RCS 404M • Series 44 Remote Panel with S/O/W Switch, Lights & Occupied/Unoccupied Space Heating

Description of Temperature Control

- 404M-Maxitrol Series 44 Electronic Modulating Space Temperature Control with Remote Panel Occupied/Unoccupied Space Heating Control
- Single Range - 55°F to 90°F
- Space Selectrastat Mounted in Remote Panel
- Discharge Sensor Mounted in Blower
- Discharge Min. 40°F to 80°F/Max. 80°F to 140°F Discharge Set Point
- Remote Panel Includes Summer/Off/Winter Switch, and Indicator Lights

Applications

Where tempered make-up air is required for both indoor air quality and to replace an exhaust load in a facility where space temperature control is important and night setback is desired.

Heater Type

Industrial Re-circulating Unit

Sequence of Operations

With the disconnect in ON position and the SUMMER/OFF/WINTER switch (SW-02) in WINTER position and occupied mode is satisfied (RE-06) from the electronic time clock (TI-07) or the unoccupied room thermostat (TS-03) is closed and the unoccupied mode (RE-04) is satisfied, power is supplied to the damper motor (MT-02), if equipped.

When the damper motor approaches the OPEN position (approximately 70%), the damper-end switch (SW-07) closes energizing the blower motor starter contactor (ST-01) and powering the blower motor (MT-01). The blower motor can also be energized from the service switch (SW-05). After the blower is energized the “Blower On” light (LI-01) will illuminate on the remote panel.

After the blower is energized, the unit will check for the minimum indoor air temperature (TS-09) and the minimum outdoor air temperature (TS-10). If both temperatures are above the minimum set-points, the photohelic (PS-05) will be energized. The photohelic will then send a signal to the re-circulating damper motor (MT-03) to open. The damper will open and stop opening when building pressure is met according to the setting on the photohelic. If the minimum outdoor air temperature and minimum indoor air temperature stats are not met, the unit will go into 100% outdoor air mode until the stats are met again.

RCS System	Minimum Outdoor Air Temp	Minimum Indoor Air Temp	Maximum Recirculation Percentage	Maximum Discharge Temp
RCS5	-30 ºF	7 ºF	60%	90 ºF
RCS10	-30 ºF	25 ºF	50%	120 F
RCS15	-25 ºF	58 ºF	80%	90 ºF
RCS20	-25 ºF	54 ºF	60%	120 ºF
RCS25	-20 ºF	55 ºF	50%	140 ºF
RCS30	-15 ºF	47 ºF	60%	120 ºF
RCS35	0 ºF	52 ºF	80%	90 ºF
RCS40	0 ºF	35 ºF	50%	140 ºF

If the unit is equipped with the low-temperature limit control (TS-07), after ten minutes, the low-temperature limit control shuts down the unit if the discharge temperature does not reach the minimum set-point on the low-temperature limit control. Upon shutdown TS-07 will energize the "Low Temperature" light on the remote panel (LI-03) and the damper will close.

If the unit is equipped with a smoke detector (AL-02), the smoke detector will shut down the unit if smoke is detected.

If an exhaust fan starter coil is tied into the exhaust fan interlock (C1-01), the exhaust fan will turn on.

If the unit is equipped with a firestat (TS-22), the unit will shut down if the temperature exceeds the control's setting.

If the unit is equipped with a clogged filter switch (PS-02), the pressure drop across the filters will be monitored. If the pressure drop exceeds the set-point, PS-02 will illuminate the "Clogged Filter" light on the remote panel (LI-05).

When the low airflow switch (PS-01) is proven, the high temperature limit control (TS-04) is energized. The high temperature limit control will monitor the air temperature and shut down the burner if the temperature set point is exceeded. The high temperature limit will require a manual reset.

If equipped, the optional low and high gas pressure switches (PS-03 & PS-04) will be energized. If the gas pressure is not between the set-points the burner will turn off and require a manual reset.

(Note: when the remote panel is in SUMMER position the burner is locked out)

The flame relay (RE-07) is energized when the burner ON/OFF intake air stat (TS-06) calls for heat. The pilot valve (VA-03) opens, and the ignition transformer (TR-03) energizes, providing a signal to spark the spark rod.

After the flame rod (SN-02) proves flame, the main valves (VA-01 & VA-02) open, and the ignition transformer de-energizes. The burner can also be energized from the service switch (SW-06). After the main gas valves open the "Burner On" light (LI-02) will illuminate on the remote panel. If the flame rod does not prove after 3 ignition cycles, the burner will shut off and the "Flame Failure Light" (LI-04) will illuminate on the remote panel. The pilot valve (VA-03) stays energized.

If the unit is equipped with dual flame rods (SN-03), timer (T1-11) is energized. After the timer's set point is exceeded, the flame sensing is switched from SN-02 to SN-03 (SN-03 is located at the opposite end of the burner) for continual flame monitoring during unit operation.

When in occupied mode, the temperature control system's amplifier (AM-01) receives a signal from the occupied room thermostat (TS-02) and when heat is required the amplifier will send a DC voltage to the modulating valve (VA-05). As the DC voltage from the amplifier increases the modulating valve will open, allowing more gas to flow. This modulation allows the amplifier to maintain space temperature control. If the unoccupied room thermostat (TS-03) calls for heat, a high fire signal will be sent to the temperature control system's amplifier (AM-01), until the unoccupied room thermostat is satisfied. The discharge air sensor (TS-01) monitors the air and keeps the discharge air temperatures between 60 °F and 120°F.