Application 2218: Constant Volume Room Pressurization with Hot Water Reheat

Overview

In Application 2218, the controller provides a constant volume of air to the room during occupied periods, and a lower constant volume of air to the room during unoccupied periods. It modulates a reheat valve for room temperature control. The controller also modulates the supply and exhaust air dampers to maintain a fixed CFM differential between the volumes of supply and exhaust air. To work properly, the central air handling unit must provide both supply and exhaust air. See Figure 2218-1 and Figure 2218-2.

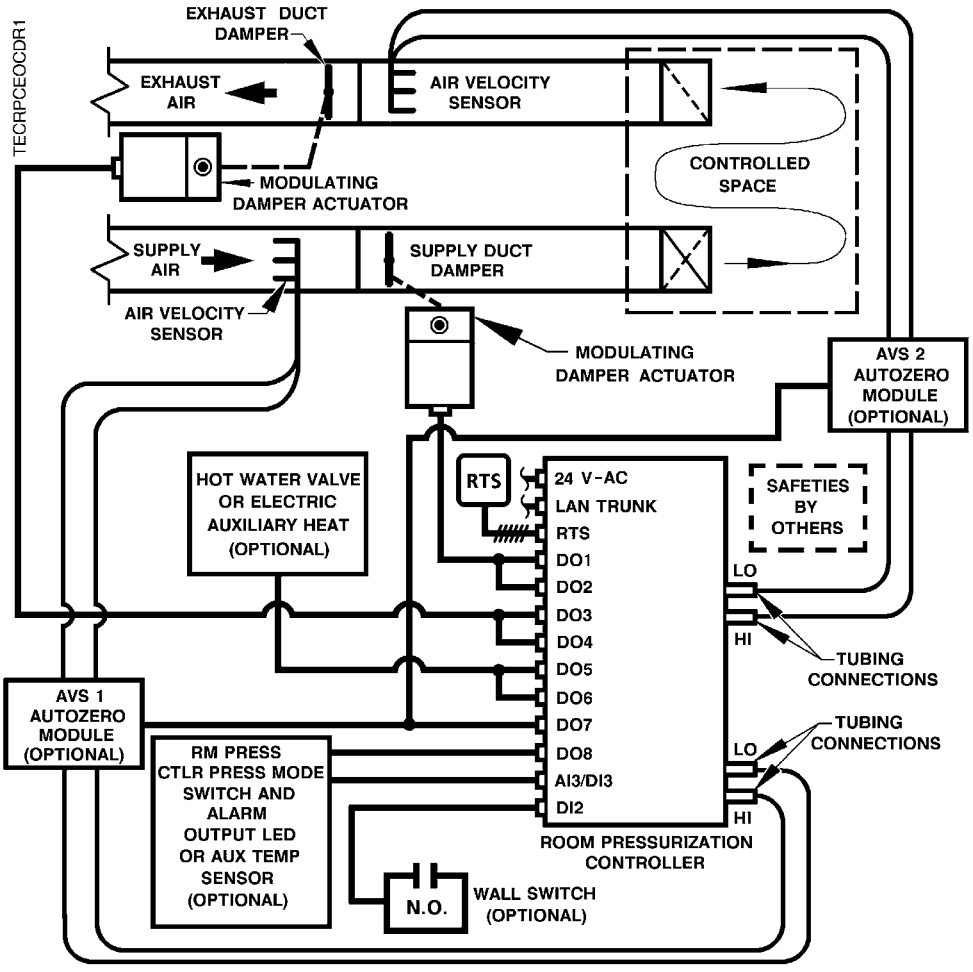
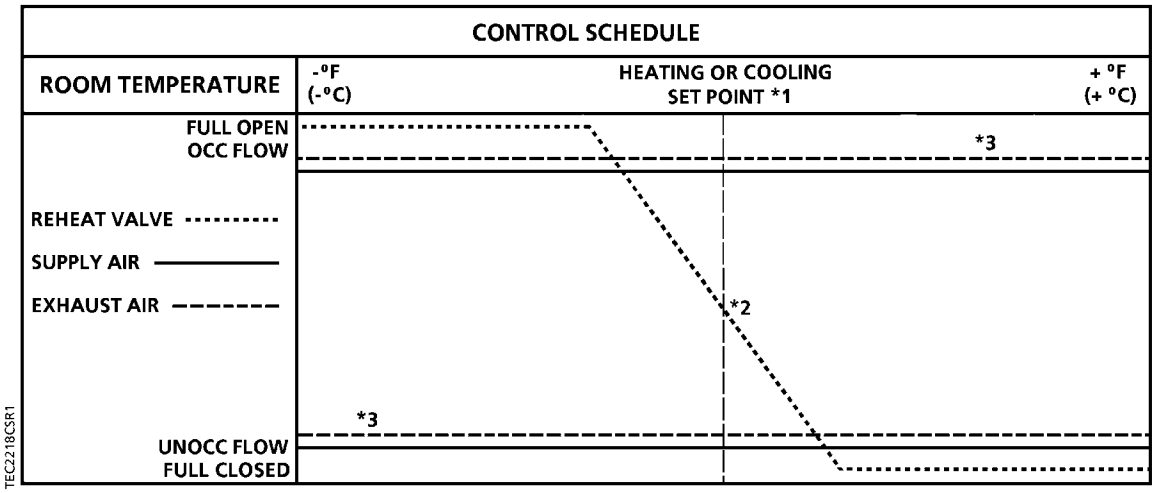


