	150	76	68	83	66	76	37	Ø100	23
	Lo	36	90	30	75	84	69	76	29		

1. The input power and exchange efficiency are the values measured under the standard air volume.
2. The above specification are the values measured under the factory set.
3. The power indicated on the name plate is the maximum value under the static pressure of 0 Pa.
4. The noise is measured 1.5 m directly below the center of the energy recovery ventilator. The noise value of the product is measured in a full anechoic chamber. Under actual conditions, due to the impact of ambient sound, the noise value will be greater than the target value. The noise rises by about 1 dB (A) under reverse installation.
5. The air volume in normal ventilation mode is basically the same as the air volume in energy recovery mode.
6. The energy recovery efficiency test should be performed according to the method specified in Appendix 4 of JIS B 8628 (2003). The test environmental conditions should be subject to the winter and summer conditions specified in Table 1 and Table 2 of JIS B 8628 (2017). Other test methods should be subject to JIS B 8628 (2003).

ENERGY RECOVERY VENTILATOR

FV-25ZY1





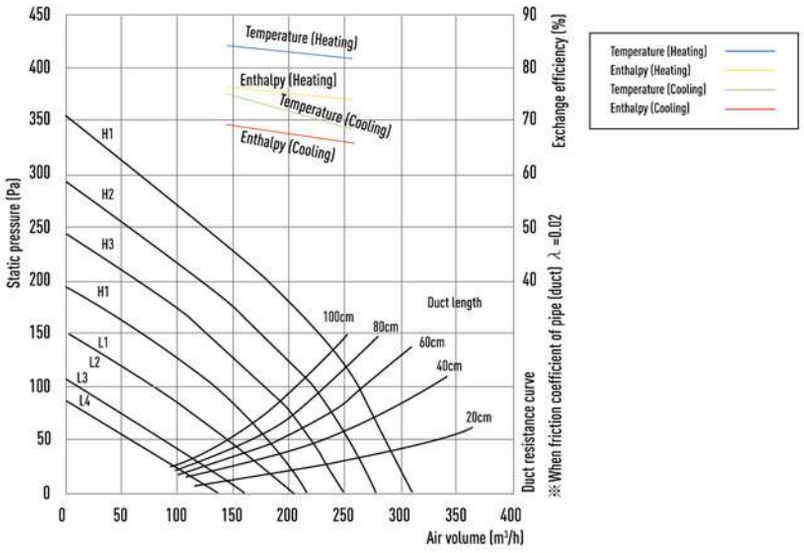
Replacement Filter
Part No.: FV-FP25ZY1
Cleaning period: once per month
Replacement period: every 4 to 6 months

Features

Air Volume up to
250 m³/h

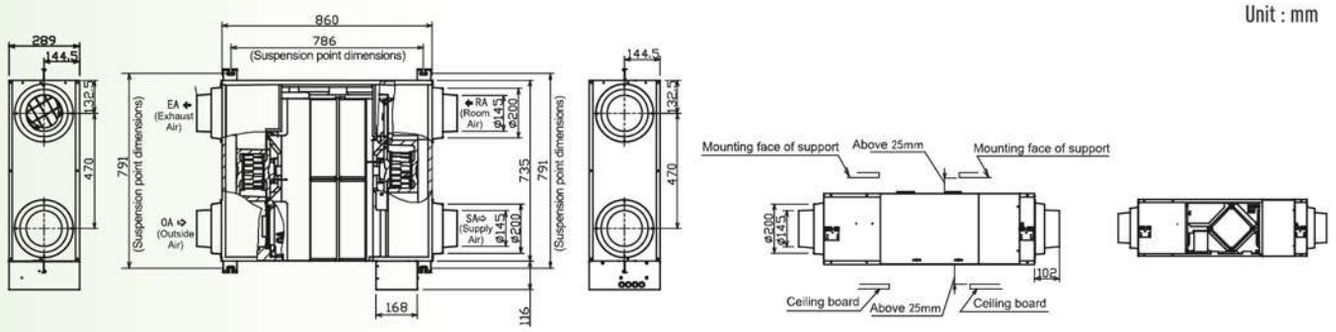
MERV16 Filter	Air-Con Connection	Two Ventilation Modes
High Efficiency	24 Hours Vent	Low Noise

Performance



Dimensions

Unit : mm



Model: FV-25ZY1

Voltage & Hz	Notch	Static pressure (Pa)	Air Volume (m³/h)	Input power (W)	Temperature Exchange Efficiency (%)		Enthalpy Exchange Efficiency (%)		Noise (dB(A))	Applicable duct diameter	Net Weight (kg)
					Cooling	Heating	Cooling	Heating			
220V-50Hz	Hi	120	250	106	69	82	66	74	38	Ø150	27
	Lo	43.5	150	45	75	84	69	76	28		

1. The input power and exchange efficiency are the values measured under the standard air volume.
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ENERGY RECOVERY VENTILATOR

