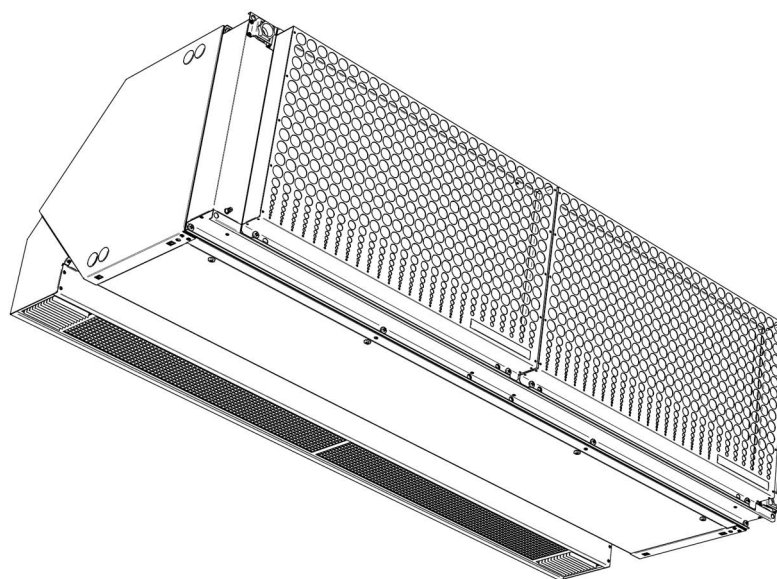




Industrial Air Curtain

IP2

IP2 Industrial Air Curtain



Installation, Operating and Maintenance

English

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1. INTRODUCTION

1.1 About this manual

This manual describes the installation, operation and maintenance of the IP2 industrial air curtain. The manual also provides instructions and information for servicing activities.

1.2 How to read this manual

1.2.1 Designations used in the manual

The following symbols are used in the manual:

NOTE: Refers to an important section in the text.

CAUTION: If you do not carry out the procedure or action correctly, you may cause damage to the unit.

Follow the instructions precisely.

WARNING: If you do not carry out the procedure or action correctly, you may cause physical injury and/or damage.



Follow the instructions precisely.

DANGER: Is used to designate actions that are not permitted.

Ignoring this prohibition may lead to serious damage or to accidents resulting in physical injury.

1.2.2 Symbols used on the unit and in the manual

The following symbols indicate possible risks or hazards. The same symbols will also be found on the unit.

Symbol	Description
	<p>WARNING: You have accessed a section of the unit containing components which carry a voltage.</p> <p>Access restricted to qualified maintenance staff only.</p> <p>Caution is required.</p>
	<p>WARNING: This surface or component may be hot. Risk of burns on contact.</p>

1.2.3 Related documentation

In addition to this manual, the following documentation is also supplied with the unit:

- wiring diagram for installation and servicing.

1.2.4 Safety instructions

Safety in use

WARNING: Do not put any objects into the inlets and outlets.

WARNING: Do not obstruct the unit's inlets or outlets.



WARNING: The upper surface of the unit becomes hot during operation.

Safety issues relating to installation, maintenance and servicing

DANGER: The unit may only be opened by qualified technical staff.



WARNING: Perform the following actions before opening the unit:

1. Switch the unit off, using the control panel.
2. Wait until the fans have stopped.

DANGER: The fans may continue rotating for a while.

3. Allow the unit to cool down.



CAUTION: The heat exchanger or the heating elements, can get very hot.

4. Disconnect the mains supply (turn off at the isolation switch).
5. **For water-heated models:**
isolate the water connections.

WARNING: The fins of the heat exchanger are sharp.

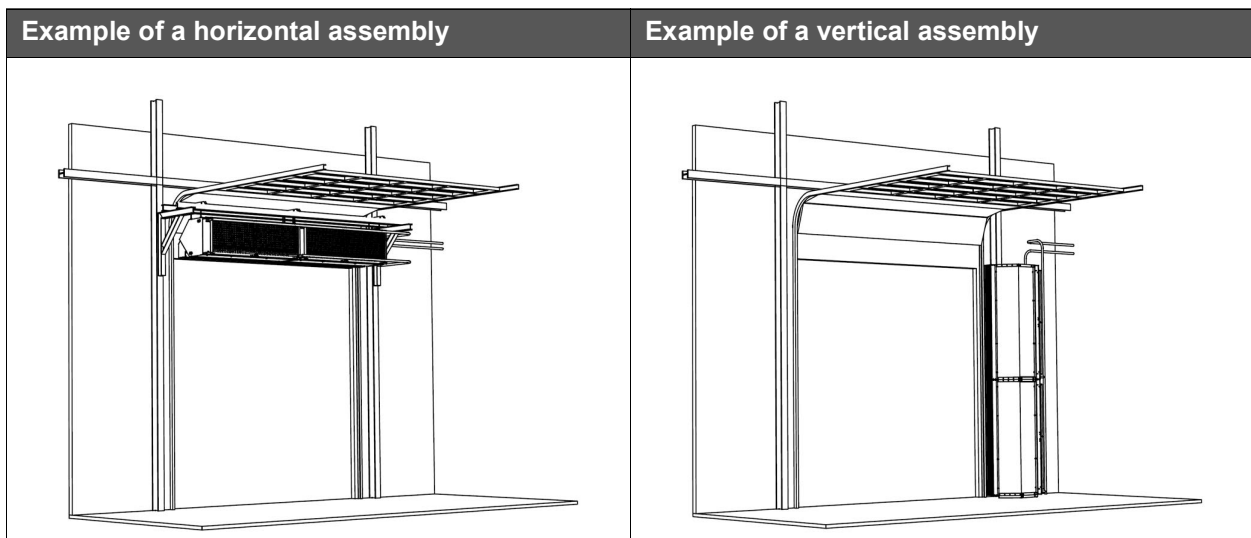
1.3 About the unit

1.3.1 Applications

The air curtain model IP2 is intended for the separation of climates between indoors and outdoors, or between two rooms. It is installed above or next to the door, across the full width or length of the doorway. The IP2 model is primarily suitable for larger doors in industrial buildings.

Models having a maximum range (type L) are intended for professional use.

Depending on the type, the air curtain is hung horizontally above the doorway, or erected vertically next to the doorway (on left or right, or on both sides).



Other versions and intended use

Upon request, we can supply versions for non-standard applications.

1.3.2 Operation

General

An air curtain above the door opening counteracts losses of energy and comfort. Located at the opening, it blows out a stream of air and thereby brings about the following:

- The exchange of air between two rooms due to a temperature difference (convection) is significantly reduced.
- The air that enters at floor level due to draught is possibly heated.

1.3.3 Type designation

The table below provides an overview of the available models of the industrial air curtain and the corresponding type designations. In combination, the type designations constitute the type code, for instance: IP2 S-1500-A-2R Simple.

If some part of the manual applies to certain models only, these will be indicated with the corresponding type designation, for example:

- 1500: models with discharge width 1500
- A: unheated models
- E: electrically-heated models
- 0: horizontal models
- Advanced: models with automatic control

NOTE: In the illustrations in this manual, one type of unit is used as a general example. The outer appearance of your unit may be different but its functioning is the same, unless stated otherwise.

Explanation of the type code

Type code element	Designation	Meaning
product series	IP2	general designation for the series
capacity	S	default range (door height 3-6 m)
	L	maximum range (door height 5-8 m)
length	1500, 2000, 2250 or 2500.	discharge length in mm
coil type	H1 H2	water heating
	E	electrical heating
	A	without heating
installation position	0, 1L, 1R, 2L, 2R	In section Installation positions , the various installation positions are explained.
control	Simple	simple control
	Advanced	automatic control

See also:

1.3.4 "Installation positions" on page 11

1.3.4 Installation positions

The IP2 air curtain is suitable for mounting in various installation positions. Depending on the situation, the unit can be placed above or next to the door. In total, there are five installation positions: 0, 1L, 1R, 2L, 2R.

CAUTION: The unit has been manufactured specifically for the installation position indicated in the type code. The unit **cannot** be located in another position.

Code	Installation position	Example
0	horizontal, above door	
1L	vertical, next to door, on left, at right angle to wall	
1R	vertical, next to door, on right, at right angle to wall	
2L	vertical, next to door, on left, along the wall	
2R	vertical, next to door, on right, along the wall	
←	= direction of air inlet and discharge (must remain free)	
▲	= inspection side (must be accessible)	
▲	= location of electronic housing	

1.3.5 Type plate

Model:	V	V	Thermoscreens <small>Marktwiel 4 9286 HA Kooijsterille The Netherlands tel. +31 512 33 55 00</small> <small>Made in the Netherlands</small>
Supply:	V		
Rated input power:	V		
Medium - p _{max} :	V		
Serial Number:	V/Vvvvvvv/Vv-Vv		
Year:	2023.Vv	T:	SN:

The type plate is located next to the discharge grille.

