

# INVISIDOR STYLE

Designer Air Curtains

**Biddle**



# CONTEMPORARY STYLE

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Architects, M&E designers and building owners are constantly looking for ways of enhancing the appearance of the entrance environment without compromising on performance. The Invisidor STYLE range combines Biddle's patented technology along with contemporary design.

Available in a variety of finishes the Invisidor STYLE range has an eye-catching cylindrical profile and a distinctive perforated grille. With the design being modular, any door width can be covered, and buildings requiring vertical rather than horizontal air curtains can still use this range to create a 'top end' designer look to the entrance environment.

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# COMFORT AND STYLE COMBINED

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Specifically developed to bring not just performance benefits and energy savings but also high quality designer looks, designed to suit entrance environments where space is limited but looks and comfort are still important.

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## FEATURES AND BENEFITS:

- ◉ Stylish design
- ◉ Performance enhancing patented discharge rectifier
- ◉ Energy saving ECONTROL
- ◉ Choice of RAL paint colours, bright or brushed stainless steel
- ◉ Water or electric heating
- ◉ Condensing boiler variants
- ◉ Compact variants, for restricted space applications
- ◉ Up to 24kW output
- ◉ Vertical or horizontal configurations
- ◉ Modular in nature (sizes from 1120mm to 2345mm) to suit any door width

## PATENTED RECTIFIER

So as to minimise turbulence in the discharge airstream, and ensure the air reaches the floor, Biddle have invested heavily in the development of the patented rectifier.

This rectifier comprises an optimised number of blades, with a precise relationship between their length and spacing, to create a laminar airstream which reduces turbulence and energy consumption and increases throw for a given air volume.



# HOW IT WORKS

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The Invisidor STYLE range uses Biddle's proven, patented rectifier to supply conditioned air at low speed with minimum turbulence, ensuring the air stream reaches the floor and doesn't escape to the outside. Comfort within the entrance area is therefore enhanced without any energy wastage.

Whether using water or electric heating, an advanced energy saving controller - the ECONTROL - when combined with the Invisidor STYLE air curtain optimises energy savings. Operated either manually or automatically the ECONTROL will not just control air curtain performance but will also control comfort conditions in the entrance environment through energy saving adjustment of air volume and temperature. Timer clocks, door contact switches or room thermostats can still be linked to the air curtain for added flexibility.

## MOUNTING HEIGHTS

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### INVISIDOR STYLE COMPACT; WITH A MOUNTING HEIGHT OF UP TO 2.6M

- 🔌 Air curtain with patented rectifier
- 🔌 3-port diverting valve (fitted inside water heated units only)
- 🔌 Return air sensor
- 🔌 ECONTROL energy saving controller
- 🔌 3 metre length of control cable, with RJ4/4 plug fitted to either end
- 🔌 Elliptical shape 362mm x 242mm

### INVISIDOR STYLE; WITH A MOUNTING HEIGHT OF UP TO 3.2M

- 🔌 Air curtain with patented rectifier
- 🔌 3-port diverting valve (fitted inside water heated units only)
- 🔌 Return air sensor
- 🔌 ECONTROL energy saving controller
- 🔌 3 metre length of control cable, with RJ4/4 plug fitted to either end
- 🔌 Mounting brackets
- 🔌 Elliptical shape 500mm x 350mm

## CONTROLS

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### ENERGY SAVING: ECONTROL

The control will ensure air curtain performance is optimised whilst minimising energy usage.

Connecting the ECONTROL to the Invisidor STYLE & STYLE Compact couldn't be easier - just plug one end of the cable in to the air curtain and the other end into the controller.

In 'Auto' mode ECONTROL will automatically adjust the air curtain's heat output to optimise air curtain performance, control the space at the selected set point temperature (range = 18-25°C) and minimise energy usage.

In 'Manual' mode ECONTROL simply provides the air curtain with either half heat or full heat.

Regardless of whether the air curtain is in 'Auto' or 'Manual' mode the user can:

- 🔌 Select fan speed
- 🔌 Turn the heating off and operate the air curtain as an ambient unit



ECONTROL



# TECHNICAL DETAILS

## INVISOR STYLE COMPACT

Size		Horizontal	Vertical
Style Compact-100	Comprising total width/height	1 x Style Compact-100 1130mm	na na
Style Compact-150	Comprising total width/height	1 x Style Compact-150 1650mm	na 1645mm
Style Compact-200	Comprising total width/height	1 x Style Compact-200 2130mm	1 x Style Compact-200 2130mm
Style Compact-250	Comprising total width/height	1 x Style Compact-150 (left unit) & 1 x Style Compact-100 (right unit) 2775mm	1 x Style Compact-150 (bottom unit) & 1 x Style Compact-100 (top unit) 2775mm

- If units are joined together (either horizontally or vertically) then they are 'master/slaved' and the master unit and slave unit(s) are daisy chained together using the 3 metre length(s) of control cable supplied. Each unit requires its own electrical supply and water supply

## INVISOR STYLE

Size		Horizontal	Vertical
Style-100	Comprising total width/height	1 x Style-100 1260mm	na na
Style-150	Comprising total width/height	1 x Style-150 1722mm	na na
Style-200	Comprising total width/height	1 x Style-200 2355mm	1 x Style-200 2355mm
Style-250	Comprising total width/height	1 x Style-150 (left unit) & 1 x Style-100 (right unit) 2977mm	1 x Style-150 (bottom unit) & 1 x Style-100 (top unit) 2977mm
Style-300	Comprising total width/height	1 x Style-150 (left unit) & 1 x Style-150 (right unit) 3439mm	1 x Style-200 (bottom unit) & 1 x Style-100 (top unit) 3610mm
Style-350	Comprising total width/height	1 x Style-200 (left unit) & 1 x Style-150 (right unit) 4072mm	na na
Style-400	Comprising total width/height	1 x Style-200 (left unit) & 1 x Style-200 (right unit) 4705mm	na na

- If units are joined together (either horizontally or vertically) then they are 'master/slaved' and the master unit and slave unit(s) are daisy chained together using the 3 metre length(s) of control cable supplied. Each unit requires its own electrical supply and water supply

## MODEL REFERENCE

The model reference consists of a code giving unit size, coil and casing arrangement.

Style Compact - 150 - W - VR			
Style Compact	150	W	VR
○ Product	○ Nominal unit length 100/150/200/250cm	○ Heating coil W = Hot water heating E = Electric heating	○ Casing style H = Horizontal VR = Vertical right handed VL = Vertical left handed

# PERFORMANCE DATA

	Speed	STYLE COMPACT-100		STYLE COMPACT-150		STYLE COMPACT-200	
		LPHW at 82/71°C	Electrical heating	LPHW at 82/71°C	Electrical heating	LPHW at 82/71°C	Electrical heating
Heat output* (kW)	Low	5.3	9.0	7.9	12.0	10.0	18.0
	Medium	5.5		8.2		10.4	
	High	5.6		8.4		10.7	
Air volume (m³/s)	Low	0.259		0.374		0.519	
	Medium	0.276		0.400		0.555	
	High	0.294		0.425		0.590	
Noise level (dBA) measured 3m from discharge	Low	50		49		50	
	Medium	53		53		54	
	High	55		55		56	

	Speed	STYLE-100			STYLE-150			STYLE-200		
		2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating
Heat output* (kW)	Low	7.7	7.1	12.0	10.6	9.1	18.0	16.2	15.0	24.0
	Medium	9.2	8.2		14.9	12.8		17.8	16.8	
	High	10.5	9.1		17.7	14.9		20.6	18.9	
Air volume (m³/s)	Low	0.258			0.338			0.540		
	Medium	0.333			0.516			0.628		
	High	0.404			0.658			0.786		
Noise level (dBA) measured 3m from discharge	Low	42			43			45		
	Medium	51			51			54		
	High	56			58			60		

\*Heat outputs stated are with an entering air temperature of 20°C

# ELECTRICAL DATA

	STYLE COMPACT-100		STYLE COMPACT-150		STYLE COMPACT-200	
	LPHW at 82/71°C	Electrical heating	LPHW at 82/71°C	Electrical heating	LPHW at 82/71°C	Electrical heating
Electrical supply (V/ph/Hz)	230/1/50	400/3/50	230/1/50	400/3/50	230/1/50	400/3/50
Rated Power input (kW)	0.15	9.15	0.20	12.20	0.25	18.25
Current per phase (A)	0.7	13.7	0.9	18.3	1.1	27.2

	STYLE-100			STYLE-150			STYLE-200		
	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating
Electrical supply (V/ph/Hz)	230/1/50		400/3/50	230/1/50		400/1/50	230/1/50		400/3/50
Rated power input (kW)	0.3		12.3	0.4		18.4	0.6		24.6
Current per phase (A)	1.3		18.7	1.8		27.9	2.7		37.5

# DIMENSIONAL & WEIGHT DATA

	STYLE COMPACT-100		STYLE COMPACT-150		STYLE COMPACT-200	
	LPHW at 82/71°C	Electrical heating	LPHW at 82/71°C	Electrical heating	LPHW at 82/71°C	Electrical heating
Unit width/height** (mm)	1120		1640		2120	
Unit depth (mm)	362		362		362	
Unit height (mm)	242		242		242	
Horizontal unit weight (kg)	31		44		60	
Vertical unit weight (kg)	31		54		70	

	STYLE-100			STYLE-150			STYLE-200		
	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating
Unit width/height** (mm)	1250			1712			2345		
Unit depth (mm)	500			500			500		
Unit height (mm)	350			350			350		
Horizontal unit weight (kg)	70			85			115		
Vertical unit weight (kg)	70			95			125		

\*\*Ceiling/wall brackets and joining plates measure 5mm each

# WATER DATA

	STYLE COMPACT-100		STYLE COMPACT-150		STYLE COMPACT-200	
	LPHW at 82/71°C	Electrical heating	LPHW at 82/71°C	Electrical heating	LPHW at 82/71°C	Electrical heating
Max. Water flow rate (l/s)	0.14	na	0.21	na	0.29	na
Max. pressure drop* (kPa)	2.77	na	6.74	na	13.40	na

	STYLE-100			STYLE-150			STYLE-200		
	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating	2-row coil at 82/71°C	3-row coil at 60/40°C	Electrical heating
Max. Water flow rate (l/s)	0.24	0.11	na	0.40	0.18	na	0.46	0.23	na
Max. Pressure drop* (kPa)	4.2	3.5	na	12.1	5.0	na	16.6	9.9	na

\*Combined pressure drop of coil and valve

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# ISOLAIR

Chilled Room Air Curtain

**Biddle**



# CLIMATE SEPARATION WITHOUT HEATING

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The Biddle IsolAir chilled room air curtain is the perfect solution for internal climate separation where heating is not required. When a building consists of several climate zones, an open inside door leads to air displacement and as a consequence energy loss. An IsolAir above an open door provides a very efficient climate separation between the two areas at the lowest energy consumption.

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## APPLICATION AREAS

The air curtain is specifically designed for internal climate separation, where climate zones are more or less constant. The IsolAir is applied in chilled rooms of production companies and distribution centres and in small cold stores in supermarkets.

The IsolAir has a trendy design in line with the latest developments in the sector. The narrow shape of the IsolAir makes the air curtain very suitable for smaller applications.

### FEATURES AND BENEFITS:

- 🕒 Optimal climate separation
- 🕒 Efficient separation between rooms
- 🕒 Comfortable working conditions
- 🕒 Energy savings

## EASY LOGISTICS

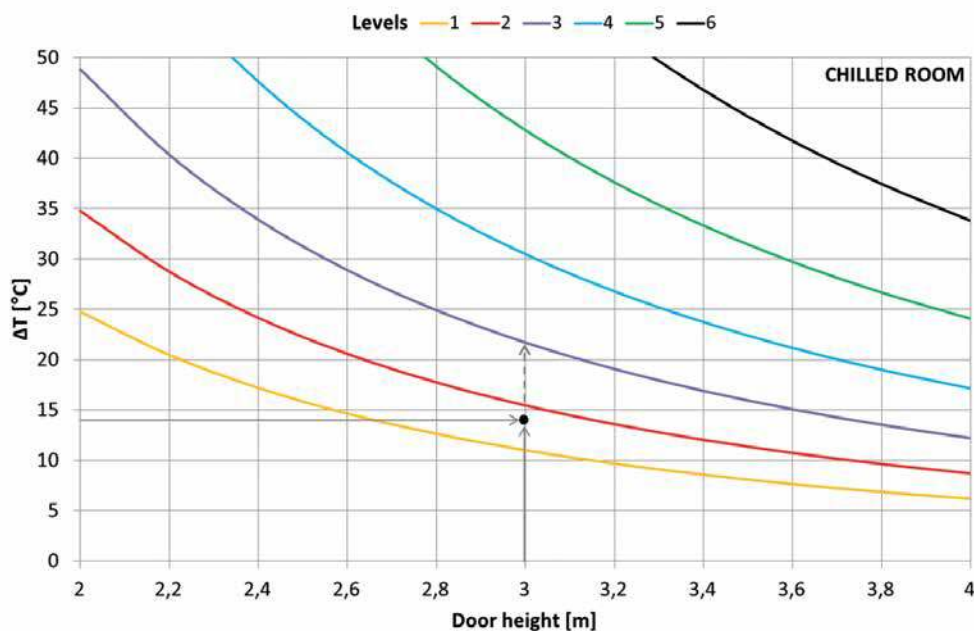
By separating the climate zones, the IsolAir makes it possible to keep the door open whilst maintaining the temperatures in each climate zone at a constant level. The air curtain will contribute to comfortable working conditions because it prevents air displacement.

The IsolAir can maintain the room temperature without the need for a strip curtain or a roller shutter door. The entrance is kept accessible for transport with safer and faster logistics and easy traffic movements as a result.

# SEMI-AUTOMATIC CONTROL

The IsolAir air curtain is sited above an inside door with minimal temperature fluctuations between the two areas. These fluctuations can be controlled properly with two positions of the control. The control consists of an external control box, a room thermostat and a door switch. The thermostat is always mounted on the warm side. Depending on the temperature difference measured by the room thermostat, the control box automatically switches between the two positions. The IsolAir always operates at the optimum output, with a high separation efficiency as a result.

The IsolAir makes it possible to switch between two of the six positions. These two positions are pre-set. The choice of the position is based on the door height and the temperature difference ( $\Delta T$ ) of the areas. For an optimal separation efficiency, the IsolAir should always be set to a higher position than the point based on the calculation.



## EXAMPLE:

The door height is 3 meters, the temperature in the chilled area is 6 °C and the temperature in the hall is 20 °C. In this case, the temperature difference is 14 °C ( $\Delta T$  14 °C). At a  $\Delta T$  14 °C, the correct position is 2 (red line). When the temperature difference gets higher than  $\Delta T$  16 °C, and thus rises above the red line, the air curtain will be switched to position 3 (purple line). For small cold stores, please contact our sales department.

## AUTOMATICALLY ON AND OFF

With the door switch the IsolAir can be switched on or off automatically when the door opens or closes.

## CONTROL OF MULTIPLE UNITS

With one control box a door width of 4 meters can be covered.

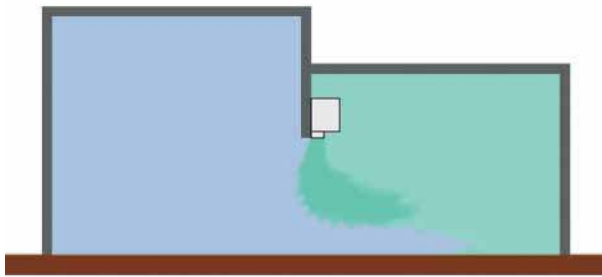


# DOUBLE RECTIFIER

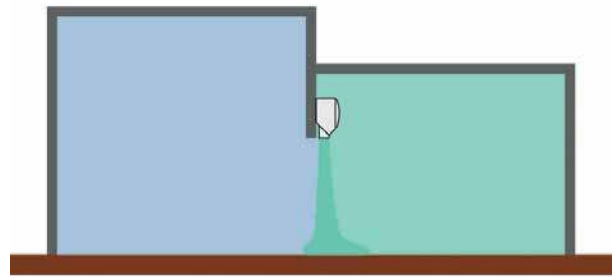
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An air curtain above an open inside door provides climate separation of the two rooms. Whilst developing the IsolAir, Biddle chose to use its well-known outlet discharge pattern, the Double Rectifier. The IsolAir is equipped with radial backward curved fans which homogeneously distribute the air across the whole discharge opening, producing high efficiency and comfort levels.

If a conventional air curtain without a rectifier discharges air at the same velocity as a unit with a Double Rectifier, the downward penetration is tangibly less. The air stream does not reach the floor, and the open door is not covered off properly. Consequences include draught, loss of energy and comfort complaints.



Ambient air curtain without rectifier

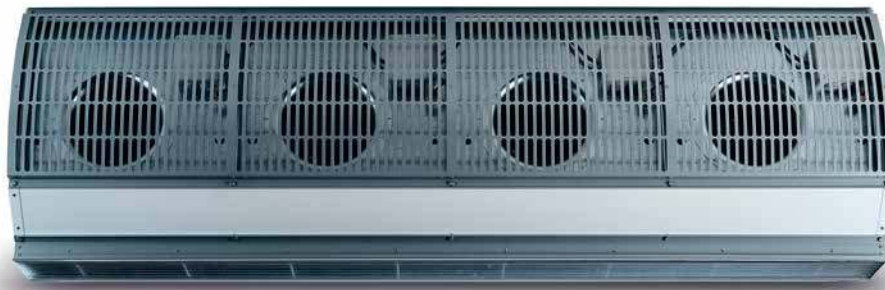


Ambient air curtain with rectifier

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## EXCELLENT DOWNWARD PENETRATION

The Double Rectifier has vertical fins mounted on top of the horizontal fins to streamline the air flow in a better way, resulting in an excellent downward penetration. The IsolAir makes sure the air, which is about to flow out through the open door, stays in the room. The Double Rectifier, which minimizes turbulence in the discharge air stream and surrounding air, ensures that the air movement generated by the fans, is directed downward in a deeply penetrating laminar air stream. As a consequence the energy consumption is reduced and comfort levels are increased.





# OPTIONS

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## LENGTHS

The IsolAir is available in the lengths: 150, 200 and 250cm.

## CONTROL OPTIONS

The IsolAir is supplied with a two-step control. With the twostep control two units can be controlled with a maximum door width of 4 meters.

## INSTALLATION POSITION

The air curtain is installed horizontally above the door, covering the full width of the doorway. The unit should always be positioned as close to the door as possible. In case the situation does not allow a position close to the door, Biddle offers optional side shields.

## MODULAR DESIGN

The modular design of the IsolAir facilitates the installation of multiple devices next to each other, in order to cover all door widths.

## EASY TO MOUNT AND CLEAN

The various parts of the IsolAir are very easy to access, making it easy to install, maintain and clean. The unit contains a minimum of 'internal obstacles', resulting in a smooth air flow through the unit in which dust has little chance of collecting.

## COLOURS

The IsolAir air curtain is standard available in two color combinations (RAL5011/RAL9006 and RAL 9016/RAL9006) and in Stainless Steel. Other RALcolours are available upon request.

## STANDARD DELIVERY:

- Two suspension brackets for horizontal installation
- Coupling plate and coupling bracket
- Control box
- Room thermostat
- Door contact switch
- Optional; Side shields

# SPECIFICATIONS

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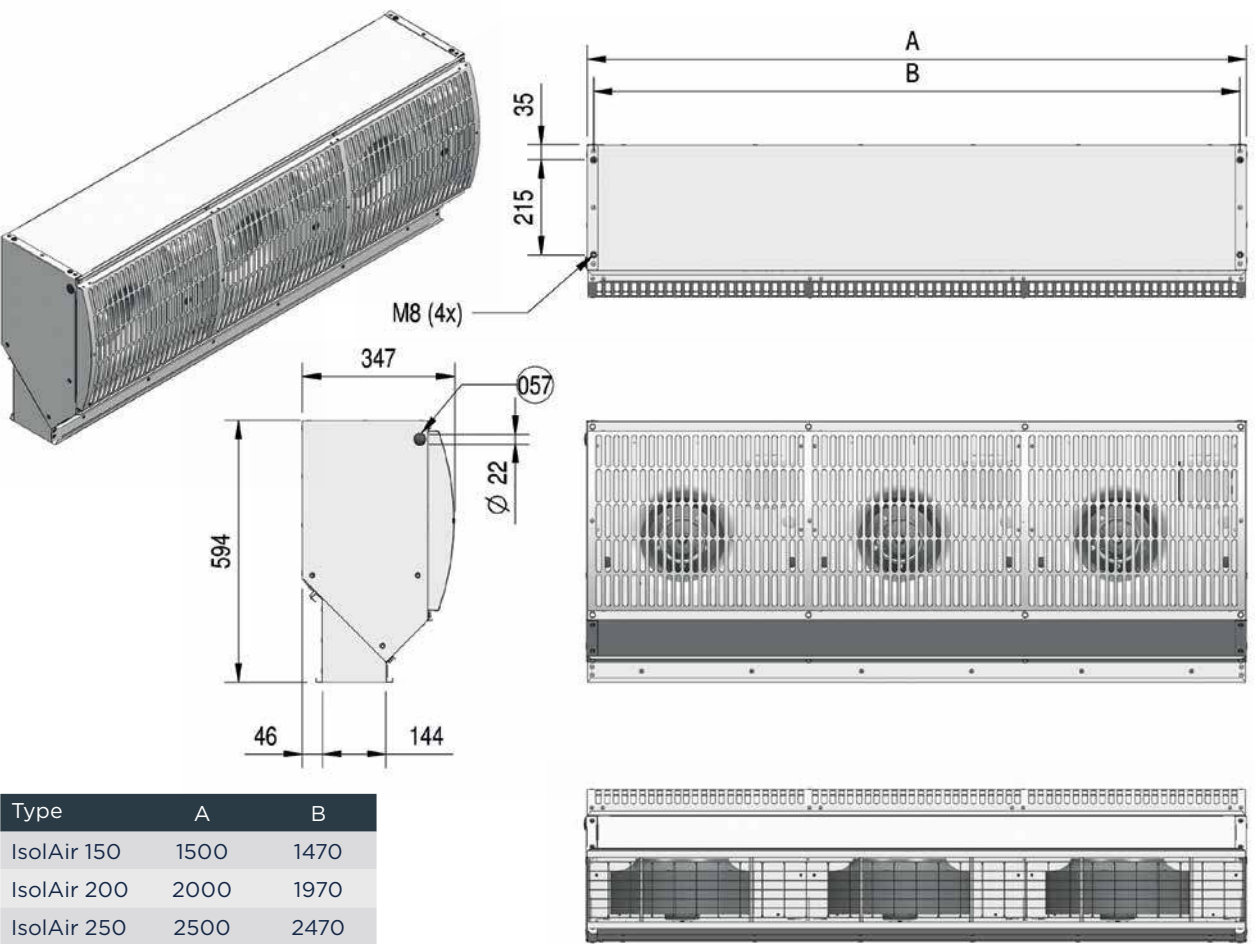
## ○ CASING

The casing and the inlet grille are manufactured from zinc-plated sheet steel, extra strengthened to minimise deformations and vibrations, and have a full-polyester powder coating.

## ○ MOTOR / FAN ASSEMBLY

The radial backward curved fans are mounted in the casing such that they cause no vibration. Each fan is driven by a rotor motor with AC technology. The fan casing is manufactured from aluminium and the impeller is made of plastic. The motor of the IsolAir is protected against overheating. The fan of the unit is IP 44 classified.

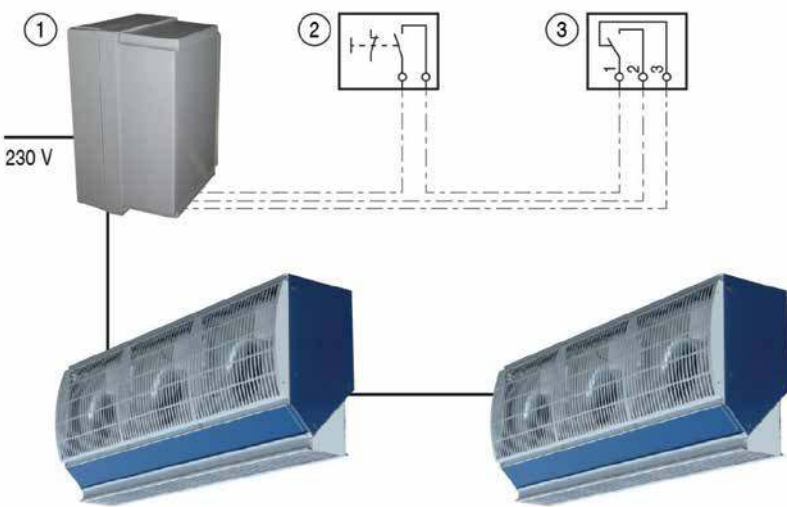
# TECHNICAL DETAILS



# ELECTRICAL CONNECTIONS

## SEMI-AUTOMATIC CONTROL

- 1 Control box
- 2 Door switch
- 3 Room thermostat



**INDEX**  
The corresponding numbers in the dimensional sketches are explained here: **57**-Lead-through electrical wiring.

# ISOLAIR 150

Unit length	m	1.5					
Door width/height	m	3-6					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current	A	1.7					
Max. Input power	kW	0.38					
Max. Specific fan power	W/l/s	0.25					
Weight	kg	74					
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2216	2630	3193	3840	4585	5490
Power consumption	kW	0.14	0.17	0.21	0.25	0.29	0.38
Sound pressure level at 5m	dB(A)	39	43	47	52	57	62

# ISOLAIR 200

Unit length	m	2					
Door width/height	m	3-6					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current	A	2.3					
Max. Input power	kW	0.5					
Max. Specific fan power	W/l/s	0.25					
Weight	kg	98					
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2954	3506	4257	5120	6114	7319
Power consumption	kW	0.19	0.23	0.28	0.33	0.39	0.5
Sound pressure level at 5m	dB(A)	41	44	48	53	58	63

# ISOLAIR 250

Unit length	m	2.5					
Door width/height	m	3-6					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current	A	2.8					
Max. Input power	kW	0.63					
Max. Specific fan power	W/l/s	0.25					
Weight	kg	123					
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	3692	4382	5321	6400	7642	9149
Power consumption	kW	0.24	0.28	0.35	0.41	0.48	0.63
Sound pressure level at 5m	dB(A)	42	45	49	54	59	64

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# MAT

Cold Store Air Curtain

**Biddle**



# OPTIMAL CLIMATE SOLUTION FOR COLD STORES

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The MAT air curtain is used for climate separation between the cold store and the loading area in order to keep the temperature at a constant level in the cold store. Furthermore it allows unobstructed access to and from the cold store, radically reducing misting and icing and provides an energy saving solution.

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# STABLE CLIMATE IN COLD AREA

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The excellent climate separation abilities of the MAT air curtain prevent warm moist air from entering the cold store, which will decrease icing of the walls, floors and ceilings. Drivers of forklift trucks have an unobstructed view so traffic and pedestrians are immediately visible. This not only makes loading and unloading much faster, the safety of staff is increased as well as a reduction of slip hazards. With the Biddle cold store air curtain, the door can remain open constantly, so that logistics operations can be performed efficiently.

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## FEATURES AND BENEFITS:

### EASY ACCESS & FAST LOGISTICS

- ⦿ Increased safety
- ⦿ Reduced icing on the floor
- ⦿ Reduced misting in the door opening
- ⦿ Faster loading and unloading

### STABLE CLIMATE IN COLD AREA

- ⦿ Optimal climate separation (due to three air streams)
- ⦿ Reduced moisture transfer and therefore icing on ceilings/floor
- ⦿ Improved hygiene (HACCP guidelines)

### ENERGY SAVING SOLUTION

- ⦿ Re-use of energy: high savings (hybrid solution)
- ⦿ Reduced load on cooling equipment

### FULL-SCALE SERVICE

- ⦿ Full on-site survey
- ⦿ Assistance with installation and commissioning

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## ENERGY SAVING SOLUTION

Use of a standard electrical cold store air curtain may yield energy savings of up to 80% compared with an open door. By applying a MAT Hybrid unit, the available waste heat from cooling machines is re-used, which leads to even greater energy savings.

## APPLICATIONS

The MAT air curtains are suitable for door heights up to 4m in cold stores of factories, logistic centres, storage rooms and warehouses.

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## RECTIFIER TECHNOLOGY

When a door is open, the difference between the outside and inside temperature leads to an exchange of air, resulting in warm air entering and cold air flowing out. A cold store air curtain above the open door provides separation of the two climates. The MAT is equipped with the patented rectifier.

This outlet grille ensures the turbulent air coming from the fans is transformed into a laminar air stream. The air curtains outlet air stream reaches the floor at a much lower air speed than air curtains without the rectifier. The result is a climate separation efficiency of over 90%.



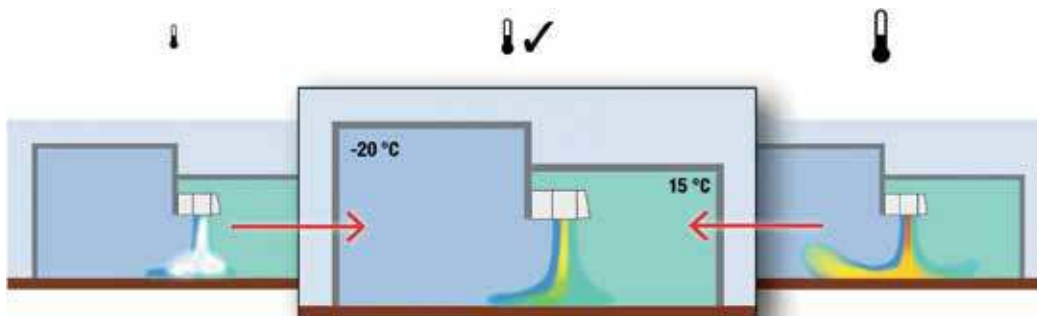
# HOW IT WORKS

The MAT can be configured to be suitable for various heating sources including electrical heating and hybrid models (combined water & electrical heating source).

## MULTI AIR STREAM TECHNOLOGY

Biddle has developed a sophisticated technology for cold stores with temperature differences of up to 30 to 40°C with the adjoining area. The Multi Air stream Technology forms the basis for the MAT cold store air curtain. By producing three air streams

the MAT creates a screen between the cold store and the ambient space. If the cold store is open all day, ambient air from the loading bay and cold air remain strictly separated. This prevents icing, misting and ensures a constant climate in the cold store.

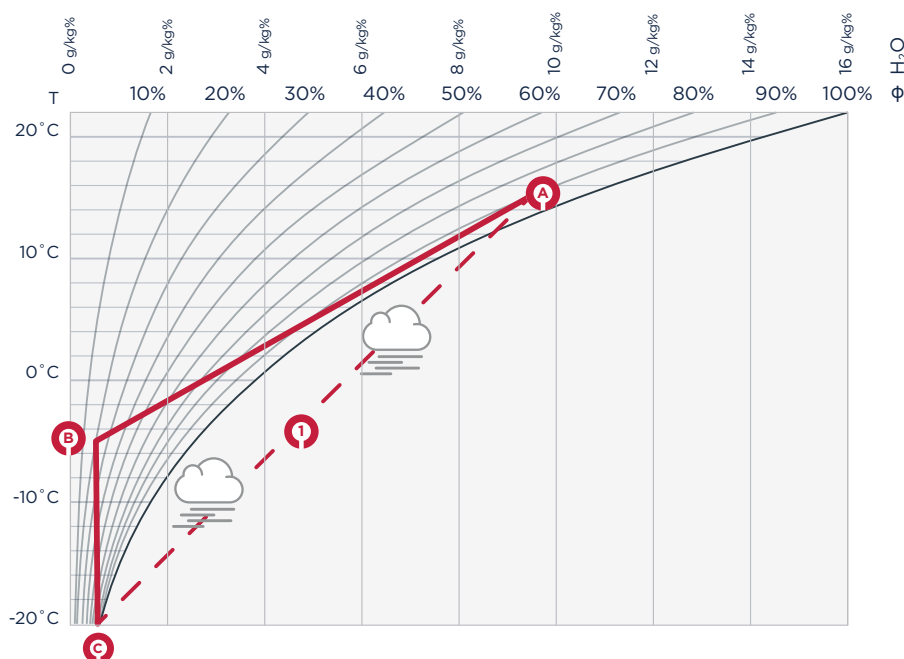


The automatic control of the B-stream always ensures the correct setting of the MAT (temperature & humidity)

## AUTOMATIC CONTROL OF THE B-STREAM

The MAT air curtain is installed in the adjoining area above the door opening to the cold store. By producing three air streams the MAT creates a screen between the cold store and the loading area. It draws air from both the cold store (stream **C**) and the adjoining room (stream **A**), discharging both cold and warm air into the doorway. The outer two streams are quite different in

terms of temperature and absolute humidity. This can lead to condensation (misting) where the streams meet (**1**). To prevent condensation a middle stream is added (stream **B**) which is also taken from the cold store and subsequently heated resulting in a low relative humidity. The B-stream temperature depends mainly on the temperature and humidity of the adjoining area.



### MOLLIER DIAGRAM:

- A** = loading area
- B** = middle stream
- C** = cold store
- 1** = misting

The B-stream can absorb moisture from the 'warm humid' A-stream so the A-stream and C-stream do not directly intermix and therefore not cause misting (see red line.)

# INTELLIGENT CONTROL

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The intelligent integrated control of the MAT air curtain ensures that the discharge temperature of the middle air stream is adjusted automatically based on the temperature and humidity in the adjoining area measured by various sensors. As a result the heating capacity of the air curtain is kept as low as possible in all conditions. A mist-free passage is guaranteed, while the energy use is minimised automatically.



MAT off: high exchange of air



MAT on: perfect climate separation

## SOLUTIONS FOR COLD APPLICATIONS

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### POSSIBILITIES

- Free-hanging model
- Door height: 2.5 - 4 m
- Unit length: 135 - 180 - 225 - 250 cm
- Maximal 2 MAT units per door (master & slave)
- Electrical supply: 400V

### HEATING SOURCE

- Electrical heating (E)
- Electrical heating with extra heating capacity (EE)
- Hybrid (H4E): combined water & electrical heating coil

### CONTROL

- Automatic control (B-stream)
- 1 control panel for master & slave unit

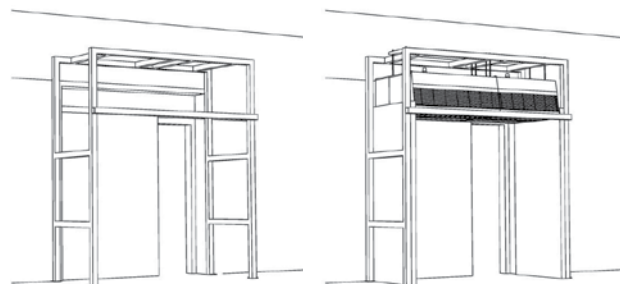
### STANDARD COLOUR

- Stainless steel

### MOUNTING FRAME (not delivered by Biddle)

- Corridor (incl. isolating construction at the sides)
- Protection bar

The corridor is essential for a good performance of the MAT cold store air curtain. For an optimal climate separation it is important that the corridor is air-tight everywhere. To protect the MAT air curtain against collisions a protective bar is recommended.



Corridor incl. MAT air curtain, mounting frame & protection bar (picture right)



# CONTROLS

---

With one control panel a master and slave unit can be controlled.  
The MAT air curtain can cover a maximum door width of 5 meters.

## BENEFITS

- ⌚ For large temperature differences between areas
- ⌚ Always the correct setting
- ⌚ No misting & icing
- ⌚ Constant climate in the cold store
- ⌚ Energy saving solution
- ⌚ No turbulences in the air stream
- ⌚ Control of two units (master / slave)

## OPERATING PACKAGE AUTOMATIC CONTROL:

- ⌚ Automatic control (B-stream)
- ⌚ Door contact switch
- ⌚ Water-side control (in case of hybrid version)
- ⌚ 2 x Biddle low-voltage cable (35 m)

### Optional:

- ⌚ RCM-module (hybrid version) optional after 3 months
- ⌚ 1 or 2 alert lights



## ENERGY SAVING HYBRID SOLUTION

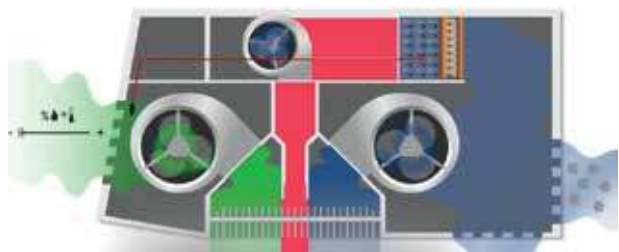
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Energy saving solutions are becoming of great importance in the industrial and cold sector. In order to meet this trend Biddle has developed the MAT Hybrid, which makes use of waste heat of cooling machines in order to save energy. In practice up to 80% energy savings have been measured by applying the MAT Hybrid model compared to an equivalent electrical unit.

---

### HOW IT WORKS

The MAT Hybrid consists of a combined water and electrical heating element. First, the heat available from the water is used to its maximum. Then, when necessary, the electrical element will automatically assist the water coil, thus always ensuring the required discharge B-stream temperature. The interaction between the water and electric element ensures optimal climate separation, making the benefits of the MAT also apply to the Hybrid version.



---

MAT Hybrid: combined water & electric element

# REMOTELY MONITORED

A constant water flow is a requirement for the proper functioning of the MAT Hybrid. As a standard this is monitored for three months in order to guarantee a reliable solution. By means of the RCM-module (Remote Control Monitoring module) the water flow is monitored remotely. The customized online dashboard visualises how the MAT Hybrid performs in practice. When necessary, adjustments can be made to optimise it.

## VARIOUS MONITORING OPTIONS

- 🔍 Air inlet temperature of electrical and water heating coil
- 🔍 Temperature and humidity of ambient area
- 🔍 Temperature A-stream
- 🔍 Discharge temperature B-stream
- 🔍 Air inlet temperature C-stream
- 🔍 Pressure difference B-stream
- 🔍 Actual fan speed Return water temperature of heating coil
- 🔍 Contribution of electrical heating (% of installed heating capacity)

## RCM-MODULE: OPTIONS AFTER THREE MONTHS

A Remote Control Monitoring-module is required for three months to guarantee a stable water flow of the MAT Hybrid. There are four options after three months:

- 🔍 Biddle monitors the MAT Hybrid, reacts on error reports and gives feedback every month for an optimal operation
- 🔍 Biddle reacts on error reports
- 🔍 The customer monitors the MAT Hybrid, takes over the module and online subscription (Biddle can support when needed)
- 🔍 No monitoring requested

## MAT HYBRID IN PRACTICE

The MAT Hybrid was monitored in a well-known logistic warehouse for three months and its performance was compared to an equivalent electrical unit.

### COLD STORE INFORMATION:

- 🔍 Size of the door: 2.70 x 3 m (width x height)
- 🔍 2 x MAT 135 (master & slave)
- 🔍 Temperature cold store: - 24°C
- 🔍 Temperature ambient area: 6°C

### RESULTS:

- 🔍 Heating capacity decreased by 32 kW
- 🔍 Yearly energy use decreased 156000 kWh
- 🔍 Yearly costs decreased by €22.000

### BENEFITS MAT HYBRID:

- 🔍 Energy savings of 80% compared to an electrical unit
- 🔍 Reliable and stable solution
- 🔍 Optimal climate separation
- 🔍 Remotely monitored

# SPECIFICATIONS

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## CASING

The MAT unit is delivered as a standard in stainless steel (AISI 304).

## MOTOR / FAN ASSEMBLY

The unit is equipped with dual-inlet, vibration free suspended centrifugal fans. Each fan is driven by a two-sided, suspended rotor motor on ball bearings. The fan casing and the impeller are made of zinc coated plate steel. The motors are, as a standard, fitted with thermal contacts. These thermal contacts will break the circuit of the motor when the maximum permissible motor temperature is exceeded.

## HEATING COIL

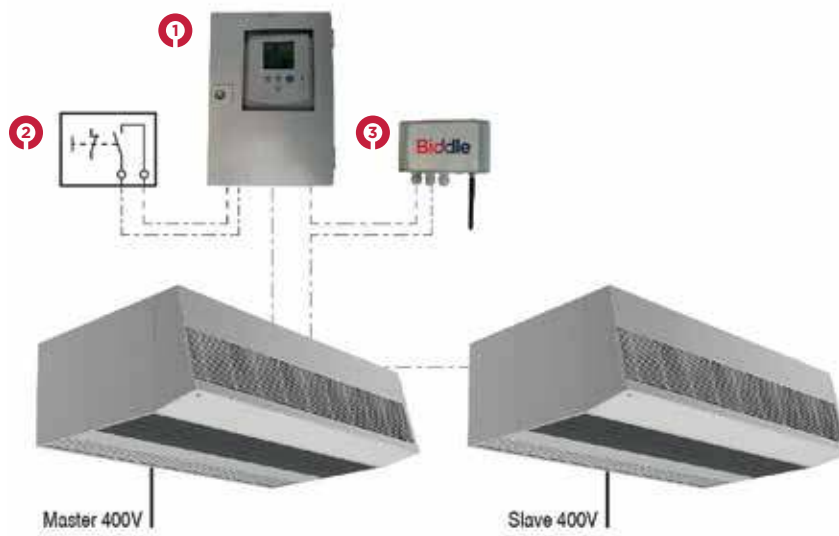
The electrical heating coil is made up of rod elements. The coil is controlled by the electronic control unit and is fitted with overload protection. The high efficient heating coils of the Hybrid model are made of 3/8" copper pipes and aluminium fins. The water connections are G 1". These connections are located on the top of the unit.

