

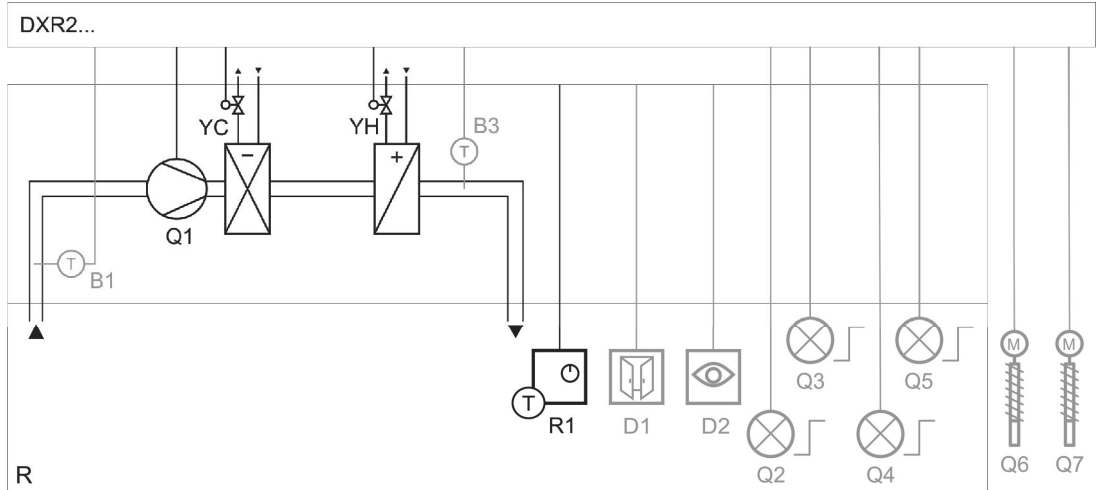
Fan coil unit with staged fan, heating and cooling coil (4 pipe) on triac output including lighting and blinds operation

DXR2.E10-101A



- Heating with LTHW and cooling with CHW
- Modulating control of heating and cooling valve (4 pipe) on triac output
- Automatic or manual 3-speed fan control
- Including the control of 4 lighting zones & 2 blinds
- Room temperature and fan speed operation via KNX PL-Link room operator unit with temperature measurement & lighting and blinds operation

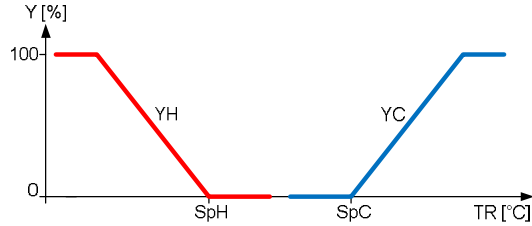
Plant diagram



DXR2...	Room automation station	Q6, Q7	2 blinds motors
B1	Extract air temperature sensor	R	Room
B3	Supply air temperature sensor	R1	Room operator unit with temperature sensor
D1	Window contact	YC	Cooling coil valve
D2	Presence detector	YH	Heating coil valve
Q1	3-speed fan		
Q2, Q3, Q4, Q5	4 lighting zones		

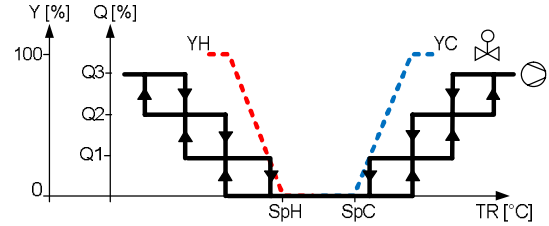
Function diagrams

Heating/cooling valves



Q	Fan output signal
Q1.1	Fan speed 1
Q1.2	Fan speed 2
Q1.3	Fan speed 3
SpC	Effective cooling setpoint

1-2-3 speed fan



SpH	Effective heating setpoint
TR	Room temperature
Y	Valve output signal
YC	Cooling coil valve
YH	Heating coil valve

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### Description of functions

