INPUT/OUTPUT SUMMARY

POINT NO.	SYSTEM APPARATUS OR AREA POINT DESCRIPTION	INPUTS: ANALOG: MEASURED: SPEED (PROG)	VOLTS	AMPS	KW	VALVE/DAMPER POSITION	TEMPERATURE	HUMIDITY	STATIC PRESSURE	ENTERING AIR PRESSURE	INLET TEMPERATURE	CO2	CO TEMPERATURE	ENTHALPY	CALC.: RUN TIME	CFM	KW/HP	BINARY: STATUS (DIFF. PRESS.)	STATUS	LOW TEMP LIMIT	HIGH TEMP LIMIT	END SWITCH (ES) POSITION	OUTPUTS: BINARY: ENABLE/DISABLE	DAMPER POSITION	ANALOG: DAMPER POSITION	ENTERING AIR PRESSURE	VALVE POSITION	SYSTEM FEATURES: ALARMS: DAMPER POSITION	LOW TEMP LIMIT	HIGH TEMP LIMIT	HIGH PRESS LIMIT	FAULT	FAN ALARM	TIME SCHEDULING	ALTERNATE	TIME DELAY START	PROGRAMS	GENERAL: SCHEDULE	ALARM(S)	TREND INTERVAL (MIN)	RUN TIME TOTALIZE	START/STOP CONTROL	OVERRIDE ON GRAPHIC
	DEDICATED OUTDOOR AIR UNIT DOAU-1																																												
1	SUPPLY FAN (SF)	X	X	X	X											X	X			X				X							X		X			X	5		X	X	X
2	OUTSIDE AIR DAMPER (D-1)						X													X			X		X						X		X			X				X	X
3, 4, 5, 6	AIR STREAM TEMP. SENSORS (TT-1, TT-2, TT-3, TT-4)							X				X	X		X		X				X																5		X	X	X
7	SUPPLY AIR HUMID. (HT-1)							X							X		X					X																5		X	X	X
8	HIGH STATIC PRESSURE (HSPS-1)								X																							X	X							X			X	
9, 10	DOAU-1 FILTER DP (FDP-1 & FPD-2)									X																														5	X	X	X	X
11	DOAU-1 SUPPLY FAN DIFFERENTIAL PRESSURE (SDP)									X								X	X							X													X	X		X	
12	DOAU-1 HOT WATER AUTOMATIC FLOW CONTROL VALVE (HACV-1)					X																			X														5	X	X	X
13	OUTSIDE AIR CO2 PPM (OACO2)												X																										5		X	
14	OUTDOOR AIR HUMIDITY/WB TEMP (OAH)							X																														5		X	
15	OUTSIDE AIR TEMPERATURE (OAT)							X																														5		X	

DOAU-1 SEQUENCE OF OPERATION

GENERAL:

A. SEE PLANS FOR LOCATIONS OF ALL ROOM THERMOSTATS, DAMPERS, VALVES, AND EQUIPMENT; WHERE SUCH DEVICES ARE NOT INDICATED, BUT ARE REQUIRED BY THE SEQUENCES, THEY SHALL BE PROVIDED AND LOCATED IN THE FIELD BY THE ENGINEER.

B. OUTSIDE AIR DAMPERS SHALL BE NORMALLY CLOSED AND SHALL BE OPENED WHEN THE SUPPLY FAN IS ENERGIZED.

C. ALL TEMPERATURE, HUMIDITY, PRESSURE, AND TIME SET POINTS SHALL BE FULLY ADJUSTABLE FROM THE BMS.

D. DEDICATED OUTDOOR AIR UNIT (DOAU) SHALL BE ENERGIZED/DE-ENERGIZED THROUGH THE BMS AND OPERATE ON AN OPTIMAL OCCUPIED/UNOCCUPIED SCHEDULE WITH A 365 DAY/24 HOUR GRAPHIC INTERFACE SCHEDULE PROGRAM.

E. WHEN THE UNIT IS DE-ENERGIZED, ALL CONTROLS SHALL RETURN TO THEIR NORMAL POSITION, READY FOR RESTARTING, AND THE REFRIGERATION CIRCUIT SHALL DE-ENERGIZE. THE SUPPLY FAN SHALL DE-ENERGIZE, AND AFTER AN ADJUSTABLE INTERVAL TO ALLOW FOR FAN WIND-DOWN, OUTSIDE AIR DAMPER SHALL CLOSE. END SWITCH ON OUTSIDE AIR DAMPER SHALL PROVIDE PROOF OF CLOSURE.

F. THE DOAU SHALL BE PROVIDED WITH AN INTEGRAL FACTORY MOUNTED EQUIPMENT CONTROLLER (MEC) THROUGH THE UNIT CONTROLS, THE MEC SHALL CONTROL THE DOAU TO MAINTAIN THE REQUIRED SEQUENCE.

