

POLYGYR[®]-Compact

Discharge Air Temperature Controller

RCM61.22

with two outputs for heating and cooling,
continuous, PI control, electronic, 24 V a.c.



Application

The RCM61.22 is used for the control of the discharge air temperature in smaller ventilating and air conditioning installations (by heating and cooling).

Application examples:

- Individual installations, e.g. kitchens, cloak-rooms, store-rooms, etc.
- Zone control in larger installations

The following units can be controlled:

- Actuator of the heating and cooling valve
- Air damper actuator
- Step controller or current valve for electric air heater battery
- Signal converter

The temperature controlled by the RCM61.22 can be shifted.

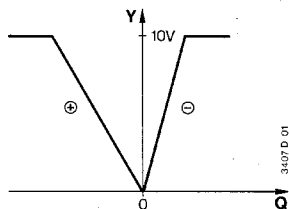
For example:

- By the outdoor temperature to obtain summer/winter compensation
- By a building automation system to obtain setpoint adjustment (fixed value shift)

Function

The RCM61.22 provides PI control. Its proportional band is adjustable. It compares the actual value with the setpoint and generates the corresponding control signal when a deviation occurs. The control signal is continuous and has a range of 0...10 V d.c.. When the control signal changes from 0...10 V, the correcting variable changes from 0...100%, i.e. there is a proportional relationship between the correcting variable and the control signal.

The adjusted Xp (proportional band) refers to heating. (Y1). The P band for cooling (Y2) is half as wide, thus making it possible to obtain the same control quality for both heating and cooling, although the control conditions are different (nearly the same plant gain with different correcting spans). Each control output generates a control signal of 0...10 V d.c.. The outputs are switched in sequence and their mode of operation is opposed, thus making it possible to provide sequence control of two actuators with different modes of operation.



Q Load
Y Signal voltage
⊕ Heating
⊖ Cooling

Compensation

The reference value is fed to the controller, thereby shifting the setpoint. There are two possibilities:

- Universal compensation over the whole setting range or over any part of the setting range with the help of the RZF61.100 universal shift controller (see Data Sheet 3472), or from a building automation system
- Setpoint adjustment within $\pm 10\%$ of the setting range; this is generally made from a building automation system.

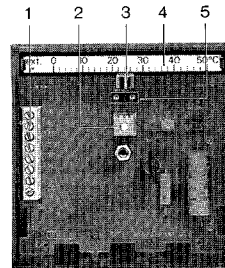
For more information on compensation refer to Data Sheet 3401 (Basic System Data) and «Application Advice».

Design Features

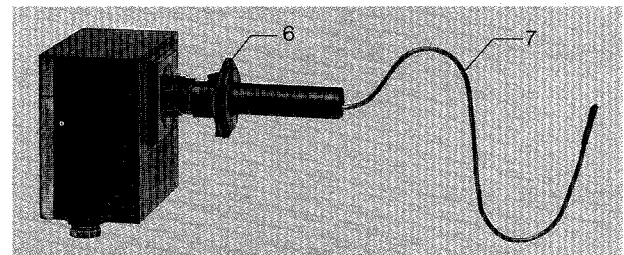
The RCM61.22 is an electronic controller of compact design with the electronics, setting scale and sensing element all combined in one unit.

Casing made of plastic, removable cover, fully active flexible sensing element, removable mounting flange with adjustable positions.

All setting devices and connecting terminals are contained in the case and are accessible only when the cover is removed.



- 1 Connecting terminals
- 2 Setting potentiometer for P band
- 3 Slider for setting the desired value
- 4 Setting scale
- 5 Service plug
- 6 Mounting flange
- 7 Flexible sensing element



The scale and the slider for setting the desired temperature can be seen through a window in the cover. The cable entries are in the form of knockout holes (Pg11).

After fitting the mounting flange to the duct wall, the controller can be installed in 7 different positions so that, with layers of insulation up to 70 mm, the controller casing will always be located outside the insulation.

The detector can be bent and thus be adapted to the shape of the duct. It senses the average temperature in the duct because the measuring element (Ni-wire) is sensitive over the total length of the flexible sensing element.

Combination of Units

Controlled units

The RCM61.22 can control various units which must have the following characteristics:

- Type of control 10 V d.c.
- Operating voltage 24 V a.c.

Remote setting units

The FZA21.11-t50 remote setting unit (see Data Sheet 3470) is used for the remote setting of the desired value.

