Energy Recovery Ventilator
YOUR HEALTHIER CHOICE

Specification

<table>
<thead>
<tr>
<th>Model No</th>
<th>Voltage</th>
<th>Frequency</th>
<th>CFM at Static Pressure (inches of H2O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E25DZUA</td>
<td>208V-240V</td>
<td>60Hz</td>
<td>183 172 160 156 143 131 126 86 14 7 2 1</td>
</tr>
<tr>
<td>E35DZUA</td>
<td>208V-240V</td>
<td>60Hz</td>
<td>258 250 247 237 225 211 174 146 90 6 1</td>
</tr>
<tr>
<td>E50DZUA</td>
<td>208V-240V</td>
<td>60Hz</td>
<td>329 330 320 310 290 261 230 188 124 82 1</td>
</tr>
</tbody>
</table>

- Performance is certified for installation type C or ductless (Register). Outdoor air.
- Static (SFM) shown in nominal. Performance is based on actual supply of air.
- Performance ratings do not include the effects of superheated air.
- Performance ratings are based on test conditions of 59°F (15°C) supply air.
- CFM ratings are for gross supply airflow and do not apply to net supply airflow.
- Specifications are subject to change without prior notice.
- Actual colors may vary slightly from those shown.

Main Body

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>600 x 750 x 220</th>
<th>600 x 920 x 200</th>
<th>600 x 1090 x 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>30</td>
<td>30</td>
<td>65</td>
</tr>
<tr>
<td>OA Side Duct Diameter</td>
<td>ø150</td>
<td>ø200</td>
<td></td>
</tr>
<tr>
<td>Duct Diameter</td>
<td>RA/SA/SA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Up-Side Down Installation

- Yes

Filter Box

- Duct Diameter | ø200 |

With energy recovery ventilator, nature is inside your home.

KDK Company, Division of PES
4017, Takaki-cho, Kasugai, Aichi, Japan
http://kdk.jp

By using the energy recovery ventilator, outdoor air will be filtered and ventilated indoors. It will also effectively filter the indoor polluted air to outdoors. "Driver" Breathe is achieved and you and your family’s health are taken care of.
There is a significant increase in the Energy consumption demand. The demand is expected to take up to 13.9% of global energy consumption in 2040 for Middle East and Africa region. Rapid rise of oil consumption will exceed the oil & LNG production in the future. If electricity demand is growing at a rate of 5-7 percent a year, it is expected to import oil in 2030. Air-conditioning has the highest proportion of domestic electricity consumption which over 70%.

**Worldwide Energy consumption demand**

- **Asia**
  - 30%
  - 30%
- **Europe**
  - 20%
  - 20%
- **North America**
  - 10%
  - 10%
- **South America**
  - 5%
  - 5%
- **Africa**
  - 3%
  - 3%
- **Middle East**
  - 2%
  - 2%

**Energy Conservation Demand**

- **Oil Production**
  - Export
  - 60%
  - 40%
- **Domestic Consumption**
  - 4%
  - 4%
- **Electricity**
  - 10%
  - 10%
- **Lighting**
  - 20%
  - 20%

**Energy Saving Label Regulation**

Significant energy saving could be achieved by using more efficient equipment which can reduce the emission of greenhouse gases and clean air pollutants from power plants. To further reduce the power demand in energy efficient appliances and new appliance standards on energy saving. Energy Efficiency Labelling Systems have been introduced.

**New Energy Saving Regulation**

- **Jordan**
  - 2015
- **South Africa**
  - 2015
- **Iran**
  - 2015
- **Saudi Arabia**
  - 2015

**New Energy Saving Regulation:**

- **India**
  - 2015
- **Egypt**
  - 2015
- **South Africa**
  - 2015
- **Saudi Arabia**
  - 2015

**New Energy Saving Regulation**

- **Global**
  - 2015
- **Regional**
  - 2015
- **National**
  - 2015

**PM2.5 on health effects:**

- Easy to penetrate the thoracic cavity of the respiratory system.
- Respiratory and cardiovascular morbidity increases, such as aggravation of asthma, respiratory symptoms.
- Increases the mortality caused by cardiovascular and respiratory diseases and lung cancer.
Importance of Indoor Air Quality

KDK Energy Recovery Ventilator (ERV) ensures proper indoor air circulation and conducts proper exchange between air indoors and outdoors.

In recent years, homes are being built more airtight than in the past. Highly airtight houses restrict air leakage that can closely retain the expected indoor temperature for energy saving. However, it also brings out the problem of indoor air quality (IAQ). Inadequate ventilation can increase indoor pollutant levels by trapping air pollutants inside.