DEDICATED OUTDOOR AIR UNIT CONTROL:

A. SUPPLY FAN CONTROL:

1. WHEN THE UNIT IS COMMANDED ON EITHER LOCALLY OR VIA THE BMS, DAMPER D-1 SHALL OPEN. ONCE D-1 IS PROVEN OPEN BY ITS RESPECTIVE END SWITCH, SUPPLY FAN SHALL START.
2. A FAILURE OF THE SUPPLY FAN MOTOR (AS SENSED BY ITS DIFFERENTIAL PRESSURE SWITCH) SHALL DE-ENERGIZE THE UNIT AND ANNUNCIATE AN ALARM AT THE BMS.
3. HIGH LIMIT STATIC PRESSURE SENSOR SHALL ANNUNCIATE AN ALARM AT THE BMS AND DE-ENERGIZE THE SUPPLY FAN WHEN HIGH STATIC PRESSURE SET-POINT IS REACHED.

B. HEATING MODE:

1. THE REFRIGERANT SYSTEM SHALL BE DE-ENERGIZED DURING THE HEATING MODE.
2. THE SUPPLY FAN SHALL BE RUNNING, OUTDOOR AIR DAMPER SHALL BE OPEN. FLOW SHALL BE PROVEN BY THE SUPPLY FAN CURRENT SWITCHES.
3. THE MEC SHALL ENERGIZE THE DOAU AND MODULATE THE HOT WATER CONTROL VALVE TO MAINTAIN THE OCCUPIED HEATING AIR TEMPERATURE SET-POINT OF 70°F (ADJ.).
4. IN THE OCCUPIED MODE THE DOAU SHALL MAINTAIN A SUPPLY AIR HUMIDITY LEVEL NO GREATER THAN 50% (ADJ.).
5. IN THE UNOCCUPIED MODE THE DOAU SHALL MAINTAIN A SUPPLY AIR HUMIDITY LEVEL NO GREAT 60% (ADJ.).

C. COOLING MODE;

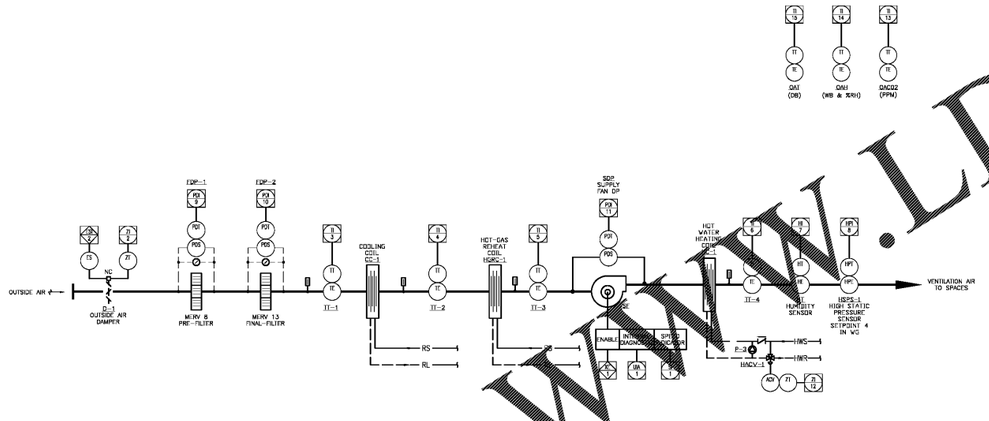
1. THE SUPPLY FAN SHALL BE RUNNING, THE OUTSIDE AIR DAMPER SHALL BE OPEN. AFTER FLOW HAS BEEN PROVEN BY THE FAN CURRENT SWITCHES THE DIRECT EXPANSION REFRIGERANT CIRCUIT SHALL ENERGIZE.
2. THE MEC SHALL CONTROL THE SYSTEM TO MAINTAIN A SUPPLY LEAVING AIR TEMPERATURE OF 75°F (ADJ.).
3. IN THE OCCUPIED MODE THE DOAU SHALL MAINTAIN A SUPPLY AIR HUMIDITY LEVEL NO GREATER THAN 50% (ADJ.).
4. IN THE UNOCCUPIED MODE THE DOAU SHALL MAINTAIN A SUPPLY AIR HUMIDITY LEVEL NO GREATER THAN 60% (ADJ.).

D. FILTERS:

1. DIFFERENTIAL PRESSURE TRANSMITTERS INSTALLED ACROSS THE FILTER BANK SHALL ALARM THE BMS WHEN THE HIGH DIFFERENTIAL PRESSURE SET-POINT (ADJ) IS REACHED.

E. HOT WATER RECIRCULATING PUMP:

1. UPON AN AIR TEMPERATURE READING OF 34°F (ADJ) AS SENSED BY TT-3, THE HOT WATER RECIRCULATING PUMP SHALL START AND REMAIN ON UNTIL THE AIR TEMPERATURE READING REACHES 40°F (ADJ).



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SHEET ISSUE:

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1	09/02/2020	ISSUE FOR BID+PERMIT	RMF

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DOAU-1 SCHEMATIC

SHEET NO. M601

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