NHS AIR CURTAINS

Superior DX

THE EXTREMELY LOW-ENERGY CLIMATE SOLUTION FOR YOUR SHOP, BUSINESS OR OFFICE

Create the optimum indoor climate and save energy

AIR CURTAINS FOR DOORS AND ENTRANCES

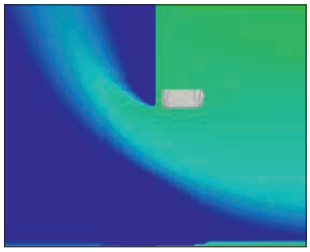
An open door is an inviting entrance for customers and visitors and retailers know this better than anyone. However, an open door also lets in dust, moisture, smells, wind and insects, and you end up with an unnecessarily high energy bill on the door mat. You can solve this problem easily by installing an NHS air curtain. Do you have a specific question about an air curtain in your building? Would you like to talk to an experienced specialist? Please contact us. We will deal with your questions professionally and quickly.

What is an air curtain?

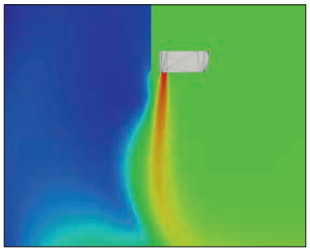
An air curtain is a controlled airflow that reduces the natural air exchange between rooms. An air curtain is situated in a door opening or entrance and keeps rooms with different climates separated when the door is open. For example a cold store of a company or the indoor and outdoor climate of a supermarket, warehouse, bank, hospital or office building.

Why have an air curtain?

The most important objective of an air curtain is to reduce air exchange to create a controlled, healthy and comfortable climate. In addition, you can use a heating or cooling element to heat or cool air locally.



A large amount of heat is often lost near doors without an air curtain.



The airflow of an air curtain works like an invisible door that keeps the climate of two different rooms separate from each other.

How does an air curtain work?

A heated airflow stops the colder air from outside. The airflow also heats the very small amount of cold air that manages to penetrate despite the airflow. This produces a comfortable indoor climate and a thermally neutral climate separation without draught. When it is warmer outside than inside? In those situations it works the other way around - with an unheated or cooled airflow, the air curtain makes sure the warm air stays out.

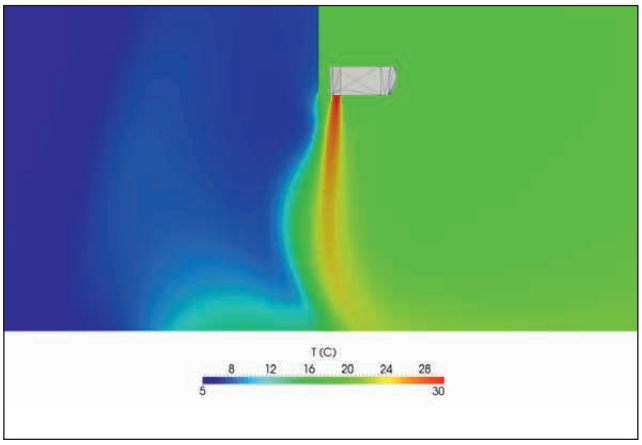
Benefits:

- Minimum energy loss and consumption
- 70% to 80% energy savings compared to open door
- Optimum thermal comfort for a pleasant climate for shopping or other purposes
- Improved air quality for visitors and employees
- Healthier environment and less sickness absence because of protection against draught
- Reduced exchange of dust, moisture, smells and fewer insects inside the building
- Warm, refreshing or cooling airflow

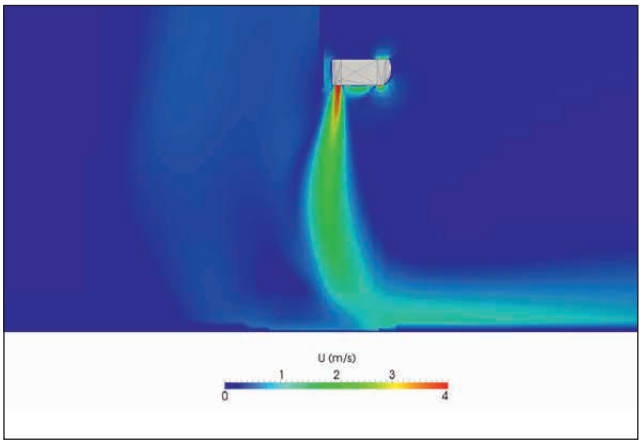
About NHS Air Curtains

NHS Air Curtains produces and supplies a range of low-maintenance and energy-saving air curtains. With customised work from our own production workshop and a wide range of standard products, we create a specific solution for any situation. You can count on short lead times and rapid delivery, often immediately from stock. If you need to talk to us, your dedicated contact person is almost always available. We're pleased to assist!