FV-35ZY1





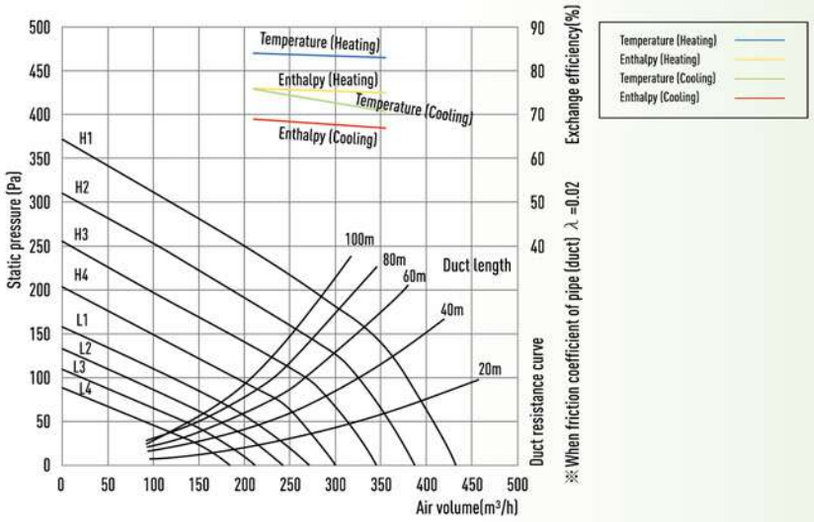
Replacement Filter
Part No.: FV-FP35ZY1
Cleaning period: once per month
Replacement period: every 4 to 6 months

Features

Air Volume up to
350 m³/h

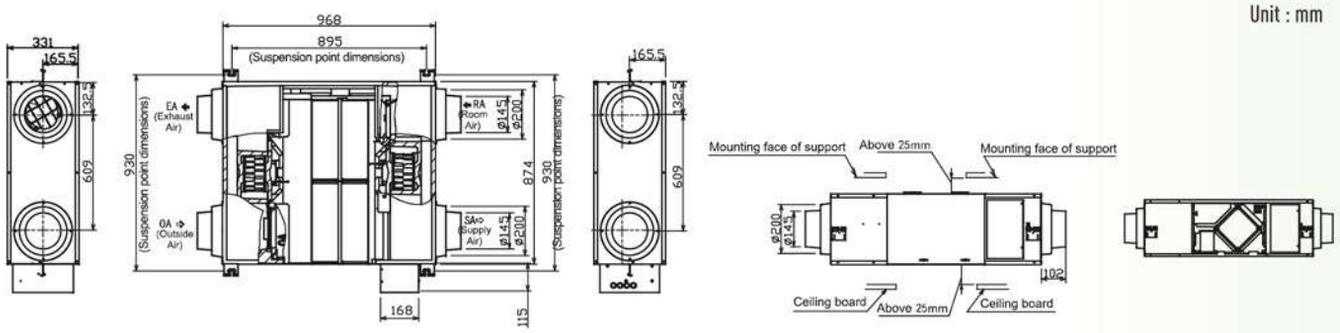
MERV16 Filter	Air-Con Connection	Two Ventilation Modes
High Efficiency	24 Hours Vent	Low Noise

Performance



Dimensions

Unit : mm



Model: FV-35ZY1

Voltage & Hz	Notch	Static pressure (Pa)	Air Volume (m³/h)	Input power (W)	Temperature Exchange Efficiency (%)		Enthalpy Exchange Efficiency (%)		Noise (dB(A))	Applicable duct diameter	Net Weight (kg)
					Cooling	Heating	Cooling	Heating			
220V-50Hz	Hi	140	350	141	71	83	67	75	39	Ø150	37
	Lo	50.5	210	58	76	84	69	76	23		

* 1. The input power and exchange efficiency are the values measured under the standard air volume.
2. The above specification are the values measured under the factory set.
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ENERGY RECOVERY VENTILATOR

FV-50ZY1





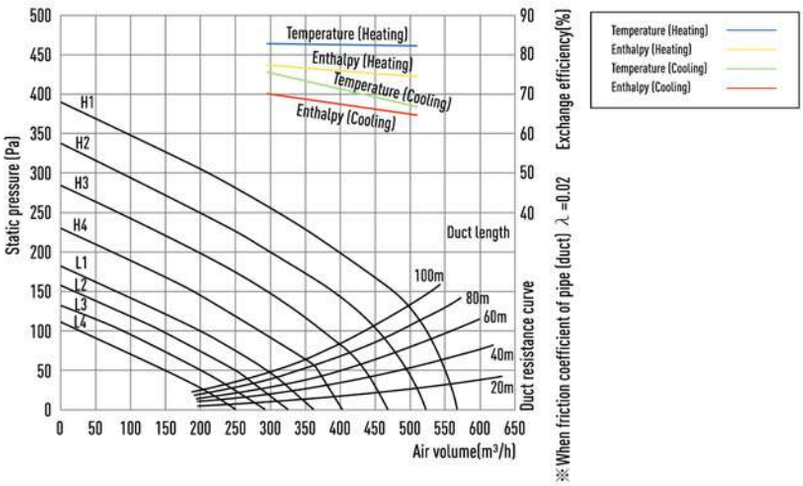
Replacement Filter
Part No.: FV-FP50ZY1
Cleaning period: once per month
Replacement period: every 4 to 6 months

