# Finesse Recessed Air Curtain

Water heater

Electric heater

Air-only

Ceiling heights of up to 3.5m

## Features

- Two capacity lines, for ceiling heights of up to 3.5m
- 1.0m, 1.5m and 2.0m lengths
- Water heater, electric heater, or air-only version
- 304mm height, ideal for shallow ceiling voids
- Three controller options
- 24-month guarantee

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

These air curtains are particularly suitable for installation into ceiling voids 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 housing is supplied in a galvanised finish with the flush fitting grille in 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, including assembled suction grille is IP20 and is equipped with an exhaust grille with fixed lamellas at an angle of 15°.
- 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 | Ceiling height* [m] | Air capacity [$m^3$/h] | Noise** [dB(A)] | Heater power [kW] | Heater voltage /current [V/A] | Fan voltage /current [V/A] | Weight [kg] |
|---|---|---|---|---|---|---|---|
| VCS3-F-B-10S | 2.8 | 2240 | 56.2 | - | - | 230/2.5 | 21 |
| VCS3-F-B-15S | | 3360 | 60.8 | - | - | 230/3.8 | 34 |
| VCS3-F-B-20S | | 4480 | 62.4 | - | - | 230/5.0 | 48 |
| VCS3-F-B-10E | | 2220 | 56.0 | 9 | 400/13 | 230/2.5 | 25 |
| VCS3-F-B-15E | | 3330 | 60.8 | 13.5 | 400/19.5 | 230/3.8 | 37 |
| VCS3-F-B-20E | | 4440 | 62.4 | 18 | 400/26 | 230/5.0 | 51 |
| VCS3-F-B-10M**** | | 2220 | 56.2 | 9 | 230/39 | 230/2.5 | 25 |
| VCS3-F-B-15M**** | | 3330 | 60.8 | 9 | 230/39 | 230/3.8 | 37 |
| VCS3-F-B-10W | | 2150 | 54.3 | 23.9*** | - | 230/2.5 | 29 |
| VCS3-F-B-15W | | 3230 | 59.1 | 38*** | - | 230/3.8 | 43 |
| VCS3-F-B-20W | | 4300 | 60.3 | 52*** | - | 230/5.0 | 60 |
| VCS3-F-C-10S | 3.5 | 2860 | 56.6 | - | - | 230/3.6 | 24 |
| VCS3-F-C-15S | | 3990 | 61.0 | - | - | 230/4.8 | 37 |
| VCS3-F-C-20S | | 5040 | 62.8 | - | - | 230/6.0 | 51 |
| VCS3-F-C-10E | | 2790 | 56.6 | 9 | 400/13 | 230/3.6 | 28 |
| VCS3-F-C-15E | | 3890 | 61.0 | 13.5 | 400/19.5 | 230/4.8 | 40 |
| VCS3-F-C-20E | | 4920 | 62.8 | 18 | 400/26 | 230/6.0 | 53 |
| VCS3-F-C-10M**** | | 2790 | 56.6 | 9 | 230/39 | 230/3.6 | 28 |
| VCS3-F-C-15M**** | | 3890 | 61.0 | 9 | 230/39 | 230/4.8 | 40 |
| VCS3-F-C-10W | | 2610 | 55.2 | 27*** | - | 230/3.6 | 32 |
| VCS3-F-C-15W | | 3640 | 59.4 | 41*** | - | 230/4.8 | 46 |
| VCS3-F-C-20W | | 4600 | 60.4 | 54.4*** | - | 230/6.0 | 63 |

