RWD68 Universal Controller
Application 57
W/S setpoint selection-analogue

Room temperature control
Hot water control valve
DX cooling

Control (P or PI)

Room temperature control

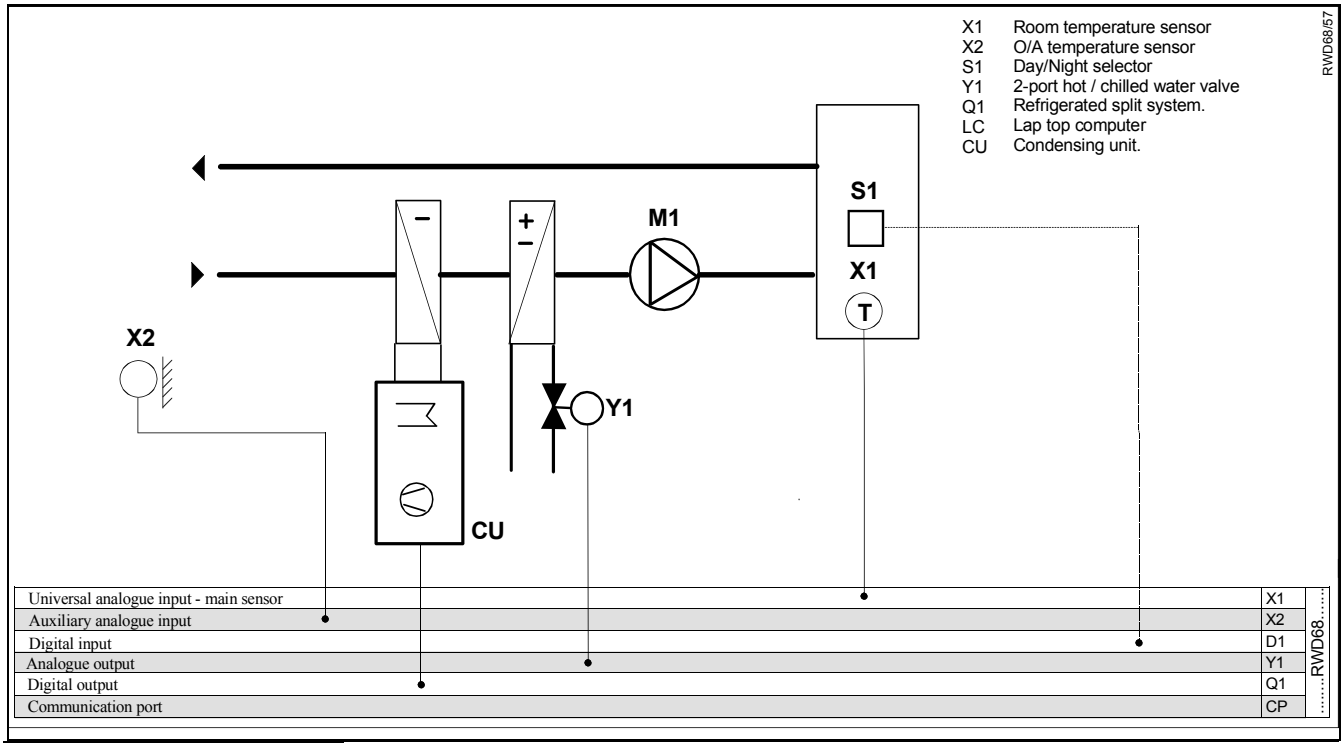
Proportional control (0..10Vdc) of the hot water valve.

On/off control of DX cooling (refrigeration package unit)

Winter / summer mode selection of Y1 as determined by analogue input (X2)

Winter / summer setpoint selection

Optional day / night set point adjustment .



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 proportional band of analogue output Y1.
- Integral action function selection and adjustment.
- Outside air temperature sensor can be selected as Ni1000, Pt1000, or active sensor.
- Winter / summer selection of heating and cooling mode of the Y1 output as selected by analogue input into auxiliary input X2 sensing outside air temperature.

Operating modes

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

Safety functions

- Safety functions are built into the condensing unit of the refrigerated split system.

Description of operation

The temperature sensor senses the room conditions and on a fall in temperature the RWD68 via Y1 analogue output modulates the hot water valve as determined by the heating set point and proportional band (XP) settings.

On a rise in temperature the RWD68 via the Q1 digital output switches the condensing unit of the refrigerated split system to provide cooling as determined by cooling set point and differential settings.

