

CBA-2000

Climate controller



User manual

Table of contents

1	About this manual.....	1
1.1	Symbols and definitions	1
1.2	Customer service	1
2	Safety instructions and warnings.....	2
2.1	Transport and storage	2
2.2	Independent alarm system.....	2
2.3	Assembly, installation, repair and replacement.....	2
3	Technical specifications	3
3.1	Technical parameters	3
3.2	Connection terminals	3
3.3	Maximum output load.....	3
3.4	Communication plug-in board (optional)	3
4	Configuring the CBA-2000	4
4.1	Overview of settings	4
4.2	Accessing and exiting the installer settings.....	5
4.3	Restoring factory settings.....	5
5	Operation.....	6
5.1	Control panel	6
5.2	Querying and changing measured values.....	6
5.3	Setting the day number	6
5.4	Setting the time	6
6	Setting and reading the temperature	7
6.1	Room temperature.....	7
6.2	Outside temperature	7
7	Setting and reading ventilation	8
7.1	Room ventilation	8
7.2	Air inlet	8
8	Setting growth curves.....	9
8.1	General	9
8.2	Room temperature curve	9
9	Alarm.....	10
9.1	Alarm limits for room temperature.....	10
9.2	Room out of service.....	10
9.3	Alarm codes	11
9.4	Temperature sensor defective	11
9.5	Alarm in another room	11
10	Manual control	12
10.1	Front switch.....	12
10.2	Output voltages during manual operation.....	12
11	Installation instructions	13
11.1	General	13
11.2	Cabling	13
12	Fault analysis.....	14
13	Work sequence	16
14	Connection diagrams	17
14.1	Room heating on OUT4	17
14.2	Second heating on OUT2	17

14.3 Second heating on OUT2	17
14.4 Second heating on OUT5	17
14.5 Air inlet on OUT2	18
14.6 Air inlet on OUT3	18
14.7 Room fan on OUT1 + AQC valve	19
14.8 Central exhaust/ECO-VENT on OUT3	19
14.9 2nd Fan switch on OUT2.....	19
14.10 2nd fan switch on OUT5	19
15 Sensors.....	20
15.1 Room temperature sensor	20
15.2 Outside temperature sensor	20
15.3 Mounting diagram of N10B temperature sensor	20
16 DIP switches.....	21
CE Declaration of Conformity	22

Application notes



*A*Note-DataCom-N-ENxxxxx

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1 About this manual

The manual is intended for the user and installer of this device. It contains all the information necessary for operating and cleaning this product. Please read all information and instructions carefully before using the product. Symbols mark warnings, important notes, tips, etc. in this manual. This manual has been compiled with all due care. If you find any errors, please let us know.

1.1 Symbols and definitions



Risk of injury by dangerous electric shock. Danger to people and animals.



Warning indicating danger to product, people and animals if procedures are not strictly complied with.



Warning indicating damage to products if procedures are not strictly complied with.



Pressure cleaning is not allowed.



Collect as separate flows



Important note



Additional information



Example of a concrete application of the functionality described.



Example calculation



Manual control



Tips and advice



Screenshot



Application note

1.2 Customer service

If you have any questions, please contact your installer or the manufacturer. Be sure to have all the necessary data handy. You should also always write down the cause of a fault and the circumstances that occurred during the fault. This will enable you to avoid any ambiguities and it will enable the installer to deal with any faults quickly and effectively.

2 Safety instructions and warnings

Read this chapter carefully before commissioning the device. Installation and troubleshooting must only be carried out by certified installers in accordance with current guidelines. Incorrect installation or operation will void the warranty.

2.1 Transport and storage

Check the device for damage and verify the delivery against the order. Report any faults or damage to the manufacturer immediately. Store the device in a clean, dry environment at a temperature between 0 °C and 40 °C and a relative humidity between 20% and 80%. Protect the device from moisture, dust, dirt, direct sunlight, aggressive substances, and vibrations.

2.2 Independent alarm system

-  Although carefully designed, technical failures may occur. Connecting alarm contacts to a central alarm unit is often required. Install an independent alarm device, such as a min/max thermostat, and test the alarm at least once per week.

2.3 Assembly, installation, repair and replacement

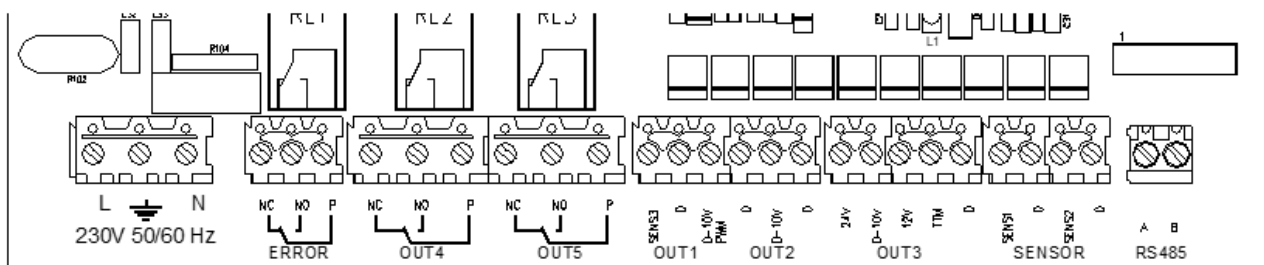
-  Always switch off the power supply before installation or maintenance.
-  The device may only be opened by authorized personnel.
-  Ensure a clean, dry workplace and prevent electrostatic discharge (ESD).
-  Install the device in a dry, dust-free area (not in the animal section) at an ambient temperature between 0 °C and +40 °C.
-  Mount the device at eye level (or slightly higher) on a flat surface with the cable glands facing downwards. Use blind plugs for unused cable glands. If necessary, carefully seal the used cable glands to prevent the ingress of moisture, dust, and aggressive gases.
-  Consult the installation manual for cable specifications and connection instructions for both low-voltage and high-voltage connections, as well as for communication cables.
-  Keep signal cables as short as possible. Refer to the installation manual for the maximum cable lengths for peripheral equipment.
-  Separate low-voltage and high-voltage cables, as well as signal cables, from cables connected to frequency converters by installing them in separate cable ducts. Metal ducts must be earthed.
-  Suppress inductive loads (such as magnetic switches) with an RC filter (100 Ω + 100 nF) connected in parallel.
-  The device must be correctly earthed in accordance with local regulations.
-  Check all connections before switching on the power supply.
-  In buildings susceptible to lightning, it is recommended to install surge protection in the mains connection of the control equipment.
-  Install a manual control for critical functions that affect animal welfare, so it can be used in emergencies.
-  Replace fuses only after the cause of the fault has been corrected. Always use the same type of fuse.
-  In the event of an emergency, record the circumstances, installation settings, software date, software version, and any suspected causes.
-  Electronic devices are recyclable and must not be disposed of with household waste. At the end of its service life, return the product in accordance with applicable legal regulations.