* *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.*

**** *DA Controlled units not available with single phase electrically heated air curtains.*

# Finesse Recessed Air Curtain

## Electric heater parameters

| Air curtain type | Air capacity [m³/h] | Heater power [kW] | | Temperature increase* Δt C] |
|---|---|---|---|---|
| | | 1st level | 2nd level | |
| VCS3-F-B-10E- | 2220 | 4.5 | 9.0 | 11.9 |
| VCS3-F-B-15E- | 3330 | 6.8 | 13.5 | 11.9 |
| VCS3-F-B-20E- | 4440 | 9.0 | 18.0 | 11.9 |
| VCS3-F-B-10M- | 2220 | 4.5 | 9.0 | 11.9 |
| VCS3-F-B-15M- | 3330 | 4.5 | 9.0 | 7.9 |
| VCS3-F-C-10E- | 2790 | 4.5 | 9.0 | 9.5 |
| VCS3-F-C-15E- | 3890 | 6.8 | 13.5 | 10.2 |
| VCS3-F-C-20E- | 4920 | 9.0 | 18.0 | 10.8 |
| VCS3-F-C-10M- | 2790 | 4.5 | 9.0 | 9.5 |
| VCS3-F-C-15M- | 3890 | 4.5 | 9.0 | 6.8 |

- *At the maximum air flow and maximum heater power*

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

| Air curtain type | Air Volume* [m³/h] | Increase of air temperature dt* [°C] | Heat output [kW] | Water flow rate [l/s] | Water pressure loss [kPa] |
|---|---|---|---|---|---|
| VCS3-F-B-10W | 2150 | 32.8 | 23.90 | 0.51 | 10.30 |
| VCS3-F-B-15W | 3230 | 34.7 | 38.00 | 0.82 | 22.10 |
| VCS3-F-B-20W | 4300 | 35.7 | 52.00 | 1.12 | 34.90 |
| VCS3-F-C-10W | 2610 | 30.5 | 27.00 | 0.58 | 12.80 |
| VCS3-F-C-15W | 3640 | 33.3 | 41.00 | 0.89 | 25.32 |
| VCS3-F-C-20W | 4600 | 34.9 | 54.40 | 1.17 | 37.80 |

- *Temperature of intake air: +18 °C*

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

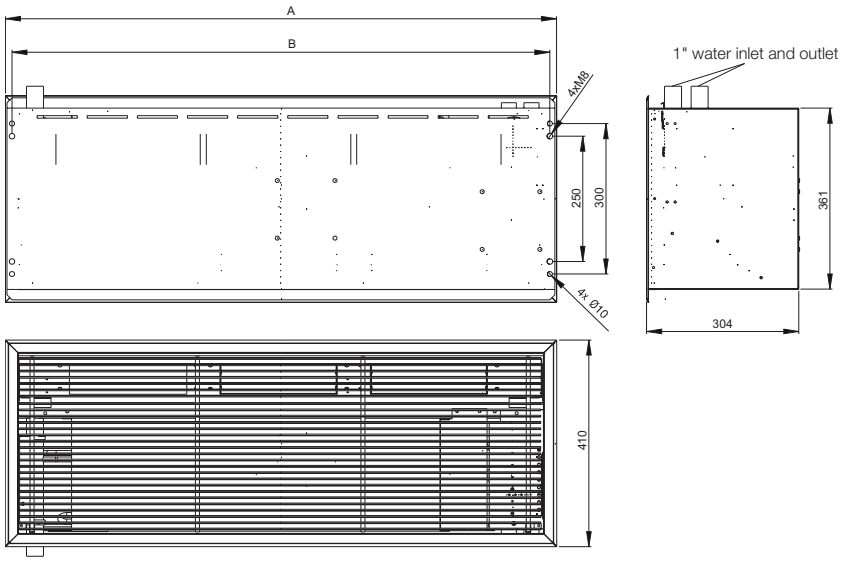
| Air curtain type | Air capacity* [m³/h] | Heater power* [kW] | Outlet temperature [°C] | Water flow [l/s] | Water pressure loss [kPa] |
|---|---|---|---|---|---|
| VCS3-F-B-10W- | 2150 | 20.13 | 45.62 | 0.24 | 2.62 |
| VCS3-F-B-15W- | 3230 | 32.74 | 47.89 | 0.4 | 5.85 |
| VCS3-F-B-20W- | 4300 | 45.18 | 48.98 | 0.53 | 9.42 |
| VCS3-F-C-10W- | 2610 | 22.62 | 43.56 | 0.27 | 3.23 |
| VCS3-F-C-15W- | 3640 | 35.25 | 46.56 | 0.43 | 6.69 |
| VCS3-F-C-20W- | 4600 | 47.14 | 48.22 | 0.56 | 10.18 |

