

**VARIABLE AIR VOLUME (VAV) AHU-1
(TYPICAL FOR AHU-2)**

SEQUENCE OF OPERATION

BUILDING AUTOMATION SYSTEM INTERFACE:

THIS BUILDING AUTOMATION SYSTEM (BAS) WILL COMMUNICATE TO ALL AHU CONTROLLERS AN OCCUPIED, UNOCCUPIED, OPTIMAL START, NIGHT SETBACK HEAT / COOL AND TIMED OVERRIDE COMMANDS. IF COMMUNICATION IS LOST WITH THE BAS, OR A BAS IS NOT PRESENT, MORNING WARM-UP AND MORNING COOL-DOWN WILL BE DISABLED AND THE AHU'S CONTROLLERS SHALL CONTROL TO THE DEFAULT SETTINGS INSTALLED AT COMMISSIONING/START-UP.

OCCUPIED MODE -

DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL START AND RUN CONTINUOUSLY AND THE OUTDOOR AIR DAMPER SHALL MODULATE OPEN TO MAINTAIN THE MINIMUM VENTILATION REQUIREMENTS AS SET BY THE TEST AND BALANCE CONTRACTOR AT STARTUP/COMMISSIONING.

THE BAS SHALL MONITOR THE RETURN AIR TEMPERATURE, COMMON SPACE TEMPERATURES AND BAS'S SPACE TEMPERATURE SETPOINT TO DETERMINE WHEN TO INITIATE REQUESTS FOR COOLING OR HEATING.

CURRENT SINGLE ZONE VAV OPERATION:

LACK OF OPERABLE VAV BOXES WILL REQUIRE THAT THE AHUS OPERATE INITIALLY AS SINGLE ZONE VAV SYSTEMS.

THE SUPPLY FANS VFDS SHALL MODULATE BETWEEN 30% MINIMUM SPEED (ADJ.) AND 100% MAXIMUM SPEED (ADJ.) BASED UPON ZONE SPACE TEMPERATURE AND RELATIVE HUMIDITY.

DURING THE COOLING MODE, THE AHU DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE SET AT 58°F (ADJUSTABLE). THE AHU'S CHILLED WATER VALVE WILL MODULATE TO MAINTAIN THE ACTIVE DISCHARGE AIR TEMPERATURE COOLING SETPOINT (ADJ.). A SUPPLY AIR RESET ROUTINE WILL ADJUST THE DISCHARGE AIR TEMPERATURE BETWEEN A MINIMUM DISCHARGE AIR SETPOINT OF 55°F (ADJ.) AND A MAXIMUM DISCHARGE AIR SETPOINT OF 65°F (ADJ.) BASED THE MONITORED SENSORS DESCRIBED ABOVE AND THE RETURN AIR TEMPERATURE SETPOINT OF 75°F (ADJ.). IF THE DISCHARGE AIR TEMPERATURE SENSOR FAILS DURING NORMAL OPERATION THE CHILLED WATER VALVE WILL CLOSE AND AN ALARM WILL BE ANNUNCIATED AT THE BAS.

DURING THE HEATING MODE, OPERATE FANS @ 75% OF MAXIMUM SPEED (ADJ.) THE AHU DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE SET AT 100°F (ADJUSTABLE). THE AHU SHALL MODULATE ITS HOT WATER REHEAT VALVE TO MAINTAIN A CONSTANT DISCHARGE AIR TEMPERATURE.

SPACE (TEMPERATURE CONTROL):

THE TEMPERATURE IN THE ZONE SHALL BE MAINTAINED BY VARYING THE QUANTITY OF AIR DELIVERED TO THE ZONE, RATHER THAN BY VARYING THE DISCHARGE AIR TEMPERATURE.

