

# Air curtains

For a comfortable indoor climate



## The full range

Our complete range of air curtains gives you all possibilities to get comfort and save energy in your entrance or opening, with a modern and smart design.

## All the data you need

Technical tables, wiring diagrams and product keys, we have gathered all our technical information together for all our air curtains.

## Technical handbook

Find everything regarding performance, sound and output calculations. We also explain why our Thermozone technology makes our air curtains so effective.

”

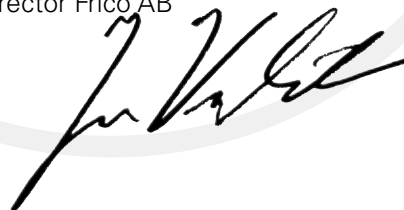
Dear customer,

Welcome to the Frico air curtain catalogue!

Our ultimate ambition is to give you the best possible support and the finest technical solutions. With this catalogue we offer you our complete range of all products and accessories you need to get the most effective air curtain installations, regarding both comfort and energy savings. To have Frico as a partner is the safe choice.

We hope this catalogue will be an effective tool, but never hesitate to contact us.

With best regards,  
Jonas Valentin  
Managing Director Frico AB



# Energy efficient products for a comfortable indoor climate

Frico offer total solutions, including both complete heating systems and products for additional heating, that helps you manage the local climate in shops in, industrial buildings, offices, hotels, restaurants and sports arenas. Through our parent company Systemair, we also possess knowledge about ventilation and can provide appropriate solutions.

Because we are environmentally aware our products are climate-smart. In our product development, the focus is on achieving the greatest possible function with the least possible energy consumption – without compromising on our core values of trust, competence and design. The intelligent products contain control systems which ensures that you never consume more energy than is required.

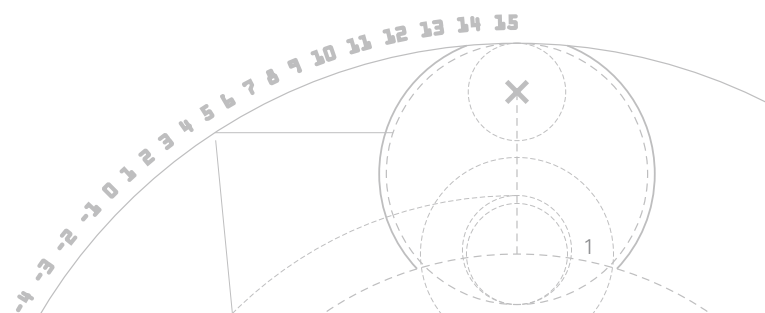


## Global business with local roots

Frico is the leading supplier of air curtains, radiant heaters and fan heaters in Europe, and we are represented in more than 70 countries by our subsidiaries, sister companies or our distributors. Updated information about our sales channels can be found at [www.frico.se](http://www.frico.se).

The head office is located in Sweden and the company is part of Systemair, one of the leading groups within ventilation. Our production takes place in Sweden and at other ISO approved production units within Europe. We also have strategically located warehouses in several of European locations.

[www.frico.se](http://www.frico.se)



# Contents



**10** Select the right  
air curtain

**16** Entrances  
Installation height up to 2,5 m

18 PA2200C  
28 PA2500  
38 AR200  
50 Portier  
58 ADA

**60** Commercial  
Installation height up to 4,2 m

62 Corinte  
86 AR300  
94 AR3500  
102 PA3500  
116 PA4200

**130** Industry  
Large doorways

132 AC500  
136 AGS5000  
144 AGS6000  
152 AGI  
162 UF600

air curtains for a com





© Roland Halbe

## 168 Specific applications

- 170 PA1006 Door heater
- 172 PA1508: Small openings
- 176 ADA Cool: Cold storage
- 180 RDS: Revolving doors
- 190 SFS: Revolving doors

## 198 Controls

- 200 SIRe
- 212 Other controls
- 214 Thermostats
- 218 Water control

## 226 Technical handbook

- 228 Thermozone technology

fortable indoor climate



## 10 good reasons for choosing Frico

Many years of work solving heating problems for our customers has given us great experience. We use this when we develop and produce today's energy efficient products for a comfortable indoor climate.

You are welcome to share our knowledge!

### Eighty years of experience

Frico was founded in Sweden in 1932 by the civil engineers D. Eggertz and G. Friberg and the Frico brand was registered in 1936. It gives us 80 years experience of products for a pleasant indoor climate and the product groups we offer today, have been introduced subsequently. In the same way we have started up subsidiaries and distributors around the world.

### Leading technology and design

Today Frico is the leading supplier of air curtains, radiant heaters and fan heaters in Europe, and the products are designed according to good Scandinavian tradition. As market leaders we run development and offer both electrical and water heated products. Thanks to Thermozone technology, performance can be precisely adjusted to obtain an air curtain with efficient separation that is also comfortable to pass through.

### Climate-smart solutions

The demand for energy saving products increases around the world in pace with increased environmental awareness and the will to conserve the earth's resource. With more than 80 years of combined expertise and Europe's most advanced testing facility at our disposal, we offer climate-smart solutions for the whole world market, regardless of the climate.

### It is easy to choose Frico

We simplify everyday life by giving you relevant product information together with our knowledge within heating. At [www.frico.se](http://www.frico.se) you will always find updated information, you can receive help to select the correct product and get inspiration from among our references, see our news, manuals, wiring diagram etc.

### The products keep our promises

To help us we have one of the most modern and advanced air and sound laboratories in Europe. We regularly carry out tests and measurements when developing new products, as well as when improving existing ones. The measurements are carried out according to the AMCA and ISO standards. In our test facility we carry out tests within the following areas:

- Airflow
- Sound
- Winding temperature
- Air velocity
- Heating capacity



#### Trust, competence and design

You can feel assured with Frico as a partner. We work according to our core values - trust, competence and design - in all aspects, from product development to contact with you the customer. Most of our products are kept in stock, which gives you short delivery times, and our well developed distribution network gives you access to maintenance, service and support. Our experience and knowledge guarantee the best solution for a comfortable indoor climate. And we offer products that can blend in with your environment or can be a design element that stands out.

#### Qualified local support

Frico is present locally in some 70 countries worldwide with a network of wholly-owned subsidiaries and independent distributors. Our highly qualified representatives are carefully chosen and together we are able to provide you with the best possible support. To find your nearest Frico subsidiary or distributor, please visit [www.frico.se](http://www.frico.se).

#### References

Our products create comfortable indoor climates all over the world. Allow yourself to be inspired by different installations that we have carried out to solve our customer's heating problems. Find our references at [www.frico.se](http://www.frico.se).

#### Warranty and high product quality

We offer constant and high product quality and our product warranty is available for your safety. We supply a 3 years product fault warranty on all Frico products that guarantees Frico's liability for faults that occur in a product during a 3 year period counted from the date of purchase. The warranty covers those faults that occur after correct installation (according to the manuals) and with normal wear and tear. Frico is liable for faults that have occurred during manufacture and that the product and its components function over 3 years of operation. Frico's production unit in Skinnskatteberg is environmentally certified in accordance with ISO 14001 and quality certified to ISO 9001. Through our distribution network we offer service and support and spare parts that are available for at least 10 years.

#### Frico Academy

Frico Academy is an important platform for networking and sharing inspiration and knowledge between us and our distributors around the world. Through the Frico Academy we share our knowledge on theory and technology, as well as product knowledge and experience in manufacturing and product development.





## Frico's products

With the current rising energy prices the costs for heating are often very high. Frigo develops products and energy efficient heating systems that create better comfort. Preventing energy loss and ensuring that heat is optimally exploited is also important. Air curtains in doorways and radiant heaters or ceiling fans where the ceilings are high are examples of products that contribute to large energy savings.

### Air curtains

It makes sound economic sense to create an efficient and invisible door that keeps the heat inside. Air curtains can be even more effective when used in air conditioned or cold storage buildings.

Thermozone technology with its precisely adjusted air velocity gives even protection throughout the opening. Frigo air curtains provide the most efficient separation with the lowest possible energy consumption, regardless of whether it is the heat or the cold that you want to keep inside.

### Radiant heaters

Frigo radiant heaters imitate the sun, the most comfortable and efficient heat source available. The heat is emitted only when the rays hit a surface and the room temperature can thus be lowered while occupants experience a comfortable environment. This makes radiant heaters well suited not only for total heating but also for zone and spot heating, for example to avoid cold draughts from windows.

Radiant heaters are easy to install and require minimum maintenance. They heat directly when switched on and give no air movement.

### Fan heaters

We are proud of the worldwide fame Frico fan heaters have gained. They are reliable and are designed for long life. Our range covers all needs. The investment cost is low compared to other heating systems.

A great advantage of fan heaters is the option of combining heating and ventilation. Frico fan heaters are compact, silent and light weight. They are available for electrical heating as well as for water heating.



### Convectors

Convection is the term for the rotating air movement where the air is affected by a heat source. The air is heated - rises upwards - cools and comes back to then be reheated. This gives good comfort through good heat distribution and the warm air flow directed upwards can be used to counteract cold drafts from large glass surfaces.



### Ceiling fans

Ceiling fans force over-heated air from the ceiling down to the occupation zone in premises with high ceilings so that the heat is maximally exploited.



### Thermostats and controls

The key to energy efficient heating and good comfort is the combination of heating products and good controls. Frico offers a wide range of thermostats and controls, read more under each product or in the Frico Catalogues.



### More information

More information about our products can be found on our website, [www.frico.se](http://www.frico.se), in our product catalogues and our other printed material that can be ordered via the website. You can also find news and more extensive information about reference installations.







## Frico's Thermozone technology optimizes the air curtain



Frico air curtains create an invisible barrier at openings and doors which separates different temperature zones without limiting access for people and vehicles. With Thermozone Technology an efficient air separation is created in combination with a low sound level, giving comfortable climate and large energy savings. Frico air curtains are appreciated worldwide for their quality and operating efficiency, and are currently used in over 70 countries.

### Energy savings and good indoor climate

In many premises, for example shops, department stores, industrial premises and goods terminals, doors remain open for a large part of the day. This means discomfort for customers and staff at the same time as there are significant losses of expensively heated or cooled air, especially when the temperature difference between outdoor and indoor air is great. Frico air curtains give a comfortable indoor climate, free from drafts, and the losses of heated or cooled air are significantly reduced with correctly installed air curtains. This means that the pay-off time is reduced, especially for large door openings. The air curtain also keeps out insects and emissions.

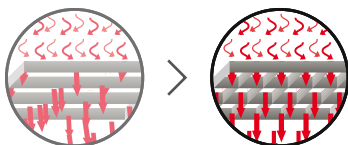
### Thermozone technology

Frico's air curtains have optimal curtain effect for doors and entrances. Thanks to Thermozone technology, performance can be precisely adjusted to obtain an air curtain with efficient separation that is also comfortable to pass through.

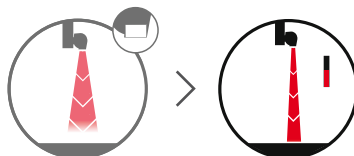
Thermozone air curtains are optimized in:

- Airflow geometry
- Performance
- Sound level

Read more about Thermozone technology in the Technical handbook in this catalogue and at [www.frico.se](http://www.frico.se).



Frico's outlet grilles generate an even airflow that creates an efficient air barrier.



Thermozone technology creates the most efficient air barrier.



By reducing the turbulence inside the air curtain, the sound level is reduced.

### Intelligent regulation

Most of our air curtains are prepared for the SIRE control system, which automatically manages the air curtain operations. The air curtain adapts itself to the present conditions in the entry. By sensing how often the door is opened and closed and measuring the outdoor temperature, the indoor temperature or even the return water temperature, the air curtain can give efficient protection with minimal energy consumption. With SIRE control the air curtain always has optimal operation. You do not even need to remember to turn it on or off. It even adapts itself to the seasons, and with its weekly calendar, the air curtain operates automatically when it is needed.

### Low sound level and high performance

Air curtains with Thermozone technology are developed and manufactured in Frico's facility in Skinnskatteberg. They are tested at one of the most modern and advanced air and sound laboratories in Europe which means that we can guarantee the data stated in our product information. Thanks to the sophisticated equipment and our long experience we can build air curtains with extremely low sound levels and very high air flow performance.

### Design

Frico collaborates with leading architects and product designs in the product development. The air curtains blends in well in the environment and the designed for fit into both exclusive shop interiors as industrial environments. With recessed installation the air curtains become nearly invisible, only the outlet grille is visible.

### Air curtain experts

Frico knows air curtains. The company was founded in 1932 and we developed our first air curtains 40 year ago. We are happy to share our knowledge and experience and we are always available to help you choose the right product.



## Select the right air curtain

For optimal air curtain effect, it is important to choose the right air curtain. We have air curtains for all openings from small kiosk hatches to large industrial doors. They blow from above, from the side or from below. Choose between electrical, water heated or unheated versions.

To get the most out of the product, the following hints are important to bear in mind.

- To ensure that the air flow reaches the floor at the optimal air speed, the installation height (not the height of the opening ) determines the choice of air curtain.
- The air curtain units should cover the whole width (or height) of the opening. The air curtains can be obtained in different lengths. For wide (high) openings, several units are mounted beside (on top) of each other.
- The units should be positioned as close to the opening as possible.
- For optimal performance it is important that the pressure difference between outside and inside is not too big.



## Our air curtains

Type	Recommended installation height	Heat	Mounting	Extra	Page
<b>Entrances</b>					
PA2200C	2,2 m	⚡ 🔥 ❄️	Horizontal	Remote control.	18
PA2500	2,5 m	⚡ 🔥	Horizontal	SIRe control system.	28
AR200	2,5 m	⚡ 🔥 ❄️	Horizontal	Recessed mounting.	38
Portier	2,5 m	⚡ ❄️	Horizontal	Brushed stainless steel.	50
ADA	2,5 m	❄️	Horizontal	Cable and plug.	58
<b>Commercial</b>					
Corinte	3 m	⚡ 🔥 ❄️	Horizontal/Vertical	SIRe control system. Polished, mirror polished or brushed stainless steel.	62
AR300	3,5 m	⚡ 🔥 ❄️	Horizontal	Recessed mounting. Built-in control.	86
AR3500	3,5 m	⚡ 🔥	Horizontal	Recessed mounting. SIRe control system.	94
PA3500	3,5 m	⚡ 🔥 ❄️	Horizontal/Vertical	SIRe control system.	102
PA4200	4,2 m	⚡ 🔥 ❄️	Horizontal/Vertical	SIRe control system.	116
<b>Industry</b>					
AC500	5 m	❄️	Horizontal/Vertical		132
AGS5000	5 m	🔥 ❄️	Horizontal	SIRe control system. Vertical unit is available as special order.	136
AGS6000	6 m	🔥 ❄️	Horizontal	SIRe control system. Vertical unit is available as special order.	144
AGI	Large doorways	🔥 ❄️	Horizontal/Vertical		152
UF600	Large doorways	❄️	Vertical	Air barrier blown from below	162
<b>Specific applications</b>					
PA1006	Door heater	⚡	Horizontal		170
PA1508	Small openings	⚡	Horizontal	Cable and plug.	172
ADA Cool	Cold storage	❄️	Horizontal	Special terminales for easy connection of several units. Cable and plug.	176
RDS	Revolving doors	⚡ 🔥	Horizontal	For revolving doors. SIRe control system.	180
SFS	Revolving doors	⚡ 🔥	Vertical	For revolving doors. SIRe control system.	190

- ❄️ Ambient, no heat
- ⚡ Electrical heat
- 🔥 Water heat

## Quick selection guide Frico air curtains

## Horizontal mounting

The air curtains are mounted horizontally above the opening, creating a vertical air barrier.

## Surface mounting

These air curtains can be mounted on a wall or in the ceiling using threaded bars or cables.

## Classic

Many of our models are classic designs that blend in well in most interiors.

## Design













Our stainless steel air curtains are design elements well suitable for prestigious environments.






## Industry











These robust and powerful units are specifically designed for large doorways.







## Recessed mounting

These air curtains are installed recessed into suspended ceilings with only the outlet grill visible.

Recommended installation height	Air curtain	Page
2,2 m	PA2200C   	18
2,5 m	PA2500  	28
2,5 m	ADA 	58
3,5 m	PA3500   	102
4,2 m	PA4200   	116

2,5 m	Portier  	50
3 m	Corinte   	62

4,2 m	PA4200   	116
5 m	AGS5000  	136
5 m	AC500 	132
6 m	AGS6000  	144
Large doorways	AGI  	152

2,5 m	AR200   	38
3,5 m	AR300 	86
	AR3500   	94







## Vertical mounting

The air curtains are mounted vertically next to the opening, creating a horizontal air barrier. Two air curtains are installed, one on each side of the opening.







## Classic

## Design

## Industry

Recommended installation width *	Air curtain	Page
5 m	PA3500   	102
6 m	PA4200   	116






5 m	Corinte   	62
-----	---	----




6 m	PA4200   	116
Large doorways	AGI  	152
12 m	UF600 	162

\*) Two units, one on each side of the opening.

## Air curtains for particular use

These air curtains are designed for a specific application area such as revolving doors, service hatches or cold storage.

Application	Air curtain	Page
Revolving doors	RDS 	180
	SFS 	190
Service hatches	PA1508 	172
Door heater	PA1006 	170
Cold storage	ADA Cool 	176

-  Ambient, no heat
-  Electrical heat
-  Water heat

## Air curtains

### Installation examples for air curtains

Frico air curtains are available for openings of different sizes and for different application areas. To facilitate your choice of product, you will find some typical cases on the following pages. More detailed information on important factors to consider when choosing an air curtain is found on the previous pages.

Please note that it is the installation height that is decisive and not the height of the opening.

Basic criterias:

1. Type of premises: store, warehouse etc.
2. Height: installation height
3. Width: installation width
4. Mounting: horizontal or vertical
5. Connection: ambient, unheated (A), electrical (E), water (W)

#### Entrances

##### Shop

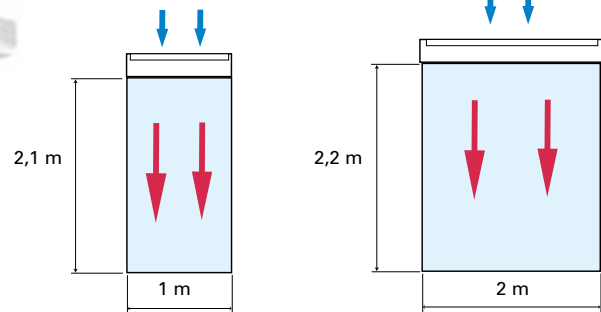


1. Type of premises: Shop
2. Installation height: 2,1 m
3. Installation width: 1 m
4. Mounting: Horizontal
5. Connection: Electrical

Recommendation: A PA2510E05 is recommended for these conditions.

2. Installation height: 2,2 m
3. Installation width: 2 m

Recommendation: A shop with a large entrance and a lot of traffic through the opening requires a larger unit to obtain a comfortable climate. For these conditions we recommend a PA3520E16.

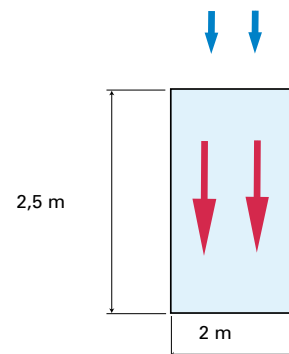


##### Bank



1. Type of premises: Bank
2. Installation height: 2.5 m
3. Installation width: 2 m
4. Mounting: Horizontal
5. Connection: Water

Recommendation: Our recessed units are ideal for buildings where a discrete air curtain installation is desired. For these conditions an AR220E18 is recommended.



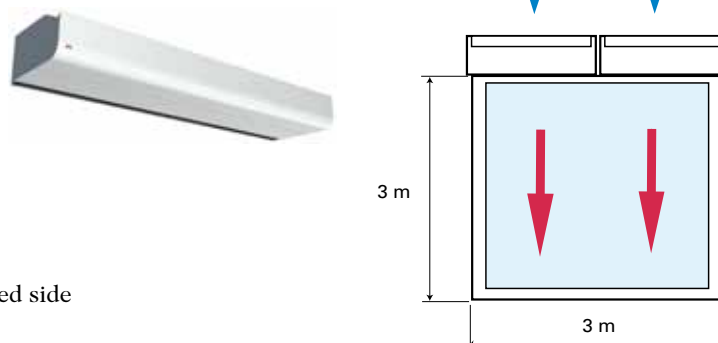


## Commercial

## Shopping centre

1. Type of premises: Shopping centre
2. Installation height: 3 m
3. Installation width: 3 m
4. Mounting: Horizontal
5. Connection: Electrical

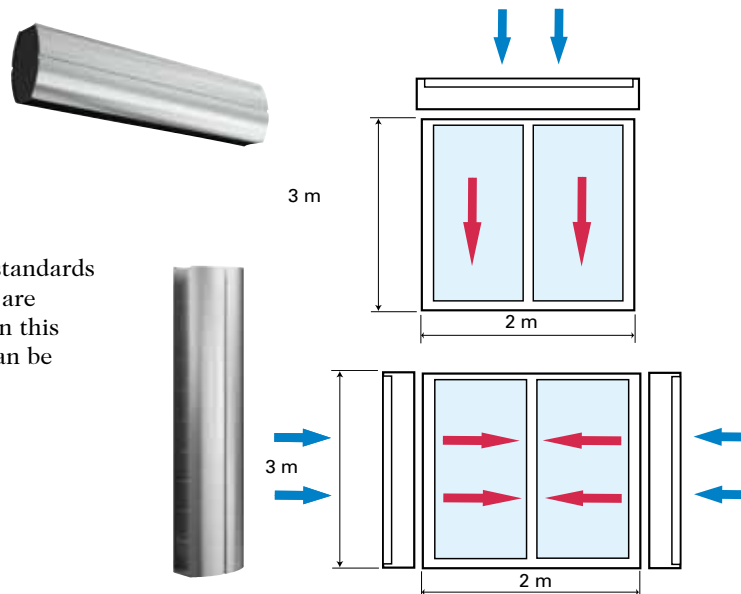
Recommendation: Two PA3515E12 are recommended for these conditions, mounted side by side above the opening.



## Hotel

1. Type of premises: Hotel
2. Installation height: 3 m
3. Installation width: 2 m
4. Mounting: Horizontal
5. Connection: Water

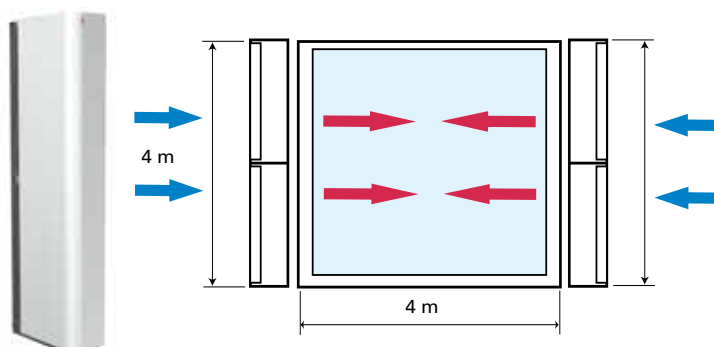
Recommendation: For doors requiring high standards of design and performance 1-2 Corinte units are recommended, depending on the premises. In this case, for example, an ADCS22WL. Corinte can be mounted vertically or horizontally.



## Goods reception, grocery store

1. Type of premises: Goods reception, grocery store
2. Installation height: 4 m
3. Installation width: 4 m
4. Mounting: Vertical
5. Connection: Water

Recommendation: Four vertically mounted PA4220WL beside the opening, two at each side are recommended for these conditions.



## Air curtains

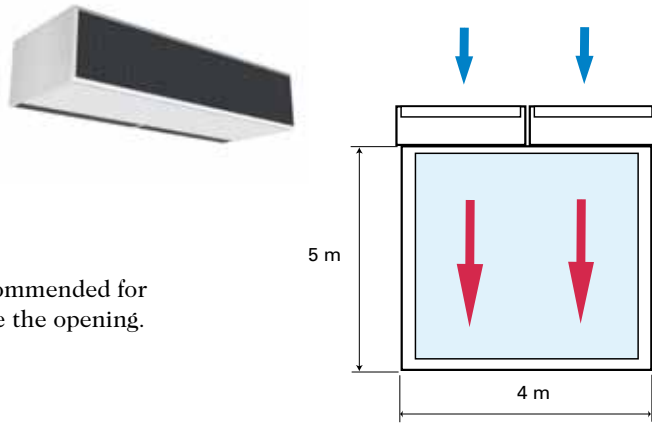
### Installation examples for air curtains

#### Industry

##### Warehouse

1. Type of premises: Warehouse
2. Installation height: 5 m
3. Installation width: 4 m
4. Mounting: Horizontal
5. Connection: Water

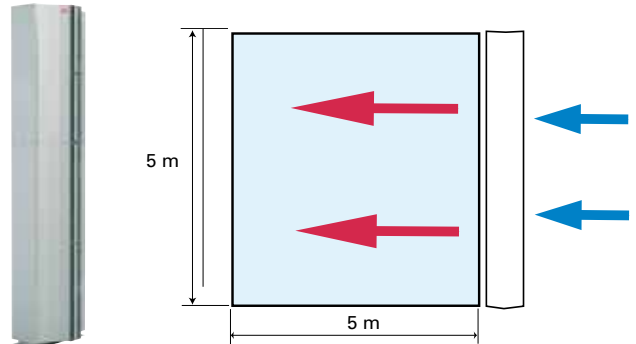
Recommendation: Two AGS5020WL are recommended for these conditions, mounted side by side above the opening.



##### Car manufacturing facility

1. Type of premises: Car manufacturing facility
2. Installation height: 5 m
3. Installation width: 5 m
4. Mounting: Vertical
5. Connection: Water

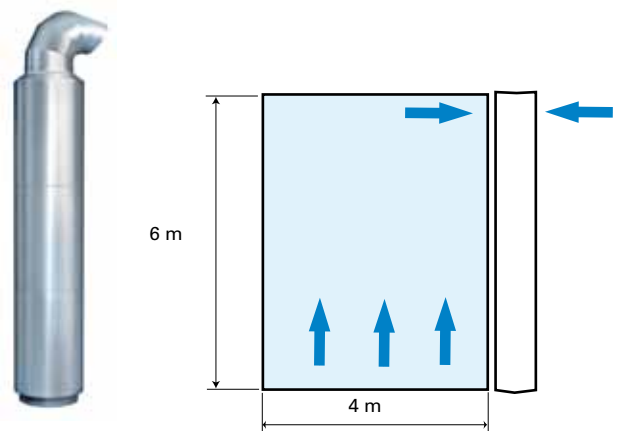
Recommendation: For these conditions two AGIV4WL units, mounted one on top of the other at one side of the door, are recommended.



##### Factory, heavy industry

1. Type of premises: Factory, heavy industry
2. Installation height: 6 m
3. Installation width: 4 m
4. Mounting: Vertical
5. Connection: Ambient

Recommendation: For these conditions we recommend UF600. Air is pressed out at high speed through a narrow slot in the floor inside the opening. UF600 provides nearly 100 % protection against cold draughts along the floor.

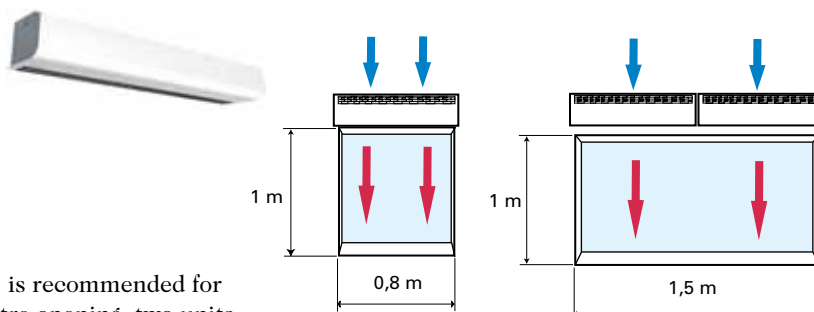


## Specific applications

### Kiosk or service hatch

1. Type of premises: Kiosk
2. Installation height: 1 m
3. Installation width: 0,8 m
4. Mounting: Horizontal
5. Connection: Electrical

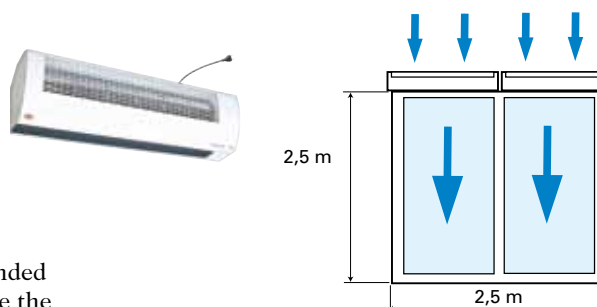
Recommendation: A PA1508E03 is recommended for these conditions. For the 1,5 metre opening, two units are mounted side by side to cover the whole width.



### Cold room

1. Type of premises: Cold room
2. Installation height: 2,5 m
3. Installation width: 2,5 m
4. Mounting: Horizontal
5. Connection: Ambient

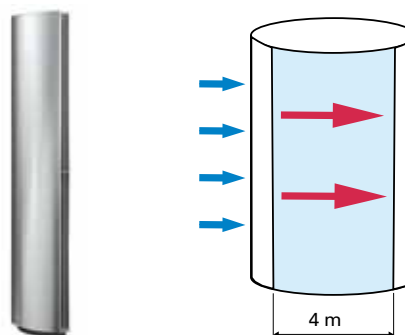
Recommendation: Two ADA Cool are recommended for these conditions, mounted side by side above the opening.



### Revolving doors

1. Type of premises: Premises equipped with revolving doors
2. Installation height: 2.2 m
3. Installation width: 1.8 m
4. Mounting: Vertical
5. Connection: Water

Recommendation: For these conditions a SFS30WL is recommended. SFS has a curved design that follows the shape of the revolving door and is installed vertically to the left of the door. If a solution without a visible air curtain is required, a RDS is recommended, which is installed above the revolving door.



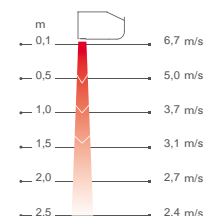


# Entrances

Frico air curtains create a comfortable indoor climate in various entrances in an attractive way. They add value to the interior when mounted visibly, although concealed mounting is also possible. Together they offer width and flexibility for entrance doors in various environments. The following air curtains are suitable for smaller premises with a relatively low installation height.

#### PA2200C

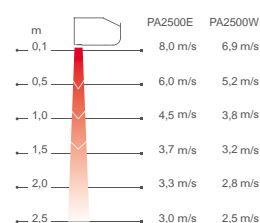
The PA2200C is a compact air curtain, suitable for most small entrances. The air curtain has an integrated control system and can also be remotely controlled which makes it very easy to use.



#### PA2500

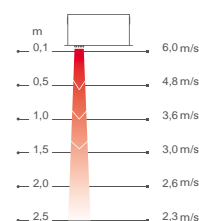
The PA2500 creates a temperature dividing air barrier that effectively prevents cold drafts and gives excellent heating comfort in door ways, such as shops, offices and public offices.

The air curtain has many intelligent and energy saving features which provide fully automatic protection for the entrance, adaptable to each area of use.



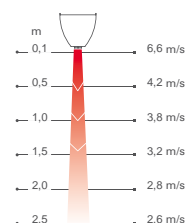
#### AR200

A low height makes it possible to install AR200 where ceiling space is limited. The recessed installation and low sound level makes AR200 very discreet.



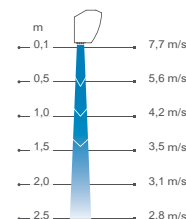
#### Portier

Portier is an exclusive air curtain in brushed stainless steel intended for entrance doors in e.g. shops, banks, hotels and restaurants. The elegant design of the air curtain makes it particularly suitable for environments where demands are made on a high standard of design.



#### ADA

ADA is suitable to use, for example, to keep the cold air inside air conditioned premises. The air curtain creates an air barrier that prevents the intrusion of warm air and also insects, exhaust fumes, smoke, dust, etc. The cost of air conditioning will be substantially lower when the loss of conditioned air is reduced.





PA2200C



## PA2200C

Stylish air curtain for entrances, with remote and integrated control

- Recommended installation height 2,2 m\*
- Horizontal mounting
- Lengths: 1, 1,5 and 2 m
- ✿ Ambient, no heat
- ⚡ Electrical heat: 3–16 kW
- 💧 Water heat

### Application

The PA2200C is a compact air curtain, suitable for most small entrances. The air curtain has an integrated control system and can also be remotely controlled which makes it very easy to use.

PA2200C creates a temperature dividing air barrier that effectively prevents cold draughts and gives excellent heating comfort inside the door.

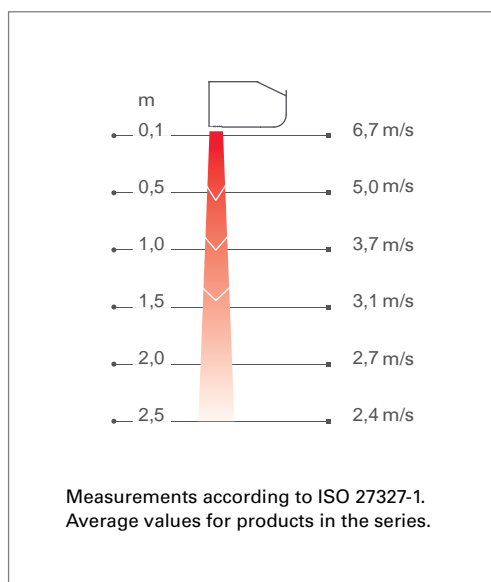
### Design

With its timeless design PA2200C is suitable for all entrances. The air curtain has a control panel discretely integrated in the end, which makes cable routing unnecessary. The front can be finished in any colour to perfectly match the environment.



Optimized airflow with  
Thermozone technology.

### Air velocity profile



### Product specifications

- Remote control and integrated regulation.
- 3 fan steps and 2 electrical heating steps.
- Units with 3 kW are equipped with 1,5 m cable and plug.
- Wall brackets included.
- The front is easy to remove, which facilitates installation and allows easy maintenance.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour front: white, RAL 9016, NCS S 0500-N. Colour grille, rear section, ends and brackets: grey, RAL 7046.

## Technical specifications

### ✿ Ambient, no heat - PA2200C A

Type	Output	Airflow* <sup>1</sup>	Sound level* <sup>2</sup>	Voltage motor	Amperage motor	Length	Weight
	[kW]	[m³/h]	[dB(A)]	[V]	[A]	[mm]	[kg]
PA2210CA	0	900/1200	42/51	230V~	0,45	1050	16
PA2215CA	0	1150/1800	40/52	230V~	0,5	1560	24
PA2220CA	0	1800/2400	43/53	230V~	0,9	2050	32

### ⚡ Electrical heat - PA2200C E

Type	Output steps	Airflow* <sup>1</sup>	Δt* <sup>3</sup>	Sound level* <sup>2</sup>	Voltage motor	Amperage motor	Voltage [V] Amperage [A] (heat)	Length	Weight
	[kW]	[m³/h]	[°C]	[dB(A)]	[V]	[A]		[mm]	[kg]
PA2210CE03	2/3	900/1200	10/7,5	42/51	230V~	0,45	230V~/13	1050	17
PA2210CE05	3,3/5	900/1200	17/12,5	42/51	230V~	0,45	400V3~/7,2	1050	17
PA2210CE08	5/8	900/1200	27/20	42/51	230V~	0,45	400V3~/11,5	1050	18
PA2215CE08	4/8	1150/1800	21/13	40/52	230V~	0,5	400V3~/11,5	1560	26
PA2215CE12	8/12	1150/1800	31/20	40/52	230V~	0,5	400V3~/17,3	1560	28
PA2220CE10	5/10	1800/2400	17/12,5	43/53	230V~	0,9	400V3~/14,4	2050	34
PA2220CE16	8/16	1800/2400	27/20	43/53	230V~	0,9	400V3~/23,1	2050	36

### 💧 Water heat - PA2200C W

Type	Output* <sup>4</sup>	Airflow* <sup>1</sup>	Δt* <sup>3,4</sup>	Water volume	Sound level* <sup>2</sup>	Voltage motor	Amperage motor	Length	Weight
	[kW]	[m³/h]	[°C]	[l]	[dB(A)]	[V]	[A]	[mm]	[kg]
PA2210CW	6,9	700/1200	21/17	0,38	39/52	230V~	0,4	1050	17
PA2215CW	11,1	1000/1750	23/18	0,81	37/53	230V~	0,5	1560	26
PA2220CW	14,4	1400/2400	22/18	0,74	40/53	230V~	0,8	2050	35

\*<sup>1</sup>) Lowest/highest airflow of totally 3 fan steps.

\*<sup>2</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.

\*<sup>3</sup>) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

\*<sup>4</sup>) Applicable at water temperature 80/60 °C, air temperature, in +18 °C.

Protection class for units with electrical heating: IP20.

Protection class for units without heating and units with water heating: IP21.

CE compliant.

## Controls

### ⚡ Unit with electrical heating

#### 💧 Unit with water heating



- Remote control.
- Integrated control panel on end of unit
  - 3 fan steps, 2 electrical heating steps (electrical), heating on /off (water).
- Manual regulation of the fan.
- Automatic heating control.

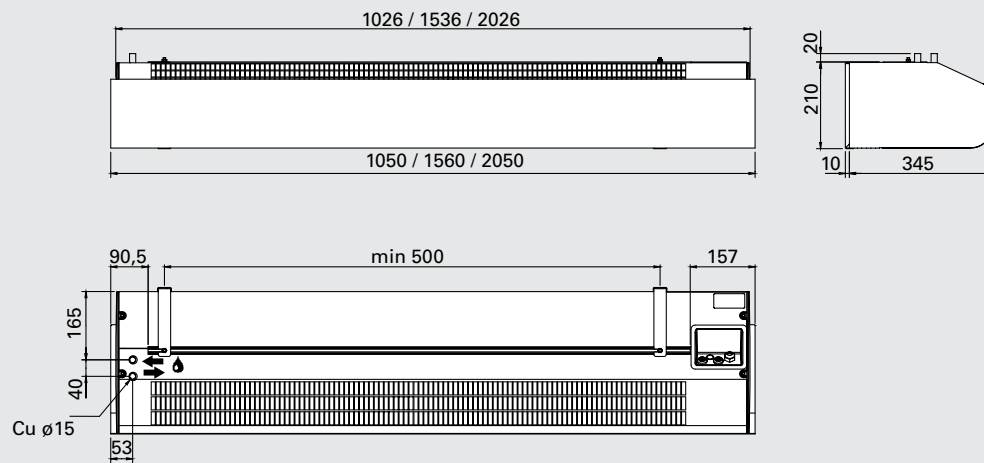
### ✿ Unit without heating



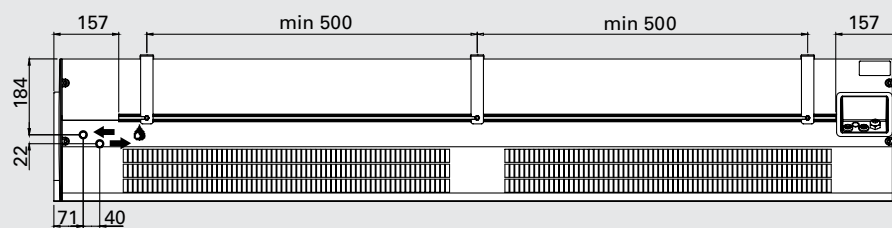
- Remote control.
- Integrated control panel on end of unit
  - 3 fan steps.
- Manual regulation of the fan.

## Dimensions

All models



2 metre units



## Mounting and connection

### Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible.

Different installation options are available; brackets for wall mounting (included in delivery) and hanging brackets or threaded bars for ceiling mounting.

Minimum distance from outlet to floor for electrically heated units is 1800 mm.

### Connection

#### *Unit without heating*

Connected via the built-in control board with 1,5 m cord and plug.

#### *Unit with electrical heating*

The electrical connection is made on the top of the unit. The 3 kW unit is connected via the integrated control card using a 1,5 m cable and plug. Other units are intended for permanent installation. Control (230V~) and power supply for heat (400V3~) should be connected to a terminal block in the terminal box. 2-metre and longer units require dual power supplies.

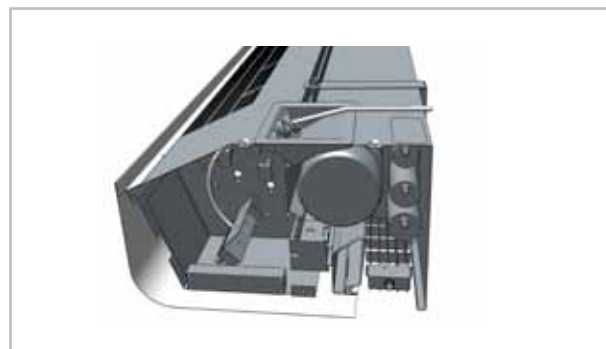
#### *Unit with water heating*

Connected via the built-in control board with 1,5 m cord and plug.

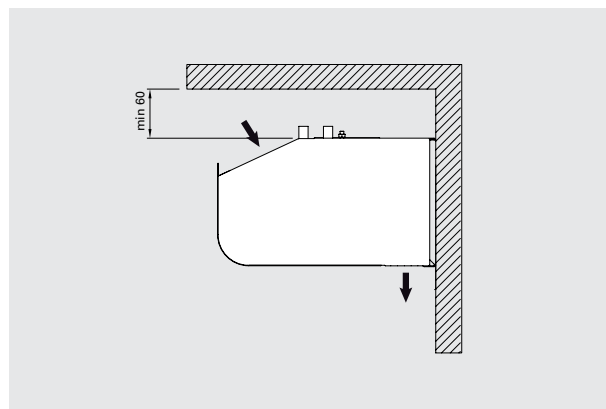
The water coil is connected on the upper side of the unit with  $\varnothing 15$  mm smooth copper pipe with a suitable coupling or soldering.



The front is easy to remove, which facilitates installation and allows easy maintenance.



Thanks to a recess on the upper side of units with electrical heating, the wiring to and inside the unit is greatly simplified.



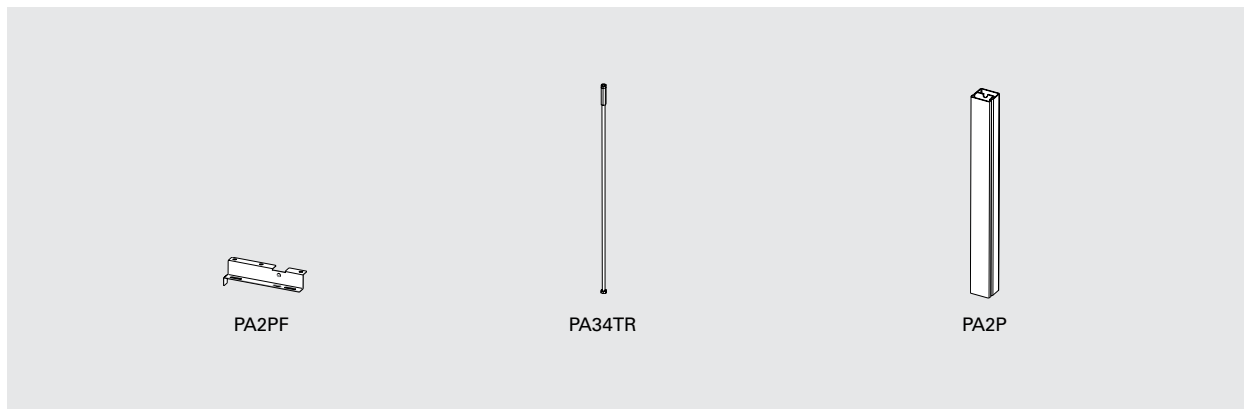
Minimum distances



Wall brackets included.

## PA2200C

### Accessories



#### PA2PF, ceiling mounting brackets

Mountings for installing the unit in the ceiling using hanging brackets or threaded bars (not included).

#### PA34TR, threaded bars

Threaded bars for installing unit on to a ceiling. Length 1 m. Used together with ceiling mounting brackets PA2PF.

#### PA2P, hanging brackets

Hanging brackets for installing the unit suspended from the ceiling. Length 1 m. The hanging brackets are covered by a white plastic trim to cover the cables. The brackets may be cut to shorter length, if required. Used together with ceiling mounting brackets PA2PF.

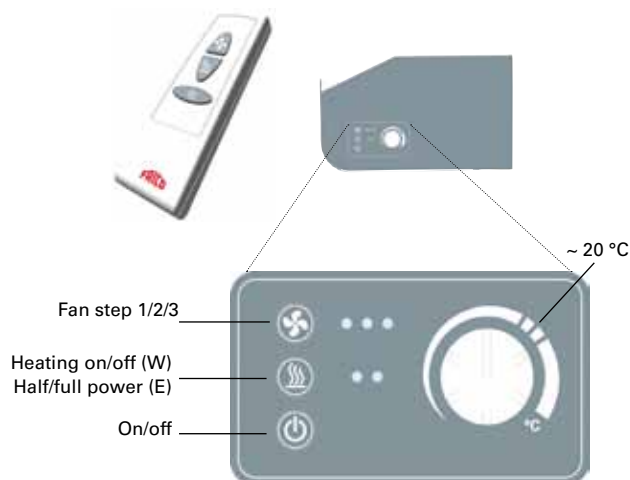
Type	Description	Quantity included	Length
<b>PA2PF15</b>	Ceiling mounting brackets for 1 and 1,5 metre units	4 pcs	
<b>PA2PF20</b>	Ceiling mounting brackets for 2 metre units	6 pcs	
<b>PA34TR15</b>	Threaded bars for 1 and 1,5 metre units	4 pcs	1 m
<b>PA34TR20</b>	Threaded bars for 2 metre units	6 pcs	1 m
<b>PA2P15</b>	Hanging brackets for 1 and 1,5 metre units	2 pcs	1 m
<b>PA2P20</b>	Hanging brackets for 2 metre units	3 pcs	1 m



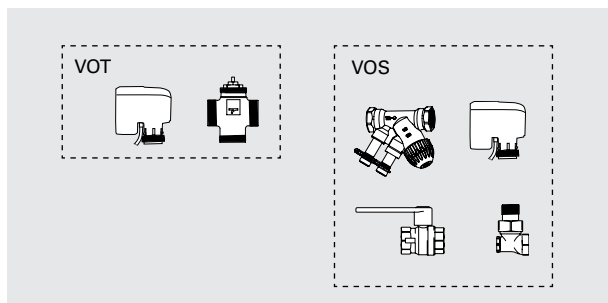
## Control options

The control system is integrated in the air curtain. The air curtain has a control panel discretely integrated in the gable end and can be controlled by a separate remote control. The air speed is set manually. The heat is controlled automatically.

Door switch control PA2DR is available as an accessory for a door switch function. Possibility of using external on/off.



## Water control



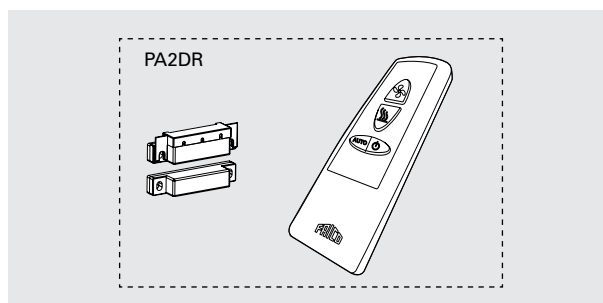
VOT, three way control valve and actuator on/off  
Used to control the water supply to water heated units. DN15/20/25.

VOS, valve kit on/off

Two way combined control and adjustment valve with on/off actuator, shut-off valve and bypass. DN15/20/25. 230V.

Type	Description
<b>VOT15</b>	3-way valve and actuator on/off DN15, Kvs 1,7
<b>VOT20</b>	3-way valve and actuator on/off DN20, Kvs 2,5
<b>VOT25</b>	3-way valve and actuator on/off DN25, Kvs 4,5
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25

## Controls



PA2DR, door switch control

Contains a door switch for door indication and a special remote control intended to activate auto mode in the unit.

Type	Description
<b>PA2DR</b>	Door switch control

For further information and options, see the "Controls" section.

## Output charts water

			Supply water temperature:110 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 110/80 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA2210CW	max	1200	6,9	53,7	0,03	1,1	10,4	43,5	0,09	6,9
	min	700	4,0	45,4	0,02	0,4	7,6	50,0	0,06	3,9
PA2215CW	max	1800	10,4	48,1	0,04	1,1	16,7	45,3	0,14	9,2
	min	1000	5,8	39,8	0,02	0,3	11,7	52,3	0,10	4,8
PA2220CW	max	2400	13,9	51,1	0,06	1,0	21,7	44,6	0,18	7,5
	min	1400	8,1	43,4	0,03	0,3	15,8	51,2	0,13	4,2

			Supply water temperature:90 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 90/70 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA2210CW	max	1200	6,9	57,8	0,05	3,1	8,5	38,8	0,10	10,2
	min	700	4,0	48,1	0,02	0,8	6,2	44,1	0,08	5,8
PA2215CW	max	1800	10,4	53,1	0,07	2,9	13,6	40,2	0,17	13,5
	min	1000	5,8	43,3	0,03	0,7	9,5	45,9	0,12	7,0
PA2220CW	max	2400	13,9	55,4	0,10	2,7	17,7	39,7	0,22	11,1
	min	1400	8,1	46,2	0,05	0,7	12,8	45,0	0,16	6,3

			Supply water temperature:80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA2210CW	max	1200	6,9	60,2	0,09	7,3	6,9	35,0	0,08	7,2
	min	700	4,0	49,7	0,03	1,4	5,0	39,2	0,06	4,1
PA2215CW	max	1800	10,4	56,1	0,11	6,2	11,1	36,2	0,14	9,6
	min	1000	5,8	45,5	0,04	1,2	7,8	40,8	0,10	5,1
PA2220CW	max	2400	13,9	57,9	0,14	6,2	14,4	35,7	0,18	7,9
	min	1400	8,1	47,9	0,06	1,2	10,5	40,0	0,13	4,5

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA2210CW	max	1200	5,7	55,0	0,28	64,4	3,7	27,0	0,05	2,5
	min	700	3,3	46,3	0,06	4,0	2,7	29,3	0,03	1,4
PA2215CW	max	1800	8,6	52,5	0,28	36,5	6,1	28,0	0,07	3,6
	min	1000	4,8	43,3	0,07	3,1	4,3	30,6	0,05	1,9
PA2220CW	max	2400	11,4	53,4	0,42	39,7	7,8	27,5	0,09	2,8
	min	1400	6,7	44,9	0,11	3,5	5,6	29,8	0,07	1,6

\*1) Recommended outlet air temperature for good comfort and optimized output.

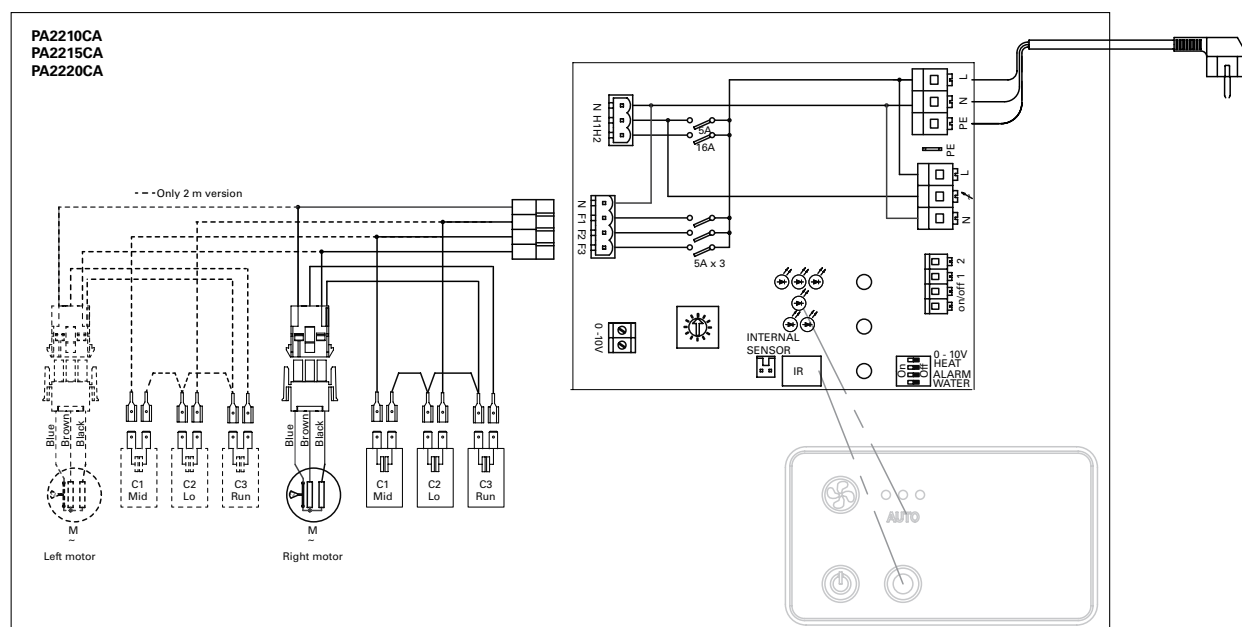
\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

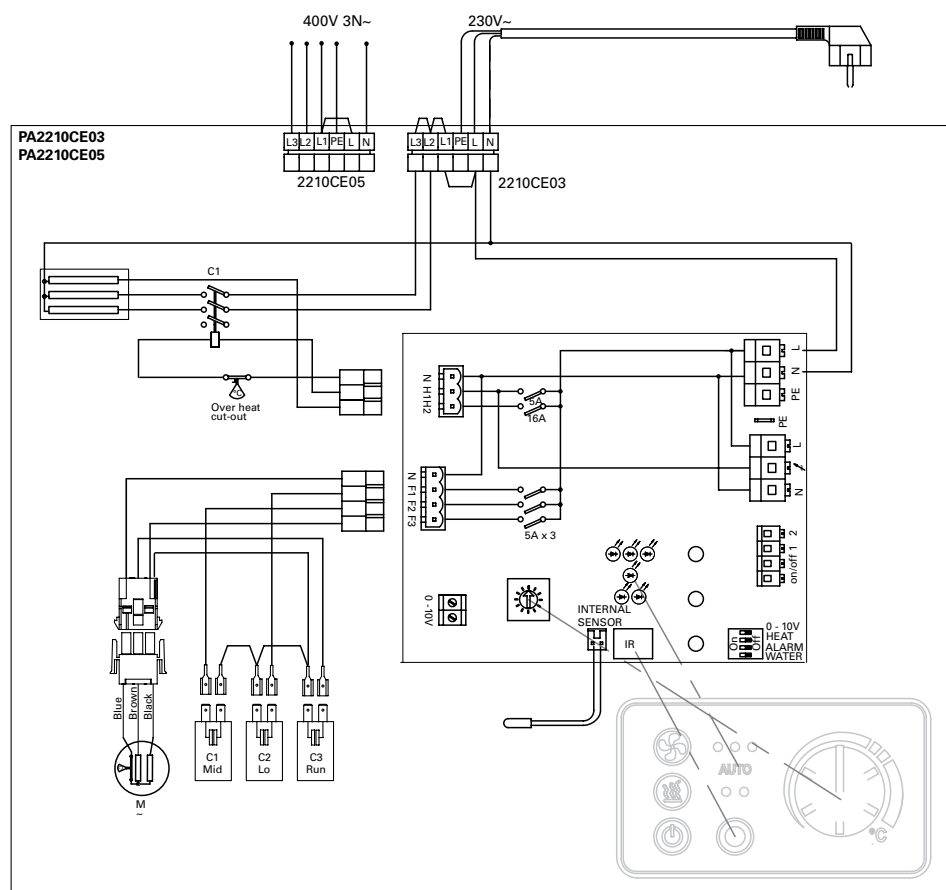
## Wiring diagrams

### Internal wiring diagram

#### Unit without heating



#### Unit with electrical heating

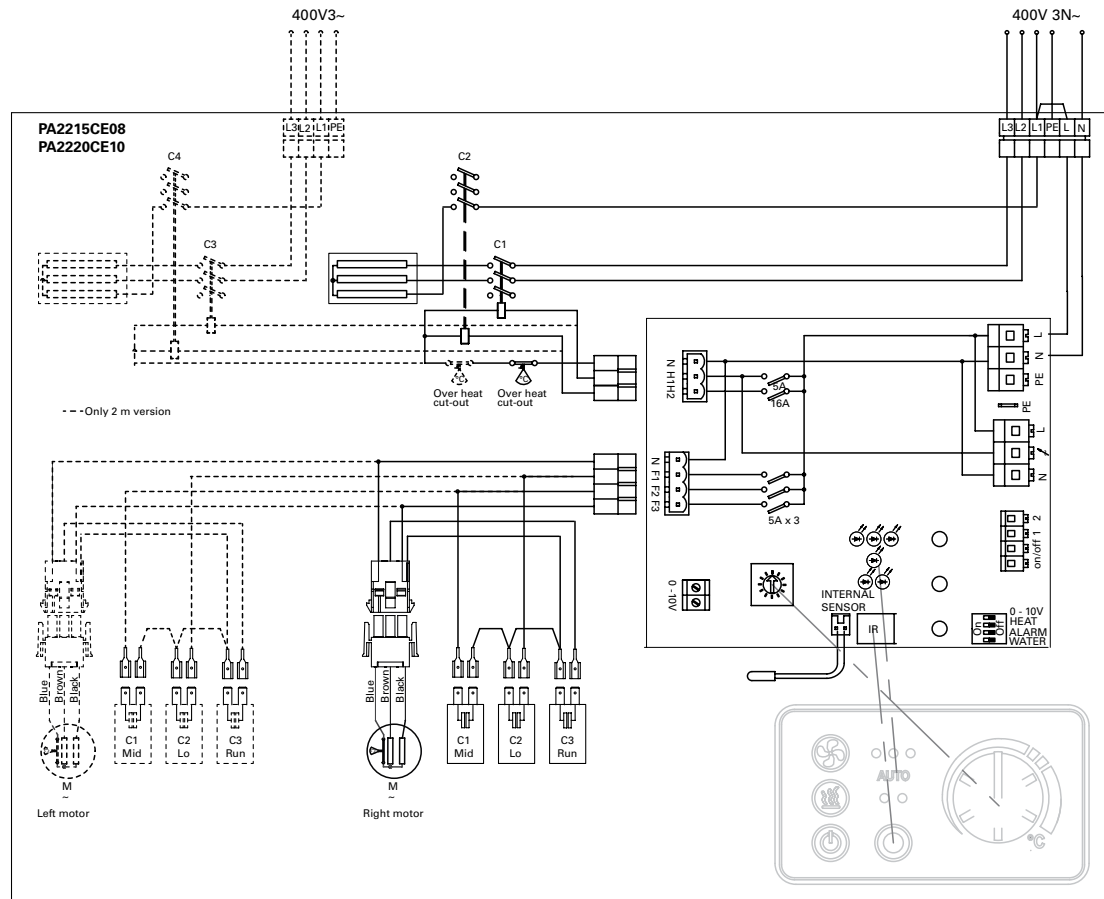


# PA2200C

## Wiring diagrams

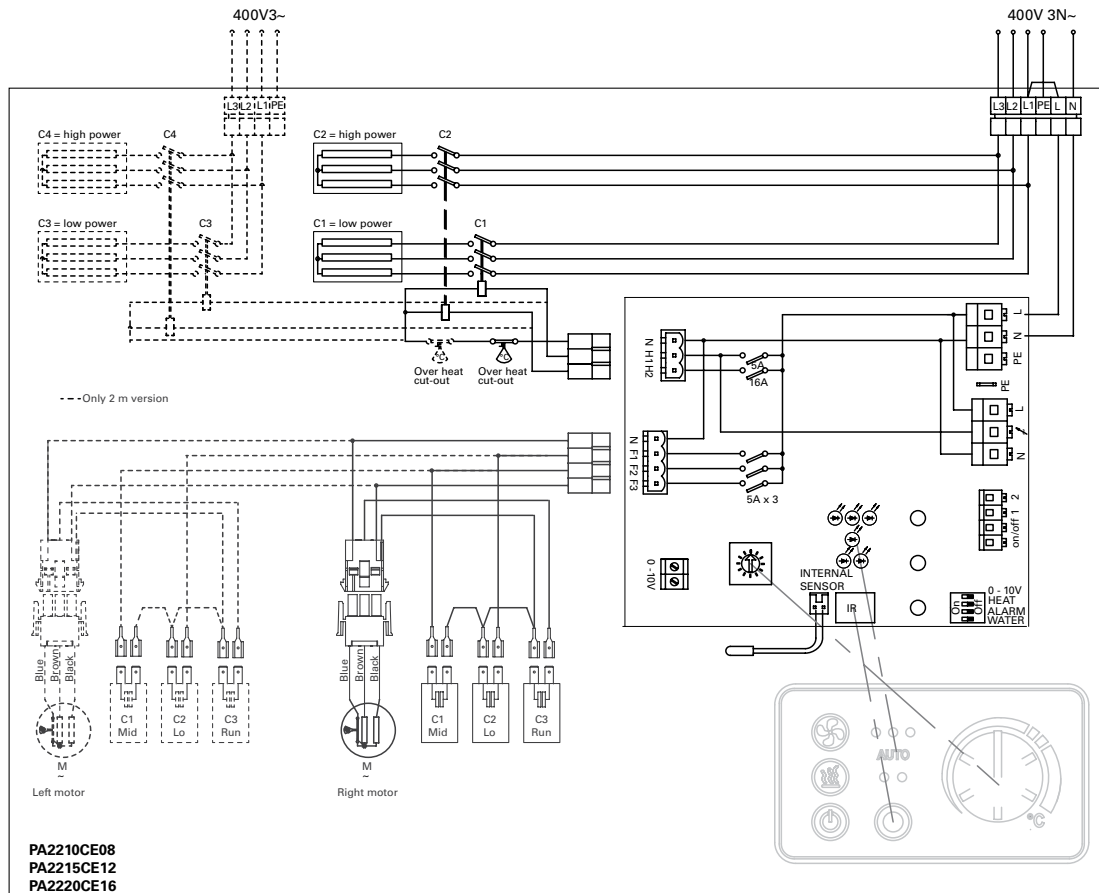
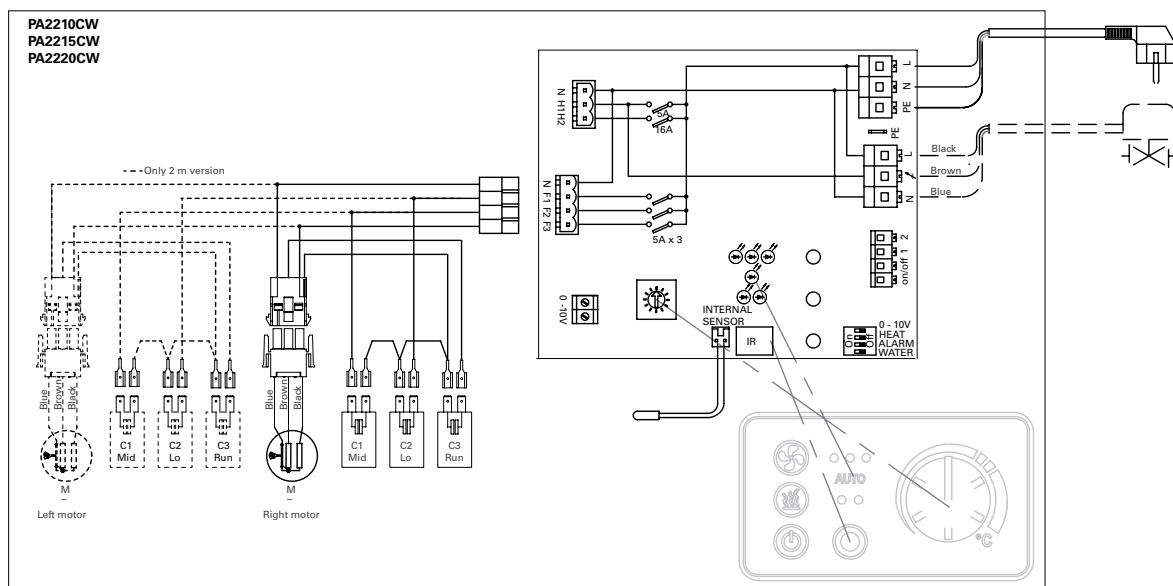
### Internal wiring diagram

#### Unit with electrical heating



## Wiring diagrams

## Internal wiring diagram

*Unit with electrical heating**Unit with water heating*

PA2500



## PA2500

Stylish air curtain for entrances, with intelligent control

- Recommended installation height 2,5 m\*
- Horizontal mounting
- Lengths: 1, 1,5 and 2 m

⚡ Electrical heat: 5 - 16 kW

💧 Water heat



Optimized airflow with Thermozone technology.

### Application

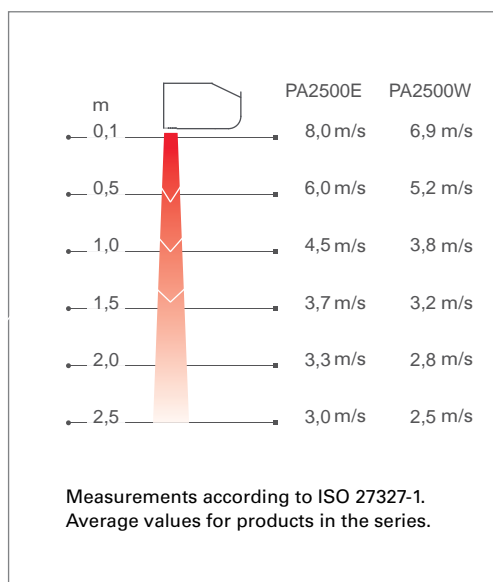
The PA2500 creates a temperature dividing air barrier that effectively prevents cold drafts and gives excellent heating comfort in door ways, such as shops, offices and public offices.

The air curtain has many intelligent and energy saving features which provide fully automatic protection for the entrance, adaptable to each area of use.

### Design

The PA2500 has a modern and stylish design developed to fit all entrances. A recess on the upper side of the unit with electrical heating simplifies installation and makes it more attractive. The front can be finished in any colour to perfectly match the environment.

### Air velocity profile



### Product specifications

- Prepared for the SIRE control system whose pre-programmed default settings and many features make it easy to install and use the air curtain. Read more about the SIRE controls package in the "Controls" section.
- 3 fan steps and 3 electrical heating steps, which give more even comfort and extra energy savings.
- Wall brackets included.
- The front is easy to remove, which facilitates installation and allows easy maintenance.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour front: white, RAL 9016, NCS S 0500-N. Colour grille, rear section, ends and brackets: grey, RAL 7046.

## Technical specifications

### ⚡ Electrical heat - PA2500 E

Type	Output steps [kW]	Airflow* <sup>1</sup> [m³/h]	$\Delta t^{*3}$ [°C]	Sound level* <sup>2</sup> [dB(A)]	Voltage motor [V]	Amperage motor [A]	Voltage [V] Amperage [A] (heat)	Length [mm]	Weight [kg]
PA2510E05	1,7/3,3/5	900/1450	17/10,5	42/51	230V~	0,5	400V3~/7,2	1050	19
PA2510E08	3/5/8	900/1450	27/16,5	42/51	230V~	0,5	400V3~/11,5	1050	20
PA2515E08	2,7/5,4/8	1400/2200	17,5/11	40/52	230V~	0,7	400V3~/11,5	1560	30
PA2515E12	3,9/8/12	1400/2200	26/16,5	40/52	230V~	0,7	400V3~/17,3	1560	32
PA2520E10	3,4/6,7/10	1800/2900	17/10,5	43/53	230V~	1,0	400V3~/14,4	2050	36
PA2520E16	6/10/16	1800/2900	27/16,5	43/53	230V~	1,0	400V3~/23,1	2050	40

### 💧 Water heat - PA2500 W

Type	Output* <sup>4</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	$\Delta t^{*3,4}$ [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
PA2510W	4,7	900/1300	12/11	0,71	42/53	230V~	0,45	1050	17,5
PA2515W	9,2	1250/2100	16/13	1,09	41/54	230V~	0,6	1560	26
PA2520W	11,5	1800/2600	15/13	1,42	43/55	230V~	0,9	2050	35

\*<sup>1</sup>) Lowest/highest airflow of totally 3 fan steps.

\*<sup>2</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.

\*<sup>3</sup>)  $\Delta t$  = temperature rise of passing air at maximum heat output and lowest/highest airflow.

\*<sup>4</sup>) Applicable at water temperature 40/30 °C, air temperature, in +18 °C.

Protection class for units with electrical heating: IP20.

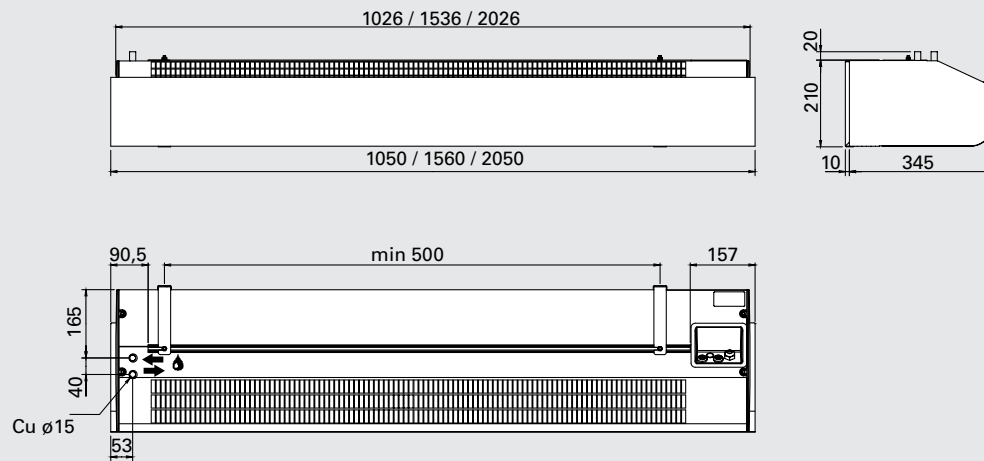
Protection class for units with water heating: IP21.

CE compliant.

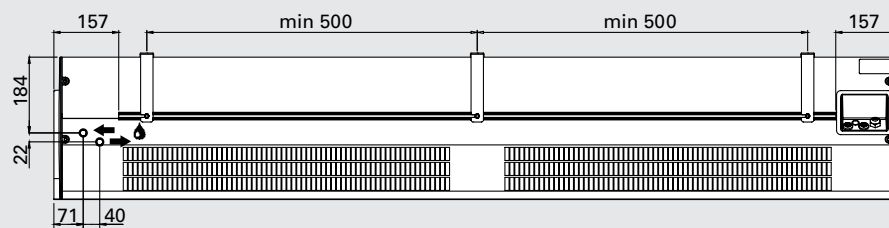


## Dimensions

### All models



### 2 metre units



## Mounting and connection

### Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible.

Different installation options are available; brackets for wall mounting (included in delivery) and hanging brackets or threaded bars for ceiling mounting.

For the protection of wider doorways, several units can be mounted next to each other. Minimum distance from outlet to floor for electrically heated units is 1800 mm.

### Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

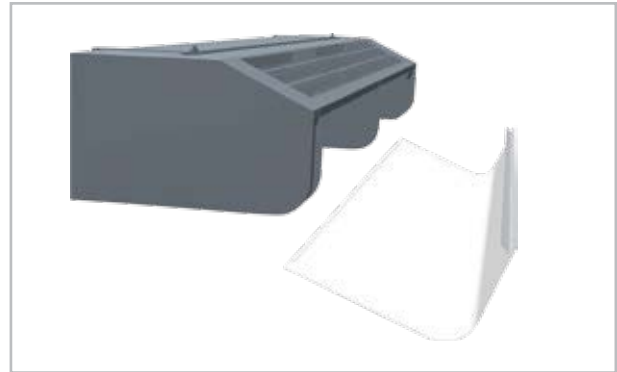
#### *Unit with electrical heating*

The electrical connection is made on the top of the unit. Control (230V~) and power supply for heat (400V3~) should be connected to a terminal block in the terminal box. 2-metre and longer units require dual power supplies.

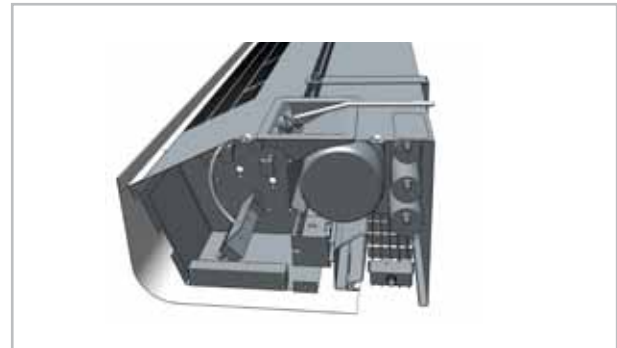
#### *Unit with water heating*

Connected via the built-in control board SIRE with 1,5 m cord and plug.

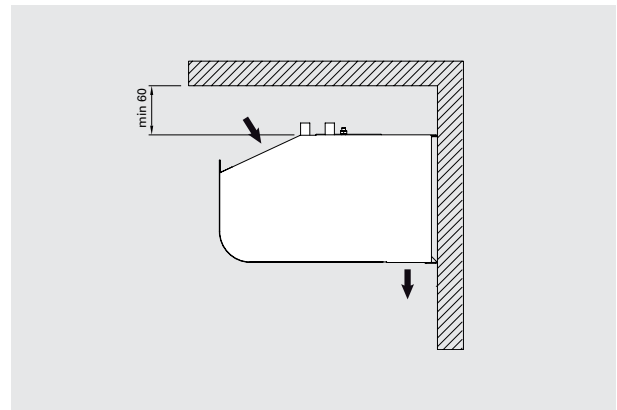
The water coil is connected on the upper side of the unit with  $\varnothing 15$  mm smooth copper pipe with a suitable coupling or soldering.



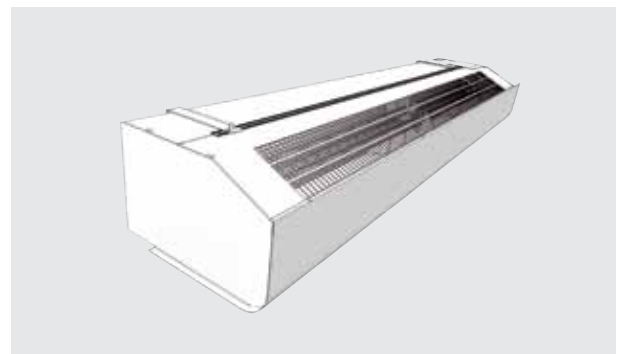
The front is easy to remove, which facilitates installation and allows easy maintenance.



Thanks to a recess on the upper side of units with electrical heating, the wiring to and inside the unit is greatly simplified.



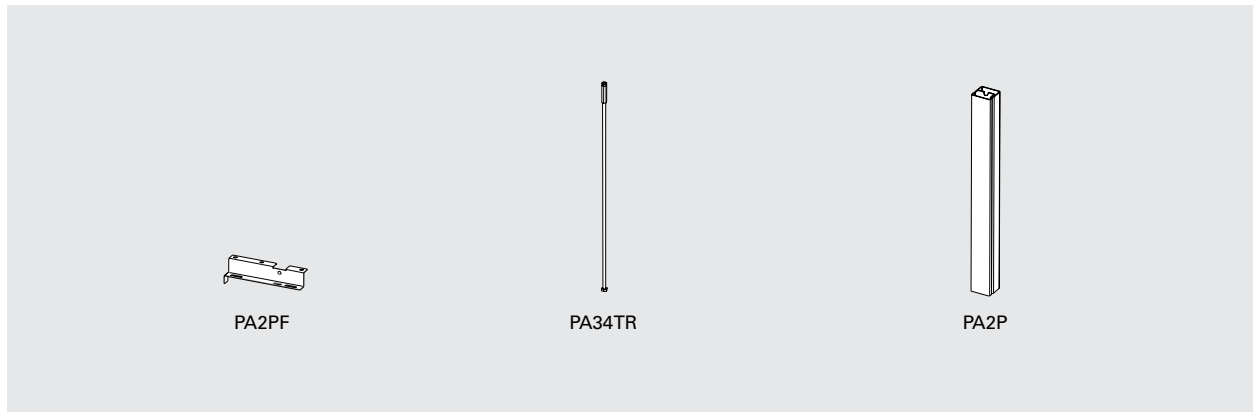
Minimum distances



Wall brackets included.

## PA2500

### Accessories



#### PA2PF, ceiling mounting brackets

Mountings for installing the unit in the ceiling using hanging brackets or threaded bars (not included).

#### PA34TR, threaded bars

Threaded bars for installing unit on to a ceiling. Length 1 m. Used together with ceiling mounting brackets PA2PF.

#### PA2P, hanging brackets

Hanging brackets for installing the unit suspended from the ceiling. Length 1 m. The hanging brackets are covered by a white plastic trim to cover the cables. The brackets may be cut to shorter length, if required. Used together with ceiling mounting brackets PA2PF.

Type	Description	Quantity included	Length
<b>PA2PF15</b>	Ceiling mounting brackets for 1 and 1,5 metre units	4 pcs	
<b>PA2PF20</b>	Ceiling mounting brackets for 2 metre units	6 pcs	
<b>PA34TR15</b>	Threaded bars for 1 and 1,5 metre units	4 pcs	1 m
<b>PA34TR20</b>	Threaded bars for 2 metre units	6 pcs	1 m
<b>PA2P15</b>	Hanging brackets for 1 and 1,5 metre units	2 pcs	1 m
<b>PA2P20</b>	Hanging brackets for 2 metre units	3 pcs	1 m

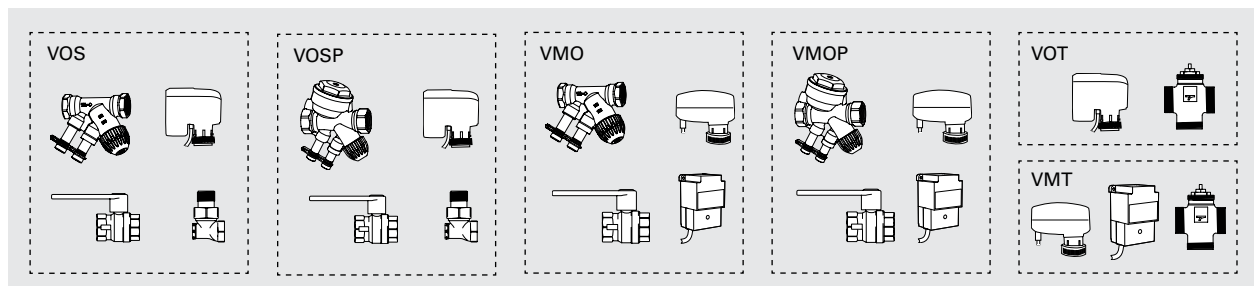
## Controls



This air curtain is supplied with an integrated PC board SIRE. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SIRE control system in the "Controls" section.

Type	Description
<b>SIREB</b>	Control system SIRE Basic
<b>SIREAC</b>	Control system SIRE Competent
<b>SIREAA</b>	Control system SIRE Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25

Type	Description
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMT20</b>	Three way control valve and modulating actuator, DN20
<b>VMT25</b>	Three way control valve and modulating actuator, DN25

## Output charts water

			Supply water temperature:110 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 110/80 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA2510W	max	1300	7,4	47	0,03	0,3	13,3	48,1	0,11	3,3
	min	900	5,3	46	0,02	0,2	10,6	52,8	0,09	2,2
PA2515W	max	2100	12,5	39	0,04	0,9	24,4	52,2	0,20	13,3
	min	1250	7,4	34	0,02	0,3	17,6	59,4	0,15	7,4
PA2520W	max	2600	15,0	36	0,05	1,5	30,1	52,0	0,25	23,6
	min	1800	10,2	32	0,03	0,7	23,9	57,0	0,20	15,6

			Supply water temperature:90 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 90/70 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA2510W	max	1300	7,4	50	0,04	0,7	10,8	42,5	0,13	4,8
	min	900	5,2	46	0,03	0,4	8,7	46,3	0,11	3,2
PA2515W	max	2100	12,5	43	0,07	1,9	19,8	45,8	0,24	19,6
	min	1250	7,2	36	0,03	0,6	14,3	51,5	0,18	10,8
PA2520W	max	2600	15,1	41	0,08	3,1	24,4	45,6	0,30	34,6
	min	1800	10,6	36	0,05	1,5	19,3	49,6	0,24	22,8

			Supply water temperature:80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA2510W	max	1300	7,4	52,0	0,07	1,4	8,8	38,0	0,11	3,4
	min	900	5,2	47,0	0,04	0,6	7,0	41,0	0,09	2,3
PA2515W	max	2100	12,0	44,0	0,08	3,0	16,3	40,8	0,20	14,1
	min	1250	7,3	38,0	0,04	1,0	11,7	45,6	0,14	7,8
PA2520W	max	2600	15,2	44,0	0,10	5,5	20,1	40,8	0,25	25,0
	min	1800	10,4	38,0	0,06	2,2	16,0	44,1	0,20	16,5

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +33 °C				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA2510W	max	1300	6,4	50	0,16	7,1	4,7	28,6	0,06	1,2
	min	900	4,5	45	0,07	1,8	3,7	30,0	0,05	0,8
PA2515W	max	2100	10,5	45	0,17	11,3	9,2	30,8	0,11	5,4
	min	1250	6,6	40	0,08	3,0	6,6	33,5	0,08	3,0
PA2520W	max	2600	13,1	45	0,21	20,3	11,5	31,0	0,14	9,8
	min	1800	9,1	40	0,11	6,5	9,1	32,9	0,11	6,5

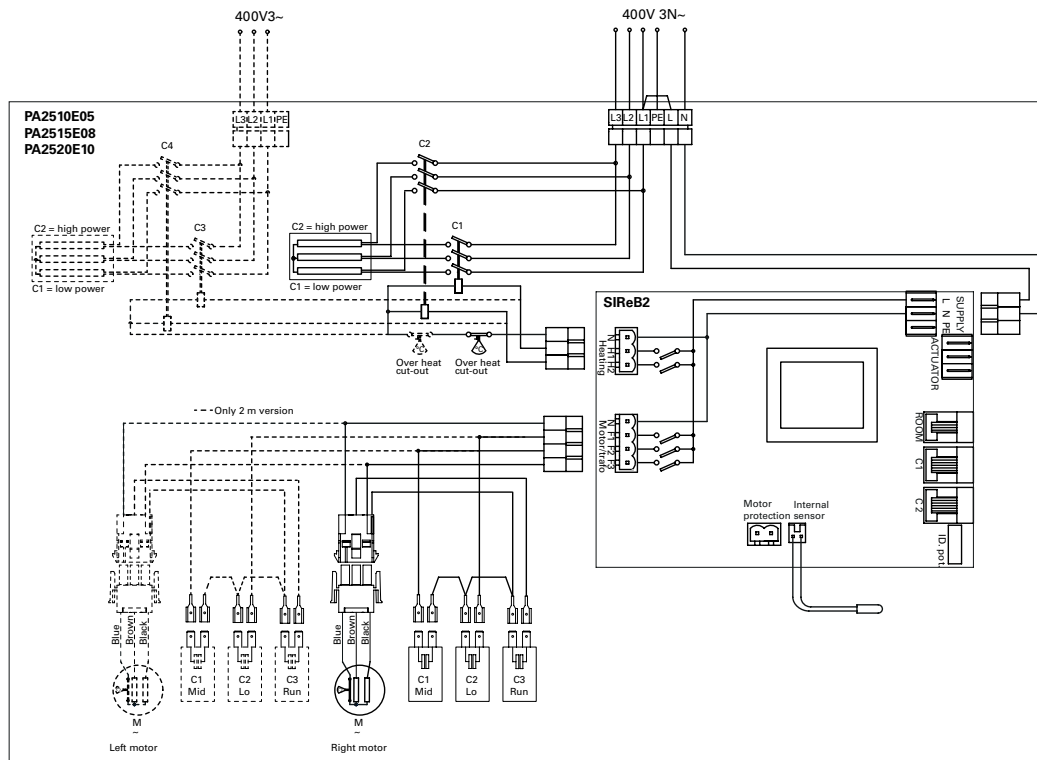
\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

## Wiring diagrams

## Internal wiring diagram

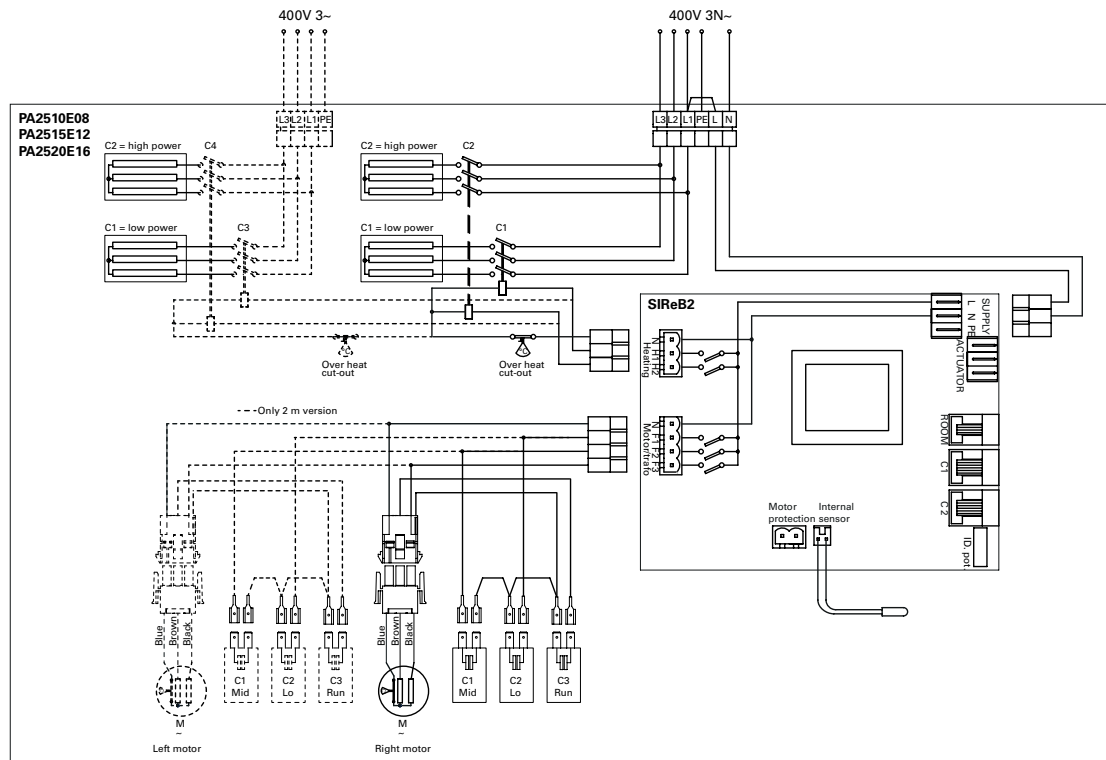
*Unit with electrical heating*

# PA2500

## Wiring diagrams

### Internal wiring diagram

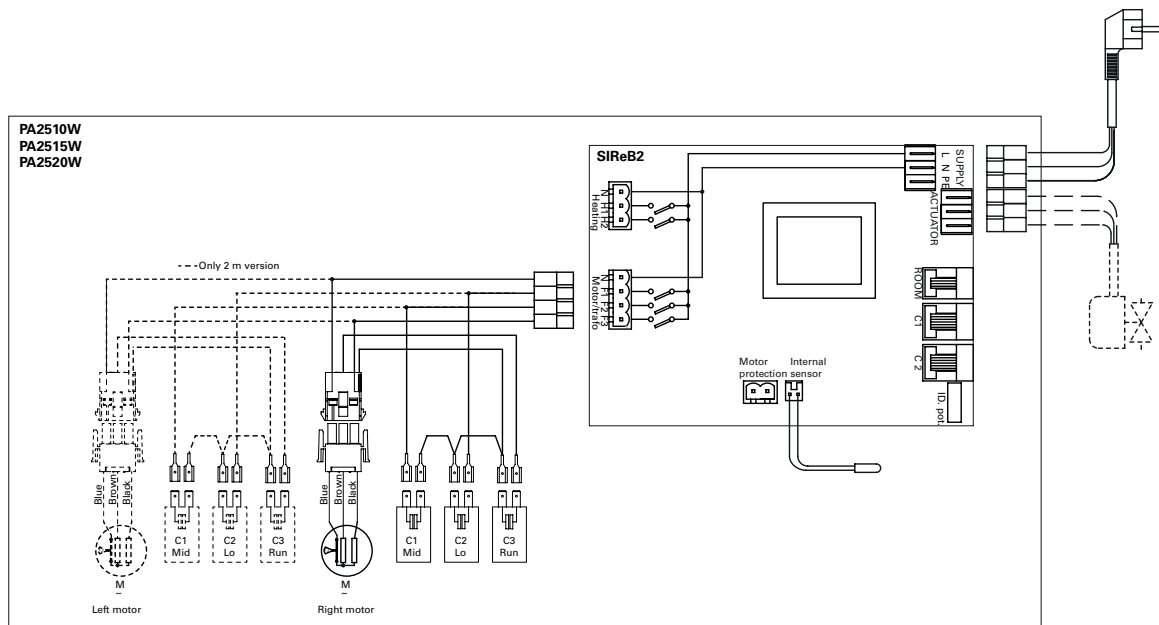
#### *Unit with electrical heating*





## Wiring diagrams

## Internal wiring diagram

*Unit with water heating*

## AR200



## AR200

### Recessed air curtain for smaller entrances

- Recommended installation height 2,5 m\*
- Recessed mounting
- Lengths: 1, 1,5 and 2 m

- ✿ Ambient, no heat
- ⚡ Electrical heat: 3–18 kW
- 💧 Water heat

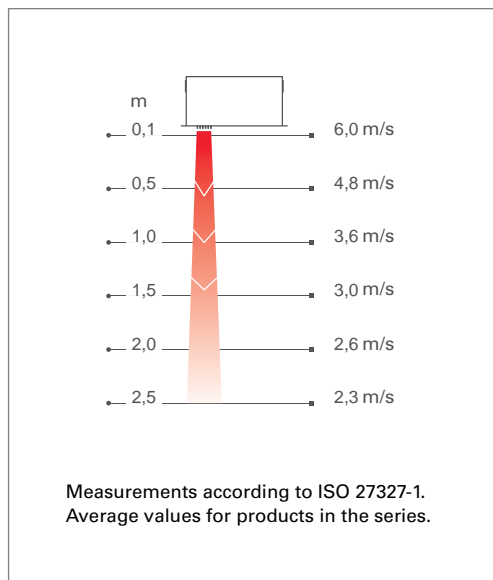
#### Application

AR200 is a compact air curtain, suitable for most small entrances. A low height makes it possible to install AR200 where ceiling space is limited. The recessed installation and low sound level makes AR200 very discreet.

#### Design

AR200 is designed for recessed installation and the visible bottom plate may be painted to make it blend in even better with the surroundings.

### Air velocity profile



### Product specifications

- Just one model per length, but electrical units are convertible between several outputs and 230V~/400V3N~ making it simple and flexible to adapt the output to current need.
- Low unit height (200 mm).
- Bottom plate in white lacquered aluminium.  
Colour: RAL 9016, NCS S 0500-N. The bottom plate can easily be removed and painted in an optional colour. Non visible parts made of hot zinc plated steel panels.

## Technical specifications

### 🌀 Ambient, no heat - AR200 A

Type	Output	Airflow* <sup>1</sup>	Sound level* <sup>2</sup>	Voltage	Amperage	Length	Weight
	[kW]	[m³/h]	[dB(A)]	[V]	[A]	[mm]	[kg]
AR210A	0	650/1200	34/50	230V~	0,5	1042	18
AR215A	0	950/1750	34/50	230V~	0,6	1552	25
AR220A	0	1300/2400	40/54	230V~	1,0	2042	36

### ⚡ Electrical heat - AR200 E

Type	Output steps 400V3N~ [kW]	Output steps 230V~ [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Voltage [V]	Amperage 400V3N~ [A]	Amperage 230V~ [A]	Length [mm]	Weight [kg]
AR210E09	3	-	650/1200	13/7	34/50	400V3N~	4,3	-	1042	23
	6/9	-	650/1200	41/22	34/50	400V3N~	13	-	1042	23
	-	3	650/1200	13/7	34/50	230V~	-	13	1042	23
	-	3/5	650/1200	23/12	34/50	230V~	-	22	1042	23
AR215E11	4,5	-	950/1750	14/8	34/50	400V3N~	6,5	-	1552	32
	6,8/11,3	-	950/1750	35/20	34/50	400V3N~	16	-	1552	32
	-	4,5	950/1750	14/8	34/50	230V~	-	20	1552	32
	-	4,5/6,8	950/1750	21/12	34/50	230V~	-	30	1552	32
AR220E18	6	-	1300/2400	13/7	40/54	400V3N~	8,7	-	2042	44
	12/18	-	1300/2400	41/22	40/54	400V3N~	26	-	2042	44
	-	6	1300/2400	13/7	40/54	230V~	-	26	2042	44
	-	6/10	1300/2400	23/12	40/54	230V~	-	43	2042	44

### 💧 Water heat - AR200 W

Type	Output* <sup>4</sup>	Airflow* <sup>1</sup>	Δt* <sup>3,4</sup>	Water volume	Sound level* <sup>2</sup>	Voltage	Amperage	Length	Weight
	[kW]	[m³/h]	[°C]	[l]	[dB(A)]	[V]	[A]	[mm]	[kg]
AR210W	6,6	700/1000	24/21	0,5	41/49	230V~	0,4	1042	21
AR215W	10,4	1000/1600	24/20	0,9	37/50	230V~	0,6	1552	39
AR220W	13,0	1400/2000	23/20	1,1	44/53	230V~	1,0	2042	42

\*<sup>1</sup>) Lowest/highest airflow of totally 3 fan steps.