An image of an air curtain



A thermographic image proves the clear separation of warm and cold air.



A thermographic image shows the progress of the air speed in metres per second.

Why is the right discharge temperature important?

The right discharge temperature produces an efficient and energy-saving climate separation. If the discharge temperature is too high (>40 °C), the airflow struggles to reach floor level and there is still air exchange. Furthermore, an airflow that is too warm also heats up the entrance too much and that disturbs the indoor climate and wastes energy. A discharge temperature that is too low (<28 °C) also disrupts effective operation. Together with an insufficiently strong airflow, it produces a temperature at floor level that is too low, causing a draught.

Extra tips:

- An air curtain works in the best possible way when the effective part of an air curtain, the airflow, has at least the width of the door opening and can be felt right down to floor level. If the airflow does not reach the floor, cold air can enter, whilst warm air escapes outside and that creates a draught.
- Install air curtains flush with the door opening to prevent air exchange and energy loss through the sides.
- Install air curtains exactly above the door opening. The shorter the distance to the floor, the less energy required.
- Be sure that the airflow is not interrupted by obstacles, such an automatic door or a roller door.
- Adjust the discharge angle of the air curtain with the settings of the discharge fin. For example when you need to heat during winter, you tilt the discharge fin slightly outwards. When you cool in summer, you tilt it slightly inwards.
- For optimum low-energy consumption, opt for a semi-automatic or fully automatic control. This uses a few parameters to adjust the operation of an air curtain to changing conditions. For example, consider adjusting the size of the airflow during cold weather or putting the air curtain on stand-by or switching it off when the door is closed.

Good to know!

- An air curtain with a heat pump is the most energy-efficient heating method. It is approximately 73% more efficient than an air curtain with electric heating.
- The energy costs of an electric air curtain are around 53% higher than those of an air curtain that works on the basis of hot water from a central-heating boiler.