Figure 2218-1. Application 2218 Control Drawing.



1. See Sequence of Operation, *Control Temperature Setpoints*.
2. See Sequence of Operation, *Hot Water Reheat* (optional).
3. The exhaust airflow is shown with a negative pressure offset from the supply airflow. See Sequence of Operation, *Control Loops*.

Figure 2218-2. Application 2218 Control Schedule.

Hardware Inputs

Analog

- Air velocity sensor (two required)
- Pressure mode switch or auxiliary temperature sensor (optional)
- Room temperature sensor
- Room temperature setpoint dial (optional)

Digital

- Night mode override (optional)
- Wall switch (optional)

Hardware Outputs

Analog

- None

Digital

- Alarm output (optional)
- Autozero Module (optional, two required if used)
- Electronic damper actuator (two required)
- Electronic valve actuator (optional)

Ordering Notes

Room Pressurization Controller – Electronic Output (540-516)

Room Pressurization Controller – Electronic Output with Autozero Modules** (540-517)

**This controller is used in applications:

- In which it is not possible, due to operational restrictions, to calibrate the air velocity transducer by fully closing the damper (for example, clean rooms, laboratories).
- In which a minimum position damper stop is used or dampers leak when closed.

See *APOGEE Automation Configuration and Sizing Guidelines* on InfoLink for product numbers.

Electronic damper actuator (two required)

Electronic valve actuator (optional)

Room Pressurization Controller Pressure Mode Switch (optional)

Terminal Equipment Controller room temperature sensor

Point Database

Table 2218-1 presents the point database information for Application 2218.

Sequence of Operation

The following paragraphs present the sequence of operation for Application 2218, "Constant Volume Room Pressurization with Hot Water Reheat".

Control Temperature Setpoints

Depending on the controller's current operational mode (occupied or unoccupied), CTL STPT (Point 92) holds the value of one of the following setpoints:

Occupied Mode – CTL STPT (Point 92) holds the value of OCC CLG STPT (Point 6) in cooling mode or OCC HTG STPT (Point 7) in heating mode. If the room temperature sensor has a setpoint dial and STPT DIAL (Point 14) = YES, CTL STPT holds the value of RM STPT DIAL (Point 13).

If the setpoint dial is used and RM STPT DIAL (Point 13) < RM STPT MIN (Point 11), CTL STPT (Point 92) holds the value of RM STPT MIN. If RM STPT DIAL > RM STPT MAX (Point 12), CTL STPT holds the value of RM STPT MAX.

Unoccupied Mode – CTL STPT (Point 92) holds the value of UNOCC CLG STPT (Point 8) or UNOCC HTG STPT (Point 9).

NOTE: CTL TEMP (Point 78) is the same as the value of ROOM TEMP (Point 4), unless CTL TEMP is overridden.

Occupied and Unoccupied Modes

The occupied/unoccupied status of the space is determined by the value of OCC.UNOCC (Point 29). The control of this point differs depending on whether the controller is monitoring the value of a wall switch or if the controller is connected to a field panel.

When a wall switch is physically connected to the termination strip on the controller at DI 2 (Figure 2218-3), and WALL SWITCH (Point 18) = YES, the controller monitors DI 2 (Point 24). When the value of DI 2 is ON (the switch is closed), OCC.UNOCC (Point 29) will be set to OCC, indicating that the controller is in occupied mode. When the value of DI 2 is OFF (the switch is open), OCC.UNOCC will be set to UNOCC, indicating that the controller is in unoccupied mode.

