



# Air curtains for your revolving door

*CIRCUM & TQD*

# Create the optimum indoor climate and save energy

## AIR CURTAINS FOR DOORS AND ENTRANCES

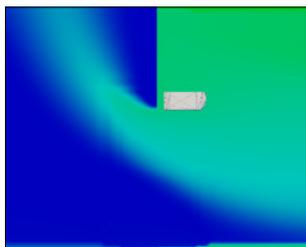
An open door is an inviting entrance for customers and visitors and retailers know this better than anyone. However, an open door also lets in dust, moisture, smells, wind and insects, and you end up with an unnecessarily high energy bill on the door mat. You can solve this problem easily by installing 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?

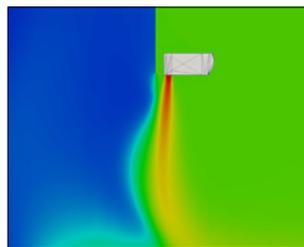
An air curtain is a controlled airflow that reduces the natural air exchange between rooms. An air curtain is situated in a door opening or entrance and keeps rooms with different climates separated when the door is open. For example a cold store of a company or the indoor and outdoor climate of a supermarket,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

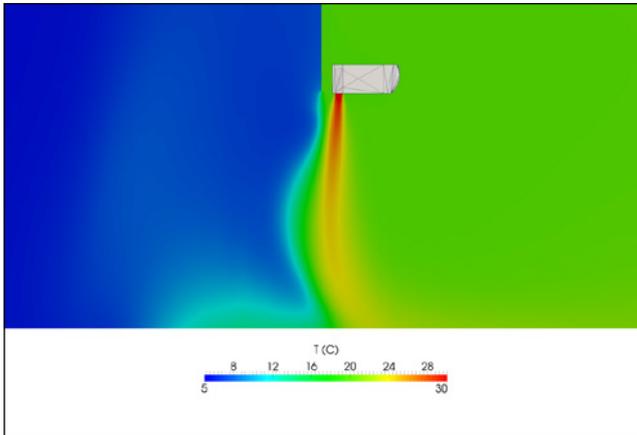
### Benefits:

- 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

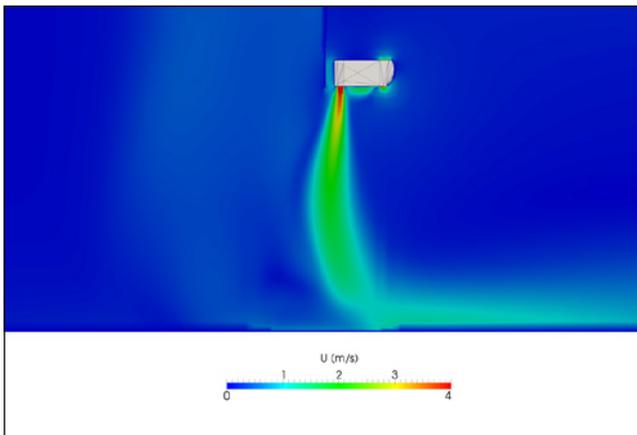
### About NHS Air Curtains

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 ( $>40^{\circ}\text{C}$ ), 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 ( $<28^{\circ}\text{C}$ ) 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:

- Prevent a discharge temperature that is too high with a discharge-air temperature control. NHS Air Curtains can supply it as an accessory or incorporate it into the air curtain.
- 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 as 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.

# Circum & TQD

SAVE ENERGY WITH AN AIR CURTAINS  
FOR YOUR REVOLVING DOOR



A revolving door is more energy efficient than a sliding door, because there is no direct contact between the inside and the outside and most of the wind is kept out. Yet every time somebody uses the door, an amount of cold outside air enters the building. Do you have dozens of people going in and out all day? In that case a Circum or TQD air curtain, designed especially for revolving doors, is a smart investment. It enables you to reduce energy losses to an absolute minimum.

