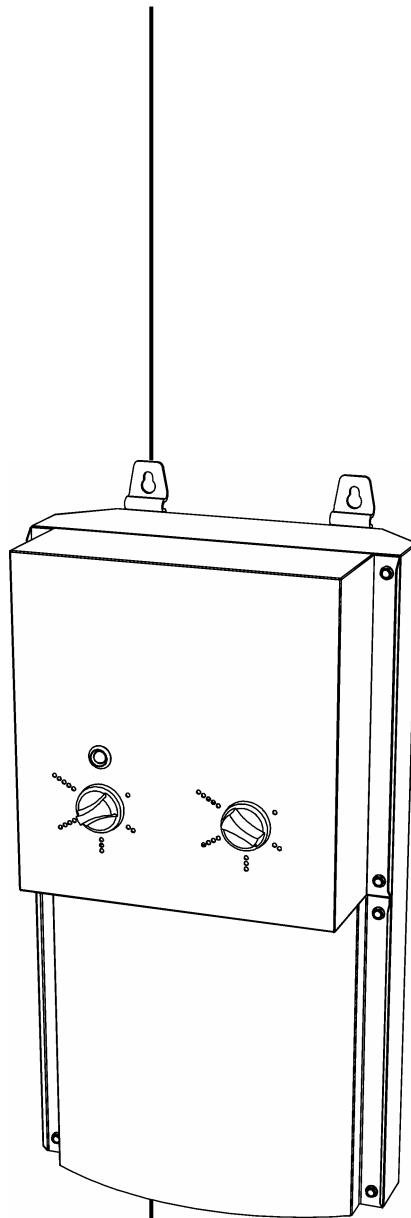




biddle
CLIMATE SOLUTIONS



Manual

Control Unit
Model **RDP**

for Industrial Air Curtain model **IndAC**

Version 1.0

06-02-2007

English

CE

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For more information

If you have any comments or questions about specific topics relating to this product, please do not hesitate to contact Biddle.

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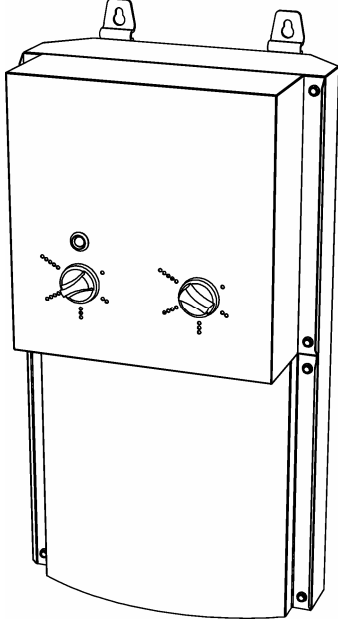
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Contents

1 Introduction	4	2.4 Connecting	7
1.1 About this manual	4	2.4.1 Mains power supply	7
1.2 How to use this manual	4	2.4.2 Fan control inputs	7
1.2.1 Marginal symbols in the manual	4	2.4.3 Fan control outputs	8
1.2.2 Pictograms used on the unit and in the manual	4	2.4.4 Inputs and outputs, electric heating	9
1.2.3 Related documentation	4	2.4.5 Making connections	9
1.3 About the control unit.....	5	3 Operation	11
1.3.1 Applications	5	3.1 Switching on and off and selecting speed	11
1.3.2 Principle of operation	5	3.2 Indicator light	11
1.3.3 Functions	5	4 Faults	12
1.3.4 Type designation.....	5	4.1 Solving problems	12
1.3.5 Type plate	5	4.1.1 General	12
1.4 Required parts	6	4.1.2 Unit does not discharge any air	12
1.4.1 Supplied parts	6	4.1.3 Unit discharges little air.....	12
1.4.2 Parts not supplied	6	4.1.4 Unit does not heat, or too little	12
1.5 Safety instructions	6	4.2 Resetting the protectors.....	12
2 Installation	7	4.2.1 Thermal protection of fans	12
2.1 Safety instructions	7	4.2.2 High-limit thermostat.....	13
2.2 Delivery check	7	4.3 Fuses	13
2.3 Mounting the control unit	7	4.3.1 General	13
		4.3.2 Fan control.....	13
		4.3.3 Electric heating control	13

1 Introduction

1.1 About this manual



This manual describes the installation, operation and maintenance of the control unit **RDP**, in combination with the Industrial Air Curtain, model **IndAC**.

1.2 How to use this manual

1.2.1 Marginal symbols in the manual



Note:

Draws your attention to an important part of the text.



