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AUTOMATED LOGIC
CORPORATION

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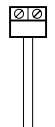
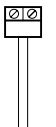
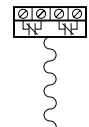
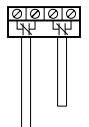
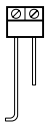
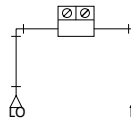

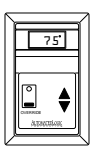



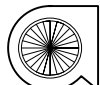
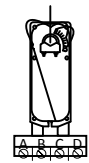
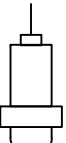
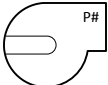
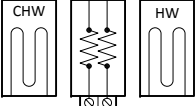
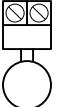
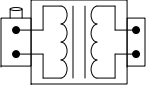



Page Number	Equipment	Module Number
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Page Number	Equipment	Module Number

Special Instruction and Project Scope

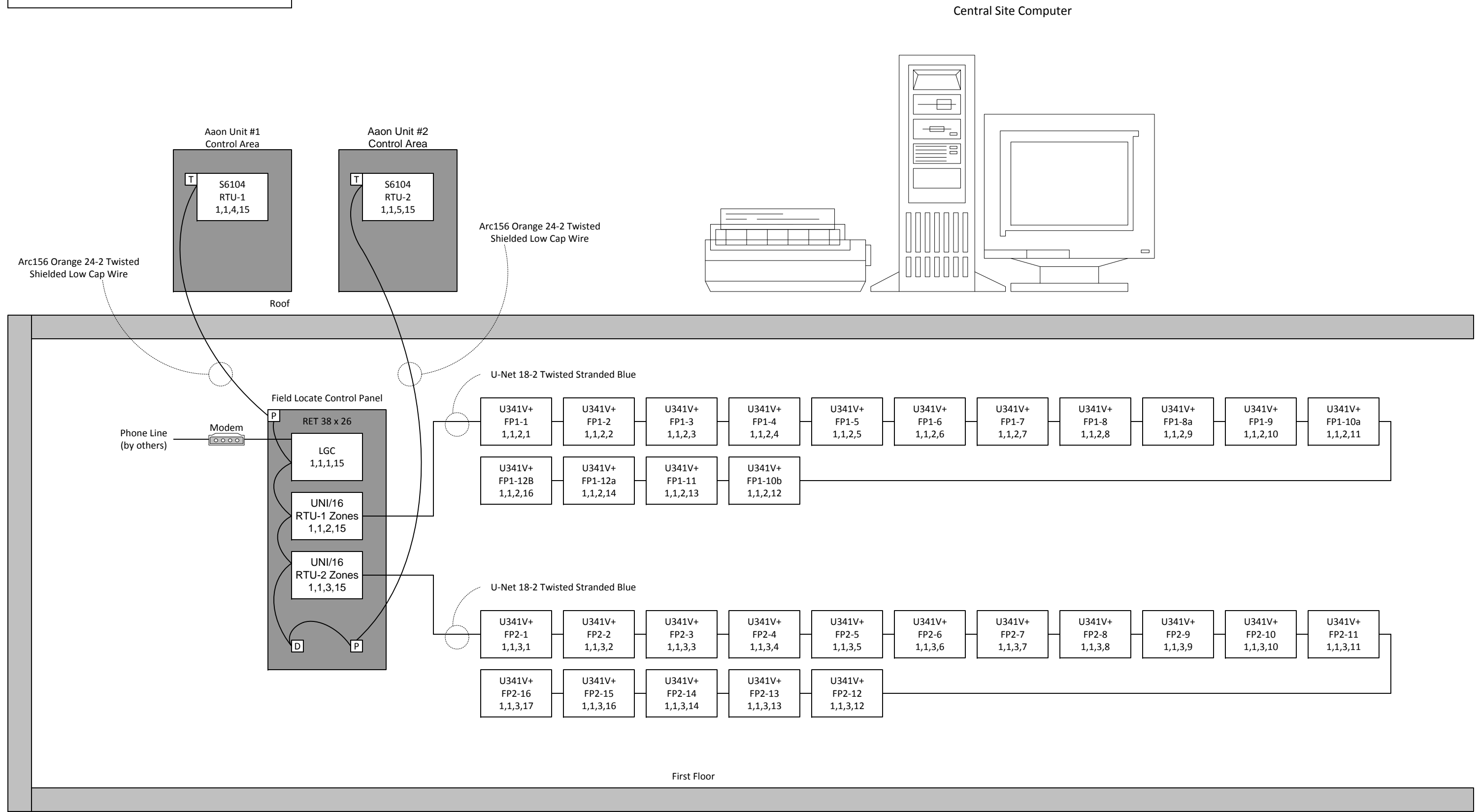
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Legend (see bill of material for specific sizes and quantity)

Duct Averaging Temperature Sensor	Duct Temperature Probe	Duct Humidity Sensor	DPDT Freezestat	Smoke Detector	Flow Sensor	Differential Pressure Sensor	Well Sensor	Room Sensor	Current Sensor
									
3-Way Valve Electric / 2-Way Valve 	3-Way Valve Pneumatic / 2-Way Valve 	Fan 	Electronic Actuator 	Pneumatic Actuator 	Water Pump 	Coils 	Strap On Sensor 	Transformer 	<div style="display: flex; justify-content: space-between;"> <div> Low Voltage wire </div> <div> New Terminal  </div> </div> <div style="display: flex; justify-content: space-between;"> <div> Line Voltage Wire </div> <div> Existing Terminal  </div> </div> <div style="display: flex; justify-content: space-between;"> <div> Pneumatic Line </div> <div> Pneumatic Point  </div> </div>

Network Layout

- E Cat 5 Ethernet Jack
- P Network Protection Board PROT484
- T Terminator (see DIAG485 Wiring Detail)
- D Diagnostic Board DIAG485