## Circum air curtains

An air curtain from our Circum series is the perfect solution for an entrance with an integrated revolving door. This horizontally mounted system takes the airflow evenly along the door opening to floor level. It is almost invisible, you just see the beautifully designed discharge opening. This air curtain comes in three different versions:

- KD version: built into the fascia of the revolving door
- BD version: mounted above the revolving door
- VP version: built into the suspended ceiling or outside the revolving door.

The air curtain is selected on the basis of the revolving door and the channel is fully customised in function of the door radius.

## TQD air curtains

The small column air curtain TQD has been developed especially for being mounted sideways near revolving doors or carousels with sliding doors. The vertical mounting and the high discharge speed in the lower part of the unit, ensure these air curtains offer optimum protection, including at floor level.

## Low-energy, silent and durable

Due to the advanced EC technology, the fans of the Circum and TQD air curtains have a long lifespan and ultra-low energy consumption. They also operate silently.

## Even airflow

The discharge opening of the TQD air curtain 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.

## A design that fits the look of your revolving door

We match the design of the air curtains to the design, door radius, materials and colours of your revolving door. The units are available in different colours and materials and in terms of look they match every possible revolving door.

## Ultimate convenience of use

When you purchase an air curtain from our Circum or TQD series, you benefit from ultimate convenience of use. The components, such as the front panel, the heating battery\* and the fans, have been developed so that you as user don't have to worry about them. Labour-intensive weekly or monthly maintenance is not necessary.

\* Our LW and DX air curtains have a filter that is easy to clean.



### **Installation in a flash**

The vertical TQD and the horizontal Circum air curtains are easy to mount. You can mount the TQD air curtain to the floor with the supplied console. You can choose to have the connections at the top or the bottom of the unit. The KD and BD versions of the Circum air curtains are mounted on or in the revolving door with adjustable feet or tubular profiles or to the ceiling with M8 stud fixings. The VP version is also mounted to the ceiling with M8 stud fixings.

### **High quality and a five-year guarantee**

All NHS air curtains comply with the highest quality standards. When you purchase an air curtain you receive a five-year guarantee.

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## **Heating methods**

### **Hot water**

Air curtains that are heated by hot water have a heat exchanger that is connected to the central-heating network. We equip air curtains with a heating battery as standard, which is suitable for hot water of 60/40°C (W). Air curtains are also available with a heating battery for low temperatures of 45/35°C (LW). For optimum energy savings it is always important to adjust your air curtains properly with your central-heating boiler, city or district heating, heat pump or other sources of sustainable energy.

### **Electric**

Our electric air curtains (E) automatically adjust the control of heat and ventilation. It goes without saying that these air curtains have a safety circuit.

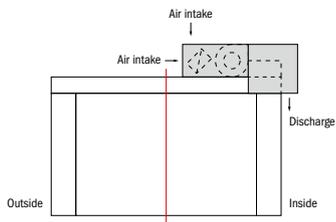
### **Direct expansion**

Air curtains for direct expansion (DX) are suitable for the refrigerant R410A. These air curtains operate as an evaporator with a stand-alone heat pump or integrated into a VRF climate-control system.

