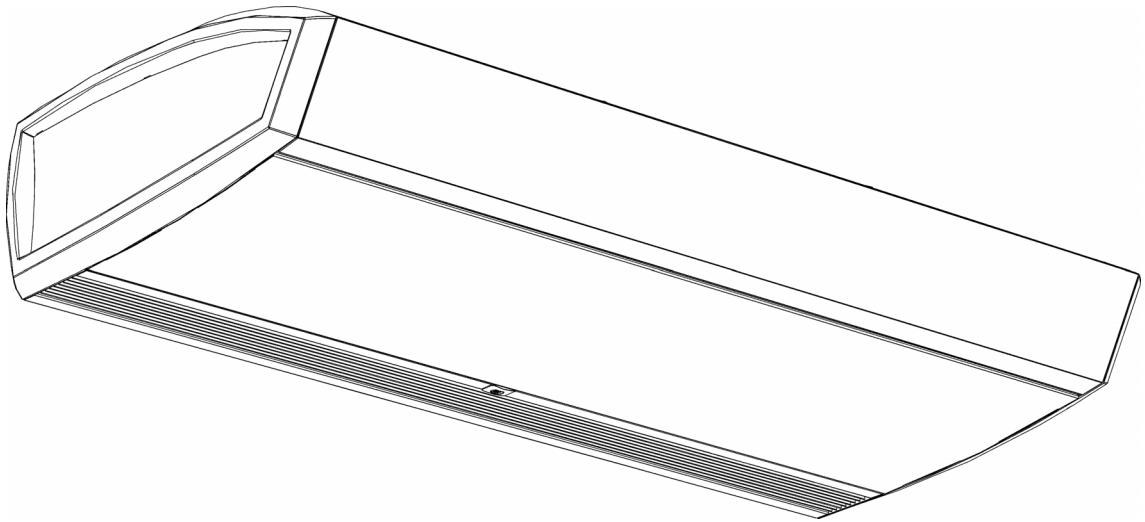


Manual

Comfort Air Curtain

Model SR



Version 1.1 - North America
Original Manual

English



Biddle

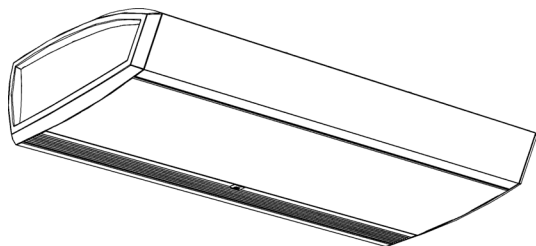
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1. Introduction

1.1 About this manual



This manual describes the installation, operation and maintenance of , the comfort air curtain model SR with *b-touch* control panel and *CHIPS* control. The manual also provides instructions and information for servicing activities.

1.2 How to read this manual

1.2.1 Daikin manuals

Only for SRV and SRQ:

This manual makes cross-references to the manuals of the components of Daikin (outdoor unit, indoor unit, control panel, etc.).

1.2.2 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.

1.2.3 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>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>This surface or component may be hot. Risk of burns on contact.</p>

1.2.4 Related documentation

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

- wiring diagram for installation and servicing.

1.3 About the unit

1.3.1 SR

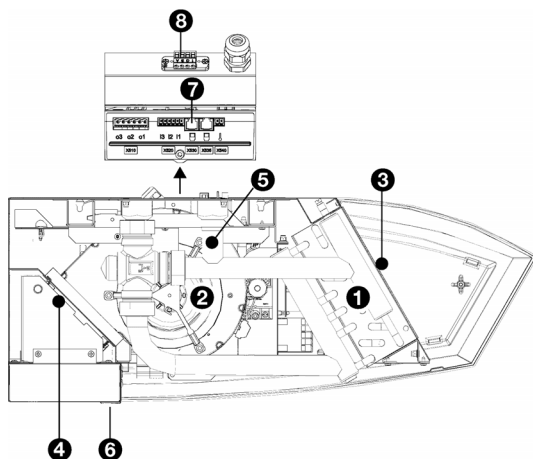
The unit

Among other things, the unit contains:

- heating element **1** (depending on the type of unit)

The heating capacity is controlled by the unit. For this purpose, water-heated models have an integrated control valve.
- fans **2**

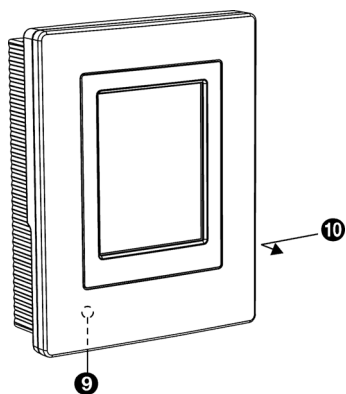
The speed (strength) is controlled by the unit.
- air inlet sensor **3**
- discharge sensor **4**
- **For models with water heating or connected to a Daikin system:**
 - heating medium sensor **5**
- IR sensor **6**
- connection for
 - the *b-touch* control panel **7**
- connection for Modbus **8**



The *b-touch* control panel

In addition to menus for the settings, the *b-touch* control panel contains, among other things:

- temperature sensor **9**
- connection for extra temperature sensor **10**. With this, the temperature at a different place in the room can possibly be measured: for example, at a place where draughts quickly occur.



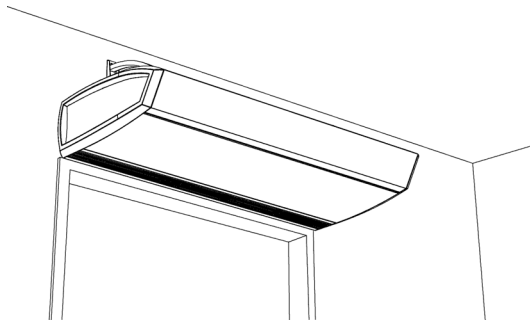
I.3.2 Applications

General

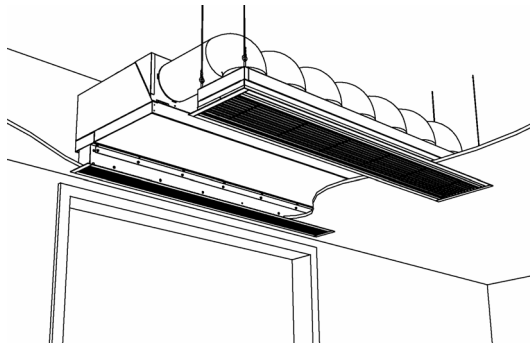
The purpose of the Comfort air curtain is to separate climates between two rooms and to heat and filter air (filter class EN779-G2). The unit is installed horizontally above the doorway, across its full width.

Mounting types

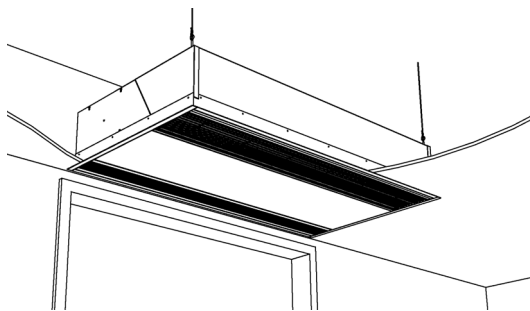
The free-hanging model is designed for free, visible installation above the door.



The recessed model is designed for integration into a false ceiling or into an alcove, with the inlet opening possibly at some distance from the unit.



The cassette model is designed for installation above a false ceiling, with the inlet opening close to the unit; the unit must be easily accessible.



Comfort air curtain for Daikin system

With models SRV and SRQ:



The air curtain is connected to a direct expansion system from Daikin. The air discharged by the unit is heated by the cooling medium. The air curtain is controlled and operated partly by the Daikin system and partly by the Biddle system.

This system has a number of limitations:

- The unit is only suitable for use in Daikin direct expansion systems.
- The unit is not suitable for cooling.
- The Daikin system has to be active at all times.

Other versions and intended use

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



Warning:

Applications other than those described above are deemed to be usage other than for the intended purpose. Biddle is not liable for damage or loss resulting from usage other than for the intended purpose. Usage for the intended purpose also entails observance of the instructions in this manual.

1.3.3 Operation

General

In an opening between two rooms, air is exchanged through pressure and temperature differences (convection). This leads to energy losses and detracts from the comfort in the room.

For reasons such as accessibility, it may nevertheless be desirable to leave the door standing open. An air curtain above the door opening counteracts losses of energy and comfort. At the location of 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 counteracted.
- The air that enters at floor level due to draught is possibly heated.

CHIPS

The automatic *CHIPS* control

The *CHIPS* control automatically adjusts the strength and heat of the unit to changing weather conditions. Thus, in all situations the energy loss is minimal and the comfort maximal.

CHIPS stands for 'Corrective Heat and Impulse Prediction System'.

Control when unit 'on'

The unit and the auto-active control have been developed for situations in which the door stands open.

For the most efficient climate separation and preservation of comfort it is important that the airflow just touches the floor and is heated sufficiently. The unit continuously measures the values that are needed in order to achieve this:

1. The installation height (entered in the control panel)
2. The temperature difference between the two rooms:
 - outdoor temperature
 - room temperature
3. The temperature of the discharged air

As soon as the situation changes, the control adjusts the outlet flow rate and the temperature of the airflow to that.

Control with unit 'off'

If the unit is off – at night, for example – it is not active.

If it is off, the unit can indeed still perform other functions:

- The unit can be set to keep the room at a minimal 'night' temperature.
- Water-heated models are equipped with integrated frost protection.

Door response

The unit and the auto-active control have been developed for situations in which the door stands open.

If the door is not continuously open, the operation can be adjusted to this:

- Normal operation: the unit is always active.
- Direct door response: the unit responds directly to the opening and closing of the door.

- Gradual door response: the unit responds to the opening and closing of the door. The speed of response is based on the open/closed ratio.

**Note:**

With the door closed, the unit can be set to keep the room at a minimal room temperature.

**Note:**

In some situations the unit is not active, even though it is on.

1.3.4 i-sense infra red technology

The *i-sense* infra red technology makes it possible to use the automatic *CHIPS* control without adding external controls such as an outdoor temperature sensor and a door contact switch.

Next to the discharge grille is an IR sensor which measures the temperature in a strip of 8 planes perpendicular to the door opening. As a result, the sensor provides the controller with diverse information:

**Note:**

The temperature of a floor surface changes gradually.

- indoor temperature (T8)
- outdoor temperature (lowest measured value of T1, T2 and T3)

**Note:**

An outdoor temperature is only measured if the IR sensor recognises the door as being open.

- door position

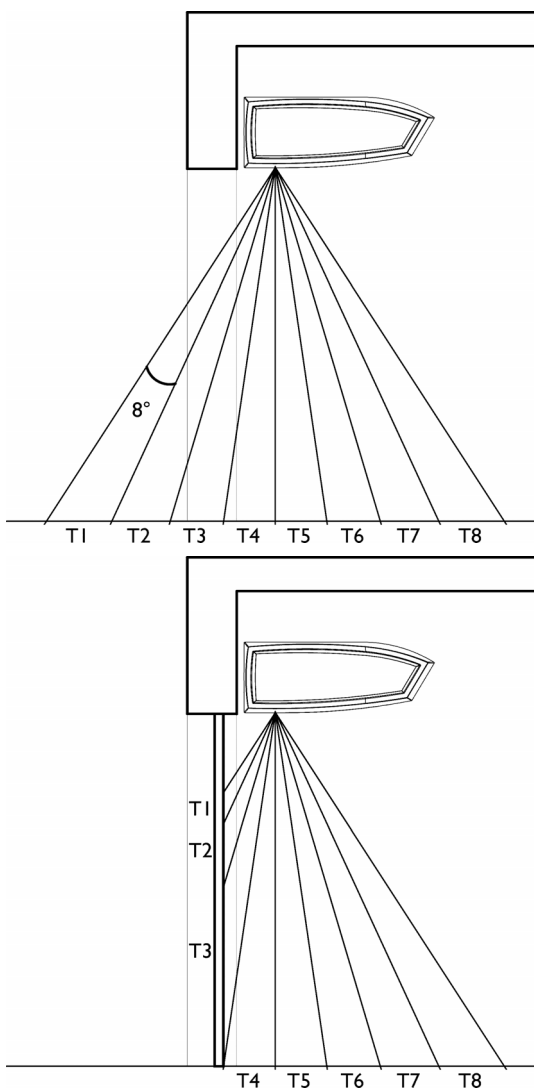
If the difference between T5 and T1, T2 or T3 is at least 3°C is, it is assumed that the door is open.

**Note:**

An outdoor temperature can only be recognised if the unit is on and climate separation is active.

- signal for quick start or 30 minutes on (T7 and T8)

If the measured value briefly changes, it is assumed that someone is walking below the sensor.



i-sense conditions

In most situations, the IR sensor meets the requirements as an information source for the auto-active control.

For correct operation, the following conditions apply:

- The IR sensor must be able to measure the temperature on the outdoor floor:
 - The sightlines must be free. (see [Position of IR sensor](#))
 - In a situation with several doors, the door at which the sensor is aimed must also open regularly.
- The temperature of the floor must be reliable.

Factors such as underfloor heating, direct sunlight on a dark floor or a strongly-reflective surface can make the measurements unreliable.

- The sensor is less suitable for situations in which extremely high outdoor temperatures (more than 10°C higher than the indoor temperature) regularly occur and the room makes use of air conditioning.

Position of IR sensor

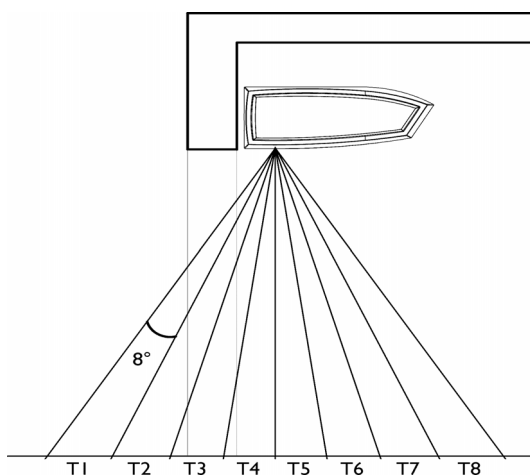
When the unit is switched on for the first time, the Installation Guide will start up. At the same time, a test is also made to see whether the IR sensor can perform the necessary measurements.

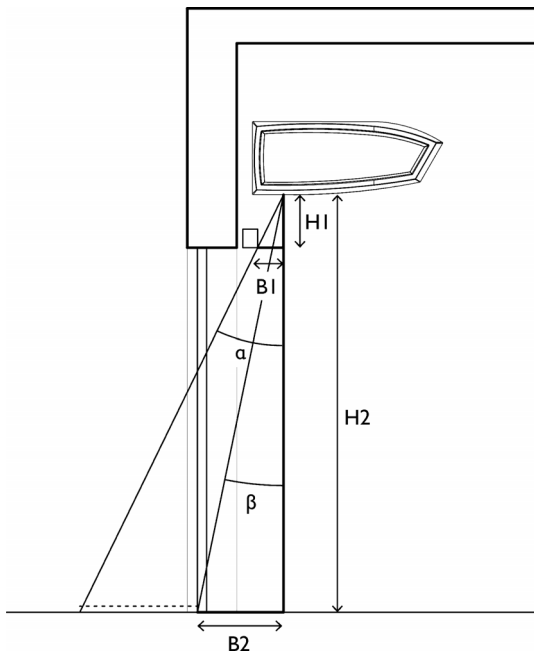
Possibly check in advance whether the position of the unit is suitable for use of the *i-sense* infra red technology.

The IR sensor measures the temperature in a strip of 8 planes perpendicular to the door opening. In order to be able to make use of the *i-sense* infra red technology, at least 1 complete plane must be able to measure the temperature on the outdoor floor.

The sightlines of the sensor can be limited by:

- structures and objects above the door opening (angle α).
- position of the threshold in relation to the unit (angle β).





Check whether the IR sensor can measure the outdoor temperature:

1. Measure angle α



Note:

Take account of elements that can block the angle (exit sign, door control system and suchlike)

- If angle $\alpha < 16^\circ$ ($H1:B1 < 3.5$):
The IR sensor does not measure the outdoor temperature.
Change the position of the unit or use an alternative for the measurement of the outdoor temperature.
- If angle $\alpha \geq 16^\circ$ ($H1:B1 \geq 3.5$):
Measure angle β .