#### Basic functions

##### HVAC

- PID control for heating and cooling.
- The 4 pipe system provides hot and chilled water for the heating coil and the cooling coil.
- 3-position valves are controlled by triac outputs for cooling and heating.
- The fan is controlled manual on the room operator unit or automatic in 3 speeds.
- The temperature is measured in the room operator unit.
- The application allows customers to adjust the room temperature setpoints via the room operator unit including the operation of lighting and blinds.
- The operating modes are Comfort, Pre-Comfort, Economy and Protection.
- Change of operating mode via room unit, presence detector, window contact or central command.
- The air flow for heating and cooling is operated in sequence to the valves. Parallel operation can be configured.

##### Lighting

- The application allows room users to control lighting via a standard function switching and/or
- The application allows customers to control lighting operation via room unit.

##### Blinds

- The application allows room users to operate the blinds via the following commands:
  - Move up/down
  - Step up/down
- The reference model applied ensures exact positioning of the shading products.
- The application allows customers to control shading operation via room unit.

#### Options

##### HVAC

- Optimal energy efficiency by including the option for room/supply air cascade control, presence detector or window contact.
- Optional system alarms displayed on the management station notify building operators of possible faults.
- Optional trends can be activated for room sensors.

##### Lighting

- Optional system alarms displayed on the management station notify building operators of possible faults (e.g. defective electronic control gear or lamps).
- Optional trends can be activated for room lighting.

##### Blinds

- Optional system alarms displayed on the management station notify building operators of possible faults (e.g. defective actuator).
- Reliable, central override of local operation only for emergencies, service, and cleaning.
- Central weather protection function preventing damages to shading products due to high winds or frost.
- Optional trends can be activated for room blinds.

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### Auxiliary functions

- Green Leaf (RoomOptiControl) function.
- Multisegment use of DXR2 automation stations with fan coil unit application.
- Standard hot water supply chain control.
- The application allows for control via centralized commands (e.g. scheduler program for room operating mode).
- Central optimum start control provides best room comfort at the start of occupancy.
- Central operation or reset of setpoints, timed valve kick function or outside temperature dependent heating limit.
- Central override functions for valves.
- Seasonal compensation of room temperature setpoints.

### Lighting

- The application allows for control via centralized commands (e.g. scheduler program).
- The application function supports runtime totalization for each lighting group for maintenance and service purposes (burn in/operation h/ EOL end of life cycle).

### Blinds

- The application allows for control via centralized commands (e.g. scheduler program or weather station).

### Variants

- 1...3 speed.
- PWM constant (incl. spring return) or PWM thermal control can be selected for valves.
- The room temperature can be measured by:
  - KNX PL-Link wall-mount sensor
  - KNX PL-Link flush-mount room operator unit
  - KNX PL-Link flush-mount sensors
  - Analog extract air temperature sensor
- KNX PL-Link switches for lighting and blinds operation.
- Presence can be detected by KNX PL-Link sensor or binary sensor.

Siemens devices	Legend	Type of unit	Data sheet	Product No.	Qty.
	DXR2...	Compact room automation station, BACnet/IP, 230 V, flat housing, 1 DI, 2 UI, 3 DO relays, 4 DO triacs	N9204	DXR2.E10-101A	1
	R1	KNX PL-Link room operator unit with temperature sensor	N1602	QMX3.P37	1
	Q2, Q3	Lighting output	2)	UP 510/13	2
	Q4, Q5	Lighting output	2)	UP 510/13	2
	Q6, Q7	Blinds actuator, 2 x AC 230 V, 6 A	2)	RL 521/23	1
	YC	2-port, 3-port valve or 3-port valves with bypass, PN16	N4847	V..P47..	1
		Motorized 3-positioning actuator for V..P47.., AC 24 V	N4864	SSP81..	1
	YH	2-port, 3-port valve or 3-port valves with bypass, PN16	N4847	V..P47..	1
		Motorized 3-positioning actuator for V..P47.., AC 24 V	N4864	SSP81..	1

Optional <sup>1)</sup>	Legend	Type of unit	Data sheet	Product No.	Qty.
	B1	Cable temperature sensor PVC 2 m, LG-Ni1000	N1831	QAP22	1
	B3	Cable temperature sensor PVC 2 m, LG-Ni1000	N1831	QAP22	1
	D1	Door/window contact, white	2)	S 290/11	3)
	D2	KNX PL-Link presence detector with brightness sensor	2)	UP 258D12	1 - 4

<sup>1)</sup> Can be combined according to available on-board I/Os on controller.