- *Temperature of intake air: +18 °C*

# Finesse Recessed Air Curtain

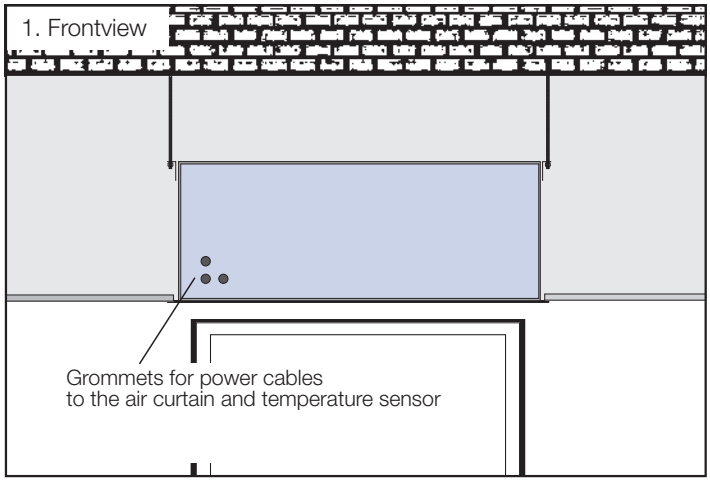
## Installation and assembly

- The air curtain should be installed in a horizontal position only.
- The air curtain should be located as close to the top edge of the doorway as possible, see figure 2.
- To create an effective air barrier it is recommended that the air curtain overlaps the doorway by 100 mm on both sides.
- Correct operation of the air curtain requires that specified distances from the surrounding objects are observed.
- Position of LPHW and power supply connections should be taken into consideration during installation.

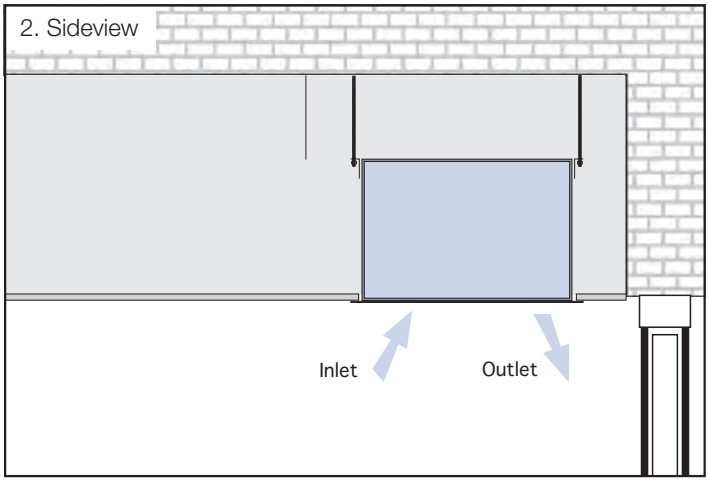



| Air curtain type | Length A [mm] | Spacing B [mm] | Width [mm] | Height [mm] |
|---|---|---|---|---|
| VCS3-F-B-10 | 1100 | 1073 | 410 | 300 |
| VCS3-F-B-15 | 1500 | 1473 | 410 | 300 |
| VCS3-F-B-20 | 2000 | 1973 | 410 | 300 |
| VCS3-F-C-10 | 1100 | 1073 | 410 | 300 |
| VCS3-F-C-15 | 1500 | 1473 | 410 | 300 |
| VCS3-F-C-20 | 2000 | 1973 | 410 | 300 |