Caution:

If you do not carry out this procedure or action correctly, you may damage the unit.

So, follow the instructions carefully.



Warning:

If you do not carry out this procedure or action correctly, you may cause material damage and/or physical injury.

So, follow the instructions carefully.



Danger:

This indicates actions which are not permitted. Ignoring this warning may lead to serious damage or accidents that may involve physical injury.

Only for ...

The information provided applies only to models and/or applications that have the specified feature.

If no specific model and/or application is referred to, the information applies to all situations..

1.2.2 Pictograms used on the unit and in the manual

The below pictograms refer to possible risks or dangers. These pictograms can also be found on the unit.

	<p>Warning: You are entering an area which contains live components. Accessible to qualified maintenance staff only. Caution is urged.</p>
	<p>Warning: This surface or part can be hot. There is a risk of burns on contact.</p>

1.2.3 Related documentation

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

- wiring diagram for installation and service purposes.

1.3 About the control unit

1.3.1 Applications

The control unit **RDP** has been designed for powering and controlling industrial air curtains, model **IndAC**.

The model **RDP-E** also controls the electric heating of the industrial air curtain, model **IndAC E**.

1.3.2 Principle of operation

The control unit regulates the speed of the fans in the air curtain using the supplied voltage.

The control unit responds to external components, such as a door switch or a room thermostat.

Only for electrical heating:

Based on the fan speed, the control unit regulates the heating level automatically.

1.3.3 Functions

There are two selectable function options.

Function option 1:

- The user can enter individual settings for an open door and a closed door.
- If the door is closed, the air curtain can be switched on and off by a room thermostat.

Function option 2:

- The user can enter two settings for an open door. The two settings are switched to and from using a room thermostat.
- If the door is closed, the air curtain is switched off.

With either function option:

- You can have the air curtain switched off completely using a third control component, such as a timer.
- You can have the control unit control a valve for a water-heated air curtain.

1.3.4 Type designation

The type designations, when combined, constitute the type code for the relevant control unit, for instance:




RDP-6.5
RDP-6.5E

Explanation of type code

Range	RDP	control unit <i>Plus</i>
Capacity	figure	maximum current strength, in amperes
	addition of E	suitable for electric heating

1.3.5 Type plate

The type plate can be found on the top of the control unit.

 Biddle bv Markwei 4 NL-9288 HA Kootsterille  	Type	RDP-6.5
	N°	1/12-34
	M	21.5 kg
	U	400 V 3N~ 50 Hz
	I _{max}	6.5 A

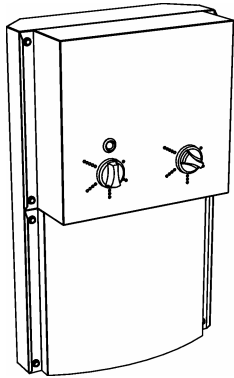
Example of a type plate

References on the type plate

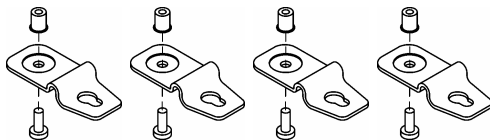
Type	full type code of unit
M	weight of unit
U	supply voltage
I_{max}	maximum current strength

1.4 Required parts

1.4.1 Supplied parts



- control unit



- fixing brackets
- cable glands

1.4.2 Parts not supplied

The following parts required for installation should be purchased from other suppliers:

- cable to connect unit and control unit
- isolating switch
- fuse for control unit
- door contact switch
- room thermostat (optional)
- timer (optional)

1.5 Safety instructions



Warning:

Do not insert any objects into the ventilation openings.

Never block the ventilation openings.



Warning:

The unit may be opened by qualified technical staff only.

Switch the unit off at the mains before opening the unit.



Danger:

Do not clean the control unit with water.

2 Installation

2.1 Safety instructions



Warning:

Installation works may be performed by qualified technical staff only.

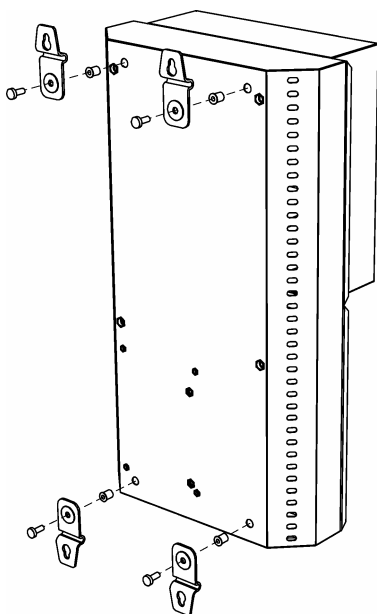
Do not perform any connection work unless you are qualified to work with 400V three-phase current.