<sup>2)</sup> Further documents on [www.siemens.com/gamma-td](http://www.siemens.com/gamma-td).

<sup>3)</sup> Type of operation (NO or NC). Multiple devices of the same type can be connected.

**Fan coil unit with staged fan, heating and cooling coil (4 pipe) on triac output including lighting and blinds operation**

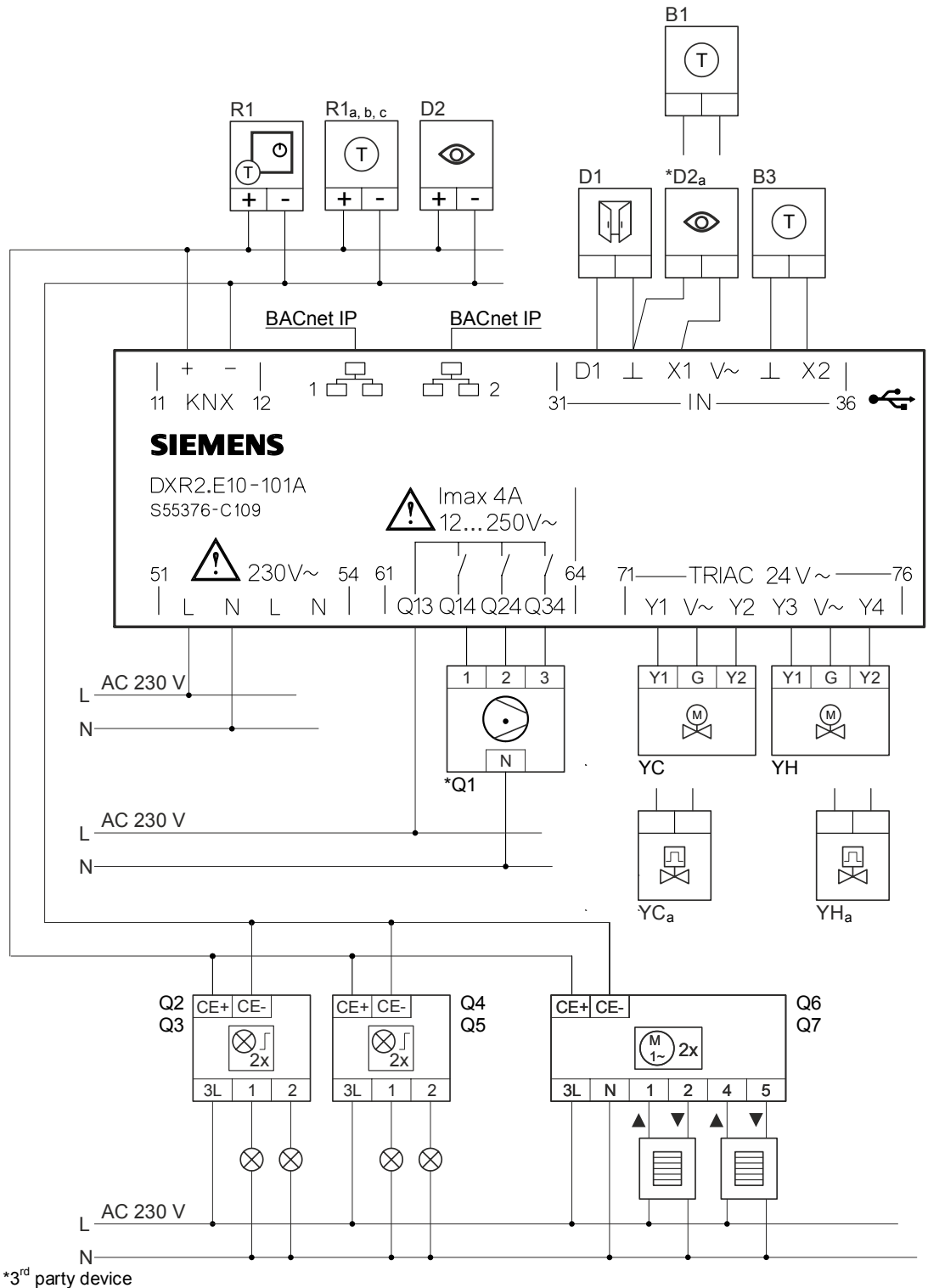
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Variants	Legend	Type of unit	Data sheet	Product No.	Qty.
	R1 <sub>a</sub>	KNX PL-Link wall-mount room sensor for temperature	N1602	QMX3.P30	1
	R1 <sub>b</sub>	KNX PL-Link flush-mount room operator unit	N1601	QMX3.P36	1
	R1 <sub>c</sub>	KNX PL-Link flush-mount room sensors	N1411	AQR253... AQR257...	1
	YC <sub>a</sub>	2-port, 3-port valve or 3-port valves with bypass, PN16	N4847	V..P47..	1
		Thermal actuator, AC/DC 24 V, NO, 2P, 1 m	N4884	STP73	1
	YH <sub>a</sub>	2-port, 3-port valve or 3-port valves with bypass, PN16	N4847	V..P47..	1
		Thermal actuator, AC/DC 24 V, NO, 2P, 1 m	N4884	STP73	1