Superior DX

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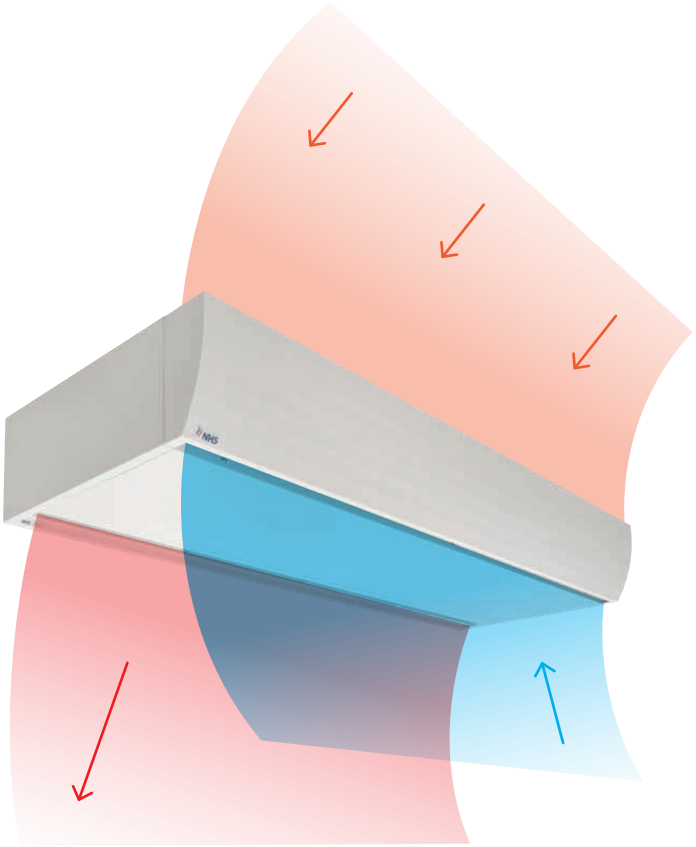
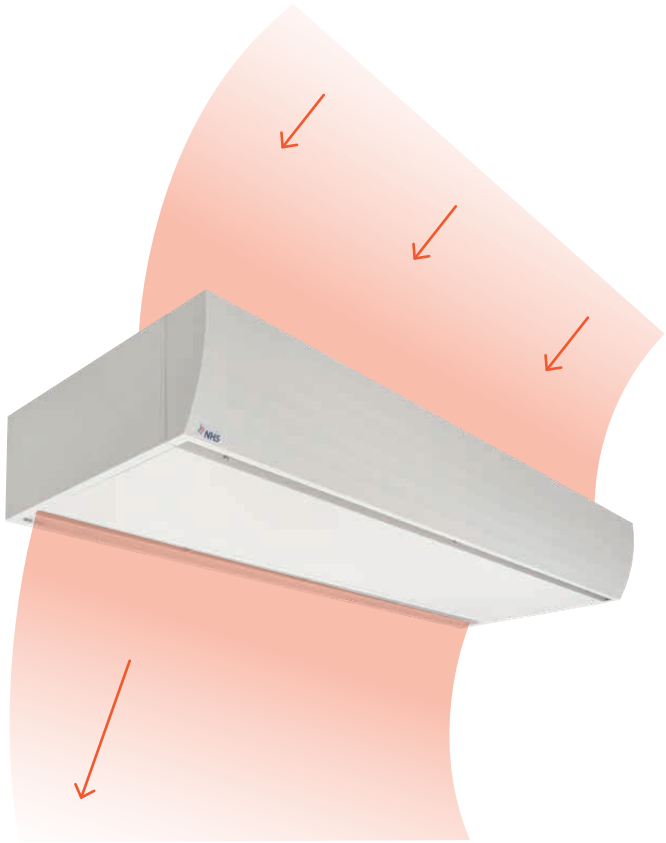
A comfortable indoor climate in summer and winter whilst the door is invitingly open? You can with NHS air curtains! Our most energy-efficient option is a Superior DX air curtain that generates sustainable energy itself with a heat pump; an investment you earn back in double-quick time.

Superior DX air curtains

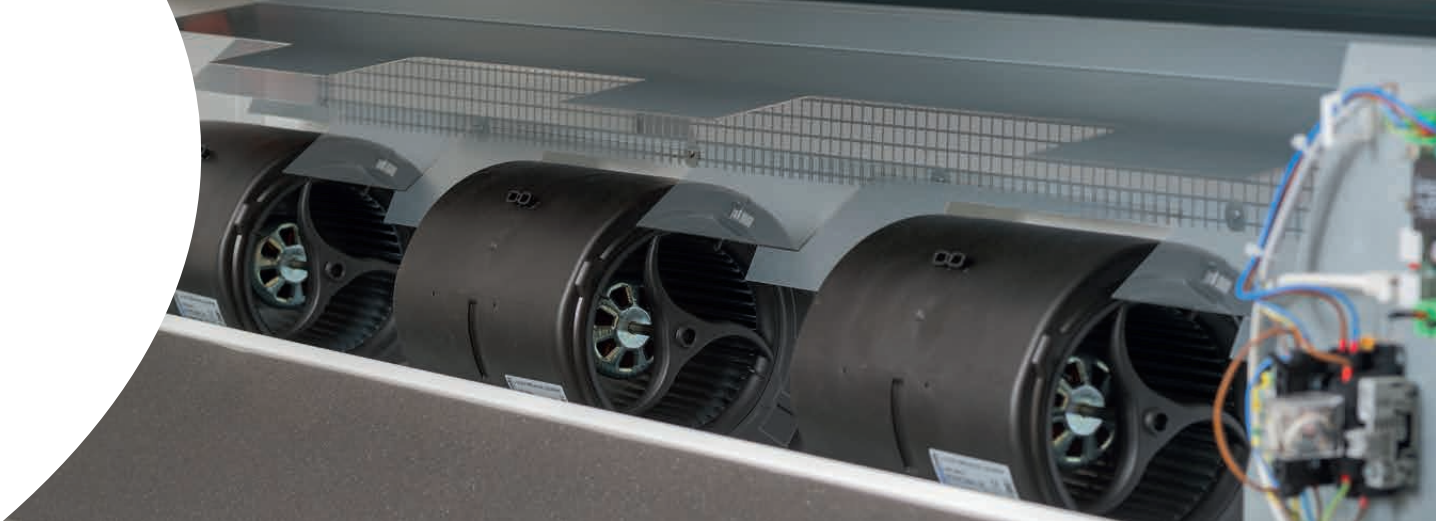
The sustainable heat pump that is connected to the Superior DX air curtains uses ambient heat, which ensures reduced CO_2 emissions compared to other systems. You don't need a gas connection or a central-heating boiler either. Due to the inverter technology of the heat pump you enjoy a constant discharge temperature. Your Superior DX air curtain can also be equipped with a state-of-the-art bypass system. During the inevitable defrosting cycle of the heat pump, this creates a pleasant airflow in winter, without needing to supply extra energy. If you opt for an RC version, the air curtain is able to produce wonderfully cooled air during summer.