When WALL SWITCH (Point 18) = NO, the controller does not monitor the value of DI2, even if one is connected to it. If the controller is operating stand-alone, the controller stays in occupied mode all the time. If the controller is operating with centralized control (that is, connected to a field panel), the field panel can send an operator or PPCL command to override the value of OCC.UNOCC (Point 29). See *Powers Process Control Language (PPCL) User's Manual* (125-1896) for more information.

Unoccupied Mode Override Switch

If an override switch is present on the room temperature sensor and a value (in hours) other than zero has been set for OVRD TIME (Point 20), pressing the override switch will reset the controller to occupied operational mode for the time period that is set in OVRD TIME. The value of UNOCC OVRD (Point 21) changes to OCC. After the override time elapses, the controller returns to unoccupied mode and the value of UNOCC OVRD changes back to UNOCC.

Only when the controller is in unoccupied mode will the override switch on the room temperature sensor have any effect on the controller.

Tracking Mode

TRACK MODE (Point 3) determines which airflow setpoint will lead and which will follow.

- If TRACK MODE (Point 3) = ETS (exhaust tracks supply), the supply setpoint will be set to maintain temperature requirements, and based on the supply, the exhaust flow setpoint will be calculated to maintain the volume offset. The supply leads and the exhaust follows.
- If TRACK MODE (Point 3) = STE (supply tracks exhaust), the exhaust setpoint will be set to maintain temperature requirements, and based on the exhaust, the supply flow setpoint will be calculated to maintain the volume offset. The exhaust leads and the supply follows.

Control Volume Setpoints

CTL FLOW MIN (Point 76) holds the value of UNOCC FLOW (Point 31). CTL FLOW MAX (Point 77) holds the value of OCC FLOW (Point 32).

The supply and exhaust flows are each maintained by modulating the supply and exhaust dampers, respectively. One flow is determined by the occupancy requirements, while the other is determined by the differential flow requirements for pressurization. TRACK MODE (Point 3) determines which is which. See *Tracking Mode* for details on ETS and STE.

CAV Flow Setpoint - If TRACK MODE (Point 3) = ETS, SUP FLO STPT (Point 93) is calculated as follows:

- In occupied mode, SUP FLO STPT (Point 93) = 100% which corresponds to the value of OCC FLOW (Point 32).
- In unoccupied mode, SUP FLO STPT (Point 93) = [(UNOCC FLOW / OCC FLOW) * 100%] which corresponds to the value of UNOCC FLOW (Point 31).

If TRACK MODE (Point 3) = STE, EXH FLO STPT (Point 85) is calculated as shown above.

Differential Flow Setpoint - If TRACK MODE (Point 3) = ETS and ACTIVE.NTRAL (Point 10) = ACTIVE, EXH FLO STPT (Point 85) is calculated as follows:

The exhaust flow loop maintains a fixed VOLUME OFFST (Point 88) in cfm (lps) with a positive or negative, POS.NEG (Point 25), differential between the supply and exhaust air volumes. This is accomplished using one of two tracking algorithms, determined by the value of TRACKING (Point 82). If TRACKING = STPT, the exhaust setpoint tracks the supply setpoint.

Example

- If OCC FLOW (Point 32) = 1000 cfm, and VOLUME OFFST (Point 88) = 100 cfm with POS.NEG set to NEG, then EXH FLO STPT (Point 85) is 10% more than SUP FLO STPT (Point 93). (100 cfm / 1000 cfm) × 100% flow = 10%.

  When SUP FLO STPT (Point 93) is 100%, EXH FLO STPT (Point 85) is 110%.

  When SUP FLO STPT (Point 93) is 50%, EXH FLO STPT (Point 85) is 60%.

  When SUP FLO STPT (Point 93) is 0%, EXH FLO STPT (Point 85) is 10%.

- With POS.NEG set to POS, the EXH FLO STPT (Point 85) is 10% less than the SUP FLO STPT (Point 93). (100 cfm / 1000 cfm) × 100% flow = 10%.

  When SUP FLO STPT (Point 93) is 100%, EXH FLO STPT (Point 85) is 90%.

  When SUP FLO STPT (Point 93) is 50%, EXH FLO STPT (Point 85) is 40%.

  When SUP FLO STPT (Point 93) is 10%, EXH FLO STPT (Point 85) is 0%.

