

Controller for apartments

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Single room controller



CRA24-B3



CRA24-B3P

VAV applications



LMV-D2-MP / NMV-D2-MP

VAV-Compact

OEM product, i.e., VAV controller can be supplied only by the manufacturer of VAV units

Water solutions

**Rotary actuators and characterised control valves**

R..K + TRD24 / R.. + TR24 / R.. + LR24A

General Air Solutions

**Damper actuators**

LM24A-MF / NM24A-MF / LM24A-MP / NM24A-MP

Accessories



COU24-A-MP

Fan optimiser fan control (only for VAV systems)

ZTH-VAV

VAV adjustment and diagnostic tool for VAV-Compact

PC-Tool

Setting for VAV-Compact MFT damper actuator

ZK1-VAV

Connecting cable ZTH-VAV for CRA24-..., diagnostic socket 1/2

Brief description

The room controller CRA24-B3(P) has been specially adapted to the requirements of controlled ventilation for individual apartments. Thanks to its unique functions such as the override kitchen and the bathroom, the CRA24-B3(P) is optimised to applications in extremely airtight buildings. The system combines individual room comfort and minimum energy consumption in an economically optimised solution.

Pure ventilation systems, either equipped with VAV units or air control dampers, can be expanded with heating functions if required.

The CR24 controller generation forms the basis of modern single room concepts.

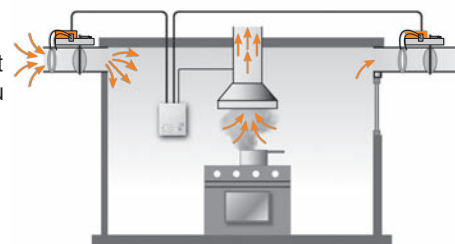
The microprocessor-controlled room temperature controller is perfectly adapted to the BELIMO actuators for motorised air and water control valves as regards the technology, functionality and handling.

The CRA24 apartment controllers can either be combined with the room temperature control range CR24 or can be expanded (see the separate documentation of the CR24 range).

Override kitchen

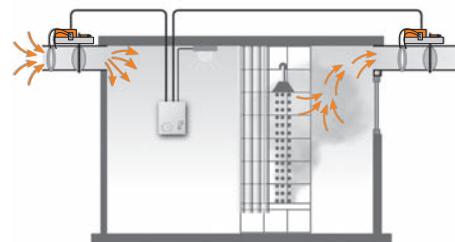
The kitchen hood fan or even the chimney extractor system sucks air from the rooms. This leads to a vacuum and it either becomes difficult to open doors or doors fly open at you when you open them.

Controlled by the vapour kitchen hood fan or chimney ventilator, the CRA24-B3 can minimise these pressure differences through intelligent control of the supply air and exhaust air components.



Override Bathroom

In energy-efficient buildings with extremely airtight shells, it is extremely important to draw off damp air (showers, baths) as quickly as possible. This helps to minimise damage to the structural fabric such as formation of mould. The apartment ventilation can be switched to maximum air exchange via the light switch or a humidistat positioned in the corresponding exhaust air.



Device variants



Standard type CRA24-B3 with user interface (setpoint adjustment, mode switch and status display). For operation, see page 7.

