

Application Engineering by Randy Langille

Engineer/Architect Fraser & Fassler Consulting Engineers


Mechanical Contractor ABC Refrigeration

Job Number P7619

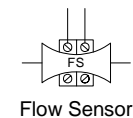
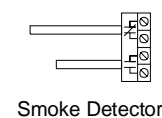
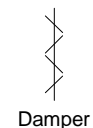
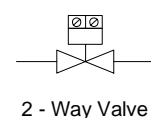
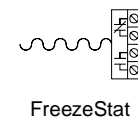
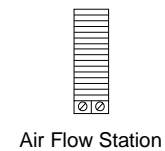
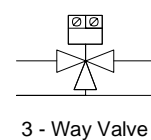
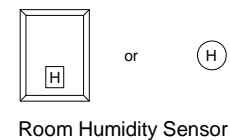
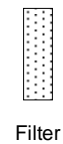
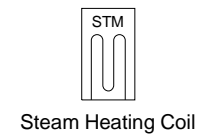
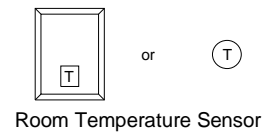
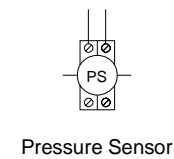
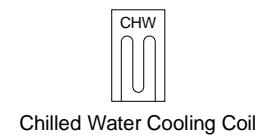
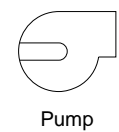
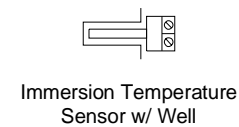
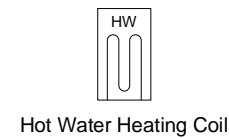
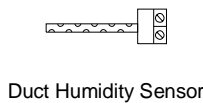
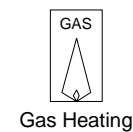
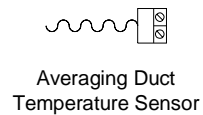
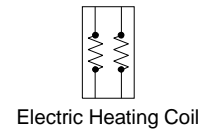
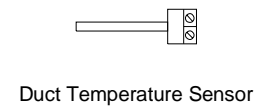
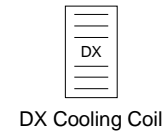
**AUTOMATEDLOGIC**<sup>®</sup>  
C O R P O R A T I O N

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# Symbol Legend



## Common Abbreviations:

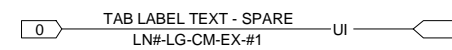
AC - Air Conditioning  
 ACU - Air Conditioning Unit  
 AHU - Air Handling Unit  
 AI - Analog Input  
 AO - Analog Output  
 AUTO - Automatic  
 AUX - Auxiliary  
 C - Common  
 CHW - Chilled Water  
 CHWP - Chilled Water Pump  
 CHWR - Chilled Water Return  
 CHWS - Chilled Water Supply  
 COND - Condenser  
 CW - Condenser Water  
 CWP - Condenser Water Pump  
 CWR - Condenser Water Return  
 CWS - Condenser Water Supply  
 DA - Discharge Air  
 DI - Digital Input  
 DO - Digital Output  
 EA - Exhaust Air  
 EF - Exhaust Fan

EVAP - Evaporator  
 F - Fahrenheit  
 FCU - Fan Coil Unit  
 HOA - Hand / Off / Auto  
 HP - Heat Pump  
 HRU - Heat Recovery Unit  
 HTEX - Heat Exchanger  
 HW - Hot Water  
 HWP - Hot Water Pump  
 HWR - Hot Water Return  
 HWS - Hot Water Supply  
 MAX - Maximum  
 MIN - Minimum  
 MISC - Miscellaneous  
 NC - Normally Closed  
 NO - Normally Open  
 OA - Outdoor Air  
 PIU - Powered Induction Unit  
 RA - Return Air  
 RF - Return Fan  
 RH - Relative Humidity  
 RTU - Roof-top Unit

SA - Supply Air  
 SF - Supply Fan  
 SP - Static Pressure  
 TEMP - Temperature  
 UH - Unit Heater  
 UV - Unit Ventilator  
 VAV - Variable Air Volume  
 VVTU - Variable Volume Terminal Unit  
 W/ - with  
 W/O - without  
 WSHP - Water-Source Heat Pump

## General Notes:

- All control modules are drawn using standard ALC module representations.
- Electrical points are identified by a tagged method (LN# - LG - CM - EX - Z0):



LN# - The line number (optional).  
 LG - The gateway number (optional).  
 CM - The control module address.  
 EX - The expander module number.  
 #1 - The channel number.

These tags include wiring for all AI's, DI's, AO's and DO's. Points using pneumatic tubing follow the same convention.

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## Symbol Legend

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# Summary Bill of Materials

Summary Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
				1 ea
AFS-B	FAN AIR FLOW SWITCH	CLEVELAND	AFS-222	2 ea
DA-BB	SR OPEN/CLOSE 35 IN-LB 24 V	BELIMO	LF24 ALC	2 ea
DA-BE	SR PROPORTIONAL 60 IN-LB 24 V	BELIMO	NF24-SR ALC	2 ea
DA-BF	SR OPEN/CLOSE 133 IN-LB 24 V SWITCH	BELIMO	AF24-S ALC	2 ea
DTS-A	DUCT 10K THERMISTOR PROBE 12 IN.	BAPI	ALC/10K-2-D-12	3 ea
DTS-B	DUCT 10K THERMISTOR AVERAGING 12 FT.	BAPI	ALC/10K-2-A-12	2 ea
IAQ-AB	CO SPACE SENSOR 0-200 PPM 4-20MA	R.E. TECH	WCO-1B	1 ea
OAS-A	OUTDOOR AIR SENSOR 10K THERM	BAPI	ALC/10K-2-O	1 ea
RBXKF	CURRENT SENSOR	RIB	RBXKF	9 ea
REL-AD	SPDT RELAY W/ IND LGHT 24 VAC	IDEC	RH1B-ULC-AC24V	2 ea
RIBU1C	RELAY 24 V	RIB	RIBU1C	3 ea
RIBXKF	CURRENT SENSOR	RIB	RIBXKF	3 ea
RS	ROOM SENSOR	AUTOMATED LOGIC	RS	5 ea
RSPLUS	ROOM SENSOR WITH PB AND SA	ALC	RSPLUS	8 ea
RTS-F	10K ROOM THERMISTOR RS	BAPI	ALC/10K-2-RS	15 ea
SE6104	SE6104	AUTOMATED LOGIC	SE6104	1 ea
TR-A	TRANSFORMER, 120/24VAC, 50VA	CORE COMPONENTS	LE-117	14 ea
TR-B	TRANSFORMER, MULTITAP 24VAC, 75VA	CORE COMPONENTS	LE-150	3 ea
WEBZONE	WEBZONE	AUTOMATED LOGIC	WEBZONE	7 ea
WS-A	10K IMMERSION THERMISTOR	BAPI	ALC/10K-2-I-4	1 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	16 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	13 ea
ZN551	ZN551	AUTOMATED LOGIC	ZN551	2 ea

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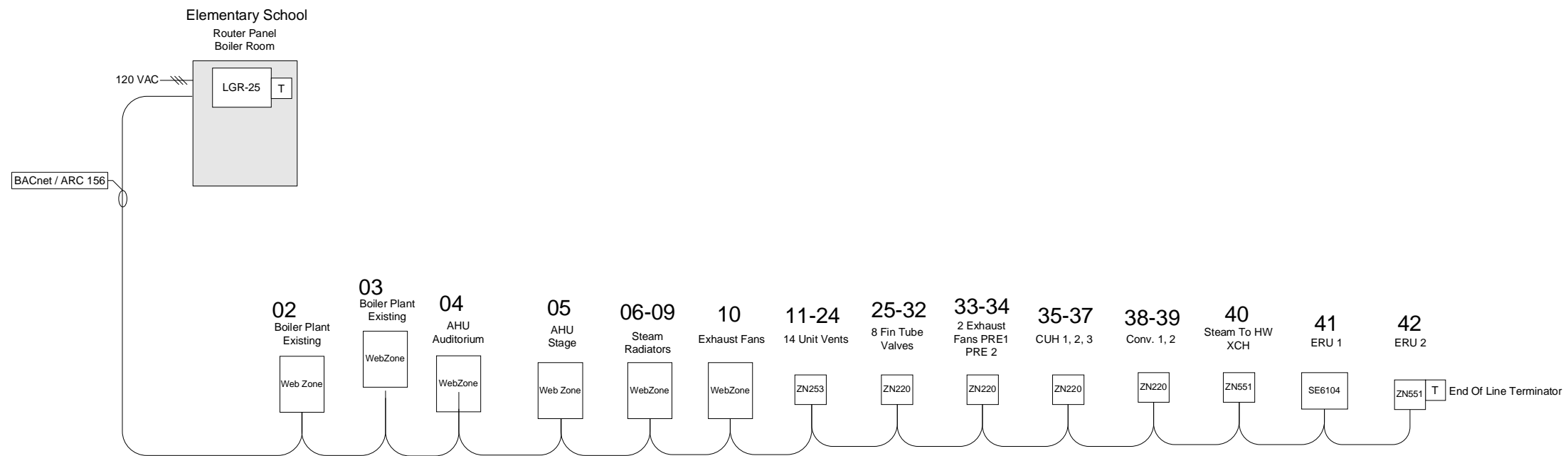
Summary Bill of Materials

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# Riser



**General Notes:**

All ARC156 wiring shall be 22AWG single twisted pair, low capacitance (12.5pF/ft), shielded, plenum rated cable. ALC recommends Magnum Cable Corporation Product number A3ARC156.

Each ARC156 segment must be wired in a daisy chain configuration. Branching requires the use of a REP485.

Each ARC156 segment should have one (1) PROT485 installed to provide protection from electrical surges.

Each ARC156 segment end must be terminated with a TERM485 (120 ohm) terminating resistor.

The ARC156 network segment must have at least one (1) DIAG485 installed to supply bias.

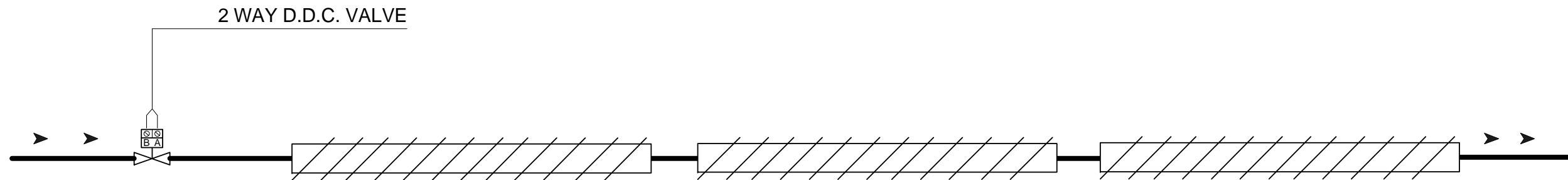
Do not strip back shielded cable sheath more than 1" in order to keep twisted pair from separating. Do not ground shield to the panel or chassis ground. The shield should only be connected to the "Optional Shield" connection at a module.

Routing of communications cabling and control module locations shall be field verified.

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Riser			
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# Elementary School Fin Tube

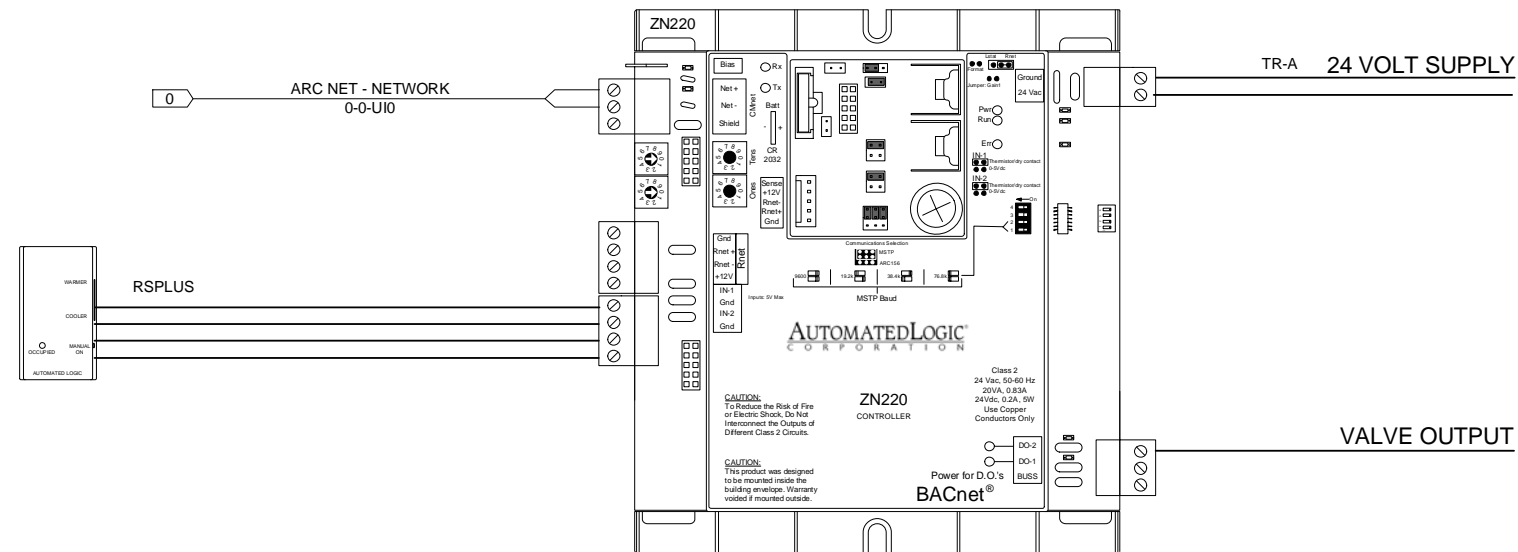
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
RSPLUS	ROOM SENSOR WITH PB AND SA	ALC	RSPLUS	8 ea
TR-A	TRANSFORMER, 120/24VAC, 50VA	CORE COMPONENTS	LE-117	8 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	8 ea



- Class 122 26FT 1.6 GPM
- Class 124 26FT 1.6 GPM
- Class 126 26FT 1.6 GPM
- Resource 15FT .9 GPM
- Bathroom 20FT 1.2 GPM
- Girls Bathroom 20FT 1.2 GPM
- Boys Locker 26FT 1.6 GPM
- Girls Locker 26FT 1.6 GPM

## FTR CONTROL

- A. Sequence Occupied**
1. D.D.C. Valve shall open to maintain occupied set point.
  2. Set point is adjustable at room sensor. Set point adjust can be limited, or disabled by operator.
- B. Sequence Unoccupied**
1. D.D.C. Valve shall remain closed. If room space temp drops below the unoccupied set point, valve shall open to maintain unoccupied set point.
  2. When override button is pushed on the wall mounted space temp sensor, the room shall operate as occupied until the override timer has expired. Override time is adjustable by operator

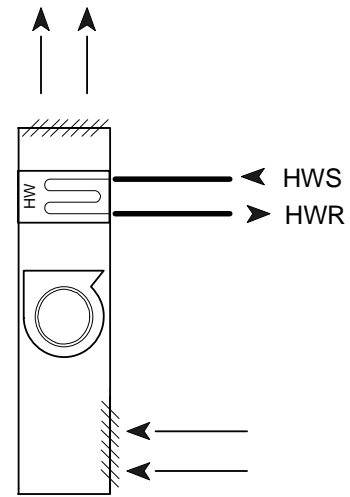


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Elementary School Fin Tube			
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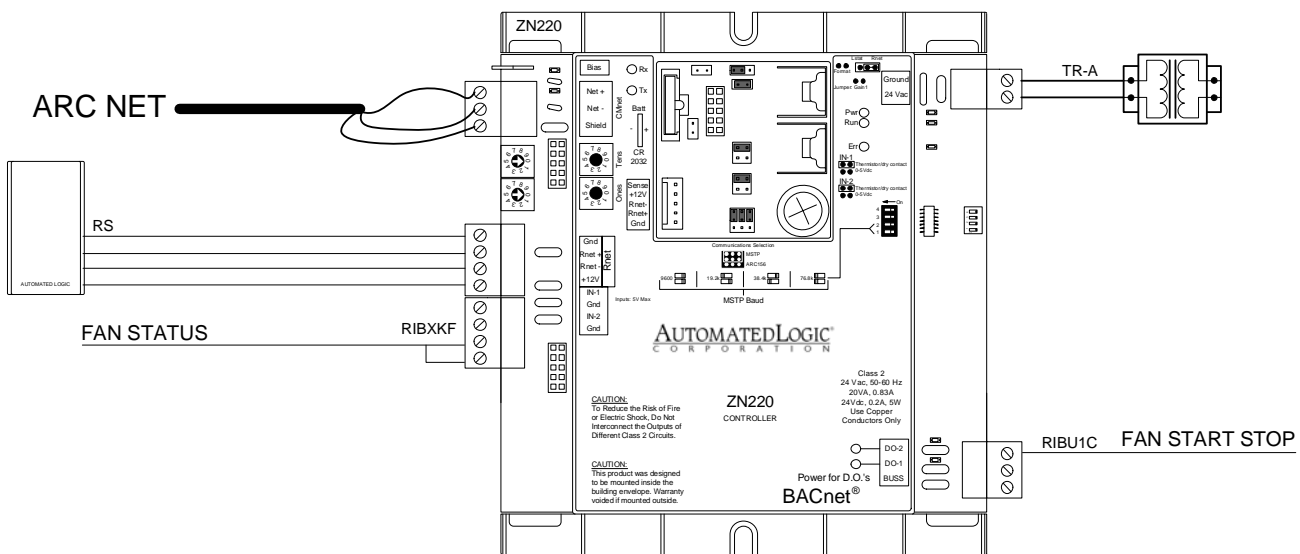
# Elementary CUH