NOTE: In this example, the controller would not allow SUP FLO STPT (Point 93) to fall below 10% because EXH FLO STPT (Point 85) cannot be less than 0%.

If ACTIVE.NTRAL (Point 10) = NTRAL, then EXH FLO STPT (Point 85) = SUP FLO STPT (Point 93) and VOLUME OFFST (Point 88) is not used.

If TRACKING (Point 82) = FLOW, the exhaust setpoint tracks the actual supply flow, not the flow setpoint. Setpoint tracking typically provides more stable control. If the supply flow loop cannot maintain its setpoint, the flow tracking algorithm will maintain the flow differential.

If TRACK MODE (Point 3) = STE, SUP FLO STPT (Point 93) is calculated as shown above.

Control Loops

The Room Pressurization Controller uses four Proportional, Integral, Derivative (PID) control loops: two temperature loops and two flow loops.

Temperature Loop – The temperature loop is a heating loop which operates in both heating and cooling modes. The heating loop generates HTG LOOPOUT (Point 80) which is then used to control the heating valve in order to maintain the room temperature set in CTL STPT (Point 92). See *Control Temperature Setpoints*.

Flow Loops – The *supply flow loop* maintains SUP FLO STPT (Point 93) by modulating supply air damper. SUPPLY FLOW (Point 75) is the input value for the supply flow loop and is dependent upon SUP AIR VOL (Point 35) and OCC FLOW (Point 32) according to the following formula:

$$\frac{\text{SUP AIR VOL}}{\text{OCC FLOW}} \times 100\% = \text{SUPPLY FLOW}$$

- If SUP AIR VOL (Point 35) = 0 cfm, SUPPLY FLOW (Point 75) = 0% flow.
- If SUP AIR VOL (Point 35) = OCC FLOW (Point 32), SUPPLY FLOW (Point 75) = 100% flow.

The *exhaust flow loop* maintains EXH FLO STPT (Point 85) by modulating the exhaust air damper. EXHAUST FLOW (Point 74) is the input value for the exhaust flow loop and is dependent upon EXH AIR VOL (Point 30) and OCC FLOW (Point 32) according to the following formula:

$$\frac{\text{EXH AIR VOL}}{\text{OCC FLOW}} \times 100\% = \text{EXHAUST FLOW}$$

- If EXH AIR VOL (Point 30) = 0 cfm, EXHAUST FLOW (Point 74) = 0% flow.
- If EXH AIR VOL (Point 30) = OCC FLOW (Point 32), EXHAUST FLOW (Point 74) = 100% flow.

Positive/Negative Pressure Switchover

An optional pressure mode switch can be connected to the termination strip on the controller at AI 3. This switch is designed to let the controller know which pressure mode to use.

If PRES SWITCH (Point 81) = YES:

- In the first position, Protective Isolation, POS.NEG (Point 25) is set to POS, indicating that the controller is in the positive pressure mode, and ACTIVE.NTRAL (Point 10) is set to ACTIVE.
- In the second position, Neutral Isolation, ACTIVE.NTRAL (Point 10) is set to NTRAL.
- In the third position, Infectious Isolation, POS.NEG (Point 25) is set to NEG, indicating that the controller is in the negative pressure mode, and ACTIVE.NTRAL (Point 10) is set to ACTIVE.

When ACTIVE.NTRAL (Point 10) = ACTIVE, the differential flow alarm feature is enabled. When ACTIVE.NTRAL = NTRAL, the differential flow alarm feature is disabled (see *Differential Flow Alarm*).

If the pressure mode switch fails, PT FAIL COND (Point 89) is set to ALARM. The controller continues to operate in the last known mode of operation (positive, negative, or neutral). Overriding POS.NEG (Point 25) will return PT FAIL COND (Point 89) back to NORMAL.

If PRES SWITCH (Point 81) = NO, an auxiliary temperature sensor can be monitored on AI-3. AUX TEMP (Point 15) holds the temperature reading.

Differential Flow Alarm

When ALARM OUT (Point 50) is enabled (ACTIVE.NTRAL (Point 10) = ACTIVE), its value changes from OFF to ON and DO8 turns on if either of the following conditions persists longer than the time value of ALARM DELAY (Point 62):

- The value of ACTUAL OFFST (Point 83) > the sum of VOLUME OFFST (Point 88) plus OFFSET LMT (Point 61).
- The value of ACTUAL OFFST (Point 83) < the difference of VOLUME OFFST (Point 88) minus OFFSET LMT (Point 61).