3 Technical specifications

3.1 Technical parameters

Technical parameter	Specification
Power supply	230Vac 50/60Hz
Connected load	25VA
Dimensions (h × w × d)	220 × 230 × 120mm
Protection class	IP 54
Ambient temperature	-5°C to +40°C
Environmental conditions	The CBA-2000 is only suitable for installation in a dry, non-corrosive, and non-condensing environment. Do not expose the CBA-2000 to direct sunlight, heat, or humidity.

3.2 Connection terminals



3.3 Maximum output load

Output	Maximum permissible load
0-10V outputs	5mA
Alarm relay	24Vdc / 2A
Other relays	230Vac / 2A
24Vdc power supply on OUT3	4.8W

3.4 Communication plug-in board (optional)

An RS485 communication plug-in board is available as an option for data communication with other devices. This is a galvanically isolated RS485 communication bus (2-wire connection).

4 Configuring the CBA-2000

4.1 Overview of settings

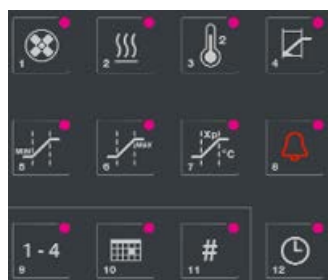
Code	Description	Factory setting	User setting
	<i>1.xx / Device</i>		
1.00	Device type (26= CBA-2000)	26	26
1.01	Software version number	4.64	4.64
1.04	Variable version number	1	1
1.07	Device address	0	
1.08	Baud rate: 0=1200, 1=2400, 2=4800, 3=9600, 4=19k2, 5=38k4	5	
1.18	Malfunction: relay delay time (seconds)	240	
1.19	Malfunction: measuring fan delay time (seconds)	240	
	<i>2.xx / Inputs / compensations / alarm limits</i>		
2.01	Temperature sensor 1 measurement	-	
2.02	Temperature sensor 2 measurement	-	
2.03	Temperature sensor 3 measurement	-	
2.04	Temperature sensor 1 correction	0.0	
2.05	Temperature sensor 2 correction	0.0	
2.06	Temperature sensor 3 correction	0.0	
2.07	Outside temperature: 0/1/2 = no/yes, sensor 3/communication	1	
2.0	Measuring fan measurement time	105	
2.09	Measuring fan ventilation percentage (%)	-	
2.18	Temperature compensation: maximum compensation	0.0	
2.19	Temperature compensation: reduction per hour	0.2	
2.27	Lower limit for alarm notification of temperature sensor 2	0.0	
2.2	Upper limit for alarm notification of temperature sensor 2	50.0	
	<i>3.xx / Outputs</i>		
3.01	Maximum voltage OUT1 (V)	10	
3.02	Maximum voltage OUT2 (V)	10.0	
3.03	Maximum voltage OUT3 (V)	2.0	
3.04	Minimum voltage OUT1 (V)	2.0	
3.05	Minimum voltage OUT2 (V)	2.0	
3.06	Minimum voltage OUT3 (V)	10.0	
	<i>4.xx / Section ventilation</i>		
4.09	Capacity of 1st ventilation group (%)	50	
4.10	Start of 2nd ventilation group (%)	50	
4.15	Data to central fan	0	
4.16	Data to central air inlet	0	
4.17	Relative room size	1.0	

Code	Description	Factory setting	User setting
	<i>4.xx / Room ventilation (continued)</i>		
4.24	Frost protection [0 = no; 1 = yes]	0	
4.25	Frost protection temperature setpoint (°C)	-1.0	
4.26	Interval ventilation: duty-cycle time (minutes)	60	
4.27	Interval ventilation: air inlet propagation time (seconds) ²	20	
4.28	Interval ventilation: maximum air inlet opening during interval ventilation (%) ¹	10	
4.29	Calculated air inlet status: 0 = <i>auto</i> ; 1 = <i>active</i>	-	-
4.30	Actual air inlet status: 0 = <i>auto</i> ; 1 = <i>open</i> ; 2 = <i>closed</i>	-	-
4.31	Remaining duty-cycle time (seconds)	-	-
	<i>6.xx / Room heating</i>		
6.08	Data to central heating 1	0	
6.09	Data to central heating 2	0	
6.10	Heat demand correction	5.0	
	<i>7.xx / Second heating/cooling</i>		
7.08	Data to central heating 1	0	
7.09	Data to central heating 2	0	
7.10	Heat demand correction	5.0	
7.11	Cooling: Time proportional (1 = <i>on</i> ; 0 = <i>off</i>)	0	
7.12	Cooling: Propagation time in minutes (2-20 minutes)	10	



- 1 The position and duration of the air inlets must be determined empirically. Use a smoke device to determine the airflow and then measure the time it takes for the air inlets to close (allow plenty of time for this).
- 2 Use the air inlet with the longest propagation time to activate the fans during interval ventilation.

4.2 Accessing and exiting the installer settings



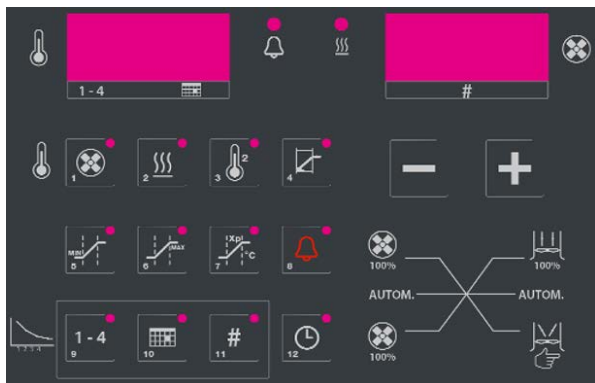
1. Press the keys , , and  simultaneously to access the installer settings.
2. Press the same key combination again to exit the installer settings.

4.3 Restoring factory settings

1. Go to installer settings.
2. Press the keys , , , and  simultaneously to restore the factory settings.
3. Then reset the installer and user settings.

5 Operation

5.1 Control panel



If none of the LEDs on the control panel are lit, the left display shows the measured room temperature and the right display shows the current room ventilation.

5.2 Querying and changing measured values

When you press a key and the corresponding LED is lit, the display will show the current measured value or a calculated setting. Press the same key again to change the corresponding setting; the LED flashes.



Use the + and – keys to adjust the value.



If the curve is active, you cannot change the setting.

5.3 Setting the day number



Press the key .