Features

Air Volume up to
500 m³/h

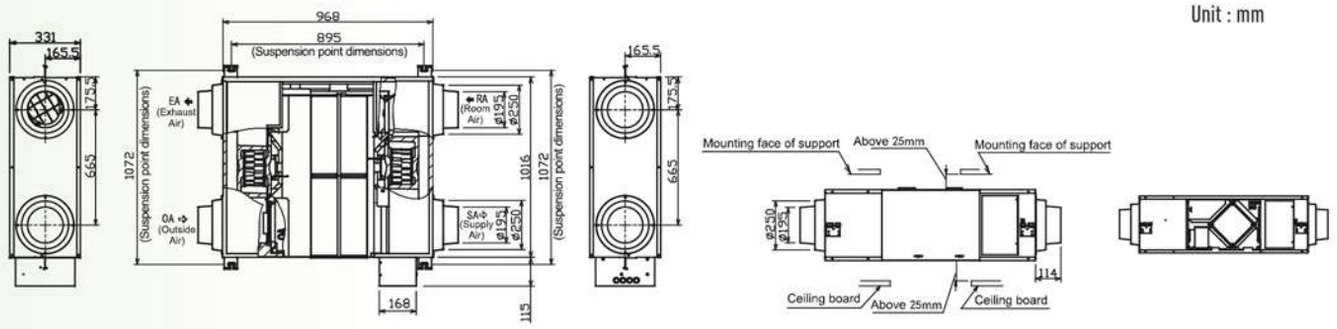
MERV16 Filter	Air-Con Connection	Two Ventilation Modes
High Efficiency	24 Hours Vent	Low Noise

Performance



Dimensions

Unit : mm



Model: FV-50ZY1

Voltage & Hz	Notch	Static pressure (Pa)	Air Volume (m³/h)	Input power (W)	Temperature Exchange Efficiency (%)		Enthalpy Exchange Efficiency (%)		Noise (dB(A))	Applicable duct diameter	Net Weight (kg)
					Cooling	Heating	Cooling	Heating			
220V-50Hz	Hi	130	500	180	65	81	62.5	73	43	Ø200	40
	Lo	47	300	76	74	84	68	76	32		

1. The input power and exchange efficiency are the values measured under the standard air volume.
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ENERGY RECOVERY VENTILATOR

FV-65ZY1





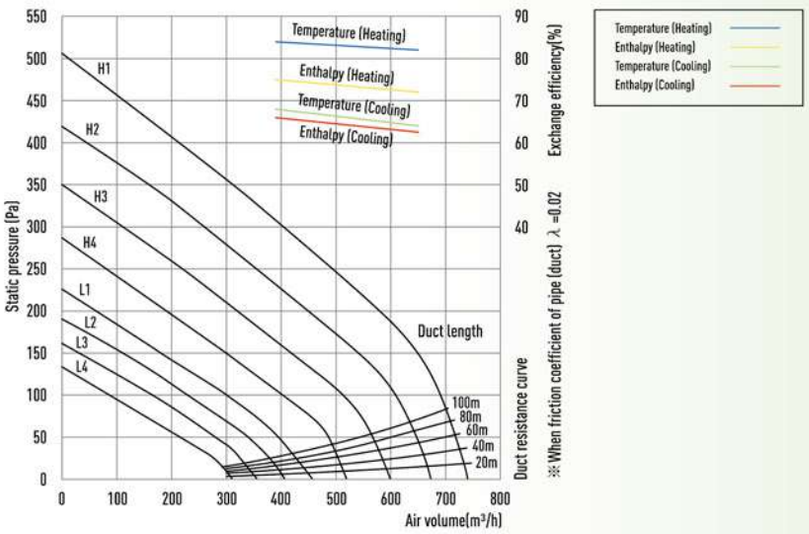
Replacement Filter
Part No.: FV-FP65ZY1
Cleaning period: once per month
Replacement period: every 4 to 6 months

Features

Air Volume up to
650 m³/h

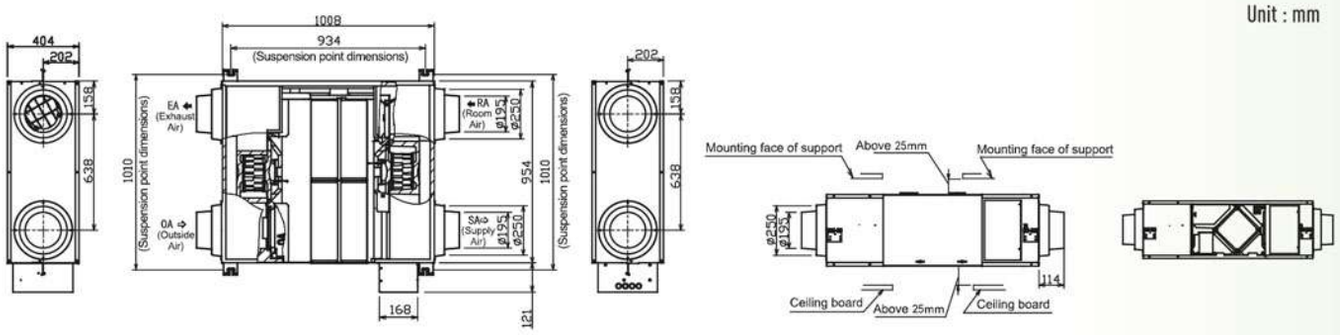
MERV16 Filter	Air-Con Connection	Two Ventilation Modes
High Efficiency	24 Hours Vent	Low Noise

