

## Technical data

|  |   |
|--|---|
| Nominal voltage                            | AC 24 V 50/60 Hz  |
| Power supply range                         | AC 19.2...28.8 V  |
| Control characteristics                    | P   |
| – P-band heating / cooling                 | Selectable: 1.5 / 1.0 K or 3.0 / 2.0 K  |
| External temperature sensor (ai1)          | Type NTC, 5 kΩ, sensing range 10...45°C   |
| Heating setpoint                           | Range 15...36°C (default 21°C)  |
| – Energy hold off                          | Heating 15°C / cooling 40°C   |
| – Stand-by                                 | Heating –2 K / cooling +3 K   |
| Dead band                                  | 1 K   |
| Frost limit temperature                    | 10°C  |
| Operation (CR24-B.. only)                  |   |
| – Mode switch and status indication (LEDs) | AUTO (green) – ECO (orange) – MAX (red)   |
| – Rotary knob for setpoint adjustment      | ±3 K  |
| Inputs                                     | 2 x analog, 2 x digital   |
| – External temperature sensor (ai1)        | Type NTC, 5 kΩ, sensing range 10...45°C   |
| – External setpoint shift (ai2)            | 0...10 V corresponds to 0...10 K  |
| – Digital inputs (di1, di2)                | Contact rating 10 mA  |
| Output                                     | 1 x analog  |
| – VAV system output (ao1)                  | (0)2 ... 10 V, max. 5 mA  |
| Communication port for field devices       | 2 x PP (for PC-Tool, MFT remote control etc.)   |
| Housing                                    | Baseplate: NCS2005-R80B light gray (corresponds approx. to RAL 7035) / cover: RAL 9003 signal white |
| Connections                                | Terminal block 1... 3: 2.5 mm <sup>2</sup><br>Terminal block 4...12: 1.5 mm <sup>2</sup>            |
| Ambient conditions                         |   |
| – Operation                                | 0...+50°C / 20...90% rH (without condensation)  |
| – Transport and storage                    | –25...+70°C / 20...90% rH (without condensation)  |
| Standards                                  |   |
| – Protection class                         | III Safety extra-low voltage  |
| – Degree of protection                     | IP 30 to EN 60529   |
| – Mode of operation                        | Type 1 to EN 60730-1  |
| – Software class                           | A to EN 60730-1   |
| – EMC                                      | CE conformity to 89/336/EEC   |
| Dimensions (H x W x D)                     | 99 x 84 x 52 mm   |
| Weight                                     | 105 g   |



## Application

Temperature controllers for single room applications with one analog output. The analog output ao1 can be used in VAV applications to control one or more controllers. In change-over applications, the analog output ao1 can be changed over from cooling to heating mode via an input.

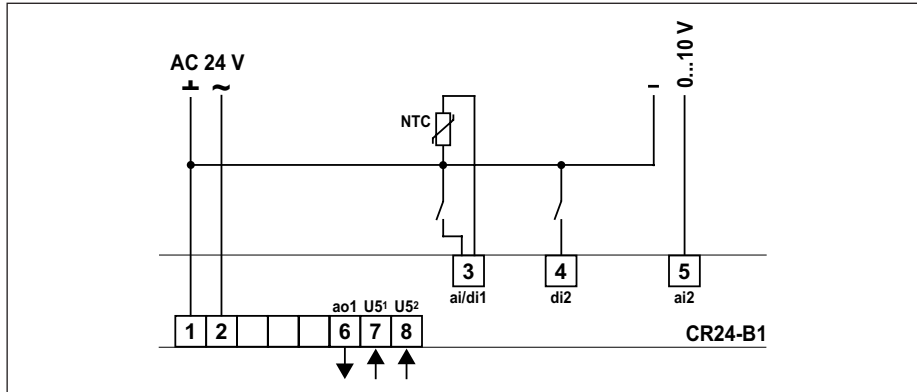
## Functions

- Energy hold off**  
 In energy saving mode, the room temperature is reduced to building protection level, i.e. either the heating setpoint is significantly reduced or the cooling setpoint is significantly increased, for instance in a room with an open window.
- Stand-by**  
 The room temperature is reduced to stand-by level, i.e. either the heating setpoint is slightly reduced or the cooling setpoint is slightly increased, for instance in a room that is temporarily unoccupied.
- Frost**  
 The frost protection function is activated if the actual room temperature falls below 10°C.
- Change-over**  
 Change-over heating or heating/cooling.
- External temperature sensor**  
 An external temperature sensor can be connected to the analog input ai1, for instance in order to measure the average room temperature in the exhaust air duct.
- External setpoint shift**  
 An external DC 0...10 V signal at the analog input ai2 can be used to shift the basic setpoint 0...10 K, for instance for the summer/winter compensation.

## Device variant

Type CR24-A1: same functionality as the CR24-B1 but without an operator panel.

## Wiring diagram



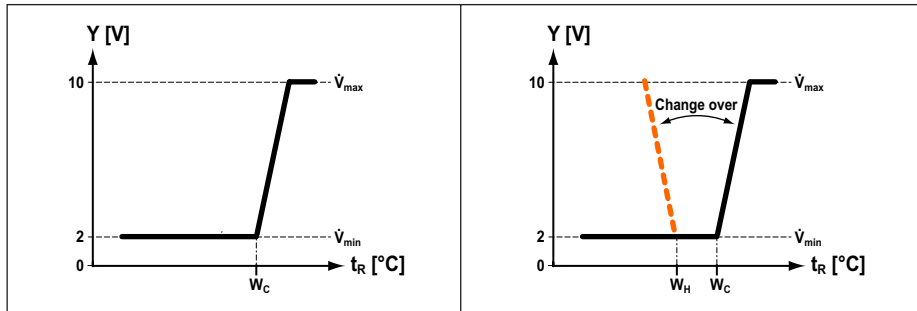
## Configuration



| DIP | Default settings   |                       |
|-----|--------------------|-----------------------|
| 1   | P-band normal      | P-band wide           |
| 2   | Input di2 Stand by | Input di2 Change over |

| Inputs |     |                             | Output |                          |   |
|--------|-----|-----------------------------|--------|--------------------------|---|
| 3      | ai1 | External temperature sensor | 6      | ao1                      | System output for Belimo VAV controller |
|        | di1 | Energy hold off             |        | <b>Other connections</b> |   |
| 4      | di2 | Stand by                    | 7      | PP1                      | Diagnostics socket 1                    |
| 5      | ai2 | External setpoint shift     | 8      | PP2                      | Diagnostics socket 2                    |

## Prinziple diagram



| Key        |  |                 |                     |
|------------|--|-----------------|---------------------|
| Y [V]      | Output voltage in Volt                 | $\dot{V}_{max}$ | Maximum volume flow |
| $t_R$ [°C] | Room temperature in degrees centigrade | $\dot{V}_{min}$ | Minimum volume flow |
| $W_H$      | Heating setpoint                       |                 |                     |
| $W_C$      | Cooling setpoint                       |                 |                     |