Influence of Insufficient Ventilation

Health effects from indoor air pollutants may be experienced soon after exposure or, possibly, years later. Some symptoms may show up shortly which include irritation of the eyes, nose, and throat; headaches; dizziness; and fatigue. Other long-term health effects which include some respiratory diseases, heart diseases, and cancer, can be severely debilitating or fatal.

24-hours Whole House Ventilation

“24-hour ventilation” targets to the whole residence, focusing on general living area such as living room, dining room, bedrooms, study room, and guest rooms. It would run continuously with gentle extraction over 24-hour period. Sources, interval and amount of those unpleasant pollutants are often unclear, thus 24-hour ventilation is necessary, and 0.5 air change per hour is recommended.

Types of Ventilation

There are 2 methods of ventilation, Natural Ventilation and Mechanical Ventilation. Mechanical Ventilation is also divided into First Type, Second Type and Third Type Ventilation generally.

- Natural Ventilation
  - Exhaust: Mechanical
  - Intake: Natural

- Mechanical Ventilation
  - First Type
    - Exhaust: Mechanical
    - Intake: Natural
    - Provides most reliable ventilation and easy control at low cost
    - Able to achieve stable ventilation in the houses with low airtightness

- Mechanical Ventilation
  - Second Type
    - Exhaust: Mechanical
    - Intake: Natural
    - Suitable for apartment with steel and concrete structure in which only little condensation due to air leaking through the walls during winter

- Mechanical Ventilation
  - Third Type
    - Exhaust: Mechanical
    - Intake: Natural
    - Ventilation plan may be at low cost. It should be aware that planned ventilation may not work effectively in low airtight houses

24-hour Ventilation Vs Spot Ventilation

“24-hour Ventilation” brings in fresh air and removes polluted air from the house constantly over 24-hour period.

- 24-hour Ventilation
  - 24-hour Operation
  - Low Air Volume
  - Slow
  - Air Change Per Hour = 0.5

“Spot Ventilation” focuses on removal of concentrated pollutants directly from the sources, such as smoke and smell from cooking.

- Spot Ventilation
  - Localized
  - Powerful Air Volume
  - Fast
  - Air Change Per Hour depends on location
    - e.g. bathroom = 5

Indoor air is polluted by cooking odors or cigarette smoke.
Reduce Energy Consumption

KDK Energy Recovery Ventilator is equipped with a heat-exchanging element. When outdoor fresh air and indoor foul air passes through the energy recovery element, the temperature is exchanged through air flow and heat conduction of different temperatures at both ends of the heat transfer sheets. Meanwhile, humidity exchange occurs from high humidity to low humidity as moisture is transferred through difference in pressure of water vapor.

Inside of Heat Exchange Core (diagram)

Principle of Heat Exchange

Energy Recovery Ventilator

Heat exchange core

Exhaust

Inside indoor

Outdoor air

Filter

In summer, the indoor cool air discharged can be used to precool outdoor warm air before it gets delivered indoor and so reduces the loss of cool air.

Cool and Dry Air

ERV core

Indoor

Hot and Humid Air

ERV core

ERV core

Outdoor

Hot and Humid Air

ERV core

ERV core

Cool and Dry Air

Winter

Whereas in winter, indoor warm air discharged can be used to preheat outdoor cool air before it is released indoor and so reduces the loss of warm air.
Filter Box designed for Middle East
Bring clean air to your life

KDK filter box is part of the ERV which designed to make the indoor spaces insect free, dustproof and pollen free. Equipped with filter box, fresh air can circulate and refresh the household. There are two filters - Primary and PM2.5 filter. First, primary filter will filter big particles such as sand, insect. The tiny and invisible particles can be trapped by PM2.5 filter. With two layers of filters, ERV can bring clean, fresh and comfortable air to your house.

**Field test result in KSA:**
When sand dust disperses, 2-10 micrometer particles are increased. KDK ERV can cooperate with filter box which is designed for Middle East environment.

**Dust Polluted Air in Riyadg**
Comparison of the particle size distribution of air dust (At a House in Riyadg)

**Ignition Loss Test**
large particles can be effectively trapped by the filter, there are many pollutant can be obtained by filters.

### Filter Box

**Filter Box Unit**

**Outside Air Filter**
Recommended to change every 2-4 month

**Filter - It can filter PM2.5 and PM10**

<table>
<thead>
<tr>
<th>Model</th>
<th>Air Volume</th>
<th>PM2.5</th>
<th>PM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>E5G02UA</td>
<td>250</td>
<td>96%</td>
<td>98.2%</td>
</tr>
<tr>
<td>E5G02UA</td>
<td>350</td>
<td>99%</td>
<td>99.8%</td>
</tr>
<tr>
<td>E5G02UA</td>
<td>500</td>
<td>99%</td>
<td>99.8%</td>
</tr>
</tbody>
</table>

**Dust Polluted Air in Riyadg**

Comparison of the particle size distribution of air dust (At a House in Riyadg)

**Field test result in KSA:**
When sand dust disperses, 2-10 micrometer particles are increased.
KDK ERV can cooperate with filter box which is designed for Middle East environment.