Performance



Dimensions

Unit : mm



Model: FV-65ZY1

Voltage & Hz	Notch	Static pressure (Pa)	Air Volume (m³/h)	Input power (W)	Temperature Exchange Efficiency (%)		Enthalpy Exchange Efficiency (%)		Noise (dB(A))	Applicable duct diameter	Net Weight (kg)
					Cooling	Heating	Cooling	Heating			
220V-50Hz	Hi	150	650	420	64	82	62.5	72	45	Ø200	48
	Lo	54	390	180	68	84	66	75	34		

1. The input power and exchange efficiency are the values measured under the standard air volume.
2. The above specification are the values measured under the factory set.
3. The power indicated on the name plate is the maximum value under the static pressure of 0 Pa.
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5. The air volume in normal ventilation mode is basically the same as the air volume in energy recovery mode.
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ENERGY RECOVERY VENTILATOR

FV-80ZY1





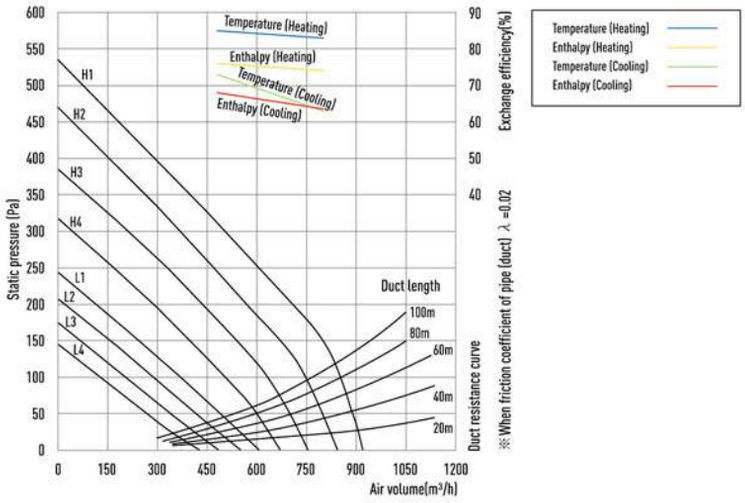
Replacement Filter
Part No.: FV-FP80ZY1
Cleaning period: once per month
Replacement period: every 4 to 6 months

Features

Air Volume up to
800 m³/h

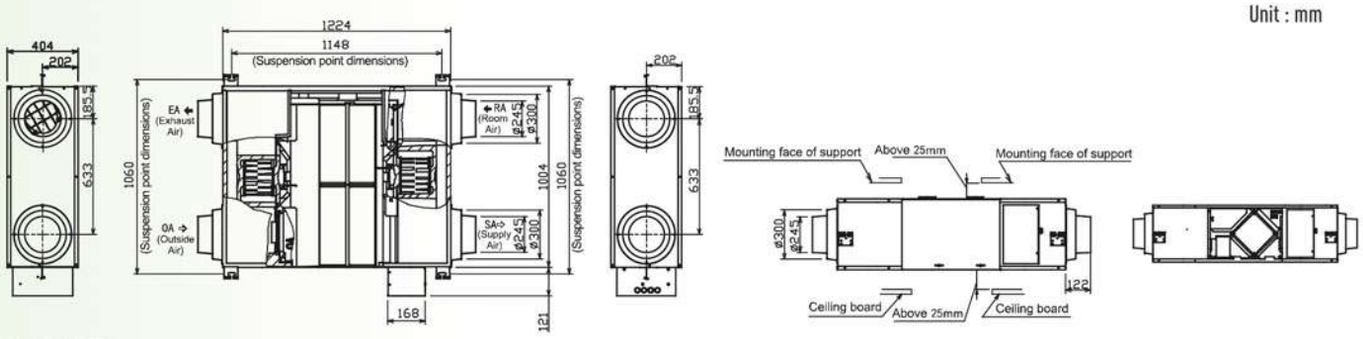
MERV16 Filter	Air-Con Connection	Two Ventilation Modes
High Efficiency	24 Hours Vent	Low Noise

Performance



Dimensions

Unit : mm



Model: FV-80ZY1

Voltage & Hz	Notch	Static pressure (Pa)	Air Volume (m³/h)	Input power (W)	Temperature Exchange Efficiency (%)		Enthalpy Exchange Efficiency (%)		Noise (dB(A))	Applicable duct diameter	Net Weight (kg)
					Cooling	Heating	Cooling	Heating			
220V-50Hz	Hi	150	800	470	63	83	63.5	73	45	Ø250	60
	Lo	54	400	212	73	85	68	75	35		

1. The input power and exchange efficiency are the values measured under the standard air volume.
2. The above specification are the values measured under the factory set.
3. The power indicated on the name plate is the maximum value under the static pressure of 0 Pa.
4. The noise is measured 1.5 m directly below the center of the energy recovery ventilator. The noise value of the product is measured in a full anechoic chamber. Under actual conditions, due to the impact of ambient sound, the noise value will be greater than the target value. The noise rises by about 1 dB (A) under reverse installation.
5. The air volume in normal ventilation mode is basically the same as the air volume in energy recovery mode.
6. The energy recovery efficiency test should be performed according to the method specified in Appendix 4 of JIS B 8628 (2003). The test environmental conditions should be subject to the winter and summer conditions specified in Table 1 and Table 2 of JIS B 8628 (2017). Other test methods should be subject to JIS B 8628 (2003).