2. Measure angle β .

3. Check in the table that angle β does not exceed the maximum value corresponding to the measured angle α .

- If angle β is too large:
The IR sensor does not measure the outdoor temperature.
Change the position of the unit or use an alternative for the measurement of the outdoor temperature.
- If angle β is satisfactory:
The unit is hanging in a good position in order to use the IR sensor for the *i-sense* infra red technology.

maximum angle β at angle α

ANGLE A		ANGLE B MAXIMUM	
DEGREES	H1:B1	DEGREES	H2:B2
16° – 24°	2.2 – 3.5	8°	7.1
24° – 32°	2.2 – 1.6	16°	3.5
> 32°	> 1.6	24°	2.2



Note:

If angle $\alpha < 16^\circ$ then the situation is not suitable for *i-sense* infra red technology



Note:

If angle $\beta > 24^\circ$ then the situation is not suitable for *i-sense* infra red technology

1.3.5 Type designation

The table below provides an overview of the available models of the air curtain and the corresponding type designations. In combination, the type designations constitute the type code, for instance: -480/52SR S-150-H3-F-208/32

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

- S: models with capacity S
- 150: models with discharge width 150
- H: water-heated models
- E: electrically-heated models
- F: free-hanging models



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 function is the same, unless stated otherwise.


Explanation of the type code

TYPE CODE ELEMENT	DESIGNATION	MEANING
product series	SR	general designation for the series
	SRV	for connection to Daikin VRV system ('multi')
	SRQ	for connection to Daikin ERQ system ('pair')
capacity	S	short range
	M	medium range
	L	long range
length	100, 150, 200 or 250	discharge length in cm
battery type	H3	water heating
	E	electrical heating
	A	without heating
	DK	heating with Daikin direct expansion system
model	F	free-hanging model
	R	recessed model
	R(O)	recessed model without grille plenum
	C	cassette model
mains supply	230/22	230V, split phase, 60 Hz
	208/32	208V, three-phase (without neutral wire), 60 Hz
	480/32	480V, three-phase (without neutral wire), 60 Hz
	480/52	480V, combination three phase/split phase, 60 Hz
	600/32	600V, three-phase (without neutral wire), 60 Hz

I.3.6 Type plate

The type plate is located at the left on the intake side of the unit.

Designations on the type plate

biddle Biddle bv Markovei 4 NL-9288 HA Kootsterille Made in the Netherlands 	Type	XX XX-XX-XX	
	Code	xxx	U xxx V xN- xx Hz
	N°	xxxxxx/x-x xx-xx	I _{max} L1 xxx A
			I _{max} L2 -
	M	xx kg	I _{max} L3 -
	Medium	XXXX	P _{motor} xxx kW
	P _{max}	xxxx kPa	P _{heating} -

DESIGNATION	MEANING
Type	complete type code of the unit
Code	configuration code
N°	serial number, production week and year
M	weight of unit
Medium	medium
P _{max}	maximum permissible operating pressure
Capacity Index	Daikin capacity index
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

I.3.7 Field of application

Observe the following limits for the unit:

Application limits for all models

Ambient conditions	Temperature	5 °C to 40°C (41 °F – 104 °F)
	Relative air humidity	20% – 95%, non-condensing
Power supply voltage		see type plate
Power		see type plate
Maximum discharge temperature		(140 °F) 50 °C (122 °F)

Parameters of use for water-heated models

Heating medium		water with max. 20% glycol
Maximum operating pressure and temperature		6 bar at 110°C
Maximum valve pressure difference	type S/M	0.5 bar
	type L	1.0 bar



Caution:
(257 °F/16 bar)



Note:
Consult Biddle if you want to connect a unit to a water flow-path with higher temperatures and higher pressure.



Warning:
The air curtain 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.

Biddle shall not be held liable for damage caused by use in such situations.

Sound levels

The emission sound pressure level at 3 m (10 ft.) distance from the unit is lower than 70 dB(A).

1.3.8 Modifications and changes

Without the approval of Biddle, no changes or modifications may be made to the unit that could adversely affect safety.

I.4 Components and accessories

I.4.1 Components supplied

For all models:

- suspension rails (2 per unit, 3 with models 250)
- operating package:
 - *b-touch* control panel (able to control a maximum of 10 units);
 - Biddle control cable, available in various lengths;

With free-hanging models (type F):

- set of side caps

I.4.2 Accessories

- wall bracket set ('Standard' or 'Design');
- threaded rod lining;
- door contact switch;
- external outdoor temperature sensor
- filter sensor (pressure sensor) in the unit to measure filter contamination;
- *b-connect* communication module.

I.4.3 Components not supplied

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

- threaded rods (M8)
- other cabling

I.4.4 Daikin components

The following Daikin components are required for models that are to be connected to a Daikin direct expansion system:

- outdoor unit
- **optional, only possible with a VRV system:**
 - one or more indoor units
- Daikin control panel
- connection materials, such as cooling pipes, wiring, etc.: see the Installation Manual for the outdoor unit

**Caution:**

The control system and the capacity index of the Daikin outdoor unit must correspond to those of the Biddle air curtain.

1.5 Safety instructions

1.5.1 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.

**Caution:**

In exceptional situations, water may run out of the unit. Therefore, do not place anything under the unit that could be damaged by this.

1.5.2 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, as the case may be, the heating elements, may get very hot.

4. **For models intended for connection to a Daikin direct expansion system:**
turn the Daikin system off and disconnect the mains supply from the Daikin external unit.
5. Disconnect the mains supply (remove plug from the power socket or set the isolation switch to OFF).
6. **For water-heated models:**
shut off the central heating feed (if possible).

**Caution:**

For models to be connected to a Daikin direct expansion system:

water may be present in the inspection panel if the system is, or was recently, running in defrost mode.

**Warning:**

The fins of the heat exchanger are sharp.

2 . . Installation



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



Warning:
Before starting installation: read the safety instructions.

See also:

1.5.2 "Safety issues relating to installation, maintenance and servicing" on page 17

2.1 Inspection on delivery

- Check the unit and the packaging to ensure that they have been delivered in good order. Notify the driver and the supplier 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 16

2.2 General working method

2.2.1 Sequence of operations

Biddle recommends working as follows when installing the unit:

1. Hang the unit up.
2. For water-heated models (**type H**):
connect the unit to the central heating system.

3. For models to be connected in a Daikin direct expansion system:

install the Daikin components in accordance with the relevant Installation manuals.

- outdoor unit;
- **if applied in your system:**
indoor unit(s);
- control panel.

4. Connect the unit to the mains supply.



Caution:

Make sure that the unit's power supply voltage matches the local mains voltage.

The unit's power supply voltage is displayed on the type plate.

5. Install the control panel and (any optional) connections to external controls.

6. Complete the installation of the unit.

7. For models to be connected to a Daikin direct expansion system:

connect the unit to the Daikin system.

8. Switch the mains supply on and check that the unit is working properly.

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.

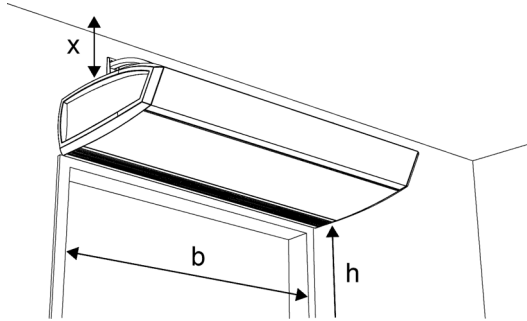


Note:

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

2.3 Hanging the unit up

2.3.1 Determining the location of the unit



Danger:

Do not install the unit in a vertical position.

- 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. The unit's weight is indicated on its type plate.
- Note the following dimensions:
 - The unit must be at least as wide as the door opening (dimension b).
 - Position the unit as near to the doorway as possible.
 - Position the unit as close to the top of the door as possible.
 - The IR sensor must be able to measure the temperature on the outdoor floor. (see 1.3.4 [Position of IR sensor](#))



Warning:

The minimum installation height is 1.8 m (6 ft).



Note:

The maximum mounting height of the unit (dimension h, measured from the floor to the discharge grille) depends on the unit type.



Warning:

The top of the unit may get hot. The unit must be positioned with at least 25 mm (1") clearance from the ceiling (dimension x).

See also:

1.3.6 "Type plate" on page 14

"Position of IR sensor" on page 11

2.3.2 Suspension method

The unit can be suspended in various ways:

- From wall consoles (accessory):
 - model 'standard'
 - model 'design'
- From threaded rods:
 - without threaded rod lining
 - with threaded rod lining (accessory)



Note:

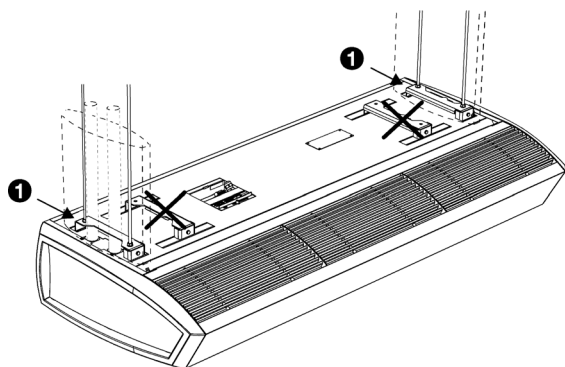
In all cases, the unit is hung from the suspension frame using suspension brackets.

2.3.3 Attaching the wall consoles (accessory)

Attach the wall consoles in accordance with the instructions supplied.

2.3.4 Fixing the threaded rods

Fix four threaded rods M8 (1/4" or metric thread M8) in accordance with the dimensions in the table. Make sure the threaded rods are perpendicular.



Note:

With units of 250mm length, three suspension brackets are used. Fix six threaded rods for that type.



Note:

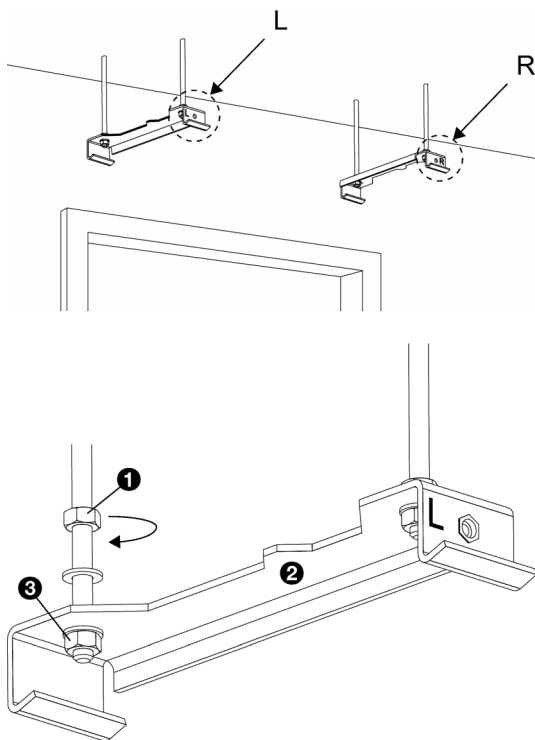
Use the outermost suspension ① when applying threaded rod lining (accessory) if this is also supposed to hide the water piping. The dimensions are specifically listed in the table.

Dimensions for suspending unit

	SIZE	TYPE	DIMENSIONS
	a	all models	as needed
	b	all models	4 11/16" / 119 mm
	c	all models	7 3/4" / 197 mm
	d	100	19 11/16" / 500 mm ± 5" / 125 mm
		100 with threaded rod lining	34 23/32" / 882 mm
		150	39 3/8" / 1000 mm ± 5" / 125 mm
		150 with threaded rod lining	54 13/32" / 1382 mm
		200	59 1/16" / 1500 mm ± 5" / 125 mm
		200 with threaded rod lining	74 3/32" / 1882 mm
		250 (six threaded rods)	2 x 39 3/8" / 2 x 1000 mm ± 5 2/6" / 60 mm
	250 with threaded rod lining (six threaded rods)	2 x 46 57/64" / 2 x 1191 mm	

2.3.5 Fixing the suspension brackets

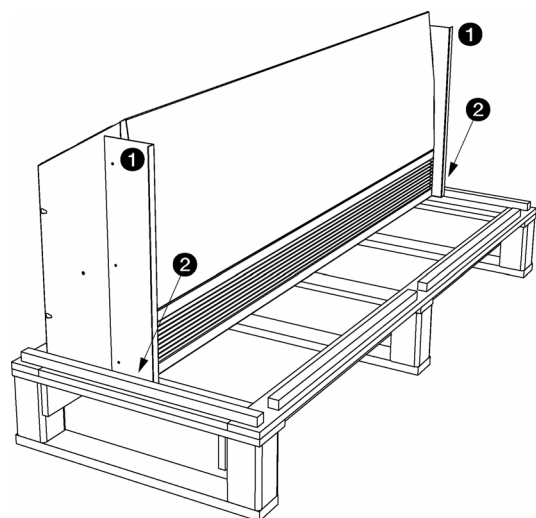
Attach the suspension brackets to the threaded rods or to the wall consoles.



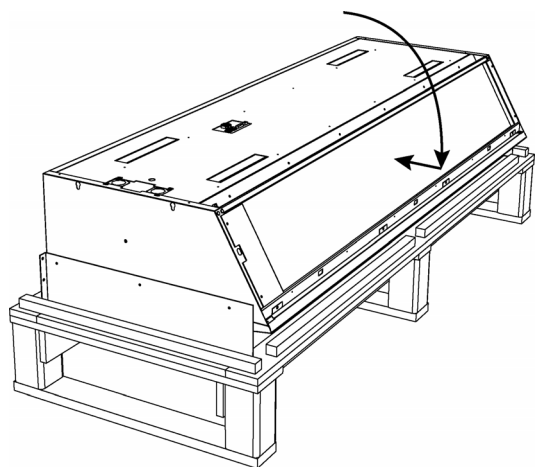
Note:
Place the left- (L) and right brackets (R) in the correct position.

1. Screw a lock nut ❶ onto each threaded rod.
2. Place the suspension brackets ❷ onto the threaded rods and then put on the nuts ❸.
3. Make sure that the suspension brackets are hanging horizontally and at equal height.
4. Secure each suspension bracket by tightening the lock nuts ❶.

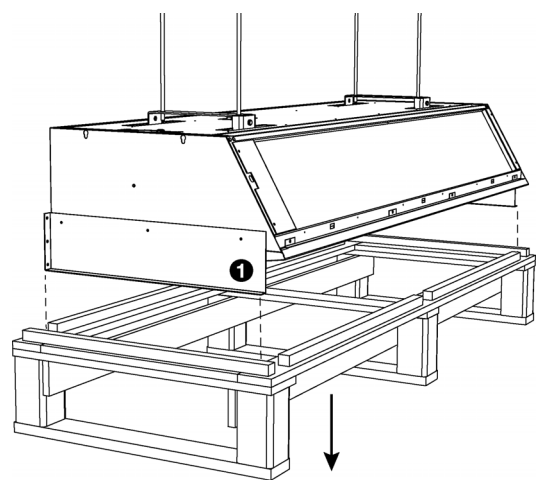
2.3.6 Suspending and securing the unit



1. Remove the components and packaging from the pallet with the unit on it. Leave the unit on the pallet.
2. The unit is fixed to the pallet with two transportation brackets ❶. Remove the screws ❷. But do not remove the brackets from the unit.



3. Tilt the unit across the pallet and lay it down as shown opposite.



4. Lift the pallet, with the unit on it, and hook the unit into the suspension brackets.



Caution:

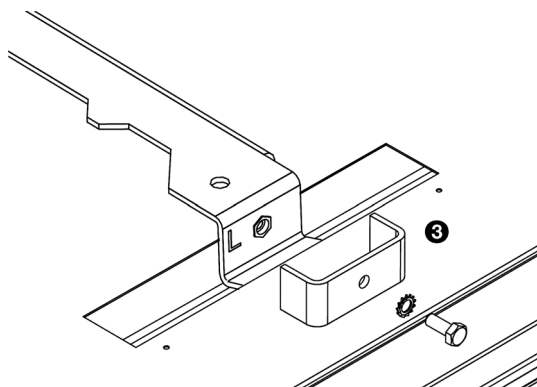
Depending on the weight (specified on the type plate), either use a lifting device or lift the unit: this requires at least 2 persons.



Note:

Always use the pallet when lifting the unit, in order to prevent any damage.

5. The unit is now suspended from the suspension brackets: remove the pallet.
6. Remove the transportation brackets ❶ from the unit.