Cabinet unit heater 1 thru 4

C.U.H. 1 & 2 share wall sensor and control module



**CABINET HEATER**



## Bill of Materials

DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
RIBU1C	RELAY 24 V	RIB	RIBU1C	3 ea
RIBXKF	CURRENT SENSOR	RIB	RIBXKF	3 ea
RS	ROOM SENSOR	AUTOMATED LOGIC	RS	3 ea
TR-A	TRANSFORMER, 120/24VAC, 50VA	CORE COMPONENTS	LE-117	3 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	3 ea

## C.U.H. CONTROL

### A. Sequence Occupied

1. Fan shall run to maintain occupied set point

### B. Sequence Unoccupied

1. Fan shall remain off. If room space temp drops below the unoccupied set point, fan shall start and run to maintain unoccupied set point

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Elementary CUH

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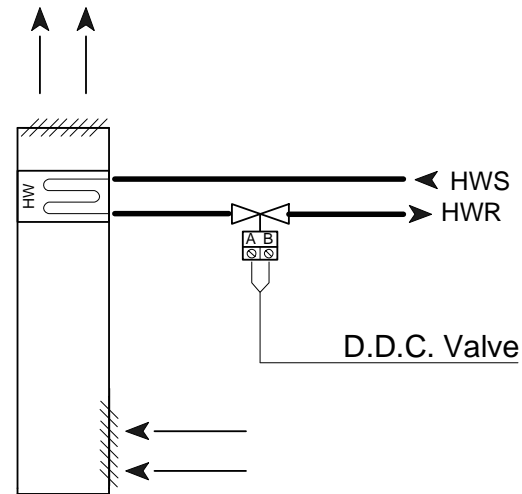
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# Elementary Convector

Cabinet unit heater 1 thru 2

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
RS	ROOM SENSOR	AUTOMATED LOGIC	RS	2 ea
TR-A	TRANSFORMER, 120/24VAC, 50VA	CORE COMPONENTS	LE-117	2 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	2 ea



**CONVECTOR HEATER**

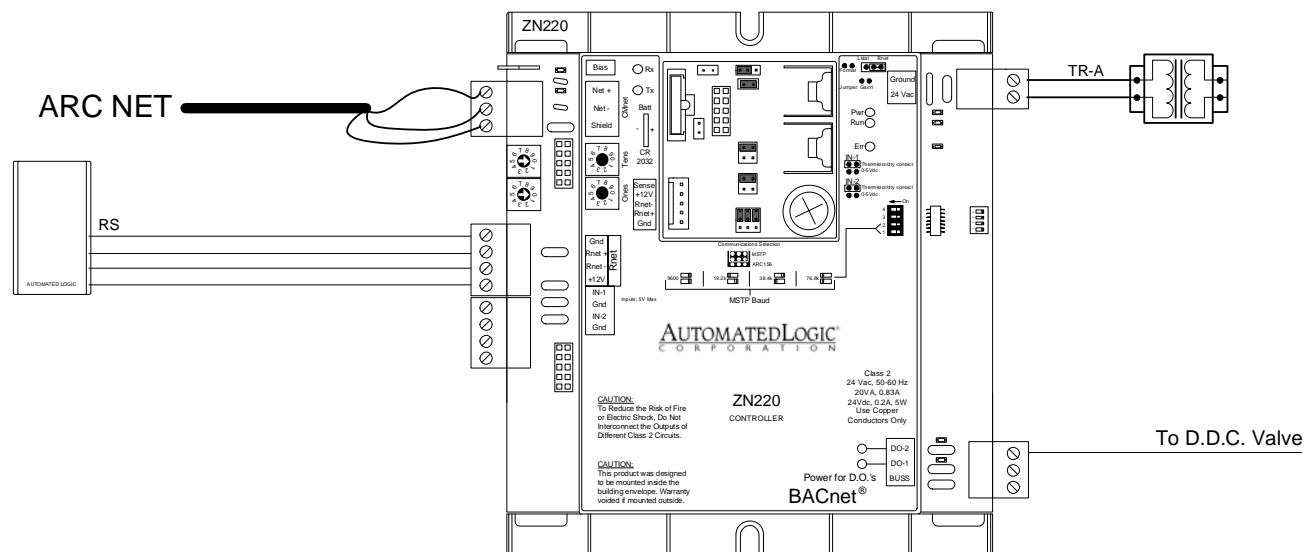
## C.U.H. CONTROL

### A. Sequence Occupied

1. Valve shall open to maintain occupied set point

### B. Sequence Unoccupied

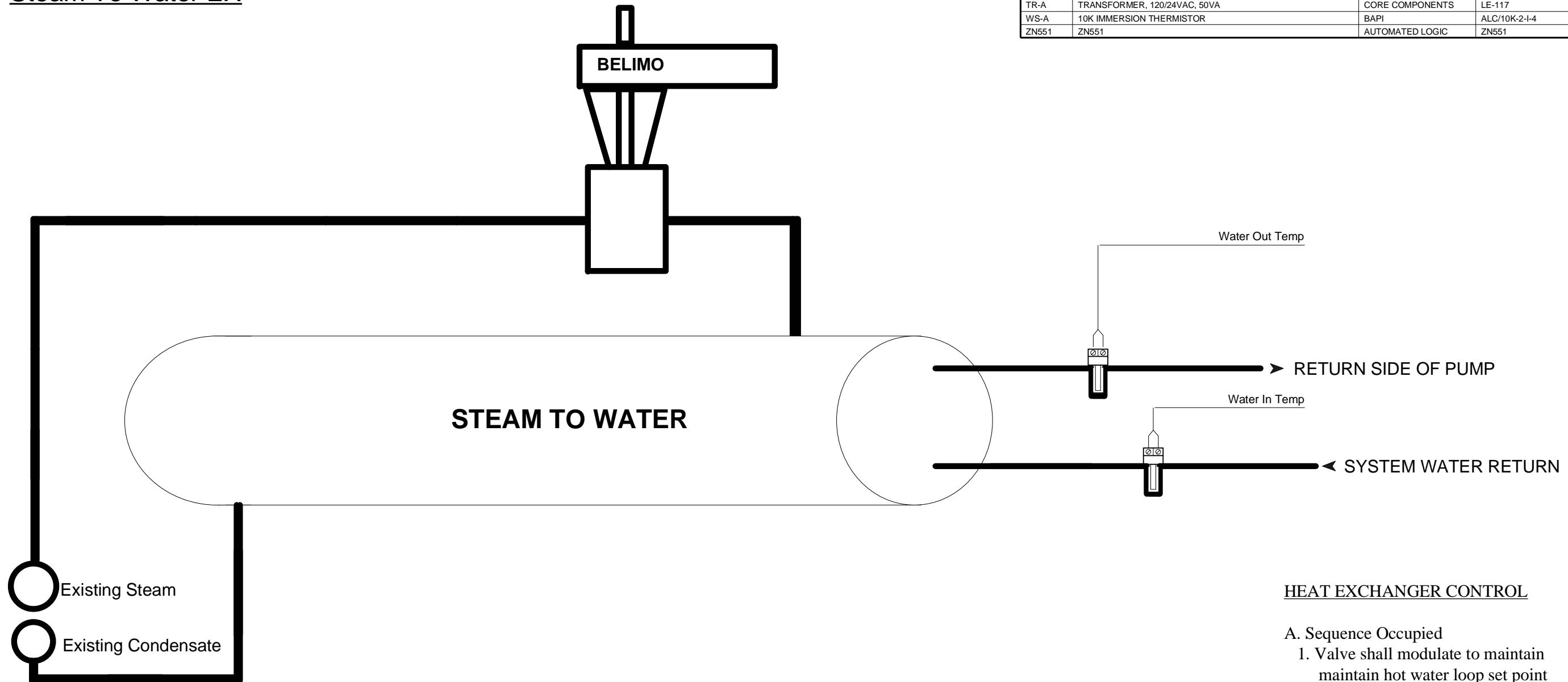
1. Valve shall remain closed. If room space temp. drops below the unoccupied set point, valve shall open to maintain occupied set point



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Elementary Convector			
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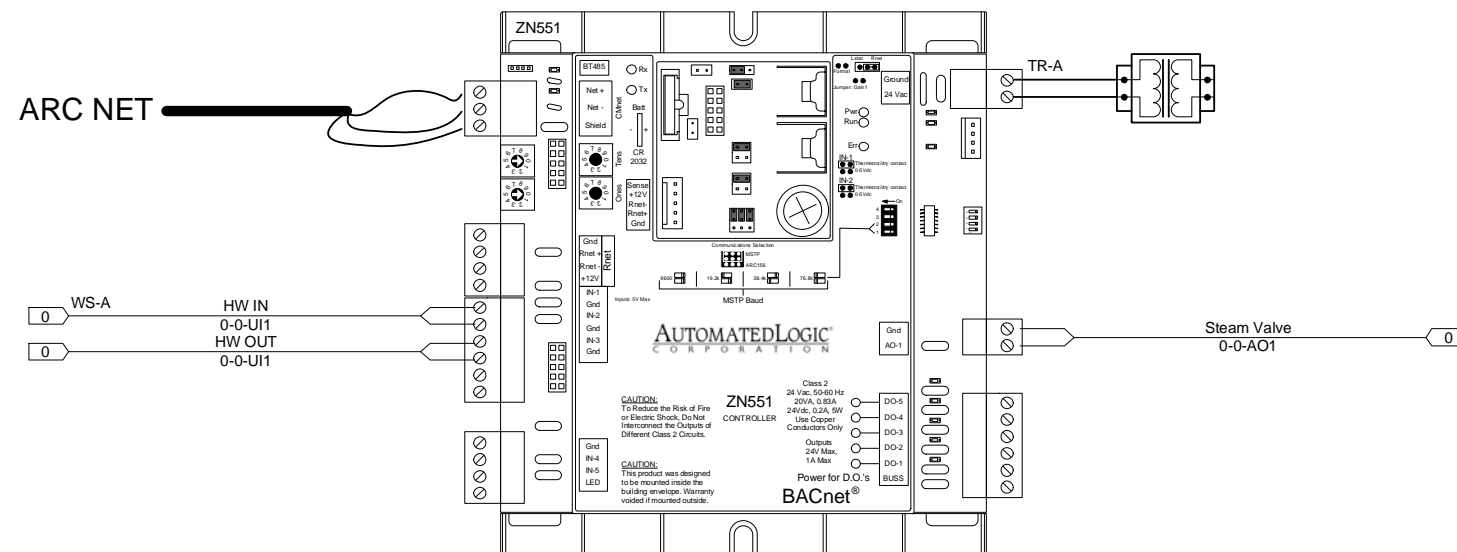
# Steam To Water EX



Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
TR-A	TRANSFORMER, 120/24VAC, 50VA	CORE COMPONENTS	LE-117	1 ea
WS-A	10K IMMERSION THERMISTOR	BAPI	ALC/10K-2-I-4	1 ea
ZN551	ZN551	AUTOMATED LOGIC	ZN551	1 ea

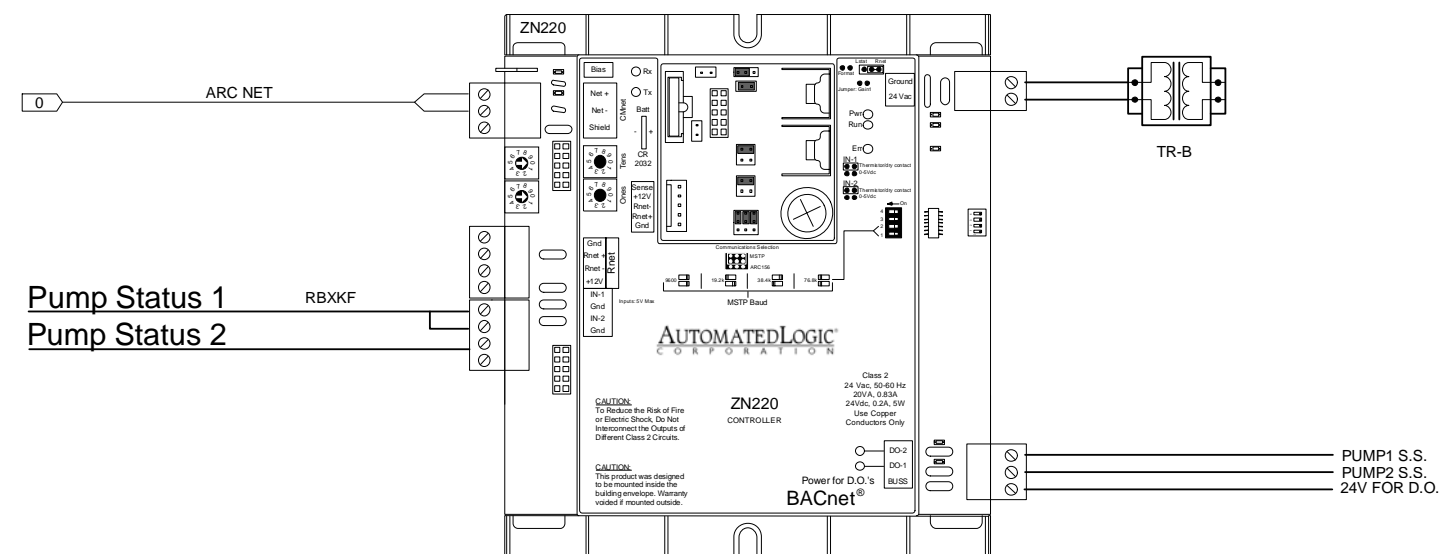
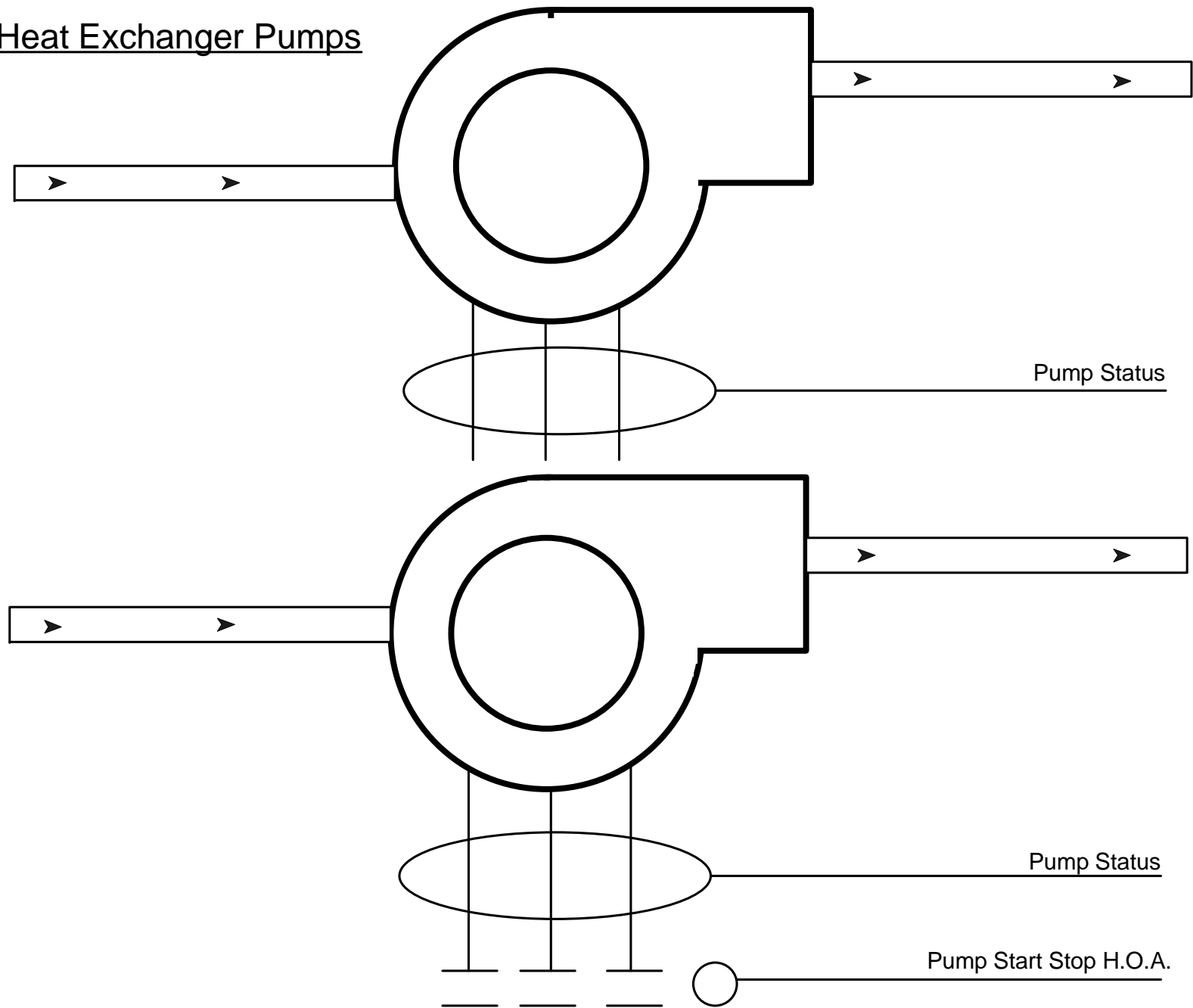
## HEAT EXCHANGER CONTROL

- A. Sequence Occupied
1. Valve shall modulate to maintain maintain hot water loop set point  
Set point will be based on a reset schedule, driven by outdoor temp.



