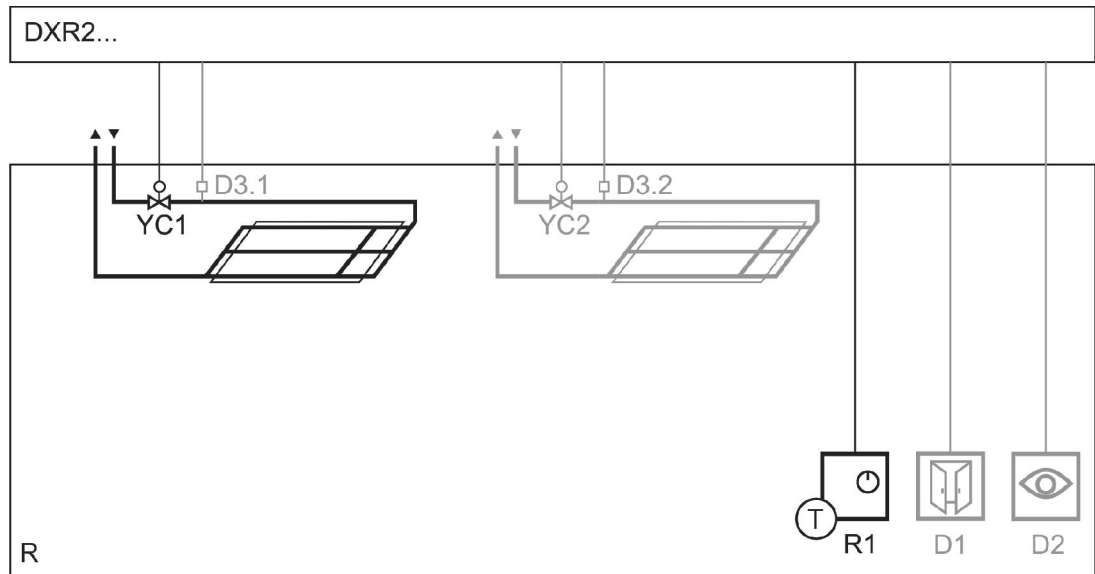




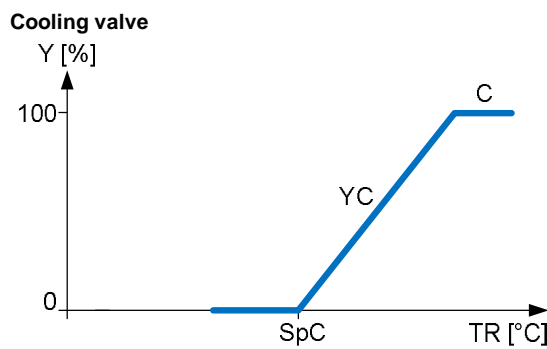
- Cooling with chilled ceiling on triac outputs
- Modulating control of cooling valve
- Condensation monitoring
- Room temperature operation via KNX PL-Link room operator unit with temperature measurement

Plant diagram



|         |                         |     |  |
|---------|-------------------------|-----|--|
| DXR2... | Room automation station | R   | Room                                       |
| D1      | Window contact          | R1  | Room operator unit with temperature sensor |
| D2      | Presence detector       | YC1 | Cooling valve 1                            |
| D3.1    | Condensation monitor 1  | YC2 | Cooling valve 2                            |
| D3.2    | Condensation monitor 2  |     |  |

Function diagrams



|     |                            |    |               |
|-----|----------------------------|----|---------------|
| C   | Cooling sequence           | Y  | Output signal |
| SpC | Effective cooling setpoint | YC | Cooling valve |
| TR  | Room temperature           |    |               |

**Description of functions****Basic functions**

- PID control for cooling.
- 3-position valves are controlled by triac outputs for cooling.
- The temperature is measured in the room operator unit.
- The application allows customers to adjust the room temperature setpoints via the room operator unit.
- The operating modes are Comfort, Pre-Comfort, Economy and Protection.
- Change of operating mode via room unit, presence detector, window contact or central command.