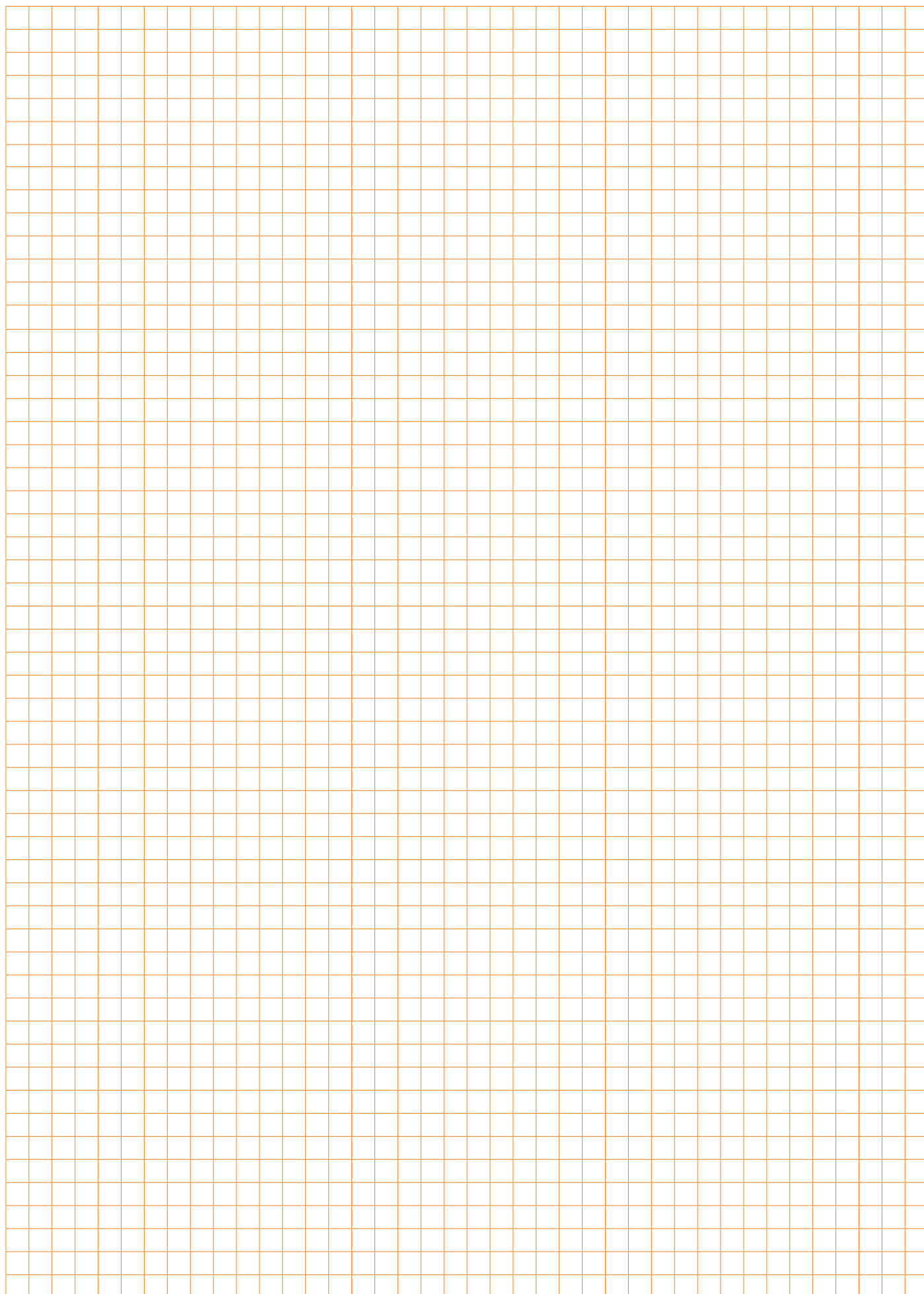


Type CRA24-B3P with the same functions as the CRA24-B3, but with hidden setpoint adjustment.

Accessories

Mechanical accessories

Type	Description
CRZA-A	Spare cover without user interface
CRZW	Spare baseplate



Room controllers for the controlled apartment ventilation with three outputs:

- Analogue output ao1: Supply air device
– VAV unit or damper actuator.
- Analogue output ao2: Exhaust air device
– VAV unit or damper actuator.
- Output ao3: 2- (on/off) or 3-point signal for a heating valve.


Device variant

Type CRA24-B3P, same functions as the CRA24-B3, but with a hidden user interface.

Technical data

Electrical data	Nominal voltage	AC 24 V 50/60 Hz
	Dimensioning	3 VA, without actuators
	Power supply range	AC 19.2 ... 28.8 V
	Connections	Terminal block 1 ... 3: 2.5 mm ² Terminal block 4 ... 12: 1.5 mm ²
Functional data	Control characteristics	P
	– P band	Selectable: 1.5 K or 3.0 K
	External temperature sensor (ai1)	Type NTC, 5 kΩ, power supply range 10 ... 45°C e.g. Belimo Type TFK
	Setpoint	Setting range 15 ... 36°C (Default 21°C)
	– Energy hold off (EHO)	Heating –2 K
	Room temperature (frost protection)	14°C
	Max. room temperature monitoring	28°C
	Operation	
	– Mode switch and status display (LED)	COMF (green) – MIN (orange) – MAX (red)
	– Dial for setpoint adjustment	30 ... 70% air / ±3 K temperature
	Communication connection for field devices	2 x PP (for PC tool, ZTH-VAV etc.)
Inputs	1 x analogue, 3 x digital	
	– External temperature sensor (ai1)	Type NTC, 5 kΩ, power supply range 10 ... 45°C
	– Digital inputs (di1, di2, di3))	Contact rating 10 mA
Output	3 x analogue or digital	
	– Supply air VAV system output (ao1)	2 ... 10 V, max. 5 mA
	– Exhaust air VAV system output (ao2)	2 ... 10 V, max. 5 mA
	– Heating output (ao3)	2- / 3-point, AC 24 V, source current max. 0.5 A / 10 VA (optimised for actuators with approx. 150 s runtime)
Standards	Protection class	III Safety extra-low voltage
	Degree of protection	IP30 (EN 60529)
	Mode of operation	Type 1 (EN60730-1)
	Software class	A (EN 60730-1)
	EMC	CE according to 2004/108/EC
	Ambient conditions	
	– Operation	0 ... +50°C / 20 ... 90% rH (non-condensing)
	– Transport and storage	–25 ... +70°C / 20 ... 90% rH (non-condensing)
Dimensions / Weight	Dimensions (H x W x D)	99 x 84 x 32 mm
	Weight	105 g
Housing colours	Base plate	NCS2005-R80B-light grey (corresponds to approx. RAL 7035)
	Cover	RAL 9003 signal white

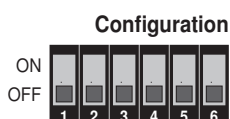
Safety notes


- The controller is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- The device does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Control strategy air volume	The air volume can be pre-selected and set to minimum, variable (dial: 30 ... 70 %) and maximum using the push-button and the rotary knob. This is especially suitable for applications requiring a defined air change. The heating output is not available.
Control strategy room temperature	The desired comfort temperature can be selected using the rotary knob. The room controller controls the air volumes as well as the heating valve on the basis of the set parameters.
Override kitchen	Pressure differences caused by the kitchen hood fan or the chimney extraction system are balanced out as far as possible by reducing the exhaust air volume.
Override bathroom	Volume currents are increased to the maximum air change in order to draw off humid air from rooms as quickly as possible.
Energy hold off (EHO)	The room is controlled in the energy saving mode, i.e. the VAV units are closed and the heating setpoint is lowered by 2K during long periods of absence, for example.
Room protection (Frost)	If the current room temperature falls below 14°C, the room protection function is activated.
External temperature sensor	An external temperature sensor can be connected to the analogue input ai1, e.g. in the exhaust air duct for calculating the average room temperature.

Configuration



DIP	Default settings	
1	P band normal	P band wide
2	Control strategy air volume	Control strategy room temperature
3	Control sequence for air cooling	Control sequence for air heating
4	Reset MAX → COMF Off	Reset MAX → COMF 1 h
5	Max. temp. monitoring Off	Max. temp. monitoring On
6	Definition of heating output (ao3) 2-point actuator	Definition of heating output (ao3) 3-point actuator

Note

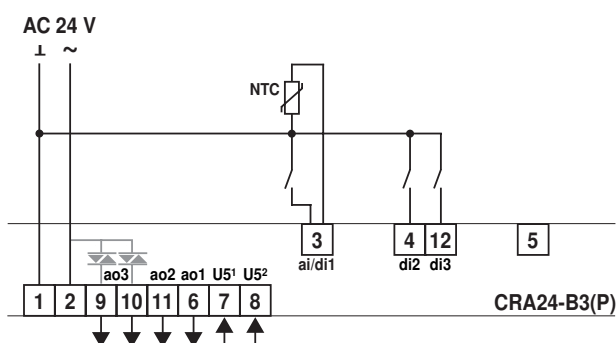
The functions have been described in detail on pages 9 to 13.

