

**Dedicated Outside Air Unit w/ Energy Recovery Sequence of Operation**

The Building Management System (BMS) will send the controller a user definable run schedule. If the BMS is not present, or communication is lost, the controller will operate using last known sequence.

**Run Conditions - Schedule:**  
The unit shall run according to a user definable time schedule in the following modes:

**Occupied Mode:**

The supply fan will run continuously at constant speed after O.A. damper has fully open. The exhaust fan will run continuously at constant speed with E.A. damper open. The energy recovery wheel will be activated. Controller will modulate/stage DX cooling, enable hot gas reheat, and/or gas heat to discharge neutral air to space at 70°F (adj.) and 55% R.H. (adj.) when OAT is greater than 60°F or 74°F (adj.) when OAT is less than 60°F. The compressor/gas heat shall operate subject to its own internal safeties and controls.

**Unoccupied Mode:**

The unit is disabled, supply/exhaust fans off, and the outside air/exhaust air dampers shall close. Unit can be enabled to occupied mode from BMS for 2 hours (adj.).

**Staggered start:**

This application shall prevent all controlled equipment from simultaneously restarting after a power outage or fire alarm restart. The order in which equipment (or groups of equipment) is started and the time delay between starts shall be user-selectable.

**Morning Warm-Up/Cool-down/Optimal Start:**

The unit does not run during morning warm-up, cool down, or optimal start.

**Supply Fan Operation:**

The supply fan shall be enabled during occupied mode and disabled during the unoccupied mode. The controller monitors fan operation.

**Exhaust Fan Status:**

The exhaust fan shall be enabled during occupied mode and disabled during the unoccupied mode. The controller monitors fan operation.

**Building Pressurization:**

Supply fan CFM is balanced per contract documents. Exhaust fan CFM is balanced per contract documents.

**System Shutdown:**

On a signal from the BMS or from the fire alarm system the unit shall be shutdown with the supply and exhaust fans de-energized, and the O.A. and E.A. damper shall be closed. Upon fire alarm reset, unit shall return to operating mode.

**Smoke Control:**

Duct mounted smoke detectors located in the supply and return air ductwork shall shutdown the unit with the supply and return fans de-energized and closing the O.A. and E.A. damper upon sensing smoke. A signal from the duct smoke detector shall activate the fire alarm system.

**Condensate Overflow Switch Status:**

Unit shuts down and BMS alarms upon activation of condensate overflow switch.

**Filter status:**

A differential pressure switch will monitor the differential pressure across the filter when the fan is running. If the switch closes for 2 minutes after a request for fan operation a dirty filter alarm will be annunciated at the BMS. Set the differential pressure switch to close at a differential pressure of 0.9" WC (adj.).


**Supply Fan Alarms:**

Alarms shall be provided as follows:  
- Failure: Commanded on, but the status is off.  
- Running in Hand: Commanded off, but the status is on.

POINT NAME	HARDWARE POINTS					SOFTWARE POINTS					
	AI	AO	BI	BO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC
DISCHARGE AIR TEMP	X								X		X
DISCHARGE AIR HUMIDITY	X								X		X
DISCHARGE HUMIDITY SETPOINT									X		X
DISCHARGE TEMP. SETPOINT									X		X
SUPPLY AIR SMOKE DETECTOR			X						X	X	X
SUPPLY FAN START/STOP			X						X		X
SUPPLY FAN STATUS		X	X						X		X
SUPPLY FAN SPEED									X		X
EXHAUST FAN START/STOP				X					X		X
EXHAUST FAN STATUS			X						X		X
EXHAUST FAN SPEED									X		X
ENTHALPY WHEEL START/STOP				X					X		X
ENTHALPY WHEEL STATUS			X						X		X
COMPRESSOR 1 START/STOP				X					X		X
COMPRESSOR 2 START/STOP				X					X		X
COMPRESSOR 1 STATUS		X							X		X
COMPRESSOR 2 STATUS		X							X		X
COMPRESSOR MODULATION		X							X		X
GAS HEAT START/STOP				X					X		X
GAS HEAT MODULATION		X							X		X
HOT GAS REHEAT STATUS			X						X		X
HOT GAS REHEAT MODULATION		X							X		X
O.A. DAMPER ENABLE/DISABLE				X					X		X
O.A. DAMPER STATUS			X						X		X
RECIR. DAMPER ENABLE/DISABLE				X					X		X
RECIR. DAMPER STATUS			X						X		X
WHEEL BYPASS DAMPER STATUS			X						X		X
WHEEL DIFFERENTIAL PRESSURE		X							X	X	X
FILTER DIFFERENTIAL PRESSURE		X							X		X
SUPPLY AIR SMOKE DETECTOR		X							X	X	X
RETURN AIR SMOKE DETECTOR		X							X	X	X
SUPPLY AIR PRESSURE		X	X						X		X
CONDENSATE OVER FLOW SWITCH STATUS									X		X
UNIT ALARM		X							X		X
SCHEDULE								X			

1 CONTROLS - ERU 4  
NTS

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SA&E PROJECT NUMBER	01-615-056
BID PACKAGE	BP-1
ISSUED FOR CONSTRUCTION	10/15/2019
<b>Southern AE</b> 7951 Truon Circle Austell, Ga 30168 (770) 819-7777 architects & engineers	REVISIONS
	R # Doc # Date
FACILITY CODE NUMBER: 674-0110 GYMNASIUM/AUDITORIUM FOR: <b>HEARD COUNTY SCHOOLS</b> 545 MAIN STREET, FRANKLIN, GA 30217 <b>HEARD COUNTY SCHOOL SYSTEM</b> FRANKLIN, GEORGIA	
MECHANICAL EQUIPMENT CONTROLS	
	DRAWING NUMBER <b>M702</b>