Fan coil unit with staged fan, heating and cooling coil (4 pipe) on triac output including lighting and blinds operation

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Connection diagram



## Fan coil unit with staged fan, heating and cooling coil (4 pipe) on triac output including lighting and blinds operation

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### Application configuration

	Equipment	Values/Range	Template settings
On-board output	Fan speed	1-stage; Q14; Normally open 2-stage; Q14, Q24; Normally open 3-stage; Q14, Q24, Q34; Normally open	3-stage; Q14, Q24, Q34; Normally open
	Cooling coil valve position	Water; Y1, Y2; 3-position Water; Y1; Pulse width modulation thermal Water; Y1; Pulse width modulation spring return DX; Y1; Normally open DX; Y1, Y2; Normally open	Water; Y1, Y2; 3-position
	Heating coil valve position	Water; Y3, Y4; 3-position Water; Y4; Pulse width modulation thermal Water; Y4; Pulse width modulation spring return Electric 1-stage; Y4; Normally open Electric 2-stage; Y3, Y4; Normally open Electric modulating; Y4; Pulse width modulation constant period	Water; Y3, Y4; 3-position
KNX PL-Link devices	Room operator unit device 1	QMX3.P37; General HVAC; 4x dimming QMX3.P37; General HVAC; 2x dimming, 2x blinds QMX3.P37; General HVAC; 4x toggle, 2x blinds	QMX3.P37; General HVAC; 4x toggle, 2x blinds
	Lighting device 1	RL 512/23 - JB 512C23; 1x lighting, switching RL RS 510/23 - JB 510C23; 2x lighting, switching UP 510/03; 2x lighting, switching UP 510/13; 2x lighting, switching RS 525/23 - JB 525C23; 1x lighting, dimming UP 525/03; 1x lighting, dimming UP 525/13; 1x lighting, dimming	UP 510/13; 2x lighting, switching
	Lighting device 3	RL 512/23 - JB 512C23; 1x lighting, switching RL RS 510/23 - JB 510C23; 2x lighting, switching UP 510/03; 2x lighting, switching UP 510/13; 2x lighting, switching RS 525/23 - JB 525C23; 1x lighting, dimming UP 525/03; 1x lighting, dimming UP 525/13; 1x lighting, dimming	UP 510/13; 2x lighting, switching
	Blinds device 1	RS 520/23 - JB 520C23; 1x blinds RS 520/23 - JB 520C23; 1x awnings UP 520/03; 1x blinds UP 520/03; 1x awnings UP 520/13; 1x blinds UP 520/13; 1x awnings RL 521/23 - JB 521C23; 2x blinds RL 521/23 - JB 521C23; 2x awnings	RL 521/23 - JB 521C23; 2x blinds