ENERGY RECOVERY VENTILATOR

FV-1KZY1





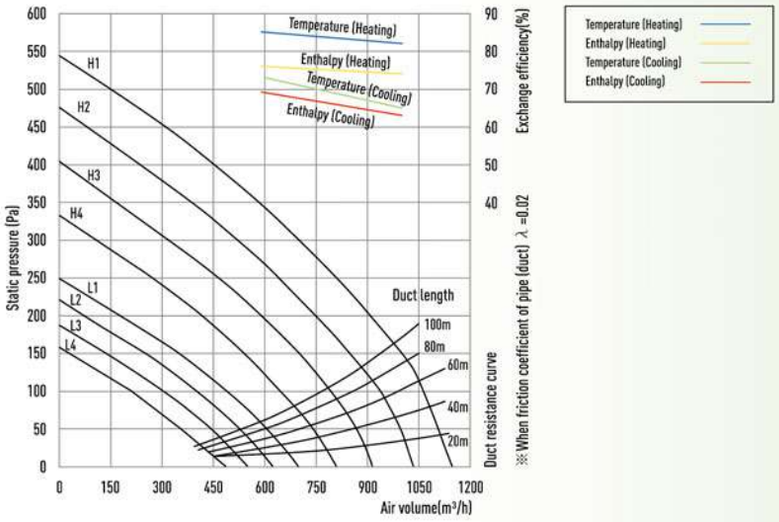
Replacement Filter
Part No.: FV-FP1KZY1
Cleaning period: once per month
Replacement period: every 4 to 6 months

Features

Air Volume up to
1,000 m³/h

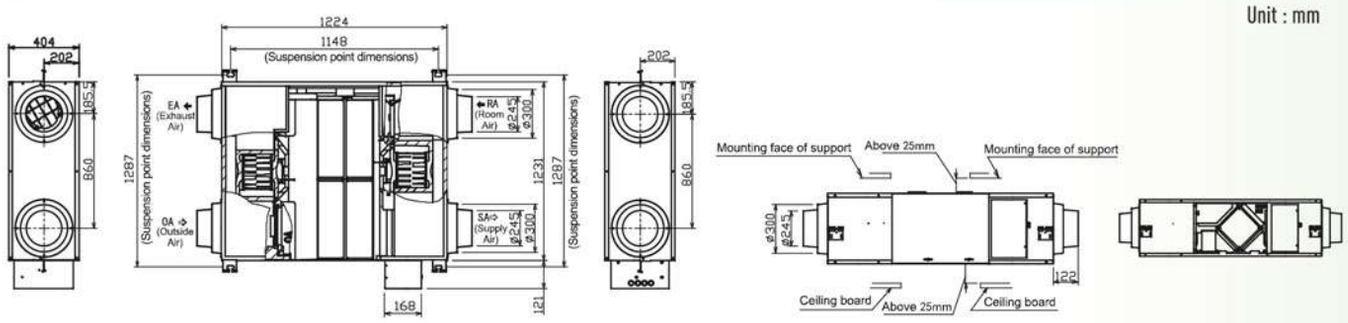
MERV16 Filter	Air-Con Connection	Two Ventilation Modes
High Efficiency	24 Hours Vent	Low Noise

Performance



Dimensions

Unit : mm



Model: FV-1KZY1

Voltage & Hz	Notch	Static pressure (Pa)	Air Volume (m³/h)	Input power (W)	Temperature Exchange Efficiency (%)		Enthalpy Exchange Efficiency (%)		Noise (dB(A))	Applicable duct diameter	Net Weight (kg)
					Cooling	Heating	Cooling	Heating			
220V-50Hz	Hi	150	1000	550	65	82	63	74	46	Ø250	64
	Lo	54	690	235	73	85	69	76	36		

1. The input power and exchange efficiency are the values measured under the standard air volume.
2. The above specification are the values measured under the factory set.
3. The power indicated on the name plate is the maximum value under the static pressure of 0 Pa.
4. The noise is measured 1.5 m directly below the center of the energy recovery ventilator. The noise value of the product is measured in a full anechoic chamber. Under actual conditions, due to the impact of ambient sound, the noise value will be greater than the target value. The noise rises by about 1 dB (A) under reverse installation.
5. The air volume in normal ventilation mode is basically the same as the air volume in energy recovery mode.
6. The energy recovery efficiency test should be performed according to the method specified in Appendix 4 of JIS B 8628 (2003). The test environmental conditions should be subject to the winter and summer conditions specified in Table 1 and Table 2 of JIS B 8628 (2017). Other test methods should be subject to JIS B 8628 (2003).

ENERGY RECOVERY VENTILATOR

FV-1HZY1





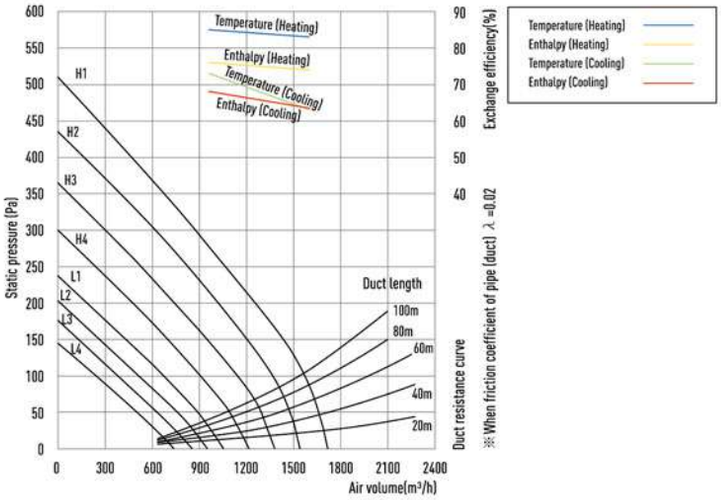
Replacement Filter
Part No.: FV-FP80ZY1 (2 sets are used each time)
Cleaning period: once per month
Replacement period: every 4 to 6 months