Designations on the type plate

Designation	Meaning
Type	complete type code of the unit
N ^o	serial number, production week and year
M	weight of unit
Medium	medium
P _{max}	maximum permissible operating pressure
U	power supply voltage
I _{max}	max. current
P _{motor}	max. power consumption by fans
P _{heating}	For electrically heated models: max. power consumption by heating element

1.3.6 Field of application

Observe the following limits for the unit:

Operating limits for all models

Ambient conditions	Temperature	5 °C to 40°C
	Relative air humidity	20% - 95%, not condensing
Power supply voltage		see type plate
Power		see type plate
Maximum discharge temperature		60 °C
IP rating		IP44 (Ambient And Water Units) IP20 (Electrical Units)

Parameters of use for water-heated models

Heating medium	water with max. 50% glycol
Maximum operating pressure	see type plate

Maximum water temperatures (unregulated)

Type of unit	Maximum permissible discharge temperature	Maximum water temperatures (unregulated - supply/return)
H1	60 °C	100/80 °C
H2	60 °C	70/50 °C

CAUTION: * A water temperature of up to 125 °C/16 bar is only permitted if all units connected have been set in such a way that the maximum discharge temperature is not exceeded **at the lowest fan speed.**

NOTE: Consult Thermoscreens if you want to connect a unit to a system with higher water temperatures and/or higher pressure.

WARNING: The unit may not be used in potentially explosive environments, outdoors or in very dusty or aggressive air conditions.

WARNING: Electrical models may not be used in wet environments.

Thermoscreens shall not be held liable for damage caused by use under these conditions.

Sound levels

	Maximum sound pressure level L_p [dB(A)]	Maximum sound power level L_w [dB(A)]
IP2 S-150	61	77.8
IP2 S-200	62	79.1
IP2 S-250	63	80.1
IP2 L-150	69	85.6
IP2 L-225	71	87.4

$V = 2500 \text{ m}^3$; $T60 = 0.8\text{s}$; $R = 5\text{m}$; $Q = 4$

WARNING: Prolonged exposure can cause damage to the hearing. If necessary, wear hearing protection.

Maximum number of units that can be daisy chained

Take into account the maximum number of units that can be daisy chained as shown in the table below:

	IP2 S	IP2 L
Simple	5 m total length (10 fans)	7.5 m total length (10 fans)
Advanced	9 units	9 units
Number of Simple Units That Can Be Controlled By 1 Advanced	2 units	2 units

CAUTION: With Advanced type unit: The total cable length between the first and the last unit may be 30m at maximum.

NOTE: Consult our sales team if you wish to connect more units.

1.3.7 CE (and UKCA) declaration

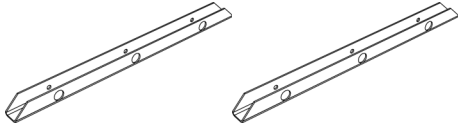
The unit is compliant with the applicable CE standards. For the UK market, the unit is also compliant to the applicable UKCA standards. The Declaration(s) of Conformity can be found on the website.

1.3.8 Modifications and changes

Without our approval, no changes or modifications may be made to the unit that could adversely affect safety. The CE (and UKCA where appropriate) declaration is no longer valid if the unit has been modified or changed in any way.

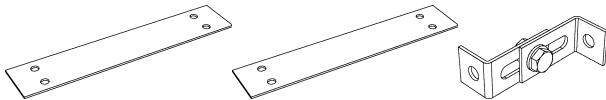
1.4 Components and accessories

1.4.1 Components supplied



For horizontal installation:

- suspension rails (2 per unit), also used for fixing the unit to the pallet;



For vertical installation:

- coupling plates (2 per unit)
- safety hanger

For electrically heated models (type E):

- Control cable for connecting multiple units.

NOTE: For delivery purposes, some components may be packed within the unit (behind the inspection panel).

1.4.2 Operating package

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

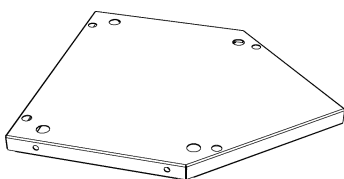
Operating package for simple control

- continuously variable controller.

Operating package for advanced control

- Ecopower control panel (Optional);
- control cable (Optional);
- outdoor temperature sensor;
- water-side control with valve and actuator (water heating units only).

1.4.3 Accessories



- plastic side shields;
- door contact switch
- base plate (required for vertical installation);
- flanges;
- filter module;
- door contact switch.

1.4.4 Components not supplied

The following components required for installation must be obtained from third parties:

- threaded rods
- other cabling

2. INSTALLATION

2.1 Safety instructions

WARNING: Installation activities may only be performed by technical staff qualified for this purpose.

WARNING: Before starting installation: read the safety instructions.

See also:

1.2.4 "Safety instructions" on page 4

2.2 Inspection on delivery

- Check the unit and the packaging to ensure that they have been delivered in good order. Notify the supplier and, if possible, the driver immediately if any shipping damage is detected.
- Ensure that all components are present. Notify supplier of any missing parts immediately.

See also:

1.4 "Components and accessories" on page 15

2.3 General working method

2.3.1 Sequence of operations

Thermoscreens recommends working as follows when installing the unit:

1. Hang the unit up. **(horizontal models)**
2. Position the unit. **(vertical models)**
3. **For models with water-heating (type H):**
connect the unit to the central heating system.
4. Connect the unit to the mains supply.
5. Install the control panel (simple control, optional for advanced) and any connections to external controls (advanced control units only).
6. Complete the installation of the unit.
7. Switch the mains supply on and check that the unit is working properly.
8. Connect the unit to any building management systems (if required).

General instructions

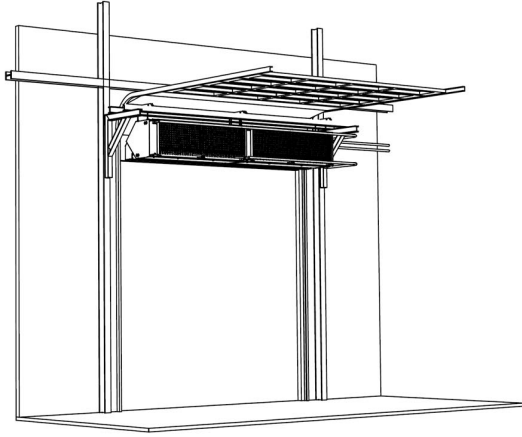
Some parts of this section only apply to certain models. Where this is the case, it will be indicated. If no specific model is referred to, then the description applies to all models.

NOTE: Make sure that you perform all installation operations that are applicable to your unit.

Check the type plate and consult the manual if in doubt about the model or type of your unit.

NOTE: During the installation period, protect the unit against damage and penetration of dust, cement, etc. You can, for instance, use the packaging for protection.

2.4 Suspending the unit horizontally



See also:

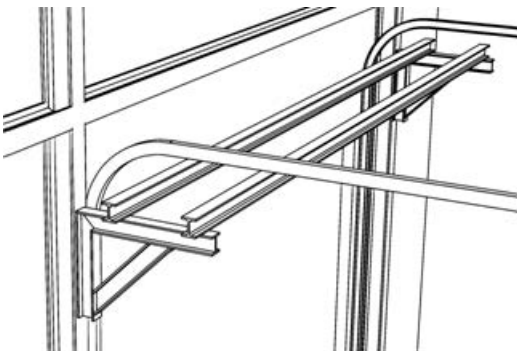
1.3.3 "Type designation" on page 7

1.3.5 "Type plate" on page 11

1.3.4 "Installation positions" on page 9

2.4.1 Suspension method

Example of an auxiliary structure



This manual assumes that the unit will be suspended from an auxiliary structure, consisting of two horizontal beams positioned above the door.

You may also fix the units directly to the ceiling, or to another horizontal structure, using the screw holes in the upper side of the unit.

WARNING: Make sure that the structure from which the unit is about to be suspended can bear at least 4 times the weight of the unit.

2.4.2 Determining the location of the unit

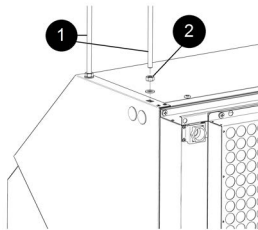
- Position the underside of the unit at the same height as the top of the doorway.
- Position the discharge side of the unit as close to the doorway as possible, to ensure optimum operation.

NOTE: If the distance is greater than 5 cm., Thermoscreens recommends that you seal off the openings at the side. For this purpose, you can order a side shield of plastic strips from Thermoscreens.

- Position the row of units centrally in relation to the doorway.
- In the case of an assembly with advanced control and several units, position the master unit with the control circuit board in the middle of the row.
- Units of different widths can be positioned in random order.
- Make sure that the inspection and intake sides of the units remain accessible for maintenance.

WARNING: Make sure that all units can freely take in and blow out air across their entire width

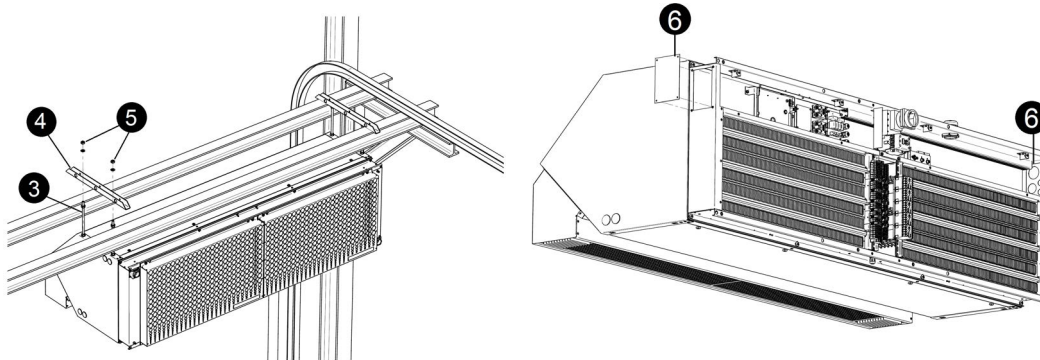
2.4.3 Suspending the unit (horizontal units only)



Perform the following actions for each unit:

1. Lay the unit in a horizontal position.
2. Fit threaded rods ① (M12) in all screw holes on the top of the unit.
3. Provide all threaded rods with lock nuts ②, and tighten them.