Before opening the unit, follow the safety instructions in section 1.5.

2.2 Delivery check

- On delivery, check the unit and its packaging. Report any transit damage immediately to the driver and supplier.
- Make sure that all parts have been supplied (see section 1.4). Report any defects to the supplier immediately.

2.3 Mounting the control unit



- 1 Mount the fixing brackets to the back of the control unit.
- 2 Mount the control unit to the wall.

2.4 Connecting

2.4.1 Mains power supply

The control unit is to be connected to 400 V three-phase current. Connecting the null wire is optional.



Caution:

The mains power supply to the control unit must be separately fused.

In emergency and maintenance situations, it must be possible to switch off the entire installation using an isolating switch.

All connections must be made according to the applicable local laws, regulations and standards.



Warning:

The control unit must be earthed.

2.4.2 Fan control inputs

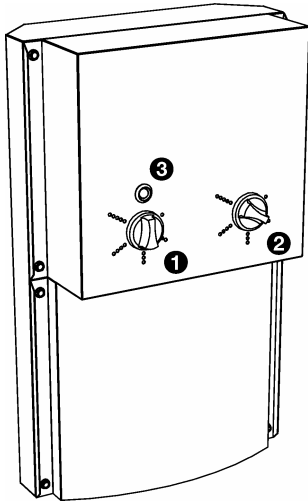
Possible input connections

<i>input</i>	<i>component to be connected</i>	<i>specifications</i>
function 1 or function 2	bridge <i>optional:</i> timer or other control component	output: 24 V AC
DS-DS	door contact switch	output: 24 V AC
RT-RT	room thermostat	output: 24 V AC
TK-TK	thermal protector of fans	output: 24 V AC

The function option (described in section 1.3.3) is determined by the interconnection of the input **function 1** or **function 2**. It also allows you to completely switch off the air curtain using a third component.

Working of inputs based on function option

	function 1 <i>contact made</i>	function 1 <i>contact broken</i>
function 2 <i>contact made</i>	(combination not possible)	operation according to function option 2
function 2 <i>contact broken</i>	operation according to function option 1	off, irrespective of position of switches and other inputs



The operation of the control unit depends on the function option chosen, the control components connected, and on the positions of the switches ❶ and ❷.

Working of inputs of external control components with function option 1

	RT-RT <i>contact made</i>	RT-RT <i>contact broken</i>
DS-DS <i>contact made</i>	position of switch ❶	position of switch ❶
DS-DS <i>contact broken</i>	position of switch ❷	off

Working of inputs of external control components with function option 2

	RT-RT <i>contact made</i>	RT-RT <i>contact broken</i>
DS-DS <i>contact made</i>	position of switch ❷	position of switch ❶
DS-DS <i>contact broken</i>	off	off

2.4.3 Fan control outputs

You can connect external control components to the outputs. This is optional.

Possible output connections

<i>output</i>	<i>component to be connected</i>	<i>specifications</i>
V-V	control-valve or BMS control	potential-free (normally open) allowed load: 230 V, 1.3 A
L-N	control-valve	power unit: 230 V AC requires connection to null wire to power unit
error output	external signalling or BMS	potential-free (normally open) allowed load: 230 V, 1.3 A

Working of outputs

<i>output</i>	<i>contact made</i>	<i>contact broken</i>
V-V	fans are operational	fans are off
L-N	always	N/A
error output	thermal protector of fans has been activated	normal operation

2.4.4 Inputs and outputs, electric heating

Only for type RDP-E

You can connect external control components to the electric heating PCB. This is optional. These in- and outputs operate independently from the fan control.

Possible input connections, electric heating

input	component to be connected	specifications
error reset	external switch (optional)	output: 24 V DC
He-He	bridge <i>optional:</i> timer or other control component	output: 24 V DC

Working of inputs, electric heating

input	contact made	contact broken
error reset	<i>briefly:</i> reset high-limit thermostat	heating works normally
He-He	heating works normally	heating off



Warning:

The 'error reset' input should never be interconnected permanently. The connected component should work only briefly and manually, otherwise the protection from the high-limit thermostat is undone.