# Models Circum

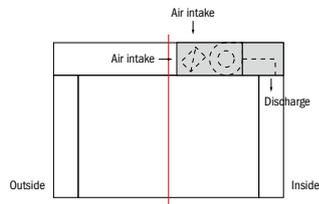
## Type BD

Mounted above the revolving door



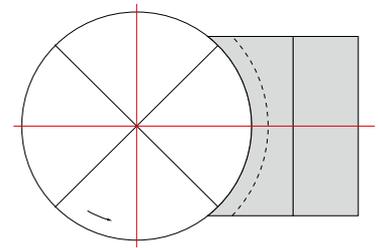
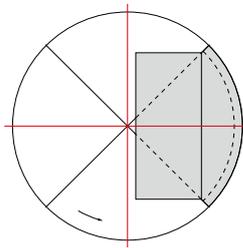
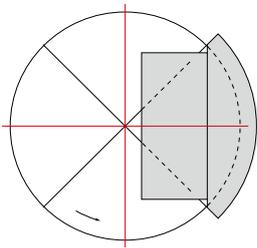
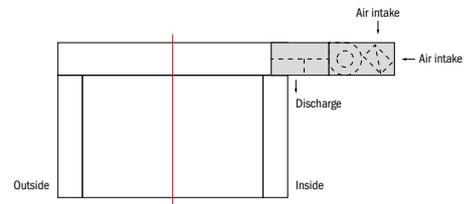
## Type KD

Built into the fascia of the revolving door



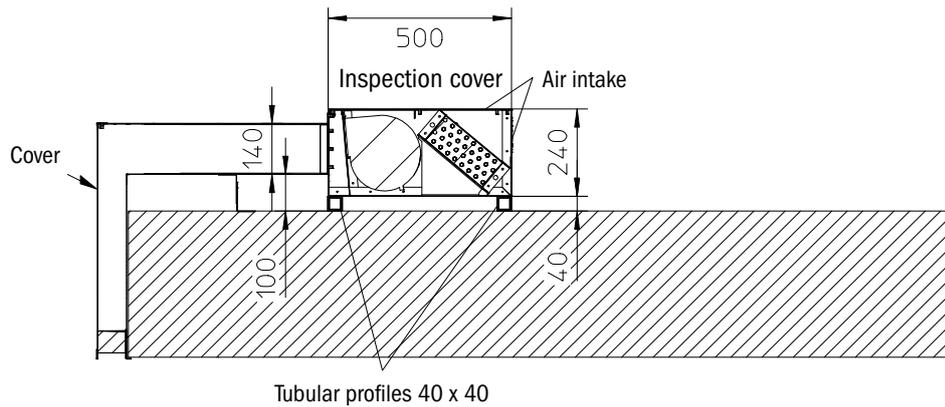
## Type VP

Built into the suspended ceiling or outside the revolving door.



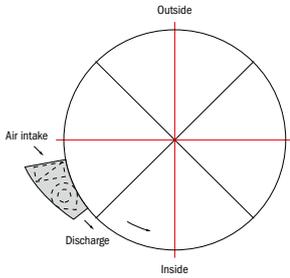
# Dimensions Circum

## Circum BD (profile)

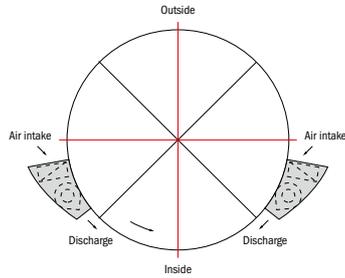


# Models TQD

Mounting on one side

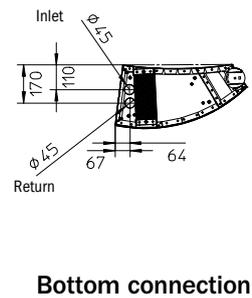
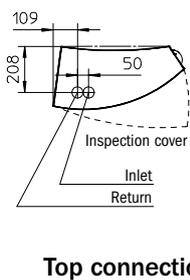
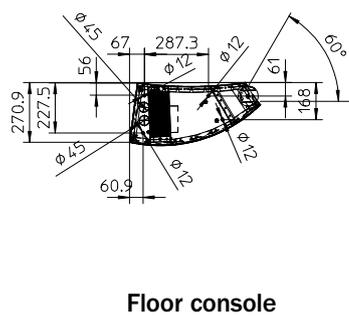
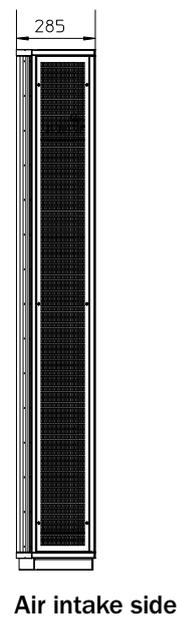
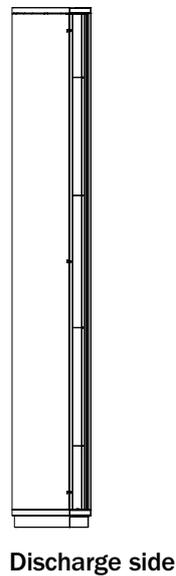
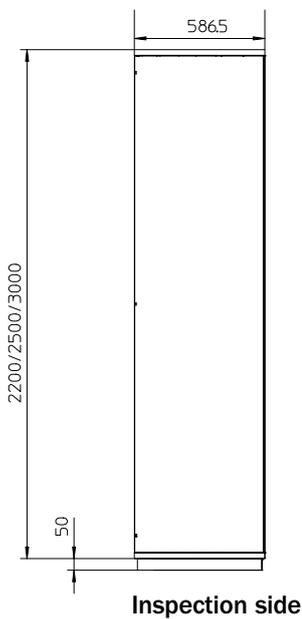


