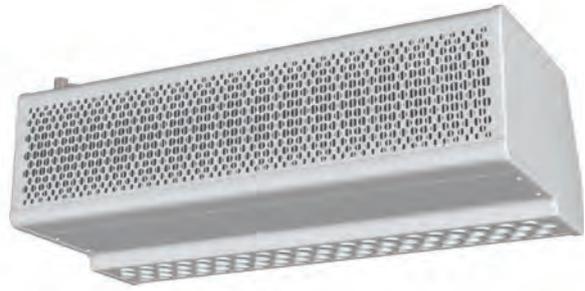


## Optimal

- [ ] Water heater
- [ ] Electric heater
- [ ] Without heater
- [ ] Opening heights of up to 3m



### Features

- Single capacity line, for opening heights of up to 3m
- 1.0m, 1.5m and 2.0m lengths
- Water heater, electric wire heater or air-only version
- Two types of integrated regulation
- 24-month guarantee

Optimal air curtains are designed for the barrier free separation of two areas with differing climatic conditions.

These air curtains are particularly suitable for installation in shopping centres, banks, hotels, restaurants, administrative buildings and so on. The air curtain should be used in an environment free of rough dust, grease, chemical fumes and other impurities.

The air curtain is supplied in two colour options, metallic silver or white RAL9010 gloss.

### Primary parameters

- The air curtain should be installed indoors in a dry area with ambient temperatures ranging from 0°C up to +40°C with a relative humidity up to 80%.
- The IP rating of the air curtain is IP20.
- All air curtains with electric heaters are fitted with a safety thermostat with automatic reset and an emergency thermostat with a manual reset.
- The warm-water exchangers are designed for a maximum operating temperature of +100°C and a maximum operating pressure of 1.6MPa.

All air curtain projects should be calculated by a HVAC designer.

Air curtain type	Door height* [m]	Air capacity [m <sup>3</sup> /h]	Noise** [dB(A)]	Heater power [kW]	Heater voltage /current [V/A]	Fan voltage /current [V/A]	Weight [kg]
VCO-B-10S-1	3	2400	52.5	-	-	230/1.2	29
VCO-B-15S-1		3600	55	-	-	230/2.0	41
VCO-B-20S-1		4800	56.5	-	-	230/2.5	50
VCO-B-10E-2		2350	52.5	9.5	400/14.5	230/1.2	32
VCO-B-15E-2		3525	55	15.0	400/22.5	230/2.0	45
VCO-B-20E-2		4700	56.5	19.0	400/28.5	230/2.5	54
VCO-B-10M-2		2350	52.5	6.3	230/28.6	230/1.2	32
VCO-B-15M-2		3525	55	8.75	230/39.7	230/2.0	45
VCO-B-10V-2		2150	52	18.52***	-	230/1.2	37
VCO-B-15V-2		3225	54.5	29.00***	-	230/2.0	52
VCO-B-20V-2		4300	56	38.85***	-	230/2.5	62

\* Limited distance when air flow speed decreases to 2 m/s. Applies to the highest capacity type under optimum conditions.

\*\* Sound pressure measured 3 m from the air curtain intake.

\*\*\* At the temperature gradient of 82/71 and temperature of intake air equal to +18 °C.

## Electric heater parameters

Air curtain type	Air capacity [m <sup>3</sup> /h]	Heater power [kW]	Temperature increase* Δt [°C]
VCO-B-10E-2	2350	9.50	11.2
VCO-B-15E-2	3525	15.00	11.8
VCO-B-20E-2	4700	19.00	11.2
VCO-B-10M-2	2350	6.30	7.5
VCO-B-15M-2	3525	8.75	6.9

- At the maximum air flow and maximum heater power

## Water exchanger parameters for water temperature gradient of 80/60°C

Air curtain type	Air capacity [m <sup>3</sup> /h]	Heater power* [kW]	Outlet temperature [°C]	Water flow [l/s]	Water pressure loss [kPa]
VCO-B-10V-2	2150	14.1	37.4	0.05	1.6
VCO-B-15V-2	3225	22.2	38.4	0.08	1.9
VCO-B-20V-2	4300	29.7	38.4	0.10	1.7

