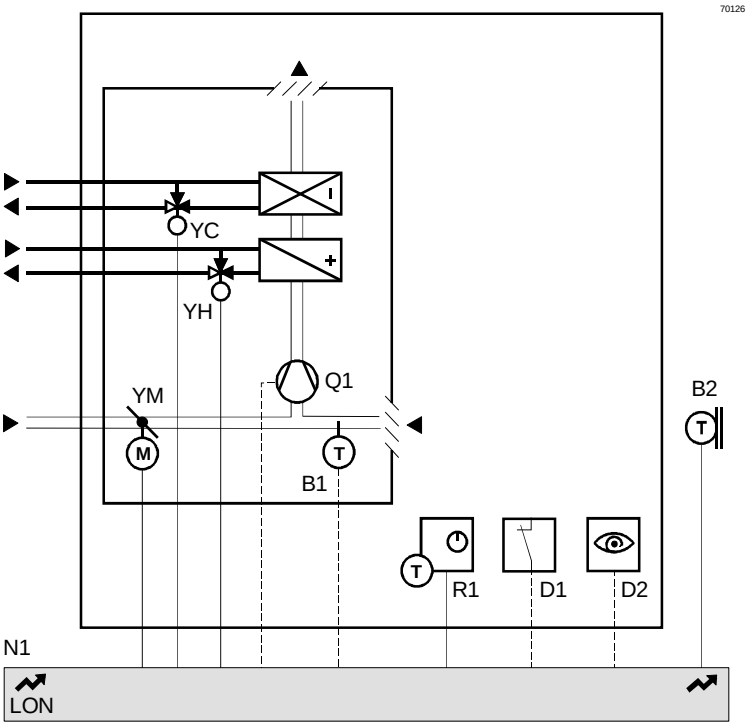
Fan coil with four-pipe system and outside air damper

FNC12

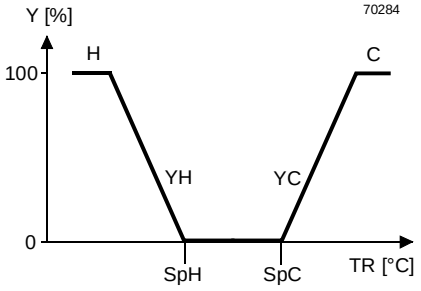
- **Heating and cooling with LTHW and CHW resp.**
- **Modulating control of heating and cooling valve**
- **Outside air damper for supply of outside air**
- **Automatic or manual fan control**

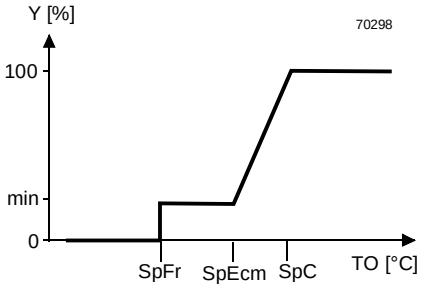
Plant diagram

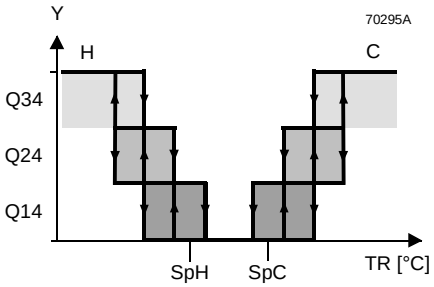


N1	Room temperature controller
R1	Room unit with temp. sensor
B1	Return air sensor
B2	Outside-air temperature sensor via LON bus
D1	Window switch
D2	Occupancy sensor
Q1	Fan (1 ... 3-speed)
YH	Heating valve
YC	Cooling valve
YM	Outside air damper