7. Fit a lock plate ③ to each suspension bracket.



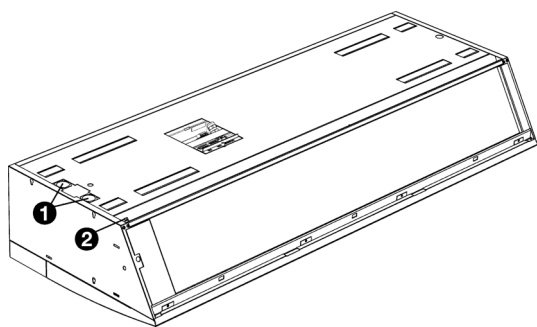
Warning:
The unit may fall down if you do not secure the suspension.

8. Check whether the unit is suspended firmly:

2.4 Connecting the unit to the central heating system

Only for water-heated models (type H3)

2.4.1 Special points regarding the water connection



Caution:
The central heating system's supply and return pipes must be attached to the correct corresponding connectors ①. 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:
The unit has an integrated water-side control. The central heating connection must NOT be fitted with a control valve.



Caution:
Biddle recommends the inclusion of a valve in both pipes.

- The maximum permissible operating pressure of the hot water circuit is specified on the type plate. It is based on a water temperature of 110 °C (230°F).

- The venting valve ② of the heat exchanger is located at the left, on the top of the unit.
- The water-side control valve is automatically closed by default if the air curtain and/or the heating is switched off. This can be adjusted on the control panel via [menu > Configuration > 25. Auto: Door response > Stand-by heating](#).

2.4.2 Frost protection

The electronic control features integrated frost protection. This works in two stages:

1. If the temperature of the discharged air falls to below 5 °C (41 °F) and the temperature of the intake air falls below 8 °C (46 °F):
 - the valve of the integral water-side control will open fully;
 - the output on the unit gives a signal for the central heating installation provided that function [61. Function of outputs](#) on the control panel is set to [Risk of freezing](#).
2. If the temperature of the discharged air falls to below 2 °C (36 °F) and the temperature of the intake falls below 8 °C (46 °F):
 - the control panel will temporarily display error message E6;
 - the fans will be switched off, but the valve of the water-side control will stay open.

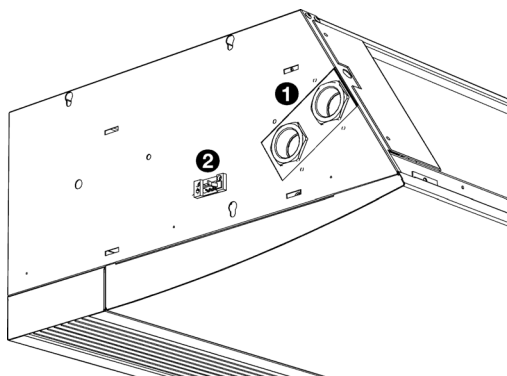


Caution:

The frost protection reduces the risk of freezing but does not guarantee complete protection.

Take the following precautions if you install the unit in a room where frost may occur:

- Ensure constant circulation of the water at the right temperature;
- Add up to 20% glycol to the water when the unit is not in operation during the wintertime;
- Or bleed the system and the unit.



2.4.3 Units with side connection

Upon request, units with water-side connections on the side can be supplied. The water-side control is then not built-in, but has to be connected outside the unit during installation.

1. Connect the valve to the connections ❶ as shown in the corresponding diagram.
2. Connect the valve drive to terminal ❷.

WIRING DIAGRAM, 2-WAY VALVE	WIRING DIAGRAM, 3-WAY VALVE
<p>All models: valve in the return pipe</p>	<p>models S/M: valve in the feed pipe</p>
	<p>models L: valve in the return pipe</p>

2.4.4 Connecting the unit

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

2.5 Connecting the unit to the Daikin system

Only for models with Daikin direct expansion system (type DK)

2.5.1 Preconditions for connection to a Daikin system

- The Daikin system must always be active when the Biddle air curtain is active.
- A control system must be connected to the Daikin system. This can also be a Daikin control panel that is connected to the Biddle air curtain.



Warning:
Units of type SRV may only be connected to a Daikin VRV system.

Units of type SRQ may only be connected to a Daikin ERQ system.

These units are **NOT** mutually interchangeable.

2.5.2 Connecting the controls

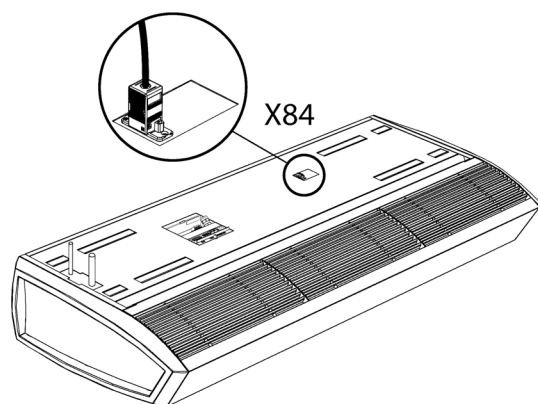
For all models:

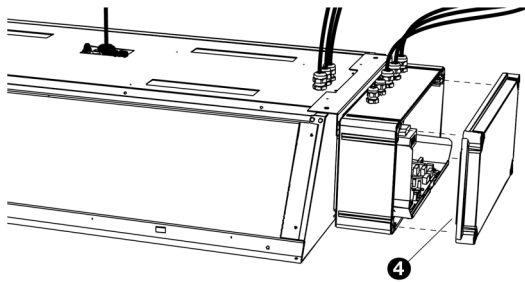


Caution:
Use a cable with a cross-section of at least 0.75 mm².

On models with discharge width 150, 200 or 250:

1. Connect the system controls to terminal X84 on the upper side of the air curtain:
 - Connect the control cable of the outdoor unit to F1/F2.
 - **If applied on your unit:**
Connect the Daikin control panel to P1/P2.
2. Install the cable sheath (supplied) on the terminal.





On models with discharge width 100:

1. Remove the cover of the box on the side of the unit.

2. **Optional:**

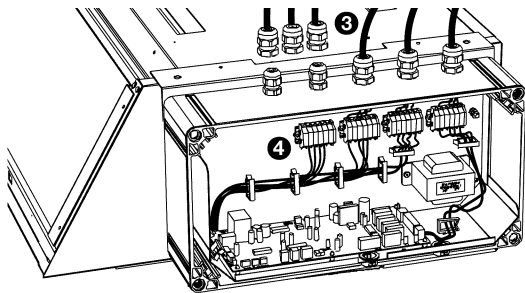
Remove the box from the unit:

- Remove the bracket from the unit and the box.
- Install the box on the wall at an appropriate point.



Note:

Do not disconnect the wiring between the box and the unit.



3. Lead the control cable(s) into the box, through the free cable gland(s) ③.

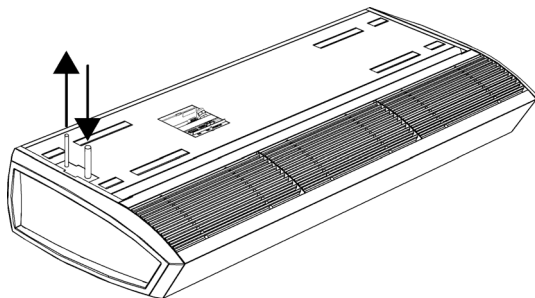
4. Connect the controller of the system to the free terminal block ④:

- Connect the control cable of the outdoor unit to F1/F2.
- **If applied on your unit:**
Connect the Daikin control panel to P1/P2.

5. Tighten the cable gland(s).

2.5.3 Connecting the cooling medium

- Install the piping in accordance with the installation manual for the Daikin outdoor unit.
- Solder the piping to the pipes protruding from the upper side of the unit.



2.5.4 Settings on the Daikin control panel

On the Daikin control panel you can make local make settings as described in the Installation manual concerned.

The units described in this manual have a few additional settings possibilities:

MODE NUMBER	FIRST CODE NUMBER	DESCRIPTION OF THE SETTING	SECOND CODE NUMBER			
			01	02	03	04
(22)	3	Operation of air curtain when not heating	unheated	unheated	at standstill (provided that 23-8 is set to 01)	--
(23)	8	Operation of air curtain in defrost mode	at standstill	unheated (default setting)	unheated	--

2.6 Connecting the unit to the mains supply

2.6.1 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.



Warning:
Each unit must be fused in accordance with the table below.

Fuse ratings

MAXIMUM AMPERAGE ON TYPE PLATE L1, L2 OR L3	MAXIMUM FUSE VALUE A
≤ 10A	16A
≤ 15A	20A
≤ 20A	25A
≤ 25A	35A
≤ 35A	50A
≤ 50A	63A
≤ 65A	80A

MAXIMUM AMPERAGE ON TYPE PLATE L1, L2 OR L3	MAXIMUM FUSE VALUE A
≤ 80A	100A
≤ 102A	125A

**Note:**

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

For models without heating (type A), with water heating (type H) or connected to a direct expansion system (type DK)

- It must be possible to disconnect the unit from the mains supply. The installer must provide a facility for doing this.

For models with electric heating (type E)

**Danger:**

Only carry out the connection if you are qualified to work on three-phase power systems.

- The unit is connected to the mains supply with a cable (4-core, not supplied).

**Caution:**

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

- 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 (1/8"),
 - be positioned near the unit.

2.6.2 Connecting the unit

[Only for models with electrical heating (type E)]

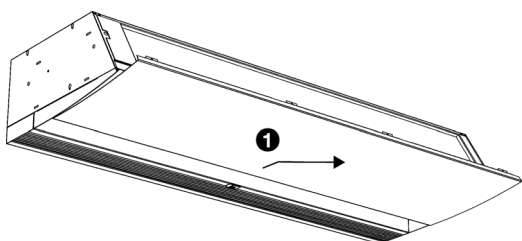


Warning:
Make sure that the mains supply on which you are working has been turned off.



Warning:
With models of length 100, first connect the external transformer before connecting the unit to the mains supply.

1. Fit the isolation switch and connect it to the mains supply.
2. Remove the inspection panel ❶:

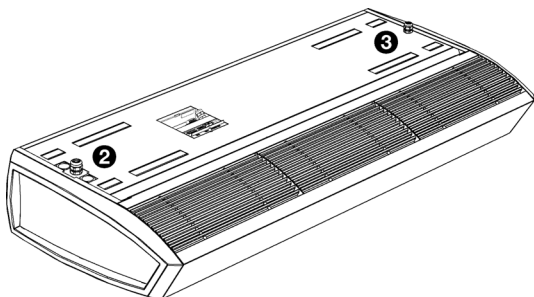


- Remove the screws from the front of the inspection panel.
- Pull the panel forward a little and remove it.



Caution:
The panel comes free completely once pulled forward: make sure it does not fall.

3. Fix the cable gland to the unit ❷.
4. Feed the mains power cable through the cable gland.

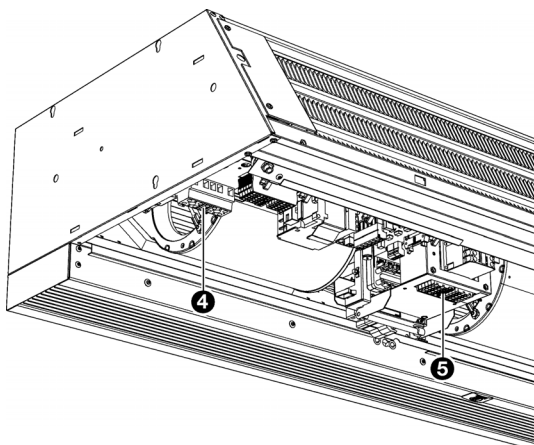


5. Connect the cable to the power supply terminal ❸ in the unit, in accordance with the wiring diagram.
6. Replace the inspection panel and screw it on firmly.



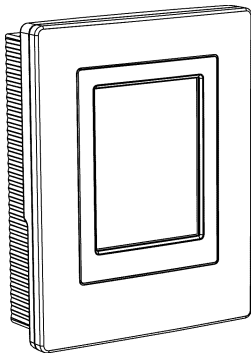
Warning:
When replacing the inspection panel, always attach it using flanged bolts with milled edges; these are required for the earth connection.

7. Fit a plug to the mains power cable or connect it to the isolation switch.



Caution:
Do not switch on the mains supply yet.

2.7 Installing the *b-touch* control panel



2.7.1 Special points regarding the control panel

Positioning

- You can fasten the control panel either to the wall or to a standard junction box.
- By default, the indoor temperature is measured by the IR sensor next to the discharge grille.

The control panel contains a temperature sensor and a connection for a possible extra temperature sensor. Position the control panel in a logical place if you want to use one of these sensors as an indoor temperature sensor.

Cabling



Note:

Take the following into account, otherwise errors may occur:

- The control cable between the control panel and the (first) connected unit may not be longer than 50 m (165 ft.).
- Keep control cables away from electromagnetic fields and interference sources such as high-voltage cables and fluorescent light starters, for example.
- Lay the control cables out straight or roll them in a bifilar coil by folding cables in half before rolling them. As a result, the magnetic fields will cancel each other out to an important extent.



Note:

Use Biddle control cables only. Standard modular telephone cable is NOT suitable.

Multiple units operated from a single control panel

- A maximum of 10 units can be connected to a single control panel. To do so, the units must be daisy chained.
- The total length of the control cables must not exceed 100m (330ft). If the distance becomes too great, an additional control panel must be connected.
- Only units from the same product series, with the same battery type and preferably of the same capacity, can be applied in combination with a single control panel.

Operation without control panel

The unit can also be operated without control panel. In that event, only remove the control panel after complete installation.



Caution:

Set the system to operate without a control panel. For this purpose, with the aid of a USB flash drive and a computer parameter, set “BTOU” of the settings file to “0”. See [6.14 Copying the settings of the b-touch control panel](#).



Caution:

Ensure that the temperature sensor in the control panel **is not** used as an indoor temperature sensor ([7.1. Indoor temperature sensor](#)).



Note:

Without a control panel, use of function [8. Night temperature](#) **is not** possible.

2.7.2 Mounting and connecting the control panel

1. Lay the control cable.
2. Screw the wall holder onto the junction box or against the wall.



Caution:

The control panel should only be put back into the wall holder when the power supply of all the connected units has been switched on.

2.7.3 Connecting the control panel to the unit

1. Connect the control cable to terminal block X530 on the upper side of the unit.

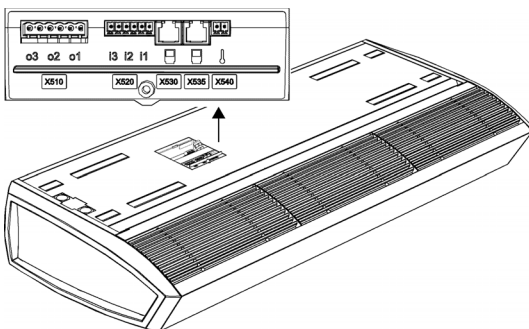
Daisy chaining multiple units with a single control panel

1. Connect the connecting cable to terminal X535 of the first unit.



Note:

Remove the dummy plug.



2. Connect the units: connect the connecting cable to X530 of the next unit.
3. Repeat steps 1 and 2 for each unit which is to be connected.



Caution:

Do not remove the dummy plug from the last unit, as this may lead to errors.

2.8 Installing external controls

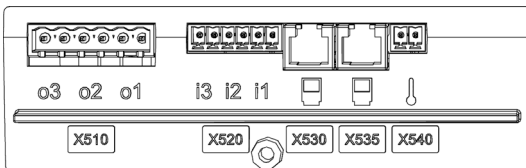
2.8.1 Special points regarding external controls

Input on the control panel X426

The control panel has one input signal interface. This can be used for an external ON/OFF signal or for an additional temperature sensor.

Inputs on the unit i1, i2, i3

On terminal block X520, the unit has three input signal interfaces. A door contact switch can be connected to this. Other possibilities include a timer switch or a signal from a building management system.



Caution:

The inputs are designed for controls with potential-free contacts, and are not to be loaded.



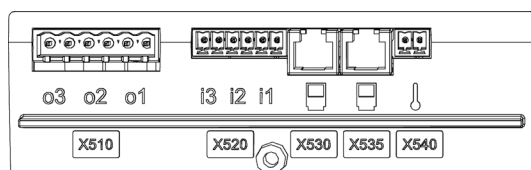
Caution:

The inputs of multiple units must NOT be connected to each other.



