SIEMENS

Room Temperature Controller RCC30
for four-pipe fan coil units

Outputs for on / off valve actuators
Outputs for three-speed fan
Control depending on room or return air temperature
Operating modes: normal, energy saving and frost protection or OFF
Operating mode changeover input for remote control
Selectable control parameters
Operating voltage AC 230 V

Use

Typical use:

- Control of the room temperature in individual rooms that are heated or cooled with four-pipe fan coil units.
- For opening or closing a valve
- for switching a three-speed fan.

Functions

The controller acquires the room temperature with its integrated sensor or external room temperature sensor (QAA32) or external return air temperature sensor (QAH11.1) - if used - and maintains the setpoint by delivering control commands to the 2-point-valve.
The switching differential is adjustable. It can be 1 or 4 K in heating mode and 0.5 or 2 K in cooling mode.

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Fan operation

The fan is switched to the selected speed via control output Q1, Q2 or Q3.

When the function "Temperature-dependent fan control" is activated (can be selected with DIP switch no.1), the fan is switched on / off depending on the temperature, that is, together with the valve.

It is switched off by

- leaving the heating or cooling sequence, provided the function "Temperature-dependent fan control " is activated, or
- manually changing to standby $\bigcirc$, provided plant conditions do not call for frost protection mode, or
- activating an external operating mode changeover switch, provided plant conditions do not call for energy saving or frost protection mode, or
- turning the controller's power supply off.

Heating mode

ON

The heating valve receives the **OPEN** command via control output Y11 when

1. the measured room temperature lies by half the switching differential below the setpoint, and
2. the heating valve has been fully closed for more than one minute.

OFF

The heating valve receives the **CLOSE** command via control output Y11 when

1. the measured room temperature lies by half the switching differential above the setpoint, and
2. the heating valve has been fully open for more than one minute.
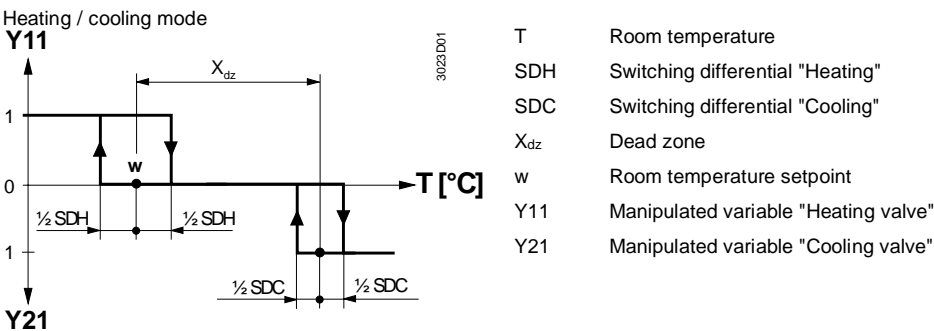
Cooling mode

ON

The cooling valve receives the **OPEN** command via control output Y21 when

1. the measured room temperature lies by half the switching differential plus the dead zone above the setpoint ($x \geq w + x_{dz} + \frac{1}{2}$ SDC) and
2. the cooling valve has been closed for more than one minute.

OFF

The cooling valve receives the **CLOSE** command via control output Y21 when

1. the measured room temperature lies by half the switching differential plus the dead zone below the setpoint ($x > w + x_{dz} - \frac{1}{2}$ SDC) and
2. the cooling valve has been open for more than one minute.

Heating / cooling mode

T	Room temperature
SDH	Switching differential "Heating"
SDC	Switching differential "Cooling"
X_{dz}	Dead zone
w	Room temperature setpoint
Y11	Manipulated variable "Heating valve"
Y21	Manipulated variable "Cooling valve"

Return air temperature

The RCC30 provides control either depending on the measured room temperature or depending on the fan coil unit's return air temperature. Changeover is automatic if a QAH11.1 cable temperature sensor is connected to the device.

Energy saver

The room temperature setpoint can be limited in increments of 1 K by making use of the minimum and maximum limitation facility. Arbitrary setpoint readjustments can thus be prevented.

Operating modes

The following operating modes are available:

Normal operation

Heating or cooling mode with automatic changeover and with manually selected fan speed III, II or I. In normal operation, the controller maintains the adjusted setpoint in heating mode and, in cooling mode, a temperature level represented by the setpoint plus the dead zone.

Frost protection mode

The frost protection function is activated only when DIP switch no.4 is set to OFF. Frost protection mode can be activated either

- by manually switching to standby (⏻)
- by activating the external operating mode changeover switch, provided DIP switch no.2 is set to OFF

If the room temperature falls below 8 °C, the controller will automatically switch to frost protection mode. In that case, the heating valve opens and the fan operates at the selected speed. If the operating mode selector is in position standby (⏻), the fan will operate at speed I. The room temperature is maintained at a setpoint of 8 °C and the setpoint adjusted by the user will be ignored.
If frost protection mode is locked (DIP switch no.4 in position ON), standby is locked also, which means that the controller will not switch to standby but to OFF.