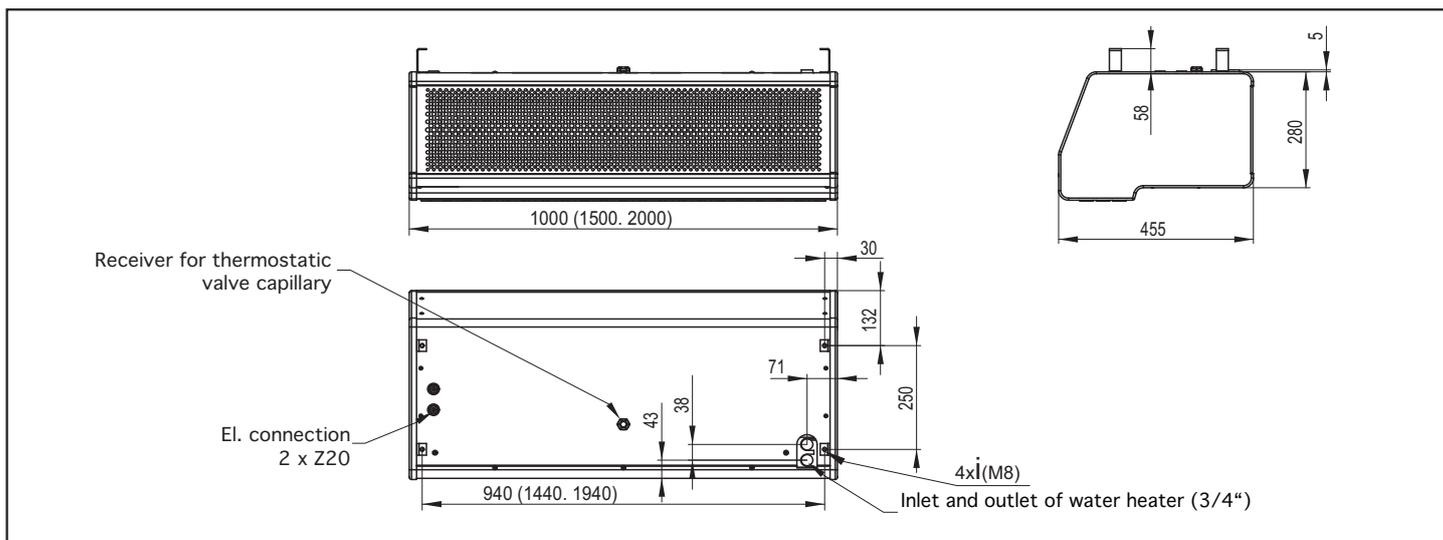
- Temperature of intake air: +18 °C

## Water exchanger parameters for water temperature gradient of 82/71°C

Air curtain type	Air capacity [m <sup>3</sup> /h]	Heater power* [kW]	Outlet temperature [°C]	Water flow [l/s]	Water pressure loss [kPa]
VCO-B-10V-2	2150	18.72	43.5	0.4111	9.43
VCO-B-15V-2	3225	29.00	44.6	0.6444	10.21
VCO-B-20V-2	4300	38.85	44.7	0.8638	8.05

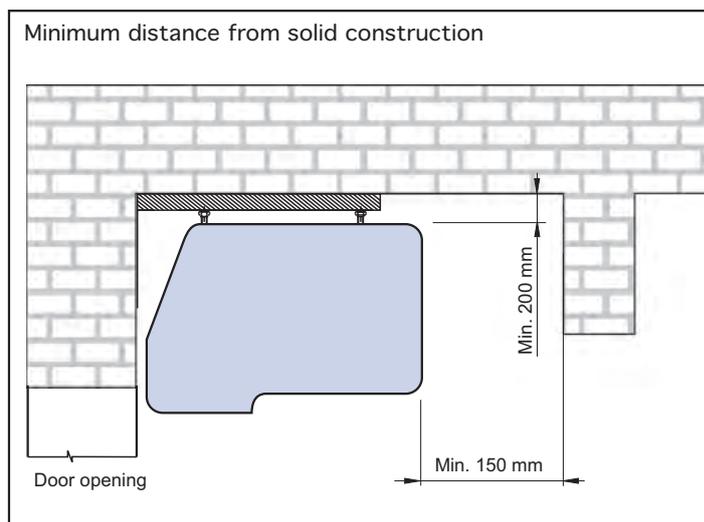
- Temperature of intake air: +18 °C





## Installation and assembly

- The air curtain shall be installed in a horizontal position only.
- The air curtain shall be located as close to the top edge of the doorway as possible, see figure.
- To ensure a correct function it is recommended that the air curtain overlaps the doorway by 100mm on both sides.
- Correct operation of the air curtain requires that specified distances from the surrounding objects are observed, see figure.
- Suspension holders are used for installing the air curtains see **ACCESSORIES**.



## Control

The OPTIMAL Comfort air curtains are controlled by a wired remote control. The controller type depends on the type of air curtain required and it is shipped with the air curtain. The differences between individual controller options are detailed in table over the page. All Optimal air curtains may also be connected to the central building management system through RS-485 interface. Contact your supplier for more detailed information and data necessary for integration into such system.