The right-hand display shows the current curve day number. Use the + and – keys to adjust the day number: 0 = curve off.

5.4 Setting the time



The time is used to increase the curve day number. Press the  key.

The left display shows hours and the right display shows minutes. Use the + and – keys to adjust the time as needed.

6 Setting and reading the temperature

6.1 Room temperature



Press this key to display the room temperature setpoint on the right-hand display. The LED in this key will flash. Use the + and – keys to change the value. The left-hand display shows the temperature compensation, if applicable to this control.



The right display shows the temperature difference relative to the room temperature. The room heating activates based on the temperature difference. Use the + and – keys to adjust it.



This key allows you to request the measured temperature of the 2nd temperature sensor, if installed. The LED will then light up. If a second heating (cooling) system is installed, you can set the temperature for the second heating (cooling) system by pressing the key again. The LED in this key flashes.

2nd heating = floor

With underfloor heating, the compensated temperature is displayed first (LED is on). Press the key again to display the set value.

2nd heating = relative

The right-hand display shows the set difference temperature. The second heating (cooling) system regulates this value. The LED flashes. The set value is relative to the set zone temperature.

2nd heating = cooling

The second heater is a cooling unit.



Press this key to display the measured temperature on the left display. The right display shows the calculated position of the air inlet valve. Press this key again to set the differential temperature and the room temperature setpoint.

6.2 Outside temperature



Press the  key and then the  key. The left display shows the current outside temperature. See also parameter 2.07.

7 Setting and reading ventilation

7.1 Room ventilation

To set the control band and the minimum and maximum ventilation, you must press several keys in succession.



First press , then  to set the minimum room ventilation. The LED in  is lit and the LED in  flashes.

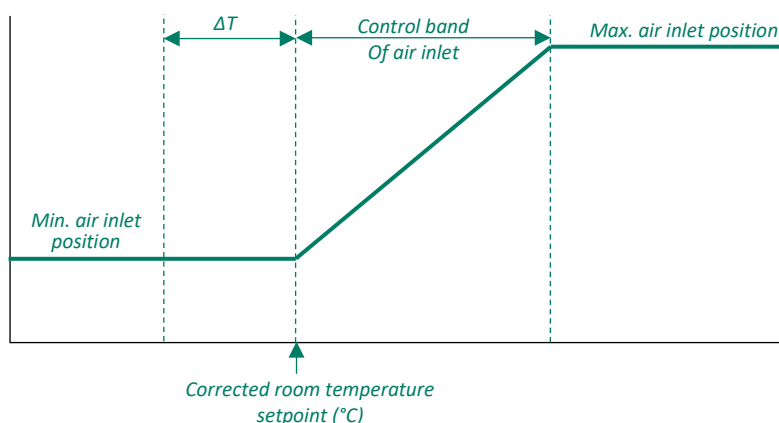


First press , then  to set the maximum room ventilation. The LED in  is lit and the LED in  flashes.



First press , then  to set the control band—the temperature range in which ventilation is controlled from minimum to maximum—for the room ventilation. The LED in  is on and the LED in  flashes.

7.2 Air inlet



To set the control band and the minimum and maximum air inlet position, you must press several keys in succession.



First press , then  to set the minimum air inlet position. The LED in  key is lit and the LED in  flashes.



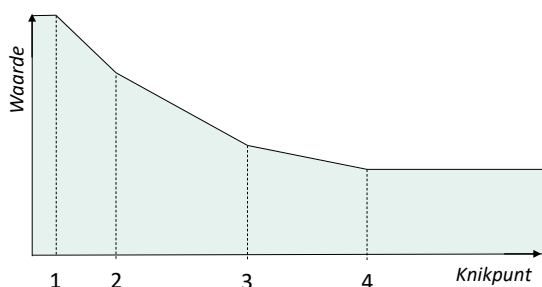
First press , then  to set the maximum air inlet position. The LED in  key is lit and the LED in  flashes.



First press , then  to set the control band—the temperature range in which the air inlet is controlled from minimum to maximum position. The LED in  key is lit and the LED in  flashes.

8 Setting growth curves

8.1 General



Growth curves allow you to pre-program the climate process based on the age of the animals. To set the curve (max. 4 breakpoints), you must press several keys in succession.



If the curve for the setting to be changed is active, you can only change the setting via the curve.

You cannot switch from a relative to an absolute setting via the curve.

8.2 Room temperature curve



Press , then . The left display shows the last breakpoint set. The LED in  is lit and the LED in  flashes. Use the + and – keys to adjust the breakpoint number.

Press  to set the day number for the selected breakpoint. The LED in  is lit and the LED in  flashes. Use the + and – keys to change the number: 0 = curve disabled. If a day number is set lower than the previous breakpoint, this breakpoint will not be present.



If you then press , the day number will shift to the left display, and the right display will show the desired room temperature. Use the + and – keys to set the temperature setpoint.

Replace the  key with:



to set the minimum ventilation curve.



to set the maximum ventilation curve.



to set the difference temperature curve for the room heating.



To set the temperature curve of the second heating system (second heating, cooling, or underfloor heating) or to set the differential temperature curve of the second heating system (second heating, cooling, or underfloor heating).



For setting the temperature curve for the air inlet.



For setting the minimum air inlet position curve.



For setting the maximum air inlet position curve.



Day number setting for the minimum ventilation curve:   

9 Alarm

9.1 Alarm limits for room temperature



Press . The left display shows the current alarm code: F00 = no alarm. On the right display, you can set whether the alarm should be transmitted to an external device via the ERROR relay: 1 = transmit; 0 = do not transmit. If 0, the LED in flashes.

The alarm is only transmitted to the ERROR relay after the alarm delay time set by the installer has elapsed.

9.2 Room out of service

If you set 2 instead of 0 or 1, the room will be taken out of service. The right display shows - - - to indicate that the room is out of service.



Press . The left display shows the calculated lower limit of the room temperature. The right display shows the relative lower limit in relation to the room temperature setpoint. If the room temperature falls below the calculated lower limit, an alarm is triggered. Use the + and – keys to set the difference. While changing the setting, the calculated lower limit is shown on the left display.



Press . The left display shows the calculated upper limit of the room temperature. The right display shows the relative upper limit in relation to the room temperature setpoint. If the room temperature rises above the calculated upper limit, an alarm is triggered. Use the + and – keys to set the difference. While changing the setting, the calculated upper limit is shown on the left display.



Press . The left display shows the current outside temperature. The right display shows the absolute upper limit. If the room temperature rises above this absolute upper limit, an alarm is triggered. Use the + and – keys to set the absolute upper limit.



The alarm will be triggered as soon as the room temperature exceeds the outside temperature plus the set alarm upper limit.