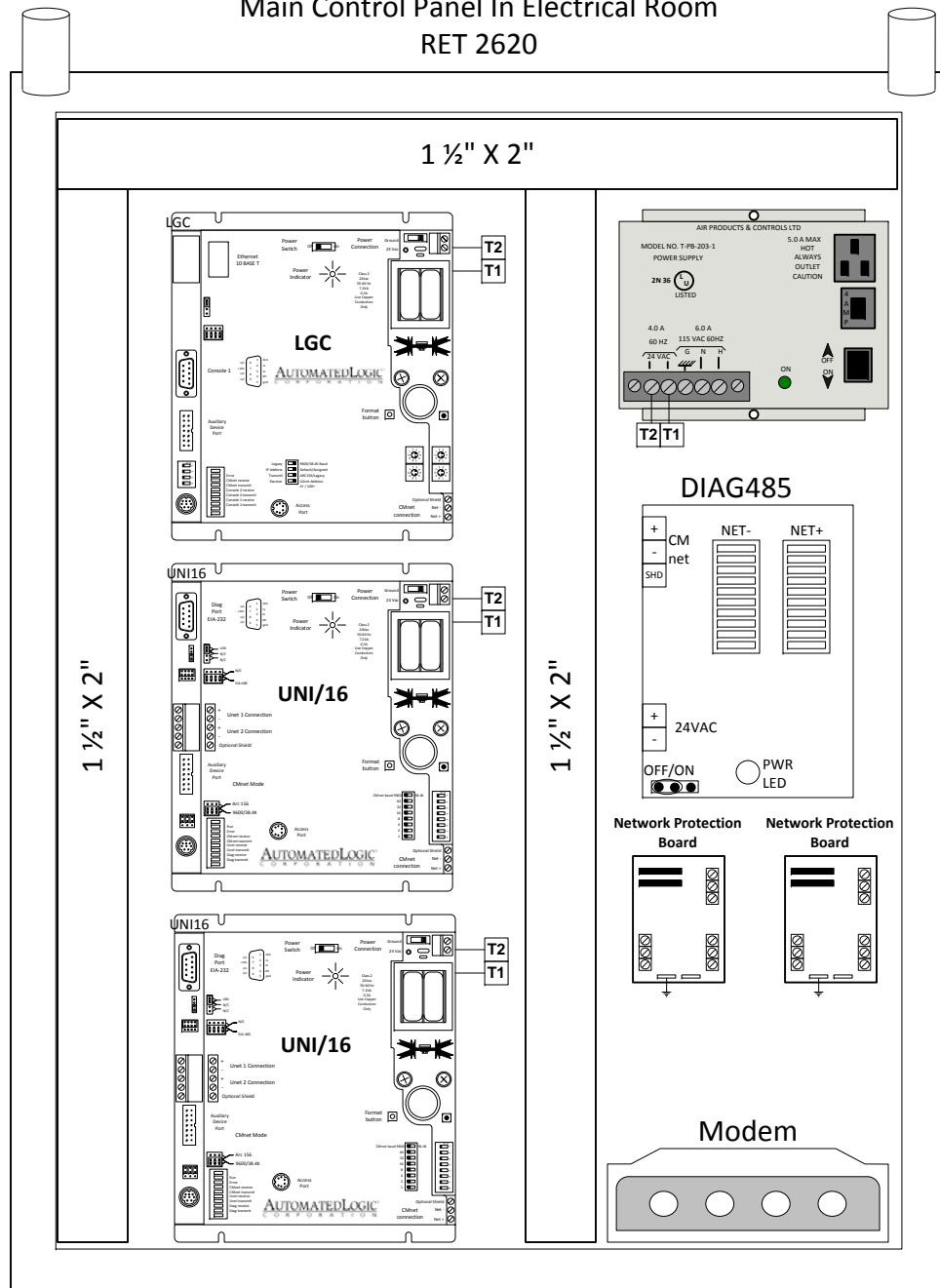


Control Panel Layout

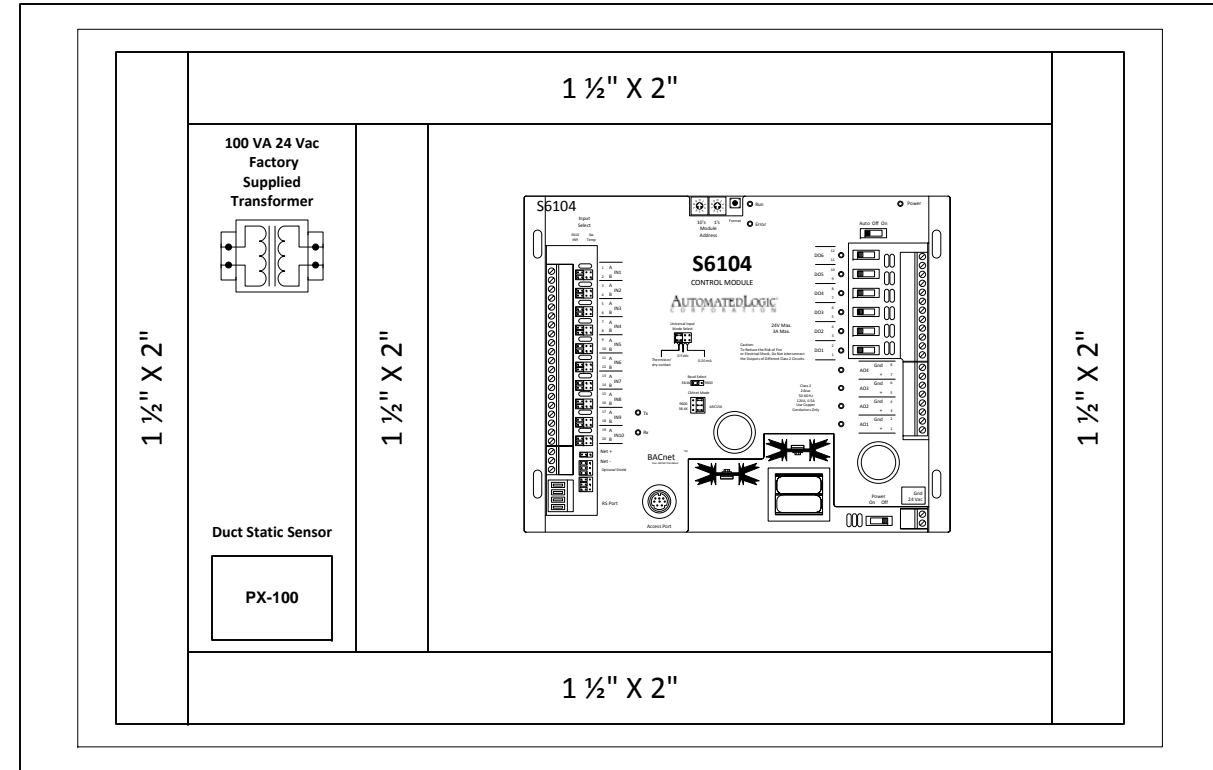
All Network and I/O Wiring

Main Control Panel In Electrical Room
RET 2620