## Control

Optimal air curtains are controlled by a wired remote control. The differences between the individual controller options are detailed in the table below.

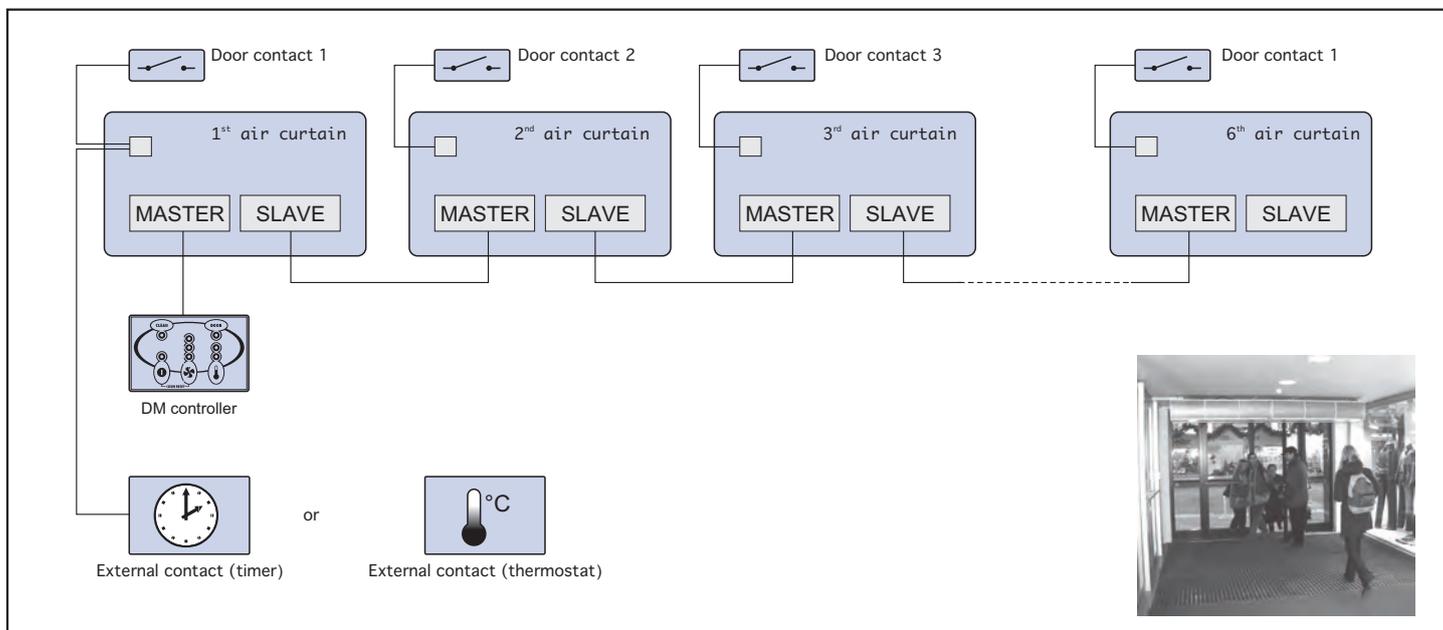


**SM**  
(air curtains without water heater only)



**DM**  
(air curtains with water heater only)

	Type of controller	Manual	Manual
	Regulation of air output	3 speeds	3 speeds
	Regulation of electric heater	NO	2 levels
	Possibility of connecting a door contact		YES
	Connection of a special thermostat	YES (Only one of the mentioned items)	YES (Only one of the mentioned items)
	Connection of a timer		
	External temperature sensor	NO	NO
	Air curtain cleaning interval indication based on operating hours	NO	YES
	Door switch state indication	NO	YES
	Aftercooling electric heater	NO	30s
	Chaining air curtains	NO	Up to 6
	Light indication of selected function	NO	YES
	Controller connection to air curtain	Power cable (230V) Max. length 100m	Low-voltage cable (12V) with max. length of 50m



## Water heater control

**The air curtain is not equipped with an integrated water control, this needs to be designed separately.**

### Basic – by throttling.

TV1 Thermostatic Valve - The valve controls the flow of the warm water supply into the air curtain depending on the temperature of air leaving the air curtain. One valve is required for each air curtain.

### Economical – by diverting.

ZV3 Three Way Zone Valve (open/closed) with servo drive - Each ZV3 Zone valve should be selected with either a TER-K (channel thermostat) or TER-P (room thermostat).

The valve switches the warm water supply in to the air curtain and back towards the heat source depending on the

temperature of the air leaving the air curtain or depending on the room temperature. One valve is required per air curtain.