Energy saving mode

In energy saving mode, the setpoint of heating is 16 °C and the setpoint of cooling 28 °C, independent of the position of the setpoint knob. This operating mode will be activated when input D1 for operating mode changeover is active and DIP switch no.2 is set to ON.

Operating mode changeover switch

A changeover switch can be connected to status input D1-GND. When the switch closes its contact (caused by an open window, for instance), the operating mode will change from normal operation to energy saving mode (provided DIP switch no.2 is set to ON), or from normal operation to standby (provided DIP switch no.2 is set to OFF). If the room temperature falls below 8 °C and if DIP switch no.4 is set to OFF, frost protection mode will become active.
The operating action of the switch (N.C. or N.O.) can be selected.

Ordering

When ordering, please give name and type reference.

The QAH11.1 temperature sensor (used as a return air temperature sensor) and zone valves are to be ordered as separate items.

Equipment combinations

Type of unit	Type reference	Data sheet[*]
Temperature sensor	**QAH11.1**	1840
Room sensor	**QAA32**	1747
Motoric on/off actuator	**SFA21...**	4863
Thermal actuator (for radiator valve)	**STA21...**	4893
Thermal actuator (for small valve 2,5 mm)	**STP21...**	4878

[*] The documents can be downloaded from http://siemens.com/bt/download.

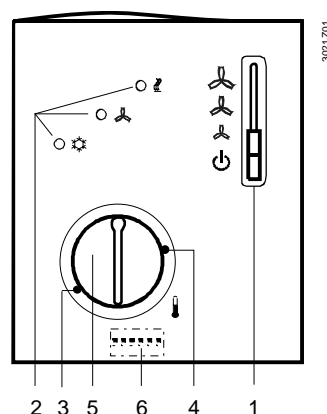The unit consists of two parts:

- A plastic housing which accommodates the electronics, the operating elements and the built-in room temperature sensor
- A mounting base

The housing engages in the mounting base and snaps on.

The base carries the screw terminals.

The DIP switches are located at the rear of the housing.

Setting and operating elements

Legend

1. Operating mode selector
   (standby ⏻, heating or cooling mode with manual selection of fan speed)
2. LEDs for indicating heating mode, cooling mode and fan operation
3. Setting facility for minimum setpoint limitation
   (in increments of 1 K)
4. Setting facility for maximum setpoint limitation
   (in increments of 1 K)
5. Room temperature setpoint knob
6. Set of DIP switches

| DIP switch no.	Meaning	Position ON	Position OFF
1	Fan control	Fan control is temperature-dependent in all operating modes	Fan control in normal operation is tem-perature- independent [1]
2	Operating mode changeo-ver via external switch	Changeover between normal operation and energy saving mode	Changeover between normal operation and standby [1]
3	Operating action of switch for external operating mode changeover	Changeover activated when contact of switch is closed (N.O.) [1]	Changeover activated when contact of switch is open (N.C.)
4	Standby	Frost protection function not enabled	Frost protection function enabled [1]
5	Switching differential	1 K in heating mode [1] 0.5 K in cooling mode [1]	4 K in heating mode 2 K in cooling mode
6	Dead zone in normal operation	2 K [1]	5 K

[1] Factory setting

4/8

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Accessories

Description	Type reference
Adapter plate 120 x 120 mm for 4" x 4" conduit boxes	ARG70
Adapter plate 96 x 120 mm for 2" x 4" conduit boxes	ARG70.1
Adapter plate for surface wiring 112x130 mm	ARG70.2

Engineering notes

Mounting, installation and commissioning notes

Mounting location: on the wall or inside the fan coil unit. Not in niches or bookshelves, not behind curtains, above or near heat sources and not exposed to direct solar radiation. Mounting height is about 1.5 m above the floor. The connecting wires can be run to the controller from a recessed conduit box.
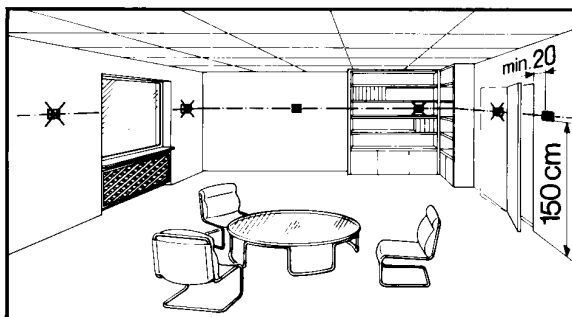
Check the settings of the DIP switches no.1 through no.6 and change them if required. If setpoint limitation is required, use the minimum and maximum limitation facility (energy saver).

After applying power, the controller makes a reset during which the fan LED flashes, indicating that the reset has been correctly made. This takes about 3 seconds. Then, the controller will be ready to operate and the LED stops flashing,

⚠ • The cables used must satisfy the insulation requirements with regard to mains potential.

• Sensor input B1-M carries mains potential. If the sensor's cables must be extended, the cables used must be suited for mains voltage

⚠ **Warning!**
No internal line protection for supply lines to external consumers (Q1, Q2, Q3, Y11, Y12)
Risk of fire and injury due to short-circuits!
• Adapt the line diameters as per local regulations to the rated value of the installed overcurrent protection device.