\*<sup>2</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.

\*<sup>3</sup>) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

\*<sup>4</sup>) Applicable at water temperature 80/60 °C, air temperature, in +18 °C.

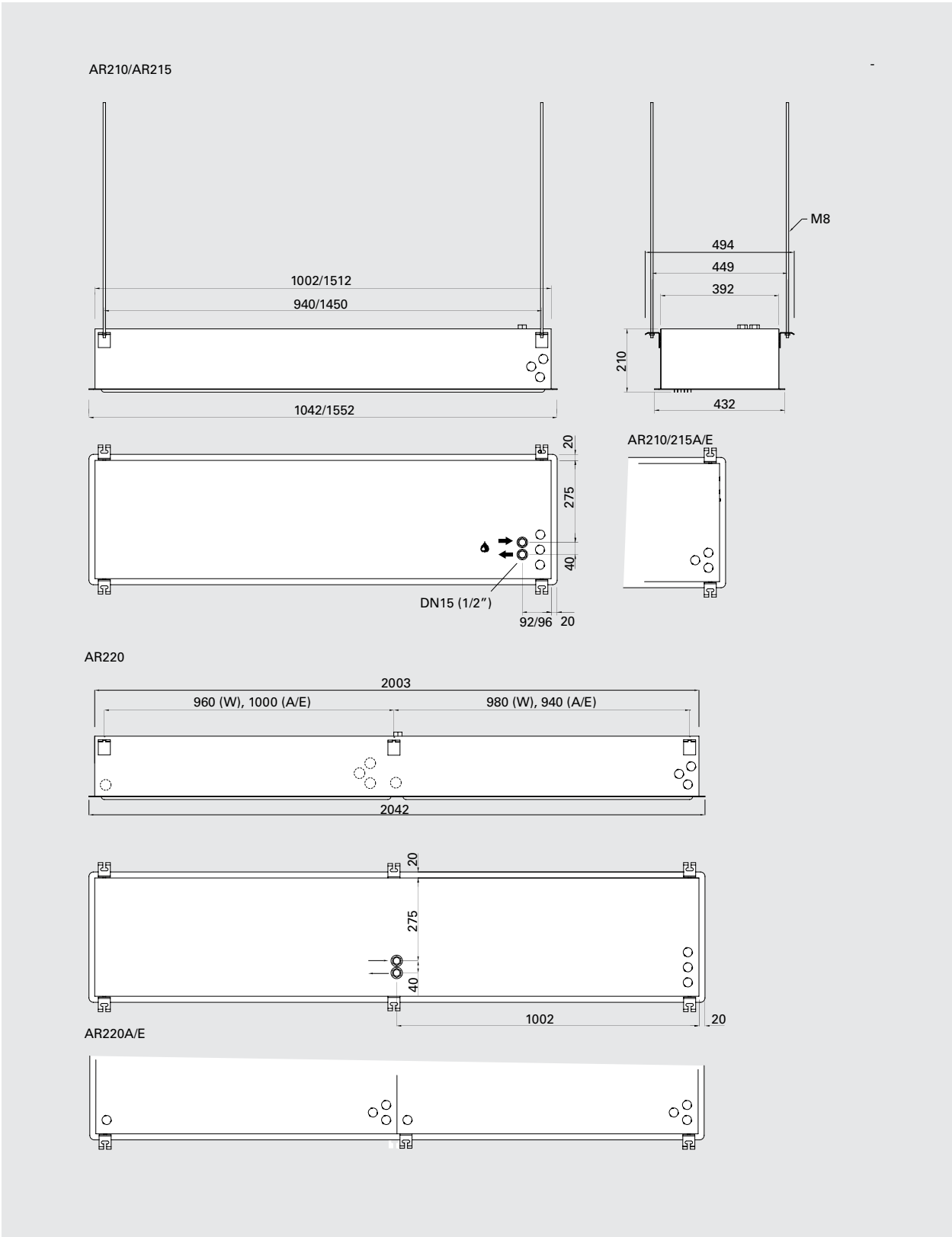
AR200E is delivered as 9 kW, 11 kW and 18 kW (400V3N~) models, but they are convertible to 230V~ and different outputs as shown in above table.

Protection class: IP20.

CE compliant.

AR200

Dimensions



## Mounting and connection

### Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible, concealed in the false ceiling. The only visible part of the unit is the underside which is level with the ceiling. The bottom plate must be accessible, nothing should prevent it being fully opened.

The unit is ready for suspension with threaded rods.

For the protection of wider doorways, several units can be mounted next to each other. Minimum distance from outlet to floor for electrically heated units is 1800 mm.

### Connection

#### *Unit without heating*

The electrical connection is made on the side or on the top of the unit. Control (230V~) should be connected to a terminal block in the terminal box. See wiring diagrams.

#### *Unit with electrical heating*

The electrical connection is made on the side or on the top of the unit. The units are convertible between different output and 230V~/400V3N~. Control (230V~) and power supply for heat (230V~/400V3N~) should be connected to a terminal block in the terminal box. 2-metre and longer units require dual power supplies. See wiring diagrams.

#### *Unit with water heating*

The electrical connection is made on the side or on the top of the unit. Control (230V~) should be connected to a terminal block in the terminal box. See wiring diagrams.

The water coil is connected on top of the unit via connections DN15 (1/2"), internal thread.



## Control options

### ✿ Unit without heating

#### Level 1

Airflow is set manually.

Control kit:

- CB30N, control box, 3 fan steps.

#### Level 2

Airflow is set manually. The door contact controls the airflow on/off.

Control kit:

- CB30N, control box, 3 fan steps
- MDC, magnetic door contact with a time relay

### ⚡ Unit with electrical heating

#### Level 1

Airflow is set manually. The room thermostat controls the heat output in two steps.

Control kit:

- CB32N, control box, 3 fan steps and 2 heating steps.
- RTI2, electronic 2-step thermostat

#### Level 2

Airflow and heat output are controlled automatically based on the opening of the door and the room temperature. When the door is open the fan runs at high speed, when the door closes the fan will continue to run at high speed for the desired time (2s–10 min.) set on MDC. When the door is closed the fan runs at low speed if there is a need for heating, if not the fan is switched off.

The room thermostat controls the heat output. E.g. the thermostat is set on 23 °C and the difference between the steps 4 °C. The thermostat will activate below 19 °C when the door is closed. When the door opens, the thermostat will activate below 23 °C and normally the heat is switched on.

Control kit:

- CB32N, control box, 3 fan steps and 2 heating steps.
- MDC, magnetic door contact with a time relay.
- RTI2, electronic 2-step thermostat

### 💧 Unit with water heating

#### Level 1

Airflow is set manually. Room thermostat controls the heat output via actuator/valve on/off.

Control kit:

- CB30N, control box, 3 fan steps.
- T10, room thermostat IP30.

Note! A valve set VR20/25 (option: TVV20/25 with SD20) should be added for a complete control kit.

#### Level 2

Airflow and heat output are controlled automatically based on the opening of the door and the room temperature. When the door is open the fan runs at high speed, when the door closes the fan will continue to run at high speed for the desired time (2s–10 min.) set on MDC. When the door is closed the fan runs at low speed if there is a need for heating, if not the fan is switched off.

The room thermostat controls the heat output on/off.

E.g. the thermostat is set on 23 °C and the difference between the steps 4 °C. The thermostat will activate below 19 °C when the door is closed. When the door opens, the thermostat will activate below 23 °C and normally the heat is switched on.

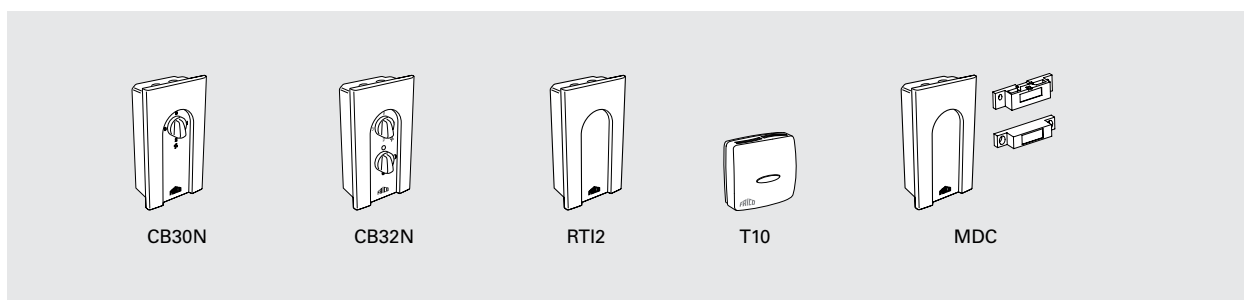
Control kit:

- CB30N, control box, 3 fan steps.
- MDC, magnetic door contact with a time relay.
- RTI2, electronic 2-step thermostat

Note! A valve set VR20/25 (option: TVV20/25 with SD20) should be added for a complete control kit.

Valve set VR20 is recommended for water flow rates up to 0.2 l/s. VR25 is recommended for 0.2-0.6 l/s.

## Controls



CK01E, control kit  
Contains control box CB32N and thermostat RTI2.

CB30N, control box  
Controls the airflow in 3 steps. Can control several units. Max input 10 A. IP44.

CK02E, control kit  
Contains control box CB32N, thermostat RTI2 and door contact MDC.

CB32N, control box  
Controls the airflow in 3 steps and heat output in 2 steps. Can control several units. Max input 10 A. IP44.

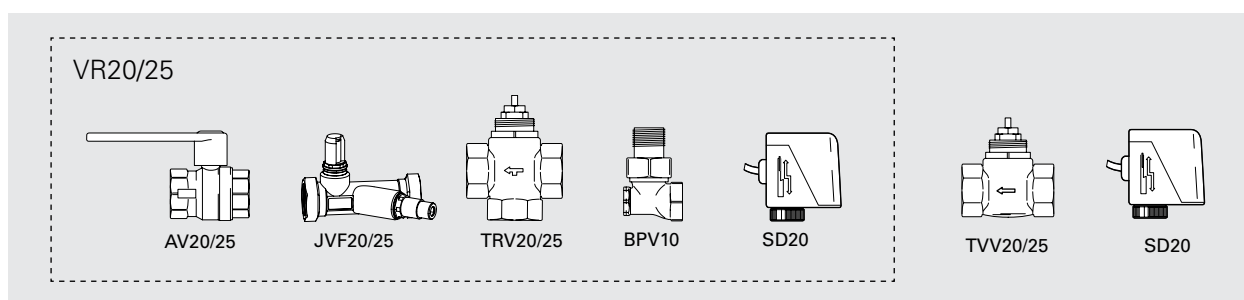
CK01W, control kit  
Contains control box CB30N and thermostat T10.

CK02W, control kit  
Contains control box CB30N, thermostat T10 and door contact MDC.

For further information and options, see the "Controls" section.

Type	Description	HxWxD [mm]
<b>CK01E</b>	Control kit Electric level 1 (CB32N, RTI2)	
<b>CK02E</b>	Control kit Electric level 2 (CB32N, RTI2, MDC)	
<b>CK01W</b>	Control kit Water level 1 (CB30N, T10)	
<b>CK02W</b>	Control kit Water level 2 (CB30N, RTI2, MDC)	
<b>CB30N</b>	Control box AR200A/W, IP44	155x87x43
<b>CB32N</b>	Control box AR200E, IP44	155x87x43
<b>T10</b>	Electronic thermostat, IP30	80x80x31
<b>RTI2</b>	Electronic 2-step room thermostat, IP44	155x87x43
<b>MDC</b>	Magnetic door contact with time relay, IP44	155x87x43
<b>MDCDC</b>	Magnetic door contact	

## Water control



Type	Description
<b>VR20</b>	Valve set DN 20 mm
<b>VR25</b>	Valve set DN 25 mm
<b>TVV20</b>	2-way control valve, DN 20 mm
<b>TVV25</b>	2-way control valve, DN 25 mm
<b>SD20</b>	Actuator 230V~

For further information and options regarding our water controls, see the "Controls" section.



## Output charts water

			Supply water temperature: 110 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 110/80 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR210W	max	1000	5,8	44,1	0,02	1,6	9,8	46,9	0,08	15,6
	min	700	4,0	38,7	0,01	0,7	7,9	51,3	0,06	10,5
AR215W	max	1600	9,2	45,8	0,04	0,9	15,6	46,8	0,13	8,3
	min	1000	5,8	39,6	0,02	0,3	11,7	52,5	0,10	5,0
AR220W	max	2000	11,5	44,3	0,04	1,4	19,5	46,7	0,16	14,2
	min	1400	8,1	39,0	0,03	0,7	15,7	51,0	0,13	9,6

			Supply water temperature: 90 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 90/70 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR210W	max	1000	5,8	49,4	0,03	3,7	8,0	41,5	0,10	23,0
	min	700	4,0	43,1	0,02	1,6	6,4	45,0	0,08	15,5
AR215W	max	1600	9,2	50,5	0,06	2,1	12,7	41,4	0,16	12,3
	min	1000	5,8	43,1	0,03	0,7	9,5	46,1	0,12	7,3
AR220W	max	2000	11,5	49,7	0,07	3,4	15,8	41,3	0,19	20,3
	min	1400	8,1	43,4	0,04	1,4	12,7	44,8	0,16	14

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR210W	max	1000	5,8	52,6	0,05	7,6	6,6	37,3	0,08	16,5
	min	700	4,0	45,8	0,03	2,7	5,3	40,2	0,06	11,1
AR215W	max	1600	9,2	53,3	0,08	4,2	10,4	37,2	0,13	8,7
	min	1000	5,8	45,3	0,04	1,2	7,0	41,0	0,10	5,2
AR220W	max	2000	11,5	52,9	0,10	7,0	13	37,2	0,16	15
	min	1400	8,1	46,1	0,06	2,5	10,4	40,0	0,13	10,1

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR210W	max	1000	–	–	–	–	3,7	28,8	0,04	6,3
	min	700	4,0	52,6	0,01	43,9	3,0	30,5	0,04	4,3
AR215W	max	1600	–	–	–	–	5,8	28,6	0,07	3,2
	min	1000	5,8	50,8	0,15	12,8	4,3	30,7	0,05	1,9
AR220W	max	2000	–	–	–	–	7,3	28,8	0,09	5,7
	min	1400	8,1	53,0	0,28	43,5	5,9	30,4	0,07	3,8

– = at the current water temperatures and airflows, the air outlet temperature will be less than 35 °C.

\*1) Recommended outlet air temperature for good comfort and optimized output.

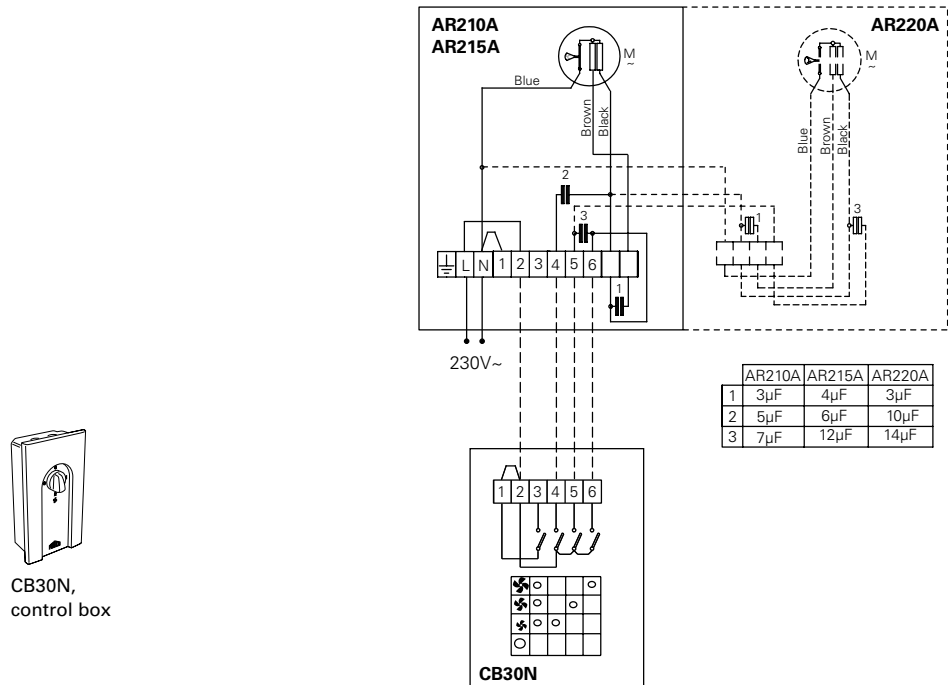
\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

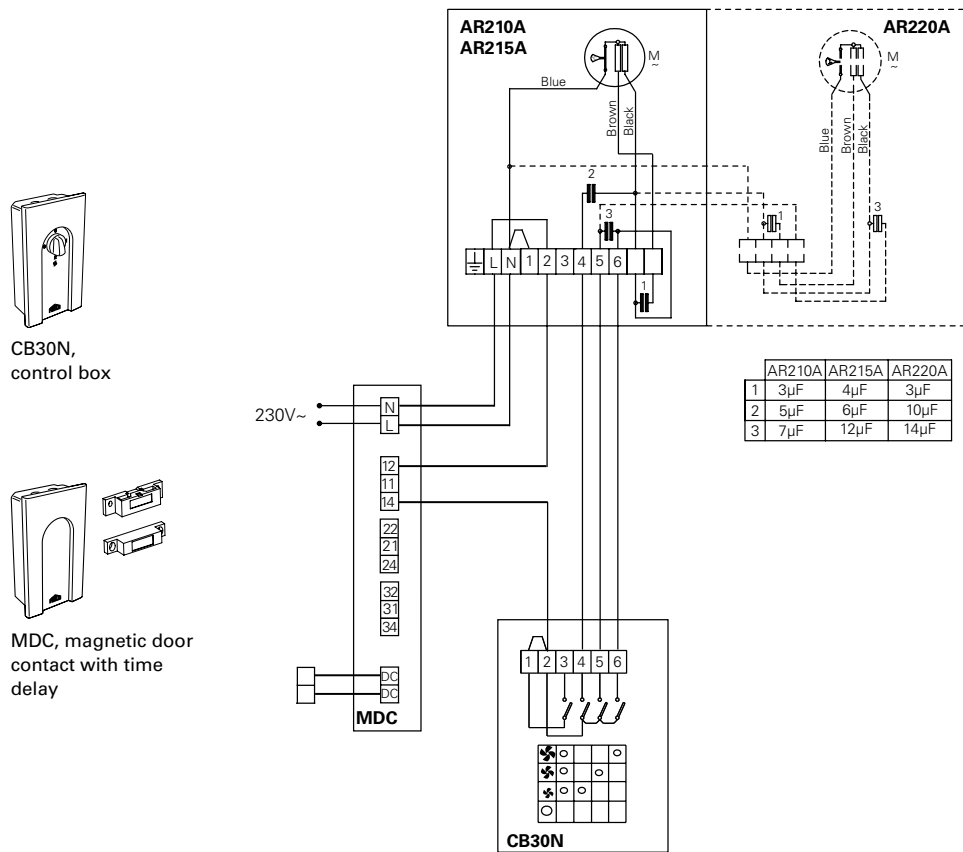
Wiring diagrams

Control options for units without heat

Level 1



Level 2

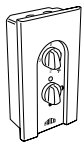
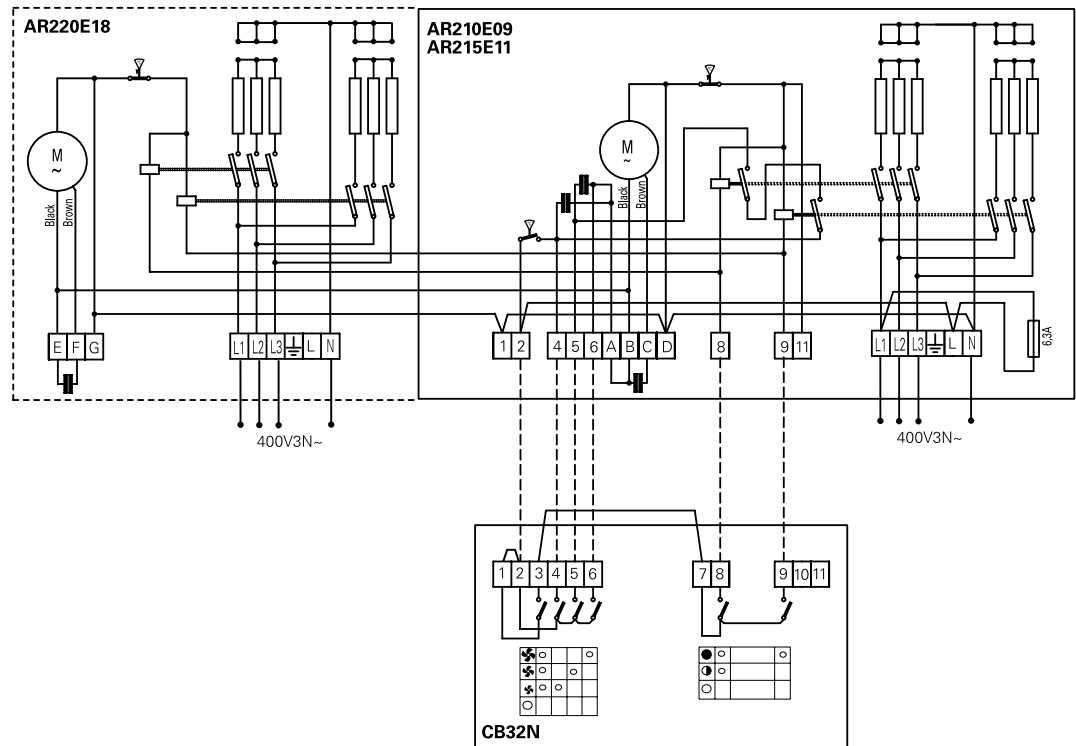


# AR200

## Wiring diagrams

Control options for electrically heated units

Internal wiring diagram

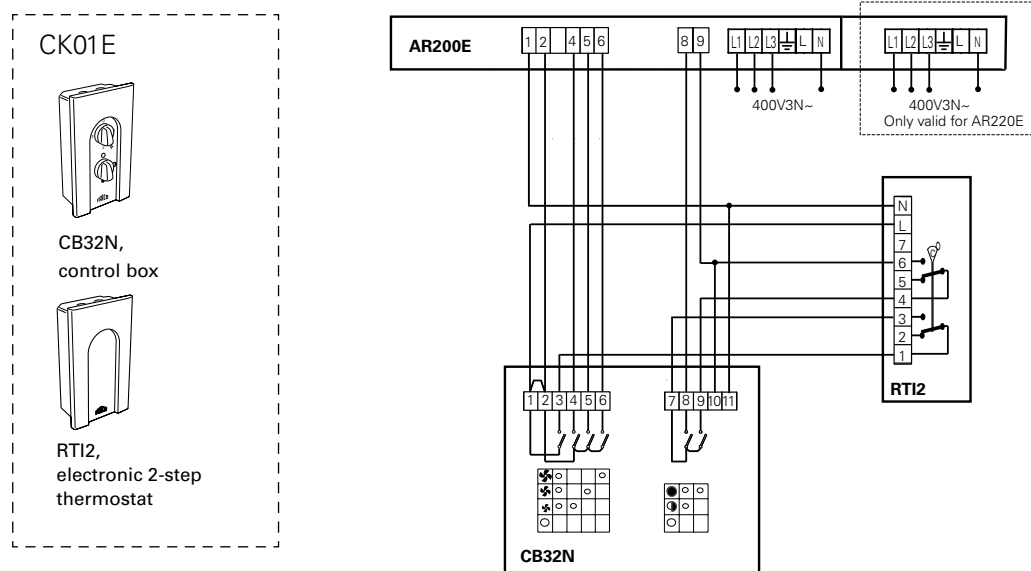


CB32N,  
control box

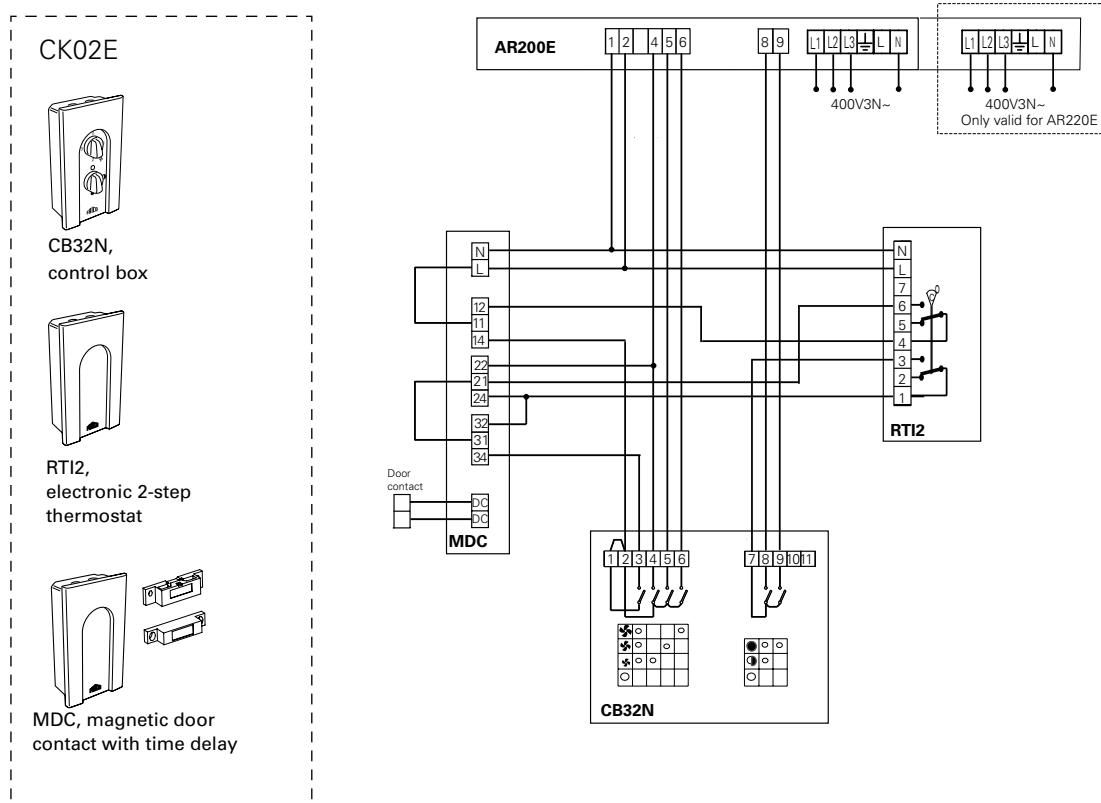
## Wiring diagrams

## Control options for electrically heated units

## Level 1



## Level 2

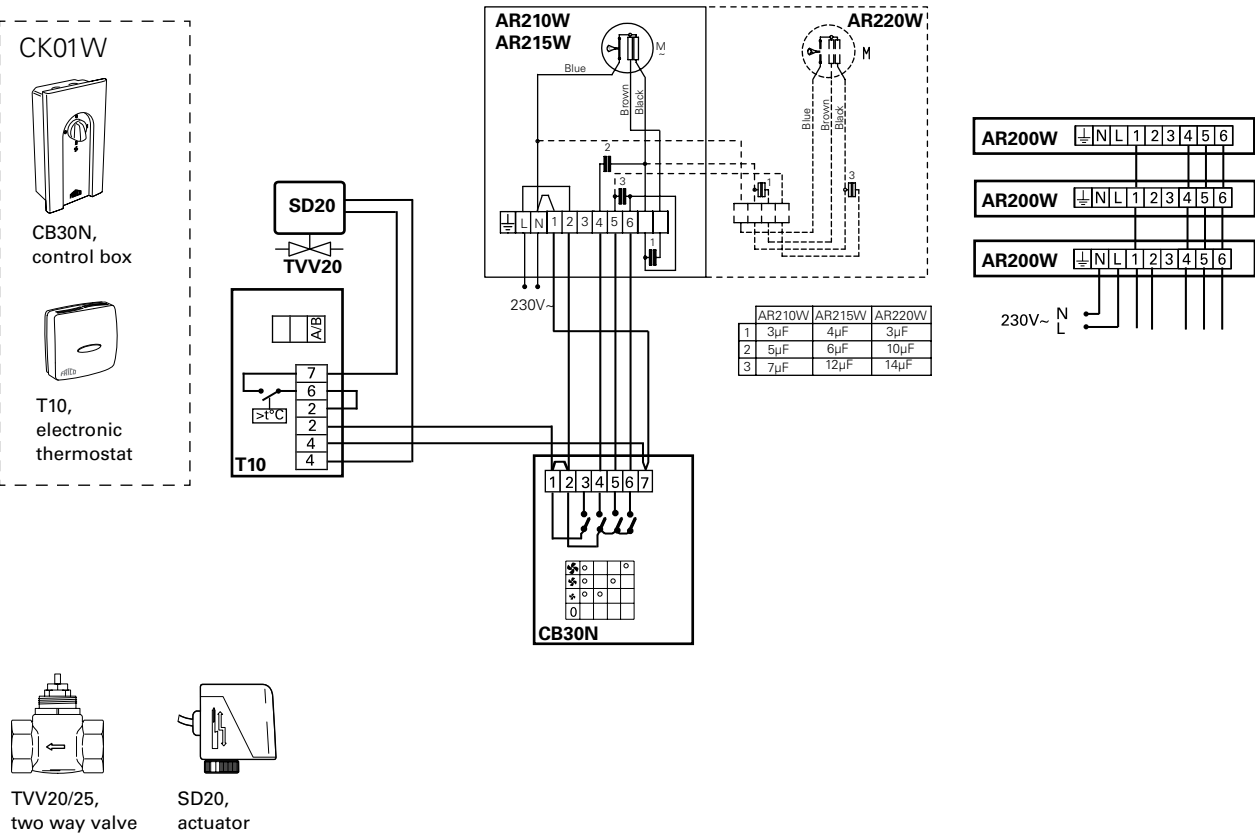


AR200

Wiring diagrams

Control options for water heated units

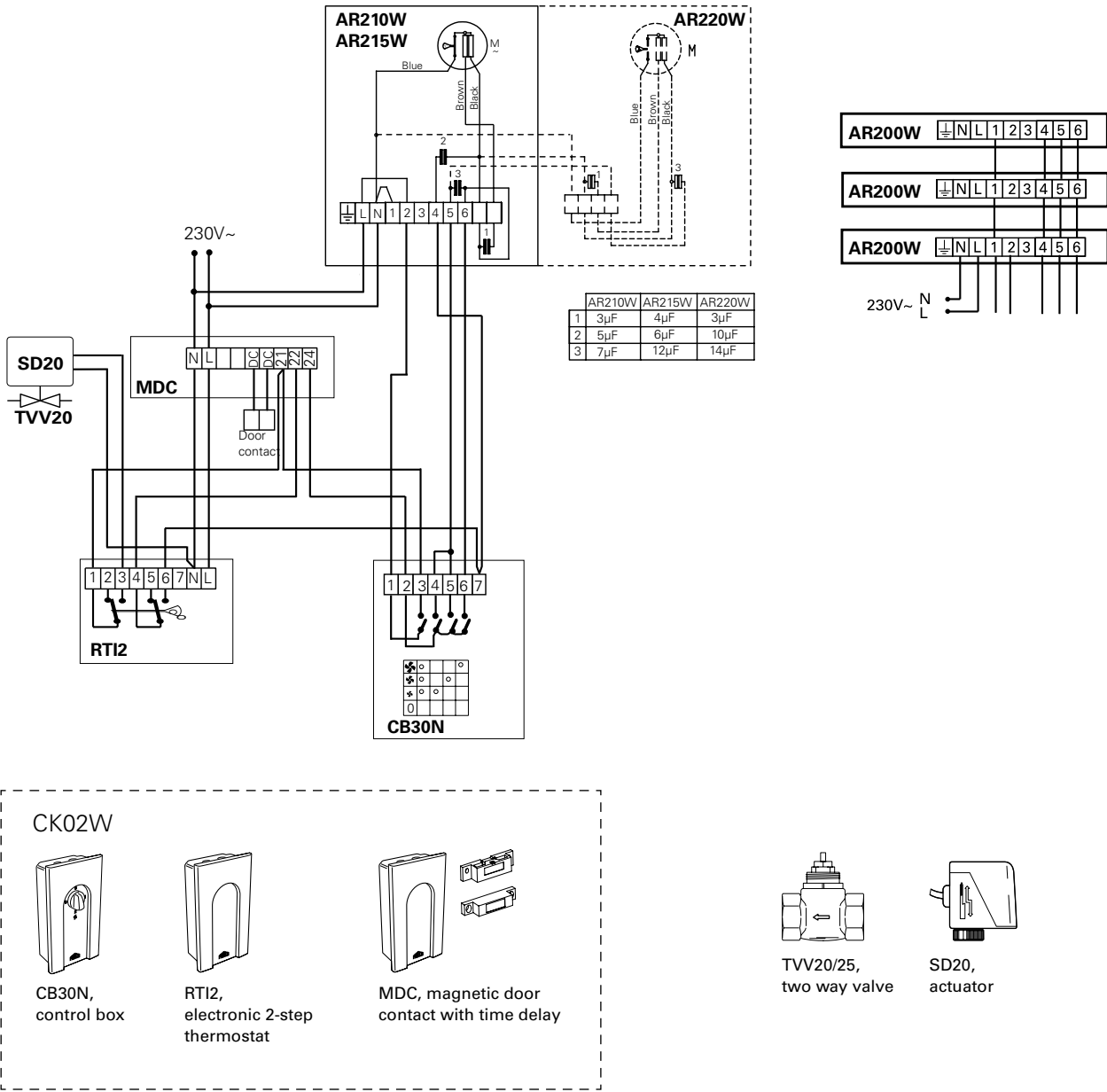
Level 1



Wiring diagrams

Control options for water heated units

Level 2





## Portier



## Portier

Design air curtain for entrances

- Recommended installation height 2,5 m\*
- Horizontal mounting
- Lengths: 1 and 1,5 m

✱ Ambient, no heat

⚡ Electrical heat: 3-13,5 kW

### Application

Portier is an exclusive air curtain in brushed stainless steel intended for entrance doors in e.g. shops, banks, hotels and restaurants. The elegant design of the air curtain makes it particularly suitable for environments where demands are made on a high standard of design.

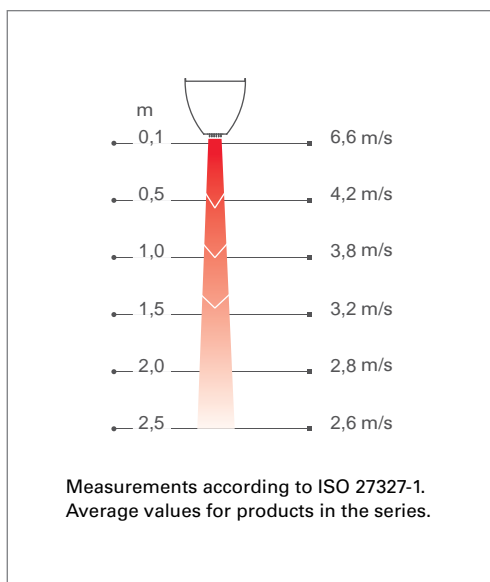
### Design

Portier has a unique symmetrical design in brushed stainless steel with black grille and ends.



Optimized airflow with  
Thermozone technology.

### Air velocity profile



### Product specifications

- Low sound level.
- Adjustable outlet grille makes it possible to direct the air for optimum air curtain effect.
- Simple suspension using fixing nuts on the upper side for installation with wall brackets, suspension kit or wire/threaded rod.

## Technical specifications

### ❄ Ambient, no heat - Portier A

Typ	Output [kW]	Airflow [m³/h]	Sound level[dB(A)]*1	Voltage [V]	Amperage [A]	Length [mm]	Weight [kg]
PS210A	0	1000/1300	44/54	230V~	0,45	1020	14
PS215A	0	1300/2000	46/56	230V~	0,55	1530	20

### ⚡ Electrical heat - Portier E

Typ	Output steps [kW]	Airflow [m³/h]	$\Delta t^{*2}$ [°C]	Sound level [dB(A)]*1	Voltage [V]	Amperage [A]	Length [mm]	Weight [kg]
PS210E03	1,5/3	950/1200	10/8	44/50	230V~/400V3N~*3	13,4/4,8	1020	17
PS210E06	3/6	950/1200	19/15	44/50	400V3N~*3	9,2	1020	17
PS210E09	4,5/9	950/1200	28/23	44/50	400V3N~*3	13,5	1020	17
PS215E09	4,5/9	1200/1900	23/14	39/50	400V3N~*3	13,5	1530	24
PS215E14	6,7/13,5	1200/1900	34/21	39/50	400V3~ + 230V~	20,0	1530	24

\*1) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m².

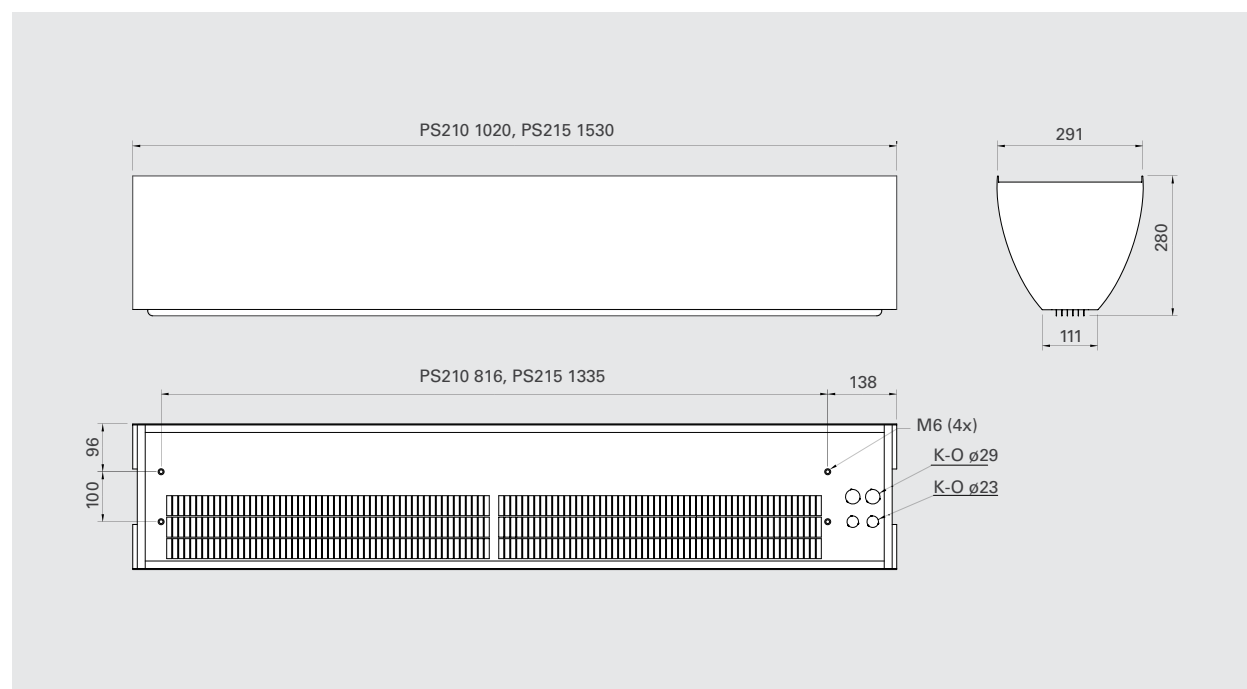
\*2)  $\Delta t$  = temperature rise of passing air at maximum heat output and lowest/highest airflow.

\*3) Alternative 400 V3~ + 230 V~ (operating supply) if the current is greater than 16 A. Applies when connecting several units.

Protection class: IP21.

CE compliant.

## Dimensions



## Mounting and connection

### Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible.

Numerous installation options are available: wall mounting with the wall mounting kit or ceiling mounting with pendulum mounting kit and suspension bracket. The air curtain can be suspended from wires or threaded rods.

Minimum distance from outlet to floor for electrically heated units is 1800 mm.

For the protection of wider openings, several units can be mounted next to each other using a joining kit.

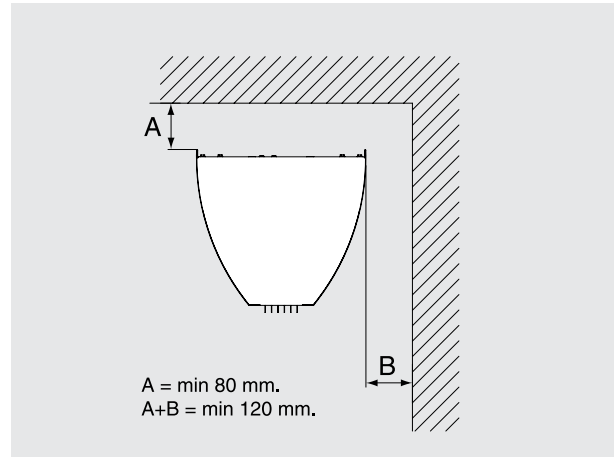
### Connection

#### *Unit without heating*

The electrical connection is made on the top of the unit. Control (230V~) should be connected to a terminal block in the terminal box. See wiring diagrams.

#### *Unit with electrical heating*

The electrical connection is made on the top of the unit. Control (230V~) and power supply for heat (400V3~) should be connected to a terminal block in the terminal box. For units with electrical heating, power and control should be supplied separately. See wiring diagrams.

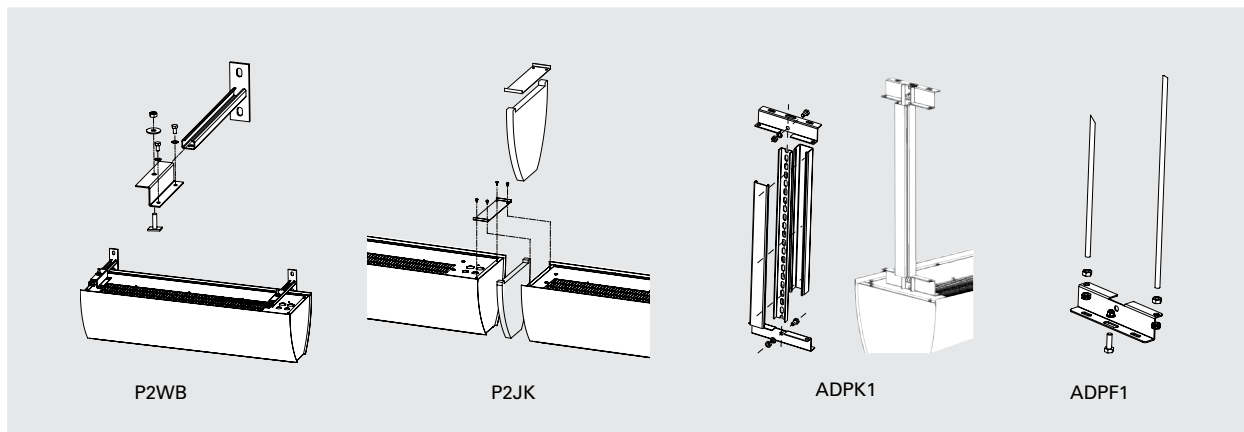


Minimum distances



Two units can be installed together with a joining kit to form a continuous air curtain above a wide doorway.

## Accessories

**P2WB, wall mounting kit**

Used for installing unit horizontally on a wall. Consists of wall brackets and mounting parts.

**P2JK, joining kit**

Used to join horizontal units together for a sleek and unified installation. Consists of joint bracket and mounting parts.

**ADPK1, suspension kit**

The hanging brackets are covered by a white plastic trim to cover the cables. The brackets may be cut to shorter length, if required.

**ADPF1, suspension brackets**

Ceiling brackets for installing the unit from the ceiling using wires or threaded bars (not included). Consists of 4 brackets, 2 for the unit and 2 for the ceiling.

Type	Description	Quantity included
<b>P2WB</b>	Wall mounting kit	1 pcs
<b>P2JK</b>	Joining kit	1 psc
<b>ADPK1</b>	Suspension kit	2 pcs
<b>ADPF1</b>	Suspension brackets	4 pcs

# Portier

## Control options

### ✿ Unit without heating

#### Level 1

Airflow is set manually.

Control kit:

- CB20, control box, 2 fan steps.

#### Level 2

Airflow is set manually. The door contact regulates the airflow on/off.

Control kit:

- CB20, control box, 2 fan steps.
- MDC, magnetic door contact with a time relay.

### ⚡ Unit with electrical heating

#### Level 1

Airflow is set manually. The room thermostat controls the heat output in two steps.

Control kit:

- CB22, control box, 2 fan steps and 2 heating steps.
- RTI2, electronic 2-step thermostat

#### Level 2

Airflow and heat output are controlled automatically based on the opening of the door and the room temperature. When the door is open the fan runs at high speed, when the door closes the fan will continue to run at high speed for the desired time (2s–10 min.) set on MDC. When the door is closed the fan runs at low speed if there is a need for heating, if not the fan is switched off.

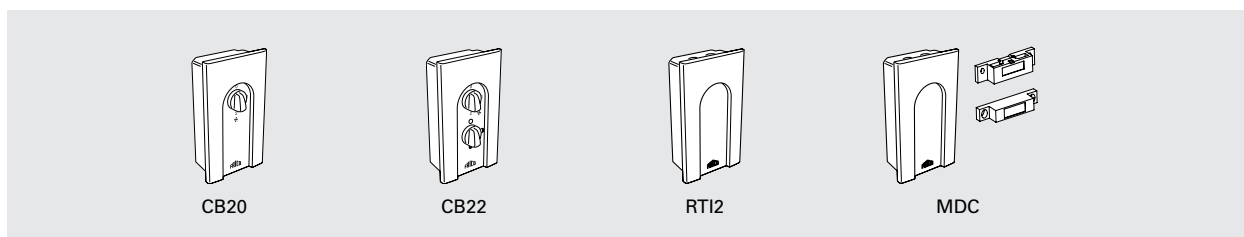
The room thermostat controls the heat output. E.g. the thermostat is set on 23 °C and the difference between the steps 4 °C. The thermostat will activate below 19 °C when the door is closed. When the door opens, the thermostat will activate below 23 °C and normally the heat is switched on.

Control kit:

- CB22, control box, 2 fan steps and 2 heating steps.
- MDC, magnetic door contact with a time relay.
- RTI2, electronic 2-step thermostat



## Controls

**CB20, control box**

Controls the airflow in 2 steps. Can control several units. Max input 12 A. IP44.

**CB22, control box**

Controls the airflow in 2 steps and heat output in 2 steps. Can control several units. Max input 10 A. IP44.

**RTI2, electronic 2-step thermostat**

Processor controlled 2-step thermostat with concealed dial. Setting range +5 – +35 °C. Connection voltage 230 V (two potential free contacts). Max. breaking current: 16/10 A (230/400 V). IP44.

**MDC, magnetic door contact with time relay**  
Starts the air curtain or increases from low to high speed when the door is opened. When the door is closed, the fan continues to run for the preset time (2 s–10 min). This prevents the fan from starting/stopping continuously and is especially suitable for doors that are frequently opened. Three alternating volt-free contacts 10 A, 230 V~ activated when the contacts make. A MDCDC is included in MDC. IP44.

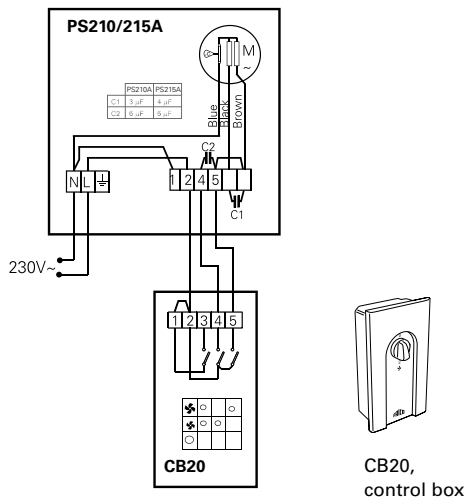
Typ	Description	HxWxD [mm]
<b>CB20</b>	Control box Portier A, IP44	155x87x43
<b>CB22</b>	Control box Portier E, IP44	155x87x43
<b>RTI2</b>	Electronic 2-step thermostat, IP44	155x87x43
<b>MDC</b>	MDC, magnetic door contact with time relay, IP44	155x87x43

For further information and options, see the "Controls" section.

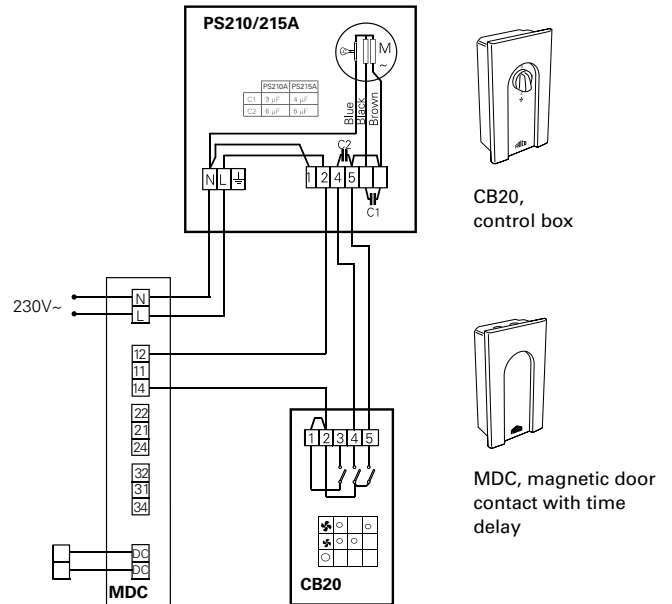
## Wiring diagrams

### Control options for units without heat

#### Level 1

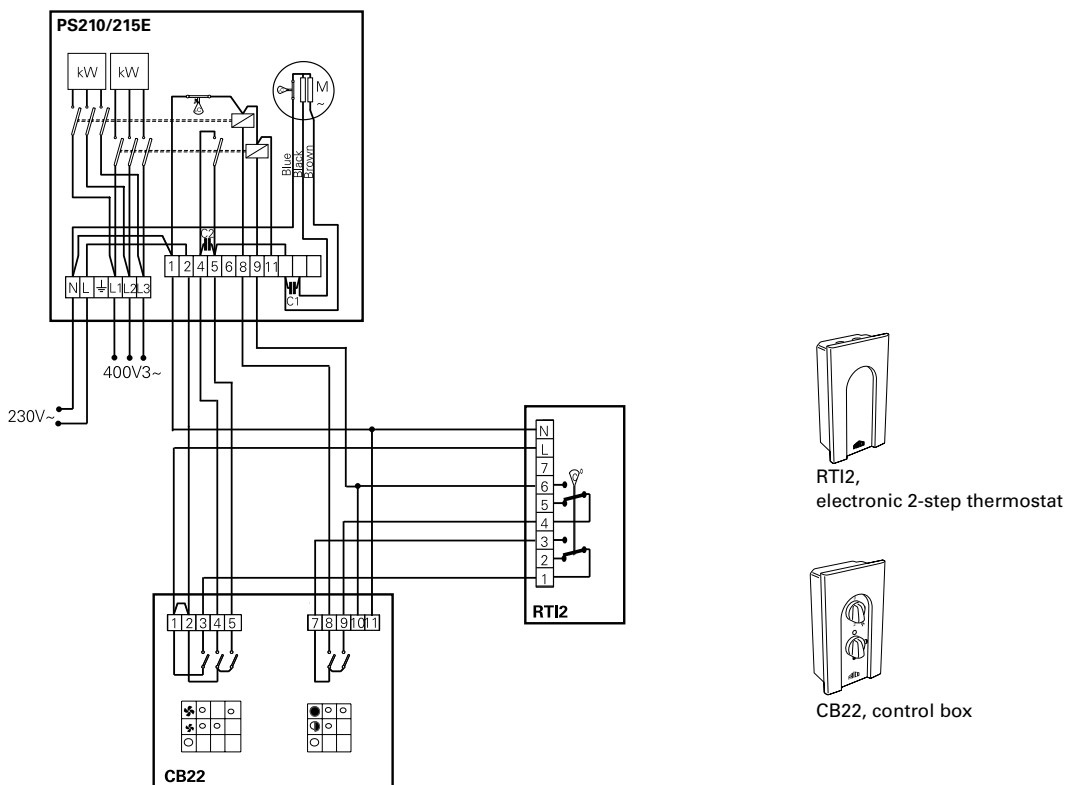


#### Level 2



### Control options for electrically heated units

#### Level 1

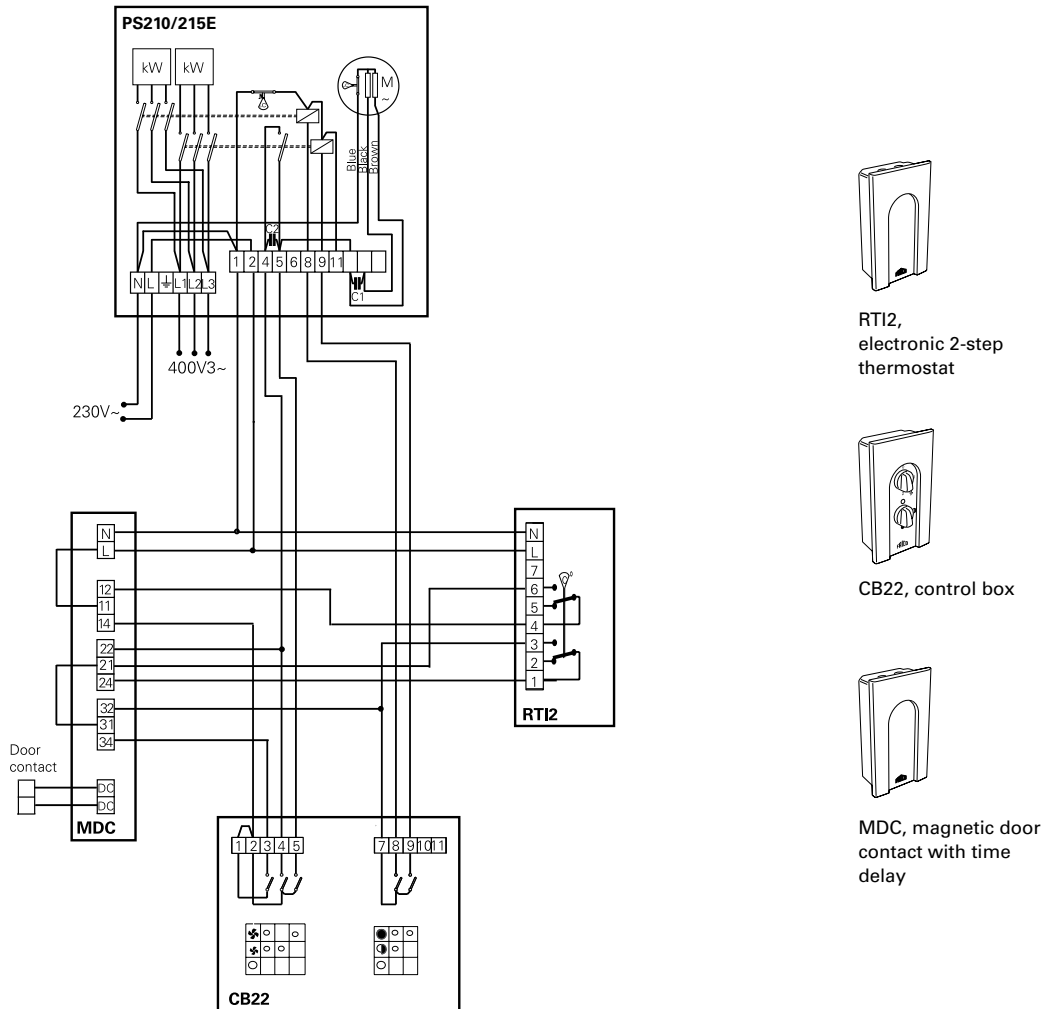




## Wiring diagrams

### Control options for electrically heated units

#### Level 2



ADA



## ADA

Air curtain for air conditioned premises

- Recommended installation height 2,5 m\*
- Horizontal mounting
- Lengths: 0,9 and 1,2 m

### Application

ADA is suitable to use, for example, to keep the cold air inside air conditioned premises. The air curtain creates an air barrier that prevents the intrusion of warm air and also insects, exhaust fumes, smoke, dust, etc. The cost of air conditioning will be substantially lower when the loss of conditioned air is reduced.

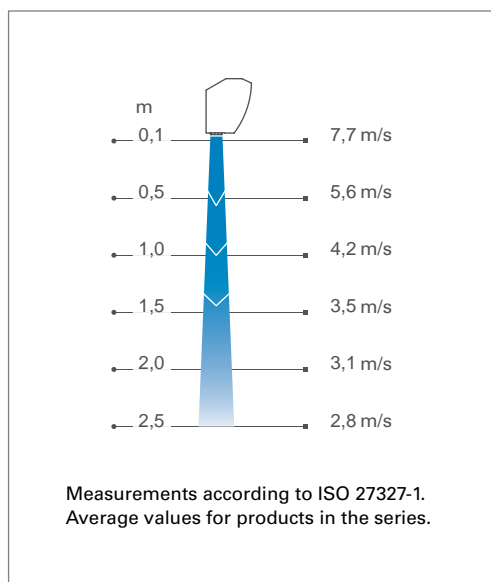
### Design

Thanks to compact design and air intake at the front, the air curtain can be mounted where space is limited between the ceiling and the upper edge of the doorway.



Optimized airflow with  
Thermozone technology.

### Air velocity profile



### Product specifications

- Built-in switch; high/low speed.
- Compact and easily positioned.
- Easy installation with 1,8 m cable and plug.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour: white, RAL 9016, NCS S 0500-N.

## Technical specifications

✪ Ambient, no heat - ADA

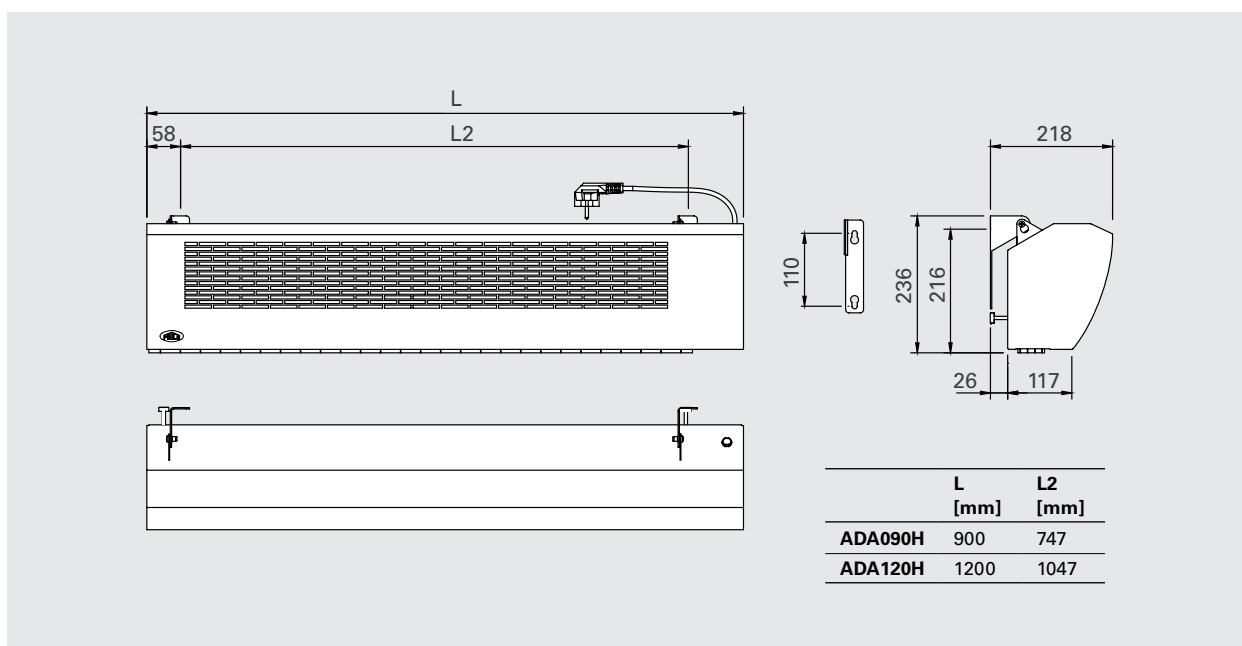
Type	Output [kW]	Airflow [m³/h]	Sound level* [dB(A)]	Voltage [V]	Amperage [A]	Length [mm]	Weight [kg]
ADA090H	0	800/1150	43/54	230V~	0,50	900	9,5
ADA120H	0	1100/1400	44/51	230V~	0,55	1200	11,7

\*) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.

Protection class: IP21.

CE compliant.

## Dimensions



## Mounting and connection

### Mounting

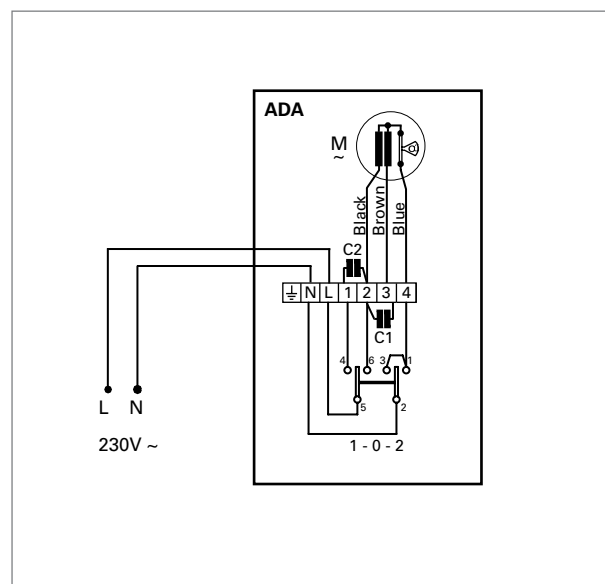
The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible. When the unit is used to protect cold storage or freezer rooms, it must be mounted on the outside of the conditioned space. The unit can be tilted for optimum output. For the protection of wider doorways, several units can be mounted next to each other.

### Connection

The unit is fitted with a 1.8 m cable and plug on delivery.

## Wiring diagrams

### Internal wiring diagram



Commercial

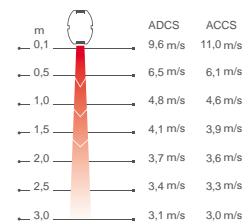


Commercial

Frico air curtains create a comfortable indoor climate in various entrances in an attractive way. They add value to the interior when mounted visibly, although concealed mounting is also possible. Together they offer width and flexibility for entrance doors in various environments and of various sizes. The following air curtains are suitable for wide entrances or relatively high installation heights, such as superstores, shopping malls or similar.

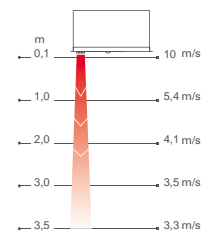
### Corinte

Corinte is intended for exclusive shop entrances and other environments with high demands in respect of design and soundlevel. Mounted with one unit on either side of the opening, thus creating a classic symmetry, the curtain effect and comfort is optimized.



### AR300

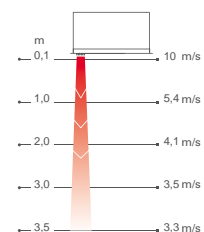
AR300 is very discreet thanks to its concealed appearance in the ceiling and built-in control that requires no wiring. The IR-eye in the Plug & play control detects if the door is opened or closed and controls the air curtain accordingly.



### AR3500

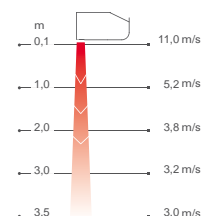
With its concealed location, AR3500 is very unobtrusive and with that particularly suitable for environments where the design is important.

The air curtain has many intelligent and energy saving features which provide fully automatic protection for the entrance, adaptable to each area of use.



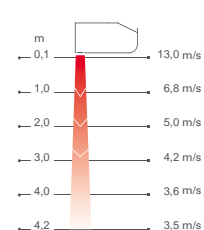
### PA3500

Air curtain PA3500 gives more possibilities than ever before, packed into the same product. There are therefore many areas of use. PA3500 is particularly suitable for entrances to stores and shopping centres for example.



### PA4200

With air curtain PA4200 there are more opportunities than ever before, packed into the same product. There are therefore many areas of use. PA4200 is specifically designed for doorways in for example, large commercial installations or industrial and warehouse buildings.





## Corinte

Design air curtain for exclusive entrances, with intelligent control

- Horizontal mounting
  - Recommended installation height 3 m\*
  - Lengths ADCS: 1,7 and 2,2 m
  - Lengths ACCS: 1, 1,5, 2, 2,5 and 3 m
- Vertical mounting
  - Recommended installation width 5 m\* (2 units), one on each side
  - Lengths ADCS: 2,2 and 2,7 m
  - Lengths ACCS: 2, 2,5 and 3 m

✿ Ambient, no heat

⚡ Electrical heat ADCS: 15–22,5 kW

⚡ Electrical heat ACCS: 9–23 kW

💧 Water heat WH, WL

### Application

Corinte is intended for exclusive shop entrances and other environments with high demands in respect of design and soundlevel. Mounted with one unit on either side of the opening, thus creating a classic symmetry, the curtain effect and comfort is optimized.

The air curtain has many intelligent and energy saving features which provide fully automatic protection for the entrance, adaptable to each area of use.

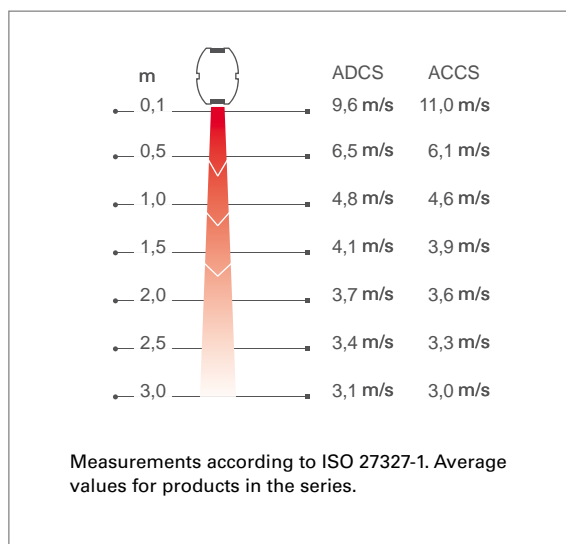
### Design

Corinte is a stylish and exclusive, stainless steel air curtain for horizontal or vertical installation. Corinte is available in two models; ADCS and ACCS that have varying dimensions and performance. The product key offers many options for the design and finish of both models.



Optimized airflow with Thermozone technology.

### Air velocity profile



### Product specifications

- Prepared for the SIRE control system whose pre-programmed default settings and many features make it easy to install and use the air curtain. Read more about the SIRE controls package in the "Controls" section.
- Customised production based on the product key.
- Available for horizontal or vertical mounting.
- For vertical mounting, electricity and/or water may be connected from above or below.
- Available in polished, mirror-polished or brushed stainless steel. Colour intake and outlet grille: black, RAL 9005.



## ADCS



- Horizontal mounting
  - Recommended installation height 3 m\*
  - Lengths: 1,7 and 2,2 m
- Vertical mounting
  - Recommended installation width 5 m\* (2 units), one on each side
  - Lengths: 2,2 and 2,5 m

✿ Ambient, no heat

⚡ Electrical heat: 15–22,5 kW

💧 Water heat WH, WL

Corinte is available in two versions; ADCS and ACCS. Read more about ACCS in the end of this section.

\*) Recommended installation height and width varies depending on the relevant premises.



## Technical specifications

✱ Ambient, no heat - ADCS A

Type	Output [kW]	Airflow* <sup>3</sup> [m³/h]	Sound level* <sup>3</sup> [dB(A)]	Output-motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
ADCS17A* <sup>1</sup>	0	1400/3000	40/60	670	230V~	2,9	1700	73
ADCS22A	0	1800/4000	42/61	990	230V~	4,3	2200	95
ADCS25A* <sup>2</sup>	0	2050/4500	43/63	1150	230V~	5,0	2450	108

⚡ Electrical heat - ADCS E

Type	Output steps [kW]	Airflow* <sup>3</sup> [m³/h]	Δt* <sup>4,5</sup> [°C]	Sound level* <sup>3</sup> [dB(A)]	Output-motor [W]	Voltage motor [V]	Amperage motor [A]	Voltage [V] Amperage [A] (heat)	Length [mm]	Weight [kg]
ADCS17E* <sup>1</sup>	7,5/15	1400/3000	32/15	40/60	670	230V~	2,9	400V3~/21,7	1700	73
ADCS22E	10/20	1800/3600	33/15	42/61	890	230V~	3,6	400V3~/28,9	2200	95
ADCS25E* <sup>2</sup>	11,2/22,5	2050/4100	33/15	43/63	1080	230V~	4,3	400V3~/32,5	2450	108

💧 Water heat - ADCS WH, coil for high temperature water (≥80 °C)

Type	Output* <sup>5</sup> [kW]	Airflow* <sup>3</sup> [m³/h]	Δt* <sup>4,5</sup> [°C]	Water volume [l]	Sound level* <sup>3</sup> [dB(A)]	Output-motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
ADCS17WH* <sup>1</sup>	22,5	1400/3000	29/22	2,8	39/59	670	230V~	2,9	1700	85
ADCS22WH	29,3	1800/4000	29/22	3,6	42/60	990	230V~	4,3	2200	110
ADCS25WH* <sup>2</sup>	34,3	2050/4500	30/22	4,0	42/61	1150	230V~	5,0	2450	125

💧 Water heat - ADCS WL, coil for low water temperature (≤80 °C)

Type	Output* <sup>6</sup> [kW]	Airflow* <sup>3</sup> [m³/h]	Δt* <sup>4,6</sup> [°C]	Water volume [l]	Sound level* <sup>3</sup> [dB(A)]	Output-motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
ADCS17WL* <sup>1</sup>	17,3	1400/3000	22/17	2,8	39/59	670	230V~	2,9	1700	85
ADCS22WL	24,5	1800/4000	23/18	3,6	42/60	990	230V~	4,3	2200	110
ADCS25WL* <sup>2</sup>	28,0	2050/4500	24/18	4,0	42/61	1150	230V~	5,0	2450	125

\*<sup>1</sup>) Available only for horizontal mounting.\*<sup>2</sup>) Available only for vertical mounting.\*<sup>3</sup>) Lowest/highest airflow of totally 5 fan steps.\*<sup>4</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.\*<sup>5</sup>) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.\*<sup>6</sup>) Applicable at water temperature 80/60 °C, air temperature, in +18 °C.\*<sup>7</sup>) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

CE compliant.

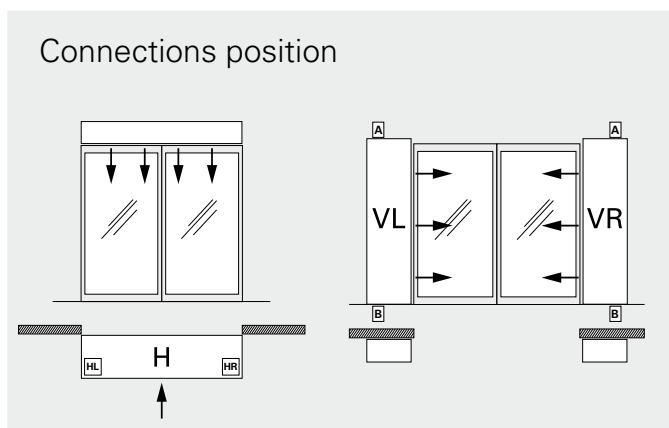
Protection class: IP20.

## Product key

Type - Unit shape - Connections position - Finish / Material

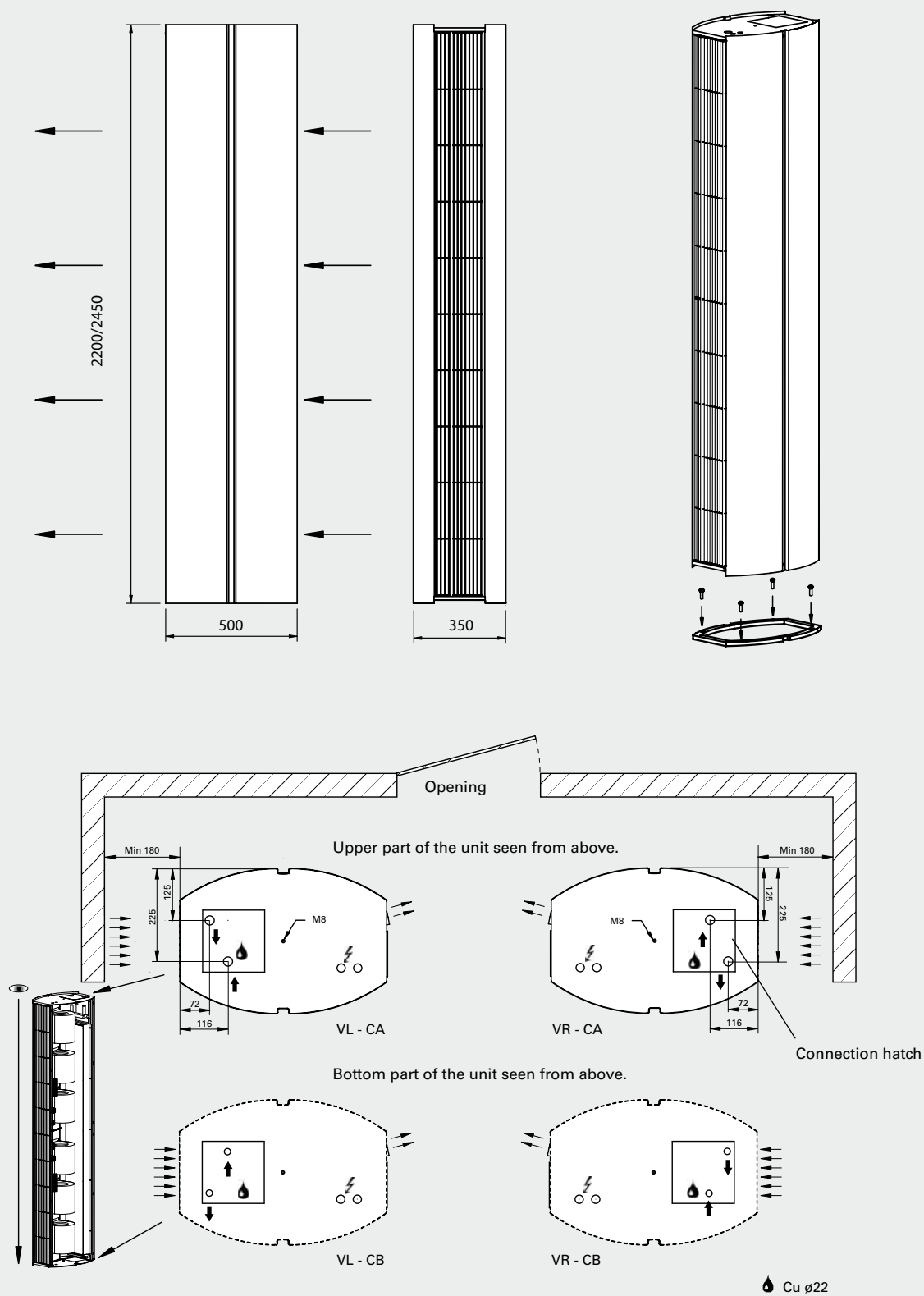
Example: ADCS22WL - VL - A - P

Type	See technical specifications
Unit shape	HL (Horizontal, connections to the left), HR (Horizontal, connections to the right), VL (Vertical Left) or VR (Vertical Right)
Connections position	A or B, see figure.
Finish / material	P = Polished bright annealed B = Brushed stainless steel MP = Mirror polished stainless steel



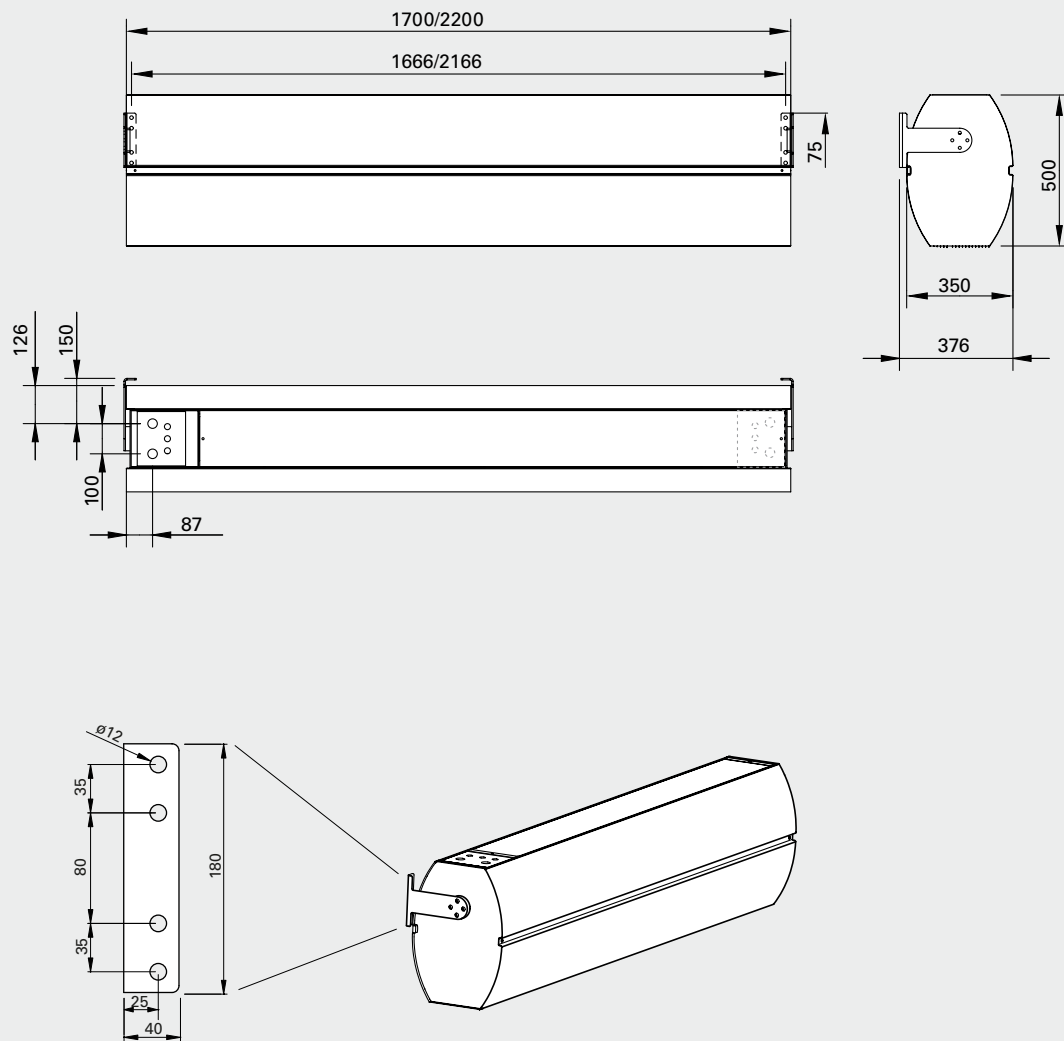
## Dimensions

Vertical mounting



## Dimensions

Horizontal mounting



## Mounting

The air curtain range includes variants for horizontal and vertical installation.

### *Horizontal mounting*

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible.

It must be specified when ordering whether the connections are to be on the left or right hand side (seen from inside the premises). The air curtain may be mounted on the wall or on the ceiling with the enclosed brackets. For suspended mounting from the ceiling, suitable devices (threaded bars, rails etc.) are fixed on the brackets.

Minimum distance from outlet to floor for electrically heated units is 1800 mm.

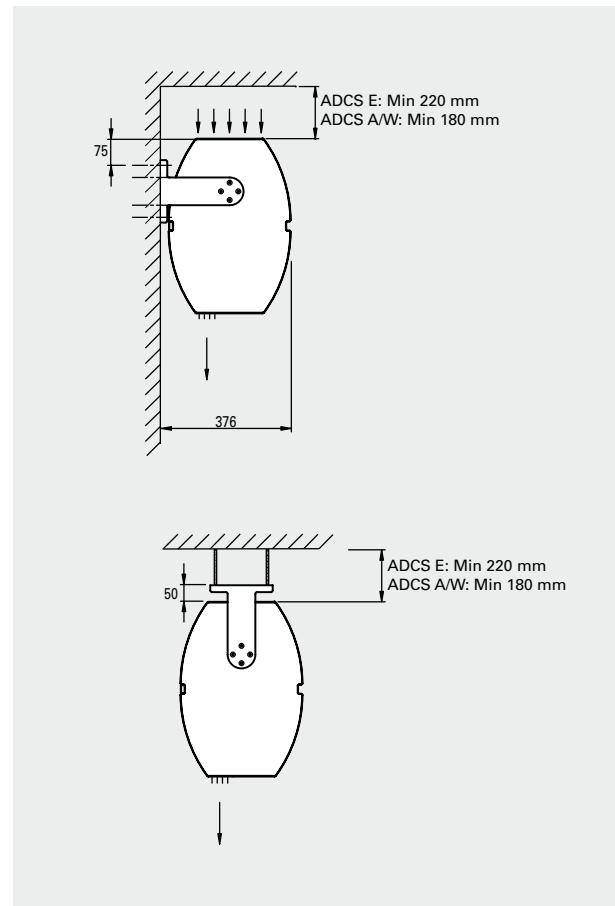
### *Vertical mounting*

The air curtain is mounted vertically as close as possible to the door. For the best effect air curtains should be placed on both sides of the opening.

When ordering, state on which side of the door the unit is to be placed and whether electricity and/or water connections are made from above or below.

The air curtain is mounted on a floor frame which is included. The edging is attached horizontal to the floor using fasteners appropriate for the surface. The air curtain must always be secured at the top.

By using an extension hood, the gap between the air curtain and the ceiling is filled in.



Minimum distances



## Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

### *Unit without heating*

The electrical connection may be done from above or below when mounted vertically, and from left or right when mounted horizontally, according to ordering key. Control (230V~) should be connected to a terminal block.

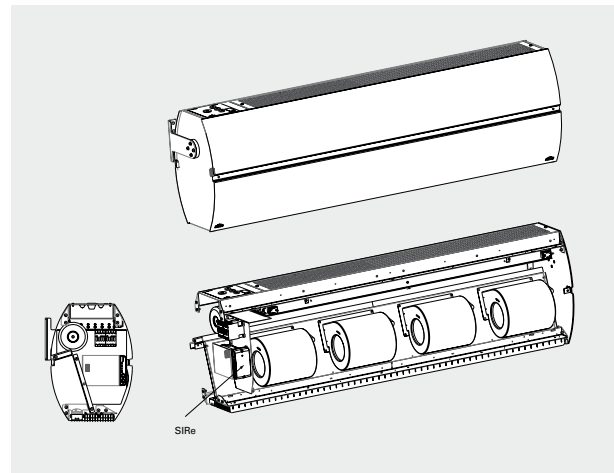
### *Unit with electrical heating*

The electrical connection may be done from above or below when mounted vertically, and from left or right when mounted horizontally, according to ordering key. Control (230V~) and power supply for heat (400V3~) should be connected to a terminal block. For units with electrical heating, power and control should be supplied separately.

### *Unit with water heating*

The electrical connection may be done from above or below when mounted vertically, and from left or right when mounted horizontally, according to ordering key. Control (230V~) should be connected to a terminal block.

The water connection may be done from above or below when mounted vertically, and from the left or right when mounted horizontally. The smooth Ø22 mm copperpipes is connected by compression fitting or through welding the pipe work to the unit.



PC board SIRE is built in to the air curtain.

## Accessories

### ADCSEH, extension hood

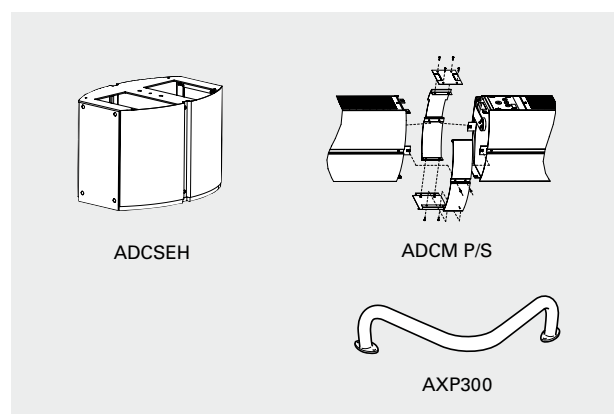
Fills the space between the unit and the ceiling for vertical mounting and provides a neater installation. Special order to required dimension. Height 100-1000 mm.

### ADCM P/S, joining kit

Used to join horizontal units together for a sleek and unified installation. ADCMP for suspended installation and ADCMS for wall installation.

### AXP300, collision protection

Floor placed protection against impact from e.g. shopping trolleys.



Type	Description
ADCSEH	Extension hood
ADCMP	Joining kit for suspended installation
ADCMS	Joining kit for wall installation
AXP300	Collision protection

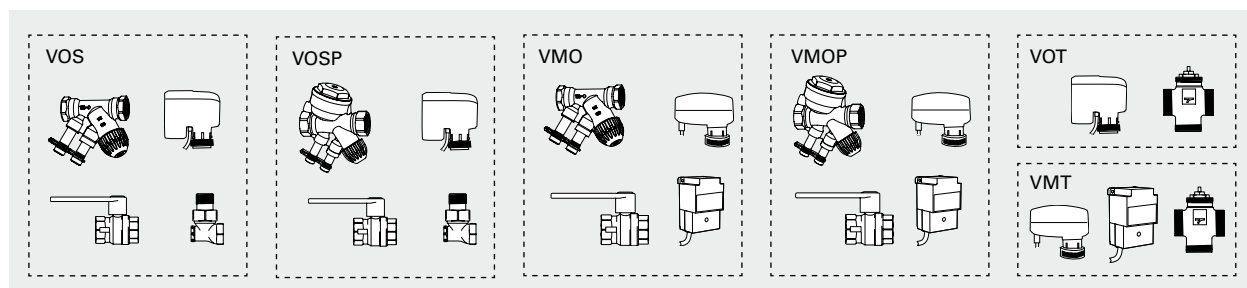
## Controls



This air curtain is supplied with an integrated PC board SIRE. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SIRE control system in the "Controls" section.

Type	Description
<b>SIREB</b>	Control system SIRE Basic
<b>SIREAC</b>	Control system SIRE Competent
<b>SIREAA</b>	Control system SIRE Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25
Type	Description
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMOP20</b>	Three way control valve and modulating actuator, DN20
<b>VMOP25</b>	Three way control valve and modulating actuator, DN25

## Output charts water

## ADCS WH

			Supply water temperature: 110 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 110/80 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ADCS17WH	max	3000	17,3	39,9	0,06	0,4	33,8	51,2	0,28	6,0
	min	1400	8,1	38,5	0,02	0,1	20,6	61,4	0,17	2,5
ADCS22WH	max	4000	23,1	38,0	0,08	0,7	43,9	50,3	0,36	10,7
	min	1800	10,4	33,2	0,03	0,2	26,6	61,5	0,22	4,3
ADCS25WH	max	4500	26,0	35,2	0,08	1,1	51,4	51,7	0,42	17,6
	min	2050	11,8	29,7	0,04	0,3	31,0	62,6	0,26	7,1

			Supply water temperature: 90 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 90/70 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ADCS17WH	max	3000	17,3	43,8	0,09	0,9	27,3	44,8	0,34	8,8
	min	1400	8,1	38,2	0,04	0,2	16,7	53,0	0,20	6,3
ADCS22WH	max	4000	23,1	43,0	0,12	1,6	35,5	44,1	0,43	15,5
	min	1800	10,4	34,7	0,05	0,3	21,4	53,0	0,26	6,2
ADCS25WH	max	4500	26,0	40,2	0,13	2,3	41,5	45,2	0,51	25,6
	min	2050	11,8	32,1	0,05	0,5	25,0	53,9	0,31	10,2

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ADCS17WH	max	3000	17,3	46,3	0,13	1,6	22,5	40,0	0,27	6,4
	min	1400	8,1	38,7	0,05	0,3	13,7	46,8	0,17	2,6
ADCS22WH	max	4000	23,1	46,2	0,17	2,9	29,3	39,6	0,36	11,2
	min	1800	10,4	36,0	0,06	0,5	17,7	47,0	0,22	4,5
ADCS25WH	max	4500	26,0	43,6	0,17	4,0	34,3	40,5	0,42	18,6
	min	2050	11,8	33,8	0,06	0,7	20,7	47,7	0,25	7,5

			Supply water temperature: 82 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 82/71 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ADCS17WH	max	3000	17,3	45,7	0,12	1,4	26,4	43,9	0,59	24,7
	min	1400	8,1	38,6	0,05	0,3	16,0	51,6	0,36	9,9
ADCS22WH	max	4000	23,1	45,5	0,15	2,5	34,1	43,1	0,76	43,4
	min	1800	10,4	35,7	0,05	0,4	20,5	51,5	0,46	17,1
ADCS25WH	max	4500	26,0	42,8	0,16	3,5	39,8	44,0	0,89	70,7
	min	2050	11,8	33,4	0,06	0,6	23,8	52,2	0,53	27,8

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.



## Output charts water

## ADCS WL

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ADCS17WL	max	3000	17,2	35,8	0,09	0,9	30,9	48,4	0,38	10,2
	min	1400	8,2	33,9	0,04	0,2	18,3	56,6	0,22	4,0
ADCS22WL	max	4000	23,0	32,6	0,12	1,6	42,6	49,4	0,52	22,1
	min	1800	10,4	29,2	0,05	0,4	24,4	58,0	0,30	8,1
ADCS25WL	max	4500	26,0	31,6	0,13	2,1	48,4	49,7	0,59	30,4
	min	2050	11,8	27,6	0,05	0,5	28,0	58,2	0,34	11,3

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ADCS17WL	max	3000	17,2	37,6	0,13	1,6	24,2	41,8	0,29	6,7
	min	1400	8,1	33,7	0,05	0,3	14,4	48,3	0,18	2,7
ADCS22WL	max	4000	23,0	34,9	0,16	2,8	33,6	42,8	0,41	14,8
	min	1800	10,4	30,0	0,06	0,6	19,4	49,7	0,24	5,5
ADCS25WL	max	4500	26,0	34,0	0,17	3,6	38,3	43,1	0,47	20,4
	min	2050	11,8	28,7	0,07	0,7	22,3	50,0	0,27	7,7

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ADCS17WL	max	3000	17,2	39,9	0,21	3,7	17,3	35,0	0,21	3,8
	min	1400	8,1	34,2	0,08	0,6	10,3	39,8	0,13	1,5
ADCS22WL	max	4000	23,0	38,0	0,25	6,6	24,5	36,0	0,30	8,6
	min	1800	10,4	31,4	0,09	1,0	14,2	41,2	0,17	3,3
ADCS25WL	max	4500	26,0	37,3	0,28	8,4	28,0	36,4	0,34	11,9
	min	2050	11,8	30,5	0,10	1,3	16,4	41,6	0,20	4,6

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ADCS17WL	max	3000	17,5	41,5	0,31	7,7	13,7	31,5	0,17	2,5
	min	1400	8,1	34,8	0,10	1,0	8,2	35,0	0,10	1,0
ADCS22WL	max	4000	23,0	39,9	0,37	12,9	19,8	32,6	0,24	6,0
	min	1800	10,4	32,5	0,11	1,6	11,5	36,8	0,14	2,3
ADCS25WL	max	4500	26,0	39,4	0,40	16,5	22,8	32,9	0,28	8,4
	min	2050	11,8	31,8	0,12	2,0	13,4	37,2	0,16	3,3

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

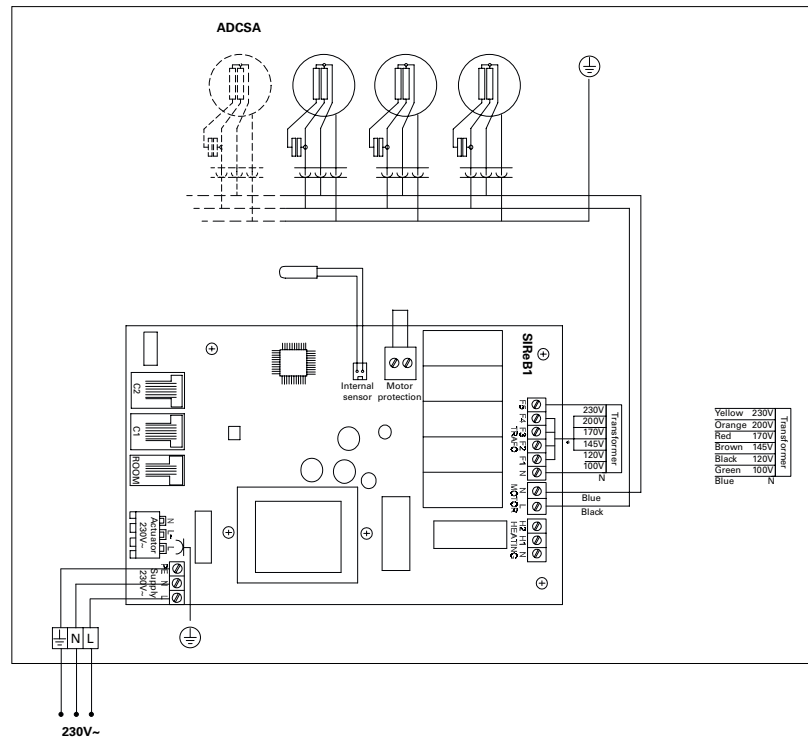
See [www.frico.se](http://www.frico.se) for additional calculations.