Hot Water Reheat

CAUTION:

Do not set UNOCC FLOW (Point 31) to 0 cfm. A minimum airflow should be provided across the heating coils when the heating valve is open.

The heating loop modulates the heating valve in both heating and cooling modes.

Calibration

Air Velocity Transducer – Calibration of the controller's internal air velocity transducers is periodically required to maintain accurate air velocity readings. CAL SETUP (Point 95) is set with the desired calibration option during controller startup. Depending on the value of CAL SETUP, calibration may be set to take place automatically or manually when the override switch is pressed on the room temperature sensor. If CAL AIR (Point 94) = YES, calibration is in progress.

- For a controller used without Autozero Modules, CAL MODULE (Point 87) is set to NO, and the dampers are commanded closed simultaneously to get zero airflow readings during calibration.
- For a controller used with Autozero Modules, CAL MODULE (Point 87) is set to YES, and calibration occurs without closing the damper. (Exception: During the first calibration after start-up, initialization or return from power loss, the dampers are closed to calibrate the damper positions.)

Hot Water Valve – Calibration of a hot water valve (if used) is performed simultaneously with calibration of the air velocity transducers and is accomplished by commanding the valve closed. Calibration of the valve is not affected by the presence of Autozero Modules.

At the end of a calibration sequence, CAL AIR (Point 94) returns to NO automatically. A value of NO indicates that the controller is not in a calibration sequence.

The Autozero Modules are used during calibration when they are wired to DO7 and CAL MODULE (Point 87) is set to YES.

Damper Status Operation

Under normal operation DMPR STATUS (Point 84) reads CAL. However, when using the Autozero Modules, it is possible that the calculated damper position may differ from the actual (physical) damper position after a while.

If this occurs, the controller will automatically compensate for any difference by setting DMPR STATUS (Point 84) to RECAL which readjusts the value of the damper positions. DMPR STATUS will be set to RECAL if all of the following conditions are true:

- SUPPLY POS (Point 49) = 100%
- SUP AIR VOL (Point 35) > 0 cfm
- SUPPLY FLOW (Point 75) < SUP FLO STPT (Point 93)

In this case, the controller resets the value of SUPPLY POS (Point 49) to 75%, strokes the damper to 100%, and then checks to see if SUPPLY FLOW (Point 75) ≥ SUP FLO STPT (Point 93). If not, the controller repeats this sequence. If after the fourth attempt the conditions are unchanged, DMPR STATUS (Point 84) remains set to RECAL, but the controller discontinues attempts to recalibrate the damper position.

- or -

- SUPPLY POS (Point 49) = 0%
- SUP AIR VOL (Point 35) > 0 cfm
- SUPPLY FLOW (Point 75) > SUP FLO STPT (Point 93)

In this case, the controller resets the value of SUPPLY POS (Point 49) to 25%, strokes the damper to 0%, and then checks to see if SUPPLY FLOW (Point 75) ≤ SUP FLO STPT (Point 93). If not, the controller repeats this sequence. If after the fourth attempt the conditions are unchanged, DMPR STATUS (Point 84) remains set to RECAL, but the controller discontinues attempts to recalibrate the damper position.

DMPR STATUS (Point 84) will also be set to RECAL if these same conditions exist for the exhaust damper.

If DMPR STATUS (Point 84) has been changed to RECAL in response to one of the conditions described above, do one of the following:

1. If flow is now being properly controlled, set DMPR STATUS to CAL and release it.

2. If flow is still not being properly controlled (that is, one of the conditions described above is still present) or if the damper position must be accurate, initialize the controller.

If these steps do not fix the problem of maintaining flow, a mechanical problem might exist.

Fail-safe Operation

If either one of the air velocity sensors fail (SUP AIR VOL (Point 35) or EXH AIR VOL (Point 30)), the supply and exhaust dampers are controlled as follows:

- If FAIL MODE (Point 40) is set at OPEN, the controller sets the supply and exhaust dampers open.

- If FAIL MODE is set at CLOSED, the controller sets the supply and exhaust dampers closed.

The hot water valve continues to operate as normal.

If the room temperature sensor fails and ROOM TEMP (Point 4) and CTL TEMP (Point 78) are not overridden, the hot water valve moves to fully open. In ETS mode, the supply damper moves to the minimum airflow position, while the exhaust damper continues to maintain a fixed cfm differential between the supply air volume and exhaust air volume. (In STE mode, exhaust moves to the minimum position while the supply follows to maintain the airflow differential.)