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Steam To Water EX			
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# Heat Exchanger Pumps



Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
RBXKF	CURRENT SENSOR	RIB	RBXKF	1 ea
TR-B	TRANSFORMER, MULTITAP 24VAC, 75VA	CORE COMPONENTS	LE-150	2 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	1 ea

## PUMP SEQUENCE

### **A. General:**

1. When outdoor air temperature falls below 65 Deg F. E.M.C.S. Shall switch the building to heating mode. The lead pump (as selected by the E.M.C.S.) shall energize. P1 and P2 shall operate in a lead/lag sequence.

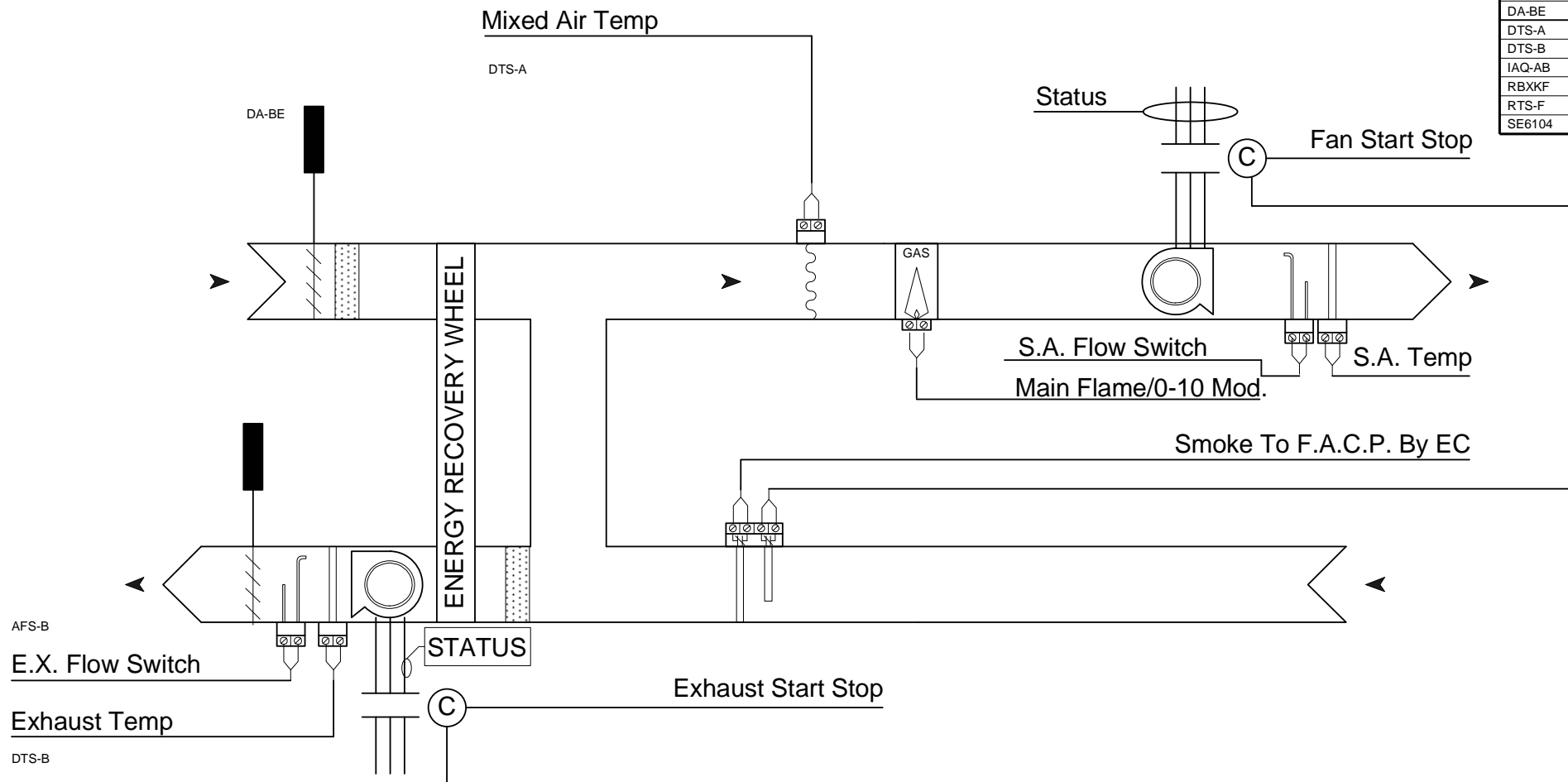
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Heat Exchanger Pumps

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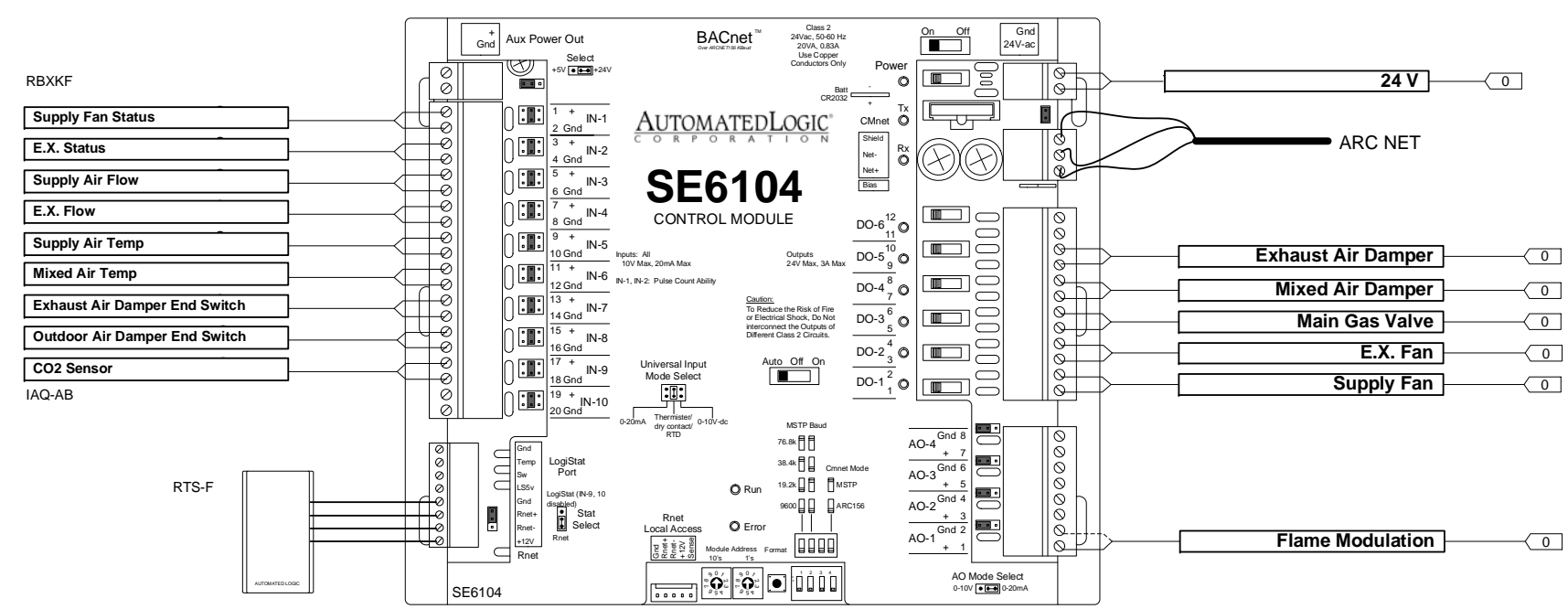
# ERU 1



Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
AFS-B	FAN AIR FLOW SWITCH	CLEVELAND	AFS-222	2 ea
DA-BE	SR PROPORTIONAL 60 IN-LB 24 V	BELIMO	NF24-SR ALC	2 ea
DTS-A	DUCT 10K THERMISTOR PROBE 12 IN.	BAPI	ALC/10K-2-D-12	1 ea
DTS-B	DUCT 10K THERMISTOR AVERAGING 12 FT.	BAPI	ALC/10K-2-A-12	2 ea
IAQ-AB	CO SPACE SENSOR 0-200 PPM 4-20MA	R.E. TECH	WCO-1B	1 ea
RBXKF	CURRENT SENSOR	RIB	RBXKF	2 ea
RTS-F	10K ROOM THERMISTOR RS	BAPI	ALC/10K-2-RS	1 ea
SE6104	SE6104	AUTOMATED LOGIC	SE6104	1 ea

### AHU Control

- A. General:
  - Unit is provided with factory D.D.C. controls
  - Index unit to occupied and unoccupied cycles from BMS.
  
- B. Occupied Cycle:
  - Enable unit
  - The heat wheel control, and furnace modulate in sequence without overlap to maintain supply air temperature set point.
  - The supply air temperature is reset based on based on space temperature S.P.
  - The outside air and exhaust air dampers shall open 100% for a 30 minute pre-occupancy purge when the system goes from unoccupied to occupied
  - Following the purge the outside and exhaust dampers will go to minimum position until a co2 demand calls for more outdoor air based on a 100 PPM differential with outdoor co2, and to never allow a co2 level above 400 PPM during occupied.
  - Allow economizer operation to override co2 control when outdoor air entalpy is adequate for free cooling when cooling is needed.
  
- C. Unoccupied Cycle:
  - Following post occupancy flush, the outdoor air and exhaust air damper open and the return air damper remains in recirculation position.  
  
During an unoccupied heating call the recirculation damper opens and after a time delay the supply and return fans start with the furnace to maintain 65 Deg.
  
- D. Safety
  - Smoke detectors in the supply and return airs will shut fans down with a hard shutdown when activated.
  - Current switches will monitor fans statuses, and activate an alarm through D.D.C. system if the fan status does not match the fan call.



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ERU 1

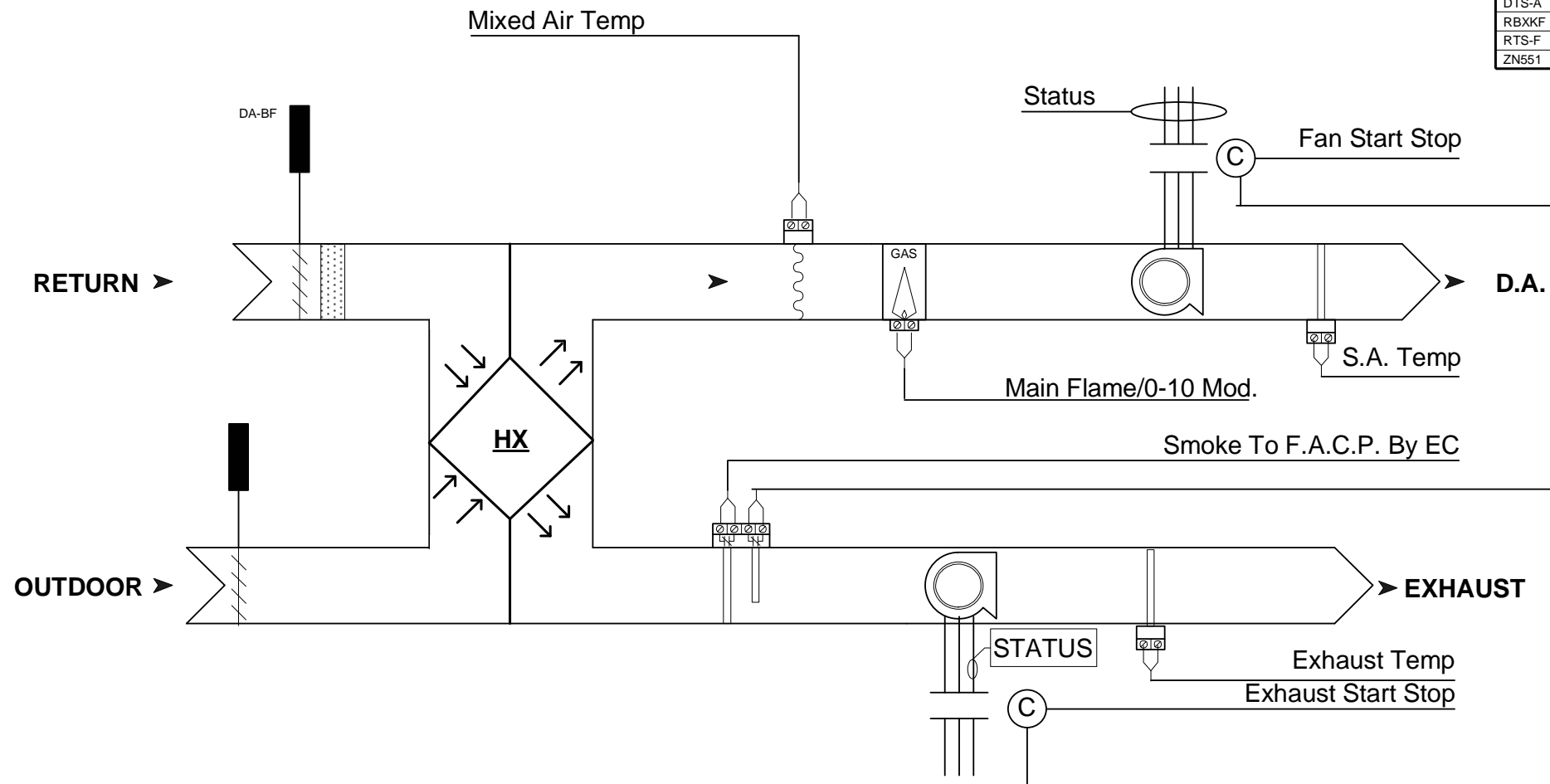
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**AUTOMATED LOGIC**  
CORPORATION

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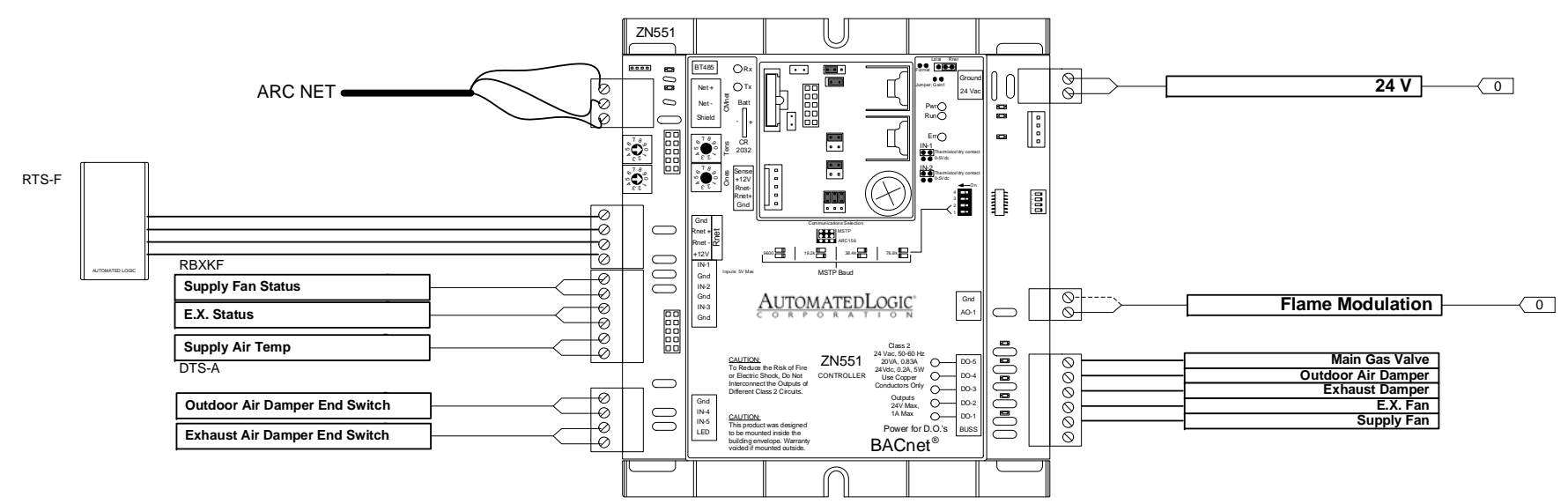
# ERU 2



Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
DA-BF	SR OPEN/CLOSE 133 IN-LB 24 V SWITCH	BELIMO	AF24-S ALC	2 ea
DTS-A	DUCT 10K THERMISTOR PROBE 12 IN.	BAPI	ALC/10K-2-D-12	2 ea
RBXKF	CURRENT SENSOR	RIB	RBXKF	2 ea
RTS-F	10K ROOM THERMISTOR RS	BAPI	ALC/10K-2-RS	1 ea
ZN551	ZN551	AUTOMATED LOGIC	ZN551	1 ea

### AHU Control

- A. General:
  1. Unit is provided with factory D.D.C. controls
  2. Index unit to occupied and unoccupied cycles from BMS.
- B. Occupied Cycle:
  1. The supply Air is reset based on a space temp S.P. of 70 Deg. F. The outside and exhaust air dampers open, and prove open with an end switch before fans start.
- C. Unoccupied Cycle:
  1. The supply and return fans stop. The outside air and exhaust dampers close.
- D. Safety:
  1. Smoke detectors in the supply and return air de-energize the supply and return fans with a hard shut down at the motor starters.
  2. Current sensors shall be used to monitor the fan status through D.D.C. system, and report an alarm is the fan status deviates from the fan call.



