

A

B

C

D

E

F

Total Hardware (68)
Total Software (434)
NOTES:
1. SERVED BY NEW 432DDCP02. CONNECT 432DDCP02 TO 432DDCP01 VIA ARCNET OR BACNET/MSTP.
2. 432ACHPS01 AND 432ACHPS02 UTILIZE INTEGRAL ON-BOARD UNIT CONTROLLERS. CONTROLLERS SHALL BE WIRED TO COMMUNICATE WITH NEW ALC DDC SYSTEM OVER BACNET/MSTP OR MODBUS. BACNET/IP IS PROHIBITED. 432ACHPS04 IS AN EXISTING TO REMAIN UNIT THAT IS TO RECEIVE A NEW BACNET/MSTP NETWORK COMMUNICATION CARD - ONLY LISTED SOFTWARE POINTS THAT ARE AVAILABLE OVER BACNET/MSTP ARE REQUIRED OVER ALC FOR EXISTING TO REMAIN 432ACHPS04.
3. EQUIPMENT VENDOR WILL NOT PROVIDE CONTROL DEVICE. MECHANICAL SUBCONTRACTOR TO PROVIDE FIELD-INSTALLED, HARD-WIRED CONTROL DEVICE.
4. REFER TO M-702. SUBCONTRACTOR SHALL RE-USE EXISTING DUCT SMOKE DETECTOR AT EXISTING HVAC EQUIPMENT AND RE-INSTALL AND RE-WIRE DEVICE FOR USE WITH NEW HVAC EQUIPMENT.
5. REFER TO M-702. INSTALL DEVICE NEAR 432ACHPS01.
6. PROVIDE ALL CONTROL RELAYS NECESSARY TO REPORT SMOKE DETECTOR ALARM STATUS TO NEW ALC DDC SYSTEM.
7. REFER TO SEQUENCES OF OPERATION FOR ALL DEFAULT SYSTEM SETPOINTS. COORDINATE FINAL SYSTEM SETPOINTS WITH LLNL.
8. CONTROLS SUBCONTRACTOR TO PROVIDE ALL PROGRAMMING REQUIRED TO DELIVER NEW ALARM NOTIFICATIONS OVER NEW ALC SYSTEM TO LLNL EMAILS AND PAGERS. COORDINATE WITH LLNL.
9. CELLS WITH "Y", ">" SHALL BE DETERMINED BY THE CONTROLS SUBCONTRACTOR. SPACES WHERE NO ENTRY IS REQUIRED CONTAIN "~".

POINT NAME	HARDWARE POINTS				SOFTWARE POINTS					
	AI	AO	BI	BO	AV	BV	LOOP	SCHED	TREND	ALARM
642ACU01-A1 (NOTE 1)										
VFD Supply Fan Start/Stop Command				4				4	4	
VFD Relief Fan Start/Stop Command				4				4	4	
Smoke Detector Supply Fan Shutdown (NOTE 4)				4					4	
VFD Supply Fan Speed Control Command		4						4	4	
VFD Relief Fan Speed Control Command		4						4	4	
Heating Control Valve Command (NOTE 3)		1							1	
Cooling Control Valve Command (NOTE 3)		1							1	
Outside Air Control Damper Command (NOTE 3)		1						1	1	
Return Air Control Damper Command (NOTE 3)			1					1	1	
Relief Air Control Damper Command (NOTE 3)		1						1	1	
Pre-Filter Differential Pressure (NOTE 3)	1									1
Final Filter Differential Pressure (NOTE 3)	1									1
Outside Air Flowrate Measurement	1								1	1
VFD Supply Fan Current Transducer (NOTE 3)	4								4	4
VFD Relief Fan Current Transducer (NOTE 3)	4								4	4
Supply Fan Inlet Air Flowrate Measurement Ring	4								4	4
Relief Fan Inlet Air Flowrate Measurement Ring	4								4	4
Outside Air Damper Position Feedback (NOTE 3)	1								1	1
Return Air Damper Position Feedback (NOTE 3)	1								1	1
Relief Air Damper Position Feedback (NOTE 3)	1								1	1
Room Temp (NOTE 3)	1								1	1
Freezeestat Switch Status (NOTE 3)			1						1	1
Freezeestat Switch Auto Reset				1					1	
Supply Air Temp (NOTE 3)	1								1	1
Return Air Temp (NOTE 3)	1								1	1
Mixed Air Temp (NOTE 3)	1								1	1
Supply Air Temp Setpoint (NOTE 3)					1					
Mixed Air Temp Setpoint (NOTE 3)					1					
Room Temp Setpoint (NOTE 3)					1				1	
VFD Supply Fan Status					4				4	4
VFD Relief Fan Status					4				4	4
VFD Supply Fan Speed/Current					4				4	
VFD Relief Fan Speed/Current					4				4	
VFD Supply Fan Instantaneous Power (kW)					4				4	
VFD Relief Fan Instantaneous Power (kW)					4				4	
VFD Supply Fan Alarm/Failure			4						4	4
VFD Relief Fan Alarm/Failure			4						4	4
Supply Air Smoke Detector Status (NOTE 6)			1						1	1
432ACHPS01-4 & 432ACHPS02-5 & 432ACHPS04 (NOTE 2)										
Unit Enable Command						3		3	3	
Unit Heat Lockout Command						3			3	
Unit Cool Lockout Command						3			3	
Occupancy Mode Command					3			3	3	
Economizer Enable Command					3				3	
Supply Fan Start/Stop Command						3		3	3	
Relief Fan Start/Stop Command						3		3	3	
Supply Fan Speed Control Command					3			3	3	
Relief Fan Speed Control Command					3				3	
Smoke Detector Unit Shutdown (NOTE 4)				2						
Pre-Filter Differential Pressure (NOTE 3)	2									3
Final Filter Differential Pressure (NOTE 3)	2									3
Outside Air Flowrate Measurement	1								1	1
VFD Supply Fan Current Transducer (NOTE 3)	2								3	3
VFD Relief Fan Current Transducer (NOTE 3)	2								3	3
Supply Fan Inlet Airflow Measurement Ring	1								1	1
Relief Fan Inlet Airflow Measurement Ring	1								1	1
Room Temp (NOTE 3)	3								3	3
Outside Air Temp (NOTE 5)	1								2	
Supply Air Temp					3				3	3
Return Air Temp					3				3	3
Supply Air Temp Setpoint					3				3	
Room Temp Setpoint (NOTE 3)					3				3	
Unit Economizer Minimum Position Command					3			3	3	
Unit Economizer Minimum Position Setpoint					3				3	
Unit Status						3			3	
Unit General Alarm						3			3	3
Unit Run Fault						3			3	3
Unit Current					3				3	
Unit Instantaneous Power (kW)					3				3	
Unit Misc. Monitoring 1					3				3	3
Unit Misc. Monitoring 2					3				3	3
VFD Supply Fan Status					3				3	3
VFD Relief Fan Status					3				3	3
VFD Supply Fan Alarm/Failure			2			1			3	3
VFD Relief Fan Alarm/Failure			2			1			3	3
Supply Air Smoke Detector Status (NOTE 6)			1						1	1
Outside Air Damper Failure						3			3	3
Economizer Failure						3			3	3
MISCELLANEOUS										
Supply Air Smoke Detector to Fire Alarm (NOTE 3)	3									3
Optics Lab Purge Push Button Status			1						1	
TOTALS	44	13	16	15	75	32	0	40	185	102