PT FAIL COND (Point 89) is set to ALARM if

- Either one of the air velocity sensors fails.

- The room temperature sensor fails (and neither ROOM TEMP (Point 4) nor CTL TEMP (Point 78) is overridden).

- The pressure mode switch fails and PRES SWITCH (Point 81) is set to YES.

- There is not a pressure mode switch attached to AI3 and POS.NEG (Point 25) is not overriden.

Otherwise, a NORMAL value will be displayed.

If RM STPT DIAL (Point 13) fails, the controller operates with the last known setpoint dial value.

Application Notes

If temperature swings in the room are excessive or there is trouble maintaining the setpoint, the cooling loop, the heating loop or both need to be tuned. If SUPPLY FLOW (Point 75) is oscillating, while SUP FLO STPT (Point 93) is constant, the supply flow loop requires tuning. If the EXHAUST FLOW (Point 74) is oscillating while EXH FLO STPT (Point 85) is constant, the exhaust flow loop requires tuning.

Wiring diagram

Figure 2218-3 shows the point wiring for Application 2218.

CAUTION:

The controller's DOs control 24 Vac loads only. The maximum rating is 12 VA for each DO. Use an interposing 220V 4-relay module for any of the following:

- VA requirements higher than the maximum
- 110 or 220 Vac requirements
- DC power requirements
- Separate transformers used to power the load

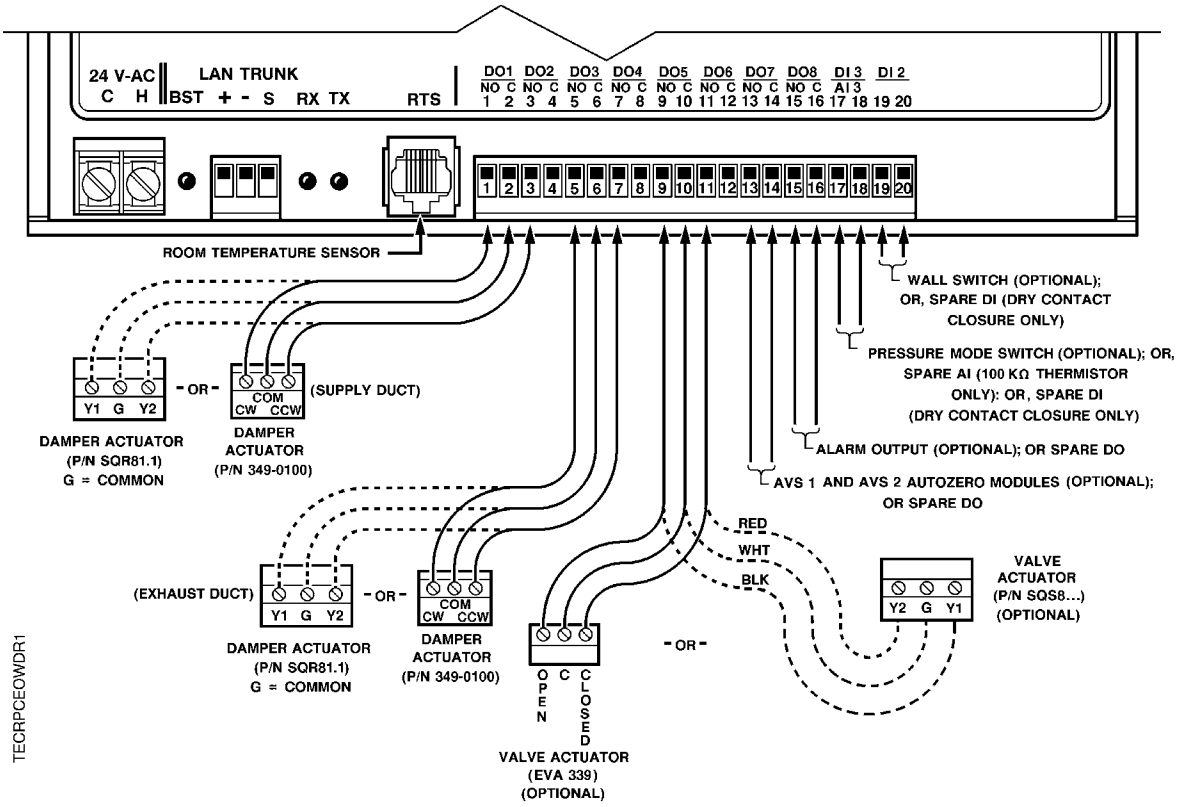


Figure 2218-3. Application 2218 Wiring Diagram with Hot Water Reheat.

