RWD32 Universal Controller
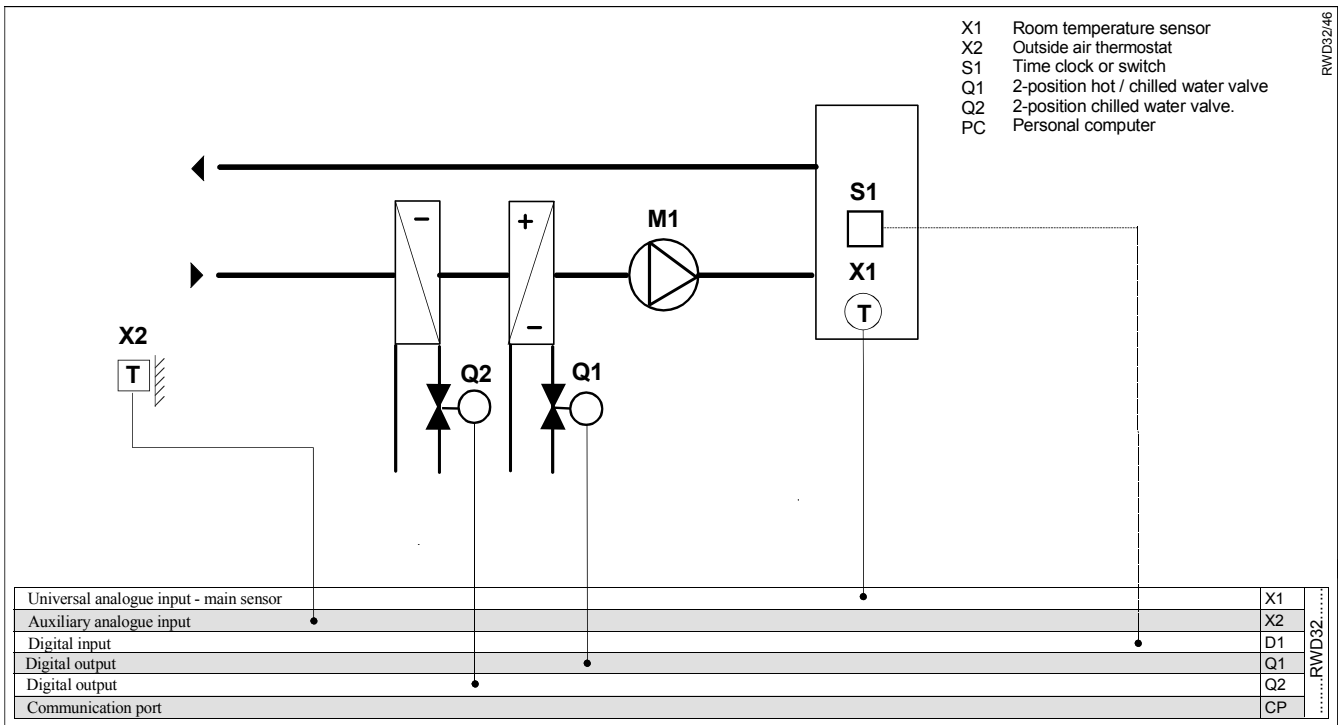
Application 46
W / S mode selection - digital

Room temperature control
Hot water control valve
Chilled water control valve

Control (2 position)
Room temperature control
2 position control of the hot water control valve
2 position control of the chilled water control valve
Winter / Summer selection of heating or cooling operation of Q1 output by X2
Optional day / night set point adjustment .

X1   Room temperature sensor
X2   Outside air thermostat
S1   Time clock or switch
Q1   2-position hot / chilled water valve
Q2   2-position chilled water valve.
PC   Personal computer

Universal analogue input - main sensor	X1
Auxiliary analogue input	X2
Digital input	D1
Digital output	Q1
Digital output	Q2
Communication port	CP

Supplemental features

Control

- Room temperature sensor can be selected as Ni1000, Pt1000, or active sensor.
- Adjustable dead zone with separate heating and cooling set points.
- Adjustable differential of digital output Q1.
- Adjustable differential of digital output Q2.
- 230Vac controller supply voltage
- 230Vac two position control valves
- Outdoor air temperature sensor can be selected as Ni1000, Pt1000, or active sensor.(X2)
- Winter / summer selection of heating or cooling mode of the Q1 output as selected by digital input into auxiliary input X2 sensing outside air temperature.

Operating modes

- Day / night set points can be selected via time clock or switch.

Description of operation

The temperature sensor senses the room conditions and on a fall in temperature the RWD32 via Q1 digital output opens and closes the two position heating valve as determined by the heating set point and differential settings.

The temperature sensor senses the room conditions and on a rise in temperature the RWD32 via Q2 digital output opens and closes the two position chilled water valve as determined by the cooling set point and differential settings.

