

AS - BUILT

Windsor School District Palmer Middle School

Windsor, New York

Application Engineering by Randy Langille

Engineer/Architect M/E Engineering



Mechanical Contractor J.L. Lewis

Job Number P7979

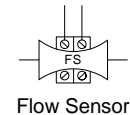
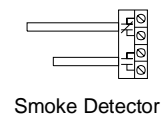
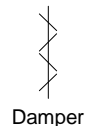
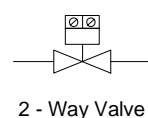
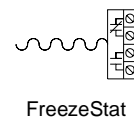
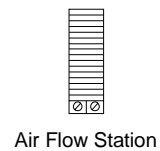
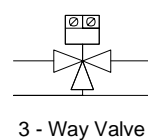
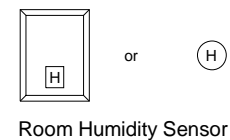
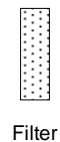
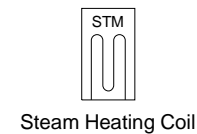
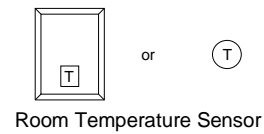
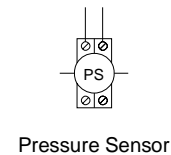
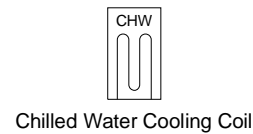
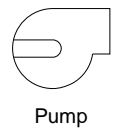
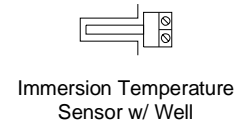
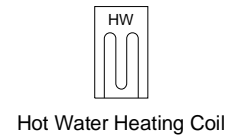
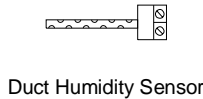
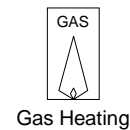
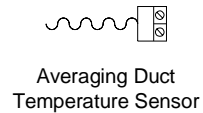
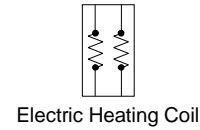
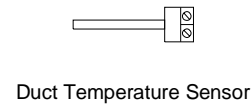
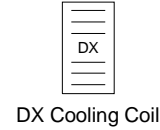
AUTOMATEDLOGIC[®]
CORPORATION

Table of Contents

- 1: Titlepage
- 2: Table of Contents
- 3: Symbol Legend
- 4: Riser
- 5: Summary Bill of Materials
- 6: RTU 1
- 7: HC2&3
- 8: Split A/C
- 9: UV New
- 10: UV Existing
- 11: VF-1
- 12: Cabinet Unit Heater O.A.
- 13: Cabinet Unit Heaters
- 14: U.H.
- 15: Fintube A
- 16: Electric Wall Heater
- 17: Domestic Hot Water
- 18: Exhaust Fans Existing
- 19: Exhaust Fans
- 20: Intake 1&2
- 21: Exterior Lights
- 22: Valve Schedule
- 23: Damper Schedule

| | | | |
|---|----------|-----------|---------------|
| Windsor School District Palmer Middle School | | | |
| Windsor, New York | | | |
|  AIR TEMP HEATING & AIR CONDITIONING, INC. A LINC SERVICE ® CONTRACTOR | | | |
| Table of Contents | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
|  | | | CHECK BY: RSL |
| | | | DSCODE: |
| | | | 2 of 23 |

Symbol Legend



Common Abbreviations:

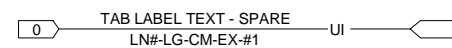
AC - Air Conditioning
 ACU - Air Conditioning Unit
 AHU - Air Handling Unit
 AI - Analog Input
 AO - Analog Output
 AUTO - Automatic
 AUX - Auxiliary
 C - Common
 CHW - Chilled Water
 CHWP - Chilled Water Pump
 CHWR - Chilled Water Return
 CHWS - Chilled Water Supply
 COND - Condenser
 CW - Condenser 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.

Windsor School District Palmer Middle School

Windsor, New York

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

Symbol Legend

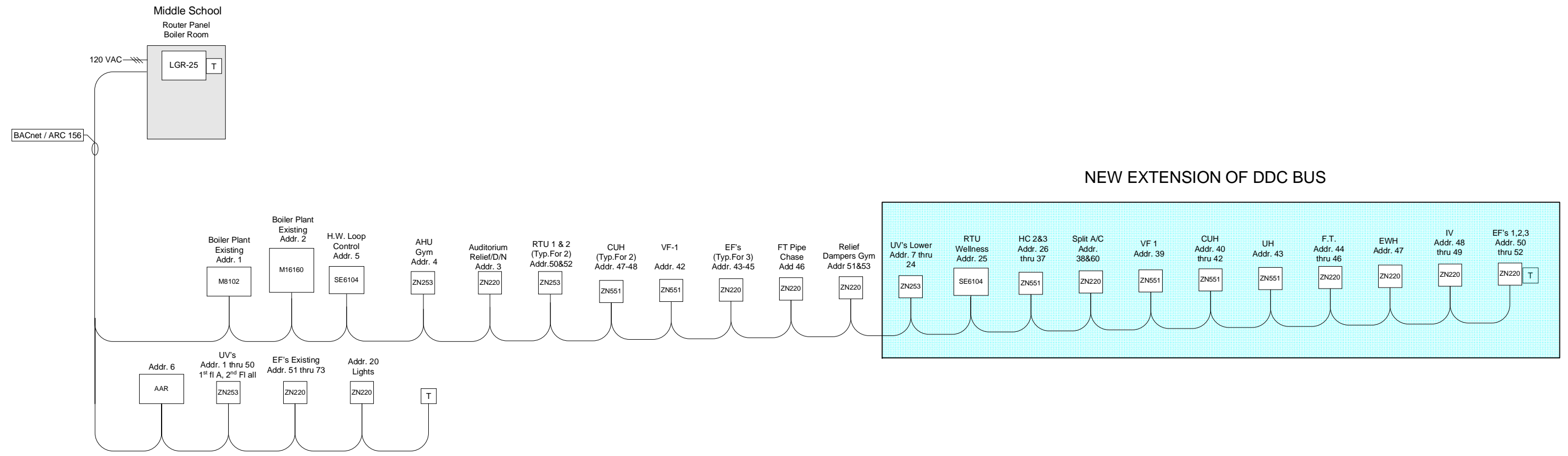
| | | | |
|--------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
|--------|----------|-----------|---------------|

AUTOMATEDLOGIC
 CORPORATION



CHECK BY: RSL

DSCODE:

Riser





NEW EXTENSION OF DDC BUS

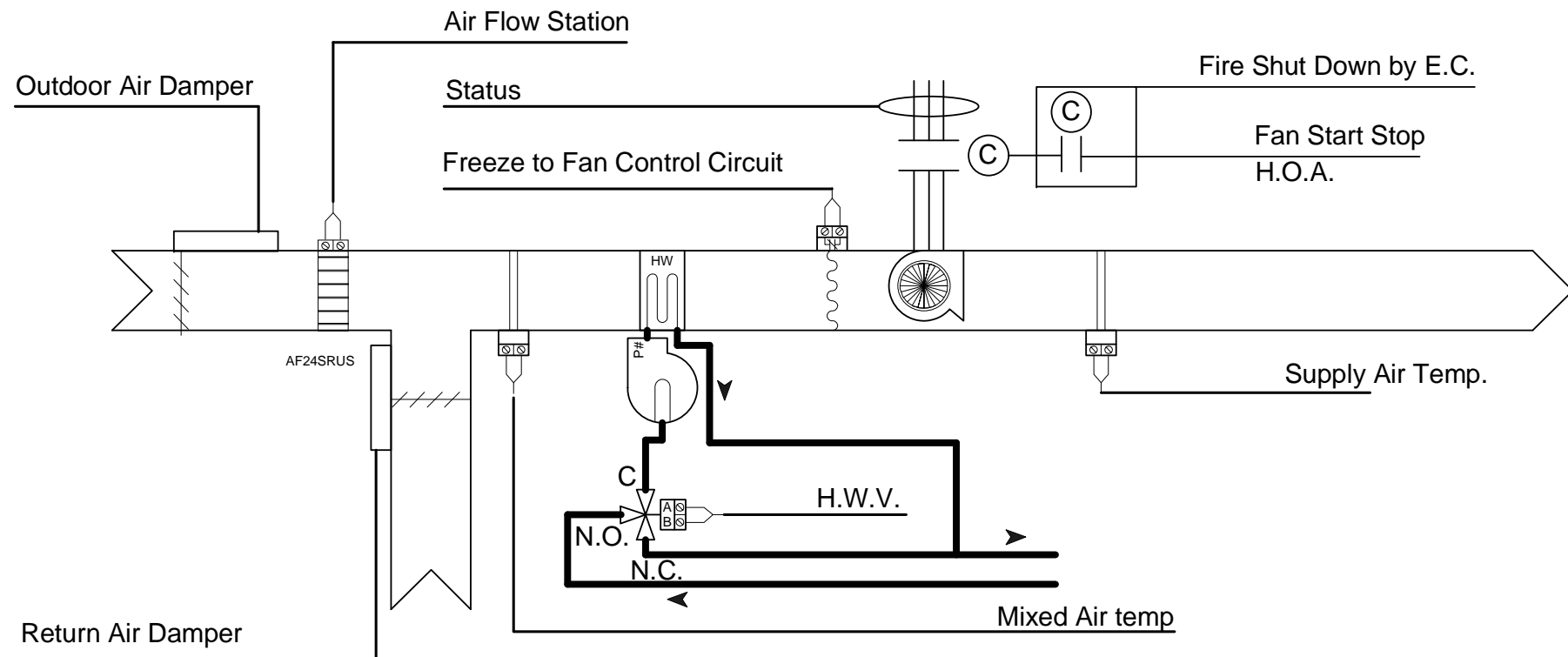
| | | | |
|---|----------|-----------|---------------|
| Windsor School District Palmer Middle School Windsor, New York | | | |
|  AIR TEMP HEATING & AIR CONDITIONING, INC. A LINC SERVICE ® CONTRACTOR | | | |
| Riser | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
|  | | | CHECK BY: RSL |
| | | | DSCODE: |
| | | | 4 of 23 |

Summary Bill of Materials

| Summary Bill of Materials | | | | |
|---------------------------|-----------------------------------|--------------------|-------------|--------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A10KCPD8 | SUPPLY SENSE | ALPS | A10KCPD08 | 73 ea |
| | | JC | A19ABC83C | 2 ea |
| | | JC | A19ABC83C | 3 ea |
| A2.5 | WELL | BAPI | A25 | 2 ea |
| BA10K2A1 | AVERAGING | BAPI | BA102A12 | 70 ea |
| DA-BB | SR OPEN/CLOSE 35 IN-LB 24 V | BELIMO | LF24 ALC | 3 ea |
| DBTF52US | FREEZESTAT | ALPS | DBTF52US | 1 ea |
| E-AB | HOFFMAN NEMA 3 12X12X4 | HOFFMAN | A12R124 | 3 ea |
| LF24SRUS | ACTUATOR | BELIMO | LF24SRUS | 2 ea |
| LF24US | 2POS ACTUATOR | BELIMO | LF24US | 6 ea |
| PXP3 | TRANSDUCER | ALPS | PXP3 | 136 ea |
| RIBU1C | RELAY | FUNCTIONAL DEVICES | RIBU1C | 3 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 82 ea |
| RS | TEMP SENSE | ALC | RS | 1 ea |
| RSPLUS | WALLSTAT | ALC | RSPL | 80 ea |
| SE6104 | SE6104 | AUTOMATED LOGIC | SE6104 | 1 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 92 ea |
| ZN220 | ZN220 | AUTOMATED LOGIC | ZN220 | 15 ea |
| ZN253 | ZN253 | AUTOMATED LOGIC | ZN253 | 70 ea |
| ZN551 | ZN551 | AUTOMATED LOGIC | ZN551 | 6 ea |
| af24srus | SR PROPORTIONAL 133 IN-LB 2-10VDC | BELIMO | AF24SRUS | 4 ea |
| ba2i | SENSOR | BAPI | BA2I | 2 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 81 ea |

| | | | |
|---|----------|-----------|---------------|
| Windsor School District Palmer Middle School | | | |
| Windsor, New York | | | |
|  AIR TEMP HEATING & AIR CONDITIONING, INC. A LINC SERVICE ® CONTRACTOR | | | |
| Summary Bill of Materials | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
|  | | | CHECK BY: RSL |
| | | | DSCODE: |
| | | | 5 of 23 |

RTU 1



| Bill of Materials | | | | |
|-------------------|-----------------------------------|--------------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A10KCPD8 | SUPPLY SENSE | ALPS | A10KCPD08 | 1 ea |
| BA10K2A1 | AVERAGING | BAPI | BA102A12 | 1 ea |
| DBTF52US | FREEZESTAT | ALPS | DBTF52US | 1 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 2 ea |
| SE6104 | SE6104 | AUTOMATED LOGIC | SE6104 | 1 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 1 ea |
| af24srus | SR PROPORTIONAL 133 IN-LB 2-10VDC | BELIMO | AF24SRUS | 4 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 2 ea |