Operating diagrams







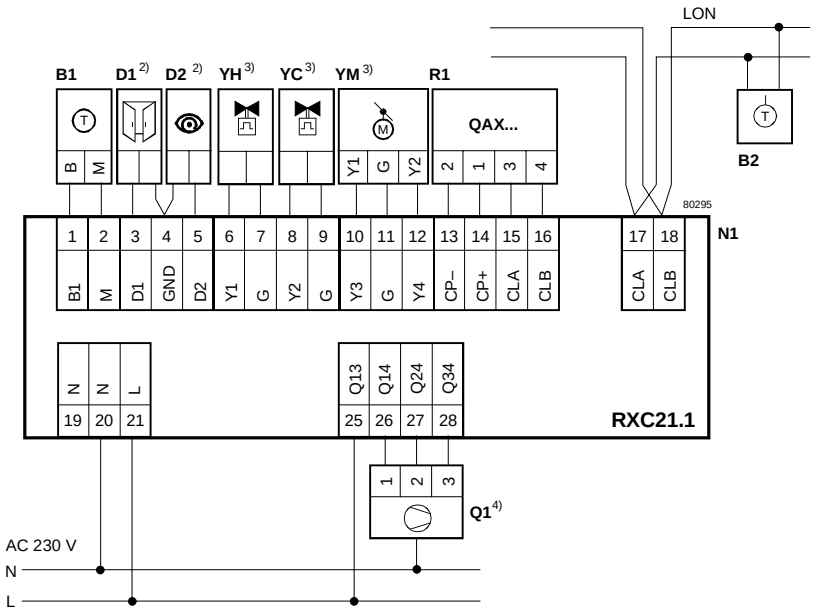
Y	Output signal
TR	Room temperature
TO	Outside temperature
SpH	Effective heating setpoint
SpC	Effective cooling setpoint
SpEcm	Economiser setpoint
SpFr	*Frost protection* limit
H	Heating sequence
C	Cooling sequence
YH	Heating valve
YC	Cooling valve
YM	Outside air damper
Q14	Fan speed 1
Q24	Fan speed 2
Q34	Fan speed 3

Functions

For details refer to the “FNC” description of functions at the beginning of this section (CA2A3816E00). Application FNC12 includes the following functions:

Function	Brief description	See CA2A3816E00
Four-pipe system	– PID control – Two proportional control sequences, heating and cooling – Control of thermic valve actuators (AC 24 V, PWM) – Outside air damper – Valve exercising feature	6.1 6.3 6.6 6.8
Fan control	– Single speed (RXC20.1) or 1 ... 3 speeds (RXC21.1) automatic or – Manual with room unit	7
Temperature measurement	– Room temperature sensor or – Return air sensor	5 7.6
Operating modes	– *Comfort, Stand-by, Economy* and *Building protection* – Change of operating mode via ⏻/Auto switch on room unit, occupancy sensor, window contact or central command	2, 3
Setpoint adjustment	– Locally via room unit or via central command	4
General functions	– Occupancy sensor – Window switch – Master/slave operation – Boost, night cooling – etc.	2.2, 8.4 2.2, 8.4 8.2 8.6, 8.7
Room units	– Available with temperature sensor, setpoint adjuster, ⏻/Auto switch and fan speeds, LCD display	9
Compatible controllers	FNC12 can be used in conjunction with the RXC21.1	

Connection diagram



2) Type of operation (N/O or N/C) can be selected
3) Do not exceed the max. simultaneous load on outputs Y1 ... Y4: max. 9.5 VA (see data sheet 3834).
4) Do not connect the fans in parallel (or use cut-off relays).