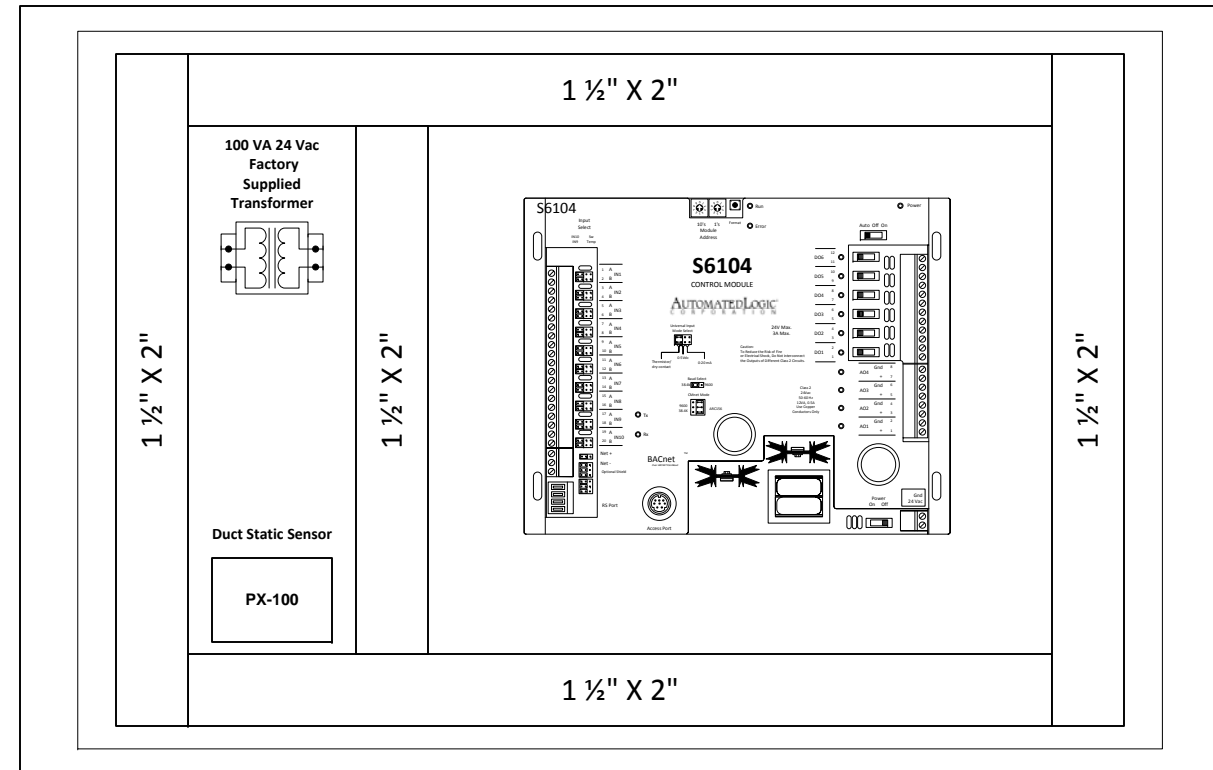
120 Vac



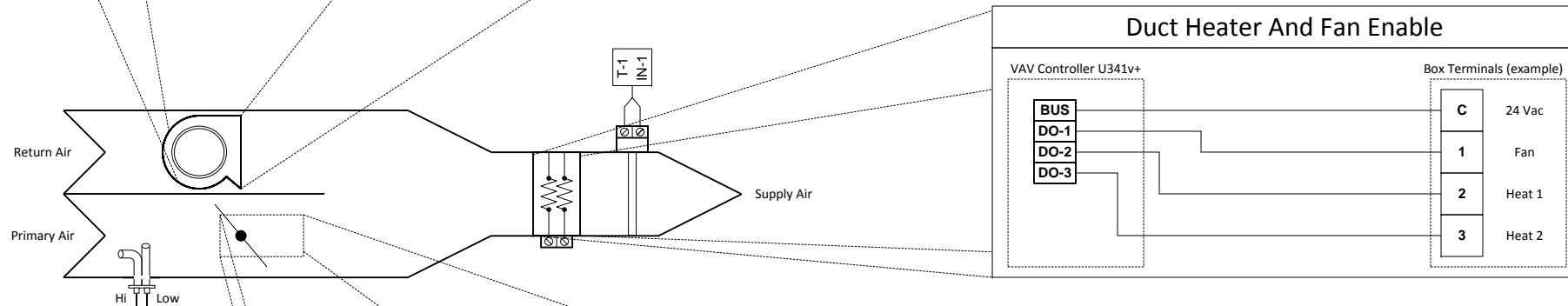
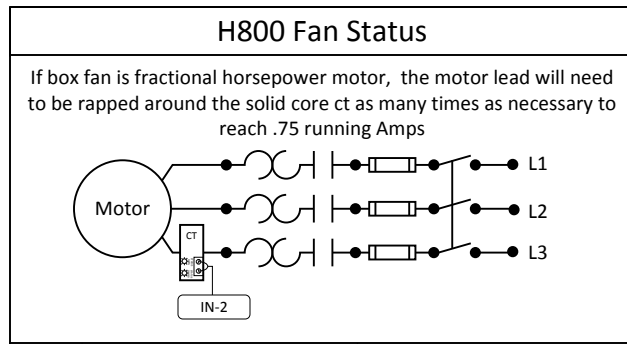
RTU-1 Controls Located In Aeon Unit Control Area