The controller is supplied with Mounting Instructions.

Disposal

The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

• Dispose of the device through channels provided for this purpose.

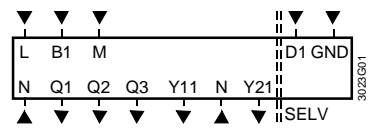• Comply with all local and currently applicable laws and regulations.

Technical data

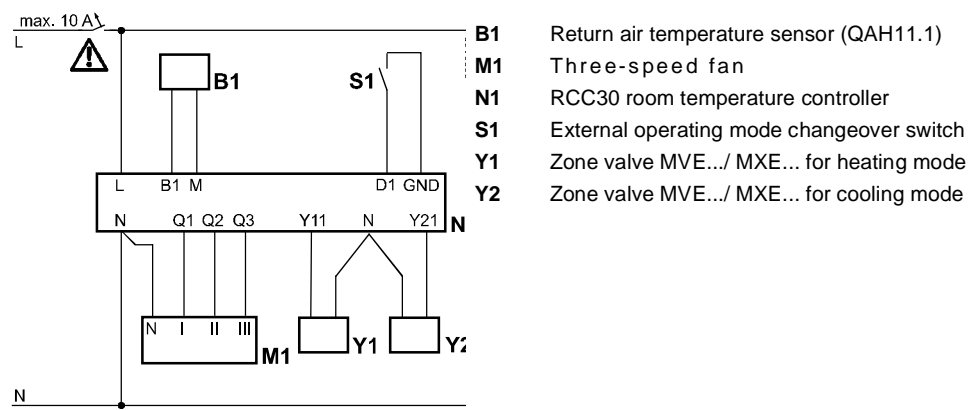|		
⚠ Power supply	Operating voltage	AC 230 V +10/-15 %
	Frequency	50/60 Hz
	Power consumption	max. 8 VA
⚡	**No internal fuse** External preliminary protection with max. C 10 A circuit breaker in the supply line required under all circumstances	
	Control outputs Q1, Q2, Q3	AC 230 V
	Rating	max. 600 VA
	Control output Y11, Y21 (N.O. contacts)	AC 230 V
	Rating	max. 300 VA
	Signal input B1 for return air sensor	QAH11.1, Safety class II NTC resistor 3kΩ at 25°C
	Status input D1 and GND	
	Contact sensing	SELV DC 6-15 V / 3-6 mA
	Insulation against mains	4 kV
	Perm. cable length with copper cable 1.5 mm^2	
	for connection to terminals B1, B2 and D1	80 m
Operational data	Setpoint setting range	8...30 °C
	Max. control deviation at 25 °C	max. ±0.7 K
	Switching differential in heating mode SDH (selectable)	1 K or 4 K
	Switching differential in cooling mode SDC (selectable)	0.5 K or 2 K
	Dead zone in normal operation	2 K or 5 K
	Setpoint «Energy saving mode ☾», heating	16 °C
	Setpoint « Energy saving mode ☾», cooling	28 °C
	Setpoint «Standby ⏻»	8 °C
Environmental conditions	Operation	to IEC 60721-3-3
	Climatic conditions	class 3K5
	Temperature	0...+50 °C
	Humidity	<95 % r.h.
	Transport	to IEC 60721-3-2
	Climatic conditions	class 2K3
	Temperature	−25...+70 °C
	Humidity	<95 % r.h.
	Mechanical conditions	class 2M2
	Storage	to IEC 60721-3-1
	Climatic conditions	class 1K3
	Temperature	−25...+70 °C
	Humidity	<95 % r.h.
Norms and standards	EU Conformity (CE)	CE1T3020xx [*)
	RCM Conformity	CE1T3020en_C1 [*)
	Safety class	II to EN 60 730-1
	Pollution class	normal
	Degree of protection of housing	IP30 to EN 60 529
Environmental compatibility	The product environmental declaration CE1E3020[*) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).	

[*) The documents can be downloaded from http://siemens.com/bt/download.

General	Connection terminals	Use solid wires or prepared stranded wires.
		$2 \times$ 0.4-1.5 mm^2 or $1 \times$ 2.5 mm^2
	Weight	0.23 kg
	Colour of housing front	White, NCS S 0502-G (RAL9003)

Connection terminals

L, N	Operating voltage AC 230 V
B1	Status input "Return air temperature sensor"
M	Measuring neutral "Return air temperature sensor"
D1, GND	Status input for potential-free operating mode changeover switch (operating action can be selected)
Q1	Control output "Fan speed I", AC 230 V
Q2	Control output "Fan speed II", AC 230 V
Q3	Control output "Fan speed III'", AC 230 V
Y11	Control output "'Valve", AC 230 V
Y21	Control output "Valve", AC 230 V

Connection diagram

B1	Return air temperature sensor (QAH11.1)
M1	Three-speed fan
N1	RCC30 room temperature controller
S1	External operating mode changeover switch
Y1	Zone valve MVE.../ MXE... for heating mode
Y2	Zone valve MVE.../ MXE... for cooling mode

Dimensions

unit

baseplate

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