## STANDARD DELIVERY:

Control unit (incl. control panel)  
Suspension frame (M12 threaded rods not delivered)  
RCM-module (hybrid version)  
for the first 3 months

# ELECTRICAL CONNECTIONS

---



- |   |  |
|---|--|
| 1 | Control unit                           |
| 2 | Door contact switch                    |
| 3 | RCM-module (in case of hybrid version) |



# MAT

Technical Details



## MAT 135-E

Unit length	m	1.35			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	5			
Max. current consumption (3 phase)	A	39			
Max. input power	kW	3.15			
Max. power consumption	kW	27			
Max. heating capacity - electric	kW	23.6			
Weight	kg	320			
Speed		1	2	3	4
Air volume	m³/h	8505	9720	10935	13365

## MAT 135-EE

Unit length	m	1.35			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	5			
Max. current consumption (3 phase)	A	54			
Max. input power	kW	3.15			
Max. power consumption	kW	37			
Max. heating capacity - electric	kW	33.8			
Weight	kg	320			
Speed		1	2	3	4
Air volume	m³/h	8505	9720	10935	13365

## MAT 180-E

Unit length	m	1.80			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	6.7			
Max. current consumption (3 phase)	A	52			
Max. input power	kW	4.2			
Max. power consumption	kW	36			
Max. heating capacity - electric	kW	31.5			
Weight	kg	416			
Speed		1	2	3	4
Air volume	m³/h	11340	12960	14580	17820

## MAT 180-EE

Unit length	m	1.80			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	6.7			
Max. current consumption (3 phase)	A	72			
Max. input power	kW	4.2			
Max. power consumption	kW	49			
Max. heating capacity - electric	kW	45			
Weight	kg	416			
Speed		1	2	3	4
Air volume	m³/h	11340	12960	14580	17820

## MAT 225-E

Unit length	m	2.25			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	8.4			
Max. current consumption (3 phase)	A	65			
Max. input power	kW	5.25			
Max. power consumption	kW	45			
Max. heating capacity - electric	kW	39.4			
Weight	kg	513			
Speed		1	2	3	4
Air volume	m³/h	14175	16200	18225	22275

## MAT 225-EE

Unit length	m	2.25			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	8.4			
Max. current consumption (3 phase)	A	90			
Max. input power	kW	5.25			
Max. power consumption	kW	62			
Max. heating capacity - electric	kW	56.3			
Weight	kg	513			
Speed		1	2	3	4
Air volume	m³/h	14175	16200	18225	22275

## MAT 250-E

Unit length	m	2.50			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	8.4			
Max. current consumption (3 phase)	A	65			
Max. input power	kW	5.25			
Max. power consumption	kW	45			
Max. heating capacity - electric	kW	39.4			
Weight	kg	552			
Speed		1	2	3	4
Air volume	m³/h	14175	16200	18225	22275

## MAT 250-EE

Unit length	m	2.50			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	8.4			
Max. current consumption (3 phase)	A	90			
Max. input power	kW	5.25			
Max. power consumption	kW	62			
Max. heating capacity - electric	kW	56.3			
Weight	kg	552			
Speed		1	2	3	4
Air volume	m³/h	14175	16200	18225	22275

## MAT 135 HYBRID

Unit length	m	1.35			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	5			
Max. current consumption (3 phase)	A	29			
Max. input power	kW	3.15			
Max. power consumption	kW	20			
Max. heating capacity - electric	kW	16.9			
Weight	kg	325			
Water range	°C	40/30			
Speed		1	2	3	4
Air volume	m³/h	8505	9720	10935	13365
Air volume B-stream	m³/h	1700	1945	2185	2675
Air inlet temperature	°C			-20	
Heating capacity - water	kW	20.4	22.2	23.9	27
Water flow rate	l/h	1859	2026	2181	2463
Water pressure drop with 2 & 3-port valve	kPa	17	19.9	22.8	28.7

## MAT 180 HYBRID

Unit length	m	1.80			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	6.7			
Max. current consumption (3 phase)	A	39			
Max. input power	kW	4.2			
Max. power consumption	kW	27			
Max. heating capacity - electric	kW	22.5			
Weight	kg	424			
Water range	°C	40/30			
Speed		1	2	3	4
Air volume	m³/h	11340	12960	14580	17820
Air volume B-stream	m³/h	2270	2590	2915	3565
Air inlet temperature	°C			-20	
Heating capacity - water	kW	25.9	28.2	30.3	34.2
Water flow rate	l/h	2366	2575	2770	3125
Water pressure drop with 2 & 3-port valve	kPa	12.3	14.5	16.7	21.1

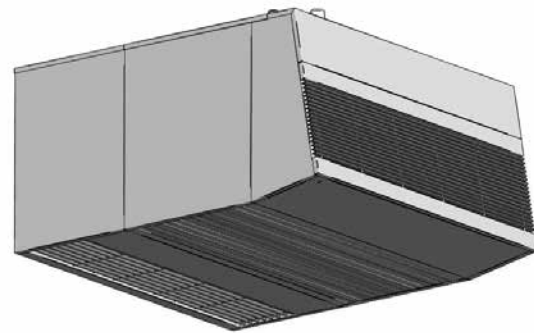
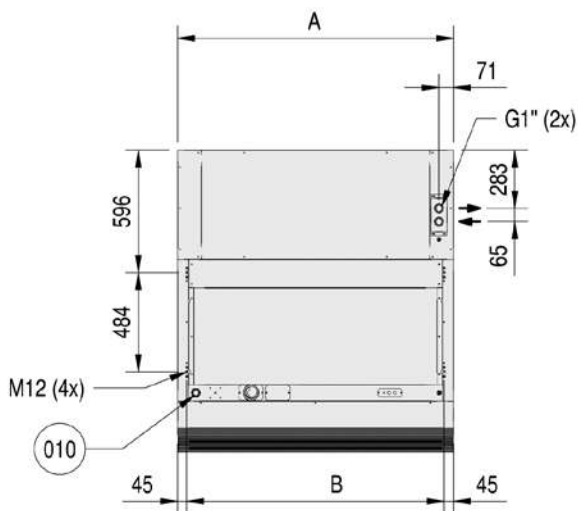
## MAT 225 HYBRID

Unit length	m	2.25			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	8.4			
Max. current consumption (3 phase)	A	49			
Max. input power	kW	5.25			
Max. power consumption	kW	33			
Max. heating capacity - electric	kW	28.1			
Weight	kg	523			
Water range	°C	40/30			
Speed		1	2	3	4
Air volume	m³/h	14175	16200	18225	22275
Air volume B-stream	m³/h	2835	3240	3645	4455
Air inlet temperature	°C			-20	
Heating capacity - water	kW	34.3	37.3	40.2	45.5
Water flow rate	l/h	3128	3410	3673	4154
Water pressure drop with 2 & 3-port valve	kPa	22.5	26.5	30.6	38.8

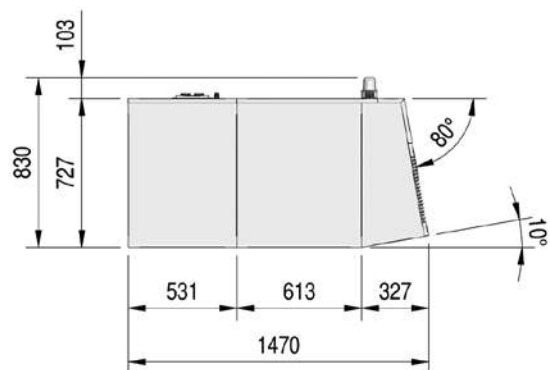
# MAT 250 HYBRID

Unit length	m	2.50			
Door height	m	2.5 - 4			
Electrical supply	V/ph/Hz	400/3N/50			
Max. input current	A	8.4			
Max. current consumption (3 phase)	A	49			
Max. input power	kW	5.25			
Max. power consumption	kW	33			
Max. heating capacity - electric	kW	28.1			
Weight	kg	563			
Water range	°C	40/30			
Speed		1	2	3	4
Air volume	m <sup>3</sup> /h	14175	16200	18225	22275
Air volume B-stream	m <sup>3</sup> /h	2835	3240	3645	4455
Air inlet temperature	°C	-20			
Heating capacity - water	kW	36.3	39.6	42.8	48.5
Water flow rate	l/h	3311	3618	3905	4432
Water pressure drop with 2 & 3-port valve	kPa	25.9	30.7	35.6	45.4

# MAT ELECTRIC & HYBRID



10 - Cable feed through



	A	B
MAT 135 - ...	1352	1262
MAT 180 - ...	1802	1712
MAT 225 - ...	2252	2162
MAT 250 - ...	2502	2412

## BIDDLE AIR SYSTEMS

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**www.biddle-air.co.uk**



# Biddle

Every effort has been made to ensure descriptions are correct at the time of print.  
Errors and omissions excepted. MAT|V1|06|2019

# CITY

Air Curtains

**Biddle**





## FRESH THINKING IN CLIMATE SEPARATION TECHNOLOGY

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The latest development in a long line of leading technology air curtains, Biddle's CITY incorporates improved structural design and enhanced aesthetic appeal without compromising its award-winning performance. Most importantly, by utilising world class design and engineering, the CITY now brings energy and cost saving benefits at a lower installed cost than ever before.

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# PATENTED AIRFLOW TECHNOLOGY

---

One of the main functions of an air curtain is to condition outdoor air as it enters the building. For this to be achieved the jet must cover the full width of the entrance, so that it cannot be bypassed by incoming air. However, ensuring the jet reaches the floor level is more difficult, with turbulence at the jet outlet being a critical factor.

---

## AIRFLOW TECHNOLOGY

Along with the TNO wind tunnel facility at Apeldoorn in the Netherlands, Biddle have successfully developed a patented rectifier, which minimises turbulence in the discharge airstream. With reduced turbulence, induction of the surrounding air is also reduced, which in turn, increases the jet throw by 30-40% of an equal volume/velocity unit. The pressure chamber behind the rectifier evenly distributes the air stream across the whole width of the unit. The result is a deeply penetrating, laminar airstream, reducing energy consumption whilst increasing comfort levels.

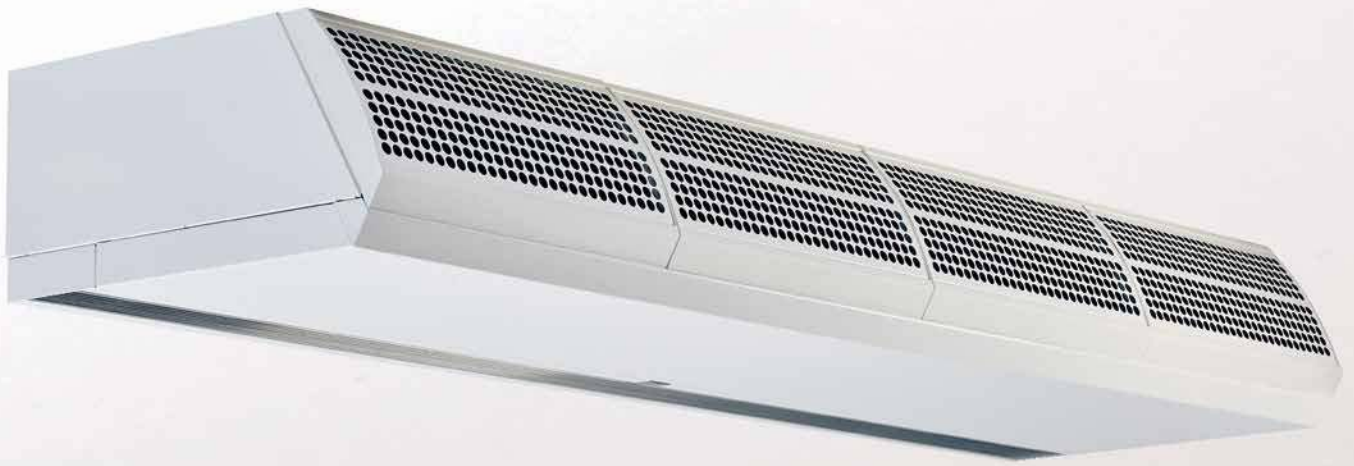
## ENERGY EFFICIENCY

By using their patented rectifier in the CITY range, Biddle have reduced the amount of air that escapes from the jet outlet. This saves a large amount of energy, in comparison to other air curtains. Measurements have shown that with the patented rectifier, up to 94% of the heat input to the air curtain can be transferred to the entrance area and subsequently contributes to overall room heating, an important factor when considering current building energy costs.

## APPLICATIONS

A complete range of models ensures effectiveness in creating a comfortable climate depending on different factors, including door size, the building and its location. CITY is available in three performance models, including the latest CITY Power Plus for higher entrance doors, and a CB variant for use with condensing boilers.

Whether for a high street store, supermarket or a head office building, Biddle works closely with end-users, consultants, architects and installers at every stage of the design, to ensure the optimum solution is achieved.

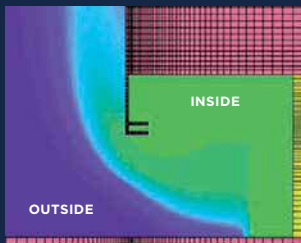


## HOW IT WORKS

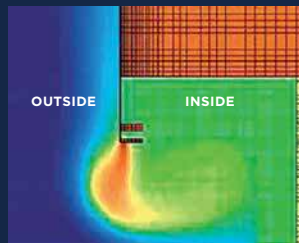
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For over 15 years Biddle has invested heavily in research and development to create an energy efficient designer product of the highest quality. Biddle air curtains bring energy efficiency and thermal comfort. One big advantage of a CITY air curtain is that it offers real energy savings - research echoed by BSRIA's research.

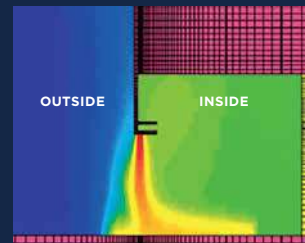
Biddle's CITY was developed to deliver greater comfort than a conventional air curtain, to retail customers and employees in all weathers. Using Biddle's patented rectifier technology, the CITY ensures that the air curtain supplies air at the correct velocity, volume and temperature to satisfy thermal comfort throughout the year.



Entrance with no air curtain



Entrance with inefficient air curtain



Entrance with a CITY air curtain

# THE AFFORDABLE CITY RANGE

---

We have a comprehensive range of air curtains – there will be one ideally suited to your particular situation. There are three ceiling recessed options plus one free hanging exposed model.

---

## CITY

Ideal for doorways up to 2.7m high and aimed primarily at the retail market where looks, performance, energy efficiency and budget are critical considerations.

## CITY PLUS

A more powerful version of the CITY. For use up to 3.2m high

## CITY POWERPLUS

Designed for door heights up to 3.7m. This is the latest model in the range and is ideally suited for the large prestigious entrances to shopping malls, large retail units and commercial developments

---

### PRODUCT SELECTOR

- 🕒 2.7m mounting height
- 🕒 Small/medium
- 🕒 High street

- 🕒 3.2m mounting height
- 🕒 Medium/large
- 🕒 High street
- 🕒 Retails outlets

- 🕒 3.7m mounting height
- 🕒 Large/extra
- 🕒 Large high street
- 🕒 Retails outlets
- 🕒 Shopping malls
- 🕒 Commercial
- 🕒 Developments

---

## MOUNTING

Fast and simple mounting brackets are supplied with each unit. They provide lateral adjustment so each unit can be accurately mounted in the desired position. For wall mounting purposes, brackets are available.

# CONTROLS

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With quick project turn-around times, any reduction in installation time is greatly beneficial. Biddle therefore supply a standard controls package which is simply connected between the unit and controller via a low voltage plug-in cable. Electronic touchpad controllers provide localised on/off, and three-speed control – as well as two heat settings on electric units. Each controller can control up to ten units, wired as master/slave.

In all cases the CITY has volt free contacts for input of remote switching devices, namely:

- ⓘ Timers
- ⓘ Thermostats
- ⓘ Door switches
- ⓘ BMS etc

Alternatively, and if the controller is not preferred, the CITY range can be configured for remote operation by a Building Management System (BMS). If you have particular requirements please contact the Biddle sales office for detailed advice.

# SPECIFICATIONS

---

## ⓘ CASING

Casings are manufactured from zinc coated steel, extra strengthened to minimise vibration. All models have inspection/access panels on the underside of the unit. Unit casings are finished in White (RAL 9016). The free hanging model is supplied with sectional inlet grilles that have a grey/white finish. Other RAL colours are available on request.

## ⓘ GRILLES

All units are supplied with a patented rectifier grille for the discharge air. Inlet grilles have filters fitted directly behind the grille blades for ease of maintenance. All rectifiers and grilles have an Aluminium finish.

## ⓘ MOTOR/FAN ASSEMBLY

Two or more, dual inlet, vibration-free centrifugal fans, each driven by a suspended rotor motor. The fan casing and impeller are made from zinc coated steel. The motor is manufactured according to EN 60-335-1, protection class IP44 (CITY) or IP54 (CITYPlus and PowerPlus), and insulation class F. All motors are fitted with thermal overload protection.

## ⓘ LPHW HEATING COIL

The heating coil comprises Copper tubes with Aluminium fins. The water connections are G1" female thread. Test pressure is 30bars and the operating pressure is 16bars max. at 120°C.

## ⓘ ELECTRIC HEATING COIL

The electric heating coil has Aluminium fins and is controlled by the electronic control board. The elements are fitted with high temperature cut-out thermostats to prevent overheating. In addition when the unit is switched off, the fans will continue to rotate until the elements have cooled sufficiently.

## ⓘ CONTROL AND OPERATION

The touchpad controller has three buttons for controlling the fan speed, as well as manual control for on/off. Electrically heated units have two additional buttons for 1st and 2nd stage heating control. The controller is connected to the air curtain with a low voltage cable, which has RJ11 plugs fitted. This type of cable is also used to inter-connect multiple units. Enable inputs from a room thermostat, BMS or door switch can be connected directly to the potential free contacts on top of each unit. For specific requirements please contact the Biddle sales office.



# CITY

Technical Details



CITY			Water heating				Electrical heating			
			100 W	150 W	200 W	250 W	100 E	150 E	200 E	250 E
Maximum installation height	m		2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Optimum door width	m		0.8	1.3	1.8	2.3	0.8	1.3	1.8	2.3
Unit width	m		1.0	1.5	2.0	2.5	1.0	1.5	2.0	2.5
			A/B	A/B	A/B	A/B				
Heating capacity** (max/ controlled)	@ Speed 1	kW	7.5/3.2	11.8/4.7	16.1/6.3	20.4/7.8	3.6	5.3	7.2	8.9
	2	kW	9.2/4.1	14.5/6.2	19.8/8.3	25.2/10.3	3.6/7.2	5.3/10.6	7.2/14.3	8.9/17.8
	3	kW	11.6/5.9	18.4/8.9	25.2/11.6	32.0/14.6	3.6/7.2	5.3/10.6	7.2/14.3	8.9/17.8
Air volume	@ Speed 1	m³/s	0.171	0.257	0.343	0.429	0.171	0.257	0.343	0.429
	2	m³/s	0.229	0.343	0.457	0.572	0.229	0.343	0.457	0.572
	3	m³/s	0.323	0.485	0.648	0.808	0.323	0.485	0.648	0.808
Water flow rate (max)	l/s		0.257	0.409	0.56	0.71	n/a	n/a	n/a	n/a
Coil hyd pressure drop (max)	kPa		1.9	5.5	11.5	20.3	n/a	n/a	n/a	n/a
Electrical supply			230V/1ph/50Hz				400V/3ph/50Hz			
Max power (motor/elec heating)	kW		0.23	0.35	0.46	0.58	7.5	11.2	15.1	18.7
Max running current	A		1.06	1.59	2.12	2.65	3 x 12.4	3 x 18.4	3 x 24.8	3 x 30.8
Noise level at 3m*	@ Speed 2	dB(A)	37	39	40	41	37	39	40	41
Weight (dry)	Model F	kg	40	58	73	90	43	60	78	94
	Model R	kg	54	80	102	126	57	82	107	130
	Model R(O)	kg	49	73	93	114	52	74	97	118
	Model C	kg	52	75	96	118	55	77	101	122

\* Typically NR = dB(A) – 4

\*\* Heating Capacities A/B

**A:** Denotes the maximum heating capacity with 82/71°C flow & return water temperatures. The unit discharges air at its maximum temperature.




**B:** Denotes the capacity when the optional 3 port valve is fitted, controlling the discharge air temperature to 35°C.

## BENEFITS

- Aesthetically designed unit
- Mounting heights up to 2.7m
- Incorporates patented Invisidor technology
- Suitable for most high street applications

## MODEL REFERENCE

The model reference consists of a code giving unit size, coil and casing arrangement.

CITY - 100 - W - F		
100	W	F
 <p><b>Nominal unit length</b> 100/150/200/250cm</p>	 <p><b>Heating coil</b> W = Hot water heating E = Electric heating</p>	 <p><b>Casing style</b> F = Free-hanging model R = Ceiling recessed model R(O) = Bulkhead recessed model C = Cassette model</p>

## CITY PLUS

CITY Plus			Water heating				Electrical heating			
			100 W	150 W	200 W	250 W	100 E	150 E	200 E	250 E
Maximum installation height	m		3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Optimum door width	m		0.8	1.3	1.8	2.3	0.8	1.3	1.8	2.3
Unit width	m		1.0	1.5	2.0	2.5	1.0	1.5	2.0	2.5
			A/B	A/B	A/B	A/B				
Heating capacity** (max/ controlled)	@ Speed 1	kW	9.6/4.5	15.2/6.7	20.7/9.0	26.3/11.3	5.4	8.0	10.7	13.3
	2	kW	13.3/7.2	19.0/9.2	26.1/12.4	33.1/15.6	5.4/8.9	8.0/13.3	10.7/17.9	13.3/22.2
	3	kW	14.3/8.2	22.7/12.3	31.2/16.2	39.6/20.5	5.4/8.9	8.0/13.3	10.7/17.9	13.3/22.2
Air volume	@ Speed 1	m³/s	0.243	0.365	0.486	0.608	0.243	0.365	0.486	0.608
	2	m³/s	0.400	0.510	0.679	0.849	0.400	0.510	0.679	0.849
	3	m³/s	0.446	0.669	0.892	1.115	0.446	0.669	0.892	1.115
Water flow rate (max)	l/s		0.32	0.505	0.692	0.88	n/a	n/a	n/a	n/a
Coil hyd pressure drop (max)	kPa		2.9	8.2	17.1	30.2	n/a	n/a	n/a	n/a
Electrical supply			230V/1ph/50Hz				415V/3ph/50Hz			
Max power (motor/elec heating)	kW		0.37	0.56	0.75	0.94	9.4	14.0	18.8	23.4
Max running current	A		1.64	2.46	3.28	4.10	3 x 15.7	3 x 23.4	3 x 31.4	3 x 39.1
Noise level at 3m*	@ Speed 2	dB(A)	44	46	47	48	44	46	47	48
Weight (dry)	Model F	kg	44	63	82	97	45	67	87	106
	Model R	kg	59	85	111	133	60	89	116	142
	Model R(O)	kg	54	77	101	121	55	81	106	129
	Model C	kg	56	80	105	125	57	84	110	134

\* Typically NR = dB(A) - 4

\*\* Heating capacities A/B

**A:** Denotes the maximum heating capacity with 82/71°C flow & return water temperatures. The unit discharges air at its maximum temperature.

**B:** Denotes the capacity when the optional 3 port valve is fitted, controlling the discharge air temperature to 35°C.

## BENEFITS

- Choice of casing styles
- Mounting heights up to 3.2m

- Energy efficient
- Simple control

- Suited to medium size high street retail outlets

## MODEL REFERENCE

The model reference consists of a code giving unit size, coil and casing arrangement.

CITY PLUS - 100 - W - F		
100	W	F
<p>Nominal unit length</p> <p>100/150/200/250cm</p>	<p>Heating coil</p> <p>W = Hot water heating E = Electric heating</p>	<p>Casing style</p> <p>F = Free-hanging model R = Ceiling recessed model R(O) = Bulkhead recessed model C = Cassette model</p>

## CITY POWERPLUS

CITY PowerPlus			Water heating				Electrical heating			
			100 W	150 W	200 W	250 W	100 E	150 E	200 E	250 E
Maximum installation height	m		3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Optimum door width	m		0.8	1.3	1.8	2.3	0.8	1.3	1.8	2.3
Unit width	m		1.0	1.5	2.0	2.5	1.0	1.5	2.0	2.5
			A/B	A/B	A/B	A/B				
Heating capacity** (max/controlled)	@ Speed 1	kW	17.3/8.1	26.0/12.0	35.5/16.1	45.1/20.1	10.7	15.9	21.5	26.7
	2	kW	20.5/10.4	30.8/15.6	42.2/20.8	53.7/25.9	10.7/21.5	15.9/31.8	21.5/43.0	26.7/53.4
	3	kW	26.6/15.6	40.0/23.5	54.9/31.3	69.9/39.1	10.7/21.5	15.9/31.8	21.5/43.0	26.7/53.4
Air volume	@ Speed 1	m³/s	0.442	0.663	0.884	1.105	0.442	0.663	0.884	1.105
	2	m³/s	0.571	0.856	1.142	1.428	0.571	0.856	1.142	1.428
	3	m³/s	0.862	1.292	1.723	2.153	0.862	1.292	1.723	2.153
Water flow rate (max)	l/s		0.59	0.89	1.22	1.55	n/a	n/a	n/a	n/a
Coil hyd pressure drop (max)	kPa		18.8	10.5	22.1	39.3	n/a	n/a	n/a	n/a
Electrical supply			230V/1ph/50Hz				415V/3ph/50Hz			
Max power (motor/elec heating)	kW		0.75	1.13	1.50	1.88	22.6	33.6	45.2	56.2
Max running current	A		3.3	4.9	6.6	8.3	3 x 35.0	3 x 52.0	3 x 70.0	3 x 87.0
Noise level at 3m*	@ Speed 2	dB(A)	43	45	46	47	43	45	46	47
Weight (dry)	Model F	kg	63	94	119	151	69	104	137	170
	Model R	kg	81	139	153	194	87	149	171	213
	Model R(O)	kg	73	110	138	175	79	120	156	194
	Model C	kg	79	116	149	188	85	126	167	207

\* Typically NR = dB(A) - 4

\*\* Heating capacities A/B

**A:** Denotes the maximum heating capacity with 82/71°C flow & return water temperatures. The unit discharges air at its maximum temperature.

**B:** Denotes the capacity when the optional 3 port valve is fitted, controlling the discharge air temperature to 35°C.

## BENEFITS

- High performance unit
- Suitable for malls and large retail outlets
- Mounting heights up to 3.7m
- Incorporates patented Invisidor technology

## MODEL REFERENCE

The model reference consists of a code giving unit size, coil and casing arrangement.

CITY POWERPLUS - 100 - W - F		
100	W	F
Nominal unit length 100/150/200/250cm	Heating coil W = Hot water heating E = Electric heating	Casing style F = Free-hanging model R = Ceiling recessed model R(O) = Bulkhead recessed model C = Cassette model

# CONDENSING BOILER RANGE

## CITY CB

CITY CB	150 W*	200 W*	250 W*
Maximum installation height (m)	2.7	2.7	2.7
Optimum door width (m)	1.3	1.8	2.3
Unit width (m)	1.5	2.0	2.5
Heating capacity/off coil temperature (kW/°C)			
Speed 1	5.04/37	7.25/39	9.48/39
Speed 2	6.08/36	8.78/37	11.5/38
Speed 3	7.54/34	11.0/35	14.4/36
Air volume (m³/s)			
Speed 1	0.257	0.343	0.429
Speed 2	0.343	0.457	0.572
Speed 3	0.485	0.648	0.808






## CITY PLUS CB

CITY PLUS CB	150 W*	200 W*	250 W*
Maximum installation height (m)	3.2	3.2	3.2
Optimum door width (m)	1.3	1.8	2.3
Unit width (m)	1.5	2.0	2.5
Heating capacity/off coil temperature (kW/°C)			
Speed 1	6.33/35	9.14/37	12.0/37
Speed 2	7.78/34	11.3/35	14.9/36
Speed 3	9.14/33	13.3/34	17.6/34
Air volume (m³/s)			
Speed 1	0.365	0.486	0.608
Speed 2	0.510	0.679	0.849
Speed 3	0.669	0.892	1.115

\*Denotes casing style to be added to complete product reference.

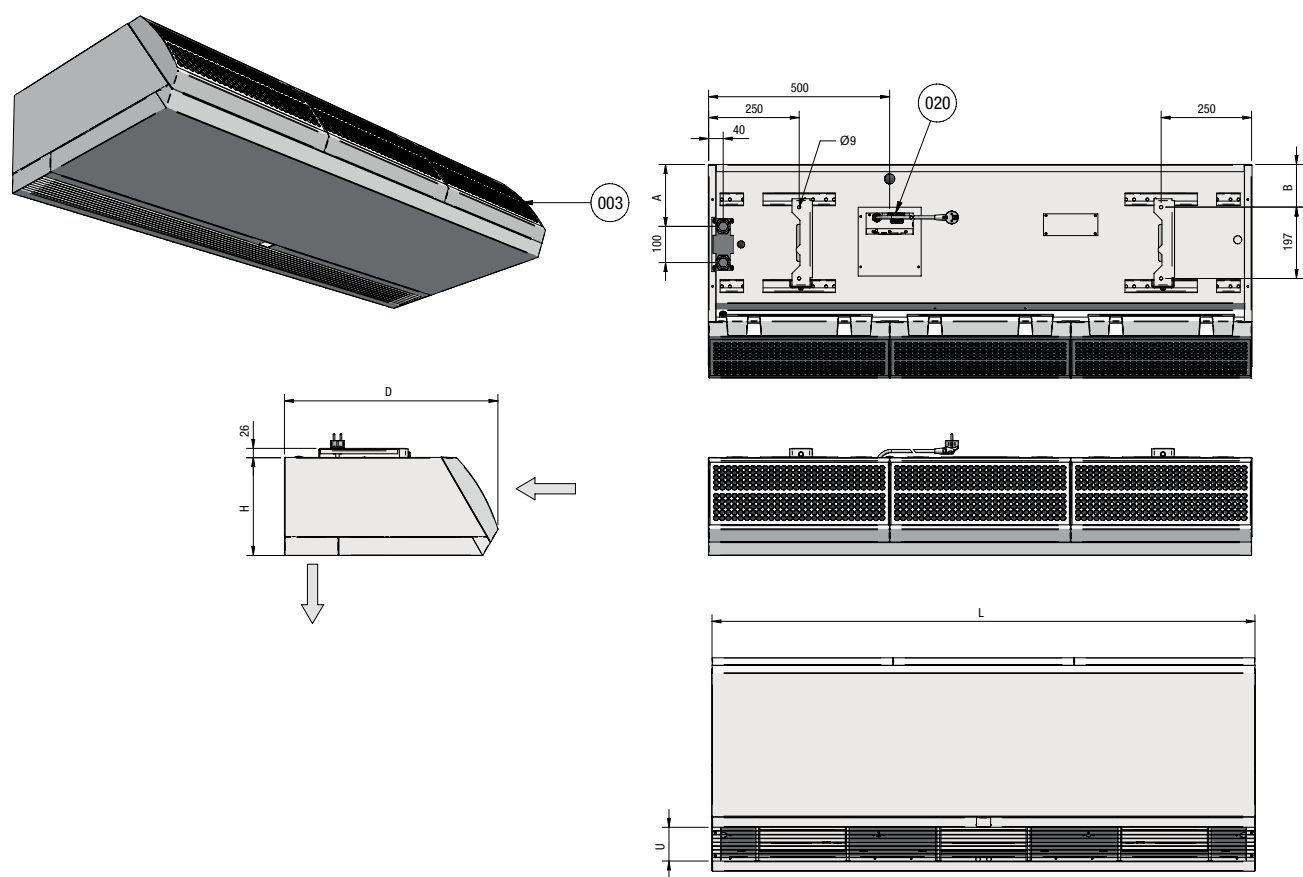
Performance based on LPHW:  Flow 60°C  Return 40°C  Entering Air Temperature 21°C

## BENEFITS

-  For use with lower water temperatures
-  Energy efficient
-  Incorporates patented Invisidor technology
-  Choice of casing styles
-  Choose from 1500mm, 2000mm or 2500mm long units



# FREE HANGING MODEL DRAWING



Type	L	H	D	U	A	B
CITY / CITY PLUS	1000-1500-2000-2500	270	590	93	170	119
CITY POWERPLUS		370	774	125	245	200

## EXPLANATION OF DIMENSIONAL SKETCHES

### ○ Models

**Free hanging:** by removing the end panels, the units are easy to interlink.

**Cassette:** aperture sizes = (A+8) x (C+8) mm.

**Recessed:** aperture sizes:

- for air discharge (A+8) x (D+8) mm
- for air inlet: (A+8) x (I+8) mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

### ○ Wall suspension brackets and threaded rod covers

- Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.

### ○ Note

- All dimensions are in mm.
- 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

## INDEX

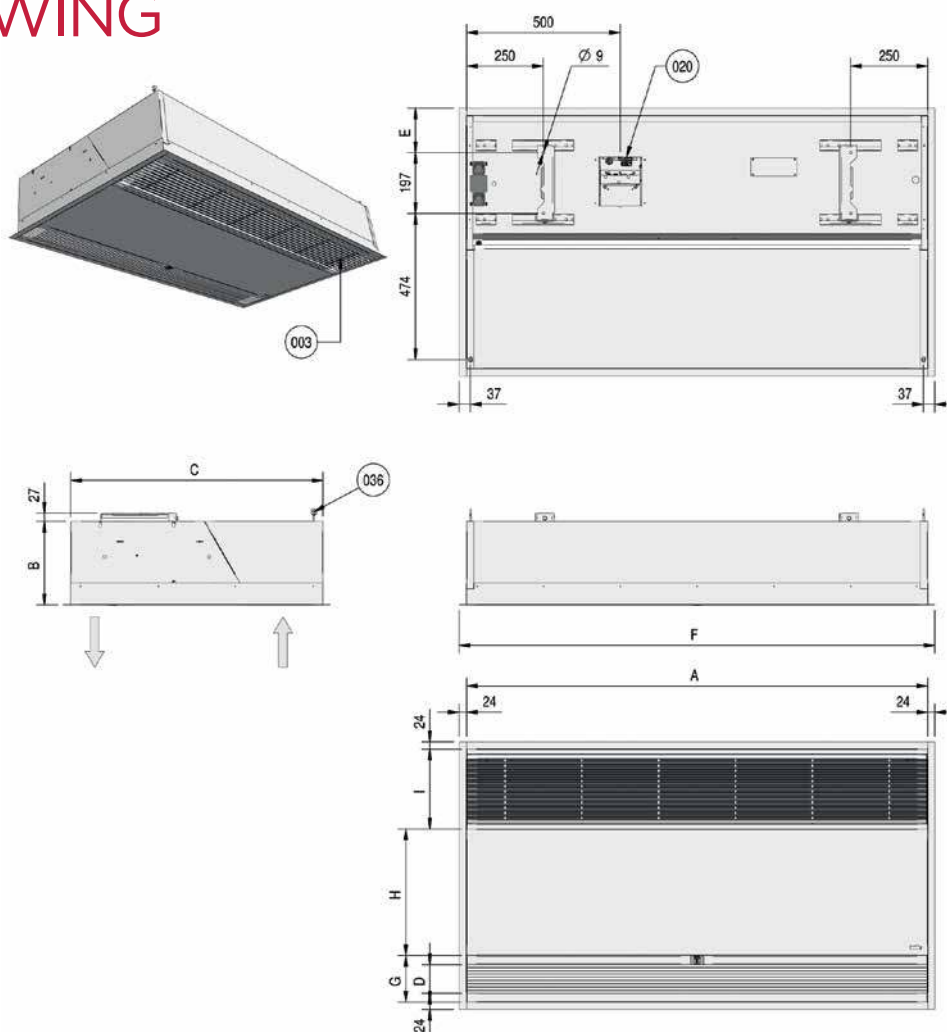
The corresponding numbers in the dimensional sketches are explained here:

**3**-Air inlet grille with filter. **20**-Connection plate.

### EXPLANATION OF DIMENSIONAL SKETCHES

## CITY | TECHNICAL DETAILS | 13

# CASSETTE MODEL DRAWING



	A	B	C	D	E	F	G	H	I
CITY / CITY PLUS 100	1000	270	821	93	144	1048	150	411	260
CITY / CITY PLUS 150	1500	270	821	93	144	1548	150	411	260
CITY / CITY PLUS 200	2000	270	821	93	144	2048	150	411	260
CITY / CITY PLUS 250	2500	270	821	93	144	2548	150	411	260
CITY POWERPLUS 100	1000	370	1105	125	175	1048	182	564	360
CITY POWERPLUS 150	1500	370	1105	125	175	1548	182	564	360
CITY POWERPLUS 200	2000	370	1105	125	175	2048	182	564	360
CITY POWERPLUS 250	2500	370	1105	125	175	2548	182	564	360

## EXPLANATION OF DIMENSIONAL SKETCHES

### ○ Models

**Free hanging:** by removing the end panels, the units are easy to interlink.

**Cassette:** aperture sizes = (A+8) x (C+8) mm.

**Recessed:** aperture sizes:

- for air discharge (A+8) x (D+8) mm
- for air inlet: (A+8) x (I+8) mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

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- Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.

### ○ Note

- All dimensions are in mm.
- 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

## INDEX

The corresponding numbers in the dimensional sketches are explained here:

**3**-Air inlet grille with filter. **20**-Connection plate. **36**-Eye bolt M6.



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# Biddle

Every effort has been made to ensure descriptions are correct at the time of print.  
Errors and omissions excepted. CITY|V1|10|2019

A close-up, low-angle shot of a white industrial air curtain grille. The grille consists of a grid of dark, rectangular slats. The perspective is from below, looking up at the grille, which creates a sense of depth and scale. The lighting is soft, highlighting the texture of the grille and the surrounding white frame.

# INDAC<sub>2</sub>

Industrial Air Curtain

**Biddle**





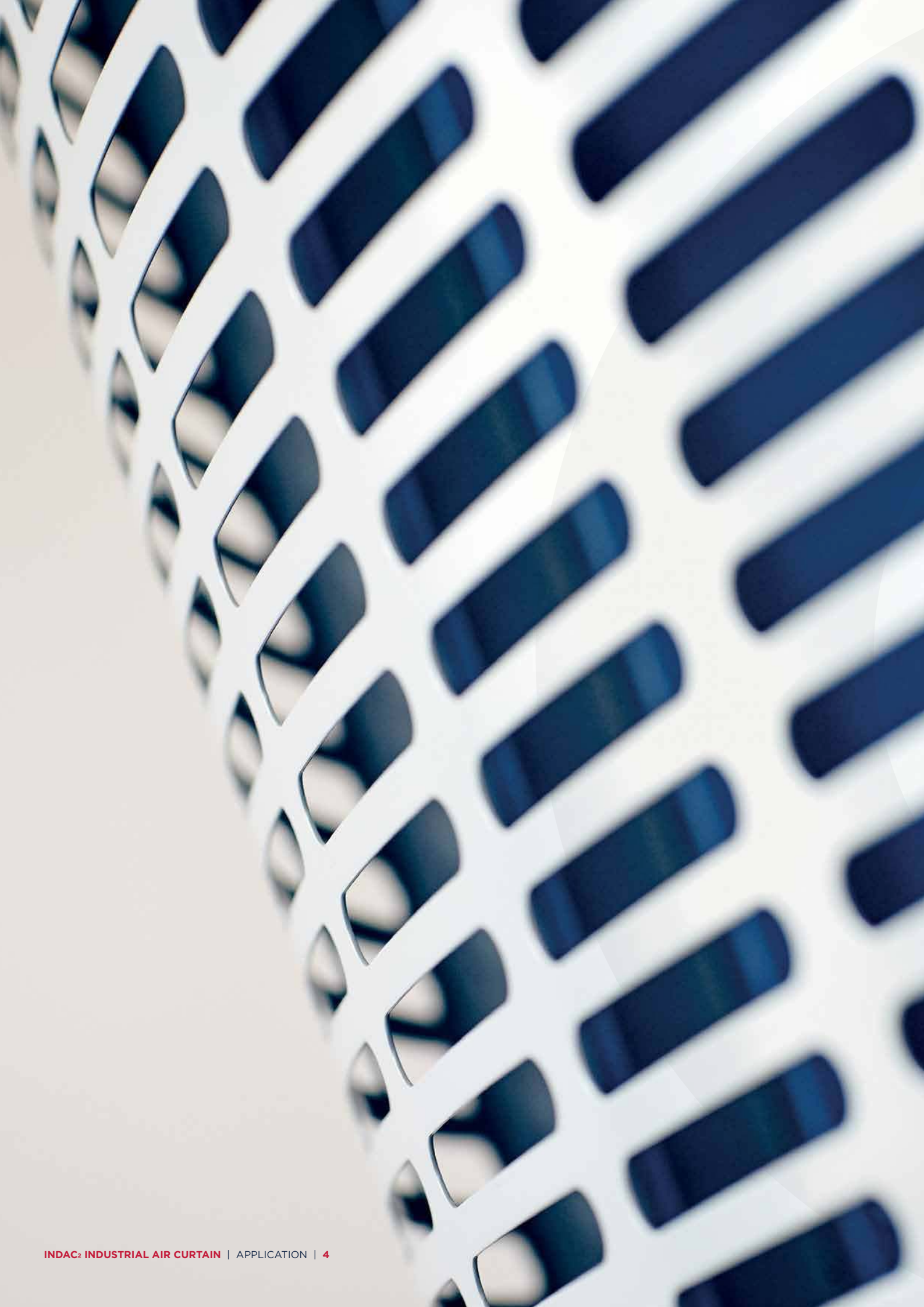
# OPTIMAL CLIMATE SEPARATION

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The Biddle IndAC<sub>2</sub> industrial air curtain, is the perfect solution for separating climates in industrial buildings. Doors are often open for long periods of time to facilitate transport in and out of the building. The IndAC<sub>2</sub> air curtain can be used for climate separation between indoor and outdoor environments and for indoor climate separation between two spaces with different temperatures.