RTU-2 Controls Located In Aeon Unit Control Area



Fan Powered Vav Box



Bill Of Material			
Tag	Quantity	Part Number	Part Description
T-1	1	U341v+	U-Line Controller With Flow Sensor 3 Digital Outputs, 4 Universal Inputs, Analog Output.
	1	LSPRO	Thermostat With Setpoint Adjust, And Local Override, And Display.
	1	ALC/10K-2-D-12	Supply Air Temperature Sensor 10k Thermister
	1	H800	Current Switch .5 Amp Trip Fan Status

Sequence Of Operation

ZONE CONTROL (GENERAL)

The zone served by the room sensor will be scheduled. There are 5 modes for each zone: occupied and unoccupied as determined by an operator defined schedule, and 3 override demand levels as determined by the kilowatt meter and operator defined parameters. Each mode has individually adjustable heating and cooling set points. Each zone will have a color associated with the condition of the zone with respect to temperature and the applicable set point. The color will be green when the temperature is between the heating and cooling set point. The color will change progressively from green to yellow, orange, and then red as the temperature rises progressively above the cooling set point. The color will change progressively from green to light blue, dark blue, and then red as the temperature drops progressively below the heating set point. Gray will represent the unoccupied mode. The color changes combined with PID control will execute the required control for the zone (see below for the specific requirements of each type of zone control).

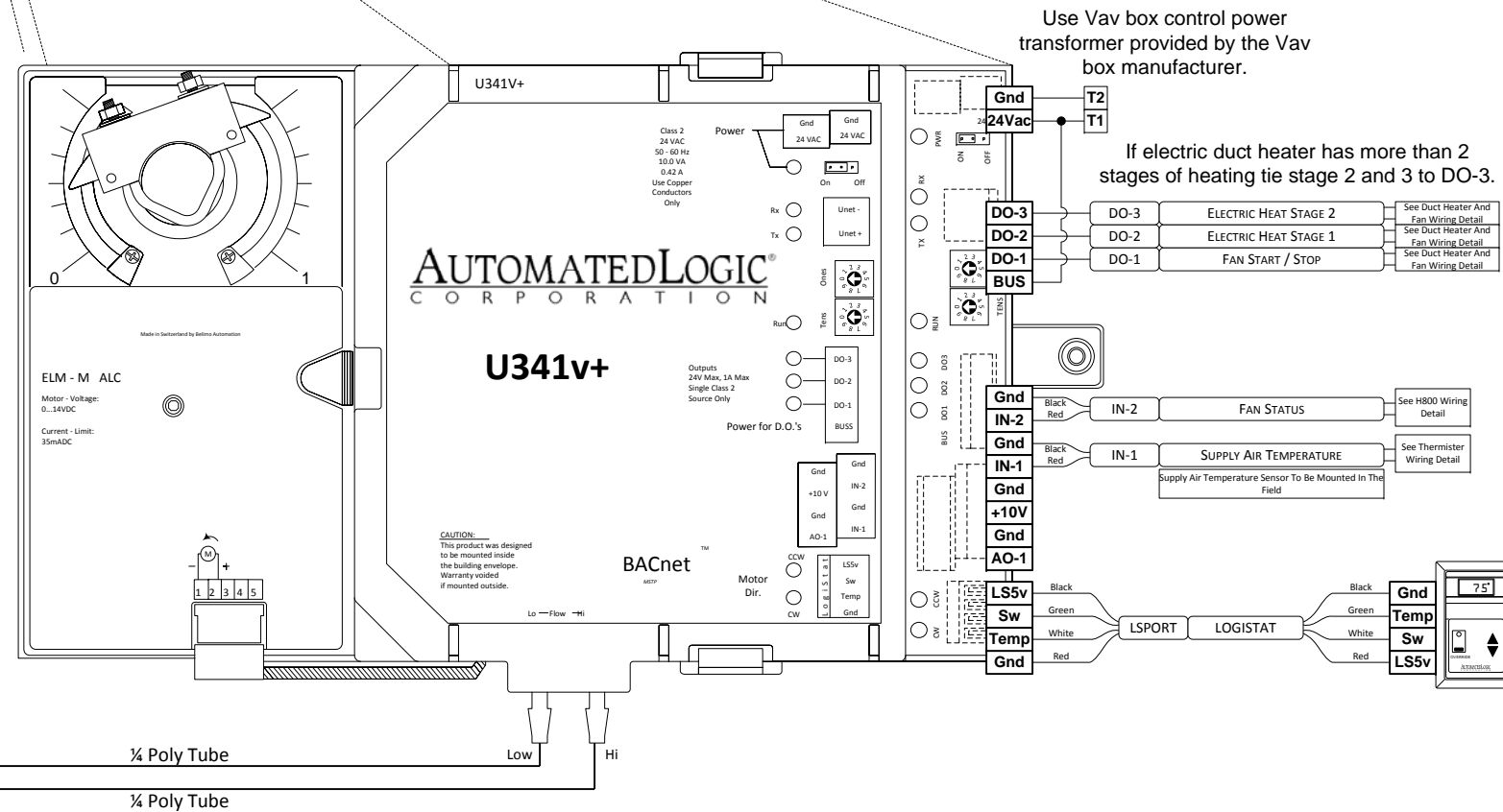
Occupied

If the zone needs heating the damper will maintain the minimum airflow setpoint. If the zone temperature continues to fall the supply fan will be started and run continually. If the temperature continues to fall the electric heater will be staged to maintain the zone heating setpoint. If the zone needs cooling the vav box damper will be modulated open within design cfm limits. The associated rooftop unit will provide 55 degree (adj.) supply air year round.