Note:

With the setting **All units off** and with the NC (Normally Closed) settings of function 60. **Function of inputs**, a jumper must be laid on the input for all the subsequent connected units.



Outputs on the unit o1, o2, o3

On terminal block X510, the unit has three signal interfaces for an output signal. These can be used, for example, for controlling the central heating or cooling system or for transmitting status reports to a BMS.



Caution:

The outputs are potential-free contacts (relays). Their maximum load is 24 V / 1 A.

Options and operation

Options and operation depend on the input or output and on the control panel settings.

2.8.2 Installing the outdoor temperature sensor (accessory)

The *CHIPS* control requires an outdoor temperature in order to operate correctly.

The IR sensor on the unit functions as outdoor temperature sensor. In some situations it is advisable to measure the outdoor temperature in a different manner. See 1.3.4 [i-sense conditions](#).



Note:

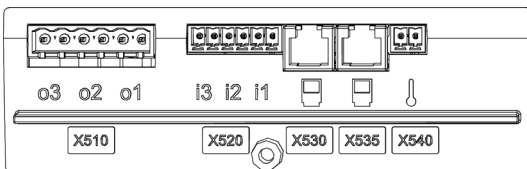
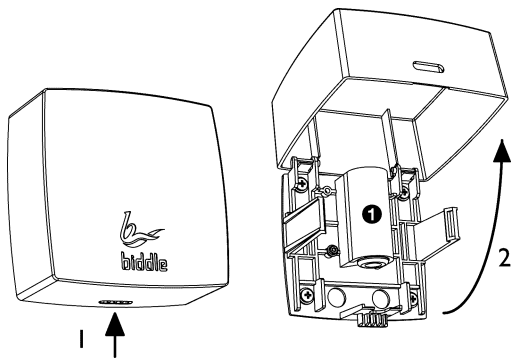
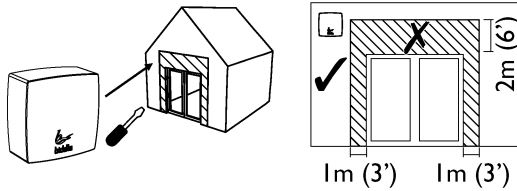
The desired possibility is selected in the installation guide.

1. The IR sensor on the unit
2. A wired outdoor temperature sensor
3. A table giving average temperatures per month



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 3 FT. (1 metre) to the side of the door opening or at least 6 FT. (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 X540 on the upper side of the unit.
 4. When the unit is switched on for the first time, the Installation Guide will start up. This will guide you through the most important settings. During this process, the outdoor temperature sensor will also be installed.

If the Installation Guide does not start:

- Go to the installation guide via [menu > Maintenance > Installation](#).



Note:
In function 74. IR sensor the IR sensor is not allowed to be activated as outdoor temperature sensor.

2.8.3 Connecting the door contact switch (optional)

The IR sensor on the unit functions as a door contact switch. In some situations, it is advisable to connect a wired door contact switch. See 1.3.4 [i-sense conditions](#).

1. Mount the door contact switch.
2. Connect the door contact switch to input i3 (X520) on the unit.
3. When the unit is switched on for the first time, the Installation Guide will start up. This will guide you through the most important settings. During this process, the door contact switch will also be installed.

If the Installation Guide does not start:

- Go to the installation guide via [menu > Maintenance > Installation](#).

2.8.4 Connecting the unit to Modbus

Communication parameters

The Modbus system must comply with the following communication parameters:

COMMUNICATION PARAMETER	VALUE
Baud rate	9600
Parity	none
Stop bits	1

Wiring

A twisted-pair cable must be used for connection to the Modbus system. 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 = -

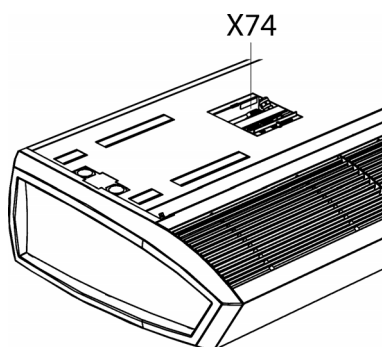
Modbus B = +

GND = ground



Note:

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



Connecting the unit to Modbus

1. Lay a cable between the Modbus system and the unit.
2. Attach the cable to the unit, in accordance with the wiring diagram:
 - Connect the cable to terminal X74 on the upper side of the unit.



Note:

For a more reliable signal, it is possible to connect a 120 Ohm resistor. For this purpose, place a bridge between positions I and B of terminal X382 on the control circuit board in the unit.



Note:

A detailed manual for the connection and usage of ModBus is available on:

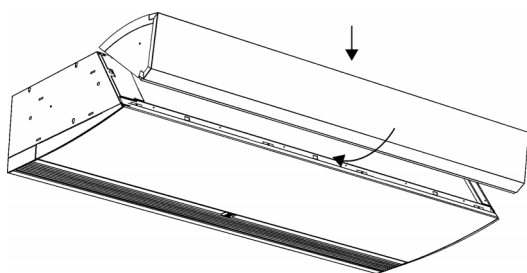
www.biddle.info.

2.9 Finishing the unit

2.9.1 Finishing free-hanging models

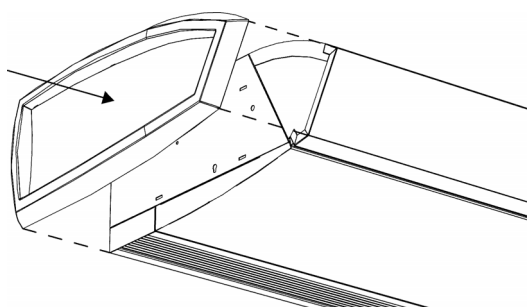
Position the inlet grille

Hook the inlet grille onto the unit.



Position the side caps

Click the side caps to either side of the unit:



If linking two or more units to each other, fit the end caps to the outer ends.

The threaded rod lining (accessory)

Fasten the threaded rod lining in accordance with the instructions supplied.

2.9.2 Finishing recessed models

General



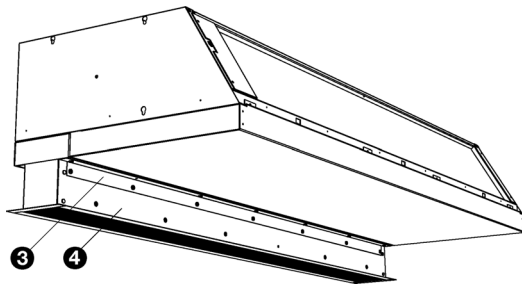
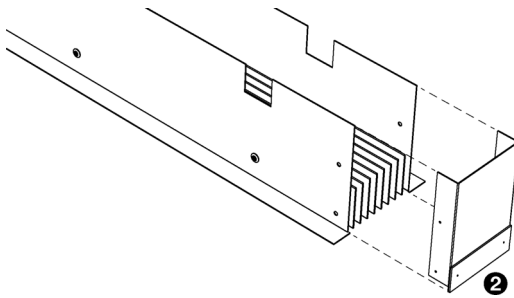
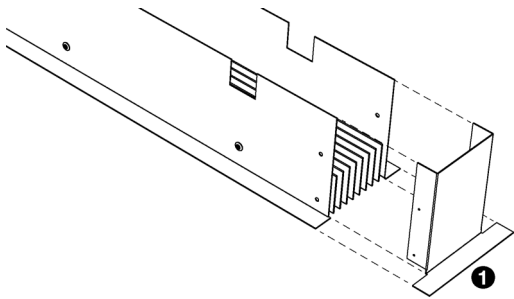
Note:

Ensure that the unit remains accessible for maintenance and repair, via an inspection hatch, for instance.

Adjusting the discharge duct

If linking two or more units to each other contiguously, you must adjust the discharge duct so that the finishing edges are not in each other's way.

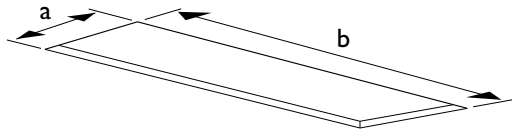
1. Remove the end piece *with* finishing edge ❶.
2. Mount the end piece *without* finishing edge ❷.



Mounting the discharge duct

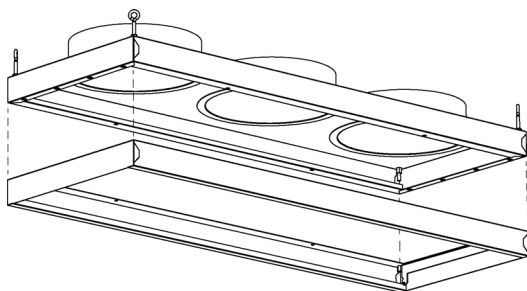
1. Make a hole in the ceiling for the discharge (for the dimensions, see table regarding dimensions of the hole for the discharge section).
2. Fix the two angle sections ❸ with sheet metal screws to the unit, along the edges of the discharge opening.
3. Slide the discharge duct ❹ into the unit's discharge opening until the desired height is reached.
4. Using sheet metal screws, fix the discharge duct to the angle sections ❸.
5. Connect the IR sensor in the discharge duct to the plug intended for that purpose. To do this, open the inspection panel.

Discharge section hole dimensions

	SIZE	TYPE	DIMENSIONS
	a	S-R	4" / 102 mm
		M-R	4" / 102 mm
		L-R	5 1/4" / 133.5 mm
	b	100-R	39 11/16" / 1008 mm
		150-R	59 3/8" / 1508 mm
		200-R	79 1/16" / 2008 mm
		250-R	98 3/4" / 2508 mm

Installing the grille plenum of the inlet section

1. Make a hole in the suspended ceiling for the inlet section (see table regarding dimensions of the hole for the inlet section).
2. Remove the inlet grille from its frame:
 - Push the two electrodes ❶ in the grille towards one another and tilt the grille outwards.
 - Push the two electrodes at ❷ towards one another and take the grille out.
3. Mount the grille plenum to the inlet grille frame.
4. Put the grille back into its frame.

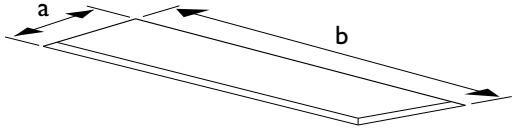


Note:

On delivery, the grille plenum may arrive already mounted to the inlet grille.

5. Fix the edge finishing strips to the frame.
6. Suspend the inlet section. Use the supplied screw eyes for this.

Inlet section hole dimensions

	SIZE	TYPE	DIMENSIONS
	a	S-R	10 9/16" /268 mm
		M-R	10 9/16" /268 mm
		L-R	14 1/2" /368 mm
	b	100-R	39 11/16" /1008 mm
		150-R	59 3/8" /1508 mm
		200-R	79 1/16" /2008 mm
		250-R	98 3/4" /2508 mm

Connect the unit plenum and grille plenum

1. Connect the unit plenum to the grille plenum using flexible ducts. Use hose clips to fasten the ducts.

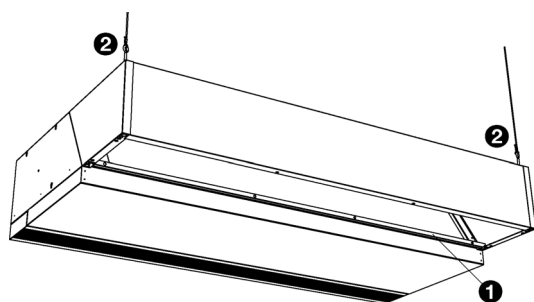
Plenum duct diameter

TYPE	DUCT DIAMETER
S-R	6 5/16" /160 mm
M-R	6 5/16" /160 mm
L-R	9 27/32" /250 mm

2.9.3 Finishing cassette models

Installing the inlet case

1. Mount the inlet case to the unit:
 - Hook the inlet case onto the upper side of the unit.
 - Screw flange ❶ of the inlet case to the unit.
2. Fix the angle points ❷ of the inlet case to the ceiling. Use the supplied screw eyes for this.



Warning:
 If you do not fix the inlet case to the ceiling, the unit may tip over and fall out of the suspension rails.

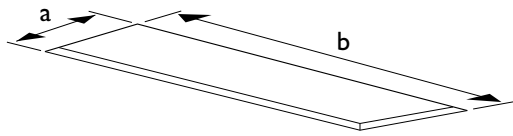
Installing the inlet grille

1. Remove the inlet grille from its frame:
 - Push the two electrodes ❶ in the grille towards one another and tilt the grille outwards.
 - Push the two electrodes at ❷ towards one another and take the grille out.
2. Screw the frame ❸ onto the inlet case.
3. Put the grille back into its frame.

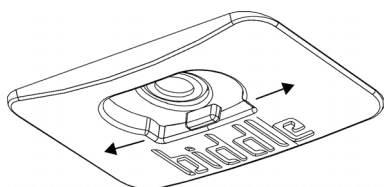
Finishing

1. Fix the strips ❹ for the around the unit.
2. In the false ceiling, make a hole with dimensions in accordance with the table.

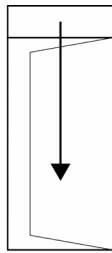
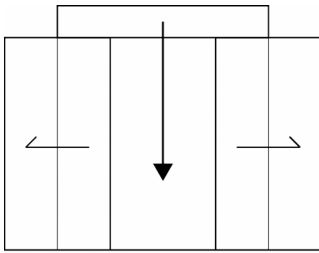
Unit hole dimensions

	SIZE	TYPE	DIMENSIONS
	a	S-C	32 5/8" /829 mm
		M-C	32 5/8" /829 mm
		L-C	43 13/16" /1113 mm
	b	100-C	39 11/16" /1008 mm
		150-C	59 3/8" /1508 mm
		200-C	79 1/16" /2008 mm
		250-C	98 3/4" /2508 mm

2.10 Adjusting the IR sensor



Adjust the IR sensor properly in order to be able to detect whether the door is open and in order to be able to measure the outdoor temperature.



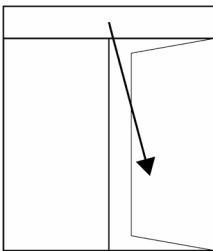
The correct strength is dependent on the door situation:

- Sliding door: Directly downwards.
- Single door: Directly downwards.
- Double door: In the direction of the door which is most used.



Caution:

With a double door, do not aim the IR sensor directly downwards. If you do so, then the outdoor temperature will not be properly measured.



2.11 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 models connected to a Daikin system:

1. Check the control cables between unit(s) and Daikin components.
2. Switch on the Daikin indoor units and outdoor unit.
3. Test the Daikin system in accordance with the Installation manual for the outdoor unit.

For all models:

1. Switch the mains supply on and/or put the plug into the power socket for all connected units.



Caution:

Make sure that the unit's power supply voltage matches the local mains voltage.

The unit's power supply voltage is displayed on the type plate.

2. Place the control panel back into the wall holder.

When you connect the control panel, the control panel searches for connected units and then briefly displays the number of connected units.

**Caution:**

If the number of units displayed does not match the number connected, check the wiring and power supply of the units and reconfigure the system via [menu > Maintenance > Reset system](#).

Optional:

Lock the control panel with the screw on the underside.

During the first start-up, the installation guide is initiated. Go through this in order to make the most necessary settings.

If the installation guide is not displayed, it can be started via [menu > Maintenance > Installation](#).

If the control panel does not work, or if the display shows an error message, there is an error: consult the relevant section.

**Note:**

The settings of the *b-touch* control panel can be copied to another *b-touch* control panel. See [6.14 Copying the settings of the b-touch control panel](#).

**Note:**

After installation, the control panel may possibly be removed. See [2.7.1 Special points regarding the control panel](#) for the conditions.

For all models:

1. Check whether the fans are rotating.

For water-heated models (type H):

1. Check whether the heat exchanger is connected correctly.
2. Make sure that the central heating system has been turned on.
3. *If the b-touch control panel is implemented:* Make sure that the heating is enabled on the control panel.
4. Feel whether the discharged air stream becomes warm. This may take some time and is dependent on the need for heating.
5. Vent the heat exchanger.

For models connected to a Daikin system model SRV):

1. Check whether the heat exchanger is connected correctly.
2. Make sure the Daikin system is turned on.
3. Make sure that the heating is enabled on the control panel.
4. Feel whether the discharged air stream becomes warm. This may take some time and is dependent on the need for heating.

