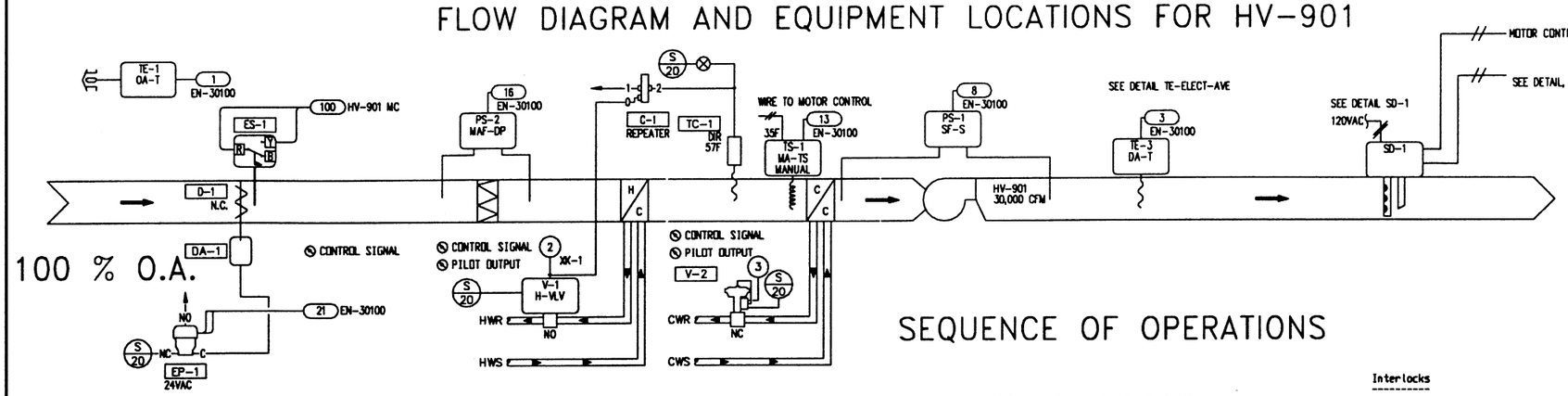
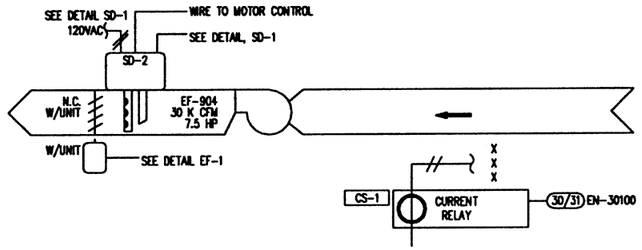
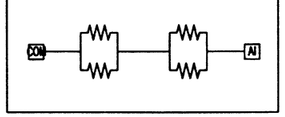
FLOW DIAGRAM AND EQUIPMENT LOCATIONS FOR HV-901





INSTALLATION CONTRACTOR IS RESPONSIBLE FOR TERMINATING DAMPER MOTOR WIRING TO EXHAUST FAN POWER.

DETAIL TE-ELECT-AVE



SEQUENCE OF OPERATIONS

SYSTEM: 100 Percent Outside Air Constant Volume Air Handling Unit HV-901

CONFIGURATION: Constant Discharge Air Setpoint
Constant air supply Fan

Discharge Air Temperature Setpoint

The building operating engineer will set the discharge air temperature by adjusting the discharge air setpoint, DA-SP form any ISC terminal. The digital controller will modulated controlled devices as described below to maintain a fan discharge temperature of 65 F.(adjustable at any ICS terminal)

Discharge Temperature Loop

The discharge cooling deadband is added to the discharge air setpoint. This value establishes the point at which mechanical cooling begins when the controller uses proportional only control. The digital controller will continually adjust the mechanical cooling command in sequence according to the controller's result of the proportional-intergal cooling loop calculation. The digital controller modulates the cooling coil valve, V-2 until the discharge air temperature equals the calculated discharge setpoint. The digital controller will continually adjust the heating command according to the controller's result of the proportional-integral heating loop calculation. The digital controller will modulate the heating control valve, V-1, until the discharge air temperature equals the setpoint. The controller will provide an output between 0 and 100 percent as the discharge air temperature travels through the proportional bands.

The state of 'Heating Mode' and 'Cooling mode' will lockout the operation of the controlled device, V-1 and V-2 if the respective node is set 'OFF'. The PID control algorithm will sequence the heating and cooling devices so that both do not operate in the same proportional band.

Fans Status

Sensitive differential pressure switch, PS-1(supply fan) will close upon air flow being present, this will set fan status ON. The digital AHU controller will switch to normal control. The status of exhaust fans, EF-901,904 and EF-907,908 will be determined by current switches, CS-1-CS-2

Power Fail Restart

The power fail restart will delay the startup of the digital controller for 1 minute(adjustable at the operator workstation) after a power failure for controller reset condition. This logic will hold the controller in the sutdown mode until the restart timer has expired.

Electric low limit

Heating discharge low limit temperature switch, TS-1 will stop the supply fan, close the mixed air dampers and the AHU digital controller will issue an alarm to the ISC network in the event that the heating discharge temperature drops below 35 F.(Adj.)