THE WIRELESS SPACE SENSORS (TYPICAL FOR 5 PER AHU) SHALL MONITOR THE SPACE TEMPERATURE. THE SPACE TEMPERATURE SHALL BE USED AS AN INPUT TO THE DDC CONTROLLER ON THE AHUS TO BE USED TO DETERMINE THE VOLUME OF AIR, IN CFM, THAT IS TO BE DELIVERED TO THE ZONE TO SATISFY THE COOLING DEMAND.

ON AN INCREASE IN COOLING LOAD IN THE SPACE, THE AHU SHALL INCREASE THE VOLUME OF AIR BEING DELIVERED TO THE SPACE TO SATISFY THE TEMPERATURE SETPOINT AS MONITORED BY THE WIRELESS SPACE SENSORS.

ON A DECREASE IN COOLING LOAD IN THE SPACE, THE AHU SHALL REDUCE THE VOLUME OF AIR BEING DELIVERED TO THE SPACE TO SATISFY THE TEMPERATURE SETPOINT AS MONITORED BY THE WIRELESS SPACE SENSORS.

THE AHU UNIT CONTROLLER SHALL CONTROL THE SUPPLY FAN SPEED THROUGH THE SUPPLY FAN VARIABLE FREQUENCY DRIVE (VFD) TO MAINTAIN THE STATIC PRESSURE SETPOINT (ADJ.) AS CALCULATED BY THE SUPPLY FAN PRESSURE PROGRAM. THE DEFAULT DUCT STATIC PRESSURE SETPOINT WILL BE AS INDICATED ON THE MECHANICAL PLANS.

OUTDOOR AIRFLOW:

DURING THE OCCUPIED MODE, THE OUTDOOR AIR DAMPER SHALL BE MODULATED TO MAINTAIN THE MINIMUM VENTILATION VALUE BY MODULATING THE OUTDOOR AIR AND RETURN AIR DAMPERS, AS REQUIRED.

OUTDOOR AIR (OA) FLOW COMPENSATION:

AS THE SUPPLY FAN SLOWS, THE PRESSURE DROP ACROSS THE OUTDOOR AIR DAMPER CHANGES. THIS MEANS THAT THE QUANTITY OF OUTDOOR AIR WOULD DROP AS THE VFD GOES TOWARD MINIMUM.

THE OUTDOOR AIR (OA) FLOW COMPENSATION PROGRAM WILL AUTOMATICALLY MODULATE THE OA DAMPER POSITION OPEN IN RESPONSE TO A DECREASING SUPPLY FAN VFD SPEED POSITION. THE CORRELATION BETWEEN THE OUTDOOR AIR DAMPER POSITIONS (% OPEN) AND THE AHU FAN SPEED (CFM) ARE SETUP DURING TAB COMMISSIONING. THE UNIT SHALL PROVIDE THE MINIMUM OUTDOOR AIR FLOW REGARDLESS OF THE FAN'S SPEED. THE PERCENTAGE OF CHANGE IN THE OUTDOOR AIR DAMPER POSITION IS LINEAR TO THE CHANGE OF FAN SPEED BETWEEN THE MINIMUM AND MAXIMUM.

OPTIMAL START:

THE BAS SHALL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINT AND SPACE TEMPERATURE AND SHALL COMPARE THE CURRENT VALUES TO THE RECENT HISTORICAL DATA COLLECTED AND CALCULATE WHEN THE OPTIMAL START SHOULD OCCURS.

UNOCCUPIED MODE:

WHEN THE BUILDING IS INDEXED FOR UNOCCUPIED OPERATION, THE AHU'S SUPPLY FAN SHALL BE STOPPED, THE CHILLED WATER AND HOT WATER VALVES SHALL CLOSE TO THE COIL AND BE INHIBITED FROM OPERATING. THE OUTDOOR AIR DAMPER SHALL BE POSITIONED CLOSED AND THE RETURN AIR DAMPER SHALL BE POSITIONED OPEN.