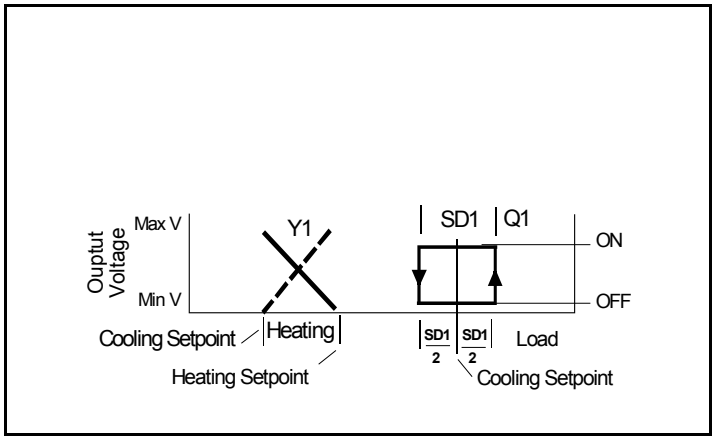
When the outside air temperature sensor senses the outside air temperature has exceeded summer set point, the controller set points for Y1 are adjusted to the summer set point, and the Y1 output reverses it's action from heating to cooling mode.

The water supplied to the Y1 control valve must be also change from heating water to chilled water from the central plant.

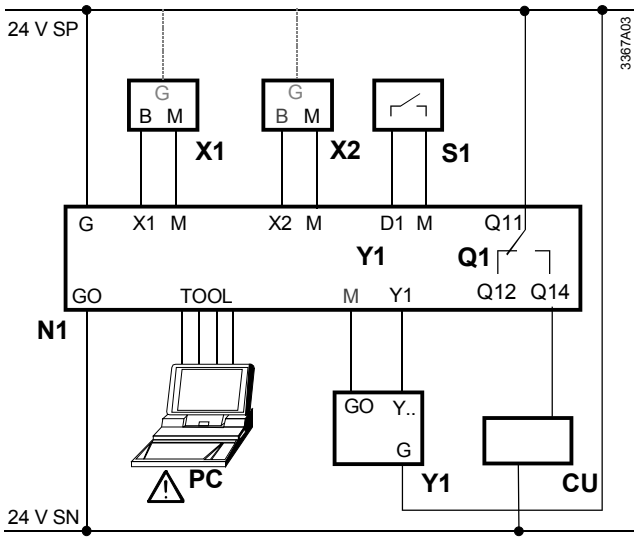
This application results in Y1 supplying heating during the winter, and supplementary cooling during summer.

Heating and cooling sequences

Function diagram



Connection diagram



RWD68

N1	RWD68 controller
X1	Main temperature sensor
X2	Outside air temperature sensor.
S1	Time clock or switch for day/night setpoint select
Q1	Potential-free relay contacts for 2-position
Y1	Heating control valve
CU	Condensing unit.
PC	Personal computer

Main Display

The main display shows ,
a) Whether Q1 is On or Off (= off, ■ = on)
b) Y1 output in Volts dc. (0..10V = 0..100% range)
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.

Press buttons	Action	Current display	Selected display	Selected display comments.
▲	Push + button	Q1 Y1 ¤ X1	Y1 SP – h ¤ 24.0c	Y1 heating day set point. (winter)
▲	Push + button	Y1 SP – h ¤ 24.0c	Y1 SP – c ¤ 21.0c	Y1 cooling day set point. (summer)
▲	Push + button	Y1 SP – c ¤ 21.0c	Q1 SP – c ¤ 16.0c	Q1 heating day set point.
▲	Push + button	Q1 SP – c ¤ 16.0c	Y1 SP – h ☾ 16.0c	Y1 heating night set point. (winter)
▲	Push + button	Y1 SP – h ☾ 16.0c	Y1 SP – c ☾ 13.0c	Y1 cooling night set point. (summer)
▲	Push + button	Y1 SP – c ☾ 13.0c	Q1 SP – c ☾ 32.0c	Q1 cooling night set point.
▲	Push + button	Q1 SP – c ☾ 32.0c	X1 18.0c	X1 - main temperature sensor reading
▲	Push + button	X1 18.0c	X2 24.0c	X1 – outside air temperature sensor reading
▲	Push + button	X2 24.0c	Y1 5.0	Y1 – heating analogue output value in Vdc to one decimal point
▲	Push + button	Y1 5.0	Q1 OFF	Q1 – cooling digital output, display shows if relay is on or off.
▲	Push + button	Q1 OFF	WIN/SUM 57 ANLG	Control sequence diagram and application number display.
▲	Push + button	WIN/SUM 57 ANLG	Q1 Y1 ¤ X1	Back to main display.

Values shown are either default values or nominated for information only

Alternatives

1) Modulating hot water valve and two position chilled water valve.