Mounting on two sides



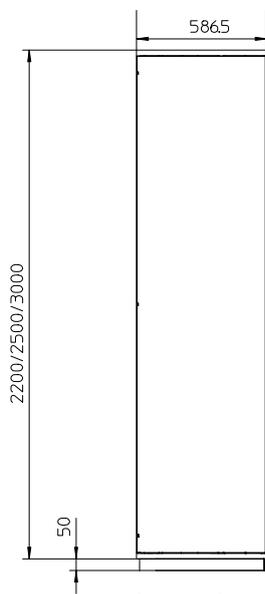
# Dimensions TQD

TQD left standing, blowing to the right



# Dimensions TQD

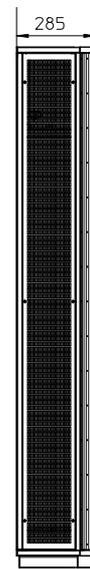
TQD right standing, blowing to the left



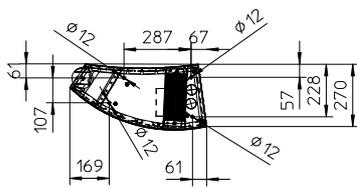
Inspection side



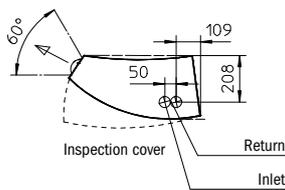
Discharge side



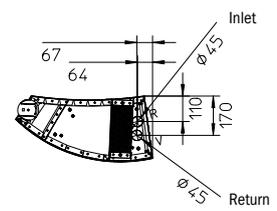
Air intake side



Floor console



Top connection



Bottom connection

# 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 a magnetic valve or 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 Circum

## Hot water 80/60 and 60/40 °C (W)

Type	Air volume	Heating capacity 80/60 °C	Water-side resistance 80/60 °C	Amount of water	Heating capacity 60/40 °C	Water-side resistance 60/40 °C	Amount of water	Water connections	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	kW <sup>1</sup>	kPa	m <sup>3</sup> /h	kW	kPa	m <sup>3</sup> /h	"	Volt	kW	A	dB(A) <sup>2</sup>	kg
2-100 W	1.800	12,2	2,2	0,3	8,2	2,6	0,4	3/4	230	0,33	2,40	56	45
2-150 W	2.700	18,4	3,1	0,4	13,6	5,3	0,6	3/4	230	0,50	3,60	57	60
2-200 W	4.500	30,1	6,5	0,8	21,6	10,1	0,9	3/4	230	0,83	6,00	59	80
2-250 W	5.400	36,0	6,8	0,9	27,0	12,7	1,2	3/4	230	0,99	7,20	60	100
2-300 W	6.300	42,2	7,5	1,0	32,2	15,0	1,4	3/4	230	1,16	8,40	61	125
3-100 W	2.700	18,2	7,3	0,7	10,6	4,1	0,5	3/4	230	0,50	3,60	57	50
3-150 W	3.600	24,4	6,6	0,7	16,3	7,3	0,7	3/4	230	0,66	4,80	58	65
3-200 W	5.400	36,3	11,1	1,0	24,3	12,4	1,1	3/4	230	0,99	7,20	60	85
3-250 W	6.300	42,1	10,5	1,1	29,8	15,1	1,3	3/4	230	1,16	8,40	61	105
3-300 W	7.200	48,9	11,2	1,2	35,1	17,5	1,5	3/4	230	1,32	9,60	63	130