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# HIGH CLIMATE SEPARATION EFFICIENCY

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Open doors cause energy loss and disturb the inside climate; the difference between the inside and outside temperature leads to an exchange of air, resulting in cold air entering and warm, heated air, flowing out. When the IndAC<sub>2</sub> air curtain is mounted above or next to an open door it provides a very efficient climate separation at the lowest energy consumption.

The comfort of staff operating near the door is improved by heating the cold incoming air through the air curtain, thus preventing draught. A corridor might seem like a relatively cheap option, but it can hinder traffic and make stock movements harder. An air curtain enables fast and safe logistics and saves energy at the same time, in turn providing a high return on investment.

By separating the outdoor climate from the indoor conditioned environment the IndAC<sub>2</sub> makes it possible to keep the door open whilst maintaining the indoor temperature.

## FEATURES AND BENEFITS:

- ❶ Separation efficiency – rectifier technology
- ❷ Stable indoor climate - no draughts
- ❸ Comfortable working conditions
- ❹ Accessible entrance
- ❺ Safer and faster transport
- ❻ Maximum efficiency
- ❼ High performance stepless fans

---

## ENERGY SAVING AND EFFICIENT

With the automatic control option fitted, the IndAC<sub>2</sub> continuously selects the correct settings. The automatic control in combination with stepless fans ensures that the settings are always set very precisely, which results in high separation efficiency and energy savings. Once the air curtain is installed and commissioned the user does not have to worry about the settings, as the output of the IndAC<sub>2</sub> will adjust to meet the challenges of the environment.

---

## APPLICATIONS

The IndAC<sub>2</sub> air curtain is specifically designed for use in factories, warehouses, logistics centres and production areas but can also be used for internal climate separation in chill rooms or cold stores (ambient version) with a front hall or loading bay and in environments with a high ambient temperature.





# HOW IT WORKS

With the automatic control option fitted, the IndAC<sub>2</sub> continuously selects the correct settings. Once the air curtain is installed and commissioned the user does not have to worry about the settings, as the output of the IndAC<sub>2</sub> will adjust to meet the challenges of the environment.

Sensors ensure that the IndAC<sub>2</sub> is supplied with all details regarding the climate outside and inside near the doorway. All the information is continuously translated by the CHIPS technology into the correct setting of the air curtain. The temperature and fan speed of the IndAC<sub>2</sub> are automatically adjusted, which means the unit is always operating at the desired setting. A constant, comfortable and energy efficient indoor climate is the result.

The desired room temperature is set by the user in the b-touch control panel **(1)**. The outside temperature sensor **(2)** measures the outdoor temperature. The fan speed of the air curtain is determined based on the set room temperature, the outside temperature and the door height. The air inlet temperature sensor **(4)** measures the actual room temperature. Based on this room temperature the discharge temperature is being calculated. If necessary, the fan speed is adjusted.

- (1)** B-touch
- (2)** Outside temperature sensor
- (3)** Discharge temperature sensor
- (4)** Air inlet temperature sensor
- (5)** Door contact switch





# IMPRESSIVE TECHNOLOGY

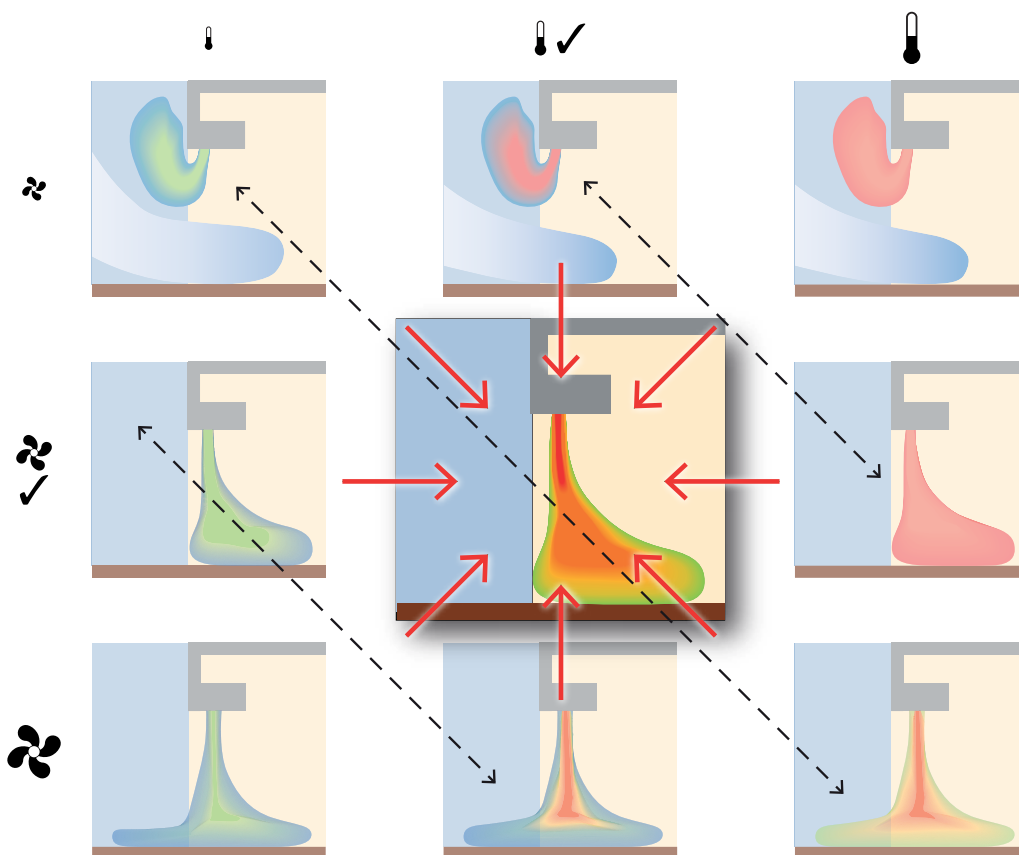
## CHIPS

With changing weather conditions and insufficient attention to or knowledge of an air curtain, it can be the case that an air curtain is not set up correctly. It can either blow too strong or too weak, with a discharge temperature that is too high or it is not switched on at all.

Energy loss is a result with low comfort (draught) and an unnecessarily high noise level. Biddle has developed the fully automatic and energy saving CHIPS-technology to save energy and provide a high level of comfort. The CHIPS-technology adjusts the discharge temperature and the strength of the air stream to the changing conditions around the doorway independent of each other. The technology has been translated into a fully automatic control for IndAC<sub>2</sub> industrial air curtain. The diagram below clarifies the operation of the CHIPS-technology in various conditions.

The situation in the middle is the optimal situation: Sufficient strength to reach the floor (optimum climate separation) and sufficient heat to warm incoming air to the indoor temperature required (comfort).

Due to the CHIPS-technology the IndAC<sub>2</sub> air curtain always functions in the correct speed and discharge temperature, with optimal energy savings as a result. The energy savings of the IndAC<sub>2</sub> with automatic control can increase by up to 75% compared to a manual controlled conventional air curtain.



## CHIPS



## PATENTED DOUBLE RECTIFIER

Whilst developing the IndAC<sub>2</sub>, Biddle chose to use the well known outlet discharge pattern, the Double Rectifier. The IndAC<sub>2</sub> is equipped with radial backward curved fans which homogeneously distribute the air across the whole discharge opening, producing high efficiency and comfort levels.

If a conventional industrial air curtain without a rectifier discharges air at the same velocity as a unit with a Double Rectifier, the downward penetration is tangibly less. The air stream does not reach the floor, and the open door is not covered off properly. Consequences include draught, loss of heat and comfort complaints.

The IndAC<sub>2</sub> makes sure the air, which is about to flow out through the open door, stays in the room. The Double Rectifier, which minimizes turbulence in the discharge air stream and surrounding air, ensures that the air movement generated by the fans, is directed downward in a deeply penetrating laminar air stream. As a consequence the energy consumption is reduced and comfort levels are increased all year round.



## VARIOUS HEATING SOURCES

The IndAC<sub>2</sub> air curtain is suitable for connection to water or electric heating sources.

An ambient model, without a heating battery, is also available. The versions with water coils and electric heating batteries are suitable for large industrial doorways to separate interior and outside temperature. Ambient models are suitable for climate separation in internal spaces for which no heated air stream is required.

# CONTROLS

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The IndAC<sub>2</sub> air curtain can come with a basic control option or the b-touch control.



Basic Control



b-touch Control Panel

## ACCURATE STEPLESS CONTROL

The b-control is a 0-10V potentiometer that functions stepless and makes it easy to manually set the air curtain accurately to the desired fan speed. To be assured of the best possible climate separation the manual setting should be adjusted to circumstances several times a day.

## AUTOMATIC ON AND OFF

Use of the optional door contact switch enables the IndAC<sub>2</sub> to be automatically switched on when the door opens and off when the door is closed.

## ENERGY SAVING

The IndAC<sub>2</sub> is standard equipped with energy saving and high performance EC fans. These fans support the stepless operation of the b-control.

## CONTROL OF MULTIPLE UNITS

With one b-control multiple units can be controlled. The IndAC<sub>2</sub> ST with b-control has the capacity to control a combination of units that cover a door width of max. 5 meters. The IndAC<sub>2</sub> MX with b-control has the capacity to control a combination of units that cover a door width of max. 7.5 meters.

## B-TOUCH CONTROL

The fully automatic IndAC<sub>2</sub> comes with Biddle's touchscreen control panel: the b-touch. The simple menu structure of the b-touch makes it very easy to choose the desired settings using the clear preset menu. The IndAC<sub>2</sub> can be automatically set up using the intelligent software which is situated inside the air curtain. Usage and fault diagnostic data can be easily extracted via the b-touch data port. The data port also permits software updates, which means it is no longer necessary to open the unit for this. Extracting information from the air curtain can easily be achieved via the b-touch. Once set, the control panel is no longer necessary.

## MODBUS COMMUNICATION

The IndAC<sub>2</sub> fitted with automatic control enables communication via Modbus from a remote PC or BMS system. If required b-touch and Modbus can be used in parallel allowing local and remote control of the air curtain.

## MULTIPLE UNITS

When more units are connected, the b-touch control panel can control up to a max. of ten master units. One master unit and two slave units can be controlled simultaneously. In that case, only the master unit contains the intelligent software. The master unit can be connected to another master unit to which two slave units can also be connected.



# A SOLUTION FOR EVERY SITUATION

## COIL TYPES

<b>H1</b>	Water heating
	High water temperatures
	1 row element
<b>H2</b>	Water heating
	Low water temperatures
	2 row element
<b>E</b>	Electrical heating
	Only available with automatic control
	Only available in ST
<b>A</b>	Ambient, no heating coil
<b>H1p</b>	Water heating
	High water temperatures
	High pressure
	On customer order, always with welded flanges

## TYPES

The IndAC<sub>2</sub> is available in a standard (ST) and a maximal version (MX). The selection is based on the door heights.

IndAC<sub>2</sub> ST: 3-6m

IndAC<sub>2</sub> MX: 5-8m

## LENGTHS

IndAC<sub>2</sub> ST: 150, 200 and 250cm

IndAC<sub>2</sub> MX: 150 and 225cm

## CONTROL OPTIONS

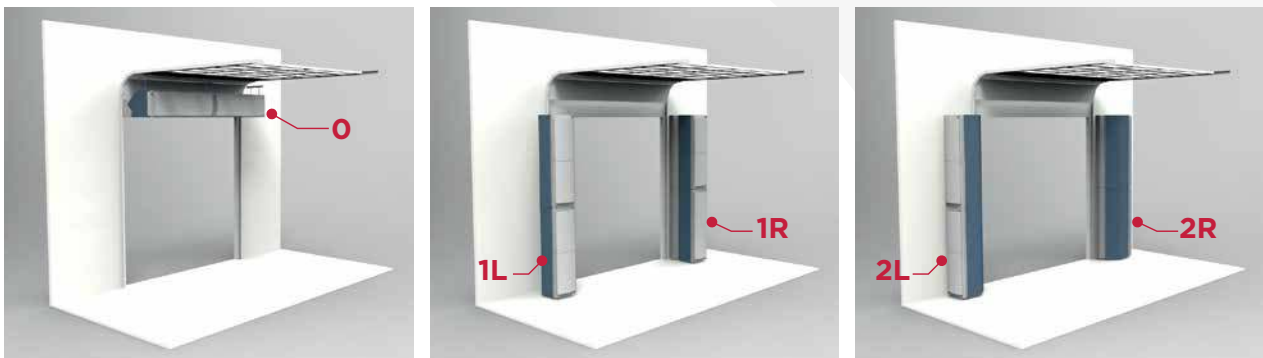
- Automatic control with b-touch control panel and CHIPS Technology
- Basic control with b-control (0-10V)
- BMS: Modbus communication (automatic control)

## MOUNTING

IndAC<sub>2</sub> air curtains in combination with an automatic control can be installed directly above the door. IndAC<sub>2</sub> with basic control can also be installed next to the door. Different installation positions are possible depending on the room layout around the door.

# INSTALLATION

The available room layout around a door determines where and how an air curtain can be best installed. Thanks to a diverse range of installation positions, the IndAC<sub>2</sub> air curtain can be matched to the constructional possibilities offered by the local situation. Depending on the situation, the air curtain is either installed horizontally above or vertically next to the door, covering the full length or width of the doorway. For the vertical position there are two options: square to the wall and parallel to the wall. The unit should always be positioned as close to the door as possible. In case the situation does not allow a position close to the door, Biddle offers optional side shields. There are a total of five installation positions, which are shown below.



- O** Horizontal, above door
- 1L** Vertical, left side, square to wall
- 1R** Vertical, right side, square to wall
- 2L** Vertical, left side, parallel to wall
- 2R** Vertical, right side, parallel to wall

## MODULAR

The modular design of the IndAC<sub>2</sub> facilitates the installation of multiple devices next to or above each other, in order to cover all door heights or widths. The IndAC<sub>2</sub> ST with b-control can cover door widths of 5 meters. The IndAC<sub>2</sub> MX with b-control can cover door widths of 7.5 meters. With the automatic b-touch control maximal three units can be connected. For the exact amount of your specific type of air curtain, please contact your Biddle sales team who will be happy to develop a solution to suit you.

## EASY TO MOUNT AND CLEAN

The various parts of the IndAC<sub>2</sub> are very easy to access, making it easy to install, maintain and clean. The unit contains a minimum of 'internal obstacles', resulting in a smooth air flow through the unit in which dust has little chance of collecting.

## DESIGN

The IndAC<sub>2</sub> has a robust and modern design. With the pronounced industrial design of this air curtain, the appearance is consistent with the latest developments within the industry.

# WHAT'S IN IT FOR ME?

---

## STANDARD DELIVERY

- Two suspension brackets - for horizontal installation
- Two coupling plates - for vertical installation (only for basic unit)
- Wall bracket - for vertical installation (only for basic unit)

### These components are also needed:

- Automatic control (b-touch) or basic control (b-control)
- Base plate / plinth (required for vertical installation)

### Optional:

- Filter module (filter G4) for IndAC<sub>2</sub> ST
- Flanges
- Side shields

## OPERATING PACKAGE

The unit can be supplied with a basic control or an automatic control.  
A corresponding operating package is supplied.



### AUTOMATIC CONTROL

- b-touch touchscreen control panel
- Biddle control cable
- outdoor temperature sensor
- door contact switch
- water-side control (valve and actuator)
- room sensor for automatic CHIPS control (optional)



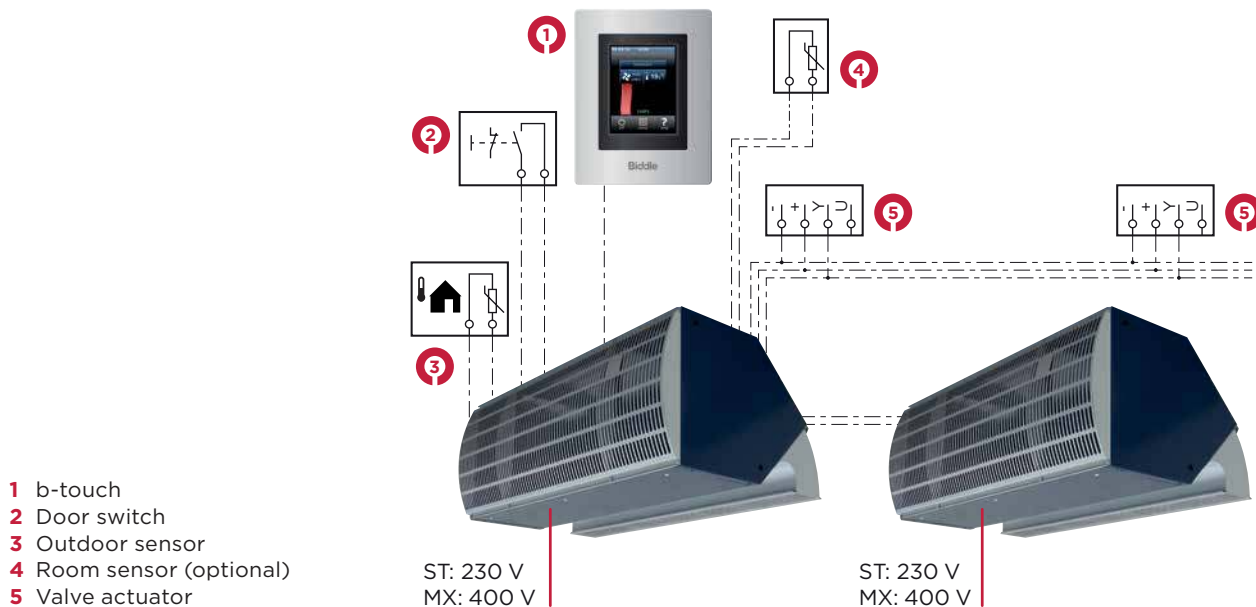
### BASIC CONTROL

- b-control 0-10 V stepless fan controller
- door contact switch (optional)

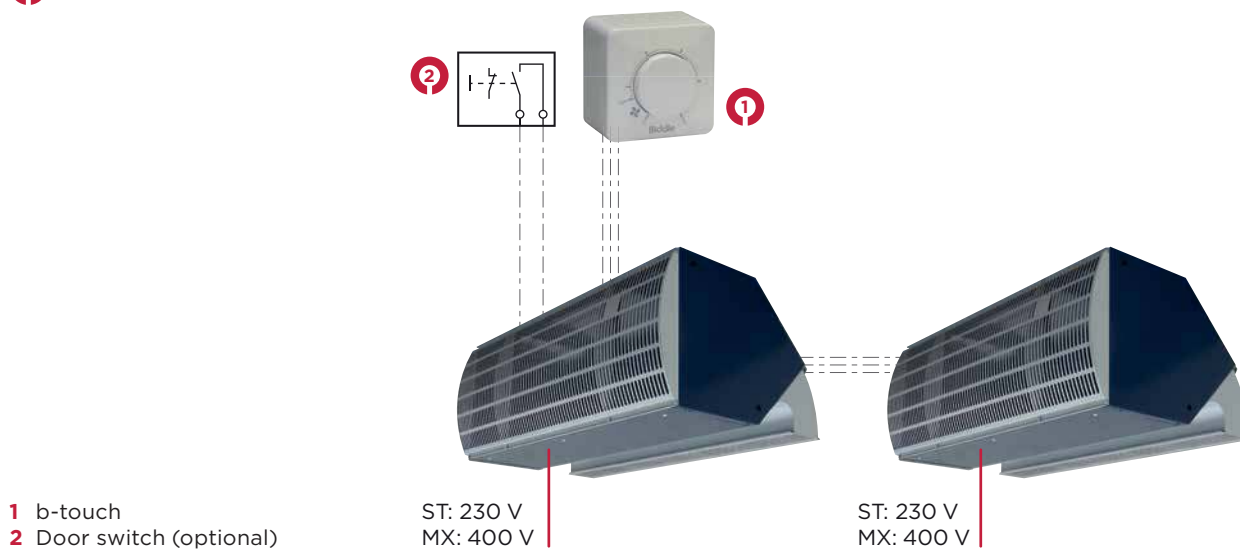


# ELECTRICAL CONNECTIONS

## AUTOMATIC CONTROL



## BASIC CONTROL



# SPECIFICATIONS

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## CASING

The casing and the inlet grille are manufactured from zinc-plated sheet steel, strengthened to minimise deformations and vibrations, and have a full-polyester powder coating. The IndAC<sub>2</sub> is supplied in two colour combinations: RAL 5011/RAL 9006 and fully RAL 9006. Other colours are available on request.

## MOTOR / FAN ASSEMBLY

The radial backward curved fans are mounted in the casing such that they cause no vibration. Each fan is driven by a rotor motor with EC technology. The fan casing are manufactured from aluminium and the impeller is made of plastic. The motor of the IndAC<sub>2</sub> is protected against overheating.

## HEATING BATTERY

The heating battery LPHW is manufactured with 1/2" copper tubes and aluminium fins. The water connections are G1" female thread (except for IndAC<sub>2</sub> H1p). The maximum operating pressure is 16 bar at 120°C. The water connections of the H1p-battery have flanges. The maximum operating pressure is 23,8 bar at 175°C. The electric heating battery is manufactured with aluminium fins. The battery is controlled electronically and fitted with overload protection. When the device is switched off, the fans will continue to rotate until the fins have cooled sufficiently.

# FORMULAS EXPLAINED

## WATER FLOW RATE

When water and room temperatures other than the values represented in the tables are used, the water flow rate can be roughly calculated using the formula below. Before doing so, the heating capacity must first be recalculated based on the table with correction coefficients.

- $m_w$  = water flow rate [l/h]
- $Q$  = heating capacity [kW]
- $C_{pw}$  = specific heat of water (=4.18) [kJ/kg°C]
- $\Delta T_w$  = water temperature differential [°C]
- $P_w$  = density of water at 90°C (=0.984) [kg/l]

$$m_w = \frac{Q}{C_{pw} \Delta T_w P_w} 3600 \text{ [l/h]}$$

## WATERSIDE PRESSURE LOSS

When water temperatures other than the values represented in the tables are used, the waterside pressure loss can be calculated using the formula below. To do so, the water flow rate must first be calculated.

- $\Delta P_{w1}$  = water pressure loss, table values [kPa]
- $\Delta P_{w2}$  = water pressure loss [kPa]
- $m_{w1}$  = water flow rate table values [l/h]
- $m_{w2}$  = water flow rate, calculated using formula [l/h]

$$\Delta p_{w_2} = \Delta p_{w_1} \left( \frac{m_{w_2}}{m_{w_1}} \right)^2 \text{ [kPa]}$$

## SOUND

The sound data represented in the technical tables were measured at a distance of 5m from the device, in a room with a reverberation time of 0.8 seconds and with a volume of 2500m<sup>3</sup>. If a unit is used in a deviating room, or if multiple devices are used in a single room, the sound pressure level must be recalculated. This can be done using the below formula below.

- $L_p$  = sound level [dB(A)]
- $T$  = reverberation value in deviating room [s]
- $T_o$  = reverberation value is 1.2s
- $V$  = volume of deviating room [m]
- $V_o$  = volume of reference room [250m<sup>3</sup>]
- $d$  = distance from the unit
- $d_o$  = reference distance is 5m
- $n$  = number of units

$$L_p = \text{table value} + \left( 10 \log \left( \frac{T}{T_o} \right) - 10 \log \left( \frac{V}{V_o} \right) + 10 \log \left( \frac{d_o^2}{d^2} \right) + 10 \log (n) \right) \text{ [dB(A)]}$$

# CORRECTION FACTORS

## HEATING CAPACITY

### IndAC<sub>2</sub> ST

Water range	Air inlet temperature									
	+5°C		+10°C		+15°C		+18°C		+20°C	
	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
120/100 °C	2.24 <sup>1</sup>	3.12 <sup>1</sup>	2.10 <sup>1</sup>	2.72 <sup>1</sup>	1.97 <sup>1</sup>	2.34 <sup>1</sup>	1.89 <sup>1</sup>	2.11 <sup>1</sup>	1.84 <sup>1</sup>	1.97 <sup>1</sup>
110/90 °C	2.00 <sup>1</sup>	3.12 <sup>1</sup>	1.87 <sup>1</sup>	2.72 <sup>1</sup>	1.74 <sup>1</sup>	2.34 <sup>1</sup>	1.66 <sup>1</sup>	2.11 <sup>1</sup>	1.61 <sup>1</sup>	1.97 <sup>1</sup>
100/80 °C	1.75	3.02 <sup>1</sup>	1.63	2.72 <sup>1</sup>	1.50	2.34 <sup>1</sup>	1.42	2.11 <sup>1</sup>	1.37	1.97 <sup>1</sup>
90/70 °C	1.50	2.62 <sup>1</sup>	1.38	2.41 <sup>1</sup>	1.25	2.20 <sup>1</sup>	1.18	2.08 <sup>1</sup>	1.13	1.97 <sup>1</sup>
82/71 °C	1.53	n/a	1.41	n/a	1.28	n/a	1.20	n/a	1.15	n/a
80/60 °C	1.25	2.21 <sup>1</sup>	1.12	2.00 <sup>1</sup>	1	1.80 <sup>1</sup>	0.93	1.68 <sup>1</sup>	0.88	1.60 <sup>1</sup>
70/50 °C	0.99	1.80	0.87	1.60	0.75	1.40	0.68	1.28	0.64	1.21
60/40 °C	0.74	1.39	0.62	1.19	0.51	1	0.44	0.88	0.39	0.81
50/40 °C	0.76	1.35	0.64	1.15	0.52	0.95	0.46	0.84	0.41	0.76

<sup>1</sup> Water range not suitable in case of an uncontrolled basic model.

- ◉ The discharge temperature of the IndAC<sub>2</sub> in combination with an automatic control is limited on 50°C.
- ◉ Inlet temperatures up to 120°C / 16 bar are only permitted if the water-side devices are tuned in to not exceed the maximum discharge temperature at the lowest fan setting.

### IndAC<sub>2</sub> MX

Water range	Air inlet temperature									
	+5°C		+10°C		+15°C		+18°C		+20°C	
	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
120/100 °C	2.25 <sup>1</sup>	4.28 <sup>1</sup>	2.11 <sup>1</sup>	3.72 <sup>1</sup>	1.98 <sup>1</sup>	3.20 <sup>1</sup>	1.90 <sup>1</sup>	2.90 <sup>1</sup>	1.85 <sup>1</sup>	2.71 <sup>1</sup>
110/90 °C	2.01 <sup>1</sup>	3.87 <sup>1</sup>	1.87 <sup>1</sup>	3.61 <sup>1</sup>	1.74 <sup>1</sup>	3.20 <sup>1</sup>	1.67 <sup>1</sup>	2.90 <sup>1</sup>	1.61 <sup>1</sup>	2.71 <sup>1</sup>
100/80 °C	1.76	3.40 <sup>1</sup>	1.63	3.15 <sup>1</sup>	1.50	2.90 <sup>1</sup>	1.43	2.76 <sup>1</sup>	1.38	2.66 <sup>1</sup>
90/70 °C	1.51	2.91 <sup>1</sup>	1.38	2.67 <sup>1</sup>	1.25	2.43 <sup>1</sup>	1.18	2.29 <sup>1</sup>	1.13	2.19 <sup>1</sup>
82/71 °C	1.54	n/a	1.41	n/a	1.29	n/a	1.21	n/a	1.16	n/a
80/60 °C	1.25	2.42 <sup>1</sup>	1.12	2.19 <sup>1</sup>	1	1.95 <sup>1</sup>	0.93	1.81 <sup>1</sup>	0.88	1.72 <sup>1</sup>
70/50 °C	0.99	1.94	0.87	1.70	0.75	1.47	0.68	1.34	0.63	1.25
60/40 °C	0.73	1.45	0.62	1.22	0.50	1	0.43	0.87	0.39	0.78
50/40 °C	0.76	1.47	0.64	1.24	0.52	1.02	0.45	0.89	0.41	0.80

<sup>1</sup> Water range not suitable in case of an uncontrolled basic model.

- ◉ The discharge temperature of the IndAC<sub>2</sub> in combination with an automatic control is limited on 50°C.
- ◉ Inlet temperatures up to 120°C / 16 bar are only permitted if the water-side devices are tuned in to not exceed the maximum discharge temperature at the lowest fan setting.
- ◉ If circumstances differ from those described here, such as different water temperatures or more than one unit in a single room, please do not hesitate to ask for our advice.



# INDAC<sub>2</sub>

Technical Details





# INDAC<sub>2</sub> ST-150-H1

Unit length	m	1.5				
Door width/height	m	3-6				
Electrical supply	V/ph/Hz	230/1/50				
Max. Input current	A	3				
Max. Input power	kW	0.52				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	92				
Water range	°C	80/60				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	1506	3253	4937	6111	6738
Power consumption	kW	0.03	0.07	0.18	0.33	0.52
Air inlet temperature	°C			15		
Heating capacity	kW	13.3	21	26.2	29.2	30.6
Discharge air temperature	°C	40.8	33.8	30.5	28.9	28.3
Water flow rate	l/h	583	920	1150	1280	1342
Water pressure drop	kPa	0.4	1	1.5	1.8	2
Water pressure drop with 2 & 3-port valve	kPa	0.8	1.8	2.8	3.4	3.8
Sound pressure level at 5m	dB(A)	24	40	50	57	60

# INDAC<sub>2</sub> ST-150-H2

Unit length	m	1.5				
Door width/height	m	3-6				
Electrical supply	V/ph/Hz	230/1/50				
Max. Input current	A	3				
Max. Input power	kW	0.52				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	95				
Water range	°C	60/40				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	1506	3253	4937	6111	6738
Power consumption	kW	0.03	0.07	0.18	0.33	0.52
Air inlet temperature	°C			15		
Heating capacity	kW	14	23.1	29.3	32.9	34.6
Discharge air temperature	°C	42.2	35.7	32.3	30.7	30
Water flow rate	l/h	609	1003	1273	1427	1501
Water pressure drop	kPa	0.5	1.2	1.8	2.3	2.5
Water pressure drop with 2 & 3-port valve	kPa	0.8	2.2	3.4	4.3	4.7
Sound pressure level at 5m	dB(A)	24	40	50	57	60

# INDAC<sub>2</sub> ST-200-H1

Unit length	m	2				
Door width/height	m	3-6				
Electrical supply	V/ph/Hz	230/1/50				
Max. Input current	A	4				
Max. Input power	kW	0.69				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	118				
Water range	°C	80/60				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	2008	4337	6582	8148	8984
Power consumption	kW	0.03	0.1	0.23	0.44	0.69
Air inlet temperature	°C			15		
Heating capacity	kW	18.9	30.1	37.9	42.3	44.4
Discharge air temperature	°C	42.5	35.3	31.8	30.1	29.4
Water flow rate	l/h	829	1321	1660	1853	1945
Water pressure drop	kPa	0.9	2.2	3.4	4.2	4.5
Water pressure drop with 2 & 3-port valve	kPa	1.6	4	6.1	7.6	8.3
Sound pressure level at 5m	dB(A)	25	41	51	58	61

# INDAC<sub>2</sub> ST-200-H2

Unit length	m	2				
Door width/height	m	3-6				
Electrical supply	V/ph/Hz	230/1/50				
Max. Input current	A	4				
Max. Input power	kW	0.69				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	123				
Water range	°C	60/40				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	2008	4337	6582	8148	8984
Power consumption	kW	0.03	0.1	0.23	0.44	0.69
Air inlet temperature	°C			15		
Heating capacity	kW	20.1	33.5	42.9	48.3	50.8
Discharge air temperature	°C	44.2	37.6	34	32.3	31.5
Water flow rate	l/h	871	1455	1862	2094	2206
Water pressure drop	kPa	1	2.7	4.2	5.3	5.8
Water pressure drop with 2 & 3-port valve	kPa	1.8	4.8	7.7	9.7	10.7
Sound pressure level at 5m	dB(A)	25	41	51	58	61

# INDAC<sub>2</sub> ST-250-H1

Unit length	m	2.5				
Door width/height	m	3-6				
Electrical supply	V/ph/Hz	230/1/50				
Max. Input current	A	5				
Max. Input power	kW	0.87				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	144				
Water range	°C	80/60				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	2510	5421	8227	10185	11230
Power consumption	kW	0.04	0.12	0.29	0.55	0.87
Air inlet temperature	°C			15		
Heating capacity	kW	24.5	39.3	49.6	55.4	58.2
Discharge air temperature	°C	43.5	36.2	32.6	30.9	30.1
Water flow rate	l/h	1076	1724	2172	2429	2551
Water pressure drop	kPa	1.7	4.1	6.3	7.8	8.5
Water pressure drop with 2 & 3-port valve	kPa	2.9	7.1	11	13.7	15
Sound pressure level at 5m	dB(A)	26	42	52	59	62

# INDAC<sub>2</sub> ST-250-H2

Unit length	m	2.5				
Door width/height	m	3-6				
Electrical supply	V/ph/Hz	230/1/50				
Max. Input current	A	5				
Max. Input power	kW	0.87				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	150				
Water range	°C	60/40				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	2510	5421	8227	10185	11230
Power consumption	kW	0.04	0.12	0.29	0.55	0.87
Air inlet temperature	°C			15		
Heating capacity	kW	26.1	44	56.6	63.7	67.2
Discharge air temperature	°C	45.3	38.7	35.1	33.3	32.5
Water flow rate	l/h	1132	1909	2453	2765	2915
Water pressure drop	kPa	1.9	5	8	10	11
Water pressure drop with 2 & 3-port valve	kPa	3.2	8.7	14	17.6	19.5
Sound pressure level at 5m	dB(A)	26	42	52	59	62

# INDAC<sub>2</sub> MX-150-H1

Unit length	m	1.5				
Door width/height	m	5-8				
Electrical supply	V/ph/Hz	400/3/50				
Max. Input current	A	3.1				
Max. Input power	kW	1.8				
Max. Specific fan power	W/l/s	0.45				
Weight	kg	201				
Water range	°C	80/60				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	3198	6613	9809	12231	14356
Power consumption	kW	0.07	0.24	0.61	1.22	1.8
Air inlet temperature	°C			15		
Heating capacity	kW	24.7	37.2	45.5	50.7	54.6
Discharge air temperature	°C	37.5	31.4	28.5	27.1	26.1
Water flow rate	l/h	1081	1631	1995	2220	2394
Water pressure drop	kPa	0.5	1	1.4	1.8	2
Water pressure drop with 2 & 3-port valve	kPa	0.6	1.4	2.1	2.5	2.9
Sound pressure level at 5m	dB(A)	38	49	59	66	69

# INDAC<sub>2</sub> MX-150-H2

Unit length	m	1.5				
Door width/height	m	5-8				
Electrical supply	V/ph/Hz	400/3/50				
Max. Input current	A	3.1				
Max. Input power	kW	1.8				
Max. Specific fan power	W/l/s	0.45				
Weight	kg	207				
Water range	°C	60/40				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	3198	6613	9809	12231	14356
Power consumption	kW	0.07	0.24	0.61	1.22	1.8
Air inlet temperature	°C			15		
Heating capacity	kW	23.8	36.4	44.7	49.8	53.8
Discharge air temperature	°C	36.7	31.1	28.3	26.9	25.9
Water flow rate	l/h	1031	1580	1939	2162	2334
Water pressure drop	kPa	0.3	0.6	0.8	1	1.2
Water pressure drop with 2 & 3-port valve	kPa	0.4	1	1.5	1.8	2.1
Sound pressure level at 5m	dB(A)	38	49	59	66	69

# INDAC<sub>2</sub> MX-225-H1

Unit length	m	2.25				
Door width/height	m	5-8				
Electrical supply	V/ph/Hz	400/3/50				
Max. Input current	A	4.6				
Max. Input power	kW	2.7				
Max. Specific fan power	W/l/s	0.45				
Weight	kg	277				
Water range	°C	80/60				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	4797	9919	14713	18347	21534
Power consumption	kW	0.11	0.36	0.91	1.83	2.7
Air inlet temperature	°C			15		
Heating capacity	kW	40.5	61.9	76.2	85	91.9
Discharge air temperature	°C	39.6	33.2	30.1	28.5	27.5
Water flow rate	l/h	1776	2713	3339	3727	4028
Water pressure drop	kPa	1.5	3.3	4.9	6	6.9
Water pressure drop with 2 & 3-port valve	kPa	2	4.5	6.7	8.2	9.5
Sound pressure level at 5m	dB(A)	40	50	60	67	70

# INDAC<sub>2</sub> MX-225-H2

Unit length	m	2.25				
Door width/height	m	5-8				
Electrical supply	V/ph/Hz	400/3/50				
Max. Input current	A	4.6				
Max. Input power	kW	2.7				
Max. Specific fan power	W/l/s	0.45				
Weight	kg	286				
Water range	°C	60/40				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	4797	9919	14713	18347	21534
Power consumption	kW	0.11	0.36	0.91	1.83	2.7
Air inlet temperature	°C			15		
Heating capacity	kW	41.1	64.5	80.1	89.8	97.4
Discharge air temperature	°C	40	34	30.9	29.3	28.2
Water flow rate	l/h	1783	2798	3476	3898	4227
Water pressure drop	kPa	0.8	1.9	2.9	3.6	4.2
Water pressure drop with 2 & 3-port valve	kPa	1.3	3.2	4.8	6	7
Sound pressure level at 5m	dB(A)	40	50	60	67	70

## INDAC<sub>2</sub> ST-150-E

Unit length	m	1.5				
Door width/height	m	3-6				
Electrical supply motor and controller	V/ph/Hz	230/1/50				
Electrical supply E module	V/ph/Hz	400/3/50				
Max. Input current	A	3				
Max. Current consumption (3 phase)	A	67.6				
Max. Input power	kW	0.52				
Max. Power consumption, heating	kW	46.8				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	119				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	1506	3253	4937	6111	6738
Air inlet temperature	°C			15		
Heating capacity	kW	14.8	22.2	29.6	37.1	44.5
Discharge air temperature	°C	44.4	35.4	33	33.1	34.7
Sound pressure level at 5m	dB(A)	24	40	50	57	60

## INDAC<sub>2</sub> ST-200-E

Unit length	m	2				
Door width/height	m	3-6				
Electrical supply motor and controller	V/ph/Hz	230/1/50				
Electrical supply E module	V/ph/Hz	400/3/50				
Max. Input current	A	4				
Max. Current consumption (3 phase)	A	91				
Max. Input power	kW	0.69				
Max. Power consumption, heating	kW	63				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	154				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	2008	4337	6582	8148	8984
Air inlet temperature	°C			15		
Heating capacity	kW	20	29.9	39.9	49.9	59.9
Discharge air temperature	°C	44.7	35.6	33.1	33.3	34.9
Sound pressure level at 5m	dB(A)	25	41	51	58	61



## INDAC<sub>2</sub> ST-150-A

Unit length	m	1.5				
Door width/height	m	3-6				
Electrical supply	V/ph/Hz	230/1/50				
Max. Input current	A	3				
Max. Input power	kW	0.52				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	78				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	1506	3253	4937	6111	6738
Power consumption	kW	0.03	0.07	0.18	0.33	0.52
Sound pressure level at 5m	dB(A)	24	40	50	57	60

## INDAC<sub>2</sub> ST-200-A

Unit length	m	2				
Door width/height	m	3-6				
Electrical supply	V/ph/Hz	230/1/50				
Max. Input current	A	4				
Max. Input power	kW	0.69				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	100				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	2008	4337	6582	8148	8984
Power consumption	kW	0.03	0.1	0.23	0.44	0.69
Sound pressure level at 5m	dB(A)	25	41	51	58	61

## INDAC<sub>2</sub> ST-250-A

Unit length	m	2.5				
Door width/height	m	3-6				
Electrical supply	V/ph/Hz	230/1/50				
Max. Input current	A	5				
Max. Input power	kW	0.87				
Max. Specific fan power	W/l/s	0.28				
Weight	kg	123				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	2510	5421	8227	10185	11230
Power consumption	kW	0.04	0.12	0.29	0.55	0.87
Sound pressure level at 5m	dB(A)	26	42	52	59	62