During heating



Whilst defrosting the heat pump



Easy to remove filter

All the air curtains from the Superior DX series contain a filter that protects the battery against accumulating dust and dirt. You don't need tools to remove the filter for cleaning or replacement.

Noiseless, sustainable and low-energy

The fans of the Superior DX air curtains are equipped with advanced EC technology, giving them a longer lifespan. Other benefits include noiseless operation and ultra-low energy consumption.

Stable airflow

The discharge opening is equipped with a special pressure chamber jet system that produces up to 30% energy savings compared to conventional fin discharge systems. This modern system also produces an even, stable airflow. The discharge opening has continuously variable settings from 30 degrees inwards to 30 degrees outwards.

For doors up to 3.20 metres tall and of any width

You can create an effective air curtain for any door width. The four length sizes are easy to combine. For door heights of up to 3.20 metres air curtains are available in two different capacities.

Easy to connect and to mount

The air curtains are easy to mount to the wall with M8 stud fixings or with brackets that can be ordered separately.
A Superior DX air curtain is easy to connect with the built-in communication module between the air curtain and the heat pump and the built-in condensation water pump (optional).
It goes without saying that you can always count on our comprehensive support.

Highly reliable, little maintenance

We believe it is important that you can rely 100% on our air curtains. During the production of Superior DX air curtains we only use A-quality components. You also have a standard five-year guarantee on your air curtain.

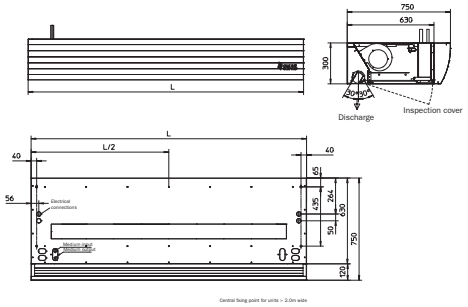
Visible and invisible air curtains

The Superior DX air curtains have a sleek and minimalist design and you can simply mount them in plain view. The air intake is hidden behind a beautifully designed front panel that - if fitted the other way around - takes in air from below.
You determine the colour of your air curtain. The most common colour is traffic white (RAL9016), but we can supply the product in any RAL colour of your choice upon request.
If you prefer to have an invisible air curtain, we have models that you can recess into a suspended ceiling. Take a look at all our models on page 8 of this brochure.

Models

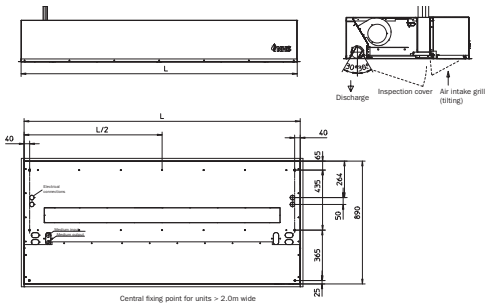
Superior DX

Wall or ceiling mounted in plain view with air intake top and bottom.



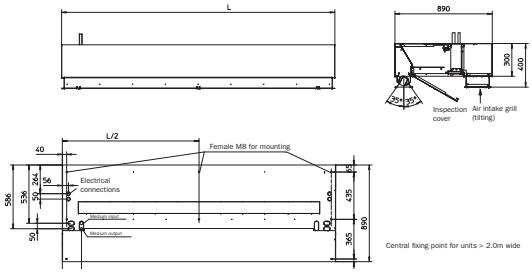
Superior DX GVP

For mounting in plain sight or for recessing into a suspended ceiling (GVP), with visible bottom and air intake from below.