Corinte ADCS

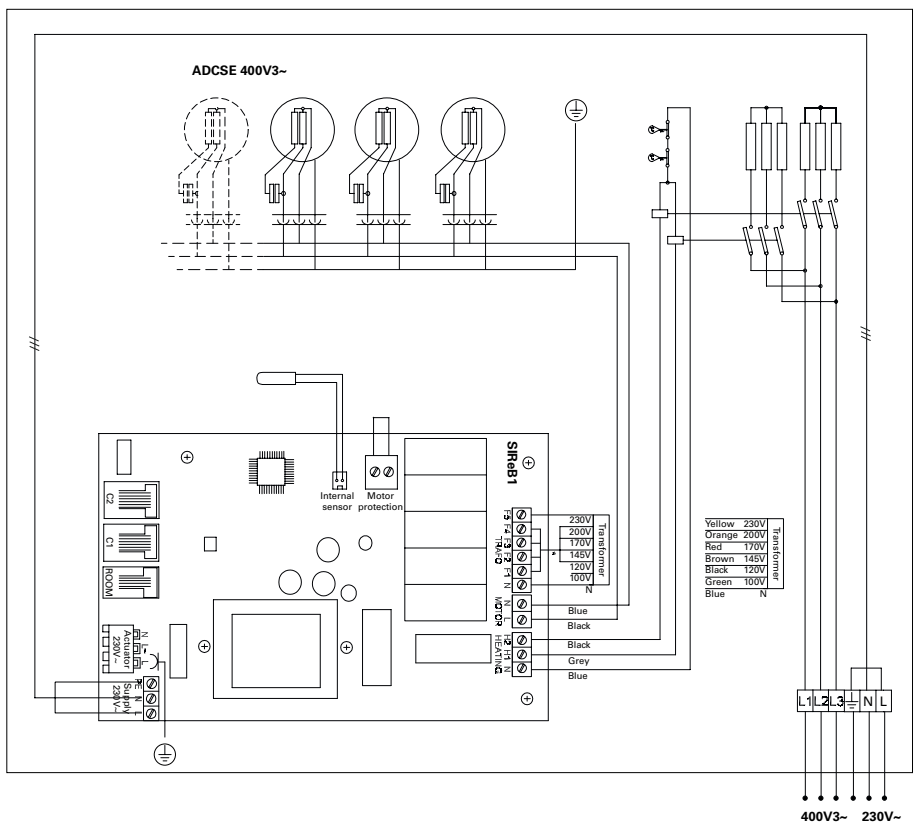
Wiring diagrams

Internal wiring diagram

Unit without heating

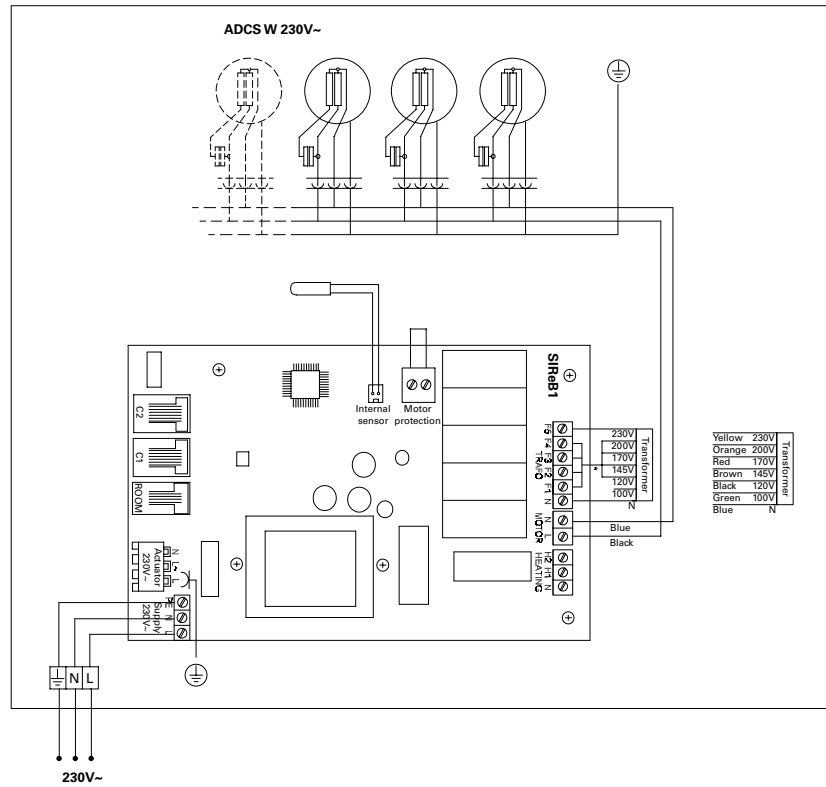


Unit with electrical heating



## Wiring diagrams

## Internal wiring diagram

*Unit with water heating*

## ACCS



- Horizontal mounting
  - Recommended installation height 3 m\*
  - Lengths: 1, 1,5, 2, 2,5 and 3 m
- Vertical mounting
  - Recommended installation width 5 m\*  
(2 units), one on each side
  - Lengths: 2, 2,5 and 3 m

⚡ Electrical heat: 8–23 kW

💧 Water heat WH, WL

Corinte is available in two versions; ADCS and ACCS. Read more about ADCS in the beginning of this section.

## Technical specifications

## ⚡ Electrical heat - ACCS E

Type	Outout steps [kW]	Airflow* <sup>2</sup> [m³/h]	Δt* <sup>4</sup> [°C]	Sound level* <sup>3</sup> [dB(A)]	Voltage motor [V]	Amperage motor [A]	Voltage [V] Amperage [A] (heat)	Length [mm]	Weight [kg]
ACCS10E08* <sup>1</sup>	2,7/5,4/8,1	950/1900	25/13	44/61	230V~	2,2	400V3~/11,7	1000	50
ACCS15E12* <sup>1</sup>	3,9/7,8/11,7	1350/2600	26/13	45/62	230V~	2,9	400V3~/16,9	1500	65
ACCS20E16	5,4/10,8/16,2	1980/3800	24/13	47/64	230V~	4,3	400V3~/23,4	2000	95
ACCS25E20	6,6/13,2/19,8	2340/4500	25/13	48/65	230V~	5,1	400V3~/28,6	2500	110
ACCS30E23	7,8/15,6/23,4	2660/5100	26/14	48/65	230V~	5,8	400V3~/33,8	3000	130

## 💧 Water heat - ACCS WH, coil for high temperature water (≥80 °C)

Type	Output* <sup>5</sup>		Airflow* <sup>2</sup>	Δt* <sup>4,5</sup>		Water volume		Sound level* <sup>3</sup>	Voltage motor	Amperage motor	Length	Weight
	H* <sup>7</sup> [kW]	V* <sup>8</sup> [kW]	[m³/h]	H* <sup>7</sup> [°C]	V* <sup>8</sup> [°C]	H* <sup>7</sup> [l]	V* <sup>8</sup> [l]	[dB(A)]	[V]	[A]	[mm]	[kg]
ACCS10WH* <sup>1</sup>	11,1	-	950/1900	23/17	-	2,0	-	44/61	230V~	2,1	1000	50
ACCS15WH* <sup>1</sup>	15,1	-	1350/2600	23/17	-	3,2	-	45/62	230V~	2,9	1500	65
ACCS20WH	22,3	30,3	1980/3800	23/17	30/24	4,3	3,0	47/64	230V~	4,3	2000	95
ACCS25WH	27,1	33,4	2340/4500	23/18	28/22	5,4	3,0	48/65	230V~	5,0	2500	110
ACCS30WH	35,2	51,9	2660/5100	26/21	38/30	6,6	5,6	48/65	230V~	5,7	3000	130

## 💧 Water heat - ACCS WL, coil for low water temperature (≤80 °C)

Type	Output* <sup>6</sup>		Airflow* <sup>2</sup>	Δt* <sup>4,6</sup>		Water volume		Sound level* <sup>3</sup>	Voltage motor	Amperage motor	Length	Weight
	H* <sup>7</sup> [kW]	V* <sup>8</sup> [kW]	[m³/h]	H* <sup>7</sup> [°C]	V* <sup>8</sup> [°C]	H* <sup>7</sup> [l]	V* <sup>8</sup> [l]	[dB(A)]	[V]	[A]	[mm]	[kg]
ACCS10WL* <sup>1</sup>	9,0	-	950/1900	18/14	-	1,1	-	44/61	230V~	2,1	1000	50
ACCS15WL* <sup>1</sup>	16,8	-	1350/2600	24/19	-	1,9	-	45/62	230V~	2,9	1500	65
ACCS20WL	23,5	23,1	1980/3800	23/18	22/18	2,5	4,4	47/64	230V~	4,3	2000	95
ACCS25WL	29,3	25,8	2340/4500	24/19	21/17	3,3	4,4	48/65	230V~	5,0	2500	110
ACCS30WL	34,6	31,1	2660/5100	25/20	22/18	3,9	5,6	48/65	230V~	5,7	3000	130

\*<sup>1</sup>) Available only for horizontal mounting.\*<sup>2</sup>) Lowest/highest airflow of totally 5 fan steps.\*<sup>3</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.\*<sup>4</sup>) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.\*<sup>5</sup>) Applicable at water temperature 80/60 °C, air temperature, in +18 °C.\*<sup>6</sup>) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.\*<sup>7</sup>) Horizontal mounting\*<sup>8</sup>) Vertical mounting

CE compliant.

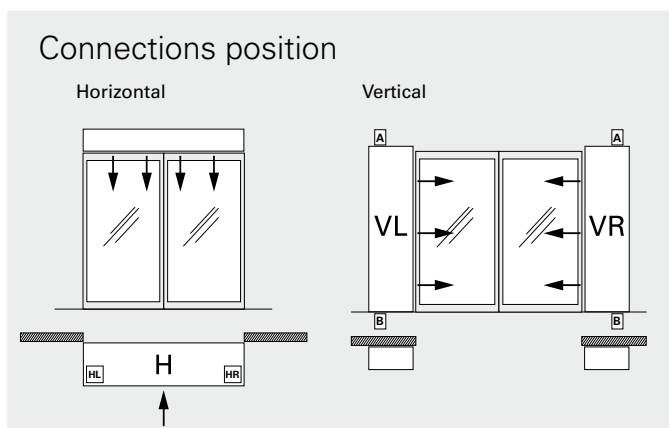
Protection class: IP20.

## Product key

Type - Unit shape - Connections position - Finish / Material

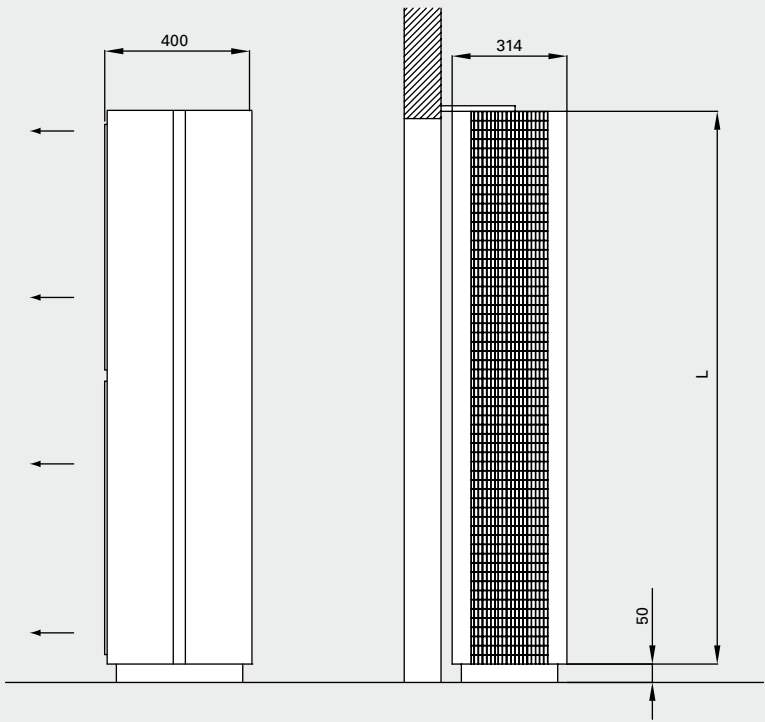
Example: ACCS25WL - VL - A - P

Typ	See technical specifications
Unit shape	HL (Horizontal, connections to the left), HR (Horizontal, connections to the right), VL (Vertical Left) or VR (Vertical Right) seen from inside
Connections position	A or B, see figure.
Finish / material	P = Polished stainless steel B = Brushed stainless steel MP = Mirror polished stainless steel

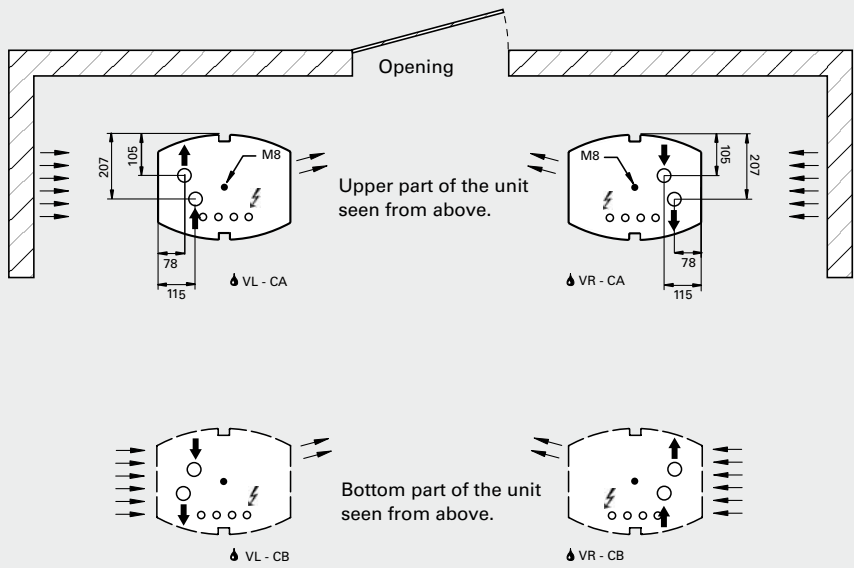


Dimensions

Vertical mounting



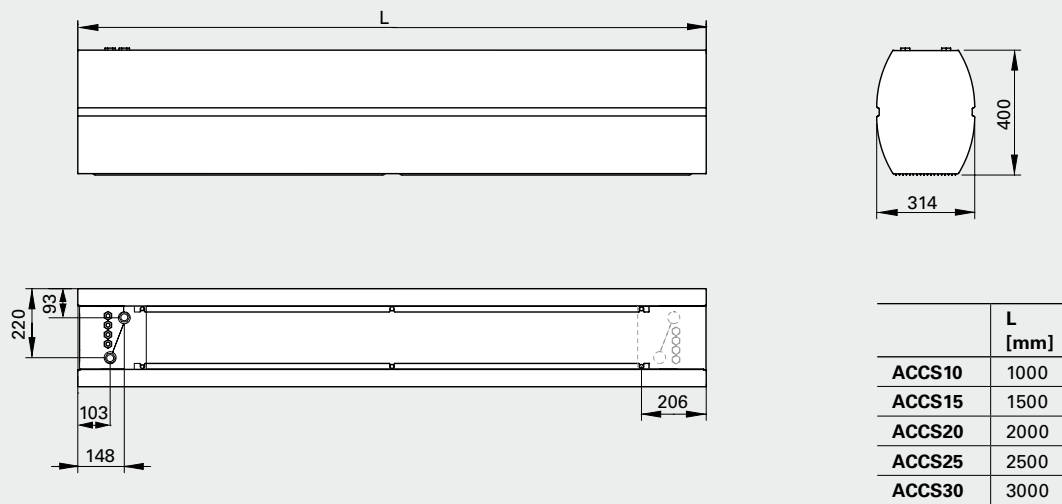
	L [mm]
ACCS20	2000
ACCS25	2500
ACCS30	3000



Connection dimensions, inside thread: 1", DN25

## Dimensions

### Horizontal mounting



Connection dimensions, inside thread: 3/4", DN20

## Mounting

The air curtain range includes variants for horizontal and vertical installation.

### Horizontal mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible.

It must be specified when ordering whether the connections are to be on the left or right hand side (seen from inside the premises). The air curtain may be mounted on the wall or on the ceiling with the enclosed brackets (accessory). The air curtain can also be mounted hanging from the ceiling.

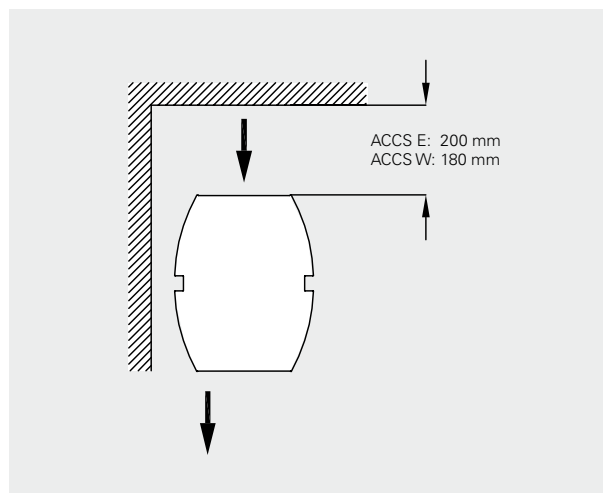
Minimum distance from outlet to floor for electrically heated units is 1800 mm.

### Vertical mounting

The air curtain is mounted vertically as close as possible to the door. For the best effect air curtains should be placed on both sides of the opening.

When ordering, state on which side of the door the unit is to be placed and whether electricity and/or water connections are made from above or below.

The air curtain is installed on adjustable feet which makes it possible to compensate for any surface undulations. The feet are attached to the floor with fasteners appropriate to the surface and covered by a frame. The air curtain must always be secured at the top.



Minimum distances



### Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

#### *Unit with electrical heating*

The electrical connection may be done from above or below when mounted vertically, and from left or right when mounted horizontally, according to ordering key. Control (230V~) and power supply for heat (400V3~) should be connected to a terminal block. For units with electrical heating, power and control should be supplied separately.

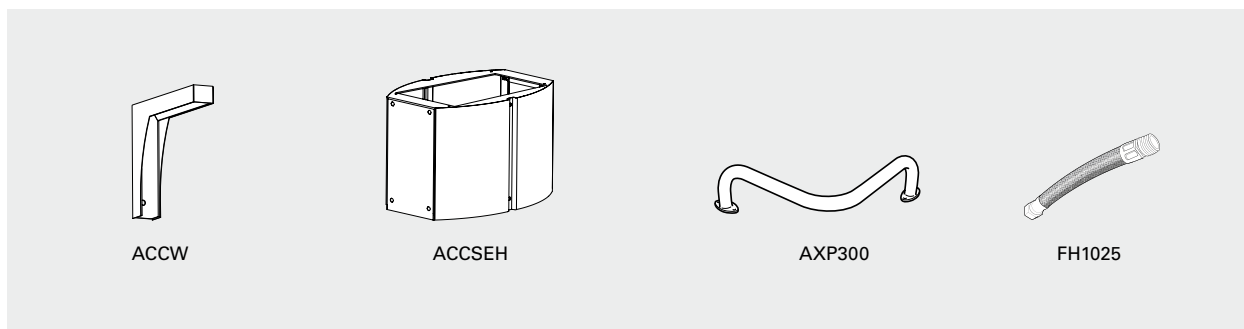
#### *Unit with water heating*

The electrical connection may be done from above or below when mounted vertically, and from left or right when mounted horizontally, according to ordering key. Control (230V~) should be connected to a terminal block.

The water connection may be done from above or below when mounted vertically, and from the left or right when mounted horizontally, via connections with inside thread. Horizontal units DN20 (3/4"), vertical units DN25 (1").



## Accessories

**ACCW, wall bracket**

Brackets for installing unit horizontally on a wall. Two are required for 1 and 1.5 metre units, while 2 and 2.5 metre units need three and 3 metre units need four.

Available in three designs:

- ACCWBB, brushed stainless steel
- ACCWBP, polished stainless steel
- ACCWBMP, mirror polished stainless steel

**ACCSEH, extension hood**

Fills the space between the unit and the ceiling for vertical mounting and provides a neater installation. Special order to required dimension. Height 100-1000 mm.

**AXP300, collision protection**

Floor placed protection against impact from e.g. shopping trolleys.

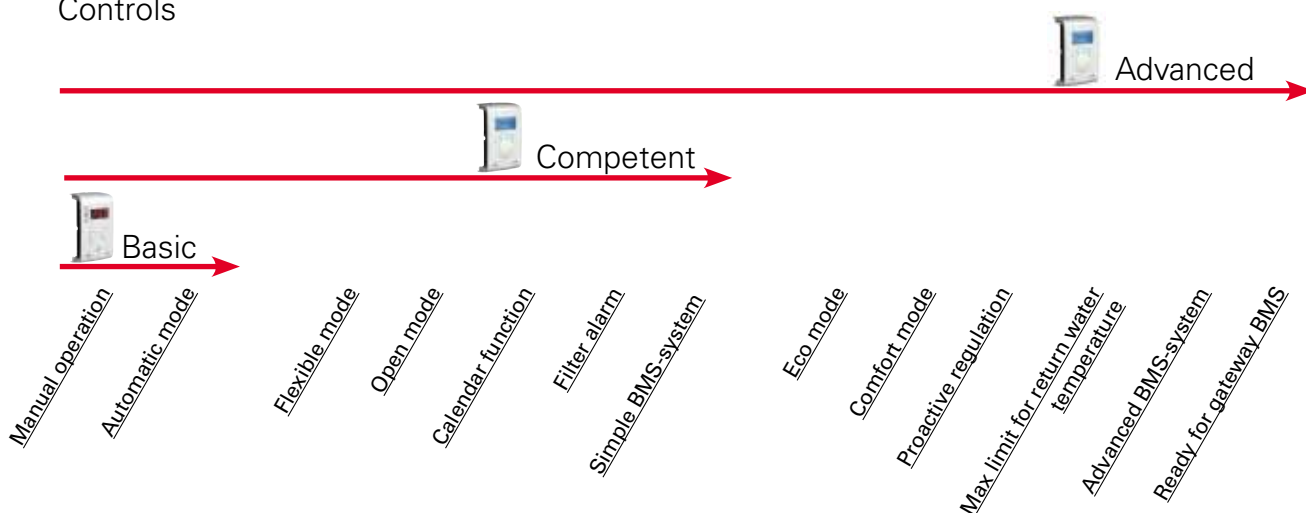
**FH1025, flexible hose**

Flexible hose (DN25, 1" inside thread) for easy connection to the pipe system.

Type	Description
<b>ACCWBB</b>	Wall bracket, brushed stainless steel
<b>ACCWBP</b>	Wall bracket, polished stainless steel
<b>ACCWBMP</b>	Wall bracket, mirror polished stainless steel
<b>ACCSEH</b>	Extension hood 100-1000 mm
<b>AXP300</b>	Collision protection
<b>FH1025</b>	Flexible hoses DN25, inside thread, 1 pcs



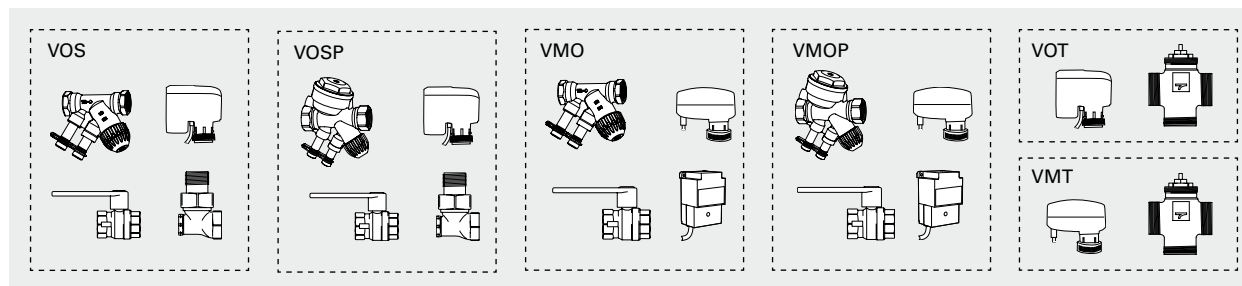
## Controls



This air curtain is supplied with an integrated PC board SIRE. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SIRE control system in the "Controls" section.

Type	Description
<b>SIREB</b>	Control system SIRE Basic
<b>SIREAC</b>	Control system SIRE Competent
<b>SIREAA</b>	Control system SIRE Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25

Type	Description
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMT20</b>	Three way control valve and modulating actuator, DN20
<b>VMT25</b>	Three way control valve and modulating actuator, DN25

## Output charts water

ACCS WH Horizontal mounting

			Supply water temperature: 110 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 110/80 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ACCS10WH	max	1900	10,9	45,7	0,04	2,0	16,6	43,9	0,14	15,9
	min	950	5,4	32,7	0,02	0,5	11,1	52,7	0,09	7,7
ACCS15WH	max	2600	14,9	48,0	0,06	0,8	22,6	43,9	0,19	5,7
	min	1350	7,7	39,8	0,03	0,2	15,5	52,0	0,13	2,9
ACCS20WH	max	3800	21,7	45,7	0,08	1,9	33,3	44,0	0,28	14,9
	min	1980	11,3	33,0	0,04	0,4	22,8	52,2	0,19	7,5
ACCS25WH	max	4500	25,8	45,0	0,10	1,1	40,6	44,8	0,33	9,9
	min	2340	13,4	36,0	0,04	0,4	27,6	53,0	0,23	4,9
ACCS30WH	max	5100	29,2	36,2	0,10	1,6	52,5	48,6	0,43	21,3
	min	2660	15,2	29,4	0,05	0,4	35,2	57,3	0,29	10,3

			Supply water temperature: 90 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 90/70 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ACCS10WH	max	1900	10,9	53,5	0,07	5,6	13,4	39,0	0,16	23,2
	min	950	5,4	37,3	0,02	0,9	8,9	45,9	0,11	11,2
ACCS15WH	max	2600	14,9	54,7	0,10	2,1	18,3	38,9	0,22	8,3
	min	1350	7,7	40,7	0,04	0,4	12,5	45,5	0,15	4,2
ACCS20WH	max	3800	21,7	53,4	0,14	5,1	26,9	39,0	0,33	21,6
	min	1980	11,3	38,0	0,05	0,9	18,4	45,6	0,23	10,9
ACCS25WH	max	4500	25,8	52,0	0,17	4,1	32,9	39,7	0,41	21,0
	min	2340	13,4	37,6	0,06	0,7	22,2	46,3	0,27	10,1
ACCS30WH	max	5100	29,2	43,0	0,15	3,5	42,5	42,8	0,52	31,1
	min	2660	15,2	31,7	0,06	0,8	28,4	49,7	0,35	15

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ACCS10WH	max	1900	10,9	58,8	0,13	14,8	11,1	35,4	0,14	16,9
	min	950	5,4	41	0,03	1,5	7,4	41,2	0,09	8,2
ACCS15WH	max	2600	14,9	59,0	0,17	5,4	15,1	35,3	0,18	6,0
	min	1350	7,7	43,0	0,05	0,6	10,3	40,7	0,13	3,0
ACCS20WH	max	3800	21,7	58,2	0,24	12,9	22,3	35,4	0,27	15,7
	min	1980	11,3	41,8	0,07	1,6	15,3	40,9	0,19	8,0
ACCS25WH	max	4500	25,8	56,5	0,27	7,1	27,1	35,9	0,33	10,4
	min	2340	13,4	41,2	0,08	0,9	18,5	41,4	0,23	5,2
ACCS30WH	max	5100	29,2	47,5	0,22	6,9	35,2	38,5	0,43	22,5
	min	2660	15,2	35	0,08	1,3	23,5	44,3	0,29	10,9

			Supply water temperature: 82 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 82/71 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ACCS10WH	max	1900	10,9	57,4	0,11	11,3	12,9	38,2	0,29	64,1
	min	950	5,4	40,0	0,03	1,3	8,5	44,7	0,19	30,4
ACCS15WH	max	2600	14,9	58,0	0,15	4,2	17,7	38,3	0,39	23,3
	min	1350	7,7	42,6	0,05	0,6	12,0	44,3	0,27	11,4
ACCS20WH	max	3800	21,7	57,0	0,21	10,1	25,9	38,2	0,58	60,0
	min	1980	11,3	41,0	0,07	1,4	17,6	44,4	0,39	29,8
ACCS25WH	max	4500	25,8	55,5	0,24	8,0	31,7	38,9	0,71	40,9
	min	2340	13,4	40,5	0,08	1,1	21,4	45,1	0,48	28,7
ACCS30WH	max	5100	29,2	46,4	0,20	5,8	40,5	41,6	0,89	85,4
	min	2660	15,2	34,0	0,08	1,1	26,9	48,0	0,60	40,4

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

## Output charts water

ACCS WH

Vertical mounting

			Supply water temperature: 110 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 110/80 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ACCS20WH	max	3800	21,9	32,4	0,07	1,5	45,7	53,7	0,38	33,8
	min	1980	11,4	26,1	0,03	0,4	30,3	63,5	0,25	16,2
ACCS25WH	max	4500	26,0	34,9	0,09	2,2	50,6	51,4	0,42	40,6
	min	2340	13,5	27,3	0,04	0,6	33,8	60,8	0,28	19,6
ACCS30WH	max	5100	29,4	23,6	0,08	1,2	77,9	63,4	0,64	54,5
	min	2660	15,4	20,6	0,04	0,4	49,6	73,5	0,41	24,3

			Supply water temperature: 90 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 90/70 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ACCS20WH	max	3800	21,9	37,6	0,10	3,1	36,6	46,3	0,45	52,3
	min	1980	11,4	29,6	0,05	0,7	24,3	54,1	0,30	23,5
ACCS25WH	max	4500	26,0	40,7	0,13	4,8	40,4	44,4	0,49	63,5
	min	2340	13,5	31,2	0,06	1,0	27,1	52,1	0,33	29,1
ACCS30WH	max	5100	29,4	27,0	0,11	2,3	62,3	53,9	0,76	82,3
	min	2660	15,4	22,5	0,06	0,6	40,6	62,9	0,50	35,6

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ACCS20WH	max	3800	21,9	41,1	0,14	5,5	30,3	41,5	0,37	36,3
	min	1980	11,4	32,0	0,06	1,1	20,1	47,9	0,25	16,4
ACCS25WH	max	4500	26,0	44,4	0,18	9,0	33,4	39,9	0,41	44,1
	min	2340	13,5	33,8	0,07	1,6	22,4	46,2	0,27	20,3
ACCS30WH	max	5100	29,4	29,5	0,14	3,4	51,9	48,0	0,63	57,8
	min	2660	15,4	23,8	0,07	1,2	33,9	55,5	0,41	25,3

			Supply water temperature: 82 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 82/71 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ACCS20WH	max	3800	21,9	40,3	0,13	4,8	35,1	45,2	0,78	156,4
	min	1980	11,4	31,5	0,06	1,0	23,3	52,6	0,52	69,7
ACCS25WH	max	4500	26,0	43,3	0,16	7,8	38,8	43,4	0,86	190,3
	min	2340	13,5	33,3	0,07	1,5	26,0	50,7	0,58	86,4
ACCS30WH	max	5100	29,4	29,0	0,13	3,1	58,9	52,0	1,31	239,4
	min	2660	15,4	23,7	0,06	0,8	38,1	60,2	0,85	101,6

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

## Output charts water

ACCS WL

Horizontal mounting

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ACCS10WL	max	1900	10,9	39,0	0,06	5,4	15,4	42,1	0,19	35,0
	min	950	5,4	29,0	0,03	1,1	9,9	49,0	0,12	15,9
ACCS15WL	max	2600	14,9	27,5	0,07	2,1	27,9	49,9	0,34	33,3
	min	1350	7,8	25,3	0,03	0,7	17,7	57,0	0,22	14,9
ACCS20WL	max	3800	21,8	29,5	0,11	1,8	39,7	49,0	0,48	24,7
	min	1980	11,3	27,1	0,05	0,5	25,3	56,0	0,31	11,1
ACCS25WL	max	4500	25,9	27,5	0,12	2,8	48,8	50,2	0,60	44,4
	min	2340	13,4	24,2	0,06	0,8	31,0	57,4	0,38	19,8
ACCS30WL	max	5100	29,2	25,9	0,13	3,9	57,1	51,2	0,70	70,2
	min	2660	15,3	22,5	0,06	1,2	36,2	58,4	0,44	31,2

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ACCS10WL	max	1900	10,9	43,5	0,36	11,8	12,3	37,2	0,15	23,8
	min	950	5,4	32,0	0,12	1,9	8,0	42,9	0,10	11,1
ACCS15WL	max	2600	14,9	30,5	0,33	3,5	22,5	43,7	0,28	23,3
	min	1350	7,7	26,0	0,15	1,0	14,2	49,3	0,17	10,4
ACCS20WL	max	3800	21,7	32,5	0,51	3,0	31,8	42,8	0,39	17,0
	min	1980	11,4	27,7	0,23	0,8	20,3	48,4	0,25	7,7
ACCS25WL	max	4500	25,9	30,5	0,57	4,6	39,4	44,0	0,48	31,1
	min	2340	13,4	25,1	0,26	1,2	24,9	49,6	0,30	13,8
ACCS30WL	max	5100	29,2	28,7	0,62	6,3	45,9	44,7	0,56	48,7
	min	2660	15,3	23,6	0,29	1,7	29,2	50,6	0,36	21,8

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
ACCS10WL	max	1900	10,9	49,0	0,24	56,9	9,0	32,1	0,11	14,3
	min	950	5,4	36,5	0,06	4,5	5,9	36,4	0,07	6,7
ACCS15WL	max	2600	14,9	35,0	0,14	8,0	16,8	37,2	0,20	14,3
	min	1350	7,7	27,5	0,06	1,6	10,7	41,6	0,13	6,5
ACCS20WL	max	3800	21,7	37,0	0,23	7,2	23,5	36,3	0,28	10,3
	min	1980	11,4	29,2	0,09	1,4	15,1	40,6	0,18	4,7
ACCS25WL	max	4500	25,9	34,5	0,24	9,9	29,3	37,3	0,36	18,9
	min	2340	13,4	27,5	0,10	2,1	18,7	41,8	0,23	8,6
ACCS30WL	max	5100	29,2	32,8	0,26	13,3	34,6	38,2	0,42	30,5
	min	2660	15,3	26,3	0,11	3,0	22,0	42,6	0,27	13,7

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

## Output charts water

ACCS WL

Horizontal mounting

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ACCS10WL	max	1900	-	-	0,17	-	7,4	29,6	0,09	10,3
	min	950	5,5	39,5	0,09	9,3	4,9	33,2	0,06	4,9
ACCS15WL	max	2600	15,0	38,0	0,21	15,8	13,9	33,8	0,17	10,5
	min	1350	7,8	30,0	0,08	2,6	8,9	37,5	0,11	4,8
ACCS20WL	max	3800	21,7	39,5	0,34	14,2	19,4	33,1	0,23	7,5
	min	1980	11,35	31,4	0,12	2,2	12,5	36,7	0,15	3,5
ACCS25WL	max	4500	25,8	37,5	0,36	19,4	24,2	34,0	0,29	13,8
	min	2340	13,4	29,6	0,13	3,3	15,5	37,7	0,19	6,3
ACCS30WL	max	5100	29,3	35,8	0,37	24,7	28,7	34,7	0,35	22,3
	min	2660	15,3	28,5	0,14	4,6	18,4	38,5	0,22	10,2

- = at the current water temperatures and airflows, the air outlet temperature will be less than 35 °C.

Vertical mounting

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ACCS20WL	max	3800	21,8	29,3	0,10	2,0	39,1	48,5	0,48	27,7
	min	1980	11,3	26,8	0,05	0,6	24,1	55,7	0,57	11,7
ACCS25WL	max	4500	25,8	31,5	0,13	2,9	43,4	46,7	0,53	33,4
	min	2340	13,4	26,3	0,06	0,8	27,9	53,4	0,34	15,2
ACCS30WL	max	5100	29,2	28,7	0,14	4,1	52,1	48,3	0,64	57,6
	min	2660	15,3	23,9	0,07	1,2	33,3	55,1	0,41	25,8

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ACCS20WL	max	3800	21,8	32,7	0,14	3,5	31,1	42,3	0,38	18,9
	min	1980	11,3	27,4	0,06	0,9	19,9	47,8	0,24	8,6
ACCS25WL	max	4500	25,8	35,1	0,18	5,2	34,7	40,9	0,42	23,0
	min	2340	13,4	27,7	0,08	1,2	22,3	46,3	0,27	10,5
ACCS30WL	max	5100	29,2	32,2	0,19	7,1	41,7	42,3	0,51	39,7
	min	2660	15,3	25,5	0,08	1,8	26,7	47,8	0,33	18

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
ACCS20WL	max	3800	21,8	37,2	0,23	8,3	23,1	36,1	0,28	11,6
	min	1980	11,3	29,2	0,09	1,6	14,9	40,3	0,18	5,3
ACCS25WL	max	4500	25,8	40,0	0,31	14,0	25,8	35,0	0,31	14,0
	min	2340	13,4	31,0	0,11	2,1	16,7	39,2	0,20	6,5
ACCS30WL	max	5100	29,2	37,0	0,31	17,1	31,1	36,1	0,38	24,4
	min	2660	15,3	28,9	0,12	3,3	20,0	40,4	0,24	11,2

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

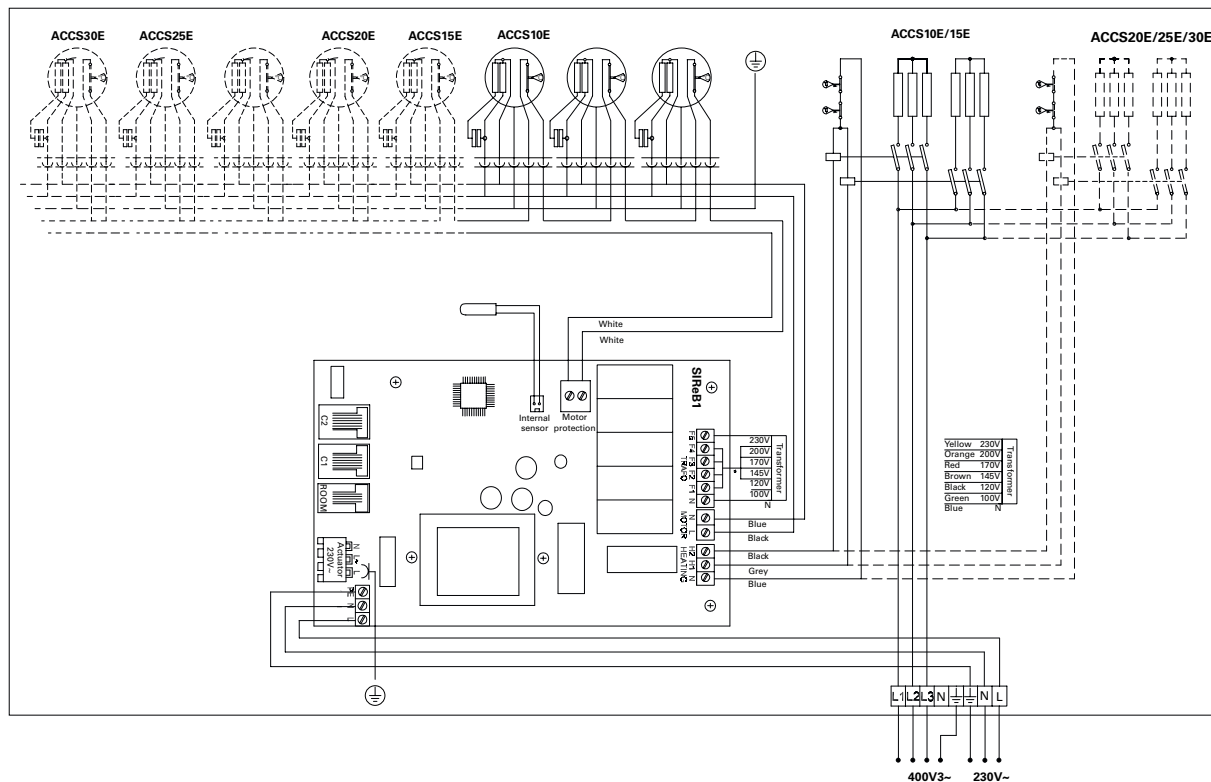
See [www.frico.se](http://www.frico.se) for additional calculations.



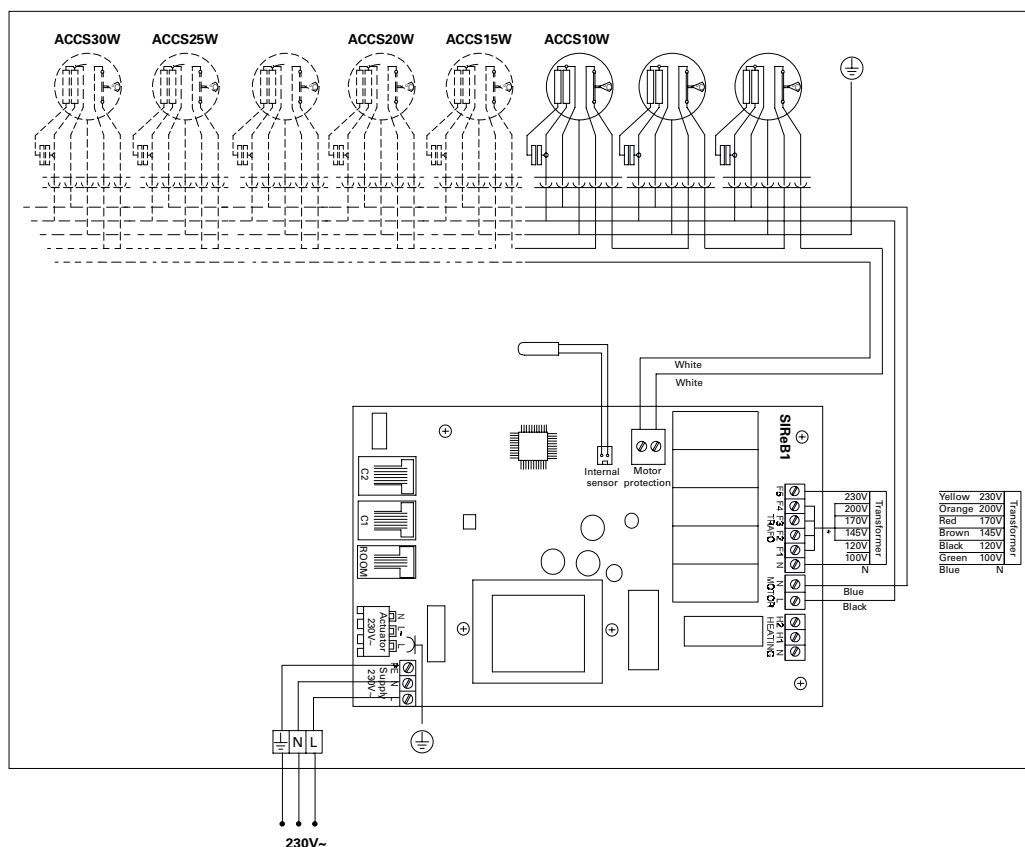
## Wiring diagrams

### Internal wiring diagram

#### Unit with electrical heating



#### Unit with water heating



AR300



## AR300

Recessed air curtain for commercial premises, with built-in control

- Recommended installation height 3,5 m\*
- Recessed mounting
- Lengths: 1, 1,5 and 2 m

⚡ Electrical heat: 9–18 kW

💧 Water heat

### Application

AR300 is very discreet thanks to its concealed appearance in the ceiling and built-in control that requires no wiring. The IR-eye in the Plug & play control detects if the door is opened or closed and controls the air curtain accordingly.

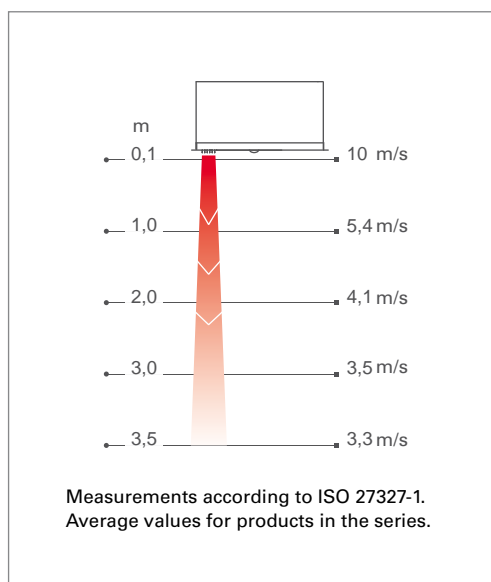
### Design

AR300 is intended for recessed installation and the frame and hatch can be painted in colours that blend well with the premises.



Optimized airflow with  
Thermozone technology.

### Air velocity profile



### Product specifications

- Intelligent, built-in control, operating both when the door is open and when it is closed gives the air curtain dual functionality.
- Possibility to integrate the air curtain with a BMS system for on/off control and alarm indication.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour frame and hatch: white, RAL 9016, NCS S 0500-N. Colour grille: grey, RAL 7046. The frame and hatch can be painted in an optional colour.

## Technical specifications

### ⚡ Electrical heat - AR300 E

Type	Output steps [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Voltage Amperage (control)	Voltage Amperage (heat)	Length [mm]	Weight [kg]
AR310E09	4,5/9	1000/2000	27/14	43/59	230 V~/2,1 A	400 V3~/13 A	1057	42
AR315E14	7/13,5	1400/2800	29/15	43/60	230 V~/2,9 A	400 V3~/19,5 A	1567	58
AR320E18	9/18	2000/4000	27/14	46/63	230 V~/4,2 A	400 V3~/26 A	2073	78

### 💧 Water heat - AR300 W, coil for low water temperature (≤80 °C)

Type	Output* <sup>4</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,4</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Voltage [V]	Amperage [A]	Length [mm]	Weight [kg]
AR310W	8,6	1000/2000	17/13	43/58	230V~	2,1	1057	42
AR315W	12,6	1400/2800	17/13	43/59	230V~	2,9	1567	58
AR320W	18,3	2000/4000	18/14	46/62	230V~	4,2	2073	78

\*<sup>1</sup>) Lowest/highest airflow of totally 5 fan steps.

\*<sup>2</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.

\*<sup>3</sup>) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

\*<sup>4</sup>) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

Protection class, recessed mounting above suspended ceilings: IP44, hanging on rods without suspended ceiling: IP20. Approved by SEMKO and CE compliant.

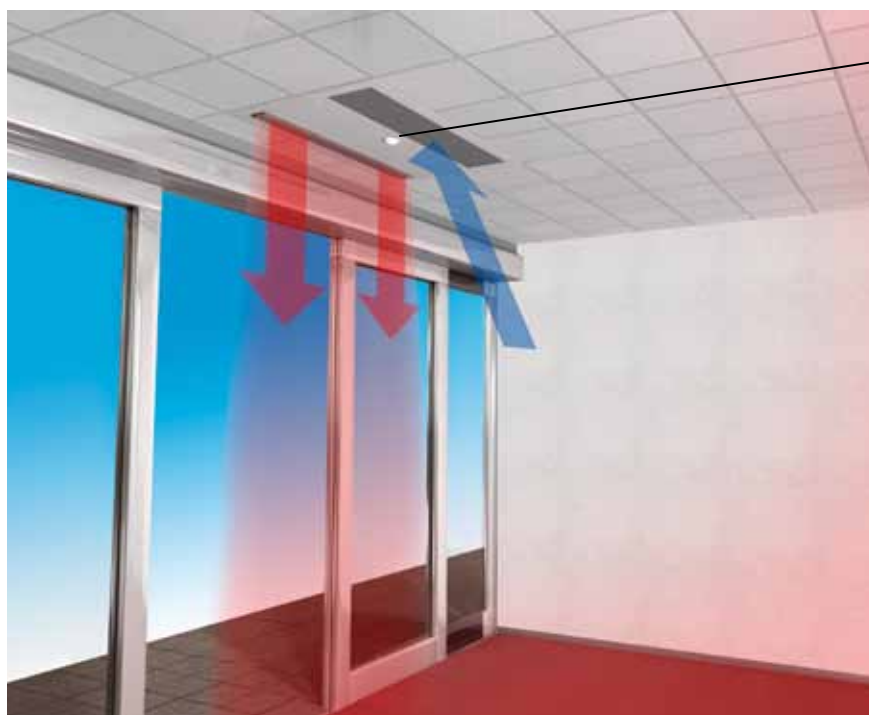
## Control

The built-in control of AR300 is designed to give the highest level of functionality while minimizing installation and daily operation. No additional wiring or external controls are needed.

The air curtain operates at its maximum performance in all situations and is not dependent on day-to-day adjustments.

When the door is open the air curtain separates outdoor and indoor air and provides heat if it is needed.

When the door is closed the air curtain operates as part of the heating system supplying additional heat if indoor temperature falls below desired temperature. There are also possibilities to connect the air curtain to a BMS system for on/off control and alarm indication.



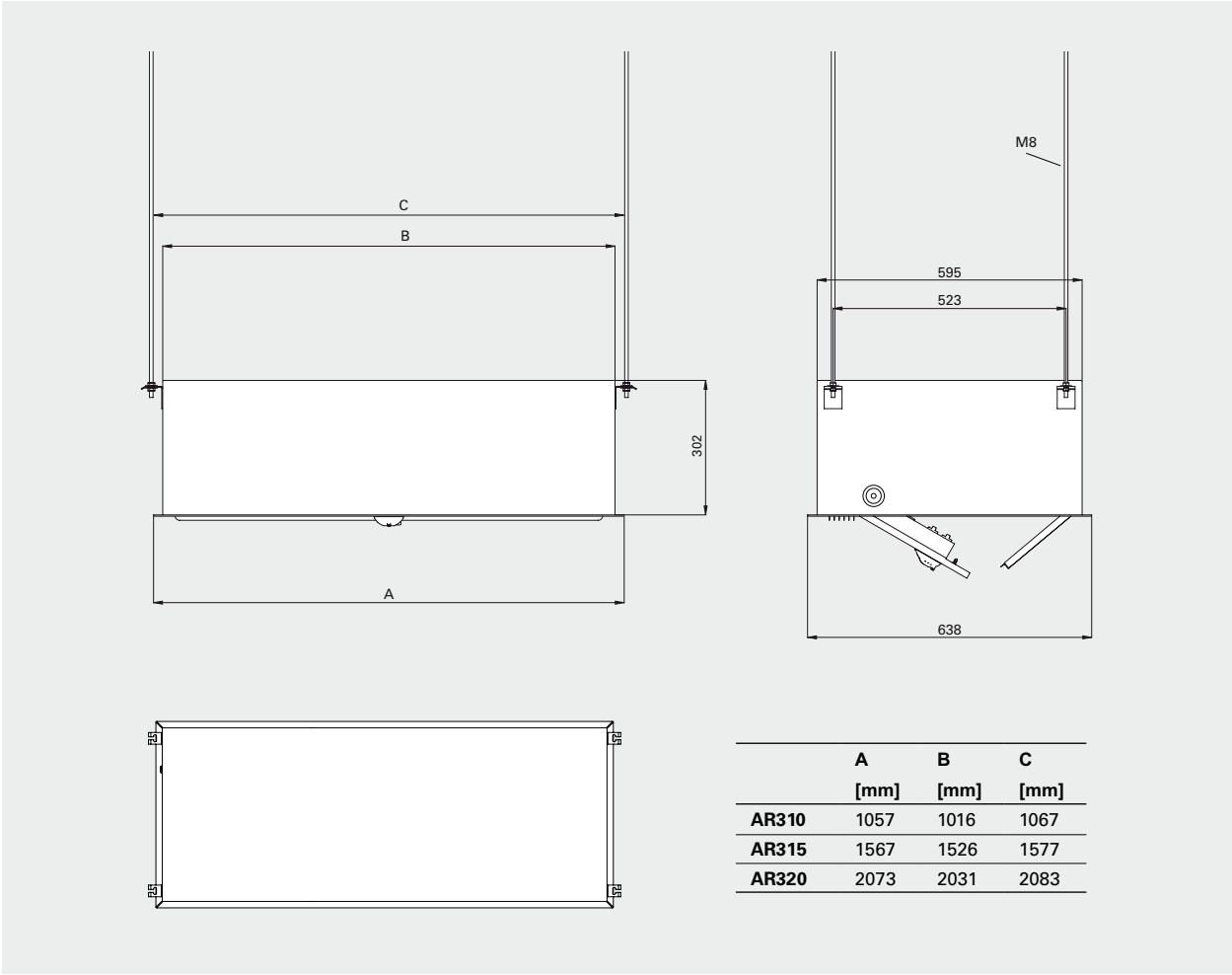
The IR-eye detects when the door is open and closed. The thermostat is located by the air intake and heat or ambient mode is set by a push button. Alarm indication by LED.



The thermostat setting and open door fan speed selection is hidden under the cover.

AR300

Dimensions



## Mounting and connection

### Mounting

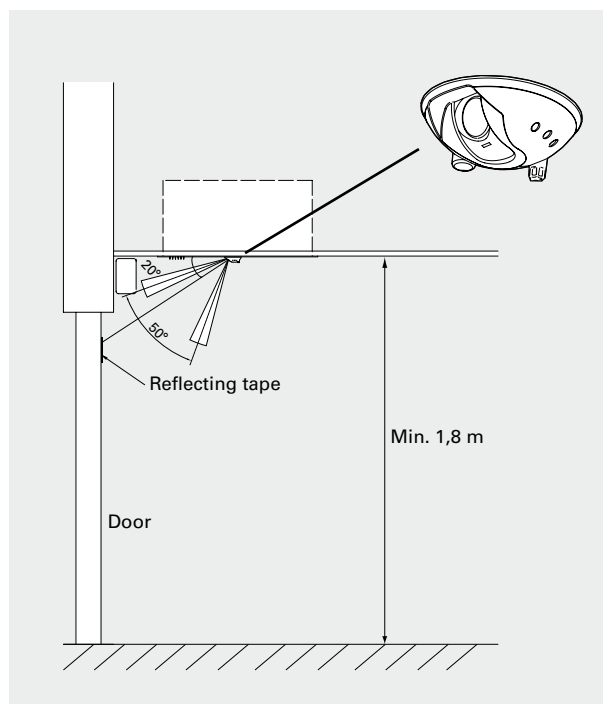
The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible, concealed in the false ceiling. The only visible part of the unit is the underside which is level with the ceiling. The service hatch must be accessible, nothing should prevent it being fully opened.

The unit is ready for suspension with threaded rods.

For the protection of wider doorways, several units can be mounted next to each other. Minimum distance from outlet to floor for electrically heated units is 1800 mm.

### Adjusting

An IR-eye is mounted on AR300. A piece of reflector tape is also supplied. The door sensor can be directed up/down to "see" the tape, see Fig. The maximum distance between the IR-eye and the reflecting tape is 1,5 m. If a greater angle is needed the reflecting tape may be angled towards the IR-eye. This is easily done with the enclosed cylinder cut to the right angle. When the distance between the eye and the reflector is too great for detection, an alternative external door contact (AR300DS) can be used.



Adjustment of the IR-eye downwards/upwards and minimum distance to floor.

### Connection

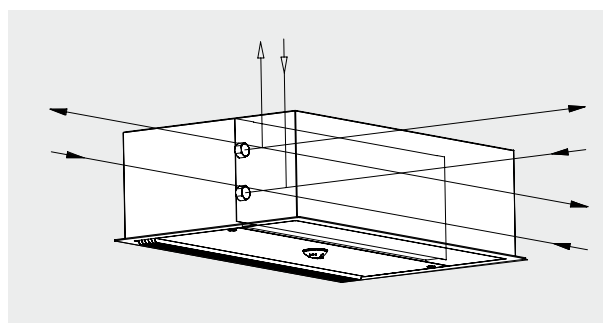
#### *Unit with electrical heating*

The electrical connection is made on the side or on the top of the unit. Control (230V~) should be connected to a terminal block in the terminal box. See wiring diagrams.

#### *Unit with water heating*

The unit is delivered with a 2 m cable and plug. See wiring diagrams.

Connection of water pipes to the water heating coil is of type DN20 (3/4"), inside thread, inside the unit. Cable glands can be made from the back, top or the sides of the unit. There are pre-marked holes for drilling at these locations.



Water connection

## Control options

### ⚡ Unit with electrical heating

The IR-eye detects when the door is open and closed. Airflow and heat output are controlled automatically based upon room temperature and whether the door is open or closed. High speed can be set on 4 different speeds.

When the door is open the fan runs at high speed, when the door closes the fan will continue to run at high speed for 60 seconds and then at low speed for 60 seconds. When the door is closed the fan runs at low speed if there is a need for heating, if not the fan will be switched off. If the temperature decreases further, the fan will run at high speed.

The built-in room thermostat controls the heat output. E.g. the thermostat is set on 20 °C and the difference between the stages 2 °C. The thermostat will activate below 20 °C when the door is closed. When the door opens, the thermostat will activate below 22 °C and normally the heat is switched on.

Possibility to choose between heat/ambient mode (summer case). Alarm, door status and heat/ambient mode is indicated with diodes on the IR-unit.

Complete control kit:

- Built-in control, controls the airflow and heat output in 2 steps.

### 💧 Unit with water heating

The IR-eye detects when the door is open and closed. Airflow and heat output are controlled automatically based upon room temperature and whether the door is open or closed. High speed can be set on 4 different speeds.

When the door is open the fan runs at high speed, when the door closes the fan will continue to run at high speed for 60 seconds and then at low speed for 60 seconds. When the door is closed the fan runs at low speed if there is a need for heating, if not the fan will be switched off. If the temperature decreases further, the fan will run at high speed.

The built-in room thermostat controls the heat output. E.g. the thermostat is set on 20 °C and the difference between the stages 2 °C. The thermostat will activate below 20 °C when the door is closed. When the door opens, the thermostat will activate below 22 °C and normally the heat is switched on.

Possibility to choose between heat/ambient mode (summer case). Alarm, door status and heat/ambient mode is indicated with diodes on the IR-unit.

Water flow has to be regulated by using the VR20/25 Valve kit, see table below (accessory).

Complete control kit:

- Built-in control, controls the airflow and heat output.
- VR20/25, valve kit.

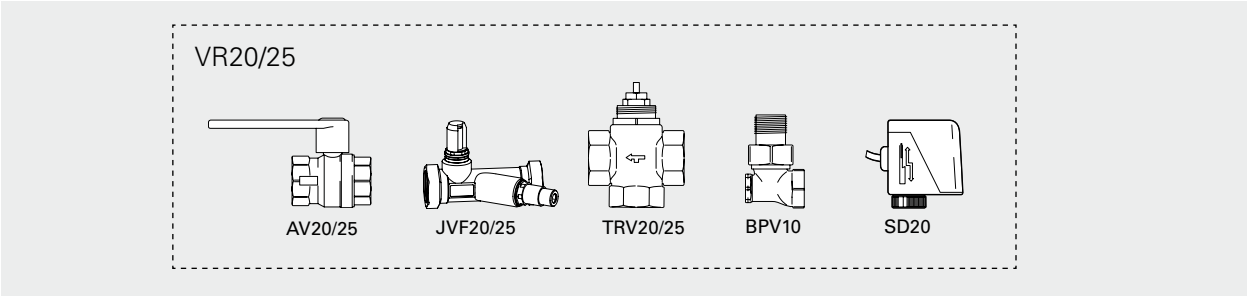


### Recommended valve kits

Type	Water temp.	VR20	VR25
AR310W	60/40	X	
	80/60		X
AR315W	60/40	X	
	80/60		X
AR320W	60/40		X
	80/60		X



Water control



Type	Description
VR20	Valve set DN 20 mm
VR25	Valve set DN 25 mm

For further information and options regarding our water controls, see the "Controls" section.

Accessories



AR300ERS, external room sensor  
If an external room sensor is needed, use the AR300ERS. The external room sensor is supplied with 7 m cable and a modular connector for easy and quick installation (no other adjustments are needed to get the accessories working). The connection of the room sensor is done on the control box accessible by opening the service hatch of the AR300.



AR300DS, external door contact  
When the distance between the eye and the reflector is too long an external door contact AR300DS is needed. The external door contact is supplied with 7 m cable and a modular connector for easy and quick installation (no other adjustments are needed to get the accessories working). The connection of the door contact is done on the control box accessible by opening the service hatch of the AR300.

Type	Description	HxWxD [mm]
AR300ERS	External room sensor	80x80x31
AR300DS	External door contact	



## Output charts water

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR310W	max	2000	11,5	44,5	0,08	2,0	14,9	40,1	0,18	11,0
	min	1000	5,7	33,6	0,03	0,6	9,6	46,4	0,12	5,0
AR315W	max	2800	16,0	42,2	0,10	2,0	21,9	41,2	0,27	9,0
	min	1400	8,0	32,4	0,04	0,4	14,0	47,5	0,17	4,0
AR320W	max	4000	23,0	41,0	0,14	4,0	31,4	41,3	0,37	19,0
	min	2000	11,5	31,0	0,06	1,0	20,0	47,7	0,24	9,0

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR310W	max	2000	11,5	48,7	0,13	6,0	11,5	35,4	0,14	7,0
	min	1000	5,7	37,0	0,04	1,0	7,6	40,5	0,09	3,0
AR315W	max	2800	16,0	46,2	0,16	4,0	17,3	36,3	0,21	6,0
	min	1400	8,0	35,5	0,06	1,0	11,1	41,4	0,13	3,0
AR320W	max	4000	23,0	45,5	0,22	8,0	24,9	36,5	0,29	14,0
	min	2000	11,5	34,4	0,08	1,0	15,9	41,6	0,19	6,0

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR310W	max	2000	11,5	53,7	0,44	53,0	8,6	30,7	0,10	4,0
	min	1000	5,7	41,2	0,08	2,0	5,6	34,5	0,07	2,0
AR315W	max	2800	16,0	51,0	0,43	20,0	12,6	31,3	0,15	3,0
	min	1400	8,0	39,6	0,09	1,0	8,1	35,2	0,10	1,0
AR320W	max	4000	23,0	51,2	0,63	46,0	18,3	31,6	0,22	8,0
	min	2000	11,5	38,8	0,13	3,0	11,8	35,5	0,14	4,0

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR310W	max	2000	-	-	-	-	6,9	28,3	0,08	3,0
	min	1000	5,7	44,0	0,13	6,0	4,5	31,4	0,06	1,0
AR315W	max	2800	-	-	-	-	10,2	28,8	0,12	2,0
	min	1400	8,0	42,2	0,15	3,0	6,6	32,0	0,08	1,0
AR320W	max	4000	-	-	-	-	15,0	29,1	0,18	6,0
	min	2000	11,5	41,7	0,21	7,0	9,7	32,4	0,12	3,0

- = at the current water temperatures and airflows, the air outlet temperature will be less than 35 °C.

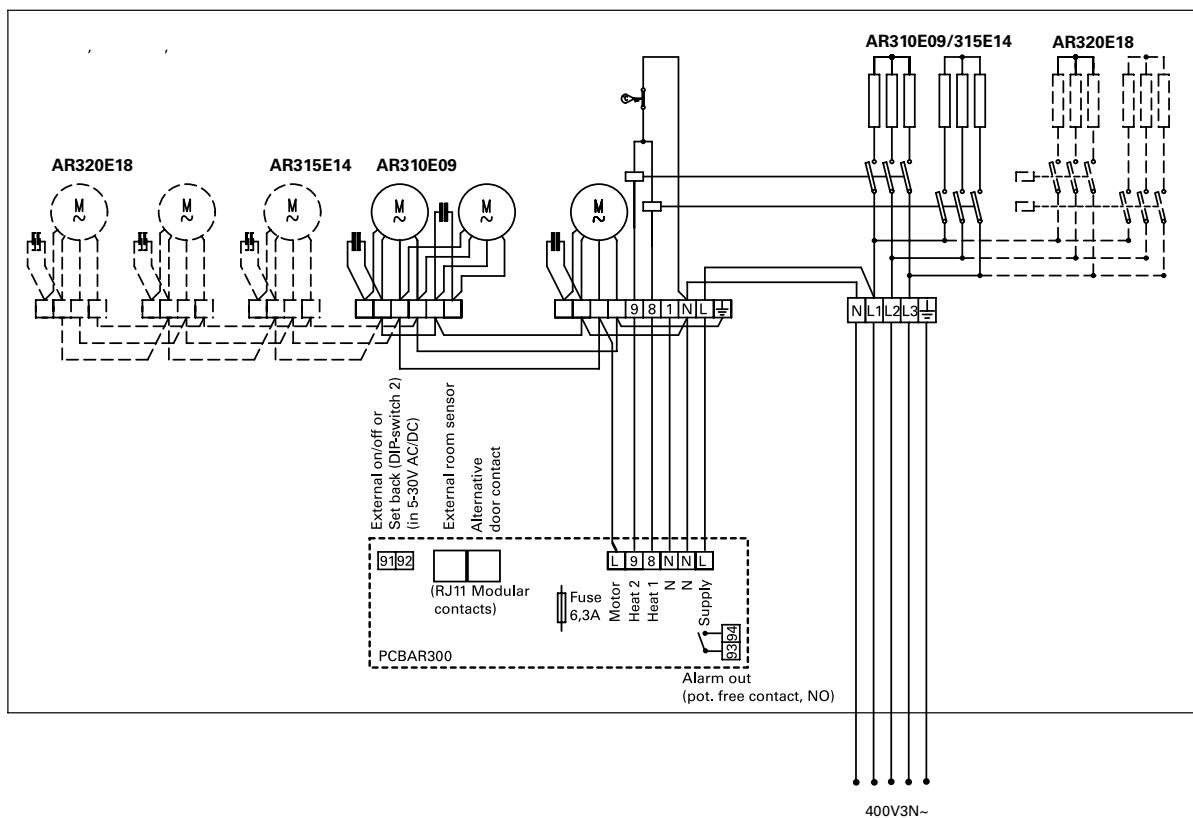
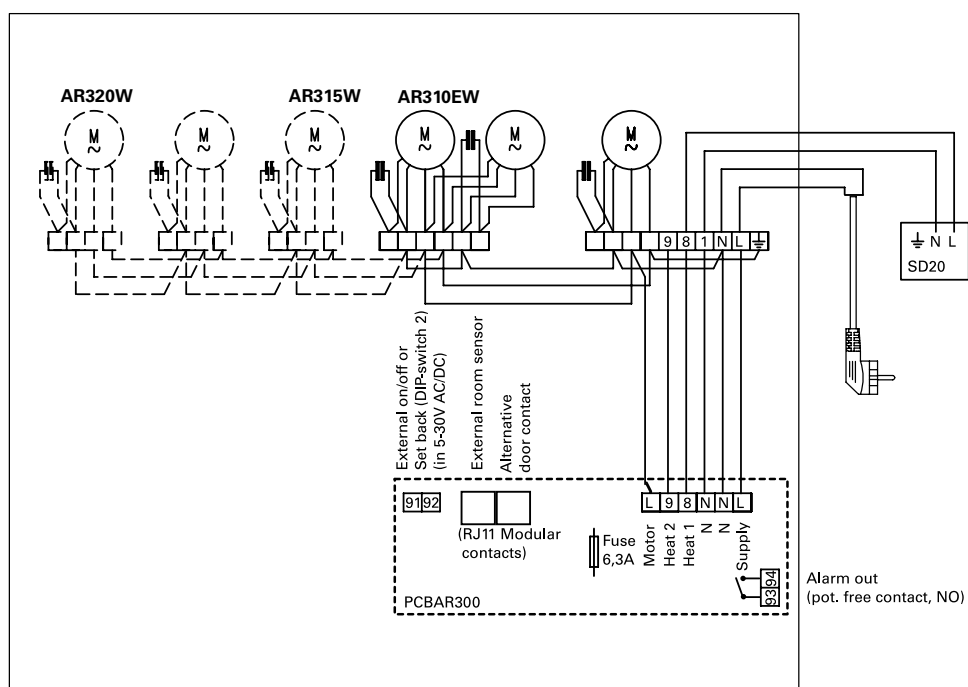
\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

## Wiring diagrams

## Internal wiring diagram

*Unit with electrical heating**Unit with water heating*

AR3500



## AR3500

Recessed air curtain for commercial premises, with intelligent control

- Recommended installation height 3,5 m\*
- Recessed mounting
- Lengths: 1, 1,5 and 2 m

- ✿ Ambient, no heat
- ⚡ Electrical heat: 9–18 kW
- 💧 Water heat W, WLL

### Application

With its concealed location, AR3500 is very unobtrusive and with that particularly suitable for environments where the design is important.

The air curtain has many intelligent and energy saving features which provide fully automatic protection for the entrance, adaptable to each area of use.

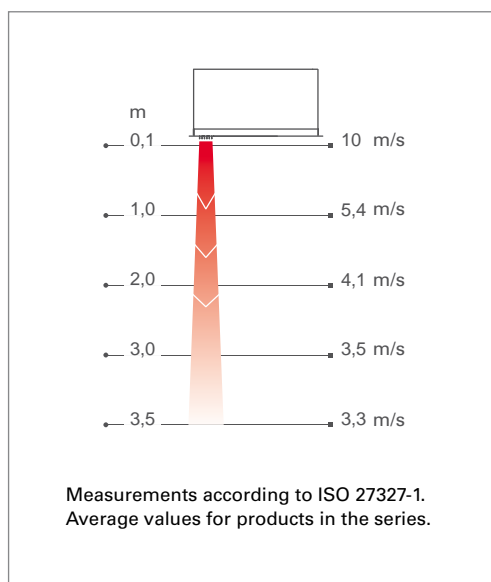
### Design

AR3500 is intended for recessed installation and the frame and hatch can be painted in colours that blend well with the premises.



Optimized airflow with Thermozone technology.

### Air velocity profile



### Product specifications

- Prepared for the SIRE control system whose pre-programmed default settings and many features make it easy to install and use the air curtain. Read more about the SIRE controls package in the "Controls" section.
- Possibility to integrate the air curtain with a BMS system.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour frame and hatch: white, RAL 9016, NCS S 0500-N. Colour grille: grey, RAL 7046. The frame and hatch can be painted in an optional colour.

## Technical specifications

### ✿ Ambient, no heat - AR3500 A

Type	Output [kW]	Airflow* <sup>1</sup> [m <sup>3</sup> /h]	Sound level* <sup>2</sup> [dB(A)]	Voltage Amperage (control)	Length [mm]	Weight [kg]
AR3510A	0	1000/2100	39/58	230 V~/2,1 A	1057	38
AR3515A	0	1400/2900	40/59	230 V~/2,9 A	1567	51
AR3520A	0	2000/4200	41/61	230 V~/4,3 A	2073	70

### ⚡ Electrical heat - AR3500 E

Type	Output steps [kW]	Airflow* <sup>1</sup> [m <sup>3</sup> /h]	Δt* <sup>3</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Voltage Amperage (control)	Voltage Amperage (heat)	Length [mm]	Weight [kg]
AR3510E09	4,5/9	1000/2100	27/13	39/58	230 V~/2,1 A	400 V3~/13 A	1057	42
AR3515E14	7/13,5	1400/2900	29/14	40/59	230 V~/2,9 A	400 V3~/19,5 A	1567	58
AR3520E18	9/18	2000/4200	27/15	41/61	230 V~/4,3 A	400 V3~/26 A	2073	78

### 💧 Water heat - AR3500 W, coil for low water temperature (≤80 °C)

Type	Output* <sup>4</sup> [kW]	Airflow* <sup>1</sup> [m <sup>3</sup> /h]	Δt* <sup>3,4</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Voltage [V]	Amperage [A]	Length [mm]	Weight [kg]
AR3510W	8,6	1000/2000	17/13	39/58	230V~	2,1	1057	42
AR3515W	12,6	1400/2800	17/13	40/58	230V~	2,9	1567	58
AR3520W	18,3	2000/4000	18/14	41/60	230V~	4,3	2073	78

### 💧 Water heat - AR3500 WLL, coil for very low temperature water (≤60 °C)

Type	Output* <sup>4</sup> [kW]	Airflow* <sup>1</sup> [m <sup>3</sup> /h]	Δt* <sup>3,4</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Voltage [V]	Amperage [A]	Length [mm]	Weight [kg]
AR3510WLL	8,0	950/1900	15/12	37/57	230V~	2,1	1057	45
AR3515WLL	11,7	1300/2600	16/13	38/57	230V~	2,9	1567	61
AR3520WLL	16,7	1900/3800	16/13	40/59	230V~	4,3	2073	83

\*<sup>1</sup>) Lowest/highest airflow of totally 5 fan steps.

\*<sup>2</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m<sup>2</sup>. At lowest/highest airflow.

\*<sup>3</sup>) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

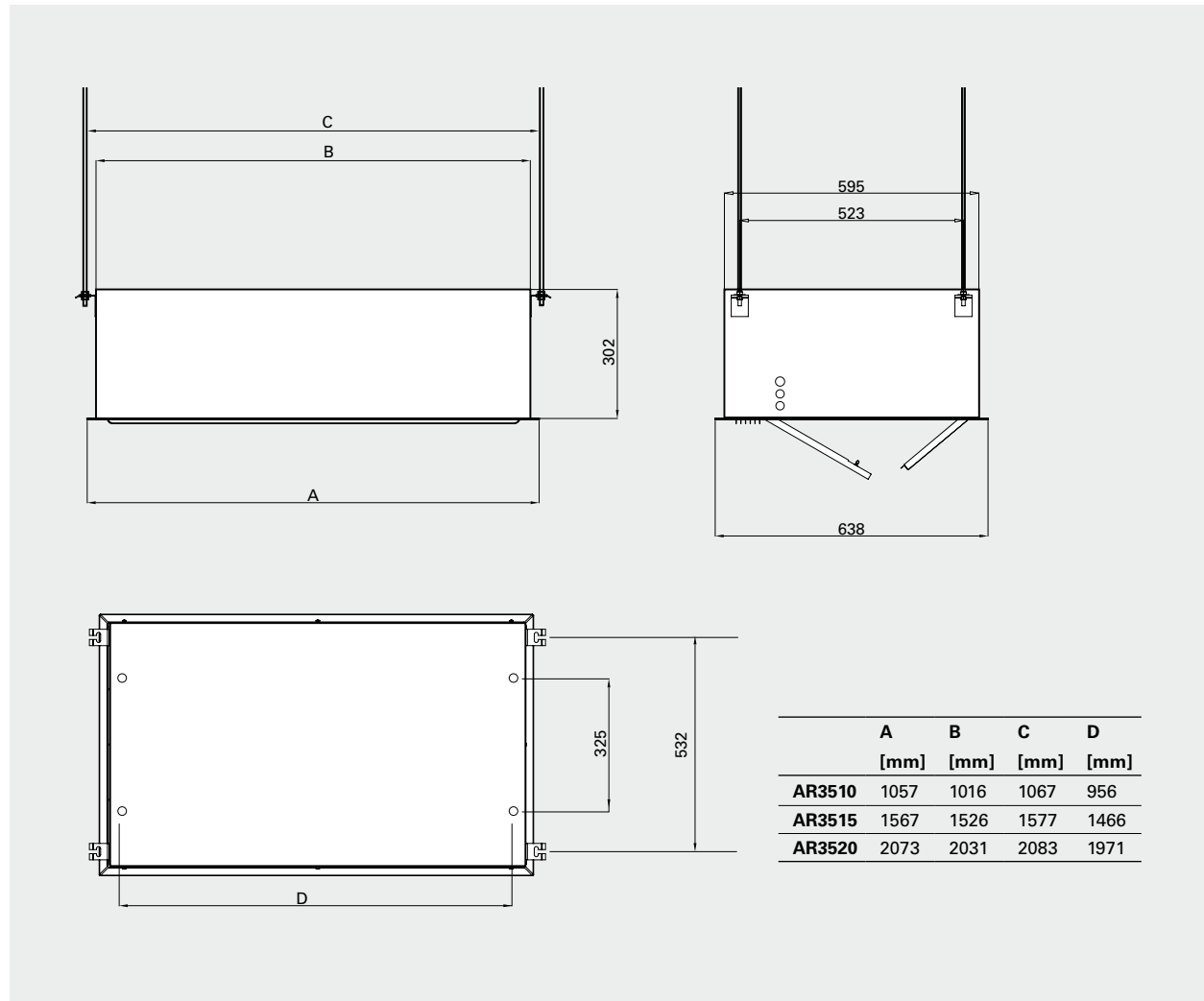
\*<sup>4</sup>) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

\*<sup>5</sup>) Applicable at water temperature 40/30 °C, air temperature, in +18 °C.

Protection class, recessed mounting above suspended ceilings: IP44, hanging on rods without suspended ceiling: IP20.

Approved by SEMKO and CE compliant.

## Dimensions

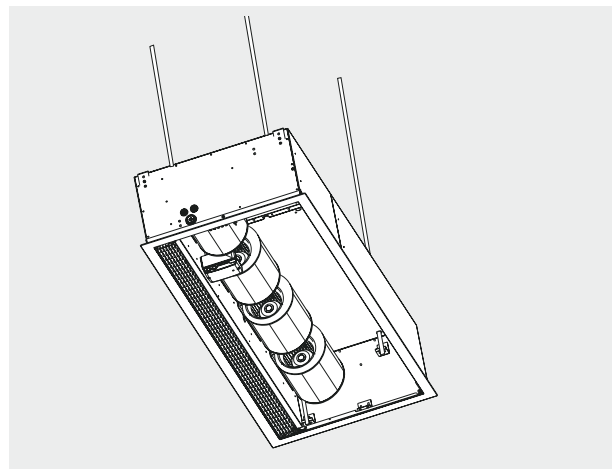


## Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible, concealed in the false ceiling. The only visible part of the unit is the underside which is level with the ceiling. The service hatch must be accessible, nothing should prevent it being fully opened.

The unit is ready for suspension with threaded rods on its outside. The threaded rods can also be fixed on the inside of the unit e.g. when mounted on a solid suspended ceiling.

For the protection of wider doorways, several units can be mounted next to each other. Minimum distance from outlet to floor for electrically heated units is 1800 mm.



Mounting with threaded bars inside the unit.

## Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

### *Unit without heating*

Connected via the built-in control board with 2 m cord and plug.

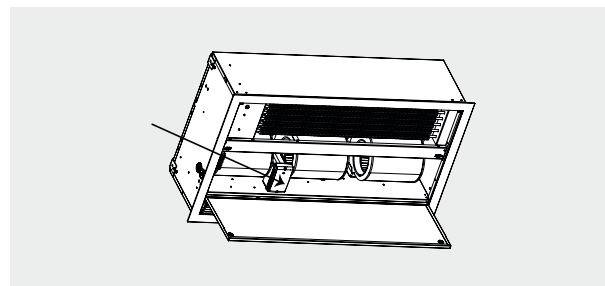
### *Unit with electrical heating*

The electrical connection is made on the side of the unit. Control (230V~) and power supply for heat (400V3~) should be connected to a terminal block in the terminal box. For units with electrical heating, power and control should be supplied separately.

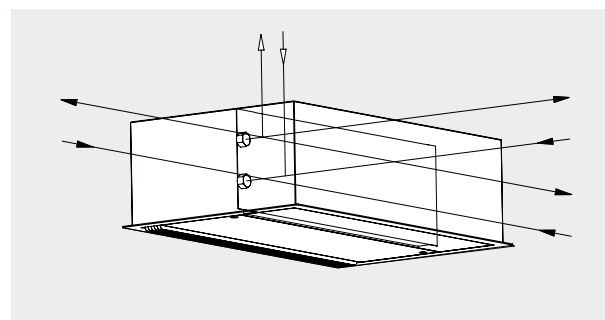
### *Unit with water heating*

Connected via the built-in control board with 2 m cord and plug.

Connection of water pipes to the water heating coil is of type DN20 (3/4"), inside thread, inside the unit. Cable glands can be made from the back, top or the sides of the unit. There are pre-marked holes for drilling at these locations.



PC board SIRE is built in to the air curtain.



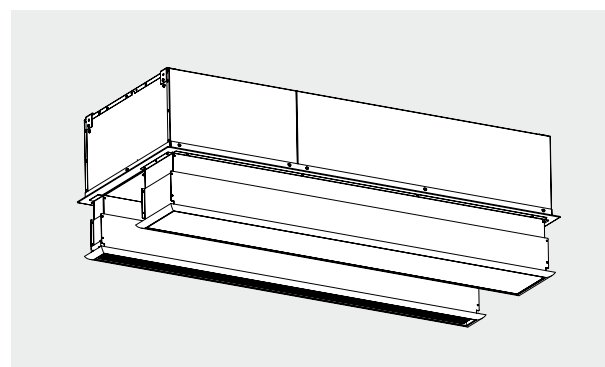
Water connection

## Accessories

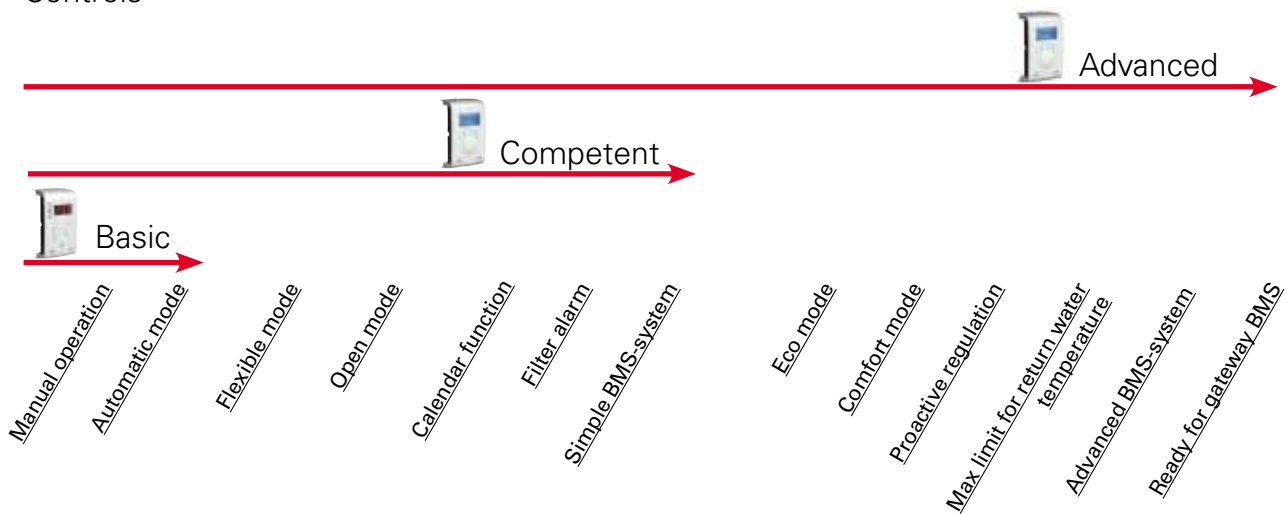
### AR35XTT, extension

Outlet/inlet extension for a discreet installation with only the outlet and inlet visible in the ceiling.

Type	Description	L [mm]
<b>AR35XTT10</b>	Outlet/inlet extension AR3510	130-210
<b>AR35XTT15</b>	Outlet/inlet extension AR3515	130-210
<b>AR35XTT20</b>	Outlet/inlet extension AR3520	130-210



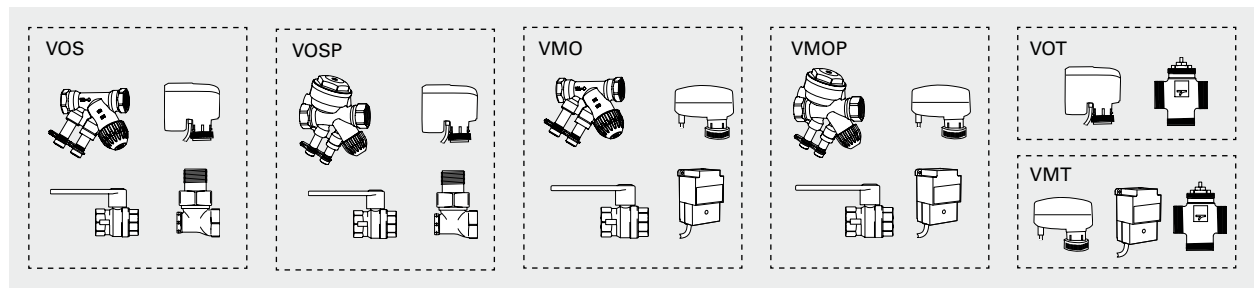
## Controls



This air curtain is supplied with an integrated PC board SIRe. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SIRe control system in the "Controls" section.

Type	Description
<b>SIReB</b>	Control system SIRe Basic
<b>SIReAC</b>	Control system SIRe Competent
<b>SIReAA</b>	Control system SIRe Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25

Type	Description
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMT20</b>	Three way control valve and modulating actuator, DN20
<b>VMT25</b>	Three way control valve and modulating actuator, DN25



## Output charts water

## AR3500W

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR3510W	max	2000	11,5	44,5	0,08	2,0	14,9	40,1	0,18	11,0
	min	1000	5,7	33,6	0,03	0,6	9,6	46,4	0,12	5,0
AR3515W	max	2800	16,0	42,2	0,10	2,0	21,9	41,2	0,27	9,0
	min	1400	8,0	32,4	0,04	0,4	14,0	47,5	0,17	4,0
AR3520W	max	4000	23,0	41,0	0,14	4,0	31,4	41,3	0,37	19,0
	min	2000	11,5	31,0	0,06	1,0	20,0	47,7	0,24	9,0

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR3510W	max	2000	11,5	48,7	0,13	6,0	11,5	35,4	0,14	7,0
	min	1000	5,7	37,0	0,04	1,0	7,6	40,5	0,09	3,0
AR3515W	max	2800	16,0	46,2	0,16	4,0	17,3	36,3	0,21	6,0
	min	1400	8,0	35,5	0,06	1,0	11,1	41,4	0,13	3,0
AR3520W	max	4000	23,0	45,5	0,22	8,0	24,9	36,5	0,29	14,0
	min	2000	11,5	34,4	0,08	1,0	15,9	41,6	0,19	6,0

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR3510W	max	2000	11,5	53,7	0,44	53,0	8,6	30,7	0,10	4,0
	min	1000	5,7	41,2	0,08	2,0	5,6	34,5	0,07	2,0
AR3515W	max	2800	16,0	51,0	0,43	20,0	12,6	31,3	0,15	3,0
	min	1400	8,0	39,6	0,09	1,0	8,1	35,2	0,10	1,0
AR3520W	max	4000	23,0	51,2	0,63	46,0	18,3	31,6	0,22	8,0
	min	2000	11,5	38,8	0,13	3,0	11,8	35,5	0,14	4,0

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR3510W	max	2000	-	-	-	-	6,9	28,3	0,08	3,0
	min	1000	5,7	44,0	0,13	6,0	4,5	31,4	0,06	1,0
AR3515W	max	2800	-	-	-	-	10,2	28,8	0,12	2,0
	min	1400	8,0	42,2	0,15	3,0	6,6	32,0	0,08	1,0
AR3520W	max	4000	-	-	-	-	15,0	29,1	0,18	6,0
	min	2000	11,5	41,7	0,21	7,0	9,7	32,4	0,12	3,0

- = at the current water temperatures and airflows, the air outlet temperature will be less than 35 °C.

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

# AR3500

## Output charts water

### AR3500WLL

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR3510WLL	max	1900	9,0	26,8	0,08	1,0	12,5	37,5	0,15	3,0
	min	950	4,5	23,4	0,03	0,3	7,6	41,6	0,09	1,0
AR3515WLL	max	2600	12,3	25,1	0,10	1,0	18,4	39,0	0,22	4,0
	min	1300	6,1	22,1	0,04	0,3	11,0	43,0	0,13	2,0
AR3520WLL	max	3800	18,0	25,5	0,15	1,0	26,4	38,6	0,32	4,0
	min	1900	9,0	22,3	0,07	0,4	15,8	42,6	0,19	2,0

			Supply water temperature: 50 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 50/30 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR3510WLL	max	1900	9,0	28,3	0,10	1,0	9,7	33,1	0,12	2,0
	min	950	4,5	24,5	0,04	0,4	5,9	36,5	0,07	1,0
AR3515WLL	max	2600	12,3	26,6	0,13	1,0	14,4	34,4	0,17	3,0
	min	1300	6,1	23,2	0,06	0,4	8,7	37,8	0,11	1,0
AR3520WLL	max	3800	18,0	27,0	0,19	2,0	20,6	34,1	0,25	3,0
	min	1900	9,0	22,3	0,07	0,4	12,5	37,5	0,15	1,0

			Supply water temperature: 45 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 45/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR3510WLL	max	1900	8,9	30,2	0,14	3,0	10,6	34,6	0,26	7,0
	min	950	4,5	26,0	0,06	0,3	6,3	37,6	0,15	3,0
AR3515WLL	max	2600	12,3	28,5	0,18	3,0	15,4	35,5	0,37	9,0
	min	1300	6,1	24,7	0,07	1,0	9,0	38,4	0,22	4,0
AR3520WLL	max	3800	18,0	29,0	0,27	4,0	22,1	35,2	0,53	9,0
	min	1900	9,0	25,0	0,11	1,0	12,9	38,2	0,31	5,0

			Supply water temperature: 40 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 40/30 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output *	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AR3510WLL	max	1900	9,0	33,0	0,31	10,0	8,0	30,4	0,19	5,0
	min	950	4,5	28,4	0,09	1,0	4,8	32,9	0,11	2,0
AR3515WLL	max	2600	12,3	31,4	0,34	8,0	11,7	31,3	0,28	6,0
	min	1300	6,1	27,0	0,11	1,0	6,9	33,7	0,17	2,0
AR3520WLL	max	3800	18,0	31,9	0,53	9,0	16,7	31,1	0,40	6,0
	min	1900	9,0	27,4	0,17	2,0	9,9	33,5	0,24	3,0

\*) Nominal output at given supply and return water temperature.

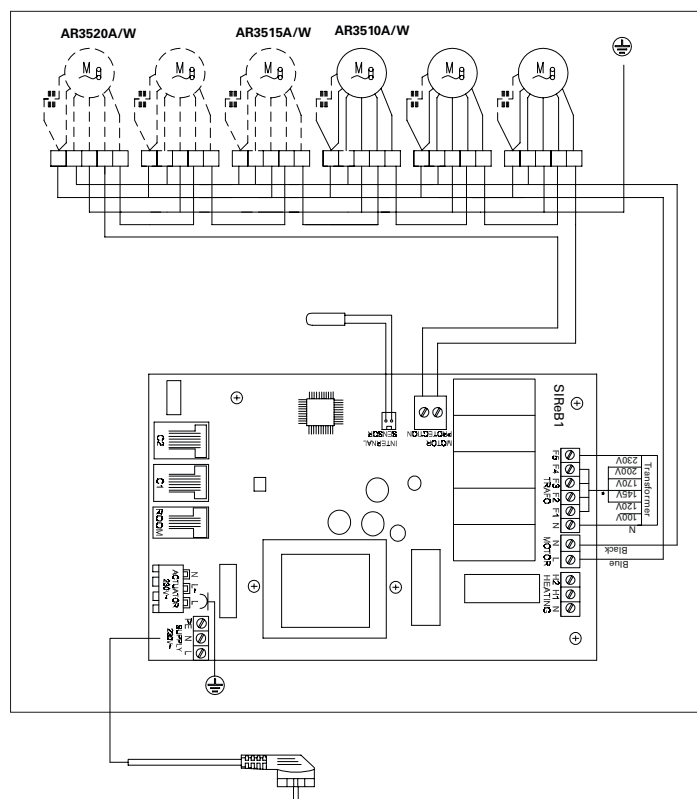
See [www.frico.se](http://www.frico.se) for additional calculations.