Possible output connections, electric heating

output	component to be connected	specifications
error output	external signalling or BMS	potential-free (make-and-break contact) allowed load: 24 V, 0.5 A

Working of output, electric heating

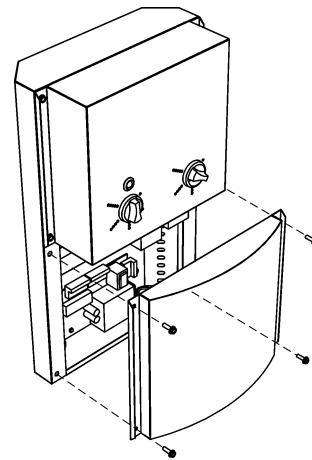
output	signal	no signal
error output	high-limit thermostat has been activated	normal operation

2.4.5 Making connections

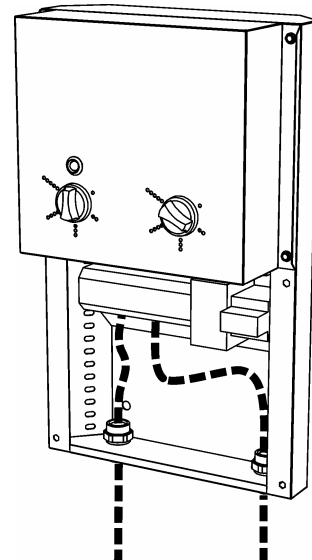


Warning:

Make sure that the mains power supply is switched off.

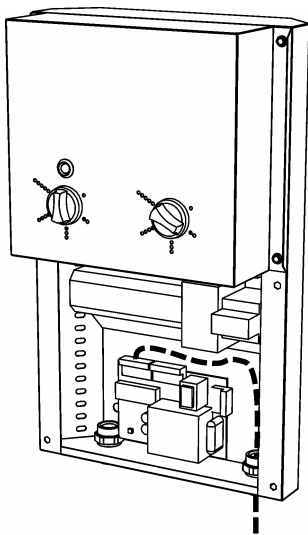


- 1 Remove the cover from the control unit.



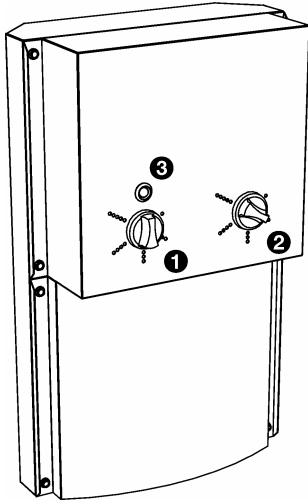
- 2 Apply cable glands for pull relief purposes.

- 3 Make the following connections to the terminal blocks according to the wiring diagram:
- the feeder cable to the units;
 - the mains power supply;
 - the external control components.



- 4 **Only for electrical heating:** Connect the control cable leading to the units to the PCB according to the wiring diagram.
- 5 Place the cover back on the control unit.

3 Operation



3.1 Switching on and off and selecting speed

If function option 1 is selected:

- Using switch **1**, select the speed with open door.
- Using switch **2**, select the speed with closed door.

If function option 2 is selected:

- Using switch **1**, select the lower speed.
- Using switch **2**, select the higher speed.

If either function option is selected:

- Set switch **1** to position 0 to switch off the air curtain completely. The unit will not work then, irrespective of the position of switch **2**, and the air curtain will not react to external control components (door switch or room thermostat).



Note :

Biddle recommends selecting the lowest strength at which no draught occurs.

For electrically heated units:

The heating is automatically adjusted to the fan strength. You cannot control it separately.

3.2 Indicator light

If the indicator light **3** is on:

- the air curtain is in operation;

or:

- the air curtain is on stand-by but disabled by an external control component.

If the indicator light is off:

- the air curtain is switched off completely using switch **1**;

or:

- the air curtain is dead;

or:

- the thermal protector of the fans has been activated: see section 4.2.1.

4 Faults

4.1 Solving problems

4.1.1 General

If the air curtain does not work, or not properly, perform the checks mentioned below.

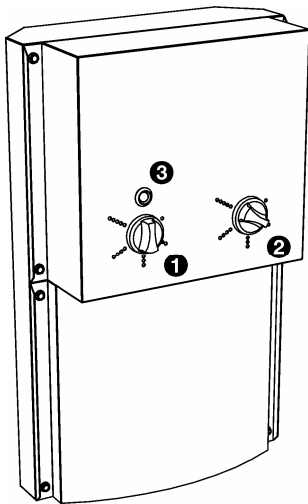


Note:

Also refer to the air curtain manual.

If that does not help, there may be a defect. In that case, alert the installer.