CONTROL SEQUENCE FOR CONSTANT VOLUME SINGLE ZONE AIR HANDLING UNITS

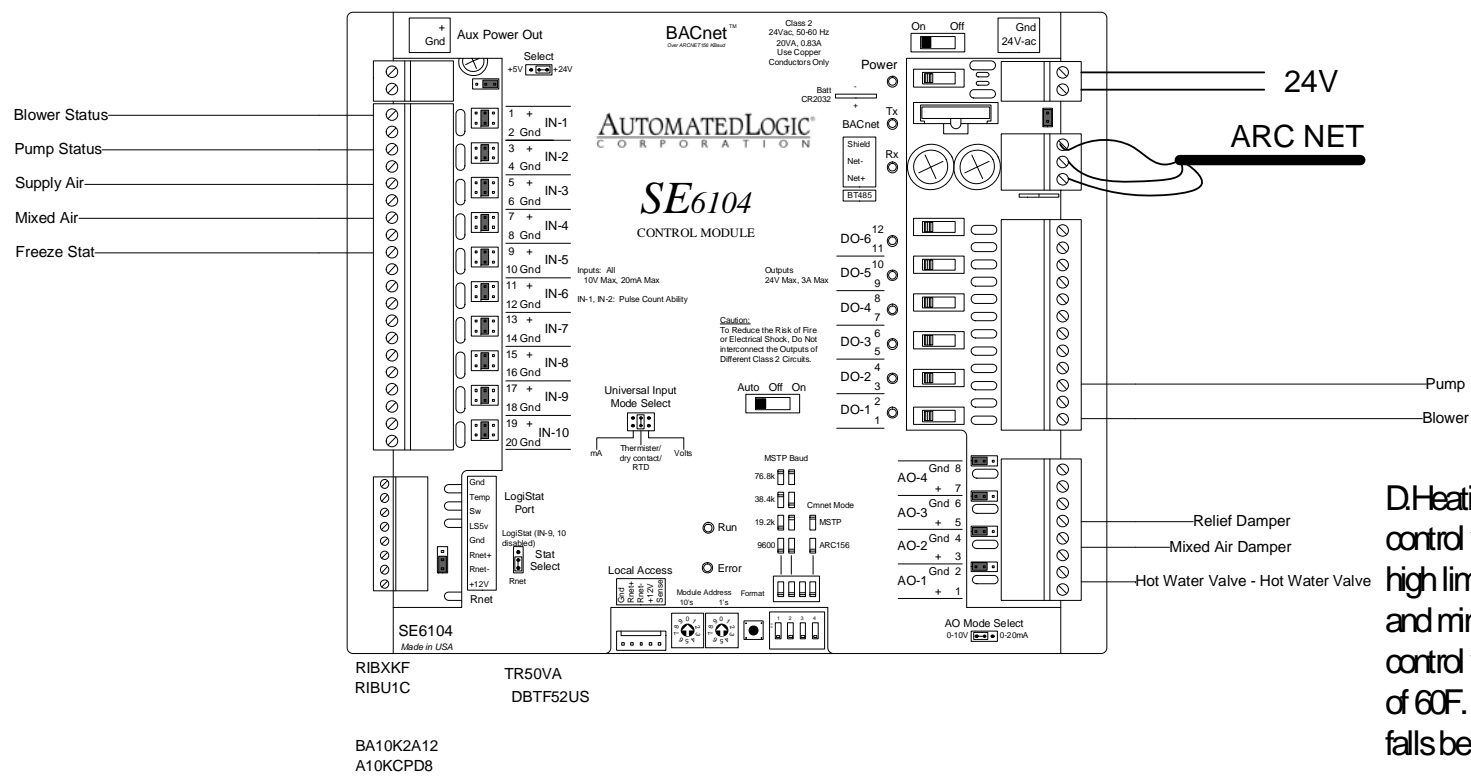
- A. RTU-1 Wellness Center: Constant volume air handling unit.
- B. Fan Control: During occupied mode, the supply fan shall run continuously. During unoccupied mode, the supply fan shall cycle as required to maintain the unoccupied temperature set point.
- C. Damper Control: During morning warm-up or cool down modes, the outside air damper and relief dampers shall be fully closed. During occupied mode, the outside air damper shall open to minimum set point. Whenever the return air enthalpy is greater than the outside air enthalpy, the unit shall be in economizer mode. During economizer mode, the return and outside air dampers shall modulate in sequence to maintain the discharge air set point (subject to a mixed air low limit of 55°F). The relief damper shall track the return air damper to maintain a slightly positive space pressure. If the mixed air low limit drops below set point, the outside air dampers shall modulate to minimum position and the return damper shall open.
- D. Unit mounted pre-heating Coil Control: During occupied mode, the normally open heating coil control valve shall modulate to maintain the unit supply air temperature set point. Set point shall vary linearly from 50 when the outside air temperature is 55 or greater to 65 when outside air temperature is 10 or less. An alarm shall sound through the D.D.C. system if the supply air temperature rises above 100, or drops below 40. During the unoccupied mode, the heating coil control valve shall modulate to maintain a unit supply air temperature sensor set point of 50. Whenever the outside air temperature is below minimum set point of 38, the heating coil pump shall run continuously to maintain water flow through the heating coil and the valve shall continue to maintain set point. When pump fails to operate an alarm shall sound through the D.D.C. system.

Fire Alarm Interlock and shut down.

All Automated Logic controllers are networked via BACnet and receive a broadcast fire or smoke alarm signal from the facility's fire alarm panel. A fire or smoke alarm from the fire panel will initiate a global fan shutdown of all equipment controlled by Automated Logic.

15A 972-20
3.3

Fire fan Shut Down
Division 16 ELECTRIC to provide a signal to stop air handling unit fans and close air handling unit smoke dampers upon activation of the fire alarm system. Wiring to be directly to the motor starter. An end switch shall prevent the the operation of the air handling unit fans until corresponding smoke dampers are open.



D. Heating Coil Control: During occupied mode, the normally open heating coil control valve shall modulate as necessary to satisfy the space sensor, subject to a high limit of 100°F and a low limit of 40°F. Generate an alarm outside of the listed max and min parameters. During unoccupied mode, the normally opened heating coil control valve shall modulate to maintain an unoccupied space temperature set point of 60°F. An alarm shall sound through the D.D.C. system if the space temperature falls below 40°F.

Windsor School District Palmer Middle School
Windsor, New York

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

RTU 1

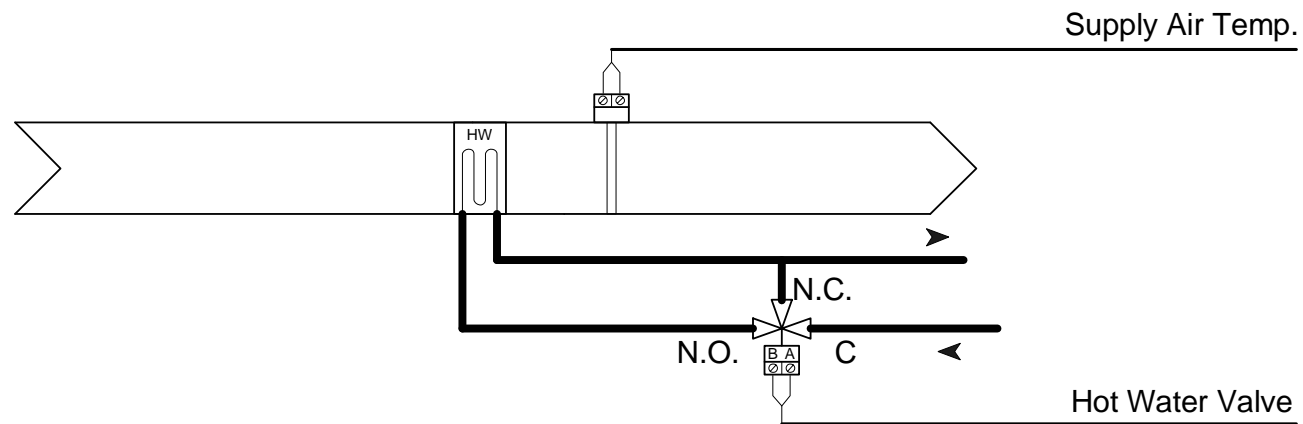
| | | | |
|---------------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| CHECK BY: RSL | | | DSCODE: |

AUTOMATED LOGIC CORPORATION

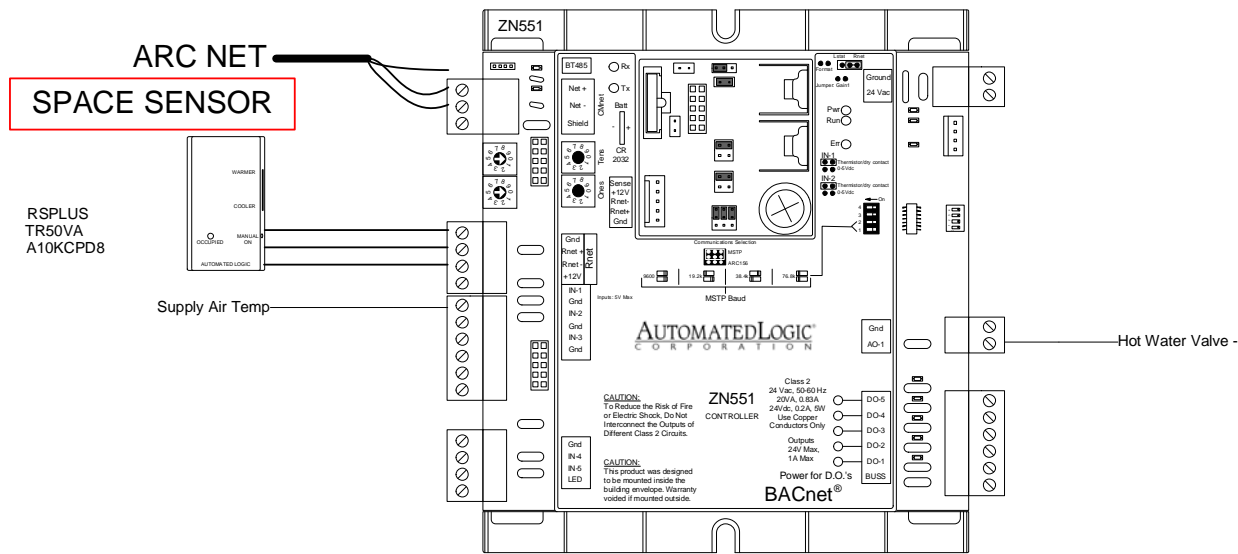
6 of 23

HC2&3

| Bill of Materials | | | | |
|-------------------|--------------|-----------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A10KCPD8 | SUPPLY SENSE | ALPS | A10KCPD08 | 2 ea |
| RSPLUS | WALLSTAT | ALC | RSPL | 2 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 2 ea |
| ZN551 | ZN551 | AUTOMATED LOGIC | ZN551 | 1 ea |



A. Heating Coil Control: During occupied mode, the normally open heating coil control valve shall modulate as necessary to satisfy the space sensor, subject to a high limit of 100°F and a low limit of 40°F. Generate an alarm outside of the listed max and min parameters. During unoccupied mode, the normally opened heating coil control valve shall modulate to maintain an unoccupied space temperature set point of 60°F. An alarm shall sound through the D.D.C. system if the space temperature falls below 40°F.