Electrical installation

Wiring diagram

Notes

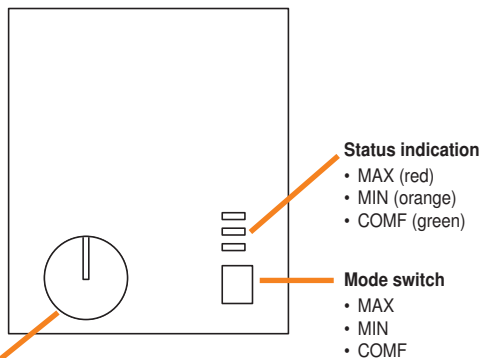
- Connect via safety isolation transformer.
- Parallel connection of other actuators possible. Pay attention to the power data.



Inputs			Outputs		
3	ai1	External temperature sensor	6	ao1	System output VAV controller supply air
	di1	Energy hold off (EHO)	9/10	ao3	2-point / 3-point output heating
4	di2	Override kitchen	11	ao2	System output VAV controller exhaust air
5	–	Not used	Other connections		
12	di3	Override bathroom	7	PP1	Diagnostic socket VAV controller supply air
			8	PP2	Diagnostic socket VAV controller exhaust air

Operation level 1 – Operation

Operating type / setpoint



Rotary knob for setpoint adjustment (only CRA24-B3)

- Control strategy air volumes of 30 ... 70 %
- Control strategy room temperature ± 3 K

Mode switch and status indication

One of three operating types (modes) can be selected:

• COMF – Comfort-oriented operating type

If the external control signals permit this, the room is maintained in the comfort state using the selected control strategy. All control functions are enabled.

• MIN – Minimum operating type

The air volume is maintained to the minimum value that is set at the VAV controller. The heating valve value is maintained at the set setpoint.

Advantages: Energy stop mode in the case of short periods of absence.

• MAX – Maximum operating type

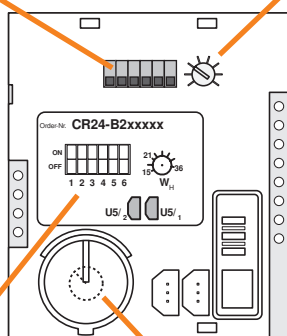
The air volume is regulated to the maximum value that is set

Operation level 2 – Configuration

Application / Parameter

DIP switch for configuration

Basic setpoint adjustment Room temperature



Label for settings

Hidden rotary knob for setpoint adjustment (only CRA24-B3P)

DIP switch for configuration

DIP switches 1 to 6

Basic setpoint adjustment of the room temperature W_H (heating setpoint)

Potentiometer 15 ... 36 °C (Default 21 °C)

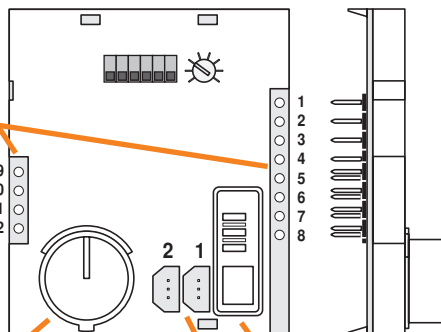
Label for settings

Retaining the used settings
(DIP switch and basic setpoint).

Operation level 3 – Service

Test / Simulation

Measuring points Connecting terminals



Rotary knob for Simulation of control sequence

ZTH-VAV / PC-Tool connection

Measuring points terminals

Measuring points at all terminals (also during operation).

Internal function test

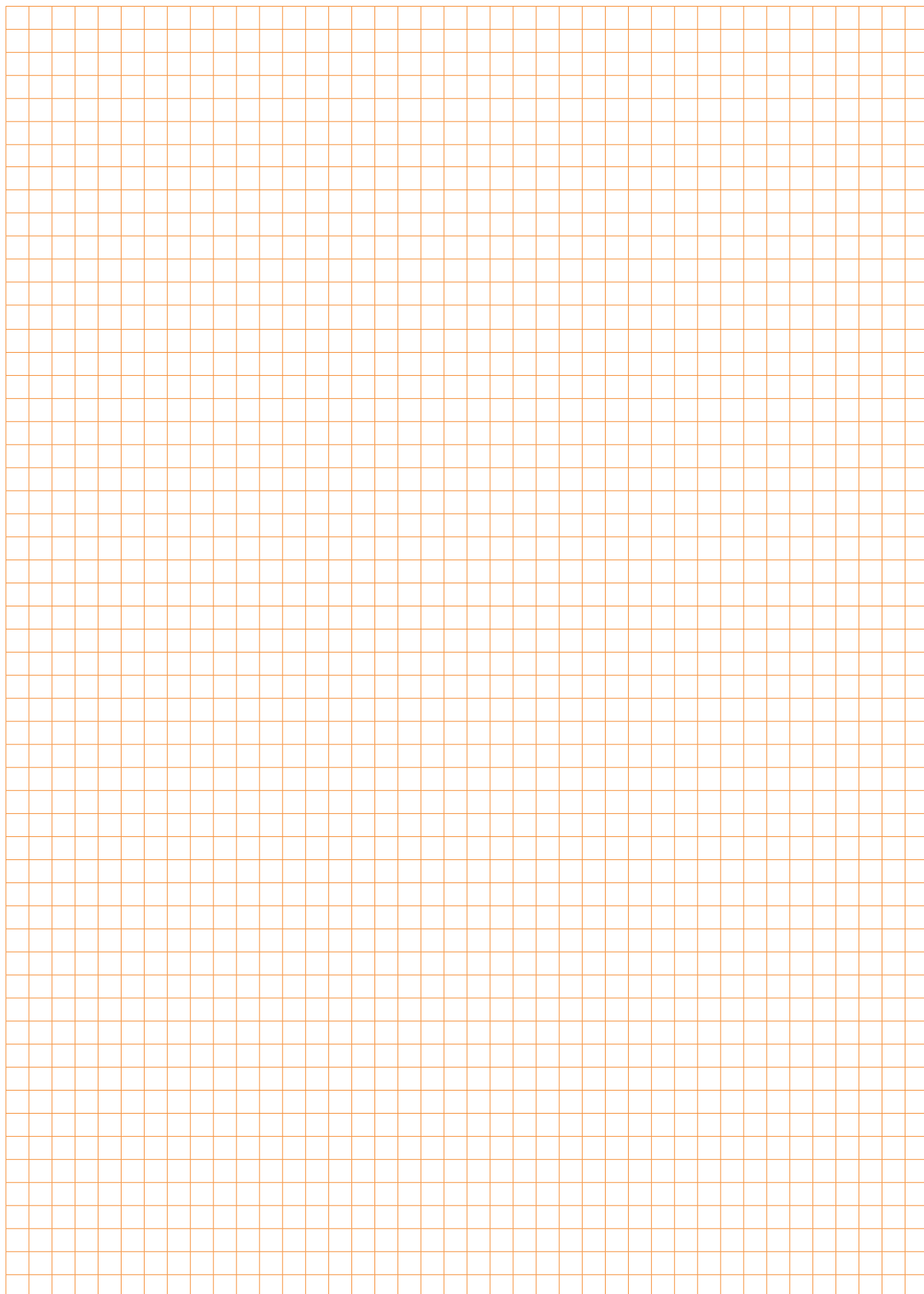
A comprehensive internal function test can be started using the mode switch which enables a test of the controller including the nominal voltage (AC 24 V). The three LEDs (status display) help in displaying the voltage level and the statuses.