## Wiring diagrams

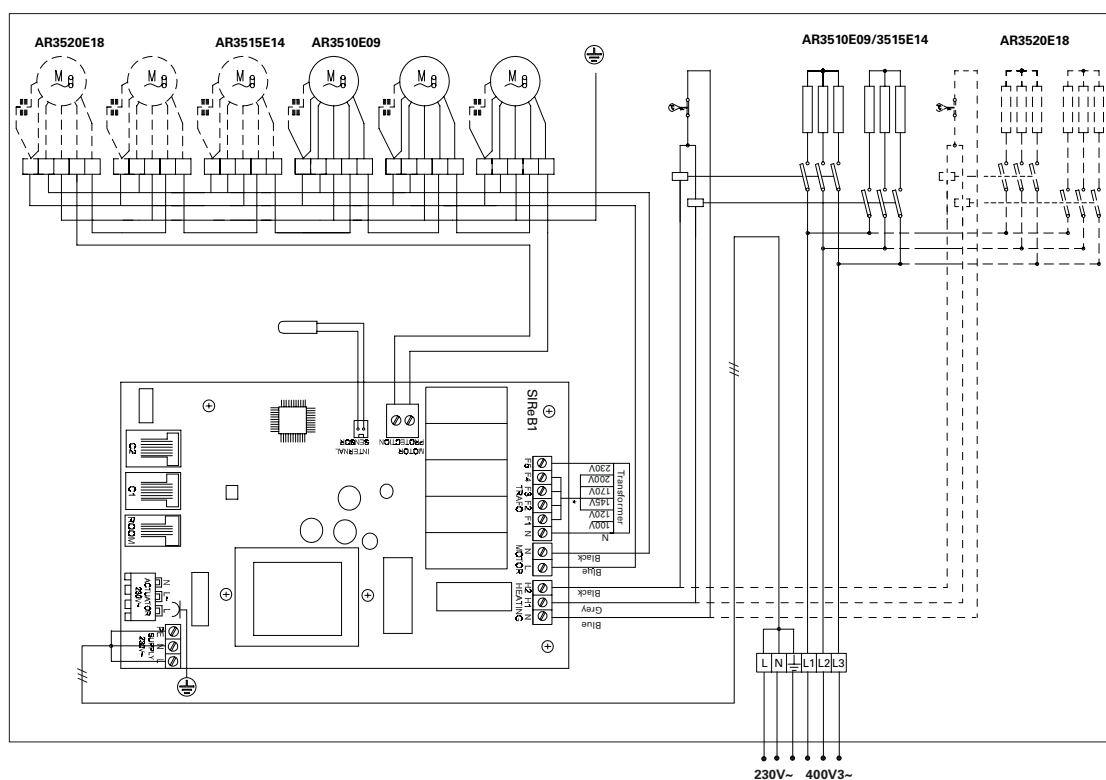
## Internal wiring diagram

Unit without heating

Unit with water heating



Unit with electrical heating



PA3500



## PA3500

Stylish air curtain for commercial premises, with intelligent control

- Horizontal mounting
  - Recommended installation height 3,5 m\*
  - Lengths: 1, 1,5, 2 and 2,5 m
- Vertical mounting
  - Recommended installation width 5 m\* (2 units), one on each side
  - Lengths: 1,5, 2 and 2,5 m

✿ Ambient, no heat

⚡ Electrical heat: 8 - 20 kW

💧 Water heat WH, WL, WLL



Optimized airflow with  
Thermozone technology.

### Application

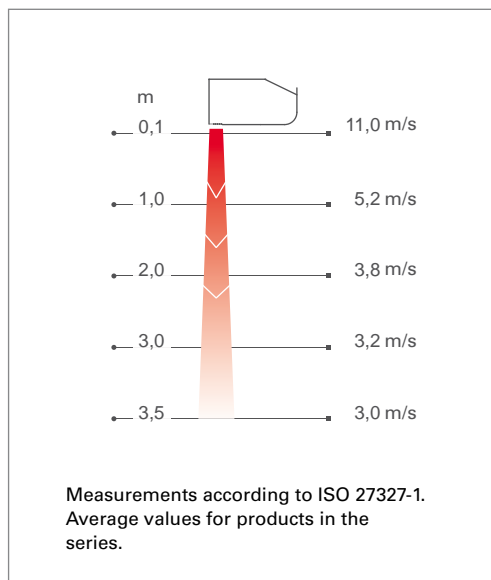
Air curtain PA3500 gives more possibilities than ever before, packed into the same product. There are therefore many areas of use. PA3500 is particularly suitable for entrances to stores and shopping centres for example.

The air curtain has many intelligent and energy saving features which provide fully automatic protection for the entrance, adaptable to each area of use.

### Design

Through its timeless design and its many accessories, it's easy to get PA3500 to blend well into the premises. Front and service hatch can be finished in any colour to perfectly match the environment. The air curtain is available for horizontal, vertical and recessed installation.

### Air velocity profile



### Product specifications

- Prepared for the SIRE control system whose pre-programmed default settings and many features make it easy to install and use the air curtain. Read more about the SIRE controls package in the "Controls" section.
- The front is easy to open and lock in the open position, which facilitates installation and allows easy maintenance.
- The air curtain is complemented with a vertical pack for vertical installation.
- Outlet extension for recessed installation is available as an accessory.
- The accessory Design kit enables a neat installation with concealed mountings, pipes and cables.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour front and service hatch: white, RAL 9016, NCS S 0500-N. Colour grille, rear section and ends: grey, RAL 7046.

## Technical specifications

### ✱ Ambient, no heat - PA3500 A

Type	Output [kW]	Airflow* <sup>1</sup> [m³/h]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
PA3510A	0	860/1800	40/57	470	230V~	2,0	1039	36
PA3515A	0	1240/2600	40,5/58,5	650	230V~	2,8	1549	50
PA3520A	0	1530/3200	42/59,5	810	230V~	3,5	2039	65
PA3525A	0	2200/4600	42/60,5	1140	230V~	4,9	2549	79

### ⚡ Electrical heat - PA3500 E

Type	Output step [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Voltage [V] Amperage [A] (heat)	Length [mm]	Weight [kg]
PA3510E08	2,7/5,4/8,1	860/1800	35/13	40/57	470	230V~	2,0	400V3~/11,7	1039	44
PA3515E12	3,9/7,8/11,7	1240/2600	38/14	40,5/58,5	650	230V~	2,8	400V3~/16,9	1549	63
PA3520E16	5,4/10,8/16,2	1530/3200	35/13	42/59,5	810	230V~	3,5	400V3~/23,4	2039	80
PA3525E20	6,6/13,2/19,8	2200/4600	37/14	42/60,5	1140	230V~	4,9	400V3~/28,6	2549	104

### 💧 Water heat - PA3500 WH, coil for high temperature water (≥80 °C)

Type	Output* <sup>4</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,4</sup> [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
PA3510WH	10,2	860/1800	22/17	1,0	40/57	470	230V~	2,0	1039	42
PA3515WH	15,3	1240/2600	23/17	1,6	40,5/58,5	650	230V~	2,8	1549	58
PA3520WH	20,1	1530/3200	24/19	2,2	42/59,5	810	230V~	3,5	2039	73
PA3525WH	27,4	2200/4600	23/18	2,9	42/60,5	1140	230V~	4,9	2549	92

### 💧 Water heat - PA3500 WL, coil for low water temperature (≤80 °C)

Type	Output* <sup>5</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,5</sup> [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
PA3510WL	11,7	860/1800	24/19	1,5	40/57	470	230V~	2,0	1039	43
PA3515WL	18,1	1240/2600	26/21	2,4	40,5/58,5	650	230V~	2,8	1549	60
PA3520WL	22,8	1530/3200	26/21	3,3	42/59,5	810	230V~	3,5	2039	75
PA3525WL	32,6	2200/4600	26/21	4,2	42/60,5	1140	230V~	4,9	2549	95

### 💧 Water heat - PA3500 WLL, coil for very low temperature water (≤60 °C)

Type	Output* <sup>6</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,6</sup> [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
PA3510WLL	7,2	830/1700	15/13	2,0	40/57	470	230V~	2,0	1039	44
PA3515WLL	10,5	1200/2500	14/12	4,1	40,5/58,5	650	230V~	2,8	1549	63
PA3520WLL	14,0	1460/3050	16/14	5,6	42/59,5	810	230V~	3,5	2039	78
PA3525WLL	19,4	2100/4400	15/13	8,3	42/60,5	1140	230V~	4,9	2549	100

\*1) Lowest/highest airflow of totally 5 fan steps.

\*2) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m².

\*3) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

\*4) Applicable at water temperature 80/60 °C, air temperature, in +18 °C.

\*5) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

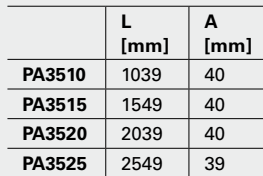
\*6) Applicable at water temperature 40/30 °C, air temperature, in +18 °C.

Protection class for units with electrical heating: IP20.

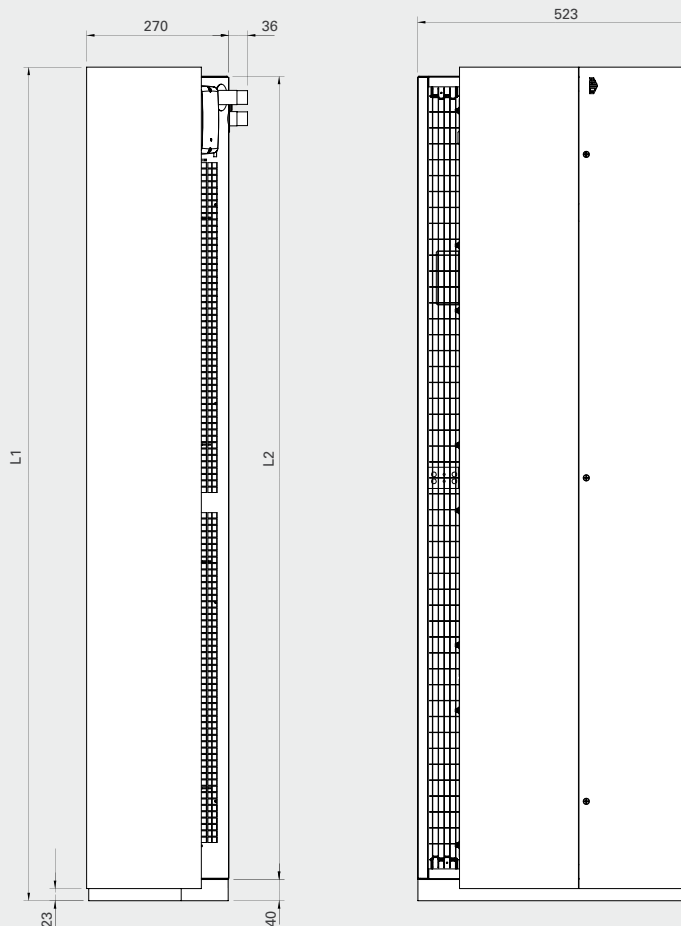
Protection class for units without heating and units with water heating: IP21.

CE compliant.

DN20 (3/4"),  
outside thread



The unit can be reversed and placed on either side of the door. Connections and PC Board S1Re are positioned near floor level when the air curtain is placed to the left of the door and at the top when it is placed to the right (seen from the inside).



	L1 [mm]	L2 [mm]
<b>PA3515</b>	1572	1515
<b>PA3520</b>	2062	2004
<b>PA3525</b>	2572	2515

## Mounting

The air curtain range can be adapted for vertical or horizontal installation. The units can also be installed recessed into suspended ceilings.

### *Horizontal mounting*

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible.

A variety of installation options are available; brackets for wall mounting, threaded bars or cables for ceiling mounting. An outlet extension is used for recessed installation.

The design kit that conceals cables, pipes and mountings is available for both wall and ceiling installations.

For the protection of wider openings, several units can be mounted next to each other using a joining kit.

Minimum distance from outlet to floor for electrically heated units is 1800 mm.

### *Vertical mounting*

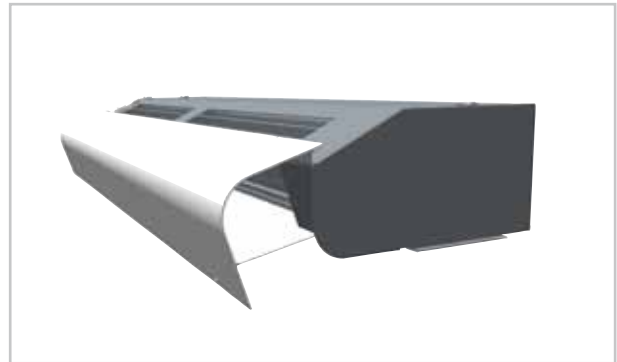
Units from 1,5 metres and longer may be used vertically. The air curtain is mounted vertically as close as possible to the door. For the best effect air curtains should be placed on both sides of the opening.

For vertical mounting, each unit must be supplemented with a vertical kit. The design kit for vertical mounting is used to hide pipes and cables.

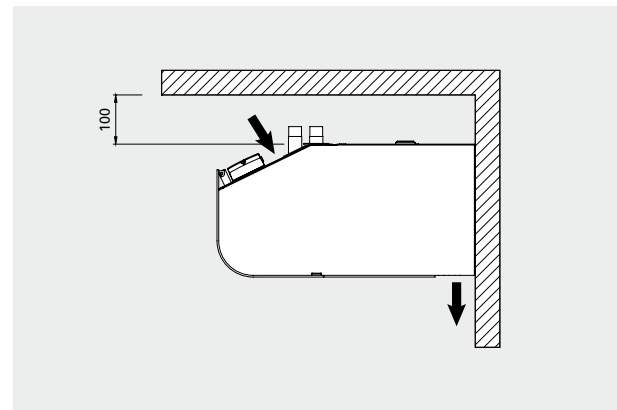
Two units can be mounted directly on top of each other.

The unit can be reversed and placed on either side of the door. Connections and PC Board SIRE are positioned near floor level when the air curtain is placed to the left of the door and at the top when it is placed to the right (seen from the inside).

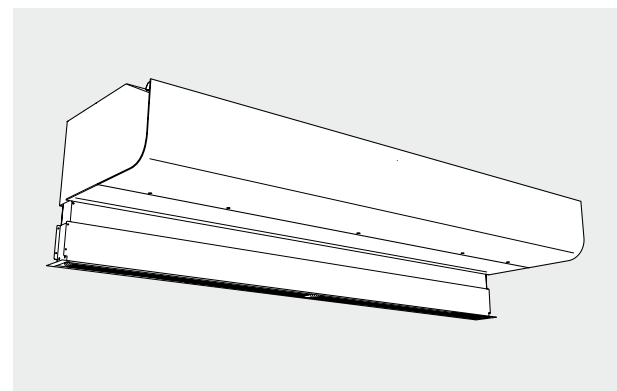
The air curtain is mounted on a floor frame that is included in the vertical kit. The edging is attached horizontal to the floor using fasteners appropriate for the surface. The air curtain must always be secured at the top.



The front is easy to open and lock in the open position, which facilitates installation and allows easy maintenance.



Minimum distances



Outlet extension for recessed installation



## Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

### *Unit without heating*

Connected via the built-in control board with 2 m cord and plug.

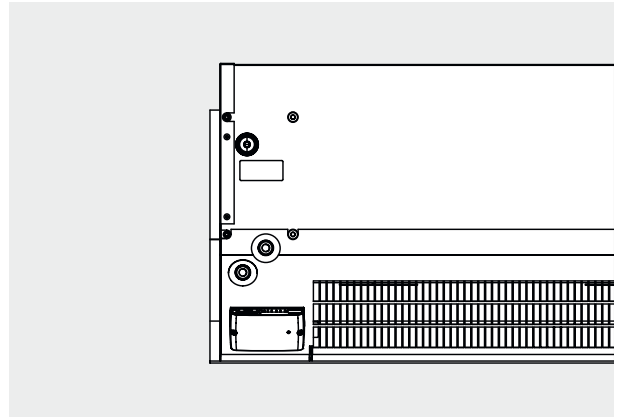
### *Unit with electrical heating*

The electrical connection is made on the top of the unit (horizontal) or on the reverse (vertical). Control supply is 230V~ and cable is routed from the built-in SIRE control board. Power supply for heating (400V3 ~) is connected to terminal block in the internal connection box. 2-metre and longer units require dual power supplies.

### *Unit with water heating*

Connected via the built-in control board with 2 m cord and plug.

The water coil is connected on top of the unit (horizontal mounting) or on the reverse (vertical mounting) via connections DN20 (3/4"), external thread. Flexible hoses are available as an accessory.

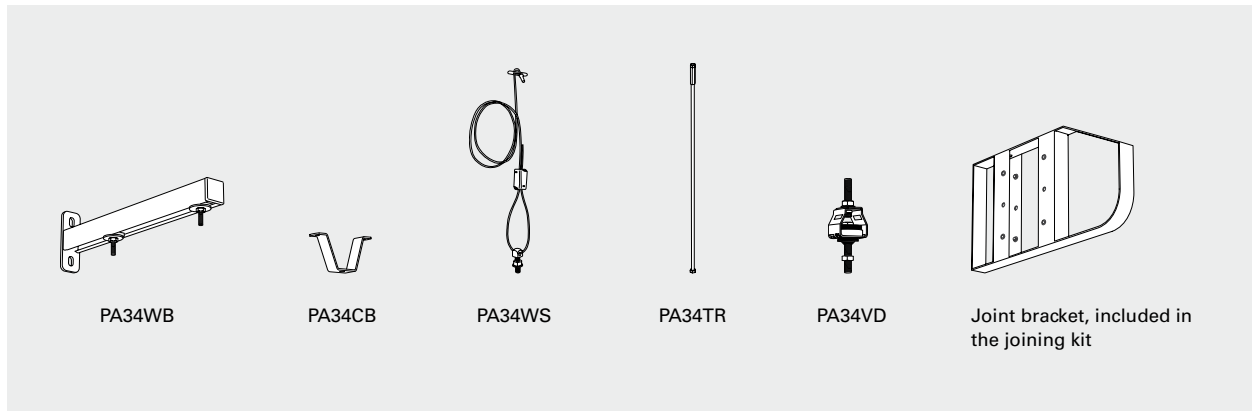


PC board SIRE is built in to the air curtain.



## Accessories

### Horizontal mounting



#### PA34WB, wall brackets

Brackets for installing unit horizontally on a wall.

#### PA34CB, ceiling brackets

Ceiling brackets for installing the unit from the ceiling using wires or threaded bars (not included). Best combined with vibration dampers (PA34VD) when using threaded bars.

#### PA34WS, wire suspension kit

Galvanized wires with wire locks to secure the unit from the ceiling. Length 3 m. Used together with ceiling brackets (PA34CB).

#### PA34TR, threaded bars

Threaded bars for installing unit on to a ceiling. Length 1 m. Used together with ceiling brackets (PA34CB). Supplemented with vibration dampers (PA34VD) for reduced vibration.

#### PA34VD, vibration dampers

Reduces vibrations for ceiling installations with threaded bars.

#### PA3JK, joining kit

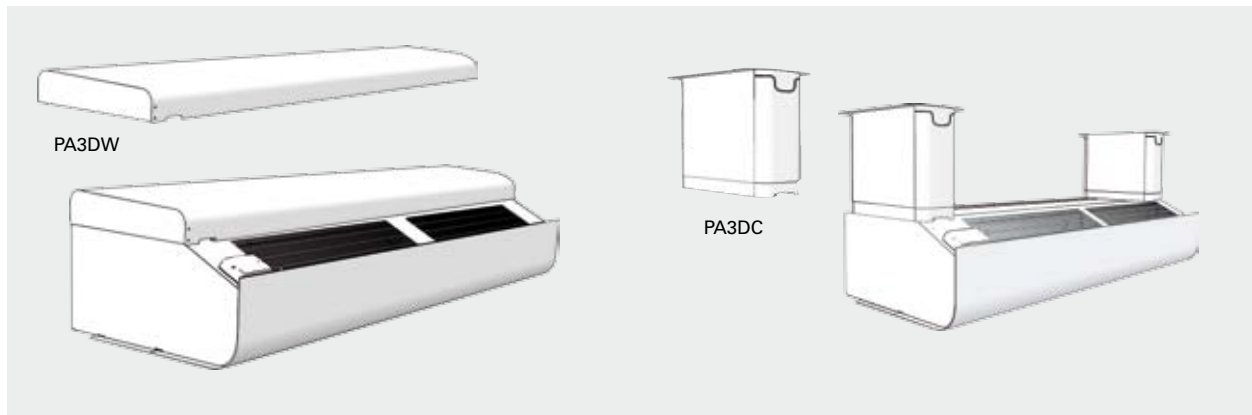
Used to join horizontal units together for a sleek and unified installation. Consists of joint bracket and mounting parts.

Type	Description	Quantity included	Length
PA34WB15	Wall brackets for 1 and 1,5 metre units	2 pcs	400 mm
PA34WB20	Wall brackets for 2 metre units	3 pcs	400 mm
PA34WB30	Wall brackets for 2,5 metre units	4 pcs	400 mm
PA34CB15	Ceiling brackets for 1 and 1,5 metre units	4 pcs	
PA34CB20	Ceiling brackets for 2 metre units	6 pcs	
PA34CB30	Ceiling brackets for 2,5 metre units	8 pcs	
PA34WS15	Wire suspension kit for 1 and 1,5 metre units	4 pcs	3 m
PA34WS20	Wire suspension kit for 2 metre units	6 pcs	3 m
PA34WS30	Wire suspension kit for 2,5 metre units	8 pcs	3 m
PA34TR15	Threaded bars for 1 and 1,5 metre units	4 pcs	1 m
PA34TR20	Threaded bars for 2 metre units	6 pcs	1 m
PA34TR30	Threaded bars for 2,5 metre units	8 pcs	1 m
PA34VD15	Vibration dampers for 1 and 1,5 metre units	4 pcs	
PA34VD20	Vibration dampers for 2 metre units	6 pcs	
PA34VD30	Vibration dampers for 2,5 metre units	8 pcs	
PA3JK	Joining kit		

## PA3500

### Accessories

#### Horizontal mounting



PA3DW, design kit for wall mounting  
Used to conceal mountings, cables and pipes. Used together with ceiling brackets PA34WB.

PA3DC, design kit for ceiling mounting  
Used to conceal mountings, cables and pipes. The design kit has a telescope function that can be adapted for the installation. It can also be extended with one or more extension parts.

Two design kits are required for 1 and 1.5 metre units, while 2 metre units need three kits and 2.5 metre units needed four kits.

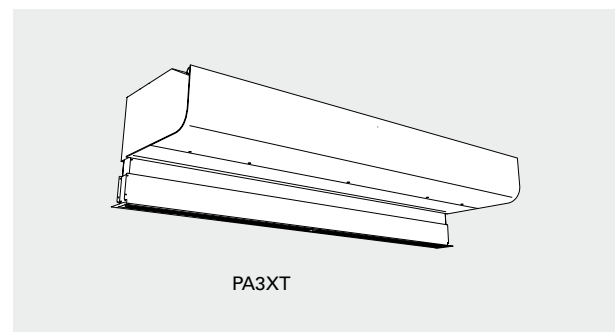
Type	Description	LxHxW [mm]
<b>PA3DW10</b>	Design kit for wall mounting PA3510	87x382x1006
<b>PA3DW15</b>	Design kit for wall mounting PA3515	87x382x1516
<b>PA3DW20</b>	Design kit for wall mounting PA3520	87x382x2006
<b>PA3DW25</b>	Design kit for wall mounting PA3525	87x382x2516

Type	Description
<b>PA3DCS</b>	Design kit for ceiling mounting PA3500, small, 200-300 mm (1 piece)
<b>PA3DCM</b>	Design kit for ceiling mounting PA3500, medium, 300-500 mm (1 piece)
<b>PA3DCL</b>	Design kit for ceiling mounting PA3500, large, 500-900 mm (1 piece)
<b>PA3DXT</b>	Design kit for ceiling mounting PA3500, extension, 420 mm (1 piece)

#### Recessed mounting in suspended ceilings

PA3XT, outlet extension  
Outlet extension with telescopic function. Used for recessed installation of units in suspended ceilings.

Type	Description
<b>PA3XT10</b>	Outlet extension for PA3510, 130-200 mm
<b>PA3XT15</b>	Outlet extension for PA3515, 130-200 mm
<b>PA3XT20</b>	Outlet extension for PA3520, 130-200 mm
<b>PA3XT25</b>	Outlet extension for PA3525, 130-200 mm



## Accessories

### Vertical mounting

PA3JK, vertical kit

Used to adapt a horizontal unit for vertical installation. Includes floor frame and mounting parts to support the top. Vertical kit allows two units to be installed on top of each other. One vertical kit is needed per unit.

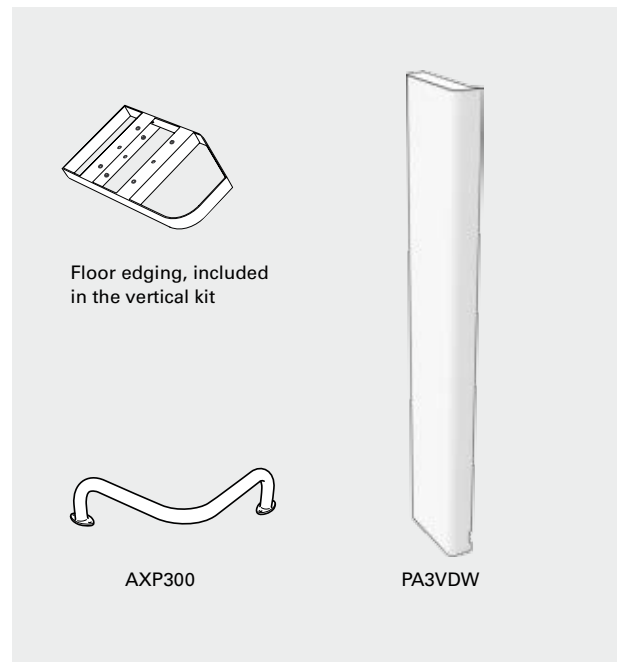
PA3VDW, design kit for vertical mounting

Used to conceal cables and pipes.

AXP300, collision protection

Floor placed protection against impact from e.g. shopping trolleys.

Type	Description
<b>PA3JK</b>	Vertical kit PA3500
<b>PA3VDW15</b>	Design kit for vertical mounting PA3515
<b>PA3VDW20</b>	Design kit for vertical mounting PA3520
<b>PA3VDW25</b>	Design kit for vertical mounting PA3525
<b>AXP300</b>	Collision protection



### Unit with water heating



PA34EF, external intake filter

Fine mesh filter that prevents ingress of dirt and deposits to water heated units. The filter is easy to attach and remove thanks to the integrated magnetic strips. Makes maintenance easier since the unit does not need to be opened.

DTV200S, filter pressure guard

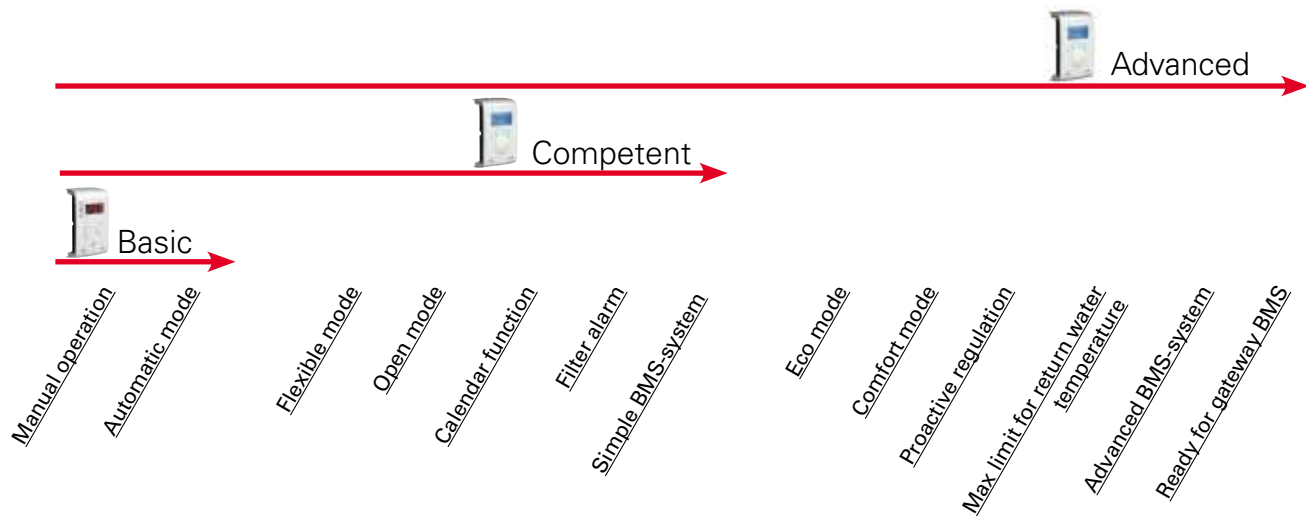
Measures the differential pressure, which indicates how dirty the filter is in water heated units. The metering hose is connected to the suction side of the unit (after the filter). Adjustment is performed on site depending on the unit and the environment. Adjustable range 20-300 Pa. Potential free, changeover alarm contact.

FHDN20, flexible hoses

Flexible hoses for easy and practical installation of water heated unit.

Type	Description
<b>PA34EF10</b>	External intake filter for 1 metre units
<b>PA34EF15</b>	External intake filter for 1,5 metre units
<b>PA34EF20</b>	External intake filter for 2 metre units
<b>PA34EF25</b>	External intake filter for 2,5 metre units
<b>DTV200S</b>	Filter pressure guard
<b>FHDN20</b>	Flexible hoses DN20, inside thread, 90° bend, 1 pair

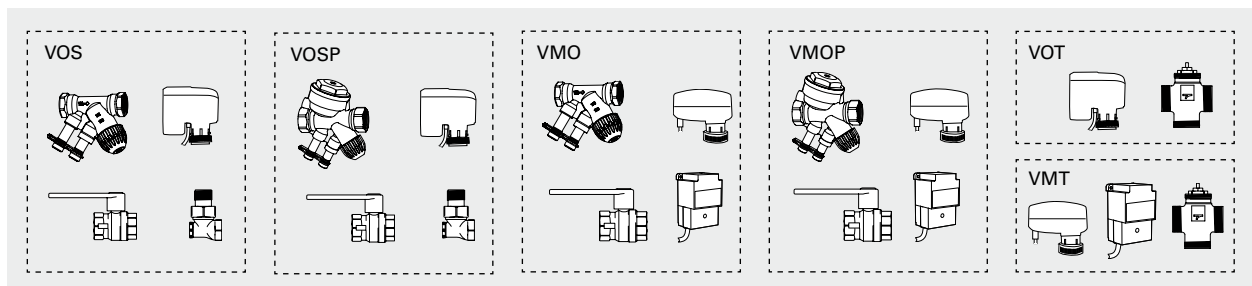
## Controls



This air curtain is supplied with an integrated PC board SIRE. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SIRE control system in the "Controls" section.

Type	Description
<b>SIREB</b>	Control system SIRE Basic
<b>SIREAC</b>	Control system SIRE Competent
<b>SIREAA</b>	Control system SIRE Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25

Type	Description
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMT20</b>	Three way control valve and modulating actuator, DN20
<b>VMT25</b>	Three way control valve and modulating actuator, DN25

## Output charts water

## PA3500 WH

			Supply water temperature: 110 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 110/80 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA3510WH	max	1800	10,4	51,1	0,04	1,6	15,3	43,0	0,13	10,1
	min	860	5,0	39,8	0,02	0,3	9,7	51,0	0,08	4,4
PA3515WH	max	2600	15,0	50,4	0,06	0,8	23,0	44,0	0,19	5,6
	min	1240	7,2	41,2	0,03	0,2	14,4	52,2	0,12	2,4
PA3520WH	max	3200	18,5	45,1	0,07	1,2	30,2	45,7	0,25	11,2
	min	1530	8,8	36,4	0,03	0,3	18,8	54,2	0,15	4,8
PA3525WH	max	4600	26,6	48,6	0,11	1,0	41,2	44,2	0,34	8,0
	min	2200	12,7	39,2	0,04	0,2	25,8	52,6	0,21	3,4

			Supply water temperature: 90 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 90/70 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA3510WH	max	1800	10,4	57,5	0,08	4,6	12,4	38,3	0,15	14,9
	min	860	5,0	43,7	0,03	0,7	7,8	44,8	0,10	6,5
PA3515WH	max	2600	15,0	55,7	0,11	2,1	18,7	39,2	0,23	8,3
	min	1240	7,2	44,2	0,04	0,4	11,7	45,8	0,14	3,6
PA3520WH	max	3200	18,5	51,0	0,12	3,0	24,5	40,5	0,30	16,4
	min	1530	8,8	39,8	0,04	0,5	15,2	47,3	0,19	7,0
PA3525WH	max	4600	26,6	54,5	0,18	2,8	33,4	39,4	0,41	11,8
	min	2200	12,7	42,4	0,07	0,5	21,0	46,0	0,26	5,0

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA3510WH	max	1800	10,4	61,2	0,14	12,4	10,2	34,7	0,12	10,7
	min	860	5,0	46,3	0,04	1,2	6,4	40,0	0,08	4,7
PA3515WH	max	2600	15,0	58,8	0,17	5,1	15,3	35,3	0,19	5,9
	min	1240	7,2	46,0	0,05	0,6	9,6	40,8	0,12	2,5
PA3520WH	max	3200	18,5	54,7	0,18	6,7	20,1	36,5	0,25	11,8
	min	1530	8,8	42,1	0,06	0,9	12,6	42,4	0,15	5,0
PA3525WH	max	4600	26,6	58,0	0,29	6,7	27,4	35,6	0,34	8,4
	min	2200	12,7	44,7	0,09	0,8	17,2	41,0	0,21	3,6

			Supply water temperature: 82 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 82/71 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA3510WH	max	1800	10,4	60,4	0,12	9,6	12,1	37,7	0,27	42,1
	min	860	5,0	45,7	0,03	1,1	7,6	44,0	0,17	18,1
PA3515WH	max	2600	15,0	58,2	0,15	4,2	18,2	38,6	0,41	23,8
	min	1240	7,2	45,6	0,05	0,5	11,4	45,0	0,25	10,1
PA3520WH	max	3200	18,5	53,9	0,16	5,5	23,7	39,8	0,53	46,5
	min	1530	8,8	41,6	0,05	0,8	14,7	46,3	0,33	19,5
PA3525WH	max	4600	26,6	57,3	0,26	5,4	32,4	38,8	0,72	33,6
	min	2200	12,7	44,2	0,08	0,7	20,3	45,2	0,45	14,2

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

## Output charts water

## PA3500 WL

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
PA3510WL	max	1800	10,4	31,5	0,05	1,2	20,3	51,2	0,25	19,0
	min	860	5,0	29,2	0,02	0,3	12,1	59,2	0,15	7,4
PA3515WL	max	2600	15,0	28,8	0,07	1,5	31,0	53,2	0,38	28,5
	min	1240	7,2	26,6	0,03	0,4	18,1	61,1	0,22	10,8
PA3520WL	max	3200	18,5	28,8	0,09	0,9	39,4	54,2	0,48	18,6
	min	1530	9,0	28,2	0,04	0,3	22,9	62,0	0,28	6,9
PA3525WL	max	4600	26,6	27,7	0,12	2,1	55,4	53,5	0,68	40,9
	min	2200	12,7	24,9	0,06	0,5	32,4	61,4	0,40	15,4

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
PA3510WL	max	1800	10,4	33,5	0,07	2,1	16,0	44,2	0,19	12,7
	min	860	5,0	29,8	0,03	0,5	9,6	50,7	0,12	5,0
PA3515WL	max	2600	15,0	30,9	0,09	2,5	24,6	45,9	0,30	19,2
	min	1240	7,2	27,4	0,04	0,6	14,5	52,4	0,18	7,4
PA3520WL	max	3200	18,5	30,6	0,11	1,5	31,2	46,7	0,38	12,5
	min	1530	8,8	28,4	0,05	0,4	18,2	53,1	0,22	4,8
PA3525WL	max	4600	26,5	29,8	0,16	3,3	44,1	46,2	0,54	27,6
	min	2200	12,7	26,0	0,07	0,8	26,0	52,7	0,32	10,6

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
PA3510WL	max	1800	10,4	36,0	0,11	4,5	11,7	37,1	0,14	7,4
	min	860	5,0	31,0	0,04	0,9	7,0	42,0	0,08	3,0
PA3515WL	max	2600	15,0	33,7	0,14	5,0	18,1	38,5	0,22	11,3
	min	1240	7,2	28,9	0,06	1,0	10,7	43,5	0,13	4,5
PA3520WL	max	3200	18,5	33,1	0,17	3,0	22,8	39,1	0,28	7,4
	min	1530	8,8	29,2	0,07	0,7	13,5	43,9	0,16	2,9
PA3525WL	max	4600	26,6	32,9	0,24	6,7	32,6	38,9	0,39	16,5
	min	2200	12,7	27,8	0,09	1,4	19,3	43,9	0,23	6,5

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
PA3510WL	max	1800	10,4	37,9	0,15	8,1	9,4	33,4	0,11	5,2
	min	860	5,0	31,9	0,05	1,3	5,7	37,4	0,07	2,1
PA3515WL	max	2600	15,0	35,5	0,19	8,6	14,7	34,7	0,18	8,0
	min	1240	7,1	29,9	0,07	1,5	8,7	38,9	0,10	3,1
PA3520WL	max	3200	18,5	34,8	0,22	5,0	18,6	35,1	0,23	5,2
	min	1530	8,9	30,1	0,09	1,0	11,1	39,1	0,13	2,1
PA3525WL	max	4600	26,6	34,9	0,32	11,6	26,7	35,1	0,32	11,7
	min	2200	12,7	29,0	0,12	2,0	15,9	39,3	0,19	4,7

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.



## Output charts water

## PA3500 WLL

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
PA3510WLL	max	1700	8,1	28,3	0,07	1,5	11,2	37,4	0,14	4,3
	min	830	3,9	27,9	0,04	0,4	6,5	41,1	0,08	1,7
PA3515WLL	max	2500	11,9	29,4	0,11	0,7	16,3	37,2	0,20	1,9
	min	1200	5,7	30,7	0,06	0,2	9,2	40,5	0,11	0,7
PA3520WLL	max	3050	14,5	26,7	0,12	1,1	21,9	39,2	0,26	4,0
	min	1460	6,9	27,6	0,11	0,4	12,3	42,8	0,15	1,5
PA3525WLL	max	4400	20,8	27,5	0,18	1,1	30,3	38,3	0,37	3,6
	min	2100	10,0	28,1	0,10	0,4	17,1	42,0	0,21	1,3

			Supply water temperature: 50 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 50/30 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
PA3510WLL	max	1700	8,1	29,2	0,09	2,3	8,4	32,6	0,10	2,7
	min	830	3,9	27,7	0,04	0,6	4,8	35,2	0,06	1,0
PA3515WLL	max	2500	11,9	30,0	0,14	1,1	11,9	32,0	0,14	1,1
	min	1200	5,7	29,9	0,07	0,3	6,0	32,6	0,07	0,3
PA3520WLL	max	3050	14,5	27,6	0,16	1,6	16,7	34,2	0,20	2,6
	min	1460	4,9	27,0	0,07	0,4	9,3	36,8	0,10	0,9
PA3525WLL	max	4400	20,8	28,4	0,23	1,7	23,0	33,4	0,28	2,3
	min	2100	10,0	27,4	0,11	0,4	12,9	36,0	0,16	0,8

			Supply water temperature: 45 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 45/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
PA3510WLL	max	1700	8,1	30,6	0,14	4,4	9,7	34,8	0,23	11,6
	min	830	3,9	28,0	0,06	1,0	5,6	37,8	0,13	4,4
PA3515WLL	max	2500	11,9	30,8	0,20	2,1	14,4	34,9	0,35	5,4
	min	1200	5,7	29,3	0,09	0,5	8,1	37,8	0,19	1,9
PA3520WLL	max	3050	14,5	28,8	0,22	2,9	18,7	36,0	0,45	10,6
	min	1460	6,9	27,0	0,09	0,7	10,4	38,9	0,25	3,7
PA3525WLL	max	4400	20,8	29,7	0,33	3,1	26,0	35,4	0,63	9,7
	min	2100	10,0	27,5	0,14	0,7	14,6	38,4	0,35	3,4

			Supply water temperature: 40 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 40/30 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
PA3510WLL	max	1700	8,1	32,6	0,26	14,5	7,2	30,5	0,17	7,0
	min	830	3,9	29,0	0,09	2,1	4,2	32,8	0,10	2,7
PA3515WLL	max	2500	11,9	32,4	0,38	6,3	10,5	30,4	0,25	3,2
	min	1200	5,7	29,5	0,13	1,0	5,9	32,5	0,14	1,2
PA3520WLL	max	3050	14,5	30,8	0,38	8,0	14,0	31,5	0,34	6,5
	min	1460	6,9	27,4	0,05	0,2	7,8	33,8	0,19	2,3
PA3525WLL	max	4400	20,8	31,6	0,60	9,2	19,4	31,0	0,47	5,9
	min	2100	10,0	28,4	0,21	1,4	10,9	33,3	0,26	2,1

\*) Nominal output at given supply and return water temperature.

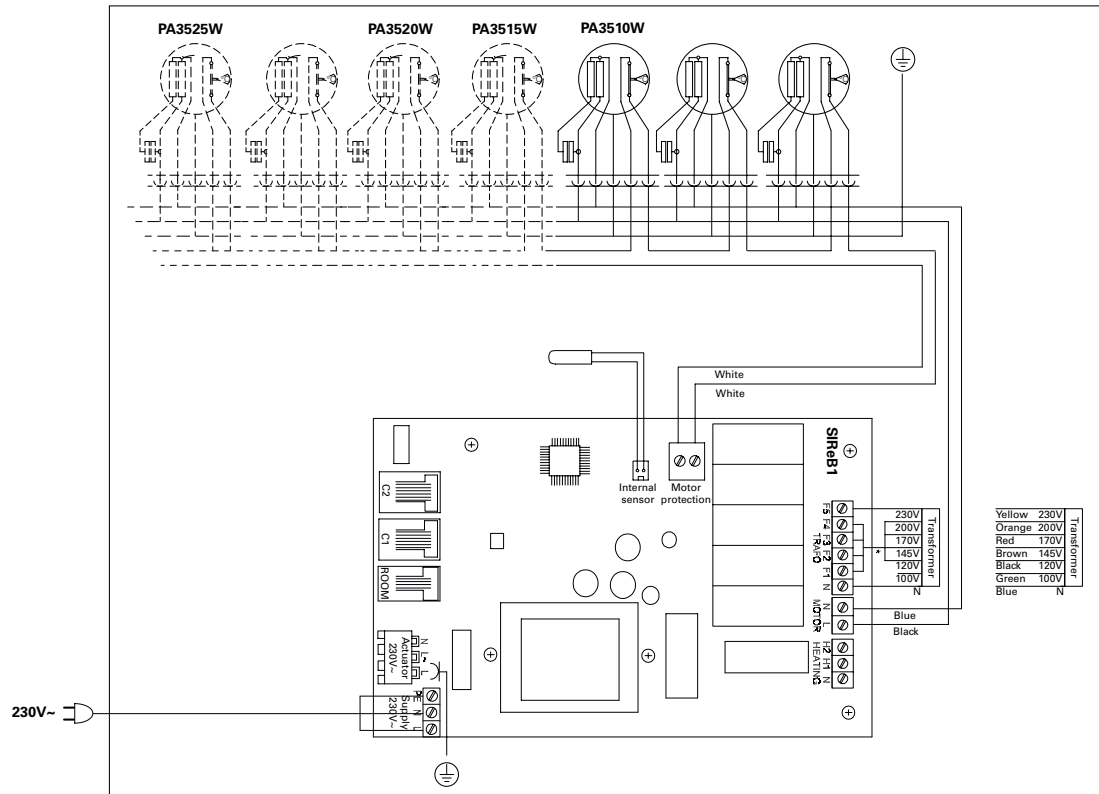
See [www.frico.se](http://www.frico.se) for additional calculations.



## Wiring diagrams

### Internal wiring diagram

#### Unit with water heating



PA4200



## PA4200

Stylish air curtain for commercial and industrial premises, with intelligent control

- Horizontal mounting
  - Recommended installation height 4,2 m\*
  - Lengths: 1, 1,5, 2 and 2,5 m
- Vertical mounting
  - Recommended installation width 6 m\* (2 units), one on each side
  - Lengths: 1,5, 2 and 2,5 m

✿ Ambient, no heat

⚡ Electrical heat: 12–30 kW

💧 Water heat WH, WL, WLL



Optimized airflow with  
Thermozone technology.

### Application

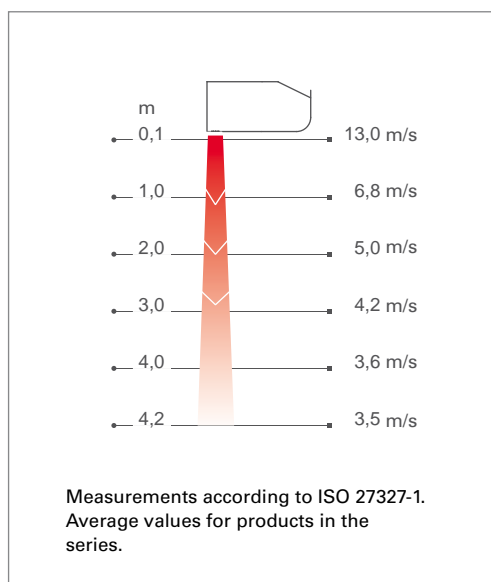
With air curtain PA4200 there are more opportunities than ever before, packed into the same product. There are therefore many areas of use. PA4200 is specifically designed for doorways in for example, large commercial installations or industrial and warehouse buildings.

The air curtain has many intelligent and energy saving features which provide fully automatic protection for the entrance, adaptable to each area of use.

### Design

Through its timeless design and its many accessories, it's easy to get PA4200 to blend well into the premises. Front and service hatch can be finished in any colour to perfectly match the environment. The air curtain is available for horizontal, vertical and recessed installation.

### Air velocity profile



### Product specifications

- Prepared for the SIRE control system whose pre-programmed default settings and many features make it easy to install and use the air curtain. Read more about the SIRE controls package in the "Controls" section.
- The front is easy to open and lock in the open position, which facilitates installation and allows easy maintenance.
- The air curtain is complemented with a vertical pack for vertical installation.
- Outlet extension for recessed installation is available as an accessory.
- The accessory Design kit enables a neat installation with concealed mountings, pipes and cables.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour front and service hatch: white, RAL 9016, NCS S 0500-N. Colour grille, rear section and ends: grey, RAL 7046.

## Technical specifications

### 🌀 Ambient, no heat - PA4200 A

Type	Output [kW]	Airflow* <sup>1</sup> [m³/h]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
PA4210A	0	1280/2700	46/63,5	830	230V~	3,6	1039	43
PA4215A	0	1760/3700	46/64	1150	230V~	5,0	1549	56
PA4220A	0	2520/5300	47/64,5	1610	230V~	7,0	2039	75
PA4225A	0	3020/6350	48,5/67	1990	230V~	8,6	2549	91

### ⚡ Electrical heat - PA4200 E

Type	Output steps [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Voltage [V] Amperage [A] (heat)	Length [mm]	Weight [kg]
PA4210E12	3,9/7,8/11,7	1280/2700	37/14	46/63,5	830	230V~	3,6	400V3~/16,9	1039	50
PA4215E18	6,0/12,0/18,0	1760/3700	40/15	46/64	1150	230V~	5,0	400V3~/26,0	1549	71
PA4220E24	7,8/15,6/23,4	2520/5300	37/14	47/64,5	1610	230V~	7,0	400V3~/33,8	2039	94
PA4225E30	9,9/19,8/29,7	3020/6350	38/15	48,5/67	1990	230V~	8,6	400V3~/42,9	2549	113

### 💧 Water heat - PA4200 WH, coil for high temperature water (≥80 °C)

Type	Output* <sup>4</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,4</sup> [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
PA4210WH	14,4	1280/2700	21/16	1,3	46/63,5	830	230V~	3,6	1039	49
PA4215WH	20,7	1760/3700	22/17	2,0	46/64	1150	230V~	5,0	1549	65
PA4220WH	29,9	2520/5300	22/17	2,7	47/64,5	1610	230V~	7,0	2039	87
PA4225WH	35,6	3020/6350	22/17	3,8	48,5/67	1990	230V~	8,6	2549	105

### 💧 Water heat - PA4200 WL, coil for low water temperature (≤80 °C)

Type	Output* <sup>5</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,5</sup> [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
PA4210WL	16,9	1280/2700	23/18	1,9	46/63,5	830	230V~	3,6	1039	50
PA4215WL	24,7	1760/3700	25/20	3,0	46/64	1150	230V~	5,0	1549	67
PA4220WL	34,8	2520/5300	24/19	4,1	47/64,5	1610	230V~	7,0	2039	90
PA4225WL	43,8	3020/6350	25/20	5,2	48,5/67	1990	230V~	8,6	2549	109

### 💧 Water heat - PA4200 WLL, coil for very low temperature water (≤60 °C)

Type	Output* <sup>6</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,6</sup> [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Output- motor [W]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
PA4210WLL	10,1	1150/2500	15/12	2,5	46/63,5	830	230V~	3,6	1039	52
PA4215WLL	15,0	1600/3450	15/13	4,7	46/64	1150	230V~	5,0	1549	70
PA4220WLL	20,6	2320/4950	15/12	7,5	47/64,5	1610	230V~	7,0	2039	95
PA4225WLL	25,8	2820/6600	15/13	9,6	48,5/67	1990	230V~	8,6	2549	115

\*<sup>1</sup>) Lowest/highest airflow of totally 5 fan steps.

\*<sup>2</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m².

\*<sup>3</sup>) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

\*<sup>4</sup>) Applicable at water temperature 80/60 °C, air temperature, in +18 °C.

\*<sup>5</sup>) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

\*<sup>6</sup>) Applicable at water temperature 40/30 °C, air temperature, in +18 °C.

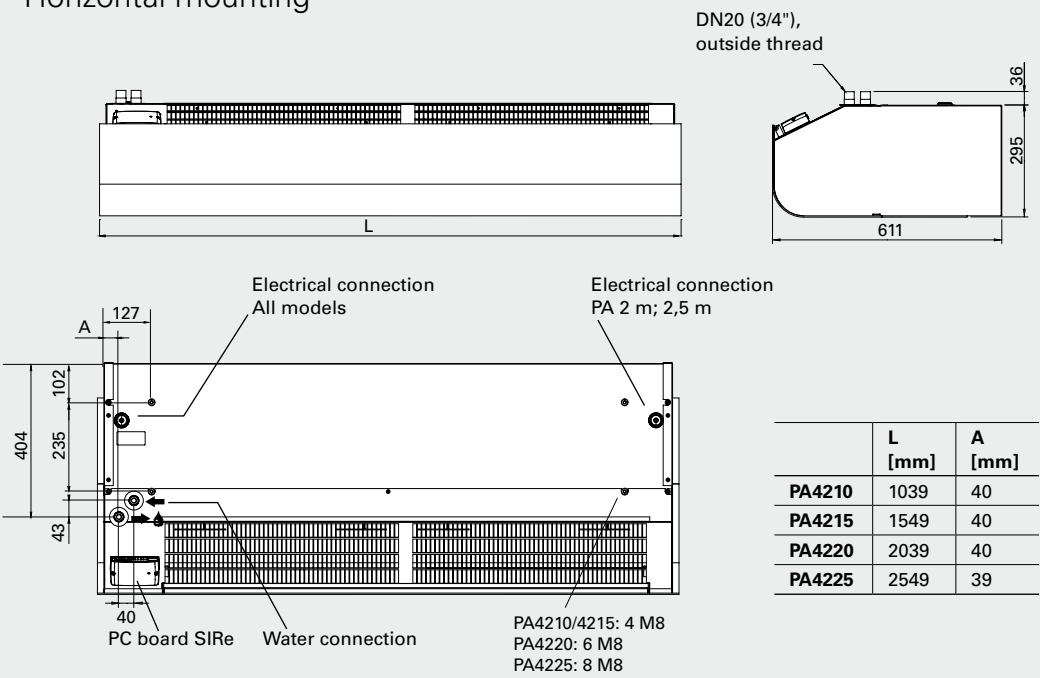
Protection class for units with electrical heating: IP20.

Protection class for units without heating and units with water heating: IP21.

CE compliant.

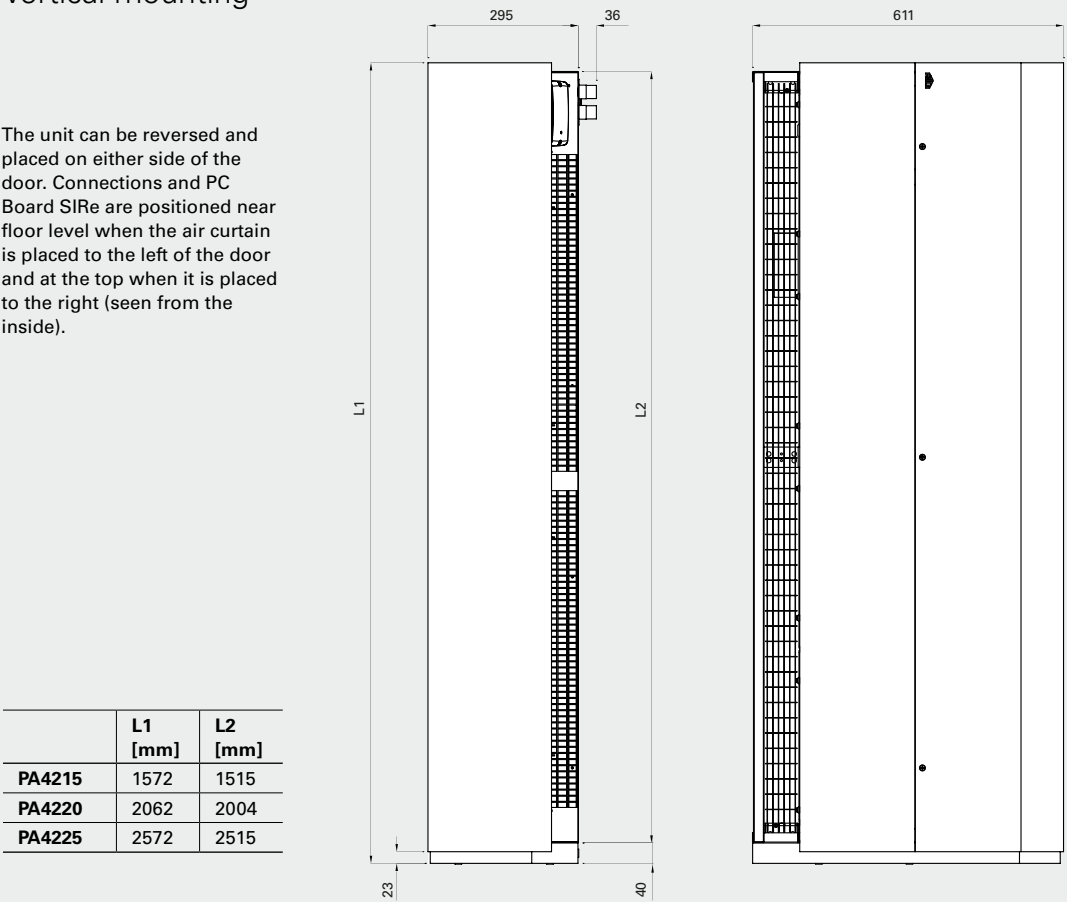
Dimensions

Horizontal mounting



Vertical mounting

The unit can be reversed and placed on either side of the door. Connections and PC Board SIRe are positioned near floor level when the air curtain is placed to the left of the door and at the top when it is placed to the right (seen from the inside).



## Mounting

The air curtain range can be adapted for vertical or horizontal installation. The units can also be installed recessed into suspended ceilings.

### *Horizontal mounting*

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible.

A variety of installation options are available; brackets for wall mounting, threaded bars or cables for ceiling mounting. An outlet extension is used for recessed installation.

The design kit that conceals cables, pipes and mountings is available for both wall and ceiling installations.

For the protection of wider openings, several units can be mounted next to each other using a joining kit.

Minimum distance from outlet to floor for electrically heated units is 1800 mm.

### *Vertical mounting*

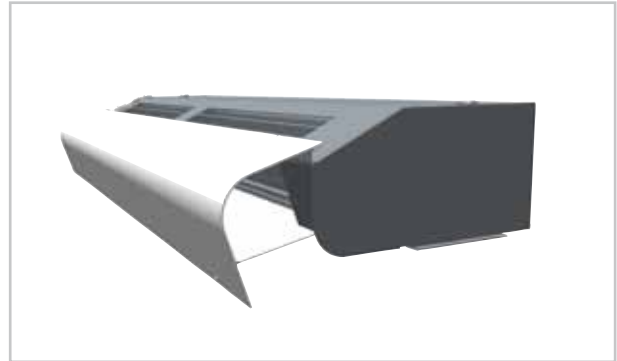
Units from 1,5 metres and longer may be used vertically. The air curtain is mounted vertically as close as possible to the door. For the best effect air curtains should be placed on both sides of the opening.

For vertical mounting, each unit must be supplemented with a vertical kit. The design kit for vertical mounting is used to hide pipes and cables.

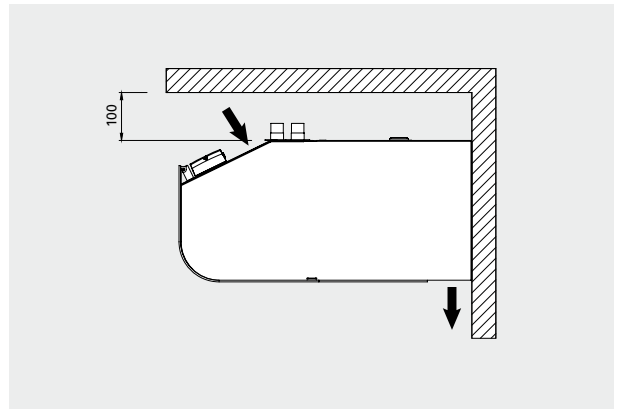
Two units can be mounted directly on top of each other.

The unit can be reversed and placed on either side of the door. Connections and PC Board SIRE are positioned near floor level when the air curtain is placed to the left of the door and at the top when it is placed to the right (seen from the inside).

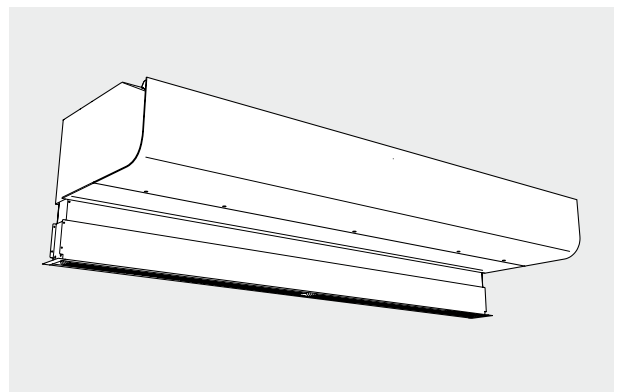
The air curtain is mounted on a floor frame that is included in the vertical kit. The edging is attached horizontal to the floor using fasteners appropriate for the surface. The air curtain must always be secured at the top.



The front is easy to open and lock in the open position, which facilitates installation and allows easy maintenance.



Minimum distances



Outlet extension for recessed installation



## Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

### *Unit without heating*

Connected via the built-in control board with 2 m cord and plug.

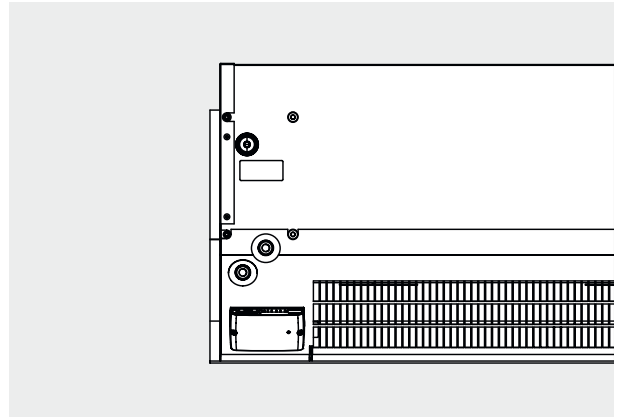
### *Unit with electrical heating*

The electrical connection is made on the top of the unit (horizontal) or on the reverse (vertical). Control supply is 230V~ and cable is routed from the built-in SIRE control board. Power supply for heating (400V3 ~) is connected to terminal block in the internal connection box. 2-metre and longer units require dual power supplies.

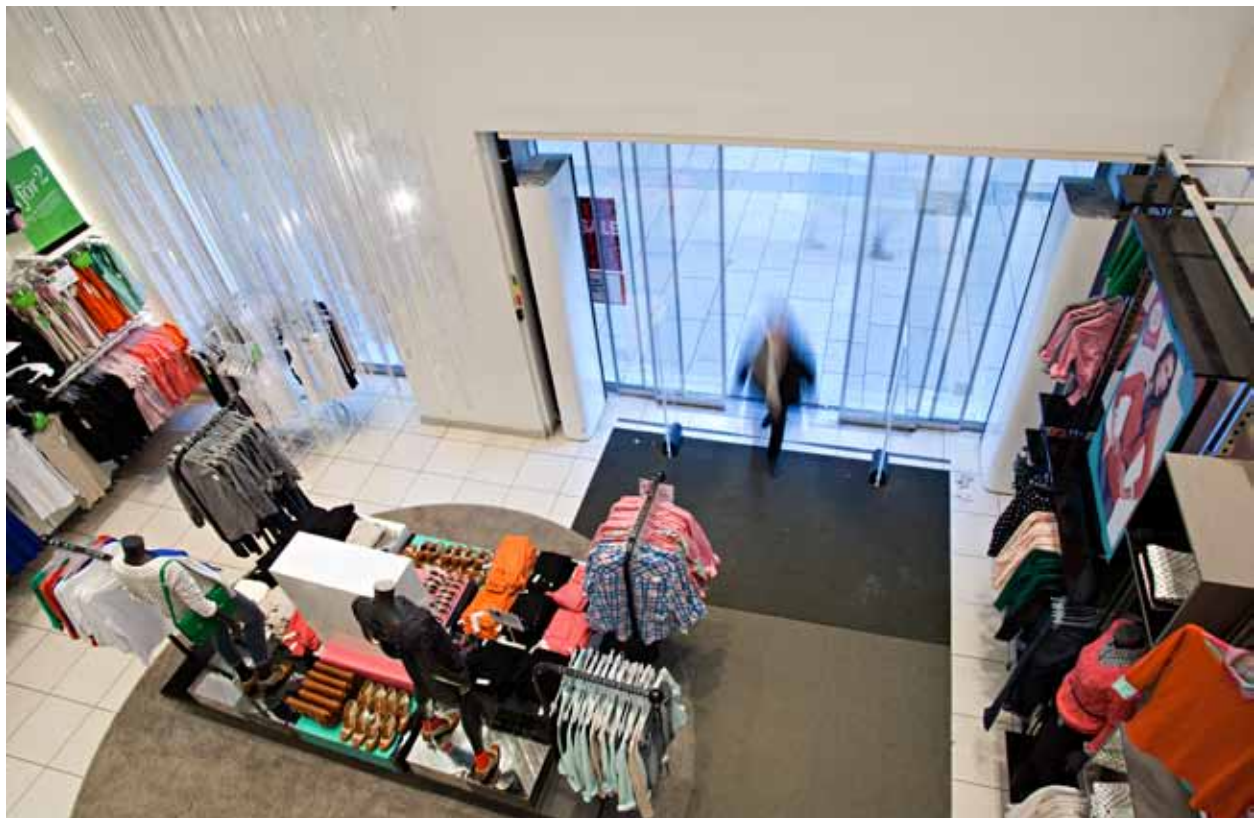
### *Unit with water heating*

Connected via the built-in control board with 2 m cord and plug.

The water coil is connected on top of the unit (horizontal mounting) or on the reverse (vertical mounting) via connections DN20 (3/4"), external thread. Flexible hoses are available as an accessory.

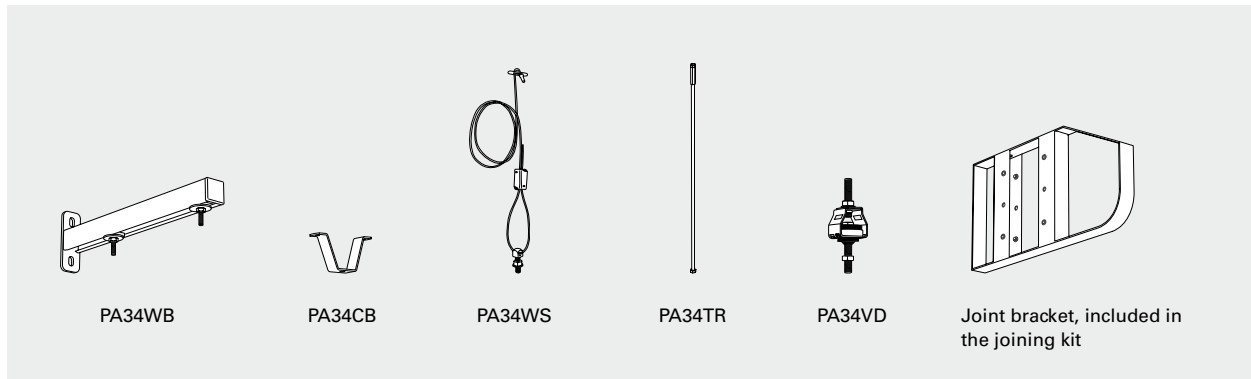


PC board SIRE is built in to the air curtain.



## Accessories

### Horizontal mounting



#### PA34WB, wall brackets

Brackets for installing unit horizontally on a wall.

#### PA34CB, ceiling brackets

Ceiling brackets for installing the unit from the ceiling using wires or threaded bars (not included). Best combined with vibration dampers (PA34VD) when using threaded bars.

#### PA34WS, wire suspension kit

Galvanized wires with wire locks to secure the unit from the ceiling. Length 3 m. Used together with ceiling brackets (PA34CB).

#### PA34TR, threaded bars

Threaded bars for installing unit on to a ceiling. Length 1 m. Used together with ceiling brackets (PA34CB). Supplemented with vibration dampers (PA34VD) for reduced vibration.

#### PA34VD, vibration dampers

Reduces vibrations for ceiling installations with threaded bars.

#### PA4JK, joining kit

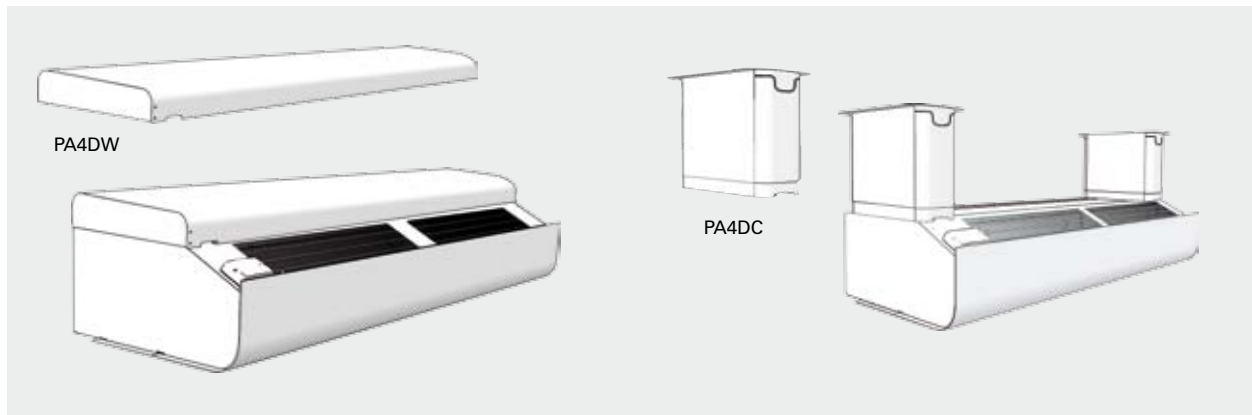
Used to join horizontal units together for a sleek and unified installation. Consists of joint bracket and mounting parts.

Type	Description	Quantity included	Length
PA34WB15	Wall brackets for 1 and 1,5 metre units	2 pcs	400 mm
PA34WB20	Wall brackets for 2 metre units	3 pcs	400 mm
PA34WB30	Wall brackets for 2,5 metre units	4 pcs	400 mm
PA34CB15	Ceiling brackets for 1 and 1,5 metre units	4 pcs	
PA34CB20	Ceiling brackets for 2 metre units	6 pcs	
PA34CB30	Ceiling brackets for 2,5 metre units	8 pcs	
PA34WS15	Wire suspension kit for 1 and 1,5 metre units	4 pcs	3 m
PA34WS20	Wire suspension kit for 2 metre units	6 pcs	3 m
PA34WS30	Wire suspension kit for 2,5 metre units	8 pcs	3 m
PA34TR15	Threaded bars for 1 and 1,5 metre units	4 pcs	1 m
PA34TR20	Threaded bars for 2 metre units	6 pcs	1 m
PA34TR30	Threaded bars for 2,5 metre units	8 pcs	1 m
PA34VD15	Vibration dampers for 1 and 1,5 metre units	4 pcs	
PA34VD20	Vibration dampers for 2 metre units	6 pcs	
PA34VD30	Vibration dampers for 2,5 metre units	8 pcs	
PA4JK	Joining kit		

## PA4200

### Accessories

#### Horizontal mounting



PA4DW, design kit for wall mounting  
Used to conceal mountings, cables and pipes. Used together with ceiling brackets PA34WB.

PA4DC, design kit for ceiling mounting  
Used to conceal mountings, cables and pipes. The design kit has a telescope function that can be adapted for the installation. It can also be extended with one or more extension parts.

Two design kits are required for 1 and 1.5 metre units, while 2 metre units need three kits and 2.5 metre units needed four kits.

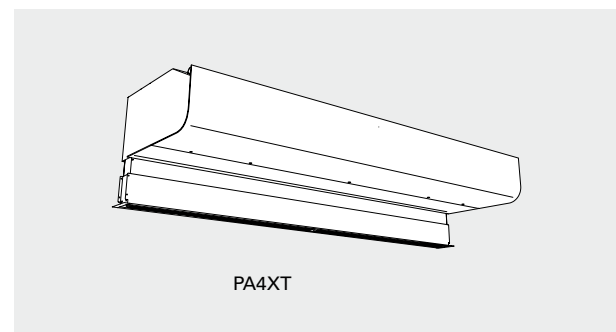
Type	Description	LxHxW [mm]
PA4DW10	Design kit for wall mounting PA4210	87x424x1006
PA4DW15	Design kit for wall mounting PA4215	87x424x1516
PA4DW20	Design kit for wall mounting PA4220	87x424x2006
PA4DW25	Design kit for wall mounting PA4225	87x424x2516

Type	Description
PA4DCS	Design kit for ceiling mounting PA4200, small, 200-300 mm (1 piece)
PA4DCM	Design kit for ceiling mounting PA4200, medium, 300-500 mm (1 piece)
PA4DCL	Design kit for ceiling mounting PA4200, large, 500-900 mm (1 piece)
PA4DXT	Design kit for ceiling mounting PA4200, extension, 420 mm (1 piece)

#### Recessed mounting in suspended ceilings

PA4XT, outlet extension  
Outlet extension with telescopic function. Used for recessed installation of units in suspended ceilings.

Type	Description
PA4XT10	Outlet extension for PA4210, 130-200 mm
PA4XT15	Outlet extension for PA4215, 130-200 mm
PA4XT20	Outlet extension for PA4220, 130-200 mm
PA4XT25	Outlet extension for PA4225, 130-200 mm



## Accessories

### Vertical mounting

PA4JK, vertical kit

Used to adapt a horizontal unit for vertical installation. Includes floor frame and mounting parts to support the top. Vertical kit allows two units to be installed on top of each other. One vertical kit is needed per unit.

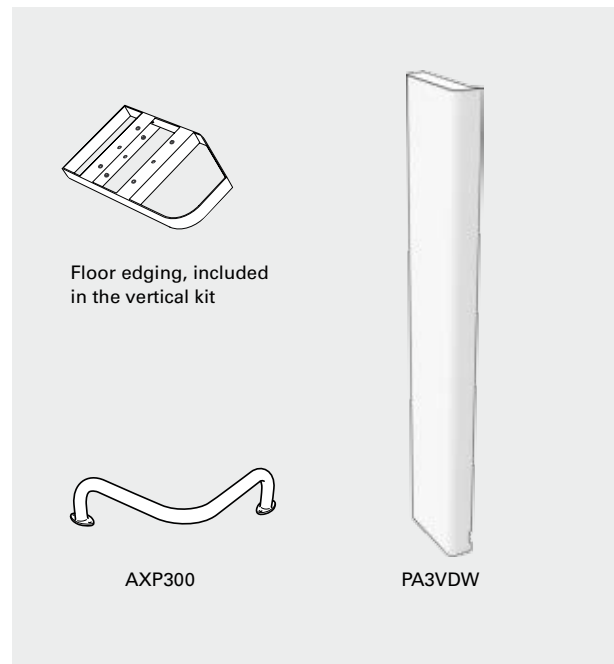
PA4VDW, design kit for vertical mounting

Used to conceal cables and pipes.

AXP300, collision protection

Floor placed protection against impact from e.g. shopping trolleys.

Type	Description
<b>PA4JK</b>	Vertical kit PA4200
<b>PA4VDW15</b>	Design kit for vertical mounting PA4215
<b>PA4VDW20</b>	Design kit for vertical mounting PA4220
<b>PA4VDW25</b>	Design kit for vertical mounting PA4225
<b>AXP300</b>	Collision protection



### Unit with water heating



PA34EF, external intake filter

Fine mesh filter that prevents ingress of dirt and deposits to water heated units. The filter is easy to attach and remove thanks to the integrated magnetic strips. Makes maintenance easier since the unit does not need to be opened.

DTV200S, filter pressure guard

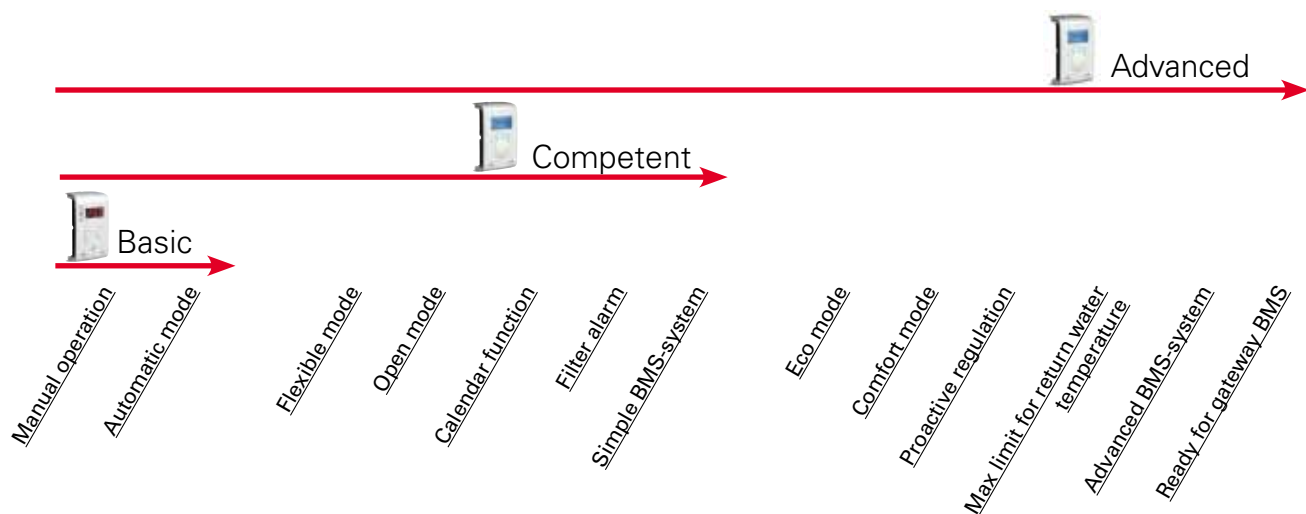
Measures the differential pressure, which indicates how dirty the filter is in water heated units. The metering hose is connected to the suction side of the unit (after the filter). Adjustment is performed on site depending on the unit and the environment. Adjustable range 20-300 Pa. Potential free, changeover alarm contact.

FHDN20, flexible hoses

Flexible hoses for easy and practical installation of water heated unit.

Type	Description
<b>PA34EF10</b>	External intake filter for 1 metre units
<b>PA34EF15</b>	External intake filter for 1,5 metre units
<b>PA34EF20</b>	External intake filter for 2 metre units
<b>PA34EF25</b>	External intake filter for 2,5 metre units
<b>DTV200S</b>	Filter pressure guard
<b>FHDN20</b>	Flexible hoses DN20, inside thread, 90° bend, 1 pair

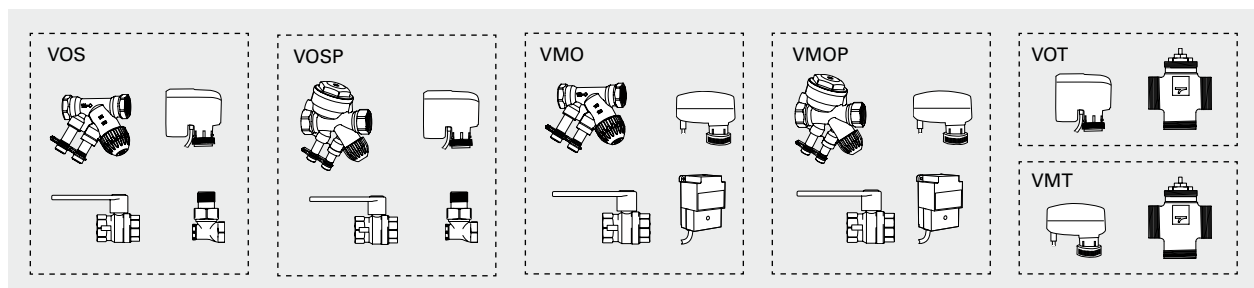
## Controls



This air curtain is supplied with an integrated PC board SIRE. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SIRE control system in the "Controls" section.

Type	Description
<b>SIREB</b>	Control system SIRE Basic
<b>SIREAC</b>	Control system SIRE Competent
<b>SIREAA</b>	Control system SIRE Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25

Type	Description
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMT20</b>	Three way control valve and modulating actuator, DN20
<b>VMT25</b>	Three way control valve and modulating actuator, DN25

## Output charts water

## PA4200 WH

			Supply water temperature: 110 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 110/80 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WH	max	2700	15,6	53,6	0,07	4,2	21,6	41,5	0,18	22,9
	min	1280	7,4	39,4	0,03	0,8	13,7	49,4	0,11	10,0
PA4215WH	max	3700	21,4	53,0	0,09	1,2	31,1	42,7	0,26	7,4
	min	1760	10,2	42,5	0,04	0,2	19,6	50,7	0,16	3,2
PA4220WH	max	5300	30,6	50,7	0,13	2,5	44,7	42,9	0,37	17,0
	min	2520	14,6	38,6	0,05	0,5	28,2	50,9	0,23	7,3
PA4225WH	max	6350	36,6	53,7	0,16	0,7	53,5	42,8	0,44	4,3
	min	3020	17,4	44,4	0,07	0,1	33,7	50,8	0,28	1,8

			Supply water temperature: 90 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 90/70 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WH	max	2700	15,6	61,0	0,13	14,1	17,5	37,1	0,21	33,6
	min	1280	7,4	44,5	0,04	1,7	11,1	43,4	0,14	14,7
PA4215WH	max	3700	21,4	58,7	0,17	3,6	25,3	38,1	0,31	10,9
	min	1760	10,2	45,5	0,06	0,5	15,9	44,6	0,19	4,7
PA4220WH	max	5300	30,6	57,5	0,23	7,6	36,3	38,2	0,44	25,0
	min	2520	14,6	43,0	0,08	1,1	22,8	44,7	0,28	10,7
PA4225WH	max	6350	36,6	58,8	0,29	2,1	43,6	38,2	0,53	6,3
	min	3020	17,4	46,5	0,10	0,3	27,4	44,7	0,34	2,7

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WH	max	2700	15,6	65,4	0,26	48,9	14,4	33,7	0,18	24,2
	min	1280	7,4	47,8	0,06	3,2	9,1	39,0	0,11	10,6
PA4215WH	max	3700	21,4	62,0	0,29	9,9	20,7	34,5	0,25	7,7
	min	1760	10,2	47,6	0,08	0,9	13,0	39,8	0,16	3,3
PA4220WH	max	5300	30,6	60,6	0,41	21,7	29,9	34,6	0,36	17,9
	min	2520	14,6	45,9	0,10	1,9	18,8	40,0	0,23	7,7
PA4225WH	max	6350	36,4	61,7	0,49	5,4	35,6	34,5	0,43	4,5
	min	3020	17,4	48,2	0,13	0,5	22,4	39,8	0,27	1,9

			Supply water temperature: 82 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 82/71 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WH	max	2700	15,6	64,5	0,22	35,1	16,9	36,5	0,38	94,7
	min	1280	7,4	47,1	0,05	2,8	107,0	42,6	0,24	40,9
PA4215WH	max	3700	21,4	61,3	0,25	7,6	24,6	37,6	0,55	31,4
	min	1760	10,2	47,2	0,07	0,8	15,5	43,9	0,34	13,3
PA4220WH	max	5300	30,6	60,7	0,35	16,5	35,2	37,5	0,78	71,5
	min	2520	14,6	45,3	0,10	1,7	22,1	43,8	0,49	30,2
PA4225WH	max	6350	36,6	61,1	0,43	4,3	42,6	37,8	0,95	18,3
	min	3020	17,4	47,8	0,12	0,5	26,7	44,0	0,59	7,7

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

## Output charts water

## PA4200 WL

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WL	max	2700	15,6	31,3	0,08	3,0	29,1	49,7	0,35	43,6
	min	1280	7,4	26,8	0,03	0,7	17,4	57,9	0,21	17,2
PA4215WL	max	3700	21,4	29,7	0,10	2,1	42,4	51,7	0,52	37,0
	min	1760	10,2	26,6	0,05	0,5	25,0	59,8	0,31	14,1
PA4220WL	max	5300	30,6	30,2	0,15	2,0	59,8	51,3	0,73	33,6
	min	2520	14,6	26,8	0,07	0,5	35,4	59,4	0,43	12,9
PA4225WL	max	6350	36,6	27,9	0,17	3,1	74,4	52,5	0,91	58,8
	min	3020	17,4	24,4	0,08	0,8	43,7	60,6	0,53	22,3

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WL	max	2700	15,6	33,8	0,10	5,2	23,0	43,1	0,28	29,3
	min	1280	7,4	28,2	0,04	1,1	13,8	49,8	0,17	11,7
PA4215WL	max	3700	21,4	32,0	0,14	3,5	33,6	44,7	0,41	24,7
	min	1760	10,1	27,6	0,16	0,8	19,9	51,3	0,24	9,6
PA4220WL	max	5300	30,6	32,4	0,20	3,4	47,4	44,4	0,58	22,5
	min	2520	14,6	27,9	0,08	0,8	28,2	51,0	0,34	8,8
PA4225WL	max	6350	36,7	30,3	0,22	5,0	59,2	45,4	0,72	39,6
	min	3020	17,4	25,8	0,10	1,1	34,9	52,1	0,42	15,2

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WL	max	2700	15,6	37,2	0,17	12,0	16,9	36,4	0,20	17,3
	min	1280	7,4	30,3	0,06	2,0	10,2	41,4	0,12	7,1
PA4215WL	max	3700	21,4	35,0	0,21	7,6	24,7	37,6	0,30	14,5
	min	1760	10,2	29,4	0,08	1,4	14,7	42,6	0,18	5,7
PA4220WL	max	5300	30,6	35,5	0,30	7,3	34,8	37,3	0,42	13,2
	min	2520	14,5	29,6	0,12	1,4	20,8	42,3	0,25	5,3
PA4225WL	max	6350	36,6	33,5	0,33	10,4	43,8	38,3	0,53	23,6
	min	3020	17,4	27,8	0,13	2,0	26,0	43,4	0,32	9,3

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WL	max	2700	15,7	39,5	0,24	24,1	13,7	33,0	0,17	12,2
	min	1280	7,5	31,8	0,08	3,2	8,4	37,1	0,10	5,1
PA4215WL	max	3700	21,4	37,0	0,29	13,7	20,1	34,0	0,24	10,2
	min	1760	10,2	30,6	0,10	2,2	12,1	38,1	0,15	4,1
PA4220WL	max	5300	30,6	37,5	0,42	13,4	28,3	33,7	0,34	9,2
	min	2520	14,6	30,9	0,15	2,1	17,0	37,9	0,21	3,7
PA4225WL	max	6350	36,6	35,7	0,46	18,5	35,8	34,7	0,43	16,7
	min	3020	17,5	29,2	0,16	3,0	21,5	38,9	0,26	6,7

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.



## Output charts water

## PA4200 WLL

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WLL	max	2500	11,9	29,0	0,11	1,9	15,7	36,5	0,19	4,9
	min	1150	5,5	27,6	0,05	0,5	8,8	40,6	0,11	2,1
PA4215WLL	max	3450	16,4	27,2	0,29	1,9	23,5	38,0	0,28	6,1
	min	1600	7,6	26,3	0,06	0,5	13,1	42,1	0,16	2,2
PA4220WLL	max	4950	23,5	28,8	0,22	1,4	32,0	37,1	0,39	3,9
	min	2320	11,0	28,7	0,11	0,4	18,1	40,9	0,22	1,2
PA4225WLL	max	6000	28,5	27,9	0,25	1,3	40,2	37,7	0,49	4,1
	min	2820	13,2	27,8	0,11	0,4	22,6	41,6	0,27	1,5

			Supply water temperature: 50 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 50/30 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WLL	max	2500	11,9	30,1	0,14	3,1	11,8	31,9	0,14	3,1
	min	1150	5,5	27,7	0,06	0,8	6,6	34,9	0,08	1,3
PA4215WLL	max	3450	16,4	28,3	0,18	2,9	18,0	33,3	0,22	3,9
	min	1600	7,6	26,4	0,08	0,6	10,0	36,4	0,12	1,4
PA4220WLL	max	4950	23,5	29,7	0,28	2,2	24,0	32,3	0,29	2,4
	min	2320	11,0	28,2	0,12	0,4	13,3	34,8	0,16	0,7
PA4225WLL	max	6000	28,5	28,9	0,33	2,1	30,4	33,0	0,37	2,6
	min	2820	13,2	27,4	0,14	0,5	17,0	35,7	0,20	0,9

			Supply water temperature: 45 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 45/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WLL	max	2500	11,9	31,6	0,21	6,3	13,6	34,0	0,33	13,3
	min	1150	5,5	28,2	0,08	1,2	7,6	37,4	0,18	5,4
PA4215WLL	max	3450	16,4	29,8	0,26	5,4	20,0	35,1	0,48	16,0
	min	1600	7,6	26,8	0,10	1,0	11,0	38,3	0,27	5,6
PA4220WLL	max	4950	23,5	30,9	0,40	4,3	27,9	34,6	0,67	10,7
	min	2320	11,0	28,3	0,16	0,7	15,5	37,7	0,37	3,2
PA4225WLL	max	6000	28,5	30,2	0,46	3,9	34,7	35,1	0,84	11,0
	min	2820	13,2	27,6	0,18	0,8	19,3	38,1	0,46	3,9

			Supply water temperature: 40 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 40/30 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
PA4210WLL	max	2500	11,9	33,7	0,46	24,2	10,1	29,9	0,24	8,0
	min	1150	5,5	29,4	0,12	2,8	5,6	32,5	0,14	3,3
PA4215WLL	max	3450	16,4	32,1	0,50	17,3	15,0	30,8	0,36	9,8
	min	1600	7,6	28,2	0,16	2,2	8,3	33,3	0,20	3,5
PA4220WLL	max	4950	23,5	32,9	0,80	14,8	20,6	30,3	0,50	6,4
	min	2320	11,0	29,2	0,25	1,8	11,6	32,7	0,28	2,3
PA4225WLL	max	6000	28,5	32,2	0,89	12,4	25,8	30,7	0,62	6,6
	min	2820	13,2	31,8	0,28	1,6	14,4	33,1	0,35	2,4

\*) Nominal output at given supply and return water temperature.

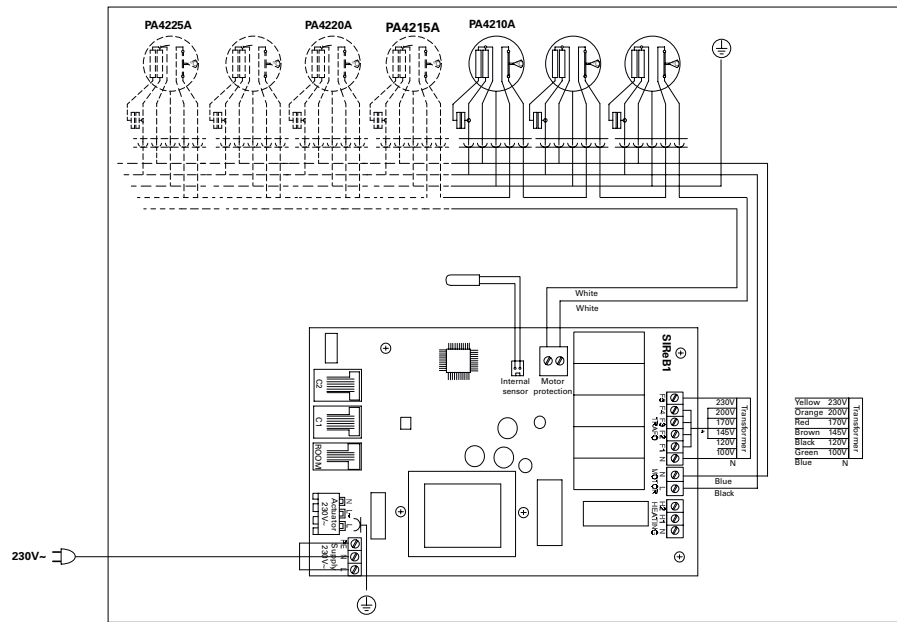
See [www.frico.se](http://www.frico.se) for additional calculations.