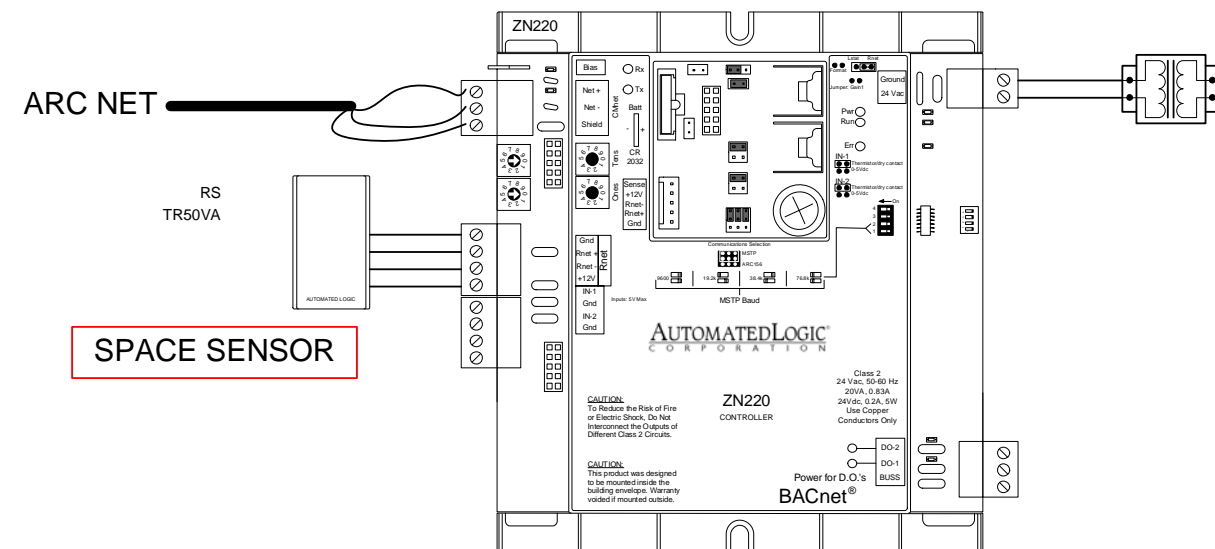
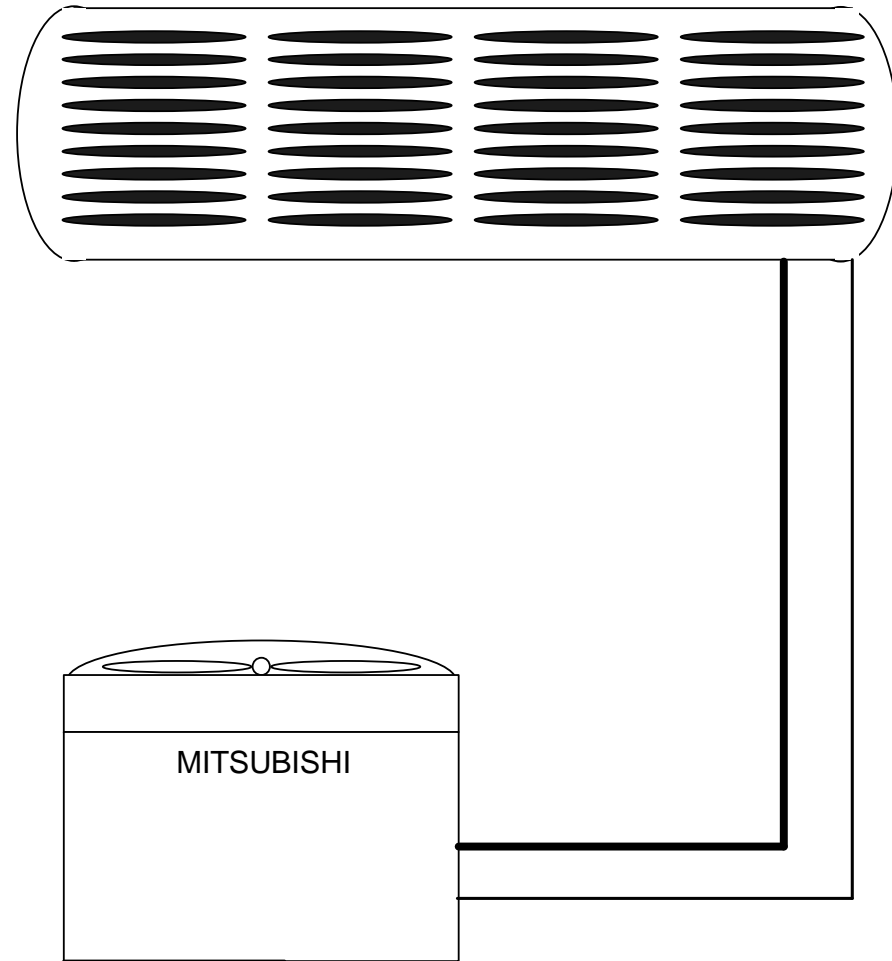


| | | | |
|---|----------|-----------|---------------|
| Windsor School District Palmer Middle School Windsor, New York | | | |
| A LINC SERVICE @ CONTRACTOR | | | |
| HC2&3 | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| | | | CHECK BY: RSL |
| | | | DSCODE: |
| | | | 7 of 23 |

Split A/C

Typical for 2

These units ship with proprietary microprocessor controller, sensors, and wiring



Bill of Materials

| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
|--------|-------------|-----------------|-------------|------|
| RS | TEMP SENSE | ALC | RS | 1 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 1 ea |
| ZN220 | ZN220 | AUTOMATED LOGIC | ZN220 | 1 ea |

High Temp Alarm .

Provide High Temperature alarm if space goes above 80F. Utilize U.V. sensor for reference

Windsor School District Palmer Middle School

Windsor, New York

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

Split A/C

| | | | |
|--------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
|--------|----------|-----------|---------------|

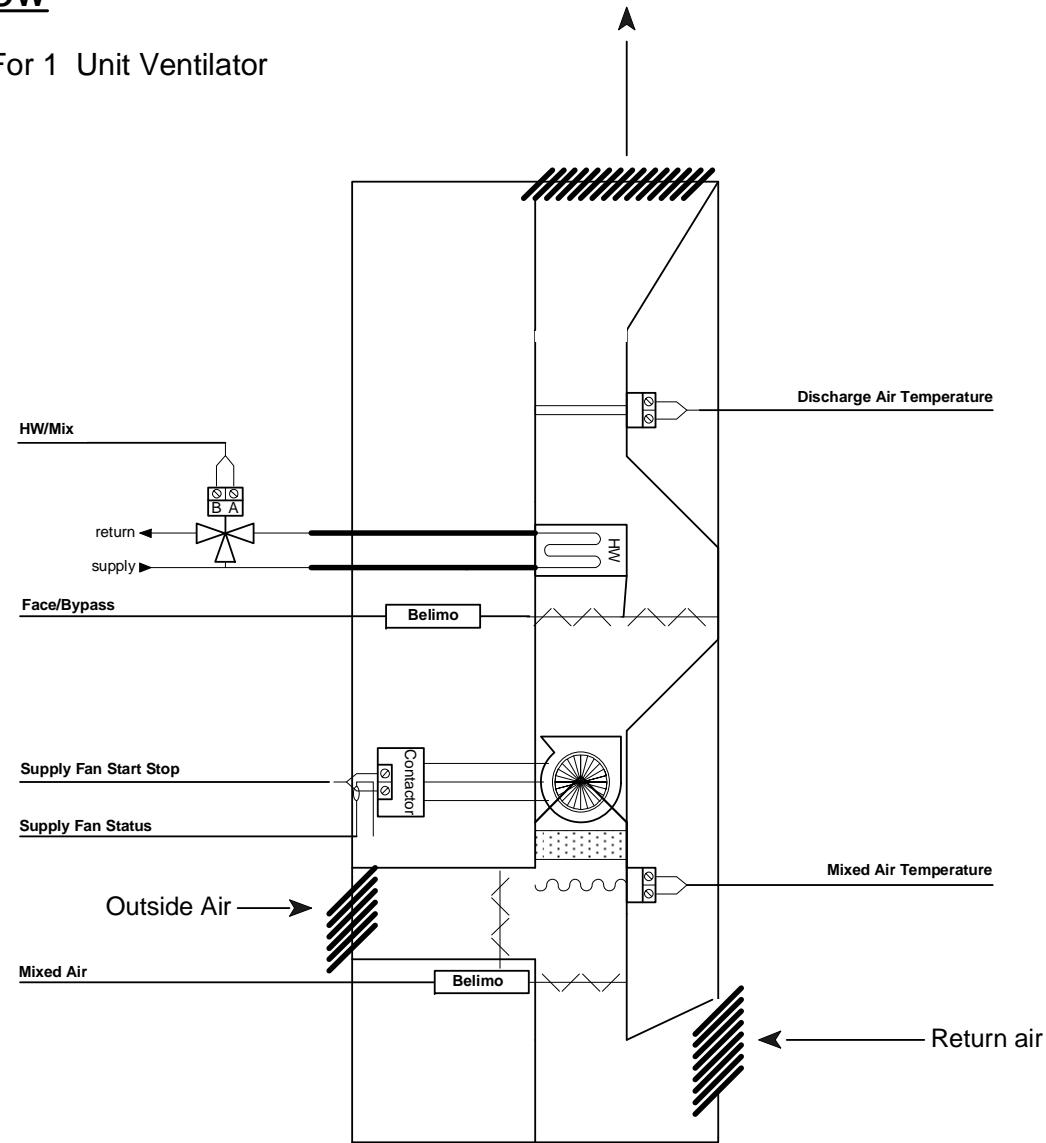
AUTOMATED LOGIC
CORPORATION

CHECK BY: RSL

DSCODE:

UV New

Typical For 1 Unit Ventilator



| Bill of Materials | | | | |
|-------------------|---------------------------|--------------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A10KCPD8 | SUPPLY SENSE | ALPS | A10KCPD08 | 1 ea |
| BA10K2A1 | AVERAGING | BAPI | BA102A12 | 1 ea |
| LF24SRUS | ACTUATOR | BELIMO | LF24SRUS | 2 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 1 ea |
| RSPLUS | WALLSTAT | ALC | RSPL | 1 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 1 ea |
| ZN253 | ZN253 | AUTOMATED LOGIC | ZN253 | 1 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 1 ea |

Unit Ventilators

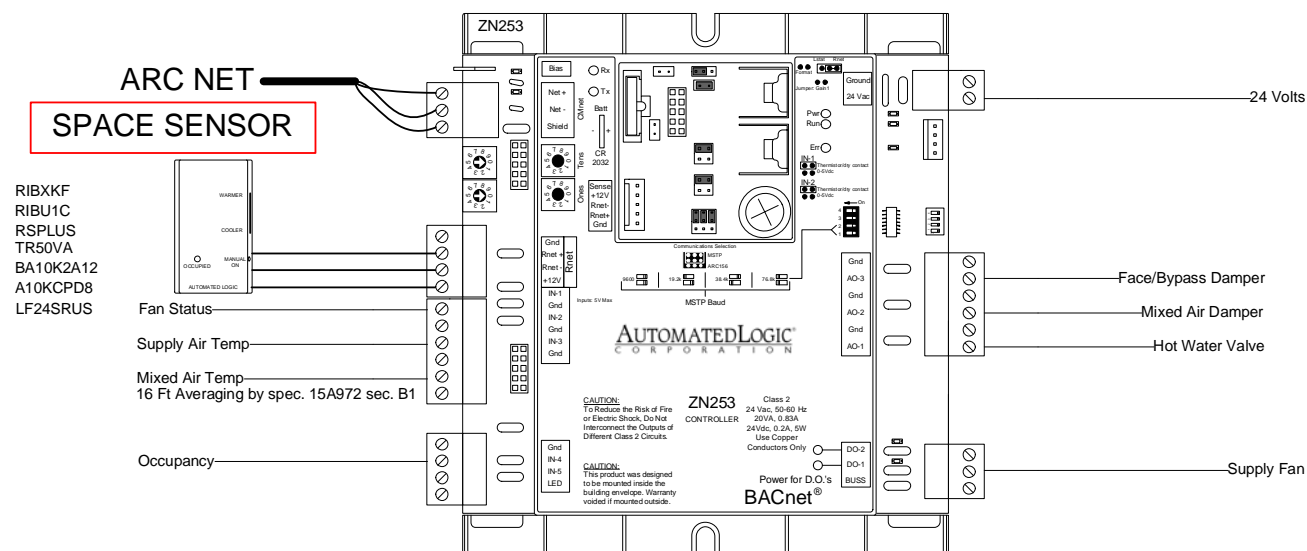
- The DDC system shall provide occupied/unoccupied scheduling of the unit ventilators. Classroom unit vents shall be interlocked with the lighting circuit occupancy sensor through the DDC system. Electrical Contractor to provide occupancy sensor with spare relay.
- During occupied hours, the fan shall run continuously. The space temperature sensor will modulate the outside air and the return air dampers, subject to a 55°F discharge air low limit, in sequence with the heating coil control valve or face and bypass damper to maintain its setting in according to ASHRAE Cycle #2. At the coil, the discharge air high limit set at 125°F shall stop the fan, close the outside air damper and open the return air damper. During scheduled unoccupied hours, the space sensor will intermittently start and stop the fan, open the control valve or position face and bypass damper to full face with the outside air damper fully closed. The unit ventilator outside air damper when operating during ASHRAE Cycle #2 sequence shall be open to minimum or greater position to maintain a discharge air temperature low limit of 40°F. Unit ventilator control system shall modulate coil control valve in full face when outside air temperature is below 35°F. Open coil control valve with modulating face and bypass damper to maintain space temperature setting above 35°F.
- The occupancy sensor shall control the unit vent as follows when the room is unoccupied during scheduled occupied hours: Close the outside air damper and maintain occupied space temperature setpoint as noted above.

Fin Tube Radiation

- Control valve shall modulate to maintain space temperature as sensed by wall mounted thermostat/
- Occupied/unoccupied scheduling shall be accomplished by DDC system

Fire Alarm Interlock and shut down.

All Automated Logic controllers are networked via BACnet and receive a broadcast fire or smoke alarm signal from the facility's fire alarm panel. A fire or smoke alarm from the fire panel will initiate a global fan shutdown of all equipment controlled by Automated Logic.