Superior DX BVP

Built-in above the suspended ceiling (BVP), with just the air intake and discharge opening visible and with air intake from below.



Control

Manual operation

With manual operation you select the speed of the airflow. However, there is a chance that your air curtain does not operate properly in line with the conditions at that time. The air that you have heated or cooled may still flow away through doors and entrances.

Standard functions:

- Five settings for the airflow speed.
- Three settings for the heating capacity of an electric air curtain.
- Summer-winter function (230 V) with control by an external heat pump.
- You can use one control to control several air curtains. Convenient for large and wide entrances where several air curtains are required.
- Partial or full integration into a building-management system or retail scheme. For example, switch the air curtain on or off through the building-management system or operate it with a 0-10 V signal.

Automatic or semi-automatic

Do you want to be sure of the correct settings? You prefer not to worry about your air curtain?
NHS Air Curtains has developed an innovative control - automatic or semi-automatic depending on the accessories you choose. It is a complete control system, suitable for all types of air curtains - from hot water and electric to hybrid and unheated. Depending on your choice of air curtain and accessories, different additional functions are available.

Additional functions (accessories):

- To be used with an outside temperature sensor. On the basis of the outside temperature, the control automatically determines the correct setting. An air curtain is only used when it is really necessary.
- To be connected to a door contact or sensor, which ensures that an air curtain only works when the door is opened or when movement is detected. After an adjustable period of time, it is switched off automatically.
- To be used with an integrated or external room thermostat. A water-heated air curtain requires a magnetic valve for this purpose. With automatic control of the heat supply and the room temperature, ensuring the room temperature remains constant.
- Control with fully integrated control of heat pump and air curtain, in function of the chosen heat pump. This can be in our control or in the control of the heat-pump manufacturer.
- Frost-protection thermostat in case of partial outside air intake to prevent the heating battery from freezing.
- With a timer, the air curtain switches on or off automatically.

Technical data

Direct expansion (DX)/only heating

Type	Nominal airflow	Effective airflow	Heating capacity	Pressure loss	Discharge tempera-ture	Volume	Refrigerant connecti-ons	Electrical connections fans (rated power)			Sound pressure	Weight
	m³/h	m³/h	kW [1]	bar	°C	l	mm [4]	Volt	kW	A	dB(A) [5]	kg
maximum recommended fitting height 2,80 m*												
2-100 R	2.250	1.800	9,6	0,067	35,7	1,6	22/16	230	0,33	2,40	56	61
2-150 R	3.375	2.700	15,4	0,114	36,7	2,8	22/16	230	0,50	3,60	57	74
2-200 R	4.500	3.600	21,1	0,138	37,3	3,9	22/16	230	0,66	4,80	58	96
2-250 R	5.625	4.500	26,1	0,084	37,1	5,1	22/16	230	0,83	6,00	59	138
maximum recommended fitting height 3,20 m*												
3-100 R	3.375	2.400	11,6	0,095	34,3	1,6	22/16	230	0,50	3,60	58	65
3-150 R	4.500	3.200	17,3	0,141	35,9	2,8	22/16	230	0,66	4,80	59	78
3-200 R	6.750	4.900	26,2	0,204	35,7	3,9	22/16	230	0,99	7,20	60	104
3-250 R	7.875	5.700	30,8	0,114	35,9	5,1	22/16	230	1,16	8,40	61	145

R version

If you opt for an R version of the air curtain, the air curtain has a leak tray that is only suitable for collecting condensation during defrosting and it has fans with a protection class of IP20.

