Comfort Air Curtains
Model CA DK
for Daikin VRV-system
Partners in innovative climate technology: Biddle and Daikin

Biddle, the company

For more than 50 years this international manufacturer of innovative climate equipment excels in top quality and custom-made solutions. The main area of expertise is air curtain technology for retail, industry, public buildings and the cold sector.

Biddle products find their way to more than 35 countries via our own factories and sales offices in Great Britain and the Netherlands, and via Biddle sales offices in Belgium, France, Germany and Canada. Other European countries are covered by a network of skilled distributors. This strategy has strengthened the position of Biddle as innovation leader and reliable supplier in the climate industry in the whole of Europe. The opening of a Canadian office means the first step toward worldwide sales of Biddle products.

Behind Biddle’s success are the modern machinery; the considerable R & D department; the team of advisers with many years of experience in the field of climate work; and great quality awareness in every aspect of the company.

Daikin, the company

For more than 80 years Daikin industries LTD produces, develops and introduces high-quality climate systems for many applications. This Japanese company with almost 16,000 employees worldwide belongs to the top in Japan. To be able to operate successfully on the European market Daikin Europe NV was established in Oostende in Belgium, in the early seventies. At the moment more than 80% of products sold in Europe are produced in Belgium and this number is still increasing. Daikin has succeeded in becoming the leading company on the European climate market.

“Your wishes - our solutions”
Technology CA Air Curtain

To increase the comfort and enhance the climate separation, considerable research and development has been invested in the design of the air discharge pattern of the Biddle Comfort Air Curtain. The result is a highly-advanced patented Rectifier- and a Constant Air velocity-technology.

1. Biddle’s Rectifier-Technology opens up new horizons

Air curtains are installed above (open) doors in shops and public buildings. An open door without an air curtain creates an uncomfortable, draughty internal climate as a result of the incoming flow of cold or warm air. The Biddle air curtain warms the cold air before entering the building and prevents the escape of warm air from leaving through the open door.

With this idea in mind, Biddle has developed the patented Rectifier technology in cooperation with TNO, the independent Dutch organization for Applied Scientific Research and the University of Groningen.

This rectifier stabilizes the air turbulence created in the fans, discharging air in a laminar air stream. The optimal discharge pattern is the reason that relatively little air is needed to reach the floor, while the door opening is also well screened.

Source: TNO-research 1995
(Dutch National Research Centre)
2. Constant Air velocity-technology

In addition to the rectifier technology, the Biddle air curtains also feature the innovative Constant Air velocity-technology (CA). The CA-principle consists of an ingenious damper system, which can expand the air discharge opening. Even when the air curtain is set at a higher fan speed, the air velocity will remain constant. As the damper opens up further, the discharge width increases allowing the wider air stream to produce more air volume at the same constant air velocity. The benefits of this technology include:

- The wider air stream allows the air curtain to better reach the floor, so that the risk of draught is reduced.
- The constant low air velocity determines the effect of the rectifier technology resulting in maximum performance and exceptional comfort.
- Even in less favourable weather conditions, when the air curtain is set higher by one speed, the comfort conditions should remain constant. As the air discharge grill expands, the air velocity remains equally low and is, therefore, barely perceptible.

![Low fan speed, low air velocity, damper half open](image1)

![Highest fan speed, damper open, air velocity remains constantly low](image2)

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### Some data of CA Air Curtains

<table>
<thead>
<tr>
<th>Type</th>
<th>Door height</th>
<th>Door width</th>
<th>Heating coil</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA S</td>
<td>200-240 cm</td>
<td>150 / 200</td>
<td>R410A</td>
<td>Free hanging Recessed Cassette</td>
</tr>
</tbody>
</table>

1. Mounting height, measured from floor to bottom of unit.

2. By installing multiple air curtains next to each other, any door width can be covered.

<table>
<thead>
<tr>
<th>Type</th>
<th>Door width</th>
<th>Air volume</th>
<th>Max. heating capacity</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA S-150</td>
<td>150 cm</td>
<td>1850 m³/h</td>
<td>9.5 kW</td>
<td>89 kg</td>
</tr>
<tr>
<td>CA S-200</td>
<td>200 cm</td>
<td>2470 m³/h</td>
<td>12.0 kW</td>
<td>112 kg</td>
</tr>
</tbody>
</table>

1. For outlet temperatures of 40°C and inlet temperatures of 20°C.

2. The weight is based on the heaviest model; the other models vary in weight.
Technology Daikin’s VRV-system

Water or air – For many years the only means of heating and cooling in big buildings. Huge air shafts and enormous water pipes had to be installed, causing many problems for architecture, technique and planning. Installation later on, renovation projects, expansions, were all are extremely expensive or totally impossible.

