

Series RT2200/.HP/H./F... Universal Roof –Top Controller



Whether it is Heat-Pump or A/C based with Gas – HWS- Electric heating this control fits almost all options, offering both switched & modulating control. With dedicated microprocessors there is no need for complicated & costly on-site programming as usually found with technically comparable alternatives.

Features

- Power Supply 230 Vac
- Power board mounts close to unit with :

0–10 Vdc Modulating Outputs for control of:

- Free Cooling on Damper
- Air-Quality function on Dampers
- Multi-Stage Electric Resistance Heating
- Gas or Hydronic Heating
- H.W.S & C.W. Valves.

Switched outputs for:

- Indoor & Outdoor Fans
- H.W.S & C.W. Pumps
- Twin Compressors
- Multi-Stage Electric Resistance Heating
- Gas or Hydronic Heating
- Reversing Valve for Heat Pump mode.

Sensor Inputs for:

- Space / Return Air & Outdoor Temp.
- Outdoor Coil , for Defrost.
- Combined Temp. & Humidity for Enthalpy.
- Air Quality

Features - Continued

Room Display Unit-

- Remote Mount for user convenience, provides via a security access code, adjustment of:
- Temp. Setpoints & Differentials
- Sensor Settings & Differentials
- Weekly Programme.- Mon to Fri.. + Sat + Sun.
- Fan Speeds (3) – including Auto-Speed option.
- Modes: Heat – Cool – Auto Heat/Cool, Fan Only.

Display of :

- Setpoint Temps.
- Space/Room/Return Air & Outdoor Temps.
- Alarm Conditions
- Weekly Programme of 2 x Start / Stops per day.

Alarm Outputs for:

- 2 x Refrigerant Circuits
- Heating Circuit
- Auto –Reset Feature for Plant Alarm override.

Options include:

- Air Quality programme
- Free Cooling based on Enthalpy.
- Infra-Red Control & Selection.

Models

RFT ...

Operation

- 1. Cooling** – Two switched outputs for dual compressor operation
An option is a modulating 0-10Vdc output to control a C.W. valve.
- 2. Pre-Heat** – In heat mode, when outdoor temp. is less than 9 °C a switched output is operative.
- 3. Heating** – The standard functions are :
 - 3.1. Two separate, switched outputs for two stages of hydronic or electric resistance heating
 - 3.2. Reverse cycle, implemented by switching two reversing valves to give 2 stages of heat-pump heating.
 - 3.3. Option of 2 x 0-10 Vdc modulating outputs for control of:
 - 3.3.1. HWS Valves
 - 3.3.2. Multi- Stage Electric Resistance heaters.
 - 3.3.3 Other forms of heating equipment e.g. gas heaters
- 4. Free Cooling** – Temp. setpoint, room & outdoor air temps., are compared and free cooling can be utilised by the 0-10 Vdc output as applied to the fresh air damper.
- 5. Air Quality** - As an option our air quality sensor can be used for sensing, to influence the 0-10 Vdc output to the fresh air damper to cause it to be drive open / closed in response to the air quality conditions in the room.
- 6. Temperature Control Strategies-** These are shown diagrammatically in (fig. 1)
- 7. Compressor Protection -**
 - 7.1. Load sharing automatically achieved by switching of Lead and Lag compressor alternatively.
 - 7.2. Limits each compressor to 6 start-stops per hour
 - 7.3. Incorporates recycling time delay.
- 8. Defrost Cycle-** A standard strategy is followed which only allows one system to defrost at any one time.
- 9. Alarms-** Alarm conditions are indicated in the display and/or as a flashing Led. & are:
 - 9.1. Heater Alarms
 - 9.2. Frig. Circuit Alarms
 - 9.3 Sensor Failure Alarms
 These also initiate various plant shutdown strategies.
- 10. Alarm Reset** – This is a one -shot manual reset, used to override alarms to allow plant to run. Subsequent alarms cause permanent shut-down.

Temperature Control Strategies- (fig 1)

INPUTS	OUTPUTS
<u>Sensors;</u>	<u>Switched;</u>
Room temp.	Pre-Heat
Outdoor Coil No.1	Res. Heat No.1
Outdoor Coil No.2	Res. Heat No.2
Outdoor Air temp.	Rev. Valve No.1
Enthalpy option	Rev. Valve No.2
Air-Quality option	Compressor No.1
	Compressor No.2
<u>Alarms;</u>	Indoor Fan
Refrig. Circuit No.1	Outdoor Fan No.1
Refrig. Circuit No.2	Outdoor Fan No.2
Heating	0-10 V dc Mod;
<u>230 Vac Supply;</u>	Fresh Air Damper
	CW Valve etc.
<u>Comms. link to room unit (4 wire)</u>	2 x HWS Valve or Res. Heat

Input – Output Schedules – (fig. 2)