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**AIR TEMP HEATING & AIR CONDITIONING, INC.**  
A LINC SERVICE @ CONTRACTOR

ERU 2

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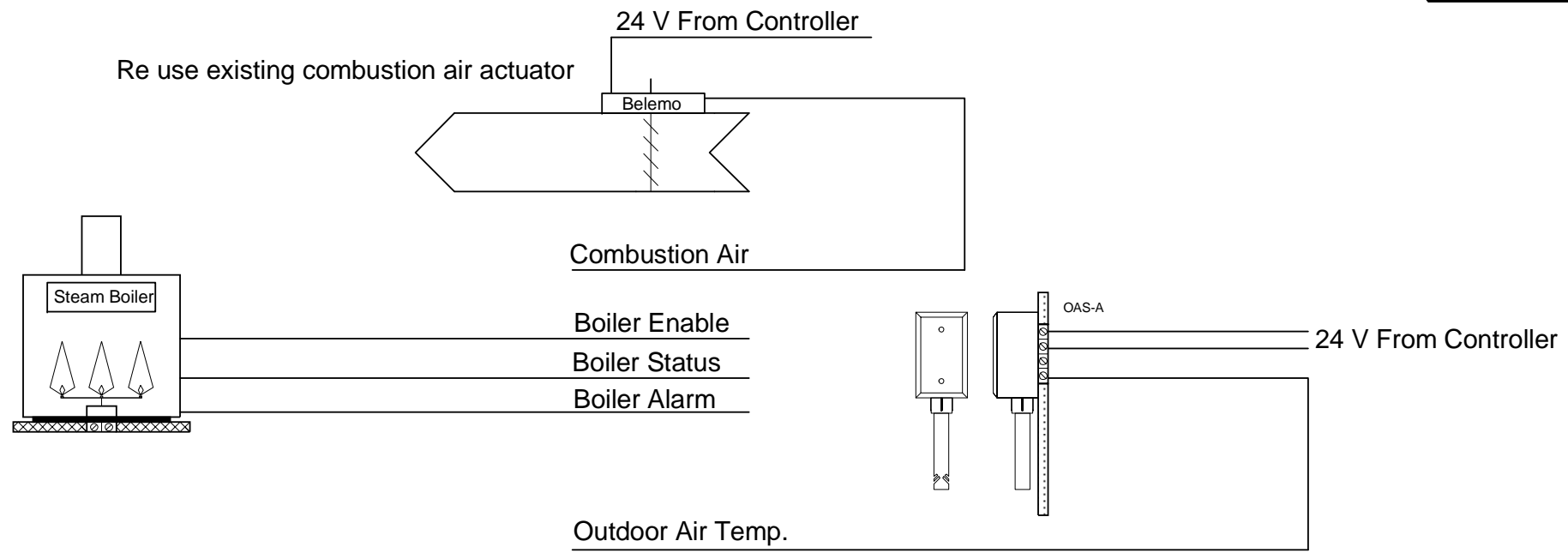
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DSCODE: 07112.00

**AUTOMATED LOGIC**  
CORPORATION

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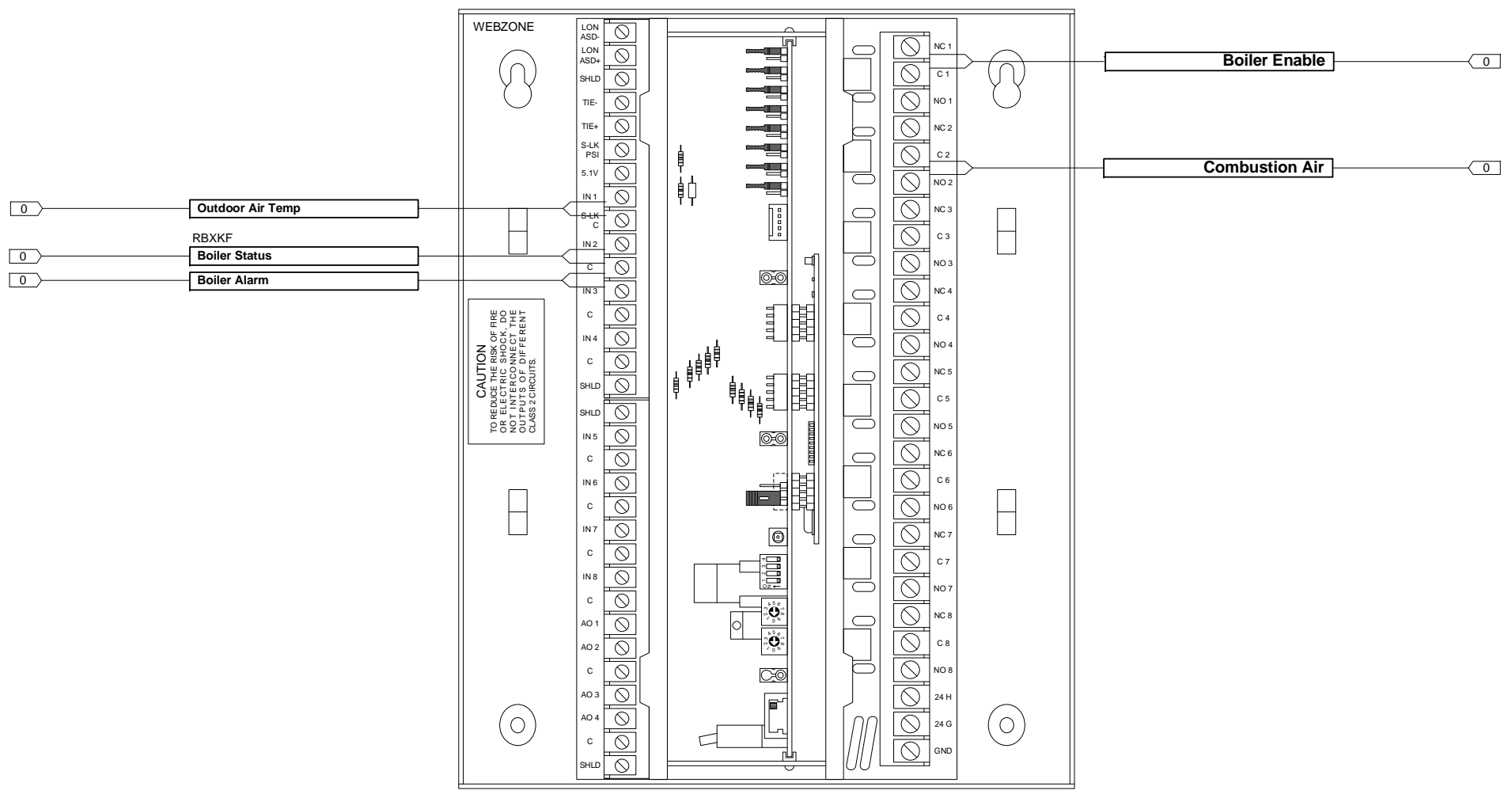
# Boiler Plant

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
OAS-A	OUTDOOR AIR SENSOR 10K THERM	BAPI	ALC/10K-2-O	1 ea
RBXKF	CURRENT SENSOR	RIB	RBXKF	1 ea
WEBZONE	WEBZONE	AUTOMATED LOGIC	WEBZONE	1 ea



### **BOILER CONTROL**

- A. General:
- Existing mechanical steam boiler operating controls to remain.
- B. Occupied Cycle:
1. Enable unit based on an outside air temperature below 65 Deg. F.
  2. Generate alarm at operator work station if boiler alarm occurs.
  3. Open combustion damper air when status is on.



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Boiler Plant

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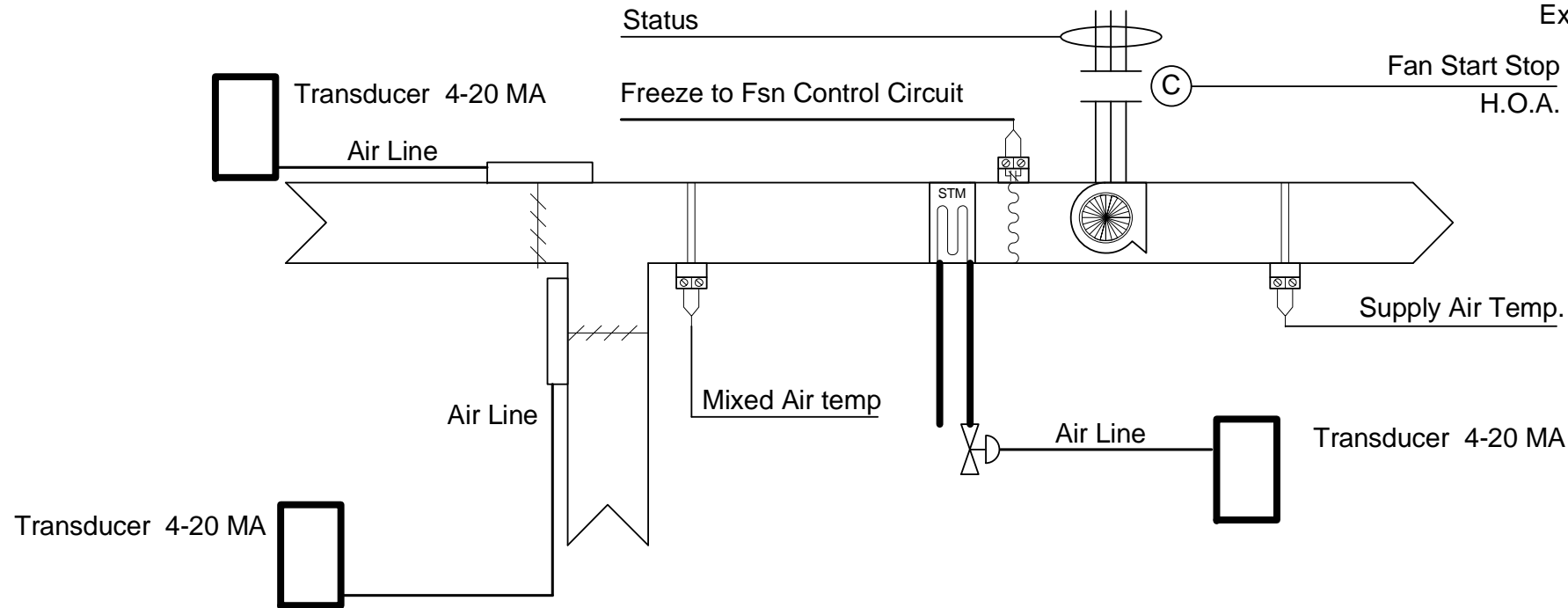
**AUTOMATED LOGIC**  
CORPORATION

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# Stage AHU

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
WEBZONE	WEBZONE	AUTOMATED LOGIC	WEBZONE	1 ea

Existing control relays, transducers, and sensors are to be re used with new controllers  
Existing actuators and wire are to be re used with new controllers



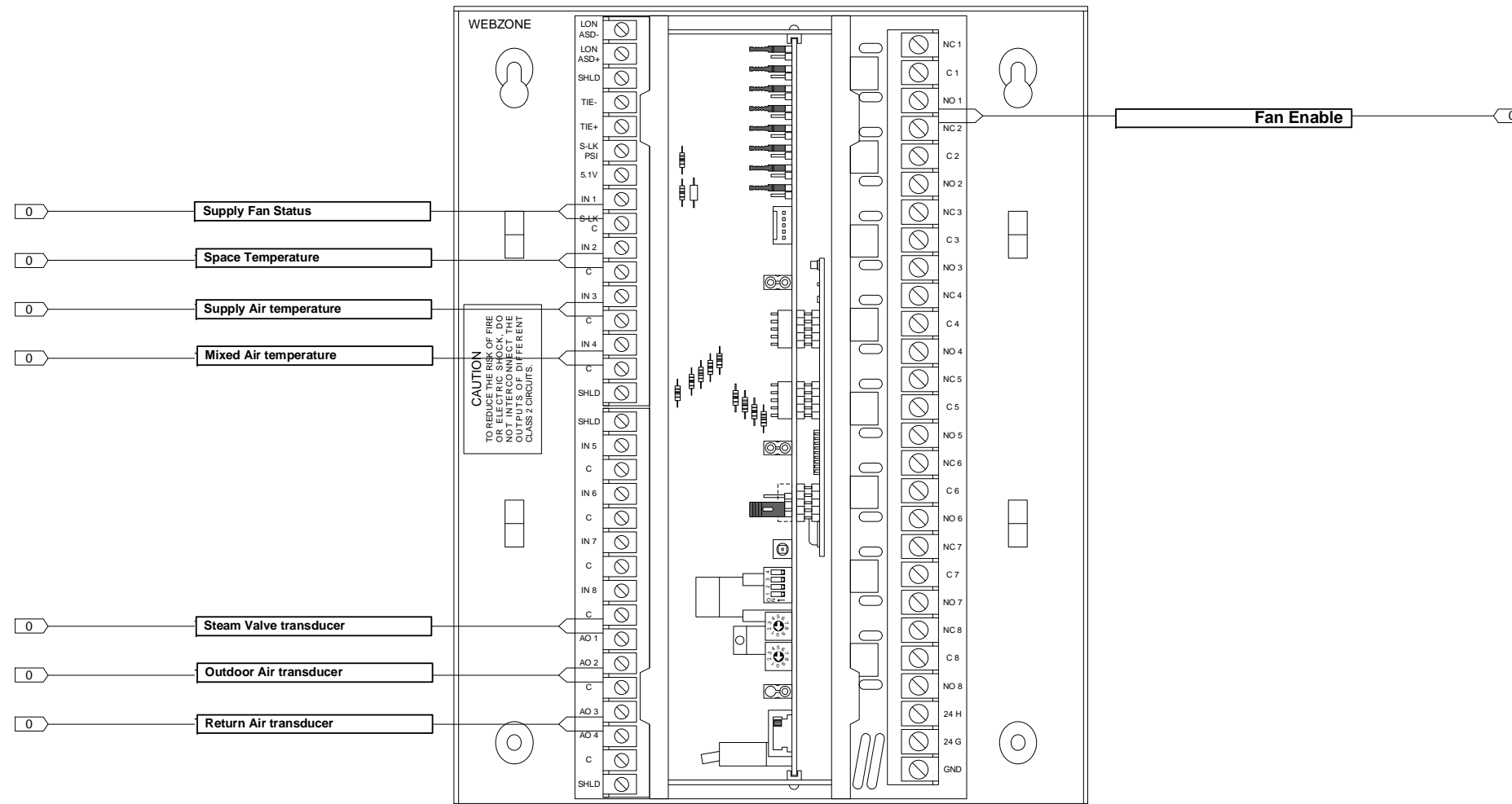
### AHU STAGE CONTROL

A. General:

Index Unit to Occupied and Unoccupied mode  
From Energy Management system

B. Occupied Cycle:

1. Run fan continuously with the outdoor air damper at 15 % minimum position
2. If space temperature is above set point modulate outdoor air damper to maintain set point. If space temperature is below set point maintain 15% minimum position outdoor air damper, and modulate steam valve to maintain a resetting discharge air temperature that resets with space temperature deviation. Reset D.A. Between 70 and 95 DEG F.



