Digital fan coil 2- and 4-pipe P+I controller

RTA05

Description

The RTA05 controller is designed to control fan coil in heating and cooling systems. RTA05 controls heating and/or cooling valves, fan speeds and electric resistance with 2 or 4-pipe fan coil. The proportional + integral (P + I) action available ensures accurate temperature control in all operating conditions.
The controller can be mounted on the wall or on the fan coil frame using the optional remote air sensor.
In 2-pipe systems it is possible to activate the summer/winter changeover by a switching contact or a sensor mounted on the pipe at the fan coil inlet.
The controller provides two pre-set levels for room temperature control: Comfort and Economy. The transition between the two levels can be directly selected on the room device or via a digital input.
The room sensor is located inside the controller and can be replaced by an optional remote sensor.
Available commands: setpoint adjustment knob, Comfort / Economy mode setting button, summer/winter changeover push bottom, manual fan speed selector and power switch off.

Technical specifications

- 2 and 4 pipes fan coil applications
- Proportional + integral digital controller
- 3 fan speed control
- Special sequence for electrical resistance control
- Sequence for floor heating and fan coil systems
- ON-OFF or PWM control action for actuators
- Digital inputs for water thermostat, summer/winter switching, economy reduction, window
- Analog input for water temperature sensor, remote room temperature sensor
- Output voltage for valves 230 V AC, fan motor 230 V AC
- Power supply: 230 Vac, 50/60 Hz
- CE certification

Inputs and Outputs

Digital Inputs

Presence contact or time program:
The contact open indicates the presence in the room (occupied room) and activates the set point on Comfort mode.

Window:
The contact open indicates the closed window and normal operation. The closing of the contact indicates the opening of the window and the changeover to antifrost operation. This causes valves closure and fan stop. The frost protection activates an ambient set point of 4°C.

Summer / Winter switchover:
The contact close indicates the presence of hot water in the piping. This causes switching to winter operation. Summer/winter switching can also be carried out by using a temperature sensor connected to the M11-M12 terminals.

Analog Inputs

Air temperature sensor:
This sensor is normally positioned on the fancoil return air and has priority on the controller‘s internal sensor.

Water temperature sensor:
If the sensor is present then activate by parameter 8 setting to default on „Without sensor“.
This sensor can be used for summer/winter switching as for fan operation and as well for both functions.

Summer/winter switch:
The sensor detects the water temperature at the fancoil. If the water temperature falls below the value set in parameter 14, summer operation is activated. If the water temperature rises above the value set in parameter 15, winter operation is activated.
If the water temperature is stable between the values set in parameters 14 and 15, the controller is set to OFF and switches to antifreeze protection.

Fan operation approval:
In 2- or 4-pipe-systems the sensor is positioned on the return piping after the heating battery. This gives approval to the fan operation.
With the parameters 14 and 15 the temperature approval values for fan operation can be set.

Sensor set for both functions: In 2-pipe fancoil systems the sensor detects the water temperature and allows summer/winter change-over. The fan operation is switched on with a delay that can be set by parameter 22 (Default value: 120 sec).

Analogue and digital outputs

Fan:
3 speed fan control. Output 230 V AC, 50 Hz max 1,2 (1) A.

Actuator heating valve:
Output 230 V AC 0,4 A suitable for controlling max 4 thermal actuators

Actuator cooling valve:
Output 230 V AC 0,4 A suitable for controlling max 4 thermal actuators .

Electrical resistance:
Auxiliary heating: (connection to the auxiliary output) ON-OFF output, in sequence with the heating valve or operation in sequence heating in winter and as primary stage in summer. Output at 230 V AC, 0.8 A.

Technical features

Control range		10…30°C	
Power supply		230 V AC, 50/60 Hz	
Outputs (hot and cold water)		PWM	
		On-Off	
Output fan		3 speed output, 230 V AC, max 1,25 A	
Knob and selectors			
	Temperature levels	Comfort / Economy	Digital input
	Working mode	Summer/Winter	Digital or analog input
	Fan	Auto-0-1-2-3	5-position selector
	Set point	Temperature: 10…30°C	Knob
Analogue Inputs			
	Room Temperature	Return air sensor (remote)	NTC10K
	Water Temperature	Contact or immersion sensor	NTC10K
Digital Inputs		Fan approval / summer/winter switching	
		Window open	
		Presence / time program	
Proportional band		2 K	
Neutral zone		From 0 to 4 K	
		2-pipes system	
		4-pipes system	
		2-pipes system with auxiliary output	
Housing		Single housing	
Protection class		IP30	
Working temperature		0...45°C	
Storage temperature		-10...+50°C	
Working humidity		20...80% RH, non condensing	

Table of 1st level parameters
The parameters below are those that can be directly modified by the controller.