PA4200

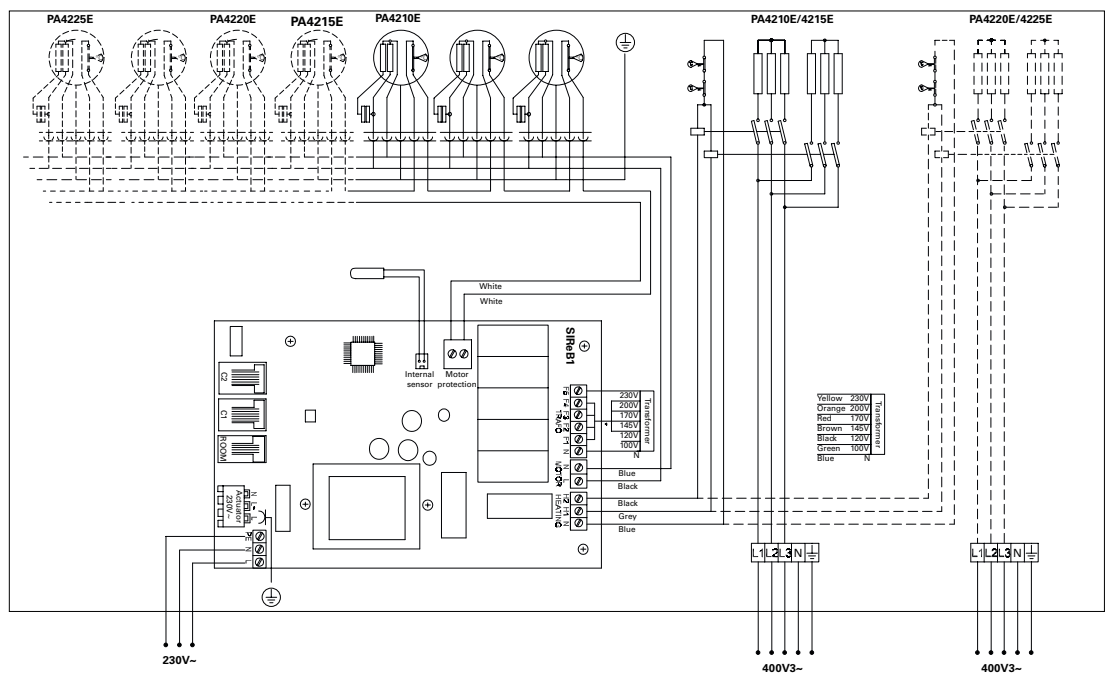
Wiring diagrams

Internal wiring diagram

Unit without heating



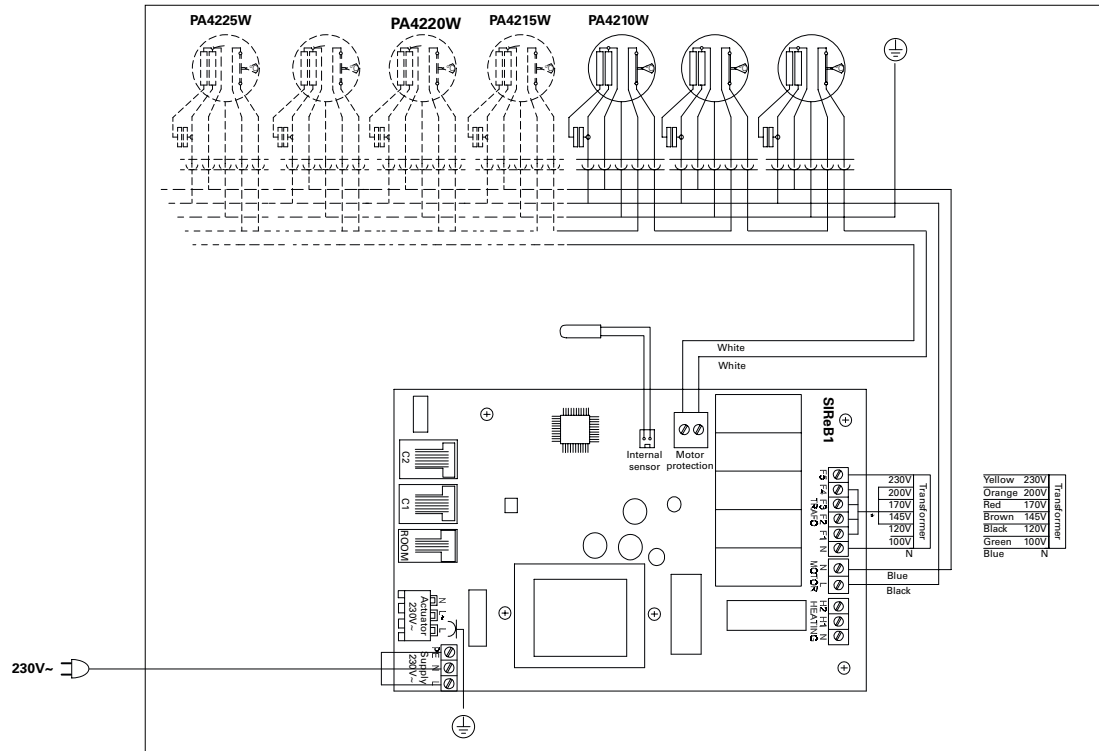
Unit with electrical heating



## Wiring diagrams

### Internal wiring diagram

#### Unit with water heating



Industry

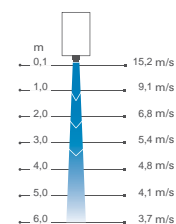


Industry

Working in the vicinity of an industrial door is often associated with a cold and draughty working environment. Frico's high-performance air curtains significantly improve the environment. Air curtains are also a profitable investment. The larger the door, the greater the energy losses and the higher the financial saving from an air curtain.

#### AC500

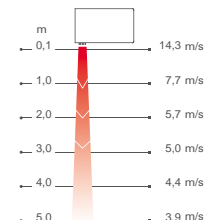
AC500 is a stable air curtain intended for use on high industrial and warehouse doors. The air curtain effectively prevents energy losses and drafts through the open door and gives excellent heating comfort. The working environment is further improved by the air curtain preventing exhaust emissions, dust and insects from entering the premises.



#### AGS5000

AGS5000 is a powerful air curtain intended for industrial doors but it can also be used for entryways in other large premises such as shopping malls.

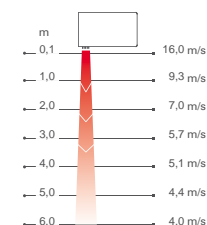
With its many clever, energy saving functions, the air curtain gives effective protection, specially adapted for your door.



#### AGS6000

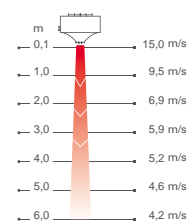
AGS6000 is a powerful air curtain intended for industrial doors but it can also be used for entryways in other large premises such as shopping malls.

With its many clever, energy saving functions, the air curtain gives effective protection, specially adapted for your door.



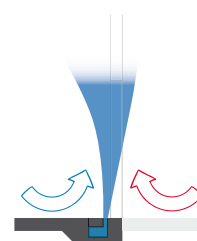
#### AGI

AGI is a robust air curtain intended for vertical or horizontal installation in large doorways. With its powerful fans and high enclosure classification it is specially suitable for industrial environments.



#### UF600

UF600 creates a very effective air barrier when air at high speed is pushed out through a narrow channel situated in the floor inside the door opening. An air barrier directed upwards from the floor gives the best possible protection against cold air flowing into the premises.



AC500



## AC500

For doors in industrial environments

- Recommended installation height 5 m\*
- Horizontal and vertical mounting
- Lengths: 1 and 1,5 m

### Application

AC500 is a stable air curtain intended for use on high industrial and warehouse doors. The air curtain effectively prevents energy losses and drafts through the open door and gives excellent heating comfort. The working environment is further improved by the air curtain preventing exhaust emissions, dust and insects from entering the premises.

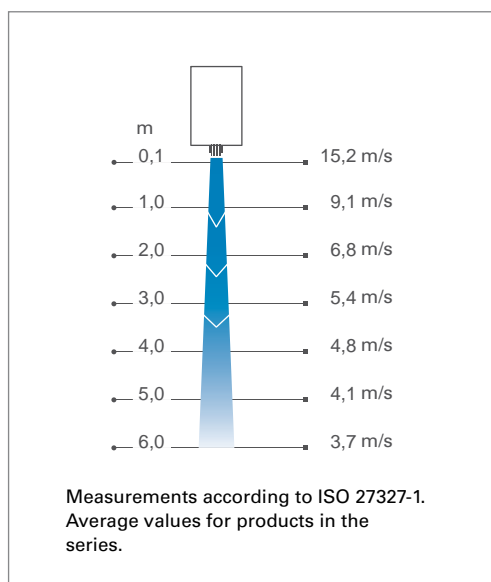
### Design

AC500 is a narrow and tall, splash proof air curtain equipped with a honeycomb grille. The air is blown out at high pressure through the grille, which results in a powerful and well defined laminar airflow.



Optimized airflow with  
Thermozone technology.

### Air velocity profile



### Product specifications

- Diagonal fans combine high pressure with high air flow.
- The unit or air directors can be angled to achieve optimal effect.
- Honeycomb grille ensures a powerful and well defined air flow.
- Protection class: IP24.
- Can also be used in the vertical position.
- Wall brackets included.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour: white, RAL 9016, NCS S 0500-N.

Technical specifications

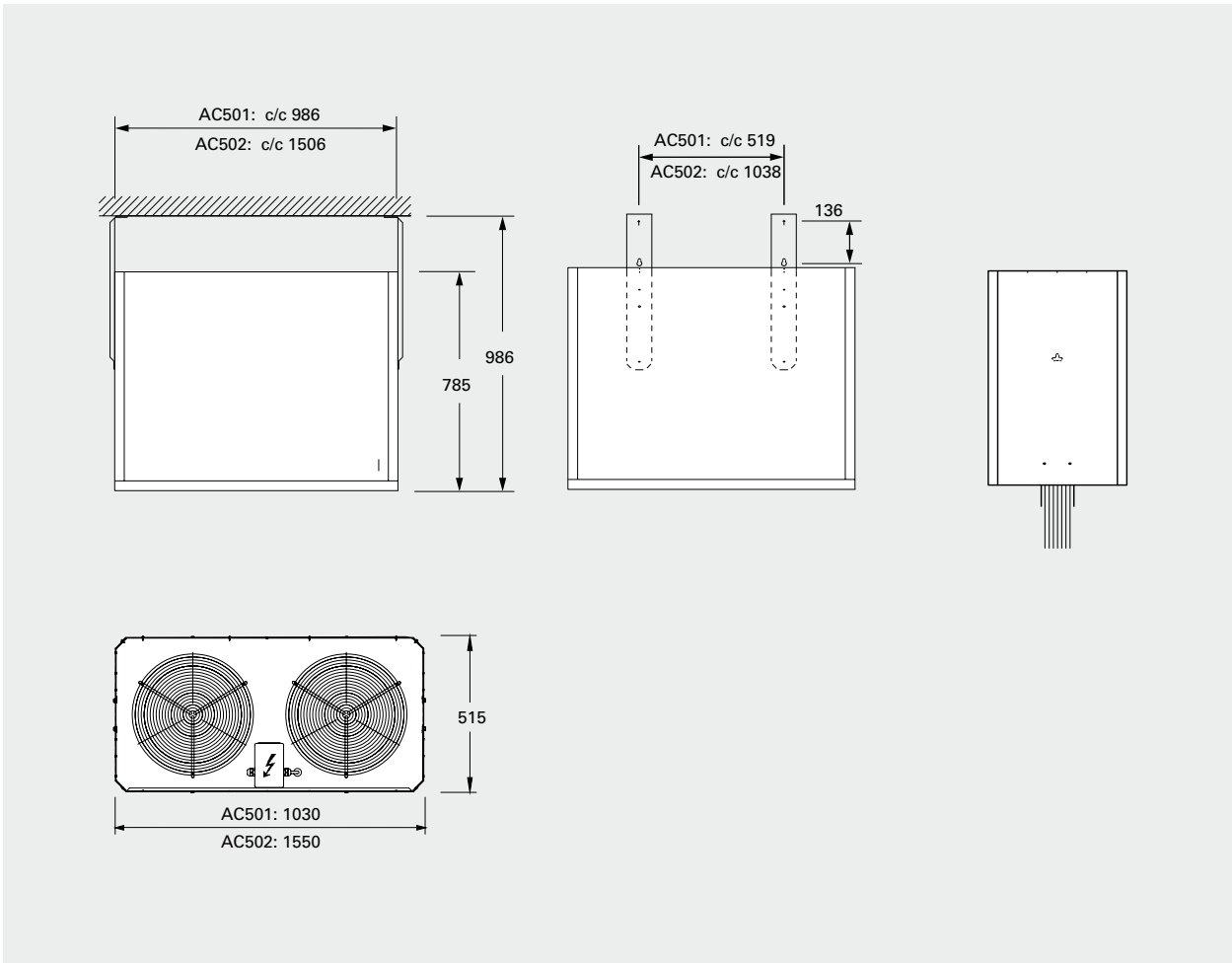
✿ Ambient, no heat - AC500

Type	Output [kW]	Airflow [m³/h]	Sound level* [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
AC501	0	5200	63	400V3~	1,8	1030	65
AC502	0	7700	65	400V3~	2,7	1550	93

\*) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m².

Protection class: IP24.  
CE compliant.

Dimensions





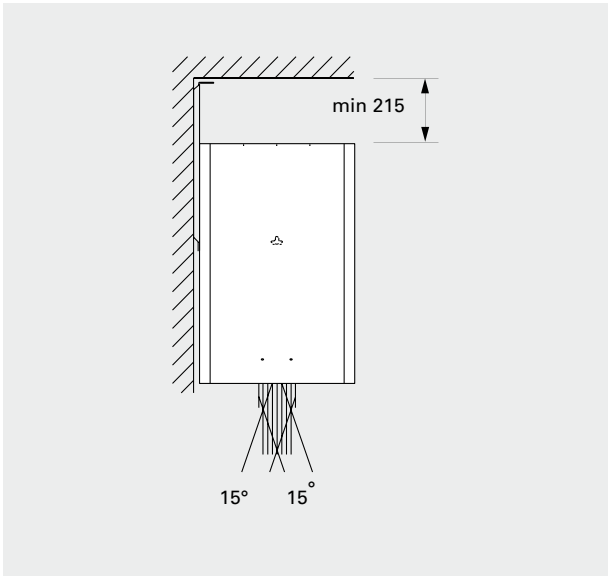
Mounting and connection

Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible. The air curtain is mounted on a beam, wall or in the ceiling using the mounting brackets supplied. The unit or air directors can be tilted for optimum output. For the protection of wider doorways, several units can be mounted next to each other.

Connection

Control (400V3~) is connected to the terminal block in the junction box on top of the unit.



Minimum distances

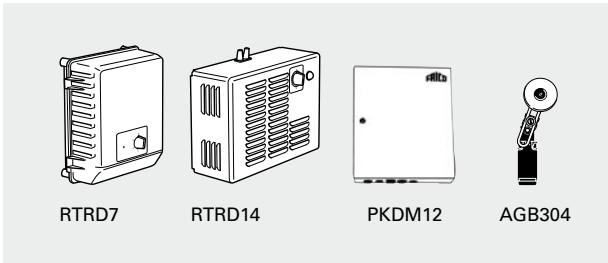
Control options

Level 1

Airflow is set manually. The position limit switch regulates the airflow on/off.

Control kit:

- RTRD7, RTRD14, 5-step fan speed control
- AGB304, position limit switch.



Level 2

Suitable speed is set for open/closed doors respectively. A position limit switch can be used to regulate on/off or high/low speed.

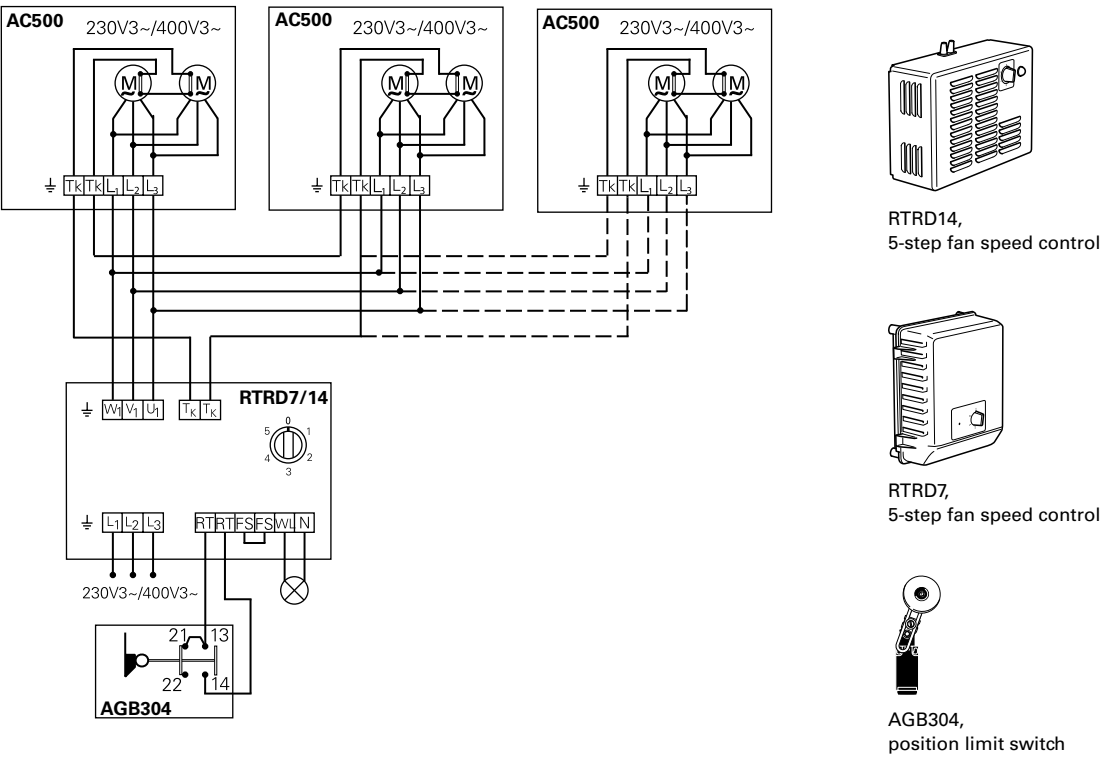
Control kit:

- PKDM12, stepless fan speed control.
- AGB304, position limit switch.

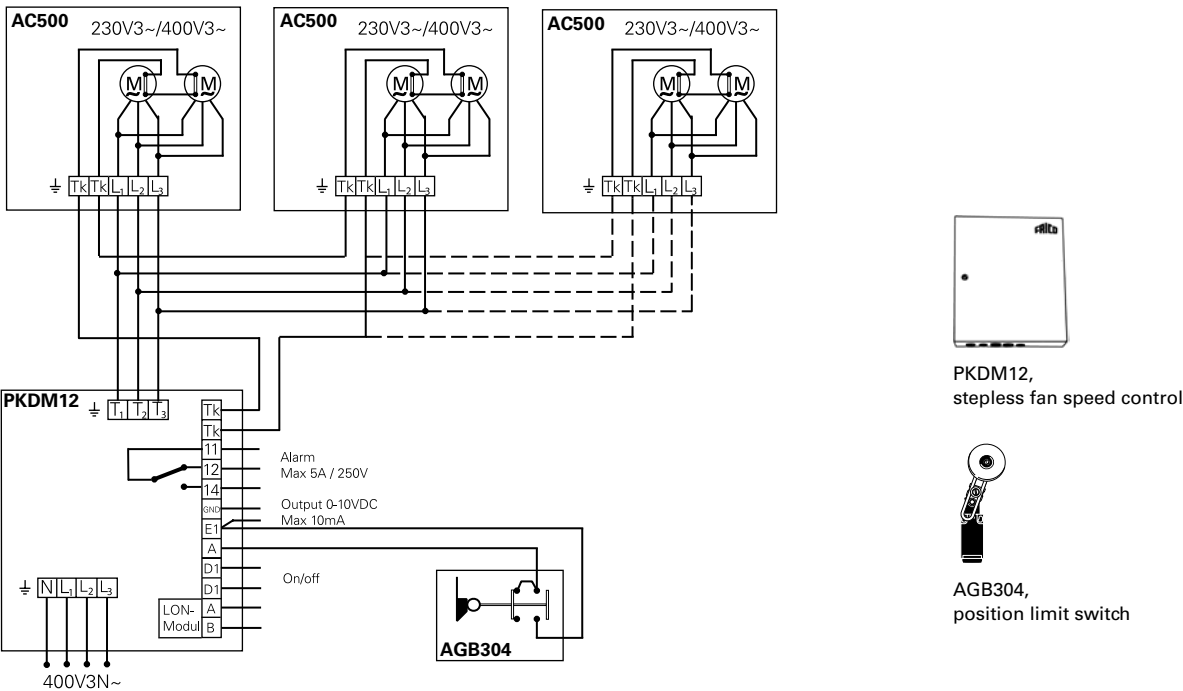
Type	Description
RTRD7	5-step fan speed control, Max 7 A
RTRD14	5-step fan speed control, Max 14 A
PKDM12	Stepless fan speed control, high/low speed, IP54
AGB304	Position limit switch, IP44

Wiring diagrams

Level 1



Level 2





## AGS5000

Air curtain for doors in industrial and large premises, with intelligent control

- Recommended installation height 5 m\*
- Horizontal mounting
- Lengths: 1,5, 2, 2,5 and 3 m

- ✿ Ambient, no heat
- 💧 Water heat WL

### Application

AGS5000 is a powerful air curtain intended for industrial doors but it can also be used for entryways in other large premises such as shopping malls.

With its many clever, energy saving functions, the air curtain gives effective protection, specially adapted for your door.

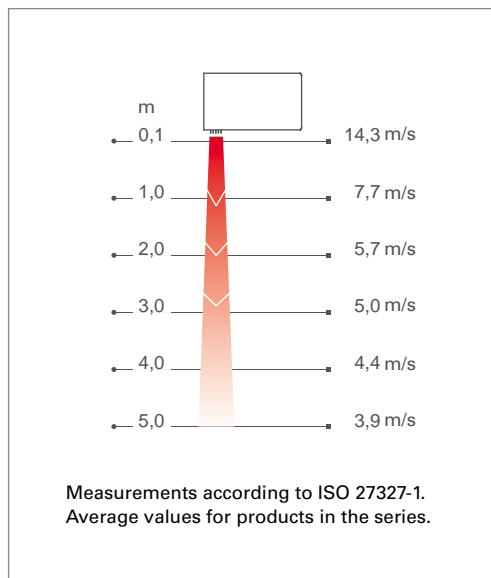
### Design

AGS5000 has a timeless, clean design. The air curtain is intended for horizontal installation, models for vertical and recessed installation are available for special order.



Optimized airflow with  
Thermozone technology.

### Air velocity profile



### Product specifications

- Prepared for the SIRE control system whose pre-programmed default settings and many features make it easy to install and use the air curtain. Read more about the SIRE controls package in the "Controls" section.
- The following models are available for special order:
  - with electrical heating
  - with water coil WH for high water temperatures
  - with alternative water connections
  - for vertical installation
  - for recessed installation in suspended ceilings
- Intake grilles that can be opened make it easy to access the water coil. The grille is easy to clean from the outside.
- Adjustable outlet grille makes it possible to direct the air for optimum air curtain effect.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour: white, RAL 9016, NCS S 0500-N. Colour grille: grey, RAL 7046.

## Technical specifications

### ✿ Ambient, no heat - AGS5000 A

Type	Output [kW]	Airflow* <sup>1</sup> [m³/h]	Sound level* <sup>2</sup> [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
AGS5015A	0	2650/5300	48/67	230V~	5,4	1515	100
AGS5020A	0	3800/7600	50/69	230V~	8,1	2010	130
AGS5025A	0	5100/10200	52/71	230V~	10,8	2520	165
AGS5030A	0	6000/12000	53/72	230V~	13,3	3030	195

### 💧 Water heat - AGS5000 WL, coil for low water temperature (≤80 °C)

Type	Output* <sup>4</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,4</sup> [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
AGS5015WL	25,0	2400/4800	20/16	4,0	47/66	230V~	5,2	1515	120
AGS5020WL	41,4	3500/7000	22/18	8,1	49/68	230V~	7,8	2010	155
AGS5025WL	53,7	4700/9400	21/17	9,2	50/69	230V~	10,4	2520	195
AGS5030WL	64,6	5800/11600	21/17	11,0	52/71	230V~	12,8	3030	235

\*1) Lowest/highest airflow of totally 5 fan steps.

\*2) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.

\*3) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

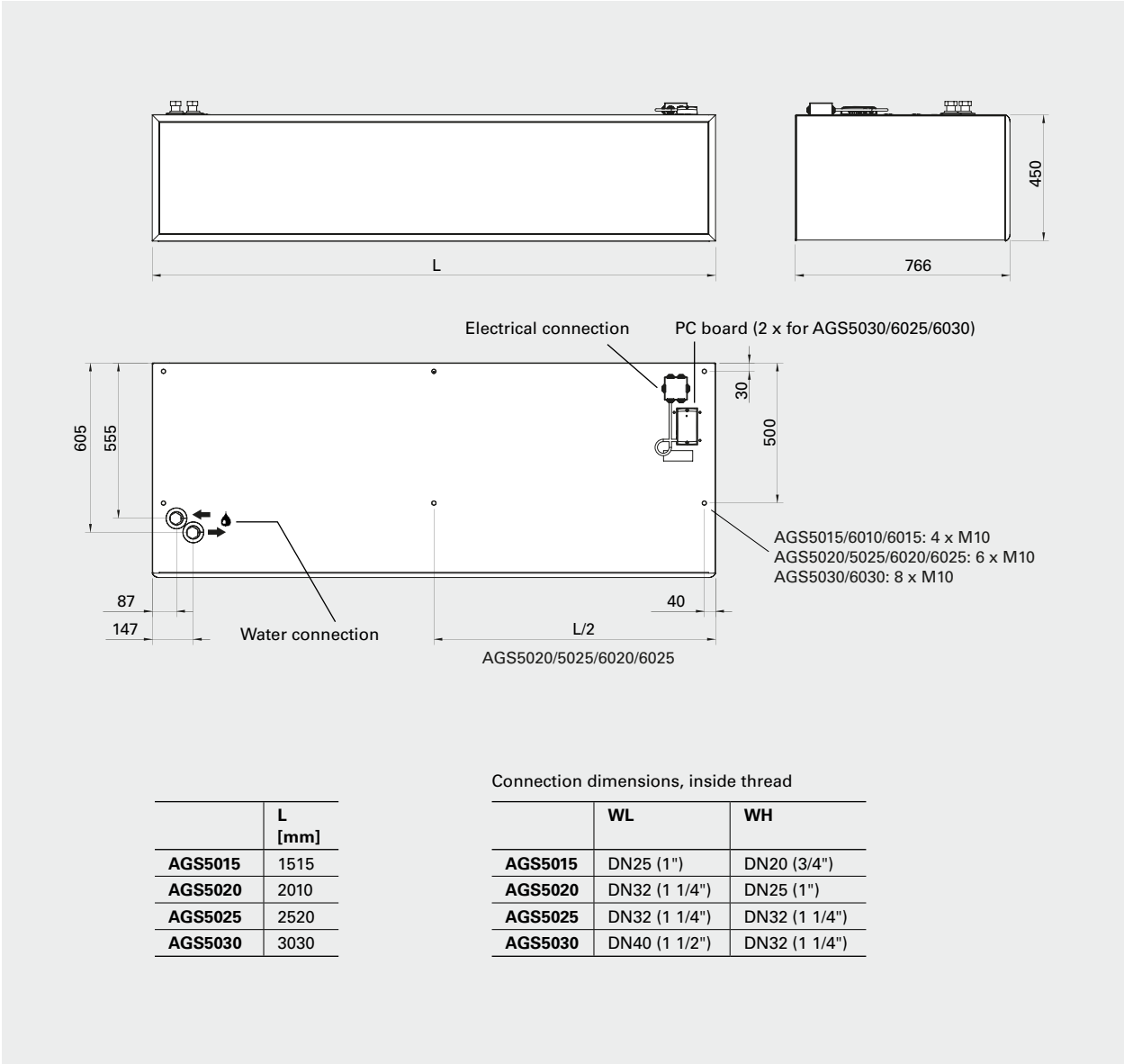
\*4) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

Protection class: IP23.

CE compliant.

AGS5000

Dimensions



## Mounting and connection

### Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible. A variety of installation options are available; brackets for wall mounting or threaded bars for ceiling mounting.

Design package for an installation with concealed mountings, cables and pipes is available as an option.

For the protection of wider doorways, several units can be mounted next to each other.

### Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

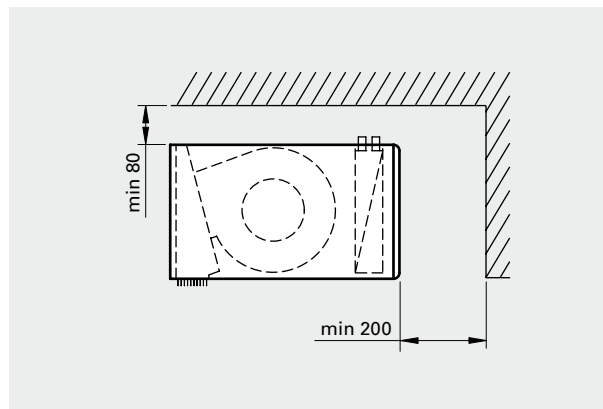
#### *Unit without heating*

Operation (230V~) is connected to terminal block in the junction box on top of the unit.

#### *Unit with water heating*

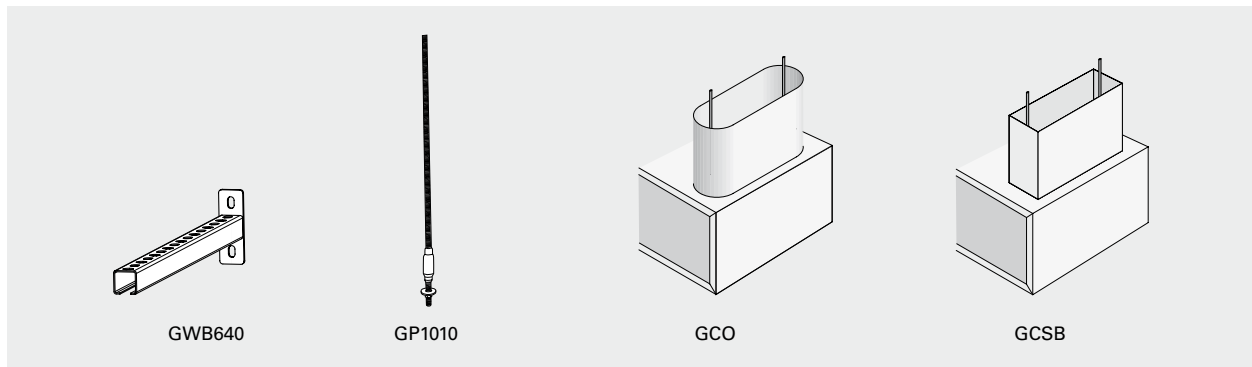
Operation (230V~) is connected to terminal block in the junction box on top of the unit.

The water coil is connected via connections with dimensions as given in the table (see diagram) on top of the unit.



Minimum distances

## Accessories



### GWB640, wall bracket

Brackets for installing unit horizontally on a wall. Two are required for 1 and 1.5 metre units, while 2 and 2.5 metre units need three and 3 metre units need four.

### GP1010, threaded bar

Threaded bar for mounting in ceilings. Length 1 m. M10. Four are required for 1 and 1.5 metre units, while 2 and 2.5 metre units need six and 3 metre units need eight.

### GCO, oval design kit

Used to conceal mountings, cables and pipes. Special order to required dimension.

### GCSB, square design kit

Used to conceal mountings, cables and pipes. Special order to required dimension.

Type	Description	Quantity included	Length
<b>GWB640</b>	Wall bracket	1 pc	400 mm
<b>GP1010</b>	Threaded bar	1 pc	1 m
<b>GCO</b>	Oval design kit		
<b>GCSB</b>	Square design kit		



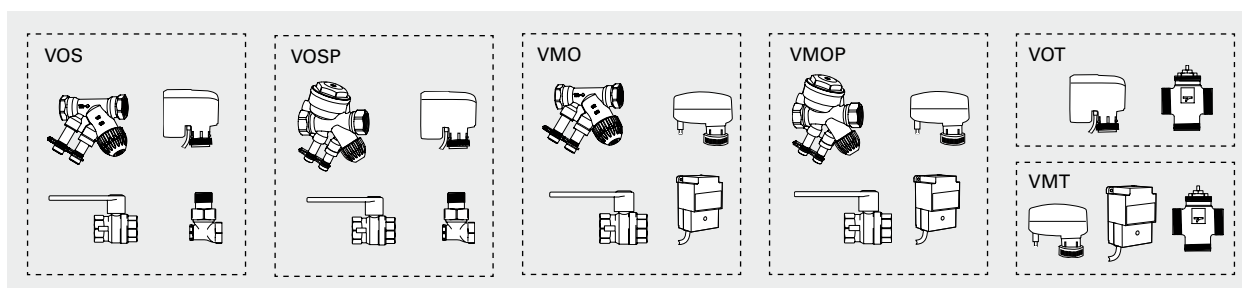
## Controls



This air curtain is supplied with an integrated PC board SIRE. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SIRE control system in the "Controls" section.

Type	Description
<b>SIREB</b>	Control system SIRE Basic
<b>SIREAC</b>	Control system SIRE Competent
<b>SIREAA</b>	Control system SIRE Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25

Type	Description
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMT20</b>	Three way control valve and modulating actuator, DN20
<b>VMT25</b>	Three way control valve and modulating actuator, DN25

## Output charts water

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
AGS5015WL	max	4800	27,4	36,6	0,15	1,0	43,6	45,0	0,53	6,6
	min	2400	13,8	34,6	0,08	0,3	27,5	52,0	0,34	3,7
AGS5020WL	max	7000	40,1	30,6	0,19	1,6	70,2	47,8	0,86	20,8
	min	3500	20,1	28,6	0,09	0,5	43,5	54,9	0,53	8,8
AGS5025WL	max	9400	53,8	31,5	0,27	3,2	90,5	46,6	1,11	37,3
	min	4700	26,8	26,0	0,12	0,8	56,6	53,8	0,69	16,1
AGS5030WL	max	11600	66,4	32,8	0,34	2,6	110,1	46,2	1,34	30,5
	min	5800	33,2	29,0	0,16	0,7	68,9	53,3	0,84	12,8

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
AGS5015WL	max	4800	27,4	39,7	0,22	1,8	34,4	39,3	0,42	5,7
	min	2400	13,7	34,6	0,09	0,4	21,8	44,9	0,26	2,5
AGS5020WL	max	7000	40,1	34,0	0,27	2,9	55,9	41,7	0,68	14,2
	min	3500	20,1	29,0	0,12	0,7	34,8	47,6	0,43	6,1
AGS5025WL	max	9400	53,7	35,2	0,38	5,8	72,4	40,9	0,88	25,6
	min	4700	26,8	27,2	0,15	1,2	45,4	46,7	0,55	11,2
AGS5030WL	max	11600	66,4	36,3	0,48	4,7	87,4	40,4	1,06	20,2
	min	5800	33,2	29,5	0,20	1,0	54,8	46,1	0,67	8,6

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
AGS5015WL	max	4800	27,4	43,7	0,41	5,7	25,0	33,5	0,30	3,3
	min	2400	13,7	34,6	0,13	0,8	16,1	37,9	0,19	1,5
AGS5020WL	max	7000	40,1	38,5	0,45	7,2	41,4	35,6	0,50	8,6
	min	3500	20,1	30,0	0,16	1,2	26,0	40,0	0,31	3,8
AGS5025WL	max	9400	53,8	40,0	0,65	15,6	53,7	35,0	0,65	15,6
	min	4700	26,8	30,6	0,22	2,4	33,8	39,4	0,41	6,9
AGS5030WL	max	11600	66,4	41,1	0,85	13,8	64,6	34,5	0,78	11,8
	min	5800	33,2	31,7	0,28	1,9	41,0	39,0	0,50	5,2

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
AGS5015WL	max	4800	27,4	46,0	0,74	16,6	20,2	30,5	0,24	2,3
	min	2400	13,7	36,4	0,18	1,3	13,1	34,2	0,16	1,1
AGS5020WL	max	7000	40,1	41,5	0,72	16,4	34,1	32,5	0,41	6,2
	min	3500	20,0	32,2	0,21	2,0	21,7	36,4	0,26	2,8
AGS5025WL	max	9400	53,7	43,3	1,11	40,5	44,2	32,0	0,53	11,2
	min	4700	26,8	33,1	0,30	4,0	28,3	35,9	0,34	5,1
AGS5030WL	max	11600	66,4	44,0	1,46	37,3	53,1	31,6	0,64	8,4
	min	5800	33,2	34,0	0,38	3,3	34,0	35,4	0,41	3,7

\*1) Recommended outlet air temperature for good comfort and optimized output.

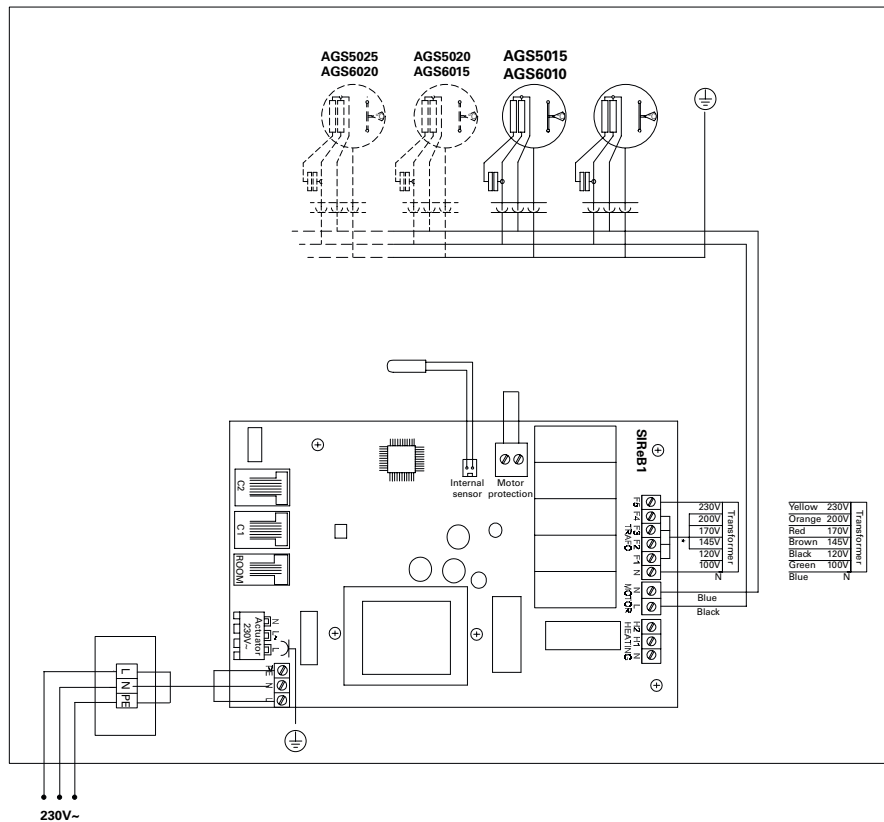
\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

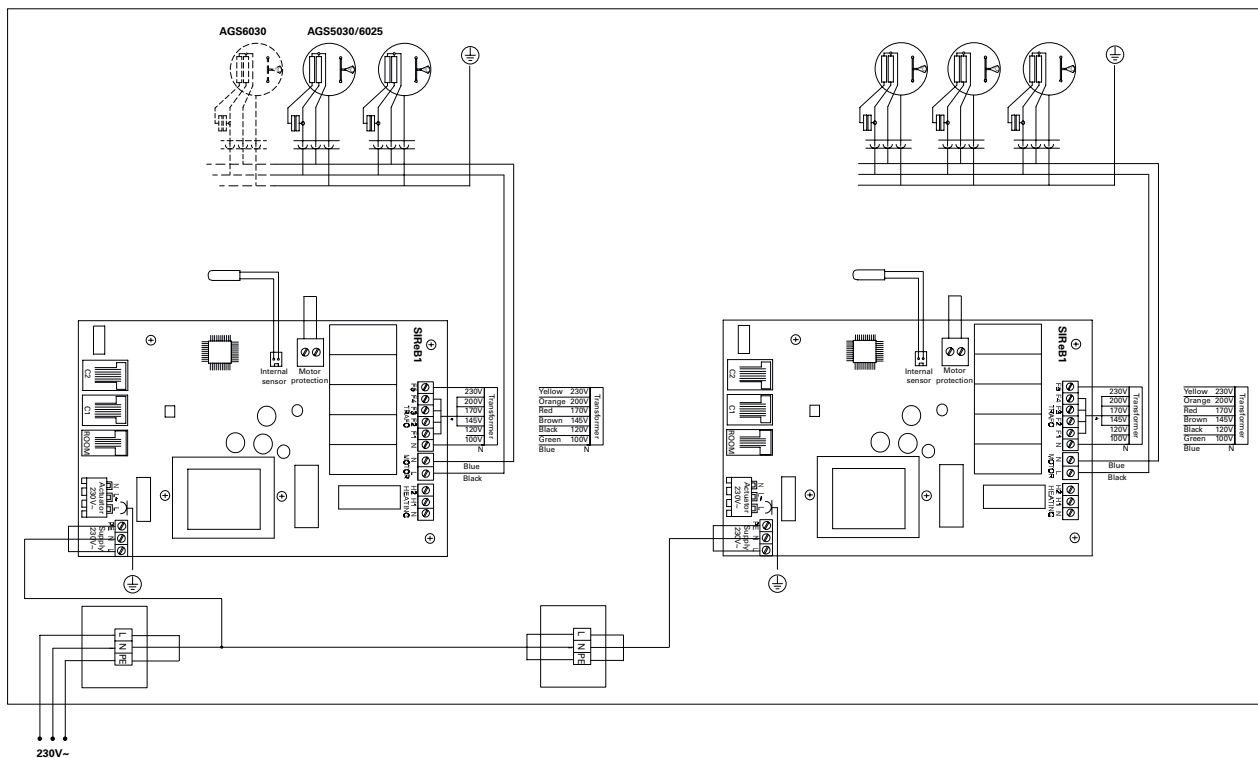
## Wiring diagrams

### Internal wiring diagram

AGS5015/5020/5025



AGS5030



AGS6000



## AGS6000

Air curtain for doors in industrial and large premises, with intelligent control

- Recommended installation height 6 m\*
- Horizontal mounting
- Lengths: 1, 1,5, 2, 2,5 and 3 m

- ✿ Ambient, no heat
- 💧 Water heat WL

### Application

AGS6000 is a powerful air curtain intended for industrial doors but it can also be used for entryways in other large premises such as shopping malls.

With its many clever, energy saving functions, the air curtain gives effective protection, specially adapted for your door.

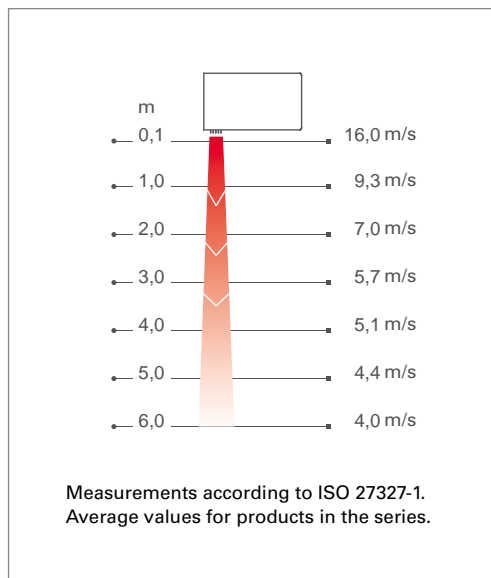
### Design

AGS6000 has a timeless, clean design. The air curtain is intended for horizontal installation, models for vertical and recessed installation are available for special order.



Optimized airflow with Thermozone technology.

### Air velocity profile



### Product specifications

- Prepared for the SIRE control system whose pre-programmed default settings and many features make it easy to install and use the air curtain. Read more about the SIRE controls package in the "Controls" section.
- The following models are available for special order:
  - with electrical heating
  - with water coil WH for high water temperatures
  - with alternative water connections
  - for vertical installation
  - for recessed installation in suspended ceilings
- Intake grilles that can be opened make it easy to access the water coil. The grille is easy to clean from the outside.
- Adjustable outlet grille makes it possible to direct the air for optimum air curtain effect.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour: white, RAL 9016, NCS S 0500-N. Colour grille: grey, RAL 7046.

## Technical specifications

## ✿ Ambient, no heat - AGS6000 A

Type	Output [kW]	Airflow* <sup>1</sup> [m³/h]	Sound level* <sup>2</sup> [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
AGS6010A	0	2350/4700	48/67	230V~	5,0	1010	80
AGS6015A	0	3550/7100	50/69	230V~	7,5	1515	115
AGS6020A	0	4650/9300	51/70	230V~	9,5	2010	145
AGS6025A	0	5800/11600	52/71	230V~	12,2	2520	180
AGS6030A	0	6500/13000	54/73	230V~	14,2	3030	210

## 💧 Water heat - AGS6000 WL, coil for low water temperature (≤80 °C)

Type	Output* <sup>4</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,4</sup> [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
AGS6010WL	24,5	2100/4200	22/17	3,8	47/66	230V~	4,8	1010	95
AGS6015WL	29,9	3250/6500	18/14	4,0	49/68	230V~	7,2	1515	135
AGS6020WL	46,7	4250/8500	21/16	8,1	50/69	230V~	9,1	2010	170
AGS6025WL	57,7	5300/10600	21/16	9,2	51/70	230V~	11,7	2520	210
AGS6030WL	68,0	6300/12600	21/16	11,0	53/72	230V~	13,6	3030	250

\*<sup>1</sup>) Lowest/highest airflow of totally 5 fan steps.

\*<sup>2</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.

\*<sup>3</sup>) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

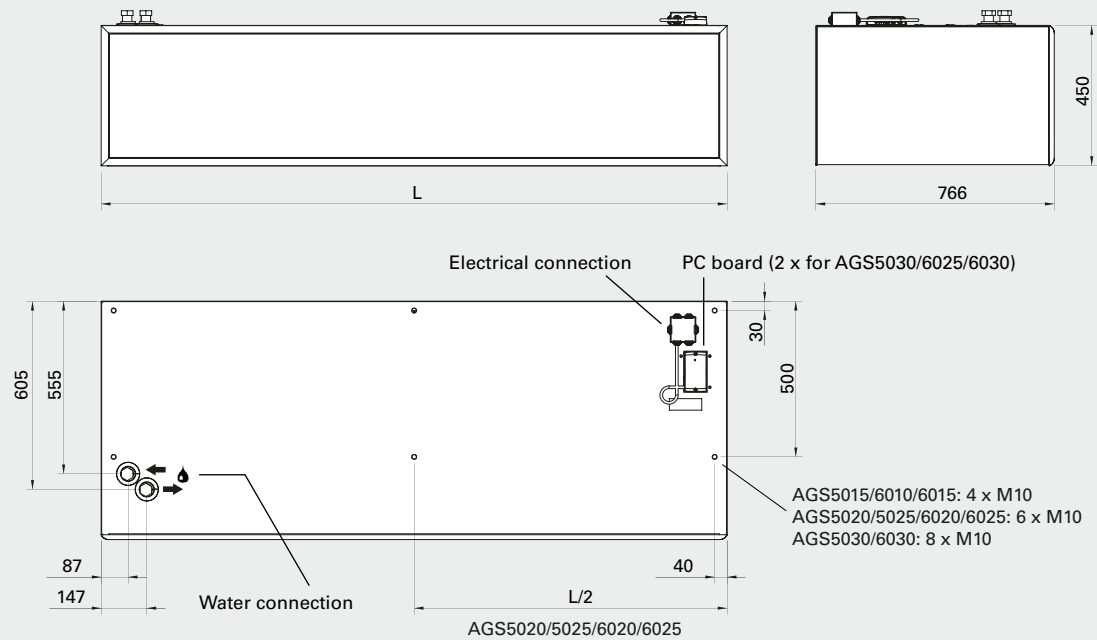
\*<sup>4</sup>) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

Protection class: IP23.

CE compliant.

# AGS6000

## Dimensions



	L [mm]
AGS6010	1010
AGS6015	1515
AGS6020	2010
AGS6025	2520
AGS6030	3030

Connection dimensions, inside thread

	WL	WH
AGS6010	DN25 (1")	DN25 (1")
AGS6015	DN25 (1")	DN20 (3/4")
AGS6020	DN32 (1 1/4")	DN25 (1")
AGS6025	DN32 (1 1/4")	DN32 (1 1/4")
AGS6030	DN40 (1 1/2")	DN32 (1 1/4")

## Mounting and connection

### Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible. A variety of installation options are available; brackets for wall mounting or threaded bars for ceiling mounting.

Design package for an installation with concealed mountings, cables and pipes is available as an option.

For the protection of wider doorways, several units can be mounted next to each other.

### Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

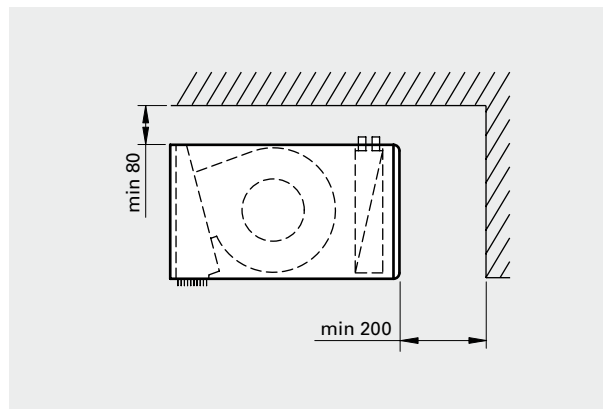
#### *Unit without heating*

Operation (230V~) is connected to terminal block in the junction box on top of the unit.

#### *Unit with water heating*

Operation (230V~) is connected to terminal block in the junction box on top of the unit.

The water coil is connected via connections with dimensions as given in the table (see diagram) on top of the unit.

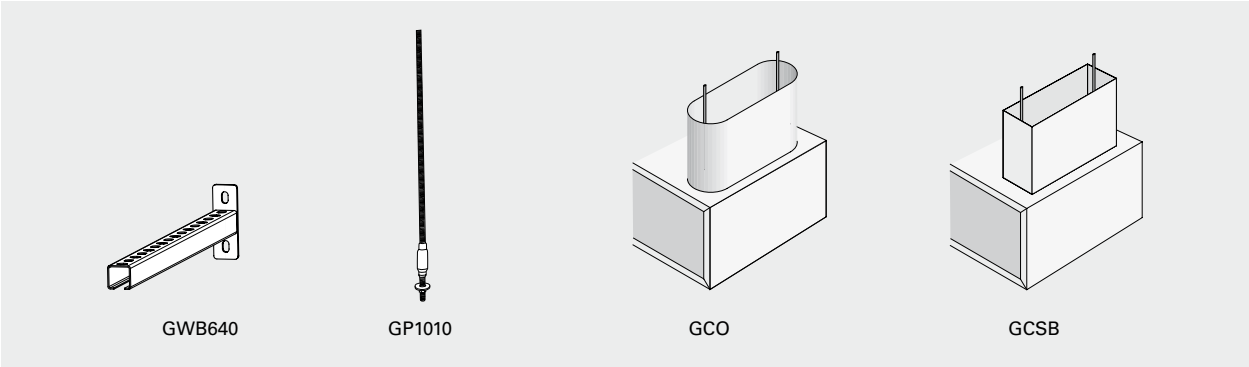


Minimum distances





Accessories



**GWB640**, wall bracket  
Brackets for installing unit horizontally on a wall. Two are required for 1 and 1.5 metre units, while 2 and 2.5 metre units need three and 3 metre units need four.

**GP1010**, threaded bar  
Threaded bar for mounting in ceilings. Length 1 m.  
M10. Four are required for 1 and 1.5 metre units, while 2 and 2.5 metre units need six and 3 metre units need eight.

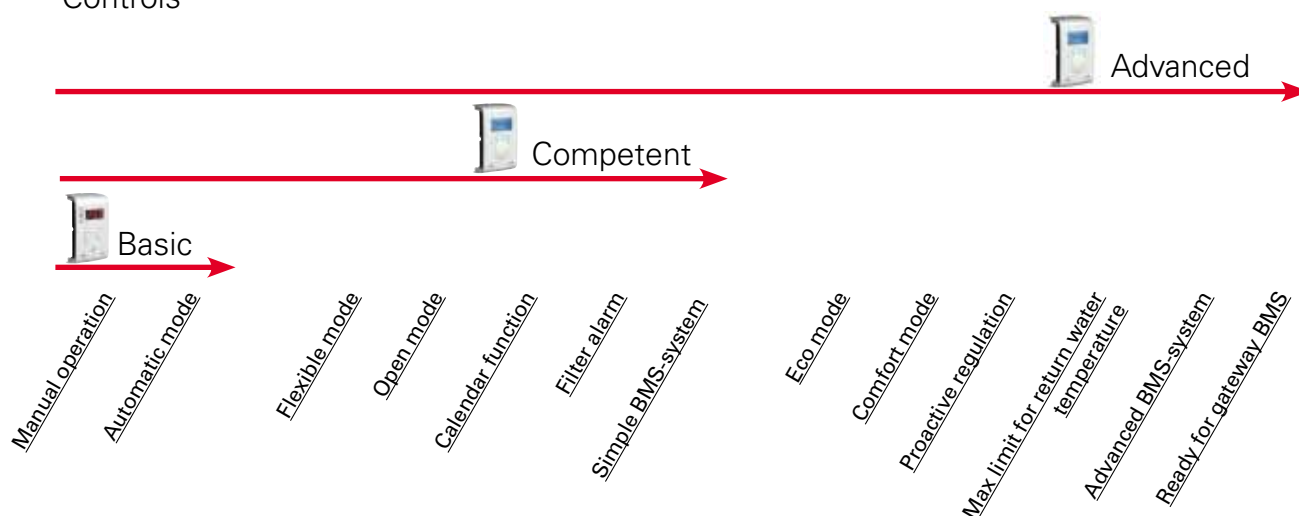
**GCO**, oval design kit  
Used to conceal mountings, cables and pipes. Special order to required dimension.

**GCSB**, square design kit  
Used to conceal mountings, cables and pipes. Special order to required dimension.

Type	Description	Quantity included	Length
<b>GWB640</b>	Wall bracket	1 pc	400 mm
<b>GP1010</b>	Threaded bar	1 pc	1 m
<b>GCO</b>	Oval design kit		
<b>GCSB</b>	Square design kit		



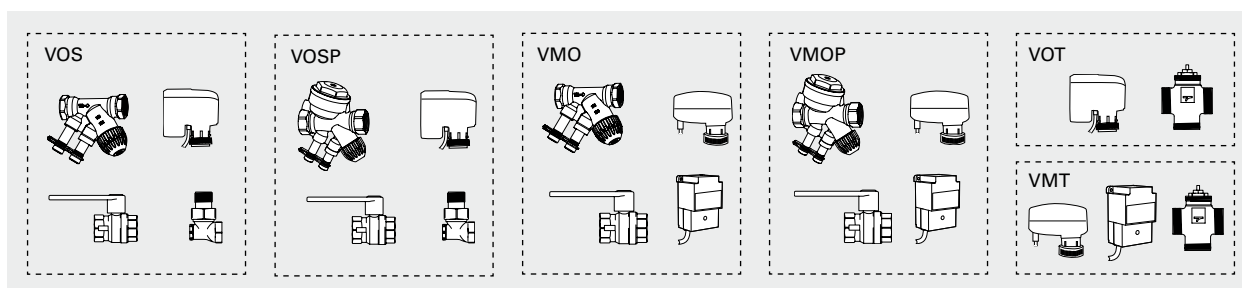
## Controls



This air curtain is supplied with an integrated PC board SIRE. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SIRE control system in the "Controls" section.

Type	Description
<b>SIREB</b>	Control system SIRE Basic
<b>SIREAC</b>	Control system SIRE Competent
<b>SIREAA</b>	Control system SIRE Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25

Type	Description
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMT20</b>	Three way control valve and modulating actuator, DN20
<b>VMT25</b>	Three way control valve and modulating actuator, DN25

## Output charts water

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AGS6010WL	max	4200	24,0	32,5	0,12	1,1	42,3	47,9	0,52	13,2
	min	2100	12,0	31,5	0,06	0,3	26,4	55,3	0,32	5,7
AGS6015WL	max	6500	37,2	41,7	0,24	2,0	52,4	42,0	0,64	12,1
	min	3250	18,6	33,8	0,10	0,4	33,9	49,0	0,41	5,5
AGS6020WL	max	8500	48,6	33,2	0,25	2,5	79,4	45,8	0,97	26,0
	min	4250	24,4	27,9	0,11	0,6	49,9	52,9	0,61	11,3
AGS6025WL	max	10600	60,6	33,1	0,31	4,2	97,8	45,4	1,19	42,9
	min	5300	30,3	26,0	0,14	1,0	61,6	52,5	0,75	18,7
AGS6030WL	max	12600	72,0	34,0	0,38	3,1	116,2	45,4	1,42	33,7
	min	6300	36,0	28,7	0,17	0,6	73,0	52,4	0,89	14,2

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AGS6010WL	max	4200	24,0	35,5	0,17	1,9	33,5	41,7	0,41	8,9
	min	2100	12,0	31,4	0,08	0,8	21,0	47,7	0,26	7,2
AGS6015WL	max	6500	37,2	45,0	0,36	4,4	41,3	36,9	0,50	8,0
	min	3250	18,6	34,5	0,13	0,7	26,8	42,5	0,33	3,7
AGS6020WL	max	8500	48,6	36,8	0,36	4,6	63,1	40,1	0,77	17,6
	min	4250	24,4	28,8	0,14	1,0	39,7	45,8	0,48	7,7
AGS6025WL	max	10600	60,6	37,0	0,44	7,8	77,8	39,8	0,95	29,2
	min	5300	30,3	28,2	0,18	1,6	49,1	45,5	0,60	12,9
AGS6030WL	max	12600	72,0	37,7	0,54	6,0	92,1	39,7	1,12	22,3
	min	6300	36,0	29,5	0,21	1,0	58,1	45,4	0,71	7,6

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AGS6010WL	max	4200	24,0	39,4	0,28	4,8	24,5	35,3	0,30	5,3
	min	2100	12,0	31,6	0,10	1,0	15,5	39,9	0,19	4,1
AGS6015WL	max	6500	37,2	49,2	0,83	20,2	29,9	31,6	0,36	4,6
	min	3250	18,6	38,0	0,21	1,7	19,6	35,9	0,24	2,2
AGS6020WL	max	8500	48,6	41,8	0,65	13,5	46,7	34,3	0,56	10,6
	min	4250	24,3	31,8	0,21	1,9	29,9	38,9	0,36	4,8
AGS6025WL	max	10600	60,6	42,2	0,83	23,6	57,7	34,2	0,70	17,6
	min	5300	30,3	32,0	0,26	3,2	37,1	38,8	0,45	8,1
AGS6030WL	max	12600	72,0	42,5	1,00	18,4	68,0	34,0	0,82	13,0
	min	6300	36,0	32,6	0,32	2,0	43,6	38,5	0,53	4,7

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
AGS6010WL	max	4200	24,0	41,7	0,44	10,6	19,9	32,1	0,24	3,7
	min	2100	12,0	33,0	0,13	2,2	12,8	36,1	0,16	2,9
AGS6015WL	max	6500	–	–	–	–	24,0	29,0	0,29	3,1
	min	3250	18,6	40,2	0,30	3,4	15,9	32,6	0,19	1,5
AGS6020WL	max	8500	48,6	45,0	1,18	39,4	38,4	31,4	0,46	7,7
	min	4250	24,4	34,3	0,28	3,2	24,7	35,3	0,30	3,5
AGS6025WL	max	10600	60,6	45,7	1,58	75,7	47,6	31,3	0,58	12,8
	min	5300	30,3	34,5	0,36	5,5	30,7	35,2	0,37	5,9
AGS6030WL	max	12600	72,0	45,7	1,88	59,6	55,9	31,2	0,68	9,2
	min	6300	36,0	35,1	0,44	3,4	36,0	35,0	0,44	3,4

– = at the current water temperatures and airflows, the air outlet temperature will be less than 35 °C.

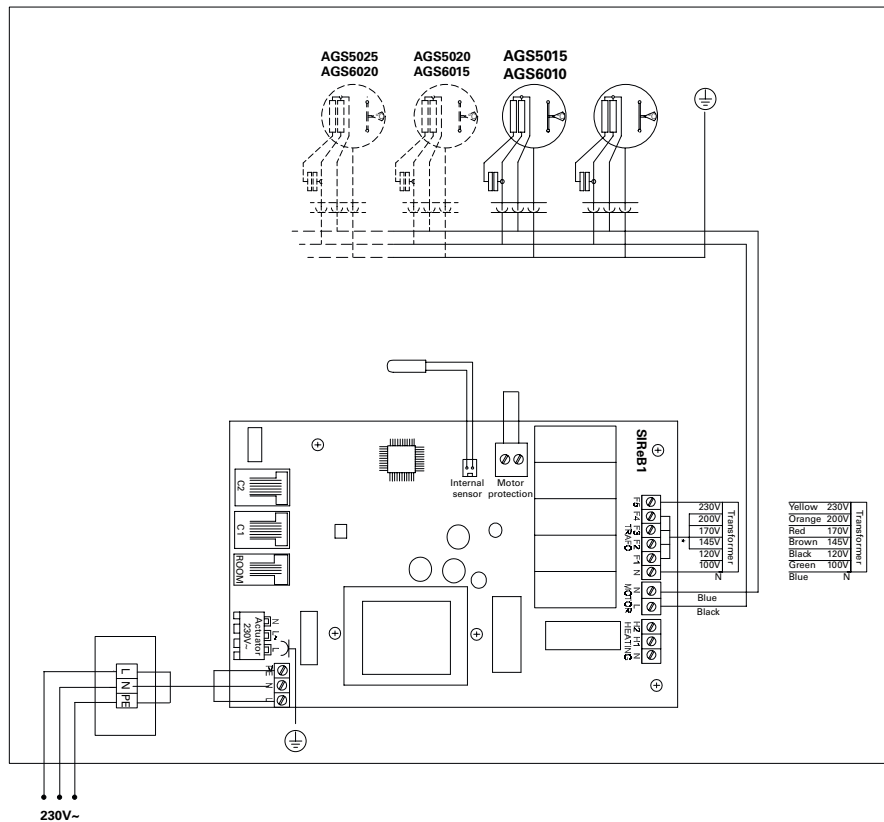
\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

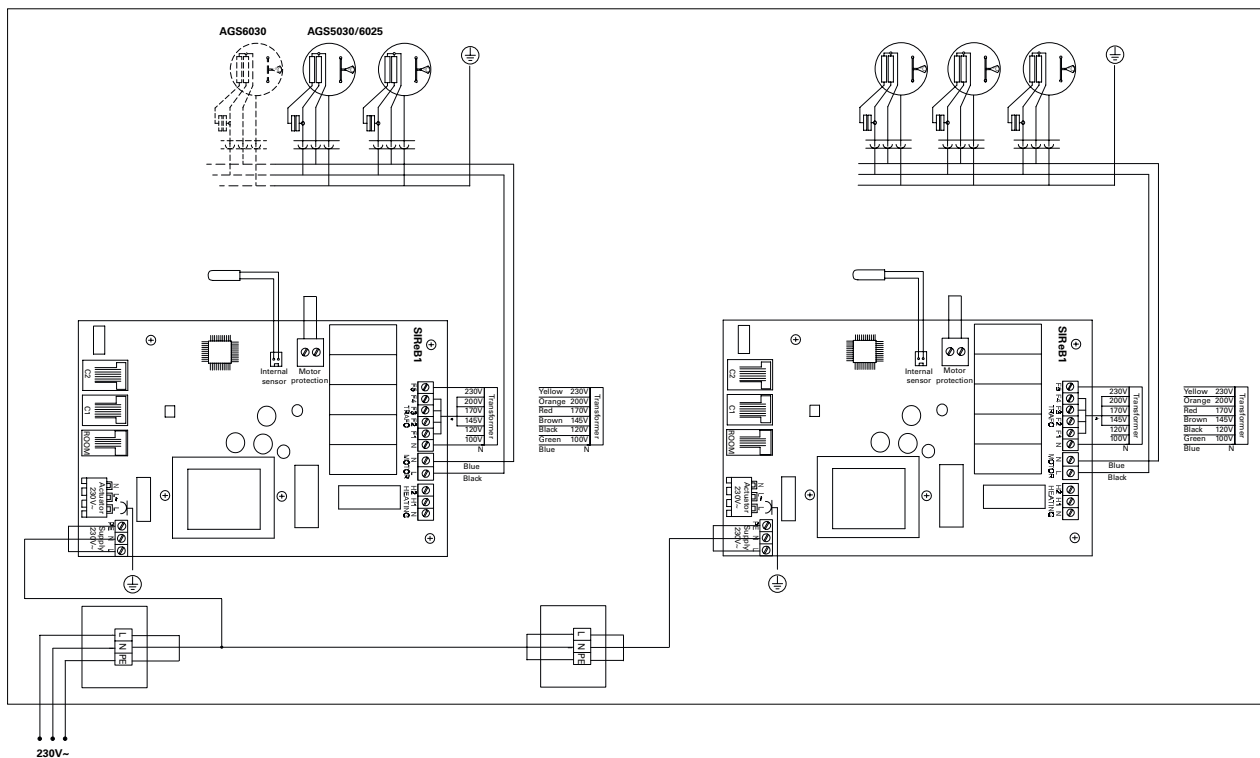
## Wiring diagrams

### Internal wiring diagram

AGS6010/6015/6020



AGS6025/6030



AGI



AGI

Robust air curtain for large industrial doors

- Horizontal and vertical mounting
- Lengths: 1,2, 1,8, 2,4 and 3 m

- ✿ Ambient, no heat
- 💧 Water heat WL

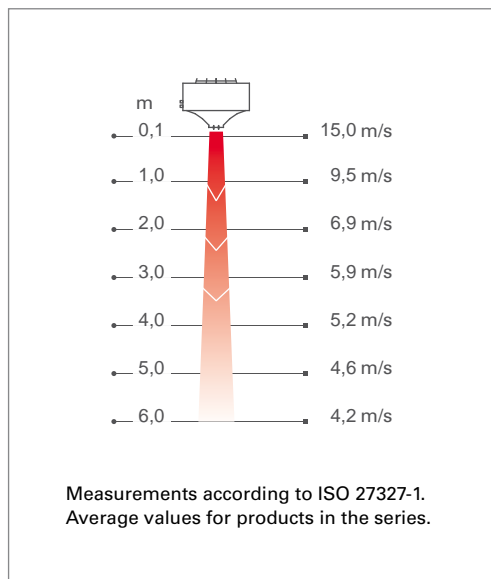
#### Application

AGI is a robust air curtain intended for vertical or horizontal installation in large doorways. With its powerful fans and high enclosure classification it is specially suitable for industrial environments.

#### Design

AGI has a stable and simple design. It is available in four different lengths of up to 3 metres, which makes it easy to create a continuous air curtain for large doors. In vertical installation two units can be put on top of each other.

#### Air velocity profile



#### Product specifications

- Simple suspension using fixing nuts on the upper side for installation with threaded rod.
- Available for horizontal or vertical mounting.
- Adjustable outlet grille makes it possible to direct the air for optimum air curtain effect.
- High protection class, IP54.
- Model with water coil WH for high water temperatures is available for special order.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour: grey, RAL9006.

## Technical specifications

### Horizontal mounting

✿ Ambient, no heat - AGI A

Type	Output [kW]	Airflow [m³/h]	Sound level*1 [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
AGIH2A	0	7000	69	400V3~	2,4	1200	51
AGIH3A	0	10500	71	400V3~	3,5	1800	75
AGIH4A	0	14000	72	400V3~	4,7	2400	97
AGIH5A	0	17500	73	400V3~	5,9	3000	120

💧 Water heat - AGI WL, coil for low water temperature ( $\leq 80$  °C)

Type	Output*3 [kW]	Airflow [m³/h]	$\Delta t^{*2,3}$ [°C]	Water volume [l]	Sound level*1 [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
AGIH2WL	33	7000	21/14	6,6	69	400V3~	2,4	1200	82
AGIH3WL	48	10500	20/13	10,1	71	400V3~	3,5	1800	125
AGIH4WL	64	14000	20/14	14,0	72	400V3~	4,7	2400	165
AGIH5WL	81	17500	20/14	17,6	73	400V3~	5,9	3000	205

\*1) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m².

\*2)  $\Delta t$  = temperature rise of passing air at maximum heat output and highest airflow.

\*3) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

### Vertical mounting

✿ Ambient, no heat - AGI A

Type	Output [kW]	Airflow [m³/h]	Sound level*1 [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
AGIV2A	0	7000	69	400V3~	2,4	1200	51
AGIV3A	0	10500	71	400V3~	3,5	1800	75
AGIV4A	0	14000	72	400V3~	4,7	2400	97
AGIV5A	0	17500	73	400V3~	5,9	3000	120

💧 Water heat - AGI WL, coil for low water temperature ( $\leq 80$  °C)

Type	Output*3 [kW]	Airflow [m³/h]	$\Delta t^{*2,3}$ [°C]	Water volume [l]	Sound level*1 [dB(A)]	Voltage motor [V]	Amperage motor [A]	Length [mm]	Weight [kg]
AGIV2WL	33	7000	21/14	6,6	69	400V3~	2,4	1200	82
AGIV3WL	48	10500	20/13	10,1	71	400V3~	3,5	1800	125
AGIV4WL	64	14000	20/14	14,0	72	400V3~	4,7	2400	165
AGIV5WL	81	17500	20/14	17,6	73	400V3~	5,9	3000	205

\*1) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m².

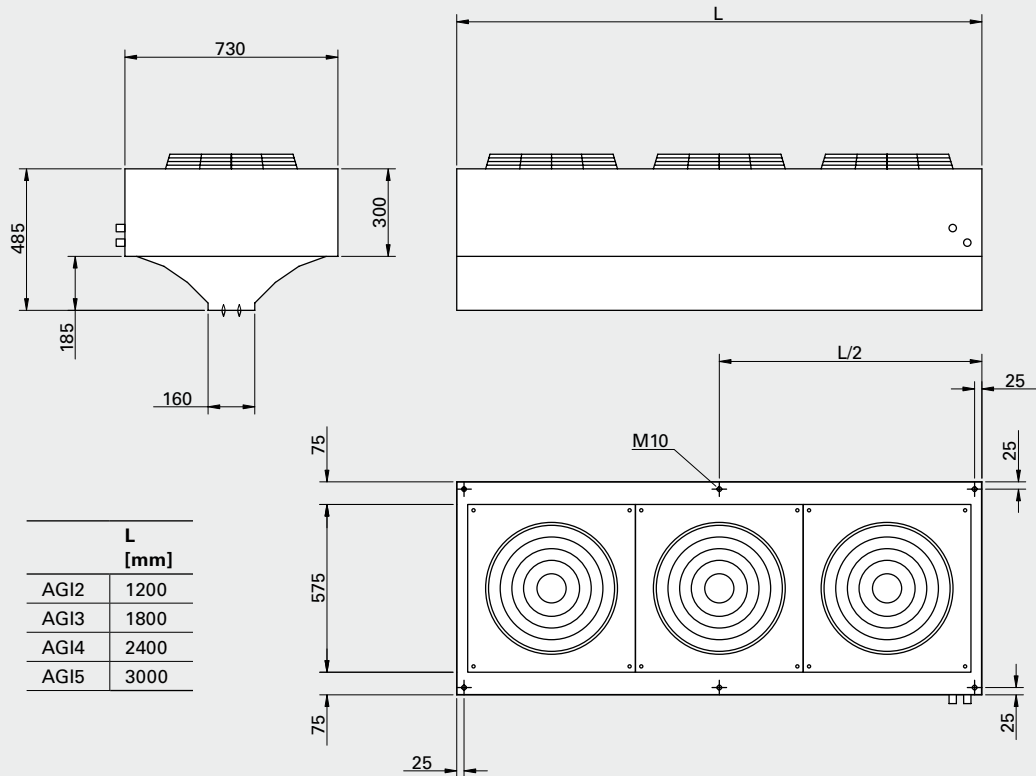
\*2)  $\Delta t$  = temperature rise of passing air at maximum heat output and highest airflow.

\*3) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

Protection class: IP54.  
CE compliant.

## Dimensions

Horizontal mounting

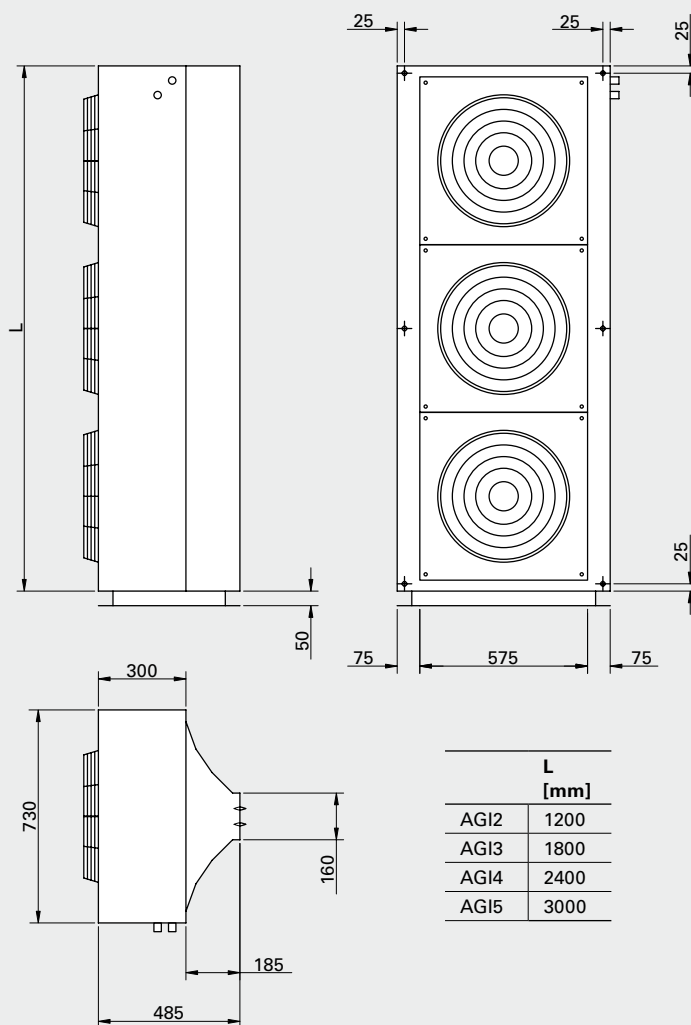


Connection dimensions,  
inside thread

Ø	1" DN25	1 1/4" DN32
AGI2	X	
AGI3	X	
AGI4	X	
AGI5		X

## Dimensions

### Vertical mounting



### Connection dimensions, inside thread

Ø	1" DN25	1 1/4" DN32
AGI2	X	
AGI3	X	
AGI4	X	
AGI5		X

## Mounting and connection

### Mounting

The air curtain range includes variants for horizontal and vertical installation.

#### *Horizontal mounting*

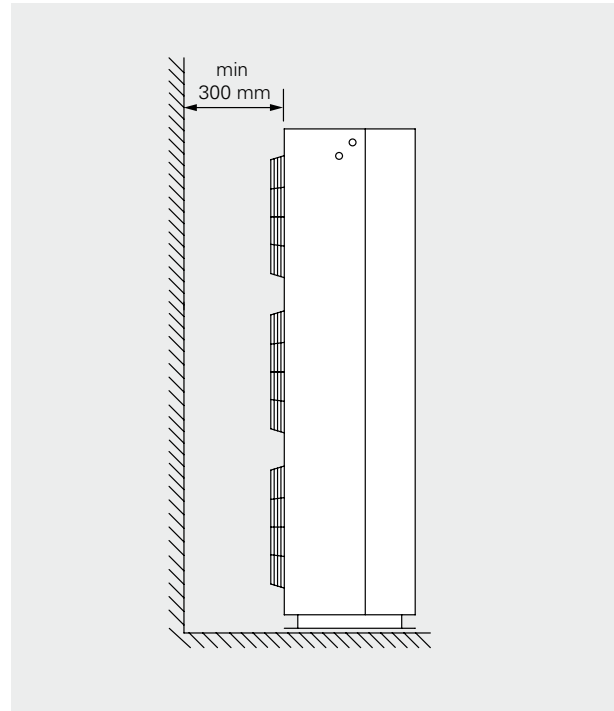
The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible. The unit is suspended from the ceiling by threaded rods. For the protection of wider doorways, several units can be mounted next to each other.

#### *Vertical mounting*

The air curtain is mounted vertically as close as possible to the door. For the best effect air curtains should be placed on both sides of the opening.

The unit can be turned and positioned on either side of the door. Two units can be mounted directly on top of each other.

The air curtain is mounted on a floor frame which is included. The edging is attached horizontal to the floor using fasteners appropriate for the surface. The air curtain must always be secured at the top.



Minimum distances

### Connection

#### *Unit without heating*

Control (400V3~) is connected to the terminal block in the junction box on the side of the unit.

#### *Unit with water heating*

Control (400V3~) is connected to the terminal block in the junction box on the side of the unit.

The water coil is connected via connections with dimensions as given in the table (see diagram) on the side of the unit.

## Accessories

### GP1010, threaded bar

Threaded bar for mounting in ceilings. Length 1 m. M10. Four are needed for 1.2 metre units and six are needed for other units.

Type	Description
GP1010	Threaded bar, 1 m



GP1010



## Control options

### ✿ Unit without heating

#### Level 1

Airflow is set manually. The position limit switch regulates the airflow on/off.

Control kit:

- RTRD7, RTRD14, 5-step fan speed control
- AGB304, position limit switch.



### 💧 Unit with water heating

#### Level 1

Airflow is set manually. The position limit switch regulates the airflow on/off. Room thermostat controls the heat output via actuator/valve on/off.

Control kit:

- RTRD7, RTRD14, 5-step fan speed control
- AGB304, position limit switch.
- T10, room thermostat IP30.

Note! A valve set VR25 (option: TVV25 with SD20) should be added for a complete control kit.

#### Level 2

Airflow and heat output are controlled automatically based on the opening of the door and the room temperature. When the door is open the fan runs at high speed, when the door closes the fan will continue to run at high speed for the desired time (2s–10 min.) set on MDC. When the door is closed the fan runs at low speed if there is a need for heating, if not the fan is switched off.

The room thermostat controls the heat output on/off.

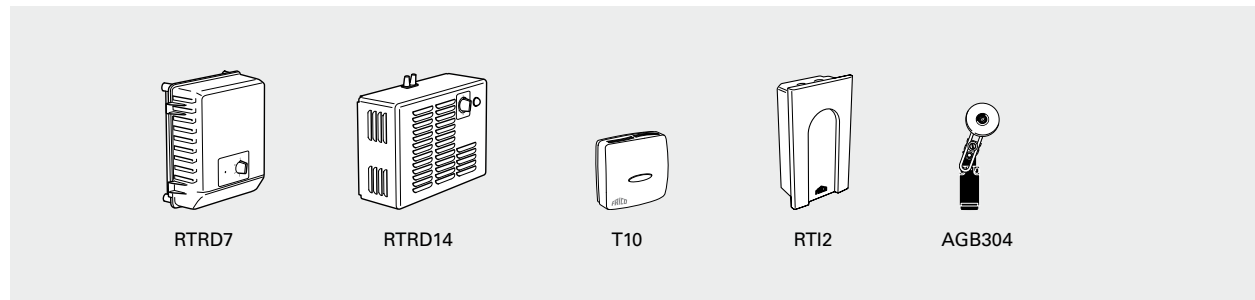
E.g. the thermostat is set on 23 °C and the difference between the steps 4 °C. The thermostat will activate below 19 °C when the door is closed. When the door opens, the thermostat will activate below 23 °C and normally the heat is switched on.

Control kit:

- RTRDU, 5-step fan speed control, high/low speed.
- MDC, magnetic door contact with a time relay.
- RTI2, electronic 2-step thermostat

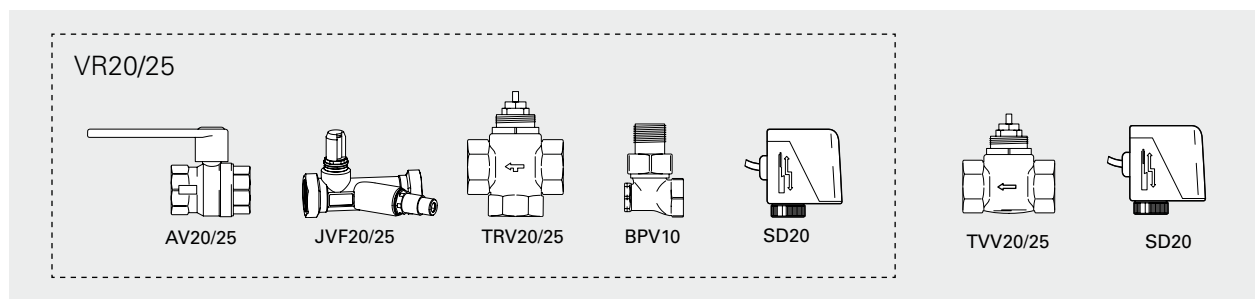
Note! A valve set VR25 (option: TVV25 with SD20) should be added for a complete control kit.

## Controls



Type	Description	HxWxD [mm]
<b>RTRD7</b>	5-step fan speed control, 7 A	309x262x160
<b>RTRD14</b>	5-step fan speed control, 14 A	290x400x166
<b>T10</b>	Electronic thermostat, IP30	80x80x31
<b>RTI2</b>	Electronic 2-step room thermostat, IP44	155x87x43
<b>AGB304</b>	Position limit switch, IP44	

## Water control



Type	Description
<b>VR20</b>	Valve set DN 20 mm
<b>VR25</b>	Valve set DN 25 mm
<b>TVV20</b>	2-way control valve, DN 20 mm
<b>TVV25</b>	2-way control valve, DN 25 mm
<b>SD20</b>	Actuator 230V~

For further information and options, see the "Controls" section.

## Output charts water

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
AGI2WL	max	7000	41,0	39,0	0,24	6,4	56,0	42,0	0,69	40,0
	min	2500	15,0	28,0	0,07	0,7	28,0	52,0	0,35	12,0
AGI3WL	max	10500	59,7	41,0	0,37	2,9	81,0	40,9	0,99	17,2
	min	3800	21,7	34,3	0,12	0,4	41,6	50,5	0,51	5,0
AGI4WL	max	14000	79,7	40,0	0,49	3,5	110,2	41,4	1,35	23,0
	min	5000	28,3	34,0	0,15	0,4	55,7	51,1	0,68	6,4
AGI5WL	max	17500	100,0	40,0	0,61	2,6	138,8	41,6	1,70	16,7
	min	6300	35,9	35,4	0,19	0,3	70,3	51,2	0,86	4,8

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
AGI2WL	max	7000	40,0	43,0	0,36	13,0	45,0	37,0	0,55	27,0
	min	2500	14,0	29,0	0,08	1,1	23,0	45,0	0,28	8,0
AGI3WL	max	10500	60,0	46,0	0,61	7,2	64,5	36,2	0,78	11,5
	min	3800	21,7	34,3	0,15	0,6	33,3	44,0	0,41	3,4
AGI4WL	max	14000	80,2	45,0	0,78	8,5	87,7	36,6	1,07	15,1
	min	5000	28,5	34,0	0,19	0,7	44,5	44,4	0,54	4,3
AGI5WL	max	17500	100,9	45,0	0,98	6,3	110,4	36,7	1,34	11,1
	min	6300	36,1	34,9	0,25	0,5	56,1	44,4	0,68	3,2

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
AGI2WL	max	7000	40,0	50,0	0,98	78,0	33,0	32,0	0,40	17,0
	min	2500	14,0	32,0	0,13	2,1	17,0	39,0	0,21	5,0
AGI3WL	max	10500	59,5	52,0	1,81	54,3	47,5	31,4	0,58	6,7
	min	3800	21,6	35,0	0,21	1,1	24,9	37,5	0,30	2,1
AGI4WL	max	14000	78,7	49,7	1,85	43,3	64,6	31,7	0,78	8,7
	min	5000	29,2	35,0	0,28	1,4	33,6	38,0	0,41	2,6
AGI5WL	max	17500	99,6	50,0	2,42	33,6	81,3	31,8	0,98	6,5
	min	6300	35,9	35,0	0,35	1,0	42,3	38,0	0,51	2,0

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPA]	Output*2	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPA]
AGI2WL	max	7000	–	–	0,64	–	28,0	30,0	0,33	12,0
	min	2500	14,0	35,0	0,17	4,0	14,0	35,0	0,17	4,0
AGI3WL	max	10500	49,8	–	1,21	–	38,8	29,0	0,47	4,7
	min	3800	21,7	37,0	0,29	2,0	20,6	34,1	0,25	1,5
AGI4WL	max	14000	–	–	1,46	–	53,1	29,3	0,64	6,1
	min	5000	28,4	36	0,36	2,1	27,8	34,5	0,34	1,9
AGI5WL	max	17500	81,8	–	1,65	–	66,7	29,3	0,81	4,6
	min	6300	35,8	36,0	0,46	1,6	34,6	34,3	0,42	1,4

– = at the current water temperatures and airflows, the air outlet temperature will be less than 35 °C.

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

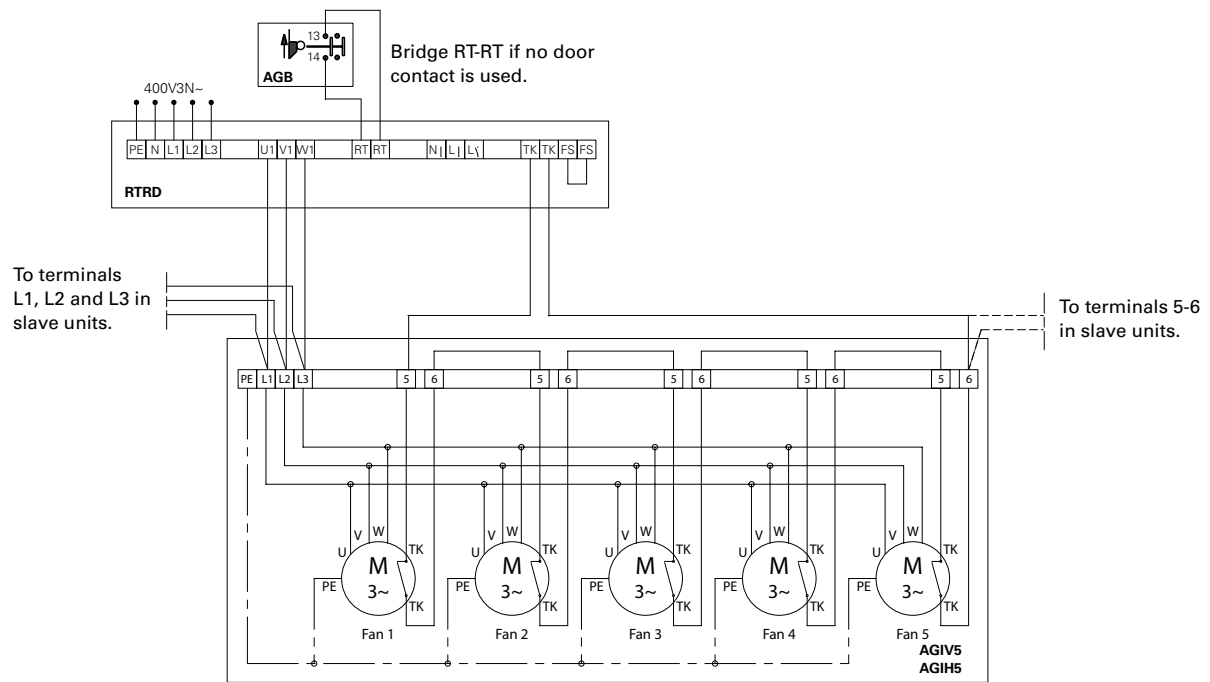
See [www.frico.se](http://www.frico.se) for additional calculations.

# AGI

## Wiring diagrams

### Control options for units without heat

#### Level 1

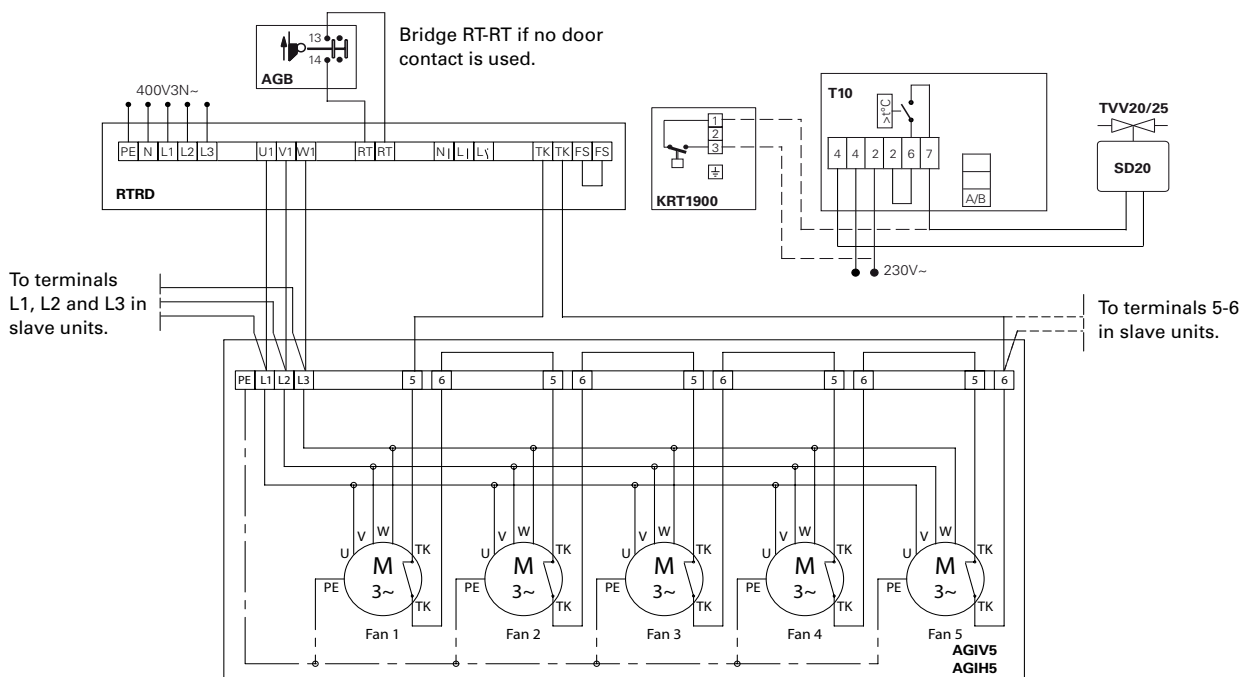


Wiring diagram valid for all AGI. Number of motors corresponds with the number in the type label.

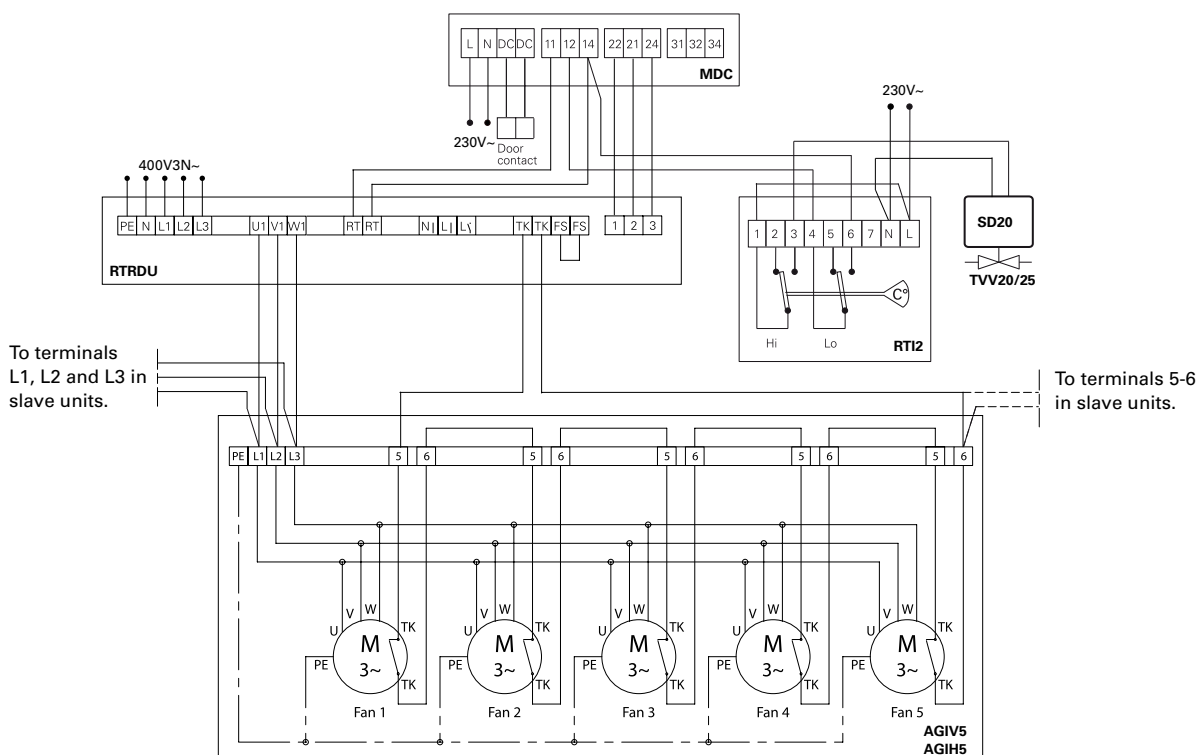
## Wiring diagrams

## Control options for water heated units

## Level 1



## Level 2



Wiring diagram valid for all AGI. Number of motors corresponds with the number in the type label.

UF600



## UF600

Air curtain for use with under floor outlet in large industrial doorways

- For doors up to (H x W): 6 x 12 m
- Vertical mounting

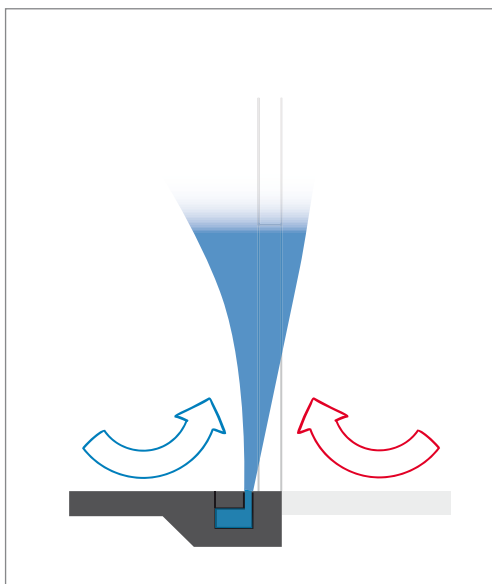
### Application

UF600 creates a very effective air barrier when air at high speed is pushed out through a narrow channel situated in the floor inside the door opening. An air barrier directed upwards from the floor gives the best possible protection against cold air flowing into the premises.

### Design

UF600 consists of one or two pillars with inlet hood, silencers and fans, as well as a floor channel with its slot at floor level. The pillars are placed inside or outside the door on either (or both) sides of the opening. The floor channel width and blowing angle is adapted to the specific door.