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Stage AHU

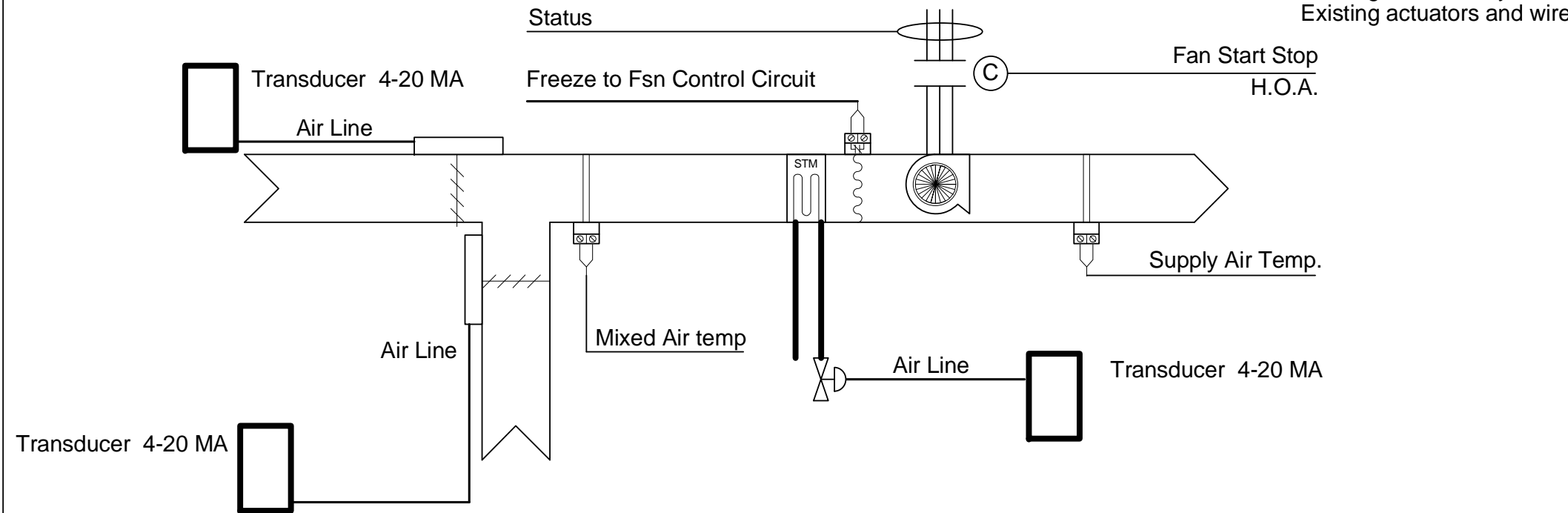
REV: 1	Submittal	9/29/2008	JOB NO: P7619
AUTOMATED LOGIC CORPORATION			CHECK BY: RSL DSCODE: 07112.00

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# Auditorium AHU

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
WEBZONE	WEBZONE	AUTOMATED LOGIC	WEBZONE	1 ea

Existing control relays, transducers, and sensors are to be re used with new controllers  
Existing actuators and wire are to be re used with new controllers



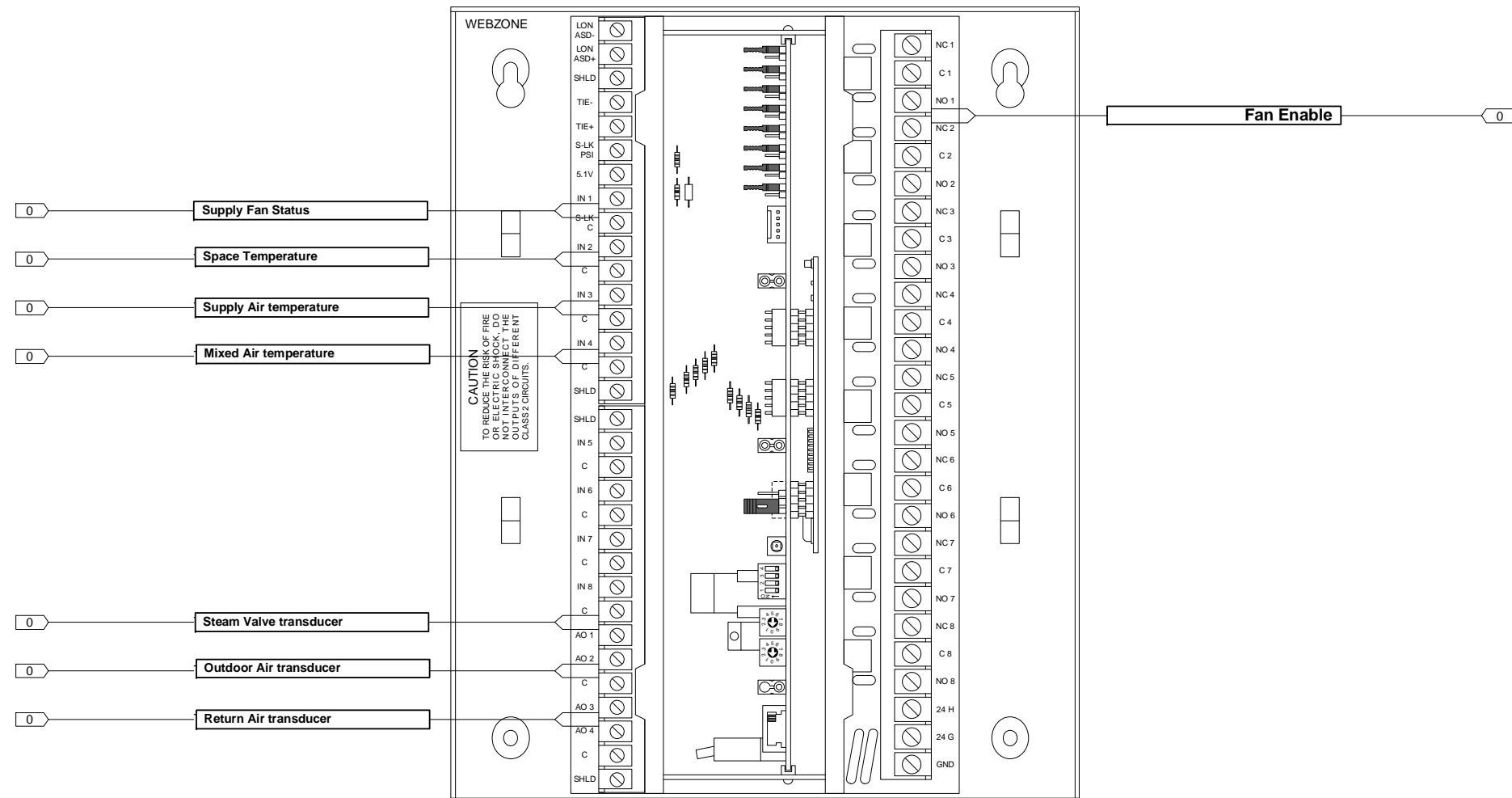
## AHU STAGE CONTROL

A. General:

Index Unit to Occupied and Unoccupied mode  
From Energy Management system

B. Occupied Cycle:

1. Run fan continuously with the outdoor air damper at 15 % minimum position
2. If space temperature is above set point modulate outdoor air damper to maintain set point. If space temperature is below set point maintain 15% minimum position outdoor air damper, and modulate steam valve to maintain a resetting discharge air temperature that resets with space temperature deviation. Reset D.A. Between 70 and 95 DEG F.

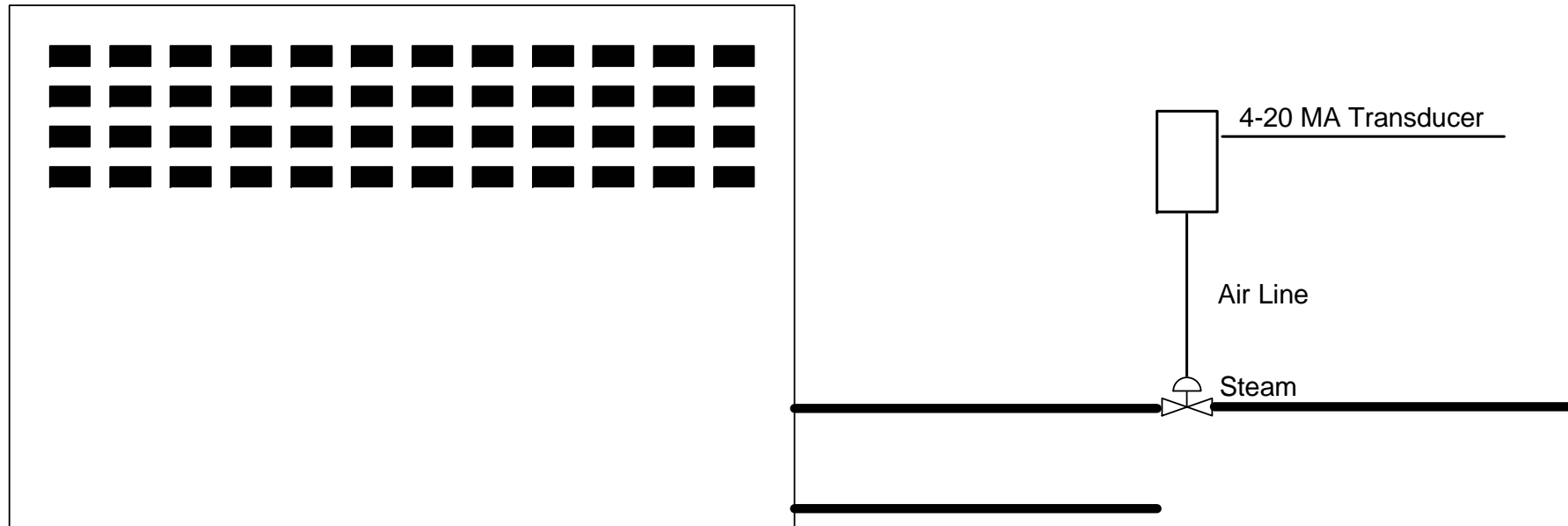


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Auditorium AHU			
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# Steam Radiators 1

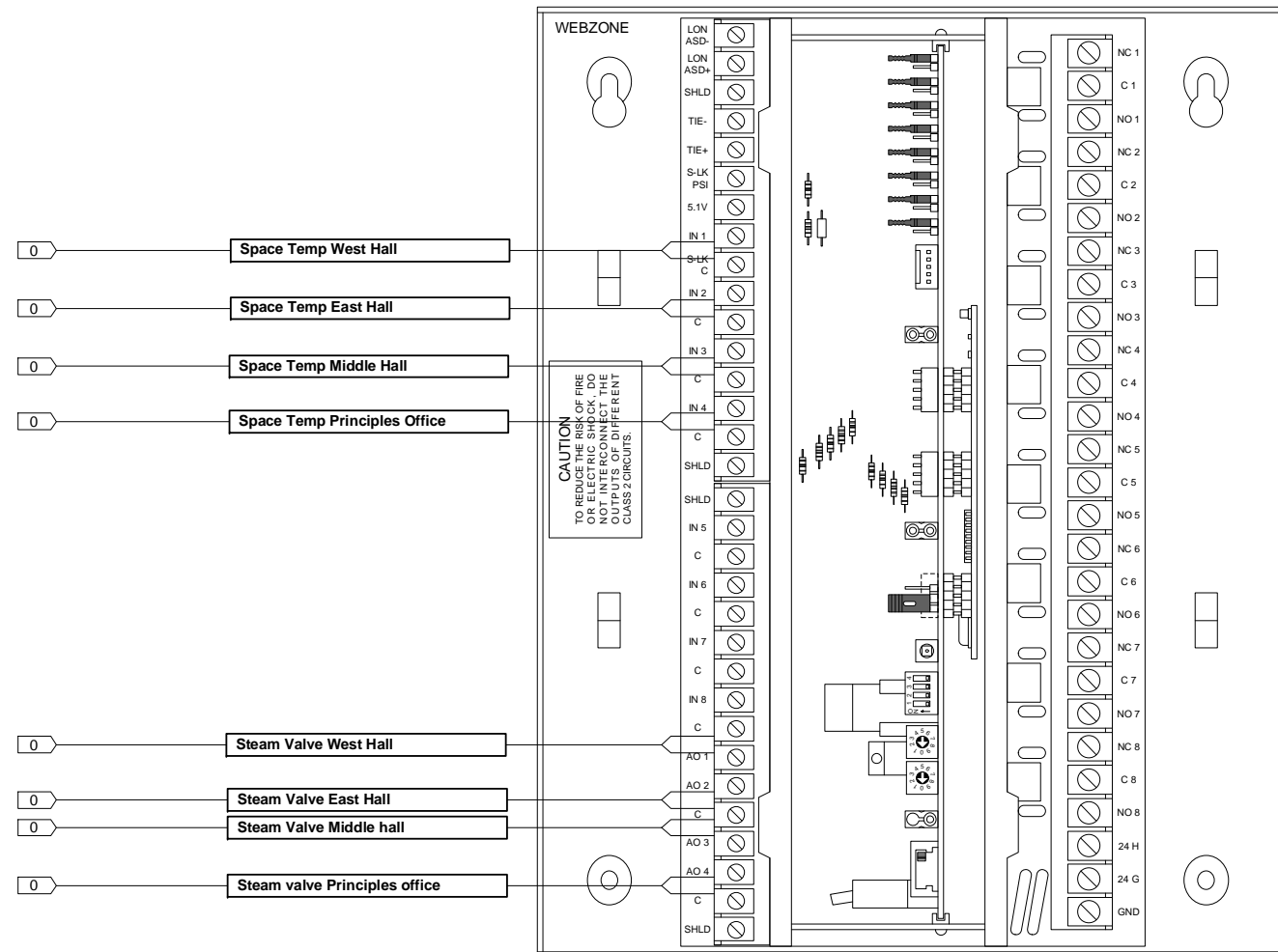
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
WEBZONE	WEBZONE	AUTOMATED LOGIC	WEBZONE	1 ea



Existing control relays, transducers, and sensors are to be re used with new controllers  
 Existing actuators and wire are to be re used with new controllers



### STEAM RADIATOR CONTROL

- A. Occupied Cycle:  
 Modulate steam valve to maintain occupied set point.
- B. Unoccupied Cycle:  
 Modulate steam valve to maintain unoccupied set point.



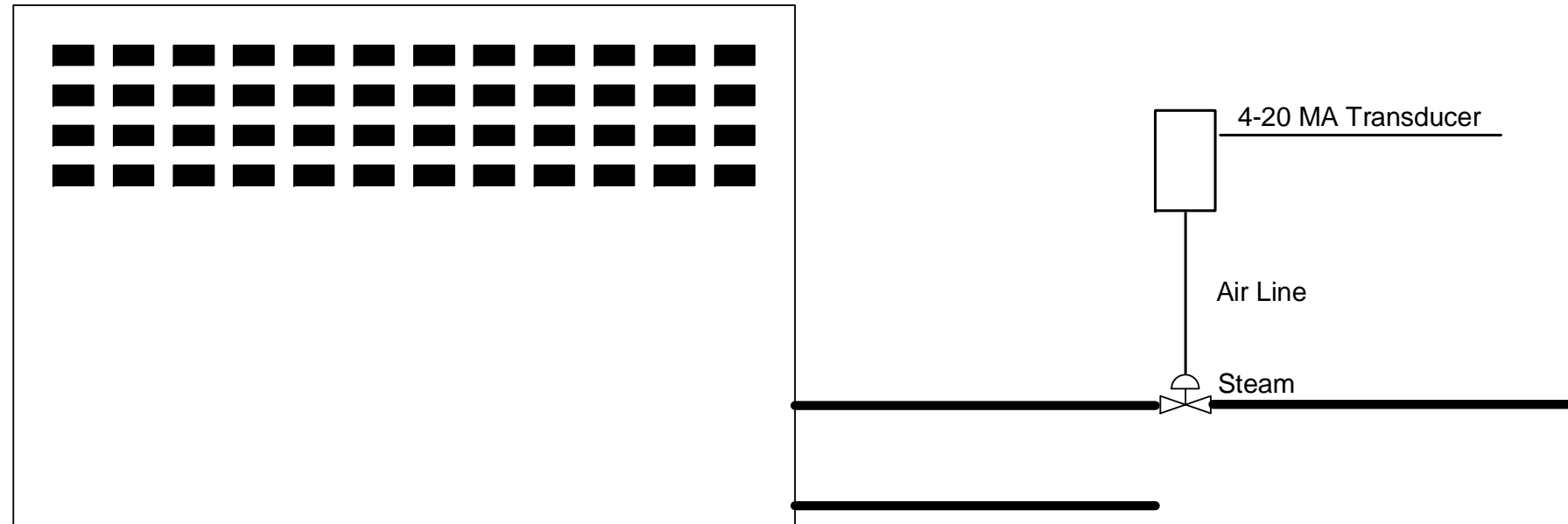
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 <b>AIR TEMP HEATING &amp; AIR CONDITIONING, INC.</b> A LINC SERVICE @ CONTRACTOR			
Steam Radiators 1			
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# Steam Radiators 2

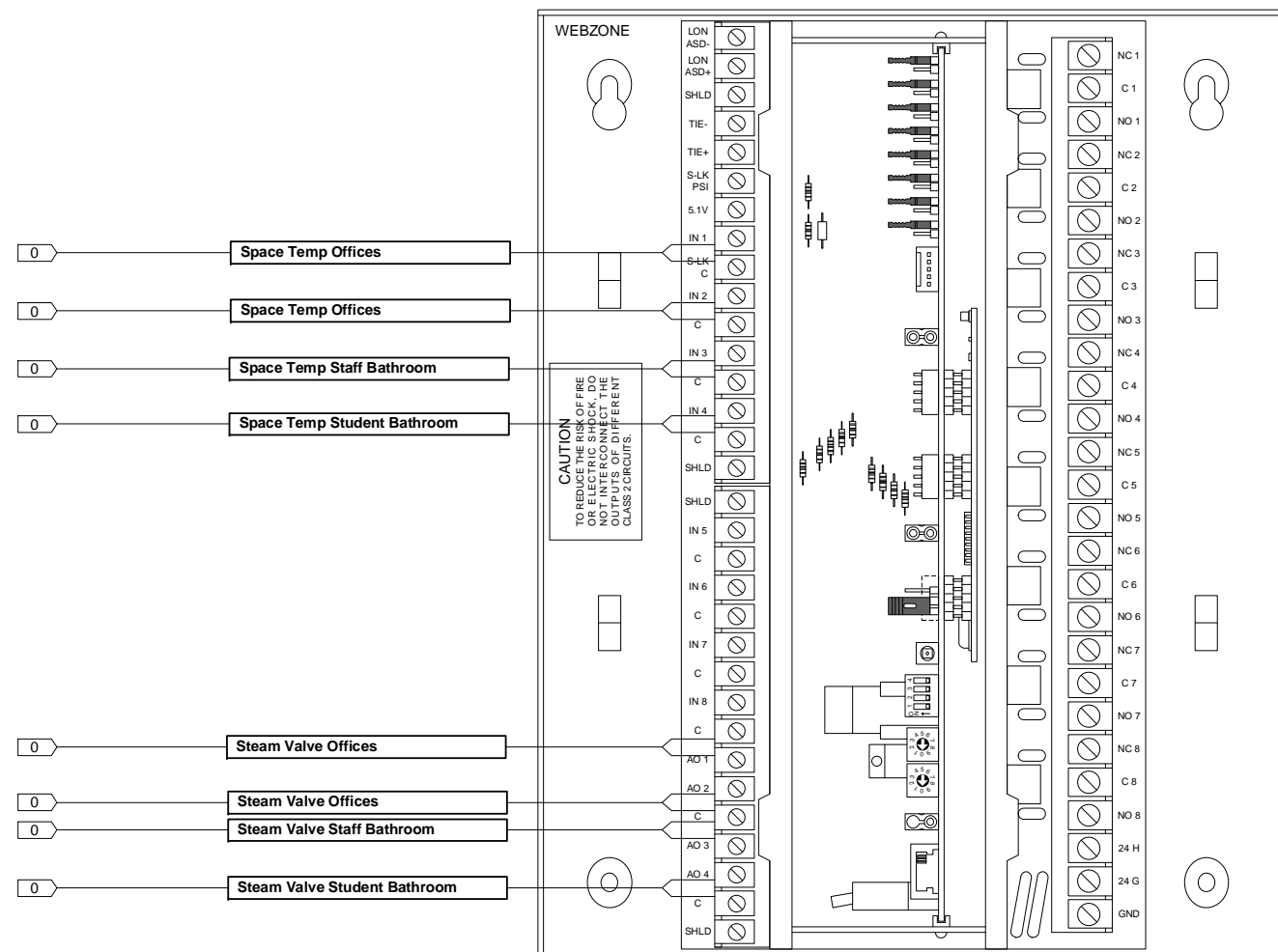
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
WEBZONE	WEBZONE	AUTOMATED LOGIC	WEBZONE	1 ea

Existing control relays, transducers, and sensors are to be re used with new controllers  
 Existing actuators and wire are to be re used with new controllers



### STEAM RADIATOR CONTROL

- A. Occupied Cycle:  
 Modulate steam valve to maintain occupied set point.
- B. Unoccupied Cycle:  
 Modulate steam valve to maintain unoccupied set point.