**Ignition Loss Test**
large particles can be effectively trapped by the filter, there are many pollutant can be obtained by filters.

<table>
<thead>
<tr>
<th>Model</th>
<th>Collection amount (g)</th>
<th>Moisture (%)</th>
<th>Inorganic matter (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Pre-filter</td>
<td>13</td>
<td>2.5</td>
<td>60.7</td>
</tr>
<tr>
<td>PM 2.5 Filter</td>
<td>2.5</td>
<td>3.0</td>
<td>61.7</td>
</tr>
</tbody>
</table>

*Test Period: 2014/11/06-2014/12/15 Test Filter: FY-FDG02C
Product Specification

KDK Company, Division of PES and Panasonic Ecology Systems Guangdong Co., Ltd. certify that the ETV model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

No. | Part name     | Qty | Material                              |
----|---------------|-----|---------------------------------------|
 1  | Frame         | 1   | Galvanized Steel Sheet                |
 2  | Adapter       | 4   | ABS                                   |
 3  | Impeller      | 2   | PP                                    |
 4  | Fan Motor     | 1   | /                                     |
 5  | Heat Exchange Core | 1 | Special Paper and Resin               |
 6  | Indoor Filter | 1   | /                                     |
 7  | Ceiling Suspension | 4 | Galvanized Steel Sheet                |
 8  | Switch Box    | 1   | Galvanized Steel Sheet                |
 9  | Filter Box Unit |    | /                                     |

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----|---------------|-----|---------------------------------------|
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 2  | Adapter       | 4   | ABS                                   |
 3  | Impeller      | 2   | PP                                    |
 4  | Fan Motor     | 1   | /                                     |
 5  | Heat Exchange Core | 1 | Special Paper and Resin               |
 6  | Indoor Filter | 1   | /                                     |
 7  | Ceiling Suspension | 4 | Galvanized Steel Sheet                |
 8  | Switch Box    | 1   | Galvanized Steel Sheet                |
 9  | Filter Box Unit |    | /                                     |

Product Dimension

UNIT: mm

Specification

KDK Energy Recovery Ventilator Catalogue (K-AMCA006) - P9

Size: 210mm x 297mm

KDK Energy Recovery Ventilator Catalogue (K-AMCA006) - P10

Size: 210mm x 297mm
Product Specification

EB50DZUA

<table>
<thead>
<tr>
<th>No.</th>
<th>Part name</th>
<th>Qty</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frame</td>
<td>1</td>
<td>Galvanized Steel Sheet</td>
</tr>
<tr>
<td>2</td>
<td>Adapter</td>
<td>4</td>
<td>AIS</td>
</tr>
<tr>
<td>3</td>
<td>Impeller</td>
<td>2</td>
<td>PP</td>
</tr>
<tr>
<td>4</td>
<td>Fan Motor</td>
<td>1</td>
<td>/</td>
</tr>
<tr>
<td>5</td>
<td>Heat Exchange Core</td>
<td>2</td>
<td>Special Paper and Resin</td>
</tr>
<tr>
<td>6</td>
<td>Indoor Filter</td>
<td>1</td>
<td>/</td>
</tr>
<tr>
<td>7</td>
<td>Ceiling Suspension</td>
<td>4</td>
<td>Galvanized Steel Sheet</td>
</tr>
<tr>
<td>8</td>
<td>Switch Box</td>
<td>1</td>
<td>Galvanized Steel Sheet</td>
</tr>
<tr>
<td>9</td>
<td>Filter Box Unit</td>
<td>1</td>
<td>/</td>
</tr>
</tbody>
</table>

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Accessory

EB90SA (Applicable to series DZUA)
- Power : 220V / 60Hz
- Rate voltage : 3.6W
- Outer size : 86x86x40mm

Filter Box Unit

BE25DZUA For E25DZUA, E35DZUA

Replacement Filter

Replacement Filter for Filter Box Unit
- Filter Model: FP25DZUA
- Filter Material: Galvanized Steel Sheet

Replacement Filter for ERV
- Filter Model: FB25DZUA
- Filter Material: Galvanized Steel Sheet

Specification

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Voltage</th>
<th>Frequency</th>
<th>CFM at Static Pressures (pa-inches of H2O)</th>
<th>RPM</th>
<th>Watts*</th>
<th>Watts**</th>
</tr>
</thead>
<tbody>
<tr>
<td>E50DZUA</td>
<td>208V</td>
<td>60Hz</td>
<td>0.1 0.125 0.25 0.375 0.5 0.75 1 1.25 1.5 1.75</td>
<td>420</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Performance varies for installation in this or other design. Contact manufacturer. Speed (CFM) values is based on actual current of fan. Performance ratings do not include the effects of static back-of.
**The performance ratings for given capacity shown are from part 2. No performance ratings for given capacity shown are to read is.