## Hot water 45/35 °C (LW)

Type	Air volume	Heating capacity 45/35 °C	Water-side resistance 45/35 °C	Amount of water	Water connections	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	kW	kPa	m <sup>3</sup> /h	"	Volt	kW	A	dB(A) <sup>2</sup>	kg
2-100 LW	1.800	8,5	9,9	0,7	3/4	230	0,33	2,40	56	45
2-150 LW	2.700	13,5	12,0	1,2	3/4	230	0,50	3,60	57	60
2-200 LW	4.500	21,5	19,2	1,9	3/4	230	0,83	6,00	59	80
2-250 LW	5.400	26,5	21,6	2,3	3/4	230	0,99	7,20	60	100
2-300 LW	6.300	31,4	24,7	2,7	3/4	230	1,16	8,40	61	125
3-100 LW	2.700	11,3	16,3	1,0	3/4	230	0,50	3,60	57	50
3-150 LW	3.600	16,5	17,4	1,4	3/4	230	0,66	4,80	58	65
3-200 LW	5.400	24,5	24,2	2,1	3/4	230	0,99	7,20	60	85
3-250 LW	6.300	29,6	26,4	2,6	3/4	230	1,16	8,40	61	105
3-300 LW	7.200	34,6	29,5	3,0	3/4	230	1,32	9,60	63	130

# Technical data Circum

## Direct expansion (DX)/only heating

Type	Air volume	Heating capacity	Pressure loss	Refrigerant connections	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	kW <sup>3</sup>	bar	mm <sup>4</sup>	Volt	kW	A	dB(A) <sup>2</sup>	kg
2-100 DX	1.800	11,5	0,133	16/22	230	0,33	2,40	56	45
2-150 DX	2.700	15,2	0,104	16/22	230	0,50	3,60	57	60
2-200 DX	4.500	24,3	0,163	16/22	230	0,83	6,00	59	80
2-250 DX	5.400	29,3	0,082	16/22	230	0,99	7,20	60	100
2-300 DX	6.300	32,6	0,099	16/22	230	1,16	8,40	61	125
3-100 DX	2.700	15,5	0,226	16/22	230	0,50	3,60	57	50
3-150 DX	3.600	18,5	0,149	16/22	230	0,66	4,80	58	65
3-200 DX	5.400	27,6	0,204	16/22	230	0,99	7,20	60	85
3-250 DX	6.300	32,6	0,099	16/22	230	1,16	8,40	61	105
3-300 DX	7.200	35,7	0,116	16/22	230	1,32	9,60	63	130

## Electrical (E)

Type	Air volume	Heating capacity electric 400V3~	Max. current consumption 3-phase incl. fans	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	kW	A	Volt	kW	A	dB(A) <sup>2</sup>	kg
2-100 E	1.800	9,0	16	230	0,33	2,40	56	45
2-150 E	2.700	12,0	21	230	0,50	3,60	57	60
2-200 E	4.500	20,0	35	230	0,83	6,00	59	80
2-250 E	5.400	24,0	42	230	0,99	7,20	60	100
2-300 E	6.300	24,0	43	230	1,16	8,40	61	125
3-100 E	2.700	15,0	26	230	0,50	3,60	57	50
3-150 E	3.600	22,5	38	230	0,66	4,80	58	65
3-200 E	5.400	30,0	51	230	0,99	7,20	60	85
3-250 E	6.300	36,0	60	230	1,16	8,40	61	105
3-300 E	7.200	36,0	62	230	1,32	9,60	63	130

The electrical air curtains just need to be fitted with a 400V3N supply - 230V3~ possible upon request - the 230V fans are connected internally in the factory.