Calculation example:	$T_{\text{OUTSIDE}} < T_{\text{ROOM}}$	$T_{\text{OUTSIDE}} \geq T_{\text{ROOM}}$	$(T_{\text{OUTSIDE}} + T_{\text{ALARM}}) > T_{\text{ABS}}$
Set abs. room temperature	35.0°C	35.0°C	35.0°C
Set room temperature	22.0°C	22.0°C	22.0°C
Set upper alarm limit	7.0°C	7.0°C	7.0°C
Measured outside temperature	18.0°C	25.0°C	34.0°C
Calculated alarm limit	$22.0 + 7.0 = 29.0^\circ\text{C}$	$25.0 + 7.0 = 32.0^\circ\text{C}$	35.0

In extremely high outside temperatures, the alarm upper limit may become too high due to outside temperature compensation. You can prevent this by setting an absolute upper limit. When the measured room temperature rises above the absolute upper limit, an alarm is triggered.

9.3 Alarm codes

Alarm code	Description
F00	No malfunction
F01	Measured room temperature outside limits or sensor defective
F0	Temperature sensor 2 outside limits or sensor 2 defective
F04	Outside temperature sensor defective
F10	Measuring fan running too slowly or not running at all
F40	Installation error (dip switch incorrectly set, check the dip switch settings).

The ERROR relay is normally energized. In the event of an alarm or power failure, the relay drops out. Multiple error messages can be combined, for example: F51 = combination of errors F01, F10, and F40.

Room temperature outside limits

The difference between the room temperature setpoint and the measured room temperature is greater than the set alarm limits.

Temperature sensor 2 outside limits

The difference between the room temperature setpoint and the measured temperature is greater than the set alarm limits (second heater). The installer can set the alarm limits for temperature sensor 2.

Measuring fan error

The measurement is less than 2% or the deviation is greater than or equal to 40% compared to the calculated ventilation.

9.4 Temperature sensor defective

If the temperature sensor is defective, then:

- The fan is set to the minimum setting;
- The air inlet (temperature-controlled) is set to the minimum setting;
- Heating and cooling are disabled;
- Room temperature compensation is disabled or reduced;
- Floor temperature compensation is disabled.

9.5 Alarm in another room



Press twice

If the alarm relay in another room fails and you press the ALARM key twice in quick succession, the following will be displayed:

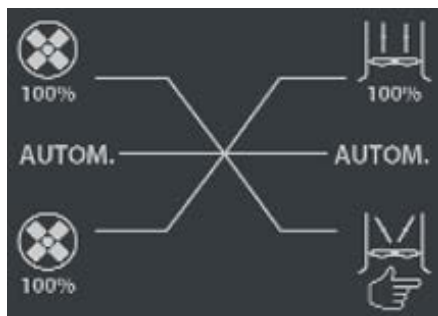
- Left display: Letter A
- Right display: Relevant ROOM number.



Install the climate computer in a dry, non-corrosive, and non-condensing environment. Do not place it too close to heat sources (appliances, heating pipes, etc.) due to heat dissipation. Do not expose the climate computer to direct sunlight, heat, or humidity.

10 Manual control

10.1 Front switch



Normal operation: The switch should be set to AUTOM (automatic).

Upper position:

- The fan is set to maximum speed.
- Any air inlet connected to OUT1 is set to fully open.

Lower position:

- The fan is set to maximum speed.
- The power supply to the AQC valve is switched off, allowing the AQC valve to remain in the desired position when the air inlet is adjusted manually.

10.2 Output voltages during manual operation

	AQC unit			Fan			2 ^e fan	
Front switch	DIP switch AQC VALVE	OUT3 (0-10V)	24Vdc	DIP switch PWM	DIP switch 10-0 VOLT	OUT1 (0-10V)	DIP switch 2 ^e fan	OUT5 (relay)
UP	OFF	-	24Vdc	OFF	OFF	10V	OFF	-
	ON	2V	24Vdc	OFF	ON	2V	ON	energized
AUTOM.	OFF	Auto	24Vdc	OFF	OFF	Auto	OFF	-
	ON	Auto	24Vdc	OFF	ON	Auto	ON	auto
DOWN	OFF	-	0Vdc	OFF	OFF	10V	OFF	-
	ON	0V	0Vdc	OFF	ON	2V	ON	energized



If you have installed a PWM control, DIP switch OUT1-3 must be set to OFF.

To adjust the AQC valve, set the switch to the lower position. The power supply to the AQC valve will be switched off and you can adjust the valve manually. Press and hold the MANUAL CONTROL key on the AQC valve and adjust the valve by moving the lever.

11 Installation instructions

11.1 General

Carefully read the general safety instructions in chapter 2 before mounting, installing, and using the CBA-2000. Also observe the following instructions:

1. Do not mount the CBA-2000 with the top against or too close to a heating pipe due to heat dissipation.
2. Connect transformers (for valves and relays) behind a circuit breaker so that they are de-energized simultaneously with the deactivation of the .
3. Connect all probes and sensors to the CBA-2000 or module using a separate cable.
4. Install auxiliary relays, transformers, power modules, and other components in a separate cabinet.
6. For critical controls that significantly affect animal welfare, always install a manual control. The manual control can be used in an emergency.