1. Frontview

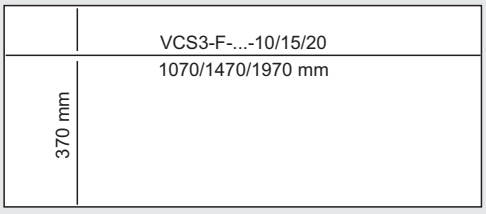



2. Sideview




3. Detail of air curtain connection to the threaded bars

4. Opening in false ceiling



## Control

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

SM

DM

DA

| | SM | DM | DA |
|---|---|---|---|
| Type of controller | Manual | Manual | Manual/Automatic |
| Regulation of air output | 3 speeds | 3 speeds | 3 speeds |
| Regulation of electric heater | 2 levels | 2 levels | 2 levels |
| Possibility of connecting a door contact | YES (Only one of the mentioned items) | YES (Only one of the mentioned items) | YES |
| Connection of a special thermostat | | | YES |
| Connection of a timer | | | YES |
| External temperature sensor | NO | NO | YES (Standard) |
| Indication of blocked filter (differential pressure switch) | NO | NO | YES |
| Indication of overheating of the electric heater | NO | NO | YES |
| Aftercooling electric heater | NO | 30s | 30s |
| Chaining air curtains | NO | Up to 6 | Up to 6 |
| Delayed cut off by external sensor | - | 30s | 30s |
| Light indication of selected function | NO | YES | YES |
| Controller connection to air curtain | Power cable (230V) with max. length of 100m | Low-voltage cable (12V) with max. length of 50m | Low-voltage cable (12V) with max. length of 50m |

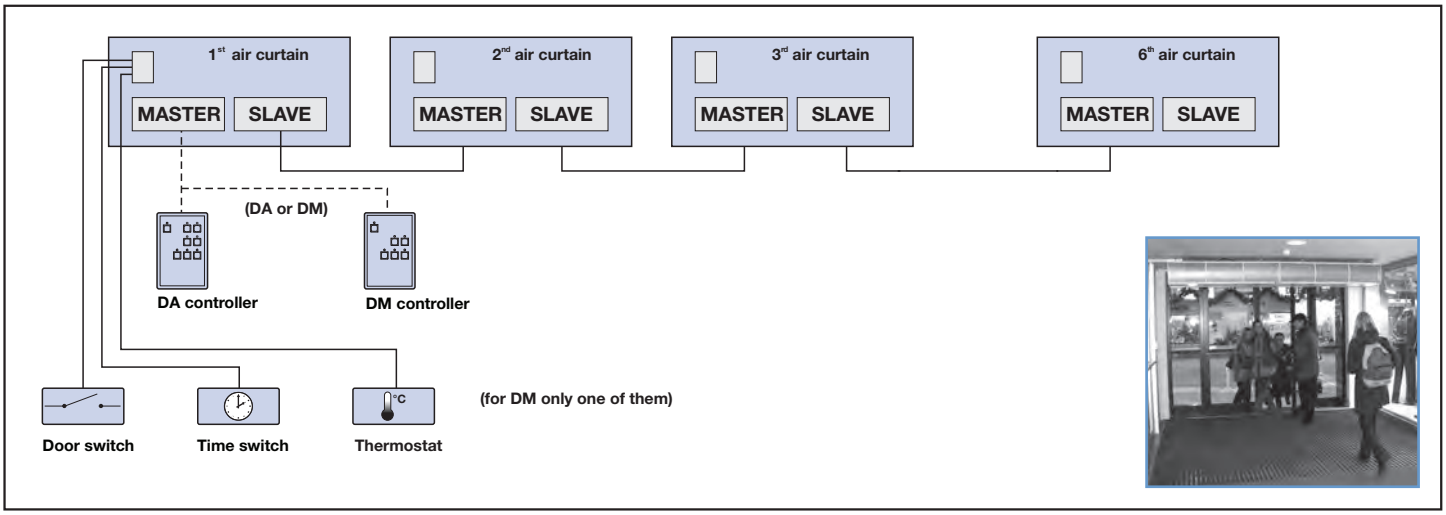
In addition to the above three control types, LonWorks module is also available on a special order for air curtains with the DA control. This module utilizes the standard LonTalk protocol facilitating integration of the air curtain into a centralized building management system. If the air curtains are chained, a LonWorks module is required for the MASTER air curtain only. Contact your supplier for more detailed information and data necessary for integration into such system.