Windsor School District Palmer Middle School
Windsor, New York

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

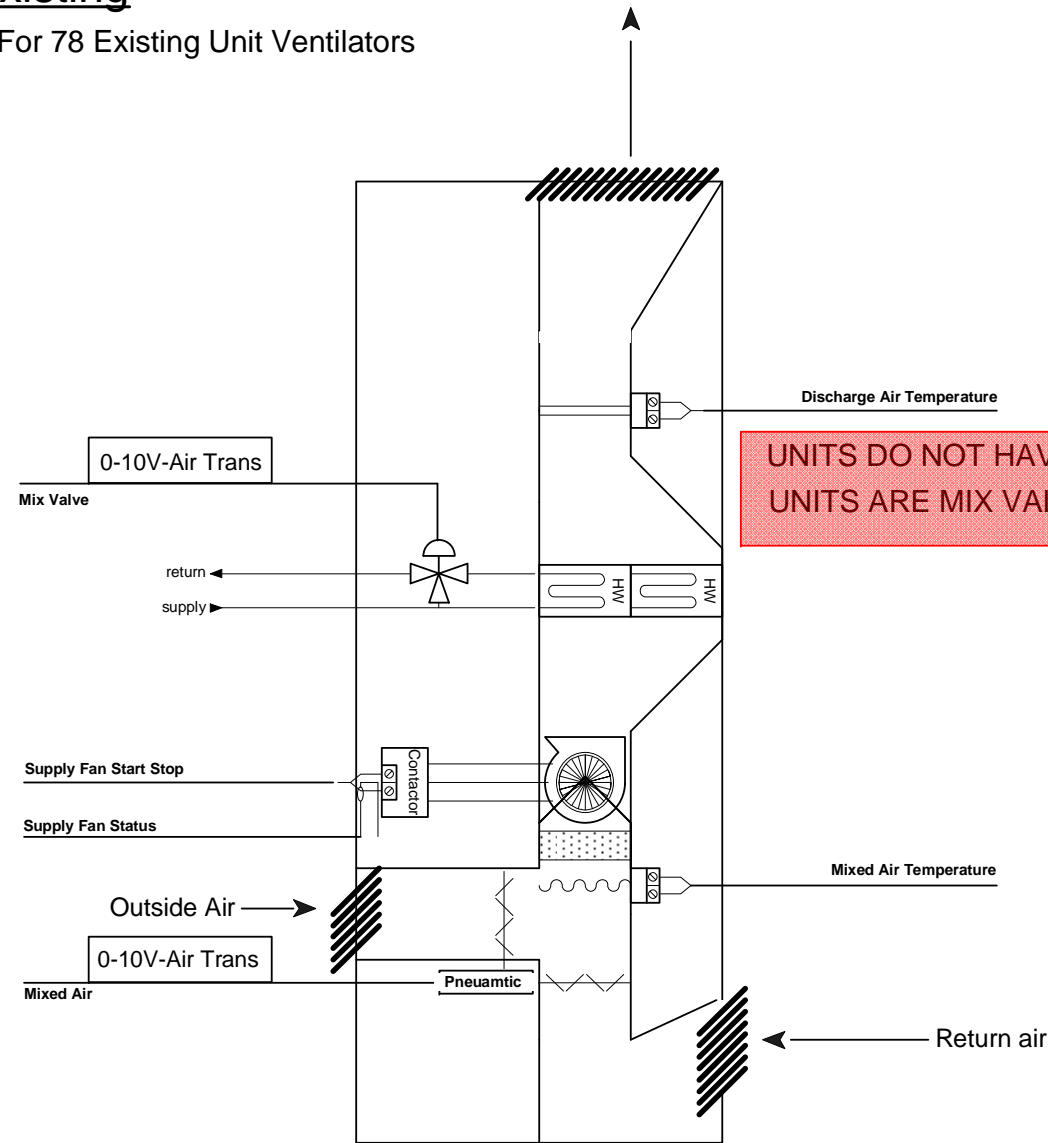
UV New

| | | | |
|---------------------------------------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| AUTOMATED LOGIC CORPORATION | | | CHECK BY: RSL |
| | | | DSCODE: |

9 of 23

UV Existing

Typical For 78 Existing Unit Ventilators



**UNITS DO NOT HAVE FACE BYPASS CONFIGURATION
UNITS ARE MIX VALVE CONFIGURATION ONLY**

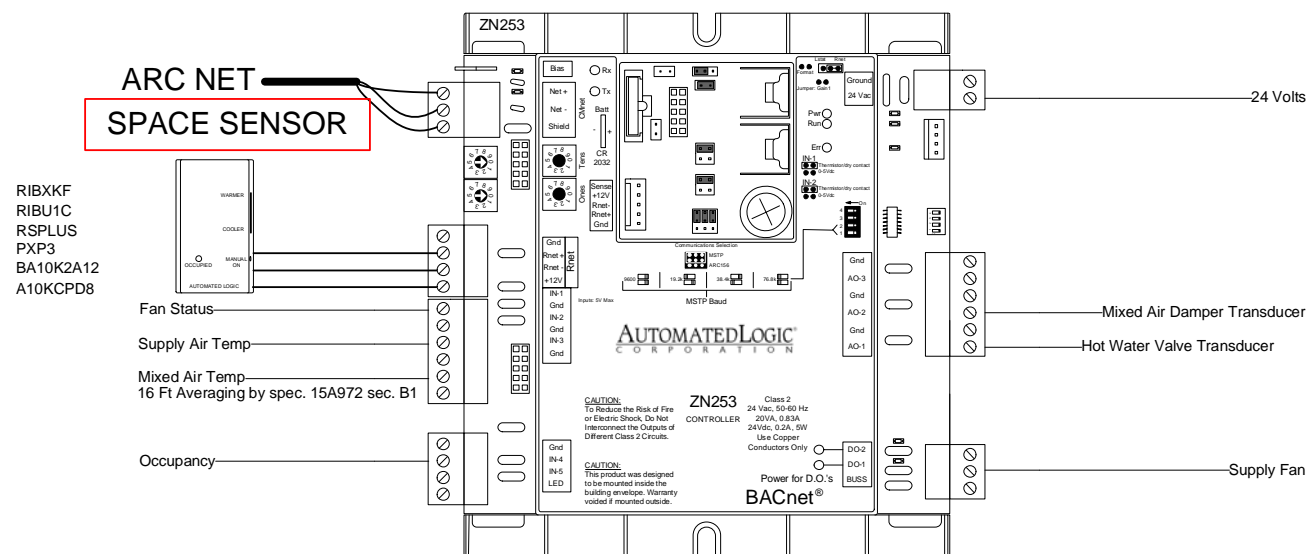
| Bill of Materials | | | | |
|-------------------|---------------------------|--------------------|-------------|--------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A10KCPD8 | SUPPLY SENSE | ALPS | A10KCPD8 | 69 ea |
| BA10K2A1 | AVERAGING | BAPI | BA102A12 | 69 ea |
| PXP3 | TRANSDUCER | ALPS | PXP3 | 136 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 68 ea |
| RSPLUS | WALLSTAT | ALC | RSPL | 68 ea |
| ZN253 | ZN253 | AUTOMATED LOGIC | ZN253 | 69 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 68 ea |

Unit Ventilators

- The DDC system shall provide occupied/unoccupied scheduling of the unit ventilators. Classroom unit vents shall be interlocked with the lighting circuit occupancy sensor through the DDC system. Electrical Contractor to provide occupancy sensor with spare relay.
- During occupied hours, the fan shall run continuously. The space temperature sensor will modulate the outside air and the return air dampers, subject to a 55°F discharge air low limit, in sequence with the heating coil control valve or face and bypass damper to maintain its setting in according to ASHRAE Cycle #2. At the coil, the discharge air high limit set at 125°F shall stop the fan, close the outside air damper and open the return air damper. During scheduled unoccupied hours, the space sensor will intermittently start and stop the fan, open the control valve or position face and bypass damper to full face with the outside air damper fully closed. The unit ventilator outside air damper when operating during ASHRAE Cycle #2 sequence shall be open to minimum or greater position to maintain a discharge air temperature low limit of 40°F. Unit ventilator control system shall modulate coil control valve to maintain space temperature setting.
- The occupancy sensor shall control the unit vent as follows when the room is unoccupied during scheduled occupied hours: Close the outside air damper and maintain occupied space temperature setpoint as noted above.

Fire Alarm Interlock and shut down.

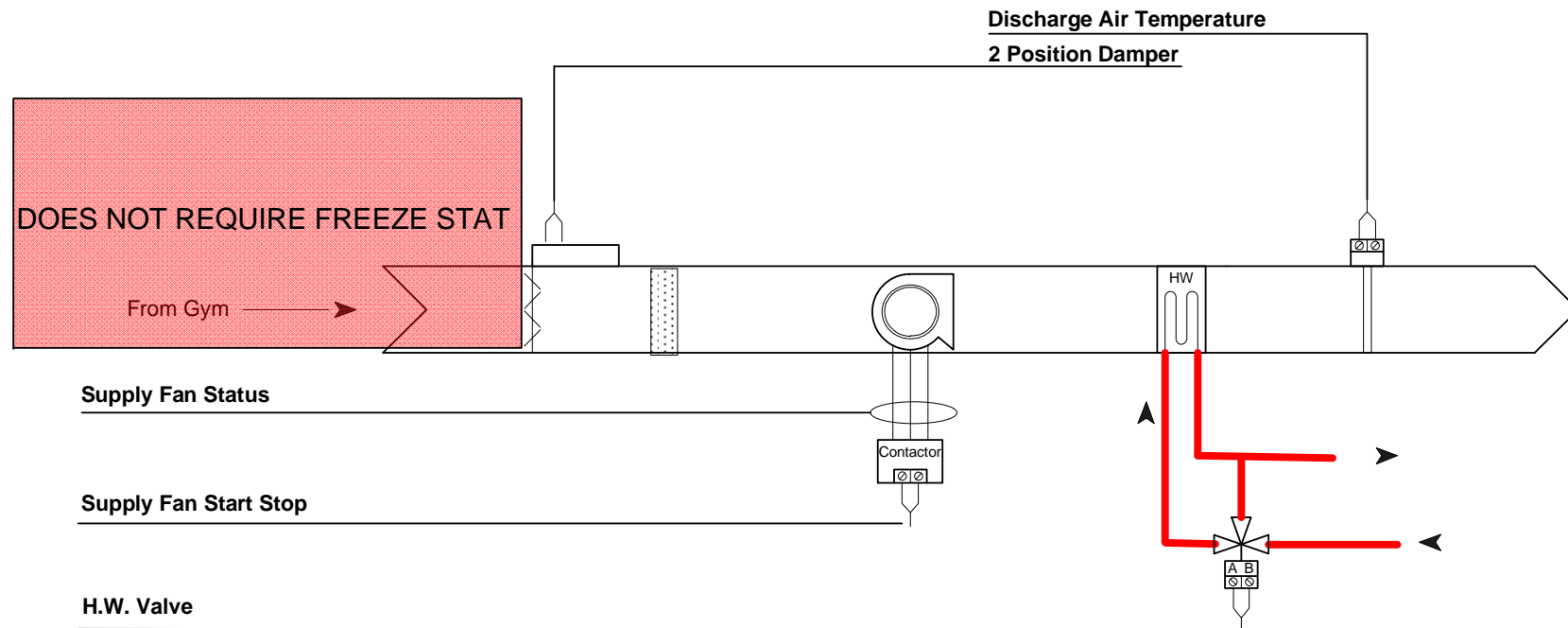
All Automated Logic controllers are networked via BACnet and receive a broadcast fire or smoke alarm signal from the facility's fire alarm panel. A fire or smoke alarm from the fire panel will initiate a global fan shutdown of all equipment controlled by Automated Logic.



| | | | |
|---|----------|-----------|--------------------------|
| Windsor School District Palmer Middle School Windsor, New York AIR TEMP HEATING & AIR CONDITIONING, INC. A LINC SERVICE ® CONTRACTOR | | | |
| UV Existing | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| AUTOMATED LOGIC CORPORATION | | | CHECK BY: RSL DSCODE: |
| 10 of 23 | | | |

VF-1

| Bill of Materials | | | | |
|-------------------|---------------------------|--------------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A10KCPD8 | SUPPLY SENSE | ALPS | A10KCPD08 | 1 ea |
| LF24US | 2POS ACTUATOR | BELIMO | LF24US | 1 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 1 ea |
| RSPLUS | WALLSTAT | ALC | RSPL | 1 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 1 ea |
| ZN551 | ZN551 | AUTOMATED LOGIC | ZN551 | 1 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 2 ea |

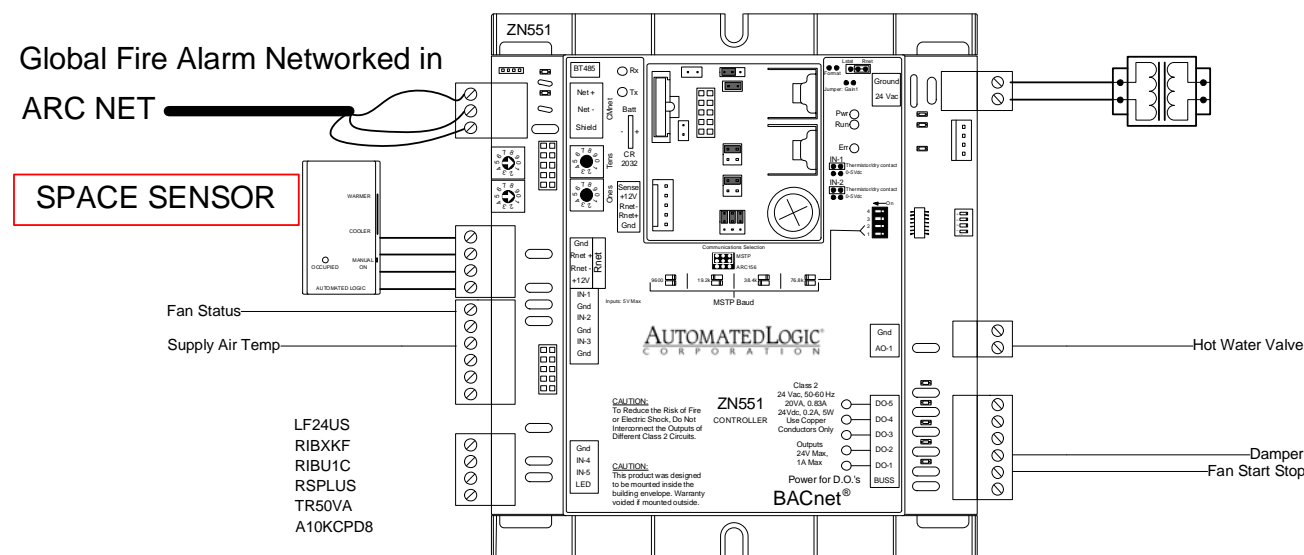


VENTILATION FAN

1. fan shall be energized by BAS during occupied mode
2. Valve will open to maintain occupied set point
3. During unoccupied, fan shall remain off until an unoccupied heating call. Valve will modulate during an unoccupied heat call.