For models connected to a Daikin system (model SRQ):

Operate the unit using the Daikin control panel and check its operation:

1. Turn the system on. The unit should start discharging air.
2. Set the operational mode to 'heat' and set the temperature to maximum. After a while, the unit should discharge warm air.
3. Set the operational mode to 'fan only'. After a while, the unit should discharge unheated air.
4. Turn the system off. After a while, the unit should switch itself off.

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

3.1 Introduction

This section describes the functions of the *b-touch* control panel, which are required for setting up the unit.



Note:

After installation, the control panel may possibly be removed. See [2.7.1 Special points regarding the control panel](#) for the conditions.

For the purpose of carrying out alterations easily, the control panel can remain present.

See also:

[2.7.1 "Special points regarding the control panel" on page 33](#)

3.1.1 Control panel

The *b-touch* control panel is equipped with a touch screen (touch screen) with which all the functions can be set:

- Turning the unit ON and OFF;
- Adjusting the strength of the unit;
- Switching the heating ON and OFF;
- Entering settings to adjust the operation of the unit to your situation.



b-touch

3.1.2 Multiple units operated from a single control panel

If multiple units are connected to the *b-touch* control panel, the settings on the panel are the same for all units.

3.1.3 Settings

Select ✓ to save the settings and return to the previous screen.

Select ✗ to return to the previous screen without saving the changes.

3.2 The Home screen



The settings of the unit and the room temperature can be adjusted on the Home screen.

- Touch the parts of the symbol to select manual or automatic and to adjust the strength of the unit or the room temperature.
- Touch the airflow symbol to obtain concise information about the operation of the unit.
- Touch **menu** to open the main menu.

3.2.1 Help function

? At any time, you can call up additional information concerning the point in the operation where you are, by touching Help.

3.2.2 Turning the unit ON and OFF

You can switch the unit ON and OFF manually, using the control panel.

- Touch **on/off** in order to turn the unit ON or OFF.

If the unit is on, the screen will become darker after some time, in order to save energy. When the screen is touched, it lights up again. This function cannot be deactivated.

If the unit is switched off, the screen will go black after some time. Touch the screen to activate it again.

CHIPS

The unit can also be switched ON and OFF in other ways:

- By external controls (see function [65. Control panel input and](#)).
- Via the internal timer or via an external release signal on the unit.

In these cases, the ON/OFF button can be hidden via [Configuration > 21. User interface options > Display on/off button](#).

3.2.3 The CHIPS control

By default, the unit operates with fully auto-active control. Depending on the selected settings, the unit can also be controlled manually. In automatic mode, the unit operates under CHIPS control. This control matches the strength and heat of the unit to changing weather conditions. This reduces energy consumption and improves comfort through selection of the optimum setting under all circumstances. CHIPS stands for “Corrective Heat and Impulse Prediction System”.

3.2.4 Automatic or manual control

The unit has an automatic mode and a manual mode. You can select these by touching the uppermost part of the symbol. When the unit is switched on, it is always in automatic mode. If you wish to use the unit in manual mode only, switch off the automatic mode via [menu > Settings > 1. Select modes](#).

In the manual mode, the unit operates with a fixed set fan speed, possibly influenced by the settings of function [26. Manual: Door response](#).

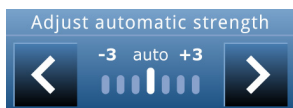
Recommended setting of the unit

To obtain the greatest possible comfort with the least possible energy consumption, Biddle recommends use of the fully automatic CHIPS control.

3.2.5 Regulating the strength

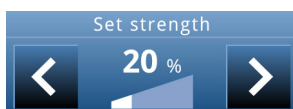
Adjusting the automatic strength control

In automatic mode, the strength and temperature of the air flow are controlled automatically. Due to weather conditions, you might want to adjust the automatic setting. If you feel a cold draught along the floor, you can increase the automatic strength.



Manual setting of the strength

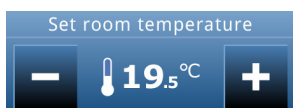
With the manual setting, you can select the strength. To achieve maximum climate separation with minimum energy consumption, Biddle recommends selecting the lowest strength at which no draught occurs. This setting may possibly need to be changed during the course of the day.




3.2.6 Required room temperature

You can set the temperature to a comfortable level. This is the temperature at the air curtain. For units connected to a Daikin system (SRV and SRQ), the temperature control is less accurate than with water heating or electrical heating.

Temperature adjustments via the home screen of the *b-touch* control panel only apply until the starting time of the following period. The default value can be set via [menu > Settings > 5. Room temperature](#).




3.2.7 Errors

The symbol  indicates that there is an error. The error message is displayed alongside.

- Touch this message for further information on the error and for instructions as to how to react.




Warning:

Some errors may cause damage or danger to persons if they are disregarded. If  is displayed, follow the instructions on the control panel concerning how to act.



Note:

The symbol  and the error message remain displayed as long as the error has not been remedied.



If an error has remedied itself, a corresponding message will be displayed. Touch this message to display the [Error history](#) and to read out the errors and the times of their occurrence. This list can also be read out via [Maintenance > Error history](#).

See also:

4.2 "Error messages on the control panel" on page 71



3.2.8 Symbols

The outdoor temperature sensor absent symbol indicates that the outdoor temperature is based on a monthly average. Only treat this as a error if this is not a deliberate setting.

The symbol ⌚ indicates that the timer is switched on.

The symbol 'i' indicates that there is currently a tip. Touch the symbol in order to read the tip.

3.3 Main menu

Touch [\(menu](#) in order to open the Main menu. Here you can enter settings for a number of frequently-used functions; in submenus you can enter settings in order to adapt the operation of the unit to your specific situation.

- Touch [home](#) in order to return to the Home screen.
- Using ▲ and ▼ you can browse through the list.

If the control panel is not operated for some time, it returns automatically to the Home screen without saving the changes.

Lock screen

Select [Lock screen](#) in order to prevent unauthorised access. The 🔒 symbol appears on the screen.

Unlocking

Touch the screen for 5 seconds to unlock it.

Turning the heating on and off



The unit's heating can be switched on and off manually.

Switching the heating off disables the room temperature control and any [Heating on](#).

This function can be deactivated via setting 21 in the configuration menu.

- Select [Heating](#).

When the heating is switched off, the airflow is displayed in blue.

The heating can also be switched off by the control itself:

- by an external signal at the input of the unit, see [menu > Configurationmenu > Configuration > 60. Function of inputs](#), setting [Heating off](#);
- when the outdoor temperature is higher than the setting of function [41. Heating OFF temperature](#).

Filter

Dirty filters make the unit less effective. It is therefore necessary to clean or replace the filters at regular intervals. The contamination of filters is measured with the optional filter sensor or calculated on the basis of the lifespan.

With the optional filter sensor, the unit measures the filter contamination every 24 hours by running the fans at the highest speed for 40 seconds. In this menu, you can set the time at which this check should be carried out.



Warning:

As default, the check is carried out at 00:00 a.m. (midnight). Be aware that the airflow of the unit can set objects in motion. This might set off an alarm system in the building at night time.

The cleaning interval can be adjusted to match the actual contamination of the filters.

The lifespan of the filter is calculated on the basis of the usage of the unit if no filter sensor has been installed. You can adjust this by setting the maximum lifespan of the filter.

When the filters are contaminated or when the maximum lifespan is reached, a message appears on the Home screen. Also, a signal can be generated on one of the outputs.


You can clean the filter with a vacuum cleaner, for instance. After several cleanings, however, the filter must be replaced. Replacement filters are available from Biddle.

Cleaning display

The use of the touch screen can leave marks or fingerprints on the screen. The screen can be cleaned using a damp, soft cloth.

Use this function to disable the touch screen for 20 seconds in order to be able to clean it.

Timer

The b-touch control panel has a week timer. You can set two start and stop times for every day of the week. The unit is on between the start time and the stop time. The second start and stop times are optional. When the ON/OFF button is displayed on the screen, the unit can also be switched ON or OFF manually. From the next switching moment, the unit follows the timer again. When the timer is switched on, the symbol  is displayed on the Home screen.

3.4 Preferences

Preferences

The menu [Preferences](#) allows you to make settings for the use of the control panel.

Set language

The control panel offers a choice of languages. Choose your preferred language from the list.

Set date and time

The date and time are necessary for the timer function, the lifespan of the filter and for tracking usage statistics of the unit.



Caution:

The date is also required in situations where the IR sensor is not suitable for measuring the outdoor temperature and no outdoor temperature sensor has been connected. In that case, the CHIPS control estimates the outdoor temperature based on the month of the year and the climate data for your country. An incorrect date causes the unit to work less optimally.

The automatic summer time function switches the clock to summer or winter time in accordance with the applicable European rules. If you do not use this function, you can switch to summer time manually. The clock is then set one hour forward.

Celsius / Fahrenheit

Choose between a temperature display in degrees Celsius or degrees Fahrenheit.

Display brightness

Set the brightness of the screen to your personal preferences or to the specific situation.

Show tips

The control panel can show tips about the usage of the unit. The display of these tips can be enabled or disabled.

3.5 Settings

The Settings menu allows you to enter settings which influence the day-to-day use of the unit.

1. Select modes

The control panel has an automatic mode and a manual mode. With the function Select modes, you can set which of these modes can be selected in the HOME screen.

5. Room temperature

Here, set the temperature which is to be used, by default, as the room temperature when starting up the unit.

The desired room temperature can temporarily be adjusted on the home screen until the next start-up moment.

6. Minimum air temperature

Set the minimum difference between the room temperature and the discharge temperature.

This difference can be increased for more comfort. A smaller difference saves energy.

8. Night temperature

The night temperature is used when the unit is switched off. When the room temperature drops below this set value, the unit will start working in order to keep the room at the night temperature.



Note:

This function only operates when the heating is switched on.



Note:

This function only operates if a *b-touch* control panel is present.



Warning:

Be aware that the airflow of the unit can set objects in motion. This might set off an alarm system in the building at night time.

9. Calibration

An unfavourable positioning of the room sensor or use of the temperature sensor in the unit may be the reason why the temperature displayed deviates from the actual temperature.

Use this function to adjust the temperature reading.

3.6 Configuration

The menu **Configuration** allows you to enter settings in order to adjust the operation of the unit to the room and the system. Usually, this menu is used only for installation, maintenance and service purposes.

20. Access control

Pin code

Access to the entire control panel or to the menu alone can be protected with a four-digit PIN code.

The default PIN code is 0000.



Note:

The cut-out only starts to operate when the control panel has to be activated again. This means you should wait a while until the screen turns black.

Access level

The control panel can be safeguarded at different access levels.

21. User interface options

Display on/off button

The unit can be switched ON and OFF manually. This can also be done via the internal timer or via an external release signal on the unit. In this case you can disable the manual on/off option. The on/off button is then not displayed on the Home screen.

Temperature display

By default, the room temperature is displayed. With this function, you can select another temperature to display or switch off the temperature display.

If the temperature display is switched off, there is no temperature control.

Heating OFF option

Use this function to enable or disable the option which allows the user to switch the heating ON/OFF manually.

Error display

Some error messages may be caused by external factors such as the central heating system and do not necessarily have an influence on the functioning of the unit.

Use this function to suppress these messages. Safety-related warnings will always be displayed.

25. Auto: Door response

Door response

The unit can respond in various ways to the opening and closing of the door. Configure whether the response should be direct or gradual.

Direct change: The unit responds directly to the opening and closing of the door. Use this setting if the door is not often opened repeatedly in quick succession.

Gradual change: The speed at which the unit responds to the opening and closing of the door is based on the open/closed ratio. If the door is opened repeatedly in quick succession, the unit reacts more slowly. As a result, it does not need to completely start up again every time the door opens. Use this setting if the door is often opened repeatedly in quick succession.

Fan speed

Set what the fan speed must be when contact is made with the input. Use this with a door contact switch to reduce the fan speed as soon as the door is closed. This only has effect if function 60. **Function of inputs** is set to **Direct change** or **Gradual change**.

If this function is set to zero (fans off), the fans can start working with the doors closed. That serves to maintain the room temperature. If you don't want this, then act as follows:

- decrease the set room temperature, or:
- set the function to a value other than zero.

Room temperature control

The unit can be used to regulate the room temperature when the door is closed. An adjustable percentage of the fan speed is used in order to bring the room to the correct temperature. As soon as the room temperature has been reached, the fans switch off.

Fan speed for room temperature control

Set the percentage of the fan speed that must be used for room temperature control. This only has an effect when the room temperature control is enabled.

Stand-by heating

The control can be set in such a way that heat is immediately available when the door is opened. This is a percentage of the maximum heat available for this function. The maximum heat depends on the outdoor temperature, among other things.

Set the amount of heating that must be available when the door is opened:

- When immediate heat is important, set a high percentage.
- When saving energy is important, set a low percentage.



Note:

The room temperature control can affect this quantity of available heat.

26. Manual: Door response

Set the way in which the unit in manual mode should respond to the opening and closing of the door:

- Response as set via function 25. [Auto: Door response](#)
- No door response (The unit always works on the set fan setting)

31. Maximum strength

To restrict the sound level, the maximum fan speed can be limited. This function only has effect on the automatic mode.

Use of this function can reduce comfort.

33. Boost function

If there is a great difference between the desired and the actual room temperatures, the fan speed can be increased in order to reach the desired temperature more quickly.

Set the temperature difference at which the boost function should be activated and what the fan's increase in speed should be.

41/42/43 Operation at higher outdoor temperatures

As the outdoor temperature rises, the need for climate separation and heating changes. In functions 41, 42 and 43 you specify at what outdoor temperatures the heating and the fans must react.



Note:

If the IR sensor is used for the outdoor temperature: Utilise a value that deviates more than 3°C from the set indoor temperature.

SITUATION	NEED	FUNCTION	OPERATION
It is colder outdoors than indoors.	Heated climate separation	Normal operation	Heating: on Fans: on
It is approximately as warm outdoors as indoors.	Ambient climate separation	41. Heating OFF temperature	Heating: off Fans: on
	No climate separation	42. Fan OFF temperature	Heating: off Fans: off
It has become warmer outdoors than indoors.	Ambient climate separation	43. Temperature unheated usage	Heating: off Fans: on

41. Heating OFF temperature

If the outdoor temperature rises above this point, the unit's heating is switched off.

A higher value gives more comfort, a lower value saves energy.

42. Fan OFF temperature

When the outdoor temperature rises, there is less need for climate separation. In order to save energy, the fans can be switched off at a pre-determined outdoor temperature.

Set this value at 50 °C in order to leave the fans on all the time.

44. Outdoor temperature

43. Temperature unheated usage

When the outdoor temperature becomes higher than the desired room temperature, there is a need for climate separation without heating. Set the outdoor temperature at which the unit should function in an unheated mode in order to keep the heat out.

Set this value at 50 °C in order to leave the temperature control on all the time.

The automatic CHIPS control needs an outdoor temperature in order to calculate the optimal setting. Without outdoor temperature data from a sensor, the outdoor temperature is estimated on the basis of the month of the year and your country. Climate data are used for this.

You can only use the function if the date and time have been correctly set. After selecting your country, you can modify the monthly temperatures in accordance with your wishes. Since this is only an estimation, it may be that your unit does not function optimally.



Note:

The auto-active control works less efficiently without an outdoor temperature sensor. (IR sensor or wired sensor)

45. Extra frost protection

For water-heated models only

When the unit is switched off, the water valve closes by default.

The unit is equipped, by default, with frost protection. You can additionally protect the unit against frost damage by leaving the water valve partially open at certain temperatures.

Select **Valve position** and set the opening percentage of the valve so as to always keep a flow running over the heat exchanger in the unit.

Set the maximum outdoor temperature at which the additional frost protection must be activated. When the temperature exceeds this value, the additional frost protection switches off again.

46. Maximum discharge temperature

The discharge temperature is limited by the controller to a maximum of 50 °C. Possibly set a lower value in order to save energy.

47. Overheat protection

If the actual room temperature becomes higher than the pre-set room temperature, the heating can be switched off in order to prevent the room from becoming too warm.

Set the temperature above which the heating must be disabled.



Note:

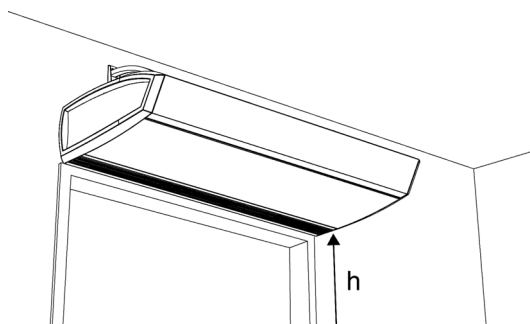
This function can only be used if the unit is set to automatic.