**Auxiliary functions**

- Green Leaf (RoomOptiControl) function.
- Multisegment use of DXR2 automation stations.
- 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.
- Central override functions for valves.
- Seasonal compensation of room temperature setpoints.

**Options**

- 2<sup>nd</sup> chilled ceiling.
- Condensation monitoring.
- Optimal energy efficiency by 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.

**Variants**

- 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
- 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, 1 DO relay, 4 DO triacs, 1 AO 0...10 V | N9204      | DXR2.E09T-101A | 1    |
|                 |         |   | N9206      | DXR2.M09T-101A |      |
|                 | R1      | KNX PL-Link room operator unit with temperature sensor, segmented backlit display, touchkeys                        | N1602      | QMX3.P34       | 1    |
|                 | YC1     | 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.          |
|------------------------|--------|---|---------------|-------------|---------------|
|                        | D1     | Door/window contact, white                              | <sup>2)</sup> | S 290/11    | <sup>3)</sup> |
|                        | D2     | KNX PL-Link presence detector with brightness sensor    | <sup>2)</sup> | UP 258D12   | 1 - 4         |
|                        | D3.1   | Condensation monitor                                    | A6V10741072   | QXA21..     | 1             |
|                        | D3.2   | Condensation monitor                                    | A6V10741072   | QXA21..     | 1             |
|                        | YC2    | 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             |

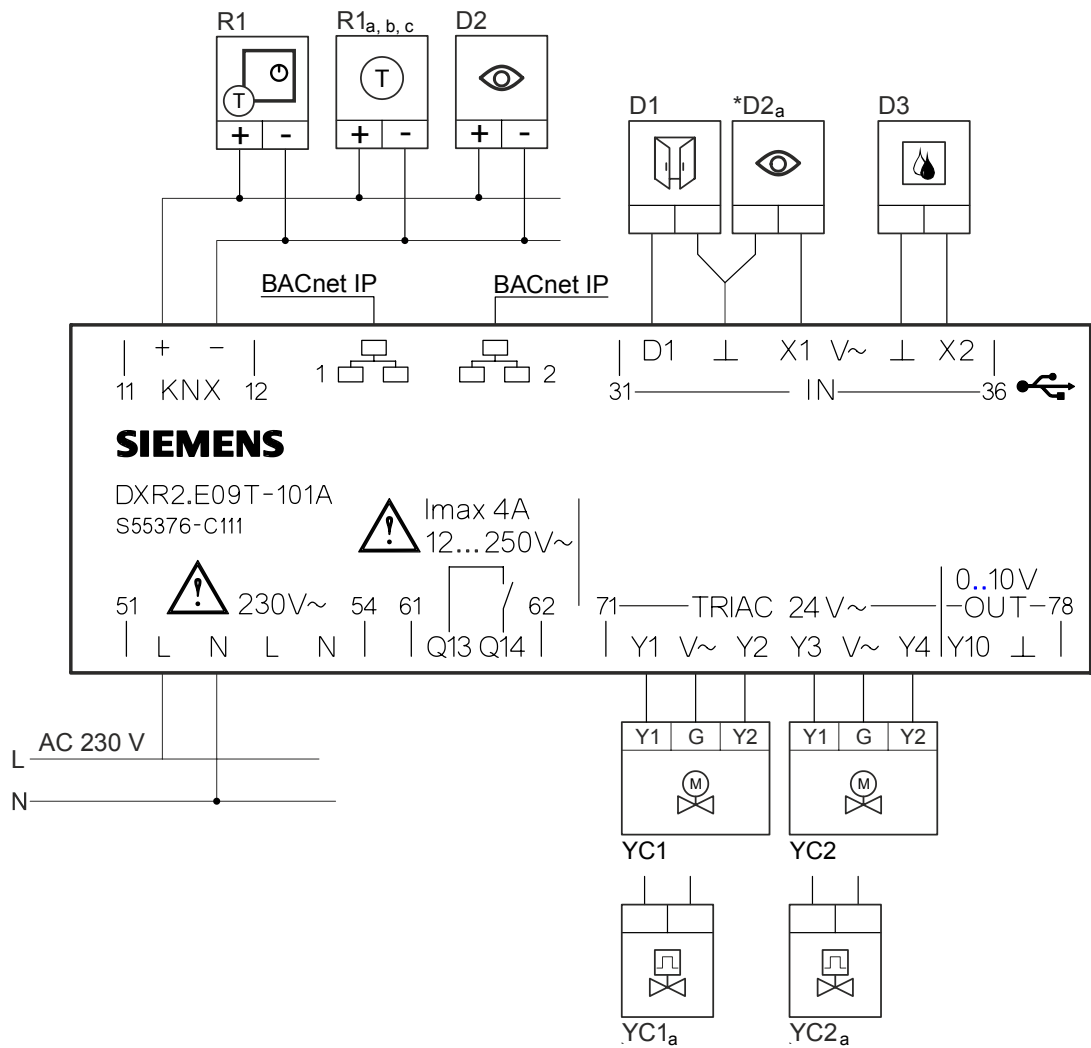
<sup>1)</sup> Can be combined according to available on-board I/Os on controller.