## INDAC<sub>2</sub> MX-150-A

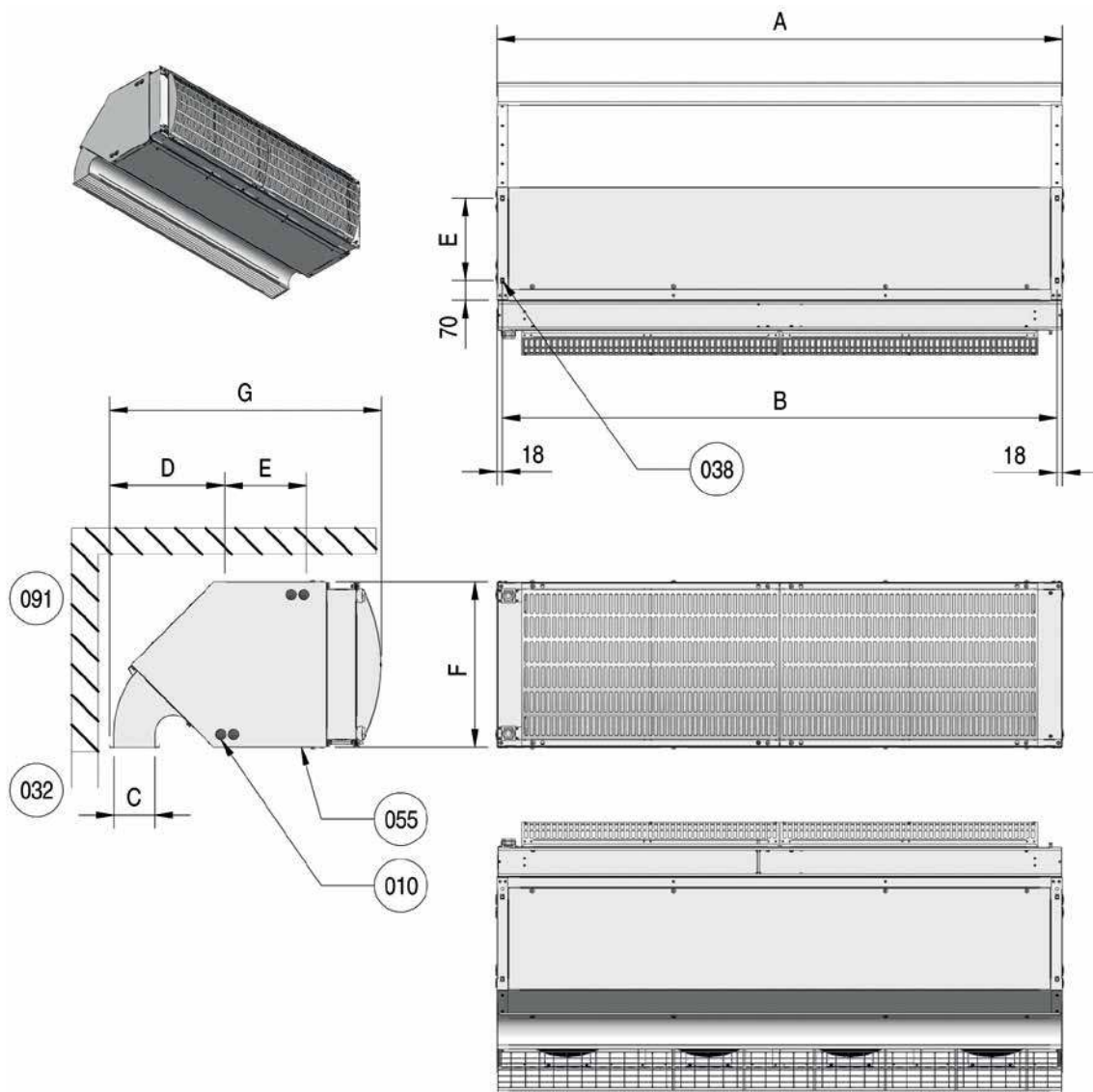
Unit length	m	1.5				
Door width/height	m	5-8				
Electrical supply	V/ph/Hz	400/3/50				
Max. Input current	A	3.1				
Max. Input power	kW	1.8				
Max. Specific fan power	W/l/s	0.45				
Weight	kg	190				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	3198	6613	9809	12231	14356
Power consumption	kW	0.07	0.24	0.61	1.22	1.8
Sound pressure level at 5m	dB(A)	38	49	59	66	69

## INDAC<sub>2</sub> MX-225-A

Unit length	m	2.25				
Door width/height	m	5-8				
Electrical supply	V/ph/Hz	400/3/50				
Max. Input current	A	4.6				
Max. Input power	kW	2.7				
Max. Specific fan power	W/l/s	0.45				
Weight	kg	249				
Speed		2V	4V	6V	8V	10V
Air volume	m <sup>3</sup> /h	4797	9919	14713	18347	21534
Power consumption	kW	0.11	0.36	0.91	1.83	2.7
Sound pressure level at 5m	dB(A)	40	50	60	67	70

# INSTALLATION

## POSITION 0, 1L AND 1R



							☄	💧	⚡	☄	💧
										+ 041	+ 041
	A	B	C	D	E	F	G	G	G	G	G
IndAC <sub>2</sub> ST 155-..	1500	1464									
IndAC <sub>2</sub> ST 200-..	2000	1964	146	407	290	583	853	956	976	976	1079
IndAC <sub>2</sub> ST 250-..	2500	2464									
IndAC <sub>2</sub> MX 150-..	1500	1464									
IndAC <sub>2</sub> MX 225-..	2250	2214	209	547	450	808	1193	1316	-	-	-

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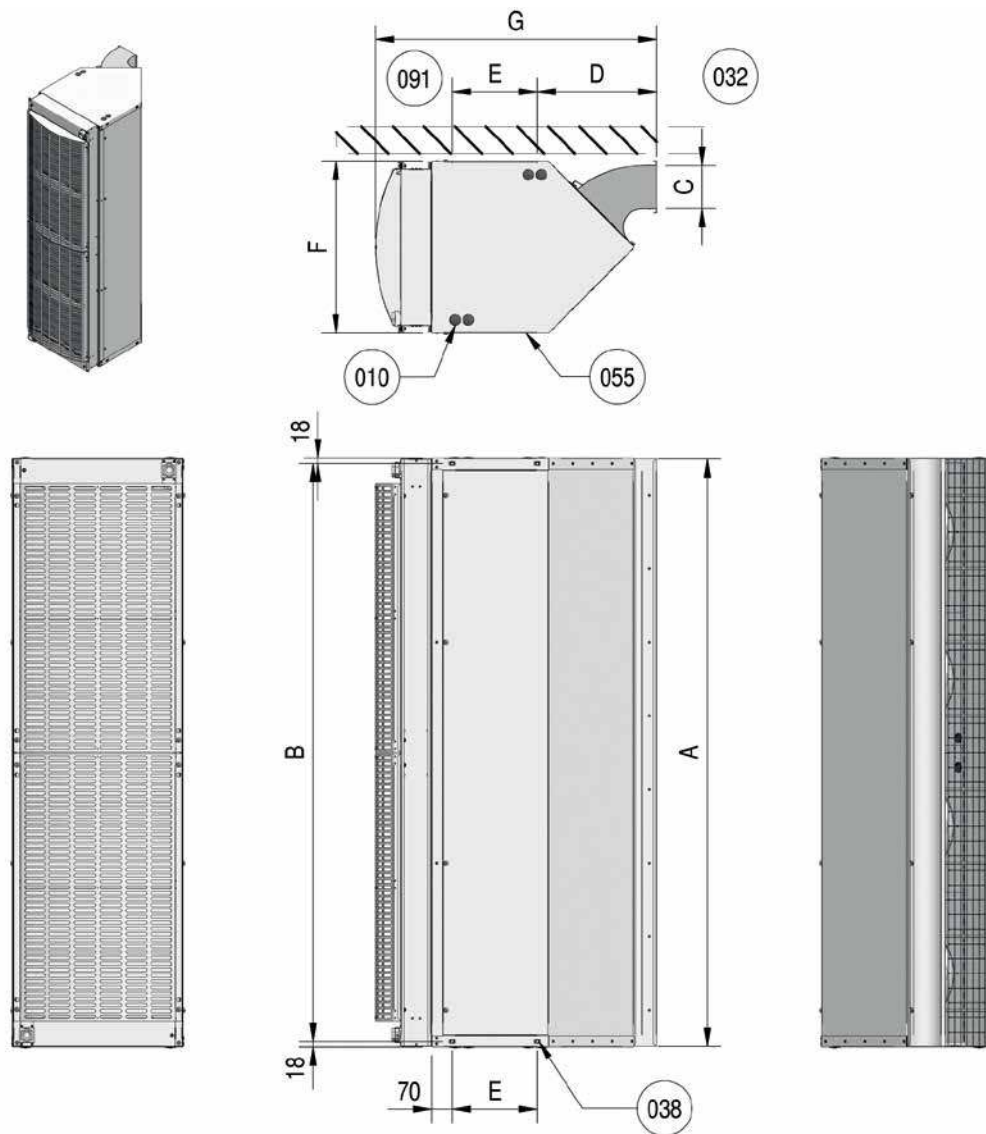
The corresponding numbers in the water connections sketch are explained below:

**10**-Cable feed through. **32**-Door **38**-Female thread for suspension/fixation M12 ( 4x).

**41**-Filter module. **55**-Inspection panel. **91**-Wall. **64**-Return. **81**-Supply.

# INSTALLATION

## POSITION 2L AND 2R



							☄	💧	⚡	☄	💧
										+ 041	+ 041
	A	B	C	D	E	F	G	G	G	G	G
IndAC <sub>2</sub> ST 155-..	1500	1464									
IndAC <sub>2</sub> ST 200-..	2000	1964	146	407	290	583	853	956	976	976	1079
IndAC <sub>2</sub> ST 250-..	2500	2464									
IndAC <sub>2</sub> MX 150-..	1500	1464									
IndAC <sub>2</sub> MX 225-..	2250	2214	209	547	450	808	1193	1316	-	-	-

### INDEX

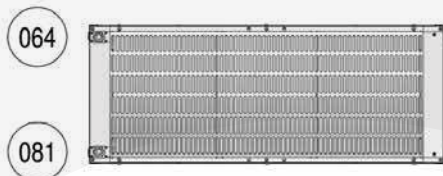
The corresponding numbers in the water connections sketch are explained below:

**10**-Cable feed through. **32**-Door **38**-Female thread for suspension/fixation M12 ( 4x).

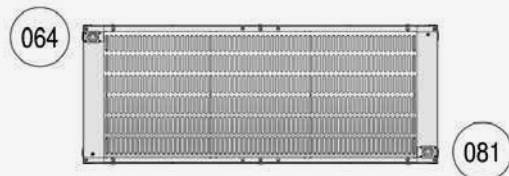
**41**-Filter module. **55**-Inspection panel. **91**-Wall. **64**-Return. **81**-Supply.

# WATER CONNECTIONS

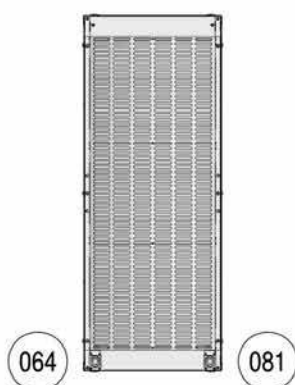
ST-...-H1-0  
MX-...-H1/H2-0



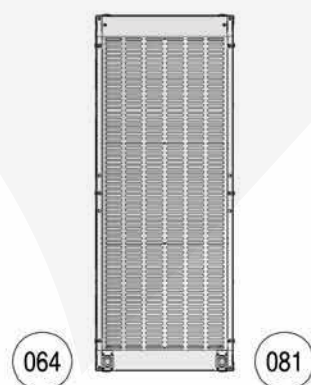
ST-...-H2-0



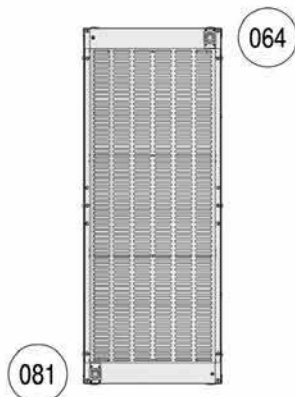
ST-...-H1-1L  
ST-...-H1-2L  
MX-...-H1/H2-1L  
MX-...-H1/H2-2L



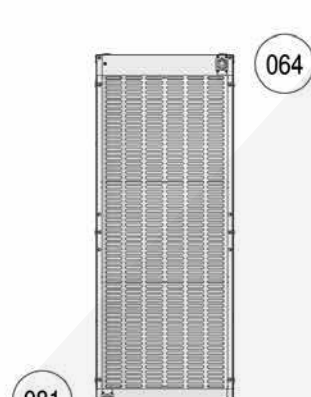
ST-...-H1-1R  
ST-...-H1-2R  
MX-...-H1/H2-1R  
MX-...-H1/H2-2R



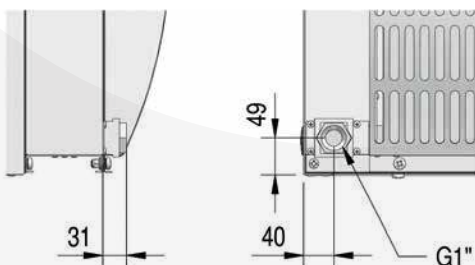
ST-...-H2-1L  
ST-...-H2-2L



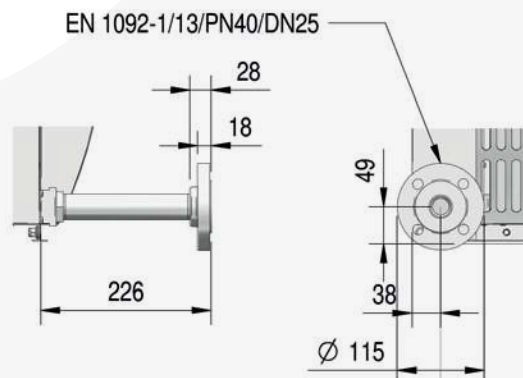
ST-...-H2-1R  
ST-...-H2-2R



## STANDARD



## ACCESSORY SET



## INDEX

The corresponding numbers in the water connections sketch are explained below:

**10**–Cable feed through. **32**–Door **38**–Female thread for suspension/fixation M12 ( 4x).

**41**–Filter module. **55**–Inspection panel. **91**–Wall. **64**–Return. **81**–Supply.





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# Biddle

Every effort has been made to ensure descriptions are correct at the time of print.  
Errors and omissions excepted. INDAC2|V1|11|2019

# SR

Comfort Air Curtain



# Biddle



# A NEW WAVE IN CLIMATE SEPARATION

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SR air curtains are the ideal solution for retailers and other end-users to combat the issue of climate separation across their outlet or office building doorway. The importance of accessibility to attract customers in the retail sector is well-known, but with this free form of access through 'open door' trading, cold draughts and high energy bills are often the consequence.

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The SR technology has been designed to deliver greater comfort for all, whether it is in a supermarket, high street store or office building. The SR air curtain does not act as a barrier in the place of a door, its prime role is to reduce the amount of warm air leaving the building and condition the incoming air to a comfortable temperature. BSRIA and Biddle research produced documented evidence proving that air curtains operate best with specific velocities and air volumes. The SR air curtain satisfies these needs by delivering the right air flow and temperature at the right time automatically, reducing energy loss.

Furthermore, it is the only commercially available air curtain of its kind that now offers a unique air damper system to improve efficiency by controlling the outlet velocity.

Biddle has a great deal of experience in designing optimal climate separation solutions. The first step is to determine the climate requirement of the room, then in consultation with you we seek a suitable climate separation solution. By remote monitoring and intelligent software Biddle is able to monitor and analyse the doorway and its energy consumption and comfort levels in detail.





# IMPRESSIVE RESULTS

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The impressive results achieved by the SR are made possible thanks to a combination of four technologies. The revolutionary patented i-sense infrared technology collects all temperature-related data in the doorway. CHIPS technology translates this information into the correct setting, whilst the adaptable discharge width (Controlled Air strength technology) and the patented rectifier technology create the perfect climate separation.

---

## INTELLIGENT AUTO-ACTIVE CONTROL AND MONITORING

The auto-active control is the next generation of controls. Knowing that manual control of air curtains often leads to the incorrect setting, the inclusion of the automatic CHIPS (Corrective Heating & Impulse Prediction System) technology ensures the most appropriate setting at any moment in time. The i-sense in the discharge grille measures the indoor and outdoor temperatures active in the door opening collecting real-time and accurate data. This auto-active control has been demonstrated to produce savings of up to 75% when compared with a manually controlled air curtain. Biddle has an extensive range of control options: the b-touch control panel, remote monitoring of comfort and energy performance and connecting to a BMS, which is easy through the standard integrated Modbus connection.

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## FEATURES AND BENEFITS:

- Intelligent control and monitoring remotely
  - Modbus integrated as standard
  - Ability to capture and collect temperature data
  - Stylish and low noise
  - Complete customised solution
  - Energy efficient and creating a comfortable environment
  - Suitable for various heat sources
  - Possible to combine with Daikin heat pumps and Biddle **air2air** heat recovery systems
- 

## VARIOUS HEAT SOURCES

The SR can be supplied to suit many heating mediums, with water, electric, Direct Expansion (DX), a combination of low grade water and electric (Hybrid) and ambient models all being available. The DX model is only suitable for use with Daikin VRV and ERQ Heat Pump systems.

## APPLICATIONS

The SR is designed for door heights from 2.0 to 4.0 m. Within the retail, commercial and public sector the applications are endless. The SR can be applied above door openings of shopping malls, stores, supermarkets, banks, stations, museums, hotels and hospitals.



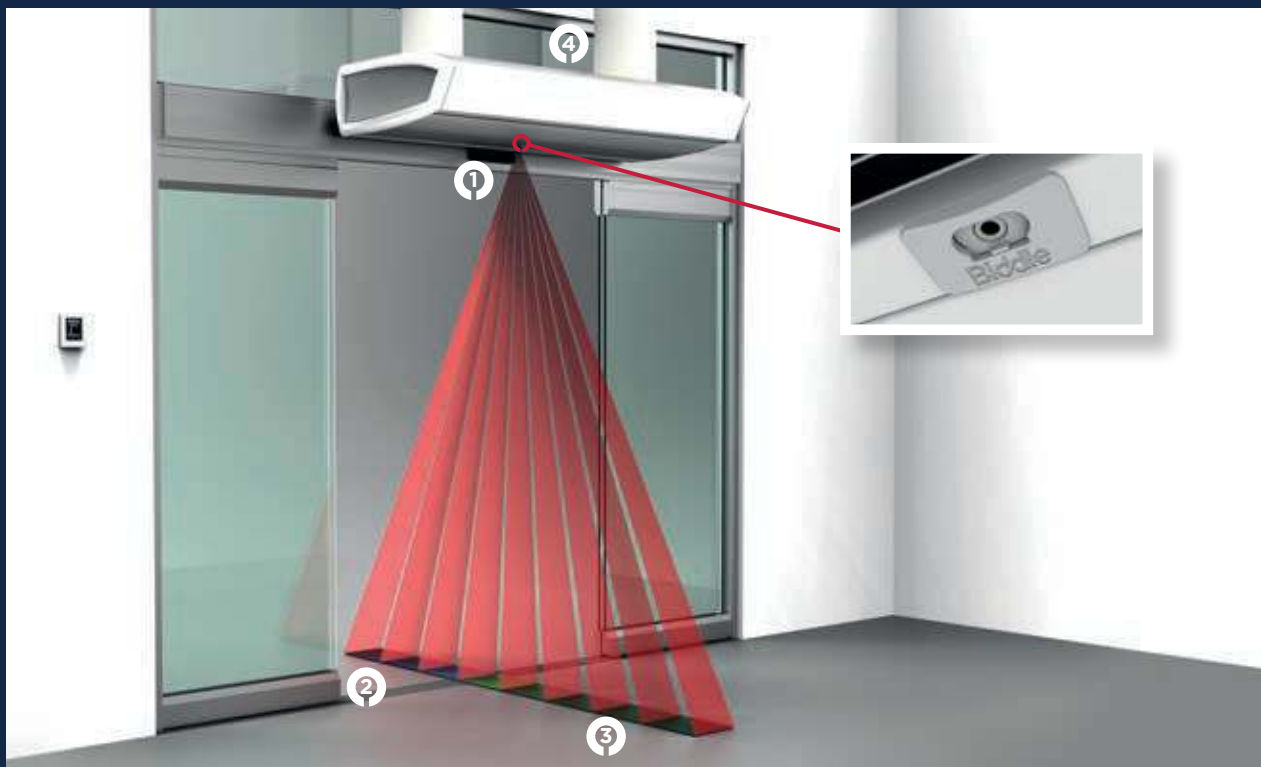
# i-SENSE INFRARED TECHNOLOGY

The patented i-sense infrared technology carefully scans the environment around the doorway collecting information on indoor and outdoor temperatures by measuring the exact temperature at floor level. In addition, the i-sense detects when the door is closed.

Outdoor and room temperatures are frequently used as a basis upon which automatic control settings are established. The temperature data is provided by a sensor located close to the device or attached to the building facade. This mechanism is not always reliable when it comes to measuring the exact climate prevailing in the doorway, resulting in the curtain operating on the basis of incorrect information. The SR however is different, as it is equipped with i-sense technology and the climate in the doorway is measured on an ongoing basis, thereby guaranteeing a comfortable environment as well as maximal energy savings.

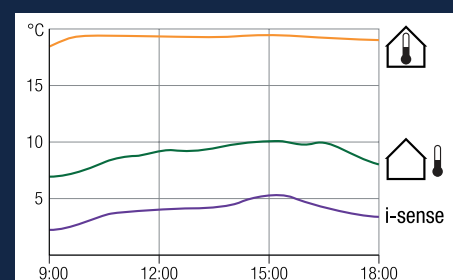
The i-sense **(1)** collects temperatures from several points both from inside and outside the doorway **(2&3)**, whilst a sensor in the return air measures room temperature **(4)**.

The automated CHIPS technology uses these temperature readings to determine the temperature and strength of the airflow that needs to be delivered, thereby guaranteeing the air curtain's performance. Air curtains that are equipped with auto-active technology are not only more efficient, but they also prevent energy being wasted due to incorrect settings. I-sense also recognises when a door is closed and adapts automatically to the situation, preventing heat from being produced unnecessarily.



## EXAMPLE OF i-SENSE IMPACT

The graph illustrates how the outdoor and indoor temperatures are measured using i-sense. As demonstrated, the sensor located on the outside of the doorway estimates an outdoor temperature of 9 °C (green line) whilst, i-sense sensor in the doorway provides a reading of 4 to 5 °C (purple line). This provides the evidence of accuracy readings of climate conditions in the doorway measured by Biddle technology.

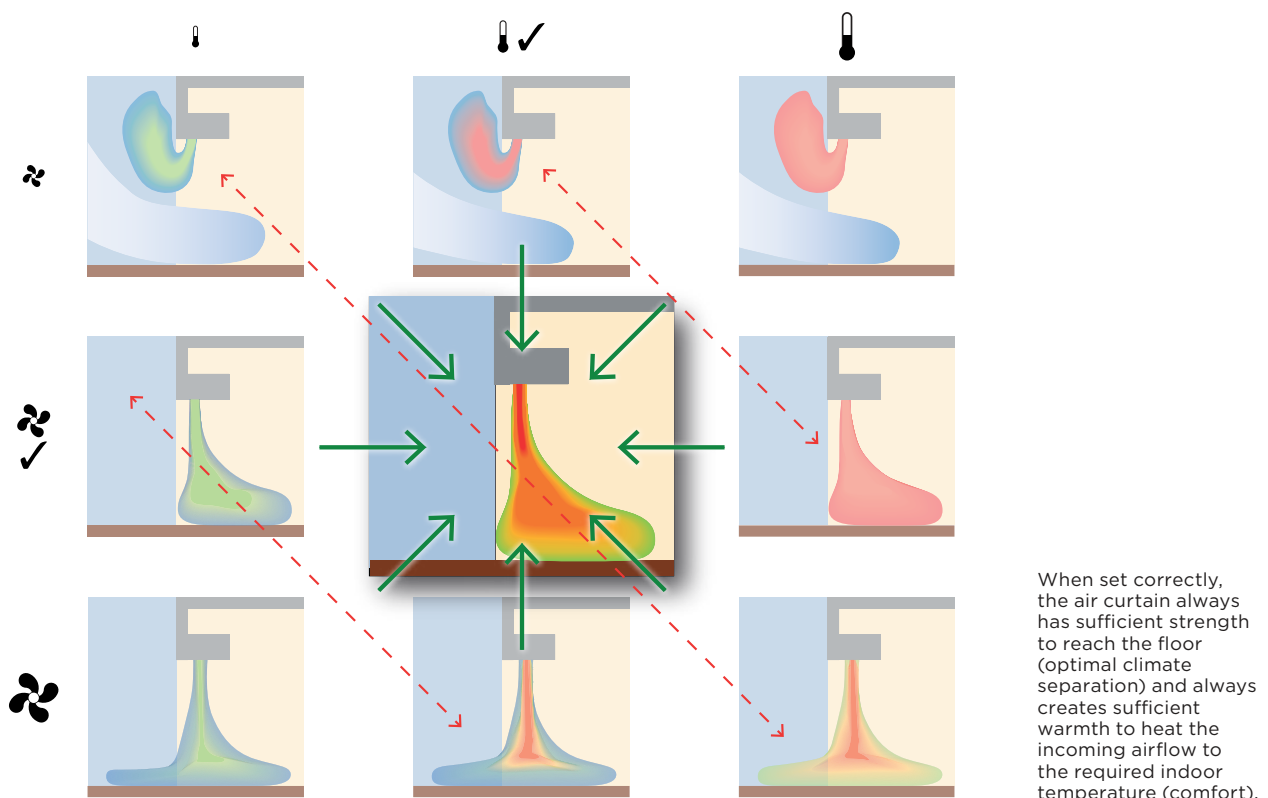


# AUTOMATIC CHIPS TECHNOLOGY

The Automatic CHIPS control strategy continually monitors and adjusts to provide the most effective and efficient operation by varying the strength and heating independently, to the point on the image below where 'sufficient heating' and 'sufficient strength' intersect.

The SR air curtain utilises CHIPS technology to automatically adjust discharge velocity, air volume, discharge temperature and heat output. Outside, return air and discharge temperature sensors are used to determine how much heat is required and the bespoke control algorithm 'translates' the data into the strength (a combination of air volume and velocity) required for complete climate separation and comfort. Negating the need for the user to continually adjust the air curtain's setting when the inside/outside temperatures and/or weather change.

An air curtain with traditional control has heat and fan speed linked to one another. When the fan speed increases heat output will also increase, whether or not it's necessary, leading to a less effective and less efficient air curtain. The CHIPS control strategy continually monitors and adjusts air volume, air velocity, discharge temperature and heat output independently of each other so that the point on the image where 'Sufficient Heating' and 'Sufficient Strength' intersect.



## CONVENTIONAL AIR CURTAINS

With a convectional air curtain both the heat and speed are usually linked to one another and when the fan speed increases, then it is probable that the heating also increases, resulting in a less effective or efficient air curtain. In contrast, Biddle's auto-active control treats both of these separately, ensuring conditions are always ideal and a maximum amount of energy is saved.



# RECTIFIER AND CONTROLLED AIR STRENGTH TECHNOLOGY

In order to achieve efficient climate separation, Biddle has created two separate technologies.

The patented rectifier ensures that the turbulent air from the fans is transformed into a virtually laminar air stream. The air stream reaches the floor with much less air speed than it would in a rectifier-free air curtain, whilst ensuring the discharge air stream stays within the building.

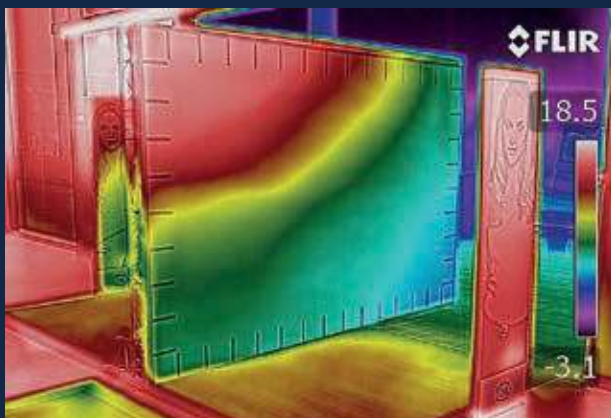
Controlled Air strength technology, on the other hand, ensures that the air stream reaches the floor containing the right volume of air, by calibrating air speed and outlet width.

At lower speeds (and hence lower air volumes) the damper partially opens to create a greater 'impulse' to the air stream, providing a more

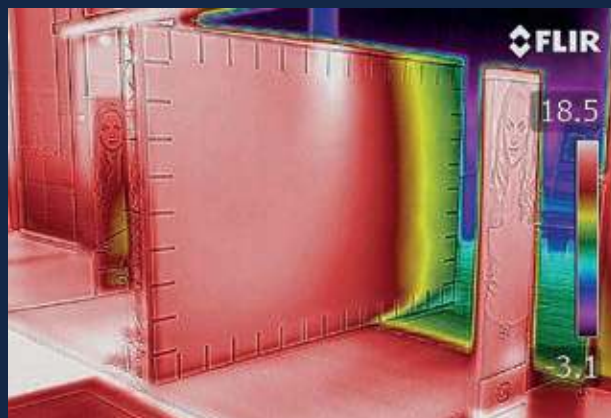
energy efficient air curtain. At higher speeds the damper opens to adjust the outlet velocity to deal with more demanding situations.

In partnership with the TNO wind facility at Apeldoorn in the Netherlands, it is proved that combining these two technologies yields an 80% climate separation efficiency rate.

The thermographic images illustrated below show the temperature differences between the conditions prevailing outside and inside a doorway create air exchanges: warm air flows outwards, cold air flows inwards. This leads to both energy losses and a draughty indoor climate. The auto-active SR technology ensures energy-efficient climate separation.



Air curtain off: significant air exchange



Air curtain on: optimal climate separation

# SELECTION AND OPTIONS

The SR has endless possibilities. The SR creates optimum climate separation in all doorways and is also suitable for a range of heating sources. There is a solution available for many monitoring and control options.

## EXAMPLE TYPE CODE: SR S-100-H3-F

SR	SR
Capacity	
S	Small (200-240cm)
M	Medium (220-280cm)
L	Large (250-330cm)
XL	Extra Large (300-400cm)
Length (cm)	
100 - 150 - 200 - 250	
Coil type	
H3	Hot water heating
E	Electrical heating
H3E	Hybrid heating (water & electric)
A	Ambient (no heating)
Model	
F	Free hanging model
R	Recessed model
C	Cassette model

For the DX version a separate brochure is available.

## FOR EVERY DOOR WIDTH

Doors wider than 250cm are covered by placing multiple units next to each other

## STANDARD COLOURS

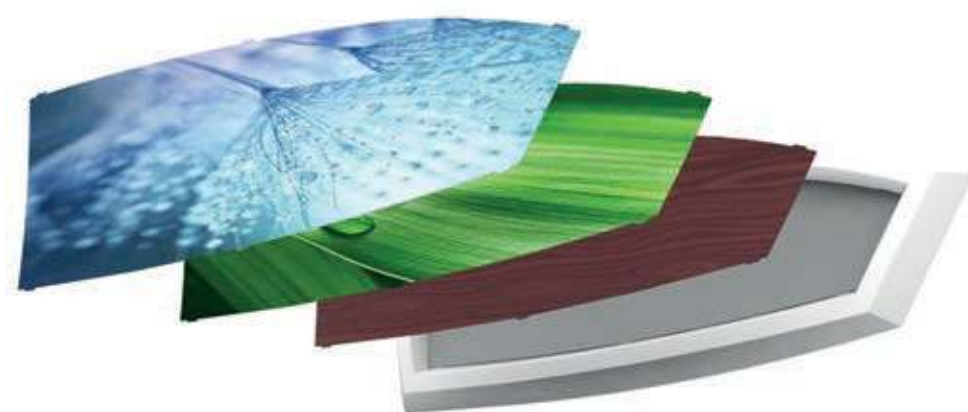
Traffic white (RAL 9016) with accent end panels in Silver Grey (RAL 9006)

Silver Grey (RAL 9006)

Other RAL classic colours available on request

## CUSTOMER-SPECIFIC STYLING

The inlays in the end panels are supplied in grey and white as standard. The removable inlays in the end panels can also be styled specifically if required (e.g. colour and logo)



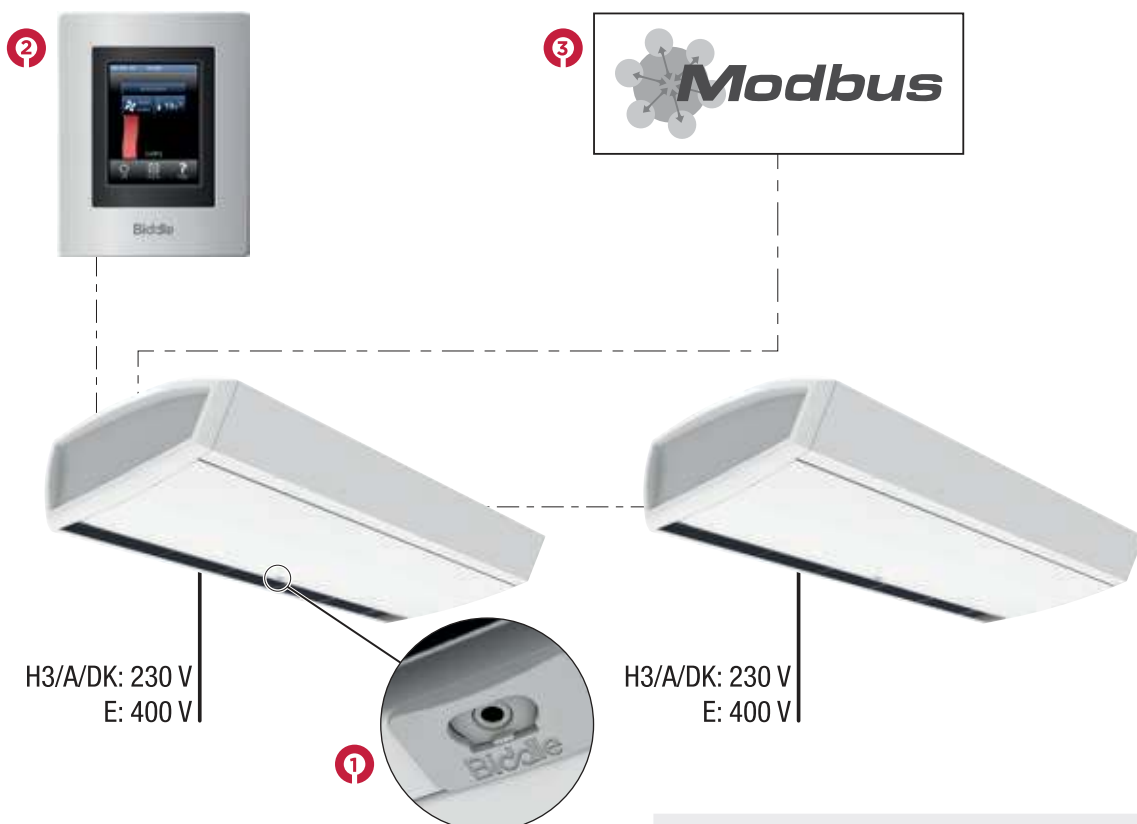
Customised end panels with styled inlays.

# INTELLIGENT CONTROLS

During installation, an air curtain is typically set to operate at a mid-speed setting and rarely adjusted. This results in the air curtain continually operating at a single air volume, velocity and temperature. However, as internal and external conditions constantly vary throughout the day this means the air curtain will only be operating at the optimum setting some of the time and for the rest of the time will be either set too high or too low.

The automatic CHIPS (Corrective Heating & Impulse Prediction System) technology ensures the most appropriate setting at any moment in time. The i-sense in the discharge grille measures the indoor and outdoor temperatures active in the door opening collecting real-time data. This process ensures that the SR is always functioning correctly and yields an ideal, energy-efficient indoor climate without the need for user input.

The auto-active SR device is equipped as standard with the b-touch control panel and i-sense infrared technology. It is also possible to communicate via Modbus.



- |   |                             |
|---|-----------------------------|
| 1 | i-sense infrared technology |
| 2 | b-touch control panel       |
| 3 | Modbus communication        |

# B-TOUCH

---

The b-touch control panel has a simple menu structure making it very easy to select preferred settings, such as room temperature and switching the device on/off. Due to the fact the SR's intelligent software is integrated, once the device is installed, it may also function without the b-touch being connected. The b-touch may then be used as a service panel only.

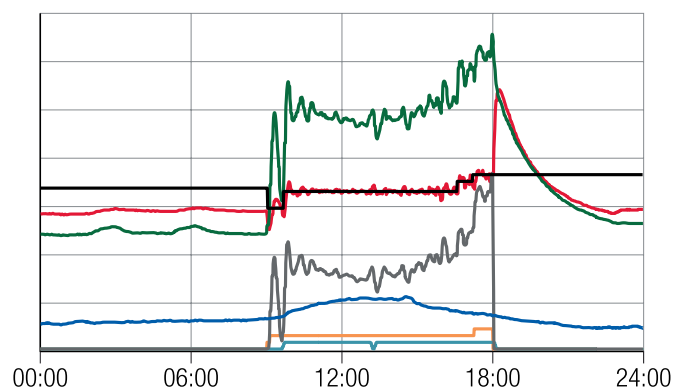
The b-touch can also be used as a component of a complete climate system. For instance, the Modbus BMS local operations via the b-touch and central management actively functions simultaneously. A single b-touch can be used to control a maximum of 10 units.

## CONTROL FEATURES:

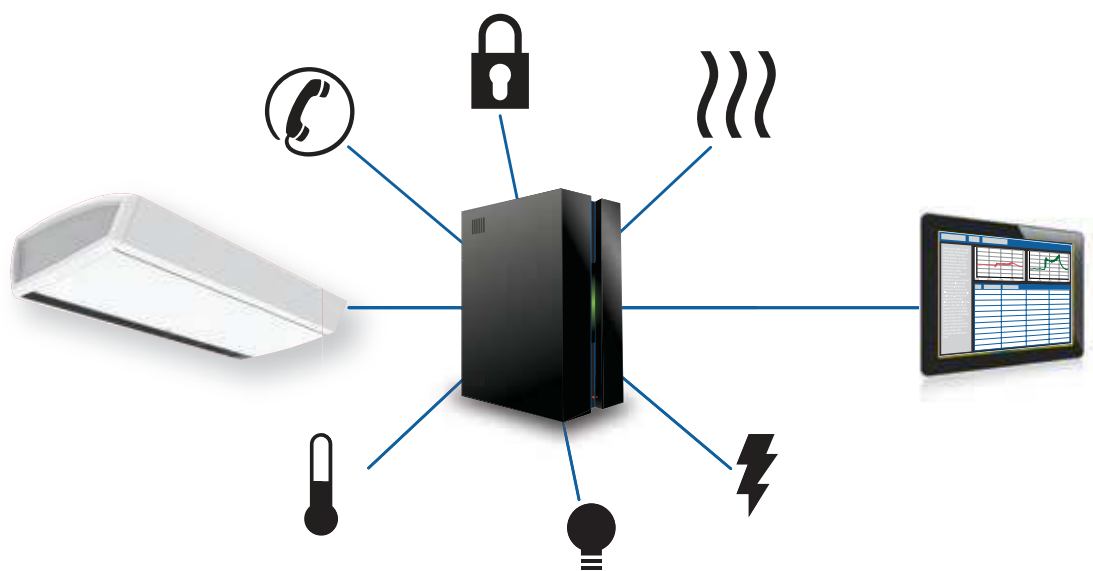
- Touchscreen control panel
- Analytical tool
- Status screen displaying all settings and current values
- Multilingual navigation menu
- Practical installation wizard to achieve preferred settings on site
- Personalisation features
- Manual operation also possible

## ANALYTICS

A USB connector is located on the underside of the b-touch for exporting data usage, importing or exporting adjustments as well as updating new software. The graph, produced from exported data, shows the degree of comfort by comparing the actual (red line) and programmed indoor temperature (black line) from a particular project installation.







# MODBUS COMMUNICATION

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The SR comfort air curtain is easy to connect to a building management system using the standard integrated connection for Modbus communication protocol. Modbus can create communication between several products within the same network.

---

A building management system (BMS) is used for the central monitoring, control and communication between the products and controls present within the building. With the Modbus communication protocol all functions of the SR can be monitored and controlled remotely. After installation, interaction with the SR is remotely or locally adjusted in line with the needs of the customer. In this way the SR is continuously monitored and adjusted where necessary to optimise operation.

In the Modbus communication protocol responsibilities with regard to local and central operation can be set. If required both the b-touch and Modbus can be used in parallel allowing local and remote control of the air curtain.

The SR air curtain can also be made suitable for Bacnet communication.

# SPECIFICATIONS

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## CASING

The casing is made of zinc plated sheet steel, and has an inspection panel in the bottom. The inlet grilles are made of anodised aluminium with fixed fins. The inlet module and the end panels as well as the casing are, as a standard, supplied in silver grey (RAL 9006) or traffic white (RAL 9016). The end panels of the white SR have a grey inlay. Other RAL casing colour finishes are available for an additional charge.