List of equipment

Ref.	Description	Type	Data sheet
N1	Room temperature controller	**RXC21.1**	3834
R1	Room unit	**QAX30.1** **QAX31.1** **QAX32.1** **QAX33.1** **QAX34.1** **QAX39.1**	1741 1741 1641 1642 1645 1646
	Wireless room unit Reciever	**QAX90.1,** **QAX91.1** **RXZ90.1**	1643 1644
B1	Return air sensor	**QAM22** **QAP22...**	1771 1831
	Room temperature sensor	**QAA24**	1721
B2	Outside temperature sensor via LON bus or central command	Third-party device	–
D1	Window contact [2]	Third-party device	–
D2	Occupancy sensor [2]	Third-party device	–
Q1	Single-speed or 3-speed fan	Third-party device	–
YH.1	Thermic heating valve, 2-position (PWM) control [3]	**T3W..., T4W...** **STE72**	4829 4873
YC.1	Thermic cooling valve, 2-position (PWM) control [3]	**T3W..., T4W...** **STE72**	4829 4873
YM	Damper actuator for outside air damper	**GDB13...1E,** **GLB13...1E** **GDB13...2E,** **GLB13...2E** **GHD131.1E**	 4624 4654 4689

2) Type of operation (N/O or N/C) can be selected
3) Do not exceed the max. simultaneous load on outputs Y1 ... Y4: max. 9.5 VA (see data sheet 3834).

Configuration

The parameters below are available with application FNC12. They are set in the RXT10.1 commissioning and service tool in the **Device, Configure, Settings** menu option.

Menu	Parameter	Values/range	Basic setting
Temperature setpoints	*Comfort heating*	10 ... 35 °C	21 °C
	Comfort cooling	10 ... 35 °C	24 °C
	Stand-by heating	10 ... 35 °C	19 °C
	Stand-by cooling	10 ... 35 °C	28 °C
	Economy heating	10 ... 35 °C	15 °C
	Economy cooling	10 ... 35 °C	35 °C
	Building protection heating	10 ... 40 °C	12 °C
	Building protection cooling	10 ... 40 °C	40 °C
	Frost protection	2 ... 10 °C	5 °C
Fan control	*Fan speeds*	– Manual – Single-stage – 2-stage – 3-stage	Three-stage
	Min. run-time	1 ... 10 min	6 min
	Temperature sensor	– Room air – Return air Time interval, 0:00 ... 1:00 h	Room air 0
Sequences	*Valve type*	– STE72	STE72
	Outside air damper		
	Economiser setpoint	>10 °C *Comfort cooling*	16 °C
	Damper run-time	0 ... 300 s	150 s
	Minimal position	0 ... 100 %	0 %
Room unit	*Sensor correction*	– 3 ... 3 K	0 K
	Setpoint adjustment range	± 0 ... 10 K	3 K
	Display of heating/cooling symbol		Enabled
	Temperature unit	°C or °F	°C
	Temperature display in normal mode	None / room temp. / setpoint	room temp.
	Temperature display in setpoint shift mode	Absolute or relative	Absolute
General functions	*Occupancy override time*	0 ... 90 min	30 min
	Receive heartbeat	0 ... 105 min	60 min
	Send heartbeat	0 ... 105 min	45 min
	Occupancy sensor	Digital input 1 or 2	No occ. sensor
	Type of operation:	Room occupied: Contact open or closed	Closed
	Switch-off delay	0 ... 90 min	5 min
	Switch-on delay	0 ... 90 min	5 min
	Window switch	Digital input 1 or 2	No window switch
	Type of operation:	Window closed: Contact open or closed	Closed
	Master/slave	Master or Slave	Master
	Heating demand signal		Enabled
	Cooling demand signal		Enabled
	Morning boost		Enabled
	Night cooling		Enabled
	Service LED		Enabled
	Reset shift		Disabled
LONMARK bindings	See the sections headed “LonMark network variables” and “LonMark binding templates”		

Ordering

Room controllers may be ordered either with the application described above or with the appropriate basic application. Please state the quantity, DESIGO RXC device name, type code and application.

Example 1

15 RXC21.1 individual room controllers with application FNC12 RXC21.1/FNC12

Notes

- The controllers will be delivered with the basic settings shown above.
- Minimum order quantity: 10 controllers

Example 2

2 RXC21.1 room controllers RXC21.1 / 00021

Notes

- The controllers will be delivered with the basic application
- The application can be loaded into the controllers by means of the RXT10.1 tool
- Minimum order quantity: 1 controller