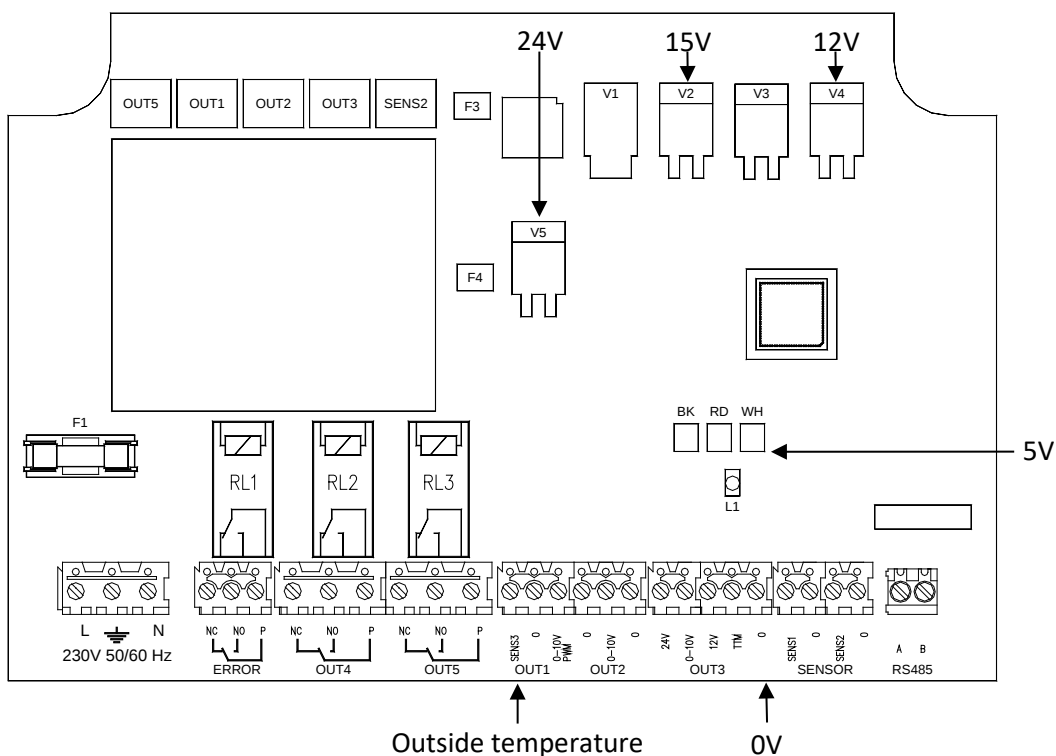
11.2 Cabling

Mains power supply	3 × 2.5 mm ²
Temperature sensor	2 × 0.5 mm ²
AQC valve	5 × 0.5 mm ²
Fan 0-10V	2 × 0.5 mm ²
Second fan	2 × 1.5 mm ²
Heating or cooling on/off	2 × 0.5 mm ²
Heating or cooling 0-10V	2 × 0.5 mm ²
RS-485 communication	24 AWG CAT.5 UTP cable (twisted pair, unshielded, max. 1200 m*)

Baud rate	Maximum number of connections			
	300 m*	600 m	900 m	1200 m*
19k2	32	32	32	24
38k4	32	32	24	18

*In this table, cable lengths have been rounded down.

12 Fault analysis



Malfunction	Cause and action
<i>Display and keypad are not functioning</i>	▪ No mains voltage. Check fuse F1; ▪ Check whether the 5V voltage is present. Set the front switch to AUTOM. and measure the voltage between J3 and 0V; this should be approx. 5V.
<i>Incorrect temperature readout</i>	▪ 15V voltage is missing; ▪ Voltage between terminals (without sensor) should be approx. 5V. If not, replace bottom circuit board; ▪ Constant temperature deviation: readjust the temperature sensor, otherwise replace it; ▪ Variable temperature deviation: water or condensation in sensor housing; ▪ Interruption or short circuit in wiring between terminal and temperature sensor.
<i>Measuring fan is not functioning</i>	▪ 12V measuring fan is missing. ▪ Break or short circuit in wiring between terminal and measuring fan. ▪ Measuring fan defective. The measuring fan input is equipped with an LED (L1). The LED lights up when a pulse is received; only visible at low speed. ▪ Measuring fan bearing defective. Replace measuring fan.

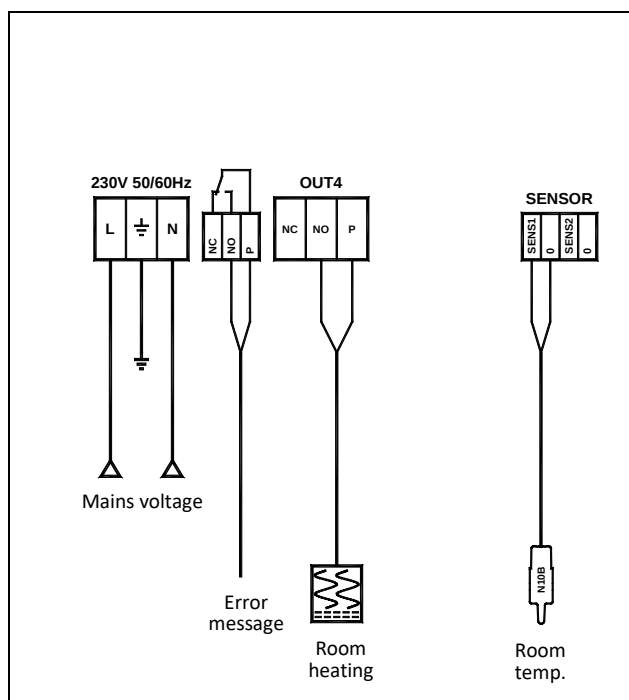
<i>Heating/cooling does not switch on</i>	▪ 15V is missing. Measure the voltage between the upper solder surface of V2 and 0V. This should be approx. 15V; ▪ 24Vac is missing. Measure the 24V voltage on OUT3; ▪ With time-proportional heating control, the output is controlled on/off on a percentage basis.
<i>Fan is not functioning properly</i>	▪ 15V is missing. Measure the voltage between the upper solder pad of V2 and the 0V. This should be approx. 15V; ▪ 24Vac is missing; only applicable to valves with a 24Vac connection. Measure the 24V voltage on OUT3; ▪ Thermal safety activated; ▪ Output incorrectly connected; ▪ Switch on front panel is not in the AUTOM. position; ▪ Interruption or short circuit in wiring; ▪ Minimum/maximum voltage incorrectly adjusted; ▪ DIP switch OUT1-3 is incorrectly set (see <i>Manual operation</i>, page12).

13 Work sequence

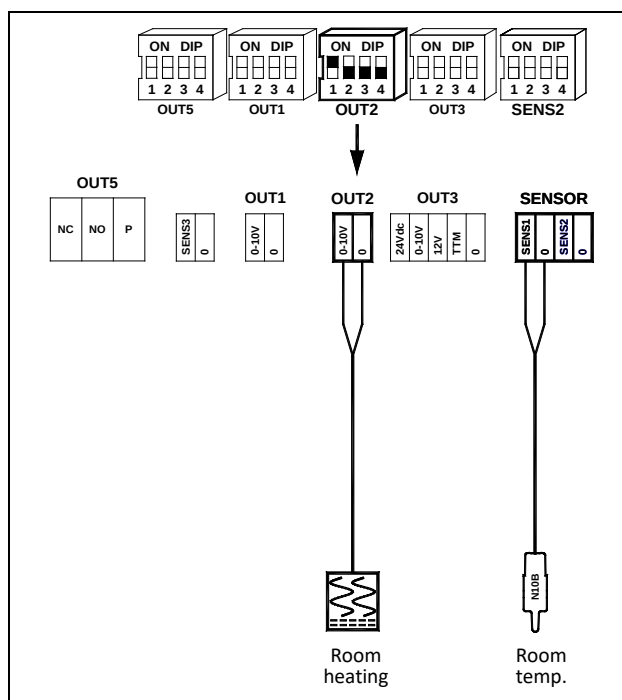
1. Select the controllers, auxiliary equipment, and communication interfaces to be used and install them according to the instructions.
2. Perform installation according to installation instructions and connection diagrams.
3. Set the DIP switches for the controls and the communication loop, if present.
4. To change the installer settings, you must first reset the factory settings. You can then change the installer settings according to the installation structure.
5. Adjust the temperature sensors.
6. Adjust the minimum and maximum voltage.
7. Test RS485 communication, if present.
8. Check and test the entire installation.
9. Check and test alarms, alarm systems, emergency power supplies, etc.
10. Fill in and archive the installer form with settings and attachments.
11. Create and archive backup files.