<sup>1</sup> At a discharge temperature of 40°C and an air intake temperature of 20°C.

<sup>2</sup> Measured at 3m from the side.

<sup>3</sup> Refrigerant R410A, compressed gas temperature 65°C, condensation temperature 48°C, SC 5K.

<sup>4</sup> Upon request, the refrigerant connections are adjusted to the external unit that is to be used.

Subject to technical changes.

# Technical data TQD

## Hot water 80/60 and 60/40 °C (W)

Type	Nominal airflow	Effective airflow	Heating capacity 80/60 °C	Water-side resistance 80/60 °C	Amount of water	Heating capacity 60/40 °C	Water-side resistance 60/40 °C	Amount of water	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	m <sup>3</sup> /h	kW <sup>1</sup>	kPa	m <sup>3</sup> /h	kW	kPa	m <sup>3</sup> /h	Volt	kW	A	dB(A) <sup>2</sup>	kg
2-220 W	4.500	3.600	20,5	2,1	0,4	18,8	7,8	0,8	230	0,66	4,80	58	98
2-250 W	5.625	4.500	25,8	2,6	0,5	24,0	10,3	1,0	230	0,83	6,00	59	111
2-300 W	6.750	5.400	36,6	5,3	0,8	29,1	12,6	1,3	230	0,99	7,20	60	134
3-220 W	6.750	4.900	28,0	4,4	0,6	22,9	11,2	1,0	230	0,99	7,20	60	108
3-250 W	7.875	5.700	32,3	4,3	0,7	27,9	13,5	1,2	230	1,16	8,40	61	121
3-300 W	9.000	6.500	44,0	8,4	1,0	32,9	15,6	1,4	230	1,32	9,60	62	144

## Hot water 45/35 °C (LW)

Type	Nominal airflow	Effective airflow	Heating capacity 45/35 °C	Water-side resistance 45/35 °C	Amount of water	Discharge air temperature	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	m <sup>3</sup> /h	kW	kPa	m <sup>3</sup> /h	°C	Volt	kW	A	dB(A) <sup>2</sup>	kg
2-220 LW	4.500	3.600	18,3	14,3	1,6	35,2	230	0,66	4,80	58	98
2-250 LW	5.625	4.500	23,2	16,9	2,0	35,4	230	0,83	6,00	59	111
2-300 LW	6.750	5.400	28,0	20,0	2,4	35,5	230	0,99	7,20	60	134
3-220 LW	6.750	4.900	22,9	21,4	2,0	33,9	230	0,99	7,20	60	108
3-250 LW	7.875	5.700	27,6	23,2	2,4	34,4	230	1,16	8,40	61	121
3-300 LW	9.000	6.500	32,1	25,7	2,8	34,7	230	1,32	9,60	62	144

## Electrical (E)

Type	Nominal airflow	Effective airflow	Heating capacity electric 400V3~	Max. current consumption 3-phase incl. fans	Electrical connections fans (rated power)			Sound pressure	Weight
	m <sup>3</sup> /h	m <sup>3</sup> /h	kW	A	Volt	kW	A	dB(A) <sup>2</sup>	kg
2-220 E	4.500	3.600	18,0	31	230	0,66	4,80	58	98
2-250 E	5.625	4.500	18,0	32	230	0,83	6,00	59	111
2-300 E	6.750	5.400	24,0	42	230	0,99	7,20	60	134
3-220 E	6.750	4.900	30,0	51	230	0,99	7,20	60	108
3-250 E	7.875	5.700	36,0	60	230	1,16	8,40	61	121
3-300 E	9.000	6.500	36,0	62	230	1,32	9,60	62	144

The electrical air curtains just need to be fitted with a 400V3N supply - 230V3~ possible upon request - the 230V fans are connected internally in the factory.