Table of Replaceable Filter Details

<table>
<thead>
<tr>
<th>No.</th>
<th>Part name</th>
<th>Qty</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frame</td>
<td>1</td>
<td>Galvanized Steel Sheet</td>
</tr>
<tr>
<td>2</td>
<td>Adapter</td>
<td>2</td>
<td>AIS</td>
</tr>
<tr>
<td>3</td>
<td>Outdoor filter</td>
<td>2</td>
<td>Nonwoven Fabric</td>
</tr>
<tr>
<td>4</td>
<td>Ceiling Suspension</td>
<td>4</td>
<td>Galvanized Steel Sheet</td>
</tr>
</tbody>
</table>

Table of Applyable Filter Details

<table>
<thead>
<tr>
<th>No.</th>
<th>Part name</th>
<th>Qty</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Frame</td>
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<td>4</td>
<td>Galvanized Steel Sheet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Replacement Filter</th>
<th>Filter Model</th>
<th>Filter Material</th>
<th>Applicable Model</th>
<th>Service life of the Filter</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE25DZUA</td>
<td>FP25DZUA</td>
<td>2</td>
<td>E50DZUA</td>
<td>2-4 months</td>
<td>Clean monthly</td>
</tr>
<tr>
<td>E25DZUA</td>
<td>FB25DZUA</td>
<td>1</td>
<td>E50DZUA</td>
<td>6 months</td>
<td></td>
</tr>
</tbody>
</table>

* The service life of the filter varies with service environment, and the filters should be replaced with filter new one.
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**General Information**

**Installation Diagram**

**Cautions**

- It’s recommended to install the pipe cover for strong wind prevention from outside. Please stop the unit during the strong wind and sandstorm as they may enter into the room along the air duct.
- Please carefully read the instruction for parts which are sold separately during the construction.
- Handle the thermal insulation to duct:
  1. The Outside air is cold in winter, but the dry air comes into the duct, dew will occur in the external duct.
  2. The Exhaust air is warm in the room, but the damp air goes out of the room, dew will occur in the internal duct.
- In the conclusion, the outdoor duct should be conducted with thermal insulation.
- The air duct which connects the filter box unit to ERV is suggested to install horizontally.

**Using Condition**

- **Outdoor air condition**
  - Temperature range: -10°C~+50°C, relative humidity 85% or less.
  - Indoor air condition:
    - Refer to the indoor air condition of living room.
  - Installation requirements:
    - Same as the indoor air conditions.
    - Indoor air here means air in air-conditioned living rooms. The appliance usage in refrigerators or other places where temperature can fluctuate greatly, it is prohibited even if a temperature range is acceptable.

**Be careful of frost and dew**

- As shown in the right figure, it’s supposed that a high temperature absorbing air condition A and a low temperature absorbing air condition B are plotted on the air line figure; then a high temperature air A is heat-exchanged by the unit and Point C represents the trend of saturation curve. In this case, it will cause the dew or frost inside the unit. To avoid this, you are required to heat a low temperature air up to 8°C so as to get C below the saturation curve before using the unit.
- The Energy Recovery Ventilator manufactured by our company is conducted the condensation without the water drooping test in the following conditions based on JIS B8628-2000, if using condition is tougher than the following show, it may cause the frost or dew:

| JIS B8628:2003 Energy Recovery Ventilator Appendix S (Specification) condensation test method |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| **Classification**               | **Dry-bulb temperature** | **Wet-bulb temperature** | **Relative Humidity** | **Dry-bulb temperature** | **Wet-bulb temperature** | **Relative Humidity** | **Operation status** | **Measured time** |
| Indoor condition                  |                   |                   |                   |                   |                   |                   |                   |                   |
| Cooling in summer                 | 22°C              | 17°C              | 90%              | 30°C              | 29°C              | 85%              | operate          | 6 hours          |
| Heating in winter                 | 20°C              | 14°C              | 50%              | -                 | -                 | -                 | operate          | 6 hours          |
| Heating in winter                 | 20°C              | 14°C              | 50%              | -10°C             | -                 | -                 | Stop             | 6 hours          |

*B Relative humidity is calculated according to JIS B8628-2000.*