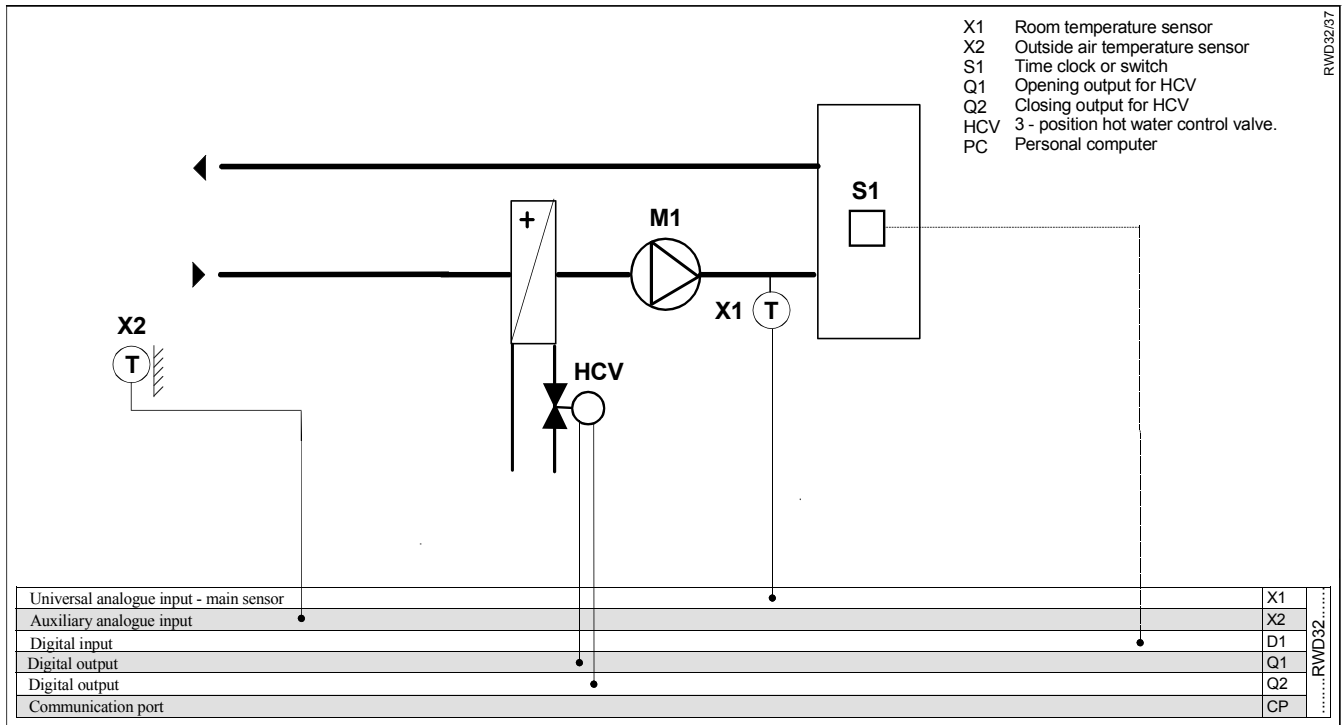


RWD32 Universal Controller
Application 37
S/W mode selection-analogue

Room temperature control
 Hot water control valve - 3 pos
 230Vac control system

- Control (P or PI)
- Room temperature control
- Proportional control of the 3 position hot water valve.
- Summer / winter selection of heating or cooling operation via analogue input (X2)
- Optional day / night set point adjustment .



Supplemental features

Control

- Room temperature sensor can be selected as Ni1000, Pt1000, or active sensor.
- Adjustable proportional band of 3-position output Q1, Q2.
- Integral action function selection and adjustment.
- Timing of 3-position valve actuator
- 230Vac controller supply voltage
- 230Vac two position control valves
- Outside temperature sensor can be selected as Ni1000, Pt1000, or active sensor.(X2)
- Winter / summer selection of heating and cooling mode of the Q1 / Q2 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.

Description of operation

The temperature sensor senses the room conditions and on a fall in temperature the RWD32 via Q1, Q2 digital outputs modulates the three position heating valve as determined by the heating set point and proportional band settings.