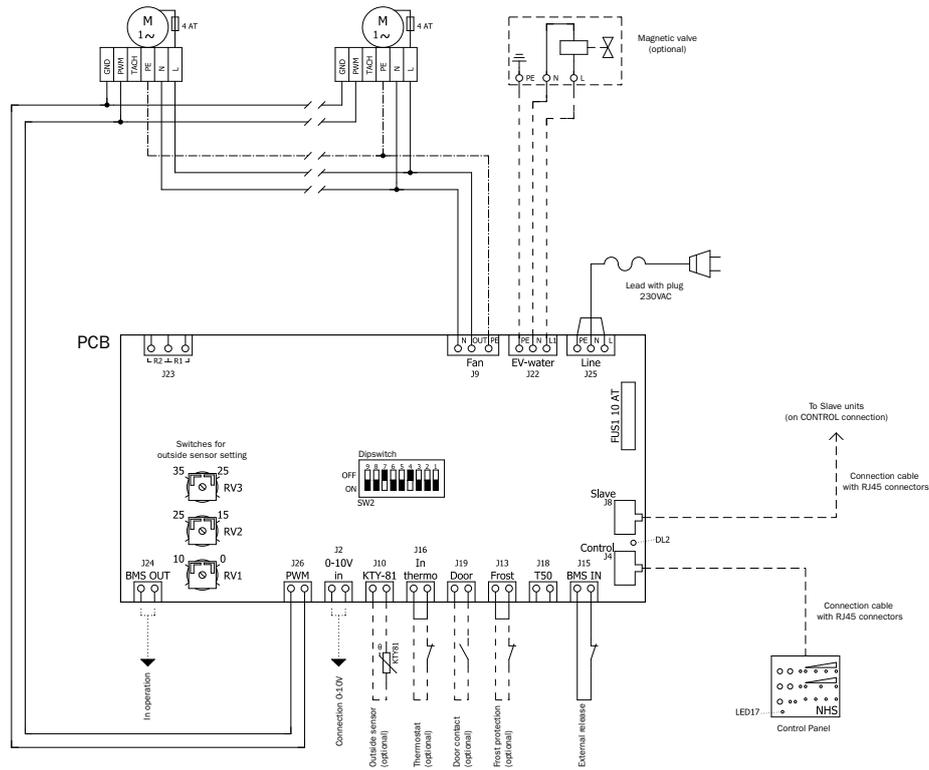
<sup>1</sup> At a discharge temperature of 40°C and an air intake temperature of 20°C.

<sup>2</sup> Measured at 3m from the side.