VENTILATION FAN ALARMS

1. VF will generate an alarm if status is not proved when fan is enabled
2. VF will be shut down, and damper closed during a global fire alarm .
3. Controller Will generate an alarm if supply temperature goes above 100F, or below 40F
4. An alarm shall be generated if the space temperature goes below 40F



15A 972-20
3.3

Fire fan Shut Down

Division 16 ELECTRIC to provide a signal to stop air handling unit fans and close air handling unit smoke dampers upon activation of the fire alarm system. Wiring to be directly to the motor starter. An end switch shall prevent the the operation of the air handling unit fans until corresponding smoke dampers are open.

Fire Alarm Interlock and shut down.

All Automated Logic controllers are networked via BACnet and receive a broadcast fire or smoke alarm signal from the facility's fire alarm panel. A fire or smoke alarm from the fire panel will initiate a global fan shutdown of all equipment controlled by Automated Logic.

Windsor School District Palmer Middle School
Windsor, New York

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

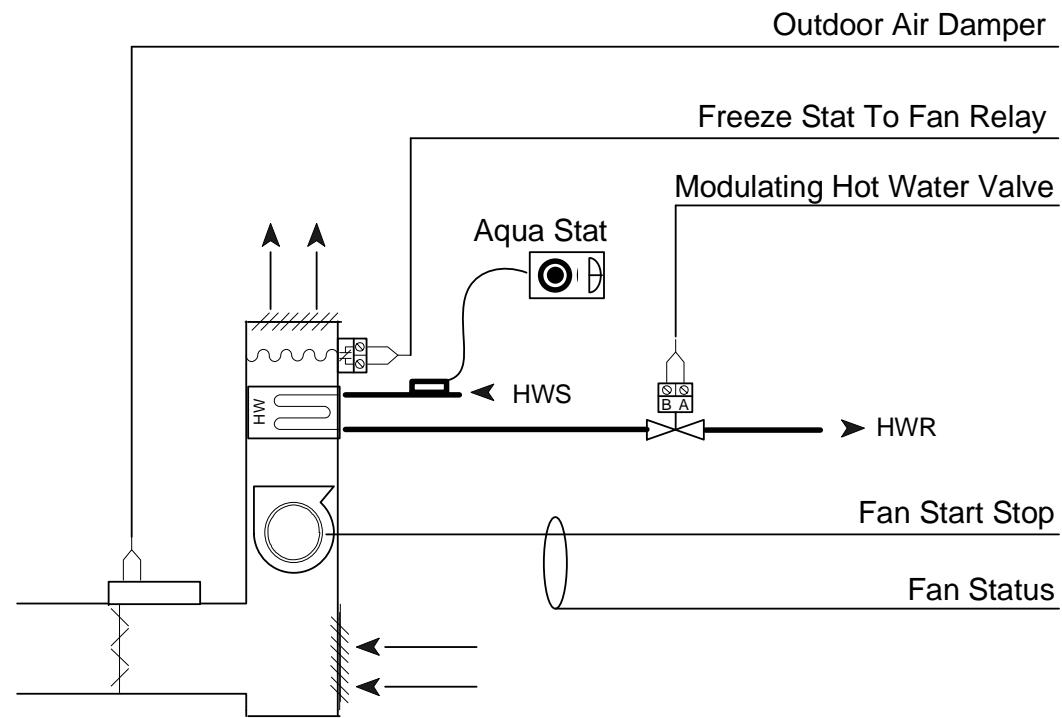
VF-1

| | | | |
|---------------------------------------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| AUTOMATED LOGIC CORPORATION | | | CHECK BY: RSL |
| | | | DSCODE: |

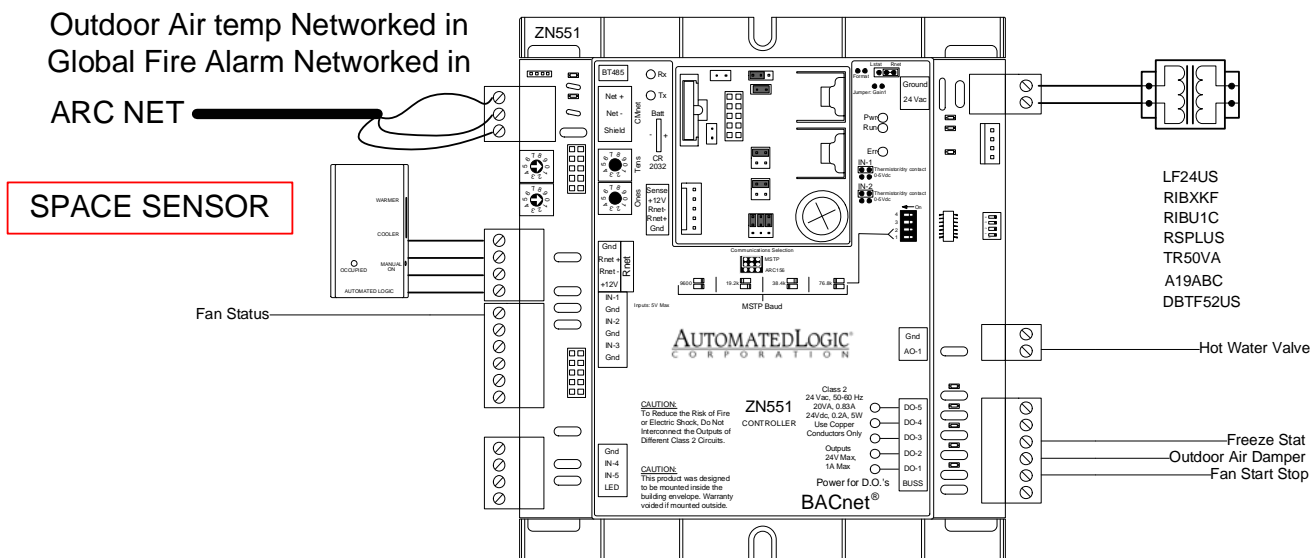
11 of 23

Cabinet Unit Heater O.A.

| Bill of Materials | | | | |
|-------------------|---------------------------|--------------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A19ABC | AQUASTAT | JC | A19ABC83C | 1 ea |
| DBTF52US | FREEZESTAT | ALPS | DBTF52US | 1 ea |
| LF24US | 2POS ACTUATOR | BELIMO | LF24US | 1 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 1 ea |
| RSPLUS | WALLSTAT | ALC | RSPL | 1 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 1 ea |
| ZN551 | ZN551 | AUTOMATED LOGIC | ZN551 | 1 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 2 ea |



CABINET HEATER



CUH CONTROL

1. fan shall be energized by BAS during a heat call, and off when space temperature is satisfied.
2. Valve will open during occupied mode, and hot water will continuously circulate. During unoccupied mode, valve will remain closed until a heat call is generated based on unoccupied set point.
3. Aqua stat will hold fan off if water temperature is under 100 deg. F.
4. Outdoor air damper shall open during occupied schedule

CUH ALARMS

1. CUH will generate an alarm if status is not proved when fan is enabled.
2. CUH will be shut down, and damper closed during a global fire alarm .
3. CUH fan will stop, and hot water valve will go full open during freeze alarm
4. An Alarm will be generated if the space temperature goes below 40F

Windsor School District Palmer Middle School

Windsor, New York

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

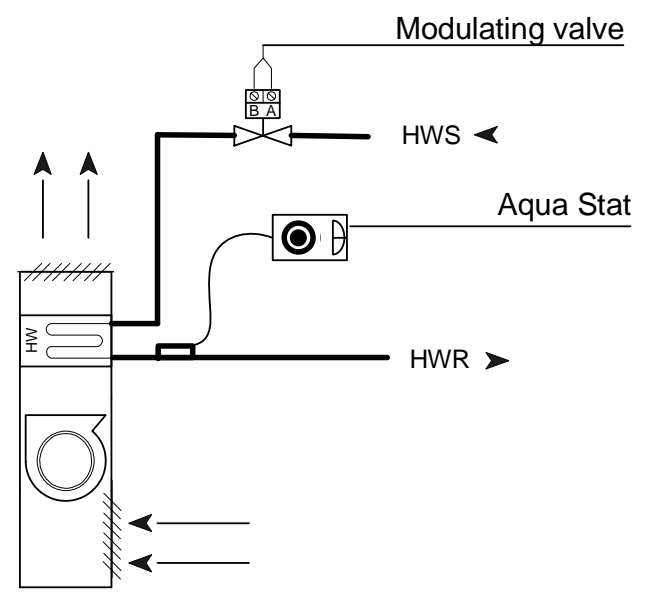
Cabinet Unit Heater O.A.

| | | | |
|--------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
|--------|----------|-----------|---------------|

| | |
|--|---------------|
| | CHECK BY: RSL |
| | DSCODE: |

Cabinet Unit Heaters

| Bill of Materials | | | | |
|-------------------|---------------------------|--------------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A19ABC83C | AQUASTAT | JC | A19ABC83C | 3 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 2 ea |
| RSPLUS | WALLSTAT | ALC | RSPL | 2 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 2 ea |
| ZN551 | AUTOMATED LOGIC | ZN551 | ZN551 | 2 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 2 ea |



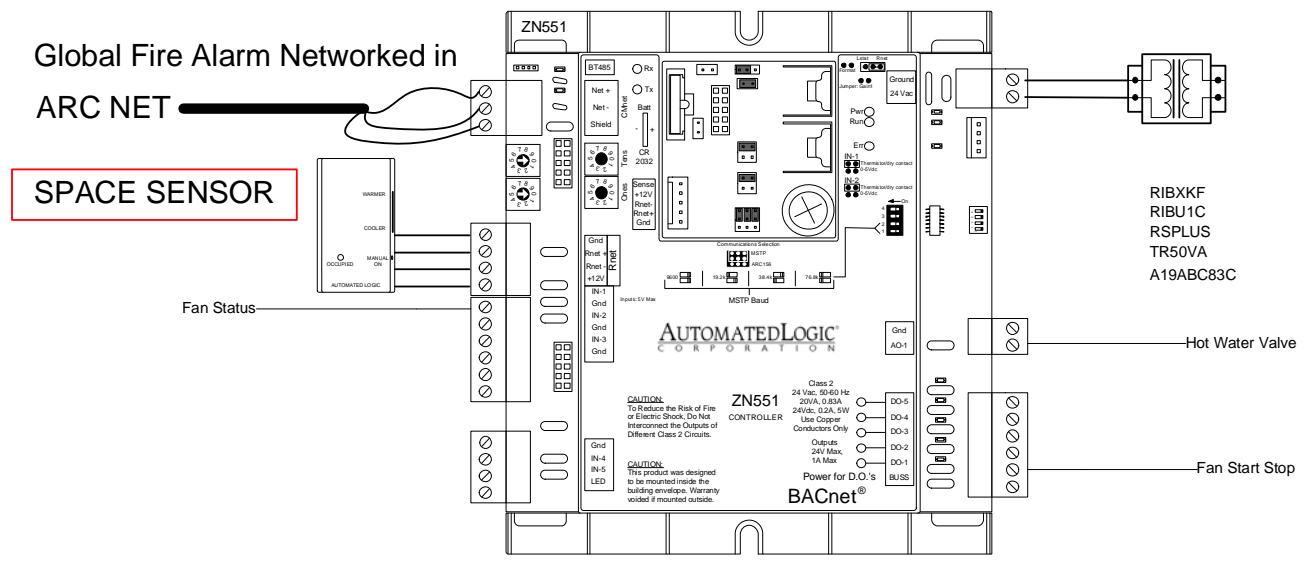
CABINET HEATER

CUH CONTROL

1. fan shall be energized by BAS during a heat call, and off when space temperature is satisfied.
2. Valve will open during occupied mode, and hot water will continuously circulate. During unoccupied mode, valve will remain closed until a heat call is generated based on unoccupied set point.
3. Aqua stat will hold fan off if water temperature is under 100 deg. F.

