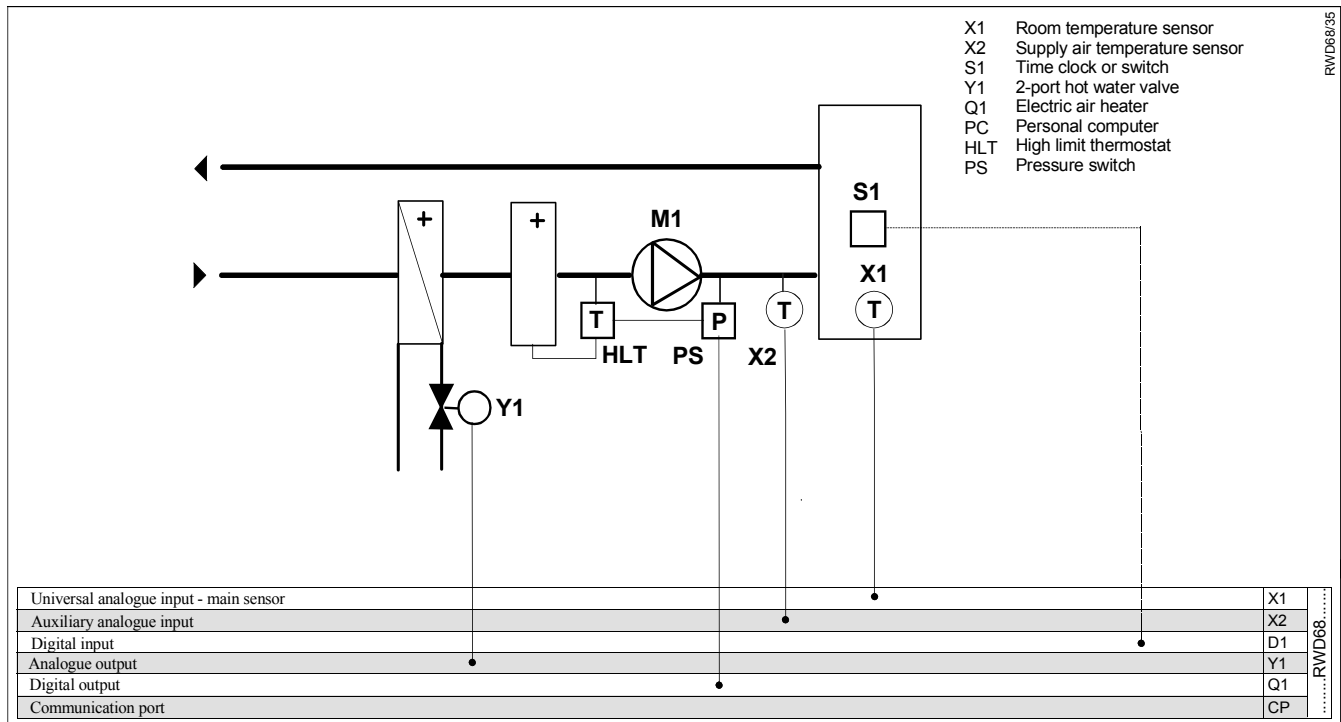


RWD68 Universal Controller

Room temperature control
Hot water control valve
Air electric heater

**Application 35
Cascade control**

- Control (P or PI)**
- Room temperature control**
- Proportional control (0..10Vdc) of the hot water valve.**
- On/off control of the air electric heater**
- Cascade control.**
- 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.(X2)
- Cascade control of the supply air by the room temperature sensor.

Operating modes

Safety functions

- Day / night set points can be selected via time clock or switch.
- A high limit manual reset thermostat is mounted downstream of the air electric heater, and de-energises the heater on excessive duct temperatures. This thermostat has to be manually reset following detection of overheating. It is often supplied by the supplier of the electric heater.
- A pressure switch is also specified to detect loss of static pressure in the duct, indicating loss of fan. This also de-energises the electric heater but it is auto reset and allows electric heater function following the detection of fan operation.
- These safety units can be connected directly in series with small electric heaters, but for larger electric heaters they are connected to a heater contactor switching the electric heater.