When the outside air thermostat senses the outside air temperature has exceeded summer set point, the controller Q1 set point is adjusted to the cooling set point, and the Q1output reverses it's action from heating to cooling mode.
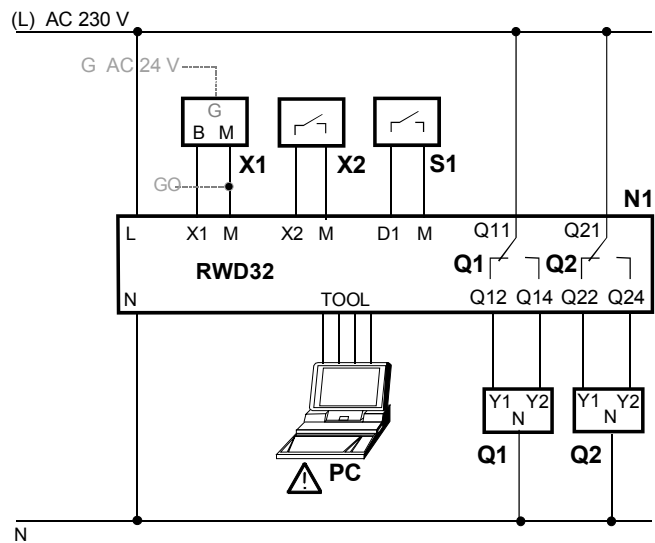
This provides extra cooling capacity during summer, and to operate, the water to the coil must be supplied with chilled water during summer operation.

Function diagram

Heating and cooling sequences
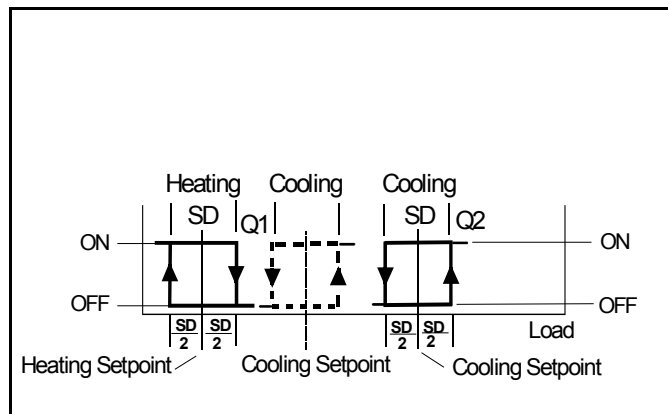
Connection diagram

RWD32

N1   RWD32 controller
X1   Main temperature sensor
X2   Outside air thermostat
S1   Time clock or switch
Q1   230Vac two position control valve
Q2   230Vac two position control valve
PC   Personal computer

Main Display

The main display shows ,
a) Whether Q1 is On or Off (= off, ■ = on)
b) Whether Q2 is On or Off (= off, ■ = on)
c) Whether day or night set point is selected. (¤ = day, (= night)
d) X1 value (room temperature) in ° C.

Other displays are available by pressing the + button, and the various displays are listed below in sequence from the main display.

On entering any of the four set point displays, the setpoint on display can be adjusted by pushing the ● enter/save button, increase value by pressing the ▲ + button or decrease the value by pressing the ▼– button, and when the required value is reached, press the ●enter/save button to save the new value.

The alternative displays return to the main display after 20 seconds duration.

Press buttons	Action	Current display	Selected display	Selected display comments
▲	Push + button	Q1 Q2 ¤ X1	Q1 SP – h ¤ 24.0c	Q1 heating day set point. (winter)
▲	Push + button	Q1 SP – h ¤ 24.0c	Q1 SP – c ¤ 21.0c	Q1 cooling day set point. (summer)
▲	Push + button	Q1 SP – c ¤ 21.0c	Q2 SP – c ¤ 28.0c	Q2 cooling day set point. (winter and summer)
▲	Push + button	Q2 SP – c ¤ 28.0c	**Q1 SP – h (16.0c**	Q1 heating night set point. (winter)
▲	Push + button	**Q1 SP – h (16.0c**	**Q1 SP – c (13.0c**	**Q1 cooling night set point. (summer)**
▲	Push + button	Q1 **SP – c (13.0c**	**Q2 SP – c (32.0c**	Q2 cooling night set point. (winter and summer)
▲	Push + button	Q2 **SP – c (** 32.**0c**	**X1 21.0c**	X1 - main temperature sensor reading
▲	Push + button	X1 21.0c	Q1 OFF	Q1 – heating valve digital output
▲	Push + button	Q1 OFF	Q2 OFF	Q2 – cooling valve digital output
▲	Push + button	Q2 OFF	WIN/SUM 46 ☐☐☐ DIG	Control sequence diagram and application number display.
▲	Push + button	WIN/SUM 46 ☐☐☐ DIG	Q1 Q2 ¤ X1	Back to main display

Values shown are either default values or nominated for information only

Alternatives

1) One stage electric heating and one stage of refrigerated cooling.
2) One stage of electric heating and two position control of chilled water valve.