Features

Air Volume up to
1,500 m³/h

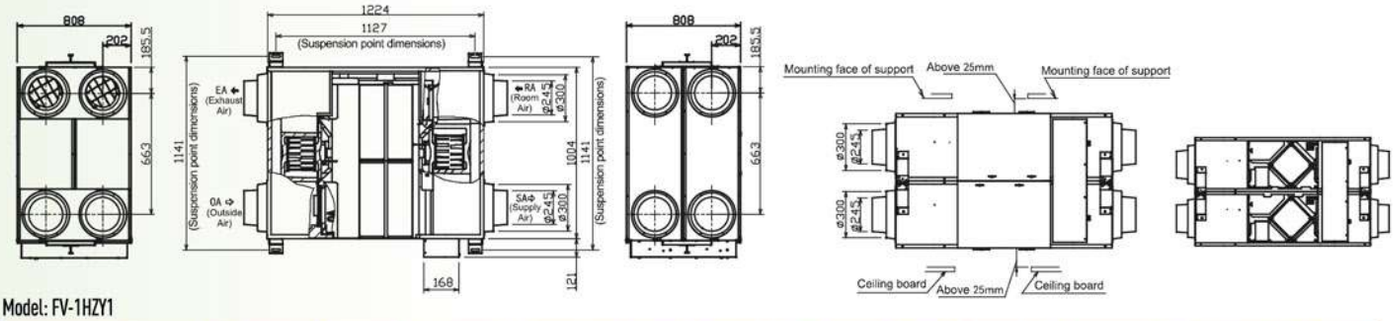
MERV16 Filter	Air-Con Connection	Two Ventilation Modes
High Efficiency	24 Hours Vent	Low Noise

Performance



Dimensions

Unit : mm



Model: FV-1HZY1

Voltage & Hz	Notch	Static pressure (Pa)	Air Volume (m³/h)	Input power (W)	Temperature Exchange Efficiency (%)		Enthalpy Exchange Efficiency (%)		Noise (dB(A))	Applicable duct diameter	Net Weight (kg)
					Cooling	Heating	Cooling	Heating			
220V-50Hz	Hi	130	1500	940	63	83	63.5	73	49	Ø250	116
	Lo	48	900	430	73	85	68	75	41.5		

1. The input power and exchange efficiency are the values measured under the standard air volume.
2. The above specification are the values measured under the factory set.
3. The power indicated on the name plate is the maximum value under the static pressure of 0 Pa.
4. The noise is measured 1.5 m directly below the center of the energy recovery ventilator. The noise value of the product is measured in a full anechoic chamber. Under actual conditions, due to the impact of ambient sound, the noise value will be greater than the target value. The noise rises by about 1 dB (A) under reverse installation.
5. The air volume in normal ventilation mode is basically the same as the air volume in energy recovery mode.
6. The energy recovery efficiency test should be performed according to the method specified in Appendix 4 of JIS B 8628 (2003). The test environmental conditions should be subject to the winter and summer conditions specified in Table 1 and Table 2 of JIS B 8628 (2017). Other test methods should be subject to JIS B 8628 (2003).

ENERGY RECOVERY VENTILATOR

FV-2KZY1





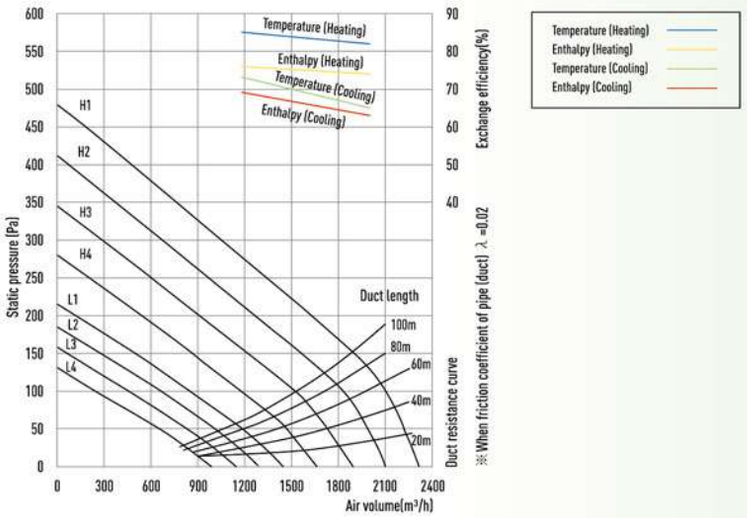
Replacement Filter
Part No.: FV-FP1KZY1 (2 sets are used each time)
Cleaning period: once per month
Replacement period: every 4 to 6 months