Note:

If this function is activated, then function 6. **Minimum air temperature** is ignored.

50. Installation height



In order to use the auto-active control as efficiently as possible and with minimum energy consumption, it is necessary to set the installation height of the unit correctly.



Note:

Use values in metres.

The installation height is the distance from the floor to the underside of the unit (h).

60. Function of inputs

The unit has three inputs (terminal block X520) which can be used to enable a function to be controlled by an external accessory such as a thermostat or a signal from a building management system.

Values for inputs 1 and 2

VALUE	OPTION	DESCRIPTION
0	No function	The input has no function.
1	Unit off locally – NO	The unit is switched OFF when the contact is closed. (This only works with the units to which the input signal is directly connected (locally).)
6	Heating off	The heating is switched OFF when the contact is closed.
9	Release – NO	The user is allowed to switch the unit on and off when the contact is closed.

VALUE	OPTION	DESCRIPTION
10	Dirty filter – NO	Displays a “dirty filter” warning if the contact is closed.
12	Electrical hybrid heating off	The auxiliary electrical heating is switched OFF when the contact is closed.
21	Switch all units on	All units are switched ON when the contact is closed.
51	Unit off locally – NC	The unit is switched OFF when the contact is open. (This only works with the units to which the input signal is directly connected (locally).)
56	Heating on	The heating is switched ON when the contact is closed.
59	Release – NC	The user is allowed to switch the unit on and off when the contact is open.
60	Dirty filter – NC	Displays a “dirty filter” warning if the contact is open.
62	Electrical hybrid heating off	The auxiliary electrical heating is switched OFF when the contact is open.
71	All units off	All units are switched OFF when the contact is closed.

The function of input 3 is set via other functions in the *b-touch* control panel. In addition, the function of this parameter (60.3) is controlled via the settings file or via Modbus.

Values for input 3

VALUE	OPTION	DESCRIPTION
13	Door contact switch – NO	If the door opens, the contact is closed.
21	Switch all units on	All units are switched ON when the contact is closed.
63	Door contact switch – NC	If the door opens, the contact is opened.
71	All units off	All units are switched OFF when the contact is closed.

Release delay input 1

When you use input 1, you can make the effect of an input signal continue for some time after the signal has been given ('release delay').

61. Function of outputs

The unit has a connection (terminal block X510) for three output signals: these can be used for controlling the central heating system, for example, or for transmitting status reports to a Building Management System (BMS).

Output 3 is used, by default, for error messages.

The outputs work independently of each other.

Multiple units operated from a single control panel.

The outputs always have a global effect: the signals are always the same in all units connected to the control panel.

Values

VALUE	OPTION	DESCRIPTION
0	No function	The contact is always open.
1	Error – NO	The contact is closed as soon as an error occurs.
2	Dirty filter – NO	The contact is closed as soon as the maximum filter lifespan has expired.
3	Heating deficit	The contact is closed when the unit cannot reach the desired air temperature.
4	Error or dirty filter – NO	The contact is closed as soon as an error occurs or when the maximum filter lifespan has expired.
8	Unit on	The contact is closed as soon as the unit is switched on.
10	Error local – NO	The contact is closed as soon as an error occurs in the unit in question.
11	Fan active – NO	The contact is closed when the fans are running.
13	Heating on	The contact is closed when the unit requires heating. Use this to switch the heating system ON or OFF via the unit.
15	Risk of freezing	The contact is closed when the temperature inside the unit drops below 7 °C.
17	Use boost function	The contact is closed when the difference between the desired temperature and the room temperature is greater than the value set for 33. Boost function .
31	Copy input 1	The output follows the contact on input 1
32	Copy input 2	The output follows the contact on input 2
33	Copy input 3	The output follows the contact on input 3
40	Overheating protection	The contact is opened as soon as the high-limit thermostat has been activated. (only for output 3, only for models with electrical heating)
41	Fan malfunction – NC	The contact is opened when there is a malfunction in the fan. (only for output3, only for type L)
51	Error – NC	The contact is opened as soon as an error occurs.
52	Dirty filter – NC	The contact is opened as soon as the maximum filter lifespan has expired.
58	Unit off	The contact is closed as soon as the unit is switched off.
60	Error local – NC	The contact is opened as soon as an error occurs in the unit in question.
61	Fan active – NC	The contact is opened when the fans are running.

65. Control panel input

The control panel has one input signal interface. This can be used for an external ON/OFF signal or for an additional temperature sensor.

When the timer is in use, the ON/OFF function of the input of the control panel is deactivated, irrespective of this setting.

If an additional temperature sensor is connected, this takes over the function of the sensor in the control panel.



Note:

Selecting “Temperature” without actually connecting a sensor leads to an error message.

66. Daikin settings

For all models connected to a Daikin system (types SRV and SRQ)

Specify whether the unit may also be switched on and off by the Daikin system.

71. Indoor temperature sensor

Select the sensor which the system must use for the indoor temperature:

- Sensor in the control panel.
- Sensor in the air inlet of the unit.
- The average of the sensor in the air inlet of the unit and the sensor in the control panel.
- The average of the sensor in the air inlet of the unit and the IR sensor.



Note:

The IR sensor measures the gradual temperature changes of the floor surface. Select this option if draught or heat loss across the floor often occurs.



Note:

For night temperature regulation, the sensor in the control panel is always used.

74. IR sensor

The unit is fitted with an IR sensor in the discharge grille. This sensor measures the temperature at a section of the ground near the door opening and can thus be used for various functions:

- indoor temperature sensor (to be activated via [71. Indoor temperature sensor](#))
- outdoor temperature sensor
- door contact switch
- quick start of the door contact switch (in the event of detection of persons, already active for 10 seconds)
- activation of unit for 30 minutes (in the event of detection of change)

Select which functions the IR sensor must be used for.

Possibly implement a correction to the indoor and outdoor temperatures if the measured temperature deviates from the actual temperature.

The room temperature that is adjustable by the user can be limited. Set a minimum and a maximum room temperature.

3.7 Maintenance

The menu [Maintenance](#) contains information on the use of the unit and offers a number of functions which are necessary for remedying errors.

Status

The status screen displays general information about the installation and specific information per group and per unit connected.

Current errors

Gives an overview of current errors. The error messages can also be deleted here.

Error history

Gives an overview of the errors which have occurred.

Capacity test

Use this function to test the capacity of the unit and your heating installation.

The unit will run for 30 minutes at the highest fan speed and the highest heating capacity. You can check the discharge temperature and the heating capacity per metre of unit length. The discharge temperature is limited to 50°C.

Valve check

For units with water heating:

if the heating capacity is too low, check the supply and return water temperatures and the water flow.

Use this function to check the operation of the water valve:

1. Set the opening percentage of the valve to 0%;
2. Press start. The fans will start rotating at the highest speed;
3. Check whether the discharged air is cold;



Note:

It may take some time before the valve reaches the adjusted opening percentage.

4. Repeat steps 1 and 2 for the percentages 50% and 100% as well. In doing so, check whether the discharged air gets warmer per step.

Check door contact switch

With this function, you check the operation of a door contact switch connected to the unit. For this purpose, you have to open and close the door, so that the control panel can detect the switch.

Calibrate filter sensor

The unit can be equipped with a filter sensor. Calibrating the sensor will determine the base level of the filter sensor. Perform the calibration after installing a recessed unit, for example.



Caution:

Make sure the unit is properly installed and that the filters are clean.

Installation

This installation guide leads you through the most frequently required settings.

The installation guide is started up automatically during the first start-up of the unit or after the resetting of the factory configuration.

Unit code

For entering the unit code after replacement of the control circuit board in a unit.

Default settings

Restores the default factory settings of the setup menu. The settings entered in the configuration menu are retained.

Factory configuration

Restores the standard factory configuration. All settings are then lost.



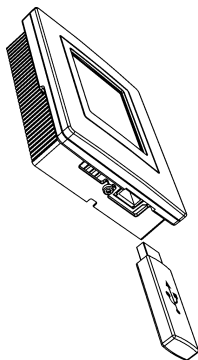
Note:

The installation guide will be restarted.

Reset system

The control panel searches for connection with the attached units again. Use this function when remedying errors and during connection or disconnection of units.

3.8 USB



The control panel is equipped with a USB port to which only a USB flash drive can be connected. This is used for:

- updating the software
- importing and exporting settings
- exporting operating data

This menu is automatically activated when a USB flash drive is connected. The menu is closed again when the USB flash drive is removed.



Caution:

Do not remove the USB flash drive during updating or during the importing or exporting of data. This can take several minutes.



Warning:

Connection of other electronic devices to the USB port can cause serious damage to the control panel or to other electronic components.

Software update

Biddle is working continuously on improving its products and recommends that you update the software of the control panel when updates become available. Consult www.biddle.info/software for availability.

- The installed version of the software can be read out from [Maintenance > Status](#).
- Download the latest version of the software via Biddle's website.

See also: [6.14 Updating the software](#)

Upload logo

It is possible to use your own logo or image as background for the display.

Requirements for the image:

- Windows bitmap;
- Filename: logo.bmp;
- Dimensions: maximum 240 x 320 pixels;
- Colour depth: 8-bit grayscale or 24-bit colour.



Note:

Uploading your own logo replaces the standard Biddle logo.

Export/import settings

For copying settings between control panels.

See also: 6.15 [Copying the settings of the b-touch control panel](#)

Export log...

The Export log functions write data concerning the operation of the unit to the USB flash drive. These files can then be analysed on a computer.

The files contain the following data:

- log_func: Data concerning the operation of the unit.
- log_error: Error report history.
- log_user: User settings history.
- log_stat: *not in use*.
- system_info: Overview of connected control circuit boards and control panels.
- log_IR: Temperatures measured by IR sensor.

See also:

6.14 *"Copying the settings of the b-touch control panel" on page 91*

6.15 *"Updating the software" on page 92*

4. . Errors



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.

See also:

1.5.2 "Safety issues relating to installation, maintenance and servicing" on page 17


4.1 Resolving simple problems







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

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

Some problems can be resolved simply by resetting the system once. (see 1.3 Reset system)

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit does not work.	The unit has not been switched on	Switch 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 by the thermal cut-out.	<ol style="list-style-type: none"> 1. Switch the unit off using the control panel. 2. Allow the unit to cool down. 3. Turn the unit on and check whether it is now working again. Contact Biddle if this error occurs repeatedly.

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit has been switched off but is still operating nevertheless.	<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 switched on but is not discharging any air.	The fans may be switched off if there is only a small difference in temperature between indoors and outdoors.	This is not an error. If this is considered a problem, the value of function 42. Fan OFF temperature can be set to zero.
The unit is not discharging much air. (There is a draught)	The inlet and/or discharge section is blocked.	Remove obstacles to the inlet and discharge section.
	The unit is set at too low a strength.	Switch the unit to a higher strength.
	The filter is dirty.	Clean or replace the filter.
	<i>Only for models with heating:</i> The heat exchanger has become dirty.	Clean the heat exchanger.
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.
The control panel display is black.	The control unit has no power supply.	Check the mains supply: <ul style="list-style-type: none"> • plug in the power socket, • isolation switch,
The display is on, but does not react to touch.	<i>If the  symbol is shown on the display:</i> The display is locked.	Touch the screen for 5 seconds to unlock it.
The display flickers	The power supply is too low or not constant	Reduce the brightness of the display to a level at which flickering no longer occurs, via menu > Preferences > Display brightness .
The unit blows out cold air (without error message).	The discharge temperature is dependent on the outdoor and indoor temperature	This is not an error. If this is considered a problem, the value of function 6. Minimum air temperature can be increased.

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit discharges cold air .	The heating has been switched off manually.	Turn the heating on via menu > Heating .
	The heating has been switched off because the outdoor temperature is too high.	This is not an error. If this is considered a problem, the value of function 41. Heating OFF temperature can be increased.
	The (set) room temperature has been reached. The unit is ventilating unheated.	This is not an error.
	The heating has been switched off by a signal to the unit's input.	This is not an error. If this is considered a problem, the function of the input can be changed via 60. Function of inputs .
The heating is disabled (the airflow on the display is blue) and the unit is nevertheless blowing out warm air.	The heating has been switched on by the additional frost protection.	This is not an error. If this is considered a problem, the function 45. Extra frost protection can be disabled.
The fans are running at a higher setting than expected	If there is a big difference between the set temperature and the actual temperature, a unit may temporarily operate at a higher setting in order to attain the pre-set temperature faster.	This is not an error. If this is considered a problem, you can switch off function 33. Boost function or set it to a different temperature difference or a different increase in the fan setting.
The door is closed but the fans are still running.	This may be caused by the settings for a closed door situation.	Check the settings of function 25. Auto: Door response .
For units connected to a Daikin system:		
The buttons   and  on the Daikin control panel do not function.	These buttons have no function in combination with a Biddle air curtain.	The air curtain is operated with the Biddle b-touch control panel.
The air curtain is discharging unheated air.	An error has occurred in the Daikin system	Check the settings on the Daikin control panel.
	The Daikin system has automatically switched the heating off.	Check the settings on the Daikin control panel.
The air curtain is discharging unheated or cold air, or does not function, and the Daikin control panel shows    .	The Daikin system is operating in defrost mode. This lasts 5 to 10 minutes.	Wait until defrosting has been completed.

4.2 Error messages on the control panel

For models with *b-touch* control panel

4.2.1 Reading out errors

Current errors

Current errors are displayed on the Home screen. If an error has remedied itself, a corresponding message will be displayed.

When the error message is touched, the screen displays an explanation, together with a list of the actions to be taken. The message will disappear from the Home screen only when the error has been remedied.

More than one error may occur at the same time. You can read out a list of current error codes via [menu > Maintenance > Current errors](#).

No-longer-current errors

If an error has remedied itself, a corresponding message will be displayed. Touch this message to display the error history and to read out the last five errors and the times of their occurrence. This list can also be read out by touching [menu > Maintenance > Error history](#).

This message will disappear when touched or when the unit is switched on again.

4.2.2 Deleting errors

Most error messages will disappear automatically when the problem is resolved. Certain errors have to be remedied, however, by deleting the error message via [menu > Maintenance > Current errors](#).

4.2.3 Reset system

Some errors can be remedied by resetting the control panel via [menu > Maintenance > Reset system](#): the panel will then search for connected units again.

In this process, all settings are retained.



4.3 Remediating errors that are accompanied by an error message

Try to remedy errors that are accompanied by an error message, making use of the error codes table. Technical expertise is needed for this.