Simulation of the control frequency

The connected actuators as well as the control sequences can be simulated independent of the room temperature using the dial for the setpoint setting.

ZTH-VAV / PC tool connection

The diagnostic sockets 1 and 2 help in PP communication with the connected Belimo MFT actuators or VAV-Compact controllers. This makes physical access to the field devices unnecessary.



Introduction

The control functions of the CRA24-B3(P) define the behaviour of the control outputs or influence the current setpoint.

The operation can be automated and the comfort and energy saving potential can be increased using the appropriate sensor system on the input side.

The relevant functions have been individually described below

We usually differentiate between two different control strategies that have been described below in more detail.

Function overview CRA24-B3(P)

Supply	AC 24 V / 50/60 Hz
Application	<ul style="list-style-type: none"> – Air volume or room temperature control in comfort zone – Internal temperature sensor (type NTC, power supply range 10 ... 45°C) – Setpoint (setting range 30 ... 70% air / 15 ... 36°C temperature)
Operation	<ul style="list-style-type: none"> – Mode selection switch: COMF – MIN – MAX – Mode indication LED: COMF – MIN – MAX – Setpoint adjustment rotary knob (CRA24-B3P hidden): 30 ... 70% air / ±3 K temperature
4 inputs	<ul style="list-style-type: none"> – Override kitchen – Override bathroom – Energy hold off (EHO) – External temperature sensor (type NTC 5 kΩ, function range 10 ... 45°C)
3 outputs	<ul style="list-style-type: none"> – 2 ... 10 V system output for supply air: Belimo VAV controller, damper actuator – 2 ... 10 V system output for exhaust air: Belimo VAV controller, damper actuator – 2-point (thermal actuator) / 3-point heating output
Functions	<ul style="list-style-type: none"> – Control characteristics: P – P band, can be switched – Control strategy can be switched (air volume / room temperature) – Air sequence can be switched (cooling / heating) – Room temperature monitoring (min and max) – Internal function test with nominal voltage test – Commissioning mode with output and sequence simulation – Diagnostics of VAV controllers using an integrated PC tool connection
Mounting	Surface mounting with flush-mounted or surface-mounted connection

Application documentation

A comprehensive documentation with specific applications has been provided for the CRA24-3(P) controller and this documentation is constantly updated.

Control strategy air volume

The air volume can be pre-selected and set to minimum, variable (dial: 30 ... 70 %) and maximum using the push-button and the rotary knob. This is especially suitable for applications requiring a defined air change. The heating output is not available.

Settings with ZTH-VAV

The operating volumetric flow setting \dot{V}_{\min} / \dot{V}_{\max} of the VAV controllers can be modified/checked with the help of the ZTH-VAV. Connection to diagnostic sockets 1 and 2.

Application with damper actuator instead of VAV controllers

Use of damper actuators is usually possible but it must still be taken into account that this application cannot detect and regulate pressure changes in the air ducting (pre-pressure-dependent operation).

Note

The MIN / MAX levels cannot be changed when using an -SR standard actuator (mode 0 ... 10 V), e.g. LM24A-SR!

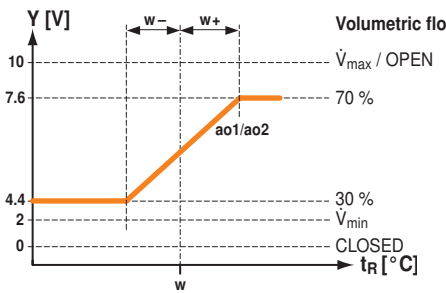
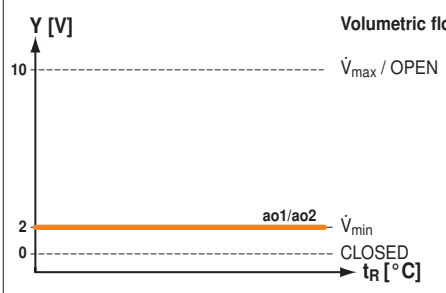
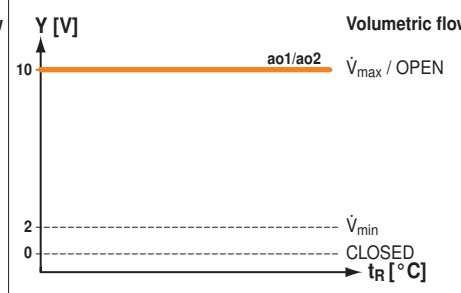
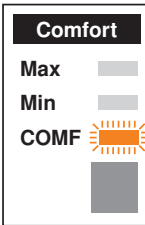
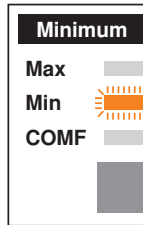
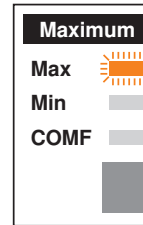
Type: LM24A-MF / NM24A-MF

The MIN- / MAX levels of the MF actuator can be programmed and then loaded in L/NM24A-MF using the Belimo PC-Tool.