Features

Air Volume up to
2,000 m³/h

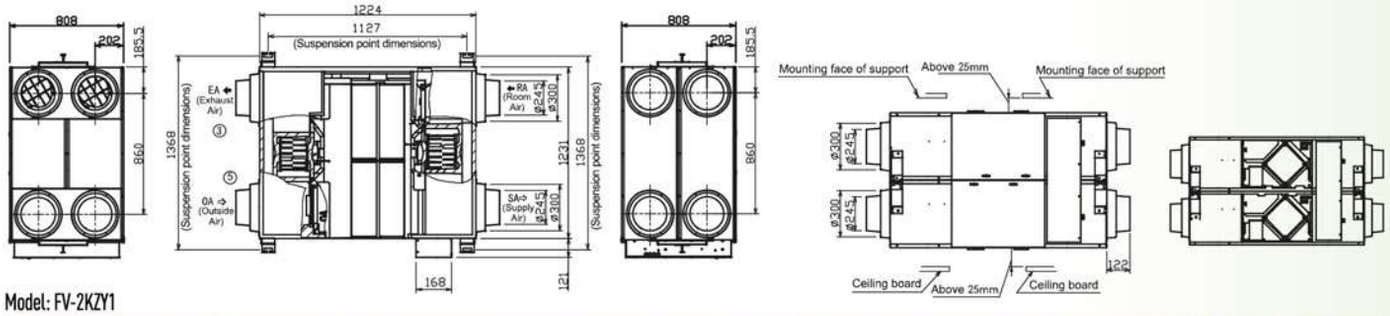
MERV16 Filter	Air-Con Connection	Two Ventilation Modes
High Efficiency	24 Hours Vent	Low Noise

Performance



Dimensions

Unit : mm



Model: FV-2KZY1

Voltage & Hz	Notch	Static pressure (Pa)	Air Volume (m³/h)	Input power (W)	Temperature Exchange Efficiency (%)		Enthalpy Exchange Efficiency (%)		Noise (dB(A))	Applicable duct diameter	Net Weight (kg)
					Cooling	Heating	Cooling	Heating			
220V-50Hz	Hi	130	2000	1100	65	82	63	74	51	Ø250	139
	Lo	48	1200	490	73	85	69	76	43.5		

1. The input power and exchange efficiency are the values measured under the standard air volume.
2. The above specification are the values measured under the factory set.
3. The power indicated on the name plate is the maximum value under the static pressure of 0 Pa.
4. The noise is measured 1.5 m directly below the center of the energy recovery ventilator. The noise value of the product is measured in a full anechoic chamber. Under actual conditions, due to the impact of ambient sound, the noise value will be greater than the target value. The noise rises by about 1 dB (A) under reverse installation.
5. The air volume in normal ventilation mode is basically the same as the air volume in energy recovery mode.
6. The energy recovery efficiency test should be performed according to the method specified in Appendix 4 of JIS B 8628 (2003). The test environmental conditions should be subject to the winter and summer conditions specified in Table 1 and Table 2 of JIS B 8628 (2017). Other test methods should be subject to JIS B 8628 (2003).

ACCESSORY

Pipe Hood



With Net

FV-MGX100P
FV-MGX150P



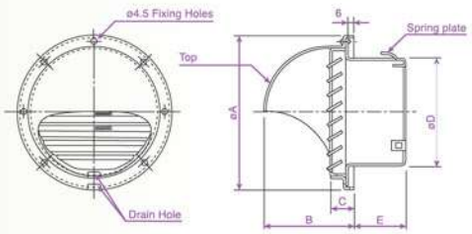
Without Net

FV-MGX100P
FV-MGX150P

Features

- High strength - adopt 0.5mm thickness SUS 304 stainless steel
- Excellent anti-rust capability – hood part coated with metallic silver paint to prevent oxidation of material
- Easy installation – 3pcs of spring clip to facilitate duct / pipe connection
- 2.5mm x 2.5mm net to keep out ingress of small particles and insects from outside (FV-MGX100P & FV-MGX150P)
- It is recommended to use pipe hood with net at intake terminal while without net at exhaust

Dimensions



Unit : mm

Model No.	A	B	C	D	E
FV-MGX100P	141	79	20	97	48
FV-MGX150P	190	106	23	147	53
FV-MGX100P	141	79	20	97	48
FV-MGX150P	190	106	23	147	53

Vent Cap



With Net

FV-VGX100P
FV-VGX150P



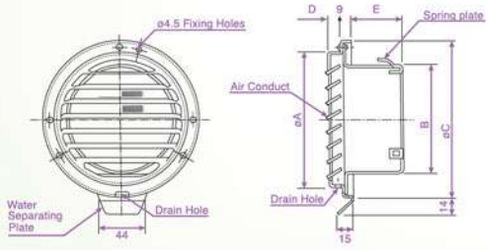
Without Net

FV-VGX100P
FV-VGX150P

Features

- High strength - adopt 0.5mm thickness SUS 304 stainless steel
- Easy installation – 3pcs of spring clip to facilitate duct / pipe connection
- 2.5mm x 2.5mm net to keep out ingress of small particles and insects from outside (FV-VGX100P & FV-VGX150P)
- It is recommended to use vent cap with net at intake terminal while without net at exhaust

Dimensions



Unit : mm

Model No.	A	B	C	D	E
FV-VGX100P	120	97	145	13	47
FV-VGX150P	169	147	195	18	52
FV-VGX100P	120	97	145	13	47
FV-VGX150P	169	147	195	18	52