## FAN / MOTOR ASSEMBLY

The air curtain is equipped with two or more (depending on type) dual-inlet, vibration free suspended centrifugal fans. Each fan is driven by a rotor motor on bearings, which are seal for life and no maintenance is required. The fan casing and the impeller are made of zinc coated plate steel. The motors, as standard, are fitted with thermal contacts. These thermal contacts break the circuit of the motor when the maximum permissible motor temperature is exceeded.

## HEATING COIL

**Water:** made up of 3/8" (S/M) and 1/2" (L/XL) copper tubes and aluminium fins. The water connections are G1" female thread. The maximum operating pressure is 6 bar at 110°C. Higher pressure levels, up to 10 bar, are available upon request. The permissible pressure difference is with S / M  $p \Delta 0.5$  bar, and with L / XL  $p \Delta 1.0$  bar.

**Electric:** made up of electric heating elements with aluminium fins. The exchanger is controlled by the electronic control unit and is fitted with overload protection. When the unit is switched off, the fans will continue to run until the heating coils have cooled off sufficiently.

**Hybrid:** a combination of water heating coil with an electrical stitched wire heating element.

## CONNECTIONS

To connect hot water and ambient units to the mains supply, they come with a fixed cable (approx. 2m long) with a moulded, earthed plug. The pipework connections for water and hybrid units and the connector plate are fitted on the top of the unit.

The mains cable to electrically heated (and hybrid) units must be connected within the unit. The top of the unit has a cable gland for feeding through the mains cable. A 5-core cable (3 phases + earth + neutral) is required for connection.

## STANDARD DELIVERY

Water-side control: 3 way valve and control (water and hybrid unit)

Modbus communication

Air filters

Ceiling mounting brackets

Duct connections R-model  
(ducts not included)

## OPTIONAL ACCESSORIES

Filter sensor

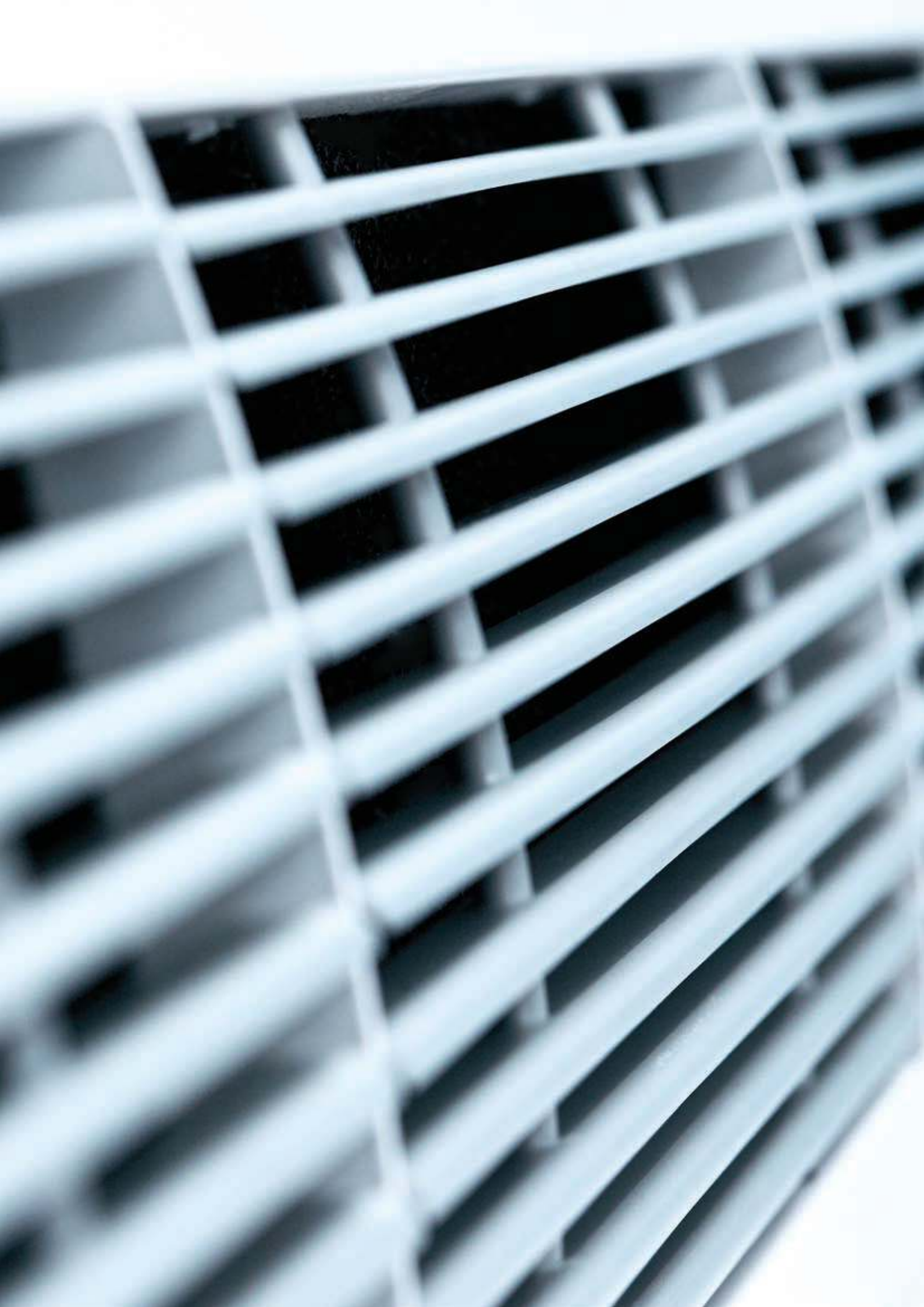
Wall mounting brackets: standard and design

Threaded rod covers

Door contact switch

External outdoor sensor

M8 threaded rods



# SR

Technical Details



# TECHNICAL EXPLANATION

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Because of the auto-active control of the SR comfort air curtain the outlet temperature varies at all speeds, depending on the situation. The SR is equipped with a low water temperature coil for every water temperature from 45/35°C to 90/70°C. The SR with hybrid heating is available for lower water temperatures than 45/35°C.

---

## SELECTION BOILER CAPACITY

For the selection of the boiler one can take the heating capacity at speed 6 at a discharge air temperature of 40°C.

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## MAXIMUM HEATING CAPACITY

For the maximum heating capacity of water, electric and hybrid units, the heating capacity has been taken at speed 6 with a discharge air temperature of 50°C.

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## WATER VOLUME

The water volumes for water units are based on a water temperature of 80/60°C, a room temperature of 20°C and an discharge air temperature of 40°C. For hybrid units the water volumes are based on a water temperature of 40/30°C, a room temperature of 20°C and a discharge air temperature of 35°C. With different values it is necessary to calculate the water flow rate using the formula below. The formula is also useful to determine the required water volume to achieve the necessary heating capacity or to determine the maximum heating capacity at a certain water volume.

$m_w$  = water flow rate [l/h]

$Q$  = capacity [kW]

$C_{pw}$  = specific heat of water (=4.18) [kJ/kg°C]

$\Delta T_w$  = temperature difference water [°C]

$\rho_w$  = density of water at 90°C (=0.984) [kg/l]

$$m_w = \frac{Q}{C_{pw} \Delta T_w \rho_w} 3600 [l/h]$$

## WATER PRESSURE LOSS

If different water temperatures than 80/60°C or 40/30°C (hybrid) are concerned, the water pressure loss can be roughly calculated with the formula below. To do this the water volume flow rate should first be calculated (see left).

$\Delta P_{w1}$  = water pressure loss, table values [kPa]

$\Delta P_{w2}$  = water pressure loss [kPa]

$m_{w1}$  = water flow rate, table values [l/h]

$m_{w2}$  = water flow rate calculated using formula [l/h]

$$\Delta p_{w_2} = \Delta p_{w_1} \left( \frac{m_{w_2}}{m_{w_1}} \right)^2 [kPa]$$

# TECHNICAL EXPLANATION

## SOUND

The sound data is based on the direct field, in a situation with an open door and a sound absorbing ceiling. The sound data for different situations can be determined by adding the adjacent values to the table values.

Closed door	+ 1 - 2 dB(A)
Acoustical "hard" ceiling	+ 2 - 3 dB(A)

Deviating distances and several units next to each other can be calculated with the table below. Data from the 1 m unit, measured at a distance of 3 m, is the basic assumption. The factors apply to all types of air curtains.

## CORRECTION FACTORS FOR SOUND PRESSURE IN dB(A)

Distance (m)	Total unit length (m)					
	1	1.5	2	2.5	3	3.5
1	+9.5	+11.3	+12.6	+13.5	+14.3	+15.0
2	+3.5	+5.3	+6.5	+7.5	+8.3	+9.0
3	0	+1.8	+3.0	+4.0	+4.8	+5.4
4	-2.5	-0.7	+0.5	+1.5	+2.3	+2.9
5	-4.4	-2.7	-1.4	-0.5	+0.3	+1



# WATER HEATING

## SR S-100-H3 / SR S-150-H3

SR S-100-H3							
Nominal unit length	m	1					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	0.88					
Max. Fan power	kW	0.2					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	11.4					
Water flow rate	l/h	590					
Water pressure drop with 3-port valve	kPa	2.82					
Water range	°C	80/60					
Weight casing style F / R / C	kg	46/60/58					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	440	600	680	880	1010	1130
Heating capacity	kW	2.2	3	3.4	4.4	5.1	7.6
Sound pressure level at 3m	dB(A)	27	33	37	42	46	48

SR S-150-H3							
Nominal unit length	m	1.5					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	1.32					
Max. Fan power	kW	0.3					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	17					
Water flow rate	l/h	935					
Water pressure drop with 3-port valve	kPa	8.1					
Water range	°C	80/60					
Weight casing style F / R / C	kg	65/87/82					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	660	910	1020	1320	1520	1700
Heating capacity	kW	3.3	4.5	5.1	6.6	7.6	11.4
Sound pressure level at 3m	dB(A)	28	35	39	43	47	50

# WATER HEATING

## SR S-200-H3 / SR S-250-H3

SR S-200-H3							
Nominal unit length	m	2					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	1.76					
Max. Fan power	kW	0.39					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	22.7					
Water flow rate	l/h	1280					
Water pressure drop with 3-port valve	kPa	16.97					
Water range	°C	80/60					
Weight casing style F / R / C	kg	79/108/102					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	880	1210	1360	1770	2020	2260
Heating capacity	kW	4.4	6.1	6.8	8.9	10.1	15.1
Sound pressure level at 3m	dB(A)	30	36	40	45	49	51

SR S-250-H3							
Nominal unit length	m	2.5					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	2.2					
Max. Fan power	kW	0.49					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	28.4					
Water flow rate	l/h	1625					
Water pressure drop with 3-port valve	kPa	30.15					
Water range	°C	80/60					
Weight casing style F / R / C	kg	102/138/130					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	1100	1510	1700	2210	2530	2830
Heating capacity	kW	5.5	7.6	8.5	11.1	12.7	18.9
Sound pressure level at 3m	dB(A)	31	37	41	46	50	52

# WATER HEATING

## SR M-100-H3 / SR M-150-H3

SR M-100-H3							
Nominal unit length	m	1					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	1.25					
Max. Fan power	kW	0.27					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	15.4					
Water flow rate	l/h	726					
Water pressure drop with 3-port valve	kPa	4.18					
Water range	°C	80/60					
Weight casing style F / R / C	kg	52/66/64					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	490	740	880	1180	1310	1530
Heating capacity	kW	2.4	3.7	4.4	5.9	6.6	10.3
Sound pressure level at 3m	dB(A)	25	34	39	45	50	53

SR M-150-H3							
Nominal unit length	m	1.5					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	1.87					
Max. Fan power	kW	0.4					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	23.1					
Water flow rate	l/h	1155					
Water pressure drop with 3-port valve	kPa	12.08					
Water range	°C	80/60					
Weight casing style F / R / C	kg	74/96/91					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	730	1100	1320	1780	1960	2300
Heating capacity	kW	3.7	5.5	6.6	8.9	9.8	15.4
Sound pressure level at 3m	dB(A)	26	35	40	47	51	54

# WATER HEATING

## SR M-200-H3 / SR M-250-H3

SR M-200-H3							
Nominal unit length	m	2					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	2.49					
Max. Fan power	kW	0.54					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	30.8					
Water flow rate	l/h	1584					
Water pressure drop with 3-port valve	kPa	25.38					
Water range	°C	80/60					
Weight casing style F / R / C	kg	92/121/115					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	970	1470	1750	2370	2610	3070
Heating capacity	kW	4.9	7.4	8.8	11.9	13.1	20.5
Sound pressure level at 3m	dB(A)	28	37	42	48	53	56

SR M-250-H3							
Nominal unit length	m	2.5					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	3.12					
Max. Fan power	kW	0.67					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	38.5					
Water flow rate	l/h	2013					
Water pressure drop with 3-port valve	kPa	45.11					
Water range	°C	80/60					
Weight casing style F / R / C	kg	114/150/142					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	1210	1840	2190	2960	3270	3840
Heating capacity	kW	6.1	9.2	11	14.9	16.4	25.7
Sound pressure level at 3m	dB(A)	29	38	43	49	54	57

# WATER HEATING

## SR L-100-H3 / SR L-150-H3

SR L-100-H3							
Nominal unit length	m	1					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	3.03					
Max. Fan power	kW	0.57					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity	kW	31.5					
Water flow rate	l/h	1327					
Water pressure drop with 3-port valve	kPa	5.38					
Water range	°C	80/60					
Weight casing style F / R / C	kg	64/82/80					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	1010	1440	1710	2240	2680	3140
Heating capacity	kW	5	7.2	8.6	11.2	13.5	21
Sound pressure level at 3m	dB(A)	33	40	43	48	53	56

SR L-150-H3							
Nominal unit length	m	1.5					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	4.55					
Max. Fan power	kW	0.86					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity	kW	47.3					
Water flow rate	l/h	2188					
Water pressure drop with 3-port valve	kPa	17.02					
Water range	°C	80/60					
Weight casing style F / R / C	kg	96/121/118					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	1510	2160	2560	3360	4020	4720
Heating capacity	kW	7.6	10.9	12.8	16.9	20.2	31.5
Sound pressure level at 3m	dB(A)	34	41	44	50	54	58

# WATER HEATING

## SR L-200-H3 / SR L-250-H3

SR L-200-H3							
Nominal unit length	m	2					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	6.07					
Max. Fan power	kW	1.15					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity	kW	63.1					
Water flow rate	l/h	3051					
Water pressure drop with 3-port valve	kPa	37.51					
Water range	°C	80/60					
Weight casing style F / R / C	kg	121/155/151					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	2010	2880	3410	4480	5360	6290
Heating capacity	kW	10.1	14.5	17.1	22.5	26.9	42.1
Sound pressure level at 3m	dB(A)	36	43	46	51	56	59

SR L-250-H3							
Nominal unit length	m	2.5					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	7.58					
Max. Fan power	kW	1.44					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity	kW	78.9					
Water flow rate	l/h	3642					
Water pressure drop with 3-port valve	kPa	25.37					
Water range	°C	80/60					
Weight casing style F / R / C	kg	154/197/191					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	2520	3610	4270	5600	6700	7860
Heating capacity	kW	12.6	18.1	21.4	28.1	33.6	52.6
Sound pressure level at 3m	dB(A)	37	44	47	52	57	60



# WATER HEATING

## SR XL-100-H3 / SR XL-150-H3

SR XL-100-H3							
Nominal unit length	m	1					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	5.02					
Max. Fan power	kW	1.03					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity	kW	39.6					
Water flow rate	l/h	1513					
Water pressure drop with 3-port valve	kPa	6.9					
Water range	°C	80/60					
Weight casing style F / R / C	kg	68/86/84					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	1170	1580	2030	2720	3370	3950
Heating capacity	kW	5.9	7.9	10.2	13.7	16.9	26.4
Sound pressure level at 3m	dB(A)	38	42	47	52	57	62

SR XL-150-H3							
Nominal unit length	m	1.5					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	7.53					
Max. Fan power	kW	1.54					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity	kW	59.4					
Water flow rate	l/h	2506					
Water pressure drop with 3-port valve	kPa	21.99					
Water range	°C	80/60					
Weight casing style F / R / C	kg	102/127/124					
Air inlet temperature	°C				20		
Discharge air temperature	°C			35			40
Speed		1	2	3	4	5	6
Air volume	m³/h	1750	2370	3050	4090	5060	5920
Heating capacity	kW	8.8	11.9	15.3	20.5	25.4	39.6
Sound pressure level at 3m	dB(A)	39	44	48	54	59	63

# WATER HEATING

## SR XL-200-H3 / SR XL-250-H3

SR XL-200-H3							
Nominal unit length	m	2					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	10.04					
Max. Fan power	kW	2.05					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity	kW	79.2					
Water flow rate	l/h	3502					
Water pressure drop with 3-port valve	kPa	48.57					
Water range	°C	80/60					
Weight casing style F / R / C	kg	130/164/160					
Air inlet temperature	°C	20					
Discharge air temperature	°C	35					40
Speed		1	2	3	4	5	6
Air volume	m³/h	2330	3170	4060	5450	6740	7890
Heating capacity	kW	11.7	15.9	20.4	27.3	33.8	52.8
Sound pressure level at 3m	dB(A)	41	45	50	55	60	65

SR XL-250-H3							
Nominal unit length	m	2.5					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	12.55					
Max. Fan power	kW	2.57					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity	kW	99					
Water flow rate	l/h	4172					
Water pressure drop with 3-port valve	kPa	33.05					
Water range	°C	80/60					
Weight casing style F / R / C	kg	163/206/200					
Air inlet temperature	°C	20					
Discharge air temperature	°C	35					40
Speed		1	2	3	4	5	6
Air volume	m³/h	2920	3960	5080	6810	8430	9870
Heating capacity	kW	14.6	19.9	25.5	34.2	42.3	66
Sound pressure level at 3m	dB(A)	42	46	51	56	61	66

# ELECTRICAL HEATING

## SR S-100-E / SR S-150-E

SR S-100-E							
Nominal unit length	m	1					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	16/10					
Max. Current consumption (unit)	A	16					
Max. Fan power	kW	0.2					
Max. Power consumption, heating	kW	10.5					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	10					
Weight casing style F / R / C	kg	55/65/63					
Air inlet temperature	°C	20					
Discharge air temperature	°C	35					
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	440	600	680	880	1010	1130
Heating capacity	kW	2.2	3	3.4	4.4	5.1	5.7
Sound pressure level at 3m	dB(A)	27	33	37	42	46	48

SR S-150-E							
Nominal unit length	m	1,5					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	16/10					
Max. Current consumption (unit)	A	23,8					
Max. Fan power	kW	0,3					
Max. Power consumption, heating	kW	15,6					
Max. Specific fan power	W/l/s	0,63					
Max. Heating capacity	kW	14,8					
Weight casing style F / R / C	kg	76/92/87					
Air inlet temperature	°C	20					
Discharge air temperature	°C	35					
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	660	910	1020	1320	1520	1700
Heating capacity	kW	3.3	4.5	5.1	6.6	7.6	8.5
Sound pressure level at 3m	dB(A)	28	35	39	43	47	50

# ELECTRICAL HEATING

## SR S-200-E / SR S-250-E

SR S-200-E							
Nominal unit length	m	2					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	16/10					
Max. Current consumption (unit)	A	32.1					
Max. Fan power	kW	0.39					
Max. Power consumption, heating	kW	21					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	20					
Weight casing style F / R / C	kg	97/118/112					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	880	1210	1360	1770	2020	2260
Heating capacity	kW	4.4	6.1	6.8	8.9	10.1	11.4
Sound pressure level at 3m	dB(A)	30	36	40	45	49	51

SR S-250-E							
Nominal unit length	m	2.5					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	16/10					
Max. Current consumption (unit)	A	39.9					
Max. Fan power	kW	0.49					
Max. Power consumption, heating	kW	26.1					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	24.8					
Weight casing style F / R / C	kg	118/144/136					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1100	1510	1700	2210	2530	2830
Heating capacity	kW	5.5	7.6	8.5	11.1	12.7	14.2
Sound pressure level at 3m	dB(A)	31	37	41	46	50	52

# ELECTRICAL HEATING

## SR M-100-E / SR M-150-E

SR M-100-E							
Nominal unit length	m	1					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	16/10					
Max. Current consumption (unit)	A	22.7					
Max. Fan power	kW	0.27					
Max. Power consumption, heating	kW	14					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	13.3					
Weight casing style F / R / C	kg	59/69/67					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	490	740	880	1180	1310	1530
Heating capacity	kW	2.4	3.7	4.4	5.9	6.6	7.7
Sound pressure level at 3m	dB(A)	25	34	39	45	50	53

SR M-150-E							
Nominal unit length	m	1.5					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	16/10					
Max. Current consumption (unit) a 33,8	A	23.8					
Max. Fan power	kW	0.4					
Max. Power consumption, heating	kW	20.8					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	19.8					
Weight casing style F / R / C	kg	85/101/96					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	730	1100	1320	1780	1960	2300
Heating capacity	kW	3.7	5.5	6.6	8.9	9.8	11.6
Sound pressure level at 3m	dB(A)	26	35	40	47	51	54

# ELECTRICAL HEATING

## SR M-200-E / SR M-250-E

SR M-200-E							
Nominal unit length	m	2					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	45.5					
Max. Fan power	kW	0.54					
Max. Power consumption, heating	kW	28					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	26.6					
Weight casing style F / R / C	kg	108/129/123					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	970	1470	1750	2370	2610	3070
Heating capacity	kW	4.9	7.4	8.8	11.9	13.1	15.4
Sound pressure level at 3m	dB(A)	28	37	42	48	53	56

SR M-250-E							
Nominal unit length	m	2.5					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	56.5					
Max. Fan power	kW	0.67					
Max. Power consumption, heating	kW	34.8					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity	kW	33.1					
Weight casing style F / R / C	kg	130/156/148					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1210	1840	2190	2960	3270	3840
Heating capacity	kW	6.1	9.2	11	14.9	16.4	19.3
Sound pressure level at 3m	dB(A)	29	38	43	49	54	57



# ELECTRICAL HEATING

## SR L-100-E / SR L-150-E

SR L-100-E							
Nominal unit length	m	1					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	37.9					
Max. Fan power	kW	0.57					
Max. Power consumption, heating	kW	24.5					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity	kW	23.3					
Weight casing style F / R / C	kg	74/87/85					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1010	1440	1710	2240	2680	3140
Heating capacity	kW	5	7.2	8.6	11.2	13.5	15.8
Sound pressure level at 3m	dB(A)	33	40	43	48	53	56

SR L-150-E							
Nominal unit length	m	1.5					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	56.3					
Max. Fan power	kW	0.86					
Max. Power consumption, heating	kW	36.4					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity	kW	34.6					
Weight casing style F / R / C	kg	111/129/126					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1510	2160	2560	3360	4020	4720
Heating capacity	kW	7.6	10.9	12.8	16.9	20.2	23.7
Sound pressure level at 3m	dB(A)	34	41	44	50	54	58

# ELECTRICAL HEATING

## SR L-200-E / SR L-250-E

SR L-200-E							
Nominal unit length	m	2					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	75.8					
Max. Fan power	kW	1.15					
Max. Power consumption, heating	kW	49					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity	kW	46.6					
Weight casing style F / R / C	kg	146/171/167					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2010	2880	3410	4480	5360	6290
Heating capacity	kW	10.1	14.5	17.1	22.5	26.9	31.5
Sound pressure level at 3m	dB(A)	36	43	46	51	56	59

SR L-250-E							
Nominal unit length	m	2.5					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	94.2					
Max. Fan power	kW	1.44					
Max. Power consumption, heating	kW	60.9					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity	kW	57.9					
Weight casing style F / R / C	kg	181/213/207					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2520	3610	4270	5600	6700	7860
Heating capacity	kW	12.6	18.1	21.4	28.1	33.6	39.4
Sound pressure level at 3m	dB(A)	37	44	47	52	57	60

# ELECTRICAL HEATING

## SR XL-100-E / SR XL-150-E

SR XL-100-E							
Nominal unit length	m	1					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	39.7					
Max. Fan power	kW	1.03					
Max. Power consumption, heating	kW	24.5					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity	kW	23.3					
Weight casing style F / R / C	kg	78/91/89					
Air inlet temperature	°C	20					
Discharge air temperature	°C	35					
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1170	1580	2030	2720	3370	3950
Heating capacity	kW	5.9	7.9	10.2	13.7	16.9	19.8
Sound pressure level at 3m	dB(A)	38	42	47	52	57	62

SR XL-150-E							
Nominal unit length	m	1.5					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	59.1					
Max. Fan power	kW	1.54					
Max. Power consumption, heating	kW	36.4					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity	kW	34.6					
Weight casing style F / R / C	kg	117/135/132					
Air inlet temperature	°C	20					
Discharge air temperature	°C	35					
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1750	2370	3050	4090	5060	5920
Heating capacity	kW	8.8	11.9	15.3	20.5	25.4	29.7
Sound pressure level at 3m	dB(A)	39	44	48	54	59	63

# ELECTRICAL HEATING

## SR XL-200-E / SR XL-250-E

SR XL-200-E							
Nominal unit length	m	2					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	79.4					
Max. Fan power	kW	2.05					
Max. Power consumption, heating	kW	49					
Max. Specific fan power	W/l/s	0.94					
Max heating capacity	kW	46.6					
Weight casing style F / R / C	kg	155/180/176					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2330	3170	4060	5450	6740	7890
Heating capacity	kW	11.7	15.9	20.4	27.3	33.8	39.6
Sound pressure level at 3m	dB(A)	41	45	50	55	60	65

SR XL-250-E							
Nominal unit length	m	2.5					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	98.8					
Max. Fan power	kW	2.57					
Max. Power consumption, heating	kW	60.9					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity	kW	57.9					
Weight casing style F / R / C	kg	190/222/216					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2920	3960	5080	6810	8430	9870
Heating capacity	kW	14.6	19.9	25.5	34.2	42.3	49.5
Sound pressure level at 3m	dB(A)	42	46	51	56	61	66

# HYBRID HEATING

## SR S-100-H3E / SR S-150-H3E

SR S-100-H3E							
Nominal unit length	m	1					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	6/4					
Max. Current consumption (unit)	A	8.1					
Max. Fan power	kW	0.2					
Max. Power consumption, heating	kW	5					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity - water	kW	11.4					
Max. Heating capacity - electric	kW	4.8					
Water flow rate	l/h	302					
Water pressure drop with 3-port valve	kPa	0.84					
Water range	°C	40/30					
Weight casing style F / R / C	kg	50/60/58					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	440	600	680	880	1010	1130
Heating capacity - water	kW	1.8	2.3	2.5	3	3.2	3.5
Heating capacity - electric	kW	0.4	0.7	0.9	1.5	1.8	2.2
Sound pressure level at 3m	dB(A)	27	33	37	42	46	48

SR S-150-H3E							
Nominal unit length	m	1.5					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	6/4					
Max. Current consumption (unit)	A	12.2					
Max. Fan power	kW	0.3					
Max. Power consumption, heating	kW	7.5					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity - water	kW	17					
Max. Heating capacity - electric	kW	7.1					
Water flow rate	l/h	505					
Water pressure drop with 3-port valve	kPa	2.71					
Water range	°C	40/30					
Weight casing style F / R / C	kg	71/87/82					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	660	910	1020	1320	1520	1700
Heating capacity - water	kW	3	3.8	4.1	4.9	5.4	5.9
Heating capacity - electric	kW	0.4	0.8	1	1.7	2.2	2.7
Sound pressure level at 3m	dB(A)	28	35	39	43	47	50

# HYBRID HEATING

## SR S-200-H3E / SR S-250-H3E

SR S-200-H3E							
Nominal unit length	m	2					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	6/4					
Max. Current consumption (unit)	A	16.3					
Max. Fan power	kW	0.39					
Max. Power consumption, heating	kW	10					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity - water	kW	22.7					
Max. Heating capacity - electric	kW	9.5					
Water flow rate	l/h	709					
Water pressure drop with 3-port valve	kPa	6.03					
Water range	°C	40/30					
Weight casing style F / R / C	kg	87/108/102					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	880	1210	1360	1770	2020	2260
Heating capacity - water	kW	4.1	5.2	5.7	6.9	7.6	8.2
Heating capacity - electric	kW	0.3	0.8	1.1	1.9	2.5	3.1
Sound pressure level at 3m	dB(A)	30	36	40	45	49	51

SR S-250-H3E							
Nominal unit length	m	2.5					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	6/4					
Max. Current consumption (unit)	A	20.3					
Max. Fan power	kW	0.49					
Max. Power consumption, heating	kW	12.5					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity - water	kW	28.4					
Max. Heating capacity - electric	kW	11.9					
Water flow rate	l/h	913					
Water pressure drop with 3-port valve	kPa	11.11					
Water range	°C	40/30					
Weight casing style F / R / C	kg	112/138/130					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1100	1510	1700	2210	2530	2830
Heating capacity - water	kW	5.3	6.7	7.3	8.9	9.8	10.6
Heating capacity - electric	kW	0.3	0.9	1.2	2.2	2.9	3.6
Sound pressure level at 3m	dB(A)	31	37	41	46	50	52



# HYBRID HEATING

## SR M-100-H3E / SR M-150-H3E

SR M-100-H3E							
Nominal unit length	m	1					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	6/4					
Max. Current consumption (unit)	A	8.5					
Max. Fan power	kW	0.27					
Max. Power consumption, heating	kW	5					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity - water	kW	15.4					
Max. Heating capacity - electric	kW	4.8					
Water flow rate	l/h	366					
Water pressure drop with 3-port valve	kPa	1.21					
Water range	°C	40/30					
Weight casing style F / R / C	kg	56/66/64					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	490	740	880	1180	1310	1530
Heating capacity - water	kW	1.9	2.6	3	3.6	3.8	4.2
Heating capacity - electric	kW	0.5	1.1	1.4	2.3	2.7	3.5
Sound pressure level at 3m	dB(A)	25	34	39	45	50	53

SR M-150-H3E							
Nominal unit length	m	1.5					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	6/4					
Max. Current consumption (unit)	A	12.7					
Max. Fan power	kW	0.4					
Max. Power consumption, heating	kW	7.5					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity - water	kW	23.1					
Max. Heating capacity - electric	kW	7.1					
Water flow rate	l/h	616					
Water pressure drop with 3-port valve	kPa	3.95					
Water range	°C	40/30					
Weight casing style F / R / C	kg	80/96/91					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	730	1100	1320	1780	1960	2300
Heating capacity - water	kW	3.2	4.3	4.9	6	6.4	7.1
Heating capacity - electric	kW	0.5	1.2	1.7	2.9	3.4	4.4
Sound pressure level at 3m	dB(A)	26	35	40	47	51	54

# HYBRID HEATING

## SR M-200-H3E / SR M-250-H3E

SR M-200-H3E							
Nominal unit length	m	2					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	6/4					
Max. Current consumption (unit)	A	17					
Max. Fan power	kW	0.54					
Max. Power consumption, heating	kW	10					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity - water	kW	30.8					
Max. Heating capacity - electric	kW	9.5					
Water flow rate	l/h	868					
Water pressure drop with 3-port valve	kPa	8.82					
Water range °C 40/30	°C	40/30					
Weight casing style F / R / C	kg	100/121/115					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	970	1470	1750	2370	2610	3070
Heating capacity - water	kW	4.4	6.1	6.9	8.5	9.1	10.1
Heating capacity - electric	kW	0.4	1.3	1.9	3.4	4.1	5.3
Sound pressure level at 3m	dB(A)	28	37	42	48	53	56

SR M-250-H3E							
Nominal unit length	m	2.5					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	6/4					
Max. Current consumption (unit)	A	21.2					
Max. Fan power	kW	0.67					
Max. Power consumption, heating	kW	12.5					
Max. Specific fan power	W/l/s	0.63					
Max. Heating capacity - water	kW	38.5					
Max. Heating capacity - electric	kW	11.9					
Water flow rate	l/h	1121					
Water pressure drop with 3-port valve	kPa	16.29					
Water range	°C	40/30					
Weight casing style F / R / C	kg	124/150/142					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1210	1840	2190	2960	3270	3840
Heating capacity - water	kW	5.7	7.8	8.8	10.9	11.7	13
Heating capacity - electric	kW	0.4	1.4	2.2	3.9	4.7	6.3
Sound pressure level at 3m	dB(A)	29	38	43	49	54	57

# HYBRID HEATING

## SR L-100-H3E / SR L-150-H3E

SR L-100-H3E							
Nominal unit length	m	1					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	15.8					
Max. Fan power	kW	0.57					
Max. Power consumption, heating	kW	8.8					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity - water	kW	31.5					
Max. Heating capacity - electric	kW	8.4					
Water flow rate	l/h	593					
Water pressure drop with 3-port valve	kPa	1.26					
Water range	°C	40/30					
Weight casing style F / R / C	kg	69/82/80					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1010	1440	1710	2240	2680	3140
Heating capacity - water	kW	3.5	4.4	4.9	5.7	6.3	6.9
Heating capacity - electric	kW	1.5	2.8	3.7	5.5	7.1	8.4
Sound pressure level at 3m	dB(A)	33	40	43	48	53	56

SR L-150-H3E							
Nominal unit length	m	1.5					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	23.7					
Max. Fan power	kW	0.86					
Max. Power consumption, heating	kW	13.2					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity - water	kW	47.3					
Max. Heating capacity - electric	kW	12.5					
Water flow rate	l/h	1087					
Water pressure drop with 3-port valve	kPa	4.94					
Water range	°C	40/30					
Weight casing style F / R / C	kg	103/121/118					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1510	2160	2560	3360	4020	4720
Heating capacity - water	kW	6.2	7.9	8.8	10.4	11.5	12.6
Heating capacity - electric	kW	1.4	3	4.1	6.5	8.7	11.1
Sound pressure level at 3m	dB(A)	34	41	44	50	54	58

# HYBRID HEATING

## SR L-200-H3E / SR L-250-H3E

SR L-200-H3E							
Nominal unit length	m	2					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	31.6					
Max. Fan power	kW	1.15					
Max. Power consumption, heating	kW	17.6					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity - water	kW	63.1					
Max. Heating capacity - electric	kW	16.7					
Water flow rate	l/h	1588					
Water pressure drop with 3-port valve	kPa	12.04					
Water range °C 40/30	°C	40/30					
Weight casing style F / R / C	kg	130/155/151					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2010	2880	3410	4480	5360	6290
Heating capacity - water	kW	8.8	11.3	12.7	15.1	16.8	18.4
Heating capacity - electric	kW	1.3	3.1	4.4	7.4	10.1	13.1
Sound pressure level at 3m	dB(A)	36	43	46	51	56	59

SR L-250-H3E							
Nominal unit length	m	2.5					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	39.5					
Max. Fan power	kW	1.44					
Max. Power consumption, heating	kW	22					
Max. Specific fan power	W/l/s	0.66					
Max. Heating capacity - water	kW	78.9					
Max. Heating capacity - electric	kW	20.9					
Water flow rate	l/h	1768					
Water pressure drop with 3-port valve	kPa	6.51					
Water range °C 40/30	°C	40/30					
Weight casing style F / R / C	kg	165/197/191					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2520	3610	4270	5600	6700	7860
Heating capacity - water	kW	10.1	12.8	14.3	16.9	18.7	20.5
Heating capacity - electric	kW	2.5	5.3	7.1	11.2	14.9	18.9
Sound pressure level at 3m	dB(A)	37	44	47	52	57	60

# HYBRID HEATING

## SR XL-100-H3E / SR XL-150-H3E

SR XL-100-H3E							
Nominal unit length	m	1					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	17.8					
Max. Fan power	kW	1.03					
Max. Power consumption, heating	kW	8.8					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity - water	kW	39.6					
Max. Heating capacity - electric	kW	8.4					
Water flow rate	l/h	667					
Water pressure drop with 3-port valve	kPa	1.57					
Water range °C 40/30	°C	40/30					
Weight casing style F / R / C	kg	73/86/84					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1170	1580	2030	2720	3370	3950
Heating capacity - water	kW	3.9	4.7	5.4	6.4	7.1	7.7
Heating capacity - electric	kW	2	3.3	4.8	7.3	8.4	8.4
Sound pressure level at 3m	dB(A)	38	42	47	52	57	62

SR XL-150-H3E							
Nominal unit length	m	1.5					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	26.7					
Max. Fan power	kW	1.54					
Max. Power consumption, heating	kW	13.2					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity - water	kW	59.4					
Max. Heating capacity - electric	kW	12.5					
Water flow rate	l/h	1232					
Water pressure drop with 3-port valve	kPa	6.25					
Water range	°C	40/30					
Weight casing style F / R / C	kg	109/127/124					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	1750	2370	3050	4090	5060	5920
Heating capacity - water	kW	6.8	8.4	9.8	11.6	13.1	14.3
Heating capacity - electric	kW	1.9	3.5	5.5	8.9	12.3	12.5
Sound pressure level at 3m	dB(A)	39	44	48	54	59	63

# HYBRID HEATING

## SR XL-200-H3E / SR XL-250-H3E

SR XL-200-H3E							
Nominal unit length	m	2					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	35.5					
Max. Fan power	kW	2.05					
Max. Power consumption, heating	kW	17.6					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity - water	kW	79.2					
Max. Heating capacity - electric	kW	16.7					
Water flow rate	l/h	1806					
Water pressure drop with 3-port valve	kPa	15.3					
Water range °C 40/30	°C	40/30					
Weight casing style F / R / C	kg	139/164/160					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2330	3170	4060	5450	6740	7890
Heating capacity - water	kW	9.8	12.1	14.2	16.9	19.2	20.9
Heating capacity - electric	kW	1.9	3.8	6.2	10.4	14.7	16.7
Sound pressure level at 3m	dB(A)	41	45	50	55	60	65

SR XL-250-H3E							
Nominal unit length	m	2.5					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	400/3N/50					
Max. Cable size allowed (solid/stranded)	mm <sup>2</sup>	35/35					
Max. Current consumption (unit)	A	44.4					
Max. Fan power	kW	2.57					
Max. Power consumption, heating	kW	22					
Max. Specific fan power	W/l/s	0.94					
Max. Heating capacity - water	kW	99					
Max. Heating capacity - electric	kW	20.9					
Water flow rate	l/h	2002					
Water pressure drop with 3-port valve	kPa	8.27					
Water range	°C	40/30					
Weight casing style F / R / C	kg	174/206/200					
Air inlet temperature	°C				20		
Discharge air temperature	°C				35		
Speed		1	2	3	4	5	6
Air volume	m <sup>3</sup> /h	2920	3960	5080	6810	8430	9870
Heating capacity - water	kW	11.2	13.6	15.9	18.9	21.3	23.2
Heating capacity - electric	kW	3.5	6.2	9.6	15.3	20.9	20.9
Sound pressure level at 3m	dB(A)	42	46	51	56	61	66



# AMBIENT

## SR S-100-A / SR S-150-A / SR S-200-A / SR S-250-A

SR S-100-A							
Nominal unit length	m	1					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	0.88					
Max. Fan power	kW	0.2					
Max. Specific fan power	W/l/s	0.63					
Weight casing style F / R / C	kg	40/54/52					
Speed		1	2	3	4	5	6
Air volume	m³/h	440	600	680	880	1010	1130
Sound pressure level at 3m	dB(A)	27	33	37	42	46	48

SR S-150-A							
Nominal unit length	m	1.5					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	1.32					
Max. Fan power	kW	0.3					
Max. Specific fan power	W/l/s	0.63					
Weight casing style F / R / C	kg	58/80/75					
Speed		1	2	3	4	5	6
Air volume	m³/h	660	910	1020	1320	1520	1700
Sound pressure level at 3m	dB(A)	28	35	39	43	47	50

SR S-200-A							
Nominal unit length	m	2					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	1.76					
Max. Fan power	kW	0.39					
Max. Specific fan power	W/l/s	0.63					
Weight casing style F / R / C	kg	70/99/93					
Speed		1	2	3	4	5	6
Air volume	m³/h	880	1210	1360	1770	2020	2260
Sound pressure level at 3m	dB(A)	30	36	40	45	49	51

SR S-250-A							
Nominal unit length	m	2.5					
Door height	m	2 - 2.4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	2.2					
Max. Fan power	kW	0.49					
Max. Specific fan power	W/l/s	0.63					
Weight casing style F / R / C	kg	91/127/119					
Speed		1	2	3	4	5	6
Air volume	m³/h	1100	1510	1700	2210	2530	2830
Sound pressure level at 3m	dB(A)	31	37	41	46	50	52

# AMBIENT

## SR M-100-A / SR M-150-A / SR M-200-A / SR M-250-A

SR M-100-A							
Nominal unit length	m	1					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	1.25					
Max. Fan power	kW	0.27					
Max. Specific fan power	W/l/s	0.63					
Weight casing style F / R / C	kg	46/60/58					
Speed		1	2	3	4	5	6
Air volume	m³/h	490	740	880	1180	1310	1530
Sound pressure level at 3m	dB(A)	25	34	39	45	50	53

SR M-150-A							
Nominal unit length	m	1.5					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	1.87					
Max. Fan power	kW	0.4					
Max. Specific fan power	W/l/s	0.63					
Weight casing style F / R / C	kg	66/88/83					
Speed		1	2	3	4	5	6
Air volume	m³/h	730	1100	1320	1780	1960	2300
Sound pressure level at 3m	dB(A)	26	35	40	47	51	54