Description of operation

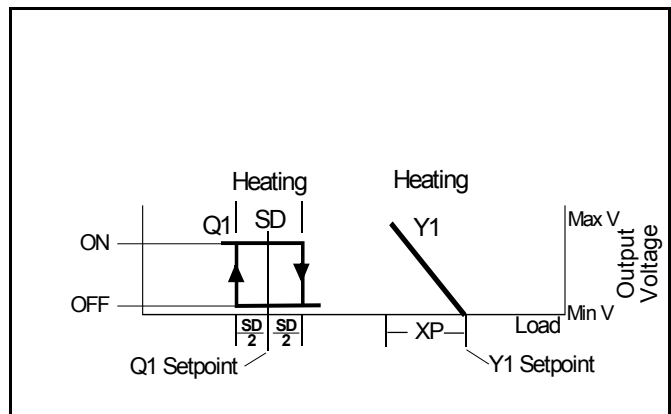
The controller sequences a hot water valve and one stage on / off electric heater. Cascade control is where deviation of room temperature from setpoint adjusts the control point of the leaving air temperature controlling heating and cooling in sequence.

On a fall in temperature the RWD68 via the Y1 analogue output modulates the hot water valve as determined by the heating set point and proportional band settings.

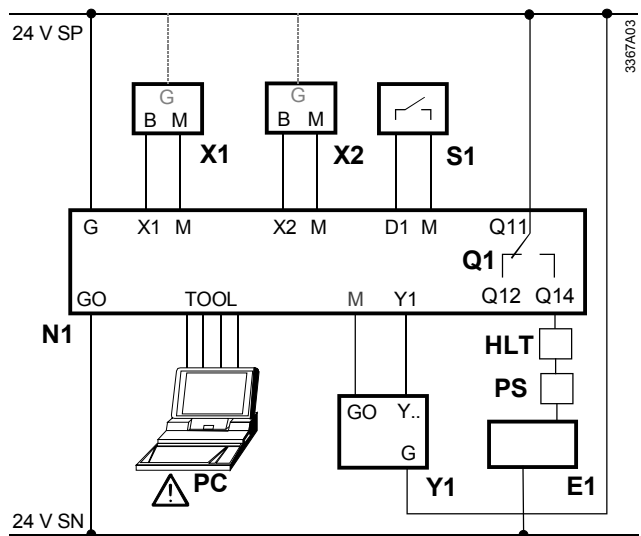
On a further fall in temperature the RWD68 via Q1 digital output switches the standby air electric heater on and off as determined by the heating set point and differential settings.

Function diagram

Heating sequences



Connection diagram



RWD68

- N1 RWD68 controllers
- X1 Main temperature sensor
- X2 Supply air temperature sensor
- S1 Time clock or switch
- Q1 Potential-free relay contacts for 2-position
- Y1 Valve actuator with 0..10Vdc input
- E1 Electrical load 2-position control
- HLT High limit safety thermostat
- PS Pressure switch
- 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 duration.

Press buttons	Action	Current display	Selected display	Selected display comments
▲	Push + button	Q1 Y1 ☐ X1	Y1 SP – h ☐ 25.0c	Y1 - heating day set point.
▲	Push + button	Y1 SP – h ☐ 25.0c	Q1 SP – h ☐ 21.0c	Q1 - heating day set point.
▲	Push + button	Q1 SP – h ☐ 21.0c	Y1 SP – h ◁ 16.0c	Y1 - heating night set point.
▲	Push + button	Y1 SP – h ◁ 16.0c	Q1 SP – h ◁ 12.0c	Q1 - heating night set point.
▲	Push + button	Q1 SP – h ◁ 12.0c	X1 18.0c	X1 - main temperature sensor reading
▲	Push + button	X1 18.0c	X2 19.0c	X2 – supply air temperature sensor reading
▲	Push + button	X2 19.0c	Y1 5.0	Y1 – heating analogue output value in Vdc to one decimal point
▲	Push + button	Y1 5.0	Q1 ON	Q1 – heating digital output, display on or off.
▲	Push + button	Q1 ON	CAS <input type="checkbox"/> 35	Control sequence diagram and application number display.
▲	Push + button	CAS <input type="checkbox"/> 35	Q1 Y1 ☐ X1	Back to main display

Values shown are either default values or nominated for information only.