WHEN THE COMMON SPACE TEMPERATURE DROPS BELOW THE UNOCCUPIED HEATING SETPOINT OF 60°F (ADJ.) THE SUPPLY FAN SHALL START AND MODULATE TO A PRESET SPEED (ADJ.). THE OUTDOOR AIR DAMPER SHALL REMAIN CLOSED AND THE RETURN AIR DAMPER SHALL REMAIN OPEN. THE AHU STATIC PRESSURE SENSOR SHALL MONITOR THE DUCT STATIC PRESSURE AND MODULATE THE FAN'S SPEED THROUGH THE FAN'S VFD TO MAINTAIN THE SETPOINT (ADJ.). THE AHU SHALL MODULATE THE HOT WATER REHEAT VALVE OPEN TO WARM THE SPACE TEMPERATURE. THE EXISTING SPACE VAV TERMINALS SHALL MODULATE THEIR AIR DAMPERS IN THE HEATING MODE. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 60°F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 4°F (ADJ.) THE SUPPLY FAN SHALL STOP. THE HOT WATER VALVE SHALL BE INHIBITED FROM OPERATING AND THE AHU SHALL RETURN TO ITS UNOCCUPIED MODE.

WHEN THE COMMON SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED COOLING SETPOINT OF 80°F (ADJ.) THE SUPPLY FAN SHALL START AND MODULATE TO A PRESET SPEED (ADJ.). THE OUTDOOR AIR DAMPER SHALL REMAIN CLOSED AND THE RETURN AIR DAMPER SHALL REMAIN OPEN. THE AHU STATIC PRESSURE SENSOR SHALL MONITOR THE DUCT STATIC PRESSURE AND MODULATE THE FAN'S SPEED THROUGH THE FAN'S VFD TO MAINTAIN THE STATIC PRESSURE SETPOINT (ADJ.). THE AHU CONTROLLER SHALL MODULATE ITS CHILLED WATER COOLING VALVE OPEN TO COOL THE SPACES. THE SPACE VAV TERMINALS SHALL MODULATE THEIR AIR DAMPERS IN THE COOLING MODE. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 80°F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4°F (ADJ.), THE SUPPLY FAN SHALL STOP. ITS CHILLED WATER VALVE SHALL BE INHIBITED FROM OPERATING AND THE AHU SHALL RETURN TO ITS UNOCCUPIED MODE.

MORNING WARM-UP:

DURING THE OPTIMAL START MODE, IF THE COMMON SPACE TEMPERATURE IS 3°F OR MORE BELOW THE BAS'S COMMON OCCUPIED HEATING SETPOINT, A MORNING WARM-UP SEQUENCE WILL BE ACTIVATED WITH 100% RETURN AIR. THE SUPPLY FAN WILL START AND ITS HOT WATER REHEAT VALVE SHALL MODULATE OPEN TO WARM THE SPACE TEMPERATURES. THE OA DAMPER SHALL REMAIN CLOSED. THIS SHALL OCCUR AT A MINIMUM OF 30 MINUTES PRIOR TO THE OCCUPIED MODE. THE WARM-UP MODE WILL TERMINATE AND TRANSITION INTO THE OCCUPIED MODE WHEN THE COMMON SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT.

MORNING COOL-DOWN:

DURING THE OPTIMAL START MODE, IF THE COMMON SPACE TEMPERATURE IS 3°F ABOVE THE BAS'S COMMON SPACE SENSOR'S OCCUPIED COOLING SETPOINT, A MORNING COOL-DOWN SEQUENCE WILL BE ACTIVATED WITH 100% RETURN AIR. THE SUPPLY FAN WILL START AND THE AHU'S CHILLED WATER VALVE SHALL MODULATE OPEN TO THE COIL TO LOWER THE SPACE TEMPERATURE TO THE OCCUPIED COOLING SETPOINT. THE OA DAMPER SHALL REMAIN CLOSED. THE MORNING COOL-DOWN MODE WILL TERMINATE AND TRANSITION INTO THE OCCUPIED MODE WHEN THE COMMON SPACE TEMPERATURE REACHES THE OCCUPIED COOLING SETPOINT.