### Principle



### Product specifications

- UF600 is available in the following models:
  - UF601 for doors up to 3 x 4 m (H x W)
  - UF602 for doors up to 3 x 6 m (H x W)
  - UF603 for doors up to 4 x 5 m (H x W)
  - UF604 for doors up to 4 x 6 m (H x W)
  - UF605 for doors up to 6 x 6 m (H x W)
  - UF606 for doors up to 6 x 12 m (H x W), UF606 corresponds to two UF604
- The floor channel is cast in the floor.
- Outer casing in galvanised steel.

## Technical specifications

### ✿ Ambient, no heat - UF600

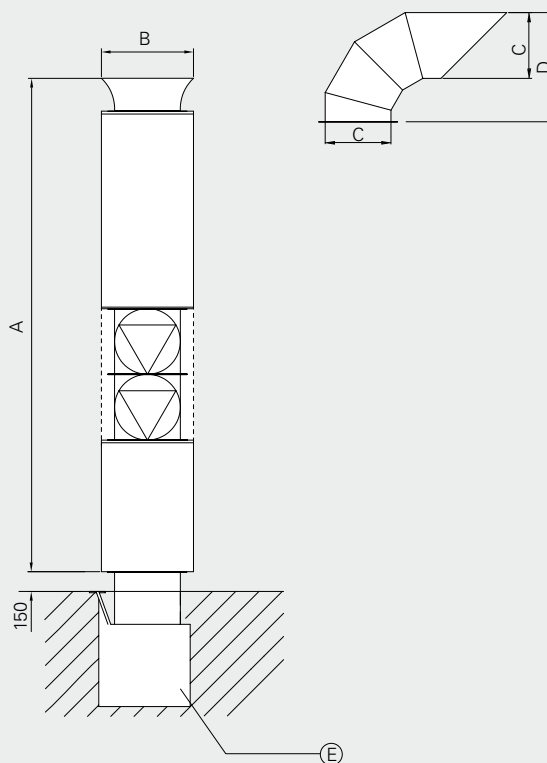
Type	Output motor [kW]	Airflow [m³/h]	Voltage [V]	Amperage [A]	Length [mm]	Diameter [mm]	Max door dimensions HxW [m]
UF601	8 (2x4)	10500	400V3~	16,0	3900	700	3 x 4
UF602	11 (2x5,5)	12000	400V3~	22,4	3900	700	3 x 6
UF603	15 (2x7,5)	15000	400V3~	28,2	4145	900	4 x 5
UF604	22 (2x11)	18000	400V3~	42,0	4145	900	4 x 6
UF605	30 (2x15)	23000	400V3~	56,8	4145	900	6 x 6
UF606*	2x22 (4x11)	36000	400V3~	2x42,0	4145	900	6 x 12

\*) UF606 corresponds to two UF604.

Protection class: IPX4.  
CE compliant.

## Dimensions

For indoor mounting the air intake should be above the door opening, therefore an extension of the column is sometimes necessary. Column extension can be ordered by length from Frico.



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
UF601-UF602	3750	700	500	830	600x600
UF603-UF605	3995	900	630	945	750x750

UF606 corresponds to two UF604.

## Mounting and connection

### The fan pillar

The fan pillar can be positioned on either side of the door. For large doors, two fan pillars are often required. They should be positioned one on each side. When two units are placed on each side of the doorway, the floor duct has to be divided by a steel wall in the middle to prevent the fans from working against each other.

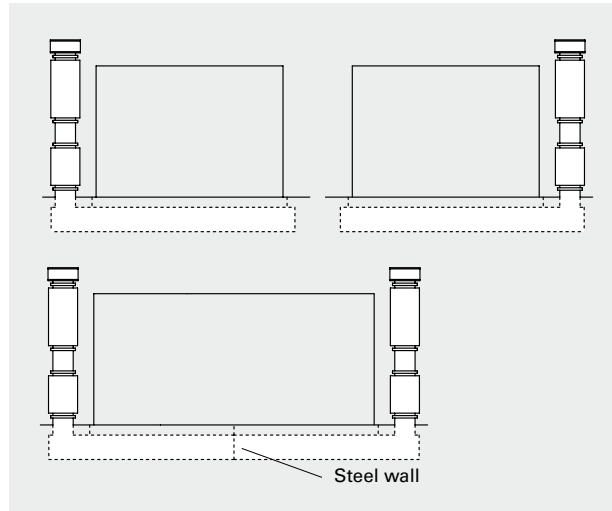
### Floor duct

The floor channel box is a steel construction that is cast into the concrete floor. The outlet opening is at floor level, as close to the floor opening as possible. The length of the box and the angle and column width is determined at the project planning stage. There is not normally a need for drainage. If there is a risk of large amounts of water running into the floor channel, a drainage pipe should be connected to the existing 1" connection (internal thread).

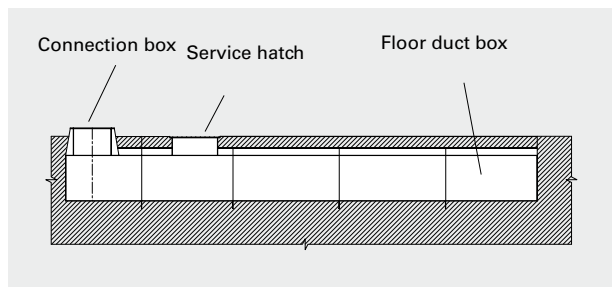
### Air curtain slot

To compensate for the inward-directed pressure force, the air curtain slot is directed at an outward angle of about 15°. The air curtain slot should be at least 200 mm wider than the door opening. Internal door protectors should be mounted next to the door if the distance between the air curtain slot and the door is greater than 150 mm, see fig.

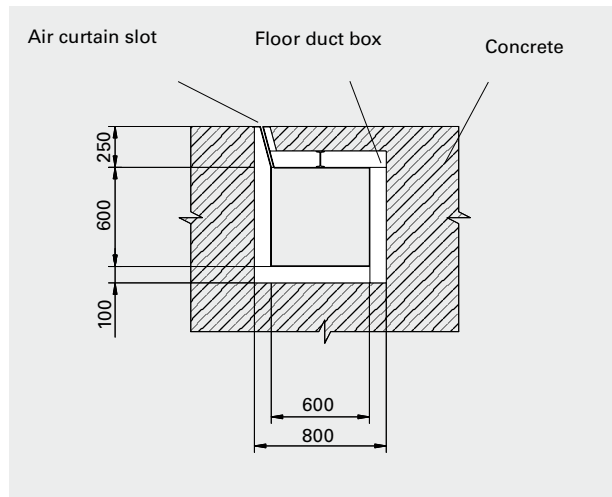
Always contact Frico for projections and dimensioning!



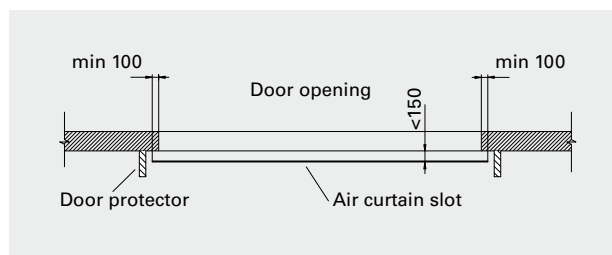
The positioning of the columns.



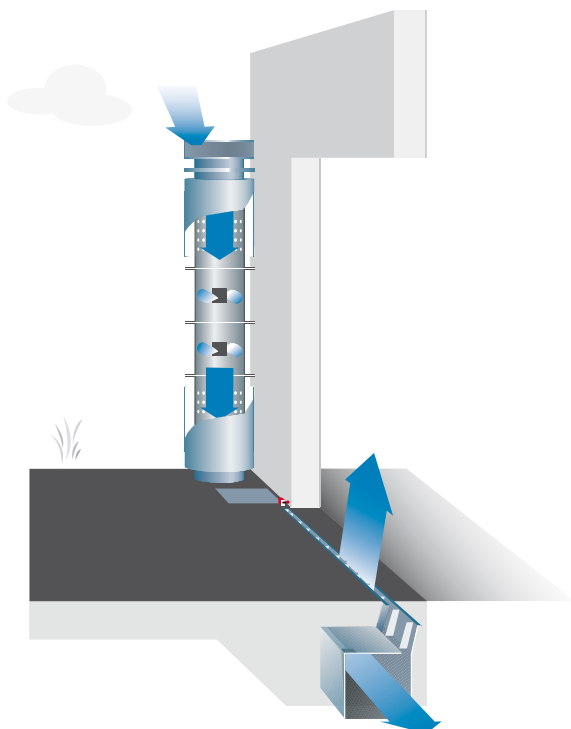
Floor duct for one column.



Cross section through floor channel for UF601-602.



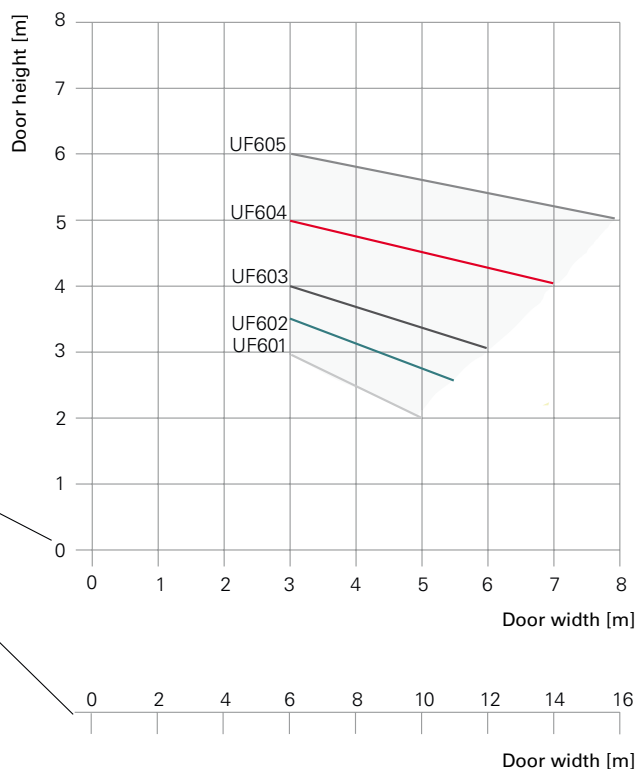
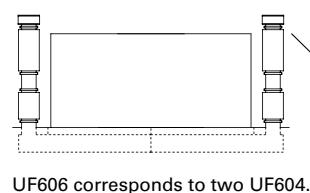
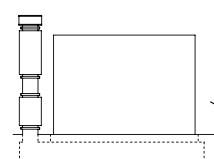
Air curtain slot





## Dimensioning

The choice of air curtain can be made with the help of the diagram on this page. The diagram applies to a dimensioned underpressure of 8 Pa and an outward angle of 15° for the air curtain slot. The highlighted field shows the normal working area.



## Performance

The energy efficiency can be estimated to approximately 75 %. This means that heat losses can be reduced to 25 % of what they would be if the door was unprotected.

The diagrams show how the temperature varies over time inside the open door and at different distances into the room, 4 and 20 metres, and at different heights above the floor.

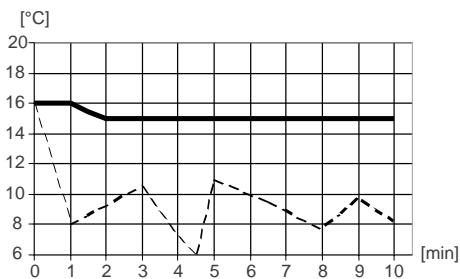
### Conditions:

Door	4 x 4 m
Premises	2000 m <sup>2</sup>
Outdoor temperature	0 °C
Vacuum	4 Pa

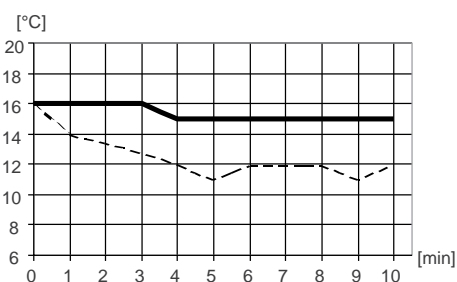
— With UF600  
- - - Unprotected door

### 4 m inside the premises

10 cm above the floor

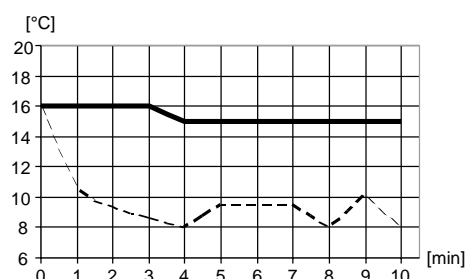


150 cm above the floor

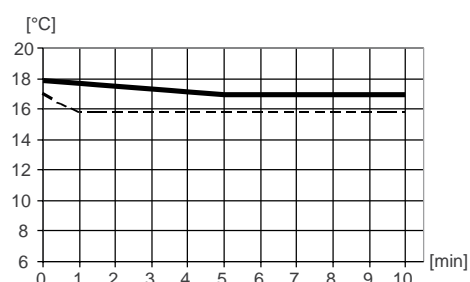


### 20 m inside the premises

10 cm above the floor



150 cm above the floor



## UF600

### Control options

Air curtain UF600 is supplemented with starter kit UFC600. For air curtain UF601 starter kit UFC601 is used, UFC602 is used for UF602 and so on. UF606 corresponds to two UF604s, and must be controlled by two UFC604s.

### Controls and accessories



UFC600



AGB304

#### UFC601/602, starter kit

Time delay between the motors at start up. Possibility of starting via door switch. Integrated motor protection for each fan.

#### UFC603-605, starter kit

Star delta start. Possibility of starting via door switch. Integrated motor protection for each fan.

#### AGB304, position limit switch

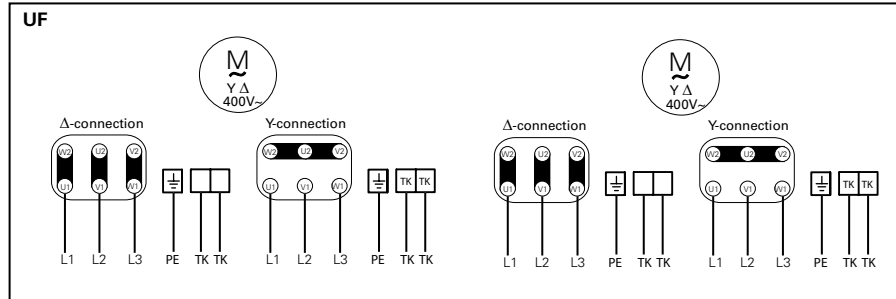
Starts the air curtain when the door is opened and stops it when the door is closed. Alternating contact 4 A, 230 V~. IP44.

#### Pillar extension

For indoor mounting the air intake should be above the door opening, therefore an extension of the column is sometimes necessary. This is placed between the inlet hood and the upper silencer. Special order to required dimension.

Type	Description
<b>UFC601</b>	Starter kit UF601
<b>UFC602</b>	Starter kit UF602
<b>UFC603</b>	Starter kit UF603
<b>UFC604</b>	Starter kit UF604
<b>UFC605</b>	Starter kit UF605
<b>AGB304</b>	Position limit switch, IP44

## Wiring diagrams



## Specific applications

### Small openings

Working behind a service hatch is often associated with cold draughts and poor air quality due to exhaust fumes. PA1508 provides an excellent remedy for these problems.

### Cold storage

Using air curtains without heat to maintain the cold temperature in cold storage is a sensible choice. Energy losses are lowered, delicate products are better protected and accessibility for people and trucks is improved.

### Revolving doors

A revolving door prevents continuous drafts but still lets in a certain amount of cold air at every rotation. The air curtain prevents the cold air from penetrating and gives good heating comfort.



# Specific applications

These air curtains are designed for a specific application area such as revolving doors, service hatches or cold storage.

#### Door heater



##### PA1006

PA1006 is a compact door heater that heats the air around the door opening. This increases the comfort in the vicinity and gives personnel close to the opening a better working climate.

#### Small openings



##### PA1508

PA1508, is primarily intended for small openings, such as kiosk and service hatches and cashier benches where a long, narrow air flow is required. This creates a temperature separating air barrier that prevents cold air from pushing in and hot air from flowing out. PA1508 also gives additional heat and in this way also improves the working environment.

#### Cold storage



##### ADA Cool

ADA Cool keeps the cold air in cold stores and also makes it possible to have an open cold store area without doors. The air curtain creates an air barrier that prevents the intrusion of warm air and also insects, exhaust fumes, smoke, dust, etc. The cost of cooling is significantly reduced and the cold air stays where it is needed.

#### Revolving doors



##### RDS

RDS is an ideal air curtain solution for revolving doors. The air curtain is installed above the door and the exhaust duct is adapted to the diameter of the door, which gives a neat and discrete solution.



##### SFS

The SFS is an air curtain with many clever functions, specially designed for revolving doors. The air curtain is mounted vertically and its curved design integrates neatly with the door. SFS efficiently protects the exposed area just above the floor.

## Door heater PA1006



## Door heater PA1006

For increased comfort inside the door

- Horizontal mounting
- Length: 0,6 m

⚡ Electrical heat: 3 kW

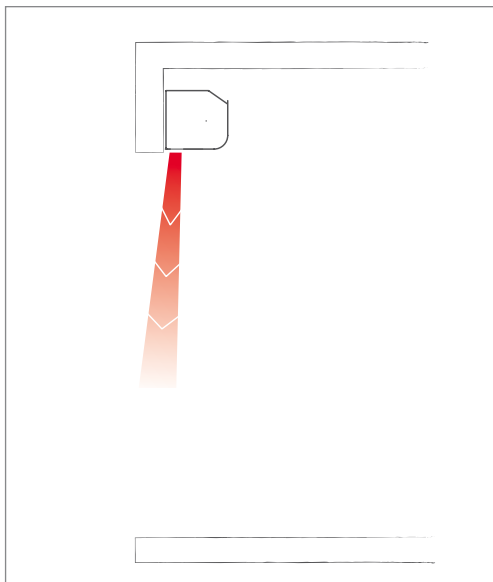
### Application

PA1006 is a compact door heater that heats the air around the door opening. This increases the comfort in the vicinity and gives personnel close to the opening a better working climate. When wall mounted, the unit can act as a high level fan heater.

### Design

With its compact construction and timeless design the unit is easy to place in any doorway. The intuitive controls are easily accessible, placed on the gable end. The front can be finished in any colour to perfectly match the environment.

### Principle



### Product specifications

- Integrated selector for the fan and heating.
- Compact and easily positioned.
- Low sound level.
- The unit is easily angled on the bracket, which is used for both wall and ceiling mounting.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour front: white, RAL 9016, NCS S 0500-N. Colour grille, rear section, ends and brackets: grey, RAL 7046.

Technical specifications

⚡ Electrical heat - PA1006

Type	Output	Airflow	$\Delta t^{*1}$	Sound level <sup>*2</sup>	Voltage	Amperage	Length	Weight
	[kW]	[m³/h]	[°C]	[dB(A)]	[V]	[A]	[mm]	[kg]
PA1006E03	0/1,5/3	230	39	44	230V~	12,8	650	5,3

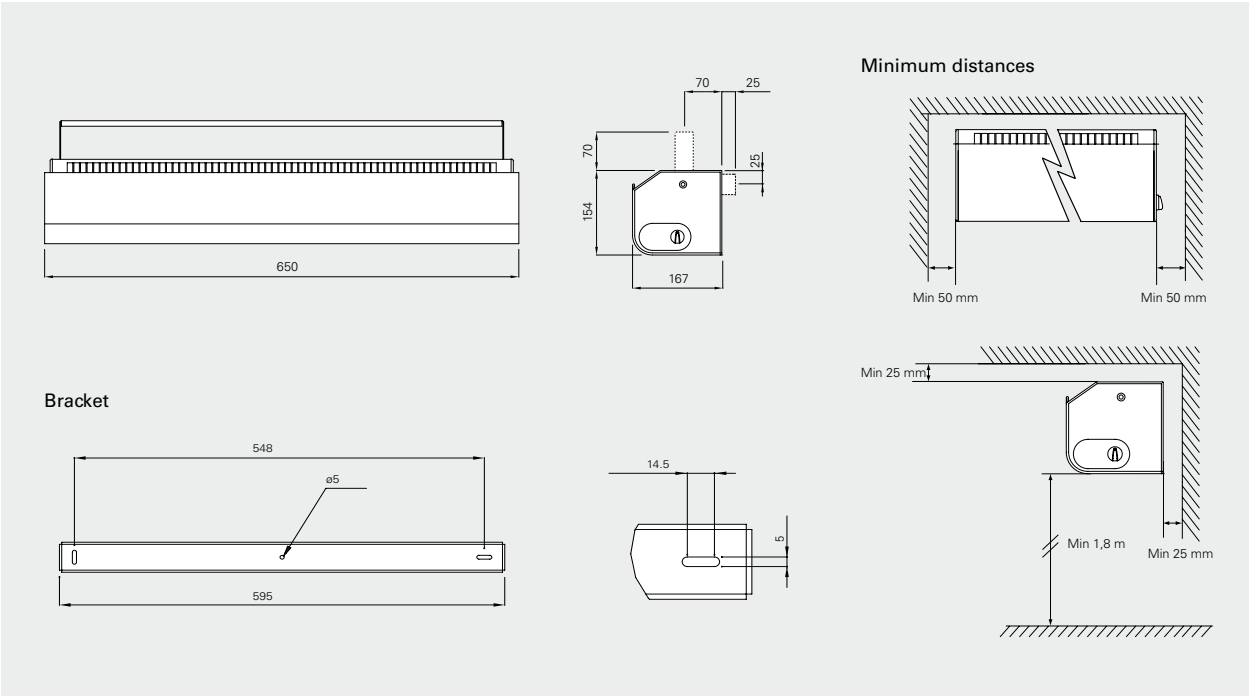
\*1)  $\Delta t$  = temperature rise of passing air at maximum heat output and highest airflow.

\*2) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m².

Protection class: IP20.

CE compliant.

Dimensions



Mounting and connection

Mounting

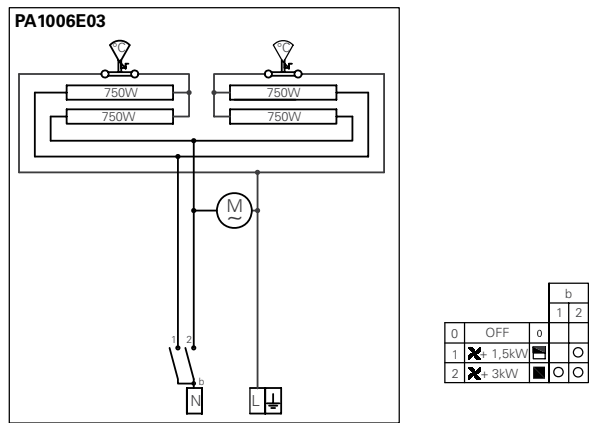
The unit is installed horizontally with the supply air grille facing downwards as close to the door as possible.

Bracket is supplied for wall or ceiling mounting. When mounted on the wall it is possible to angle the heater up to 30° to give even heat distribution in the room.

Connection

The electrical connection is made via cable supplied on the back of the unit for connection to a fixed supply outlet.

Wiring diagrams



Controls

The door heater has a built-in switch to set the fan and heating steps.

PA1508



## PA1508

Air curtain for small openings

- For small openings
- Horizontal mounting
- Length: 0,8 m

⚡ Electrical heat: 2-5 kW

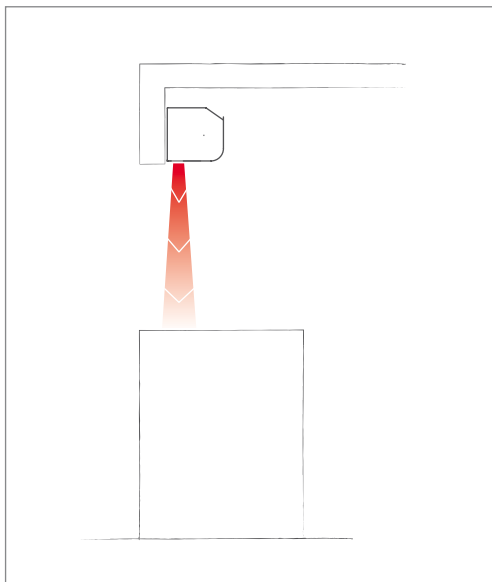
### Application

PA1508, is primarily intended for small openings, such as kiosk and service hatches and cashier benches where a long, narrow air flow is required. This creates a temperature separating air barrier that prevents cold air from pushing in and hot air from flowing out. PA1508 also gives additional heat and in this way also improves the working environment.

### Design

With its compact construction and timeless design the unit is easy to place in any doorway. The intuitive controls are easily accessible, placed on the gable end. The front can be finished in any colour to perfectly match the environment.

### Principle



### Product specifications

- Built-in control.
- Compact and easily positioned.
- Low sound level.
- Units with 2-3 kW are supplied with a 2 m cable and plug.
- The unit is easily angled on the bracket, which is used for both wall and ceiling mounting.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour front: white, RAL 9016, NCS S 0500-N. Colour grille, rear section, ends and brackets: grey, RAL 7046.



## Technical specifications

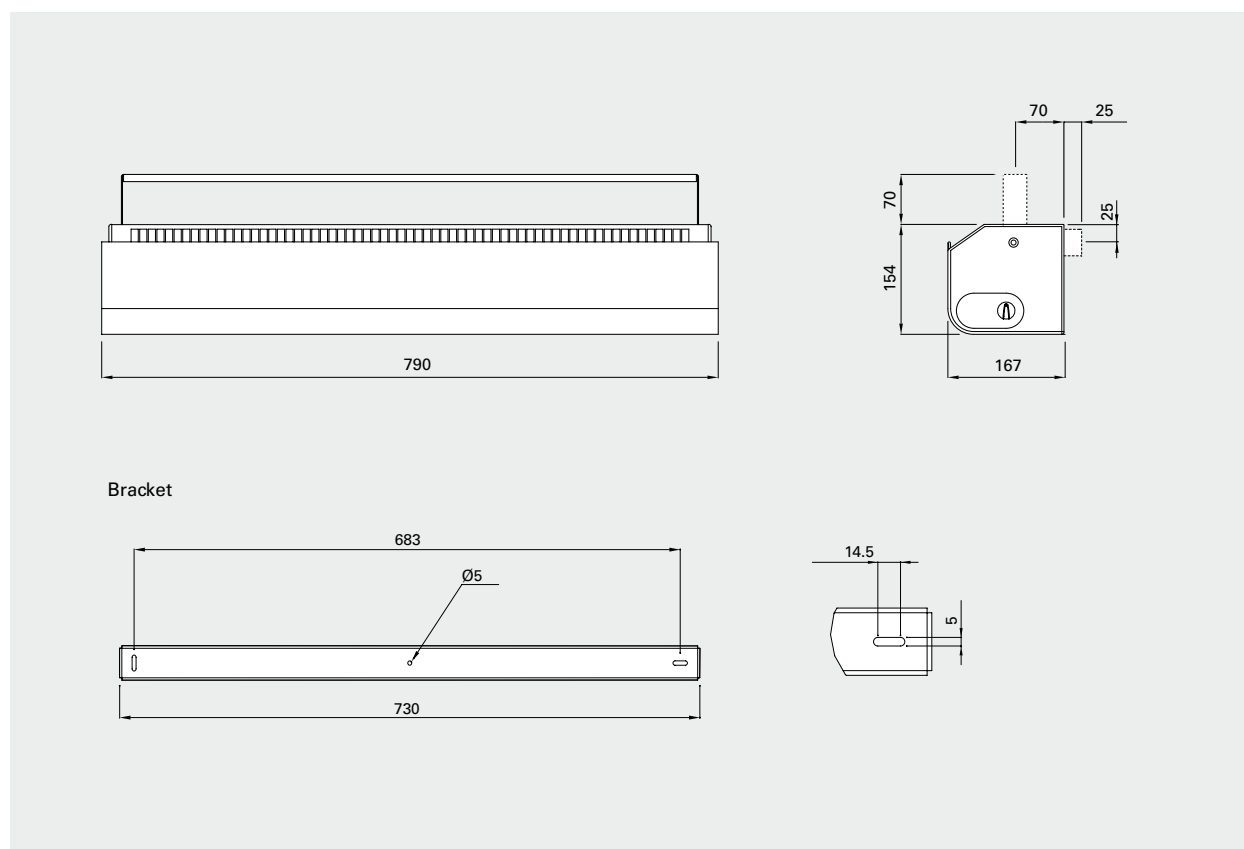
### ⚡ Electrical heat - PA1508

Type	Output	Airflow	$\Delta t^{*2}$	Sound level <sup>*1</sup>	Voltage	Amperage	Length	Weight
	[kW]	[m³/h]	[°C]	[dB(A)]	[V]	[A]	[mm]	[kg]
PA1508E02	1/2	300/400	20/15	36/48	230V~	9,1	790	9
PA1508E03	2/3	300/400	30/23	36/48	230V~	13,4	790	9
PA1508E05	3/5	300/400	50/37	36/48	230V~	22,1	790	10

\*1) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.

\*2)  $\Delta t$  = temperature rise of passing air at maximum heat output and lowest/highest airflow.

## Dimensions



## Mounting and connection

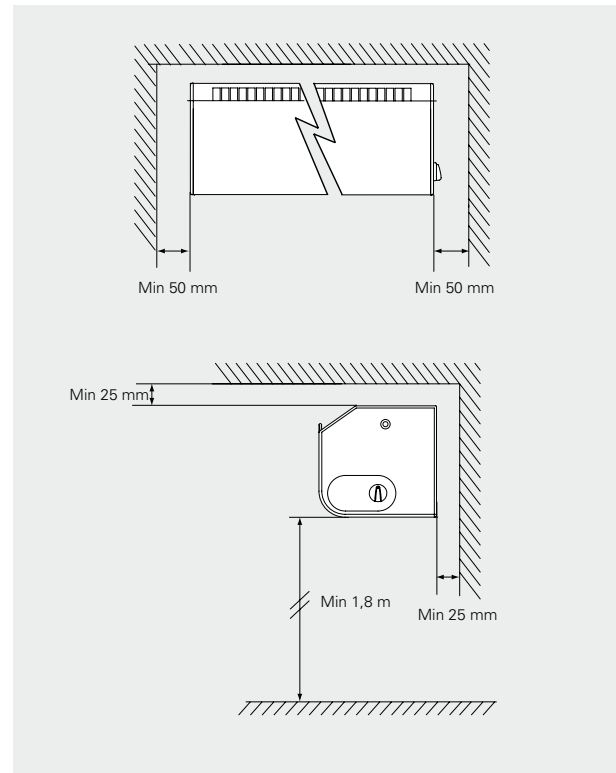
### Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible. Bracket is supplied for wall or ceiling mounting. The unit can be tilted for optimum output.

### Connection

Units with 2-3 kW are supplied with a 2 m cable and plug. The socket for PA1508E03 must be fused for 16 A.

The electrical connection for 5 kW unit is made on the back of the unit. The unit is connected to a terminal block in the terminal box (230V~).



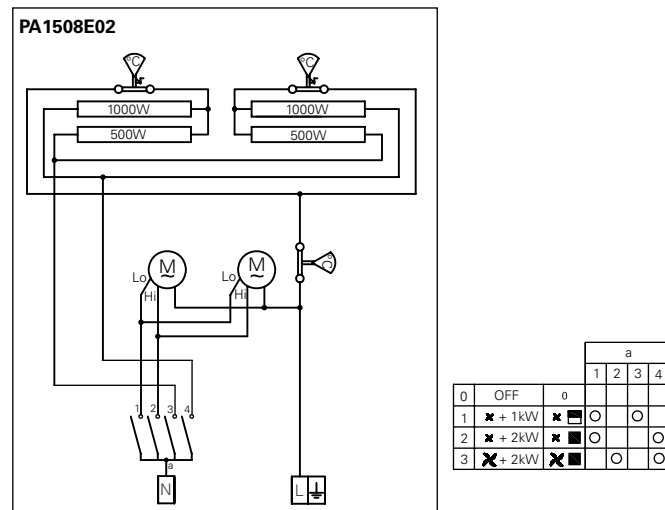
Minimum distances

## Controls

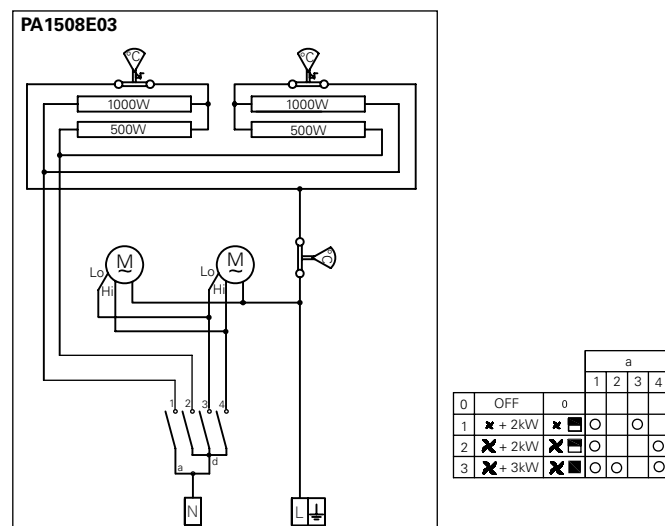
The air curtain has a built-in thermostat and switch to set the fan and heating steps.

## Wiring diagrams

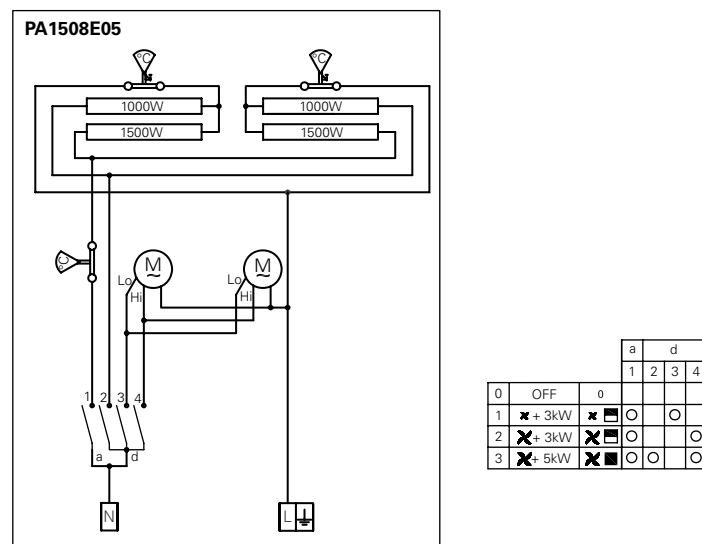
PA1508E02



PA1508E03



PA1508E05



## ADA Cool



## ADA Cool

### Air curtain for cold stores

- Recommended installation height 2,5 m\*
- Horizontal mounting
- Lengths: 0,9 and 1,2 m

#### Application

ADA Cool keeps the cold air in cold stores and also makes it possible to have an open cold store area without doors. The air curtain creates an air barrier that prevents the intrusion of warm air and also insects, exhaust fumes, smoke, dust, etc. The cost of cooling is significantly reduced and the cold air stays where it is needed. ADA Cool reduces ice formation and condensation by the doorway and improves visibility when compared to plastic strips and fast folding doors.

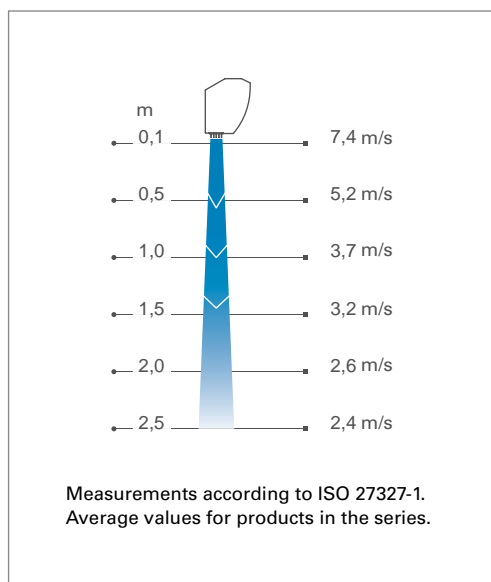
#### Design

Thanks to compact design and air intake at the front, the air curtain can be mounted where space is limited between the ceiling and the upper edge of the doorway. ADA Cool has a simple connection making it possible to easily link units together in order to cover wide openings.



Optimized airflow with  
Thermozone technology.

### Air velocity profile



### Product specifications

- Specially designed outlet grilles for optimized performance.
- Compact and easily positioned.
- Easy installation with 1,8 m cable and plug.
- Several units can easily be linked together.
- Corrosion proof housing made of hot zinc-plate and powder enamelled steel panels. Colour: white, RAL 9016, NCS S 0500-N.

## Technical specifications

✿ Ambient, no heat - ADA Cool

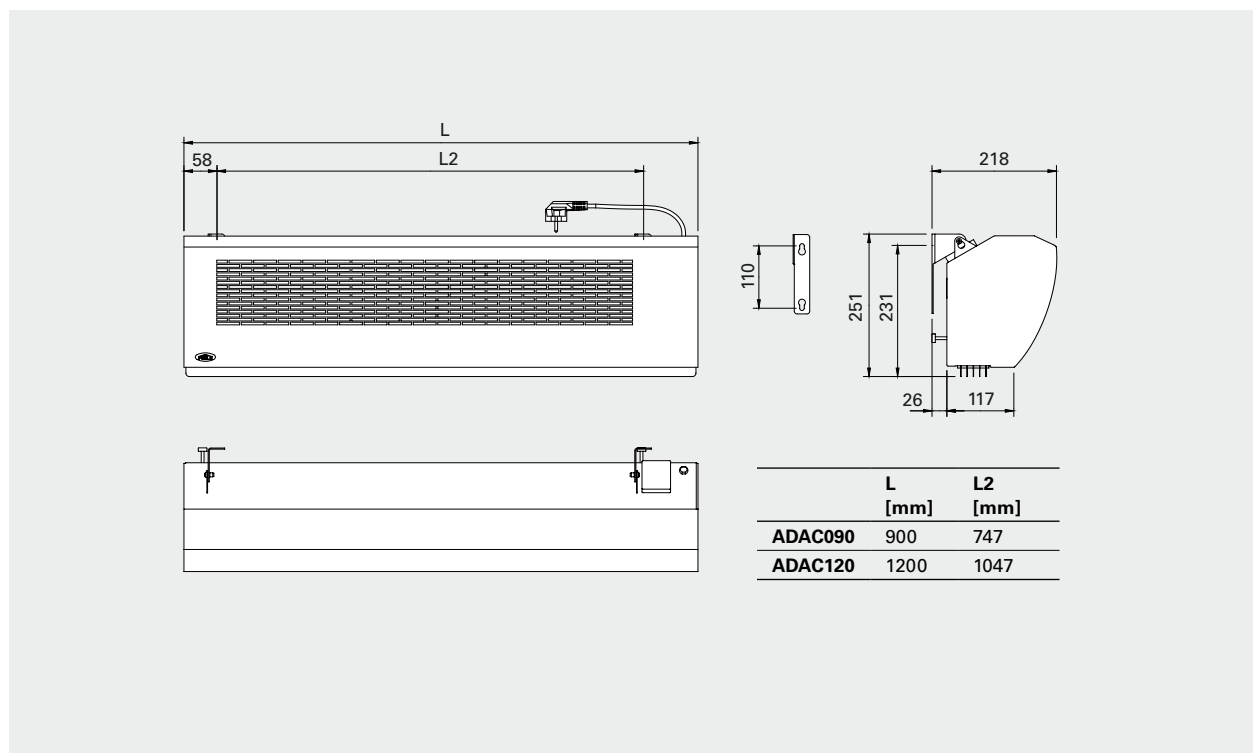
Type	Output [kW]	Airflow [m³/h]	Sound level* [dB(A)]	Voltage [V]	Amperage [A]	Length [mm]	Weight [kg]
<b>ADAC090</b>	0	800/1150	43/54	230V~	0,50	900	9,6
<b>ADAC120</b>	0	1100/1400	44/51	230V~	0,55	1200	11,8

\*) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m². At lowest/highest airflow.

Protection class: IP21.

CE compliant.

## Dimensions



# ADA Cool

## Mounting and connection

### Mounting

The air curtain is installed horizontally with the supply air grille facing downwards as close to the door as possible. As the unit is to be used to protect cold storage or freezer rooms, it must be mounted on the outside of the conditioned space. Usually the unit must be angled away from the cold storage to prevent hot air from being blown in. For the protection of wider doorways, several units can be mounted next to each other.

### Connection

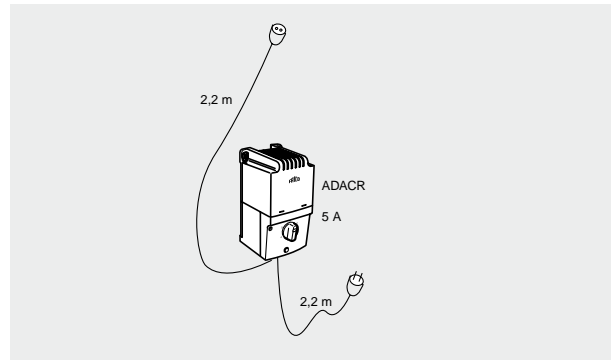
The unit is delivered with 1,8 m cord and plug and is supplied with sockets that make it easy to link up the units in series. The units should be supplemented with ADACR.



## Controls

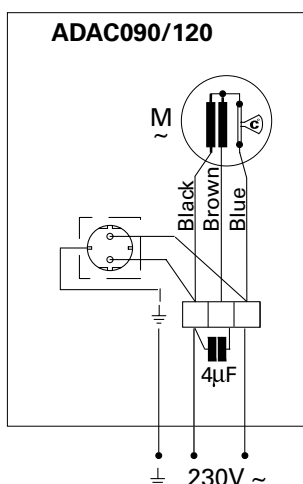
### ADACR, 5-step fan speed control

ADACR is a control and connection set consisting of a 5-step fan speed control, flexible cable and earthed plug. Can control a maximum of 7-9 units (max. 7 units at 60 Hz). Max input: 5 A. Dimensions: 200x105x105 mm. IP30.



## Wiring diagrams

### Internal wiring diagram



## Cold storage measurement

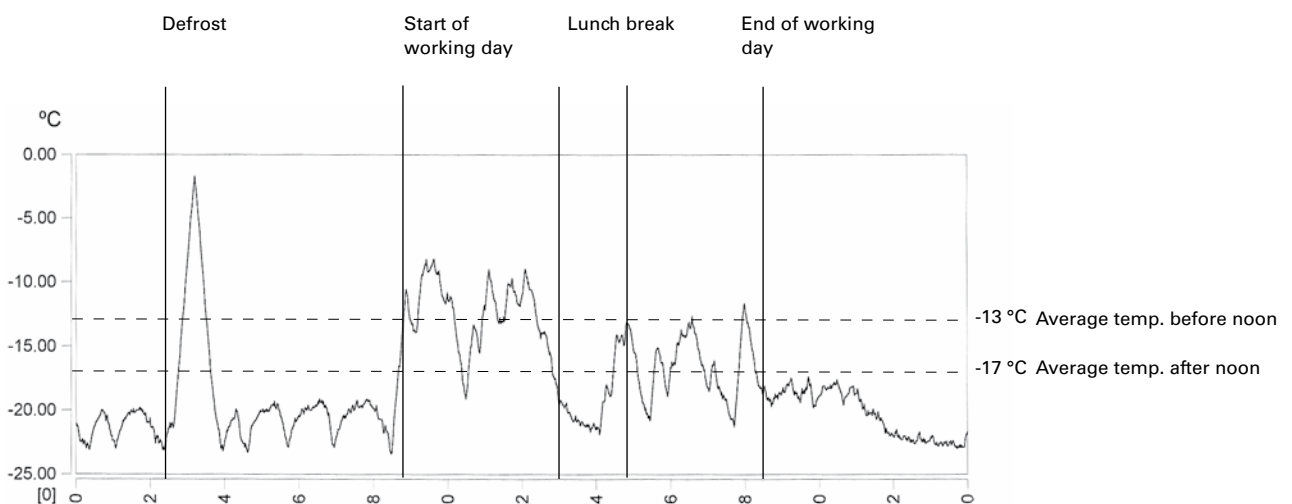
Manuel Carvalho SA, Portugal replaced plastic strips with Frico air curtain ADA Cool. They measured the temperature rise during a 24 hour period, 4 days before the installation of ADA Cool and 4 days after.

The graphs below are based on these figures. ADA Cool proved to be much more efficient in keeping the cold air inside the cold storage. Manuel Carvalho SA found further advantages compared with plastic strips. The risk of accidents is reduced when build-up of ice on the floor is prevented and visibility through the door is improved.

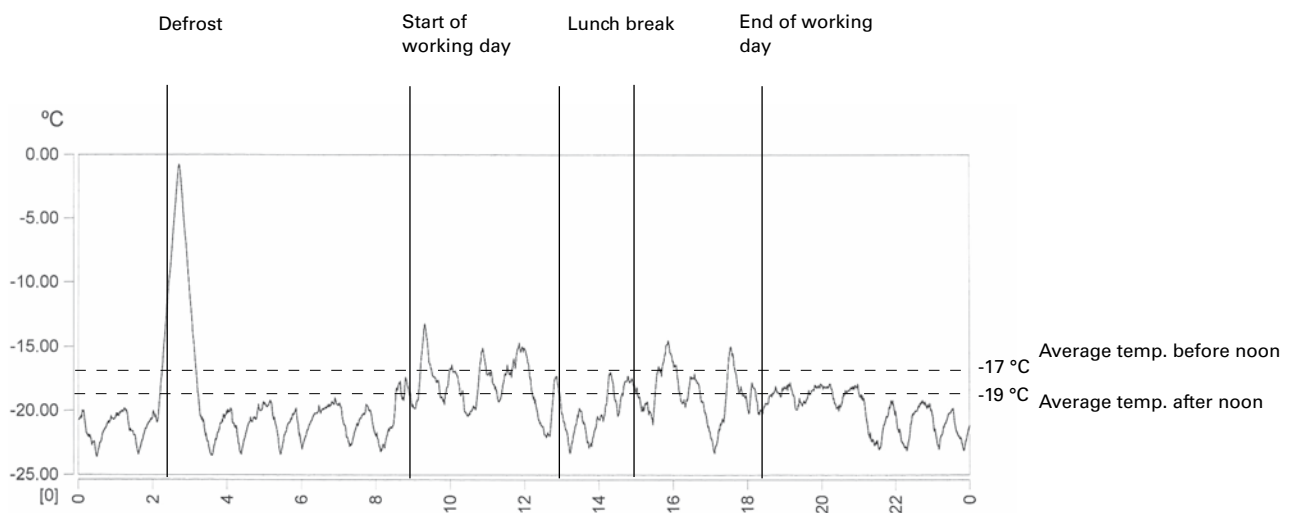
Customer: Manuel Carvalho SA  
City: Gafanha da Nazare, Portugal  
Cold storage dimension: 23x11x6m  
Dimension of opening: 2,2x 2,5m  
Cold storage temperature: -23 °C  
Outside temperature: +20 °C



### Temperature rise over a 24 hour period using plastic strips



### Temperature rise over a 24 hour period using ADA Cool



RDS



## RDS

Discreet air curtain for revolving doors, with intelligent control

- For revolving doors
- Horizontal mounting
- Lengths: 1, 1,5, 2 and 2,5 m

⚡ Electrical heat: 8–30 kW

💧 Water heat WL

### Application

RDS is an ideal air curtain solution for revolving doors. The air curtain is installed above the door and the exhaust duct is adapted to the diameter of the door, which gives a neat and discrete solution.

A revolving door prevents continuous drafts but still lets in a certain amount of cold air at every rotation. The air curtain prevents the cold air from penetrating and gives good heating comfort.

### Design

The RDS consists of a unit and an exhaust duct adapted to the shape and colour of the revolving door. The product key offers many options for the design and finish of the air curtain.



### Product specifications

- Prepared for the SIRE control system whose pre-programmed default settings and many features make it easy to install and use the air curtain. Read more about the SIRE controls package in the "Controls" section.
- Customised production based on the product key.
- The SIRE control system offers the possibility of frost protection for water heated units.
- The front of the duct is covered by a duct panel that is available in polished high gloss, polished or brushed stainless steel. It is also available in powder coated steel, in any RAL/NCS colour. Exhaust duct and air curtain in powder coated steel, white, RAL 9016. Aluminium louvres.



## Technical specifications

### ⚡ Electrical heat - RDS E

Type	Output steps [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Voltage [V] Amperage [A] (control)	Voltage [V] Amperage [A] (heat)	Length [mm]	Weight* <sup>6</sup> [kg]
RDS23E08	2,7/5,4/8,1	1050/2300	23/11	60	230V~/2,3	400V3~/11,7	1000	80
RDS29E12	3,9/7,8/11,7	1300/2900	27/12	61	230V~/3,6	400V3~/16,9	1000	100
RDS38E18	6,0/12,0/18,0	1800/3800	30/14	62	230V~/4,8	400V3~/26,0	1500	150
RDS56E23	7,8/15,6/23,4	2700/5600	26/12	63	230V~/7,0	400V3~/33,8	2000	200
RDS65E30	9,9/18,8/29,7	3100/6500	29/14	64	230V~/8,2	400V3~/42,9	2500	220

### 💧 Water heat - RDS WL, coil for low water temperature (≤80 °C)

Typ	Output* <sup>4</sup> [kW]	Output* <sup>5</sup> [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3,4</sup> [°C]	Δt* <sup>3,5</sup> [°C]	Water volume [l]	Sound level* <sup>1</sup> [dB(A)]	Voltage [V]	Amperage [A]	Length [mm]	Weight* <sup>6</sup> [kg]
RDS23WL	10,3	17,9	1050/2300	18/13	31/23	2,2	60	230V~	2,3	1000	80
RDS29WL	11,7	20,4	1300/2900	17/12	29/21	2,2	61	230V~	3,6	1000	100
RDS38WL	17,3	29,8	1800/3800	18/13	31/23	3,4	62	230V~	4,8	1500	150
RDS56WL	25,5	43,3	2700/5600	18/13	30/23	4,5	63	230V~	7,0	2000	200
RDS65WL	32,0	54,1	3100/6500	19/15	32/25	5,7	64	230V~	8,2	2500	220

\*<sup>1</sup>) Lowest/highest airflow of totally 5 fan steps.

\*<sup>2</sup>) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m².

\*<sup>3</sup>) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

\*<sup>4</sup>) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

\*<sup>5</sup>) Applicable at water temperature 80/60 °C, air temperature, in +18 °C.

\*<sup>6</sup>) Approximate weight for air curtain and duct.

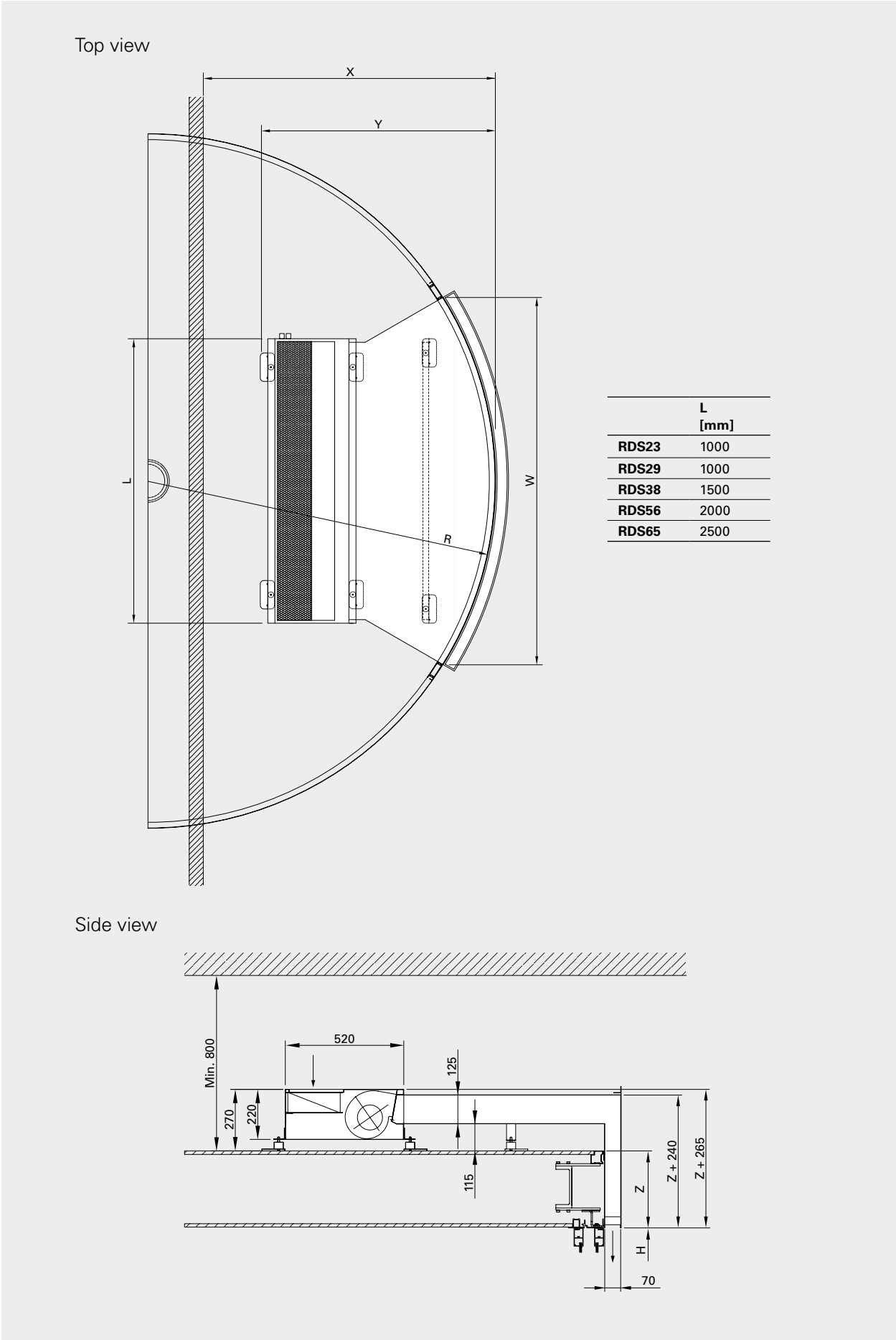
The data are estimated average values which are affected by the shape of the exhaust duct.

Protection class: IP20.

CE compliant.



Dimensions



## Ordering

### Select air curtain

To select which air curtain to order, multiply the width with the height of the opening of the revolving door, to get the surface of the opening. To create comfort in the entrance area between 3,5 and 5 kW heating per square metre of opening, depending on the lowest outdoor temperature, is needed.

### Product key

Type - R - W - X - Z - Material / colour

Example: RDS56WL - 2500 - 2900 - 2350 - 500 - P

Y is variable, depending on the other dimensions in the product key.

Type	See Technical specifications.
<b>R</b>	The outer radius of the revolving door above the entrance height.
<b>W</b>	The opening width of the revolving door
<b>X</b>	The largest distance between the outer radius R of the revolving door and the wall to the outside
<b>Z</b>	The height between the inner ceiling of the revolving door (the position of the outlet of the duct) up to the outer roof of the revolving door (where the air curtain is mounted).
<b>Material/ colour</b>	P = Polished stainless steel B = Brushed stainless steel MP = Mirror polished stainless steel State RAL-kod = Powder coating RAL State NCS-kod = Powder coating NCS Only valid for duct cover plate. Air curtain and duct are made of powder lacquered steel panels, white, RAL9016.

## Mounting

The air curtain is installed horizontally on the roof of the revolving door on steel plates (100 x 200 mm) that distribute the weight.

- Make sure that the air curtain fits on top of the revolving door.
- The distance between the roof of the revolving door and the inside ceiling must not be less than 800 mm, for installation and service to be possible.
- The distance X between the outer radius of the revolving door and the outer wall would in normal circumstances be at least 1400 mm.
- Normally the length 'L' of the air curtain should be less than the opening width 'W' of the revolving door.
- It is a requirement that the length 'L' of the air curtain is larger than the opening width 'W'. Or if there is limited space a special shaped duct can be supplied.
- Ensure that the ceiling of the revolving door can carry the weight of the air curtain and duct. The total weight of the installation is stated in the Technical specifications. If the revolving door roof cannot take the weight, RDS can be carried on a beam construction. Beam mountings included.

Contact Frico before ordering for more information about the product and special adaptations.



## RDS

### Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

#### *Unit with electrical heating*

The electrical connection is made on the side of the unit. Control (230V~) and power supply for heat (400V3~) should be connected to a terminal block. For units with electrical heating, power and control should be supplied separately.

#### *Unit with water heating*

Connected via the built-in control board with 2 m cord and plug.

The water coil is connected on the side of the unit via DN25 (1"), internal thread connections. Flexible hoses are available as an accessory.



### Accessories

#### RDSB, beam

If the revolving door roof cannot take the weight, RDS can be carried on a beam construction. Measurements 40x80 mm, state length when ordering.

#### FH1025, flexible hose

Flexible hose (DN25, 1" inside thread) for easy connection to the pipe system.



Type	Description
RDSB	Beam 40x80 mm
FH1025	Flexible hose DN25, inside thread, length 1 m

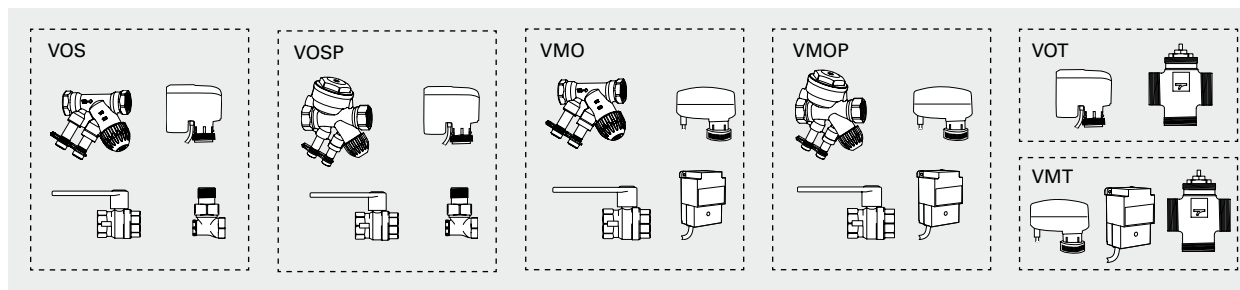
## Controls



This air curtain is supplied with an integrated PC board SRe. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SRe control system in the "Controls" section.

Type	Description
<b>SReB</b>	Control system SRe Basic
<b>SReAC</b>	Control system SRe Competent
<b>SReAA</b>	Control system SRe Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMT20</b>	Three way control valve and modulating actuator, DN20
<b>VMT25</b>	Three way control valve and modulating actuator, DN25

## Output charts water

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C* <sup>1</sup>				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output* <sup>2</sup> [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
RDS23WL	max	2300	13,3	42,7	0,09	1,9	17,9	40,9	0,22	10,8
	min	1050	6,1	32,7	0,03	0,3	11,0	48,9	0,13	4,3
RDS29WL	max	2900	16,7	47,7	0,13	3,9	20,4	38,7	0,25	13,9
	min	1300	7,5	34,1	0,04	0,5	12,6	46,6	0,15	5,6
RDS38WL	max	3800	21,9	41,9	0,14	2,1	29,8	41,1	0,36	12,4
	min	1800	10,4	31,5	0,05	0,3	18,8	48,7	0,23	5,1
RDS56WL	max	5600	32,3	41,5	0,20	5,9	43,4	40,8	0,53	35,5
	min	2700	15,6	30,3	0,08	1,0	27,8	48,3	0,34	15,1
RDS65WL	max	6500	37,5	37,4	0,21	8,1	54,1	42,5	0,66	68,9
	min	3100	17,9	27,9	0,08	1,4	33,9	50,2	0,41	27,7

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C* <sup>1</sup>				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output* <sup>2</sup> [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
RDS23WL	max	2300	13,3	46,8	0,14	4,7	14,1	36,1	0,17	6,9
	min	1050	6,1	34,5	0,04	0,5	8,7	42,5	0,11	2,8
RDS29WL	max	2900	16,7	52,3	0,23	12,5	16,1	34,3	0,20	8,9
	min	1300	7,5	37,0	0,06	0,9	10,0	40,7	0,12	3,6
RDS38WL	max	3800	21,9	46,1	0,22	5,0	23,6	36,3	0,29	8,0
	min	1800	10,4	34,1	0,07	0,6	14,9	42,4	0,18	3,4
RDS56WL	max	5600	32,3	46,3	0,33	14,7	34,5	36,1	0,42	23,0
	min	2700	15,6	33,4	0,10	1,7	22,1	42,2	0,27	9,9
RDS65WL	max	6500	37,5	42,0	0,33	17,9	43,2	37,6	0,52	44,6
	min	3100	17,9	30,8	0,11	2,4	27,1	43,7	0,33	18,2

\*<sup>1</sup>) Recommended outlet air temperature for good comfort and optimized output.

\*<sup>2</sup>) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

## Output charts water

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
RDS23WL	max	2300	13,3	51,9	0,40	35,5	10,3	31,3	0,12	3,9
	min	1050	6,1	37,9	0,07	1,2	6,4	36,0	0,08	1,6
RDS29WL	max	2900	13,8	46,9	0,26	15,0	11,7	29,9	0,14	5,0
	min	1300	7,5	40,9	0,10	2,3	7,3	34,6	0,09	2,1
RDS38WL	max	3800	21,9	51,5	0,63	36,4	17,3	31,4	0,21	4,5
	min	1800	10,4	37,8	0,11	1,4	11,0	36,0	0,13	1,9
RDS56WL	max	5600	32,3	52,0	1,05	136	25,5	31,4	0,31	13,1
	min	2700	15,6	37,7	0,17	4,3	16,4	35,9	0,20	5,7
RDS65WL	max	6500	37,1	48,0	0,72	83,2	32,0	32,5	0,39	25,4
	min	3100	17,9	34,9	0,17	5,5	20,2	37,2	0,24	10,5

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +32 °C				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
RDS23WL	max	2300	11,2	46,0	0,30	20,9	8,4	28,7	0,10	2,7
	min	1050	5,2	35,0	0,06	1,1	5,2	32,6	0,06	1,1
RDS29WL	max	2900	14,1	50,0	0,76	124,2	9,5	27,7	0,11	3,4
	min	1300	6,4	37,0	0,09	1,9	6,0	31,5	0,07	1,4
RDS38WL	max	3800	18,7	46,0	0,50	24,0	14,1	28,9	0,17	3,1
	min	1800	8,6	34,0	0,10	1,1	9,0	32,7	0,11	1,3
RDS56WL	max	5600	27,2	46,0	0,73	68,5	20,9	29,0	0,25	9,1
	min	2700	12,5	32,0	0,13	2,8	13,5	32,8	0,16	4,0
RDS65WL	max	6500	31,0	42,0	0,56	50,8	26,4	30,0	0,32	17,6
	min	3100	14,4	30,0	0,14	3,8	16,7	33,9	0,20	7,4

\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

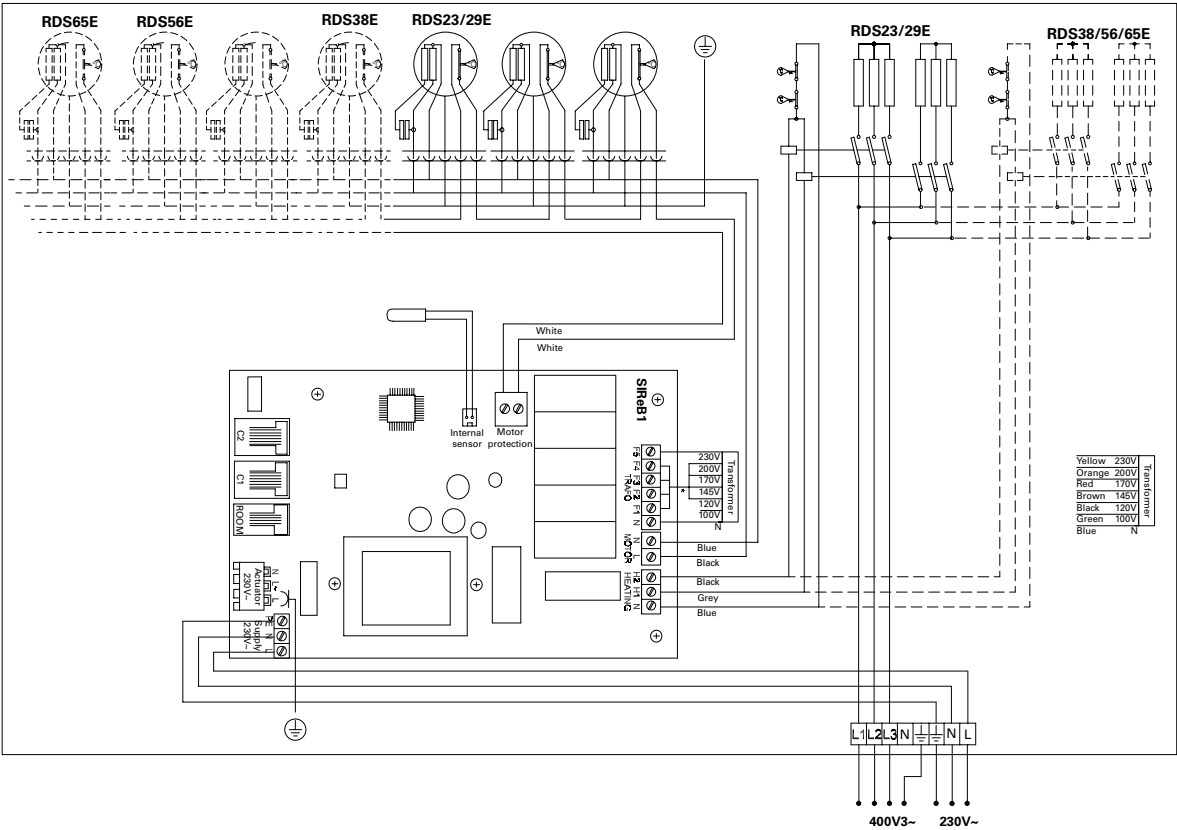
See [www.frico.se](http://www.frico.se) for additional calculations.

RDS

Wiring diagrams

Internal wiring diagram

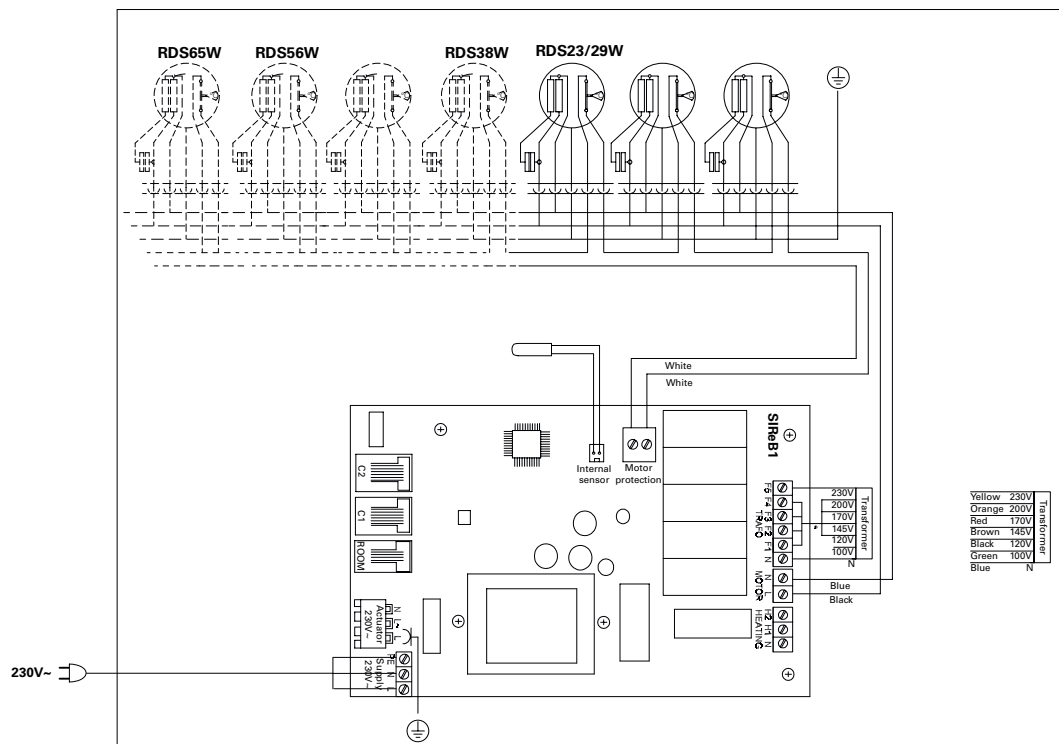
Unit with electrical heating





## Wiring diagrams

## Internal wiring diagram

*Unit with water heating*

SFS



SFS

Design air curtain for revolving doors, with intelligent control

- For revolving doors
- Vertical mounting
- Height: 2,2 m

⚡ Electrical heat: 8–23 kW

💧 Water heat WL

#### Application

The SFS is an air curtain with many clever functions, specially designed for revolving doors. The air curtain is mounted vertically and its curved design integrates neatly with the door. SFS efficiently protects the exposed area just above the floor.

A revolving door prevents continuous drafts but still lets in a certain amount of cold air at every rotation. The air curtain prevents the cold air from penetrating and gives good heating comfort.

#### Design

The SFS has a curved design that follows the shape of the revolving door and is available in powder-coat painted or stainless steel. The product key offers many options for the design and finish of the air curtain.



#### Product specifications

- Prepared for the SIRE control system whose pre-programmed default settings and many features make it easy to install and use the air curtain. Read more about the SIRE controls package in the "Controls" section.
- Customised production based on the product key.
- Standard length is 2200 mm. Lengths up to 3 m can be ordered according to the product key (extension without fans). Extension hoods, for heights up to 4 m, are available as an accessory.
- The air curtain is mounted to the left of the revolving door. Air curtains for installation to the right can be specially ordered.
- Available in polished high gloss, polished or brushed stainless steel. Also available in powder coated steel, any RAL/NCS colour. Aluminium louvres. Colour intake grille: grey, RAL 7046.

## Technical specifications

### ⚡ Electrical heat - SFS E

Type	Output steps [kW]	Airflow* <sup>1</sup> [m³/h]	Δt* <sup>3</sup> [°C]	Sound level* <sup>2</sup> [dB(A)]	Voltage [V] Amperage [A] (control)	Voltage [V] Amperage [A] (heat)	Length* <sup>6</sup> [mm]	Weight [kg]
SFS23E08	2,7/5,4/8,1	1050/2300	23/11	60	230V~/2,3	400V3~/11,7	2200	75
SFS30E12	3,9/7,8/11,7	1400/3000	25/12	61	230V~/3,1	400V3~/16,9	2200	80
SFS38E16	5,4/10,8/16,2	1800/3800	27/13	62	230V~/4,8	400V3~/23,4	2200	80
SFS56E23	7,8/15,6/23,4	2700/5600	26/12	63	230V~/7,0	400V3~/33,8	2200	90

### 💧 Water heat - SFS WL, coil for low water temperature (≤80 °C)

Type	Output* <sup>4</sup> [kW]	Output* <sup>5</sup> [kW]	Airflow [m³/h]	Δt* <sup>3,4</sup> [°C]	Δt* <sup>4,5</sup> [°C]	Water volume [l]	Sound level* <sup>2</sup> [dB(A)]	Voltage [V]	Amperage [A]	Length* <sup>6</sup> [mm]	Weight [kg]
SFS23WL	13,3	22,3	1050/2300	22/17	37/29	3,0	60	230V~	2,3	2200	75
SFS30WL	19,9	33,0	1400/3000	25/20	41/33	4,4	61	230V~	3,1	2200	80
SFS38WL	23,1	39,1	1800/3800	23/18	38/31	4,4	62	230V~	4,8	2200	80
SFS56WL	29,4	49,7	2700/5600	20/16	34/26	4,4	63	230V~	7,0	2200	90

\*1) Lowest/highest airflow of totally 5 fan steps.

\*2) Conditions: Distance to the unit 5 metres. Directional factor: 2. Equivalent absorption area: 200 m².

\*3) Δt = temperature rise of passing air at maximum heat output and lowest/highest airflow.

\*4) Applicable at water temperature 60/40 °C, air temperature, in +18 °C.

\*5) Applicable at water temperature 80/60 °C, air temperature, in +18 °C.

\*6) Standard height. Max. height 3000 mm (extension without fans).

Protection class: IP20.

CE compliant.

## Ordering

### Select air curtain

To select which air curtain to order, multiply the width with the height of the opening of the revolving door, to get the surface of the opening. To create comfort in the entrance area between 3,5 and 5 kW heating per square metre of opening, depending on the lowest outdoor temperature, is needed.

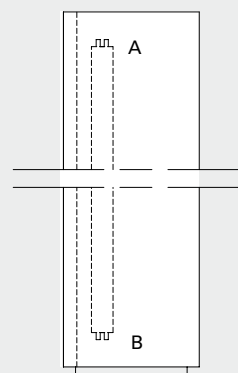
### Product key

Type - Connection position - Total height - Material / colour

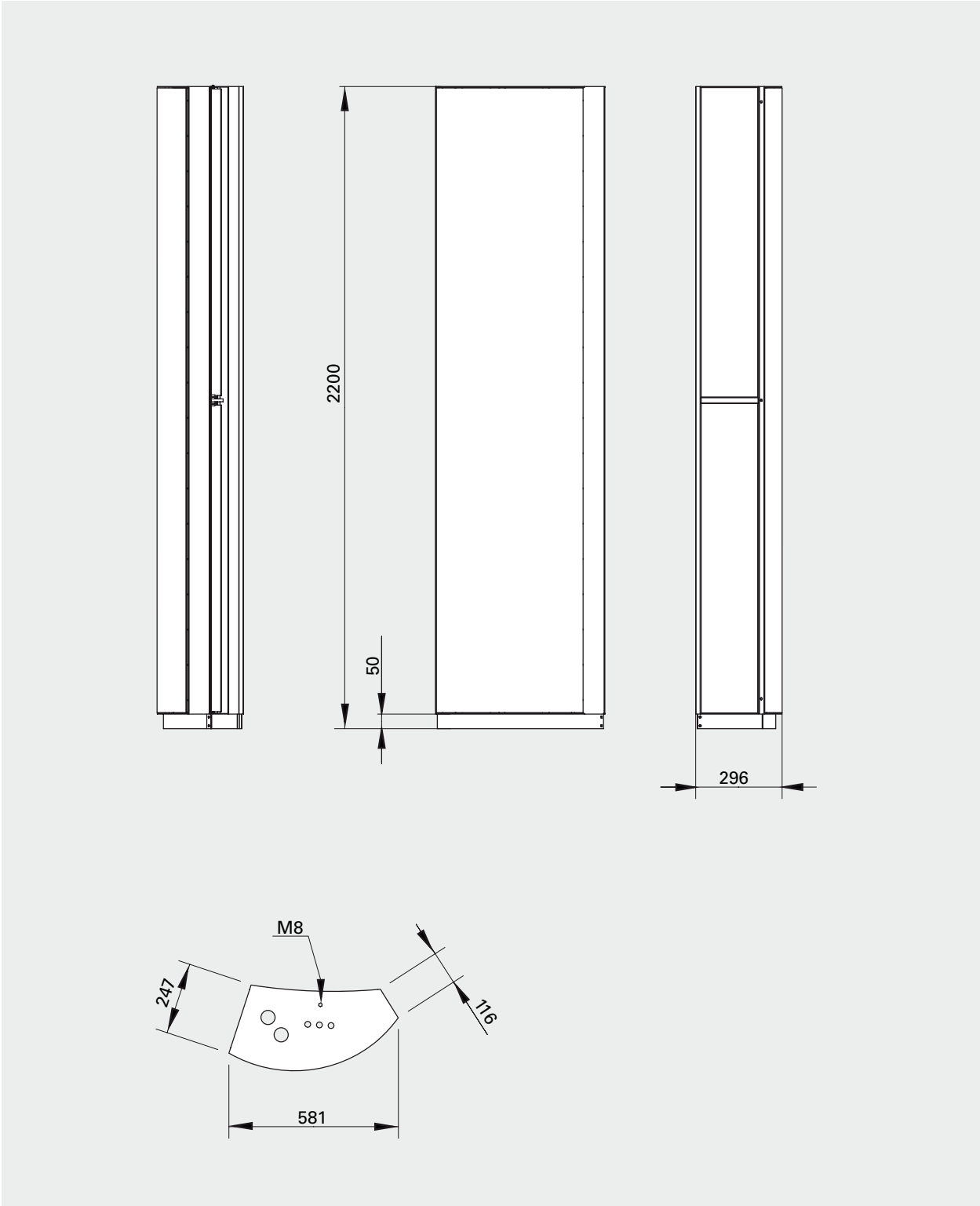
Example: SFS30E12 - A - 2800 mm - P

Type	See Technical specifications.
Connection position	A or B, see fig.
Total height	Min. height 2200 mm. Max height 3000 mm. Extension without fans.
Material/colour	P = Polished stainless steel B = Brushed stainless steel MP = Mirror polished stainless steel State RAL-kod = Powder coating RAL State NCS-kod = Powder coating NCS

### Connections position



Dimensions



## Mounting and connection

### Mounting

The air curtain is mounted to the left of the door seen from inside. The unit has a curved design which makes it an integrated part of the door. When ordering, state whether electricity and/or water connections are made from above or below.

The air curtain is installed on adjustable feet which makes it possible to compensate for any surface undulations. The feet are attached to the floor with fasteners appropriate to the surface and covered by a frame. The air curtain must always be secured at the top.

### Connection

The PC board SIRE is built into the air curtain on delivery and is equipped with modular connectors for easy connection of external components. Read more about the SIRE control system in the "Controls" section.

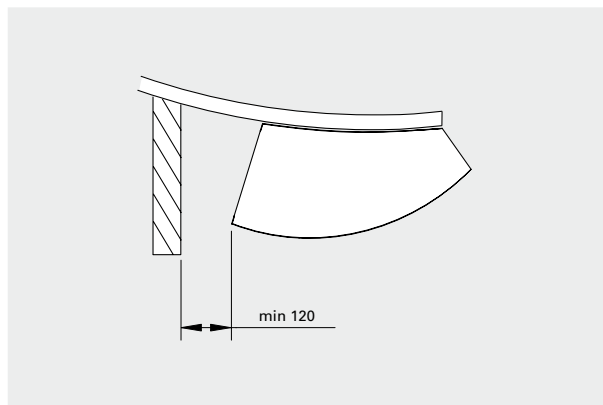
#### *Unit with electrical heating*

The electrical connection may be done from above or below, according to ordering key. Control (230V~) and power supply for heat (400V3~) should be connected to a terminal block. For units with electrical heating, power and control should be supplied separately.

#### *Unit with water heating*

The electrical connection may be done from above or below, according to ordering key. Control (230V~) should be connected to a terminal block.

Water connection can be made from above and below, according to the order key, via DN25 (1"), internal thread connections. Flexible hoses are available as an accessory.



Minimum distances



## Accessories

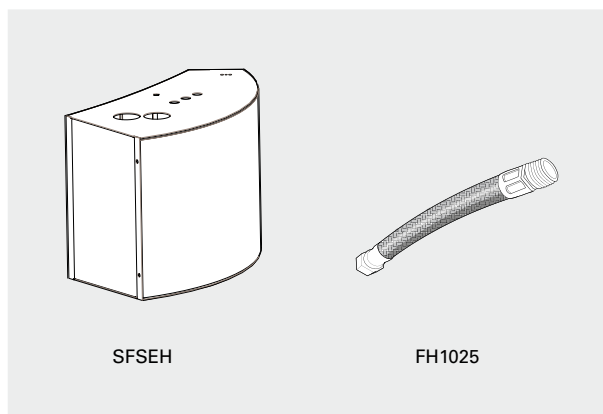
### SFSEH, extension hood

Extends the unit, adapting it to the installation. Height 100-1000 mm. Special order to required dimension.

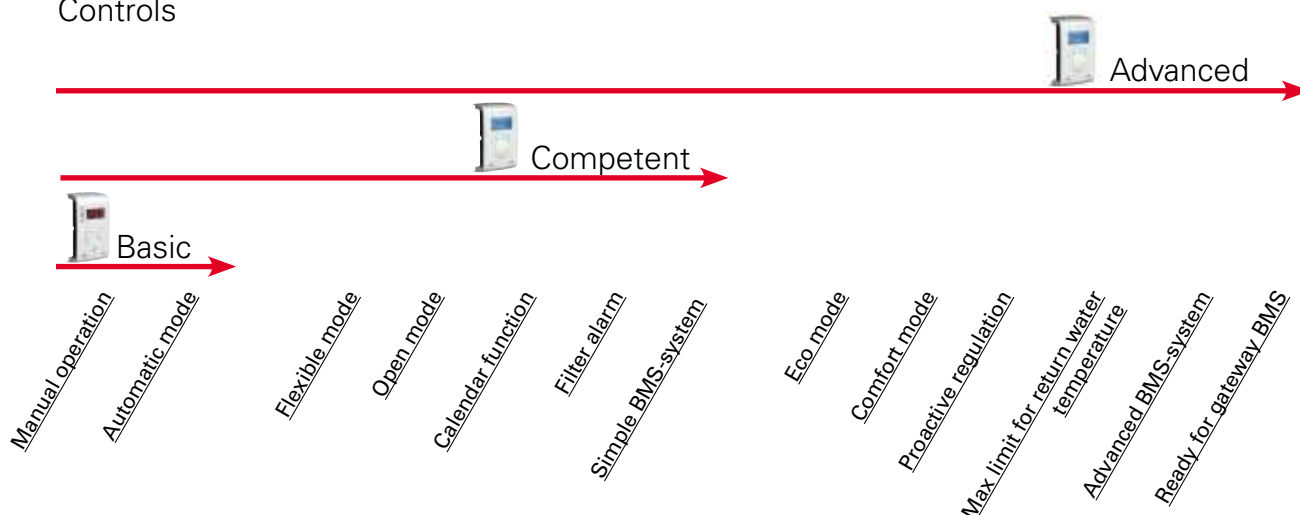
### FH1025, flexible hose

Flexible hose (DN25, 1" inside thread) for easy connection to the pipe system.

Type	Description
<b>SFSEH</b>	Extension hood
<b>FH1025</b>	Flexible hose DN25, inside thread, length 1 m



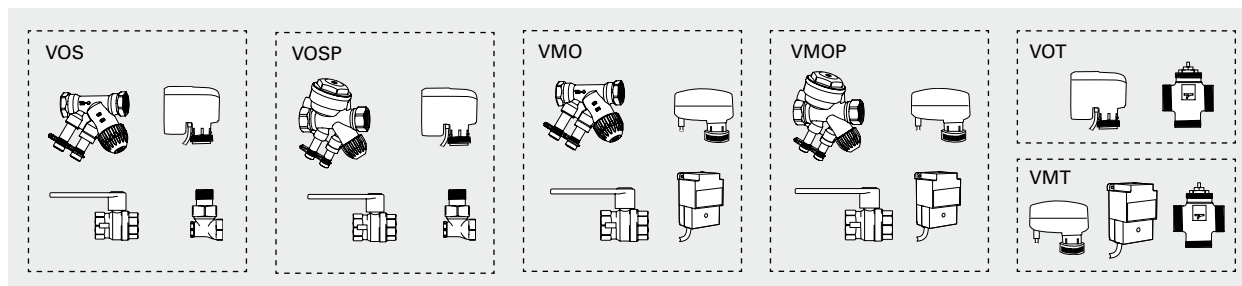
## Controls



This air curtain is supplied with an integrated PC board SIRE. There are three different levels with different functionality to choose from, Basic, Competent or Advanced. Read more about the SIRE control system in the "Controls" section.

Type	Description
<b>SIREB</b>	Control system SIRE Basic
<b>SIREAC</b>	Control system SIRE Competent
<b>SIREAA</b>	Control system SIRE Advanced

## Water control



Valve kit VOS(P), VOT, VMO(P) or VMT is used to control the water flow. For more information see the "Controls" section.

Type	Description
<b>VOS15LF</b>	Valve kit on/off, low flow, DN15
<b>VOS15NF</b>	Valve kit on/off, DN15
<b>VOS20</b>	Valve kit on/off, DN20
<b>VOS25</b>	Valve kit on/off, DN25
<b>VOSP15LF</b>	Pressure independent valve kit, low flow, DN15
<b>VOSP15NF</b>	Pressure independent valve kit, DN15
<b>VOSP20</b>	Pressure independent valve kit, DN20
<b>VOSP25</b>	Pressure independent valve kit, DN25
<b>VOT15</b>	Three way control valve and actuator on/off, DN15
<b>VOT20</b>	Three way control valve and actuator on/off, DN20
<b>VOT25</b>	Three way control valve and actuator on/off, DN25

Type	Description
<b>VMO15LF</b>	Modulating valve kit, low flow, DN15
<b>VMO15NF</b>	Modulating valve kit, DN15
<b>VMO20</b>	Modulating valve kit, DN20
<b>VMO25</b>	Modulating valve kit, DN25
<b>VMOP15LF</b>	Pressure independent and modulating valve kit, low flow, DN15
<b>VMOP15NF</b>	Pressure independent and modulating valve kit, DN15
<b>VMOP20</b>	Pressure independent and modulating valve kit, DN20
<b>VMOP25</b>	Pressure independent and modulating valve kit, DN25
<b>VMT15</b>	Three way control valve and modulating actuator, DN15
<b>VMT20</b>	Three way control valve and modulating actuator, DN20
<b>VMT25</b>	Three way control valve and modulating actuator, DN25

## Output charts water

			Supply water temperature: 80 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 80/60 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
SFS23WL	max	1800	10,3	28,2	0,05	1,1	18,9	49,2	0,23	15,2
	min	900	5,2	29,5	0,03	0,3	11,6	56,2	0,14	6,4
SFS30WL	max	2400	13,8	26,3	0,06	0,8	28,4	53,2	0,35	15,7
	min	1200	6,8	29,2	0,03	0,2	17,1	60,3	0,21	6,4
SFS38WL	max	3600	20,6	28,7	0,10	1,8	37,6	49,0	0,46	25,8
	min	1800	10,3	27,0	0,05	0,5	23,2	56,2	0,28	10,9
SFS56WL	max	5400	30,9	34,0	0,16	4,3	48,6	44,7	0,59	41,0
	min	2700	15,4	26,3	0,07	1,0	30,8	51,9	0,38	18,1

			Supply water temperature: 70 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 70/50 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
SFS23WL	max	1800	10,3	31,4	0,06	1,8	15,2	43,1	0,19	10,6
	min	900	5,1	29,7	0,03	0,5	9,3	48,7	0,11	4,5
SFS30WL	max	2400	13,7	27,5	0,08	1,3	22,7	46,1	0,28	10,8
	min	1200	6,9	29,1	0,04	0,4	13,8	52,1	0,17	4,5
SFS38WL	max	3600	20,6	32,0	0,13	3,1	30,1	42,8	0,37	17,8
	min	1800	10,3	27,5	0,06	0,8	18,6	48,7	0,23	7,6
SFS56WL	max	5400	30,9	38,0	0,23	8,3	38,8	39,3	0,47	28,0
	min	2700	15,5	28,7	0,09	1,6	24,6	45,1	0,30	12,5

			Supply water temperature: 60 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 60/40 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
SFS23WL	max	1800	10,3	35,8	0,10	4,0	11,4	36,7	0,14	6,6
	min	900	5,2	30,3	0,04	0,9	7,0	41,0	0,08	2,8
SFS30WL	max	2400	13,7	31,2	0,11	2,5	17,0	39,0	0,21	6,7
	min	1200	6,9	29,0	0,05	0,7	10,4	43,7	0,13	2,9
SFS38WL	max	3600	20,6	36,4	0,21	7,1	22,4	36,5	0,27	10,9
	min	1800	10,3	28,7	0,08	1,3	14,0	41,0	0,17	4,8
SFS56WL	max	5400	30,9	43,3	0,45	26,4	28,7	33,8	0,35	17,0
	min	2700	15,5	32,6	0,14	3,3	18,5	38,4	0,23	7,8

			Supply water temperature: 55 °C Room temperature: +18 °C Outlet air temperature: +35 °C*1				Water temperature: 55/35 °C Room temperature: +18 °C			
Type	Fan position	Airflow [m³/h]	Output [kW]	Return water temp. [°C]	Water flow [l/s]	Pressure drop [kPa]	Output*2 [kW]	Outlet air temp. [°C]	Water flow [l/s]	Pressure drop [kPa]
SFS23WL	max	1800	10,3	39,0	0,16	8,3	9,4	33,5	0,11	4,8
	min	900	5,2	31,1	0,05	1,3	5,8	37,1	0,07	2,1
SFS30WL	max	2400	13,7	33,8	0,16	4,3	14,2	35,6	0,17	5,0
	min	1200	6,9	29,3	0,06	0,9	8,7	39,5	0,11	2,1
SFS38WL	max	3600	20,6	39,5	0,32	15,0	18,5	33,3	0,22	7,9
	min	1800	10,3	30,7	0,10	2,1	11,6	37,1	0,14	3,5
SFS56WL	max	5400	30,9	46,8	0,91	94,4	23,7	31,0	0,29	12,3
	min	2700	15,4	35,2	0,19	5,9	15,3	34,9	0,19	5,7

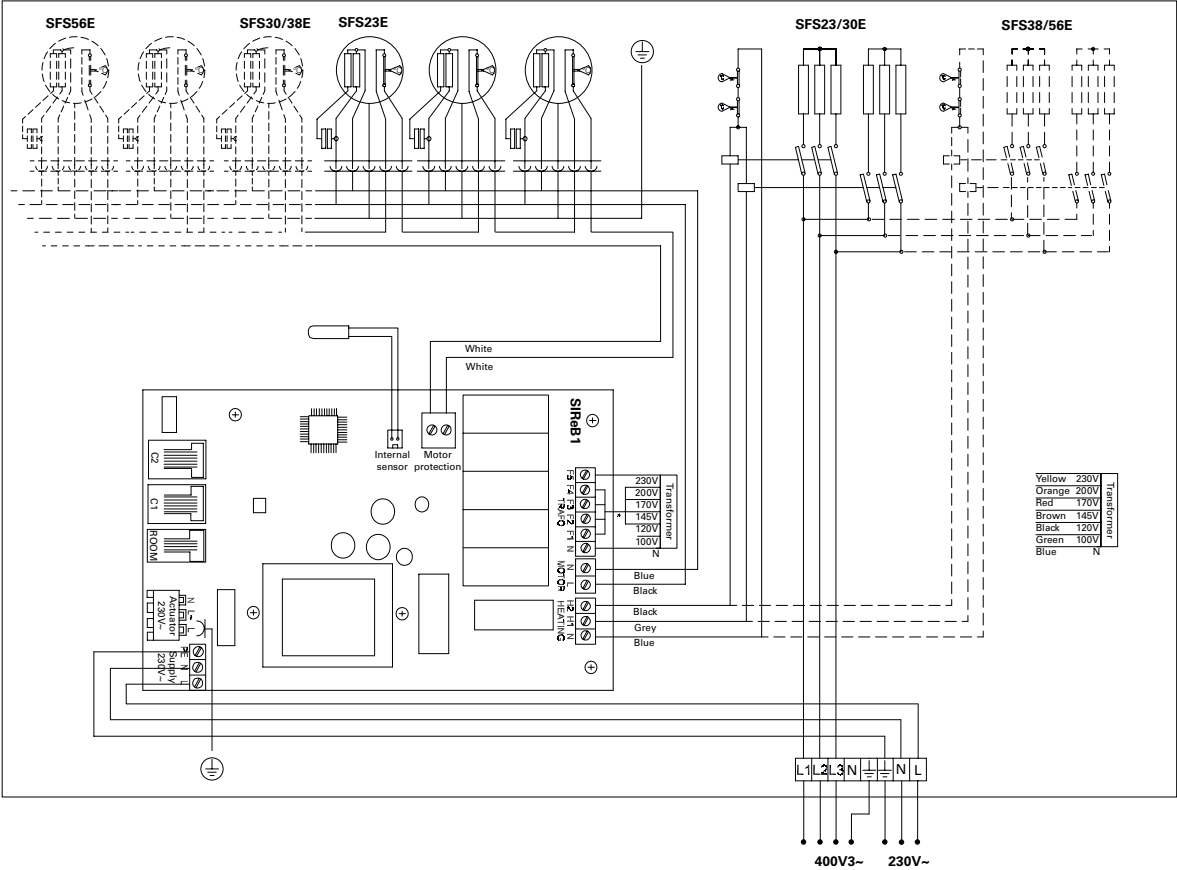
\*1) Recommended outlet air temperature for good comfort and optimized output.

\*2) Nominal output at given supply and return water temperature.

See [www.frico.se](http://www.frico.se) for additional calculations.