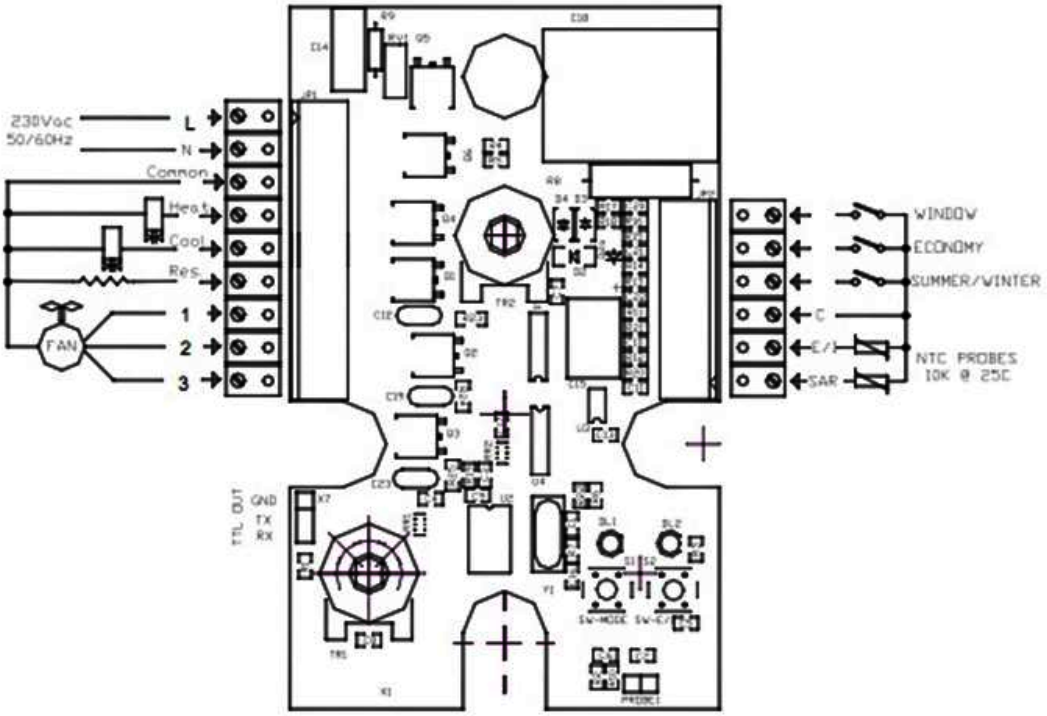
Knob position SEL 0	Parameter	Parameter to set	Parameter description	Default value SEL 1 AUTO	Switch position SEL 1 OFF	Switch position SEL 1 1	Switch position SEL 1 2	Switch position SEL 1 3
10	1	Comfort set point range	Min. and max. values for set point temperature	10 - 30	12 - 28	13 - 27	14 - 26	15 - 25
12	2	Dead band	Defines the dead band	4 K	3 K	2 K	1 K	0 K
14	3	Plant type	Type of system	2-pipe	4-pipe	2-pipe with aux. output as primary	2-pipe with aux. output as auxiliary	2 pipes s/w + electrical resistance primary in summer
16	4	Fan	Defines the fan operating mode in the dead band	thermostatic mode	OFF in cooling mode ON in heating mode	OFF in heating mode ON in cooling mode		
18	5	Output type	Defines the type of control output. Depends on which type of actuator is used	ON-OFF	PWM			
20	6	Window contact	Defines if the window contact is normally open or normally closed	Active = CONTACT OPEN i.e. contact open = window close	Active = CONTACT CLOSE i.e. contact open = window open			
22	7	Destratification	Enable or disable the destratification function	Disabled	Enabled			
24	8	Function of water temperture sensor	Defines the function of the water temperature sensor	s/w switch more fan consent	s/w changeover		No sensor used	
26	9	s/w switching	Defines s/w switching mode	Contact or water temperature sensor NTC 10K		From controller		
28	10	Offset detection room sensor	Changes the reading of the temperature sensor with an offset	0	+ 1 K	- 1 K	+ 2 K	- 2 K
30	11	RESET	Reset all the default values		Set to zero the maintenance hours of the filter		Resets all parameters to default values	

Table of 2nd level parameters
The parameters below are those that can be modified by factory only.

No.	Parameter to configure	Description	Default value	Range	Notes
12	Proportional band	Used to set the proportional band field	2	1...5 K	
13	Temperature reduction “Economy”	Used to set the reduction value (in winter) or increase (in summer) for economy mode	2	1...10°C	
14	Fan approval temperature in winter	Sets the permitted fan operation temperature in winter or s/w switching temperature if parameter 9 = sensor / contact	38	20...60°C	
15	Fan approval temperature in summer	Sets the permitted fan operation temperature in summer or s/w switching temperature if parameter 9 = sensor / contact	15	5...25°C	
16	Frost protection	Room temperature below which the frost protection function is activated	4	0...10°C	
17	Report dirty filter	Value parameter K	6	0 (disabled) 1...20 K	X300 HH
18	Time range for de-cyclization cycle	Set the time between two deactivation cycles. Note: it only applies the cycle is activated with parameter # 8	15	1...60 min	
19	Time of destratification	Sets the fan activation time during the deactivation cycle	1	1...10 min	
20	Fan start delay in heating	Sets the fan start delay time after opening the heating valve	120	0...30 sec	
21	Valve maintenance	Activates the periodic opening of the valves to prevent clogging	Not activated	Activated / not activated	
22	Fan start delay with primary electrical resistance	Sets the fan start delay time with primary electrical resistance	0	0...60 sec	
23	Fan delay stop with electrical resistance	Sets the delay at stopping the fan after stopping the electrical resistance	1	1...10 min	
24	Proportional band value for insertion of 1st fan speed	Sets the value of the proportional band to which the fan is switched to 1st speed	0 %	0...100 %	
25	Proportional band value for insertion of 2nd fan speed	Sets the value of the proportional band to which the fan is switched to 2nd speed	50 %	0...100 %	always > speed 1
26	Proportional band value for insertion of 3rd fan speed	Sets the value of the proportional band to which the fan is switched to 3rd speed	90 %	0...100 %	always > speed 2

RTA05

Electrical wiring



Dimensions