INDOOR AIR QUALITY CONTROL DEMAND VENTILATION CONTROL:

WHILE IN THE OCCUPIED MODE, THE BAS CONTROLLER SHALL MODULATE THE OUTSIDE AIR DAMPER TO MAINTAIN THE MINIMUM OUTSIDE AIR FLOW SETPOINT. IF THE HIGHEST OF THE FIVE (5) SPACE SENSOR'S CO² CONCENTRATION RISES ABOVE THE SETPOINT OF 800 + PPM (ADJ.), THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN IN SMALL INCREMENTS UNTIL THE SPACE AIR CO² LEVEL IS SATISFIED OR THE OUTSIDE AIR DAMPER REACHES THE DESIGN MAXIMUM OUTDOOR AIR FLOW SETPOINT. ONCE THE SPACE CO² CONCENTRATION SETPOINT IS SATISFIED FOR A PERIOD OF THIRTY MINUTES (ADJ.), THE OUTSIDE AIR DAMPER SHALL MODULATE TOWARD THE MINIMUM OUTDOOR AIR VENTILATION SETPOINT AND SHALL BE CONTINUOUSLY CALCULATED USING THE MEASURED CO² CONCENTRATION AS AN INDICATOR OF THE CURRENT PER-PERSON RATE.

OCCUPIED (SPACE HUMIDITY CONTROL):

ON A RISE IN SPACE RELATIVE HUMIDITY ABOVE 60% RH, THE COOLING COIL TEMPERATURE SETPOINT SHALL BE SET DOWN TO 52°F (ADJ.). THE CHILLED WATER VALVE SHALL BE MODULATED TO MAINTAIN THE DISCHARGE AIR SETPOINT TEMPERATURE. THE VAV ZONE HOT WATER HEATING VALVES WILL MODULATE OPEN AS REQUIRED TO MAINTAIN THEIR SPACE TEMPERATURES. THE SYSTEM SHALL REMAIN UNDER THIS CONTROL UNTIL THE RETURN AIR RELATIVE HUMIDITY DROPS BELOW 58% RH. (ADJ.). IF THE RETURN AIR RELATIVE HUMIDITY SENSOR FAILS THE DEHUMIDIFICATION SEQUENCE WILL BE TERMINATED AND AN ALARM WILL BE ANNUNCIATED.

SUPPLY FAN OPERATION:

THE SUPPLY FAN SHALL BE ENABLED WHILE IN THE OCCUPIED MODE AND CYCLED ON DURING THE UNOCCUPIED MODE. THE AHU'S CONTROLLER SHALL VARY THE SUPPLY FAN SPEED TO OPTIMIZE MINIMUM FAN SPEED IN ALL COOLING MODES. A CURRENT SENSING SWITCH (OR OTHER APPROVED AIRFLOW MEASUREMENT METHOD), MOUNTED IN THE SUPPLY FAN'S VFD, SHALL MONITOR THE ELECTRICAL CURRENT BEING DRAWN ACROSS THE FAN TO PROVIDE A POSITIVE FAN STATUS. IF THE SWITCH DOES NOT MAKE WITHIN 40 SECONDS AFTER A REQUEST FOR FAN OPERATION, OR IF A FAN STATUS SWITCH FAILS DURING NORMAL OPERATION FOR 40 SECONDS, A FAN FAILURE ALARM SHALL BE ANNUNCIATED TO THE BAS.

UNOCCUPIED OVERRIDE: THE BAS SHALL MONITOR THE STATUS OF THE "OCCUPY" AND "CANCEL" BUTTONS ON THE COMMON SPACE TEMPERATURE SENSOR. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM THE COMMON SPACE SENSOR, THE AHU SERVING THAT AREA SHALL TRANSITION FROM ITS CURRENT MODE TO THE OCCUPIED BYPASS MODE AND THE UNIT SHALL MAINTAIN THE COMMON SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS (ADJ.).