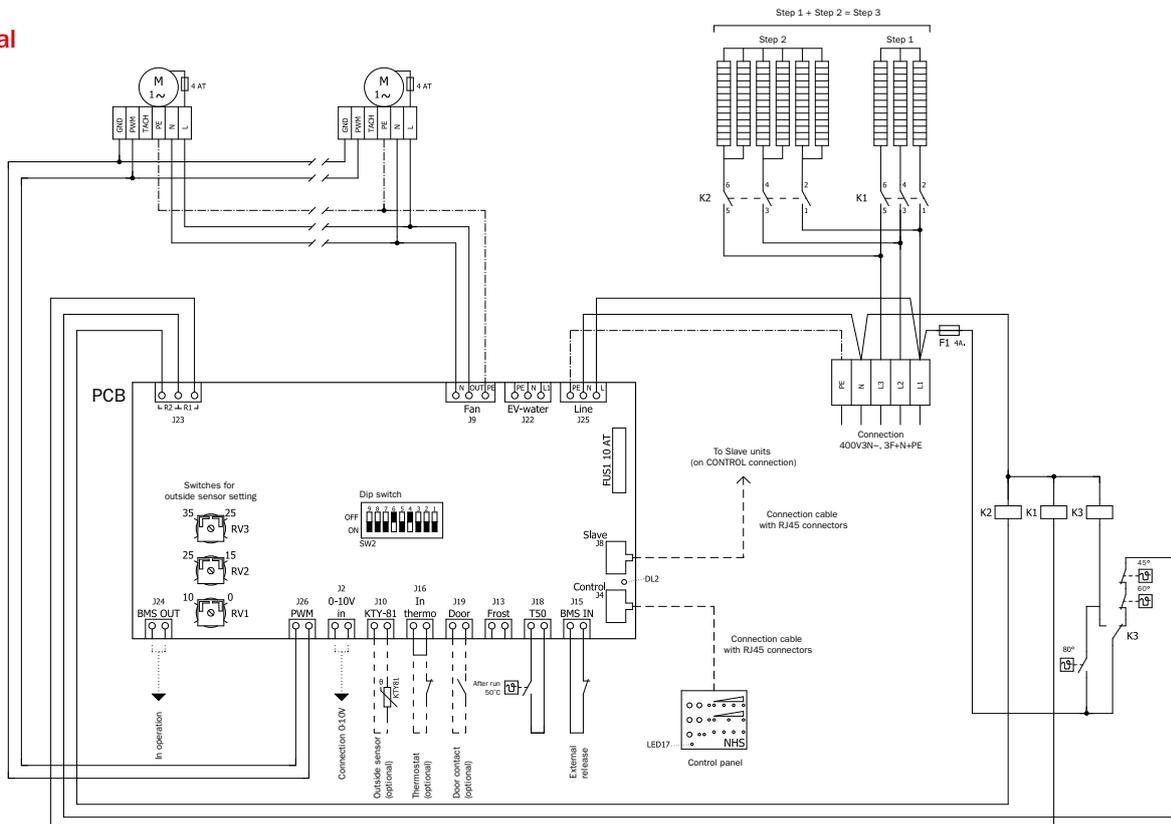
Subject to technical changes.

# Wiring diagrams

## Hot water and Direct expansion



## Electrical



# Accessories

## Control valves, shut-off valves and magnetic valves



### Thermostatic control valve type CITR with TWHV DN20, built-in

Thermostatic control valve (corner valve) CITR with thermostatic head. To control a constant discharge temperature, fully built-in. Special control valve for maximum flow kvs 5.1.



### Thermo-electric shut-off valve type MV with TWHV DN20, built-in

230 V, current-free closed, fully built-in. For the water cut-off via summer-winter function or to control the water-flow amounts for building-side control. Special control valve for maximum flow DN 20 kvs 5.1.



### Thermostatic control valve type CITR with TWV DN20/25

Thermostatic control valve (two-way valve) CITR with thermostatic head. To control a constant discharge temperature, included separately. Special control valve for maximum flow. Capillary tube length 2 m, DN 20 kvs 5.1, DN 25 kvs 5.1.



### Thermostatic control valve type CITR with DWV DN20/25/32

Thermostatic control valve (three-way valve) CITR with thermostatic head. To control a constant discharge temperature, included separately. Special control valve for maximum flow. Capillary tube length 2 m, DN 20 kvs 3.0, DN 25 kvs 6.27, DN 32 kvs 6.44.



### Thermo-electric shut-off valve type MV with TWV DN20/25

230 V, current-free closed, included separately. For the water cut-off via summer-winter switch or to control the water-flow amounts for building-side control. Special control valve for maximum flow. DN 20 kvs 5.1, DN 25 kvs 5.1.

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## 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 96mm. Temperature range: -25 to 70 °C. Housing cube: plastic.

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## 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. Only possible for warm-water air curtains.

## 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



### Frost-protection thermostat VBT, built-in

To protect hot-water heating batteries, with one temperature sensor with a length of 6 metres with a potential-free change-over contact, settings from -10 °C to 12 °C. Protection class IP40.

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## 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.

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## 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 3 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 3 m.

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## 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.



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