One external switch can be connected to air curtains with the SM and DM control (door contact, thermostat or timer). Such external switches activates and deactivates the air curtain. Air curtains fitted with the DA controller include an external temperature sensor that monitors outdoor conditions and regulates the output of the fan and heater accordingly. This model can also be fitted with a time switch, door switch or indoor temperature sensor to further control the air curtain's operation.

The DM and DA controls allow for air curtain chaining, i.e. a single controller can be used for controlling up to six air curtains at the same time in the same mode.

One of the air curtains is fitted with a controller and acts as a master unit. Other air curtains are connected to the master unit through a communication cable and operate as slave units. The same cable type is used both for interconnecting the individual air curtains and for connecting the air curtain with a controller. Any external switches should be connected to the master air curtain. These in turn will control the slave units.

See diagram below:




## Water control

The air curtains are not equipped with an integrated water control, this need 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 operational.

**Control panel**
A control panel should be ordered for air curtains fitted with a DM and DA controller according to the key provided below. Air curtains equipped with the SM control already include the control panel and it does not need to be ordered separately.

PANEL-V/DM
- DM - DM controller
  DA - DA controller
- V - for air curtains with water heater or without heater
  E - for air curtains with an electric heater
- PANEL - remote control

A "communication" light-current cable 5m in length is supplied with air curtains fitted with the DM and DA controls. The cable is designed for connecting the air curtain to the control panel or for interconnecting chained air curtains.

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

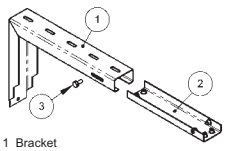
# Optional accessories

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

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

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

**Wall mounting bracket**
Bracket designed for mounting the air curtain onto the wall. Suitable number of brackets per air curtain is specified in the table below.




1 Bracket
2 Hanging strip
3 Securing screw

VCS3-SKD-A-SET
- A-SET - for B and C air curtains (2 pcs.)
- VCS3-SKD - wall mounting bracket

| Number of hanging elements according to number of air curtain modules in the chain | Number of air curtain modules (in chain) | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | n |
| Number of VCS3-SKD-x brackets | 2 | 3 | 4 | 5 | n + 1 |
| Number of VCS3-SD-x ceiling brackets | 2 | 3 | 4 | 5 | n + 1 |
| Number of ZTZ-M8 threaded bars | 4 | 8 | 12 | 16 | 4 x n |

## 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**

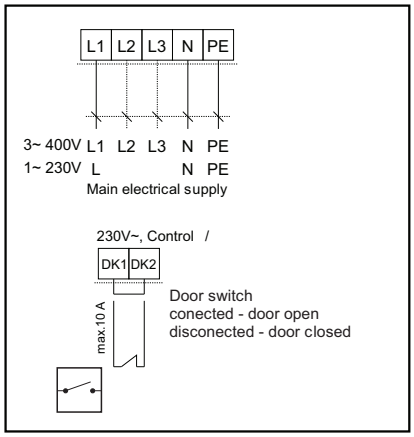
**Room thermostat**
**TER-P**

## Wiring diagrams

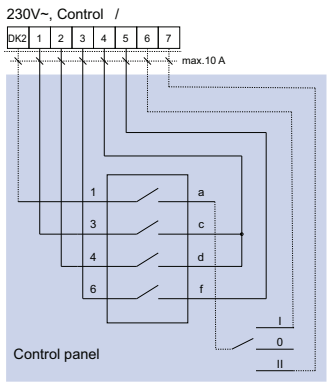
The recommended cross-section of the main power supply cable is stated in the Instruction manual.

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 attached to the product.