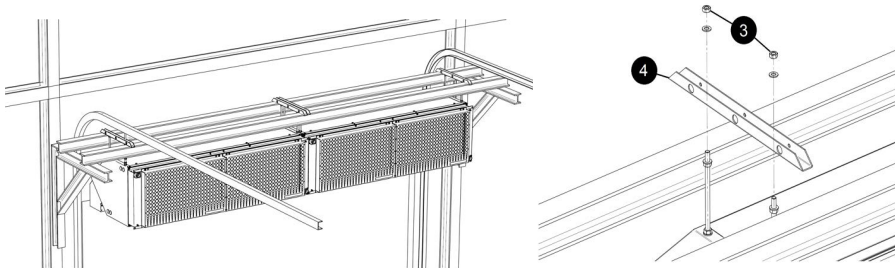
NOTE: The threaded rods must be secured, otherwise the unit may fall down.



4. Fit lock nuts ③ to each threaded rod.
5. Bring the unit into position using lifting equipment.
6. Put the suspension rails ④ on the auxiliary structure, and fasten them with nuts ⑤ to the threaded rods of the unit.
7. Allow the unit to hang freely.

NOTE: For electrically heated models (type E): Remove the small side plates ⑥ from the cable tray between the units, so that the cabling can be drawn through.

2.4.4 Adjusting and securing



1. Position the units against one another, in one line, by placing the suspension rails against one another.
2. Attach the suspension rails to the auxiliary structure.

WARNING: Make sure that the suspension rails can never come loose from the auxiliary structure.

3. Adjust the units to the same height, and level them by tightening the nuts .

CAUTION: Ensure that the units are hanging level and horizontal in both directions. Otherwise the fans may run out of true.

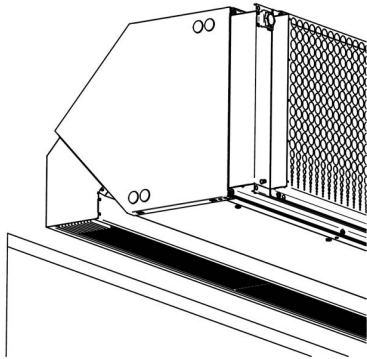
4. Secure the suspension to the threaded rods by tightening the lock nuts ③ .

WARNING: The threaded rods must be secured, otherwise the unit may fall down.

5. You can possibly fasten the units to each other .

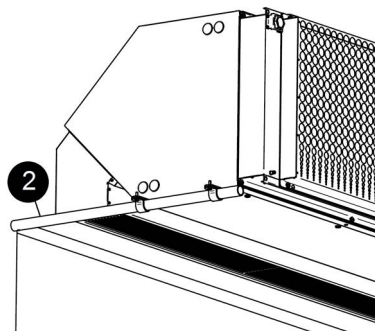
CAUTION: First position the units independently of each other, so that no force is exerted on the coupling elements.

2.4.5 Installing side shield

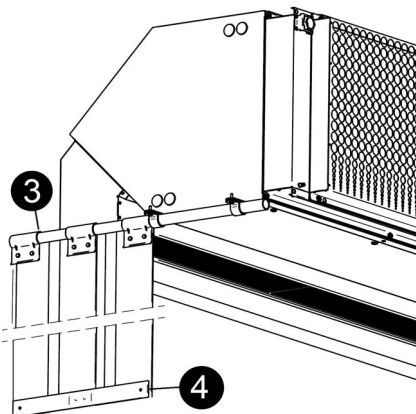


For optimum operation, the unit's discharge opening must be placed as close as possible to the door opening. If the distance is greater than 5 cm, you are advised to seal off the openings at the side.

For this purpose, you can order a side shield of plastic strips from Thermoscreens.



1. On both sides of the unit, mount a tubing profile, reaching to the wall ②.
2. Cut the plastic strips to size.



3. Fasten the strips to the suspension system ③.
4. Fasten the steel plates at the bottom of the strips ④.

See also:

1.3.3 "Type designation" on page 7

1.3.4 "Installation positions" on page 9

2.5 Installing the unit vertically

See also:

1.3.3 "Type designation" on page 7

1.3.5 "Type plate" on page 11

1.3.4 "Installation positions" on page 9

2.5.1 Method of erection

This manual makes the assumption that the unit is to be placed on a base plate (accessory). The units are stacked on top of one another.

CAUTION: If you do not use a base plate, you must ensure that the surface underneath is horizontal and completely level. Otherwise the fans may run out of true.

CAUTION: Although the units can stand up by themselves, it is always necessary to secure them to the wall.

2.5.2 Determining the location of the unit

- Position the discharge side of the unit so that its breadth coincides with that of the doorway.
- Position the discharge side of the unit as close to the doorway as possible, to ensure optimum operation.
- Units of different sizes can be placed on each other in random order.
- Make sure that the intake side and the inspection side of the units remain accessible for maintenance.

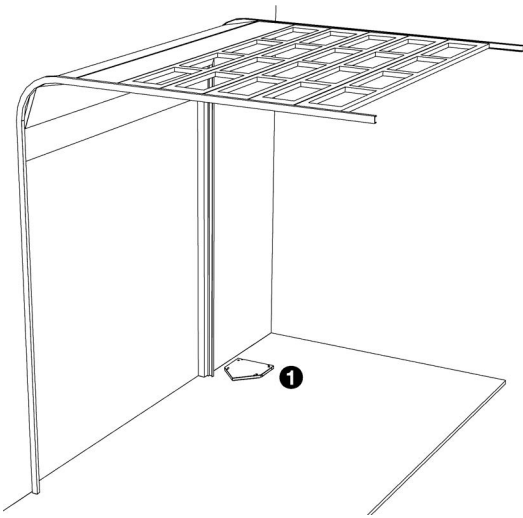
CAUTION: Make sure that all units can freely take in and discharge air across their entire height.

See also:

1.3.3 "Type designation" on page 7

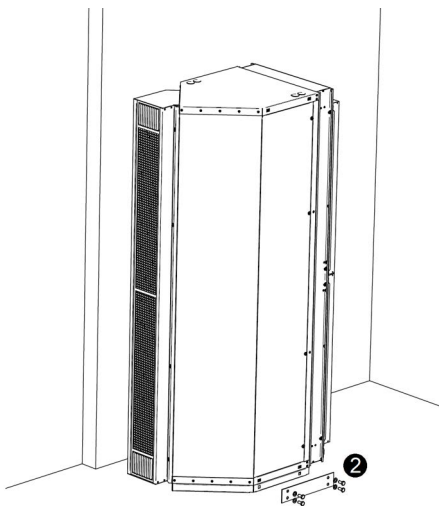
1.3.4 "Installation positions" on page 9

2.5.3 Positioning the units (vertical units only)



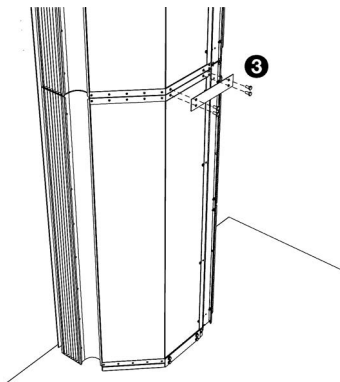
1. Position the base plate ❶ and fix it to the floor. Orientation is shown for unit type 2R.

CAUTION: Ensure that the base plate is level.



2. Position the first unit on the base plate.
3. Fix the unit to the base plate with coupling plates ❸.

CAUTION: Mount the coupling plates on both sides of the unit.

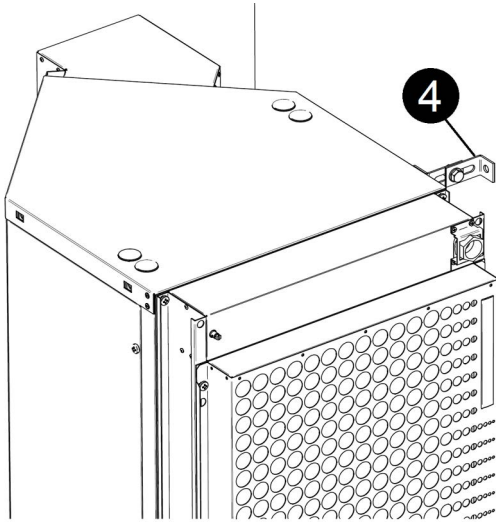


- Place the second unit on the first unit, and attach them together with coupling plates ③.

CAUTION: Mount the coupling plates on both sides of the unit.

- Place the third unit (if applicable) in the same way.

2.5.4 Securing



- Attach the topmost unit safety hanger ④: use one of the screw holes in the unit.
- Attach the safety hanger to a wall or other fixed construction.

CAUTION: If you attach more than 3 units together: attach a safety hanger every 2 or 3 units.

2.6 Connecting the unit to the central heating system

Only for water-heated models



See also:

1.3.5 "Type plate" on page 11

1.3.3 "Type designation" on page 7

2.6.1 Special points regarding the water connection

CAUTION: The central heating system's supply and return pipes must be attached to the correct corresponding connectors. On the unit, the directions are indicated with arrows.

symbol feed pipe	symbol return pipe
	
arrow points towards the connection	arrow points away from the connection

CAUTION: Thermoscreens require the inclusion of a shut off valve in both pipes.