CUH ALARMS

1. CUH will generate an alarm if status is not proved when fan is enabled.
2. CUH will be shut down, and damper closed during a global fire alarm .
4. An Alarm will be generated if the space temperature goes below 40F



Windsor School District Palmer Middle School
Windsor, New York

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

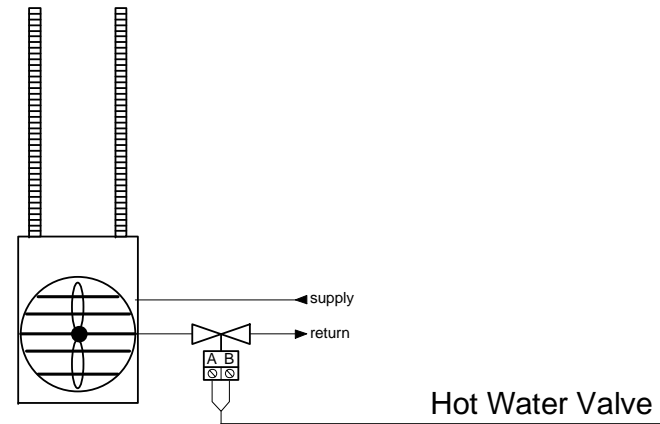
Cabinet Unit Heaters

| | | | |
|--------------------------------------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| AUTOMATEDLOGIC CORPORATION | | | CHECK BY: RSL |
| | | | DSCODE: |

13 of 23

U.H.

| Bill of Materials | | | | |
|-------------------|---------------------------|--------------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A19ABC | AQUASTAT | JC | A19ABC83C | 1 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 1 ea |
| RSPLUS | WALLSTAT | ALC | RSPL | 1 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 1 ea |
| ZN551 | ZN551 | AUTOMATED LOGIC | ZN551 | 1 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 1 ea |



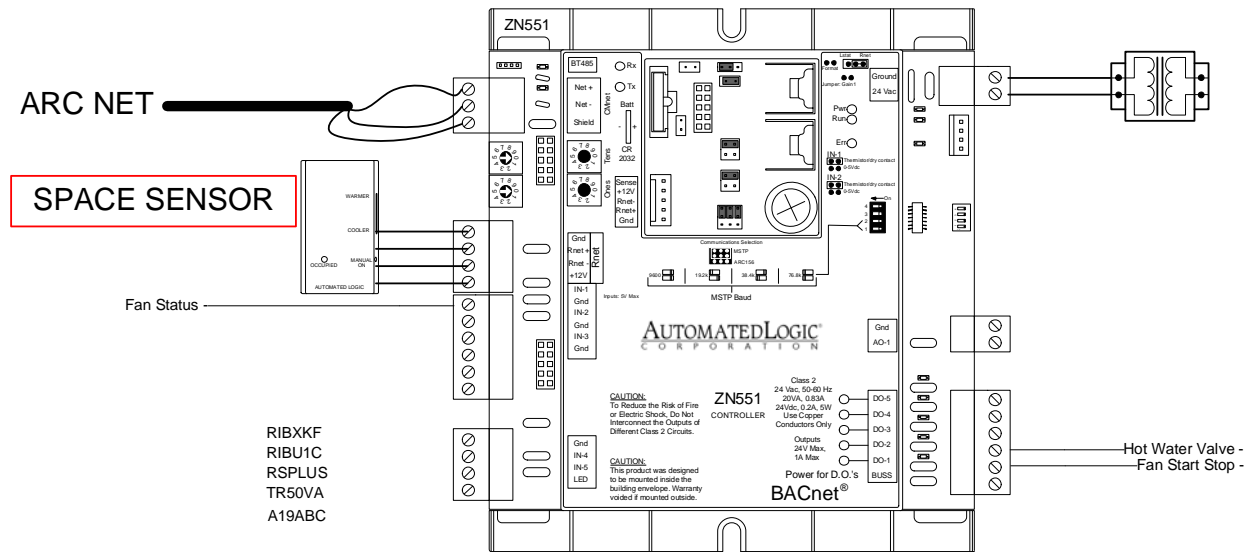
UNIT HEATER

CUH CONTROL

1. fan shall be energized by BAS during a heat call, and off when space temperature is satisfied.
2. valve will remain closed until a heat call is generated based on unoccupied and unoccupied set point.
3. Aqua stat will hold fan off if water temperature is under 100 deg. F.

CUH ALARMS

1. CUH will generate an alarm if status is not proved when fan is enabled.
2. CUH will be shut down, and damper closed during a global fire alarm .
4. An Alarm will be generated if the space temperature goes below 40F

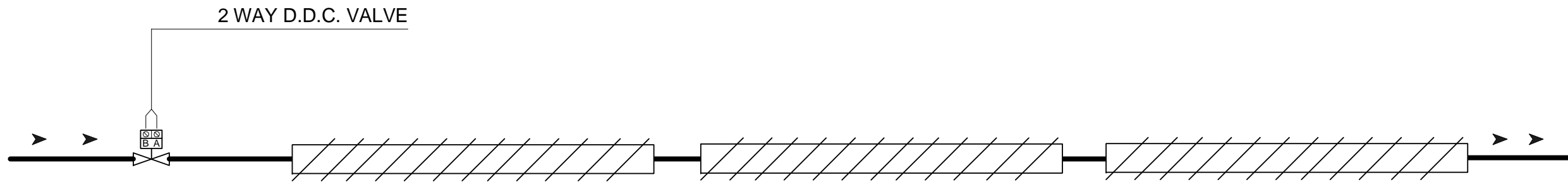


| | | | |
|--|----------|-----------|---------------|
| Windsor School District Palmer Middle School | | | |
| Windsor, New York | | | |
| A LINC SERVICE @ CONTRACTOR | | | |
| U.H. | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| | | | CHECK BY: RSL |
| | | | DSCODE: |
| | | | 14 of 23 |

Fintube A

Typical For 3

| Bill of Materials | | | | |
|-------------------|-------------|-----------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| RSPLUS | WALLSTAT | ALC | RSPL | 3 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 3 ea |
| ZN220 | ZN220 | AUTOMATED LOGIC | ZN220 | 3 ea |



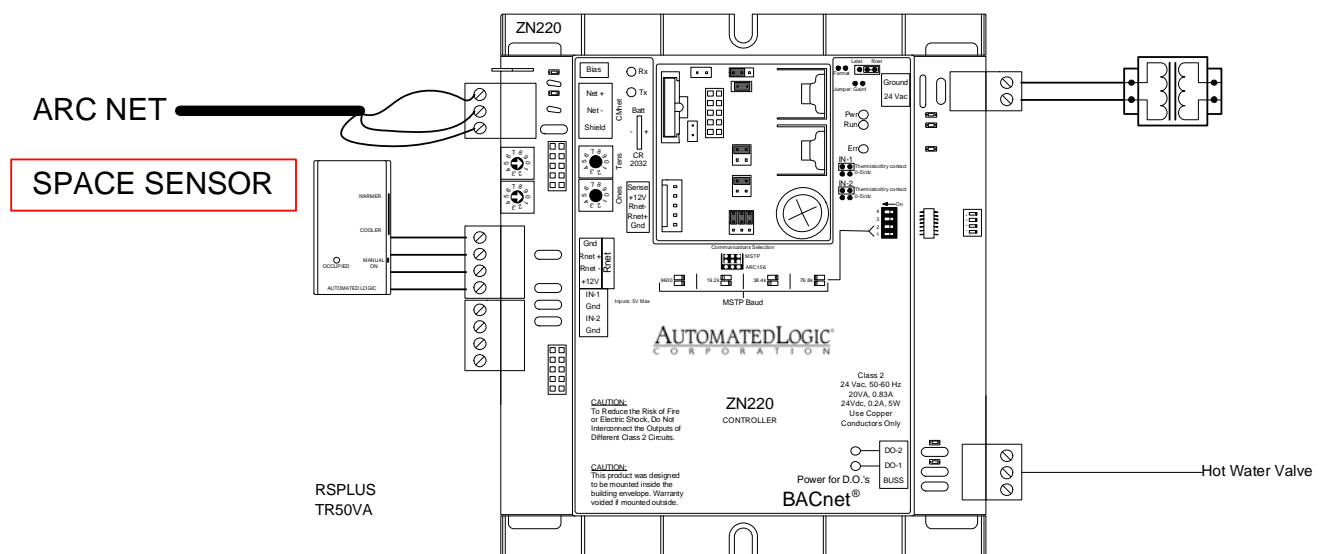
FTR CONTROL

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.



Windsor School District Palmer Middle School

Windsor, New York

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

Fintube A

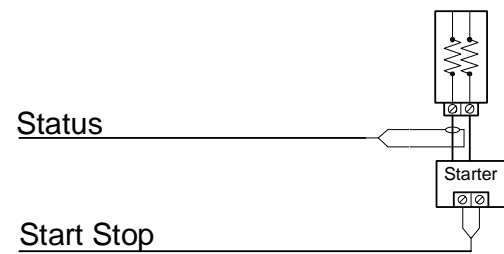
| | | | |
|--------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
|--------|----------|-----------|---------------|

AUTOMATED LOGIC
CORPORATION

CHECK BY: RSL

DSCODE:

Electric Wall Heater

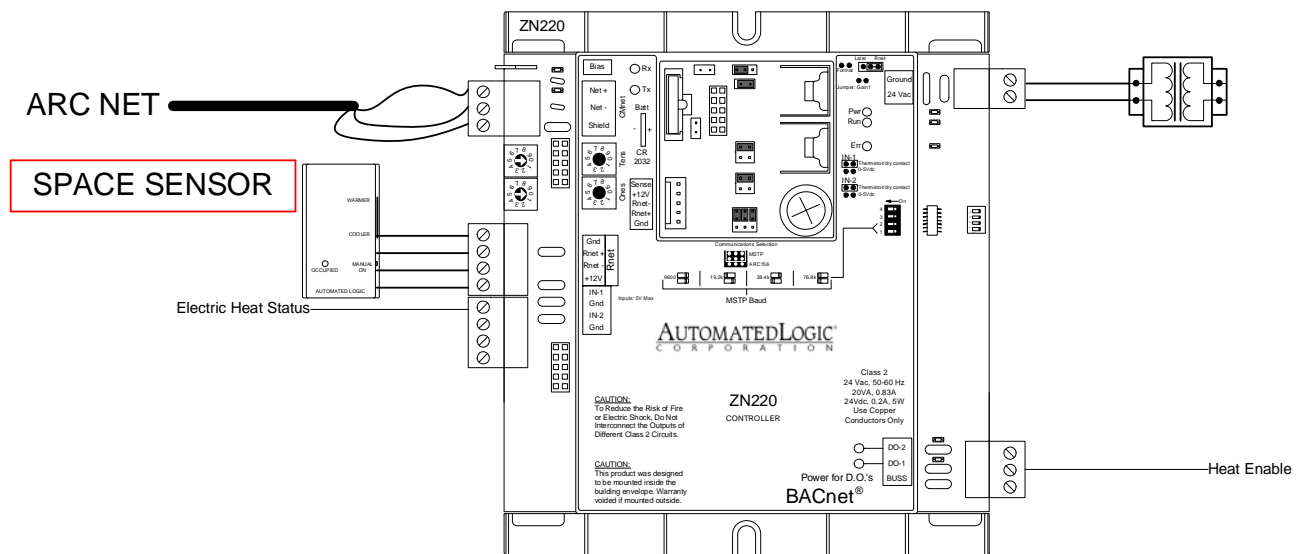


| Bill of Materials | | | | |
|-------------------|---------------------------|--------------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 1 ea |
| RSPLUS | WALLSTAT | ALC | RSPL | 1 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 1 ea |
| ZN220 | ZN220 | AUTOMATED LOGIC | ZN220 | 1 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 1 ea |

ELECTRIC HEAT CONTROL

A. Sequence Occupied

1. Heat shall be energized to maintain occupied set point.
2. Set point is adjustable at room sensor. Set point adjust can be limited, or disabled by operator.

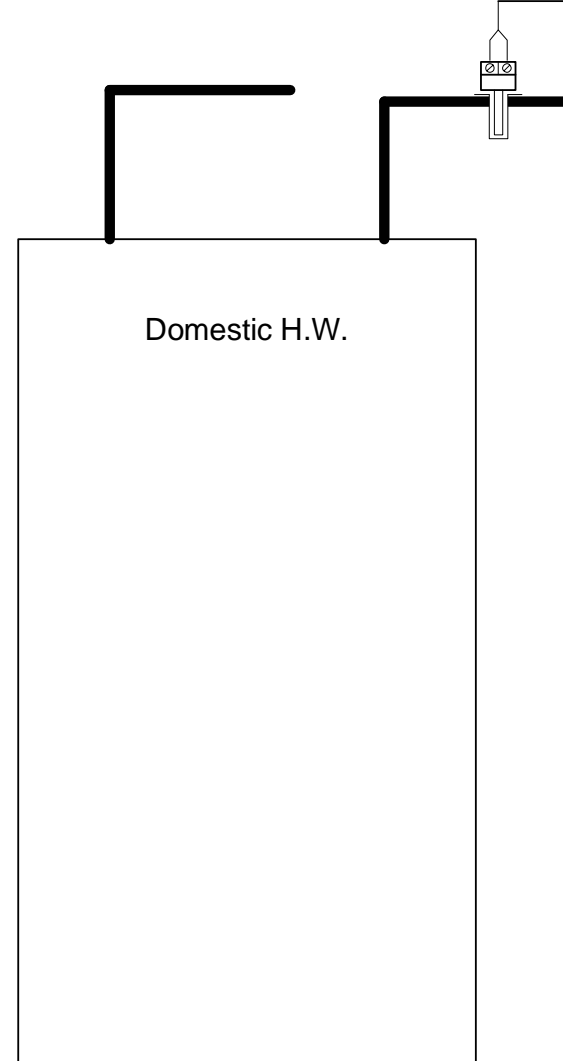


RSPLUS
TR50VA
RIBXKF
RIBU1C

| | | | |
|---|----------|-----------|---------------|
| Windsor School District Palmer Middle School Windsor, New York | | | |
| A LINC SERVICE @ CONTRACTOR | | | |
| Electric Wall Heater | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| | | | CHECK BY: RSL |
| | | | DSCODE: |
| 16 of 23 | | | |