ACCESSORY

Control Panel

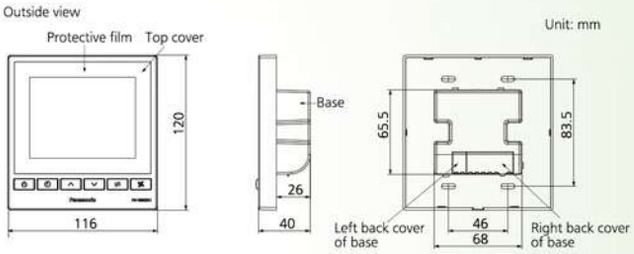


FV-SWGR1

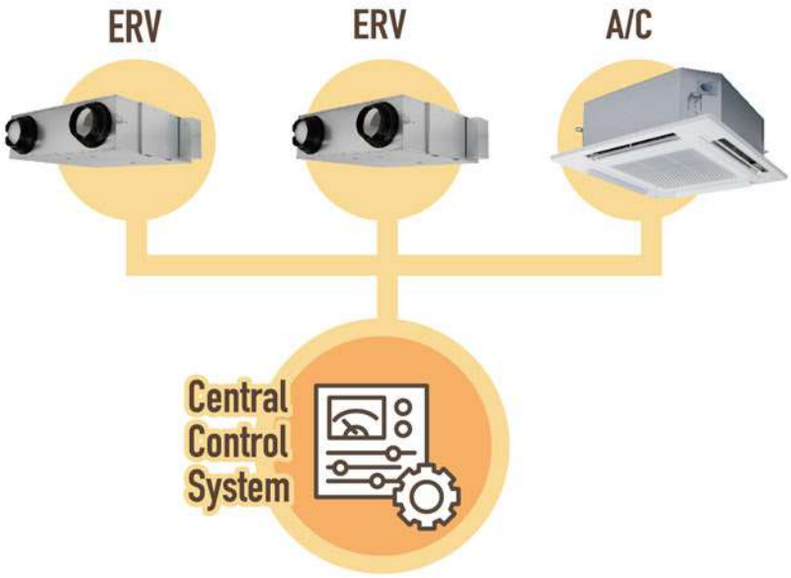
Features

Voltage: 220V
Rated Wattage: 2W
Dimension: 116mm x 120mm
Weight: 0.26kg
LCD Panel
Switch Button between heat exchange and ventilation

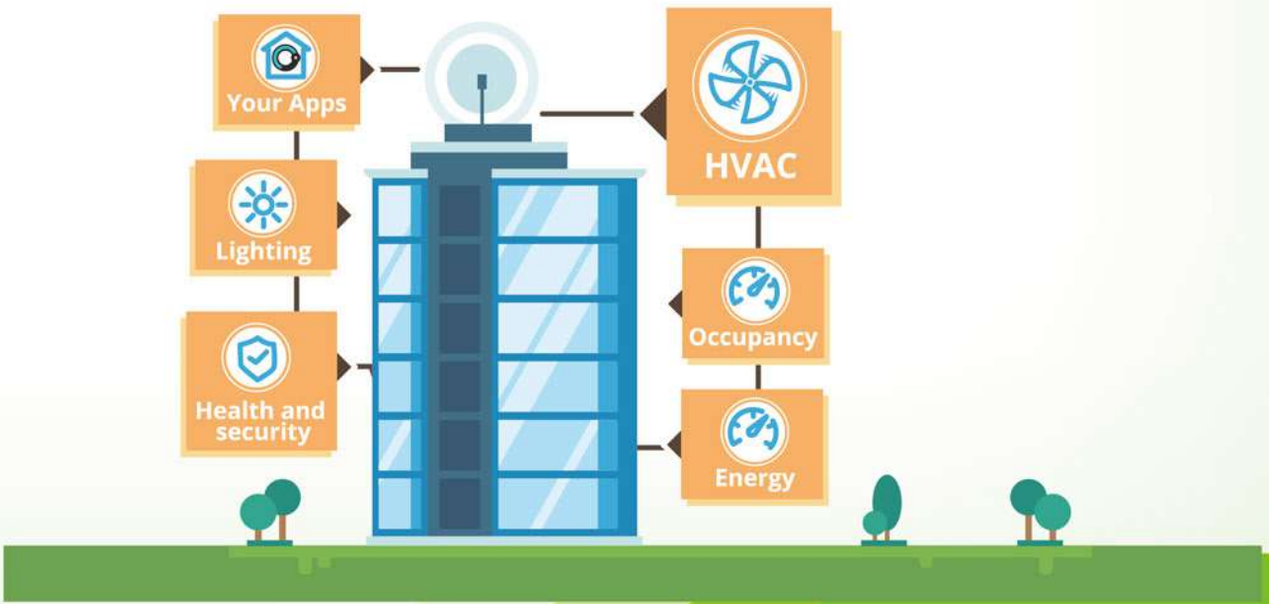
Dimensions



The control panel has built-in RS485, supports communication with the BMS (Building Management System), allowing interlocking between the ERV and the Air Conditioning system through non-voltage contact.



Common Components in BMS (Building Management System)



Panasonic®

Panasonic Ecology Systems Co., Ltd.
https://www.peshk.panasonic.hk/

- Specifications are subject to change without prior notice.
- Actual colors may vary slightly from those shown.

CATALOG NO: P-THERV002
09.2024