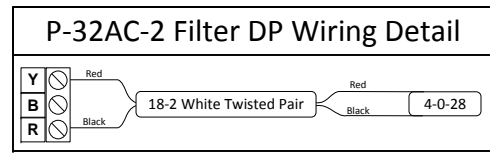
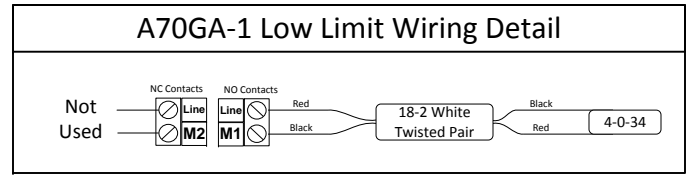
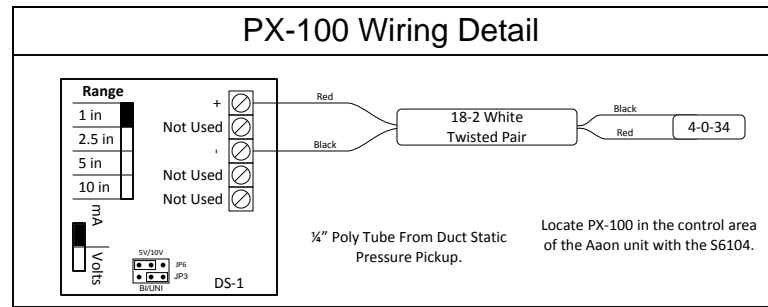
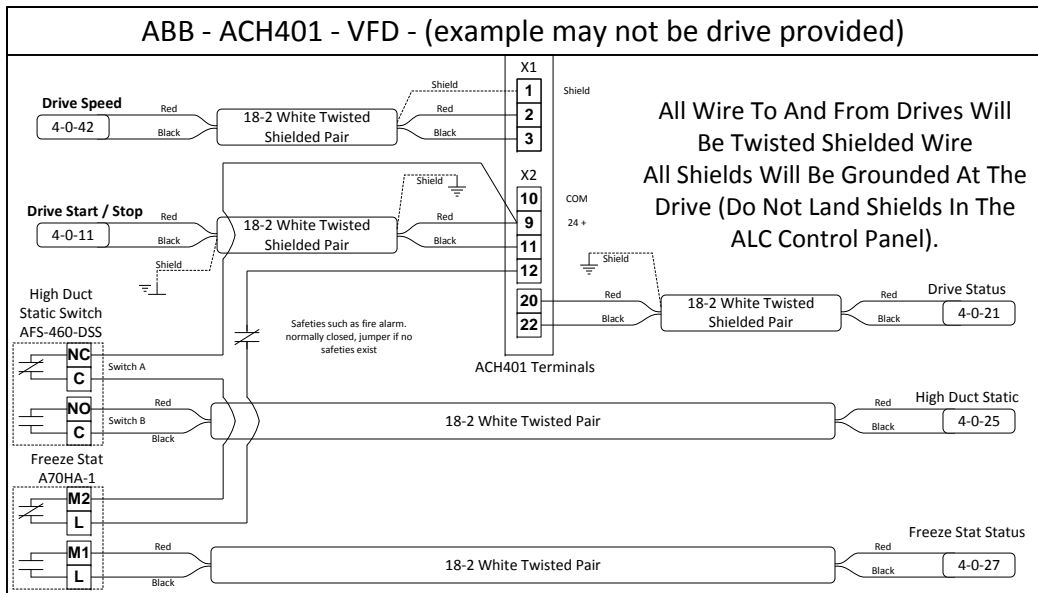
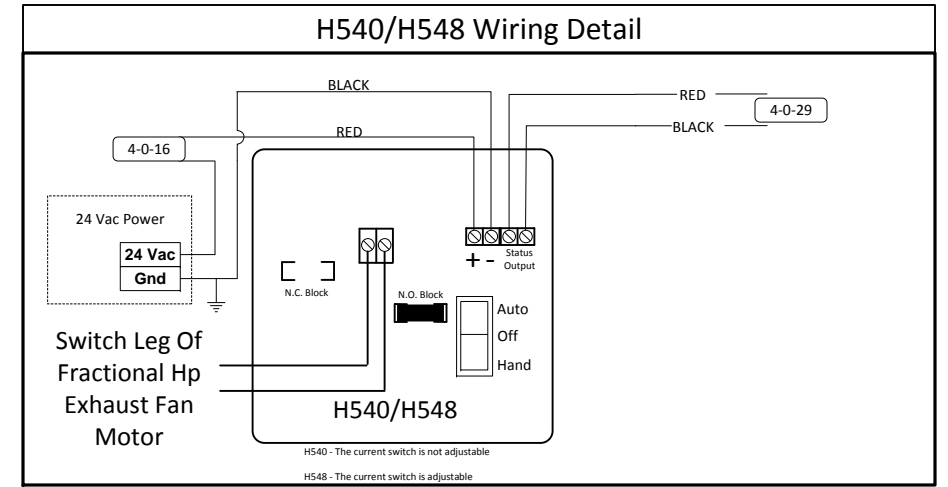
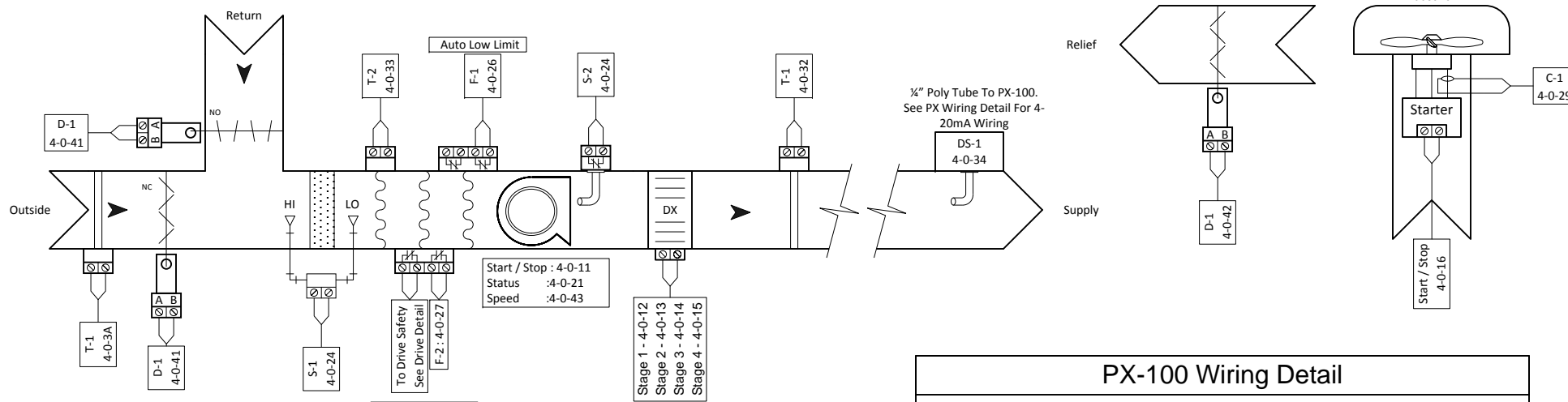
Unoccupied