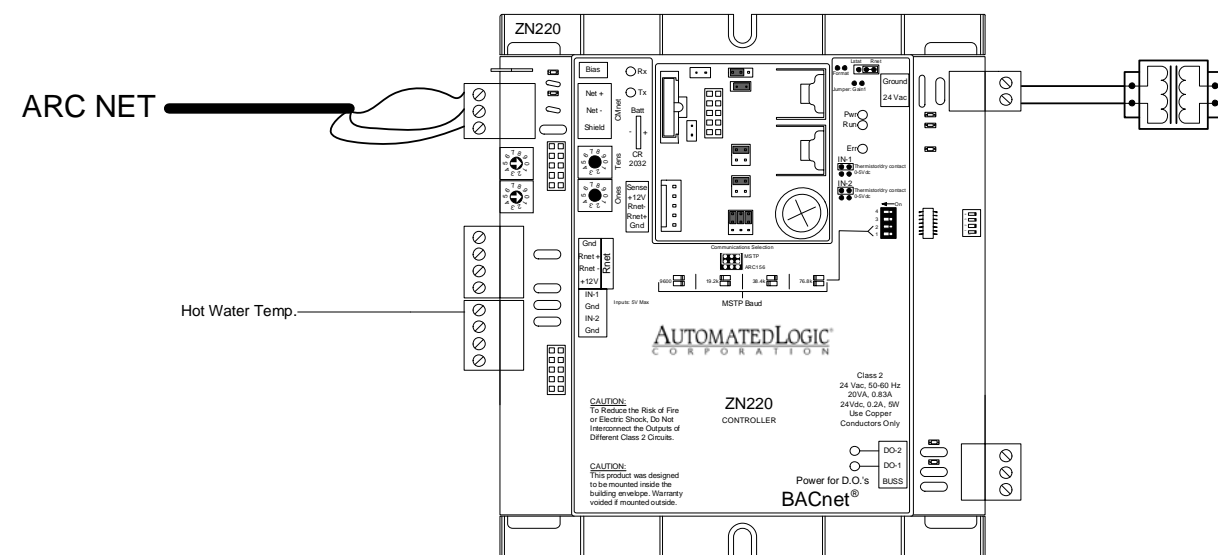
Domestic Hot Water

Hot Water Temperature



| Bill of Materials | | | | |
|-------------------|-------------|-----------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| A2.5 | WELL | BAPI | A25 | 2 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 1 ea |
| ZN220 | ZN220 | AUTOMATED LOGIC | ZN220 | 1 ea |
| ba2i | SENSOR | BAPI | BA2I | 2 ea |

Provide High and Low temperature alarms



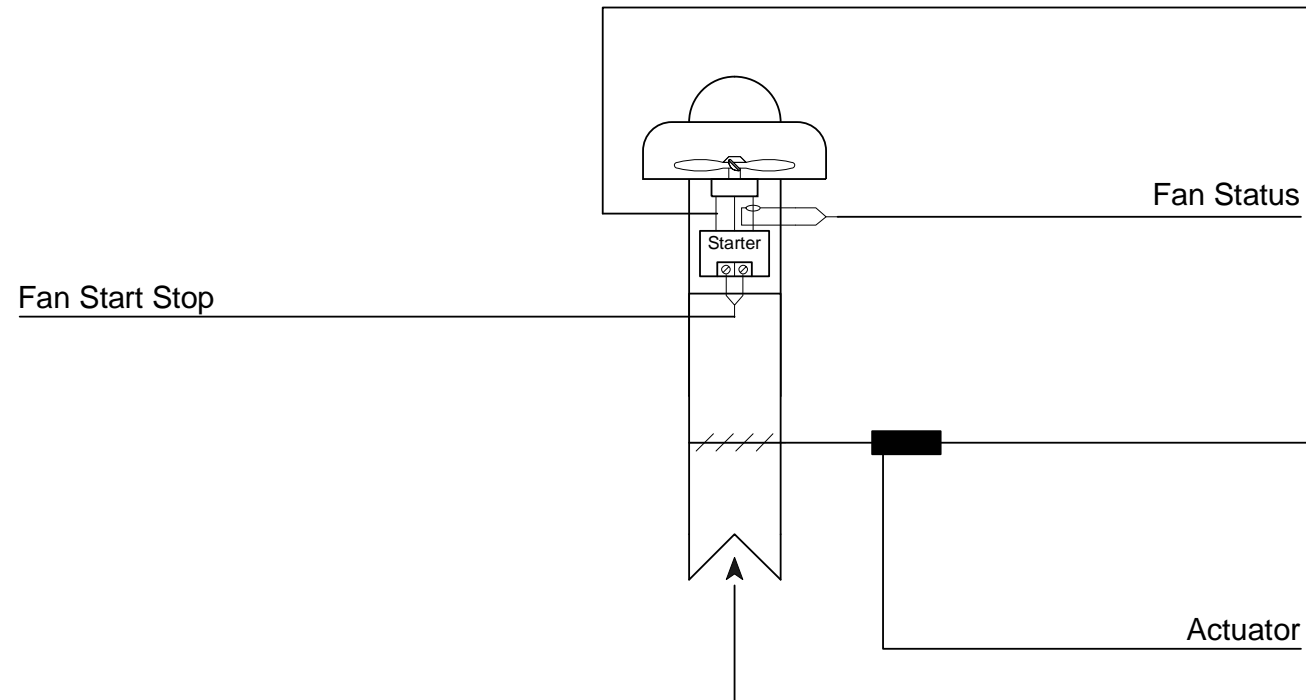
A2.5
TR50VA
BA2I

| | | | |
|--|----------|-----------|---------------|
| Windsor School District Palmer Middle School | | | |
| Windsor, New York | | | |
| A LINC SERVICE @ CONTRACTOR | | | |
| Domestic Hot Water | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| | | | CHECK BY: RSL |
| | | | DSCODE: |
| 17 of 23 | | | |

Exhaust Fans Existing

Typical for 26

| Bill of Materials | | | | |
|-------------------|-----------------------------|--------------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| DA-BB | SR OPEN/CLOSE 35 IN-LB 24 V | BELIMO | LF24 ALC | 3 ea |
| E-AB | HOFFMAN NEMA 3 12X12X4 | HOFFMAN | A12R124 | 3 ea |
| RIBU1C | RELAY | FUNCTIONAL DEVICES | RIBU1C | 3 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 3 ea |
| TR50VA | MULTI TAP PRIMARY 24V | FUNCTIONAL DEVICES | TR50VA | 3 ea |
| ZN220 | ZN220 | AUTOMATED LOGIC | ZN220 | 3 ea |

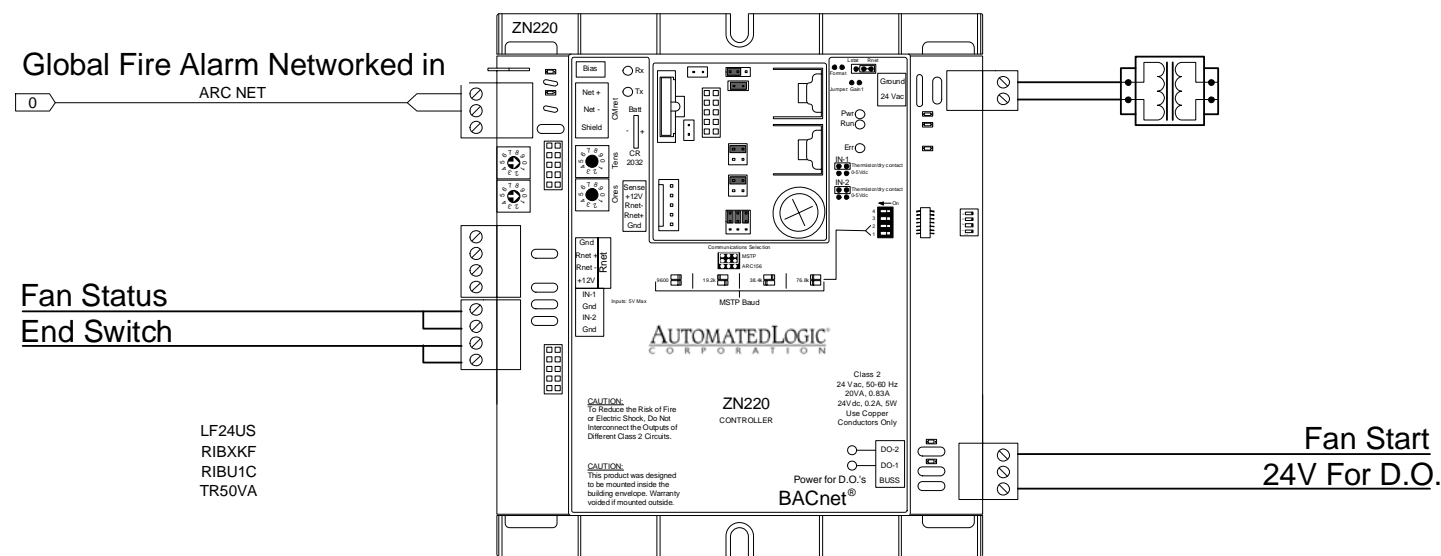


EXHAUST FAN CONTROL

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.
4. Damper shall be proved through end switch before energizing fan

EXHAUST FAN ALARMS

1. Fan will generate an alarm if status is not proved when fan is enabled.
2. Fan will be shut down, and damper closed during a global fire alarm .



Windsor School District Palmer Middle School

Windsor, New York

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

Exhaust Fans Existing

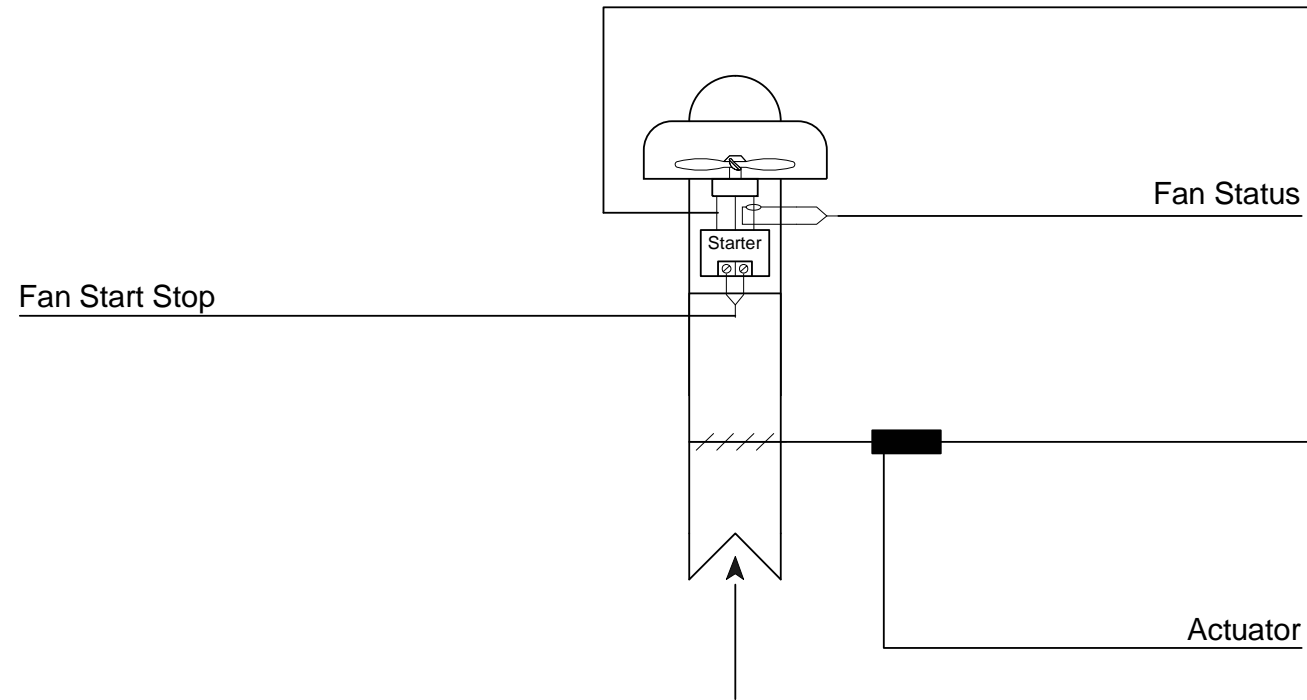
| | | | |
|--------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
|--------|----------|-----------|---------------|

| | |
|--|---------------|
| | CHECK BY: RSL |
| | DSCODE: |

Exhaust Fans

Typical for 4

| Bill of Materials | | | | |
|-------------------|---------------------------|--------------------|-------------|------|
| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
| LF24US | 2POS ACTUATOR | BELIMO | LF24US | 4 ea |
| RIBXKF | .25 TO 150 CURRENT SENSOR | FUNCTIONAL DEVICES | RIBXKF | 4 ea |
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 4 ea |
| ZN220 | ZN220 | AUTOMATED LOGIC | ZN220 | 4 ea |
| ribu1c | RELAY | FUNCTIONAL | RIBU1C | 4 ea |