IF THE "CANCEL" BUTTON IS PRESSED ON THE COMMON TEMPERATURE SENSOR IN THAT AREA, THE FAN SHALL STOP AND THE HEATING OR COOLING MODES WILL BE DISABLED AND THE AHU SHALL RETURN BACK TO ITS SCHEDULED MODE. THE OVERRIDE MODE WILL AUTOMATICALLY TERMINATE AFTER THE EXPIRATION OF A TIME DELAY OF (2) HOURS (ADJ.).

PRE-HEAT COIL CONTROL:

IF THE ENTERING AIR TEMPERATURE TO THE PRE-HEAT COIL DROPS BELOW THE PRE-HEAT LEAVING AIR TEMPERATURE SETPOINT OF 45°F (ADJ.), THE AHU CONTROLLER SHALL MODULATE THE PRE-HEAT HOT WATER VALVE TO MAINTAIN THE PRE-HEAT SETPOINT.

FREEZE PROTECTION:

IF THE PRE-HEAT TEMPERATURE CONTROL FAILS AND A POTENTIAL FREEZE CONDITION EXISTS, THE BAS SHALL ENSURE THAT THE OUTDOOR AIR DAMPER IS SET TO ITS MINIMUM VENTILATION POSITION AND THAT THE RETURN AIR DAMPER IS SET TO ITS MOST OPTIMAL POSITION FOR TEMPERATURE CONTROL.

A HARDWIRED, LOW LIMIT TEMPERATURE SWITCH SHALL ELECTRICALLY INTERLOCKED WITH THE VARIABLE SPEED DRIVE. IF THE LOW LIMIT TEMPERATURE SWITCH IS TRIPPED (38°F ADJ.) THE OUTSIDE AIR DAMPER WILL CLOSE. ALL VALVES WILL OPEN TO 100% (ADJUST PER CLIMATE) AND AN ALARM WILL BE INITIATED TO THE BAS. A MANUAL RESET OF THE LOW LIMIT TEMPERATURE SWITCH WILL BE REQUIRED TO RESTART THE FAN.

DUCT STATIC PRESSURE CONTROL:

THE BUILDING AUTOMATION SYSTEM (BAS) SHALL CONTINUOUSLY MONITOR THE STATIC PRESSURE IN THE DISCHARGE AIR DUCT WHILE THE FAN IS RUNNING. THE STATIC PRESSURE SHALL BE SENSED DIRECTLY AT THE DISCHARGE OF EACH ROOFTOP UNIT. THE SENSOR SHALL BE MOUNTED IN A NON-TURBULENT LOCATION. THE AHU'S STATIC PRESSURE SENSOR SHALL MONITOR THE DUCT STATIC PRESSURE AND MODULATE THE FAN'S SPEED THROUGH THE FAN'S VFD TO MAINTAIN THE STATIC PRESSURE SENSOR'S SETPOINT (ADJ.).

IF THE DISCHARGE DUCT STATIC PRESSURE EXCEEDS 3" W.C. (ADJ.), DUE TO A RESTRICTED AIR PATH, THE FAN SHALL STOP AND A HIGH STATIC PRESSURE ALARM WILL BE ANNUNCIATED TO THE BUILDING AUTOMATION SYSTEM CONTROLLER (BAS).

A STATIC PRESSURE SENSOR/CUTOUT MOUNTED IN THE RETURN DUCT, WILL MONITOR STATIC PRESSURE IN THE RETURN DUCTWORK. IF THE RETURN AIR STATIC PRESSURE GOES BELOW (-3" W.C.), (ADJ.), DUE TO A RESTRICTED AIR PATH, THE FAN SHALL STOP AND A LOW STATIC PRESSURE ALARM WILL BE ANNUNCIATED TO THE BUILDING AUTOMATION SYSTEM CONTROLLER (BAS).