When the zone is in the unoccupied mode the box damper will close, the fan will be off and the electric heat will be de-energized. If in the unoccupied mode the zone is below the unoccupied heating setpoint the box will start the fan and stage on the electric heating to provide heat to the controlled zone. The air-handling unit will not be started in unoccupied mode.

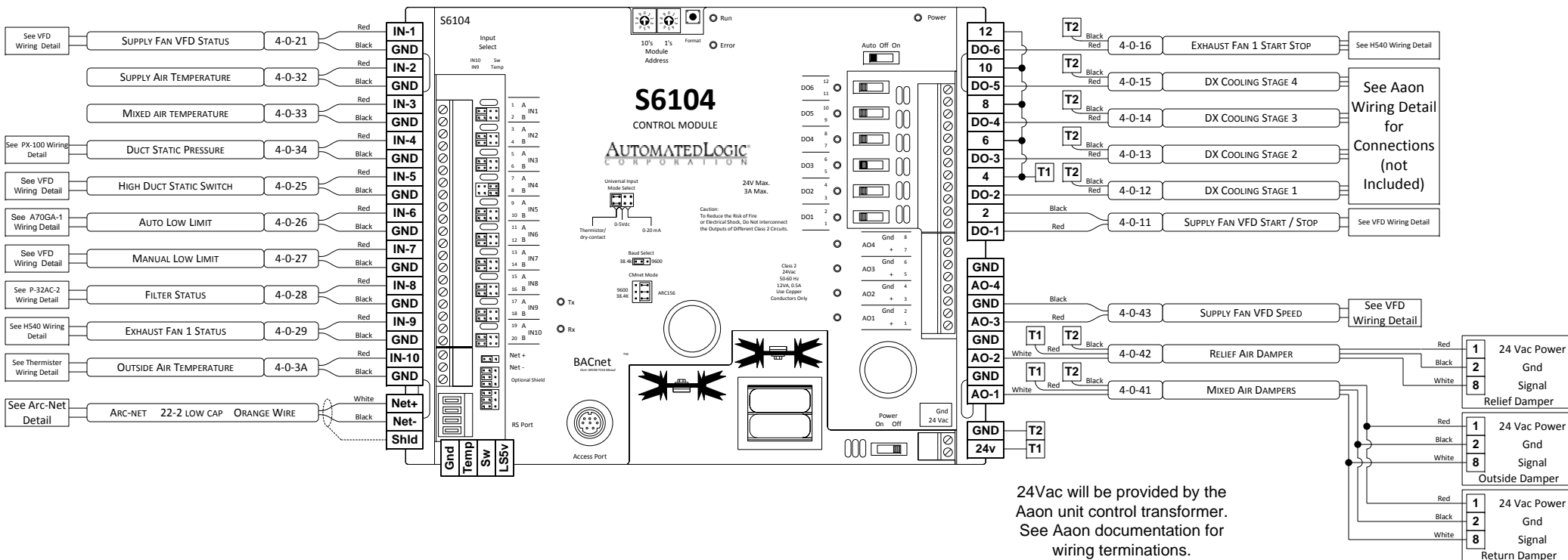
Default vav program will be the same program sequence that will run in the vav controller during normal operation.



Rooftop Unit 1



Bill Of Material			
Tag	QT	Part Number	Part Description
T-1	2	ALC/10K-2-D-12	12" Duct Temperature Sensor
T-2	1	ALC/10K-2-A-12	12' Duct Averaging Temperature Sensor
	1	S6104	Control Module
D-1	3	GCA161.1U	Damper Actuator, Spring Return, 0-10vdc Modulating Control, 24vac Power
F-1	1	A70GA-1	Auto Reset Freezestat DPDT
F-2	1	A70HA-1	Manual Reset Freezestat DPDT
S-1	1	P32AC-2	Filter Status Switch
S-2	1	AFS-460-DSS	High Duct Static Safety Switch, Manual Reset
DS-1	1	PX-100	Adjustable Static Pressure Sensor 4-20mA
C-1	1	H540	Current Switch With Start / Stop Relay