SR M-200-A							
Nominal unit length	m	2					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	2.49					
Max. Fan power	kW	0.54					
Max. Specific fan power	W/l/s	0.63					
Weight casing style F / R / C	kg	83/112/106					
Speed		1	2	3	4	5	6
Air volume	m³/h	970	1470	1750	2370	2610	3070
Sound pressure level at 3m	dB(A)	28	37	42	48	53	56

SR M-250-A							
Nominal unit length	m	2.5					
Door height	m	2.2 - 2.8					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	3.12					
Max. Fan power	kW	0.67					
Max. Specific fan power	W/l/s	0.63					
Weight casing style F / R / C	kg	103/139/131					
Speed		1	2	3	4	5	6
Air volume	m³/h	1210	1840	2190	2960	3270	3840
Sound pressure level at 3m	dB(A)	29	38	43	49	54	57

# AMBIENT

## SR L-100-A / SR L-150-A / SR L-200-A / SR L-250-A

SR L-100-A							
Nominal unit length	m	1					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	3.03					
Max. Fan power	kW	0.57					
Max. Specific fan power	W/l/s	0.66					
Weight casing style F / R / C	kg	56/74/72					
Speed		1	2	3	4	5	6
Air volume	m³/h	1010	1440	1710	2240	2680	3140
Sound pressure level at 3m	dB(A)	33	40	43	48	53	56

SR L-150-A							
Nominal unit length	m	1.5					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	4.55					
Max. Fan power	kW	0.86					
Max. Specific fan power	W/l/s	0.66					
Weight casing style F / R / C	kg	85/110/107					
Speed		1	2	3	4	5	6
Air volume	m³/h	1510	2160	2560	3360	4020	4720
Sound pressure level at 3m	dB(A)	34	41	44	50	54	58

SR L-200-A							
Nominal unit length	m	2					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	6.07					
Max. Fan power	kW	1.15					
Max. Specific fan power	W/l/s	0.66					
Weight casing style F / R / C	kg	109/143/139					
Speed		1	2	3	4	5	6
Air volume	m³/h	2010	2880	3410	4480	5360	6290
Sound pressure level at 3m	dB(A)	36	43	46	51	56	59

SR L-250-A							
Nominal unit length	m	2.5					
Door height	m	2.5 - 3.3					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	7.58					
Max. Fan power	kW	1.44					
Max. Specific fan power	W/l/s	0.66					
Weight casing style F / R / C	kg	139/182/176					
Speed		1	2	3	4	5	6
Air volume	m³/h	2520	3610	4270	5600	6700	7860
Sound pressure level at 3m	dB(A)	37	44	47	52	57	60

# AMBIENT

## SR XL-100-A / SR XL-150-A / SR XL-200-A / SR XL-250-A

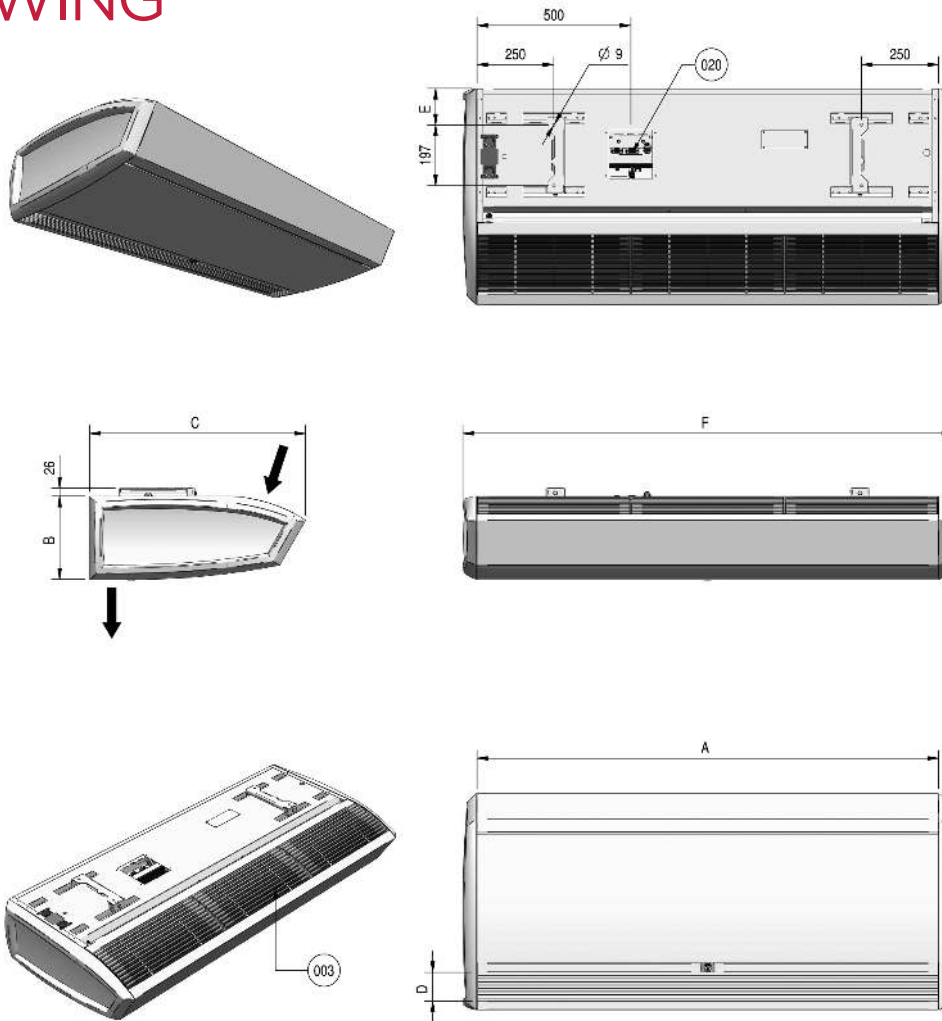
SR XL-100-A							
Nominal unit length	m	1					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	5.02					
Max. Fan power	kW	1.03					
Max. Specific fan power	W/l/s	0.94					
Weight casing style F / R / C	kg	60/78/76					
Speed		1	2	3	4	5	6
Air volume	m³/h	1170	1580	2030	2720	3370	3950
Sound pressure level at 3m	dB(A)	38	42	47	52	57	62

SR XL-150-A							
Nominal unit length	m	1.5					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	7.53					
Max. Fan power	kW	1.54					
Max. Specific fan power	W/l/s	0.94					
Weight casing style F / R / C	kg	91/116/113					
Speed		1	2	3	4	5	6
Air volume	m³/h	1750	2370	3050	4090	5060	5920
Sound pressure level at 3m	dB(A)	39	44	48	54	59	63

SR XL-200-A							
Nominal unit length	m	2					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	10.04					
Max. Fan power	kW	2.05					
Max. Specific fan power	W/l/s	0.94					
Weight casing style F / R / C	kg	118/152/148					
Speed		1	2	3	4	5	6
Air volume	m³/h	2330	3170	4060	5450	6740	7890
Sound pressure level at 3m	dB(A)	41	45	50	55	60	65

SR XL-250-A							
Nominal unit length	m	2.5					
Door height	m	3 - 4					
Electrical supply	V/ph/Hz	230/1/50					
Max. Input current (1 phase)	A	12.55					
Max. Fan power	kW	2.57					
Max. Specific fan power	W/l/s	0.94					
Weight casing style F / R / C	kg	148/191/185					
Speed		1	2	3	4	5	6
Air volume	m³/h	2920	3960	5080	6810	8430	9870
Sound pressure level at 3m	dB(A)	42	46	51	56	61	66

# FREE HANGING MODEL DRAWING



	A	B	C	D	E	F
<b>SR S / M 100</b>	1000	270	702	93	119	1093
<b>SR S / M 150</b>	1500	270	702	93	119	1593
<b>SR S / M 200</b>	2000	270	702	93	119	2093
<b>SR S / M 250</b>	2500	270	702	93	119	2593
<b>SR L / XL 100</b>	1000	370	940	125	200	1138
<b>SR L / XL 150</b>	1500	370	940	125	200	1638
<b>SR L / XL 200</b>	2000	370	940	125	200	2138
<b>SR L / XL 250</b>	2500	370	940	125	200	2638

## EXPLANATION OF DIMENSIONAL SKETCHES

### ○ Models

**Free hanging:** by removing the end panels, the units are easy to interlink.

**Cassette:** aperture sizes = (A+8) x (C+8) mm.

**Recessed:** aperture sizes:

- for air discharge (A+8) x (D+8) mm
- for air inlet: (A+8) x (I+8) mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

### ○ Wall suspension brackets and threaded rod covers

- Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.

### ○ Note

- All dimensions are in mm.
- SR 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

## INDEX

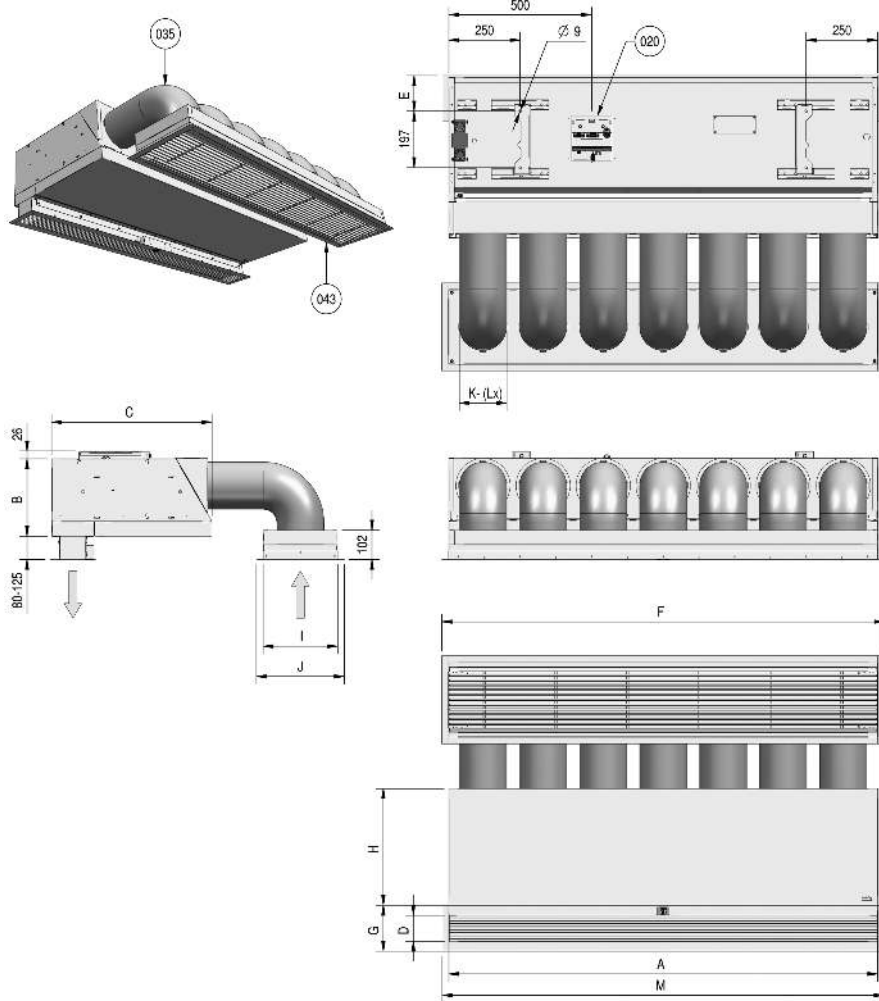
The corresponding numbers in the dimensional sketches are explained here:

**3**-Air inlet grille with filter. **20**-Connection plate. **35**-Ducts are not supplied. **43**-Finishing sections supplied separately.

**36**-Eye bolt M6. **7**-Air vent. **50**-Gland. **97**-Return (S/M). **98**-Return (L/XL). **99**-Supply (S/M). **100**-Supply (L/XL).

**12**-Pipework. **87**-Threaded rod covers (position is flexible).

# RECESSED MODEL DRAWING



	A	B	C	D	E	F	G	H	I	J	K	L	M
SR S / M 100	1000	270	561	90	125	1048	160	406	261	307	Ø160	5	1045
SR S / M 150	1500	270	561	90	125	1548	160	406	261	307	Ø160	7	1545
SR S / M 200	2000	270	561	90	125	2048	160	406	261	307	Ø160	10	2045
SR S / M 250	2500	270	561	90	125	2548	160	406	261	307	Ø160	12	2545
SR L / XL 100	1000	370	745	122	206	1048	191	559	361	407	Ø250	3	1045
SR L / XL 150	1500	370	745	122	206	1548	191	559	361	407	Ø250	5	1545
SR L / XL 200	2000	370	745	122	206	2048	191	559	361	407	Ø250	6	2045
SR L / XL 250	2500	370	745	122	206	2548	191	559	361	407	Ø250	8	2545

## EXPLANATION OF DIMENSIONAL SKETCHES

 Models

**Free hanging:** by removing the end panels, the units are easy to interlink.

**Cassette:** aperture sizes =  $(A+8) \times (C+8)$  mm.

**Recessed:** aperture sizes:

- for air discharge (A+8) x (D+8) mm
- for air inlet: (A+8) x (I+8) mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

- Wall suspension brackets and threaded rod covers
  - Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.
- Note
  - All dimensions are in mm.
  - SR 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

## INDEX

The corresponding numbers in the dimensional sketches are explained here:

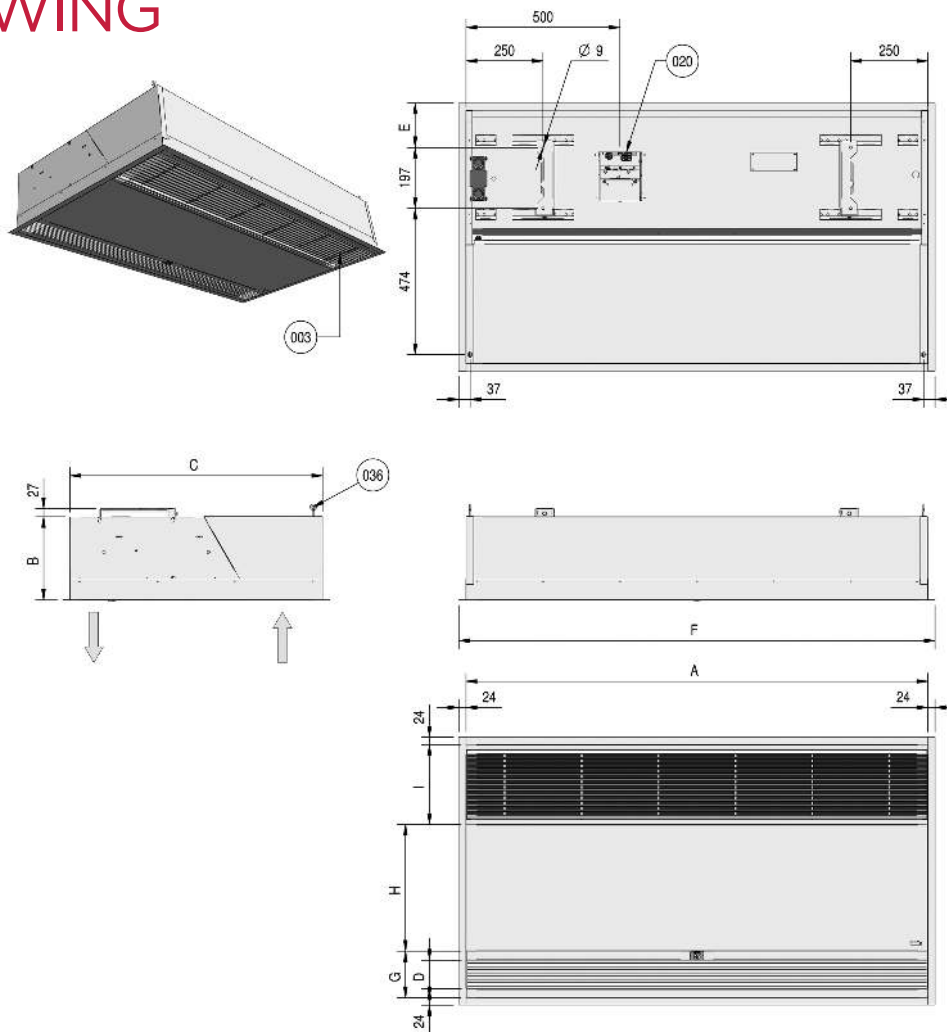
**3**-Air inlet grille with filter. **20**-Connection plate. **35**-Ducts are not supplied. **43**-Finishing sections supplied separately.

**36**-Eye bolt M6. **7**-Air vent. **50**-Gland. **97**-Return (S/M). **98**-Return (L/XL). **99**-Supply (S/M). **100**-Supply (L/XL).

**12**—Pipework. **87**—Threaded rod covers (position is flexible).



# CASSETTE MODEL DRAWING



	A	B	C	D	E	F	G	H	I
<b>SR S / M 100</b>	1000	270	821	93	144	1048	150	411	260
<b>SR S / M 150</b>	1500	270	821	93	144	1548	150	411	260
<b>SR S / M 200</b>	2000	270	821	93	144	2048	150	411	260
<b>SR S / M 250</b>	2500	270	821	93	144	2548	150	411	260
<b>SR L / XL 100</b>	1000	370	1105	125	175	1048	182	564	360
<b>SR L / XL 150</b>	1500	370	1105	125	175	1548	182	564	360
<b>SR L / XL 200</b>	2000	370	1105	125	175	2048	182	564	360
<b>SR L / XL 250</b>	2500	370	1105	125	175	2548	182	564	360

## EXPLANATION OF DIMENSIONAL SKETCHES

### 0 Models

**Free hanging:** by removing the end panels, the units are easy to interlink.

**Cassette:** aperture sizes =  $(A+8) \times (C+8)$  mm.

**Recessed:** aperture sizes:

- for air discharge  $(A+8) \times (D+8)$  mm
- for air inlet:  $(A+8) \times (I+8)$  mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

### 0 Wall suspension brackets and threaded rod covers

- Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.

### 0 Note

- All dimensions are in mm.
- SR 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

## INDEX

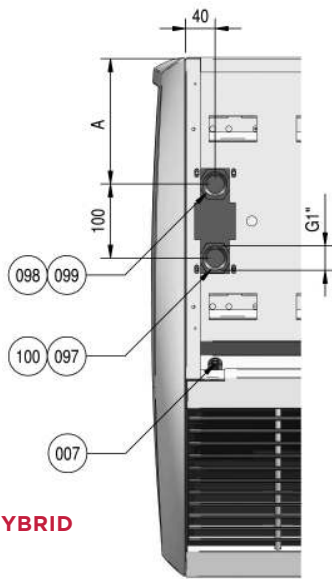
The corresponding numbers in the dimensional sketches are explained here:

**3**-Air inlet grille with filter. **20**-Connection plate. **35**-Ducts are not supplied. **43**-Finishing sections supplied separately.

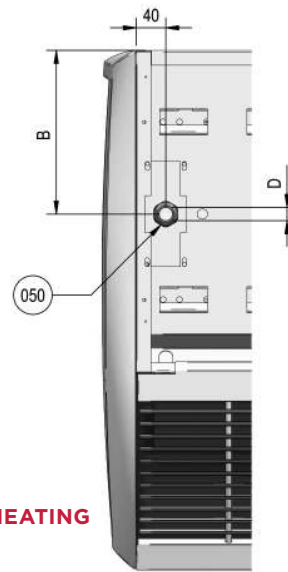
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**12**-Pipework. **87**-Threaded rod covers (position is flexible).

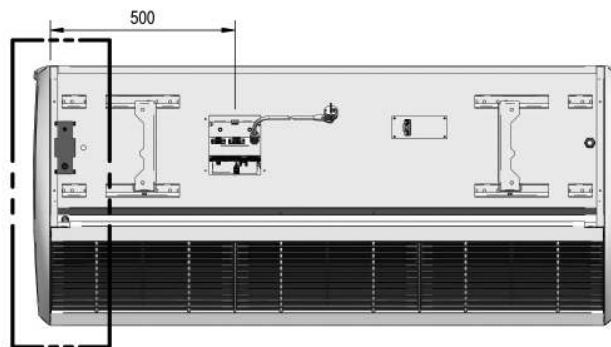
# CONNECTIONS DRAWING



**WATER & HYBRID**



**ELECTRIC HEATING**



	A	B	D
SR S 100 / SR S 150	170	220	PG21
SR S 200 / SR S 250	170	220	PG21
SR M 100 / SR M 150	170	220	PG21
SR M 200 / SR M 250	170	220	PG29
SR L / XL 100	245	295	PG21
SR L / XL 150	245	295	PG29
SR L / XL 200	245	295	PG36
SR L / XL 250	245	295	PG36

## EXPLANATION OF DIMENSIONAL SKETCHES

### ○ Models

**Free hanging:** by removing the end panels, the units are easy to interlink.

**Cassette:** aperture sizes =  $(A+8) \times (C+8)$  mm.

**Recessed:** aperture sizes:

- for air discharge  $(A+8) \times (D+8)$  mm
- for air inlet:  $(A+8) \times (I+8)$  mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

### ○ Wall suspension brackets and threaded rod covers

- Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.

### ○ Note

- All dimensions are in mm.
- SR 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

## INDEX

The corresponding numbers in the dimensional sketches are explained here:

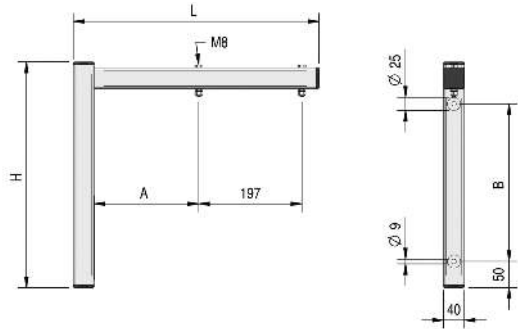
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**12**-Pipework. **87**-Threaded rod covers (position is flexible).

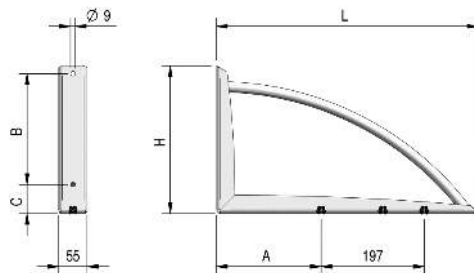
# WALL SUSPENSION BRACKETS DRAWING

## STANDARD



	L	H	A	B
SR S / M	389	330	119	200
SR L / XL	470	430	200	300

## DESIGN



	L	H	A	B	C
SR S / M	425	240	119	190	35
SR L / XL	500	280	200	210	55

## EXPLANATION OF DIMENSIONAL SKETCHES

### Models

**Free hanging:** by removing the end panels, the units are easy to interlink.

**Cassette:** aperture sizes = (A+8) x (C+8) mm.

**Recessed:** aperture sizes:

- for air discharge (A+8) x (D+8) mm
- for air inlet: (A+8) x (I+8) mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

### Wall suspension brackets and threaded rod covers

- Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.

### Note

- All dimensions are in mm.
- SR 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

## INDEX

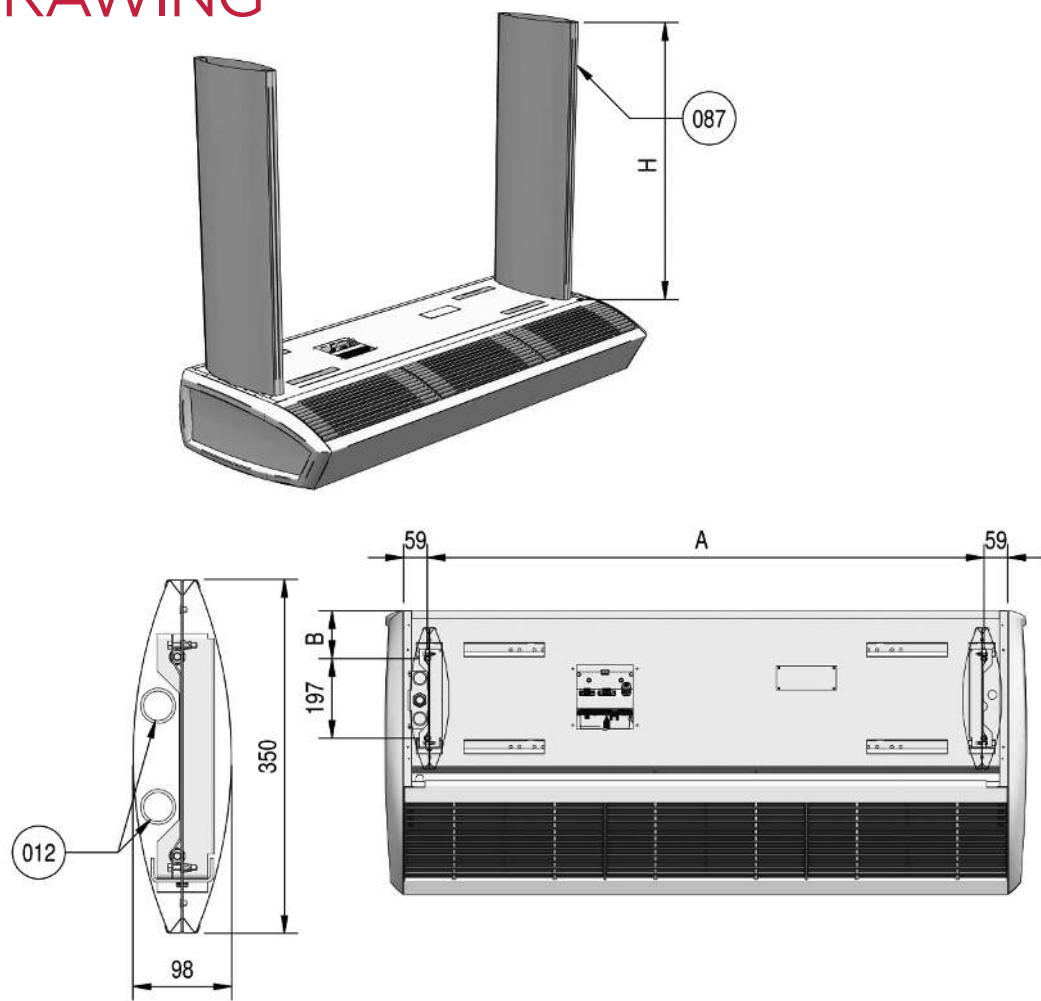
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**3**-Air inlet grille with filter. **20**-Connection plate. **35**-Ducts are not supplied. **43**-Finishing sections supplied separately.

**36**-Eye bolt M6. **7**-Air vent. **50**-Gland. **97**-Return (S/M). **98**-Return (L/XL). **99**-Supply (S/M). **100**-Supply (L/XL).

**12**-Pipework. **87**-Threaded rod covers (position is flexible).

# THREADED ROD COVERS DRAWING



	A	B
SR 100	882	
SR 150	1382	119 (S/M)
SR 200	1882	200 (L/XL)
SR 250	1191 (x2)	

Size H is the distance between unit and ceiling. This size needs to be communicated on the order.

## EXPLANATION OF DIMENSIONAL SKETCHES

### 0 Models

**Free hanging:** by removing the end panels, the units are easy to interlink.

**Cassette:** aperture sizes = (A+8) x (C+8) mm.

**Recessed:** aperture sizes:

- for air discharge (A+8) x (D+8) mm
- for air inlet: (A+8) x (I+8) mm. If the recessed model is to be built into a bulkhead, it is also available in a design that has no inlet air plenum or flexible ducts.

- 0 Wall suspension brackets and threaded rod covers
  - Material of threaded rod covers: zinc coated steel, painted, to a standard colour of RAL 9016 or RAL 9006.
- 0 Note
  - All dimensions are in mm.
  - SR 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

## INDEX

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## BIDDLE AIR SYSTEMS

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# Biddle

Every effort has been made to ensure descriptions are correct at the time of print.  
Errors and omissions excepted. SR|V1|01|2020



**DX AIR CURTAIN**

**SR**



**Biddle**



# Complete climate system

Since 2006 Biddle and Daikin have joined forces to provide a complete climate system for shops and public buildings. By combining Biddle air curtains with the highly efficient Daikin heat pump systems, a lot of energy is saved and comfort in the building is optimum.

**Maximum comfort** Both visitors and personnel can enjoy maximum comfort during the whole year, under all weather conditions. This is the result of the efficient climate separation created by Biddle air curtains, while heat pump systems heat, cool or ventilate to provide a comfortable indoor climate.



## Integrated air conditioning solutions

The advantage of combining air curtains with heat pumps and heat recovery is that climate separation, heating, cooling and ventilation are combined in one system. Considerable savings on energy costs can be made as compared with traditional systems; this means that the payback time is very short, generally about 1.5 years. The stable indoor climate due to efficient climate separation reduces heat loss through the doorway and also increases the efficiency of the Daikin systems. A Daikin heat pump is very efficient and saves up to 40% of energy costs as compared with a high-efficiency central heating boiler. A Biddle air curtain in combination with Daikin's heat pump systems is the ultimate energy-saving solution for cooling, heating, ventilation and climate separation and means that other energy generators, such as a central heating system, are not required.



## Daikin climate systems

Biddle air curtains can be installed plug&play to various Daikin climate systems.

- **Heat pump/heat recovery:** for heating and/or cooling a building. The heat released from cooling systems (residual heat) is recycled for the Biddle air curtain.
- **Conveni-pack:** a unique total solution for refrigerated storage and air conditioning, where energy consumption is reduced to a minimum as up to 100% of the heat is recovered from cooling equipment and used to heat the area. This is without additional costs.

# A new wave in climate separation

SR air curtains are the ideal solution for retailers and other end-users to combat the issue of climate separation across their outlet or office building doorway. The importance of accessibility to attract customers in the retail sector is well-known, but with this free form of access through 'open door' trading, cold draughts and high-energy bills are often the consequence.

## High comfort and energy efficient

The SR technology has been improved to deliver greater comfort for all, whether it is in a supermarket, high street store or office building. The SR air curtain, does not act as a barrier in the place of a door, its prime role is to reduce the amount of warm air leaving the building and condition the incoming air to a comfortable temperature. BSRIA and Biddle research produced documented evidence proving that air curtains operate best with specific velocities and air volumes. The SR air curtain satisfies these needs by delivering the right air flow and temperature at the right time automatically, reducing energy loss. Furthermore it is the only commercially available air curtain of its kind that now offers a unique air damper system to improve efficiency, by controlling the outlet velocity.

**Intelligent auto-active control and monitoring** The auto-active control is the next generation of controls. Knowing that manual control of air curtains often leads to the incorrect setting the inclusion of the **automatic** CHIPS (Corrective Heating & Impulse Prediction System) technology ensures the most appropriate setting at any moment in time. The i-sense in the discharge grille measures the indoor and outdoor temperatures **active** in the door opening resulting in accurate data. This auto-active control has been demonstrated to produce energy saving savings of up to 75% when compared with a manually controlled air curtain. Biddle has an extensive range of control options: the b-touch control panel, remote monitoring of comfort and energy performance and connecting to a BMS is easy through the standard integrated Modbus connection.



## Benefits

### Energy efficient and high comfort

- improved accuracy of temperature data collection
- correct settings are adjusted actively and automatically
- comfortable inside climate and inviting appearance
- low sound level

### Intelligent control and monitoring

- self-regulating: auto-active control
- remote monitoring: b-connect
- Modbus: integrated as standard

### Installation & maintenance-friendly

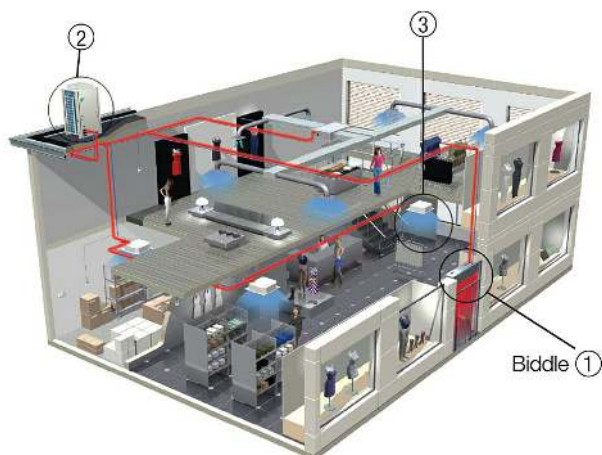
- easy to assemble and set up (b-touch)
- ready-to-use, integrated control

### Complete customized solution

- customer specific styling possible
- suitable for various heat sources

# Energy-efficient climate concept

Biddle and Daikin supply a complete plug & play climate concept. Within this energy-efficient climate concept two different versions are available: the SRV and SRQ models.

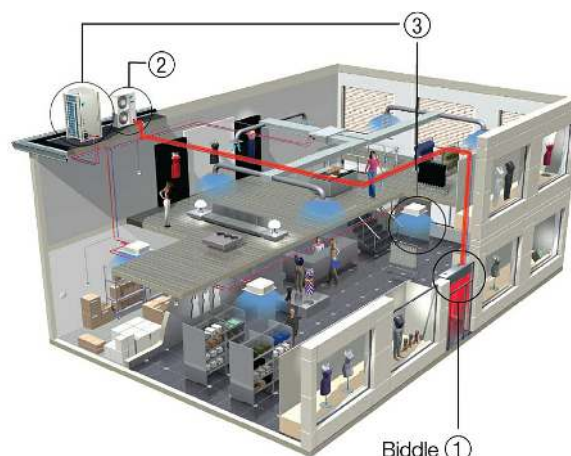


## Complete SRV air curtain – climate system

The climate system consisting of the SR air curtain, model SRV (1), Daikin VRV outdoor unit (2) and indoor units (3) supplies heating, cooling, ventilation and climate separation in one energy-efficient installation. By heating and cooling at the same time the heat extracted from the cooling systems can be extracted for the air curtain, thus resulting in considerable reduction in energy costs. This integrated climate system is energy efficient, has a quick payback time and provides a comfortable indoor climate.

## Standalone SRQ air curtain – heat pump

The SR air curtain, model SRQ (1), is available in combination with a Daikin ERQ heat pump (2). The heat pump provides the heating energy required for climate separation in the doorway. The heating and cooling in the building are controlled separately (3). Considerable energy savings are obtained by connecting the SR to a heat pump: up to 40% as compared with a high-efficiency boiler and even 73% as compared with an electric air curtain. This climate solution is sustainable, energy saving and creates a pleasant indoor climate.



*The SR is also available as a hybrid DX version*

## Constant heating with hybrid SR

The hybrid SR consists of a DX and an additional electric heating element. First maximum use is made of the available heat from the DX. If necessary, the electric element switches on automatically so that the required discharge temperature can be achieved continuously. In cold weather the electric element switches on automatically if the outdoor unit is not adequate to supply the capacity required. The electric element also supplies the heating required during the defrosting cycle. In this way climate separation is always guaranteed.



# Intelligent control and monitoring

There are an extensive range of control options; touchscreen control (b-touch), remote operation and integration with a Building Management System (BMS). It is possible to monitor the energy performance and comfort levels remotely by means of the b-connect monitoring module. Connecting to a BMS is easy through a standard Modbus Protocol connection, whilst it is also possible to communicate via BACnet. All SR devices are fitted with Biddle's innovative auto-active control, the next generation of controls.

## Auto-active control

Generally, installing an air curtain is typically set to operate at a mid-speed setting and rarely adjusted. This results in the air curtain continually operating at a single air volume, velocity and temperature. However, as internal and external conditions constantly vary this means the air curtain will only be operating at the optimum setting some of the time, and for the rest of the time will be on either too high or too low a setting. The **automatic** CHIPS (Corrective Heating & Impulse Prediction System) technology ensures the most appropriate setting at any moment in time. The i-sense in the discharge grille measures the indoor and outdoor temperatures **active** in the door opening resulting in accurate data. This process ensures that the SR is always functioning correctly and yields an ideal, energy-efficient indoor climate without interference of the user.



b-touch control panel



## A revolutionary combination of technologies

SR's auto-active control combines no fewer than four renowned Biddle technologies. The revolutionary patented i-sense infrared technology **collects** all temperature-related data in the doorway. CHIPS technology **translates** this information into the correct setting, whilst the adaptable discharge width (Controlled Air strength technology) and the patented rectifier **create** the perfect climate separation.



## Benefits

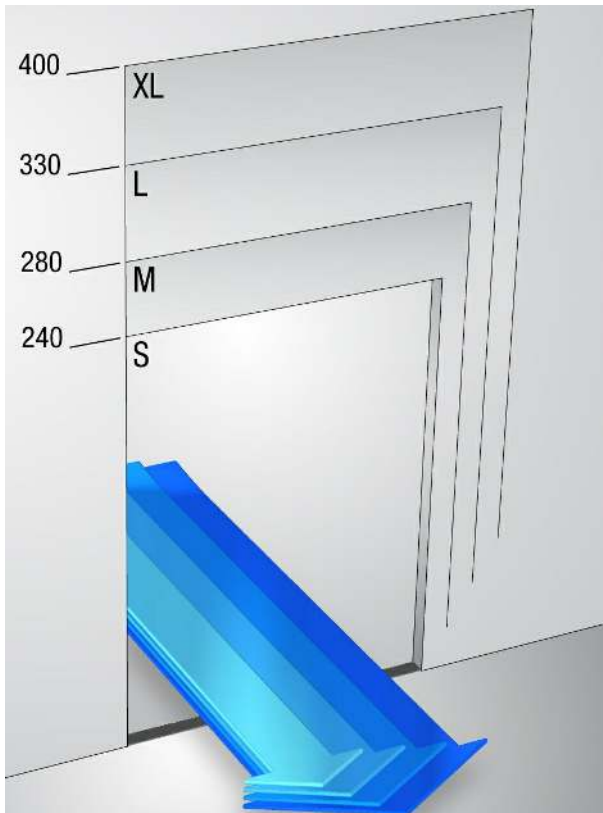
### Combination SR - Daikin

- Sustainable climate solution
- Integrated climate system possible
- Extensive control options
- Extremely low energy consumption
- Low investment costs (no central heating needed)
- Optimal comfort
- Low CO<sub>2</sub>-emission

*You will find more information regarding SR's commercial advantages in a separate brochure.*

# Air curtain selection

Selecting the right air curtain is crucial in order to ensure the SR works optimally. An air curtain performs properly when it completely shields the doorway and is strong enough to heat the cold air streaming in from outside to a comfortable temperature.



## Air curtain product selector

The selector enables a simple selection of the most appropriate product for your entrance and depends on:

- **Door height:** mounting height, measured from floor to bottom of unit.
- **Door width:** recommended unit overhang - minimum of 100mm each side.
- **Natural ventilation:** volume and temperature of the outside air entering through the open door.

The following guidelines generally apply:

- **S:** small medium high street: retail outlets, small offices, commercial reception (up to 200 m<sup>2</sup>)
- **M:** medium retail outlets, foodstores, larger commercial entrances (200 - 2,500 m<sup>2</sup>)
- **L:** large retail outlets, superstores, leisure complexes (2,000 - 6,000 m<sup>2</sup>)
- **XL:** large retail outlets, hypermarkets, department stores, shopping centres with high performance requirements (>5,000 m<sup>2</sup>)

## Design considerations

Biddle is part of your team and works closely with consultants and architects from the earliest design stages to ensure the optimum air curtain solution is achieved for both new build and refurbishment projects. Critical design considerations include:

- Store location, layout and age
- Building leakage characteristics
- Positive/negative pressurisation of the store
- Standard of mechanical air supplies
- Entrance doorway, width and height
- Multiple doors on different elevations
- Employee awareness of the problems caused by leaving bulk store doors open in foodstores
- Lobbied/no door environment
- Environmental factors - wind data, direction or speed

## Simulation tool

Biddle has developed a simulation tool to help you select the right air curtain: **VACP (Visual Air Curtain Performance)**. Biddle has specific advice for all doorway scenarios. For more information, please contact the Biddle sales office.



# A suitable solution for every situation



The SR has endless possibilities. The SR creates optimum climate separation in all doorways and is also suitable for Daikin systems. There is a solution available for many monitoring and control options.

## Example type code:

### SRV S-100-DK-80-F

<b>SRV</b>	=	SR with Daikin VRV
<b>SRQ</b>	=	SR with Daikin ERQ
<b>Capacity</b>		
S	=	Small (200 - 240 cm)
M	=	Medium (220 - 280 cm)
L	=	Large (250 - 330 cm)
XL	=	Extra Large (300 - 400 cm)
<b>Length (cm)</b>		
100 - 150 - 200 - 250		
<b>DX</b>	=	Refrigerant R410a
<b>DXE</b>	=	DK + Electrical heating
<b>Capacity index</b>		
80 - 100 - 125 - 140 - 250		
<b>Model</b>		
F	=	Free hanging model
R	=	Recessed model
C	=	Cassette model

*For the water, electrical, hybrid and ambient versions a separate brochure is available.*

## For every door width

Doors wider than 250 cm are covered by placing multiple units next to each other.