DANGER: Take measures to limit the discharge temperature.

Take account of the critical discharge temperatures and water flow-paths indicated in the section Field of application.

NOTE: The central heating system must be fitted with an overpressure cut-out with an initial pressure not exceeding the permitted pressure of the unit. This is shown on the type plate at P_{max} .

NOTE: Make sure that the central heating system has sufficient capacity.

See also:

1.3.6 "Field of application" on page 12

2.6.2 The water-side control (accessory)

Only for models with advanced control

The unit is equipped with water-side control. This regulates the water supply to the heat exchanger, so that a variable discharge temperature is achieved, either set manually or based outside weather temperature. The maximum permitted discharge temperature is indicated in [Field of application](#).

Special points regarding the water-side control

Thermoscreens supplies water-side controls on models with advanced control.

CAUTION: A maximum of 1 units having a control valve can be connected in series per control circuit board. Consult Thermoscreens if you want to connect several control valves in an assembly with a single control circuit board.

CAUTION: Control valves that are not supplied by Thermoscreens must, in any case, comply with the following:

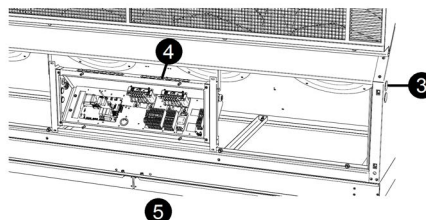
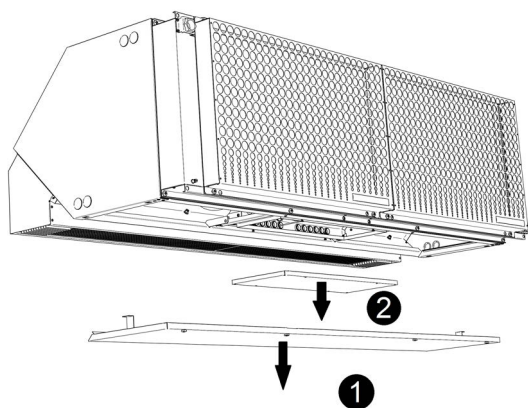
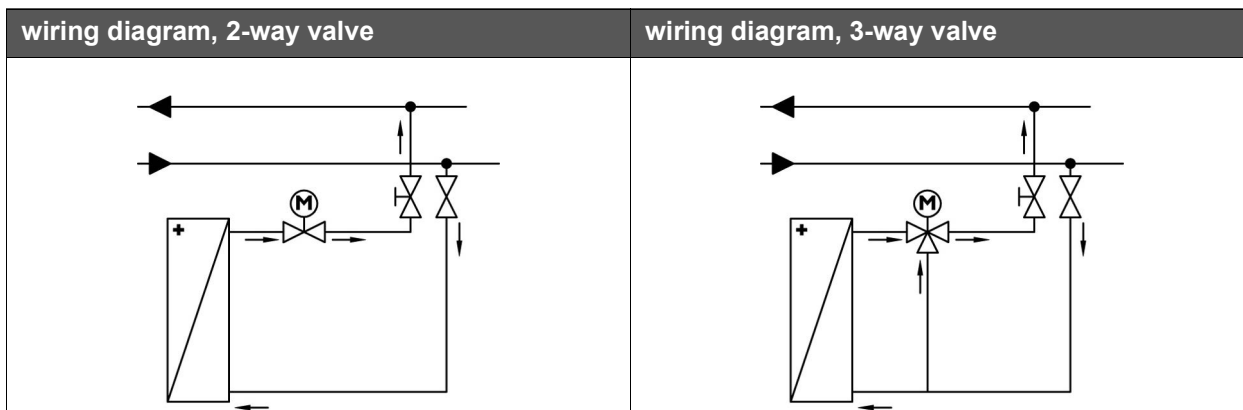
- 24V power supply.
- 0-10V control.
- The total power consumption of the water-side controls that are connected to 1 control circuit board may be a maximum of 7.6 VA.

Connecting the water-side control

Only for models with advanced control:

1. Connect the control valve and the actuator to the heat exchanger in accordance with the diagram and in line with the instructions given in the control valve manual.

NOTE: Ensure that the orientation of the valve is in the correct position when connecting the actuator. See the control valve manual.



2. Remove the inspection panel ❶.
3. Remove the cover of the electronic housing ❷.
4. Connect the cord to the actuator, in accordance with the wiring diagram.
NOTE: Use a cable of at least 0.5 mm².
5. Feed the cord from the actuator through openings ❸ and ❹ in the electronic housing.
6. Connect the cord to the terminal ❺ of the control circuit board, in accordance with the wiring diagram.
7. Connect (if applicable) the actuators from multiple units, following the instructions in the actuator manual.

NOTE: Only close the electronic housing after connecting the mains supply and the control unit and external controls.

See also:

1.3.6 "Field of application" on page 12

1.6.1 "Special points regarding the water connection" on page 17

2.6.3 Connecting the unit

1. Connect the unit to the central heating system.
2. Vent the heat exchangers.
3. Check the connections for leakage.

2.7 Connecting the unit to the mains supply

2.7.1 Special points regarding the mains supply

For all models

WARNING: The unit must be earthed.

WARNING: The unit must be connected in accordance with the applicable local requirements.

Maximum ratings are specified on the type plate.

NOTE: A single fuse may only be used for multiple units if they draw a total current of less than 10A.

- The unit is connected to the mains supply with a cable (5-core, not supplied).

CAUTION: For emergency situations and maintenance, it must be possible to render the entire system electrically dead.

- **For models without heating (type A) and water-heated models (type H)** An isolation switch (not supplied) must be fitted between the unit and the mains supply. This switch must:
 - be all-pole;
 - have a contact separation of at least 3 mm,
 - be positioned near the unit.

2.7.2 Connecting the unit (types A and H)

Only for models without heating and for water-heated models:

General

WARNING: Before you begin: read the special points regarding the mains supply.

See also:

1.7.1 "Special points regarding the mains supply" on page 22

Connecting the unit

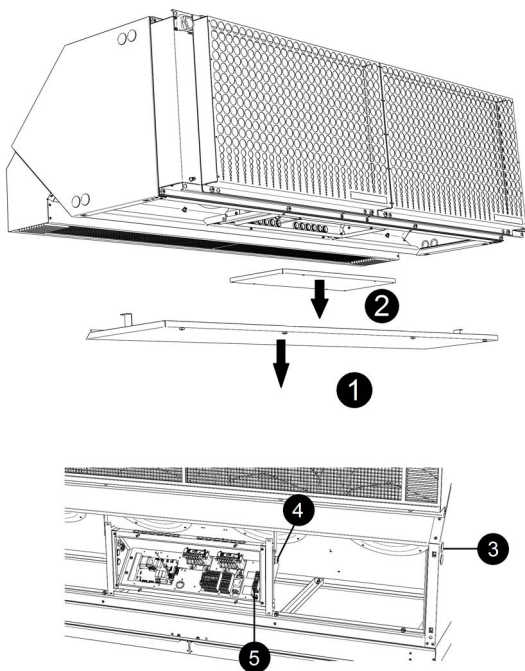
Connecting the unit is carried out in the same way for each installation position. With vertical installation position 2, the inspection panel is located in a different position.

WARNING: Make sure that the mains supply is switched off.

WARNING: The mains power cables must be resistant to the high temperatures in the unit.

See [Field of application](#) for the maximum temperatures.

*cabling in the case of horizontal installation position
(type 0)*



1. Fit an isolation switch between the mains supply and the assembly. For the specifications of the isolation switch, see [Special points regarding the mains supply](#).
 2. Remove the inspection panel ① from the free side of the unit.
 3. Remove the cover of the electronic housing ②.
 4. Feed the mains power cable between the isolation switch and the electronic housing in the unit
 - In the feed-through hole to be used ③, fit a cable gland for pull relief.
 - You may feed the cable inward through either end of the row of units, as you choose.
 - Fasten the cable to the edge inside the unit, using the cable clips.
- WARNING: Do not allow the cable to lie or hang loosely.**
5. Feed the cable into the electronic housing.
 - Make the grommets ④ in the electronic housing to measure.
 - Feed the cable through the wall of the electronic housing.

CAUTION: Ensure that the grommets fit so tightly around the cable that they remain watertight.

WARNING: Make sure that the earth wire is longer than the power supply wires.

WARNING: Only for IP2 L units:

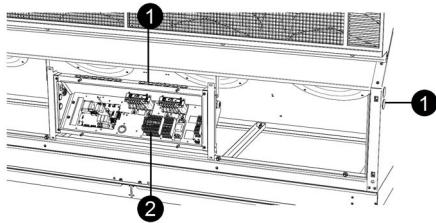
High leakage current! Connect the earth wire first, before connecting the power supply. Minimum diameter of the earth wire: 10 mm² / 6 AWG.

6. Connect the mains power cable to terminal block X01 ⑤, in accordance with the wiring diagram.

CAUTION: Keep the length of the cable within the electronic housing as short as possible. Ensure that the cable does not come into the vicinity of the other cables in the electronic housing.

CAUTION: Do not switch on the mains supply yet.

Connecting multiple units



1. Lay the connecting cable between the electronic housings of the units to be connected

- Feed the cable through the feed-through holes ①.
- Fasten the cable to the edge inside the units, using the cable clips.