Technical Data

Operating voltage	24 V a.c. $\pm 20\%$
Frequency	50...60 Hz
Power consumption	1 VA
Control signal	
Voltage	0...10 V d.c., continuous
Current	1 mA
Integral action time	2 min
Measuring element	LG-Ni 1000 Ω at 0°C
Time constant	30 s at 2 m/s
Setting ranges	
Setpoint	0...50°C
P band Xp	4...100% ($\approx 2...50$ K)
Protection standard of housing	IP30 to DIN 40050
Radio interference protection	N to VDE 0875, §4
Permiss. ambient temperature Operation	-10...+50°C
Transport and storage	-25...+65°C
Permissible ambient humidity Operation	G to DIN 40040
Transport and storage	F to DIN 40040
Vibration test	with 2 g, to DIN 40046, Sheet 8
Cable entry glands	Pg11
Connecting terminals	for 2 x 1,5 mm ² or 1 x 2,5 mm ²
Weight	0,250 kg

Ordering Specification

When ordering please use type reference: **RCM61.22**

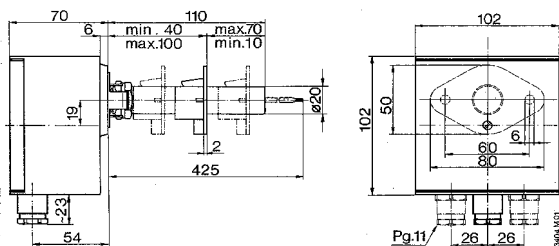
Application Advice

When the unit is switched off or the power supply interrupted (terminal G), the regulating unit is automatically run to the closed or no-load position.
 A transformer is required to generate the operating voltage of 24 V a.c.. When several units are connected, the size of the transformer is determined by adding up the power consumption of the individual units. For the designation of the connecting terminals refer to «Wiring Diagrams».
 For the permissible lengths of leads between the controller and the actuator refer to Data Sheet 3401 (Basic System Data). Every output of the RCM61.22 can control up to 10 units (actuators, converters, etc.) in parallel operation.
 If a compensation input is used, attention must be paid to its input signal:
 Terminal Z1: Input of universal compensation. The signal +5 V ± 10 V corresponds to $\pm 100\%$ of the theoretical setting range (for more information refer to Data Sheet 3472)
 Terminal Z3: Input for setpoint adjustment (fixed value shift). The signal +5 V ± 5 V corresponds to $\pm 10\%$ of the theoretical setting range

Mounting Advice

Mounting location:
 - After the supply air fan, if the latter is mounted after the last air handling unit
 - Otherwise after the air handling unit, with a clearance of at least 0,5 m
 The flexible sensing element should be positioned diagonally in the duct, but must not be in contact with the duct wall.
 Mounting instructions are supplied with the unit.

Dimensions



Dimensions in mm

Dimensions in mm

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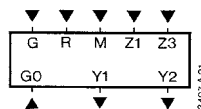
Commissioning Advice

When commissioning the installation, the wiring must be checked. To facilitate commissioning, the controller can be operated as a P controller with the help of a service plug. The correct operation of the regulating units can be checked by setting the slider to its limit positions.
 The factory-set P band Xp normally gives good control results. If readjustment is required, the following must be noted:
 - In case of instability: Xp must be increased
 - In case of overstability: Xp must be decreased
 If auxiliary control functions (e.g. limitation, compensation) are fed to the controller, the controlled value must first be adjusted, with no influence from the auxiliary control functions. To do this, the terminals for the auxiliary units must be disconnected. The auxiliary values are adjusted only after the controlled value is adjusted.
 If a remote setting unit is used, the slider for setting the desired temperature must be set to «ext».
 For detailed commissioning instructions refer to C3405.

Wiring Diagrams

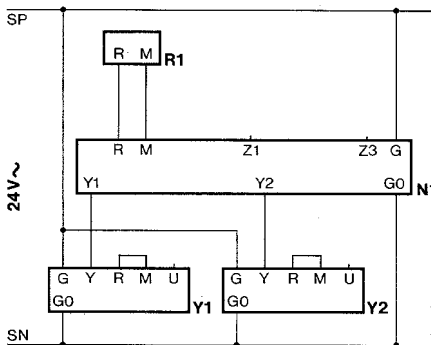
The following wiring diagram only shows the fundamental layout. It does not contain the switch off functions and other switching functions which can vary from one plant to the other according to the operating conditions.

Connecting terminals



G, G0	Operating voltage 24 V a.c. G System potential (SP) G0 System neutral (SN)
M	Measuring neutral
R	Setpoint signal
Y1	Control signal 0...10 V d.c. for \oplus (heating)
Y2	Control signal 0...10 V d.c. for \ominus (cooling)
Z1	Reference signal +5 V ± 10 V
Z3	Reference signal +5 V ± 5 V

Basic connections



N1	RCM61.22 discharge air temperature controller
R1	FZA21.11-150 remote setting unit
Y1	Actuator for \oplus (heating)
Y2	Actuator for \ominus (cooling)