14 Connection diagrams

14.1 Room heating on OUT4

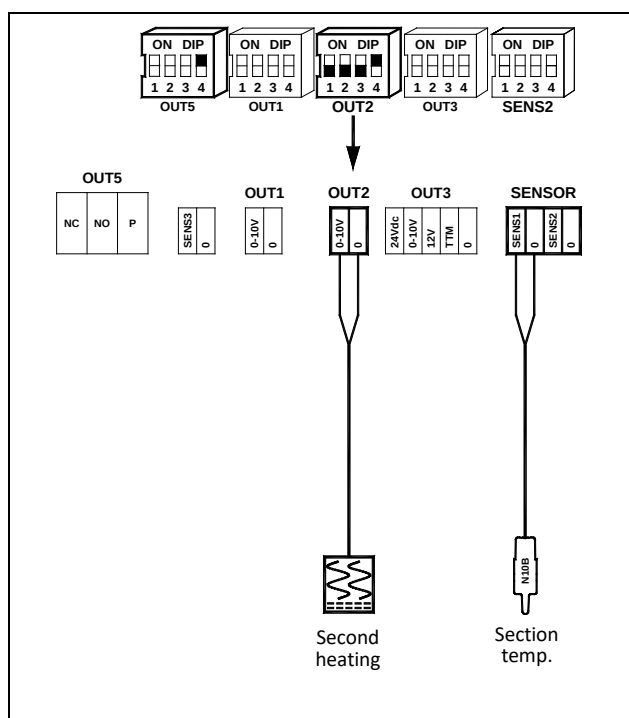


14.2 Second heating on OUT2

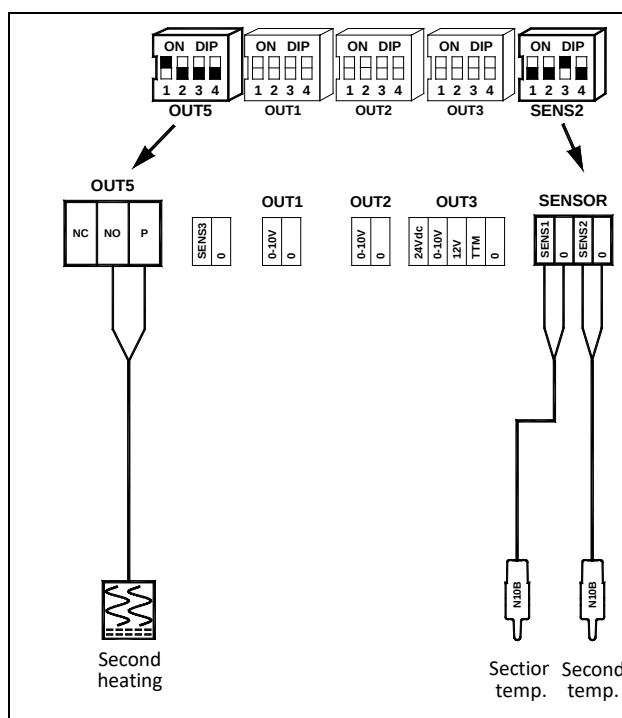


You can also assign the room heating to output 1 or 2. However, the functionality of output 4 will then be lost.