### Precise – by mixing.

SMU Mixing Point, OSMU-01-6A mixing point controller (max temperature 110°C), P12L1000 channel sensor or P10L1000 room sensor.

The mixing system controls the ratio of supply and return heated water into the air curtain depending on the temperature of air leaving the air curtain and/or depending on the room temperature.

One mixing point may be used for multiple air curtains provided they are an identical length and that the exchangers are connected in a parallel arrangement.

## Accessories

These accessories should be ordered to make the air curtain functional.

### Connection cable

Controller for air curtains with the SM control is connected using common wiring cable (230V control voltage), see "Wiring diagrams" chapter. A suitable cross-section of the cable shall be determined based on the particular installation conditions. This cable should be delivered by a company performing the air curtain electrical wiring.

Controller for air curtains with the DM control is connected using supplied common "communication" light-current cable with a length of 5m.

### Optional accessories

#### Connection cable

The communication cable is designed for connecting the DM controller to the air curtain or for interconnecting chained air curtains.



**KABEL-05M**

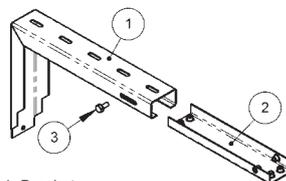
03, 05, 08, 10, 15, 20, 30, 40 - cable length in m (unless otherwise stated in the order, the cable is a standard 5m) Maximum cable length is 50m.

KABEL - connection cable

The standard length of the cable delivered with the air curtain is 5m. Other lengths are available based on the coding key provided opposite.

#### Wall mounting bracket

Bracket designed for mounting the air curtain onto the wall.



- 1 Bracket
- 2 Hanging strip
- 3 Securing screw

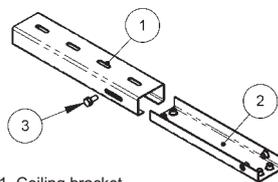
**VCS3-SKD-A-SET**

A-SET - for A,B and C air curtains (2 pcs.)  
D-SET - for D air curtains (2 pcs.)

VCS3-SKD - wall mounting bracket

#### Ceiling holder

The holder is designed for attaching the air curtain to a ceiling.



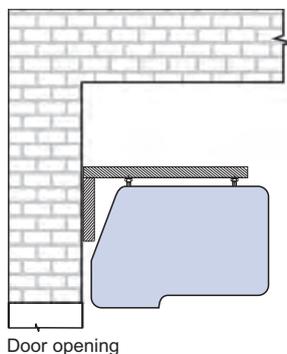
- 1 Ceiling bracket
- 2 Hanging strip
- 3 Securing screw

**VCS3-SD-A-SET**

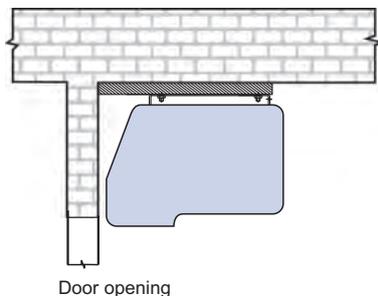
A-SET - for A,B and C air curtains (2 pcs.)  
D-SET - for D air curtains (2 pcs.)

VCS3-SD - ceiling holder

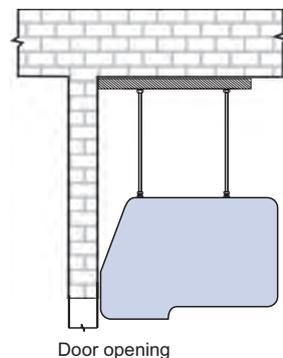
Hanging the air curtain with the aid of the VCS3-SKD wall bracket.



Hanging the air curtain with the aid of the VCS3-SD ceiling bracket.



Hanging of the air curtain with the aid of threaded screws and the VCS3-SD ceiling bracket.