Configuration

The "Air volume" control strategy is configured with the help of DIP switch 2 = OFF.

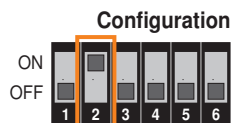


Operating mode COMF	Operating mode MIN	Operating mode MAX
<ul style="list-style-type: none"> The air volume can be set in the range of 30 ... 70% of the operating volume current range \dot{V}_{\min} ... \dot{V}_{\max} programmed at the VAV controller. Setting of the VAV controller (example): <ul style="list-style-type: none"> \dot{V}_{\min} 50 m³/h \dot{V}_{\max} 100 m³/h Setting range of the rotary knob: 65 ... 85 m³/h The heating valve is not supported by the air volume control strategy Air volume setting: <ul style="list-style-type: none"> CRA24-B3 Rotary knob on the controller front CRA24-B3P Potentiometer under the front cover 	<ul style="list-style-type: none"> The connected VAV controllers are set to the minimum air volume (\dot{V}_{\min}) set on the controller. The heating valve is not supported by the air volume control strategy 	<ul style="list-style-type: none"> The connected VAV controllers are set to the minimum air volume (\dot{V}_{\max}) set on the controller. The heating valve is not supported by the air volume control strategy <p>Reset MAX → COMF with DIP switch 4 (see page 12):</p> <ul style="list-style-type: none"> DIP switch 4 = OFF: Manual reset DIP switch 4 = ON: Automatic reset after one hour
		
		

Control strategy room temperature

The desired comfort temperature can be selected using the rotary knob. The room controller controls the air volumes as well as the heating valve on the basis of the set parameters.

The "Room temperature" control strategy is configured with the help of DIP switch 2 = ON.



Operating mode COMF	Operating mode MIN	Operating mode MAX
<ul style="list-style-type: none"> The temperature setpoint can be set between 15°C ... 36°C on the "Basic setpoint adjustment" potentiometer under the cover (operation level 2). Correction of the setpoint: <ul style="list-style-type: none"> CRA24-B3 over the rotary knob on the controller front CRA24-B3P potentiometer under the front cover The reference signal ao1/ao2 on the VAV controller depends on the selected sequence (cooling / heating). DIP switch 3: OFF = cooling / ON = heating The heating valve regulates the set setpoint. 	<ul style="list-style-type: none"> The connected VAV controllers are set to the minimum air volume (\dot{V}_{\min}) set on the controller. The heating valve regulates the set setpoint. 	<ul style="list-style-type: none"> The connected VAV controllers are set to the maximum air volume (\dot{V}_{\max}) set on the controller. The heating valve regulates the set setpoint. <p>Reset MAX → COMF with DIP switch 4 (see page 12):</p> <ul style="list-style-type: none"> DIP switch 4 = OFF: Manual reset DIP switch 4 = ON: Automatic reset after one hour
Variant for 2-point heating: DIP switch 6 = OFF	Variant for 2-point heating: DIP switch 6 = OFF	Variant for 2-point heating: DIP switch 6 = OFF
Variant for 3-point heating: DIP switch 6 = ON	Variant for 3-point heating: DIP switch 6 = ON	Variant for 3-point heating: DIP switch 6 = ON
<p>Comfort</p> <p>Max </p> <p>Min </p> <p>COMF </p>	<p>Minimum</p> <p>Max </p> <p>Min </p> <p>COMF </p>	<p>Maximum</p> <p>Max </p> <p>Min </p> <p>COMF </p>

Reset MAX → COMF



DIP switch 4 = OFF:

Reset from manually chosen operating mode MAX may be done via the mode switch on the front cover only.



DIP switch 4 = ON:

Reset from manually chosen operating mode MAX will be done automatically with one hour delay. During that time, the operating mode may be changed manually also.

Override functions

If several override functions are switched on, the one with the highest priority is activated.

**Priority 1: Frost
(Building protection)**

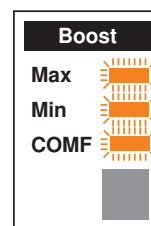
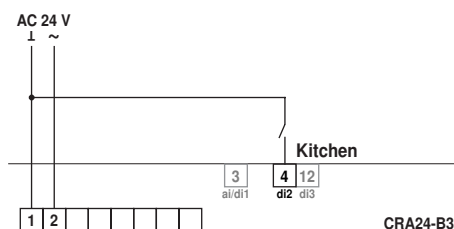
This function becomes active if the room temperature falls below 14°C room protection temperature (frost protection function).

Component	Air volume	Room temperature
Supply air (ao1)	100 % = \dot{V}_{\max}	100 % = \dot{V}_{\max}
Exhaust air (ao2)	100 % = \dot{V}_{\max}	100 % = \dot{V}_{\max}
Heating valve (ao3)	OPEN	OPEN

**Priority 2: Kitchen (di2)
(Chimney extractor system)**

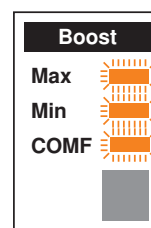
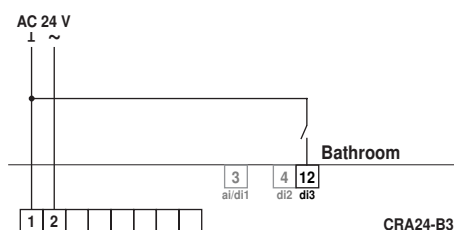
In order to minimise the pressure differences within rooms, the air balance can be regulated using the kitchen hood fan or the chimney extractor.

Component	Air volume	Room temperature
Supply air (ao1)	100 % = \dot{V}_{\max}	100 % = \dot{V}_{\max}
Exhaust air (ao2)	0 % = \dot{V}_{\min}	0 % = \dot{V}_{\min}
Heating valve (ao3)	No function	Control mode

**Priority 3: Bathroom (di3)**

In order to remove humid air or odours from the house, the VAV controllers / air control dampers can be switched to the maximum volume current via the light switch in the bathroom or a humidistat.