Wiring diagrams

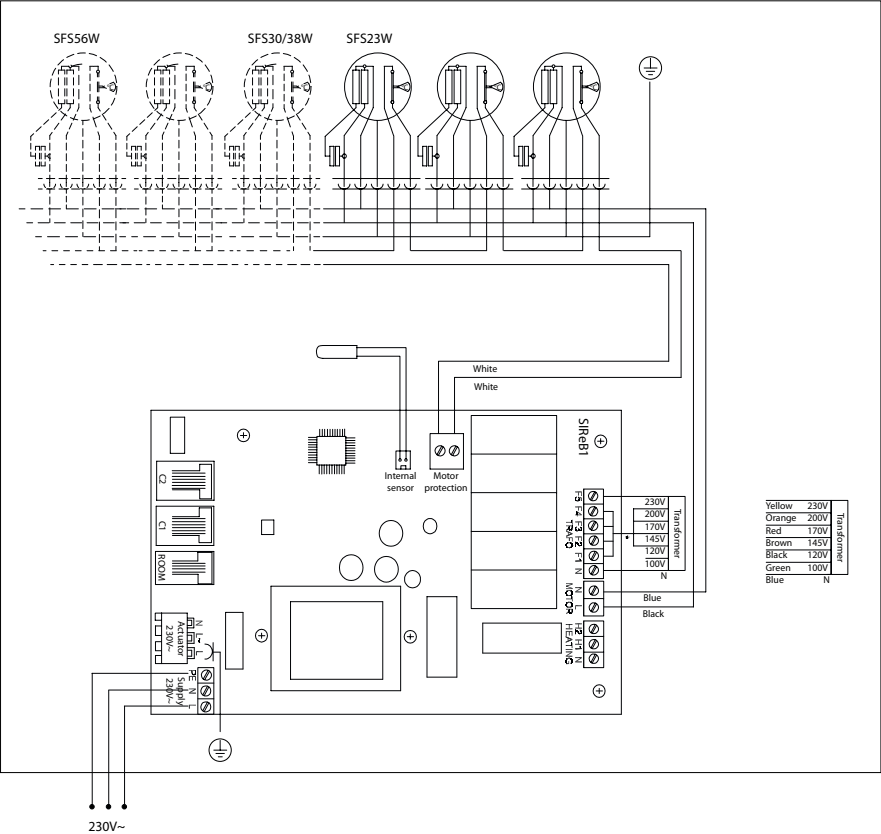
Unit with electrical heating





Wiring diagrams

Unit with water heating



## Controls



# Controls



200 SIRe

---



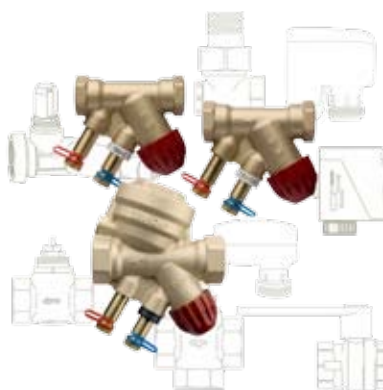
212 Other controls

---



214 Thermostats

---



218 Water control

---

## SIRe Control system

The vast majority of our air curtains are supplied with the SIRe intelligent control system, which is built in and controls the air curtain automatically. The air curtain adapts to the existing conditions in the entrance. By sensing how often the door opens/closes, outdoor temperature, indoor temperature or even the return water temperature, the air curtain will give you the most effective protection with the highest energy efficiency.



### Install and forget

With SIRe control system, the air curtain will always perform at its best. You'll never have to think about switching it on or off. It even adapts to the season outside, and with calendar function the air curtain automatically runs during the hours it is needed.



### Intelligent

Automatically adapts to your entrance

The air curtain automatically adapts to your entrance conditions. Depending on how often the door is opened/closed, or if it is left open continually, the integrated SIRe controls the air curtain operation so that optimal comfort and energy efficiency is achieved.



### Proactive

Anticipates for quicker reactions

By measuring the outdoor temperature, the air curtain is always a step ahead. The integrated regulation ensures that the air curtain is prepared for changes in the outdoor temperature. For example, when a warm spring day turns into a chilly evening. The air speed is adjusted depending on the outdoor temperature change and stops the chill before it penetrates the premises.



### Adaptive

Expert on your entrance

SIRe has the capacity to learn precisely what happens at your entrance. The air curtain adapts so that it is always ready to operate fully as soon as the door is opened. It also considers the acoustic comfort by ensuring that the air curtain does not switch between high and low speeds too often.



## BMS solutions

### Endless possibilities

With our intelligent SiRe control system, the possibilities to control your air curtains via BMS are endless. You can either choose to control your air curtain by 0-10 V signals (controlling on/off, fan speed, heating and alarm) or completely control all functions and receive indications from your air curtain via gateway (two threaded) BUS communication.



## Calendar function

### Presets as required

SiRe has a calendar function for all the days of the week. The air curtain starts in the morning to ensure that it's always working to create a comfortable climate and save energy. Preset default setting may easily be adjusted by the user.



## Simple installation

### "Plug and play"

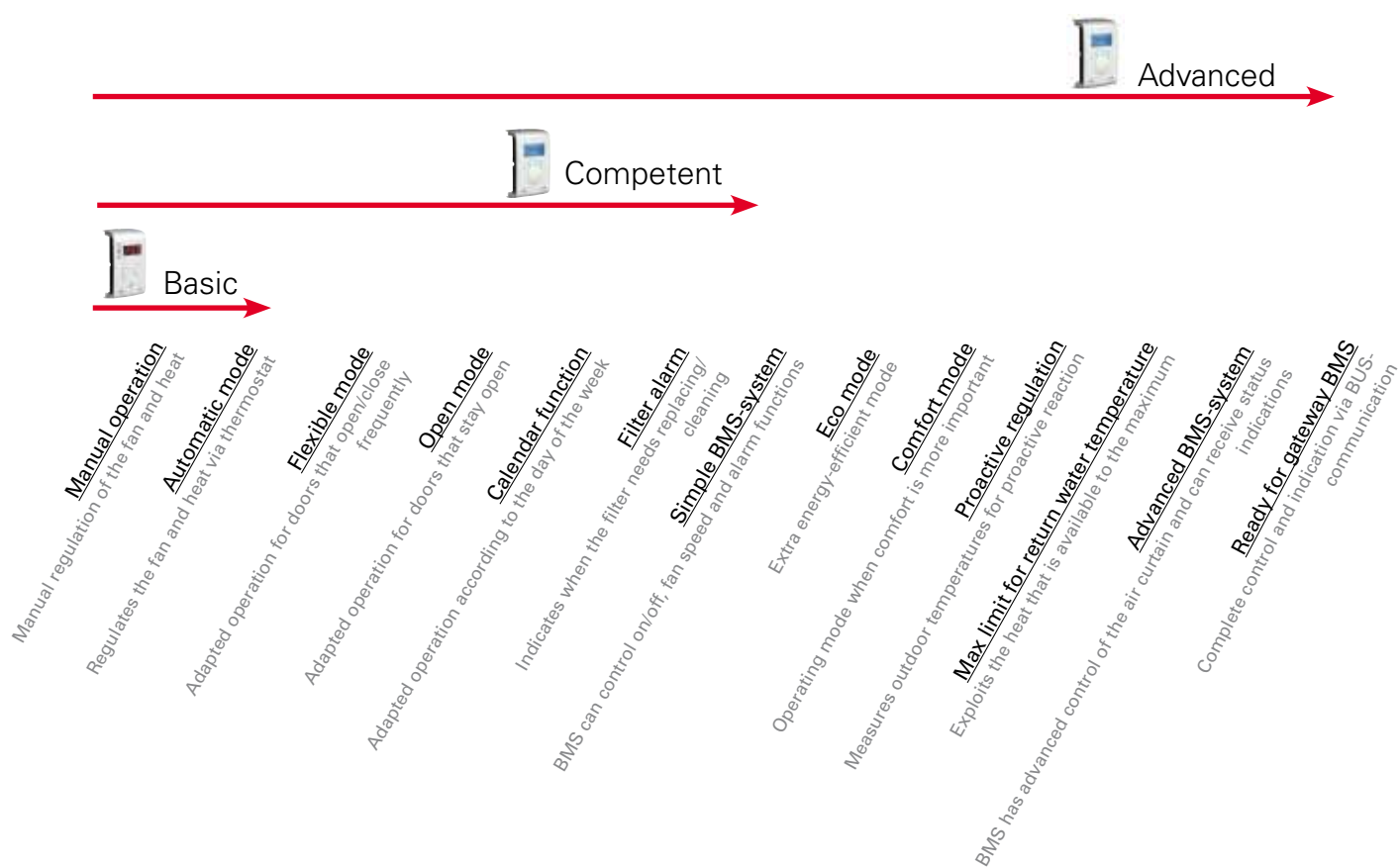
An air curtain with integrated SiRe control system is easy to install. The different components are supplied together and are easy to assemble. The system self-checks that everything is correct and that it functions. Thanks to the preset default settings it is easy to start air curtain operation as soon as the system is in place.



## Eco mode

### Save money and the environment at the same time

With SiRe intelligent regulation integrated in your air curtain, you get comfort in your entrance without wasting energy. If you want to increase the energy efficiency further, set SiRe in Eco mode. The air curtain then uses as little energy as possible without compromising too much on comfort. Energy savings of up to 35 percent are possible.



SIRe is an intelligent and well designed low voltage control system which can be customised for each unique application and environment. SIRe is supplied pre-programmed with quick fit plug connections and is very easy to use and install.

SIRe learns the requirements in the entrance it is installed in (e.g. opening frequency and outdoor temperature). It has calendar function and selectable switch off at set temperatures for up to nine units. Because the fan speed is adapted, the sound level is optimized and is never higher than is necessary for comfort. With SIRe Advanced it is possible to choose between Eco and Comfort mode dependent on whether energy savings or optimal comfort has been prioritised. The return water temperature can be limited, thus ensuring that the available heat is exploited to the maximum.

SIRe can control up to nine units. If more than one air curtain should be controlled by a single SIRe, an additional modular cable SIReCC RJ12 (6p/6c) per unit is needed. Cables between units can easily be joined together by using joint piece SIReCJ6.

There are three different levels with different functionality to choose from, Basic, Competent or Advanced.

## Functions SIReB Basic

- Manual regulation of the fan and temperature
- Automatic control of fan speed and temperature with integrated thermostat.

## Functions SIReAC Competent

- All functions for Basic
- Calendar function
- Filter alarm
- Simple BMS control - on/off, fan speed and alarm functions
- Flexible mode - for doors that open and close frequently
- Open mode - for doors that stay open

## Functions SIReAA Advanced

- All functions for Competent
- Eco mode - extra energy-efficient mode
- Comfort mode - when comfort is important
- Advanced BMS control
- Proactive regulation – measures outdoor temperatures for proactive reaction.

## Control system SIRe

Type	Description
<b>SIReB</b>	Control system SIRe Basic
<b>SIReAC</b>	Control system SIRe Competent
<b>SIReAA</b>	Control system SIRe Advanced



Included in SiReAA Advanced:

- SIReUA1, control unit. Wall unit cover included.
- SIReA1X, PC board HUB Advanced
- SIReOTX, outdoor temperature sensor
- SIReDC, door contact
- SIReCC, modular cables, RJ12(6p/6c), 3 m resp. 5 m

Options:

- SIReRTX, external room temperature sensor, RJ11 (4p/4c), 10 m
- SIReUR, kit for recessed installation
- SIReWTA, clamp-on sensor, RJ11 (4p/4c), 3 m
- VMO(P), (pressure independent) modulating valve kit or VMT, three way valve and modulating actuator

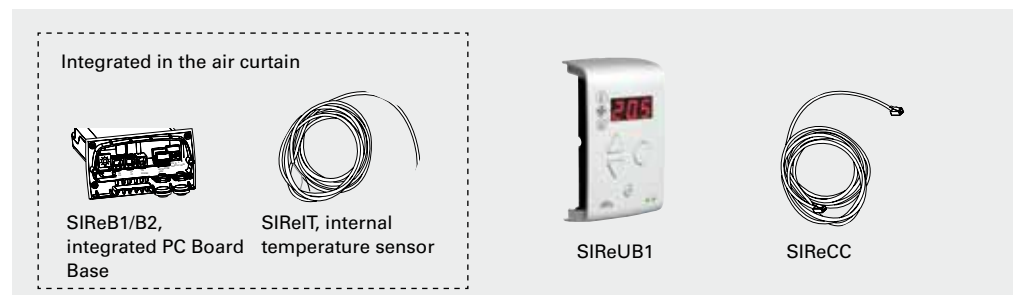


Included in SiReAC Competent:

- SIReUA1, control unit. Wall unit cover included.
- SIReC1X, PC board HUB Competent
- SIReDC, door contact
- SIReCC, modular cables, RJ12(6p/6c), 3 m resp. 5 m

Options:

- SIReRTX, external room temperature sensor, RJ11 (4p/4c), 10 m
- SIReUR, kit for recessed installation
- VOS(P), (pressure independent) valve kit on/off or VOT, three way valve and actuator on/off



Included in SiReB Basic:

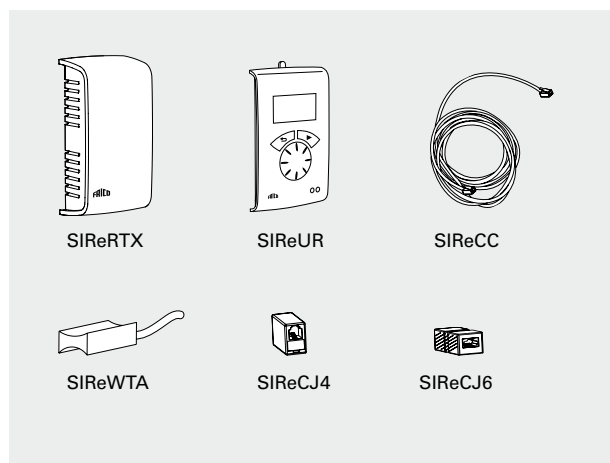
- SIReUB1, control unit. Wall unit cover included.
- SIReCC, modular cable, RJ12(6p/6c), 5 m

Options:

- SIReRTX, external room temperature sensor, RJ11 (4p/4c), 10 m
- VOS(P), (pressure independent) valve kit on/off or VOT, three way valve and actuator on/off

<b>SIReUA1</b>	IP30
<b>SIReUB1</b>	IP30
<b>SIReA1X</b>	IP10
<b>SIReC1X</b>	IP10
<b>SIReOTX</b>	IP65
<b>SIReIT</b>	IP65
<b>SIReRTX</b>	IP30
<b>SIReUR</b>	IP30
<b>SIReWTA</b>	IP65

## SIRe Control system



### SIRe control system - options

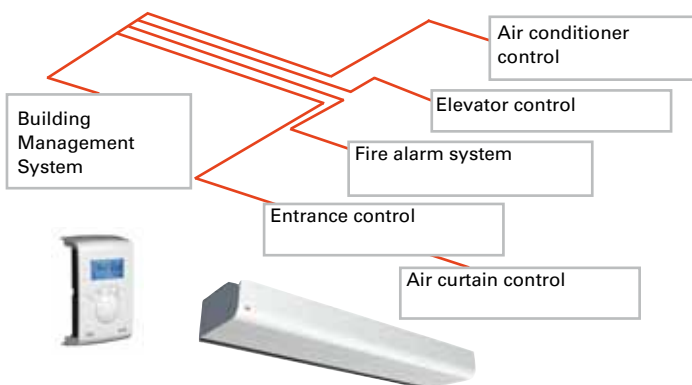
**SIReRTX**, external room temperature sensor  
Used to obtain a better measuring point in the premises when the control unit is located so that the internal room temperature sensor does not show a relevant value. 10 m. cable with modular connector RJ11 (4p/4c).

**SIReUR**, kit for recessed installation  
Kit for installing SIReUA1 recessed in a wall. Only protrudes 11 mm from the wall.

**SIReWTA**, clamp-on sensor  
Clamp-on sensor for return water temperature control. 3 m. cable with modular connector RJ11 (4p/4c). Should be mounted on the return pipe on the heating coil.

**SIReCJ4/SIReCJ6**, joint piece  
Used to join two RJ11 (4p/4c) respectively RJ12 (6p/6c).

**SIReCC**, modular cables  
Modular cables RJ11 (4p/4c) respectively RJ12 (6p/6c). Available in lengths 3, 5, 10 and 15 m.



Integration of Frico air curtains in an overall control system (BMS)

#### BMS-control - level 1

With SIRe Competent the air curtains can be integrated in an overall control system (BMS). The air curtain can be started/stopped and the fan speed regulated via the BMS system. A 5-30V control signal is required for starting/stopping. A 0-10V control signal is required to control the fan speed. Potential free contact for buzzer.

#### BMS-control - level 2

With SIRe Advanced the air curtains can be integrated in an overall control system (BMS). The air curtain can be started/stopped, the fan speed and heating regulated smoothly via the BMS system. A 5-30V control signal is required for starting/stopping. A 0-10V control signal is required to control the fan speed and heating. Input for alarm and night reduction via external potential free contact. Potential free contact for buzzer and operation indication.

#### BMS-control - level 3

With SIRe Advanced it is also possible to communicate via Modbus RTU (RS485). Contact Frico for more information.

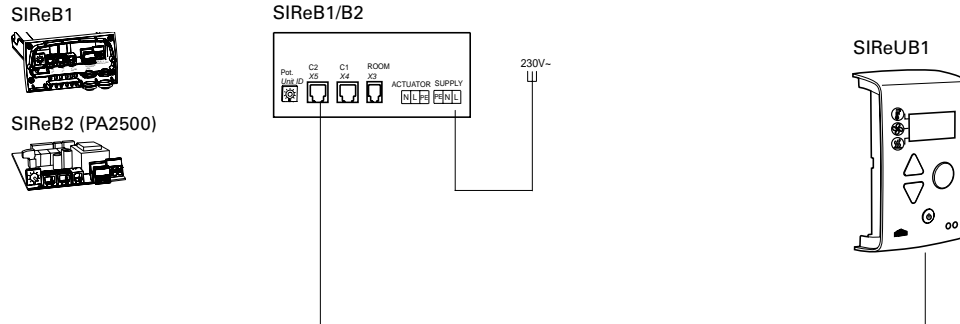
### Accessories - SIRe

Type	Description
<b>SIReRTX</b>	External room temperature sensor, IP30
<b>SIReUR</b>	Kit for recessed installation, IP30
<b>SIReWTA</b>	Clamp-on sensor, IP65
<b>SIReCJ4</b>	Used to join two RJ11(4/4)
<b>SIReCJ6</b>	Used to join two RJ12(6/6)
<b>SIReCC603</b>	Modular cable RJ12(6/6) 3 m
<b>SIReCC605</b>	Modular cable RJ12(6/6) 5 m
<b>SIReCC610</b>	Modular cable RJ12(6/6) 10 m
<b>SIReCC615</b>	Modular cable RJ12(6/6) 15 m
<b>SIReCC403</b>	Modular cable RJ11(4/4) 3 m
<b>SIReCC405</b>	Modular cable RJ11(4/4) 5 m
<b>SIReCC410</b>	Modular cable RJ11(4/4) 10 m
<b>SIReCC415</b>	Modular cable RJ11(4/4) 15 m

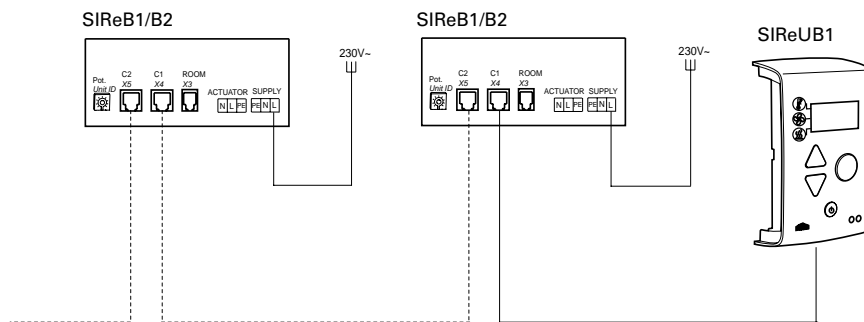


## Wiring diagrams - SIReB Basic

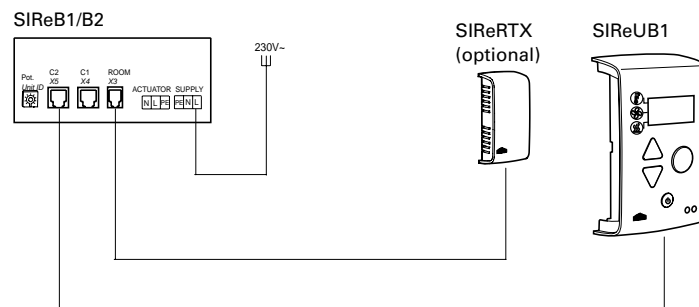
### Unit without heating



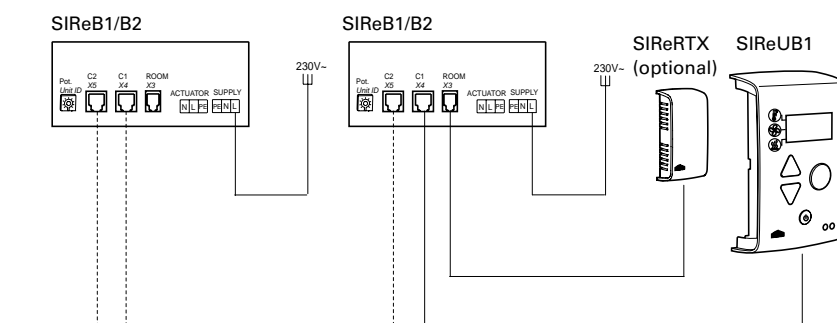
### Parallel connection



### Unit with electrical heating



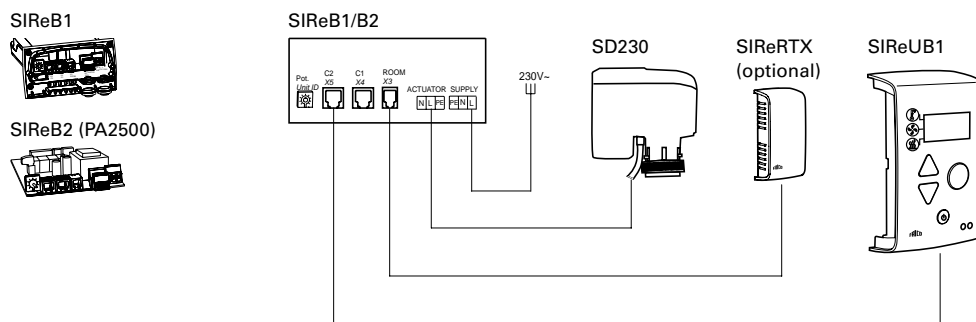
### Parallel connection



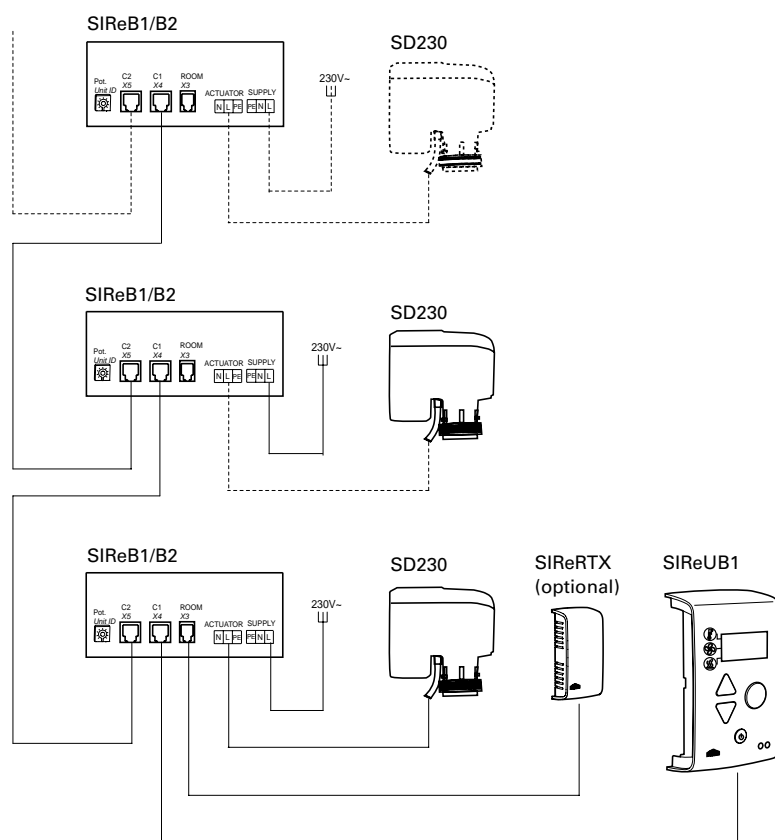
# SIRe Control system

## Wiring diagrams - SIReB Basic

Unit with water heating

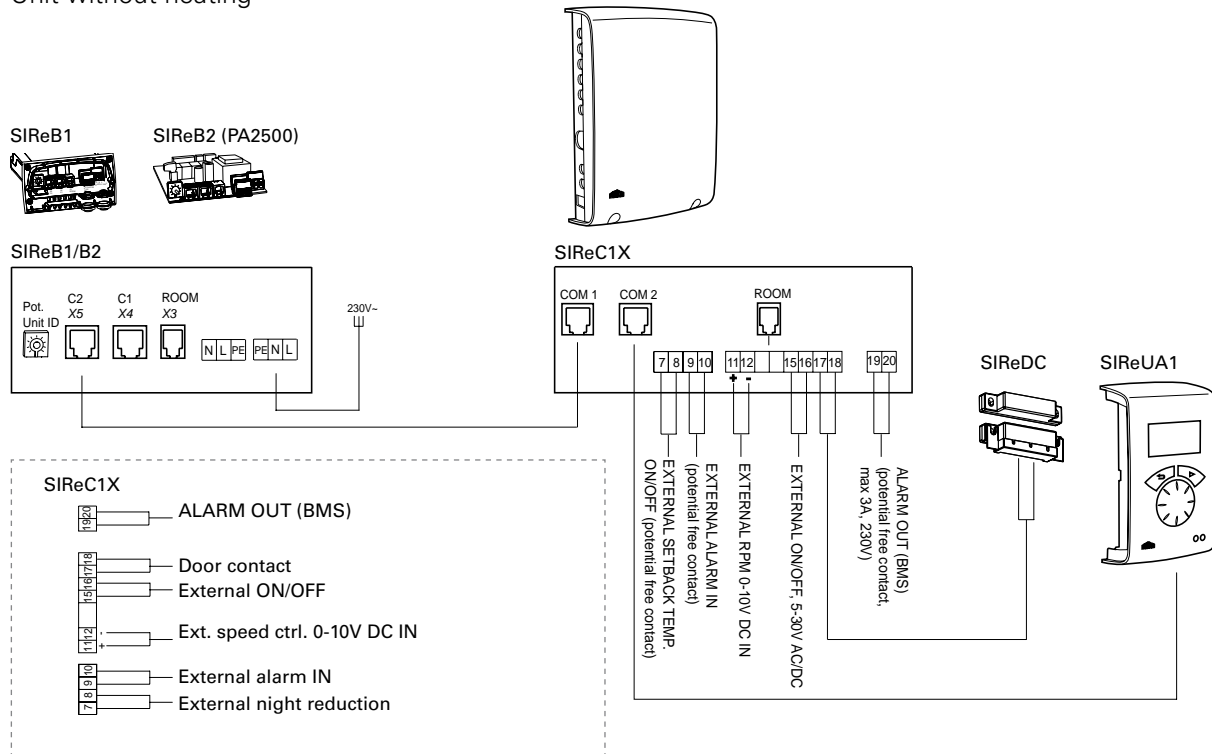


Parallel connection

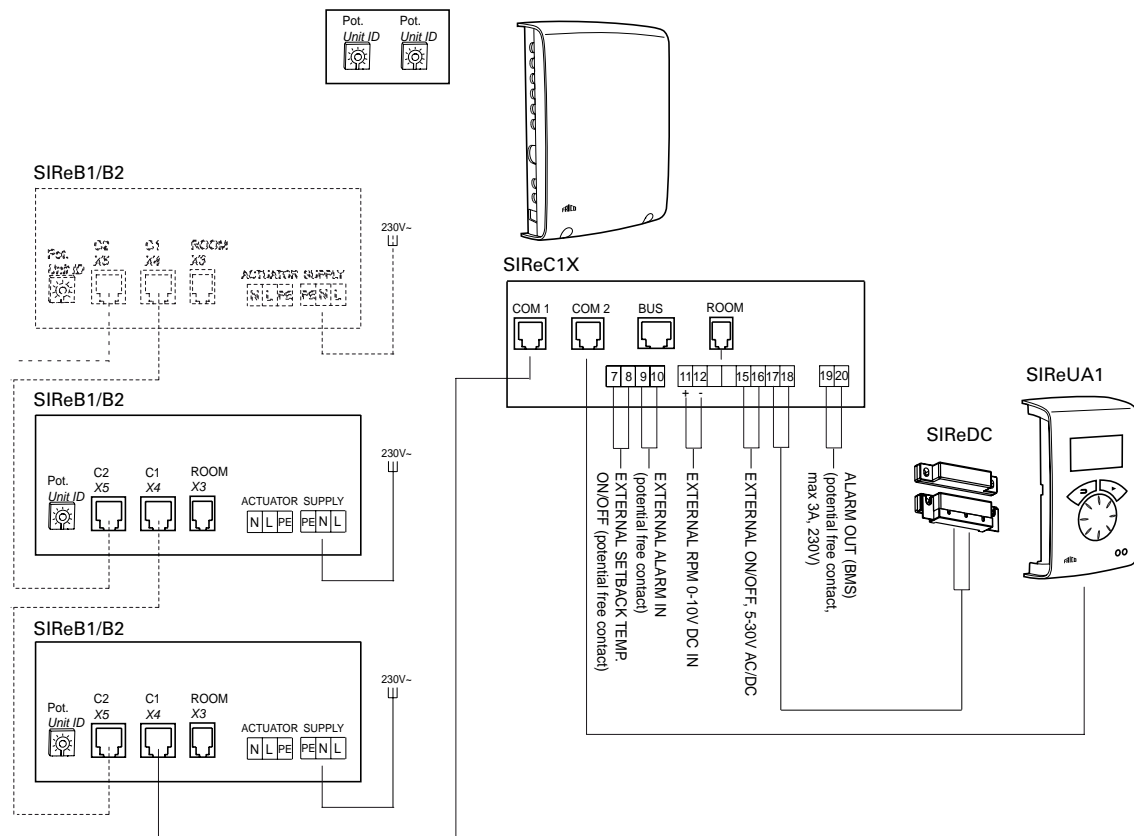


## Wiring diagrams - SIReAC Competent

### Unit without heating



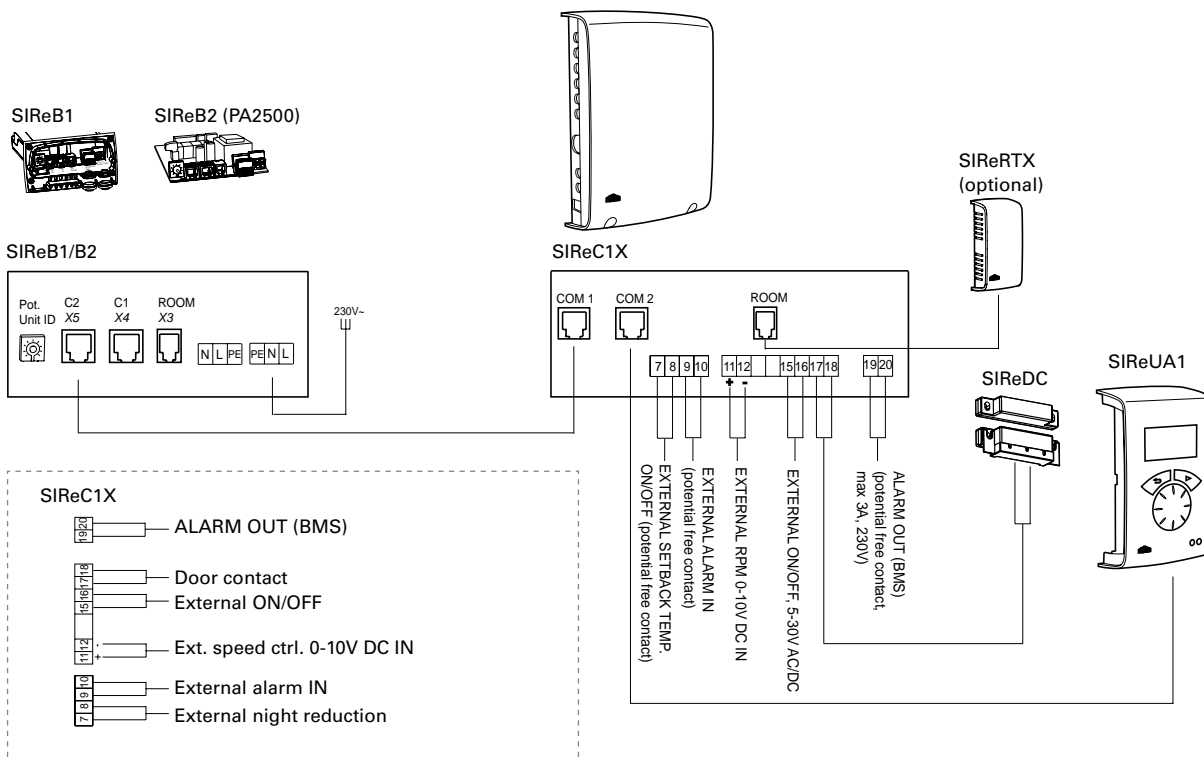
### Parallel connection



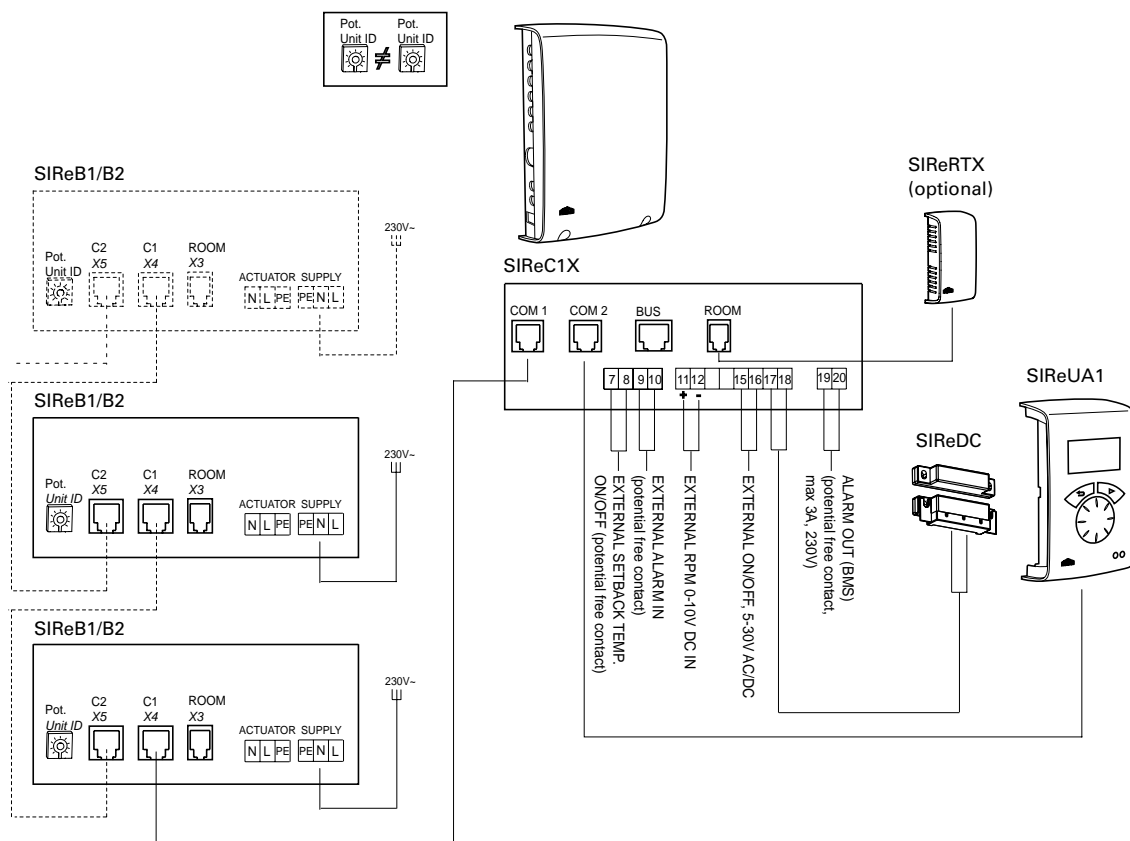
# SIRe Control system

## Wiring diagrams - SIReAC Competent

### Unit with electrical heating

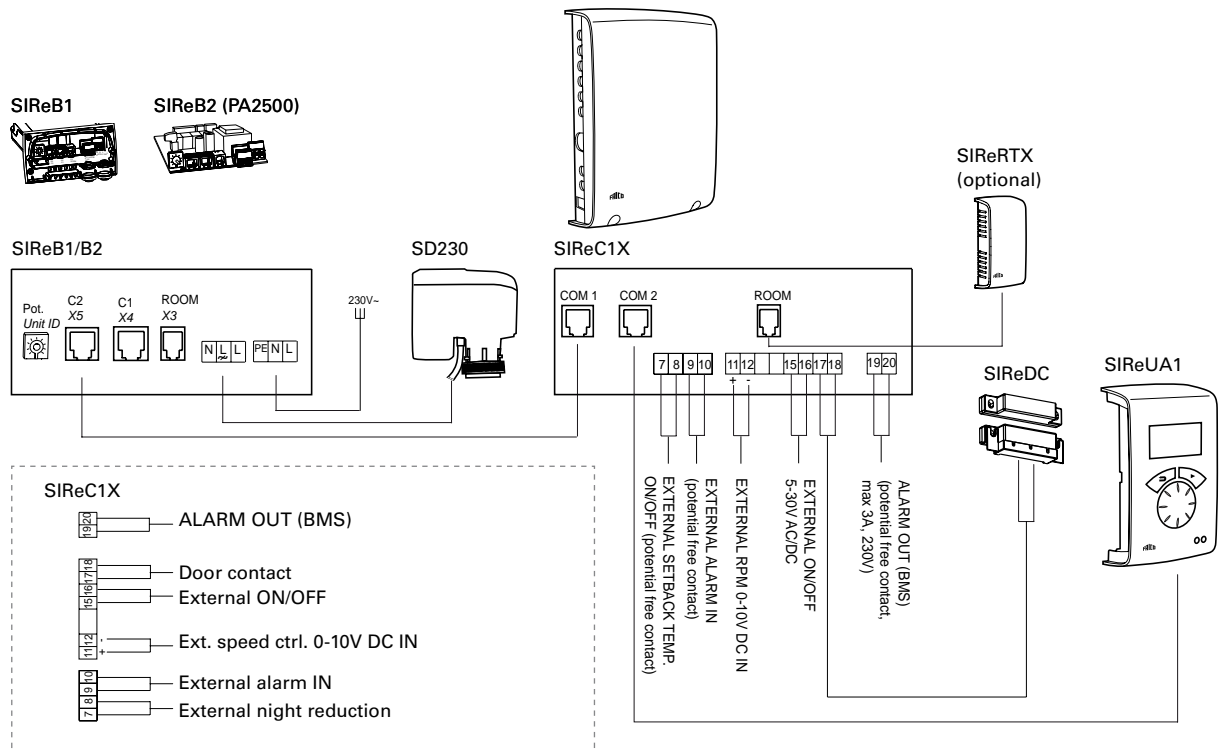


### Parallel connection

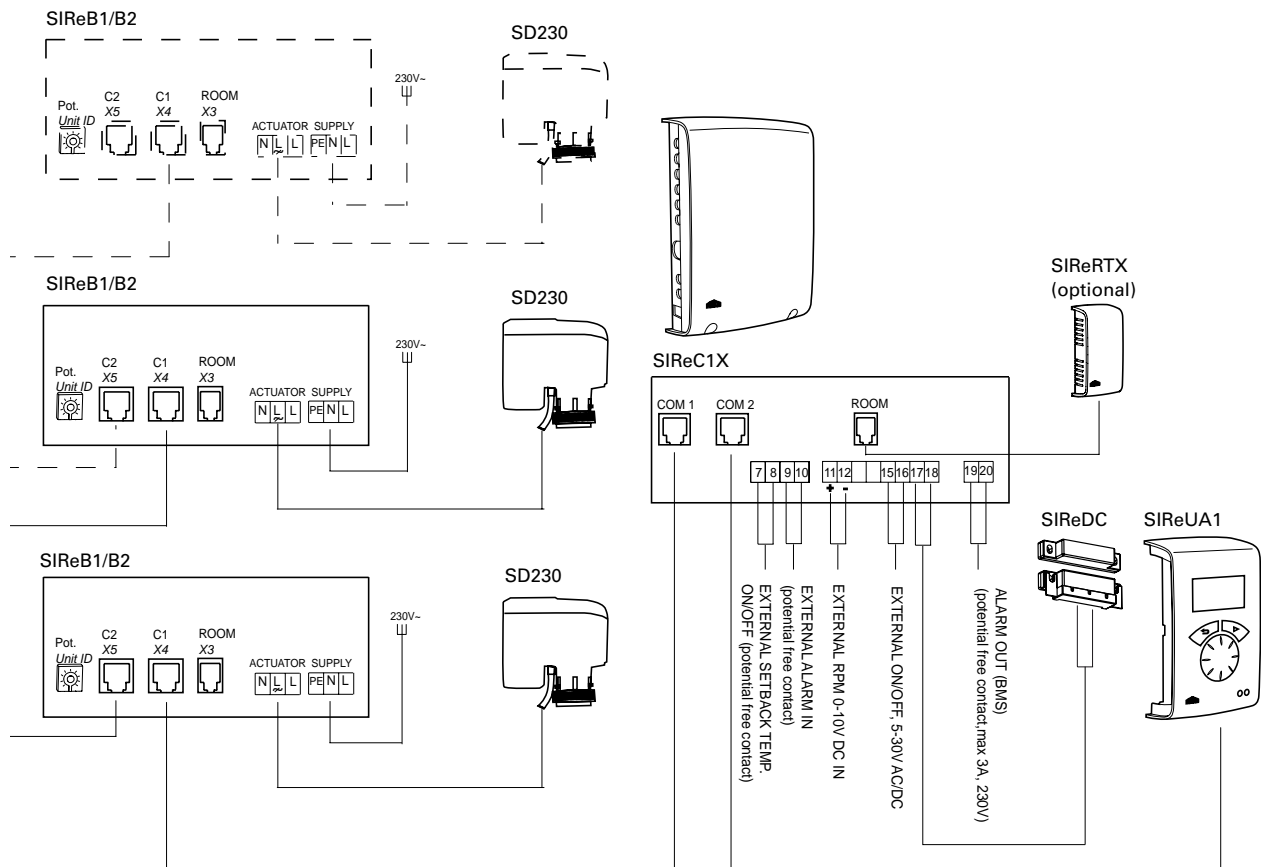


## Wiring diagrams - SIReAC Competent

Unit with water heating



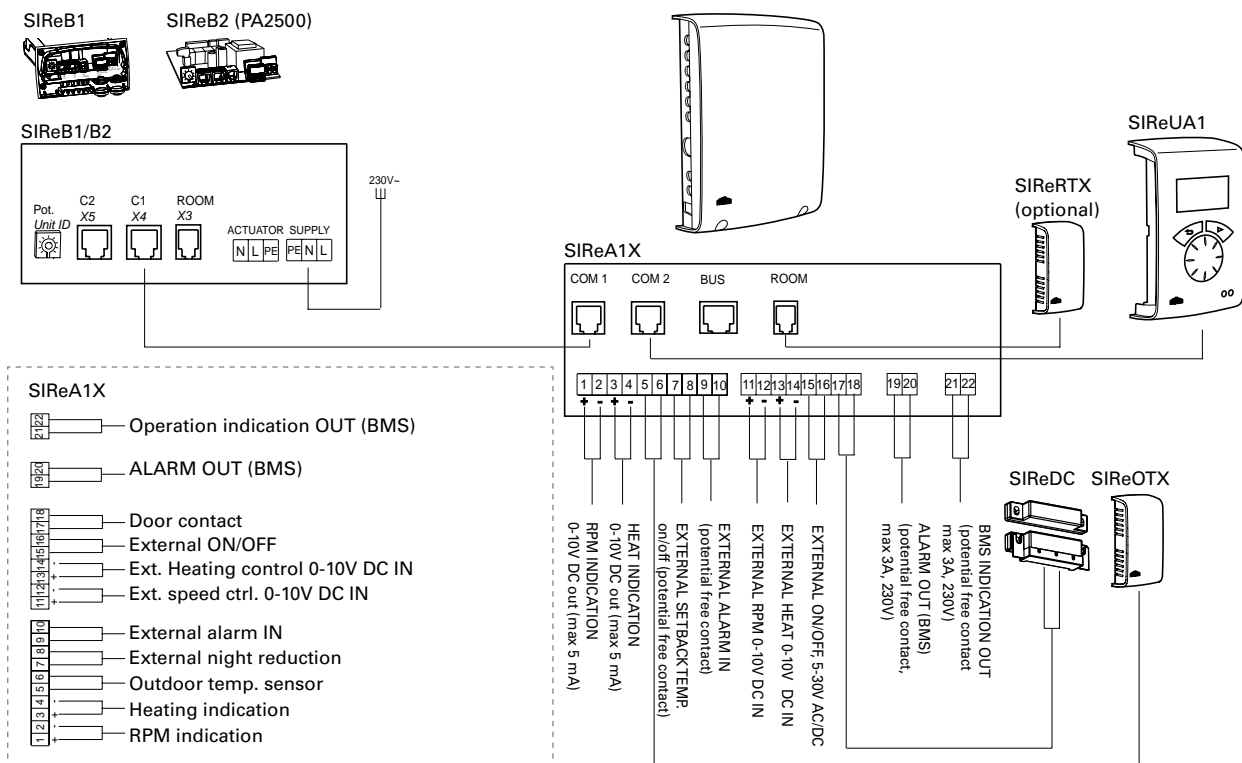
Parallel connection



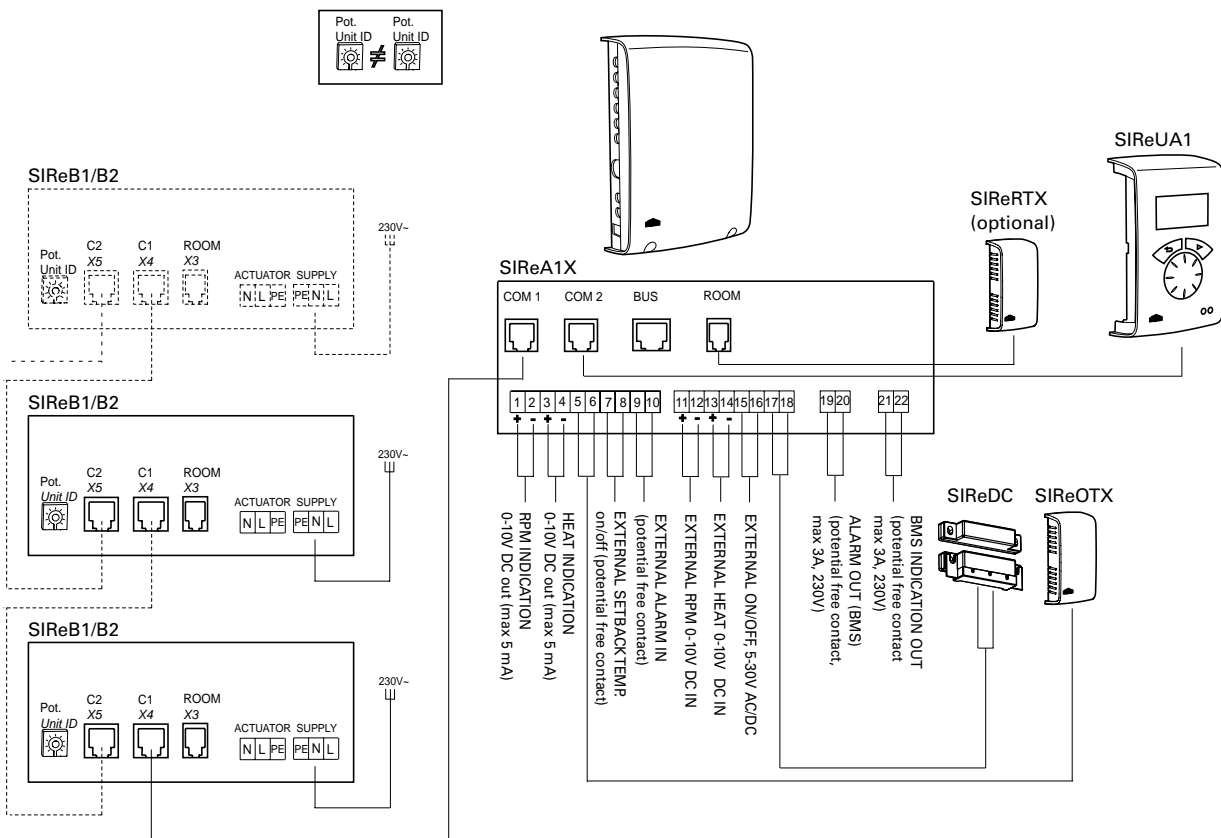
# SIRe Control system

## Wiring diagrams - SIReAA Advanced

### Unit with electrical heating

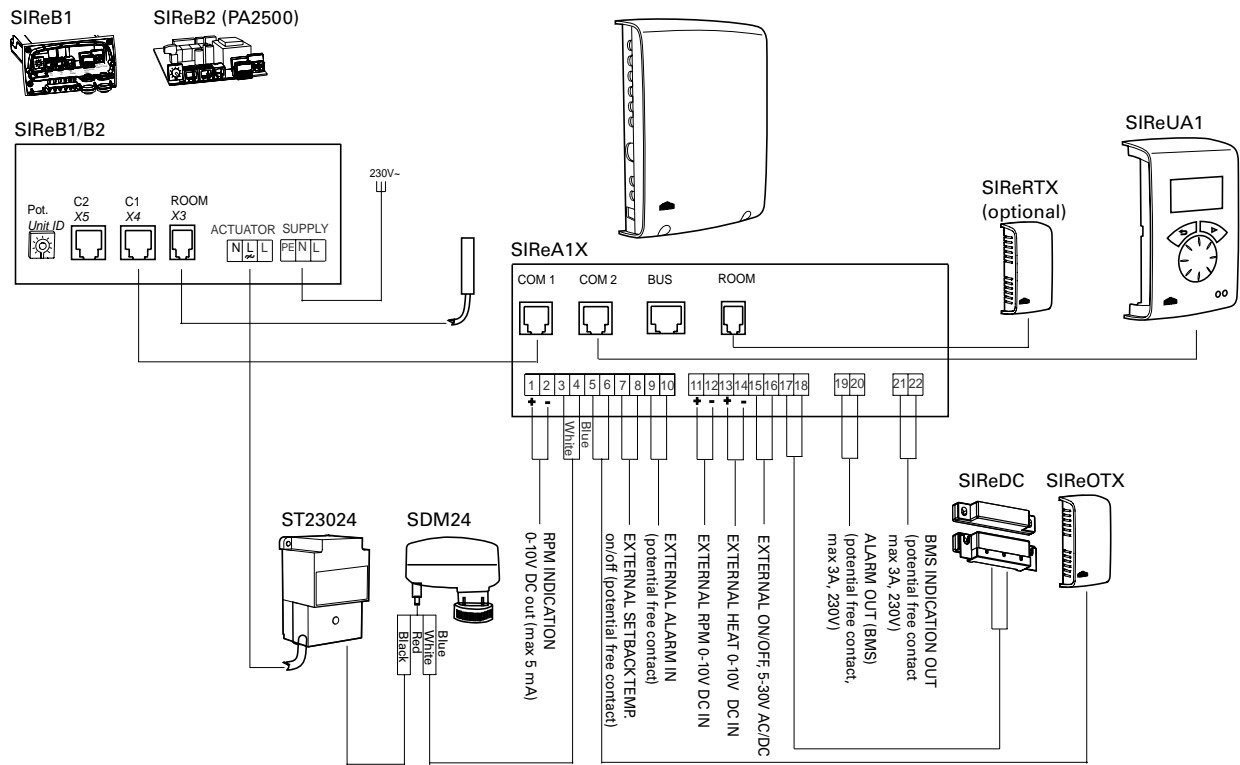


### Parallel connection

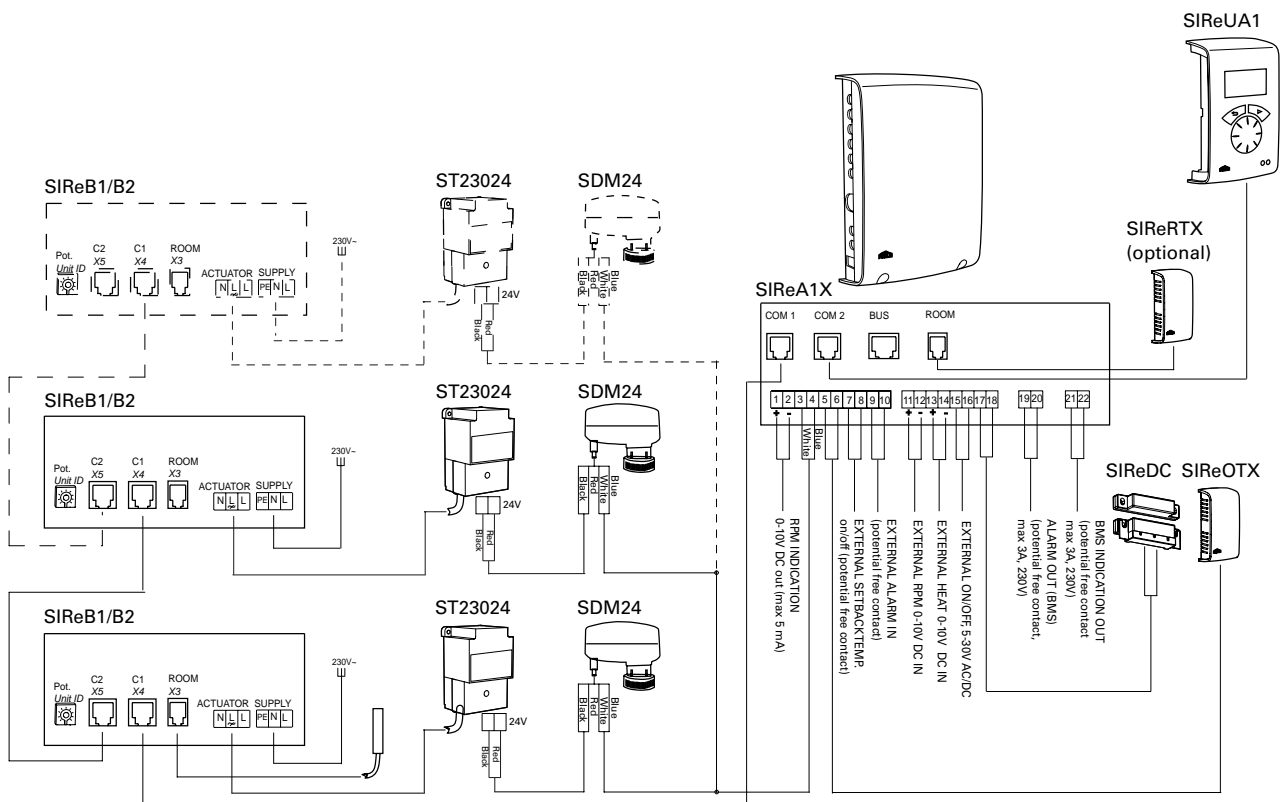


## Wiring diagrams - SIReAA Advanced

Unit with water heating



### Parallel connection



## Other controls



ADSR54



PKDM12



RTRD7



RTRD14



RTRDU7

### ADSR54, stepless fan speed control

For unheated and water heated air curtains (single phase supply 230 V~, max 3 A). Controls the motor without causing disturbing electro magnetic noise. Can be controlled with an external 0–10 V signal. Max. input 3 A, 230 V~. IP54.

### PKDM12, stepless fan speed control

For AC500 and AGI. The appropriate fan speed is set for open and closed door respectively (high/low speed). The fan speed can be controlled with an external 0–10 V signal. Max input 12 A. IP54.

### RTRD7, 5-step fan speed control

For AC500 and AGI. With RTRD7 the air velocity is adjusted in 5 steps for optimum efficiency. The air velocity is set to accommodate different external conditions. Max input 7 A. IP21.

### RTRD14, 5-step fan speed control

For AC500 and AGI. With RTRD14 the air velocity is adjusted in 5 steps for optimum efficiency. The air velocity is set to accommodate different external conditions. Max input 14 A. IP21.

### RTRDU7, 5-step fan speed control (high/low speed)

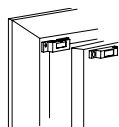
For AC500 and AGI. With RTRDU7 the air velocity is set in 5 steps for maximum efficiency. When the door is closed the fan runs at a preset low speed to keep the room warm, when the door is open the fan is preset at a high speed to accommodate different external conditions. Max input 7 A. IP21.

Type	Description	HxWxD [mm]
<b>ADSR54</b>	Variable fan speed control	284x240x115
<b>PKDM12</b>	Variable fan speed control, max 12A	316x270x143
<b>RTRD7</b>	5-step fan speed control, max. 7A	309x262x160
<b>RTRD14</b>	5-step fan speed control, max. 14A	290x400x166
<b>RTRDU7</b>	5-step fan speed control (high/low speed), max. 7A	290x400x166





MDC



MDCDC



AGB304



KUR



CBT

**MDC**, magnetic door contact with time relay  
Starts the air curtain or increases from low to high speed when the door is opened. When the door is closed, the fan continues to run for the preset time (2 s–10 min). This prevents the fan from starting/stopping continuously and is especially suitable for doors that are frequently opened. Three alternating volt-free contacts 10 A, 230 V~ activated when the contacts make. A MDCDC is included in MDC. IP44.

**MDCDC**, magnetic door contact  
Indicates door status. Extra MDCDC are used when several doors are connected to a MDC. IP44.

**AGB304**, position limit switch  
Starts the air curtain or activates a fan speed control when the door is opened. When the door closes, AGB304 stops the air curtain or changes fan speed through a fan speed control. Alternating contact 4 A, 230 V~. IP44.

**KUR**, digital time switch  
Digital weekly timer with 8 different program steps (36 memory places) equipped with a changeover contact. Max. breaking current: 10 A. IP55.

**CBT**, electronic timer  
Electronic timer with alternating contact. Setting range 1/2-1-2-4 or 4-8-16-24 hours respectively. The setting range can be limited down to a maximum time of 1/2 hours. IP44.

Type	Description	HxWxD [mm]
<b>MDC</b>	Magnetic door contact with time relay	155x87x43
<b>MDCDC</b>	Magnetic door contact	
<b>AGB304</b>	Position limit switch	
<b>KUR</b>	Digital time switch	175x85x105
<b>CBT</b>	Electronic timer	155x87x43

## Thermostats



T10 TK10 TKS16(400) TD10

T, TK, TD, basic offer thermostats

Processor controlled thermostats for room/floor heating. Available with concealed/visible knob or digital display. Model with visible knob also available with switch and in 400 V.

On/off control (for slow systems) or proportional control (for faster systems) in the same thermostat. TD10 has adjustable P-band and time of cycle.

Internal and/or external sensors (external sensor RTS01 available as an accessory) give the possibility of selecting the sensor function e.g limiting external sensors (min/max). Save reduction either by built-in manual switch or via external timer. CE compliant.



RTI2 RTI2V RTS01

RTI2, electronic 2-step thermostats

Processor controlled 2-step thermostats for room heating /cooling. Available with concealed or visible knob. Adjustable temperature difference between the steps (1–10 degrees). Save reduction via external connection timer (1–10 degrees). External sensor (RTS01) available as an accessory.

High protection class (IP44). CE compliant.

RTS01, external sensor (accessory)

External sensor of NTC-type 10 Kohm. 3 m cable included.



KRT1900/1901 KRT2800 KRTV19

KRT, capillary tube thermostats

Capillary tube thermostats for room heating/cooling. Available with concealed and visible knob, and control in 1 or 2 steps. KRT2800 controls in 2 steps and has adjustable temperature difference between the steps (1–4 degrees). KRT1901 has a temperature range of -35–+10 °C. High protection class (IP44 resp. IP55). CE compliant.



TBK10 TBKS10

TBK, bimetal thermostats

Mechanical bimetal thermostats with acceleration resistance for room heating/cooling. TBKS10 also has a 1-pole switch. CE compliant.

## Technical specifications

Type	Voltage (supply)	Max input	Setting range	Limit floor heating	Save reduction	Proportional control*1	Static differential	Protection class	Dimensions HxWxD
	[V]	[A]	[°C]	[°C]	[K]	[K/min]	[K]		[mm]
<b>T10</b>	230V~	10	5-30	10-40	-4	2K/10min	0,5	IP30	80x80x31
<b>TK10</b>	230V~	10	5-30	10-40	-4	2K/10min	0,5	IP30	80x80x31
<b>TKS16</b>	230V~	16	5-30	10-40	-4	2K/10min	0,5	IP30	80x80x39
<b>TKS16400</b>	400V2~	16	5-30	10-40	-4	2K/10min	0,5	IP30	80x80x39
<b>TD10</b>	230V~	10	5-37	5-37	Adjustable	Adjustable	0,3	IP30	80x80x31
<b>RTI2</b>	230V~	16/10, 230/400V~	5-35	-	Adjustable	-	0,5	IP44	155x87x43
<b>RTI2V</b>	230V~	16/10, 230/400V~	5-35	-	Adjustable	-	0,5	IP44	155x87x43
<b>KRT1900</b>	-	16/10, 230/400V~	0-40	-	-	-	1,0	IP55	165x57x60
<b>KRT1901</b>	-	16/10, 230/400V~	-35+10	-	-	-	1,0	IP55	165x57x60
<b>KRTV19</b>	-	16/10, 230/400V~	0-40	-	-	-	1,0	IP44	165x57x60
<b>KRT2800</b>	-	16/10, 230/400V~	0-40	-	-	-	1,0	IP55	165x57x60
<b>TBK10</b>	230V~	10	5-30	-	-	-	0,5	IP30	85x82x39
<b>TBKS10</b>	230V~	10	5-30	-	-	-	0,5	IP30	80x80x43

\*1) P-band [K]/time of cycle [min]

\*2) Only resistive loads, no contactors.

Products beginning with T can be read as follows: K=knob, S=switch, D= digital display, B=bimetal.

## Functions

	Basic offer				Electronic 2-step		Capillary tube			Bimetal	
	T10	TK10	TKS16(400)	TD10	RTI2	RTI2V	KRT1900/1901	KRTV19	KRT2800	TBK10	TBKS10
Internal sensor	X	X	X	X	X	X	X	X	X	X	X
External sensor	X*1	X*1	X*1	X*1	X*1	X*1					
Save reduction	X*2	X*2	X*2	X*2	X*2	X*2					
1-pole switch			X							X	X
Volt free contact	X	X	X	X	X	X	X	X	X		
Contact, 1-pole closing	X	X		X							
Contact, 1-pole alternating			X		X		X	X	X	X	X
Digital display				X							
Advanced extra functions*3				X							
Internal setting	X				X		X		X		
Processor controlled	X	X	X	X	X	X					
Bimetal acc.resistor										X	X
Capillary tube							X	X	X		
Fits wall box system	X	X	X	X						X	X
Heating or cooling function			X	X	X	X	X	X	X	X	X
2-step					X	X			X		
Adjustable temp.diff. between the steps					X	X			X		

\*1) External sensor (RTS01) as accessory.

\*2) Can be used with an external timer.

\*3) See manuals on [www.frico.se](http://www.frico.se).

# Thermostats

## Wiring diagrams

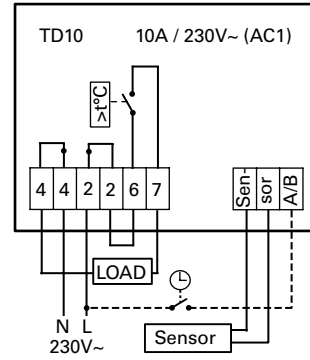
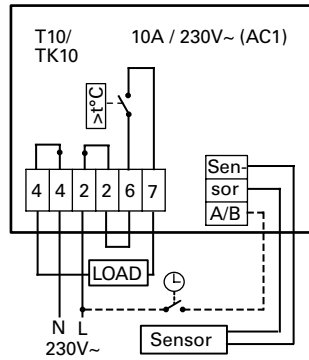
T, TK, TD, basic offer thermostats



T10



TK10



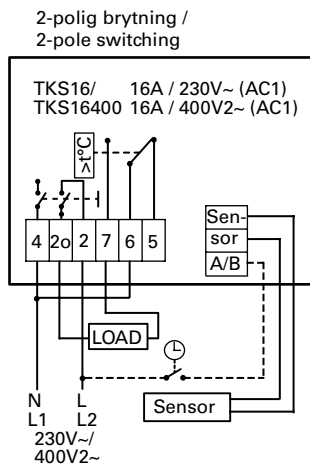
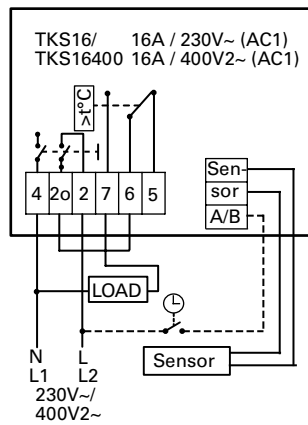
TD10



TKS16



TKS16400



TKS16400

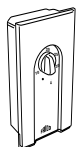


TKS16

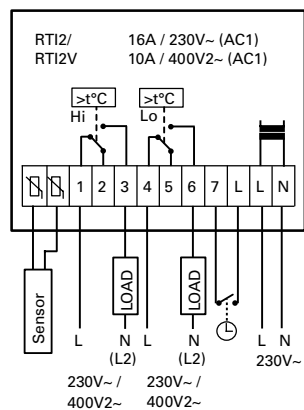
RTI2, electronic 2-step thermostats



RTI2

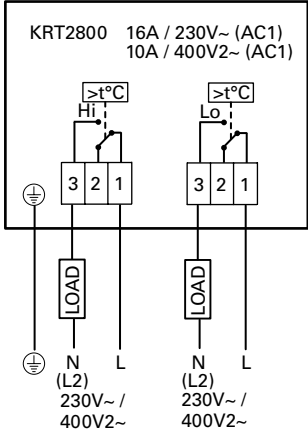
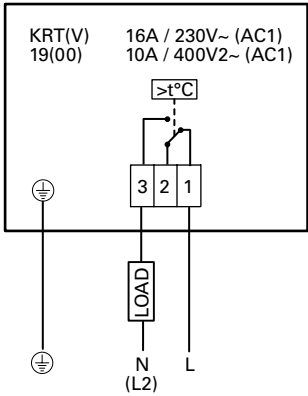


RTI2V

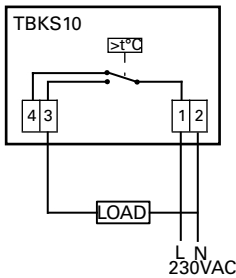
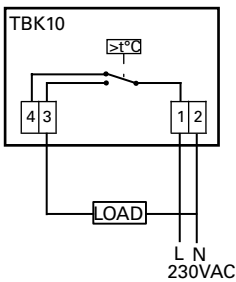


Wiring diagrams

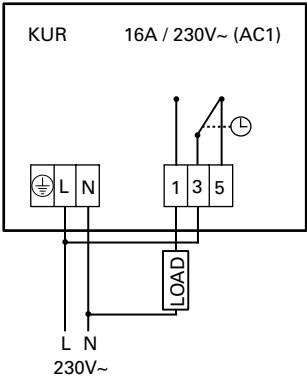
KRT, capillary tube thermostats



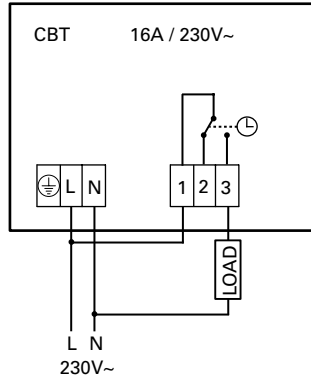
TBK, bimetal thermostats



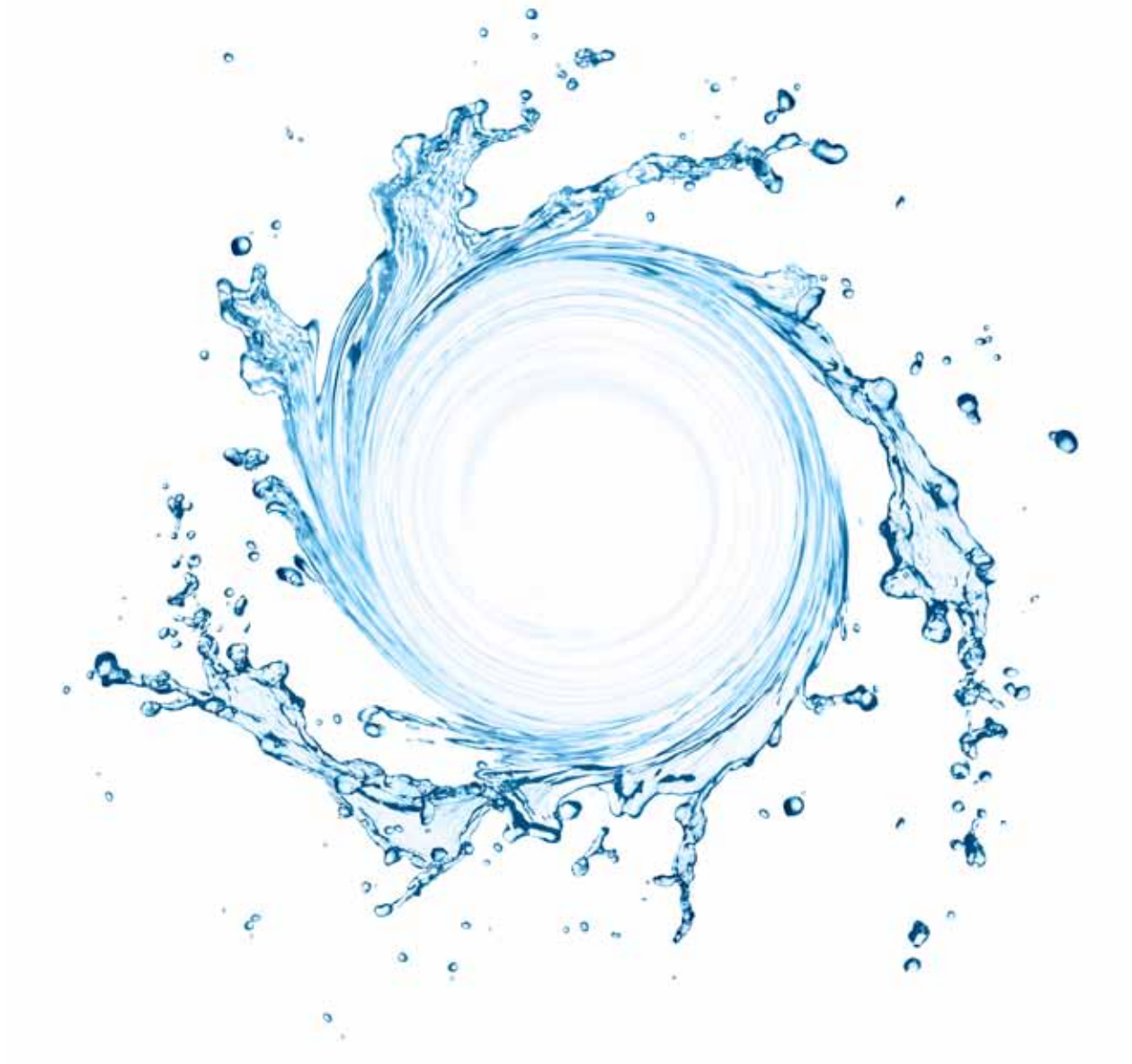
KUR, digital time switch



CBT, electronic timer

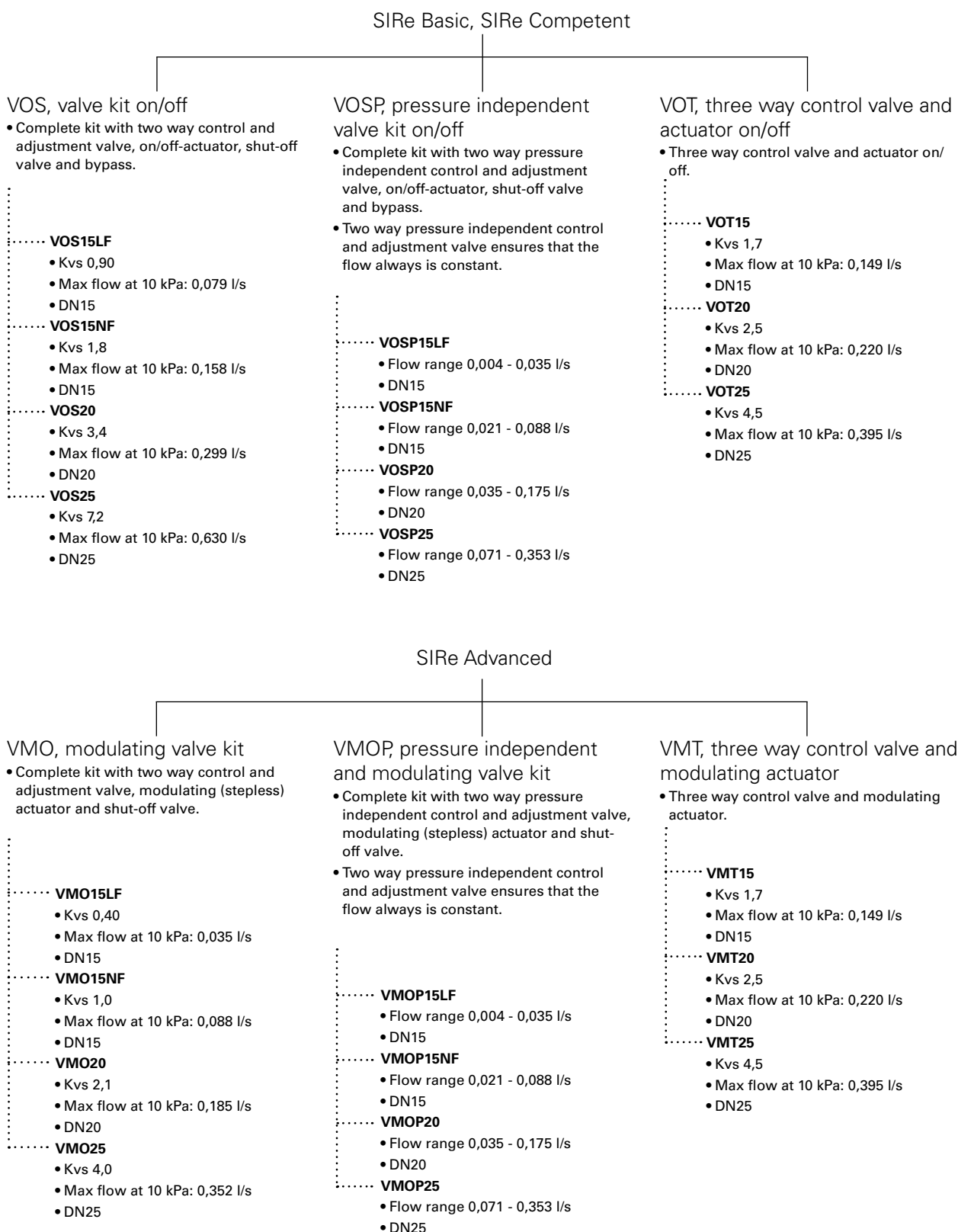


Water control

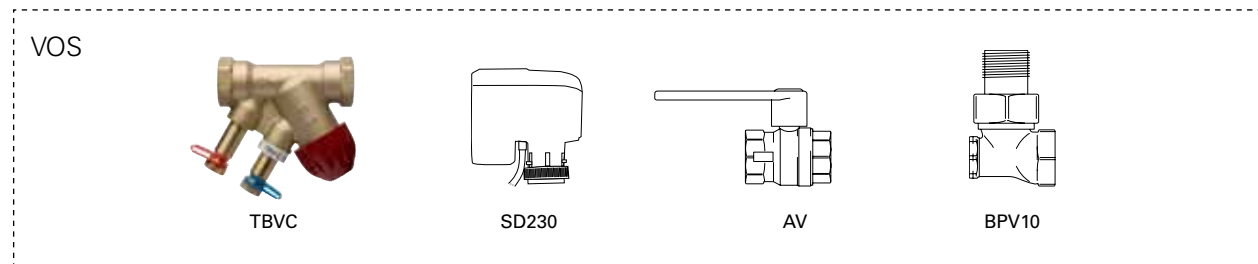


## Choose valve kit

Water heated units that are controlled by SIRE are supplemented with valve kits. It's easy to choose the right valve kit. Look at the guide for the level of SIRE chosen - Basic, Competent or Advanced and select the valve kit which suits the system requirements and characteristics.



## Water control



### VOS, valve kit on/off

Two way combined control and adjustment valve with on/off actuator, shut-off valve and bypass. DN15/20/25. 230V. Used with SIRE Basic and Competent

The valve kit consists of the following:

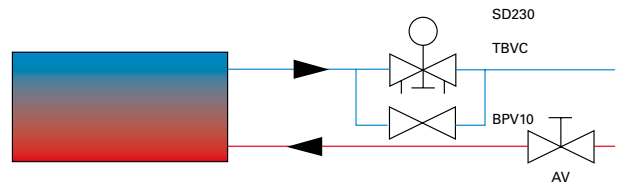
- TBVC, regulation and adjustment valve
- SD230, actuator on/off 230V
- AV, shut off valve
- BPV10, bypass valve

### AV, shut off valve

The shut off valve consists of a ball valve which is either open or closed and is used to shut off the flow, when servicing for example.

### TBVC, regulation and adjustment valve

The regulation and adjustment valve can be used to finely adjust or shut off the water flow manually. The water flow is set using the adjustment tool (option). The regulation and adjustment valve also has a shut off function, which makes maintenance easier, and a self sealing measurement outlet which allows for easy and fast measurements.



### BPV10, by-pass valve

If the valve is closed, a low flow passes through the by-pass valve (BPV10) so that there is always hot water in the water coil. This is to provide quick heat supply when a door is opened but also to provide a degree of frost protection.

### SD230, actuator

The actuator controls the heat supply on/off. In unpowered mode SD230 is open.

The valve kit is available in three different valve dimensions, DN15 (1/2"), DN20 (3/4") and DN25 (1"). The by-pass valve is DN10 (3/8"). Used with SIRE Basic and Competent or supplemented with suitable thermostat.

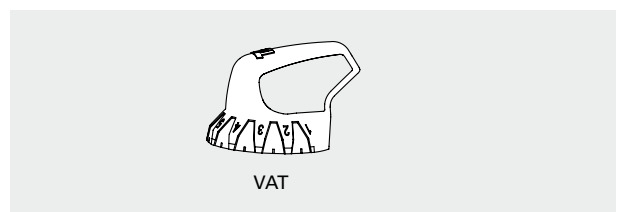
Type	Voltage [V]	Connection	Kvs
VOS15LF*	230V	DN15	0,90
VOS15NF	230V	DN15	1,8
VOS20	230V	DN20	3,4
VOS25	230V	DN25	7,2

\*) Low flow

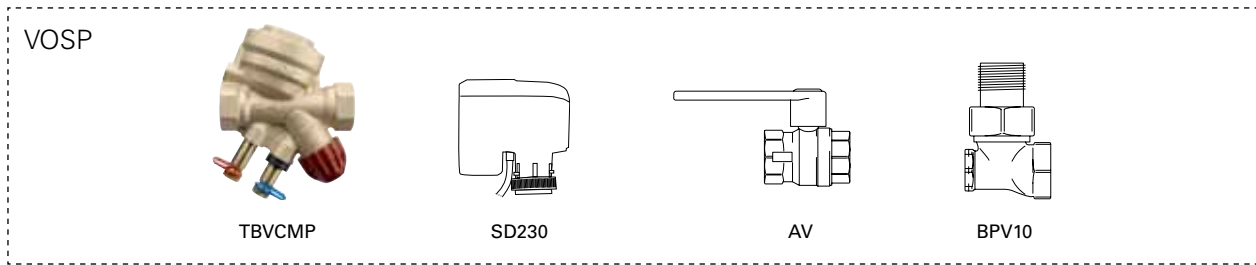
## Accessories

### VAT, adjustment tool for valve kit VOS, VOSP, VMO, VMOP

With the adjustment tool the water flow can be accurately and easily set.







VOSP, pressure independent valve kit on/off  
Two way pressure independent control and adjustment valve with on/off actuator, shut-off valve and bypass. DN15/20/25. 230V. Used with SIRE Basic and Competent.

The valve kit consists of the following:

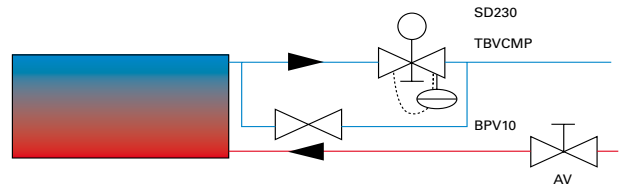
- TBVCMP, pressure independent regulation and adjustment valve
- SD230, actuator on/off 230V
- AV, shut off valve
- BPV10, bypass valve

AV, shut off valve

The shut off valve consists of a ball valve which is either open or closed and is used to shut off the flow, when servicing for example.

TBVCMP, regulation and adjustment valve

The regulation and adjustment valve can be used to finely adjust or shut off the water flow manually. TBVCMP is independent of the available differential pressure, which contributes to stable and accurate regulation (ensures the correct flow to the heater even if the differential pressure in the rest of the pipe system changes). The water flow is set using the adjustment tool (option). With the regulation and adjustment valve easy flush-through is also possible, which makes for easy and fast maintenance.



BPV10, by-pass valve

If the valve is closed, a low flow passes through the by-pass valve (BPV10) so that there is always hot water in the water coil. This is to provide quick heat supply when a door is opened but also to provide a degree of frost protection.

SD230, actuator

The actuator controls the heat supply on/off. In unpowered mode SD230 is open.

The valve kit is available in three different valve dimensions, DN15 (1/2"), DN20 (3/4") and DN25 (1"). The by-pass valve is DN10 (3/8").

Used with SIRE Basic and Competent or supplemented with suitable thermostat.

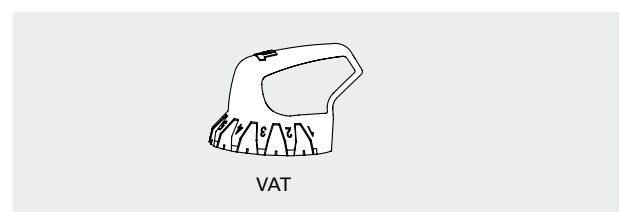
Type	Voltage [V]	Connection
VOSP15LF*	230V	DN15
VOSP15NF	230V	DN15
VOSP20	230V	DN20
VOSP25	230V	DN25

\*) Low flow

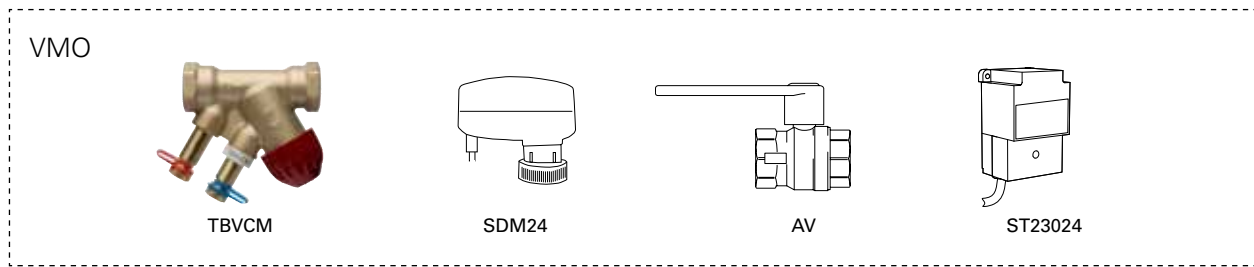
## Accessories

VAT, adjustment tool for valve kit VOS, VOSP, VMO, VMOP

With the adjustment tool the water flow can be accurately and easily set.



## Water control



VMO, modulating valve kit

Two way combined control and adjustment valve with modulating actuator and shut-off valve. DN15/20/25. 24V. Used with SIRE Advanced.

The valve kit consists of the following:

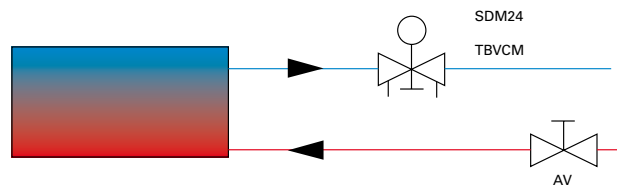
- SDM24, modulating actuator 24V
- TBVCM, regulation and adjustment valve
- AV, shut off valve
- ST23024, 24V transformer for valve actuator (in valve kit with 24V)

AV, shut off valve

The shut off valve consists of a ball valve which is either open or closed and is used to shut off the flow, when servicing for example.

TBVCM, regulation and adjustment valve

The regulation and adjustment valve can be used to finely adjust or shut off the water flow manually. The water flow is set using the adjustment tool (option). The regulation and adjustment valve also has a shut off function, which makes maintenance easier, and a self sealing measurement outlet which allows for easy and fast measurements.



SDM24, actuator

The actuator (SDM24) is modulating and gives the right temperature. SIRE is set to always allow through a small leak flow in order to provide a fast heat supply ex. when a door is opened and for some frost protection.

The valve kit is available in three different valve dimensions, DN15 (1/2"), DN20 (3/4") and DN25 (1"). Used with SIRE Advanced or supplemented with suitable thermostat.

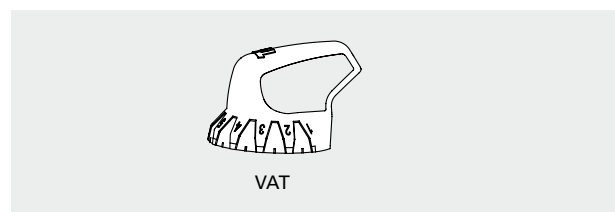
Type	Voltage [V]	Connection	Kvs
<b>VMO15LF*</b>	24V	DN15	0,40
<b>VMO15NF</b>	24V	DN15	1,0
<b>VMO20</b>	24V	DN20	2,0
<b>VMO25</b>	24V	DN25	4,0

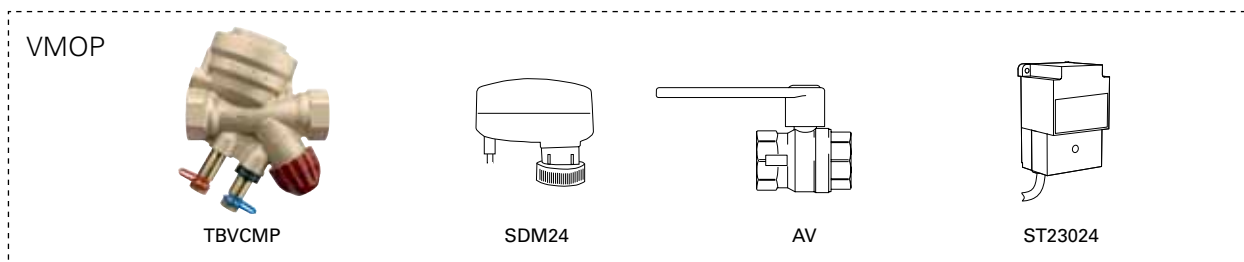
\*) Low flow

## Accessories

VAT, adjustment tool for valve kit VOS, VOSP, VMO, VMOP

With the adjustment tool the water flow can be accurately and easily set.





VMOP, pressure independent and modulating valve kit

Two way pressure independent control and adjustment valve with modulating actuator and shut-off valve. DN15/20/25. 24V. Used with SIRE Advanced.

The valve kit consists of the following:

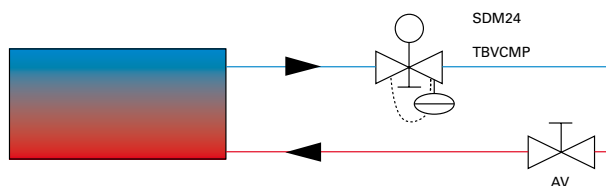
- TBVCMP, pressure independent regulation and adjustment valve
- SDM24, modulating actuator 24V
- AV, shut off valve
- ST23024, 24V transformer for valve actuator (in valve kit with 24V)

AV, shut off valve

The shut off valve consists of a ball valve which is either open or closed and is used to shut off the flow, when servicing for example.

TBVCMP, regulation and adjustment valve

The regulation and adjustment valve can be used to finely adjust or shut off the water flow manually. TBVCMP is independent of the available differential pressure, which contributes to stable and accurate regulation (ensures the correct flow to the heater even if the differential pressure in the rest of the pipe system changes). The water flow is set using the adjustment tool (option). With the regulation and adjustment valve easy flush-through is also possible, which makes for easy and fast maintenance.



SDM24, actuator

The actuator (SDM24) is modulating and gives the right temperature. SIRE is set to always allow through a small leak flow in order to provide a fast heat supply ex. when a door is opened and for some frost protection.

The valve kit is available in three different valve dimensions, DN15 (1/2"), DN20 (3/4") and DN25 (1"). Used with SIRE Advanced or supplemented with suitable thermostat.

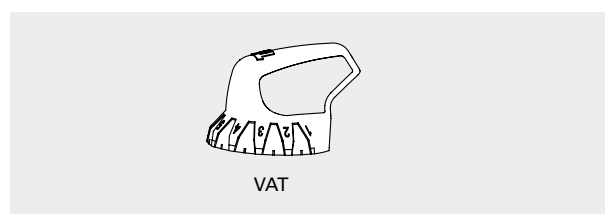
Type	Voltage [V]	Connection
VMOP15LF*	24V	DN15
VMOP15NF	24V	DN15
VMOP20	24V	DN20
VMOP25	24V	DN25

\*) Low flow

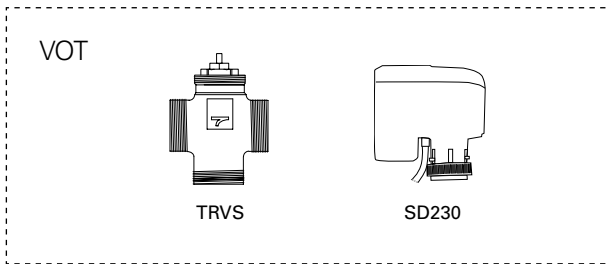
## Accessories

VAT, adjustment tool for valve kit VOS, VOSP, VMO, VMOP

With the adjustment tool the water flow can be accurately and easily set.



## Water control



VOT, three way control valve and actuator on/off  
3-way control valve with on/off actuator, DN15/20/25.  
230V.

The valve kit consists of the following:

- TRVS, 3-way control valve
- SD230, actuator on/off 230V

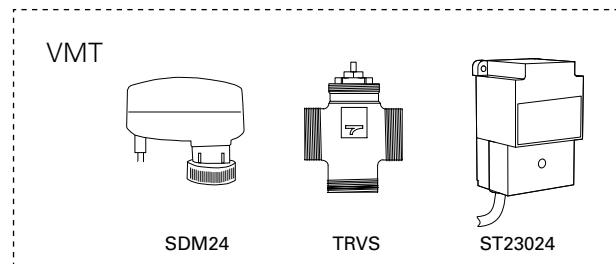
TRVS, 3-way control valve

The 3-way valve and the actuator controls the waterflow and provides a basic form of water regulation, without the possibility of adjusting or shutting the water flow off, e.g. when making maintenance.

SD230, actuator

The actuator controls the heat supply on/off. In unpowered mode SD230 is open.

The valve kit is available in three different valve dimensions, DN15 (1/2"), DN20 (3/4") and DN25 (1"). Used with SIRE Basic and Competent or supplemented with suitable thermostat.



VMT, three way control valve and modulating actuator  
3-way control valve with modulating actuator.  
DN15/20/25. 24V.

The valve kit consists of the following:

- TRVS, 3-way control valve
- SDM24, modulating actuator 24V
- ST23024, 24V transformer for valve actuator (in valve kit with 24V)

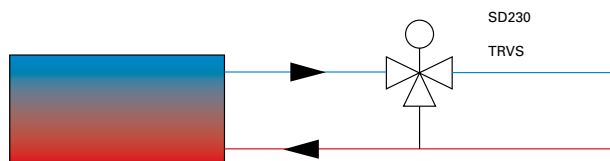
TRVS, 3-way control valve

The 3-way valve and the actuator controls the waterflow and provides a basic form of water regulation, without the possibility of adjusting or shutting the water flow off, e.g. when making maintenance.