CODE	PROBABLE CAUSE	WHAT TO DO
E1	<p>The control panel does not communicate with one or more connected units.</p> <p>This error may occur:</p> <ul style="list-style-type: none"> • when a connected unit is removed or replaced, • due to a brief error in the power supply of a connected unit, • due to incorrect cabling, • due to a fault. 	<ol style="list-style-type: none"> 1. Check whether all connected units are provided with mains supply. 2. Check whether the dummy plug on terminal X535 of the last connected unit is present. 3. Check the control cables: <ul style="list-style-type: none"> • are they correctly connected and free of breaks? • are they stretched out or rolled up in a bifilar coil? • are they shielded from magnetic fields? 4. Check the fuses. 5. Check the wiring between the control panel and connections X530 and X535 in the unit. 6. Reset the system if the error message does not automatically disappear.
E2	There are units connected that have an invalid or unknown unit code, or an invalid combination of unit types.	Check and compare the unit types on the type plate. The units must have the same battery type and preferably the same capacity.
	The control panel software is outdated.	Check the version number of the software via menu > Maintenance > Status .
	The control panel has power but is not communicating with any unit.	<ol style="list-style-type: none"> 1. Check the control cables: <ul style="list-style-type: none"> • are they properly connected and fully intact? • are they stretched out or rolled up in a bifilar coil? • are they shielded from magnetic fields?
E3	<p><i>For electrically heated models:</i></p> <p>The resistor on the printed circuit board for electric heating is not functioning properly.</p>	<ol style="list-style-type: none"> 1. Clear the error message. 2. Check the connection of the R1.6K on the EVW printed circuit board. (see the wiring diagram) If this is in order: replace the resistor.
E4	<p><i>For electrically heated models:</i></p> <p>A high-limit thermostat has switched the unit off: this is protection against overheating.</p> <p>This error may occur:</p> <ul style="list-style-type: none"> • if the unit has been temporarily without power, e.g. due to a power failure; • if the filter is dirty and lets insufficient air through. <p>In other cases, there may be a serious fault that may pose a risk to people.</p>	<ol style="list-style-type: none"> 1. Clear the error message. 2. Check the fans. If one or more fans do not work, check: <ul style="list-style-type: none"> • the fan wiring; • the connection on the control circuit board (X344); If these are in order, then replace the fan. 3. Check the filter for contamination. Clean or replace it if necessary. <p>Contact Biddle if this error occurs repeatedly.</p>

CODE	PROBABLE CAUSE	WHAT TO DO
E5	<p><i>For electrically heated models:</i></p> <p>The heating continues to operate because a relay is not working properly.</p> <p>This may be a serious fault that may pose a risk to people.</p>	<ol style="list-style-type: none"> 1. Clear the error message. 2. Switch the mains supply to the unit Off and On. 3. Let the unit operate for some time with the heating disabled and check whether the discharged air stays cold. <p>There is a dangerous fault if:</p> <ul style="list-style-type: none"> • heating continues nevertheless; • this error message recurs after half an hour; • this error occurs repeatedly. <p>In such cases, proceed as follows:</p> <ul style="list-style-type: none"> • disconnect the unit from the power supply immediately; • contact Biddle.
E6	<p><i>For water-heated models:</i></p> <p>Risk of freezing because discharge temperature is too low. Frost protection has been activated.</p> <p>Freezing may cause damage to the heat exchanger.</p>	<ol style="list-style-type: none"> 1. Clear the error message. 2. Ensure that the temperature in the room rises above 8 °C(47 °F). 3. Follow the instructions for error code F3 <p>You can prevent this error by setting the unit to switch on the central heating system when there is a risk of freezing (Function 61. Function of outputs on Heating on).</p>
E7	Fan error.	<ol style="list-style-type: none"> 1. Clear the error message 2. Check the fans. If one or more fans do not work, check: <ul style="list-style-type: none"> • the fan wiring; • the connections on the control circuit board (X344); • the transformer fuse; • the transformer itself. <p>If these are in order, then replace the fan.</p>
F1	There is an error in the air damper.	<ol style="list-style-type: none"> 1. Clear the error message 2. Change the heating strength using the control panel, and check whether the air damper moves. 3. Remove any obstacles from the air damper's range. 4. Check that the unit is not switched on at the power supply source (if the unit is switched on at the power supply source, this can damage the valve drive). 5. Check wiring and connectors X364. 6. Replace the valve drive.

CODE	PROBABLE CAUSE	WHAT TO DO
F2	<p><i>For water-heated models:</i> There is too much heating. This error may occur if the control valve does not work correctly.</p>	<ol style="list-style-type: none"> 1. Switch the unit OFF using the control panel, wait for one minute, and switch it ON again. 2. Check that the connections of the supply and return pipes have not been interchanged. 3. Check the wiring and connectors of the valve drive and the discharge temperature sensor (X350). 4. Take the drive from the valve and check the interior for mechanical operation and defects.
F3	<p><i>For water-heated models:</i> The central heating system switches on later than the unit.</p>	<p>You can:</p> <ul style="list-style-type: none"> • switch on the central heating system earlier; • set the unit to turn on the central heating: Set function 61. Function of outputs to Heating on and connect the relevant output to the central heating system. • turn off this error message: Set function 21. User interface options > Error display to Disable.
	<p><i>For water-heated models:</i> There is too little heating. This error may occur:</p> <ul style="list-style-type: none"> • if not enough hot water is supplied; • if the control valve does not work correctly. 	<ol style="list-style-type: none"> 1. Check the central heating system: <ul style="list-style-type: none"> • is it turned on? • is it able to supply enough hot water? 2. Check whether the heat exchanger only becomes partially warm: if so, it needs venting. 3. Check the wiring and connectors of the valve drive (X370) and the inlet temperature sensor (X360). 4. Take the drive from the valve and check the interior for mechanical operation and defects.
	<p><i>For electrically heated models:</i> There is too little heating because one or more heating elements do not work.</p>	<ol style="list-style-type: none"> 1. Check the fuses of the mains supply. 2. Check the wiring and connections of the heating elements, using the wiring diagram as a reference If they are OK, a relay is faulty: Contact Biddle.
	<p><i>For all models:</i> If the fans do not rotate:</p>	<ol style="list-style-type: none"> 1. Check whether the fans are rotating. If one or more fans do not work, check: <ul style="list-style-type: none"> • the wiring of the fans; • the connections on the printed circuit board (connectors X60); • the transformer fuse; • the transformer itself.
F4	<p>The temperature sensor in the control panel is faulty. The room temperature control now only works with the sensor in the unit's air inlet.</p>	<p>Replace the control panel if you wish to have the room temperature controlled by the sensor in the control panel (if function 71. Indoor temperature sensor is set to Control panel).</p>
	<p>If function 65. Control panel input is set to Temperature: The external temperature sensor is faulty or not connected to the control panel.</p>	<p>Check the wiring between the external temperature sensor and terminal X426 on the wall holder. If this error occurs repeatedly, replace the sensor.</p>

CODE	PROBABLE CAUSE	WHAT TO DO
F5	The temperature sensor in the unit's discharge section does not work.	<ol style="list-style-type: none"> 1. Check the sensor's wiring and connection (connector X350). 2. Replace the sensor.
F6	The temperature sensor in the unit's inlet section does not work.	<ol style="list-style-type: none"> 1. Check the sensor's wiring and connection (connector X360). 2. Replace the sensor.
F7	<p>The outdoor temperature sensor is not working.</p> <p>On the home screen there is also a symbol indicating outdoor temperature sensor absent.</p>	<p>If the wired outdoor temperature sensor comprises part of the system:</p> <p>The outdoor temperature is now based on a monthly average for your country.</p> <ol style="list-style-type: none"> 1. Check the wiring and connection of the outdoor temperature sensor (connector X540). 2. Possibly, replace the sensor. 3. Possibly, choose not to use the outdoor temperature sensor, via the installation guide. <p>If the wired outdoor temperature sensor does not comprise part of the system:</p> <ol style="list-style-type: none"> 1. Clear the error message. 2. The symbol indicating outdoor temperature sensor absent remains on the home screen if the outdoor temperature is not measured by the IR sensor either, but is based on a temperature table.
F8	The pressure sensor is faulty.	<ol style="list-style-type: none"> 1. Check the wiring and connection of the sensor (connector X520). 2. Replace the sensor.
F15	<p>The IR sensor does not work/does not work properly.</p> <ul style="list-style-type: none"> • If no wired outdoor temperature sensor is used, the outdoor temperature is now based on an average monthly temperature for your country. On the home screen there is also a symbol indicating outdoor temperature sensor absent. • The indoor temperature is now measured by a sensor in the inlet. • The unit is now activated by the wired door contact switch, if it is present. 	<p>If the IR sensor comprises part of the system:</p> <ol style="list-style-type: none"> 1. Check the wiring and the connection of the IR sensor (connector X346). 2. Possibly, replace the sensor. 3. Possibly, configure the system not to use the IR sensor.

See also:

- 5.2 "Replacing or cleaning the filter" on page 79
- 6.6 "Resetting the high-limit thermostat" on page 86
- 1 "Fuses" on page 1
- 4.2 "Error messages on the control panel" on page 71
- 2.10 "Adjusting the IR sensor" on page 43

4.4 Remediating errors without 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 needed for this.

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit does not respond to changes.	For more than 10 hours, there has been no connection with the control panel. The unit is operating in a safe mode.	<i>If the control panel display comprises part of the system:</i> Restore the communication with the control panel. See error E1.
		<i>If the system works without control panel:</i> Set the system to operate without a control panel. See 2.7.1 Special points regarding the control panel.
	The IR sensor is wrongly adjusted.	Check the adjustment of the IR sensor.
The control panel works normally but the unit does not respond.	The unit is being operated by a signal from an external control.	1. Check functions 60. Function of inputs and Release delay input I in the menu Configuration .
	The fans may be switched off if there is only a small difference in temperature between indoors and outdoors.	This is not an error. If this is considered a problem, the value of the function can become 42. Fan OFF temperature .
	The power supply to the fans is cut.	1. Check the transformer fuse. 2. Check the wiring between the transformer and the fans. 3. Replace the transformer.
The display flickers	The length of the control cable between the control panel and the first unit is too great	Remove excessive length of cable

PROBLEM	PROBABLE CAUSE	WHAT TO DO
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 good.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 1. Check fuse F141. 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 not receiving a power supply or is faulty.	<ol style="list-style-type: none"> 1. Check the wiring of the fan. 2. Check the transformer fuse. 3. Replace the fan.
The fans are not working at a particular speed level.	The connection to the relevant branch is not correct.	<ol style="list-style-type: none"> 1. Check the transformer connections. 2. Check connector X60.
For units connected to a Daikin system:		
The display of the Daikin control panel is blank.	No power supply to the connected unit.	<ol style="list-style-type: none"> 1. Check the mains supply. 2. Consult the installation manual for the control panel. 3. Contact the supplier.
	Poor connection to the control panel.	
	The Daikin electronics in the air curtain are faulty.	
The Daikin control panel signals an error (flashing LED and/or error code).	Daikin electronics in the unit or outdoor unit detects an error.	<ol style="list-style-type: none"> 1. Consult the service manual for the outdoor unit. 2. Contact the supplier.
The unit discharges cool air for a long period and/or condensation drips from the unit.	There is a fault in the air curtain. Warning: this situation can result in danger and/or damage.	<ol style="list-style-type: none"> 1. Switch off the whole system immediately. 2. Contact the supplier.

5 . . Maintenance

5.1 Introduction

This chapter comprises those maintenance activities that the user himself can perform. Maintenance activities and repairs that must be performed by an installer are described in chapter [6 Servicing](#).

5.2 Replacing or cleaning the filter

The filter must be cleaned regularly. A dirty filter may be the cause of inadequate heating and a high noise level. The interval at which the filter must be cleaned depends on the surroundings.

By default, filter contamination is monitored on the basis of the amount of time that the unit is in operation. As an option, the unit can be fitted with a filter sensor which measures filter contamination. You can change the time between filter cleaning sessions by adjusting the maximum lifespan of the filter or the cleaning interval.

You can clean the filter with a vacuum cleaner, for instance. After several cleanings, however, the filter must be replaced. New filters are available from Biddle.

5.2.1 Procedure when replacing the filter

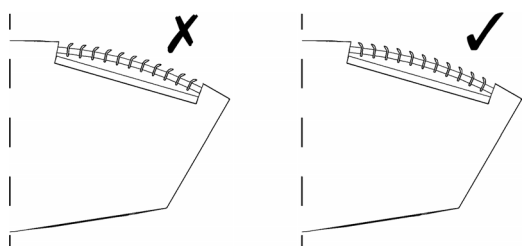
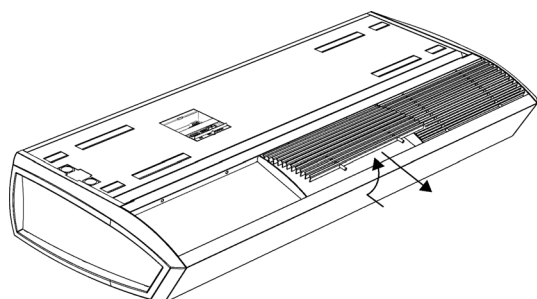
1. Select [menu > Filter > Cleaning the filter](#) on the control panel.
2. Wait until the fans have stopped and the heat exchanger has cooled down.
3. Clean or replace the filters.
4. Select [ok](#) on the control panel when you have finished cleaning or replacing the filters.

The lifespan of the filters is hereby reset to zero.

5.2.2 Removing the filter

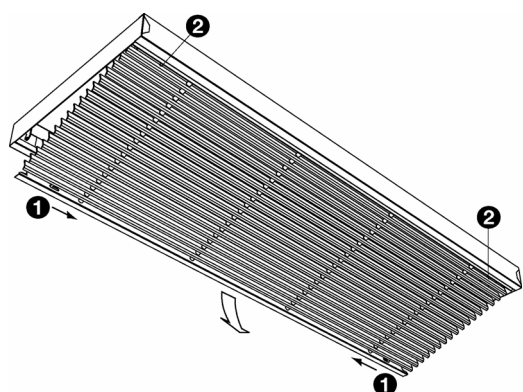
For free-hanging models

1. Remove the grille from the inlet grate:
 - Slide the grille upward.
 - Tilt the grille upwards a little.
 - Remove the grille from the grate.
2. Clean or replace the filter.
3. Replace the grille in the inlet grate.



Caution:

Place the grille in the correct position in the inlet grate. When doing so, pay attention to the direction of the fins.



With recessed and cassette models

1. Open the inlet grille:
 - Push the two electrodes ❶ towards one another – the grille will tilt down.
2. Slide the filter out of the grille.
3. Clean or replace the filter.
4. Replace the grille in the inlet grate.

5.3 Cleaning the unit

You can clean the exterior of the unit with a damp cloth and a domestic cleaning agent. Do not use any solvents.



Caution:

Make sure that no water runs into the unit.

5.4 Scheduled maintenance

Biddle recommends having the following inspection and maintenance activities performed annually by an installer or other technical expert.

- Check whether the filter is clean enough and undamaged. Replace the filter if necessary.
- Check that the heating element is clean. Settled dust may cause an unpleasant smell.

Carefully remove dust with a vacuum cleaner.



Caution:

The fins of the heat exchanger are delicate parts.



Warning:

The fins of the heat exchanger are sharp.

- Check the operation of the fans.
- Check whether the control panel has saved any error messages.

6 . . Servicing



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.

6.1 Access to the interior of the unit

For all models

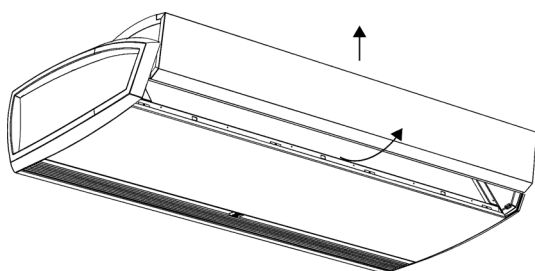
- I. Switch the unit off using the control panel.



Warning:
Disconnect the mains supply (remove plug from the power socket or set the isolation switch to OFF).

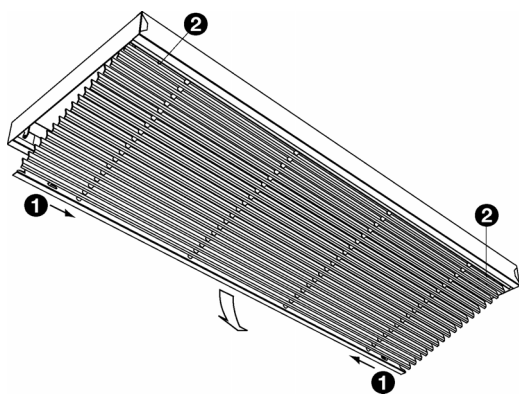
For free-hanging models

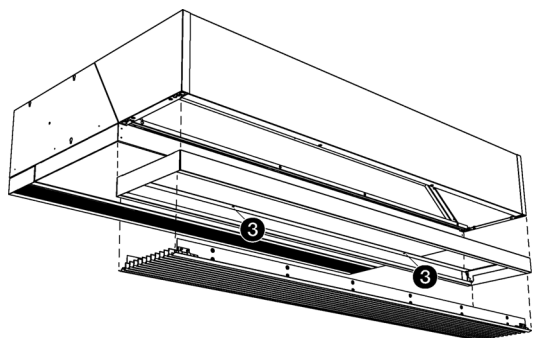
- I. Remove the inlet grates from the unit:
 - Lift the grate at the bottom and unhook it.



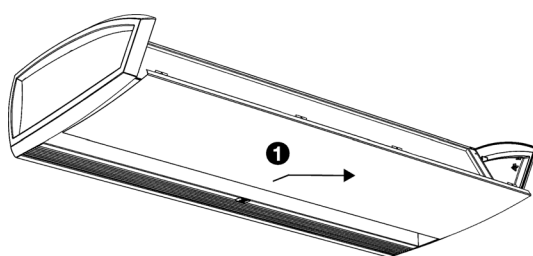
For cassette models

- I. Remove the inlet grille from its frame:
 - Push the two electrodes **1** in the grille towards one another: the grille will tilt down.
 - Push the two electrodes at **2** towards one another and take the grille out.