Component	Air volume	Room temperature
Supply air (ao1)	100 % = \dot{V}_{\max}	100 % = \dot{V}_{\max}
Exhaust air (ao2)	100 % = \dot{V}_{\max}	100 % = \dot{V}_{\max}
Heating valve (ao3)	No function	Control mode



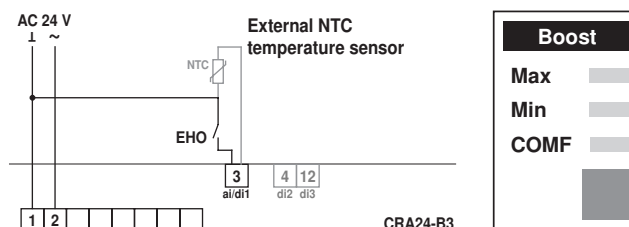
Override functions

(Continued)

Priority 4: Energy hold off (di1)

In order to prevent undesired energy consumption in the case of long periods of absence, the VAV controllers / air control dampers are closed and the heating unit is operated with a reduced setpoint.

Component	Air volume	Room temperature
Supply air (ao1)	CLOSED	CLOSED
Exhaust air (ao2)	CLOSED	CLOSED
Heating valve (ao3)	No function	Reduced control mode (setpoint – 2K offset)

Forced ventilation
Holiday mode

During the energy hold off, the system is switched on for 30 minutes three times a day. The start times are calculated by CRA24-B3 and cannot be changed.

Component	Air volume	Room temperature
Supply air (ao1)	100 % = \dot{V}_{\max}	100 % = \dot{V}_{\max}
Exhaust air (ao2)	100 % = \dot{V}_{\max}	100 % = \dot{V}_{\max}
Heating valve (ao3)	No function	Reduced temperature mode (setpoint – 2K offset)

Maximum temperature monitoring



The room temperature can be monitored to a maximum value of 28°C. This function must be enabled via DIP switch 5 = ON

Component	Air volume	Room temperature
Supply air (ao1)	100 % = \dot{V}_{\max}	100 % = \dot{V}_{\max}
Exhaust air (ao2)	100 % = \dot{V}_{\max}	100 % = \dot{V}_{\max}
Heating valve (ao3)	No function	CLOSED

External temperature sensor (ai1)

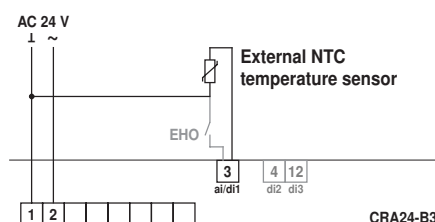
An external NTC temperature sensor can be connected to analog input ai1. Sensor type: NTC 5k (5 kΩ) e.g. Belimo TFK.

Typical applications

- Temperature measurement in the exhaust air duct for recording the average room temperature.
- More flexible positioning of the sensor for recording the room temperature

Note:

- The controller detects the connection of an external sensor automatically. Additional settings are not required.
- Using an energy hold off switch at the same time is possible but switching over to an internal sensor is necessary in such a case (also see "Energy hold off"). Due to this, the current room temperature is monitored for building protection.

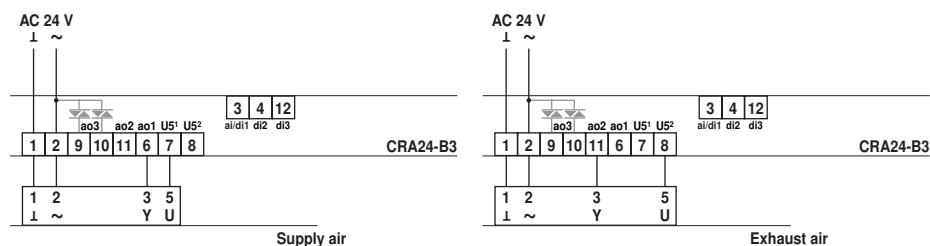


Analogue outputs

VAV controller connection

Due to the override function, it is mandatory to connect the supply and exhaust air control devices as follows:

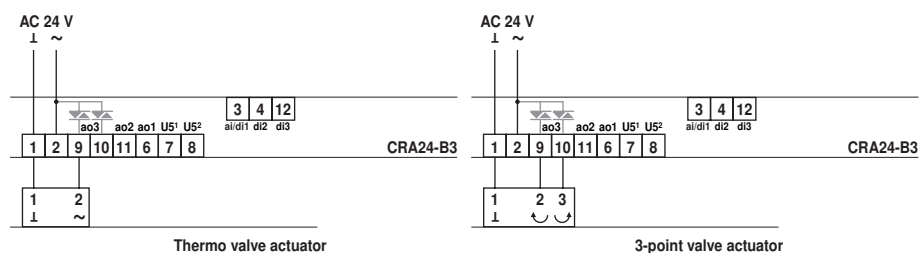
- Supply air: System output «ao1» (terminal 6), diagnostic connection «U5 / 1» (terminal 7)
- Exhaust air: System output «ao2» (terminal 11), diagnostic connection «U5 / 2» (terminal 8)

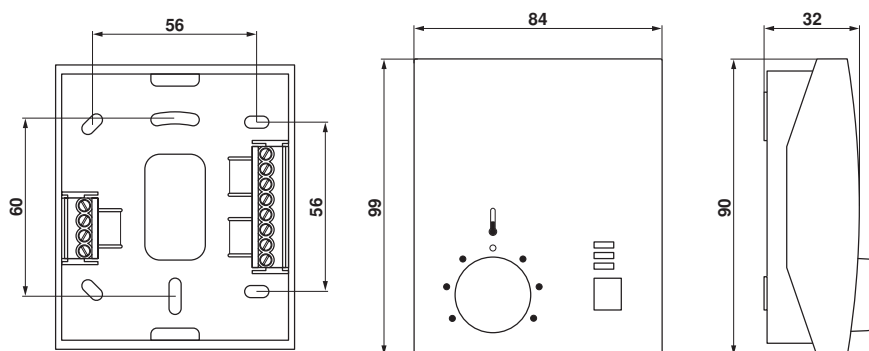


Heating valve connection



Heating valves can be controlled using a 2-point or a 3-point actuator. This selection is made using DIP switch 6. OFF = 2-point (thermo) / ON = 3-point