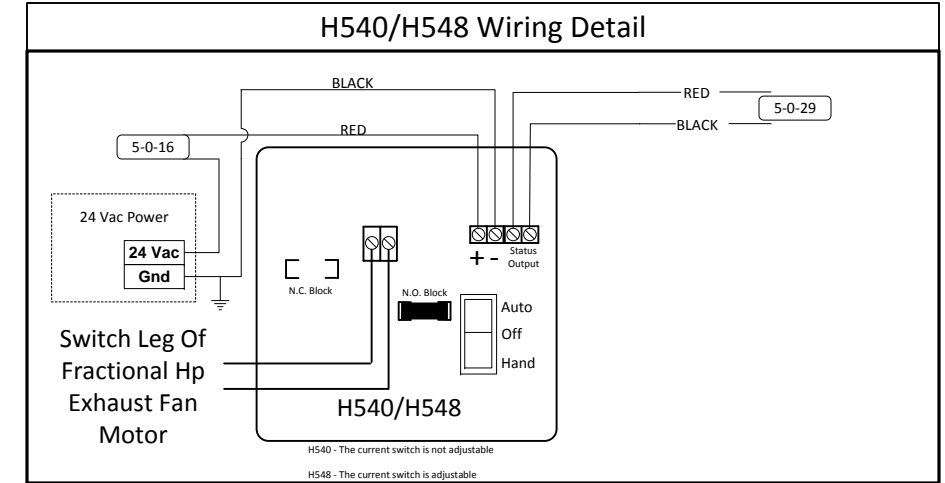
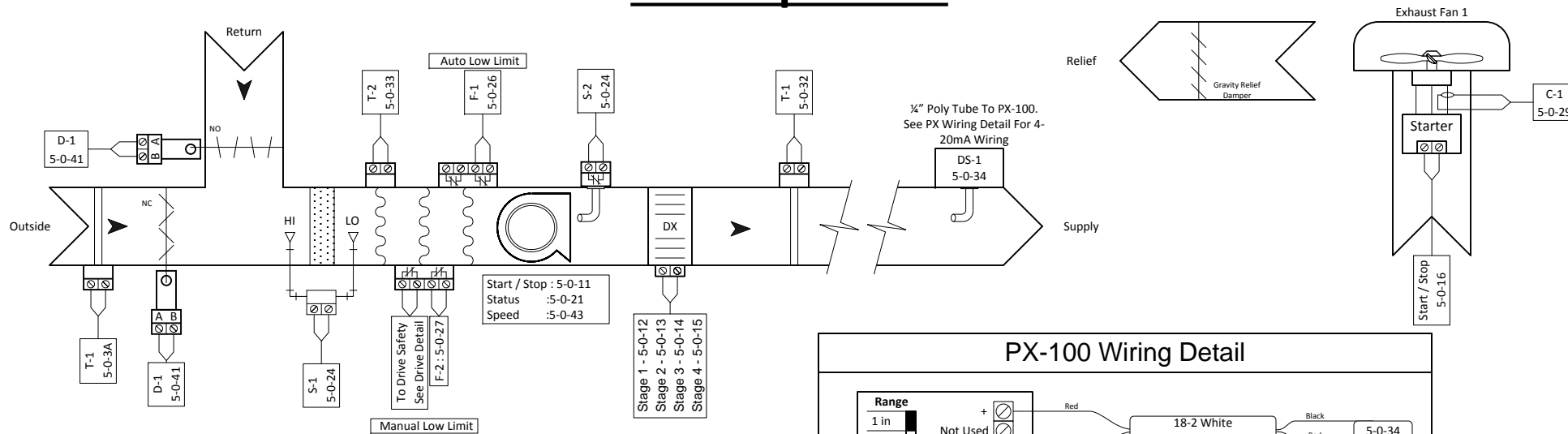


Sequence Of Operation

Unoccupied
During the unoccupied mode the supply fan will be off the outside air damper will be closed the return air damper will be open and the DX cooling will be de-energized. The Rooftop unit will not be started in the unoccupied mode.

Occupied
During the occupied mode the supply fan will run continually. The supply fan VFD will be modulated to maintain the duct static pressure setpoint of 1.5" WC (adj.). When the outside air temperature is below the economizer enable setpoint of 60°F (adj.), the mixed air damper will modulate open to the outside air to maintain the cooling supply air temperature setpoint. The relief air damper will lag the outside air damper by 10% (adj.). When the outside air temperature is above 60°F (adj.) the dx cooling will stage on to maintain the supply air temperature setpoint (adj.). All DX cooling stages will have a 5 minute anti-recycle timer to limit compressor cycling. During the occupied mode the outside air damper will be modulated open to 10% to allow for fresh air requirements. An auto-reset low limit temperature controller will be set at 42°F (adj.) to close the outside air dampers and alarm the central workstation should the mixed air temperature be below 42°F (adj.). If the mixed air temperature continues to fall the manual-reset low limit temperature controller set for 38°F (adj.) will shut down the supply fan and alarm the central workstation. The supply air temperature setpoint will be 55°F (adj.).

Rooftop Unit 2

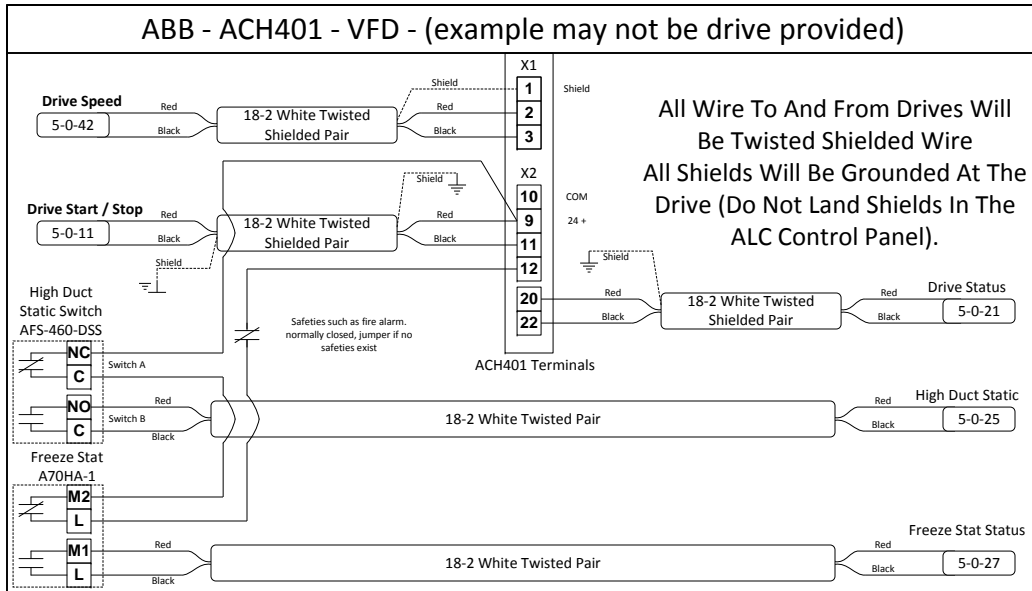


Bill of Material			
Tag	QT	Part Number	Part Description
T-1	2	ALC/10K-2-D-12	12" Duct Temperature Sensor
T-2	1	ALC/10K-2-A-12	12" Duct Averaging Temperature Sensor
	1	S6104	Control Module
D-1	3	GCA161.1U	Damper Actuator, Spring Return, 0-10Vdc Modulating Control, 24vac Power
F-1	1	A70GA-1	Auto Reset Freezestat DPDT
F-2	1	A70HA-1	Manual Reset Freezestat DPDT
S-1	1	P32AC-2	Filter Status Switch
S-2	1	AFS-460-DSS	High Duct Static Safety Switch, Manual Reset
DS-1	1	PX-100	Adjustable Static Pressure Sensor 4-20mA
C-1	1	H540	Current Switch With Start / Stop Relay