## Control options

- Auto-active control with b-touch control
- panel b-connect monitoring module
- Modbus communication

## Daikin

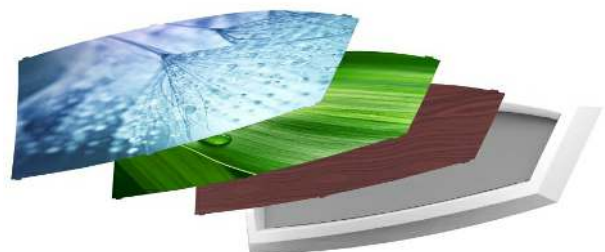
- DX: Direct expansion SRQ
- S-100 not available

## Standard colours

- Traffic white (RAL 9016) with accent end panels in silver grey (RAL 9006)
- Silver grey (RAL 9006)
- Other RAL classic colours available on request

## Customer specific styling

The inlays in the end panels are supplied in grey and white as standard. The removable inlays in the end panels can also be styled specifically if required (e.g. colour and logo).





# Delivery and accessories



i-sense

## Technologies

- i-sense infrared technology to collect accurate temperature data in the door opening
- CHIPS technology to adjust the settings automatically
- Controlled air strength technology for the best downward penetration
- Rectifier technology to reach the floor at the lowest possible speed

## DX version

For a complete installation of model SRV or SRQ several additional components to be delivery by Daikin are necessary.



b-touch control panel

## Standard delivery

- Modbus communication
- Air filters
- Ceiling mounting brackets
- Duct connections R-model (ducts not included)

## Accessory set for auto-active control

- b-touch control panel
- Two Biddle low voltage cables: 1 x 5 m, 1 x 25 m
- Two end panels (model F)



end panels - 2 colours

## Optional

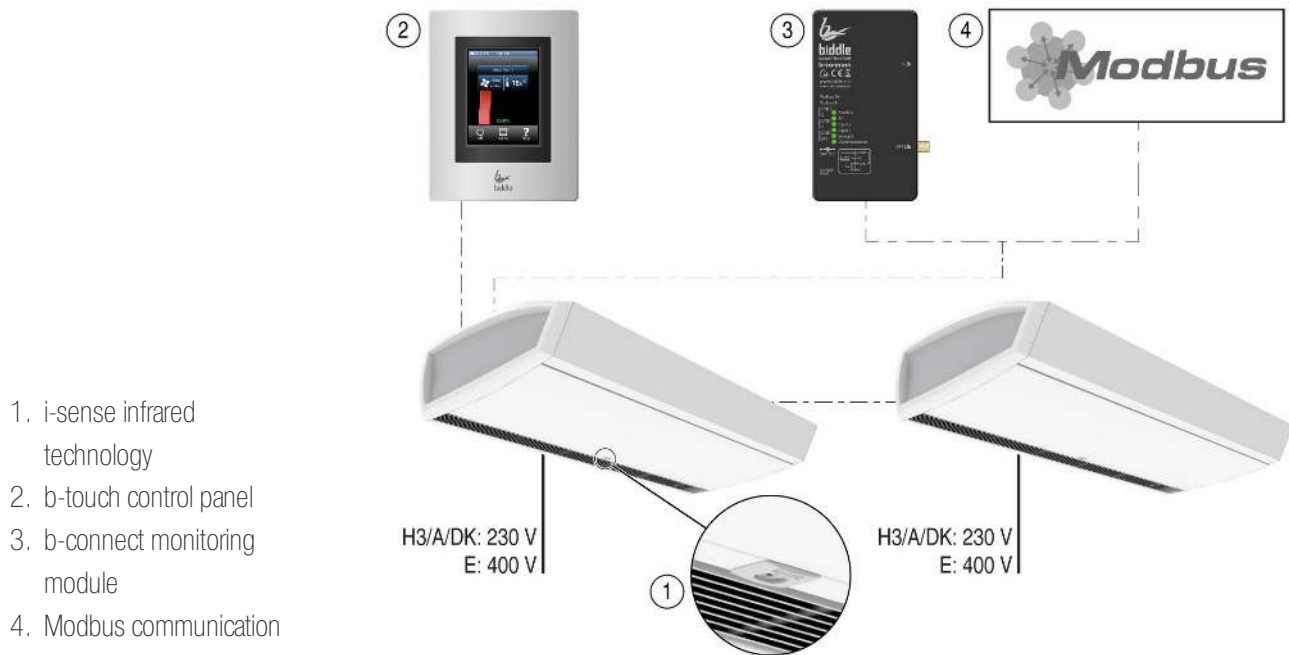
- b-connect monitoring module
- Filter sensor
- Wall mounting brackets: standard and design
- Threaded rod covers
- Door contact switch
- External outdoor sensor

## Installation possibilities

- Wall mounting brackets
- M8 threaded rods (see also - threaded rod covers)

# Electrical connections

The SR is delivered as standard with the b-touch control panel and i-sense infrared technology. It is also possible to specify the optional b-connect monitoring module or communicate via Modbus, the latter of which is a standard feature on all units.



# Specifications



## Casing

The casing is made of zinc plated sheet steel, and has an inspection panel in the bottom. The inlet grilles are made of anodised aluminium with fixed fins. The inlet module and the end panels as well as the casing are, as a standard, supplied in silver grey (RAL 9006) or traffic white (RAL 9016). The end panels of the white SR have a grey inlay. Other RAL casing colour finishes are available for an additional charge.

## Motor / Fan assembly

The air curtain is equipped with two or more (depending on type) dual-inlet, vibration free suspended centrifugal fans. Each fan is driven by a rotor motor on bearings, which are seal for life and no maintenance is required. The fan casing and the impeller are made of zinc coated plate steel. The motors, as standard, are fitted with thermal contacts. These thermal contacts break the circuit of the motor when the maximum permissible motor temperature is exceeded.

## Heating coil

**DX:** made up of 3/8" copper tubes and aluminium fins. The fluid connection is 9.52 mm, and the gas connection is 16 mm (with 100, S/M-150 & 200, S-250), 19 mm (with M-250, L/XL-150) or 22 mm (with L-200 en 250).

**Hybrid:** a combination of DX with an electrical stitched wire heating element.

## Connections

To connect DX units to the mains supply, they come with a fixed cable (approx. 2 m long) with a moulded, earthed plug. The connection for Daikin units and the connector plate are fitted on the top of the unit.

The mains cable for electrical heating must be connected within the unit. The top of the unit has a cable gland for feeding through the feeder cable. A 5-core cable (3 phases + earth + neutral) is required for proper connection.

# Explanation technical data

Because of the auto-active control of the SR DX air curtain the outlet temperature varies at all speeds, depending on the situation. The maximum heating capacity of the DX air curtains is the same as the heating capacity in the highest fan speed.

## Selection Daikin outdoor unit

To determine the correct Daikin outdoor unit for model SRV, you need to add together the capacity indexes of all the indoor units.

## Sound

The sound data is based on the direct field, in a situation with an open door and a sound absorbing ceiling. The sound data for different situations can be determined by adding the adjacent values to the table values.

Closed door	<b>+ 1 à 2 dB(A)</b>
Acoustical "hard" ceiling	<b>+ 2 à 3 dB(A)</b>

Deviating distances and several units next to each other can be calculated with the table below. Data from the 1 m unit, measured at a distance of 3 m, is the basic assumption. The factors apply to all types of air curtains.

## Correction factors for sound pressure in dB(A)

distance (m)	total unit length (m)					
	1	1,5	2	2,5	3	3,5
1	+9.5	+11.3	+12.6	+13.5	+14.3	+15.0
2	+3.5	+5.3	+6.5	+7.5	+8.3	+9.0
3	0	+1.8	+3.0	+4.0	+4.8	+5.4
4	-2.5	-0.7	+0.5	+1.5	+2.3	+2.9
5	-4.4	-2.7	-1.4	-0.5	+0.3	+1.0

## Note

The SRQ S-100 unit is not available.

# DX heating

SRV S-100-DK							
nominal unit length	m	1					
door height	m	2 - 2.4					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	0,88					
max. fan power	kW	0,2					
max. specific fan power	W/l/s	0,63					
max heating capacity	kW	7,8					
capacity index		80					
weight casing style F / R / C	kg	52/62/60					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	440	600	680	880	1010	1130
heating capacity	kW	3,6	4,7	5,2	6,4	7,1	7,8
sound pressure level at 3m	dB(A)	27	33	37	42	46	48

SRV/Q S-150-DK							
nominal unit length	m	1,5					
door height	m	2 - 2.4					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	1,32					
max. fan power	kW	0,3					
max. specific fan power	W/l/s	0,63					
max heating capacity	kW	9,7					
capacity index		80					
weight casing style F / R / C	kg	73/89/84					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	660	910	1020	1320	1520	1700
heating capacity	kW	4,9	6,2	6,8	8,2	9	9,7
sound pressure level at 3m	dB(A)	28	35	39	43	47	50

# DX heating

SRV/Q S-200-DK							
nominal unit length	m	2					
door height	m	2 - 2.4					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	1,76					
max. fan power	kW	0,39					
max. specific fan power	W/l/s	0,63					
max heating capacity	kW	12,6					
capacity index		100					
weight casing style F / R / C	kg	88/109/103					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	880	1210	1360	1770	2020	2260
heating capacity	kW	6,4	8,1	8,9	10,6	11,7	12,6
sound pressure level at 3m	dB(A)	30	36	40	45	49	51

SRV/Q S-250-DK							
nominal unit length	m	2,5					
door height	m	2 - 2.4					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	2,2					
max. fan power	kW	0,49					
max. specific fan power	W/l/s	0,63					
max heating capacity	kW	17,3					
capacity index		140					
weight casing style F / R / C	kg	113/139/131					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	1100	1510	1700	2210	2530	2830
heating capacity	kW	8,5	10,9	12	14,5	16	17,3
sound pressure level at 3m	dB(A)	31	37	41	46	50	52



# DX heating

SRV/Q M-100-DK							
nominal unit length	m	1					
door height	m	2.2 - 2.8					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	1,25					
max. fan power	kW	0,27					
max. specific fan power	W/l/s	0,63					
max heating capacity	kW	9,7					
capacity index		80					
weight casing style F / R / C	kg	59/69/67					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	490	740	880	1180	1310	1530
heating capacity	kW	3,9	5,6	6,4	8	8,6	9,7
sound pressure level at 3m	dB(A)	25	34	39	45	50	53

SRV/Q M-150-DK							
nominal unit length	m	1,5					
door height	m	2.2 - 2.8					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	1,87					
max. fan power	kW	0,4					
max. specific fan power	W/l/s	0,63					
max heating capacity	kW	11,7					
capacity index		80					
weight casing style F / R / C	kg	81/97/92					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	730	1100	1320	1780	1960	2300
heating capacity	kW	5,3	7,2	8,1	9,9	10,6	11,7
sound pressure level at 3m	dB(A)	26	35	40	47	51	54

# DX heating

SRV/Q M-200-DK							
nominal unit length	m	2					
door height	m	2.2 - 2.8					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	2,49					
max. fan power	kW	0,54					
max. specific fan power	W/l/s	0,63					
max heating capacity	kW	15,2					
capacity index		100					
weight casing style F / R / C	kg	101/122/116					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	970	1470	1750	2370	2610	3070
heating capacity	kW	6,9	9,4	10,6	12,9	13,8	15,2
sound pressure level at 3m	dB(A)	28	37	42	48	53	56

SRV/Q M-250-DK							
nominal unit length	m	2,5					
door height	m	2.2 - 2.8					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	3,12					
max. fan power	kW	0,67					
max. specific fan power	W/l/s	0,63					
max heating capacity	kW	21,1					
capacity index		140					
weight casing style F / R / C	kg	125/151/143					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	1210	1840	2190	2960	3270	3840
heating capacity	kW	9,2	12,7	14,5	17,8	19	21,1
sound pressure level at 3m	dB(A)	29	38	43	49	54	57

# DX heating

SRV/Q L-100-DK							
nominal unit length	m	1					
door height	m	2.5 - 3.3					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	3,03					
max. fan power	kW	0,57					
max. specific fan power	W/l/s	0,66					
max heating capacity	kW	17,1					
capacity index		125					
weight casing style F / R / C	kg	72/85/83					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	1010	1440	1710	2240	2680	3140
heating capacity	kW	7,6	10,1	11,4	13,8	15,5	17,1
sound pressure level at 3m	dB(A)	33	40	43	48	53	56

SRV/Q L-150-DK							
nominal unit length	m	1,5					
door height	m	2.5 - 3.3					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	4,55					
max. fan power	kW	0,86					
max. specific fan power	W/l/s	0,66					
max heating capacity	kW	25,6					
capacity index		200					
weight casing style F / R / C	kg	106/124/121					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	1510	2160	2560	3360	4020	4720
heating capacity	kW	11,4	15,1	17,1	20,7	23,2	25,6
sound pressure level at 3m	dB(A)	34	41	44	50	54	58

# DX heating

SRV/Q L-200-DK							
nominal unit length	m	2					
door height	m	2.5 - 3.3					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	6,07					
max. fan power	kW	1,15					
max. specific fan power	W/l/s	0,66					
max heating capacity	kW	32,3					
capacity index		250					
weight casing style F / R / C	kg	134/159/155					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	2010	2880	3410	4480	5360	6290
heating capacity	kW	14,9	19,5	22	26,4	29,5	32,3
sound pressure level at 3m	dB(A)	36	43	46	51	56	59

SRV/Q L-250-DK							
nominal unit length	m	2,5					
door height	m	2.5 - 3.3					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	7,58					
max. fan power	kW	1,44					
max. specific fan power	W/l/s	0,66					
max heating capacity	kW	34,4					
capacity index		250					
weight casing style F / R / C	kg	167/199/193					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	2520	3610	4270	5600	6700	7860
heating capacity	kW	16,9	21,8	24,3	28,7	31,7	34,4
sound pressure level at 3m	dB(A)	37	44	47	52	57	60

# DX heating

SRV/Q XL-100-DK							
nominal unit length	m	1					
door height	m	3 - 4					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	5,02					
max. fan power	kW	1,03					
max. specific fan power	W/l/s	0,94					
max heating capacity	kW	19,6					
capacity index		125					
weight casing style F / R / C	kg	76/89/87					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	1170	1580	2030	2720	3370	3950
heating capacity	kW	8,5	10,8	12,9	15,7	17,9	19,6
sound pressure level at 3m	dB(A)	38	42	47	52	57	62

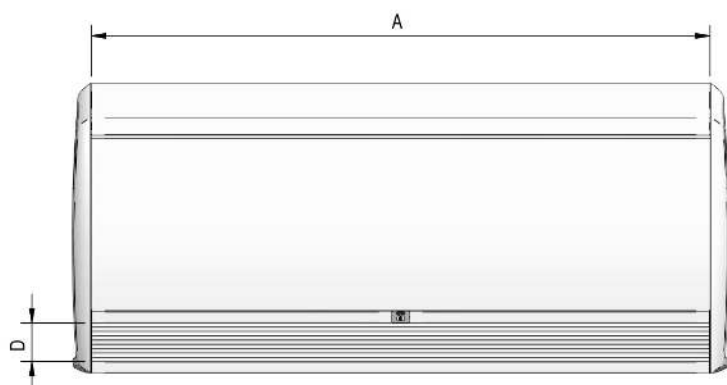
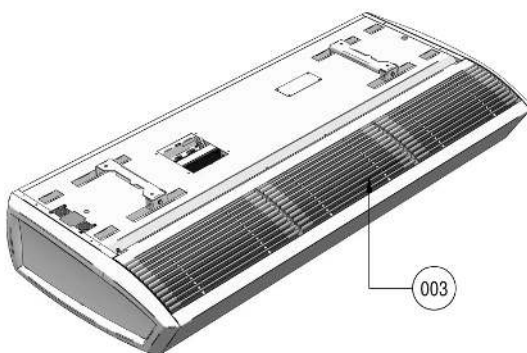
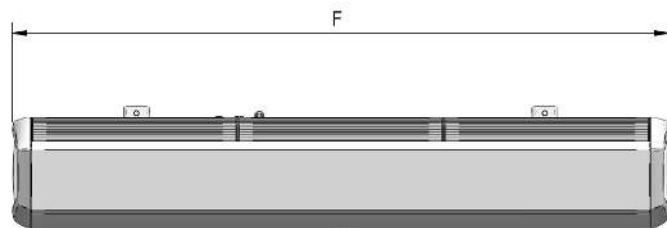
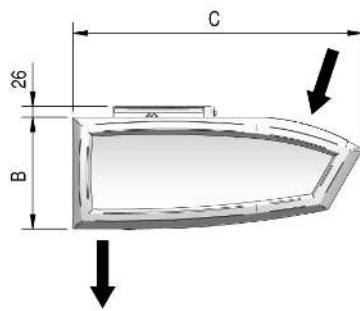
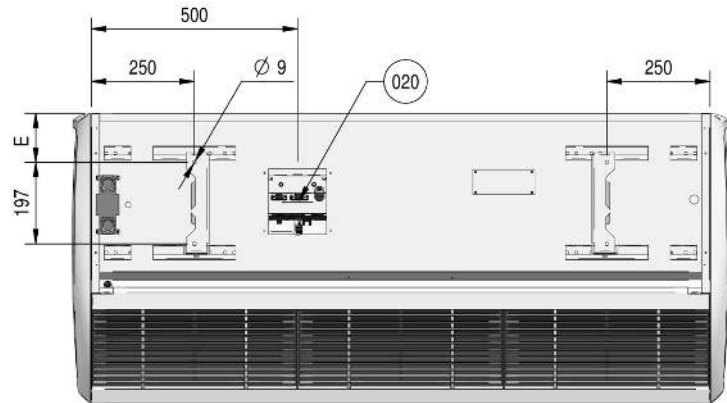
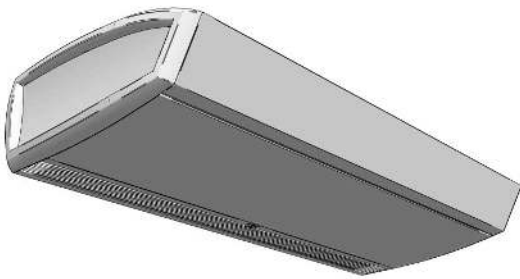
SRV/Q XL-150-DK							
nominal unit length	m	1,5					
door height	m	3 - 4					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	7,53					
max. fan power	kW	1,54					
max. specific fan power	W/l/s	0,94					
max heating capacity	kW	29,2					
capacity index		200					
weight casing style F / R / C	kg	112/130/127					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	1750	2370	3050	4090	5060	5920
heating capacity	kW	12,8	16,2	19,3	23,4	26,7	29,2
sound pressure level at 3m	dB(A)	39	44	48	54	59	63

# DX heating

SRV/Q XL-200-DK							
nominal unit length	m	2					
door height	m	3 - 4					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	10,04					
max. fan power	kW	2,05					
max. specific fan power	W/l/s	0,94					
max heating capacity	kW	36,4					
capacity index		250					
weight casing style F / R / C	kg	143/168/164					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	2330	3170	4060	5450	6740	7890
heating capacity	kW	16,7	20,9	24,7	29,7	33,6	36,4
sound pressure level at 3m	dB(A)	41	45	50	55	60	65

SRV/Q XL-250-DK							
nominal unit length	m	2,5					
door height	m	3 - 4					
electrical supply	V/ph/Hz	230/1/50					
max. input current (1 phase)	A	12,55					
max. fan power	kW	2,57					
max. specific fan power	W/l/s	0,94					
max heating capacity	kW	38,3					
capacity index		250					
weight casing style F / R / C	kg	176/208/202					
air inlet temperature	°C	20					
discharge air temperature	°C	30 - 45					
speed		1	2	3	4	5	6
air volume	m³/h	2920	3960	5080	6810	8430	9870
heating capacity	kW	18,8	23,2	27,1	31,9	35,6	38,3
sound pressure level at 3m	dB(A)	42	46	51	56	61	66

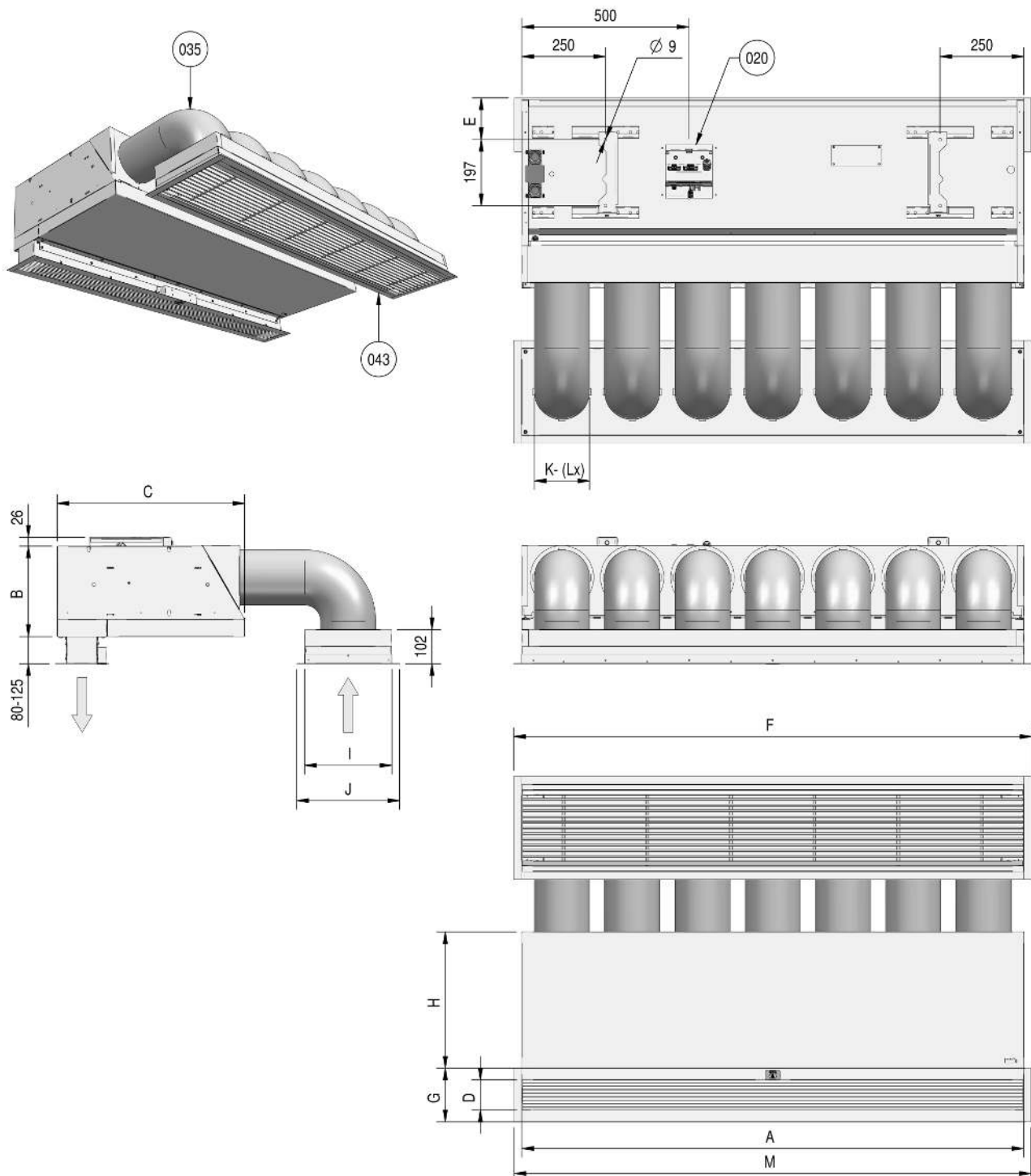
# Free hanging model



	A	B	C	D	E	F
SR S / M 100	1000	270	702	93	119	1093
SR S / M 150	1500	270	702	93	119	1593
SR S / M 200	2000	270	702	93	119	2093
SR S / M 250	2500	270	702	93	119	2593
SR L / XL 100	1000	370	940	125	200	1138
SR L / XL 150	1500	370	940	125	200	1638
SR L / XL 200	2000	370	940	125	200	2138
SR L / XL 250	2500	370	940	125	200	2638

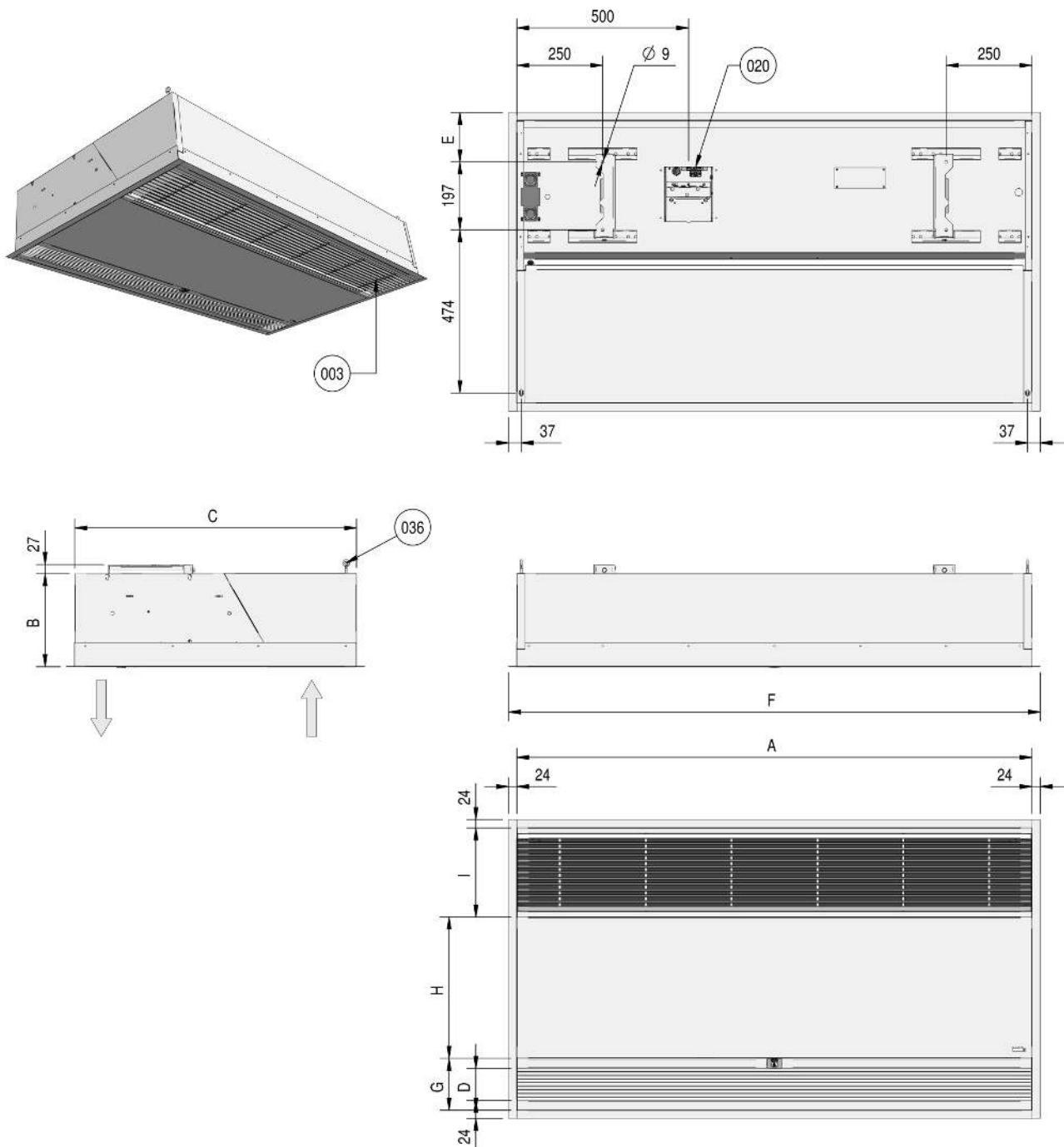


# Recessed model



	A	B	C	D	E	F	G	H	I	J	K	L	M
SR S / M 100	1000	270	561	90	125	1048	160	406	261	307	$\varnothing 160$	5	1045
SR S / M 150	1500	270	561	90	125	1548	160	406	261	307	$\varnothing 160$	7	1545
SR S / M 200	2000	270	561	90	125	2048	160	406	261	307	$\varnothing 160$	10	2045
SR S / M 250	2500	270	561	90	125	2548	160	406	261	307	$\varnothing 160$	12	2545
SR L / XL 100	1000	370	745	122	206	1048	191	559	361	407	$\varnothing 250$	3	1045
SR L / XL 150	1500	370	745	122	206	1548	191	559	361	407	$\varnothing 250$	5	1545
SR L / XL 200	2000	370	745	122	206	2048	191	559	361	407	$\varnothing 250$	6	2045
SR L / XL 250	2500	370	745	122	206	2548	191	559	361	407	$\varnothing 250$	8	2545

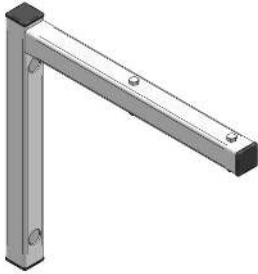
# Cassette model



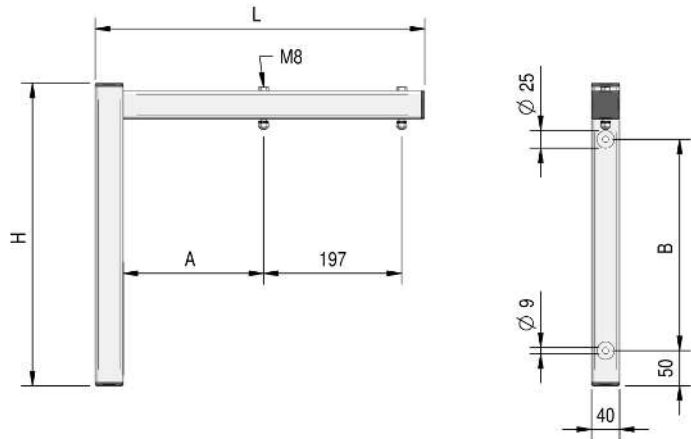
	A	B	C	D	E	F	G	H	I
SR S / M 100	1000	270	821	93	144	1048	150	411	260
SR S / M 150	1500	270	821	93	144	1548	150	411	260
SR S / M 200	2000	270	821	93	144	2048	150	411	260
SR S / M 250	2500	270	821	93	144	2548	150	411	260
SR L / XL 100	1000	370	1105	125	175	1048	182	564	360
SR L / XL 150	1500	370	1105	125	175	1548	182	564	360
SR L / XL 200	2000	370	1105	125	175	2048	182	564	360
SR L / XL 250	2500	370	1105	125	175	2548	182	564	360

# Wall suspension brackets

## Standard



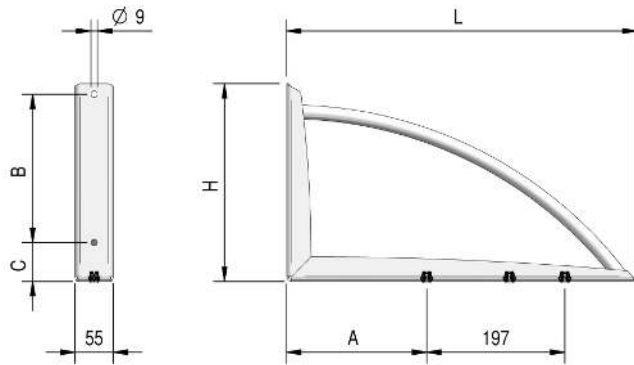
	L	H	A	B
SR S/M	389	330	119	200
SR L/XL	470	430	200	300



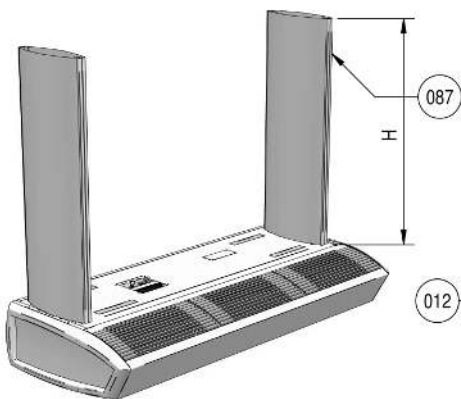
## Design



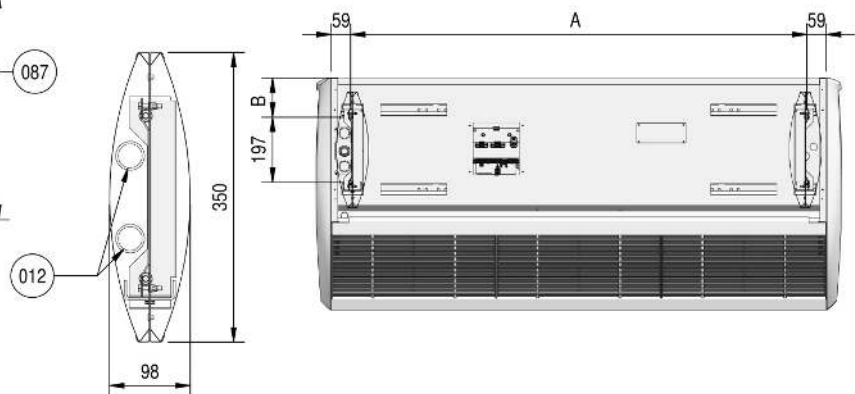
	L	H	A	B	C
SR S/M	425	240	119	190	35
SR L/XL	500	280	200	210	55



# Threaded rod covers



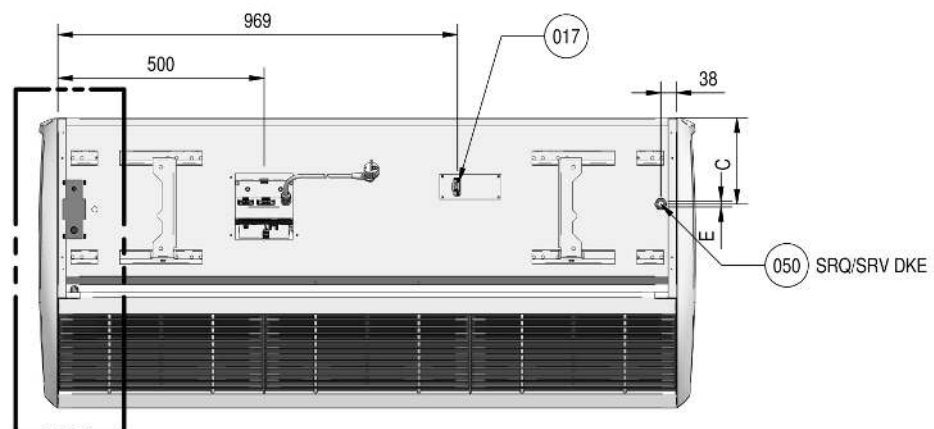
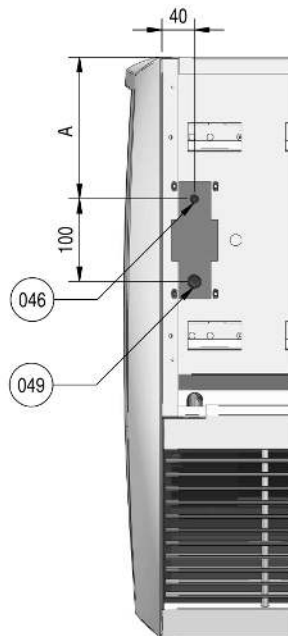
	A	B
SR 100	882	119 (S/M) 200 (L/XL)
SR 150	1382	
SR 200	1882	
SR 250	1191 (2x)	



Size H is the distance between unit and ceiling. This size needs to be communicated on the order.

# Connections

## DX



	A	C	E
SR S-100	170	208	PG16
SR S-150	170	208	PG16
SR S-200	170	208	PG21
SR S-250	170	208	PG21
SR M-100	170	208	PG16
SR M-150	170	208	PG16
SR M-200	170	208	PG21
SR M-250	170	208	PG21
SR L / XL-100	245	289	PG21
SR L / XL-150	245	289	PG21
SR L / XL-200	245	289	PG21
SR L / XL-250	245	289	PG29

# Index

The corresponding numbers in the dimensional sketches are explained below:

- 3 - Air inlet grille with filter
- 20 - Connection plate
- 35 - Ducts are not supplied
- 43 - Finishing sections supplied separately
- 36 - Eye bolt M6
- 12 - Pipework
- 87 - Threaded rod covers (position is flexible)
- 17 - Connection Daikin units
- 46 - Fluid connection
- 49 - Gas connection
- 50 - Gland

## Explanation dimensional sketches

### Models

**Free hanging:** by removing the end panels, the units are easy to interlink.

**Cassette:** daylight opening if cover moldings are used in a suspended ceiling =  $(A+8) \times (C+8)$  mm.

**Recessed:** daylight openings if cover moldings are used:

- for air discharge  $(A+8) \times (D+8)$  mm
- for air inlet:  $(A+8) \times (I+8)$  mm

If the recessed model is to be built into a cove, it is also available in a design that has no inlet air plenum or flexible ducts. To prevent bad air from let in, the cove will need to be air-tight.

### Wall suspension brackets and threaded rod covers

- Size H is the distance between unit and ceiling. This size needs to be communicated on the order.
- Material threaded rod covers: zink coated plate steel, painted, standard colour RAL 9016 and RAL 9006.

### Note

- All dimensions are in mm.
- SR 2500 mm units have 3 suspension brackets. All other sizes have 2 suspension brackets.

# Notes

# Notes



# Biddle



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Subject to change without prior notice

# DOORFLOW

Air Curtains

**Biddle**



# A SOLUTION FOR EVERY SITUATION

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The latest development in a long line of market leading air curtains, the DoorFlow has been developed to be not just of minimalist design but also to minimise maintenance, bringing a continuous and consistent long lasting level of performance and maximize energy savings.

---

The Doorflow warms the cold air before it enters the building and prevents the escape of warm air through the open door. By installing the DoorFlow above the door it increases energy efficiency, prevents draught problems and proves that an open door and a comfortable indoor climate can coexist perfectly well.

## FEATURES AND BENEFITS:

- Minimalist design
- Filter free
- Long lasting performance
- Energy saving ECONTROL
- Performance enhancing patented discharge rectifier
- Choice of RAL paint colours
- Water or electric heating
- Suitable for low water temperatures
- Mounting height up to 3.5m
- Four models, four widths and four styles; free hanging, recessed, cassette and single grille cassette

# HOW IT WORKS

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As with all air curtains from Biddle the DoorFlow uses Biddle's proven, patented rectifier to supply conditioned air at low speed with minimum turbulence, ensuring the air stream reaches the floor and doesn't escape to the outside. Comfort within the entrance area is therefore enhanced without any energy wastage.

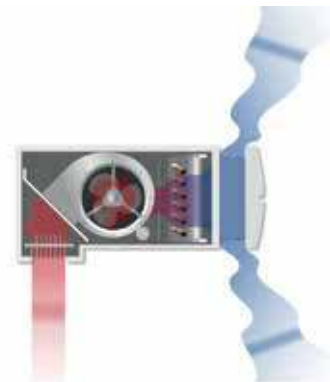
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## APPLICATIONS

Available in a variety of paint finishes, the DoorFlow has a minimalist style, being designed to look good in all types of entrance environment – from fashionable boutiques to schools and colleges. Modular in nature, any number of units can be joined together to create one seamless air curtain covering any door width.

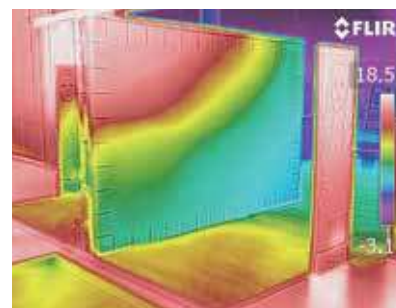
## PATENTED RECTIFIER TECHNOLOGY

So as to minimise turbulence in the discharge airstream, and ensure the air reaches the floor, Biddle have invested heavily in the development of the patented rectifier. This rectifier comprises an optimised number of blades, with a precise relationship between their length and spacing, to create a laminar airstream which reduces turbulence and energy consumption and increases throw for a given air volume.

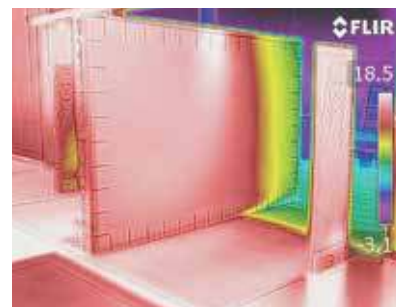


## THERMOGRAPHIC EVIDENCE

The quality and performance of an air curtain can be shown with a thermographic camera. The heat stream, which is invisible to the naked eye, is recorded and depicted with the aid of a special measuring surface and a high resolution thermal imaging camera.



Air curtain off:  
high degree of  
air exchange



Air curtain on:  
optimal climate  
separation



## INSTALLATION AND MAINTENANCE

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Carefully developed to minimise maintenance, a purpose designed coil/heater battery reduces the build-up of dust and debris between the coil fins to such an extent that filters are no longer necessary. Having no filters means the DoorFlow doesn't just offer minimal maintenance but also provides a continuous and consistent long lasting level of performance.

The DoorFlow air curtain is installed by means of threaded rods and is delivered as standard ready to plug in, including a built-in three-way valve. This makes the unit easy to install. Low voltage cables connect the control panel "plug and play" to the unit. It is also possible to interlink different units in this way.

Units can be specified for free-hanging, cassette or recessed installation and all are compatible with universal fixing systems, allowing longitudinal adjustment for flush fitting.

The separately supplied suspension brackets can be inserted in the recesses in the top of the unit and then fixed to a mounting rail to allow horizontal adjustment. Special brackets are available for wall mounting. A full installer kit with separate grilles is also supplied for recessed applications.