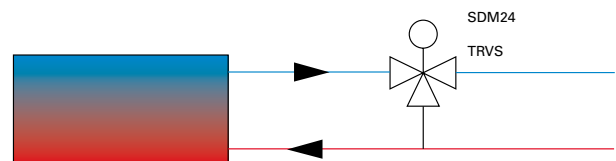
SDM24, actuator

The actuator (SDM24) is modulating and gives the right temperature. SIRE is set to always allow through a small leak flow in order to provide a fast heat supply ex. when a door is opened and for some frost protection.

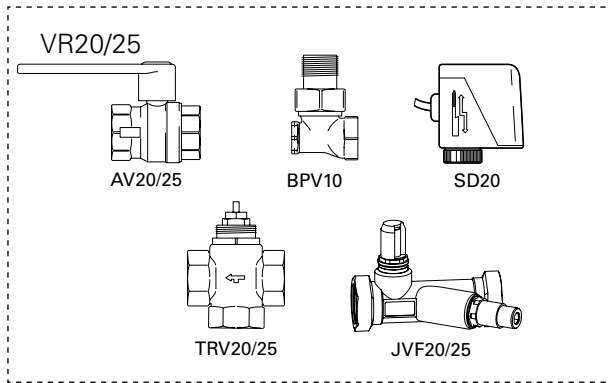
The valve kit is available in three different valve dimensions, DN15 (1/2"), DN20 (3/4") and DN25 (1"). Used with SIRE Advanced or supplemented with suitable thermostat.



Type	Connection	Kvs
VOT15	DN15	1,7
VOT20	DN20	2,5
VOT25	DN25	4,5



Type	Connection	Kvs
VMT15	DN15	1,7
VMT20	DN20	2,5
VMT25	DN25	4,5



## VR 20/25, valve kit\*

For control of water flow to water heated air curtains.

The valve kit consists of the following:

- AV20/25, stop valve
- JVF20/25, adjustment valve
- TRV20/25, on/off 3-way control valve
- BPV10, by-pass valve
- SD20, actuator on/off 230V~

The stop valve (AV20/25) consists of a ball valve which is either open or closed. It is used to turn the water flow off and on. The water flow can be fine-tuned manually with the adjustment valve and can also be completely turned off. The water flow may be read off the valve. The kv value for JVF20 is 3,5 and for JVF25 it is 5,5.

If the 3-way valve (TRV20/25) is closed, the flow through the by-pass valve (BPV10) is low to ensure presence of warm water in the heating coil. This leads to instant heat supply when needed and some degree of frost protection. The actuator (SD20) works on/off.

The valve kit is available with two different valve dimensions: VR 20 - DN20 (3/4") and VR 25 - DN25 (1"). The by-pass valve dimension is DN10 (3/8"). To regulate VR20/25, a suitable thermostat has to be added.

## TVV20/25, valves + SD20, actuator\*

TVV20/25, 2-way regulation valve and SD20, actuator on/off provides a basic form of water regulation, without the possibility of adjusting or shutting the water flow off, e.g. when making maintenance. A suitable thermostat is chosen to regulate TVV20/25 and SD20. DN20/25.

## TVV20/25, 2-way control valve\*

TVV20 has a pipe dimension of DN20 (3/4") and TVV25 of DN25 (1"). Pressure class PN16.

Maximum pressure 2 MPa (20 bar).

Maximum pressure drop TVV20: 100 kPa (1 bar)

Maximum pressure drop TVV25: 62 kPa (0,62 bar)

The kv-value is adjustable in 3 steps:

TVV20: kv 1,6, kv 2,5 and kv 3,5

TVV25: kv 2,5, kv 4,0 and kv 5,5

## TRV20/25, 3-way control valve\*

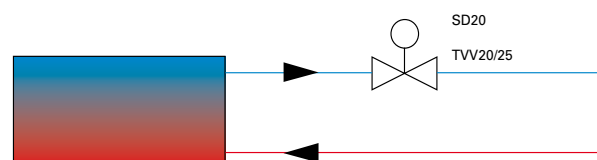
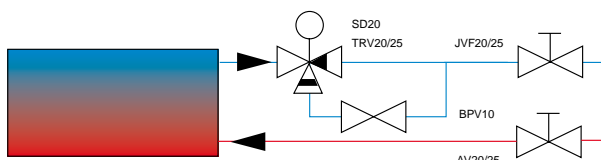
If a 3-way valve is preferred, TRV20/25 can be used instead of TVV20/25.

## SD20, actuator on/off 230V~\*

SD20 regulates the heat supply. Works on/off. A 5 second closing of the valve prevents sudden pressure changes in the pipe system. In unpowered mode SD20 is closed.

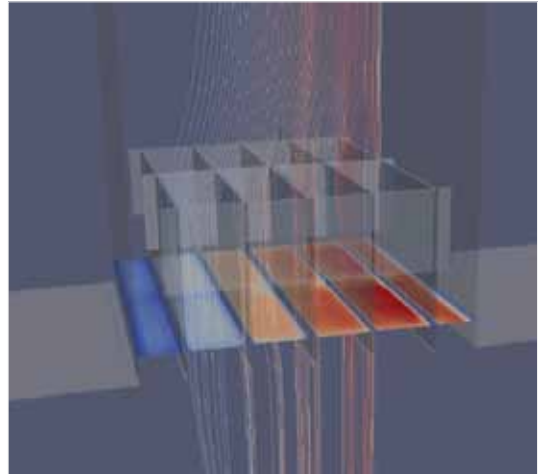
## TE3434

Flexible hose, length 0,8 metres, for water heated units (2 is needed for a unit) with external thread 3/4" (DN20) at one end and coupling nut internal thread 3/4" (DN20), on the other.



\*) These products can not be used together with SIRE control system.

# Technical handbook



## 229 The invisible door

## 230 Why is there a draught from an opening?

Temperature differential outdoor/indoor  
Pressure differentials indoor/outdoor  
Wind stress  
The total airflow  
Important to remember

## 232 Optimized air curtains

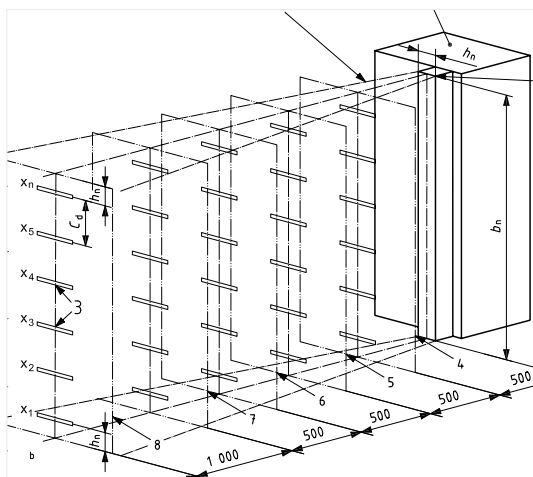
233 Right from the start and the whole way

## 234 Optimized performance

234 Protects the whole door opening  
234 ...not just where it is least needed  
235 Air barrier power = impulse  
235 The balance between air volume and air velocity gives optimum performance  
236 Optimized airflow geometry  
Width of the outlet  
Outlet grille  
Minimized turbulence  
237 Tests - airflow geometry  
Frico  
238 Create maximum protection at floor level  
Test - protective effect  
239 Dimensioning  
239 Air barrier velocity  
240 Tests - performance  
Air curtain efficiency  
242 Tests - performance  
Impulse at the floor  
242 Large air volumes cost

## 243 Minimized sound level

243 Air intake on the top  
243 Turbulence - no thanks  
243 Optimized amount of air  
244 Sound facts  
What is sound?  
How is sound measured?  
Fundamental concepts  
Sound power level and sound pressure level  
245 Testing - sound



## 246 Adjustment

- 246 Cold storage and freezer rooms
- 246 Correct air velocity
- 246 Entrances and doorways
- 246 Adjustment adapts your installation
- 246 Controls takes care of the rest

## 247 Controls

- 247 SIRE Control system
  - Basic
  - Competent
  - Advanced
  - BMS
  - Simple installation
  - Other controls

## 248 Valve kits

- 248 Select the correct valve kits for units with SIRE
  - For SIRE Basic and Competent
  - For SIRE Advanced
- 251 Other valve kits

## 252 Energy saving with air curtains

- 253 Calculation of energy savings
- 253 Contact us at Frico for advice

## 254 Just a click away

- 254 Smart tools
  - Product selection guide
  - Specification text
  - Heating calculations

## 255 Tables for dimensioning

- Basic electrical formulas
- Symbols for model types
- Enclosure classes for electrical materials
- Dimensioning table for cables and wiring
- Dimensioning table





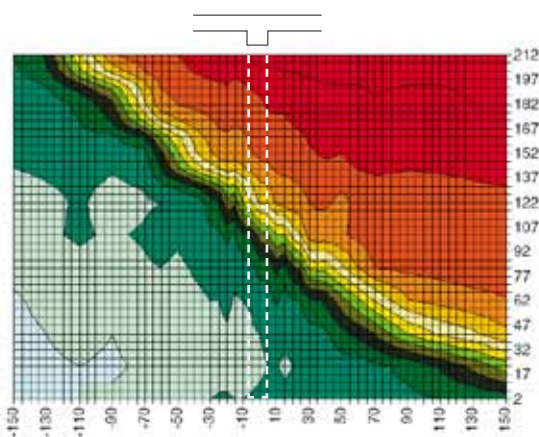


## The invisible door

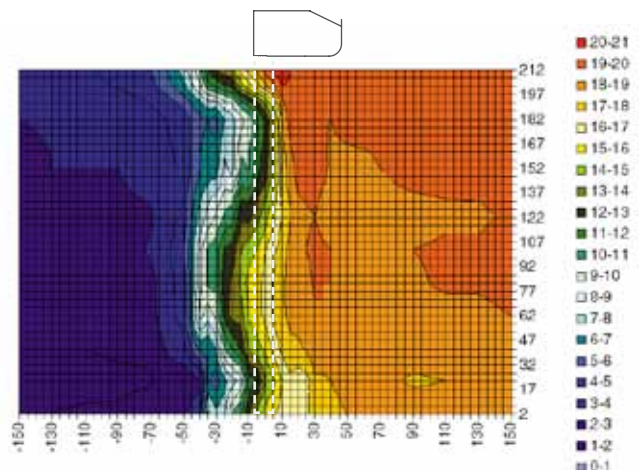
An open door is inviting and easy to pass through, but it also means a poor working environment and energy loss. An air curtain creates a comfortable environment and minimizes energy loss. Frico air curtains effectively separate indoors from outdoors, hot from cold.

Air curtains create an air barrier between hot and cold, both to prevent cold outdoor air from entering, while the heated air is kept inside, and to protect air conditioned premises and refrigerated rooms.

A correctly installed air curtain reduces draughts, creates a comfortable indoor environment and reduces energy losses at doors and doorways.



Air flows out of an unprotected opening.



With a correctly set air curtain there is a sharp separation between the different temperature zones.

## Why is there a draught from an opening?

The amount of air that flows out through an open door depends on differences in pressure between the indoor and outdoor air.

This pressure differential is dependent on three factors:

- Different temperatures indoors and outdoors
- Different pressures indoors and outdoors
- Incoming wind speed at the door opening

Simply put; if the conditions on one side of the door differ in any way from those on the other side, then there will be a draught from the door opening. Air flows out through an open door to equalize the differences in pressure and temperature. In heated premises this means that hot air flows out and cold air flows in. Wind blowing towards the door also affects the airflow.

### Temperature differential outdoor/indoor

Warm indoor air has a lower density and is lighter than cold outdoor air. Therefore there is a pressure differential at the door opening. The cold air flows in through the lower part of the opening and pushes the hot air through the upper section. The size of the airflow depends on the temperature differential between outdoor and indoor air. The air exchange is thus dependent on thermal pressure differentials. If the indoor and outdoor temperatures are known, then the density of the outdoor and indoor air can be determined and making it possible to calculate the pressure differential and airflow through the opening.

The airflow ( $Q_T$ ) can be calculated using the following equation:

$$Q_T = \frac{W}{3} \cdot H^{1.5} \cdot C_d \cdot \sqrt{g \cdot \frac{\Delta \rho}{\rho_m}} \quad [1]$$

Opening     $W$  = door width [m]  
                $H$  = door height [m]  
                $C_d$  = flow coefficient 0.6 - 0.9  
                $g$  = gravity coefficient (9.81 m/s<sup>2</sup>)  
                $\Delta \rho$  = the air masses' density differential  
                $\rho_m$  = the air masses' average density

### Pressure differentials indoor/outdoor

In order for an air curtain to work well, it is important that there is not too great an overpressure or negative pressure in the premises.

Nearly all ventilation systems are mechanically adjusted and are based on the prevailing conditions when they were set. When the external conditions are changed, for example by variations in temperature, air pressure, wind influence and humidity, the balance is disturbed and replaced by positive or negative pressure (usually negative pressure).

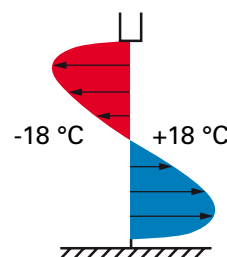
An air curtain can withstand a maximum of 5 Pa, depending on the conditions. But even small differences in pressure can significantly affect the efficiency of the air curtain.

The pressure differential between a building and its surroundings can be equalized using balanced ventilation, which increases comfort and reduces energy costs. Balanced ventilation can be achieved by pressure regulation via the ventilation system, but the most efficient way is to continuously measure the pressure differential between indoors and outdoors and use it to control the ventilation flow. Contact Frico for more information.

Airflow dependent on pressure differential ( $Q_p$ ) can be calculated using the following equation:

$$Q_p = W \cdot H \cdot \sqrt{\frac{\Delta P \cdot 2}{\rho}} \cdot C_d \quad (\Delta P \leq 5 \text{ Pa}) \quad [2]$$

Opening     $W$  = door width [m]  
                $H$  = door height [m]  
                $\Delta P$  = pressure differential  
                $\Delta \rho$  = air density  
                $C_d$  = flow coefficient 0.6 - 0.9



Airflow caused by thermal pressure differentials.

### Wind stress

When the wind blows towards an opening, air flows through the opening. The airflow is assumed to be evenly distributed across the whole door opening. The airflow is then proportional to the wind speed horizontally against the door opening. (After the pressure build up the airflow is limited to what escapes through leaks in the building.) A wind speed of 3 m/s corresponds to a load pressure of 5 Pa.

The air flow ( $Q_v$ ) can be calculated using the following equation:

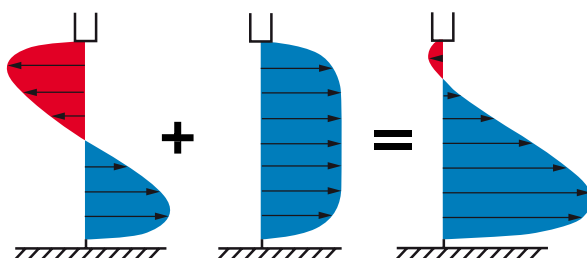
$$Q_v = W \cdot H \cdot C_v \cdot v \quad [3]$$

Opening	$W$	=	door width [m]
	$H$	=	door height [m]
	$v$	=	wind speed
	$C_v$	=	wind direction coefficient = 0.5 - 0.6 of the horizontal wind load towards the opening 0.25 - 0.36 of the horizontal wind load towards the opening

### The total airflow

The total airflow through open doors is the sum of the flow caused by temperature and pressure differentials and wind stresses.

$$Q_{\text{tot}} = Q_T + Q_v + Q_p \quad [4]$$

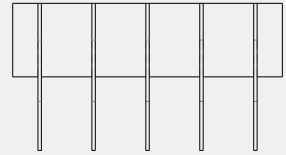


The total airflow is the sum of the flows caused by temperature and pressure differentials and wind stresses.



### Important to remember

- If there is negative pressure in the building, the efficiency of the air curtain is considerably reduced. The ventilation should therefore be balanced. An air curtain cannot prevent a deficit in the amount of air that is due to unbalanced ventilation (negative pressure).
- If an opening is exposed to wind it affects the efficiency of the air curtain. An air curtain can withstand a wind speed of up to 3 m/s, depending on the conditions. In an existing opening that is exposed to greater wind loads you may supplement with more heating to improve the comfort.
- Where there are high wind stresses it is appropriate to supplement the air curtain with a revolving door or an air lock, ideally with the openings offset in relation to each other.
- The design of the building affects the function of the air curtain. In large buildings that are strongly affected by wind, premises with staircases where the chimney effect occurs and premises with draughts, more powerful curtains are required.
- Normally the air curtain unit is placed on the inside of the opening to the premises it should protect. When used to protect cold storage or a freezer room, the unit must be mounted on the warm side.
- The air curtains must be as close to the opening as possible and cover the full width of the opening.
- The direction and speed of the airflow should be adjusted to the conditions in the opening. Wind pressure and negative pressure affect the function of air curtains and try to bend the air stream inwards. The air stream should therefore be directed outwards to withstand the load.



## Optimized air curtains

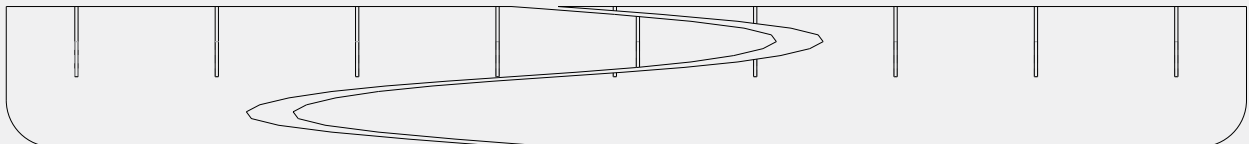
Separating climate zones is relatively easy if it is only the temperatures that differ. Handling an opening that is exposed to wind, pressure differentials and unbalanced ventilation is more difficult. Frico air curtains reduce the problems by creating an air barrier with the perfect balance between air volume and air velocity.

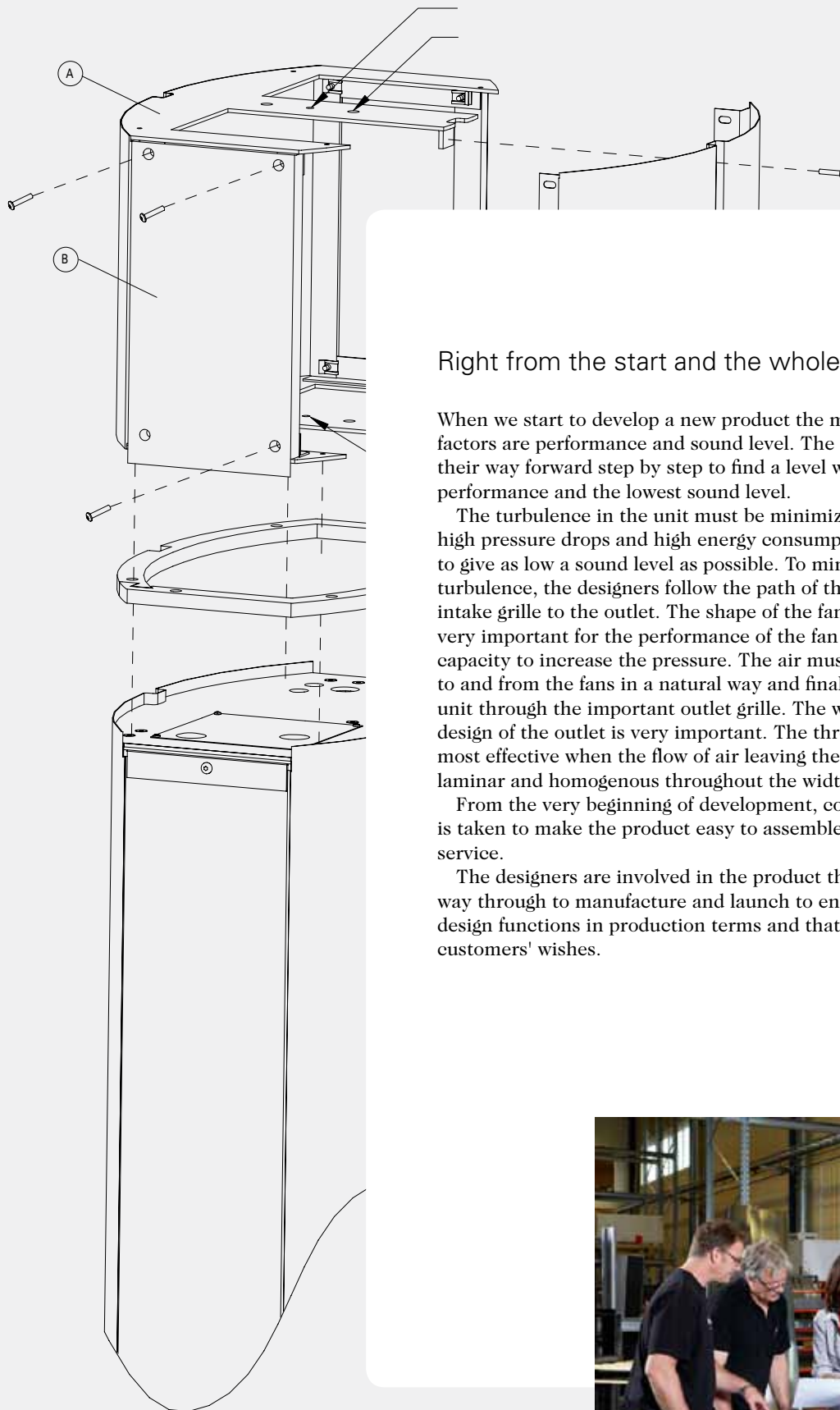
Frico has been developing air curtains for the demanding Scandinavian climate for 40 years. Our experience and knowledge has resulted in Thermozone technology, the theoretical foundation that we base the development of our air curtains on.

Thermozone technology gives optimum curtain effect with perfect balance between air volume and air velocity. This balance does not just make the air curtain more effective but also has other advantages. The indoor climate is more comfortable if the sound level and the turbulence are reduced and the energy costs are lower.

Air curtains with Thermozone technology have optimized performance and minimized sound levels.

Read more about Thermozone technology on the following pages.





## Right from the start and the whole way

When we start to develop a new product the most important factors are performance and sound level. The designers test their way forward step by step to find a level with optimum performance and the lowest sound level.

The turbulence in the unit must be minimized to prevent high pressure drops and high energy consumption and to give as low a sound level as possible. To minimize the turbulence, the designers follow the path of the air from the intake grille to the outlet. The shape of the fan housing is very important for the performance of the fan and the fan's capacity to increase the pressure. The air must be directed to and from the fans in a natural way and finally leave the unit through the important outlet grille. The width and design of the outlet is very important. The throw is at its most effective when the flow of air leaving the air curtain is laminar and homogenous throughout the width of the outlet.

From the very beginning of development, consideration is taken to make the product easy to assemble, install and service.

The designers are involved in the product the whole way through to manufacture and launch to ensure that the design functions in production terms and that it meets our customers' wishes.

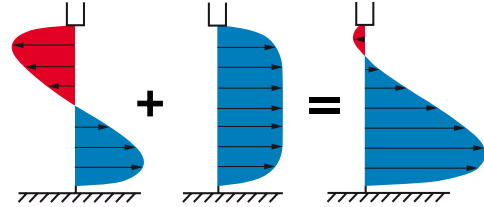


## Optimized performance

Independent tests show that a correctly installed air curtain can reduce energy losses at an open door by up to 80%. A correctly installed air curtain covers the width and height of the opening and is adapted for the stresses that it is exposed to.

### Protects the whole door opening

A correctly installed air curtain creates an air barrier that covers the whole opening and is adapted for the stresses that it is exposed to. In addition to the air curtain air volume, when dimensioning you must set requirements for air velocity at floor level, because that is where the stress is the greatest. You then know that you have an air barrier that reaches the whole way down and gives the best possible protection.



The opening is affected by the differences in temperature, pressure and wind stress. The effect is greatest at floor level.



By setting requirements for the air velocity at floor level, you have an air curtain that covers the whole door opening.

### ...not just where it is least needed

Many people evaluate air curtains based on the air volume that they produce without considering the range of the air barrier. The air volume is measured closest to the unit, where the stresses are smallest. If you choose an air curtain based purely on air volume you may get an air curtain that only gives good protection close to the outlet.



If you choose an air curtain based purely on air volume you may get an air curtain that only gives good protection close to the outlet, where the impact on the door opening is less.



## Air barrier power = impulse

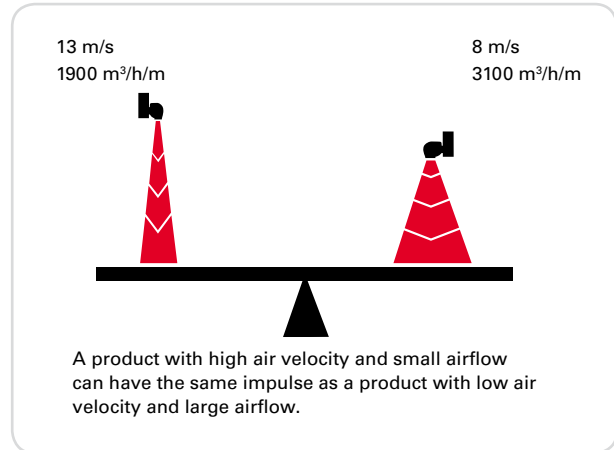
To evaluate an air curtain's performance the term impulse is used, which describes what force an air barrier has.

Impulse = air volume x density x air velocity

$$[\text{kgm/s}^2] = [\text{m}^3/\text{s}] \times [\text{kg/m}^3] \times [\text{m/s}]$$

The unit for impulse is  $[\text{kgm/s}^2]$ , that is Newton (N), the SI unit for force. The impulse can be achieved in different ways. A product with high air velocity and small airflow can have the same impulse as a product with low air velocity and large airflow.

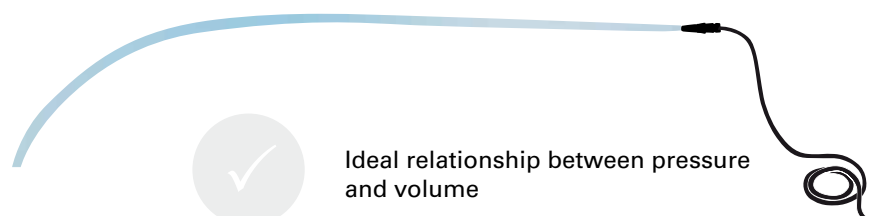
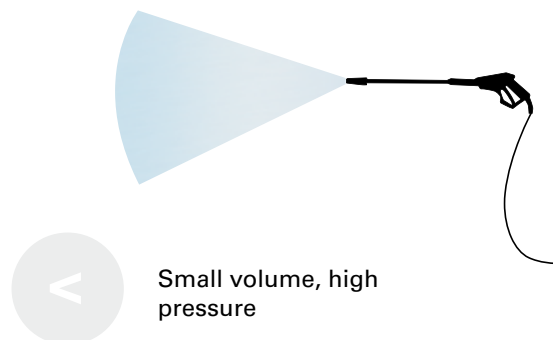
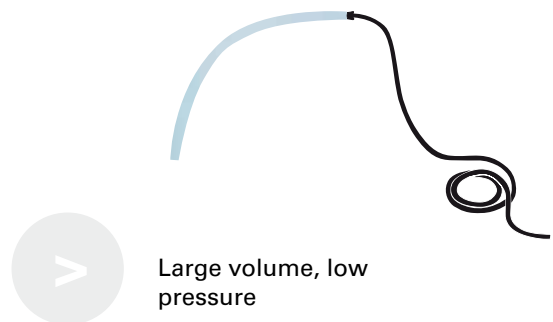
The impulse must be sufficiently large the whole way down to the floor in order to obtain an effective air barrier across the whole opening. It is therefore important to take air velocity into consideration when dimensioning.



## The balance between air volume and air velocity gives optimum performance

Thermozone technology creates a balance between air volume and air velocity that gives optimum performance. The design of the outlet is a key factor in achieving this balance. To explain it we usually use the analogy of a hose pipe, because airflow is physically similar to water flow. With a hose pipe without a nozzle (large water volume and low pressure) you cannot reach far because the velocity of the water leaving the hose is too low. If you connect the hose to a pressure washer (low water volume and high pressure) the water leaves the pressure washer at high speed, but still does not reach further than a few metres, because of the turbulence created in the water flow by the high pressure washer. If you then connect the hose to a nozzle, the water volume and pressure can be adjusted and the range of the water jet can be optimized and reach a long way.

The performance is reduced in the same way in air curtains with low air velocity and large airflow or high air velocity and small airflow. They don't reach the floor. Large air volumes also require more heating and unnecessarily large amounts of energy. Thermozone technology creates a balance between air volume and air velocity that saves energy by using the minimum amount of air and gives optimal efficiency over the whole door opening.



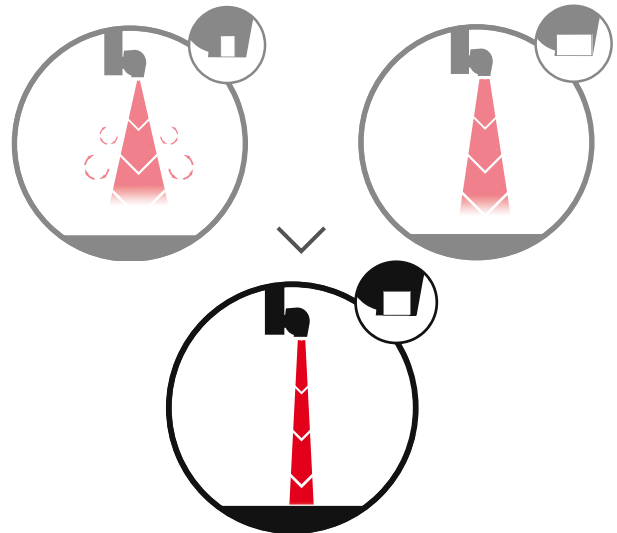
## Optimized airflow geometry

The designs of the outlet and the inside of the unit are key factors in creating an air barrier that protects efficiently and has a minimal sound level.

1

### Width of the outlet

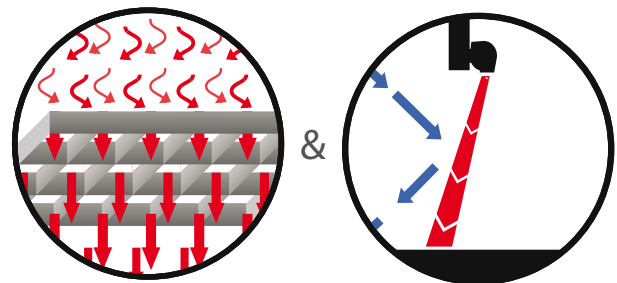
At any given air volume, it is the width of the outlet that determines the air velocity. Too small an outlet creates turbulence because of an air velocity which is too high, this shortens the range. If the outlet is too wide it reduces the air velocity and shortens the range. In Frico air curtains the airflow range is optimized via the width of the outlet.



2

### Outlet grille

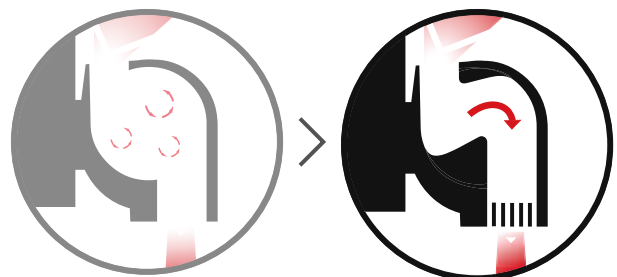
Height, width and fin distance all play a part in the design of the outlet grille, so that the air is directed and turbulence minimized. The result is a controlled air stream and an effective air barrier. Frico's outlet grilles make it easy to direct the air to resist pressure loads in the opening, so that energy losses are minimized.



3

### Minimized turbulence

Turbulence inside the air curtain gives higher pressure drops and higher energy consumption. In Frico air curtains the turbulence is minimized and the energy consumption is limited.

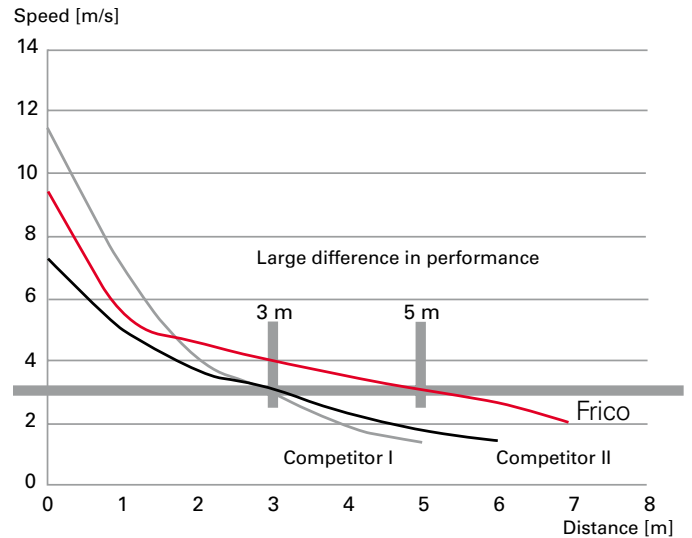




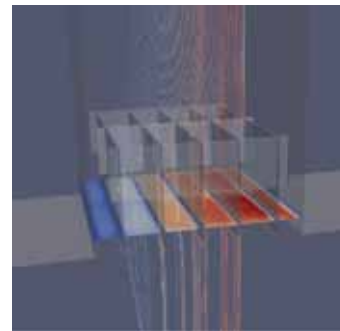
## Tests - airflow geometry

A practical test of Frico's outlet grilles compared to two competitors shows that the same air volume (2000 m<sup>3</sup>/h) gives different throw lengths depending on the characteristics of the outlet grille. In the test the different manufacturer's outlet grilles were mounted on a neutral construction with fans.

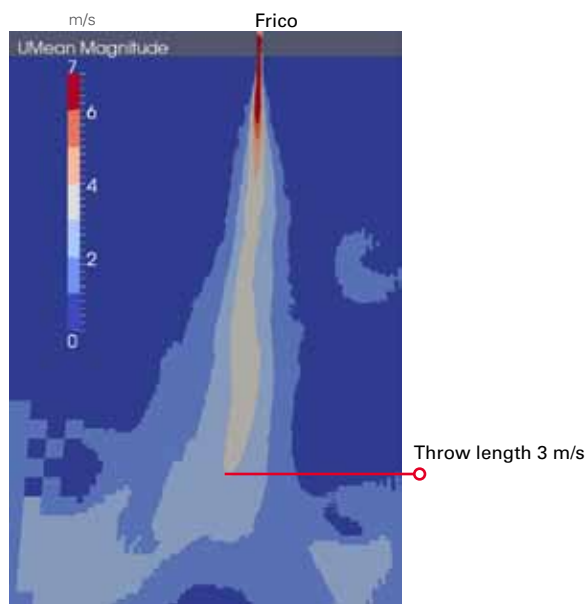
Competitor I has too high a speed at the outlet, which gives high turbulence, the speed for competitor II is too low. The result is that the competitors' outlet grilles give significantly shorter throw lengths.



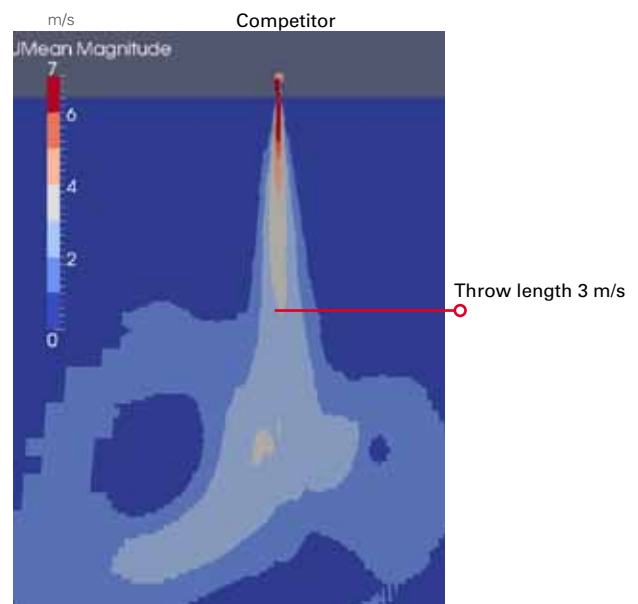
CFD analysis of Frico outlet grilles compared to a competitor shows that the same air volume (1800 m<sup>3</sup>/h) gives different throw lengths depending on the characteristics of the outlet grille. In the diagram below we have compared the throw length of a Frico unit with a competitor with an air velocity of at least 3 m/s. The CFD analysis shows that the Frico outlet grille provides an air beam with considerably longer throw length at a velocity of >3m/s.



CFD-analysis  
Frico's outlet grilles



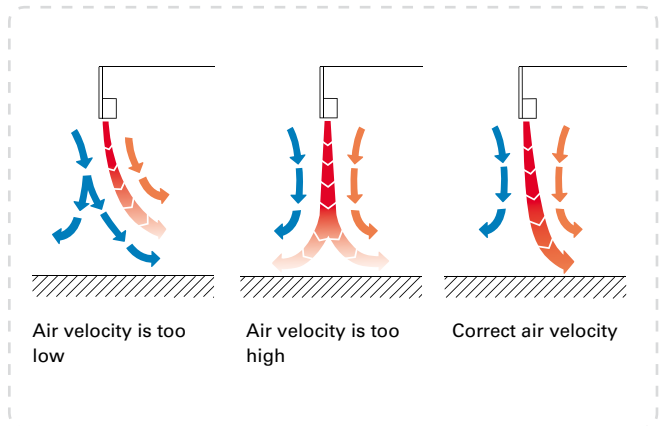
Large difference in performance



## Create maximum protection at floor level

Too low air velocity at floor level gives a curtain that cannot withstand stresses. Too high velocity gives turbulence that reduces the protective capacity of the air barrier and also has loud sound levels.

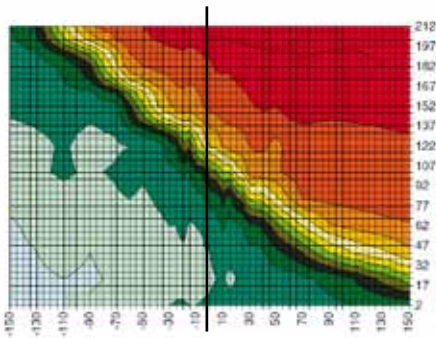
The correct velocity gives good protection. Thermozone technology gives the most effective air barrier by ensuring that the air stream reaches the floor and at optimal air velocity. Thermozone technology solves the problem with the minimum amount of air.



## Test - protective effect

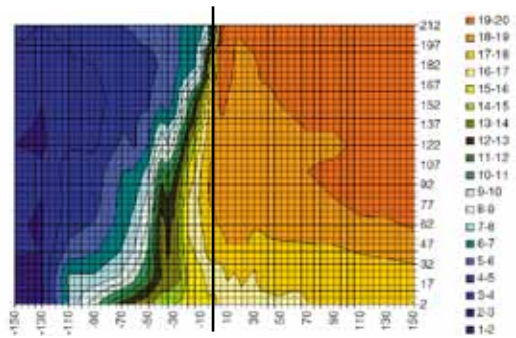
The environment replicated in this test is a dairy section directly attached to a room with normal room temperature. Different operating cases were studied in a cross-sectional temperature measurement and the values were compiled in a diagram showing how the air streams affect the temperature in the areas around the opening.

The clear red colour shows normal room temperature and the darkest blue colour shows the cold storage temperature. The values on the X-axis state the distance in centimetres from the unit, the values on the Y-axis state the distance in centimetres from the floor.



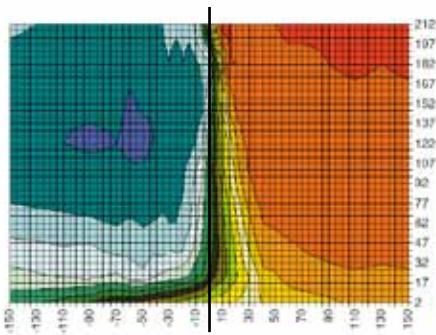
### Opening without air curtain

In an unprotected opening the cold air flows out and the cold storage room becomes much too warm.



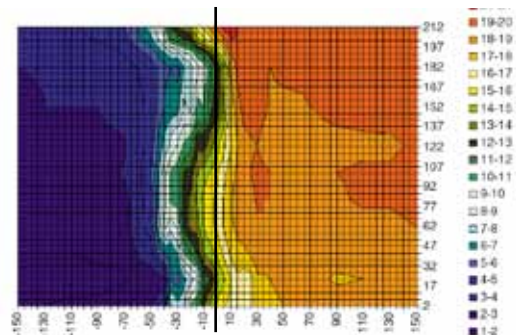
### Opening with air curtain, wrong angle

If the angle is too small the hot air is blown into the cold storage room.



### Opening with air curtain, too high speed

Excessive speed creates turbulence, which causes energy loss and increases the cold storage temperature.



### Opening with correctly adjusted air curtain

With a correctly set air curtain unit there is a sharp separation between the different temperature zones.

## Dimensioning

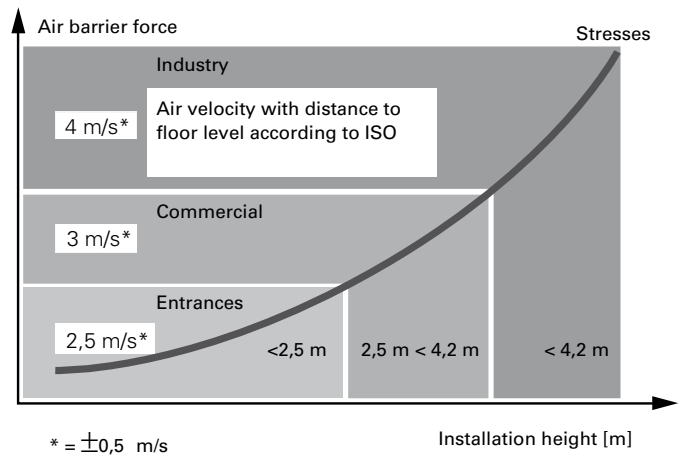
Frico has supplied air curtains for over 40 years and our experience of dimensioning can be illustrated in a diagram.

The relationship between the size of the door and how powerful the air curtain needs to be is not linear. The higher the door the greater the force required. We have chosen to use the distance to the floor as reference, together with the air velocity measured in accordance with ISO 27327-1.

For an installation height less than 2.5 metres it is usually appropriate to select an air curtain with the capacity to deliver approx 2.5 m/s in a laboratory environment at a distance equal to the installation height. For other heights, see the diagram. Please note that the air velocity at dimensioning is not the velocity the air should have at floor level in an actual installation, but the capacity the unit needs to be able to compensate for the wind loads and pressure differentials occurring in an actual doorway.

In many cases there are other factors to refer to, see the section "Important to remember" earlier in the handbook.

The air stream direction and velocity must be adjusted at installation to obtain an air curtain that works optimally. Read more about adjustment later in the handbook.



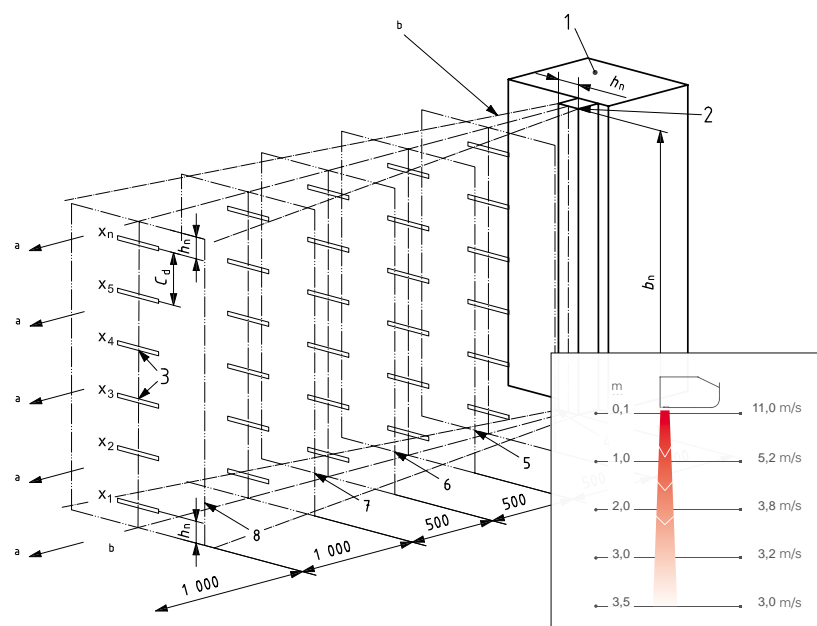
## Air barrier velocity

There is an ISO standard to measure the air barrier velocity (ISO 27327-1 Laboratory methods of testing for aerodynamic performance rating).

Frico measures all air curtains according to the ISO standard, the result is in the air velocity profile of the relevant product.



ISO measurements at our laboratory in Skinnskatteberg, which is one of the most advanced in heating and ventilation in Europe.

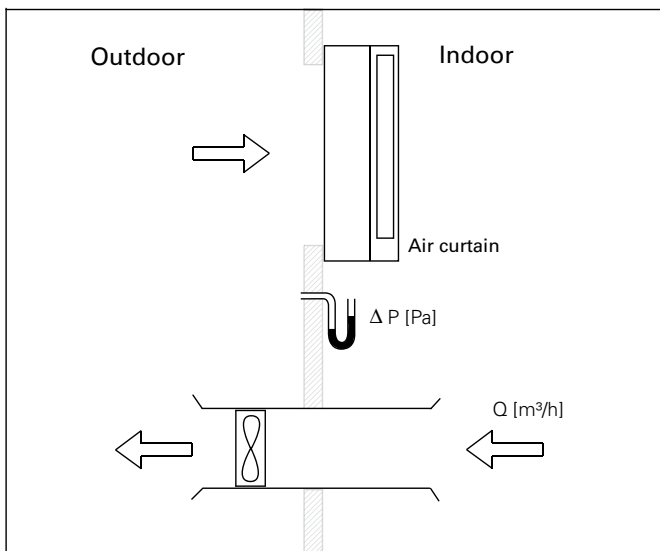


### Air velocity profile PA3500

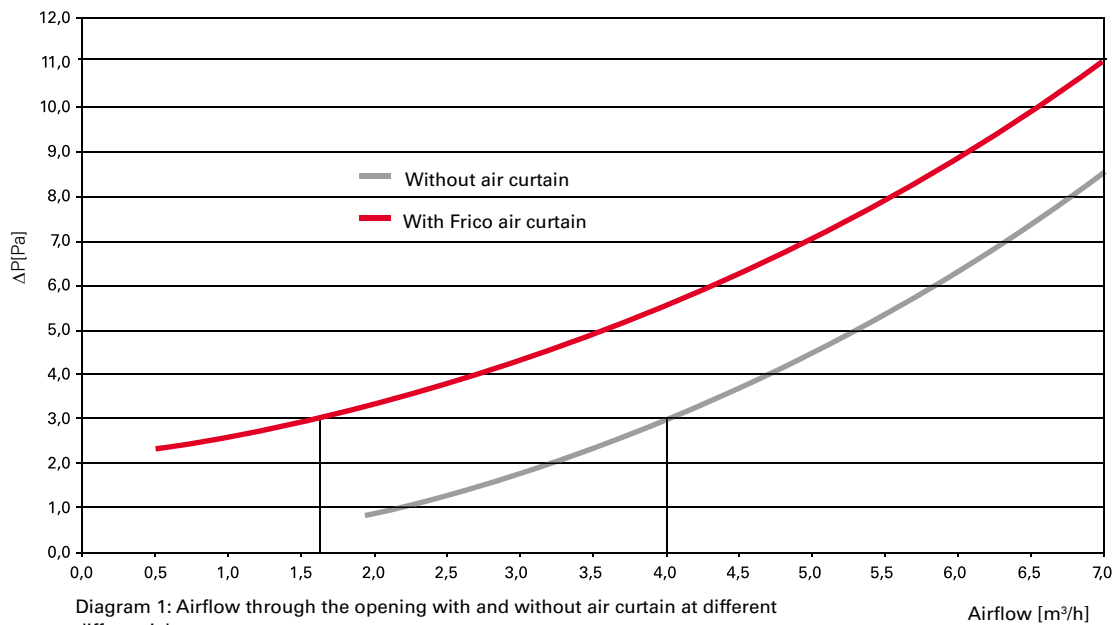
## Tests - performance

### Air curtain efficiency

Frico has developed a method to test air curtain performance. The test is full scale. The idea is to measure the volume of air that passes through a door with an air curtain is installed in comparison to a door without an air curtain. In the test all stresses are converted to a pressure evenly distributed across the door.

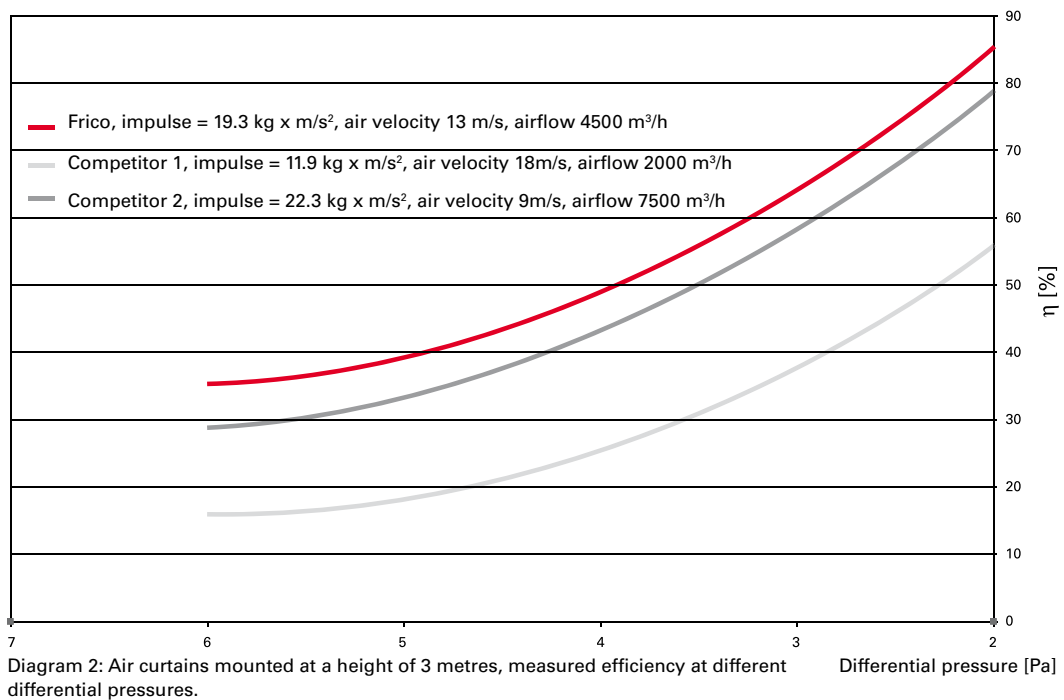


The test installation consists of two rooms that correspond to indoors and outdoors. A powerful fan with equipment to measure airflow is located between the rooms. The air curtain is installed above the opening. When the fan is run an airflow is created from one room to the other, exactly the same volume of air passes through the fan as through the opening. This gives rise to a pressure differential ( $\Delta P$ ) between the two rooms. The fan starts to run at low speed that then slowly increases. Information about airflow and pressure differential is stored on computer. This data is then used to create a curve, see diagram 1.



Pressure and flow over the opening are measured with and without the air curtain. The result is two curves where the airflow at a particular pressure differential can be compared.

Example: At 3 Pa the airflow through the opening without the air curtain is 4 m³/s and with the air curtain is 1.6 m³/s. The difference in the airflow shows the performance of the air curtain. In this case it is  $(4 - 1.6) / 4 \times 100 = 60\%$  less flow with the air curtain compared to without.



This also makes it possible to compare the performance of different products under the same conditions. Diagram 2 shows the result of testing three air curtain units that have been designed using different basic concepts. Competitor 1 has a high air velocity and small air flow and competitor 2 has a medium air velocity and large air flow.

The air curtain from Frico has an optimized air velocity and airflow that makes it more efficient than competitor 2 despite  $(22.3 - 19.3) / 22.3 = \text{approx } 13\%$  lower impulse.

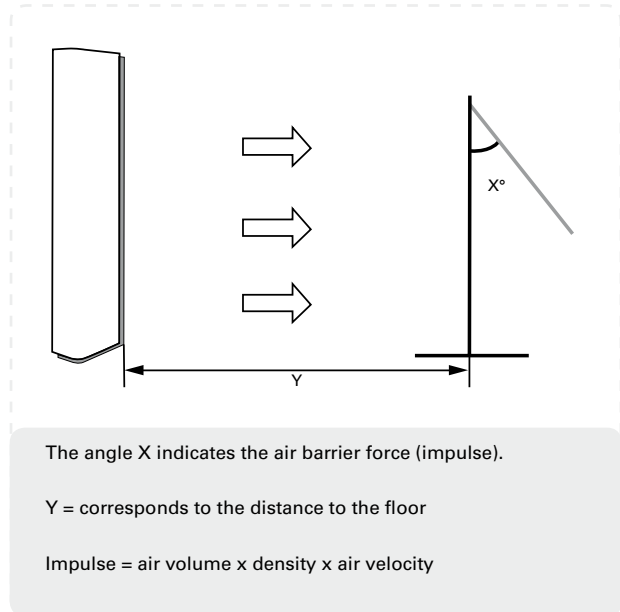
## Tests - performance

### Impulse at the floor

A practical test of different air curtains at floor level can be carried out by comparing the air barrier range and power using a wind board.

To directly compare the throw length and power of different air curtains you can position them equidistantly on either side of a wind board and see which way the board moves.

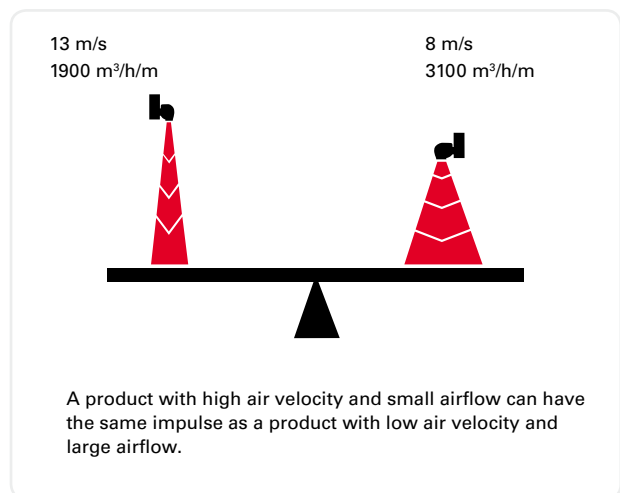
At the same air volume, air curtains from Frico give a stronger impulse at ground level than competitors, which means greater protection. Frico air curtains maintain the impulse the whole way to the floor, which gives a lower operating cost, because the same strength of air barrier can be achieved using lower air volume.



### Large air volumes cost

Low air velocity can be compensated for by higher air volume to reach the floor. Large air volumes require more heating and therefore cost more. As shown by above test, Frico air curtains can give the same strength to the air barrier at floor level with lower air volume.

Calculation of output on an air curtain from Frico and an air curtain with low air velocity and large airflow shows that, in this example, Frico air curtain consumes 40% less than the competitors', but achieves the same impulse.



### Conditions:

Same impulse

Desired temperature increase: 15 °C

Room temperature: 20 °C

Opening width: 2 m

$T = 20\text{ °C} \Rightarrow \rho = 1,2$

Competitor (3100 m³/h/m, 8 m/s)

$P = Q \cdot \Delta T \cdot \rho \cdot c_p = 2 \cdot 3100/3600 \cdot 15 \cdot 1,2 \cdot 1 = \text{approx } 31\text{ kW}$

Frico (1900 m³/h/m, 13 m/s)

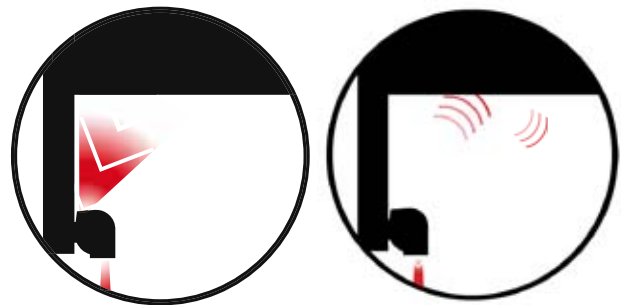
$P = Q \cdot \Delta T \cdot \rho \cdot c_p = 2 \cdot 1900/3600 \cdot 15 \cdot 1,2 \cdot 1 = \text{approx } 19\text{ kW}$

## Minimized sound level

Sound is important for indoor comfort. At Frico we place great importance on the sound levels of our products. The fans we use, together with optimized airflow geometry, contribute to the sound levels being kept as low as possible.

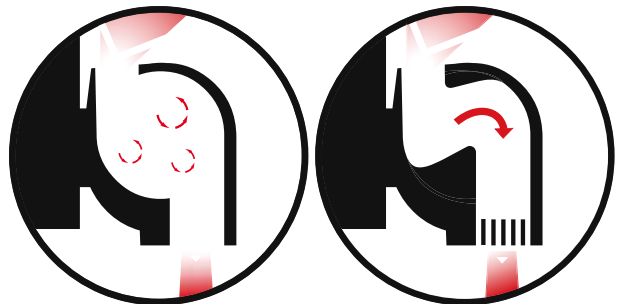
### Air intake on the top

With the air intake placed on the top of the air curtain, the sound level experienced is minimized because the walls and ceilings absorb some of the sound before it spreads.



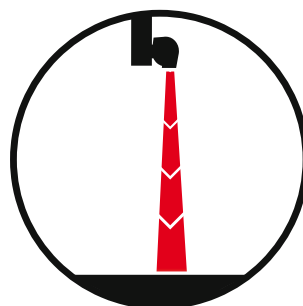
### Turbulence - no thanks

Turbulence inside the air curtain causes higher levels of sound. In Frico air curtains turbulence is minimized and the sound level is limited.



### Optimized amount of air

The sound level originating from the outlet depends on the air volume, a greater air volume increases the sound level. Optimum airflow in combination with the outlet grille gives a controlled air stream with less air volume and lower sound level.



### Sound facts

Sound is an important environmental factor, equally important as good light, fresh air and ergonomics. What we usually call the sound level of a product is actually the sound pressure level. The sound pressure level includes the distance to the sound source, the position of the sound source and acoustics of the room. This means that a silent product is essential, but the whole environment needs to be considered to achieve a comfortable sound level.

#### What is sound?

Sound is caused by air pressure fluctuations that evolve when a sound source vibrates. The sound waves that are produced are condensation and dillusion of air particles without the air in itself moving. A sound wave can have different velocities in different media. In air the sound has a velocity of 340 m/s.

#### How is sound measured?

Sound level is measured in decibel (dB). The dB is a logarithmic unit used to describe a ratio. If the sound level is increased by 10 dB, the result is twice as loud (matematically it is 6 dB, but the way we hear it, it is 10 dB).

It is also useful to know that two equally strong sound sources give an added sound level of 3 dB. Assume you have two entrances with two air curtains in each entrance, all four units with a sound level of 50 dB. The total sound level will then be 56 dB. The first opening will have a total sound level of 53 dB plus an extra 3 dB from the other opening.

### Fundamental concepts

#### *Sound pressure*

Pressure develops when pressure waves move, for example in the air. The sound pressure is measured in Pascals (Pa). To clarify sound pressure a logarithmic scale is used which is based on the differences between the actual sound pressure level and the sound pressure at the threshold of hearing. The scale has the units decibels (dB), where the threshold of hearing is 0 dB and the threshold of pain is 120 dB.

The sound pressure decreases with the distance from the source and is also affected by the acoustics of the room.

#### *Sound power*

Sound power is the energy per time unit (Watt), which the object emits. Sound power is calculated from the sound pressure and also uses a logarithmic scale. Sound power is not dependent on the sound source nor the acoustics of the room, which therefore simplifies the comparisons of different objects.

#### *Frequency*

A sound source's periodical oscillation is its frequency. Frequency is measured as the number of oscillations per second, where one oscillation per second is 1 Hertz (Hz).

#### Points of reference – dB

0	The softest sound a person can hear
10	Normal breathing
30	Recommended max. level for bedrooms
40	Quiet office, library
50	Large office
60	Normal conversation
80	Ringling telephone
85	Noisy restaurant
110	Shouting in ear
120	The threshold of pain



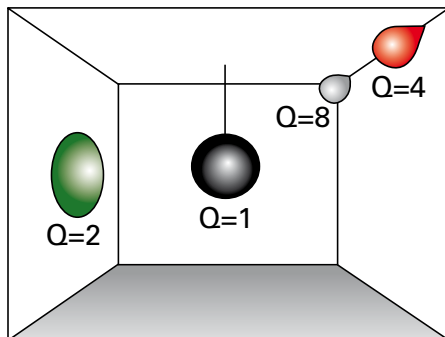


## Sound power level and sound pressure level

If the sound source emits a certain sound power level, the following will affect the sound pressure level:

- 1. Direction factor,  $Q$   
Specifies how the sound is distributed around the sound source. See figure below.
- 2. Distance from sound source  
The distance from the sound source in metres.
- 3. The room's equivalent absorption area  
The ability for a surface to absorb sound can be expressed as an absorption factor,  $\alpha$ , which has a value between 0 and 1. The value 1 corresponding to a fully absorbing surface and the value 0 to a fully reflective surface. The equivalent absorption area of a room is expressed in  $m^2$ . This can be calculated by multiplying the room's surface area by the surfaces' absorption factor.

With these known factors it is possible to calculate the sound pressure if the sound power level is known.



The distribution of sound around the sound source.

$Q = 1$	Middle of room
$Q = 2$	On wall or roof
$Q = 4$	Between wall and roof
$Q = 8$	In corner

## Testing - sound

Our test facility for air and sound is among the most modern in Europe. We regularly carry out tests and measurements during the development of new products, but also to improve existing products. The measurements are carried out according to the AMCA and ISO standards.

This picture shows our acoustic chamber, where we measure the sound levels of our products. The acoustic chamber consists of a sound chamber standing on powerful springs with a background noise that is lower than can be detected by the human ear.

The sound levels of our products are stated for each product. Our sound measurements are carried out according to the international standards ISO27327-2 and ISO3741. The distance to the product is 5 m, directional factor 2 and the equivalent absorption area is  $200 m^2$ .



## Adjustment

Dimensioning should be made according to our recommendations earlier in the handbook. In each case the direction and velocity of the air stream must then be adjusted to this to obtain optimum function in the air curtain. If the air velocity is too high, turbulence will occur which reduces the protective effect and the comfort inside the door. If velocity is too low, the barrier does not reach the floor and cannot protect the opening.

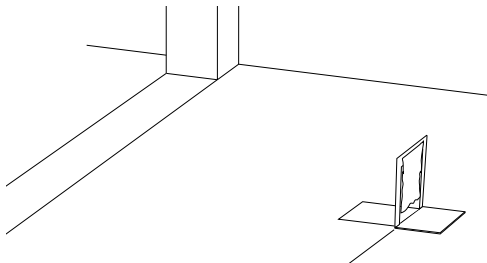


### Cold storage and freezer rooms

Adjustment can be made using an anemometer or a simple adjustment tool. The adjustment tool (or anemometer) is placed approx 0.5 m in on the cold side. The unit should have the outlet pointing straight down to start with and be set to high fan speed. Initially the angle should be adjusted (5-15° outward) and then the fan speed until it does not blow in any direction (or may blow slightly outwards).

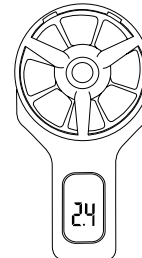
### Entrances and doorways

External influences are greater at entrances and doorways, but an anemometer or simple adjustment tool can be used to give an indication that the installation is correct. The adjustment tool (or anemometer) is placed slightly further in than with a cold storage or freezer room. Initially the angle should be adjusted (5-15° outward) and then the fan speed adjusted until the inward air stream is minimal.



A small adjustment tool consisting of a simple stand and a free hanging piece of tissue paper is placed near the door inside the premises.

Tip! There are films showing adjustment at [www.frico.se/adjust](http://www.frico.se/adjust).



Example of anemometer.

### Correct air velocity

The air velocity at dimensioning must be correct for the installation environment and height (see diagram under Dimensioning, earlier in the handbook). In an installation outside the laboratory environment, the air velocity at floor level will be affected by wind loads and pressure differentials. Our dimensioning recommendations (for air velocity at floor level) are made to withstand normal wind and pressure differences in a real environment. It is essential that the air curtain is correctly adjusted for the specific opening and the air velocity then adapted to how the conditions change over time.

### Adjustment adapts your installation

Stresses vary between different installations and adjustment ensures that the air curtain functions perfectly in your particular installation.

### Controls takes care of the rest

Adjustment is usually carried out once and when the external influences change the controls are used to compensate.



## Controls

How efficient an air curtain is and how much energy can be saved depends to a large part on the control system. Many factors that affect the air curtain vary over time. The variations can be long term, for example seasonal, or more temporary, for example when the sun goes behind clouds, the premises fills with people or when a door is opened.

### SIRe Control system

Most of our air curtains have an integrated intelligent control, SIRe, which automatically manages the air curtain operation, both in summer and winter. The control system can optimize either comfort, energy saving or a combination of these. SIRe is a smart and well designed, low voltage control system available in three different levels with different functionalities.

#### Basic

Basic includes basic functions covering manual control of fans and automatic heating with thermostats.

#### Competent

Competent is an automatic solution for daily air curtain operation.

The included door contact makes it possible to adapt operation of the air curtain to whether the door is open or closed. If the door is open the air curtain operates at high speed. When the door is closed the air curtain runs at low speed, but if there is no heating requirement the air curtain switches off. The air curtain can also be integrated with a heating system and be used for heating. In this way other heating costs can be reduced.

From function level Competent and upwards, a calendar function is included. For example, by reducing the temperature at night and weekends energy savings are possible. Each degree of room temperature reduction can save at least 5% of the total heating cost of the premises inside the door.

It is also possible to choose the functionality between the air curtain operating best for doors that are always open or for doors that are frequently opened and closed.

A common error is to turn the temperature up to max when it is cold, which results in over temperature which in turn impacts on comfort and energy consumption. With Competent it is possible to limit the range of room temperature setting.

#### Advanced

Advanced is a fully automatic solution for air curtain operation including all functions from Competent as well as further smart functions.

Advanced also includes the possibility of choosing between Eco mode or Comfort mode. Comfort mode prioritises comfort. Eco mode limits the outlet temperature and the energy consumption can be reduced by up to 35%.

Advanced measures the outdoor temperature allowing the air curtain to be one step ahead. The fan speed and temperature are always correct and assure optimal protection. The colder it is outdoors the higher the fan speed and vice versa in the summer. The automatic control, including the door contact, ensures that the air curtain operates when it should; you do not have to remember to switch it on. Many people forget that the air curtain is also of benefit when it is hot outdoors and don't switch the curtains on if it is manual, but cooling air is even more expensive than heating it.

When a water heated unit is controlled the return water temperature can be restricted. With a sensor on the return pipe more of the energy in the pipe can be utilised and the system that produces the heat - a heat pump or a district heating system - is significantly more efficient at a lower return temperature. In many cases you also pay a lower tariff if you can keep the return temperature down.

#### BMS

The air curtain operation can also be controlled via an overall control system. The air curtain can receive signals for fans and heating with voltage signal 0–10 V, but it also possible to control all functions and receive all indications via gateway Modbus RTU (RS485). Functionality for BMS is in Competent (on/off/fan speed and alarm function) and in Advanced (complete control with indication and via gateway).

#### Simple installation

The different components are supplied together and are easy to assemble. The system self-checks that everything is correct and that it functions. Thanks to the preset default settings it is easy to start air curtain operation as soon as the system is in place.

Read more on the product pages in the catalogue.

#### Other controls

Frico offer a wide selection of control panels, speed controls, door switches and thermostats for our other air curtains. Some of our air curtains have integrated controls. See product pages.

## Valve kits

Water heated units must always be supplemented with a valve kit. When heating is not required, the valve restricts the water flow and only a small amount is allowed through so that there is always hot water in the heating coil. This is to be able to provide quick heat supply when a door is opened but also to provide a degree of frost protection. Without valves the unit gives off maximum heat energy as long as the fan is running, which means energy loss.



### Select the correct valve kits for units with SRe

Which valve kit should be selected is related to the level of SRe control (Basic, Competent or Advanced) and what information is available about available pressure and desired output.

In Basic and Competent the valves are controlled on/off and in Advanced a modulating actuator is used that controls the valve.

In order to select the correct valve size it is necessary to know what water flow is desired and what available pressure the pump in the pipe system can deliver to the

valve. It is often difficult to know the available pressure and it varies with changes to the system, therefore it is often advantageous to select a pressure independent valve that compensates for variable pressure. In the Water control chapter there is a guide for selecting valve kit where you can get a quick recommendation of valve kit and valve size. There are diagrams and tables on our website to make selection more exact.

#### For SRe Basic and Competent

If the available pressure is known:

- VOS - on/off

Complete kit with two way control and adjustment valve with on/off actuator, shut off valve and bypass. Controls heat supply on/off.

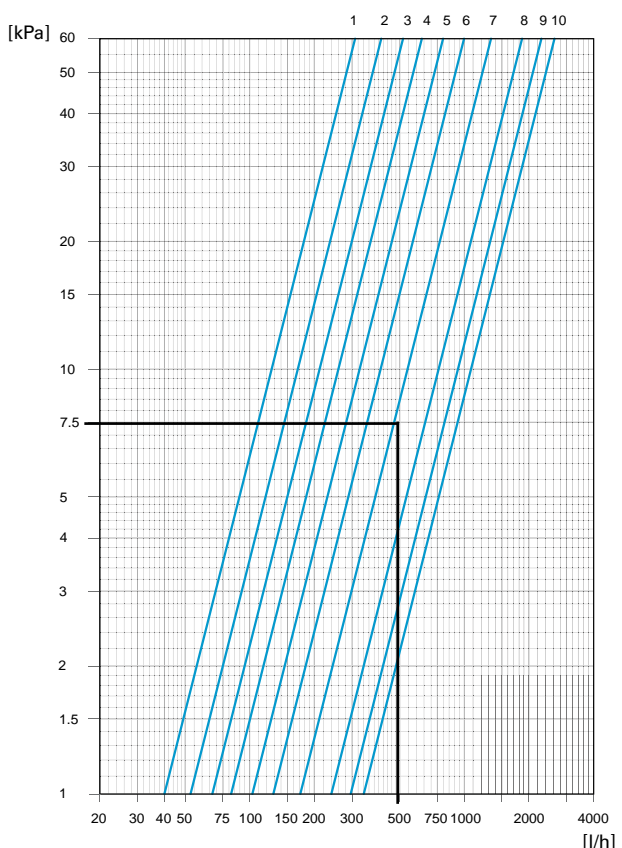
##### Valve size

Both water flow and available pressure need to be known to select the valve size.

Select the size of valve, so that the curve at the selected flow and pressure is at valve setting 6-8.

In the example in the diagram, if you want a flow of 500 l/h and the available pressure is 7.5 kPa, the valve setting is then on 7. VOS20 is therefore a suitable choice. If you instead had selected VOS15NF the valve setting would have been at 10 (fully open). If, on installation, it then transpires that the available pressure is actually lower there is no margin.

If you do not know the available pressure you can make an estimate, for example 10 kPa, and select the valve based on that; but if the actual pressure is higher than 10 kPa the water flow will be higher than required and vice versa.



Example of a diagram for valve size DN20 for VOS, which displays the flow for different settings and pressure drops.

If available pressure is not known or can vary:

- VOSP - Pressure independent on/off

Complete kit with two way pressure independent control and adjustment valve with on/off actuator, shut off valve and bypass. Controls heat supply on/off. The valve is pressure independent and ensures that the flow to the unit is correct even if the differential pressure in the rest of the pipe system changes, which contributes to stable and accurate control.

#### Valve size

To select the valve size the water flow must be known and available pressure must always lie in the range 15 – 350 kPa.

Select the smallest possible valve size that can achieve the desired flow. A valve setting between 6-8 is recommended.

In the example in the table a flow of 500 l/h is desired. VOSP20 is a suitable choice. If you instead had selected VOSP25 the valve setting would have been between 2 and 3, which would have given worse characteristics and an unnecessarily large valve.

The valve will compensate for variations in the pipe system, so that the desired water flow is maintained.

#### LF, DN15

	1	2	3	4	5	6	7	8	9	10
$q_{\max}$	18	53	75	84	94	108	116	124	133	142

#### NF, DN15

	1	2	3	4	5	6	7	8	9	10
$q_{\max}$	77	103	138	160	180	225	265	290	345	375

#### NF, DN20

	1	2	3	4	5	6	7	8	9	10
$q_{\max}$	160	195	250	320	360	435	465	540	635	660

#### NF, DN25

	1	2	3	4	5	6	7	8	9	10
$q_{\max}$	335	445	525	625	785	875	945	1075	1225	1330

$$q_{\max} = l/h$$

Example of the tables for VOSP, which display the flow for different settings.

In event of requirement of constant return flow/ when only valve and actuator are required:

- VOT - three way control valve and actuator on/off
- The 3-way control valve controls the water flow in combination with the actuator. Used when the adjustment, shut off and bypass valves are supplied in another way. Controls heat supply on/off.

If a two way valve is required instead of the 3-way control valve included, the third valve opening can be easily plugged (not included).

On markets where there are requirements for a constant return flow (3-way control valve) this is a suitable choice.

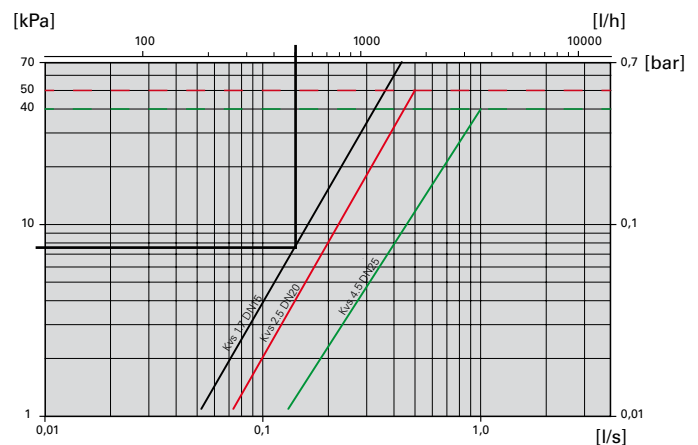
#### Valve size

To select the valve size both the water flow and pressure drop across the valve need to be known.

Select the valve size so that the pressure drop across the valve provides the required water volume.

In the example in the diagram, a flow of 500 l/h and a pressure drop of 7.5 kPa is required. VOT15 should be selected.

If you do not know the available pressure you can make an estimate, for example 10 kPa, and select the valve based on that; but if the actual pressure is higher than 10 kPa the water flow will be higher than required and vice versa.



Example of diagram for VOT, which displays the pressure drop for different flows.

## For SIRE Advanced

If the available pressure is known:

### • VMO - modulating

Complete package with two way control and adjustment valve with modulating actuator and shut off valve.

Controls the heat supply steplessly, modulates and gives the right heating. The actuator is set to always release a small flow with SIRE Advanced.

### Valve size

Both water flow and available pressure need to be known to select the valve size.

Select the size of the valve, where the pressure drop over the valve at the recommended valve setting of 6-8 is at least as large as the pressure drop over the heating coil.

In the example, if you want a flow of 500 l/h, that is 0.14 l/s, the pressure drop must be at least 7.4 kPa. VMO20 is therefore a suitable choice.

For modulated valves it is very important that the regulating valve is the correct size and has authority over the heating coil to prevent oscillation in the radiated heating output.

Too large a valve will give a large change in radiated output even at small adjustments.

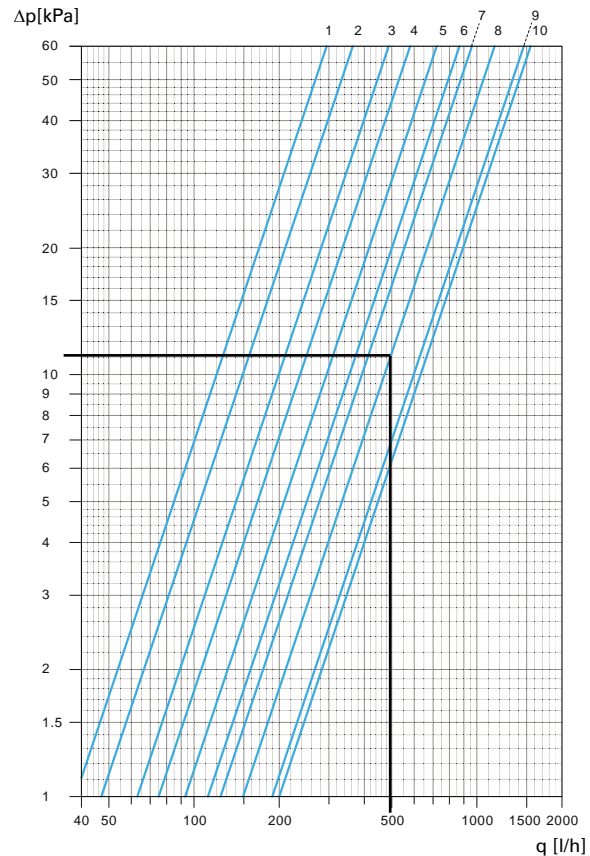
Too small a pressure drop across the valve compared to the pressure drop in the coil affects the accuracy of the valve and therefore also increases the risk of oscillations.

For good function it is required that the pipe system is balanced, with small variations in available pressure; otherwise use of the pressure independent VMOP is recommended instead.

A rule of thumb is that if you know the pump pressure you can work on the basis that the pressure drop across the valves must be 25% of the total pump pressure.

		60/40 °C +18 °C			
	[m³/h]	[kW]	[°C]	[l/s]	ΔP [kPa]
PA3510WL	1800	11,7	37,1	0,14	7,4
	860	7,0	42,0	0,08	3,0
PA3515WL	2600	18,1	38,5	0,22	11,3
	1240	10,7	43,5	0,13	4,5
PA3520WL	3200	22,8	39,1	0,28	7,4
	1530	13,5	43,9	0,16	2,9
PA3525WL	4600	32,6	38,9	0,39	16,5
	2200	19,3	43,9	0,23	6,5

Example of dimensioning tables water for PA3500WL with water temperature 60/40 °C and room temperature 18 °C.



Example of the diagram for valve size DN20 for VMO, which displays the flow for different settings and pressure drops.



If available pressure is not known or can vary:

- VMOP - Pressure independent and modulating Complete package with two way pressure independent control and adjustment valve with modulating actuator and shut off valve. Controls the heat supply steplessly, modulates and gives the right heating. The actuator is set to always release a small flow with SIRE Advanced.

The valve is pressure independent and ensures that the flow to the unit is correct even if the differential pressure in the rest of the pipe system changes, which contributes to stable and accurate control.

#### Valve size

To select the valve size the water flow must be known and available pressure must always lie in the range 15 – 350 kPa.

Select the smallest possible valve size that can achieve the desired flow. A valve setting between 6-8 is recommended.

In the example in the table a flow of 500 l/h is desired.

VMOP20 is a suitable choice. If instead you had selected VMOP25 the valve setting would have been between 2 and 3, which would have given worse circuit characteristics and an unnecessarily large valve.

The valve will compensate for variations in the pipe system, so that the desired water flow is maintained.

#### LF, DN15

	1	2	3	4	5	6	7	8	9	10
$q_{\max}$	18	53	75	84	94	108	116	124	133	142

#### NF, DN15

	1	2	3	4	5	6	7	8	9	10
$q_{\max}$	77	103	138	160	180	225	265	290	345	375

#### NF, DN20

	1	2	3	4	5	6	7	8	9	10
$q_{\max}$	160	195	250	320	360	435	465	540	635	660

#### NF, DN25

	1	2	3	4	5	6	7	8	9	10
$q_{\max}$	335	445	525	625	785	875	945	1075	1225	1330

$q_{\max} = \text{l/h}$

Example of the tables for VMOP, which display the flow for different settings.

In event of requirement of constant return flow/ when only valve and actuator are required:

- VMT - Three way control valve and modulating actuator The 3-way control valve controls the water flow in combination with the actuator. Used when the adjustment and shut off valves are supplied in another way. Controls the heat supply steplessly, modulates and gives the right heating. The actuator is set to always release a small flow with SIRE Advanced. If a two way valve is required instead of the 3-way control valve included, the third valve opening can be easily plugged (not included).

On markets where there are requirements for a constant return flow (3-way control valve) this is a suitable choice.

#### Valve size

To select the valve size both water flow and available pressure need to be known.

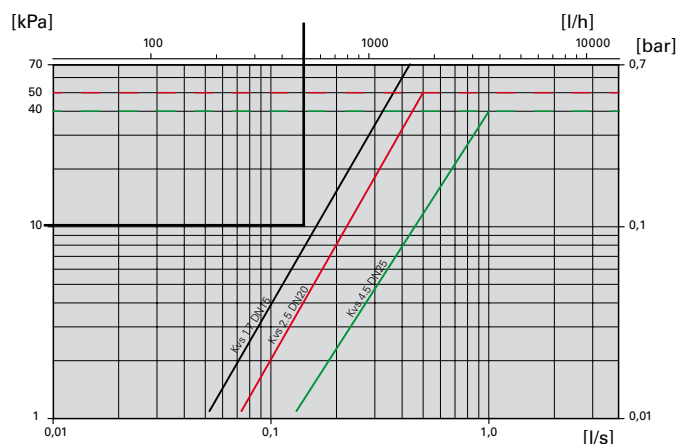
Select the size of the valve, where the pressure drop over the valve is at least as large as the pressure drop over the heating coil.

In the example, if you want a flow of 500 l/h, that is 0.14 l/s, the pressure drop must be at least 7.4 kPa (see table on previous page). VMT15 is therefore a suitable choice.

For modulated valves it is very important that the regulating valve is the correct size and has authority over the heating coil to prevent oscillation in the radiated heating output.

Too large a valve will give a large change in radiated output even at small adjustments.

Too small a pressure drop across the valve compared to the pressure drop in the coil affects the accuracy of the valve and therefore also increases the risk of oscillations.



Example of diagram for VMT, which displays the pressure drop for different flows.

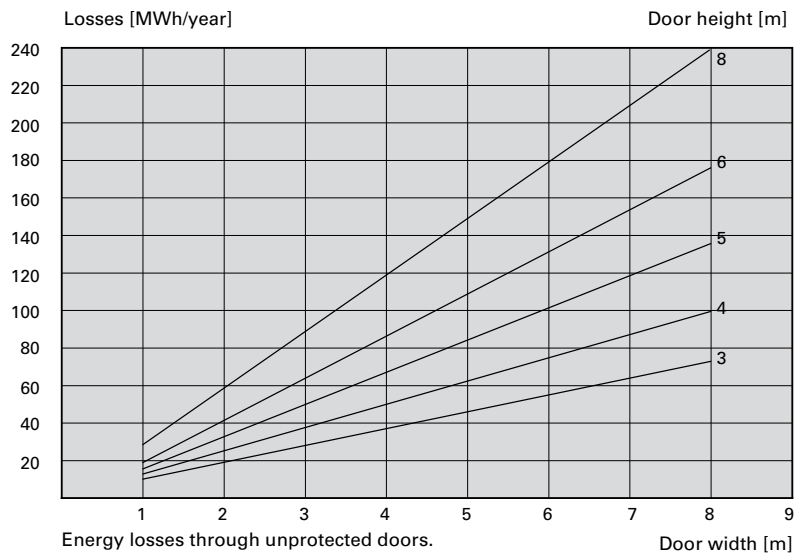
## Other valve kits

For valve kits for our other water heated air curtains, see the chapter about water control and the relevant product pages.

# Energy saving with air curtains

The diagram below illustrates how large energy losses can be from a door without air curtains as protection.

Conditions:      Large premises  
Average yearly temperature      6,5 °C  
Annual average wind speed  $v_{10}$       4 m/s  
Opening times      1 hour/day





## Calculation of energy savings

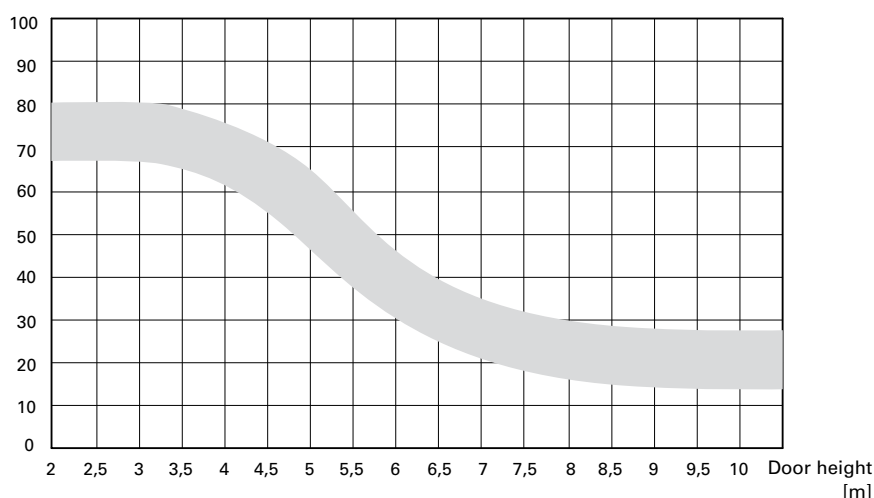
Door height	5	m
Door width	4	m
Number of days per week in operation	5	days
Time open during a day	1	hour
Average time open per opening	5	minutes
Dim. indoor temperature	18	°C
Dim. outdoor temperature	-18	°C
Average yearly temperature	5	°C
Wind speed	4	m/s
Room volume	6400	m <sup>3</sup>

We will compare energy loss through an open, unprotected door with a similar door where air curtains have been installed. The calculation should only be viewed as an estimate. Calculation of energy savings is not an exact science. It is difficult to determine the impact of cross draughts, building seal, chimney effect, wind speed and direction. But what we can see is that there will be high energy losses if an opening is left completely unprotected.

If we compare the values from the diagram on the previous page with the diagram below, we can see that the air curtain eliminates up to 65 % of the air exchange through the door.

Energy loss, unprotected door: 69 MWh/year  
 Energy loss, curtain protected door: 24 MWh/year  
 Energy saving: 45 MWh/year

Saving [%]



Estimated possible savings (efficiency) in doors of different heights. The comparison applies to doors protected by an air curtain compared to the equivalent without protection.

### Contact us at Frico for advice

You are very welcome to contact us if you want to discuss the requirements for your doors. With some information from you we can give an estimate of the possible energy savings. See the following checklist with useful parameters.

- Door's width and height
- Premises type and size
- Days per week the door is in operation
- Hours per day that the door is open
- Indoor and outdoor temperatures
- Wind influence
- Any negative pressure



## Just a click away

### Smart tools

Information about all our products can be found on our website. There are also smart tools to help find the right product, make heating calculations and create specification texts.



### Product selection guide

The product selection guide has a basic and an advanced level. What level is used depends on how much information is available about the installation. The product selection program should be used to get an idea of what products are suitable.

### Specification text

Using this tool you can choose accessories for a selected product, make heating calculations and receive all the technical data in a specification sheet.

### Heating calculations

Heating calculations can also be used as a separate tool. Calculations can be made in order to easily compare different water temperatures, fan settings etc.



# Tables for dimensioning

## Basic electrical formulas

### Amperage

Direct current and 1-phase alternating current at $\cos\varphi=1$	3-phase alternating current Y-connection	3-phase alternating current $\Delta$ -connection
$I=U/R=P/U$	$I_l=I$	$I=I_l \cdot 3$

### Voltage

Direct current and 1-phase alternating current at $\cos\varphi=1$	3-phase alternating current Y-connection	3-phase alternating current $\Delta$ -connection
$U=RI$	$U=U_l \cdot 3$	$U_f=U$

### Output

Direct current and 1-phase alternating current at $\cos\varphi=1$	3-phase alternating current Y-connection	3-phase alternating current $\Delta$ -connection
$P=UI$	$P= 3UI\cos\varphi$	$P= 3 UI \cos\varphi$

U = operating voltage in volts: with DC and singlephase AC between the two conductors, with 3-phase AC two phases (not between phase and zero).

$U_l$  = voltage between phase and zero in a 3-phase cable.  
 $\sqrt{3} \approx 1.73$

I = amperage in ampere

$I_l$  = amperage in ampere in phase wire

R = resistance in ohm

P = output in watt

## Symbols for model types

= normal design (no symbol), IPX0

☼ = drip-proof design, IPX1

☼☼ = splash-proof design, IPX4

☼☼☼ = jet-proof design, IPX5

## Enclosure classes for electrical materials

IP, first figure	Protection against solid objects
0	No protection
1	Protection against solid objects $\geq 50$ mm
2	Protection against solid objects $\geq 12.5$ mm
3	Protection against solid objects $\geq 2.5$ mm
4	Protection against solid objects $\geq 1.0$ mm
5	Protection against dust
6	Dust-tight
IP, second figure	Protection against water
0	No protection
1	Protection against vertically dripping water
2	Protection against dripping water max 15°
3	Protection against sprinkled water
4	Protection against spraying with water
5	Protection against water jets
6	Protection against heavy seas
7	Protection against short immersion in water
8	Protection against the effects of long-term immersion in water

## Dimensioning table for cables and wiring

Installation wires, open or in conduit		Connection wires		
Area [mm²]	Fuse [A]	Area [mm²]	Continuous current [A]	Fuse [A]
1,5	10	0,75	6	10
2,5	16	1	10	10
4	20			
6	25	1,5	16	16
10	35	2,5	25	20
16	63	4	32	25
25	80	6	40	35
35	100	10	63	63
50	125			
70	160			
95	200			
120	250			
150	250			
185	315			
240	315			
300	400			
400	500			

## Dimensioning table

### Current strength at different outputs and voltages

Power [kW]	Voltage [V]					
	127/1	230/1	400/1	230/3	400/3	500/3
1,0	7,85	4,34	2,50	2,51	1,46	1,16
1,1	8,65	4,78	2,75	2,76	1,59	1,27
1,2	9,45	5,22	3,00	3,02	1,73	1,39
1,3	10,2	5,65	3,25	3,27	1,88	1,50
1,4	11,0	6,09	3,50	3,52	2,02	1,62
1,5	11,8	6,52	3,75	3,77	2,17	1,73
1,6	12,6	6,96	4,00	4,02	2,31	1,85
1,7	13,4	7,39	4,25	4,27	2,46	1,96
1,8	14,2	7,83	4,50	4,52	2,60	2,08
1,9	15,0	8,26	4,75	4,78	2,75	2,20
2,0	15,8	8,70	5,00	5,03	2,89	2,31
2,2	17,3	9,67	5,50	5,53	3,18	2,54
2,3	18,1	10,0	5,75	5,78	3,32	2,66
2,4	18,9	10,4	6,00	6,03	3,47	2,77
2,6	20,5	11,3	6,50	6,53	3,76	3,01
2,8	22,0	12,2	7,00	7,03	4,05	3,24
3,0	23,6	13,0	7,50	7,54	4,34	3,47
3,2	25,2	13,9	8,00	8,04	4,62	3,70
3,4	26,8	14,8	8,50	8,54	4,91	3,93
3,6	28,4	15,7	9,00	9,04	5,20	4,15
3,8	29,9	16,5	9,50	9,55	5,49	4,39
4,0	31,1	17,4	10,0	10,05	5,78	4,62
4,5	35,4	19,6	11,25	11,31	6,50	5,20
5,0	39,4	21,7	12,50	12,57	7,23	5,78
5,5	43,3	23,9	13,75	13,82	7,95	6,36
6,0	47,3	26,1	15,0	15,1	8,67	6,94
6,5	51,2	28,3	16,25	16,3	9,39	7,51
7,0	55,0	30,4	17,50	17,6	10,1	8,09
7,5	59,0	32,6	18,75	18,8	10,8	8,67
8,0	63,0	34,8	20,0	20,1	11,6	9,25
8,5	67,0	37,0	21,25	21,4	12,3	9,83
9,0	71,0	39,1	22,5	22,6	13,0	10,4
9,5	75,0	41,3	23,75	23,9	13,7	11,0
10,0	78,5	43,5	25,0	25,1	14,5	11,6

At outputs between 0.1 and 1 kW the read off current strength is multiplied by 0.1. At outputs between 10 and 100 kW the read off current strength is multiplied by 10.

Confiance  
Asiantuntimus  
Trust  
Дизайн  
Kompetanse  
Tillit  
Competência  
Компетентность  
Kompetenz  
Zaufanie  
Design  
Vertrauen  
Confiança  
Estetyka  
Kompetencja  
信任  
Доверие  
Competence  
Luotettavuus  
能力  
Competance  
设计



Frico AB  
Box 102, SE-433 22 Partille  
Sweden  
+ 46 31 336 86 00  
+ 46 31 26 28 60  
mailbox@frico.se • www.frico.se

T  
F