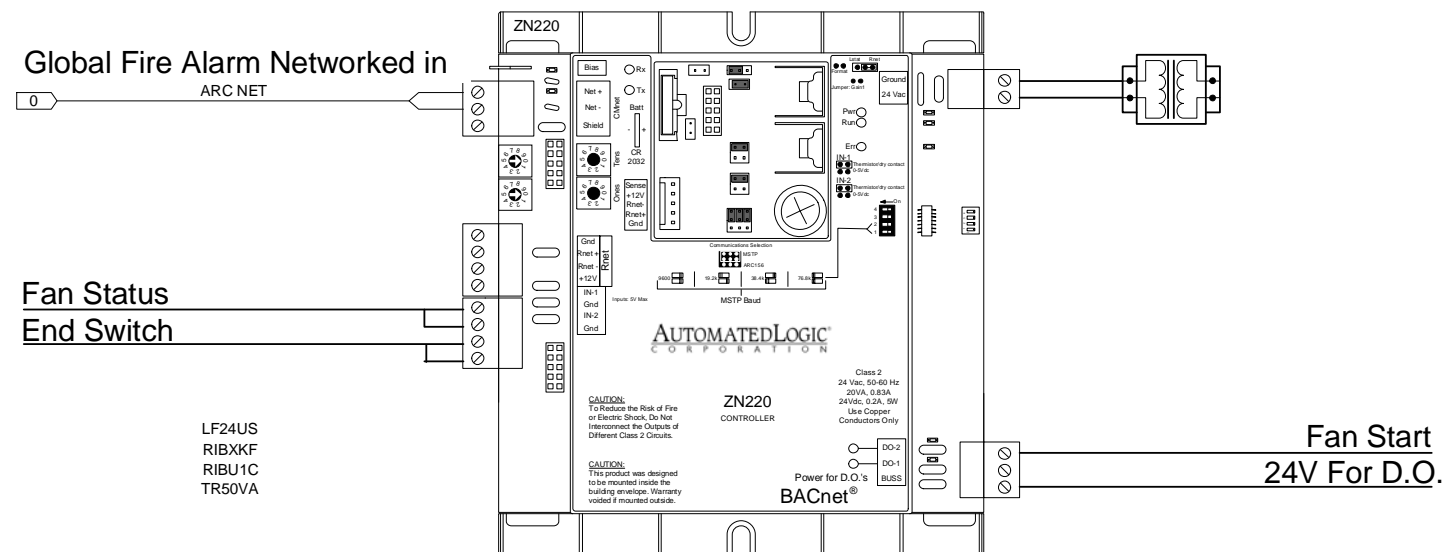


EXHAUST FAN CONTROL

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.
4. Damper shall be proved through end switch before energizing fan

EXHAUST FAN ALARMS

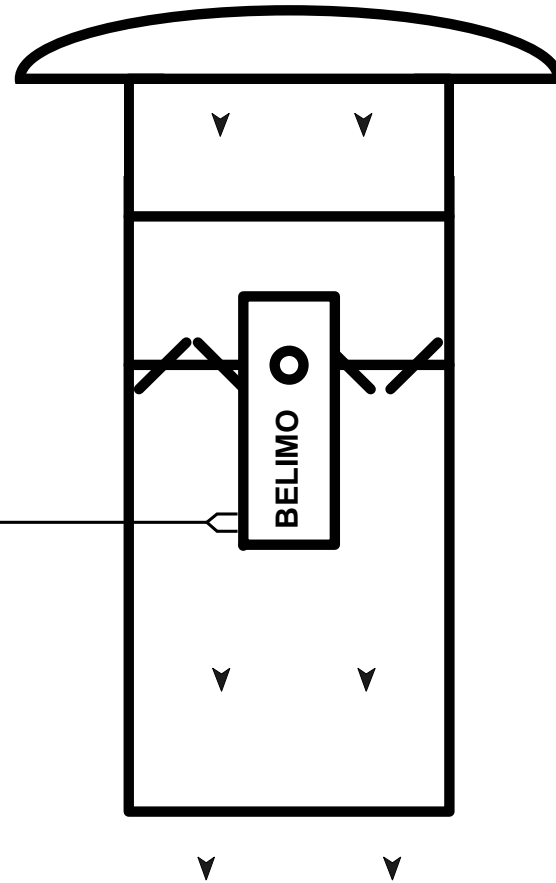
1. Fan will generate an alarm if status is not proved when fan is enabled.
2. Fan will be shut down, and damper closed during a global fire alarm .



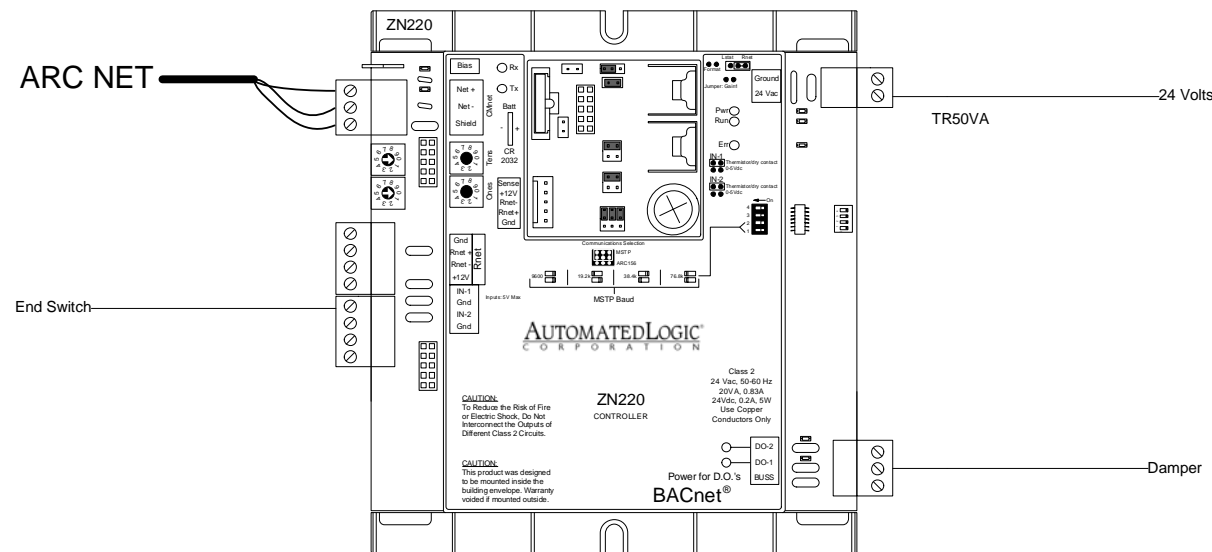
LF24US
RIBXKF
RIBU1C
TR50VA

| | | | |
|--|----------|-----------|---------------|
| Windsor School District Palmer Middle School | | | |
| Windsor, New York | | | |
| A LINC SERVICE @ CONTRACTOR | | | |
| Exhaust Fans | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| | | | CHECK BY: RSL |
| | | | DSCODE: |
| 19 of 23 | | | |

Intake 1&2



2 Position Spring Return Actuator



Bill of Materials

| DID | DESCRIPTION | MANUFACTURER | PART NUMBER | QTY |
|--------|-------------|-----------------|-------------|------|
| TR50VA | TRANSFORMER | FUNCTIONAL | TR50VA | 2 ea |
| ZN220 | ZN220 | AUTOMATED LOGIC | ZN220 | 2 ea |

GRAVITY RELIEF CONTROL

SAFETIES:

1. Shut damper, and generate an alarm at BMS panel when any of the following occur

- a. Fire alarm from fire alarm control panel by EC

OCCUPIED CYCLE:

1. Open damper when exhaust fans are in occupied cycle and remain open when units are in occupied cycle operation.
2. Damper shall be proved through end switch before energizing fan

UN-OCCUPIED CYCLE:

2. Close intake damper

Windsor School District Palmer Middle School

Windsor, New York

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

Intake 1&2

| | | | |
|--------|----------|-----------|---------------|
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
|--------|----------|-----------|---------------|

| | |
|---|---------------|
|  | CHECK BY: RSL |
| | DSCODE: |

Exterior Lights

Outdoor Lighting (typical of 5)

Run Conditions:

The lighting output shall turn on and off based upon the local sunrise and sunset times.

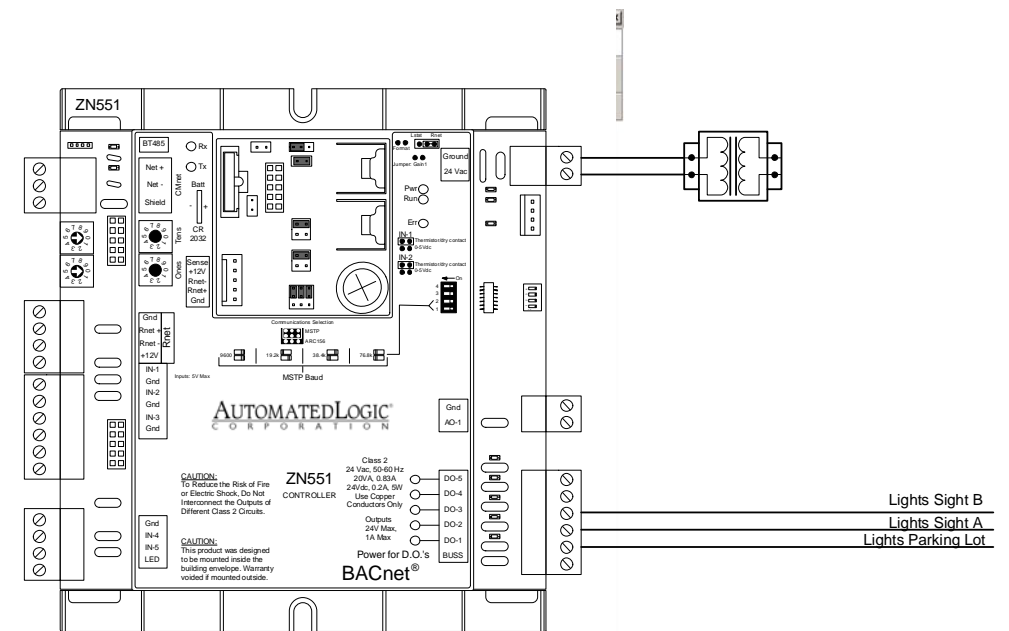
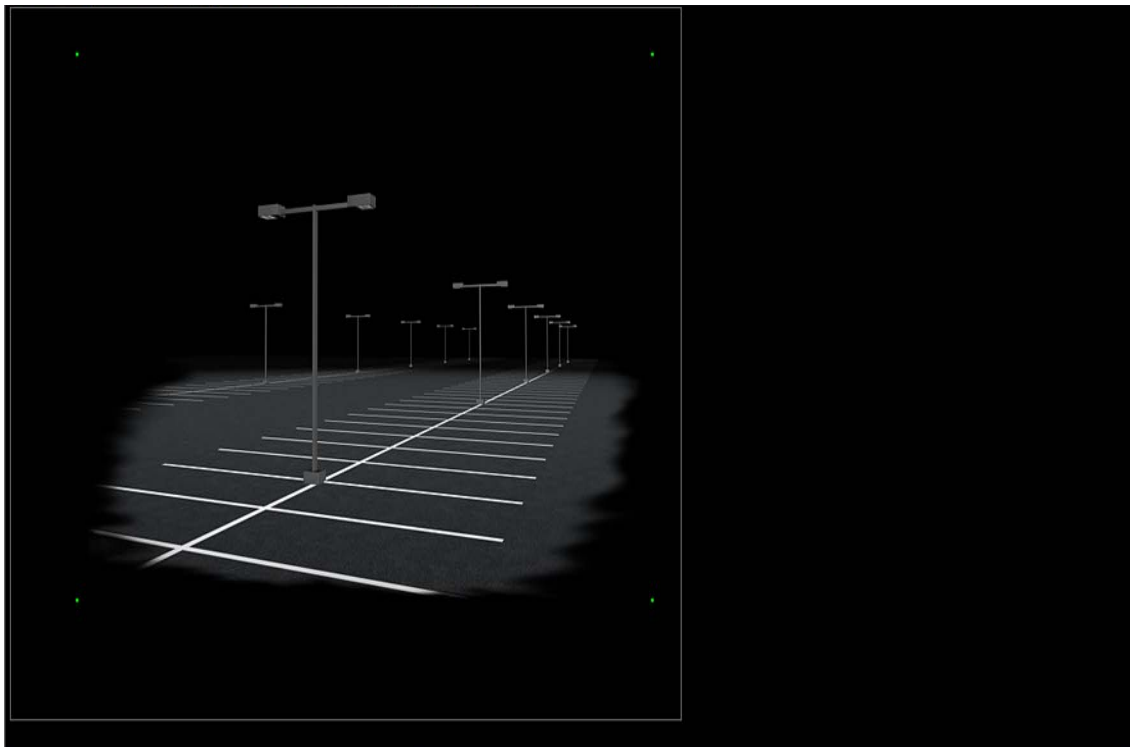
The transitions shall be configurable as follows:

Output turns OFF (adj) at 30 minutes (adj) BEFORE (adj) sunrise.

Output turns ON (adj) at 30 minutes (adj) AFTER (adj) sunset.

| Point Name | Hardware Points | | | | Software Points | | | | | Show On Graphic |
|-----------------|-----------------|----------|----------|----------|-----------------|----------|----------|----------|----------|-----------------|
| | AI | AO | BI | BO | AV | BV | Sched | Trend | Alarm | |
| Lighting Output | | | | × | | | | × | | × |
| Totals | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |

Total Hardware (1)
Total Software (1)



| | | | |
|--|----------|-----------|---------------|
| Windsor School District Palmer Middle School | | | |
| Windsor, New York | | | |
| AIR TEMP HEATING & AIR CONDITIONING, INC. <small>A LINC SERVICE @ CONTRACTOR</small> | | | |
| Exterior Lights | | | |
| REV: 1 | As-Built | 4/19/2010 | JOB NO: P7979 |
| | | | CHECK BY: RSL |
| | | | DSCODE: |
| | | | 21 of 23 |