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### Optional configuration

	Equipment	Values/Range	Template settings
On-board input	Room temperature (B1)		X1; LG-Ni1000
	Supply air temperature (B3)		X2; LG-Ni1000
	Presence detector 2 (D2 <sub>a</sub> )		X1, Normally open
	Window contact (D1)		D1; Normally closed
KNX PL-Link devices	Sensor device 1...4 (D2)		UP 258D12

### Default values

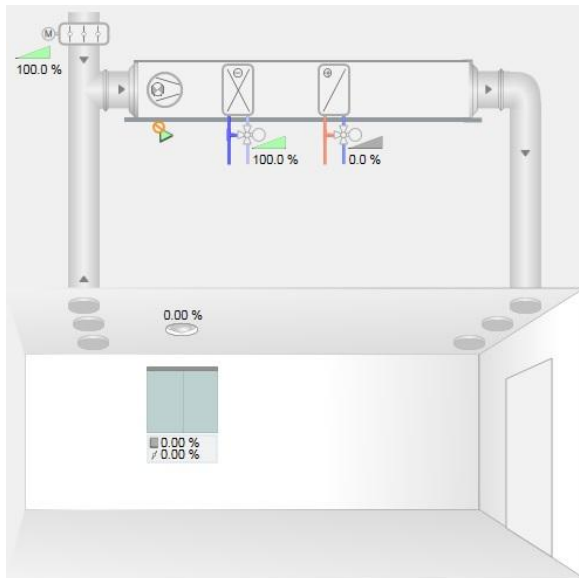
	Parameter	Values/Range	Template settings
Temperature setpoints	Cooling setpoint for Comfort	0 ... 50 °C	24 °C
	Delta cooling setpoint for Pre-comfort	0 ... 10 K	1 K
	Cooling setpoint for Economy	0 ... 50 °C	35 °C
	Cooling setpoint for Protection	0 ... 50 °C	40 °C
	Heating setpoint for Comfort	0 ... 50 °C	21 °C
	Delta heating setpoint for Pre-comfort	0 ... 10 K	1 K
	Heating setpoint for Economy	0 ... 50 °C	15 °C
	Heating setpoint for Protection	0 ... 50 °C	12 °C
Room operator unit	Room unit, display temperature	None Display room temperature	Display room temperature
	Room unit, display windows status	Yes, No	No
	Room unit, display heat./cool. status	Yes, No	Yes
	Enable operation: room temp. setpoint	Yes, No	Yes
	Room unit, room temp. setpoint display	Absolute temperature setpoint Relative setpoint shift	Relative setpoint shift
	Enable operation: fan speed setpoint	Yes, No	Yes
	Enable operation: presence button	Yes, No	No
	Enable operation: temporary Comfort	Yes, No	No
	Enable operation: room op. mode	Yes, No	No
	Enable operation: Green Leaf	Yes, No	Yes

### Engineering

- ABT Site engineering tool is required to configure the DXR2 automation stations.
- See the Siemens Download Center at [www.siemens.com/bt/download](http://www.siemens.com/bt/download) for the latest application configuration and workflow tutorials.
- Option combination according to available on-board I/Os on controller.
- B1 (optional extract air temperature sensor) to be configured under ‚Room temperature‘ in order to serve for room temperature control.
- D2<sub>a</sub> (on-board presence detector) to be configured in ABT Site under ‚Presence detector 2‘ for maximum combination of optional devices.  
Type of operation (NO or NC). Multiple devices of the same type can be connected.

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**Management station**

Sample presentation of a fan coil unit application with lighting and blinds operation on the Desigo CC management station.