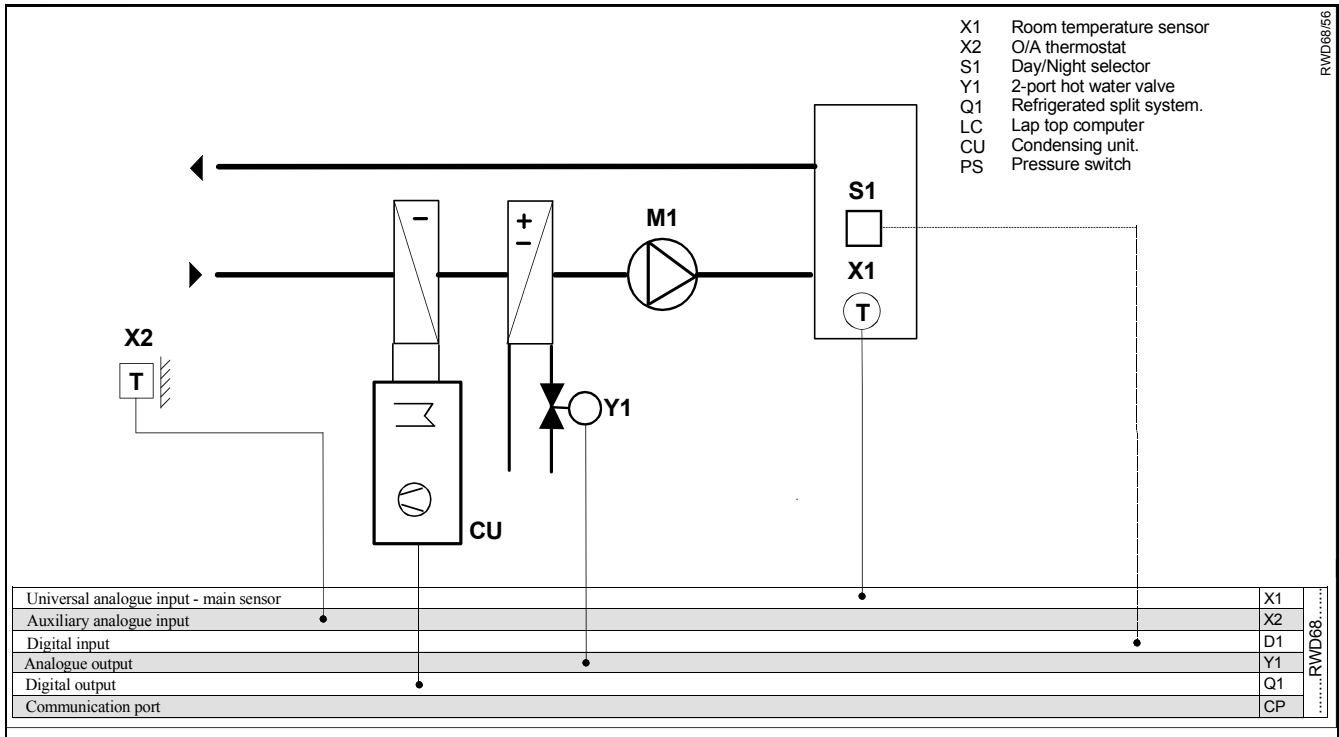


**RWD68 Universal Controller**  
**Application 56**  
**W / S setpoint selection - digital**

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 digital 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.
- Duct 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 digital 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.

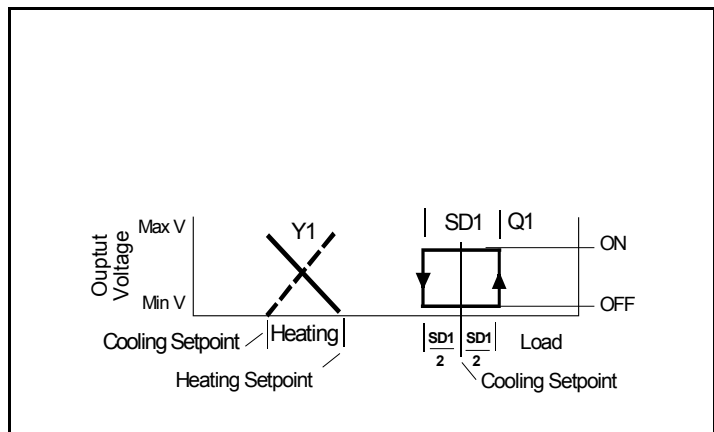
When the outside air thermostat senses the outside air temperature has exceeded summer set point, the controller set point for Y1 is adjusted to the summer set point, and the Y1 output reverses its action from heating to cooling mode.

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

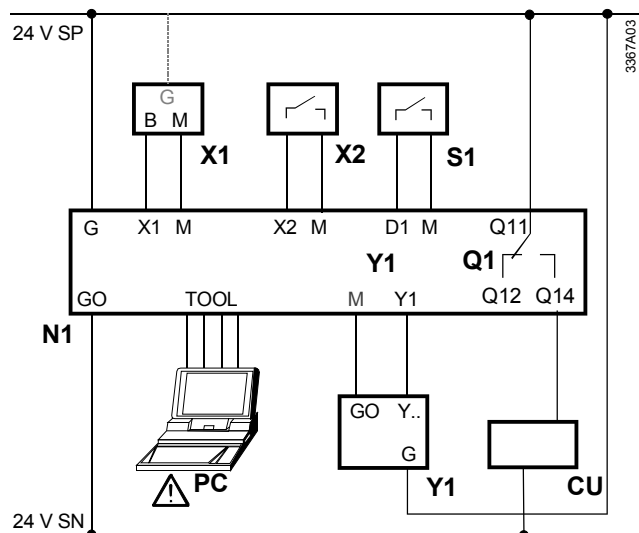
This application results in Y1 supplying heating during the winter, and supplementary cooling during summer.

Heating and cooling sequences

## Function diagram



## Connection diagram



### RWD68

|    |  |
|----|--|
| N1 | RWD68 controllers                                  |
| X1 | Main temperature sensor                            |
| X2 | Outside air thermostat                             |
| 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 ,

- Whether Q1 is On or Off (  = off,  = on )
- Y1 output in Volts dc. (0..10V = 0..100% range)
- Whether day or night set point is selected. ( ☐ = day, ◻ = night)
- 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                                   | 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 <input type="checkbox"/> 56<br>DIG | Control sequence diagram and application number display.          |
| ▲             | Push + button | WIN/SUM <input type="checkbox"/> 56<br>DIG | Q1 Y1 ☐ X1                                 | Back to main display.   |

Values shown are either default values or nominated for information only

## Alternatives

- Modulating hot water valve and two position chilled water valve.