2. Loosen screws ③ and remove the frame.



For all models

1. Remove the inspection panel ①:

- Remove the screws from the front of the inspection panel.
- Pull the panel forward a little and remove it.



Caution:

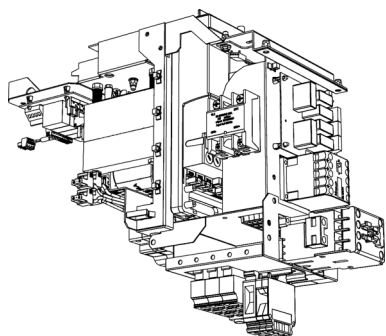
The panel comes free completely once pulled forward: make sure it does not fall.



Warning:

When replacing the inspection panel, always attach it using flanged bolts with milled edges; these are required for the earth connection.

6.2 Electronics module



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

- the transformers,
- the control circuit board;
- the connector plate;
- the fuses.

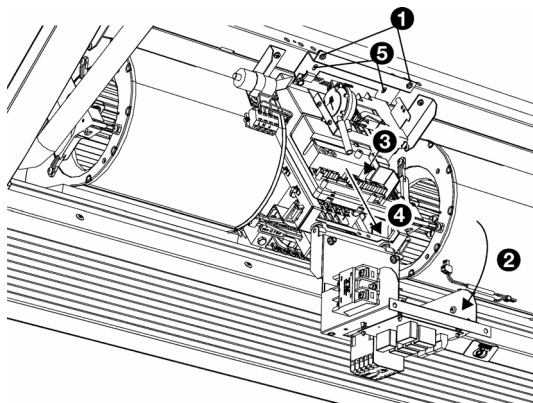
6.3 Removing the control circuit board

1. Switch the unit off using the control panel.



Warning:
Shut off the mains supply.

The unit is fitted with 2 mains power cables. Ensure that the power supply to the control circuit board is also shut off.



2. Open the unit as described in [6.1 Access to the interior of the unit](#).
3. Disconnect all connectors attached to the unit and earth connections from the control circuit board.
4. Remove the screw **3**.
5. Slide the control circuit board **4** loose and lift it out of the unit.
6. Possibly, remove the entire electronics module by removing the screws at **5**.

6.4 Connecting the control circuit board



Warning:
Make sure that the mains supply is switched off

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.



Note:
With a new control circuit board, an EI malfunction may occur because the old control circuit board can no longer be found. Resolve this by reconfiguring the system via [menu > Maintenance > Reset system](#)



Note:
If you are asked to designate a new master unit, then preferably select a unit whose control circuit board has not been replaced. In that event, the settings will be preserved.

See also:

2.11 "Switching on and checking operation" on page 44

6.5 Daikin electronics

Only on units that are used with a Daikin system:

In addition to the Biddle electronics, the unit also contains a Daikin electronics module.

6.5.1 Access to the Daikin electronics in the unit

For all models

1. Switch the unit off using the control panel.



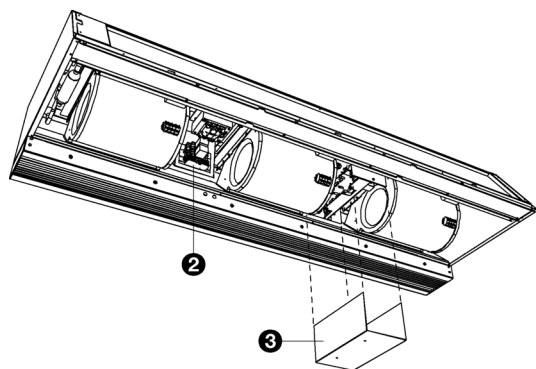
Warning:
Shut off the mains supply.

2. Open the unit as described in [6.1 Access to the interior of the unit](#).



Note:
The Biddle electronics are located at ②.

3. Remove cover ③. The Daikin electronics are located behind this cover.



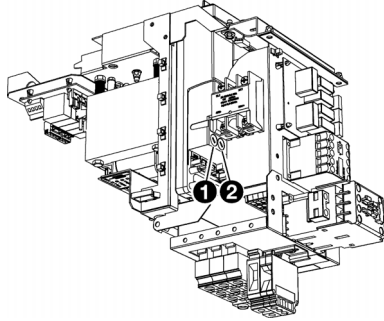
6.6 Resetting the high-limit thermostat

For models which only have electrical heating (type E)

The unit is fitted with one (**types 100 and 150**) or two (**types 200 and 250**) high-limit thermostats. Error message E4 appears when a high-limit thermostat has switched on.

1. The high-limit thermostat resets itself automatically.
2. Clear the error message from the control panel.

6.7 Fuses



The unit is fitted with the following fuses:

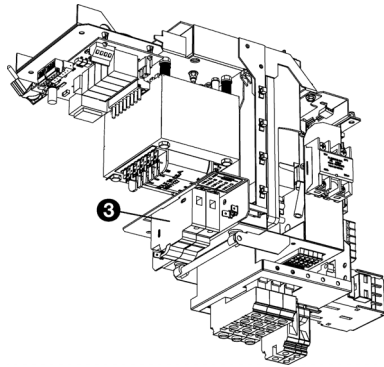
- fuse F140 **1** of the transformer.
- fuse F14I **2** of the control circuit board
- 2 fuses **3** on the transformer bracket.

The values are indicated for the fuses.

Only on units that are used with a Daikin system:

The Daikin electronics module has one extra fuse:

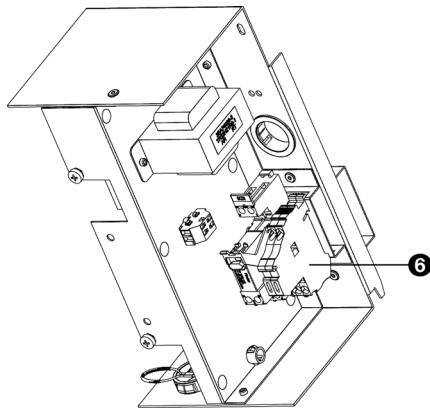
- fuse on the control circuit board, indicated by FIU.



In addition, the Daikin electronics module has another 2 fuses. Their position depends on the model:

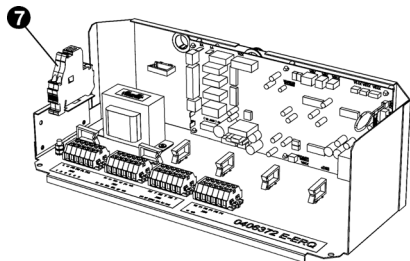
Models with discharge width 150, 200 or 250

- 2 fuses **6** on the Daikin electronics module in the unit.

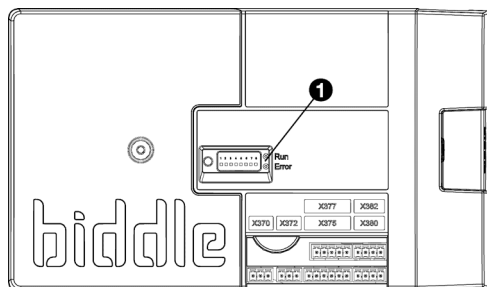


Models with discharge width 100

- 2 fuses **7** on Daikin electronics module in the box at the side of the unit.



6.8 LEDs



The LED lights ❶ on the control circuit board indicate the following:

- *continuous green*: The control circuit board has a power supply.
- *flashing green*: The unit code can be entered.
- *continuous red*: There is a local error.



Note:

This does not necessarily always result in an error message on the control panel.

6.9 Removing the discharge section

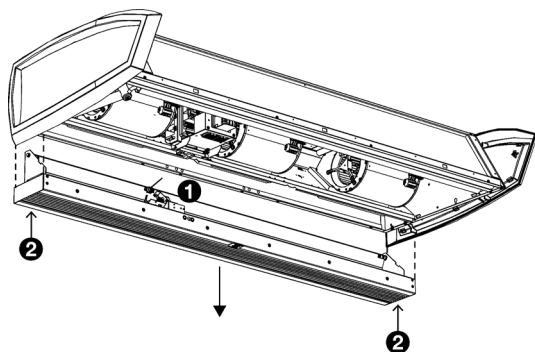
The discharge section houses the IR sensor and the air damper mechanism and drive.

For recessed models

1. Remove the discharge duct from the unit.

For all models

1. Open the unit as described in [6.1 Access to the interior of the unit](#).
2. The discharge section has the following connections to the electronics module (at ❶):
 - The connection for the IR sensor;
 - the valve drive connections on the control circuit board (connectors X140 and X210);
 - the earth connection.
 Disconnect these connections.
3. Between the fins of the discharge grille, there are 4 screws (at ❷): unscrew these.

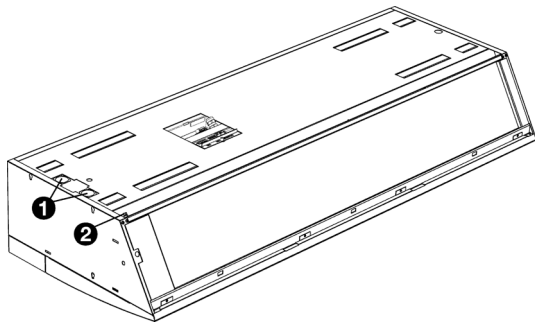


Caution:

Support the discharge section while you loosen the screws.

4. The discharge section will now come loose: remove it carefully.

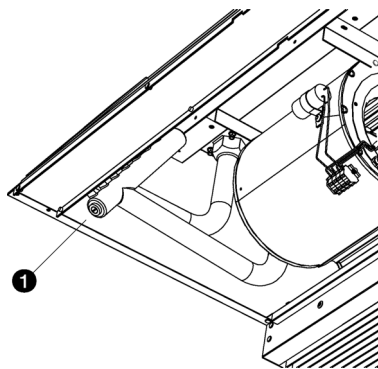
6.10 Venting the heat exchanger



For water-heated models only

The venting valve ② is located in the upper left of the unit.

6.11 Draining the heat exchanger



For water-heated models only

The drain plug ① is located on the left of the unit.

6.12 Setting the unit code

The unit code must be set after replacement of the control circuit board in the unit. The unit code depends on the unit type and is indicated on the type plate.

To set the unit code, there are two methods:

- directly via the control panel if a single unit is connected;
- via the control circuit board and the control panel if more than one unit is connected.



Warning:
Entering an incorrect code will result in poor performance of the unit.

6.12.1 Setting the unit code via the control panel



Caution:

Setting the unit code using this method will only work if just a single unit is connected to the control panel. If necessary, connect the control panel separately to the unit in question.

1. Select **menu > Maintenance > Unit code**.
2. Enter the unit code via the control panel and press **ok**.

The control panel will now search for the unit again.

6.12.2 Setting the unit code via the control circuit board and the control panel

1. Connect the mains supply (insert the plug into the socket or move the isolation switch to ON).



Warning:

Do NOT touch any live parts.

2. Press down the microswitch **1** on the control circuit board .

The LED next to the microswitch will start flashing.

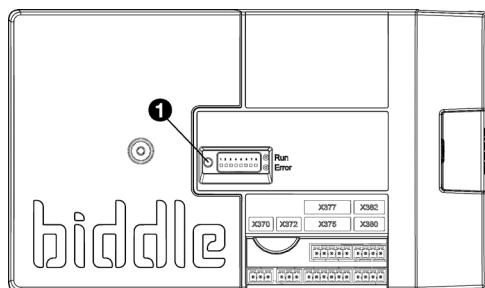
The control panel displays eight numbers: these comprise the unit code.

3. Enter the unit code via the control panel and press **ok**.
4. Press down microswitch .

The LED next to the microswitch will stop flashing.

The unit code is now set.

5. Reset the control panel.



6.13 Resetting the PIN code

The PIN code of the control panel can be reset using a USB flash drive:

1. Connect a USB flash drive to the control panel.

The USB menu is activated

2. Press  for 10 seconds.

The PIN code is reset and a new PIN code has to be entered.

3. Exit the USB menu by removing the USB flash drive.

6.14 Copying the settings of the b-touch control panel

The settings of the b-touch control panel can be copied to another b-touch control panel.

6.14.1 What you need

Before copying the setting of the control panel, check that you have the following:

- An empty USB flash drive. The USB flash drive must be formatted for FAT or DOS. Do not use a USB hard disk for the software update.

6.14.2 Step 1: Copying the settings of the correctly-set control panel

1. Check whether the settings to be copied on the original b-touch control panel are all correctly set.
2. Connect the USB flash drive to the USB port of the b-touch control panel.



Note:

If the USB flash drive is not detected, disconnect it and then connect it again.

The control panel detects the USB flash drive and displays the USB menu

3. Select [Export Settings](#)

The progress percentage is displayed.

4. When this has been completed, disconnect the USB flash drive from the control panel.

6.14.3 Step 2: Copying the settings to another control panel

1. Connect the USB flash drive to a computer.
2. Change the name of the file that is to be copied from 'settings_export.txt' to '**settings.txt**'
3. Connect the USB flash drive (with the settings that are to be copied) to the USB port on the other control panel.
4. Keep the function **Import settings** pressed down until the progress of the process is displayed.

The settings are now being imported.



Note:

In the event of an error message, check whether the file name has been changed to '**settings.txt**'.

5. When this has been completed, disconnect the USB flash drive from the control panel.
6. Repeat steps 1 to 3 for each control panel to which you wish to apply the same settings.

6.15 Updating the software

Biddle is working continuously on improving its products and recommends that you update the software of the control panel and of the control circuit board when updates become available. Consult Biddle's website for availability.

6.15.1 What you need.

Before updating the software of the control panel, check that you have the following:

- An empty USB flash drive. The USB flash drive must be formatted for FAT or DOS. Do not use a USB hard disk for the software update.
- A PC with Internet access.

6.15.2 Step 1: Check the current software version

Before you update the software of the control panel or of the control circuit board, you must check the existing software version. If the software version is the same as that of the most recent update file on Biddle's website, you do not need to update the software.

1. Press **menu** in the Home screen.
2. Select **Maintenance**. The version of the current software is displayed in the status overview.

6.15.3 Step 2: Download the most recent software

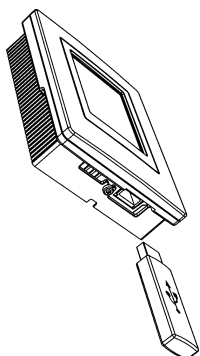
1. Connect the USB flash drive to a USB port on your PC.
2. On your PC, go to Biddle's website and look under Downloads.
3. Look for your product and the available software for your unit.
4. If the software version is more recent than the version on your control panel, click on the software update.
5. Accept the licence agreement and save the file to the main directory of the USB flash drive.
6. Disconnect the USB flash drive from the PC.

6.15.4 Step 3: Updating the software



Warning:

Do not switch off the unit or disconnect the USB flash drive during the software update. Do not disconnect the USB flash drive from the control panel even if there is a power failure during the update. The update will resume as soon as the power returns. If an error occurs during the update, start the procedure again. If the error continues to occur, contact Biddle.



1. Connect the USB flash drive (with the software update) to the USB port on the control panel.



Note:

If the USB flash drive is not detected, disconnect it and then connect it again.

The control panel detects the USB flash drive and displays the USB menu

2. Select [Software update](#) to update the software.
3. When this has been completed, disconnect the USB flash drive from the control panel.

6.16 Composition of the Biddle control cable

The control cable for the control system is constructed as follows:

- The plugs are modular connectors of the type 6P4C.
- Connectors are untwisted, i.e. at both ends of the cable, cores are connected to the same electrode.

Colour coding of Biddle cables

	ELEC-TRODE	COLOUR
	1	(not used)
	2	black
	3	red
	4	green
	5	yellow
	6	(not used)

7 . . Dismantling

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

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.

8 . . Addresses

If you have any comments or queries relating to this product, please do not hesitate to contact your Biddle branch.

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At all times, Biddle shall not be held liable for consequential damages.

Liability as regards the manual

Although great care has been taken to ensure the correct and, where necessary, complete description of the relevant components, Biddle shall not be held liable for damages as a consequence of errors and/or imperfections in this manual.

Biddle reserves the right to alter the specifications as mentioned in this manual.

Should you nevertheless discover any errors or ambiguities in the manual, we shall be glad to learn that from you. It helps us to improve the documentation still further.

For more information

If you have any comments or queries relating to this product, please do not hesitate to contact Biddle. You will find the contact information for your Biddle branch in chapter [8 Addresses](#).

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Name and telephone number of installer:

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