WARNING: Do not allow the cable to lie or hang loosely.

2. Feed the cable into the electronic housings of both units.

- Make holes in the grommets in the electronic housing to suit the cable diameter.
- Feed the cable through the wall of the electronic housing.

CAUTION: Ensure that the grommets fit so tightly around the cable that they remain watertight.

3. Connect the cable in both units to terminal block X60 ②.

CAUTION: Keep the length of the cable within the electronic housing as short as possible. Ensure that the cable does not come into the vicinity of the other cables in the electronic housing.

4. Repeat steps 1 to 3 for each unit to be connected.

CAUTION: Do not switch on the mains supply yet.

See also:

1.2.3 "Related documentation" on page 4

2.7.3 Connecting the unit (type E)

Only for electrically heated models

General

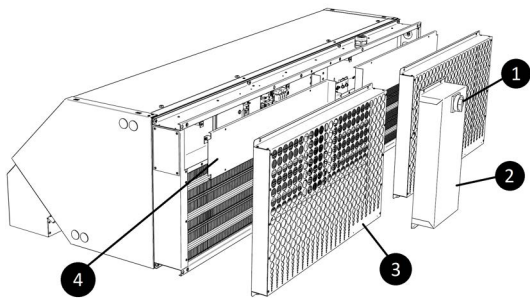
CAUTION: Each unit is separately connected to the mains supply.

WARNING: Before you begin: read the special points regarding the mains supply.

See also:

1.7.1 "Special points regarding the mains supply" on page 22

Opening the heating section



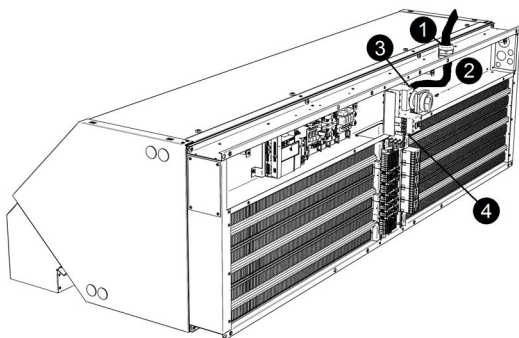
Perform the following actions for each unit:

1. Set isolation switch **1** on the unit to position 0.
2. Remove the cover **2**.
3. Remove the inlet grille **3**.
4. Remove the cover plate of the cable space **4**.

Connecting the unit

WARNING: Make sure that the mains supply is switched off.

WARNING: Connect each unit separately to the mains supply



Perform the following actions for each unit:

1. Bring the mains power cable to the unit:

- Feed the cable through hole ❶.
- Place the cable in the cable space ❷.

NOTE: The feed-through hole must be fitted with a cable gland for pull relief.

2. Connect the cable to isolation switch ❸, in accordance with the wiring diagram.

3. Connect the earth to the terminal block ❹.

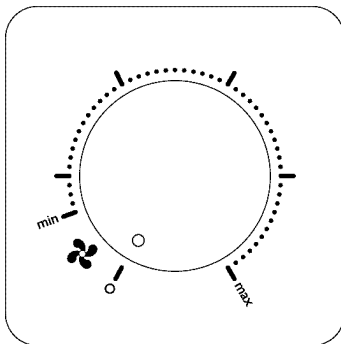
WARNING: Make sure that the earth wire is longer than the power supply wires.

4. Repeat all steps for each unit to be connected.

See also:

1.2.3 "Related documentation" on page 4

2.8 Installing the continuously variable controller



Various control units are available for the IP2 industrial air curtain. This chapter describes the installation of the continuously variable controller that is used on units having a basic control (Simple type).

2.8.1 Special points regarding the controller

Positioning

You can attach the controller to the wall or to a standard junction box.

Cabling

The controller is connected to the unit via a cable (not supplied), and can be connected in series among several units.

Take the following into account, otherwise errors may occur:

- Keep the length of the cables as short as possible.
- Keep the cables away from electromagnetic fields and interference sources, such as high-voltage cables and fluorescent light starters.

Multiple units with one controller

NOTE: Consult your Thermoscreens advisor if you wish to connect more units.

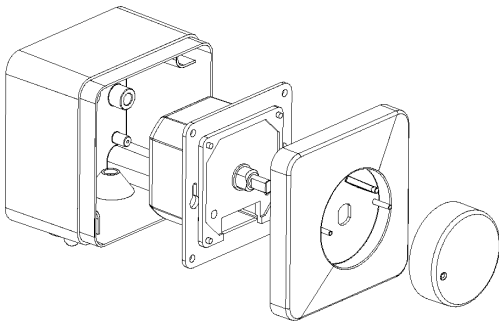
Setting output voltage.

The controller can adjust the strength of the unit in a continuously variable manner. The output voltage can be set between V_{min} and V_{max} . This is done after the complete installation of the unit and all connections.

2.8.2 Mounting and connecting the controller

WARNING: Make sure that the mains supply group with which you are working has been turned off.

CAUTION: When installing the unit, use the wiring diagram supplied.



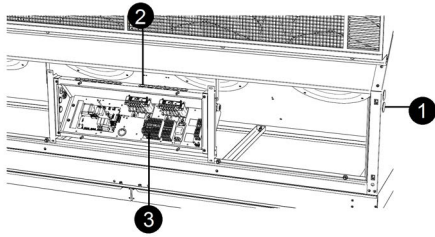
1. Remove the adjustment button.
2. Remove the hexagonal nut.
3. Remove the cap.
4. Fasten the surface-mounted box to the wall if you are not making use of a standard junction box.
5. Lead the control cable (not supplied) between the controller and a unit of your choice. For the specifications of the cable, see section [Special points regarding the controller](#).
6. Connect the control cable to the controller. See the wiring diagram supplied.

CAUTION: Do not turn the controller off yet if you still want to adjust the output voltage after complete installation of the unit.

7. Using the 2 small screws and rings, screw the switch to the surface-mounted box or standard junction box.
8. Fit the shut-off cap.
9. Fasten the hexagonal nut.
10. Fit the adjustment button: Press this on firmly and set to position '0'.

2.8.3 Connecting the controller to the unit

WARNING: The unit must be earthed.



1. Lead the cable to the electronic housing in the unit.
 - In the feed-through hole to be used **1**, fit a cable gland for pull relief.
 - You may feed the cable inward through either end of the row of units, as you choose.
 - Fasten the cable to the edge inside the unit, using the cable clips.

WARNING: Do not allow the cable to lie or hang loosely.

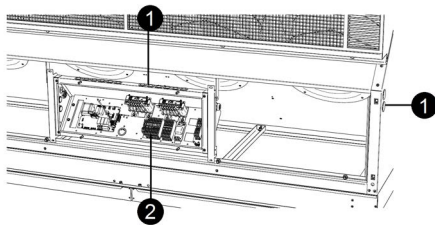
2. Feed the cable into the electronic housing.
 - Make the grommets **2** in the electronic housing to measure.
 - Feed the cable through the wall of the electronic housing.

CAUTION: Ensure that the grommets fit so tightly around the cable that they remain watertight.

3. Connect the cable to terminal block X60 **3**, in accordance with the wiring diagram.

Daisy chaining multiple units with a single controller

NOTE: Check in [Special points regarding the controller](#) to see how many units can be connected to the controller.



1. Lay the cable between the electronic housings of the units to be connected
 - Feed the cable through the feed-through holes **1**.
 - Fasten the cable to the edge inside the units, using the cable clips.

WARNING: Do not allow the cable to lie or hang loosely.

2. Feed the cable into the electronic housings of both units.
 - Make the grommets in the electronic housing to measure.
 - Feed the cable through the wall of the electronic housing.

CAUTION: Ensure that the grommets fit so tightly around the cable that they remain watertight.

3. Connect the cable in both units to terminal block X60 **2**.
4. Repeat steps 1 to 3 for each unit to be connected.

2.8.4 Connecting an extra controller to the unit (optional)

The fans have a start-up time of approx. 3 seconds. This can be remedied with an extra controller which causes the fans to rotate very slowly if the door is closed.

NOTE: The fans also continue rotating slowly at night. If this is not desired, switch the unit off at night with the controller that is used for operating it.

You can attach the extra controller to the wall, to a standard junction box or at a spot near the unit.

1. Position the controller in a logical place.

NOTE: Ensure that there is a clear difference between the extra controller and the controller that is used for the operation of the unit.

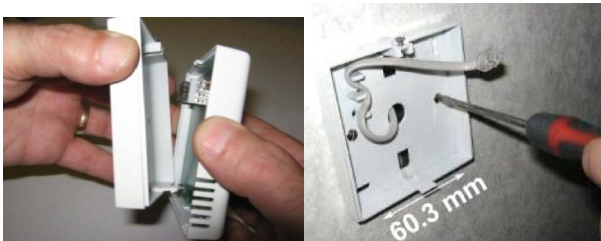
2. Connect the controller in accordance with the wiring diagram. In doing so, follow the actions as described in [Mounting and connecting the controller](#) and [Connecting the controller to the unit](#).

CAUTION: Remove the bridge from between position 5 and position 6 of terminal block X60.

NOTE: Do not close the controller yet.

2.9 Installing the control panel and external controls


2.9.1 Mounting the remote control



Mount the Ecopower remote control at an easily accessible place, either directly to the wall or in a switch box.

1. Loosen the screw on the top and open the casing.
2. Affix the back of the casing to the wall using 2 screws.
3. Close the casing and turn the screw on the top until tight.