EXHAUST FAN:

THE BAS SHALL SEND THE TOILET EXHAUST FAN AN OCCUPIED/UNOCCUPIED COMMAND ACCORDING TO ITS TIME OF DAY SCHEDULE. THE EXHAUST FAN SHALL START AND RUN CONTINUOUSLY UNTIL COMMANDED TO THE UNOCCUPIED MODE. A CURRENT SENSING SWITCH SHALL MONITOR THE CURRENT DRAWN OF THE EXHAUST FAN WHILE RUNNING. IF THE SWITCH IS DETECTED TO BE OPEN FOR 40 CONSECUTIVE SECONDS AFTER A REQUEST FOR EXHAUST FAN OPERATION, A FAN FAILURE ALARM SHALL BE ANNUNCIATED AT THE BAS AND THE EXHAUST FAN SHALL STOP.

SMOKE DAMPER CONTROL:

WHEN THE BAS SENDS THE AHU CONTROLLER AN OCCUPIED MODE COMMAND, THE AHU CONTROLLER SHALL ENERGIZE THE RETURN AND SUPPLY AIR SMOKE DAMPER ACTUATORS TO OPEN THE DAMPERS. WHEN THE ACTUATOR END SWITCHES MAKE, INDICATING THE DAMPERS ARE IN THE FULL OPEN POSITION, THE AHU SHALL START AND RUN CONTINUOUSLY. WHEN THE BAS SENDS AN UNOCCUPIED MODE COMMAND TO THE AHU CONTROLLER, THE CONTROLLER SHALL STOP THE SUPPLY FAN AND CLOSE THE SUPPLY AND RETURN AIR SMOKE DAMPERS.

IF A SMOKE OR FIRE ALARM CONDITION EXISTS, THE FAP IS SHALL SEND A STOP SIGNAL TO THE PROGRAMMABLE FAP RELAY STOPPING THE AHU'S FAN. THE AHU CONTROLLER SHALL IMMEDIATELY CLOSE THE RETURN AND SUPPLY SMOKE DAMPERS. WHEN THE FAP ALARM IS RESET, THE ADDRESSABLE RELAY SHALL ENERGIZE. IF THE AHU IS IN THE OCCUPIED MODE, THE SMOKE DAMPERS SHALL OPEN, MAKING THE END SWITCHES. THE SMOKE DAMPER END SWITCHES MUST BE MADE BEFORE THE AHU WILL BE ALLOWED TO RESTART.

SMOKE DETECTOR SHUTDOWN:

THE RETURN AND SUPPLY AIR SMOKE DETECTOR(S) SHALL NOTIFY THE BUILDING FIRE ALARM PANEL (SYSTEM) IN RESPONSE TO DETECTING THE PRESENCE OF SMOKE. UPON DETECTION OF SMOKE BY THE DETECTOR(S), THE ADDRESSABLE RELAY FROM THE BUILDING FIRE ALARM SYSTEM SHALL SHUTDOWN THE AHU. THE SMOKE DETECTOR SHALL NOTIFY THE BAS UNIT THROUGH THE DRY CONTACTS OF THE SMOKE DETECTOR IF SPECIFIED. A MANUAL RESET OF THE SMOKE DETECTOR SHALL BE REQUIRED TO RESTART THE UNIT.

FILTER STATUS:

DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER SECTION. WHILE THE FAN IS RUNNING, IF THE SWITCH CLOSES, SET AT 1.0"W.C. (ADJ.), FOR 2 MINUTES, A DIRTY FILTER ALARM SHALL BE ANNUNCIATED AT THE BAS.

FUTURE TRUE VAV SYSTEM OPERATION:

A FUTURE PHASE ANTICIPATES THE INSTALLATION OF MODERN FUNCTIONAL VAV BOXES. PROVIDE SENSOR AND PROGRAMING TO FACILITATE THAT FUNCTION.

THE SUPPLY FANS VFDS SHALL MODULATE BETWEEN 30% MINIMUM SPEED (ADJ.) AND 100% MAXIMUM SPEED (ADJ.) BASED UPON DUCT MOUNTED STATIC PRESSURE SENSOR.