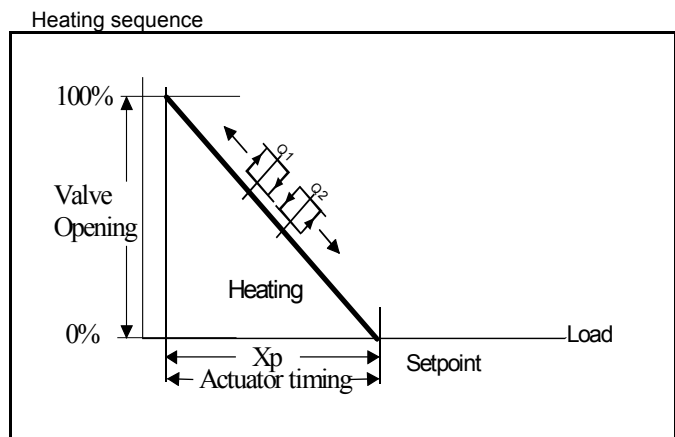
When the outside air sensor senses the outside air temperature has exceeded summer set point, the controller set point is adjusted to the cooling set point, and the Q1, Q2 output reverses it's action from heating to cooling mode.

Three position control has no feedback from the valve actuator to determine it's position, so the timing of the actuator must be known to the controller. During commissioning the actuator timing must be entered. A common actuator timing for small three position valve and damper actuators is 150 seconds from fully open to fully closed, so this means that the controller modulates the actuator over the Xp proportional band range for 150 seconds.

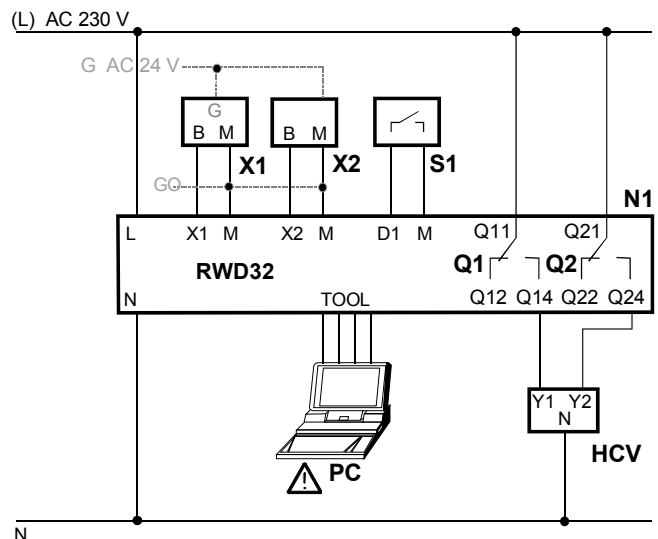
E.g. An Xp proportional band of 4° C and 150 second cycle time means that for a 4° C change the controller will drive the actuator for 150 seconds.

A synchronous check on the position of the actuator is carried out on a regular basis.

Function diagram



Connection diagram



RWD32

- N1 RWD32 controller
- X1 Main temperature sensor
- X2 O/A temperature sensor
- S1 Time clock or switch
- Q1 Opening contact for 230Vac 3 - position control valve
- Q2 Closing contact for 230Vac 3 - position control valve
- HCV 3 - position 230Vac heating control valve
- PC Personal computer

Main Display

The main display shows ,

- Whether Q1 is On or Off (= off, = on)
- Whether Q2 is On or Off (= off, = on)
- 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 Q2 ☉ X1	SP – h ☉ 24.0c	heating day set point. (winter)
▲	Push + button	SP – h ☉ 24.0c	SP – c ☉ 21.0c	cooling day set point. (summer)
▲	Push + button	SP – c ☉ 21.0c	SP – h ☾ 16.0c	heating night set point. (winter)
▲	Push + button	SP – h ☾ 16.0c	SP – c ☾ 13.0c	cooling night set point. (summer)
▲	Push + button	SP – c ☾ 13.0c	X1 21.0c	X1 - main temperature sensor reading
▲	Push + button	X1 21.0c	X2 21.0c	X2 – outside air temperature sensor reading
▲	Push + button	X2 21.0c	3P 50%	Percentage opening position of the heating control valve
▲	Push + button	3P 50%	Q1 OFF	Q1 – heating valve opening digital output
▲	Push + button	Q1 OFF	Q2 OFF	Q2 – heating valve closing digital output
▲	Push + button	Q2 OFF	WIN/SUM 37 3P ANLG	Control sequence diagram and application number display.
▲	Push + button	WIN/SUM 37 3P ANLG	Q1 Q2 ☉ X1	Back to main display

Values shown are either default values or nominated for information only