4.1.2 Unit does not discharge any air



- 1 Set switch **1** to a position other than 0.

If indicator light **3** is on:

- 2 Check if the unit is not disabled by an external control component (door switch or room thermostat).

- 3 Set switch **2** to a position other than 0.

If indicator light **3** is off:

- 4 Check if mains power is supplied.
- 5 Reset the thermal protector of the fans to: see section 4.2.1.
- 6 Check and, if necessary, replace the fuse: see section 4.3.2.

4.1.3 Unit discharges little air

- 1 Check the direction of rotation of the fans.

4.1.4 Unit does not heat, or too little

- 1 When facing draught: select a higher fan speed using the operation switch.
- 2 Does the unit blow out enough air? If not, perform the checks in sections 4.1.2 and 4.1.3.

For water-heated units:

- 3 Check the operation of the CH system.
- 4 Check the connection and operation of the control valves controlled by the control unit.

For electrically heated units:

- 5 Check if mains power is supplied to each unit.
- 6 Check whether heating is switched off by an external control component.
- 7 Reset the high-limit thermostat: see section 4.2.2.
- 8 Check and, if necessary, replace the electric heating control fuse: see section 4.3.3.

4.2 Resetting the protectors

4.2.1 Thermal protection of fans

The fans are protected from overheating. If the temperature gets too high, all fans are disabled.

Do the following to reset the protection:

- 1 Allow the unit to cool down.
- 2 Set switch **1** on the control unit to position 0 and then to another position.

4.2.2 High-limit thermostat

Only for electrically heated units

The high-limit thermostat is to protect against overheating. It switches the heating off if the temperature in the unit gets too high.

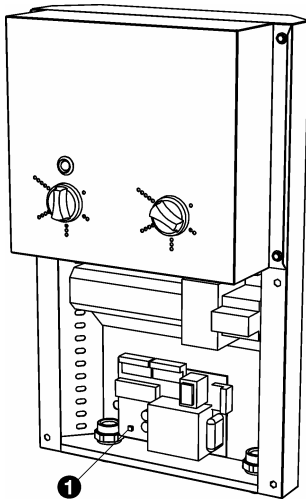
Do the following to reset the high-limit thermostat:

- 1 Allow the unit to cool down.
- 2 Open the control unit.



Warning:

In doing so, observe the safety instructions in section 1.5.



- 3 Press the reset knob ① on the PCB.



Warning:

If the high-limit thermostat is activated frequently, there may be a dangerous defect. In that case, disconnect the unit from the mains and consult Biddle.

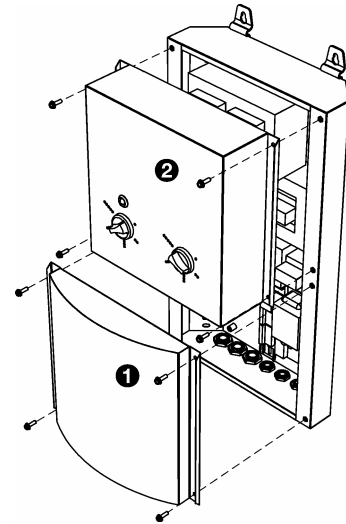
4.3 Fuses

4.3.1 General



Warning:

Before opening the unit, follow the safety instructions in section 1.5.



4.3.2 Fan control

The fuse holder can be found behind cover ②. The fuse is marked with label '24 V'.

The fuse rating is specified there.

4.3.3 Electric heating control

Only for type RDP-E

The fuse holder can be found on the PCB, behind cover ①.

The fuse rating is specified there.



Declaration of Conformity

Manufacturer: Biddle BV,
Address: Markowei 4
9288 HA Kootsterille
THE NETHERLANDS

We declare that the following product.

Product description: Fan speed controller
Brand: Biddle
Model: RDP
Type: RDP-6.5 ; RDP-6.5E

In accordance with the following Directives:

73/23/EEC

the Low Voltage Directive

89/336/EEC

the electromagnetic Compatibility Directive

Has been designed and manufactured to the following specifications:

EN 50081-2:1993
EN 50082-2:1994
EN 60335-1: 2001

EMC – Generic emission standard part 2. Industrial environments.
EMC – Generic immunity standard part 2. Industrial environments.
Safety of household and similar electrical appliances. Part-1: General requirements

IEC 342-1: 1981

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all essentials requirements of the directives.

Signed by

: P. Stoelwinder, Managing Director , 2007

A handwritten signature in black ink, appearing to read 'P. Stoelwinder', with a horizontal line underneath.