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Steam Radiators 2

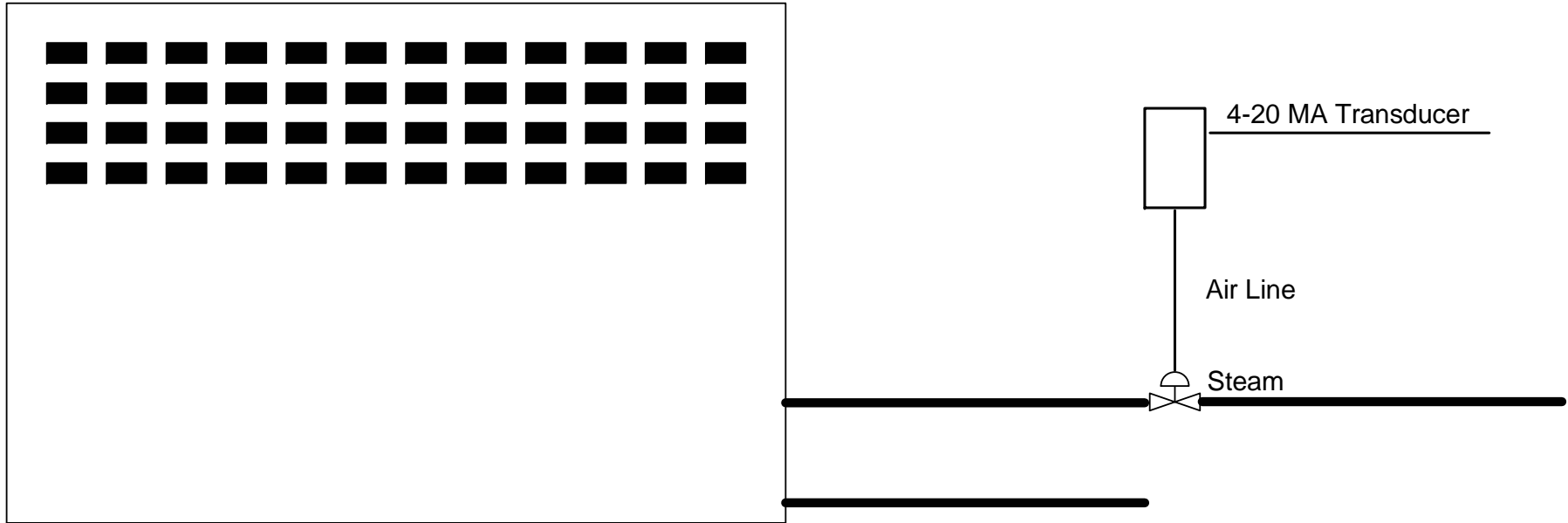
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<b>AUTOMATED LOGIC</b> CORPORATION			CHECK BY: RSL
			DSCODE: 07112.00

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# Steam radiators 3

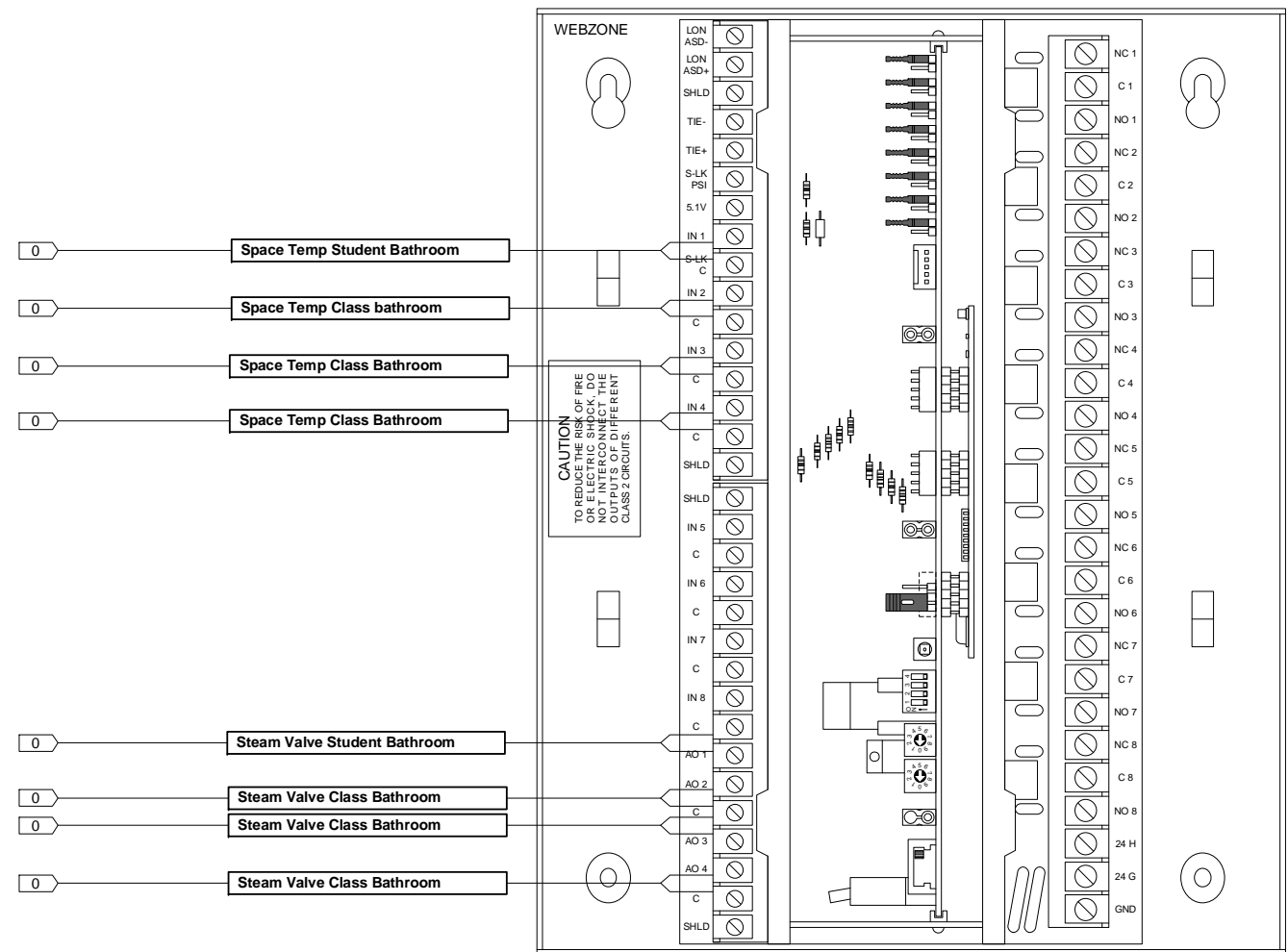
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
WEBZONE	WEBZONE	AUTOMATED LOGIC	WEBZONE	1 ea

Existing control relays, transducers, and sensors are to be re used with new controllers  
 Existing actuators and wire are to be re used with new controllers



### STEAM RADIATOR CONTROL

- A. Occupied Cycle:
  - Modulate steam valve to maintain occupied set point.
- B. Unoccupied Cycle:
  - Modulate steam valve to maintain unoccupied set point.



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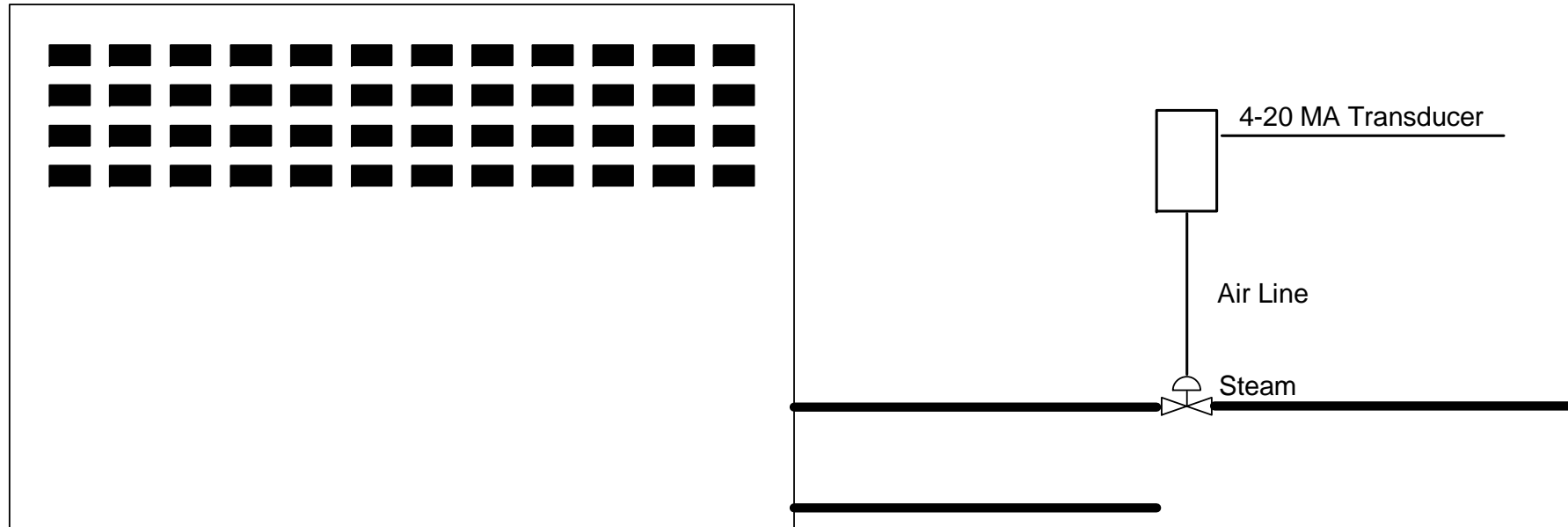
Steam radiators 3

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# Steam Radiators 4

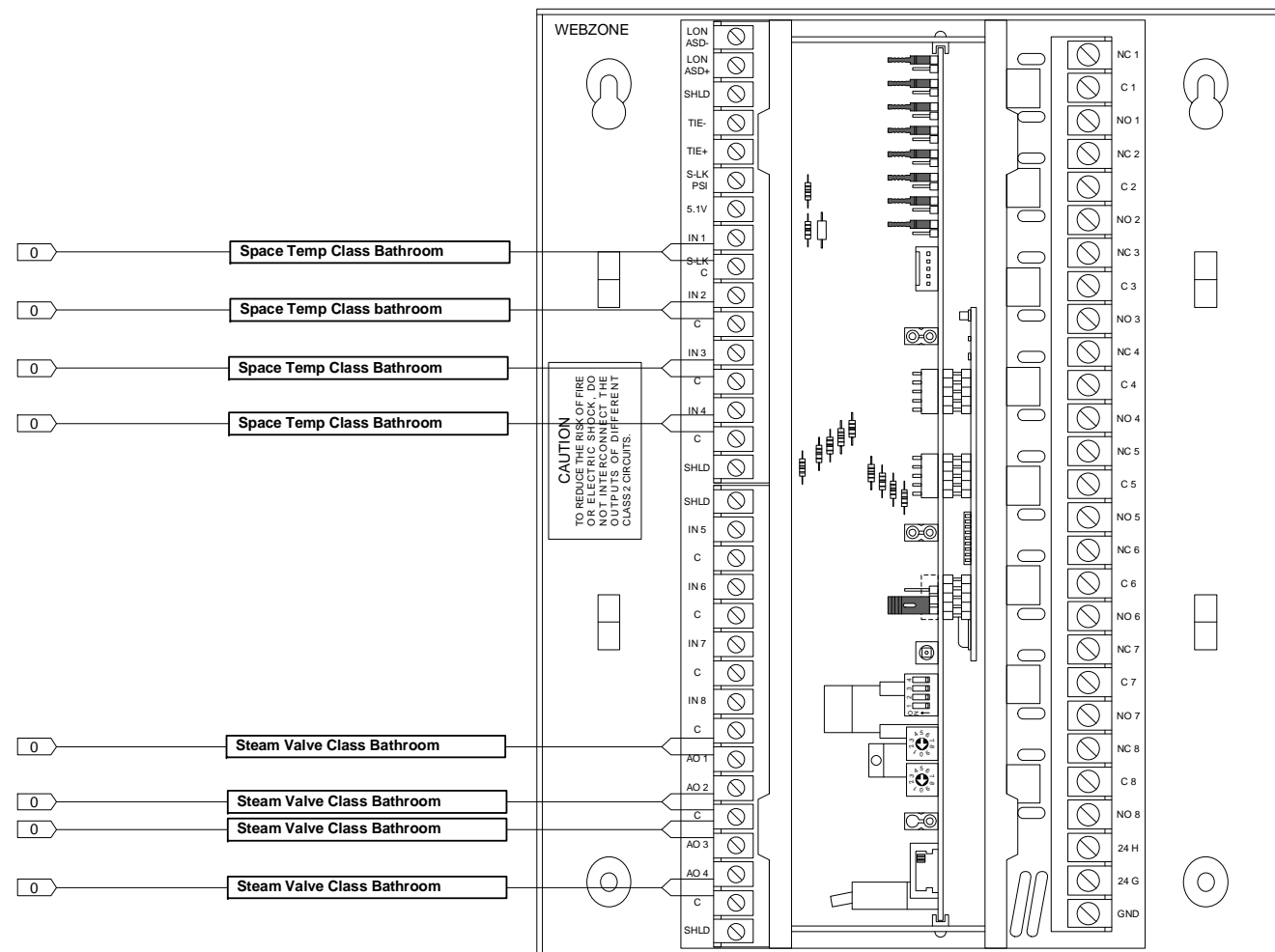
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
WEBZONE	WEBZONE	AUTOMATED LOGIC	WEBZONE	1 ea

Existing control relays, transducers, and sensors are to be re used with new controllers  
 Existing actuators and wire are to be re used with new controllers