2.9.2 Multiple units operated from a single control panel

- A maximum of eight units may be connected to a single control panel.
- Units are daisy chained using control cables and connectors .
- The total length of the control cables (from the control panel to the last unit connected) may not be any longer than 30 m.
- Configure any one unit as a master(see section Unit Settings). The sequence of the connected units is not important.

NOTE: Do NOT remove the external control input bridges on the other units.

Master and slave units

With master and slave units, only the temperature sensor and external controls (connected to IN1 and IN0) on the master device are used. This prevents units from heating up with a wide door while other units are simultaneously discharging unheated air.

NOTE: If no master unit is set, the temperature control operates independently for each unit.

2.9.3 Unit settings

WARNING: Disconnect the unit from the power supply before making any changes.

Several dip switches are located on the unit's control circuit board. You can use these to change the operation of the unit.

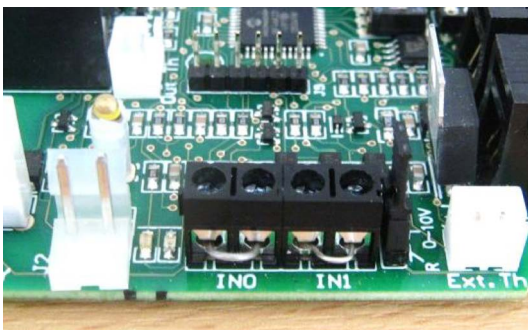
DANGER: For all units:

The position of dip switches 1 and 2 must not be changed

dip	function	position on (on)	position off (off)	default
1 and 2	Heating level is matched to fan speed. High heating is disabled in low speed and unit will run on when powered down for safety reasons.	Factory setting	Not allowed	ON
3	Designate master unit	Unit designated as master.	Unit designated as slave.	OFF
4	Function selection input 1 (IN1)	Input 1 (IN1) is used for a door contact switch.	Input 1 (IN1) is used for a weather-responsive control.	OFF

NOTE: Changes made to the dip switches are only put into effect after the power supply to the unit has been cut off.

2.9.4 External control inputs



The control circuit board is fitted with 2 inputs for external control: IN0 and IN1.

The inputs are suitable for potential-free switches, which can be connected using a 2-core cable.

DANGER: Do not connect any power supply to the contact. This could damage the circuit board.

Input IN0

A door contact switch or building management system can be connected to input IN0.

- The connector is located on the control circuit board (IN0). This connection is daisy chained to the connector on the outside of the unit.
- This connector is fitted with a link on delivery.

Working of the input

contact closed	contact open
unit operates normally (by wall control or BMS)	<ul style="list-style-type: none">• the heating switches off.• the fans first continue to run for 15 secs at the current speed.• after that, the fans run for another 2 min. at medium speed. <p><i>(only if DIP 2 on the control circuit board is set to OFF)</i></p> <ul style="list-style-type: none">• after that, the fans switch off.

Input IN1


For IP2 Industrial air curtains, input IN1 has no functionality.

2.9.5 Fault signal output

This is a potential-free contact. It can be loaded to a maximum of 1A 24V SELV.

On units with electrical heating (type E), this contact is activated if the high-limit thermostat has switched off the unit.

See the Service chapter for details of how to reset the high-limit thermostat.

- The OK-C contact is made when the unit is powered.
- The C- contact is made when the maximum thermostat has switched off the unit or when the unit is not powered.

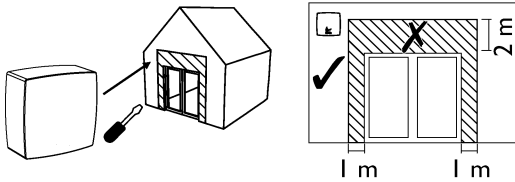
2.10 Installing external controls

2.10.1 Installing the outdoor temperature sensor

The IP2 industrial air curtain requires an outdoor temperature in order to operate correctly.

NOTE: If use is made of the table, there is a symbol for the absence of an outdoor temperature sensor on the control panel.

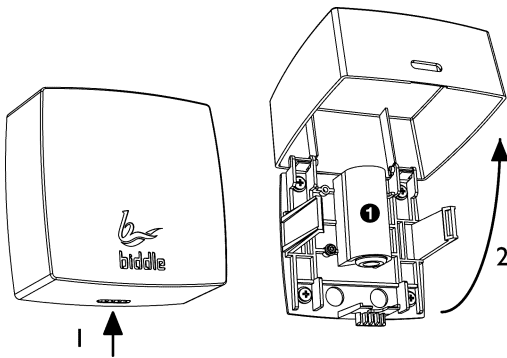
Position of the outdoor temperature sensor



Mount the outdoor temperature sensor on the outside wall:

- at least 1 metre to the side of the door opening or at least 2 metres above the door opening;
- away from direct sunlight and preferably shielded against rainfall.

Installing the outdoor temperature sensor



1. Mount the outdoor temperature sensor on the outside wall
2. Lay a cable (not supplied) between outdoor temperature sensor ❶ and unit.

NOTE: Use a cable of at least 0.5 mm².

Take the following into account, otherwise errors may occur:

- Keep the length of the cable as short as possible.
 - Keep the cable away from electromagnetic fields and interference sources, such as high-voltage cables and fluorescent light starters, for example.
3. Connect the sensor to terminal X64 with the electrical enclosure.

2.10.2 Connecting the door contact switch

For models with Simple control

1. Mount the door contact switch.
2. Connect the door contact switch to terminal block X60, in accordance with the wiring diagram supplied.

For models with Advanced control

1. Mount the door contact to the IN0 contacts as shown in the unit wiring diagram

2.10.3 Connecting the alarm signal

Only for IP2 L models or models supplied with fan monitoring.

Units with advanced control are always equipped with an alarm signal that gives a message in the event of an error in one of the fans.

Units with a basic control can optionally be equipped with this alarm signal.

CAUTION: The contact of a unit which has basic control (Basic type) may be loaded with a maximum of 250 VAC and 2 A.

NOTE: Contact is made only if the unit is connected to a power source and there are no errors.

Connecting the alarm signal to the unit

For models with advanced control

The alarm signal can be received via an output, ModBus or another building management system. Establish the required connection.

For models with simple control

1. Lay the alarm cable (not supplied) between the unit and the appliance on which the alarm signal is received.

NOTE: If the alarm signal is to be connected in series with several other units: Lay the cable to the unit which is going to serve as the master.

2. Connect the alarm cable to the appliance on which the alarm signal must be received.
3. Connect the alarm cable in the unit to the TK clamps on terminal X15 .

Multiple units with a single alarm signal

In a multiple-unit setup, the alarm signal is connected in series between the units.

NOTE: In a setup consisting only of units having a basic control (Basic type), each unit can also be connected independently to an alarm signal.

1. Lay the alarm cable between the units.
2. Connect the alarm cable to terminal X15 on the first unit to which the alarm signal is already connected (Auto or Basic master):

- Remove the bridge ②.
- Connect the cable ③.

3. Connect the alarm cable in the unit which is to be connected in series to the TK clamps on terminal X15 ①.
4. Repeat steps 1 to 3 for each unit to be connected in series.

NOTE: Leave the bridge in place on the final unit ②.

2.10.4 Connecting the unit to Building Management Systems (Modbus or Bacnet)

NOTE: A comprehensive manual for connecting and using Modbus or BACnet is available from the Thermoscreens website.

Communication parameters

Standard values of the communication parameters for ModBus are:

communication parameter	value
Baud rate	9600
DATA	8
Parity	none
Stop bits	1

The default value for the Modbus node address is 200, should an alternative address be required, this can be set over the Modbus network, before other devices are connected.

NOTE: If an alternative address is used, then a configuration EEPROM must be used to store this address. If this is not used, then unit will return to the factory settings on power loss.

Please contact Thermoscreens for a full listing of all properties that can be written to and read from.

Wiring

A twisted-pair cable must be used for connection to the Modbus or Bacnet network. The cable must also have a third core for the GND (grounding). Normally, a four-pole, twisted-pair cable is used; one pair is used for communication and one core from the other pair is used as the GND.

Modbus A = -

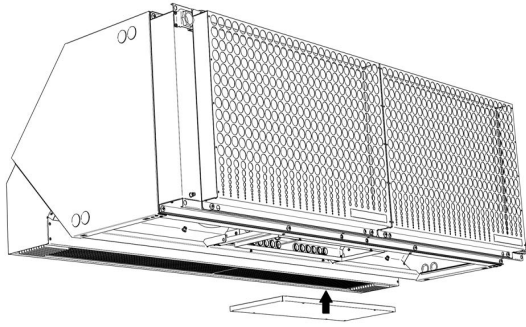
Modbus B = +

GND = ground

NOTE: If there is no communication, this may be caused by incorrectly connected wiring. Swap the A- and B+ wires.