<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.

| 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...<br>AQR257... | 1    |
| YC1 <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    |
| YC2 <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    |

Connection diagram



\*3<sup>rd</sup> party device

**Application configuration**

|                     | Equipment                        | Values/Range   | Template settings           |
|---------------------|----------------------------------|--|-----------------------------|
| On-board output     | Radiant ceiling valve position 1 | Chilled; Y1, Y2; 3-position<br>Chilled; Y3, Y4; 3-position<br>Chilled; Y1; Pulse width modulation thermal<br>Chilled; Y4; Pulse width modulation thermal<br>Heating/chilled 2-pipe; Y1, Y2; 3-position<br>Heating/chilled 2-pipe; Y3, Y4; 3-position<br>Heating/chilled 2-pipe; Y1; Pulse width modulation thermal<br>Heating/chilled 2-pipe; Y4; Pulse width modulation thermal<br>Heating; Y1, Y2; 3-position<br>Heating; Y3, Y4; 3-position<br>Heating; Y1; Pulse width modulation thermal<br>Heating; Y4; Pulse width modulation thermal | Chilled; Y1, Y2; 3-position |
| KNX PL-Link devices | Room operator unit device 1      | QMX3.P02, QMX3.P34, QMX3.P36, QMX3.P37, QMX3.P74   | QMX3.P34                    |

**Optional configuration**

|                     | Equipment                              | Values/Range   | Template settings           |
|---------------------|--|--|-----------------------------|
| On-board output     | Radiant ceiling valve position 2       | Chilled; Y1, Y2; 3-position<br>Chilled; Y3, Y4; 3-position<br>Chilled; Y2; Pulse width modulation thermal<br>Chilled; Y3; Pulse width modulation thermal<br>Heating/chilled 2-pipe; Y1, Y2; 3-position<br>Heating/chilled 2-pipe; Y3, Y4; 3-position<br>Heating/chilled 2-pipe; Y2; Pulse width modulation thermal<br>Heating/chilled 2-pipe; Y3; Pulse width modulation thermal<br>Heating; Y1, Y2; 3-position<br>Heating; Y3, Y4; 3-position<br>Heating; Y2; Pulse width modulation thermal<br>Heating; Y3; Pulse width modulation thermal | Chilled; Y3, Y4; 3-position |
| On-board input      | Presence detector 2 (D2 <sub>a</sub> ) |  | X1, Normally open           |
|                     | Window contact (D1)                    |  | D1; Normally closed         |
|                     | Condensation monitor (D3.1, D3.2)      |  | X2; 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                    |
| Radiant ceiling       | Enable condensation monitor input      | Yes, No  | Yes                      |
| Room operator unit    | Room unit, display temperature         | None<br>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<br>Relative setpoint shift | Relative setpoint shift  |
|                       | Enable operation: fan speed setpoint   | Yes, No  | No                       |
|                       | 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.
- 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 (N/O or N/C). Multiple devices of the same type can be connected.

## Management station



Sample presentation of a chilled ceiling application on the Desigo CC management station.

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