DURING THE COOLING MODE, THE AHU DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE SET AT 55°F (ADJUSTABLE). THE AHU'S CHILLED WATER VALVE WILL MODULATE TO MAINTAIN THE ACTIVE DISCHARGE AIR TEMPERATURE COOLING SETPOINT (ADJ.). A SUPPLY AIR RESET ROUTINE WILL ADJUST THE DISCHARGE AIR TEMPERATURE BETWEEN A MINIMUM DISCHARGE AIR SETPOINT OF 55°F (ADJ.) AND A MAXIMUM DISCHARGE AIR SETPOINT OF 60°F (ADJ.) BASED THE MONITORED SENSORS DESCRIBED ABOVE AND THE RETURN AIR TEMPERATURE SETPOINT OF 75°F (ADJ.). IF THE DISCHARGE AIR TEMPERATURE SENSOR FAILS DURING NORMAL OPERATION THE CHILLED WATER VALVE WILL CLOSE AND AN ALARM WILL BE ANNUNCIATED AT THE BAS.

DURING THE HEATING MODE, OPERATE FANS @ 75% OF MAXIMUM SPEED (ADJ.) THE AHU DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE SET AT 100°F (ADJUSTABLE). THE AHU SHALL MODULATE ITS HOT WATER REHEAT VALVE TO MAINTAIN A CONSTANT DISCHARGE AIR TEMPERATURE.

FUTURE TRUE VAV OPERATION SUPPLY FAN AND DUCT PRESSURE OPTIMIZATION CONTROL:

THE BUILDING AUTOMATION SYSTEM (BAS) SHALL CONTINUOUSLY MONITOR THE DAMPER POSITION OF ALL VAV TERMINAL UNITS. THE DISCHARGE DUCT STATIC PRESSURE SHALL BE SENSED DIRECTLY AT THE DISCHARGE OF EACH AIR HANDLER. THE SENSOR MUST BE MOUNTED IN A NON-TURBULENT LOCATION.

WHEN ANY VAV DAMPER IS MORE THAN 75% (ADJ.) OPEN, THE SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET UPWARD BY 0.1 IN W.C. (ADJ.) AT A FREQUENCY OF 15 MINUTES (ADJ.) UNTIL NO DAMPER IS MORE THAN 75% OPEN OR THE STATIC PRESSURE SETPOINT HAS RESET UPWARD TO THE SYSTEM MAXIMUM DUCT STATIC PRESSURE SETPOINT OR THE AHU VARIABLE-FREQUENCY DRIVE IS AT THE MAXIMUM SPEED SETTING.

WHEN ALL VAV DAMPERS ARE LESS THAN 65% (ADJ.) OPEN, THE SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET DOWNWARD BY 0.1 IN W.C. (ADJ.) AT A FREQUENCY OF 15 MINUTES (ADJ.) UNTIL AT LEAST ONE DAMPER IS MORE THAN 65% OPEN OR THE STATIC PRESSURE SETPOINT HAS RESET DOWNWARD TO THE SYSTEM MINIMUM DUCT STATIC PRESSURE SETPOINT OR THE AHU VARIABLE-FREQUENCY DRIVE IS AT THE MINIMUM SPEED SETTING.

THE CONTROL BANDS, SETPOINT INCREMENT VALUES, SETPOINT DECREMENT VALUES AND ADJUSTMENT FREQUENCIES SHALL BE ADJUSTED TO MAINTAIN MAXIMUM STATIC PRESSURE OPTIMIZATION WITH STABLE SYSTEM CONTROL AND MAXIMUM COMFORT CONTROL.

THE BAS SHALL HAVE THE CAPABILITY TO ALLOW THE OPERATOR TO EXCLUDE "PROBLEM" ZONES THAT SHOULD NOT BE CONSIDERED WHEN DETERMINING THE OPTIMIZED SETPOINT.