Direct expansion (DX)/heating and cooling

Type	Nominal airflow	Effective airflow	Heating capacity	Pressure loss	Discharge air tempe-rature	Cooling capacity	Pressure loss	Dischar-ge tempe-rature	Volume	Refri-gerant connec-tions	Electrical connections fans (rated power)			Sound pressure	Weight
	m³/h	m³/h	kW [1]	bar	°C	kW [2]	bar	°C	l	mm [4]	Volt	kW	A	dB(A) [5]	kg
maximum recommended fitting height 2,80 m*															
2-100 RC	2.250	1.800	9,6	0,067	35,7	6,0	0,054	15,4	1,6	22/16	230	0,33	2,40	56	61
2-150 RC	3.375	2.700	15,4	0,114	36,7	10,1	0,098	14,5	2,8	22/16	230	0,50	3,60	57	74
2-200 RC	4.500	3.600	21,1	0,138	37,3	14,1	0,120	14,2	3,9	22/16	230	0,66	4,80	58	96
2-250 RC	5.625	4.500	26,1	0,084	37,1	17,2	0,061	14,3	5,1	22/16	230	0,83	6,00	59	138
maximum recommended fitting height 3,20 m*															
3-100 RC	3.375	2.400	11,6	0,095	34,3	7,1	0,073	16,5	1,6	22/16	230	0,50	3,60	58	65
3-150 RC	4.500	3.200	17,3	0,141	35,9	11,3	0,120	15,2	2,8	22/16	230	0,66	4,80	59	78
3-200 RC	6.750	4.900	26,2	0,204	35,7	17,1	0,167	15,2	3,9	22/16	230	0,99	7,20	60	104
3-250 RC	7.875	5.700	30,8	0,114	35,9	19,9	0,079	15,2	5,1	22/16	230	1,16	8,40	61	145

RC20 version

If you choose an RC20 version of the air curtain, the air curtain has an insulated leak tray, a condensation pump and fans suitable for humidity with a protection class of IP20.

RC44 version

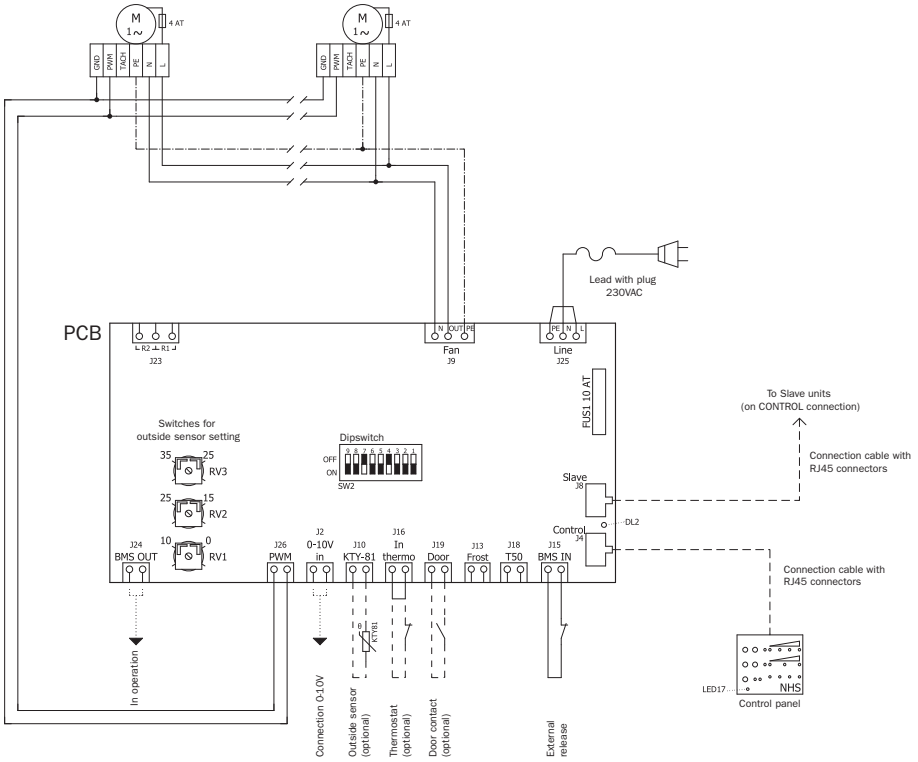
If you choose an RC44 version of the air curtain, the air curtain has an insulated leak tray, a condensation pump and fans suitable for humidity with a protection class of IP44.

* A building with balanced ventilation and a protected location.
[1] Air intake temperature of 20 °C , refrigerant R410A, compressed gas temperature 65 °C, condensation temperature 48 °C, SC 5K.
[2] Based on airflow setting 2. With an air intake temperature of 27 °C, evaporation temperature of 6°C, compressed gas temperature of 48 °C, SH 5K, SC 15 K.
[4] Upon request, the refrigerant connections are adjusted to the external unit that is to be used.
[5] Measured at 3 m from the side.