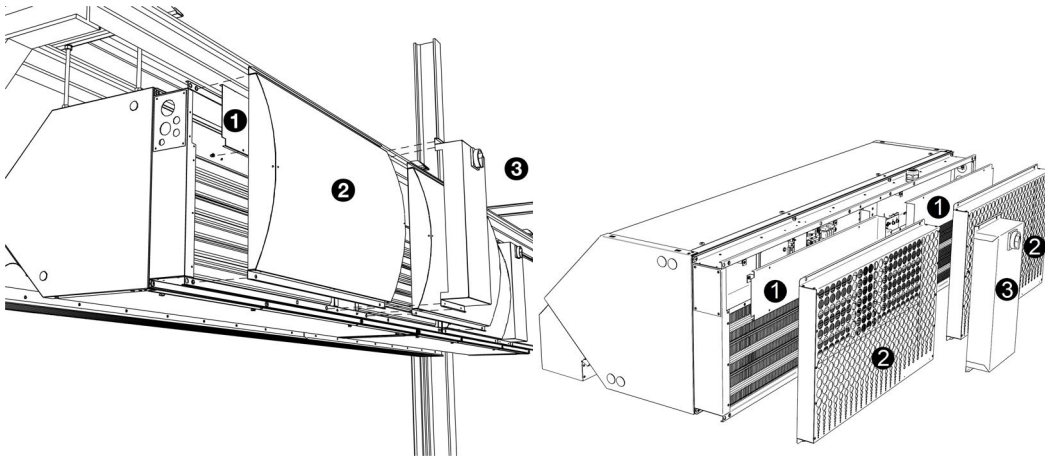
NOTE: For a more reliable signal, fit an end of line 120 Ohm resistor as required.

2.11 Finishing the unit



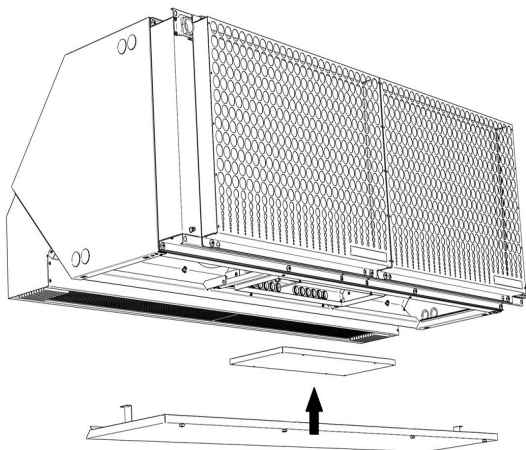
For units with advanced control:

1. Place the cover back on the electronic housing and fasten the screws ❶ .



For electrically heated units:

2. Place cover plate ❶ back onto the cable space.
3. Put the inlet grilles ❷ back into place.
4. Replace the cover ❸ .



With all units:

5. Replace the inspection panels ②.

2.12 Switching on and checking operation

For all models:

1. Check the following connections:
 - power supply;
 - control cable(s) between control panel and unit(s);
 - **If applicable:**
external control components.

For all models:

1. Switch the mains supply on.

For all models:

1. Check whether the fans are rotating.

For water-heated models :

1. Check whether the heat exchanger is connected correctly.
2. Make sure that the central heating system has been turned on.
3. Feel whether the discharged air stream becomes warm. This may take some time and is dependent on the need for heating.
4. Set to manual mode, high heat.
5. Vent the heat exchanger.

For electrically heated models (type E):

1. Make sure that the heating is enabled on the control panel.
2. Feel whether the discharged air stream becomes warm. This is dependent on the need for heating.

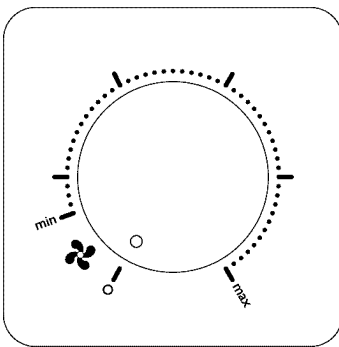
3. OPERATION (SIMPLE CONTROLS)

Various control units are available for the industrial air curtain IP2. This chapter describes operation with the continuously variable controller that is used on units supplied with Simple control.

3.1 Introduction

This section describes the functions of the continuously variable controller which are necessary for the operation of the unit. The isolation switch on the unit is only needed during maintenance and servicing.

3.2 Switching ON and OFF



When the controller is set to strength 0, the unit is switched OFF.

Turn the knob of the controller clockwise in order to switch the unit ON.

NOTE: The unit switches on commencing at the minimum strength 'min'.

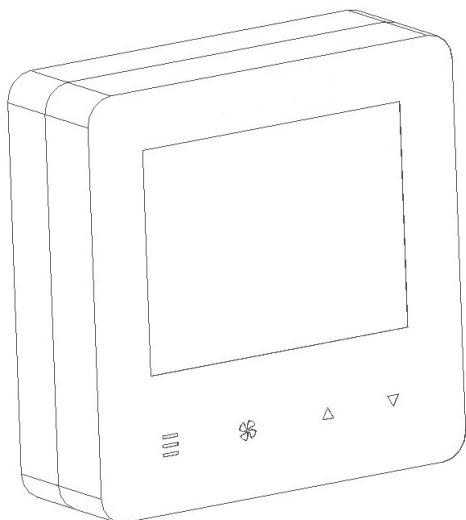
3.3 Regulating the strength

The fan speed can be controlled in a continuously variable manner with the controller.

The most optimal speed is the minimum strength at which the airflow touches the ground and there is no draught across the ground. This may vary per day and during the course of the day.

4. OPERATION

4.1 Introduction



This section describes the functions you should know for the day-to-day use of the unit.

The control panel is provided with four touch-buttons. These keys allow the user to make the following settings:

- Switching the unit ON and OFF: button ☰.
- Controlling the fan speed: button 🌀.
- Adjusting temperature or heating: buttons ▲ and ▼.

If multiple units have been connected to a single control panel, then settings apply to all units.

4.2 Switching the unit ON and OFF

- Press button ☰ for two seconds to switch the unit ON or OFF.


NOTE: Electrical heated units will continue to run for 2 minutes after being switched off to allow the residual heat to dissipate.

4.3 Controlling the fan speed



- Press button 🌀 to set the fan speed:
 - Low 🌀 📊
 - Medium 🌀 📊
 - High 🌀 📊


4.4 Control temperature or heating

Automatic or manual control

- Press briefly on button  to switch the unit between automatic (**A**) and manual mode (**M**).



Automatic temperature control

In automatic mode, the unit measures the outside air temperature and automatically selects the required heating setting to adjust the air temperature to the configured level. As the heating level is set automatically, the  and  buttons will be disabled.

This temperature is measured at the unit's air inlet and may deviate slightly from actual room temperature. The air intake temperature is shown on the control panel next to the  symbol

Manual temperature control

In manual mode, heating can be set to full or reduced capacity, or turned off.

- Press button  to reduce the heating setting by one level.
- Press button  to increase the heating setting by one level.

CAUTION: The highest heating level will only be switched on at high fan speed.

5. ERRORS

5.1 Safety instructions

DANGER: All work on the inside of the unit may only be carried out by personnel who are technically qualified to do so.

WARNING: Before you begin: read the safety instructions.

5.2 Resolving simple problems

If you suspect an error, first try to resolve the problem, using the table below. You do not need to be an expert for this.

If this fails to resolve the problem, there may be a fault; in that case, alert the installer.

Problem	Probable cause	What to do
The unit does not work.	The unit has not been switched on	Turn the unit on
	The unit has no power supply.	Check the mains supply: <ul style="list-style-type: none">• isolation switch,
	The unit has been switched off by external control components.	Check external control components, if present:
The unit has been switched off but is nevertheless still operating.	<i>Only for electrically heated models:</i> the unit cools down automatically.	This is not an error. Normally, the unit will automatically shut down within 10 minutes.
The unit is not discharging much air.	The unit is set at too low a strength.	Switch the unit to a higher strength.
<i>Only for models with heating:</i> The unit is not heating or not heating sufficiently.	The unit is set at too low a strength.	Switch the unit to a higher strength.
	<i>Only for water-heated models:</i> The central heating system is not working properly.	Check the central heating system. <ul style="list-style-type: none">• Check the connections.• Check the operation.• Check the capacity.

5.3 Remediating errors that are not accompanied by an error message

If you suspect an error but no error message is displayed:

1. Referring to the preceding sections, check whether you can easily resolve the problem.
2. Try to resolve the problem using the table below. Technical expertise is required for this.

Problem	Probable cause	What to do
The control panel works normally but the unit does not respond.	The unit is being controlled by a signal from an external source.	1. Check for BMS cabling and if present contact the party responsible for controls.
The unit is not functioning, the display is black and does not react to touch.	The unit is not receiving power.	Check the mains supply: <ul style="list-style-type: none"> • isolation switch, • unit has power. • connections and wiring of the power supply.
	The connection between the control panel and the control circuit board is not correct.	1. Check the control cable. 2. Check the wiring between the connector plate and the control circuit board (connectors X530 and X60).
	The control circuit board is not working; the LEDs on the control circuit board are not lit.	1. Check fuses on control board. 2. Check the mains power cable (connector X01). 3. Replace the control circuit board.
	The control panel is faulty.	Check the control panel by connecting it to another unit with another cable. Replace the control panel if it is not working.
One fan does not work.	The fan is faulty or is not receiving a power supply.	1. Check the wiring of the fan. 2. Check the transformer fuse. 3. Replace the fan.

6. MAINTENANCE

6.1 Introduction

This chapter comprises those maintenance activities that the user themselves can perform. Maintenance activities and repairs that must be performed by an installer are described in chapter [Service](#).

6.2 Cleaning the unit

DANGER: Units with electric heating may not be cleaned with water.

You can clean the inside and the outside of the unit with water and household cleaning products. Do not use any solvents.

The fans too can be cleaned with water. There are holes in the unit for the drainage of any water present.