SM




VCS3-F-B, VCS3-F-C



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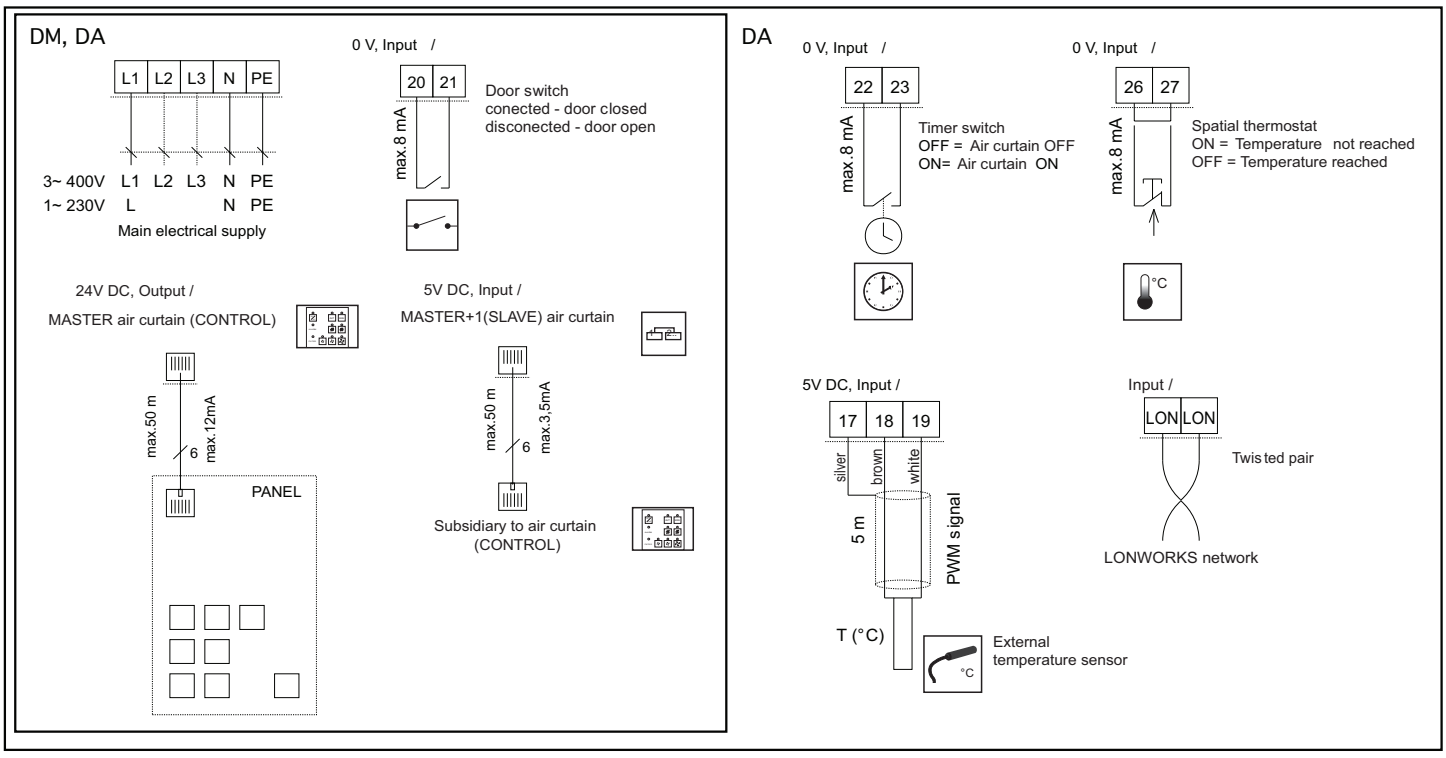


## Key to coding

VCS3 - F - B - 10 S - SM

- SM - power control in standard delivery)
- DM - manual control with electronic regulation
- DA - automatic/manual control with electronic regulation
- LW - LONWORKS (building management system)

- S - air-only
- M - Electrical 1-phase 230V (only DM,DA control, lengths 1 and 1.5m)
- E - Electrical 3-phase 400 V
- W - Multiple water heater

- 10 - nominal width 1000mm
- 15 - nominal width 1500mm
- 20 - nominal width 2000mm

- B, C - output series

- VCS3-F - FINESSE Comfort air curtain

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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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