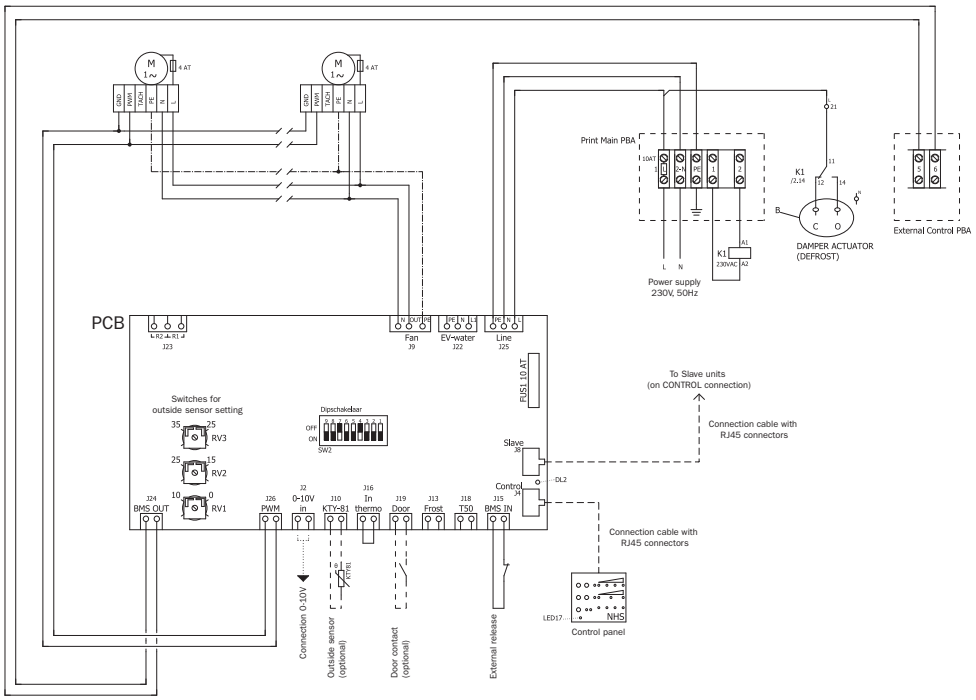
Subject to technical changes.

Wiring diagrams

Direct expansion standard



Direct expansion with control of the bypass system is fully integrated with the electronics of the heat-pump manufacturer.



Accessories

Door contacts

Door contact MDC

Magnetic switches NO & NC. Screw fitting or fixed with double-sided tape. Dimensions 64 x 15 x 13.8 mm
Temperature range: -20 to 65 °C. Housing ABS, white.

Door contact RDC

Protection class IP67, end switch with roller lever. Dimensions 31 x 96 mm
Temperature range: -25 to 70 °C. Housing cube: plastic.

Remote control

Infra-red remote control

Infra-red remote control for use with the control panel. For the remote control of the air volume and the summer-winter function of an air curtain.

Thermostats

Outside sensor BS

Sensor range from -55 to 150 °C. Protection class IP65. Housing polyamide, colour white.

Electromechanical room thermostat RT

Protection class IP30, setting range 5 – 30 °C with bimetal, pure white (comparable RAL 9010).
Dimensions: 78.3 x 83.4 x 25.5 mm

Cables

VBK05

Protected connection cable 5 m with RJ45 connectors to connect the controller to the PCB or to connect a master and a slave air curtain.

VBK50

Protected connection cable 50 m with RJ45 connectors to connect the controller to the PCB or to connect a master and a slave air curtain.

Mountings

Ceiling mounting PB

Comprising:

- Threaded rod: steel, wire gauge M8, electrogalvanised (1 m).
- Solid vibration attenuation suspension: steel, wire gauge M8, electrogalvanised, attenuation 20 dB.

Four required for units of up to 2 m and six for units of up to 2.5 m.

Wall mounting MB

Bracket, length 480 mm, profile 38/40, galvanised.

Two required for units of up to 2 m and three for units of up to 2.5 m.

Operating switch

Operating switch WKS-3

3-pin operating switch in surface mounting, included separately. For building-side installation in the supply pipe to the unit.

NHS AIR CURTAINS

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