On delivery, all DoorFlow units include detailed installer, control and wiring instructions and maintenance notes.

# CONTROLS

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## ENERGY SAVING ECONTROL



The new ECONTROL will ensure air curtain performance is optimised whilst minimizing energy usage.

Connecting the ECONTROL to DOORFLOW couldn't be easier-just plug one end of the cable into the air curtain and the other end into the controller.

In 'Auto' mode ECONTROL will automatically adjust the air curtain's heat output to optimize air curtain performance, control the space at these selected set point temperature (range=18-25°C) and minimise energy usage.

In 'Manual' mode ECONTROL simply provides the air curtain with either half heat or full heat.

Regardless of whether the air curtain is in 'Auto' or 'Manual' mode the user can:

-  Select fan speed
-  Turn the heating off and operate the air curtain as an ambient unit



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## EXTERNAL CONTROL CONNECTIONS

### REMOTE ENABLE VIA BMS

A volt free BMS enable contact (INHIBIT) is included on each unit as standard. If the terminal is linked the unit will run. If it is open circuit across the terminal the unit will switch off.

### REMOTE HEATING CONTROL VIA BMS

To facilitate fan only operation (i.e. no heating) a 3.3ko resistance should be wired across the INHIBIT terminal.

### FAULT OUTPUT (ELECTRICAL HEATED AIR CURTAINS ONLY)

A fault signal indicator is provided for when the electric elements overheat and the safety cut - out has operated. A healthy system provides a 24V DC signal at the terminals whereas an overheat fault provides 0V DC.

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## WATER UNITS

The water units of the DoorFlow model are fitted as standard with built-in room temperature control with a three-way valve. The model can optionally be ordered with an external two-way valve. The standard built-in three-way valve is then removed.

## ELECTRIC UNITS

Electric units are delivered as standard with room temperature control.

## OTHER CONTROL OPTIONS

It is also possible to connect a (week) timer, door contact switch, building management system or extra relay for controlling a boiler. With these options, automatic comfort is guaranteed.

# SELECTION

## CORRECT CHOICE OF UNIT ESSENTIAL FOR PERFORMANCE

For optimal functioning of the DoorFlow, selecting the right type of unit(s) is essential. If an air curtain has been selected well it is able to protect the entire width and height of the door opening. The unit must have sufficient heating capacity to be able to bring incoming cold air to a comfortable temperature.

### 1. INSTALLATION HEIGHT AND WIDTH

Based on the installation height (from floor to the bottom of the unit) and the door width, it is easy to select the right air curtain (see selection table). By installing multiple units next to each other, door openings wider than 250cm can be protected.

#### SELECTION TABLE

Type	Door height (cm)	Door width (cm)
S	up to 2.7	100 - 150 - 200 - 250
M	up to 3.1	100 - 150 - 200 - 250
L	up to 3.5	100 - 150 - 200 - 250

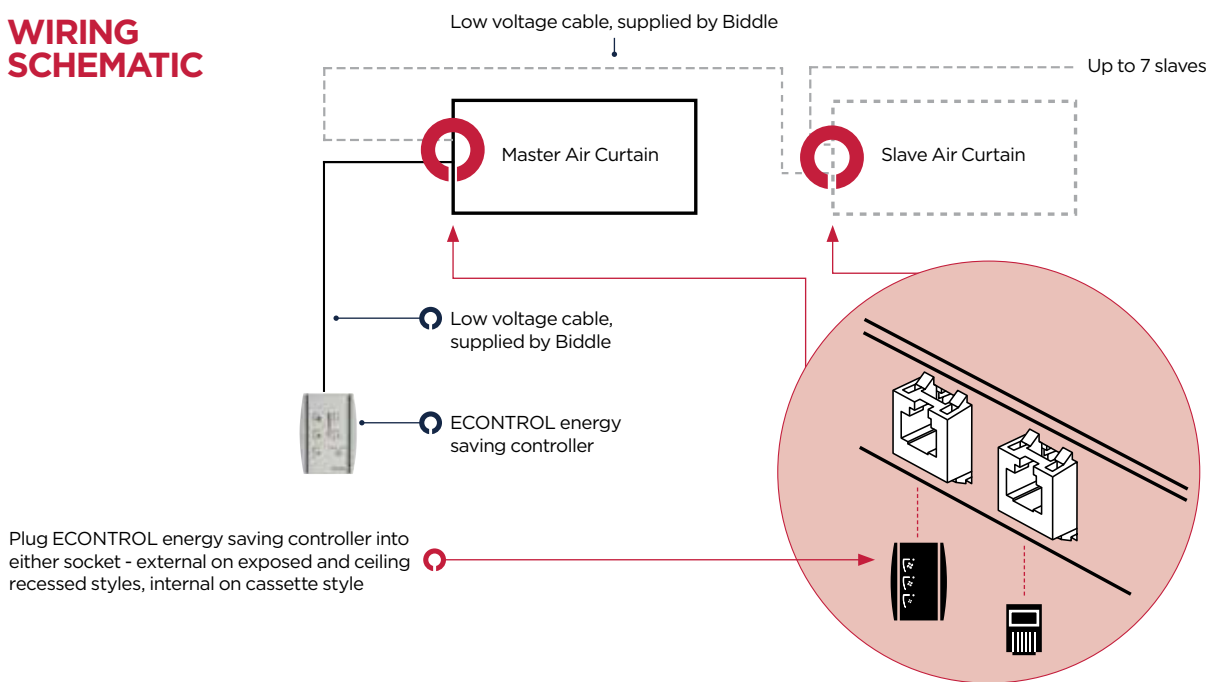
### 2. CORRECT INSTALLATION

For the air curtain to function properly, it is important that the distance between the air curtain and the door is as short as possible. Also, the air curtain must be at least as wide as the doorway to prevent cold air bypassing the unit's air stream at the sides.

#### TYPE CODE: DF S-100-H2-F

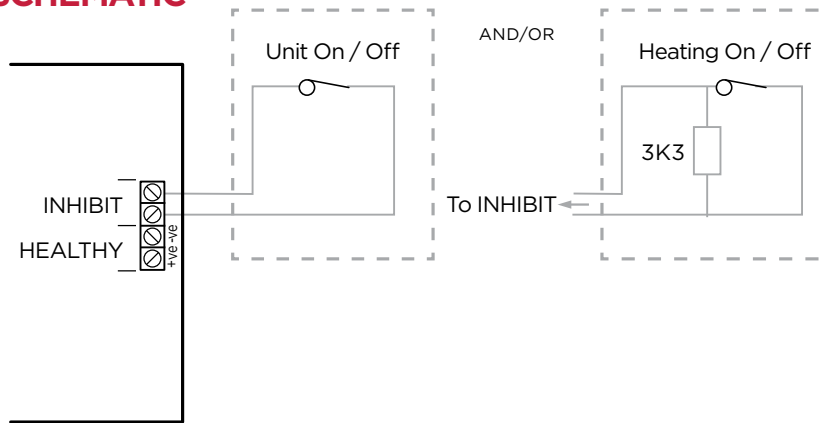
DF	DoorFlow
Capacity	
S	up to 2.7
M	up to 3.1
L	up to 3.5
Length (cm)	
100 - 150 - 200 - 250	
Coil type	
W2	Hot water heating, 2-row
W4	Hot water heating, 4-row
E	Electrical heating
Model	
F	Free hanging model
R	Recessed model
C	Cassette models
T	Tourniquet model

## WIRING SCHEMATIC



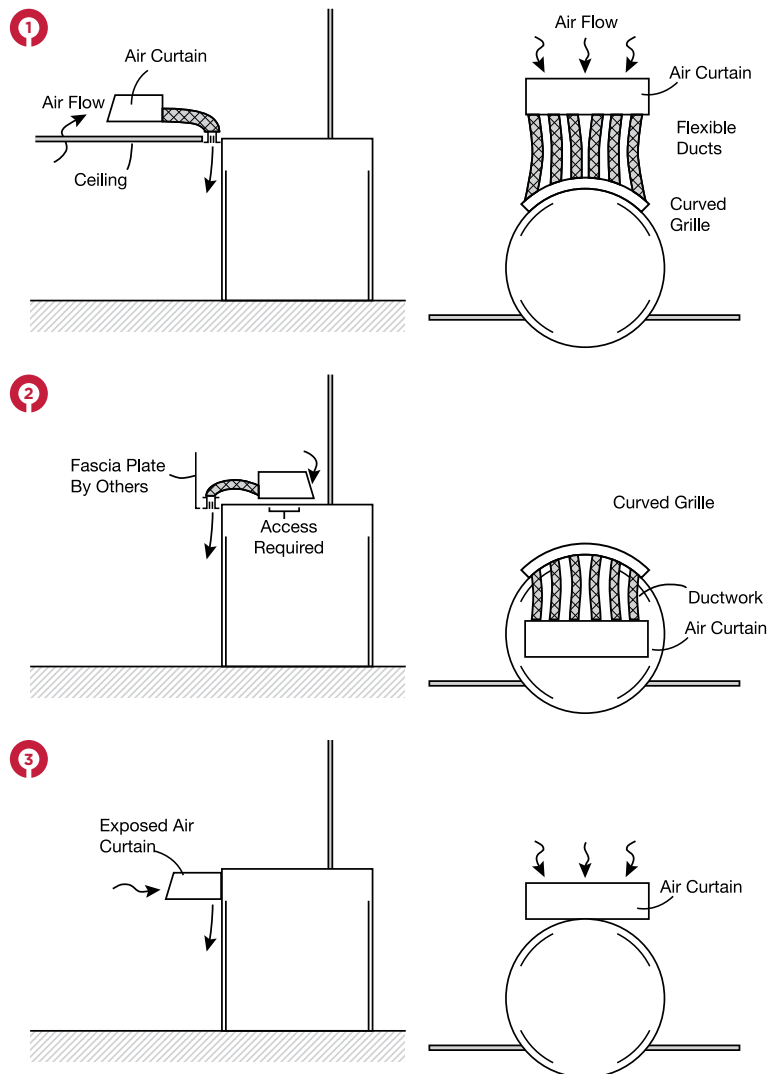
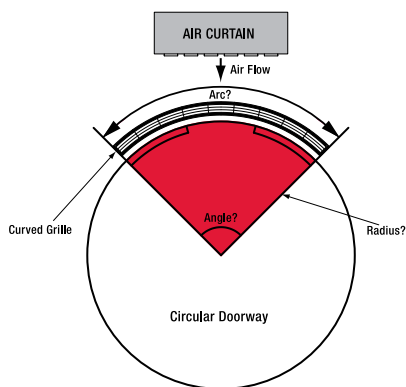


## CONTROLS SCHEMATIC



## CIRCULAR DOORWAYS

When an air curtain is to be used in conjunction with revolving doors or any other form of circular doorway we are able to use a variant of the recessed model installed either adjacent to or directly above the door. Given certain key dimensions we manufacture a bespoke discharge grille to fit perfectly with the curvature of the door, and ensure optimum climate separation around the circular doorway.



# SPECIFICATIONS

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## CONTROL & OPERATION

By adjusting heat output and fan speed the ECONTROL ensures air curtain performance is optimised whilst minimising energy usage. It is connected to the unit by a low voltage data cable with a RJ4/4 plug on both ends. Multiple units are also connected in this way. Cables are available in a variety of lengths.

## ELECTRICAL CONNECTIONS

LPHW units are connected to the mains supply by a 2 metre cable. The 3-phase mains supply cable used with electric heated units enters the air curtain via a cable gland on top of the unit and is then connected to a terminal strip within the unit. The water connections and the socket for the RJ4/4 plug are located on top of the unit.

## CASING

The casing is made from zinc plated sheet steel and incorporates an inspection panel. Both the discharge grille, incorporating the patented rectifier, and the inlet grille are made of anodized aluminium. As standard the exposed, ceiling recessed and cassette units are painted white (RAL9016) and the grille on the single grille cassette unit is painted white (RAL9010). Alternative colours can be supplied if requested.

## MOTOR/FAN ASSEMBLY

The air curtain is fitted with two or more (depending on size) dual-inlet vibration-free centrifugal fans. Each fan is driven by a suspended rotor motor. The fan casing and impeller are made from either zinc coated steel or plastic, depending on the model. The motors are manufactured according to EN60-335-1, protection class IP44 and insulation class F. They are fitted as standard with thermal contacts which break the circuit if the maximum allowable motor temperature is exceeded.

## HEATER BATTERY

The LPHW coil comprises 3/8" copper pipes and aluminium fins. The water supply connections for the exposed, ceiling recessed and cassette units are 1" BSP female thread and for the single grille cassette unit 3/4" BSP female thread. The test pressure is 9 bars and the maximum operating pressure is 8 bars at 175°C. The electric heating coil is made of U-tube-shaped stainless rods.

## STANDARD DELIVERY

Rectifier technology  
Discharge duct (model R)  
Built-in water side control: three-way valve and actuator (water units)  
Room temperature control  
Power cable, 230 Volts, length 2 metres (excl. electric units)

## OPTIONAL

Two-way control valve (delivered separately)  
Door contact switch  
Wall brackets  
Relay for controlling boiler

Normal width unit			1.0m						1.5m					
Model Code			DF S-100-W4# High output coil		DF S-100-W2# Low output coil		DF S-100-E#		DF S-150-W4# High output coil		DF S-150-W2# Low output coil		DF S-150-E#	
Max. Installation height	m		2.7		2.7		2.7		2.7		2.7		2.7	
Optimum door width	m		0.8		0.8		0.8		1.3		1.3		1.3	
Air volume	Low	m³/s	0.211		0.211		0.211		0.325		0.325		0.325	
	Medium	m³/s	0.273		0.273		0.273		0.412		0.412		0.412	
	High	m³/s	0.357		0.357		0.357		0.535		0.535		0.535	
LPHW flow & return temperatures	°C		60/40	80/60	82/71	80/60	na		60/40	80/60	82/71	80/60	na	
Heating capacity with 20°C entering air	Low	kW	4.4	8.0	5.5	4.3	2.4/4.8		7.4	13.0	9.0	7.4	4.7/9.4	
	Medium	kW	5.2	9.6	6.5	5.1	2.4/4.8		8.6	15.3	10.4	8.5	4.7/9.4	
	High	kW	6.1	11.4	7.6	6.0	2.4/4.8		10.2	18.2	12.2	10.0	4.7/9.4	
Water flow rate (max)	l/s		0.074	0.138	0.168	0.073	na		0.123	0.222	0.270	0.12	na	
Water pressure drop (Inc valve)	kPa		0.4	3.4	1.6	0.3	na		1.3	5.6	4.4	0.9	na	
Electrical supply			230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz		230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz	
Rated power input	kW		0.22		0.22		5.0		0.33		0.33		10.0	
Current per phase	A		0.96		0.96		8.20		1.44		1.44		15.94	
Noise level at medium speed	dB(A)		43		43		43		45		45		45	
Weight	Model F	kg	33		31		35		49		46		53	
	Model R	kg	32		30		34		48		45		52	
	Model C	kg	36		34		37		54		51		56	

Normal width unit			2.0m						2.5m					
Model code			DF S-200-W4# High output coil		DF S-200-W2# Low output coil		DF S-200-E#		DF S-250-W4# High output coil		DF S-250-W2# Low output coil		DF S-250-E#	
Max. Installation height	m		2.7		2.7		2.7		2.7		2.7		2.7	
Optimum door width	m		1.8		1.8		1.8		2.3		2.3		2.3	
Air volume	Low	m³/s	0.429		0.429		0.429		0.536		0.536		0.536	
	Medium	m³/s	0.547		0.547		0.547		0.684		0.684		0.684	
	High	m³/s	0.714		0.714		0.714		0.892		0.892		0.892	
LPHW flow & return temperatures	°C		60/40	80/60	82/71	80/60	na		60/40	80/60	82/71	80/60	na	
Heating capacity with 20°C entering air	Low	kW	10.2	17.7	12.2	10.2	7.1/14.2		13.0	22.5	15.6	13.2	7.1/14.2	
	Medium	kW	12.0	20.9	14.3	12.0	7.1/14.2		15.4	26.6	18.2	15.4	7.1/14.2	
	High	kW	14.2	25.1	16.7	14.0	7.1/14.2		18.3	31.9	21.3	18.0	7.1/14.2	
Water flow rate (max)	l/s		0.172	0.305	0.372	0.171	na		0.221	0.388	0.474	0.220	na	
Water pressure drop (Inc valve)	kPa		2.9	9.1	8.9	2.0	na		5.3	14.0	15.3	3.5	na	
Electrical supply			230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz		230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz	
Rated power input	kW		0.44		0.44		15.0		0.55		0.55		15.0	
Current per phase	A		1.92		1.92		23.66		2.40		2.40		24.14	
Noise level at medium speed	dB(A)		46		46		46		47		47		47	
Weight	Model F	kg	64		60		69		81		76		88	
	Model R	kg	62		58		67		79		74		86	
	Model C	kg	70		66		73		9		84		93	

# Add casing style 'F' or 'R' or 'C' to complete model code

Normal Width Unit			1.0m						1.5m					
Model Code			DF M-100-W4# High output coil		DF M-100-W2# Low output coil		DF M-100-E#		DF M-150-W4# High output coil		DF M-150-W2# Low output coil		DF M-150-E#	
Max. Installation height	m		3.1		3.1		3.1		3.1		3.1		3.1	
Optimum door width	m		0.8		0.8		0.8		1.3		1.3		1.3	
Air volume	Low	m³/s	0.283		0.283		0.283		0.395		0.395		0.395	
	Medium	m³/s	0.332		0.332		0.332		0.478		0.478		0.478	
	High	m³/s	0.392		0.392		0.392		0.592		0.592		0.592	
LPHW flow & return temperatures		°C	60/40	80/60	82/71	80/60	na		60/40	80/60	82/71	80/60	na	
Heating capacity with 20°C entering air	Low	kW	5.3	9.8	6.6	5.2	4.7/9.4		8.4	14.9	10.1	8.3	7.1/14.2	
	Medium	kW	5.8	10.8	7.2	5.7	4.7/9.4		9.5	16.9	11.4	9.4	7.1/14.2	
	High	kW	6.5	12.1	8.0	6.3	4.7/9.4		10.8	19.4	12.9	10.6	7.1/14.2	
Water flow rate (max)		l/s	0.078	0.147	0.178	0.076	na		0.131	0.237	0.286	0.129	na	
Water pressure drop (Inc valve)		kPa	0.5	3.8	1.8	0.3	na		1.5	6.0	4.9	1.0	na	
Electrical supply			230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz		230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz	
Rated power input		kW	0.33		0.33		10.0		0.44		0.44		15.0	
Current per phase		A	1.44		1.44		15.94		1.92		1.92		23.66	
Noise level at medium speed		dB(A)	46		46		46		47		47		47	
Weight	Model F	kg	37		35		39		53		51		57	
	Model R	kg	36		34		38		52		49		56	
	Model C	kg	40		38		41		58		55		60	

Normal width unit			2.0m						2.5m					
Model code			DF M-200-W4# High output coil		DF M-200-W2# Low output coil		DF M-200-E#		DF M-250-W4# High output coil		DF M-250-W2# Low output coil		DF M-250-E#	
Max. Installation height	m		3.1		3.1		3.1		3.1		3.1		3.1	
Optimum door width	m		1.8		1.8		1.8		2.3		2.3		2.3	
Air volume	Low	m³/s	0.566		0.566		0.566		0.678		0.678		0.678	
	Medium	m³/s	0.663		0.663		0.663		0.811		0.811		0.811	
	High	m³/s	0.784		0.784		0.784		0.987		0.987		0.987	
LPHW flow & return temperatures		°C	60/40	80/60	82/71	80/60	na		60/40	80/60	82/71	80/60	na	
Heating capacity with 20°C entering air	Low	kW	12.2	21.4	14.6	12.2	9.5/19.0		15.3	26.5	18.1	15.2	11.9/23.8	
	Medium	kW	13.6	23.9	16.0	13.4	9.5/19.0		17.2	29.9	20.2	17.0	11.9/23.8	
	High	kW	15.1	26.6	17.7	14.8	9.5/19.0		19.5	34.1	22.7	19.1	11.9/23.8	
Water flow rate (max)		l/s	0.182	0.324	0.393	0.180	na		0.236	0.415	0.504	0.233	na	
Water pressure drop (Inc valve)		kPa	3.3	9.8	9.9	2.2	na		6.0	16.2	17.2	4.0	na	
Electrical supply			230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz		230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz	
Rated power input		kW	0.66		0.66		20.0		0.77		0.77		25.0	
Current per phase		A	2.88		2.88		31.66		3.36		3.36		39.59	
Noise level at medium speed		dB(A)	49		49		49		50		50		50	
Weight	Model F	kg	72		68		77		89		84		96	
	Model R	kg	70		66		75		87		82		94	
	Model C	kg	78		74		81		97		92		101	

# Add casing style 'F' or 'R' or 'C' to complete model code

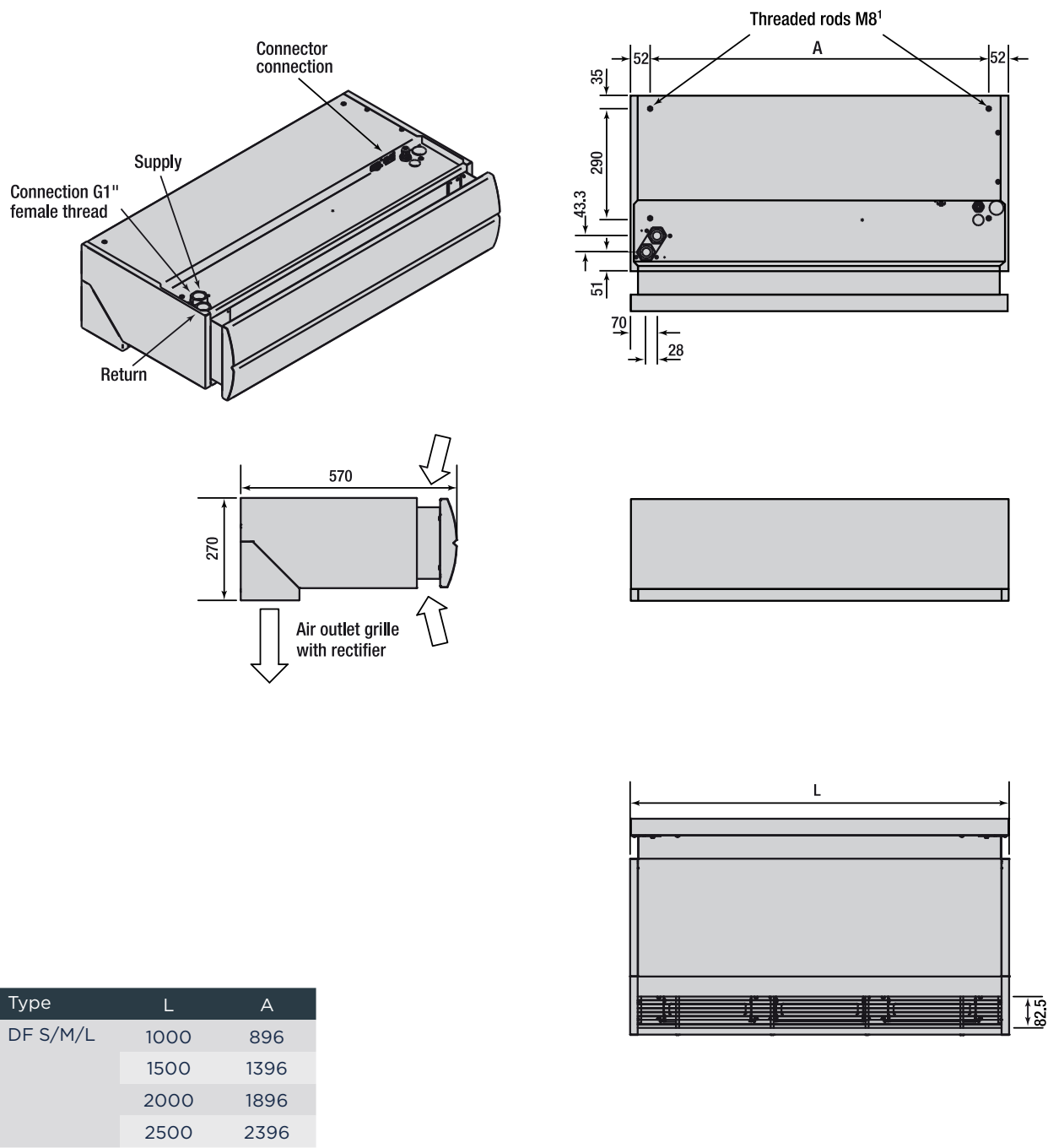
Normal width unit			1.0m						1.5m					
Model code			DF L-100-W4# High output coil		DF L-100-W2# Low output coil		DF L-100-E#		DF L-150-W4# High output coil		DF L-150-W2# Low output coil		DF L-150-E#	
Max. Installation height	m		3.5		3.5		3.5		3.5		3.5		3.5	
Optimum door width	m		0.8		0.8		0.8		1.3		1.3		1.3	
Air volume	Low	m³/s	0.325		0.325		0.325		0.439		0.439		0.439	
	Medium	m³/s	0.416		0.416		0.416		0.570		0.570		0.570	
	High	m³/s	0.521		0.521		0.521		0.731		0.731		0.731	
LPHW flow & return temperatures	°C		60/40	80/60	82/71	80/60	na		60/40	80/60	82/71	80/60	na	
Heating capacity with 20°C entering air	Low	kW	5.8	10.7	7.2	5.6	4.7/9.4		9.0	16.0	10.8	8.8	7.1/14.2	
	Medium	kW	6.7	12.5	8.3	6.4	4.7/9.4		10.6	19.0	12.6	10.3	7.1/14.2	
	High	kW	7.6	14.4	9.4	7.3	4.7/9.4		12.3	22.2	14.6	11.9	7.1/14.2	
Water flow rate (max)	l/s		0.092	0.175	0.208	0.089	na		0.149	0.271	0.324	0.145	na	
Water pressure drop (Inc valve)	kPa		0.6	4.3	2.4	0.5	na		1.9	6.3	6.2	1.3	na	
Electrical supply			230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz		230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz	
Rated power input	kW		0.58		0.58		10.0		0.77		0.77		15.0	
Current per phase	A		2.52		2.52		17.02		3.36		3.36		25.10	
Noise level at medium speed	dB(A)		48		48		48		48		48		48	
Weight	Model F	kg	35		33		37		50		47		54	
	Model R	kg	33		32		36		49		46		53	
	Model C	kg	38		36		39		55		52		57	

Normal width unit			2.0m						2.5m					
Model code			DF L-200-W4# High output coil		DF L-200-W2# Low output coil		DF L-200-E#		DF L-250-W4# High output coil		DF L-250-W2# Low output coil		DF L-250-E#	
Max. Installation height	m		3.5		3.5		3.5		3.5		3.5		3.5	
Optimum door width	m		1.8		1.8		1.8		2.3		2.3		2.3	
Air volume	Low	m³/s	0.651		0.651		0.651		0.765		0.765		0.765	
	Medium	m³/s	0.832		0.832		0.832		0.986		0.986		0.986	
	High	m³/s	1.043		1.043		1.043		1.253		1.253		1.253	
LPHW flow & return temperatures	°C		60/40	80/60	82/71	80/60	na		60/40	80/60	82/71	80/60	na	
Heating capacity with 20°C entering air	Low	kW	13.4	23.6	15.9	13.2	9.5/19.0		16.6	28.8	19.4	16.5	11.9/23.8	
	Medium	kW	15.7	27.7	18.3	15.2	9.5/19.0		19.5	34.1	22.6	19.0	11.9/23.8	
	High	kW	18.0	32.0	20.9	17.4	9.5/19.0		22.7	39.8	26.0	21.9	11.9/23.8	
Water flow rate (max)	l/s		0.217	0.389	0.464	0.212	na		0.273	0.484	0.579	0.267	na	
Water pressure drop (Inc valve)	kPa		4.5	11.1	13.6	3.0	na		7.9	21.8	22.5	5.1	na	
Electrical supply			230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz		230V/1ph/50Hz		230V/1ph/50Hz		400V/3ph/50Hz	
Rated power input	kW		1.15		1.15		20.0		1.34		1.34		25.0	
Current per phase	A		5.04		5.04		34.02		5.88		5.88		42.11	
Noise level at medium speed	dB(A)		51		51		51		51		51		51	
Weight	Model F	kg	67		63		73		84		79		91	
	Model R	kg	65		61		71		81		76		89	
	Model C	kg	73		69		76		91		86		95	

# Add casing style 'F' or 'R' or 'C' to complete model code

# FREE HANGING UNITS STYLE F

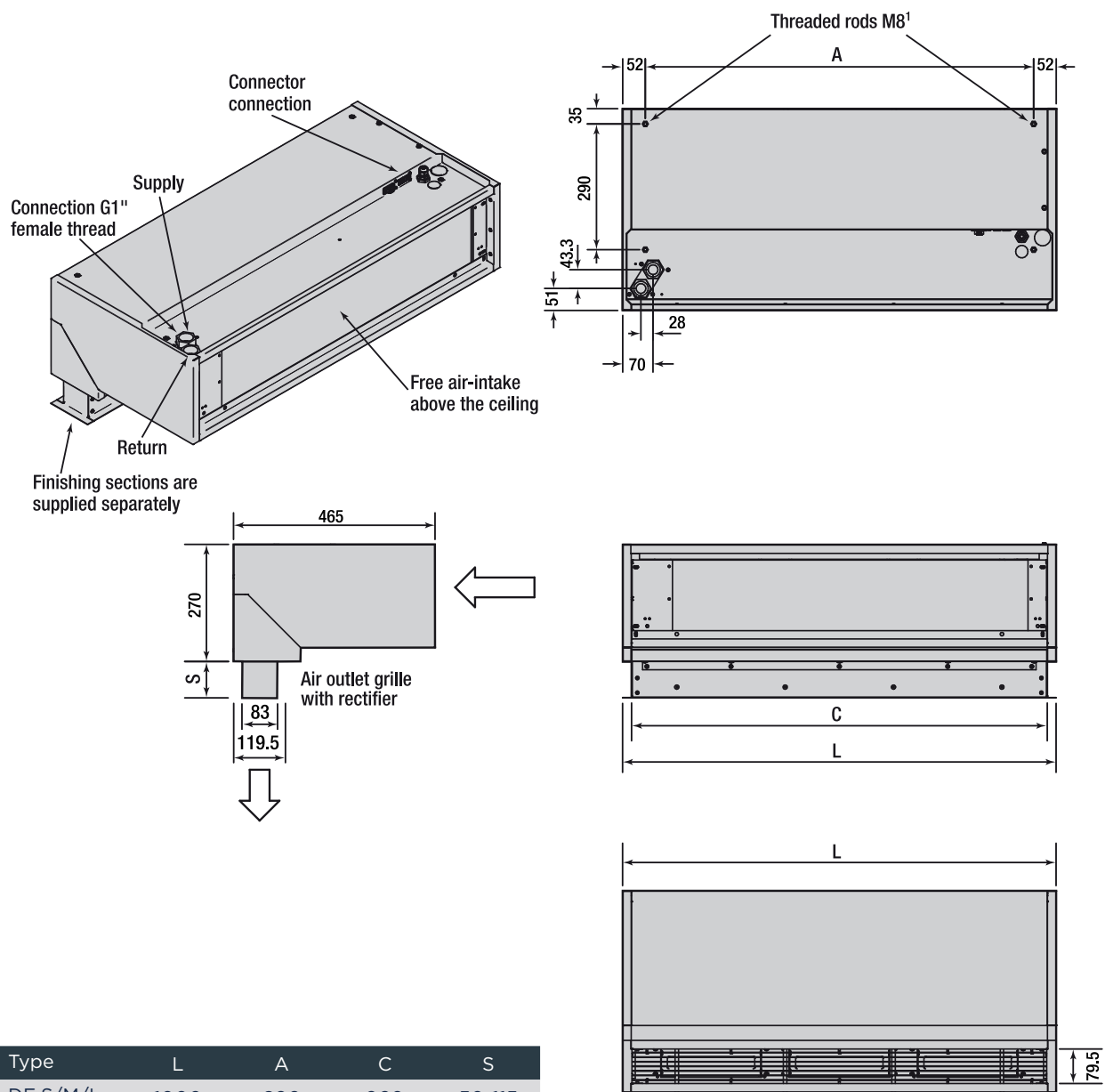
## DIMENSIONAL DRAWINGS



1. The 1000, 1500 and 2000mm versions feature a 4 x M8 internal thread, while the 2500mm version has a 6 x M8 internal thread

# CEILING RECESSED UNITS STYLE R

## DIMENSIONAL DRAWINGS

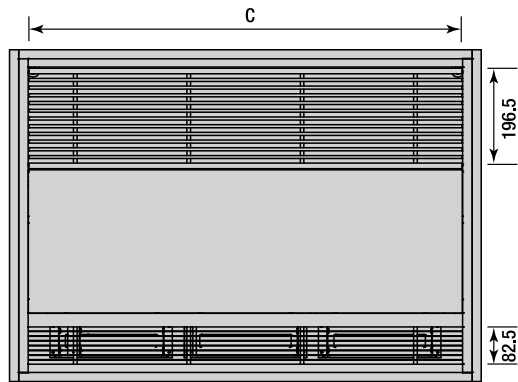
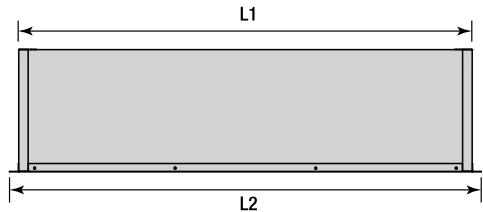
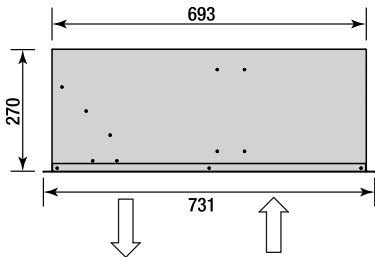
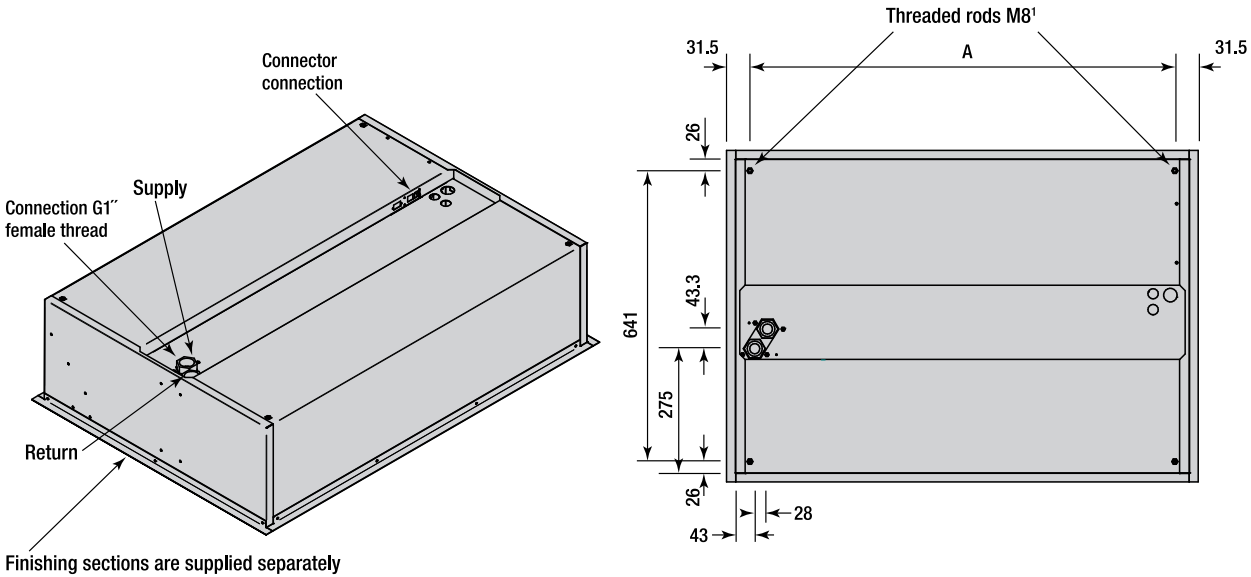


- Daylight openings (if cover mouldings are used): -for air discharge 92 x (C+8) mm.
- For safety reasons electrical heated and ambient units come with a guard grille.
- 1. The 1000, 1500 and 2000mm versions feature a 4 x M8 internal thread, while the 2500mm version has a 6 x M8 internal thread



# CASSETTE UNITS STYLE C

## DIMENSIONAL DRAWINGS

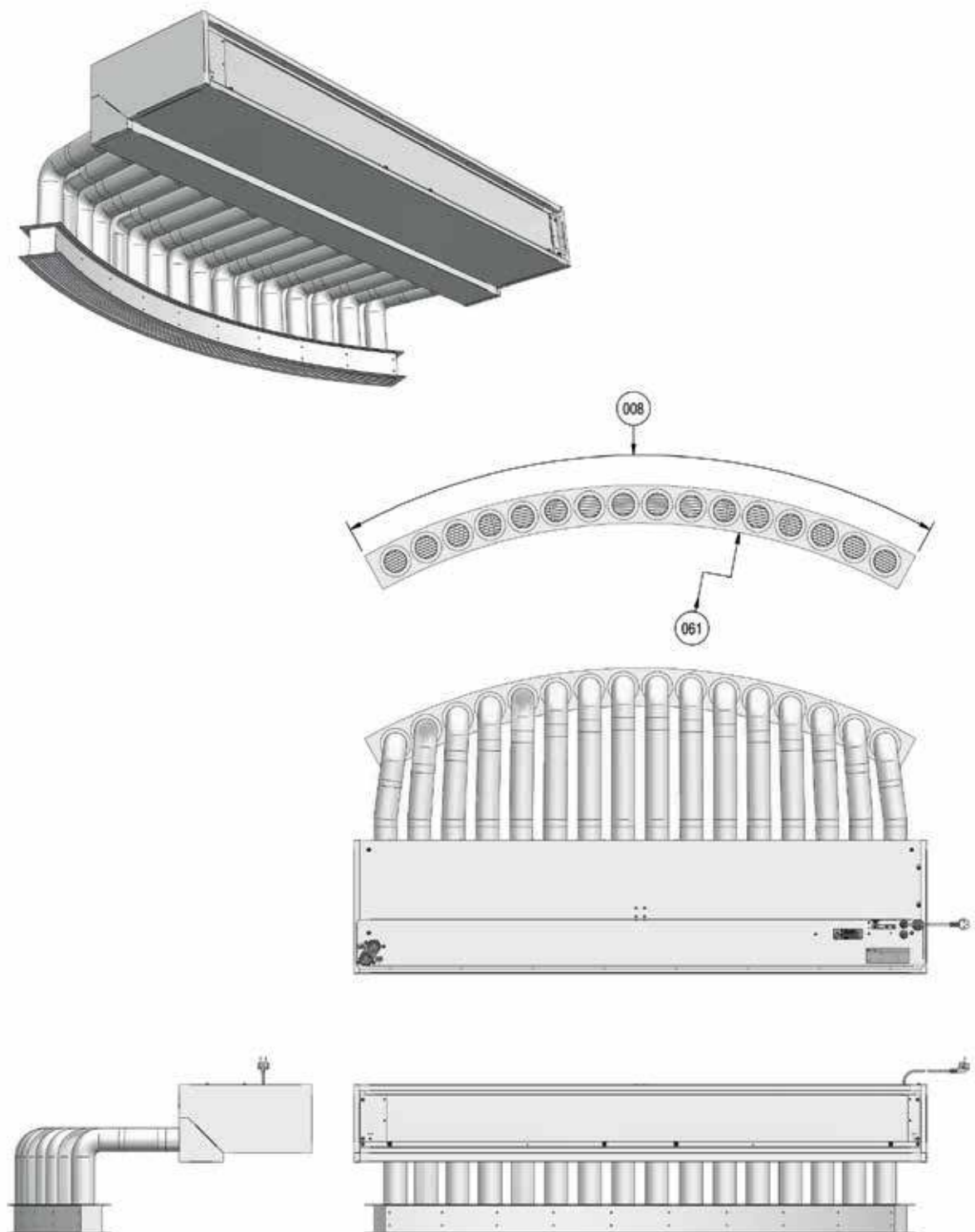


Type	L1	L2	A	C
DF S/M/L	1000	1040	937	958
	1500	1540	1437	1458
	2000	2040	1937	1958
	2500	2540	2437	2458

- Daylight openings (if cover mouldings are used): -for air discharge (L1 + 8) x 701mm.
- 1. The 1000, 1500 and 2000mm versions feature a 4 x M8 internal thread, while the 2500mm version has a 6 x M8 internal thread

# TOURNIQUET MODEL

## DIMENSIONAL DRAWINGS



- For a tourniquet air curtain to align with the curve of a revolving door, two measurements are required: the angle and the radius (R).
- For the dimensions of the air curtain, please see the dimensional sketch of the recessed model (R).
- The choice of unit is based on the extended length of the tourniquet.

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# Biddle

Every effort has been made to ensure descriptions are correct at the time of print.  
Errors and omissions excepted. DOORFLOW|V1|06|2019