## Optional accessories

**Thermostatic valve  
TV1-1/1**



**Door switch for air curtains fitted  
with the SM control  
DS**



**Three-way valve with servo drive  
ZV-3**



**Door switch for air curtains fitted  
with the DM and DA controls  
DK1**



**Flexible connection hoses  
OH-01-1/1-xxx**



**Timer with a weekly program  
SH-TM-848**

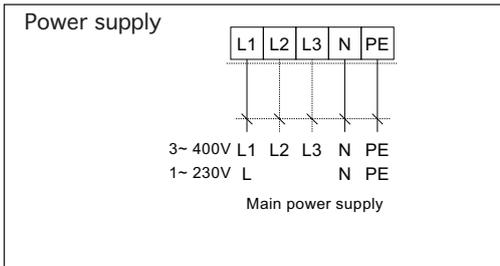


**Mixing point  
SMU-xx-xx**



**Room thermostat  
TER-P**

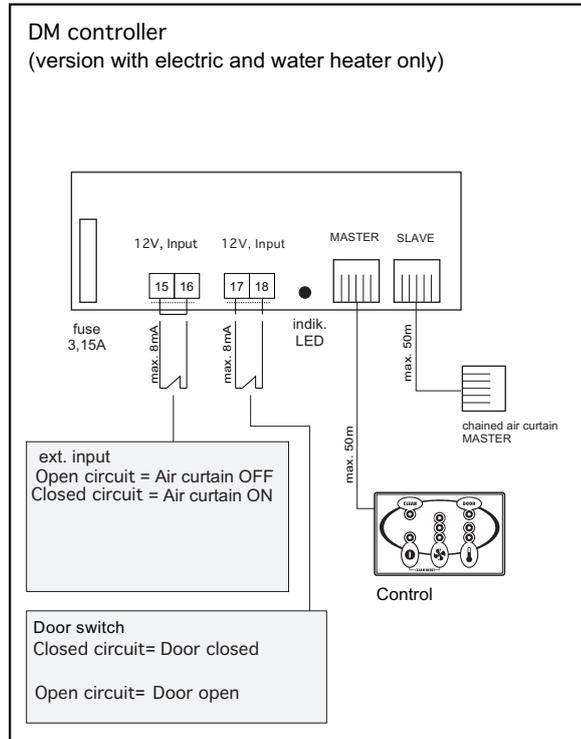
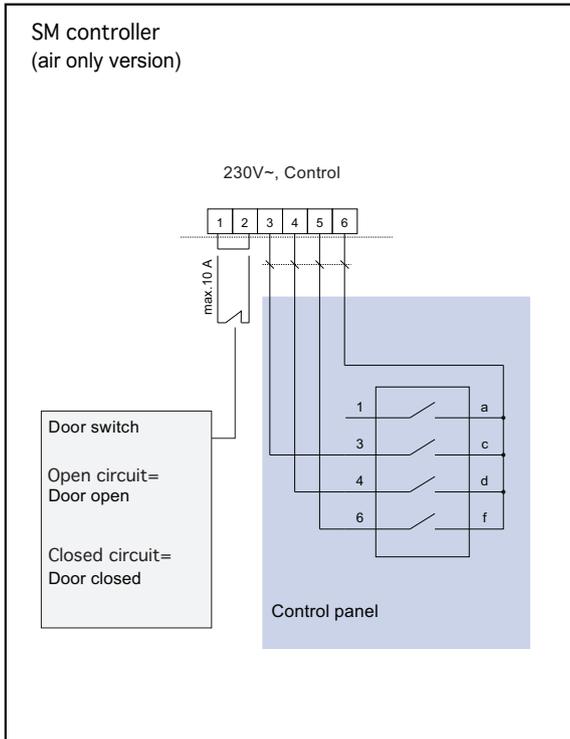




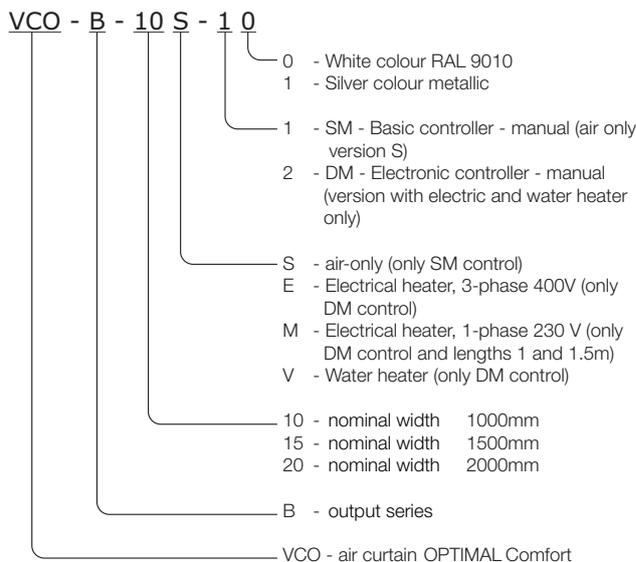
## Wiring diagrams

The recommended cross-section of the main power supply cables is stated in the Instruction Manual.

All wiring diagrams provided in the technical catalog are indicative only. When assembling the product, observe strictly the nameplate ratings as well as directions and diagrams affixed directly to the product or enclosed to the product



## Key to coding



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JS has a policy of continually improving products and performance. Actual specifications might vary from those shown.

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