The VRV technology of Daikin is the opposite in many aspects. Pipes can be kept small, the outside units are very compact and the energy loss within the system is much lower compared to the use of water or air. The refrigerant R410A is able to transport considerably more energy than air and water. Only where required (office, sales room, hotel room, meeting room, relax room) the desired heating or cooling energy will be available very quickly and precisely. With regard to planning, installation and use it is proven that VRV-systems are considerably more cost efficient then comparable water or air systems.

Some data of VRV III System:

<table>
<thead>
<tr>
<th>Daikin VRV Units</th>
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</thead>
<tbody>
<tr>
<td>• Powerful</td>
</tr>
<tr>
<td>• Compact</td>
</tr>
<tr>
<td>• Energy-efficient</td>
</tr>
<tr>
<td>• Noiseless</td>
</tr>
</tbody>
</table>

More capacity thanks to higher speed
• VRV III outside units: max. 54 PK
• High external statistic pressure: 78 Pa.

Excellent capacity index
• 200% up to format 18 (per module)
• 160% in case of 2 module applications
• max. 64 units can be connected

Low noise level
• 45 dB(A)sound pressure level is adjustable per module

Long duct work, extreme height differences
• max. length of ducts: 1,000 m
• 90m height differences in every direction

Excellent division of capacity levels
• only 1 outside unit for performance demand: 5,8,10,12,14,16 and 19 PK

Less maintenance costs:
• automatic refrigerant fill up function
• electronic density control

“The VRV-system combines savings, comfort and energy in a balanced way”
Simple and effective installation

Combination of Daikin’s modern VRV-Technology with Biddle CA Air Curtain

Architects, designers, end users, all appreciate the power and especially the flexibility of this concept. When conventional heating is out of the question partially or completely, the installation of a heat pump is very useful. In that case all rooms in the system can be cooled and heated.

Some data of VRV:
- Cooling: from -5°C - +43°C
- Heating: from -20°C - +15°C

Because of the combination of the modern Daikin VRV –Technology and the Biddle CA Air Curtain a traditional heating installation is not necessary in most cases.

Some data of CA Air Curtain:
- Max. door height: 2.40 m
- Heating capacity: 12.0 kW (per air curtain unit)
- Type: CAS-200-DK or CAS-150-DK

Example of a VRV-installation with a Biddle Comfort Air Curtain.
**Convincing advantages**

**Biddle CA Air Curtain**
- Modern design, fits into every shop
- Low investment and installation costs
- User friendly
- High comfort and max. efficiency
- Small unit height, easy to build in
- Intelligent integrated control
- Low noise level
- Energy efficient
- High quality
- Connection for BMS, door contact switch, room thermostat and timer

**Daikin VRV III system**
- Max. energy efficiency of the Daikin units
- Precise planning
- Excellent capacity index
- Inverter technology as a standard
- Capacity adaptation elec. controlled
- Extensive product program
- Low noise level
- Simple installation
- Less maintenance costs
- Safety with guarantee
- Electronic density control

“VRV III System + CA Air Curtain: a very convincing climate system.”
References - proven functionality

- C&A
- Deichmann
- Deutsche Bank
- DM DrogerieMarkt
- Expert Markt
- Lacoste
- Raiffeisenbank
- REWE Supermarkets
- Spar
- SuperBioMarkt
- TAKKO

Quality

The climate systems made by Daikin and Biddle are made up of high quality components. Long life and optimum operation take centre stage in product development. Of course you can always turn to Biddle and Daikin for detailed information and expert advice. After all, we take pride in offering solutions that are geared to your specific conditions.

“Forget all you heard about air curtains in the past and take advantage of the opportunities the Biddle “curtain of air” presents.”

For more information about the Biddle CA air curtain ask for the detailed brochure.