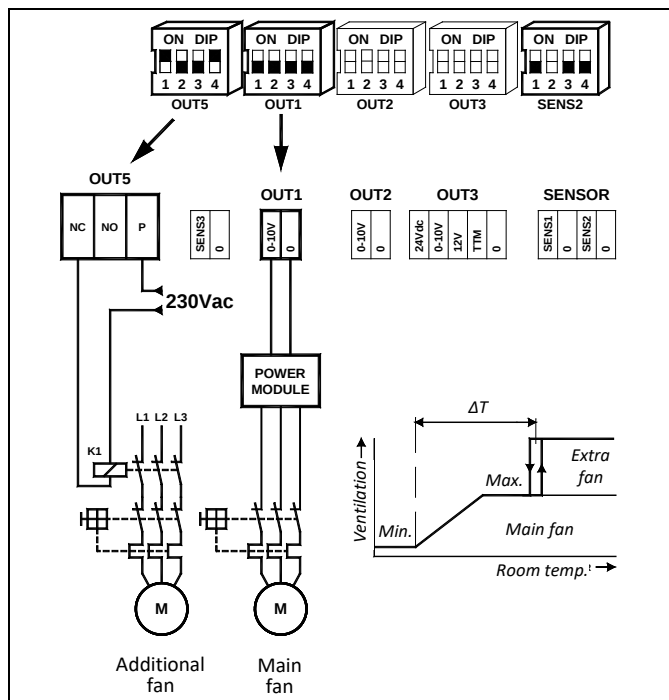
14.3 Second heating on OUT2



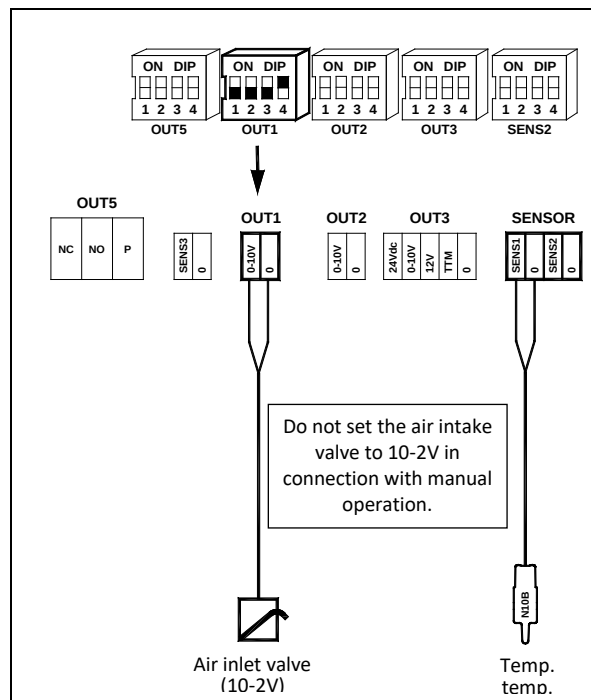
14.4 Second heating on OUT5



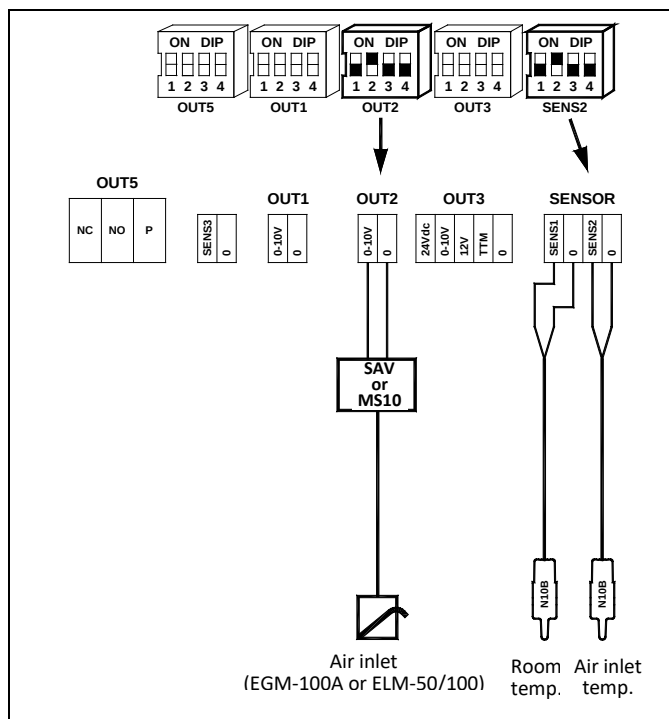
If the second heating system is underfloor heating, you must also connect the second temperature sensor. Set DIP switch SENS2 to the correct position if the heating system is to be controlled based on the second temperature sensor (floor temperature). SW5-4 ON: Second heating system is relative to the room temperature.



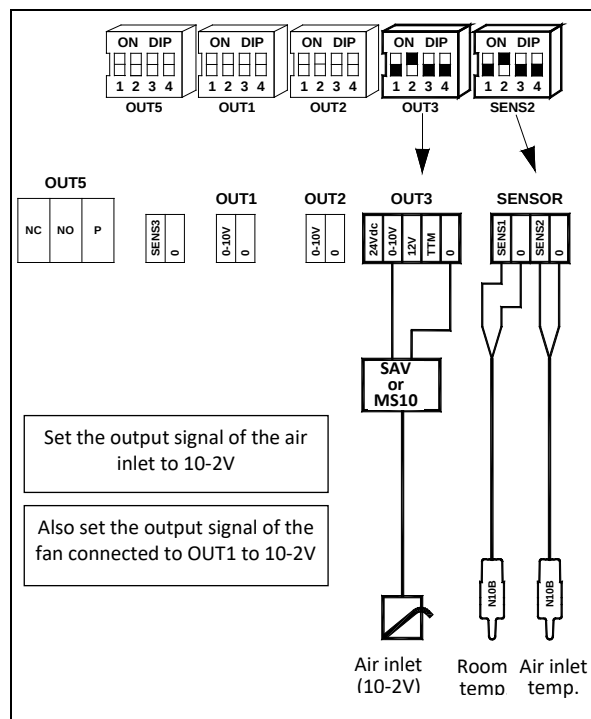
If a positive differential temperature ($\Delta T < 10.0\text{ }^{\circ}\text{C}$) is set at TEMP.2, you can use this to switch on an additional fan or cooling.