Table 2218-1. Point Database for Application 2218.

Point Number	Descriptor	Factory Default (SI Units)	Engr. Units (SI Units)	Slope (SI Units)	Intercept (SI Units)	On Text	Off Text
01	CTLR ADDRESS	99	–	1	0	–	–
02	APPLICATION	2218	–	1	0	–	–
03	TRACK MODE	ETS	–	–	–	STE	ETS
{04}	ROOM TEMP	74.00 (23.45)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
{05}	HEAT.COOL	COOL	–	–	–	HEAT	COOL
06	OCC CLG STPT	74.00 (23.45)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
07	OCC HTG STPT	70.00 (21.21)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
08	UNOCC CLG STPT	82.00 (27.93)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
09	UNOCC HTG STPT	65.00 (18.41)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
{10}	ACTIVE.NTRAL	NTRAL	–	–	–	ACTIVE	NTRAL
11	RM STPT MIN	55.00 (12.81)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
12	RM STPT MAX	90.00 (32.41)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
{13}	RM STPT DIAL	74.00 (23.45)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
14	STPT DIAL	NO	–	1	0	YES	NO
{15}	AUX TEMP	74.0 (23.5)	DEG F (DEG C)	0.5 (0.3)	37.5 (3.1)	–	–
18	WALL SWITCH	NO	–	–	–	YES	NO
{19}	DI OVRD SW	OFF	–	–	–	ON	OFF
20	OVRD TIME	1	HRS	1	0	–	–
{21}	UNOCC OVRD	UNOCC	–	–	–	OCC	UNOCC
{24}	DI 2	OFF	–	–	–	ON	OFF
{25}	POS.NEG	NEG	–	–	–	POS	NEG
26	EXHFLO PGAIN	0.00	–	0.05	0.00	–	–
27	EXHFLO IGAIN	0.010	–	0.001	0.000	–	–
28	EXHFLO DGAIN	0.0	–	2.0	0.0	–	–

1. Points not listed are not used in this application.
2. A single value in a column means that the value is the same in English units and in SI units.
3. Point numbers that appear in brackets { } may be unbundled at the field panel.

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Table 2218-1. Point Database for Application 2218.

Point Number	Descriptor	Factory Default (SI Units)	Engr. Units (SI Units)	Slope (SI Units)	Intercept (SI Units)	On Text	Off Text
{29}	OCC.UNOCC	UNOCC	–	–	–	OCC	UNOCC
{30}	EXH AIR VOL	0 (0.0)	CFM (LPS)	4.0 (1.9)	0.0 (0.0)	–	–
31	UNOCC FLOW	220.0 (103.9)	CFM (LPS)	4.0 (1.9)	0.0 (0.0)	–	–
32	OCC FLOW	2200.0 (1038.2)	CFM (LPS)	4.0 (1.9)	0.0 (0.0)	–	–
{35}	SUP AIR VOL	0.0 (0.0)	CFM (LPS)	4.0 (1.9)	0.0 (0.0)	–	–
36	SUP FLO COEF	1.00	–	0.01	0.00	–	–
{37}	VALVE COMD	0.0	PCT	0.4	0.0	–	–
{38}	VALVE POS	0.0	PCT	0.4	0.0	–	–
39	MTR3 TIMING	130.0	SEC	1.0	0.0	–	–
40	FAIL MODE	OPEN	–	–	–	CLOSED	OPEN
{41}	DO1	OFF	–	–	–	ON	OFF
{42}	DO2	OFF	–	–	–	ON	OFF
{43}	DO3	OFF	–	–	–	ON	OFF
{44}	DO4	OFF	–	–	–	ON	OFF
{45}	DO5	OFF	–	–	–	ON	OFF
{46}	DO6	OFF	–	–	–	ON	OFF
{47}	AUTOZERO MOD	ON	–	–	–	ON	OFF
{48}	SUPPLY COMD	0.0	PCT	0.4	0.0	–	–
{49}	SUPPLY POS	0.0	PCT	0.4	0.0	–	–
{50}	ALARM OUT	OFF	–	–	–	ON	OFF
51	MTR1 TIMING	95.0	SEC	1.0	0.0	–	–
{52}	EXHAUST COMD	0.0	PCT	0.4	0.0	–	–
{53}	EXHAUST POS	0.0	PCT	0.4	0.0	–	–
54	EXH FLO COEF	1.00	–	0.01	0.00	–	–
55	MTR2 TIMING	95.0	SEC	1.0	0.0	–	–
56	DPR1 ROT ANG	90.0	–	1.0	0.0	–	–
57	DPR2 ROT ANG	90.0	–	1.0	0.0	–	–

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Table 2218-1. Point Database for Application 2218.