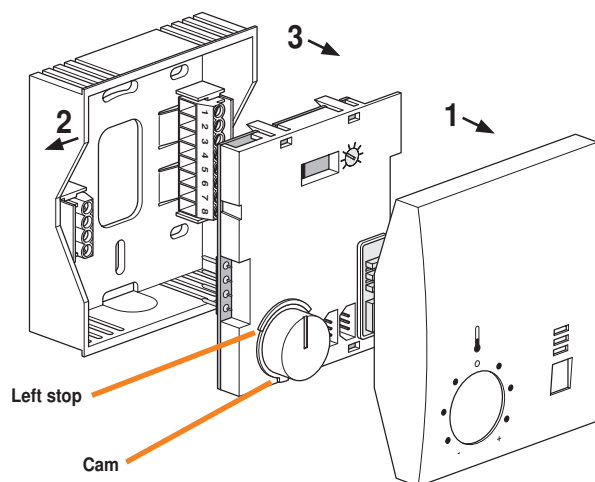
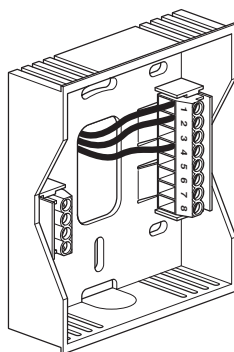
Dimensions [mm]

Mechanical installation

1. Remove the housing cover
2. Pull out slightly the wall of the housing to release the pcb.
3. Remove the PCB.

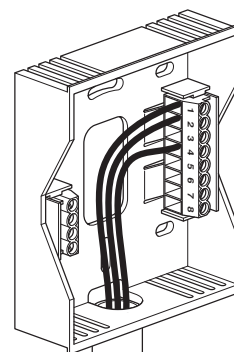
Rotary knob for setpoint adjustment

If the rotary knob has been removed proceed as follows:

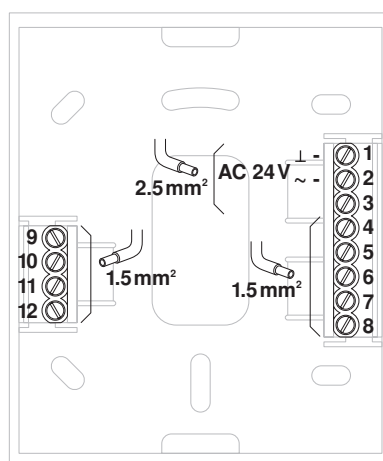
- a. Insert the rotary knob approximately half way and turn it clockwise as far as the stop.
- b. Remove the knob and align it so that the cam is flush with the left stop (see left).
- c. Insert the knob fully.


Electrical installation


Flush-mounted connection



Surface-mounted connection



Terminal connection 1 ... 12

Power supply design / wire sizing

**24 V supply
Wire sizing and cabling**

In addition to the actual wire sizing, attention must also be paid to the surrounding area and the cable routing. Signal cables must not be laid in the vicinity of load cables, objects liable to cause EMC interference etc. Paired or layer stranded cables improve immunity to interference.

The wire sizing and installation of the AC 24 V supply, the fuse protection, and the cables are dependent on the total operated load and local regulations. Account must be taken of the following performance data, including starting currents:

- Wire sizing values for room temperature controllers: 3 VA per CRA24-B3
- Wire sizing values for control devices, VAV controllers, damper actuators, valves etc. can be found in the latest data sheets and product information (www.belimo.eu)
- Other devices to be operated with the AC 24 V supply
- Reserve capacity for subsequent expansion, if planned

Analogue input connection ai1

The analogue input ai1 is used to connection an external NTC 5 k Ω temperature sensor. The sensor value is 5969 Ω at 21 °C. A change of 50 Ω corresponds to approximately 0.2 K in this range. The sensor cable constitutes a series resistance that must be added to the actual sensor value. Assuming a cable length of 15 m (2 x 15 = 30 m), the resistance of one 0.75 mm² Cu cable is approximately 0.7 Ω , in other words negligible. To prevent interference, however, the sensor cable should be a maximum of 20 m long.

Commissioning / Power on behaviour

Commissioning

1. Assemble the baseplate of the housing and connect the cables (see page 13)
2. Configure the DIP switches on the printed circuit board according to the required application.
3. Assemble the printed circuit board on the baseplate of the housing and then mount the housing cover (see page 13)
4. Switch on the nominal voltage AC 24 V
5. Optional: start the test and simulation mode (see below)

When the voltage is applied, the system starts operating normally in AUTO mode unless the test simulation mode is selected. The active operating status is determined primarily by the configuration of the DIP switches and the status of the inputs.

Power on behaviour

After power on of the voltage supply the output gets initialised as follows:

- ao1 = 0 V
- ao2 = 0 V
- ao3 = Closed (200 s)

Subsequently the controller switches automatically to the control mode.

Test and simulation mode

All controllers are supplied with two auxiliary programs for commissioning and servicing:

- Internal function test
- Control sequence simulation

Activating test and simulation mode

The test and simulation mode of CRA24-B3 controllers can be activated easily with the mode switch on the operator panel.

To activate test mode

1. Set the mode switch to MAX
 - The red LED (MAX status indication) lights up
2. Keep the mode switch pressed for ten seconds
 - The internal function test is activated (see below)

To activate simulation mode

3. Press the mode switch again briefly for approx. one second
 - The green LED (COMF status indication) flashes
 - Control sequence simulation is activated (see below)

Deactivating test and simulation mode

The test and simulation mode can be deactivated either by pressing the mode switch again for ten seconds or by interrupting the power supply. It is also deactivated automatically 15 minutes after the last user action (auto-reset).

Internal function test

The internal function test tests the nominal voltage that is connected to the controller (AC 24 V), in other words the complete electrical wiring system from the control cabinet to the controller. The three LEDs (status indication) indicate the voltage level (see below) and states during the test.