### STEAM RADIATOR CONTROL

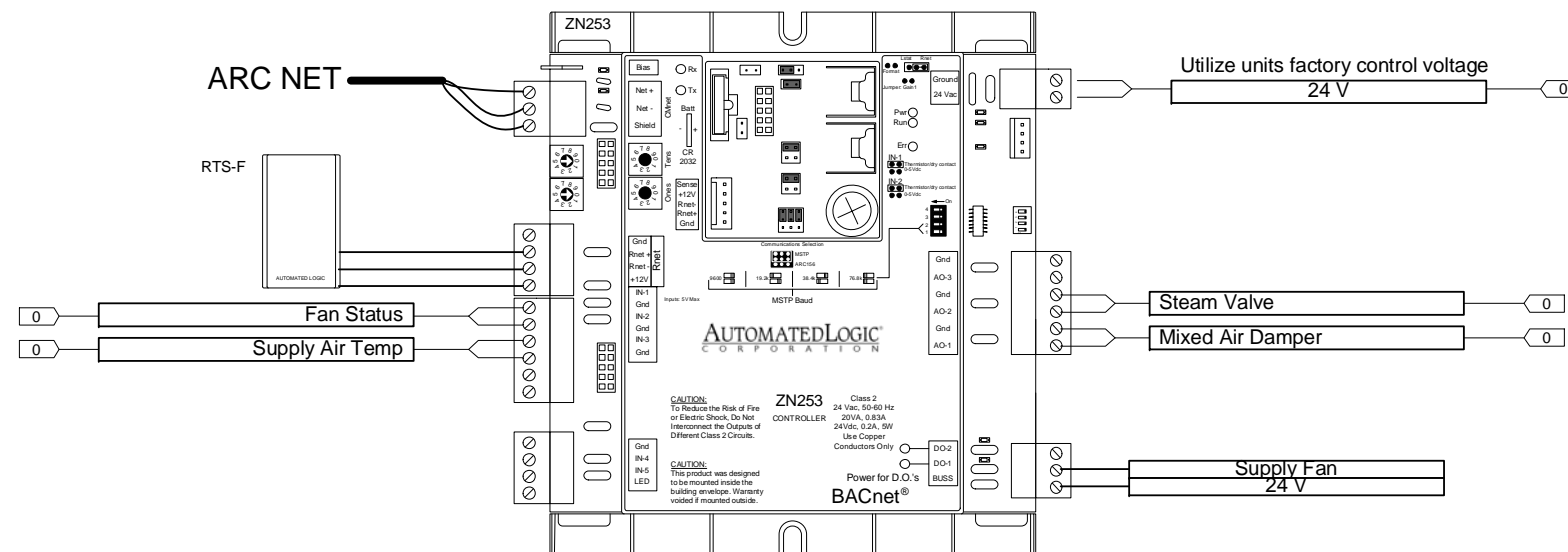
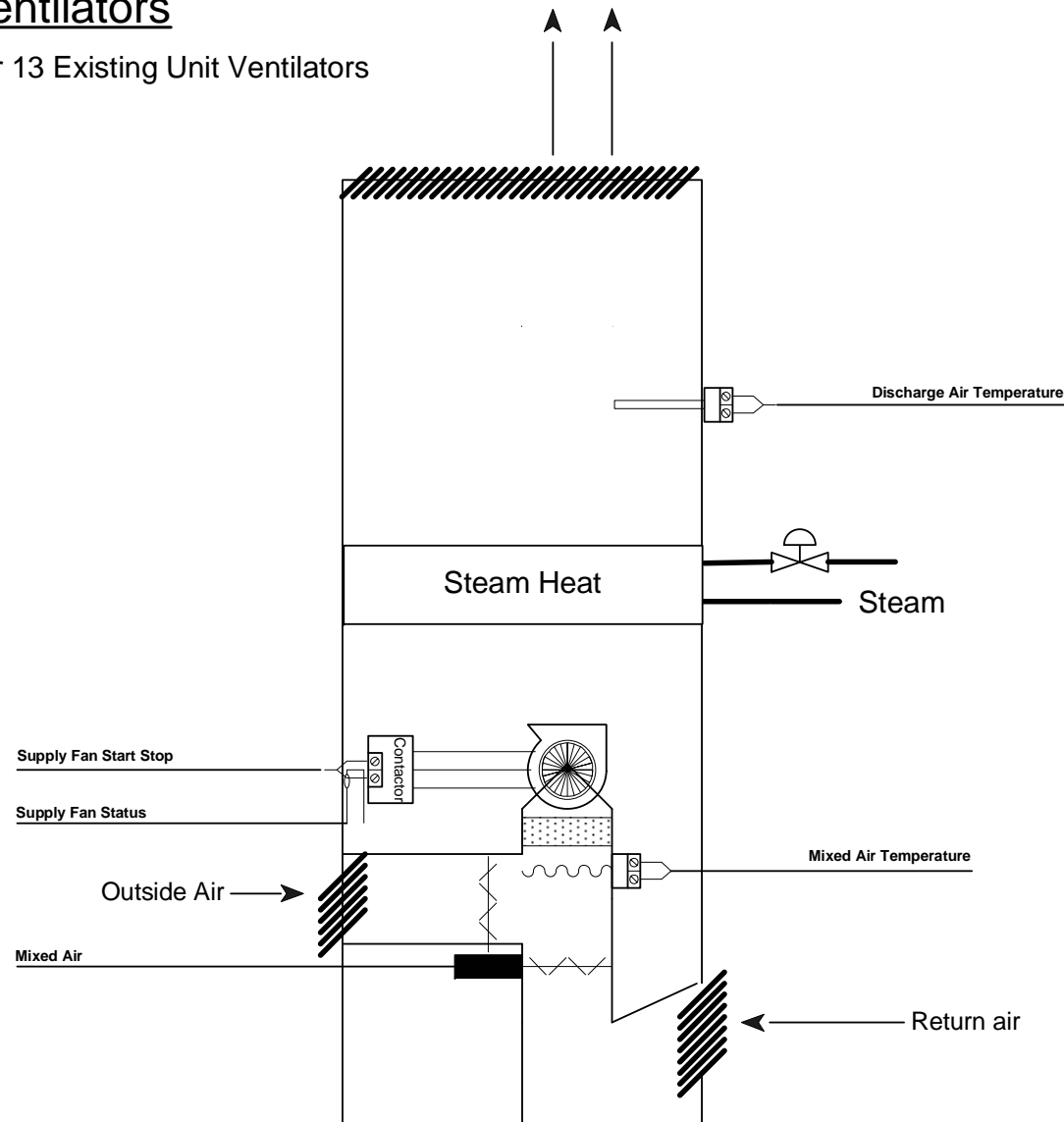
- A. Occupied Cycle:  
 Modulate steam valve to maintain occupied set point.
- B. Unoccupied Cycle:  
 Modulate steam valve to maintain unoccupied set point.



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Steam Radiators 4			
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# Unit Ventilators

Typical For 13 Existing Unit Ventilators



## Bill of Materials

DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
RTS-F	10K ROOM THERMISTOR RS	BAPI	ALC/10K-2-RS	13 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	13 ea

Existing control relays, transducers, and sensors are to be re used with new controllers

Existing actuators and wire are to be re used with new controllers

### UV CONTROL

#### A. GENERAL:

1. Provide field mounted controls.
2. Index unit to occupied and unoccupied cycles from BMS.

#### B. SAFETIES:

1. Stop fan shut outside air damper open return air damper, open face damper, and generate and alarm at BMS when any of the following occur.

- A. Discharge air temp is above 130 degrees F.
- b. Discharge air temp is below 40 degrees F.

#### C. OCCUPIED CYCLE:

1. Run fan continuously.
2. Open unit outside air damper to scheduled minimum position.
3. Modulate valve to maintain set point
4. As space temperature rises above 72 degrees F. close valve and modulate unit O.A. damper and R.A. damper to maintain set point.

#### D. UN-OCCUPIED CYCLE:

1. Run fan only on call for heat to maintain 62 degrees F. in space.
2. Shut outside air dampers and open return air dampers.
3. Open steam valve when outside air is below 60 degrees F.

#### E. WARM UP CYCLE:

1. Run fan only on call for heat to maintain 72 degrees F. in space.
2. Shut O.A. damper, and open R.A. damper.
3. Open steam valve when outside air is below 60 degrees F.

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Unit Ventilators

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**AUTOMATED LOGIC**  
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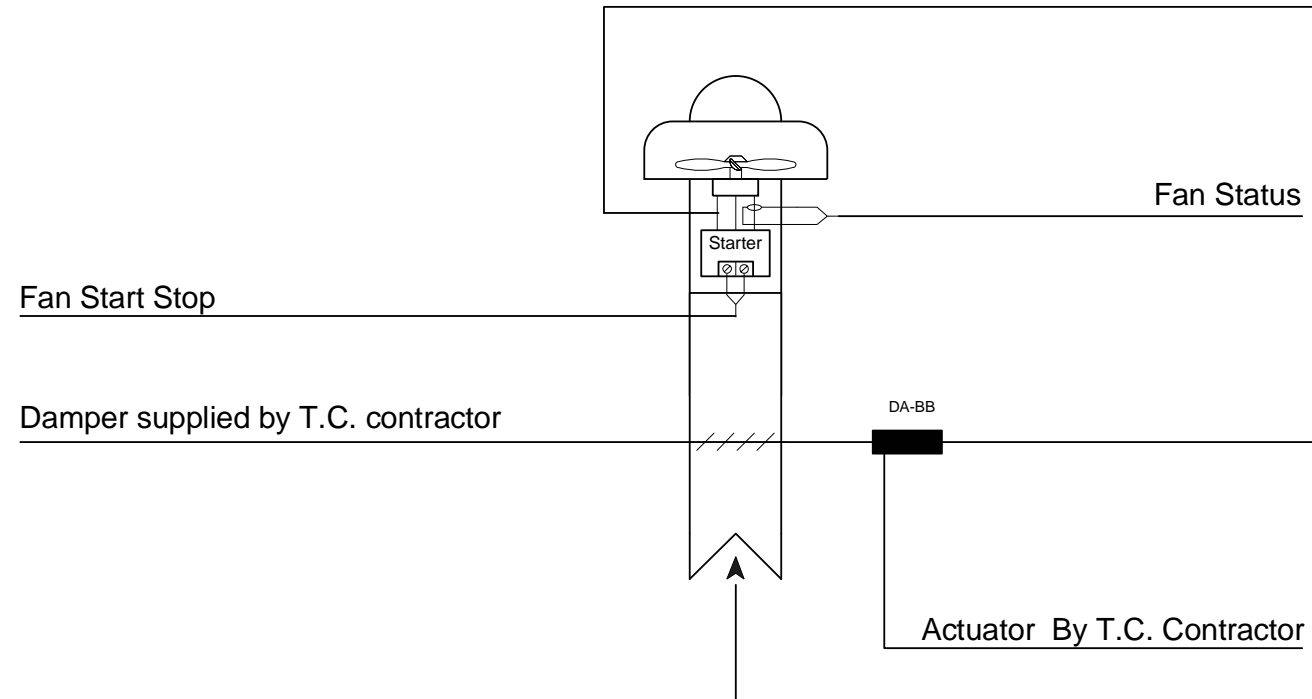
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# Exhaust Fan

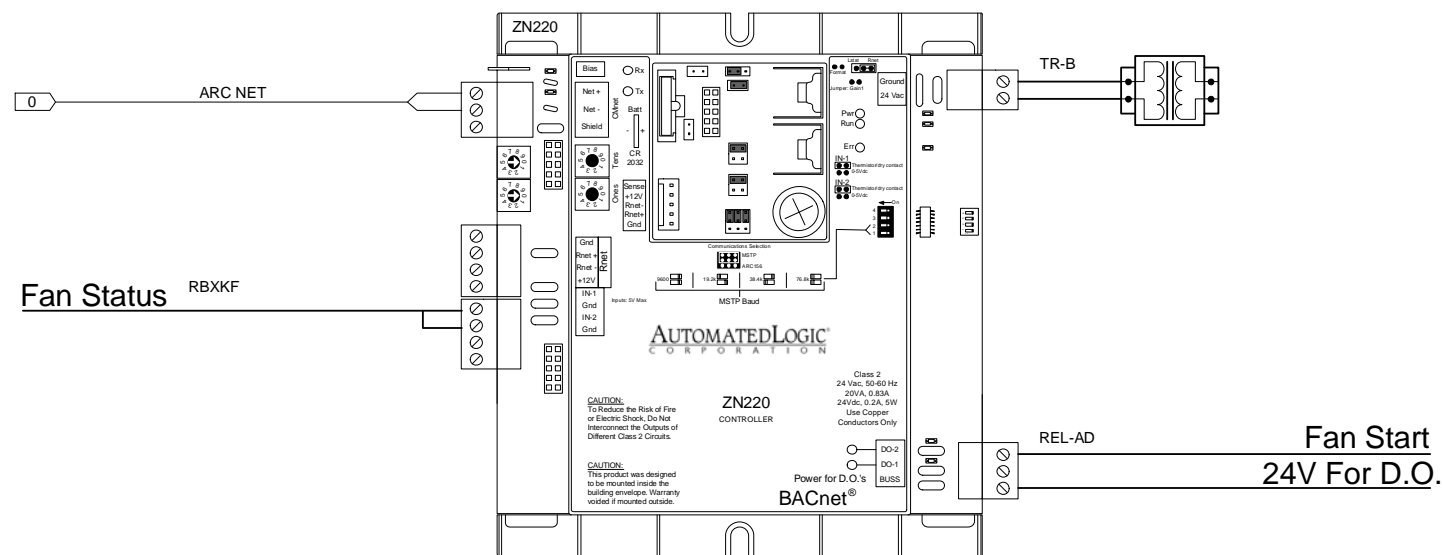
PRE 1 & PRE 2

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
DA-BB	SR OPEN/CLOSE 35 IN-LB 24 V	BELIMO	LF24 ALC	2 ea
RBXKF	CURRENT SENSOR	RIB	RBXKF	2 ea
REL-AD	SPDT RELAY W/ IND LGHT 24 VAC	IDEC	RH1B-ULC-AC24V	2 ea
TR-B	TRANSFORMER, MULTITAP 24VAC, 75VA	CORE COMPONENTS	LE-150	2 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	2 ea



## EXHAUST FAN CONTROL

1. fan shall be energized by BAS during occupied mode, and off during unoccupied mode.
2. Automatic damper shall open when fan is energized and close when fan is off.
3. Damper actuator to be electric.



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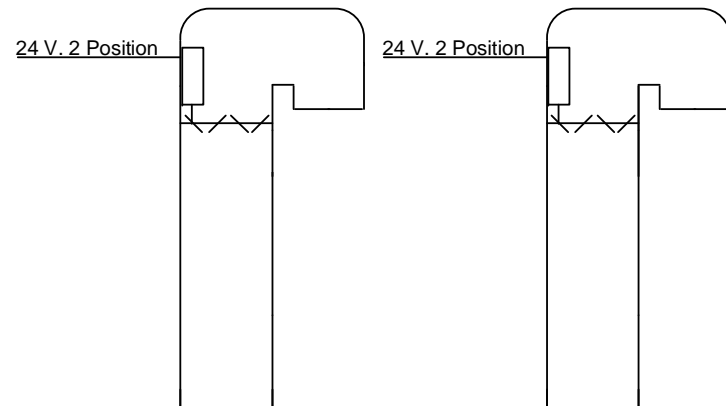
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Exhaust Fan

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AUTOMATEDLOGIC CORPORATION			CHECK BY: RSL
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# Non Powered EX

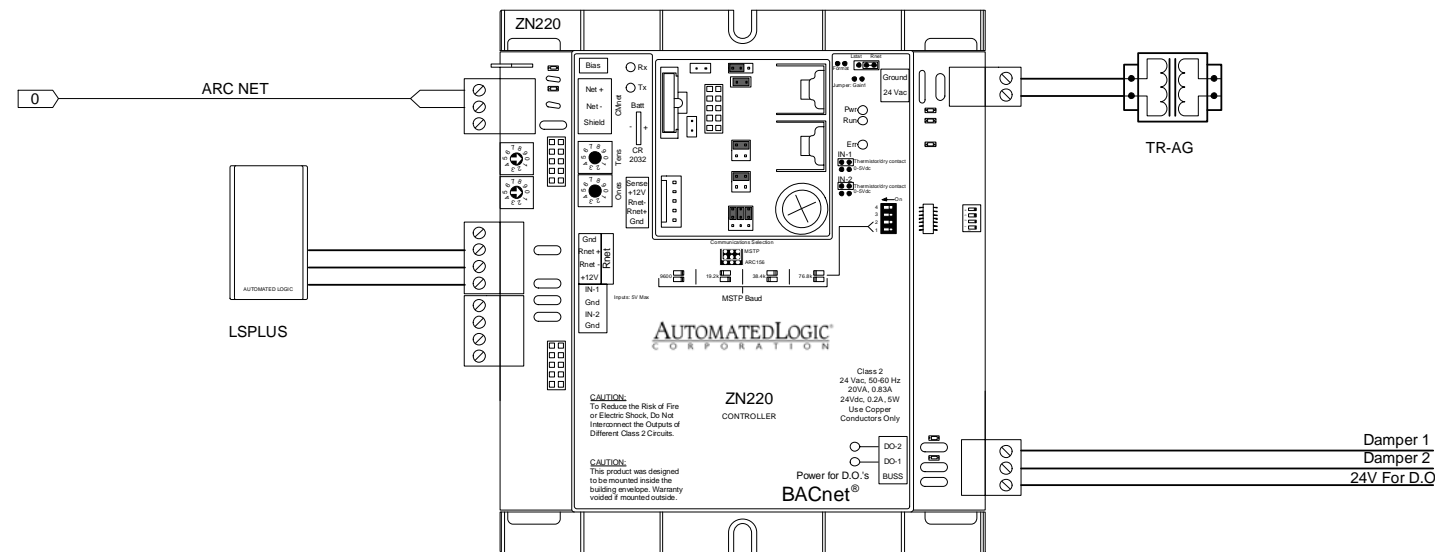
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
LSPLUS	LOGISTAT 10K ROOM SENSOR W/ SETP ADJ, TLO, COMM	BAPI	LSPLUS	1 ea
TR-AG	TRANSFORMER, 120/24VAC 150VA W/CCT BREAKER	CORE COMPONENTS	LE-124	1 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	1 ea



## Crawl Space Ventilation Sequence

When Steam to water heat exchanger crawl space goes above 65 deg F.