Point Number	Descriptor	Factory Default (SI Units)	Engr. Units (SI Units)	Slope (SI Units)	Intercept (SI Units)	On Text	Off Text
58	MTR SETUP	31.0	–	1.0	0.0	–	–
59	DO DIR.REV	0.0	–	1.0	0.0	–	–
60	EXHDUCT AREA	1.000 (0.092)	SQ.FT (SQ.M)	0.025 (0.003)	0.000 (0.000)	–	–
61	OFFSET LMT	16.0 (7.6)	CFM (LPS)	4.0 (1.9)	0.0 (0.0)	–	–
62	ALARM DELAY	10.0	SEC	1.0	0.0	–	–
67	HTG P GAIN	10.00 (18.00)	–	0.25 (0.45)	0.00 (0.00)	–	–
68	HTG I GAIN	0.010 (0.018)	–	0.001 (0.002)	0.000 (0.000)	–	–
69	HTG D GAIN	0.0 (0.0)	–	2.0 (3.6)	0.0 (0.0)	–	–
70	HTG BIAS	0.0	PCT	0.4	0.0	–	–
71	SUPFLO PGAIN	0.00	–	0.05	0.00	–	–
72	SUPFLO IGAIN	0.010	–	0.001	0.000	–	–
73	SUPFLO DGAIN	0.0	–	2.0	0.0	–	–
{74}	EXHAUST FLOW	0.00	PCT	0.25	0.00	–	–
{75}	SUPPLY FLOW	0.00	PCT	0.25	0.00	–	–
{76}	CTL FLOW MIN	220.0 (103.9)	CFM (LPS)	4.0 (1.9)	0.0 (0.0)	–	–
{77}	CTL FLOW MAX	2200.0 (1038.2)	CFM (LPS)	4.0 (1.9)	0.0 (0.0)	–	–
{78}	CTL TEMP	74.00 (23.45)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
{80}	HTG LOOPOUT	0.0	PCT	0.4	0.0	–	–
81	PRES SWITCH	YES	–	–	–	YES	NO
82	TRACKING	STPT	–	–	–	FLOW	STPT
{83}	ACTUAL OFFST	0 (0)	CFM (LPS)	4 (2)	-8000 (-3776)	–	–
{84}	DMPR STATUS	CAL	–	–	–	RECAL	CAL
{85}	EXH FLO STPT	0.00	PCT	0.25	0.00	–	–
87	CAL MODULE	NO	–	–	–	YES	NO

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3. Point numbers that appear in brackets { } may be unbundled at the field panel.

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Table 2218-1. Point Database for Application 2218.

Point Number	Descriptor	Factory Default (SI Units)	Engr. Units (SI Units)	Slope (SI Units)	Intercept (SI Units)	On Text	Off Text
{88}	VOLUME OFFST	0.0 (0.0)	CFM (LPS)	4.0 (1.9)	0.0 (0.0)	–	–
{89}	PT FAIL COND	ALARM	–	–	–	ALARM	NORMAL
{92}	CTL STPT	74.00 (23.45)	DEG F (DEG C)	0.25 (0.14)	48.00 (8.89)	–	–
{93}	SUP FLO STPT	0.00	PCT	0.25	0.00	–	–
{94}	CAL AIR	NO	–	–	–	YES	NO
95	CAL SETUP	4.0	–	1.0	0.0	–	–
96	CAL TIMER	12.0	HRS	1.0	0.0	–	–
97	SUPDUCT AREA	1.000 (0.092)	SQ.FT (SQ.M)	0.025 (0.003)	0.000 (0.000)	–	–
98	LOOP TIME	5.0	SEC	1.0	0.0	–	–
{99}	ERROR STATUS	0.0	–	1.0	0.0	–	–

1. Points not listed are not used in this application.
2. A single value in a column means that the value is the same in English units and in SI units.
3. Point numbers that appear in brackets { } may be unbundled at the field panel.