Note

Case B and C do not need further attention. In case A (<20 V) attention must be paid to the following points:

- Quality of the wiring and connections
- Cable length and diameter and the transformer sizing

Nominal voltage (AC 24 V)

LED (status indication)	Scenario A	Scenario B	Scenario C
MAX red	flash	flash	permanently on
MIN orange	flash	flash	permanently on
COMF green	permanently off	flash	permanently on
	<20 V	20 ... 22 V	>22 V

Simulation of the control frequency

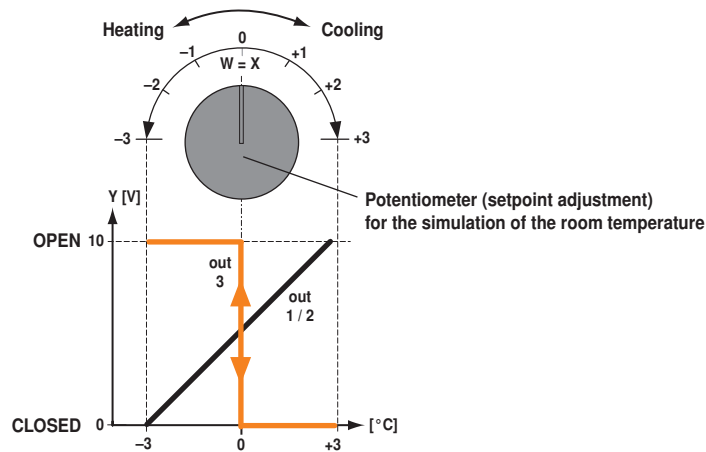
CRA24-B3

In the simulation mode, the connected actuators can be operated regardless of the room temperature.

The air volume (\dot{V}_{\min} and \dot{V}_{\max}) in the air systems and the maximum heating capacity in the water systems can thus be checked.

Notes

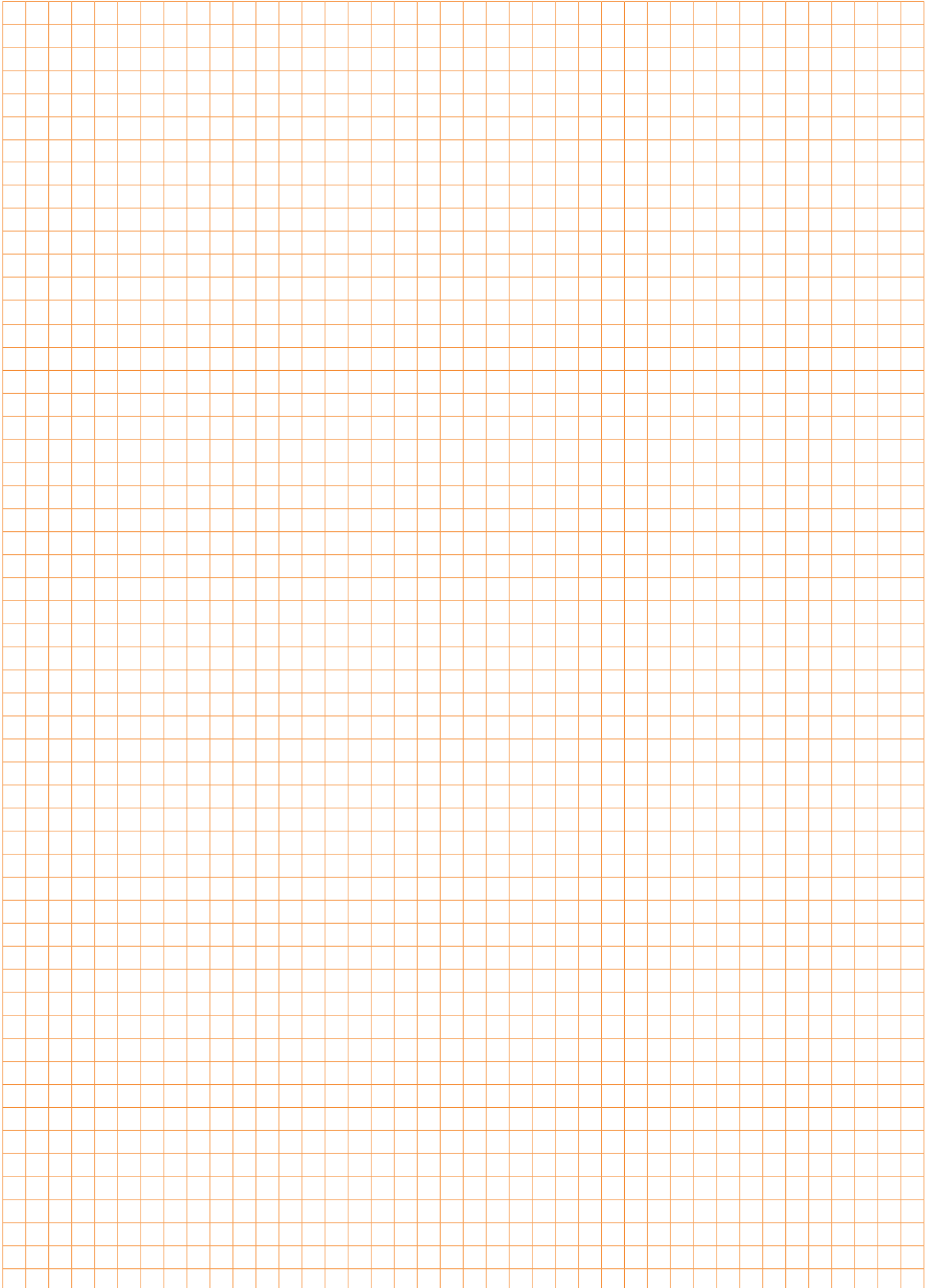
- The external control signals (di1, di2 and di3) are suppressed during the simulation.
- Due to the system-dependent attenuation of the setpoint potentiometer in the Simulation mode, the potentiometer may be adjusted only slowly.
- In the case of the CRA24-B3P controller, do not forget to reset the potentiometer to the original position after the simulation.
- The simulation mode automatically ends 15 minutes after the last manipulation (auto-reset).



Checking and setting the VAV controllers

The ZTH-VAV setting device or the Belimo PC-Tool is available for the testing and setting of the connected VAV controller.

The connection to the ZK1-VAV cable is established via the two diagnostic sockets under the front cover of CRA24-B3(P).



All inclusive.



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