THE BAS SHALL ALSO READ THE STATUS OF THE SUPPLY AIR STATIC PRESSURE SENSOR AND DISPLAY THE ACTIVE DUCT STATIC PRESSURE READING ON THE STATUS SCREEN.

THE BAS SHALL HAVE THE ABILITY TO IDENTIFY, AND DISPLAY TO THE USER, THE VAV BOX THAT SERVES THE CRITICAL ZONE (THAT IS, THE ZONE WITH THE MOST WIDE-OPEN VAV DAMPER). THIS INFORMATION SHALL UPDATE DYNAMICALLY AS THE LOCATION OF THE CRITICAL ZONE CHANGES BASED ON BUILDING LOAD, AND DUCT STATIC PRESSURE SETPOINT OPTIMIZATION CONTROL.

IF THE DISCHARGE DUCT STATIC PRESSURE EXCEEDS 3" W.C. (ADJ.), DUE TO A RESTRICTED AIR PATH, THE FAN SHALL STOP AND AN ALARM WILL BE ANNUNCIATED TO THE BUILDING AUTOMATION SYSTEM CONTROLLER (BAS).



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**FL. DEPT. OF AGRICULTURE &
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PJM

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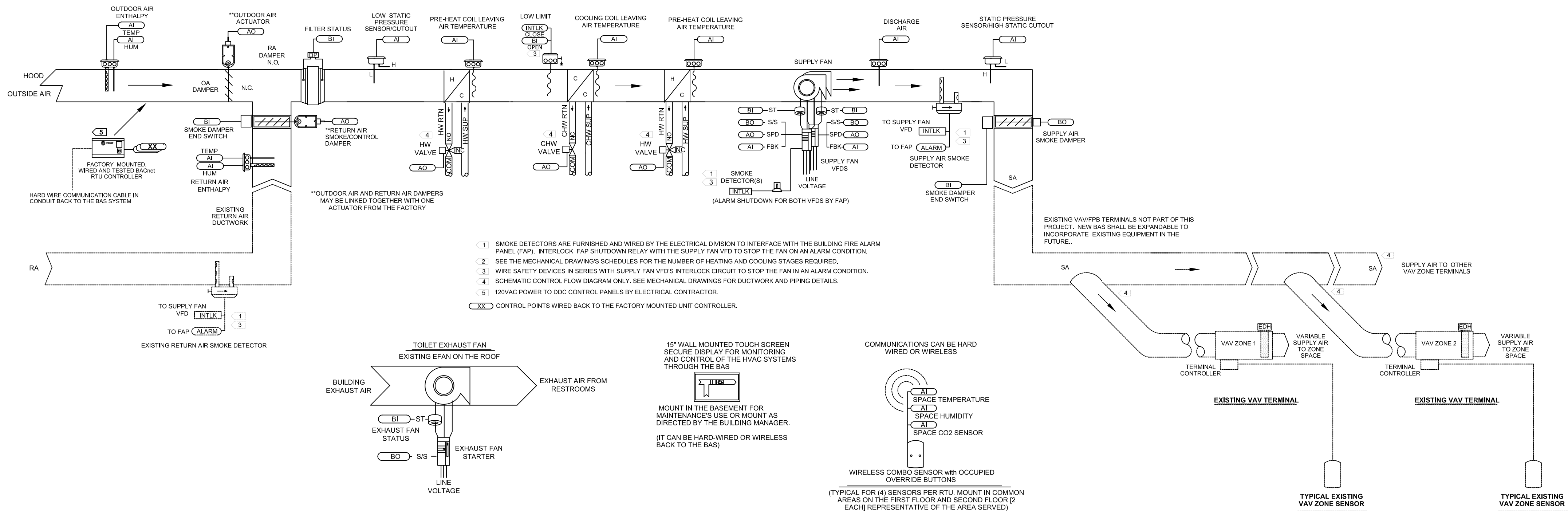
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NEW AHU-1 & 2 CONTROLS