WARNING: No water under high pressure may be sprayed onto the fans or the terminal boxes.

Carefully remove dust in the heating element with a vacuum cleaner.

6.3 Scheduled maintenance

6.3.1 Monthly maintenance

With all units:

- Check the heating elements and the fans for dust and other dirt; if necessary, clean.
- Check that all fans work.
- Check that the air curtain works in all of the control unit's operating modes.
- Check the discharge section for pollution/dirt and/or blockage; if necessary, clean.

For units with water heating:

- Check for water leakage; if this should be the case, then switch off the unit so that it is electrically dead and repair the leakage.
- Check whether the water piping system contains air; if necessary, vent the air out of the system.

See also:

1.2 "Cleaning the unit" on page 1

1 "Switching ON and checking operation" on page 1

6.3.2 Annual maintenance

With all units:

- Carry out all monthly checks.
- Check the cabling between the terminal boxes in the units and the control unit.

- Inspect the casing, the suspension or mounting structure, and the securing of each unit.
- Check whether the fans are firmly attached and are not running out of true; if necessary, fasten them again.

For electrically heated units:

- Check the wiring between the control unit and the heating section.
- Check the mains power cables and the connections in the heating section.
- Check the relay in the heating section.

7. SERVICE

7.1 Safety instructions

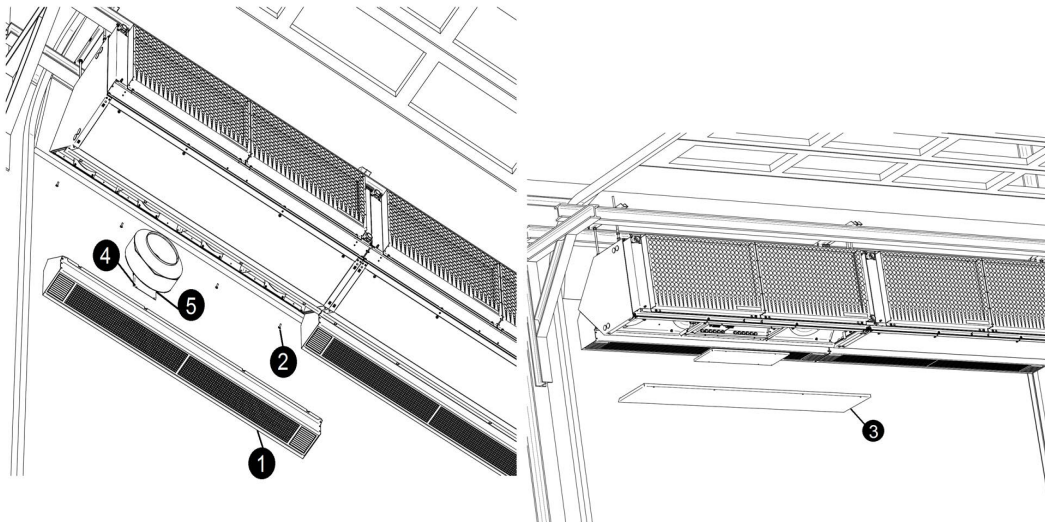
WARNING: Servicing activities may only be carried out by personnel who are technically qualified to do so.

WARNING: Before you begin: read the safety instructions.

See also:

1.2.4 "Safety instructions" on page 4

7.2 Removing the fans



1. Remove the discharge section:

- Loosen the bolts ②.
- Unhook the discharge section ①.

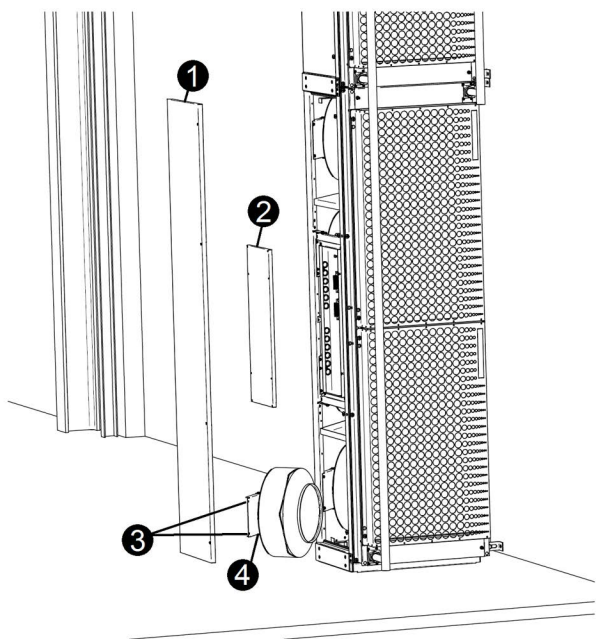
2. Disconnect the wiring:

- Remove the inspection panel ③.
- Open the terminal box.
- Disconnect the wiring of the relevant fan.

3. Remove the fan:

- Loosen the bolts ④.
- Take out the fan along with bracket ⑤.

With vertical installation position type 2:



1. Disconnect the wiring:

- Remove inspection panel ❶.
- Open the terminal box ❷.
- Disconnect the wiring of the relevant fan.

2. Remove the fan:

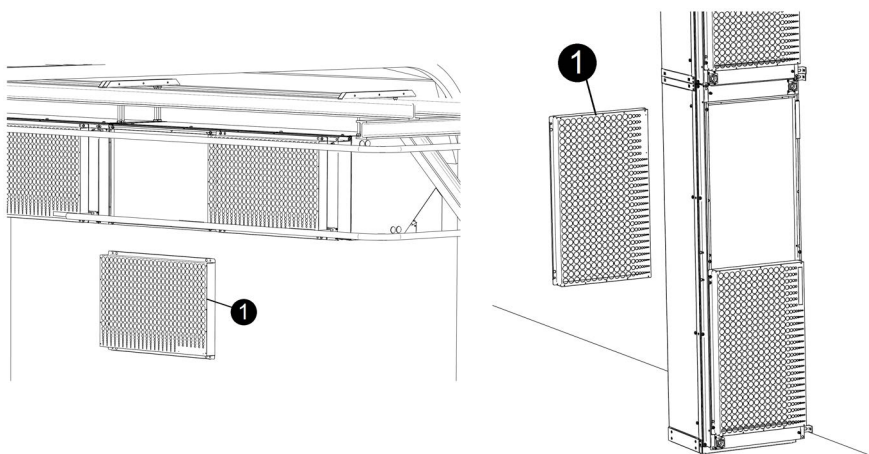
- Loosen the bolts ❸.
- Take out the fan along with bracket ❹.

See also:

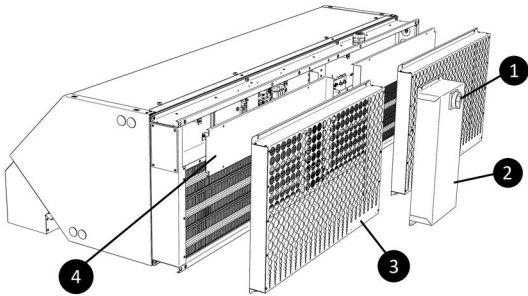
1.7.2 "Connecting the unit (types A and H)" on page 19

7.3 Accessing the heating element

For units with water heating:



1. Remove inlet grille ❶.



For electrically heated units:

1. Set isolation switch ❶ on the unit to position 0.
2. Remove the cover ❷.
3. Remove the inlet grille ❸.
4. Remove the cover plate of the cable space ❹.

7.4 Electronics module

Only with models which have advanced control

The unit contains one electronics module. Depending on the version, one can find on this such things as:

- the transformer;
- the control circuit board;
- the connector plate;
- the fuses.
- the filters
- the reactor

7.5 Removing the control circuit board

This section only applies to units with advanced control.

1. Switch the unit off using the control panel or the building management system.

WARNING: Shut off the mains supply.

2. Disconnect all unit-connected connectors and grounded connections from the control circuit board.
3. Unscrew the control circuit board from the housing and lift it out of the unit.

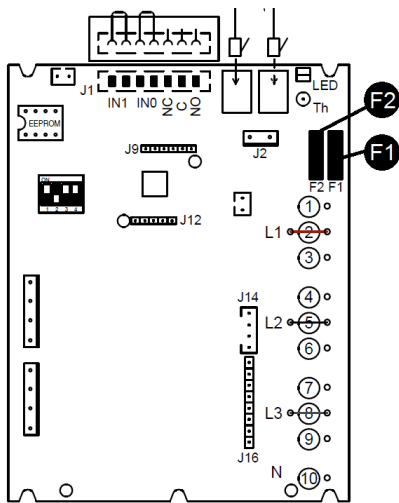
7.6 Connecting the control circuit board

WARNING: Make sure that the mains supply is switched off

This section only applies to units with advanced control.

1. Slide the control circuit board into its place and screw it in firmly.
2. Connect all connectors and earth connections to the control circuit board again.
3. Switch the unit on and check the operation.

7.7 Fuses



The control circuit board of the unit is fitted with the following fuses:

- fuse F1 for the controls (type F100mA).
- fuse F2 for auxillary outputs (type T6.3A).

8. DISMANTLING

The dismantling of the installation and the handling of the coolant, oil and other components must be carried out by a qualified fitter in accordance with the relevant local and national legislation and regulations.

Pursuant to EU legislation, used electrical and electronic appliances must be collected for recycling. By ensuring that this product is disposed of in the correct manner, you are helping to prevent potential negative consequences for the environment and public health. For more information about this, please contact your supplier or the relevant government authority.