ALARM CONDITION	GRAPHIC	POINT SETTING (WITH UNITS)	POINT RANGE (WITH UNITS)	ALARM TYPE
~	Y	~	ON/OFF	~
~	Y	~	ON/OFF	~
~	Y	~	ON/OFF	~
~	Y	~	0-100%	~
~	Y	~	0-100%	~
~	Y	~	0-100%	~
~	Y	~	0-100%	~
~	Y	~	0-100%	~
~	Y	~	0-100%	~
~	Y	~	0-100%	~
DIFFERENTIAL PRESSURE EXCEEDS SETPOINT	Y	1.0" W.C.	< >	CRIT
DIFFERENTIAL PRESSURE EXCEEDS SETPOINT	Y	1.0" W.C.	< >	CRIT
LOW LIMIT ALARM CORRESPONDING TO MINIMUM OA	Y	980 CFM	< >	CRIT
HIGH LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	CRIT
HIGH LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	CRIT
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	16,400 CFM	< >	INFO
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	VARIES	< >	INFO
DAMPER POSITION DOES NOT MATCH COMMANDED POSITION	Y	~	0-100%	INFO
DAMPER POSITION DOES NOT MATCH COMMANDED POSITION	Y	~	0-100%	INFO
DAMPER POSITION DOES NOT MATCH COMMANDED POSITION	Y	~	0-100%	INFO
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	INFO
LOW LIMIT ALARM	Y	35 DEG. F.	OPEN/CLOSED	INFO
~	Y	~	OPEN/CLOSED	~
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	INFO
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	INFO
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	INFO
~	Y	54 DEG. F.	< >	~
~	Y	SEE SEQUENCE	< >	~
~	Y	70 DEG. F.	< >	~
VFD COMMAND IS ON, BUT VFD STATUS IS OFF	Y	~	ON/OFF	CRIT
VFD COMMAND IS ON, BUT VFD STATUS IS OFF	Y	~	ON/OFF	CRIT
~	Y	~	0-100%	~
~	Y	~	0-100%	~
~	Y	~	< >	~
~	Y	~	< >	~
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
~	Y	~	ON/OFF	~
~	Y	~	ON/OFF	~
~	Y	~	ON/OFF	~
~	Y	~	ON/OFF	~
~	Y	~	ON/OFF	~
~	Y	~	ON/OFF	~
~	Y	~	ON/OFF	~
DIFFERENTIAL PRESSURE EXCEEDS SETPOINT	Y	1.0" W.C.	< >	CRIT
DIFFERENTIAL PRESSURE EXCEEDS SETPOINT	Y	1.0" W.C.	< >	CRIT
LOW LIMIT ALARM CORRESPONDING TO MINIMUM OA	Y	REFER TO SCHED.	< >	CRIT
HIGH LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	CRIT
HIGH LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	CRIT
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	REFER TO SCHED.	< >	INFO
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	VARIES	< >	INFO
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	INFO
~	Y	~	< >	~
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	INFO
HIGH LIMIT ALARM, LOW LIMIT ALARM - REFER TO SEQUENCE	Y	~	< >	INFO
~	Y	54 DEG. F.	< >	~
~	Y	72 DEG. F.	< >	~
~	Y	~	< >	~
~	Y	~	< >	~
~	Y	~	ON/OFF	~
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
~	~	~	< >	~
~	Y	~	< >	~
FOR FUTURE USE AT OWNER'S DISCRETION	~	~	~	INFO
FOR FUTURE USE AT OWNER'S DISCRETION	~	~	~	INFO
FAN COMMAND IS ON, BUT FAN STATUS IS OFF	Y	~	ON/OFF	CRIT
FAN COMMAND IS ON, BUT FAN STATUS IS OFF	Y	~	ON/OFF	CRIT
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	INFO
STATUS IS "ALARM"	Y	~	NORMAL/ALARM	CRIT
~	Y	~	ON/OFF	~

Sheet Title
MECHANICAL CONTROL POINTS

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