Supply smoke detectors, SD-1 and SD-2 stop the supply or exhaust fan and the ASC controller will issue and alarm to the ISC network in the event the respective device senses smoke at the location.

Filter alarm

The air filter condition will be monitored by differential pressure switch, PS-2. The switch will close in the event that the pressure drop exceeds .8 inches WG(adjustable) and an alarm will be sent to the ICS network, 'Dirty air Filter'.

Heating Mode - Winter Mode

The digital controller will enter the heating mode at outdoor air temperatures below 45 F. The digital controller will position the cooling control valve at zero percent.

Cooling Mode - Summer Mode

The digital controller will enter the cooling mode at outdoor air temperatures above 50 F. The digital controller will position the heating control valve at zero percent.

Interlocks

EF-904 w/ HV-901

The following point objects will be adjustable from an ICS terminal:

-Discharge air setpoint
-User start/stop time

-HV-901 Occupied/Unoccupied Mode
-Heating/Cooling Lockout Temperature Setpoint - CS object

The following objects will be monitored/alarmed at an ISC terminal:

Fan Discharge Air Temperature
Filter Status
Supply Fan Status
Smoke Detectors Status

NOTES:

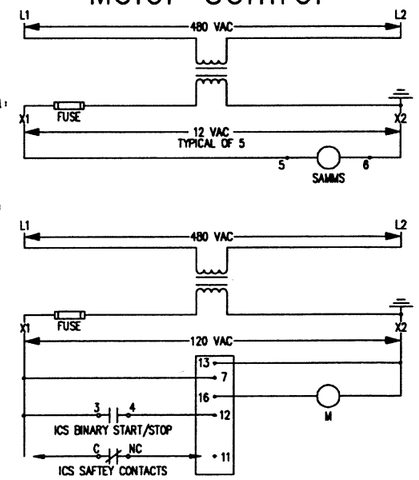
1. WIRE AUX CONTACTS FROM EXHAUST FANS, EF-904 AND 908 IN PARALLEL TO OPERATE E/P SWITCH, EP-2 SERVING RO-2.
2. WIRE AUX CONTACT FROM EXHUAST FAN, EF-907 TO E/P SWITCH, EP-3.

FIELD MATERIAL

DEVICE TAG	QTY	CODE NUMBER	DESCRIPTION
D-1-3		---	SEE DAMPER SCHEDULE
DA-1-3		---	SEE DAMPER SCHEDULE
EP-1-3	3	V-2410-2	VALVE, SOL.AIR, 3-WAY
ES-1	1	802T-CVP	END SWITCH
PS-1-2	2	P32AF-2C	SENSITIVE DIFF PRES CTL
	4	FTG18A-600R	REMOTE MTD PROBE
CS-1	1	705-MD	CURRENT SWITCH-VERIS
SD-1-SD-3	2	DH400ACDCI	DUCT DETECTOR, ION,
	2	ST-10	SAMPLING TUBE FOR
	2	RTS-451	RESET/TEST
TE-1	2	TE-6000-4	SENSOR, 1000 OHM +/- .25%
	2	TE-6001-2	HOUSING F/O O.A.TEMP.
TE-3	4	TE-6100-1	TEMP SENSING ELEMENT 17'
TS-1	1	A70HA-1C	TEMP CONTROL 4 WIRE, 2-C
V-1	1	----	SEE VALVE SCHEDULE
ACC	5	G-2010-5	AIR GAGE 1-1/2"
TC-1	1	T-3610-1001	TEMPERATURE CONTROLLER
C-1	1	C-5226-3	REPEATER
ACC	1	R-3710-2007	.007 INCH RESTRICTOR

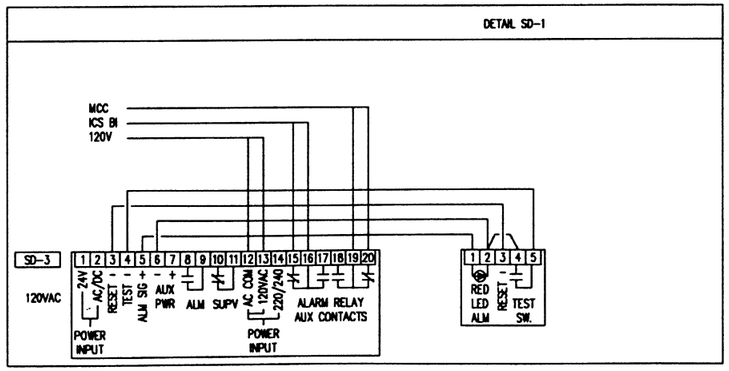
ANY MATERIAL WITH A (P) PRECEEDING THE DEVICE TAG IS CONSIDERED PROPRIETARY EQUIPMENT AND IS BEING SUPPLIED BY JOHNSON CONTROLS, INC. ALL OTHER MATERIAL IS NON-PROPRIETARY EQUIPMENT.

Motor Control



LEADER LINE INDICATES POSSIBLE FUTURE CONECTION FOR SAFETY CONTACTS.

DETAIL SD-1



FILE: HV-901

DRAWING TITLE
Flow Diagram and Equipment Locations, Single Path, 100 % OA, Constant Volume Heating/ Ventilating Unit, HV-901

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