Ventilation Dampers in 2 gooseneck ventilators open to reduce crawl space temperature



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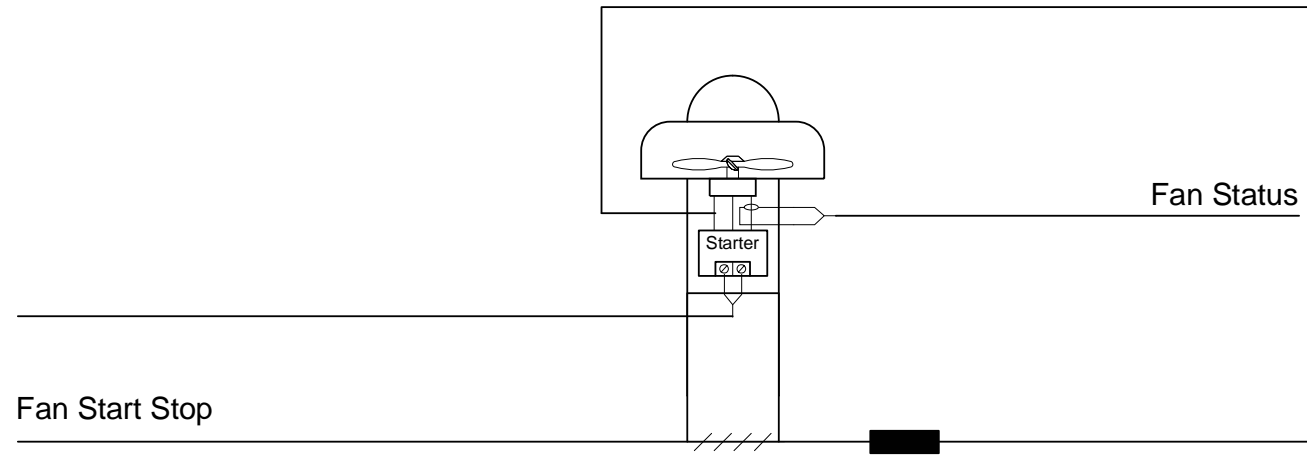
Non Powered EX

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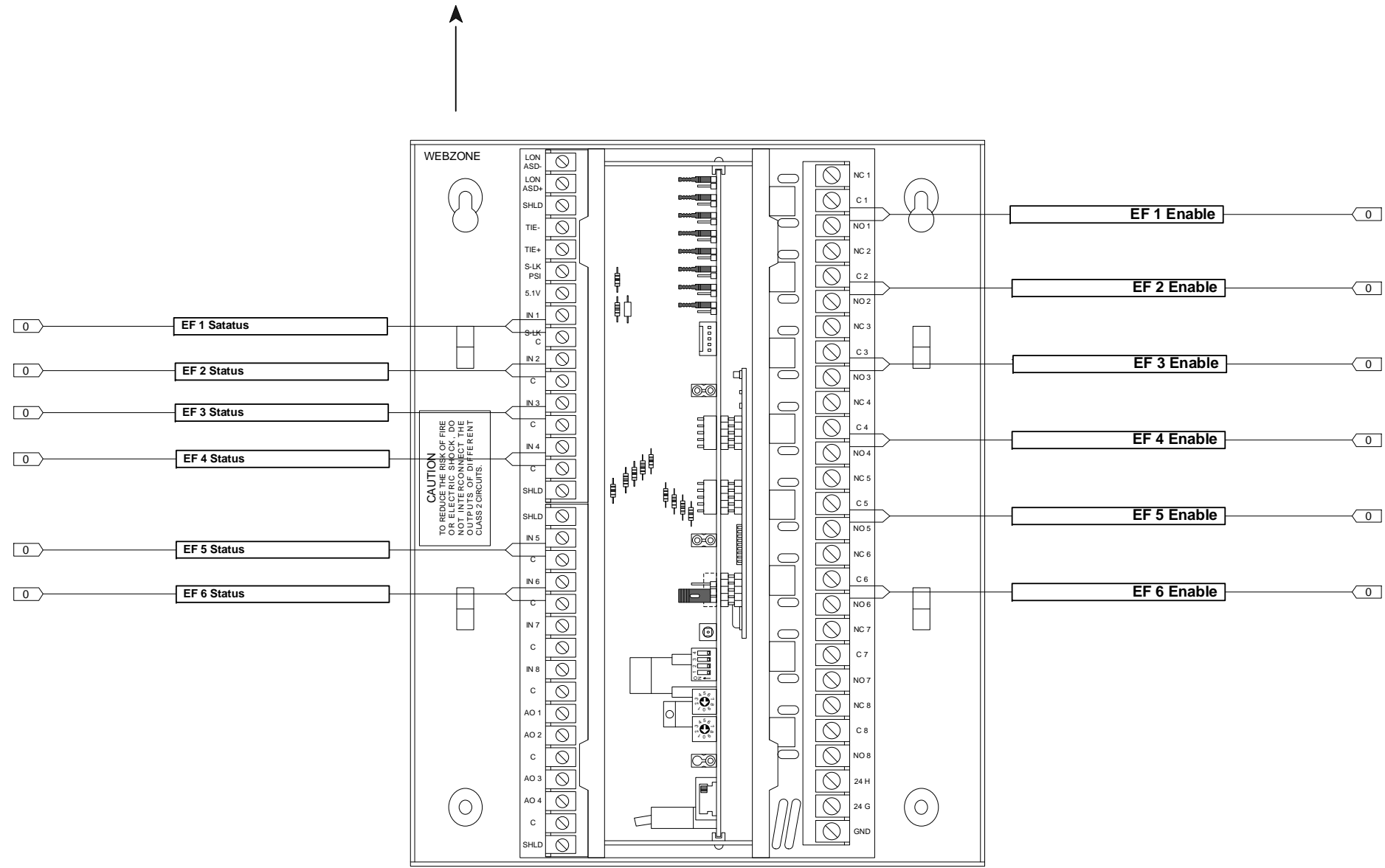
# Existing Exhaust

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
WEBZONE	WEBZONE	AUTOMATED LOGIC	WEBZONE	1 ea



## EXHAUST FAN CONTROL

1. fan shall be energized by BAS during occupied mode, and off during unoccupied mode.
2. Automatic damper shall open when fan is energized and close when fan is off.
3. Damper actuator to be electric.



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Existing Exhaust

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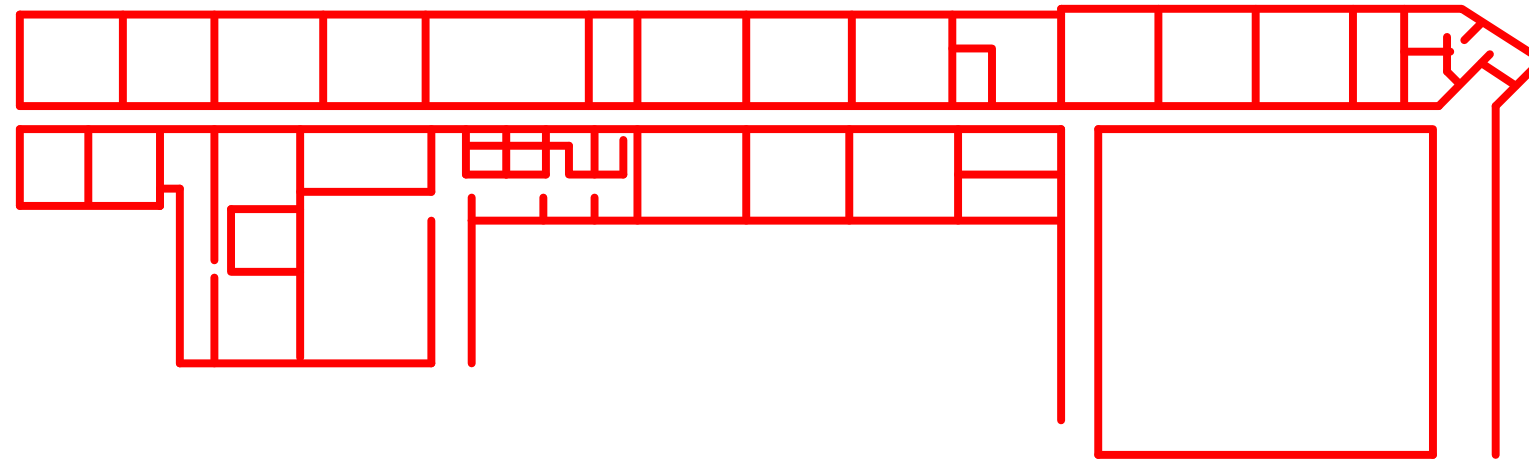


Damper Schedule

**AUTOMATEDLOGIC**  
CORPORATION

Identifier	QTY.	Damper mfg	Model	Size (W")	X Size (H")	Sq. Ft.	Opp or Par Blade	Qty Actuators	Actuator Type	Actuator mfg model
PRE 1	1	RUSKIN	CD60	12	12	1.00	OPP	1	2 POS	BELEMO LF24US
PRE 2	1	RUSKIN	CD60	12	12	1.00	OPP	1	2 POS	BELEMO LF24US
GOOSENCKS	2	RUSKIN	CD60	10	10	0.69	OPP	2	2 POS	BELEMO LF24US

HANCOCK ELEMENTARY SCHOOL



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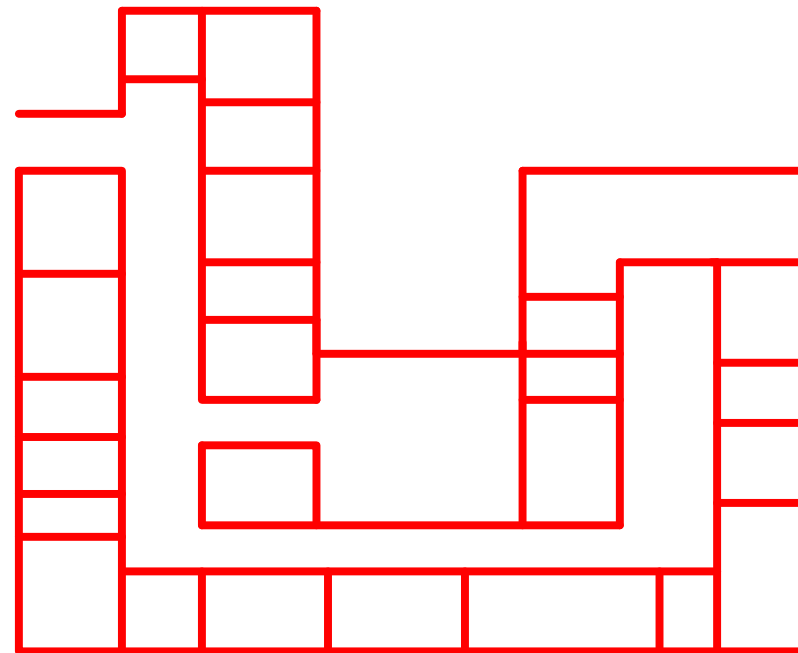
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

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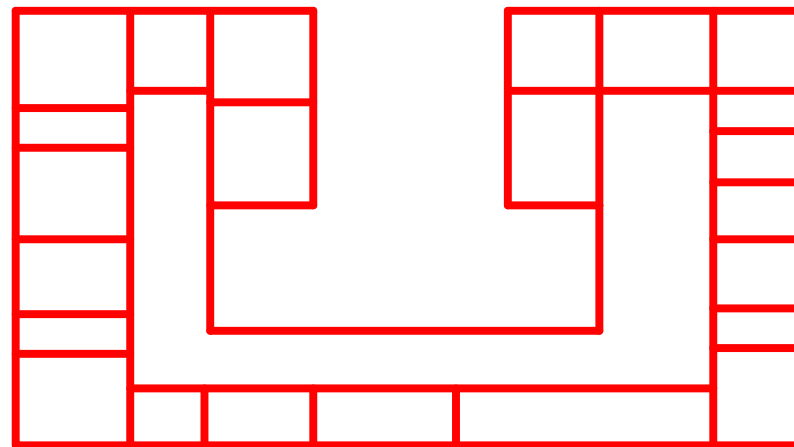
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HANCOCK HIGH SCHOOL SECOND FLOOR



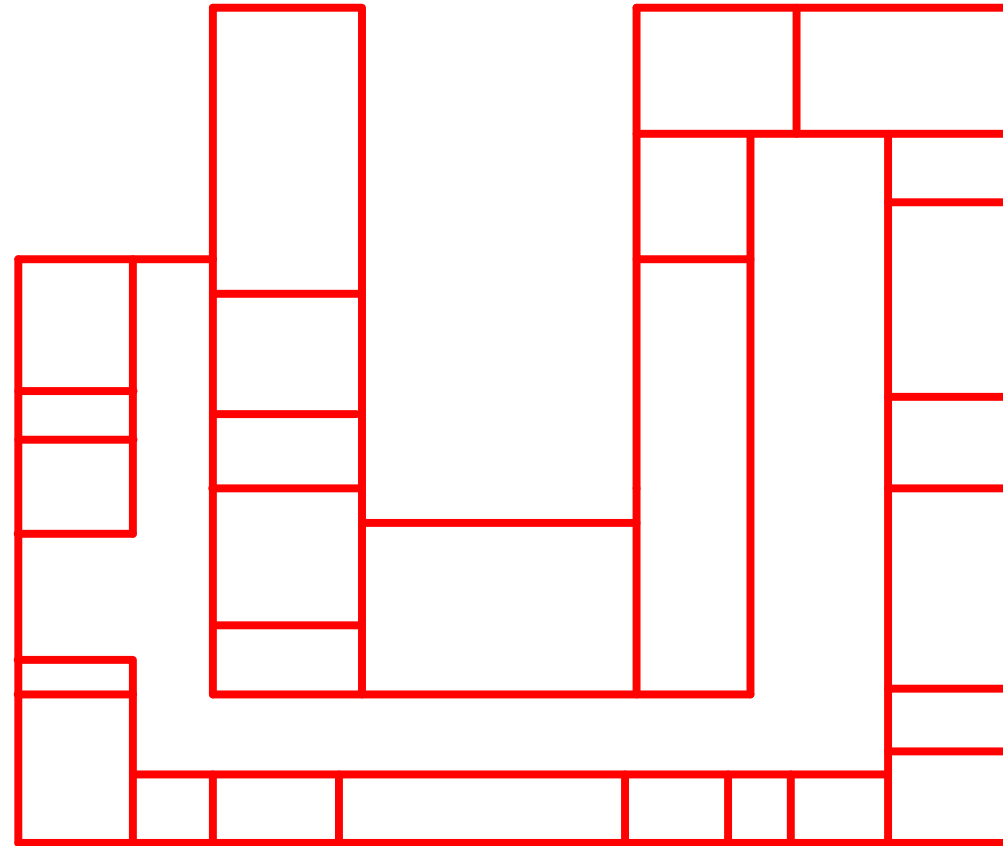
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HANCOCK HIGH SCHOOL THIRD FLOOR





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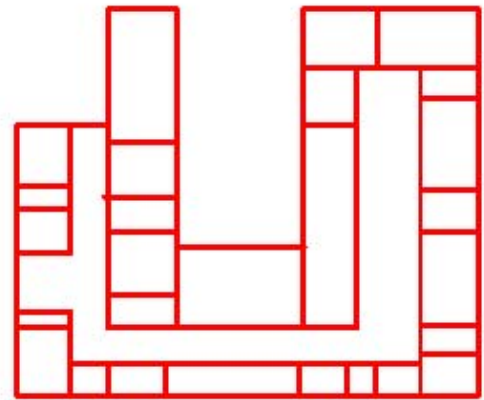
HANCOCK HIGH SCHOOL FIRST FLOOR



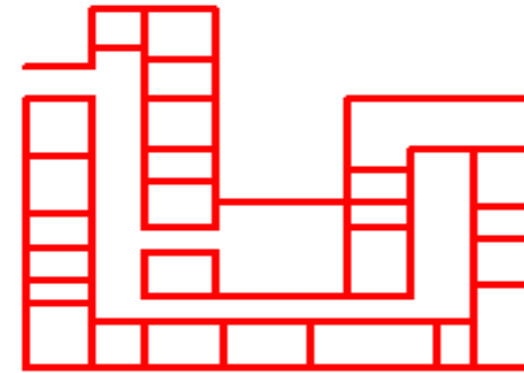
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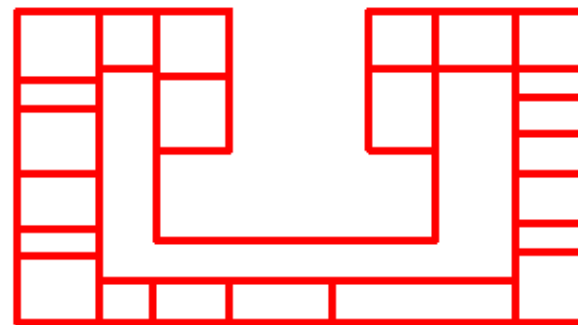
HANCOCK HIGH SCHOOL FIRST FLOOR



HANCOCK HIGH SCHOOL SECOND FLOOR



HANCOCK HIGH SCHOOL THIRD FLOOR



HANCOCK ELEMENTARY SCHOOL