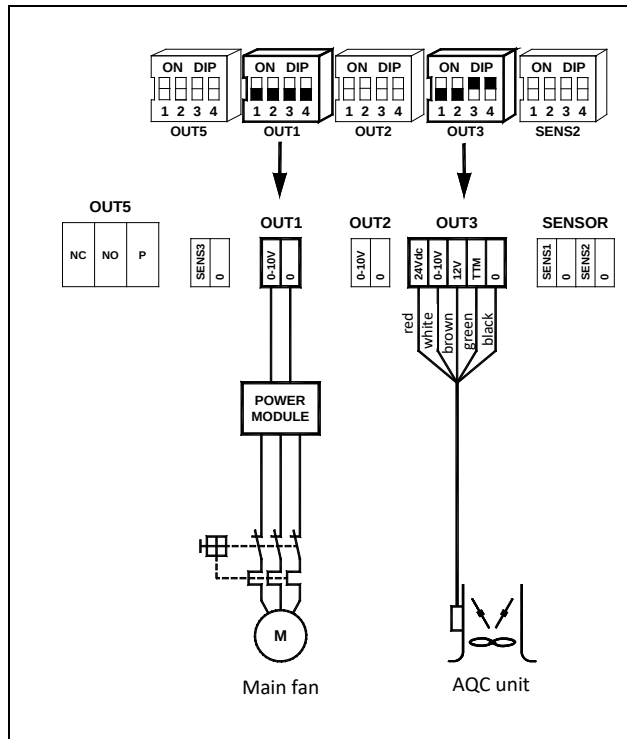
14.5 Air inlet on OUT2



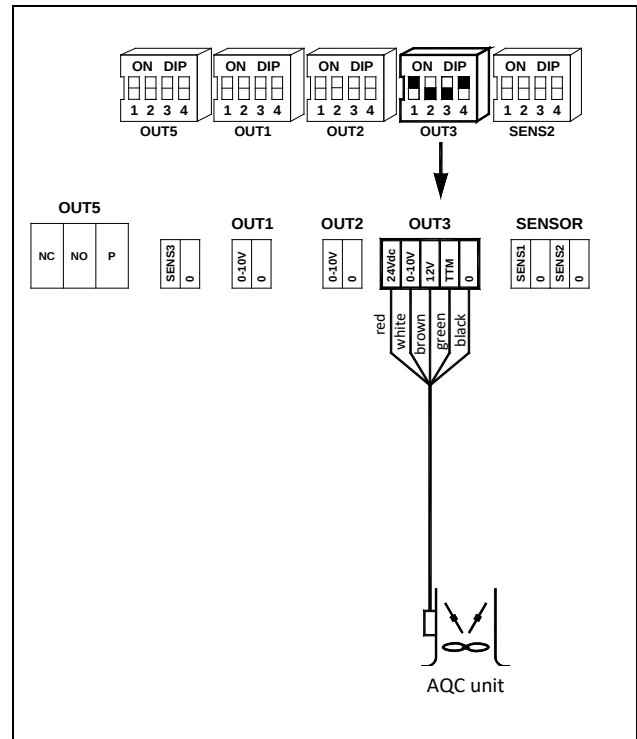
14.6 Air inlet on OUT3



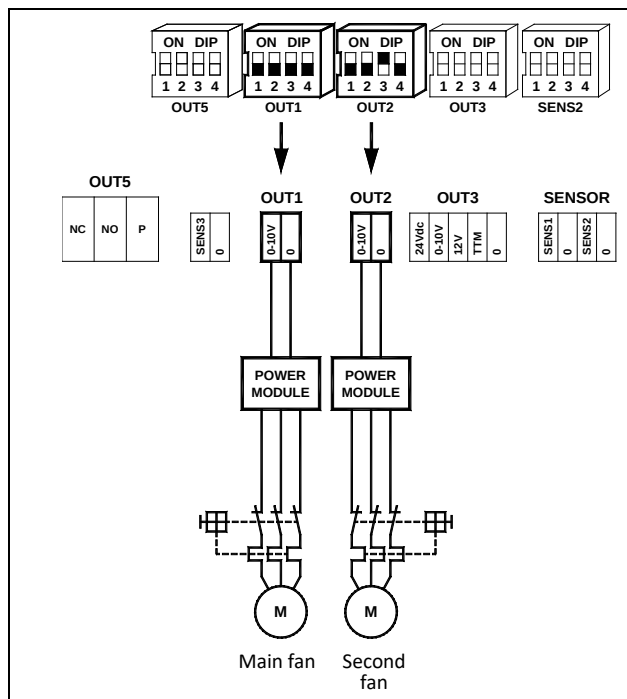
14.7 Room fan on OUT1 + AQC valve



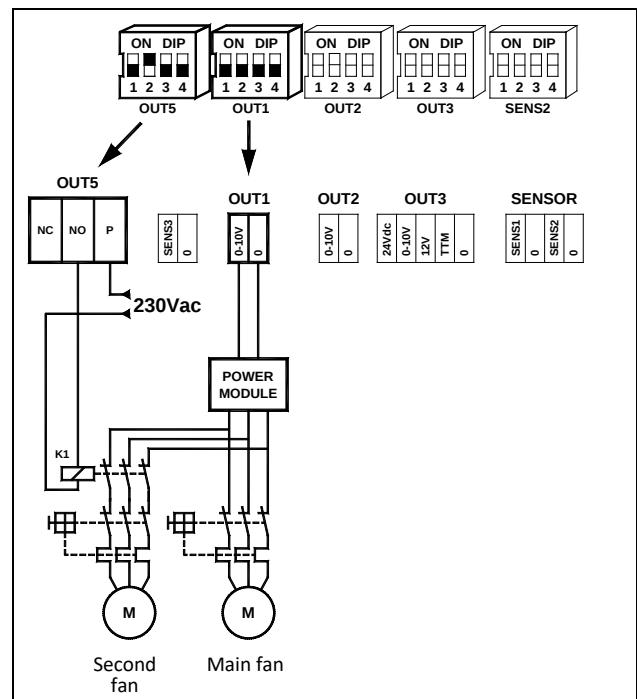
14.8 Central exhaust/ECO-VENT on OUT3



14.9 2nd Fan switch on OUT2



14.10 2nd fan switch on OUT5



15 Sensors

15.1 Room temperature sensor



N10B Temperature sensor

Temperature sensor range: $-10^{\circ}\text{C} \dots +50^{\circ}\text{C}$ ($14^{\circ}\text{F} \dots +122^{\circ}\text{F}$)

Mount the N10B sensor as shown in the figure below and secure the cable to the sensor using a cable tie.

15.2 Outside temperature sensor

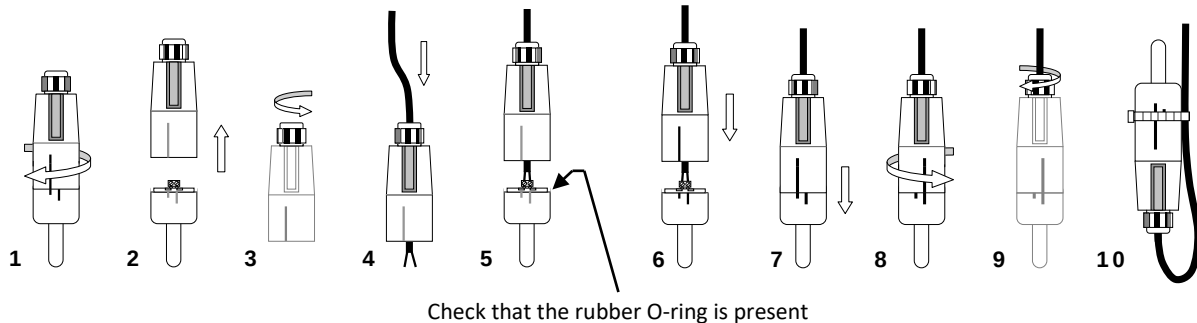


BV10B Outside temperature sensor

Temperature sensor range: $-30^{\circ}\text{C} \dots +70^{\circ}\text{C}$ ($-22^{\circ}\text{F} \dots +158^{\circ}\text{F}$)

The outside temperature sensor (BV10B) should be mounted on an outside wall that is not subject to excessive stress and preferably in a dry location.

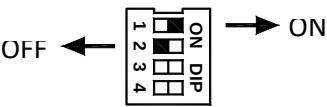
15.3 Mounting diagram of N10B temperature sensor



16 DIP switches

DIP switches are used to activate the controls in the computer.

OUT5	2ND HEATING 2ND FAN 2ND HEATING = COOLING 2ND HEATING = RELATIVE	
OUT1	ROOM HEATING PWM 10-0V AIR INLET	
OUT2	ROOM HEATING AIR INLET 2ND FAN 2ND HEATING	
OUT3	CENTRAL EXHAUST AIR INLET AQC VALVE + FAN MEASURING FAN	
SENS2	TEMPERATURE MEASUREMENT ONLY 2 AIR INLET 2ND HEATING 2ND HEATING = UNDERFLOOR HEATING	



CE Declaration of Conformity

Manufacturer	Stienen Bedrijfselektronica bv Mangaanstraat 9 6031 RT Nederweert The Netherlands
Type	Climate controller
Model	CBA-2000 series
Brand	Stienen BE
Test	EN 61000-3-2 EN 55014-1 EN 55014-2 EN 60355-1 EN 60204 EN 61010
As last amended by:	EMC Directive 2014/30/EC Low Voltage Directive 2006/95/EC Machinery Directive 2006/42/EC
Date of issue	August 7, 2012

I hereby declare that the above equipment complies with the referenced directives and standards, provided it is installed and operated in accordance with the manufacturer's specifications..



E.P.M. Stienen
General Director (CEO)
Stienen Bedrijfselektronica bv