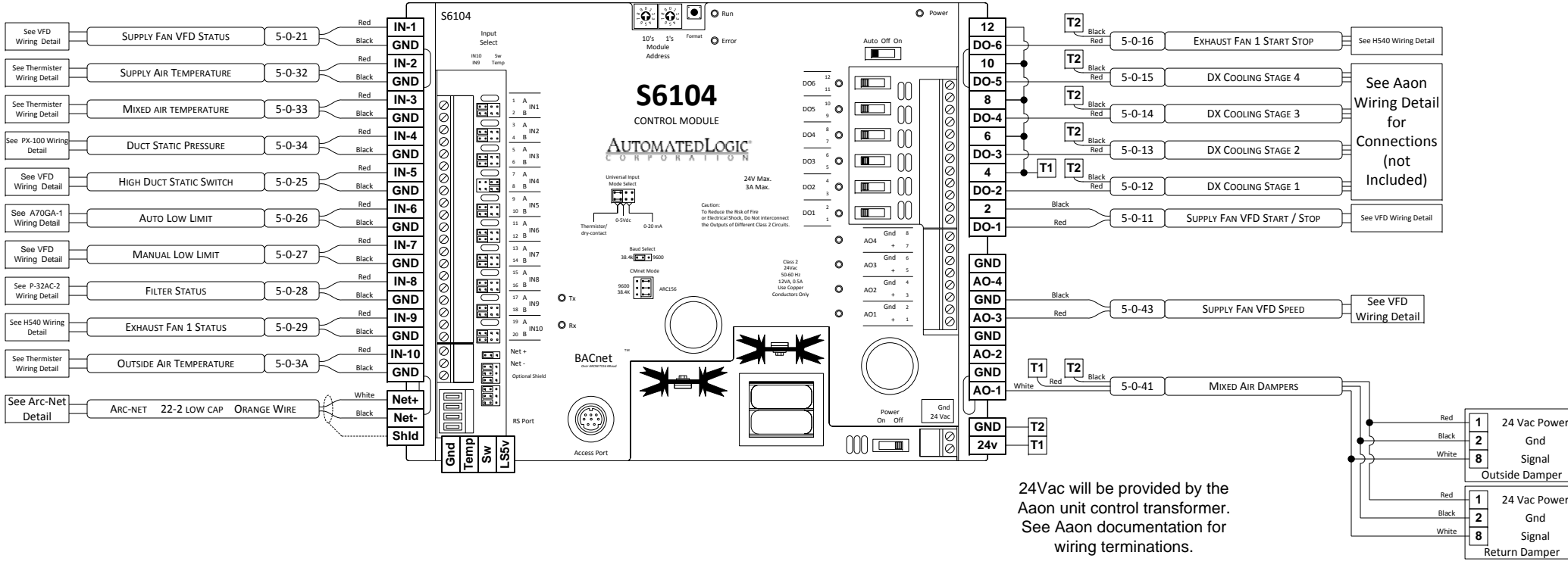
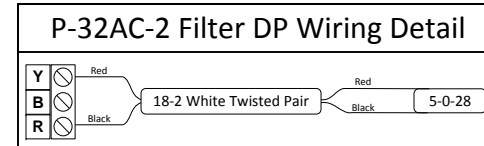
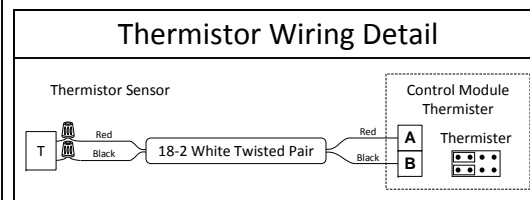
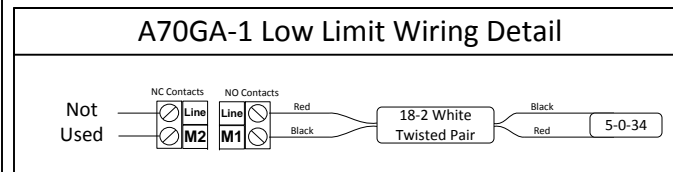
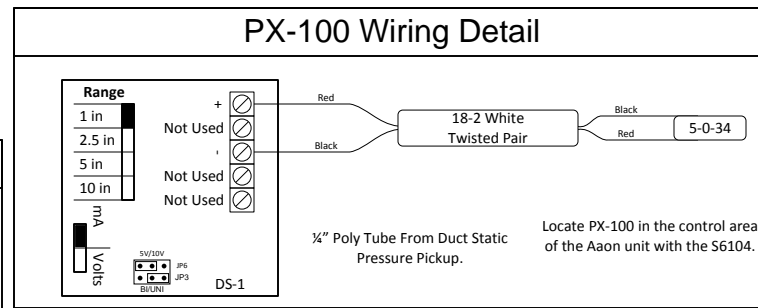
Sequence Of Operation

Unoccupied
During the unoccupied mode the supply fan will be off the outside air damper will be closed the return air damper will be open and the DX cooling will be de-energized. The Rooftop unit will not be started in the unoccupied mode.

Occupied
During the occupied mode the supply fan will run continually. The supply fan VFD will be modulated to maintain the duct static pressure setpoint of 1.5" WC (adj.). When the outside air temperature is below the economizer enable setpoint of 60°F (adj.), the mixed air damper will modulate open to the outside air to maintain the cooling supply air temperature setpoint. When the outside air temperature is above 60°F (adj.) the dx cooling will stage on to maintain the supply air temperature setpoint (adj.). All DX cooling stages will have a 5 minute anti-recycle timer to limit compressor cycling. During the occupied mode the outside air damper will be modulated open to 10% to allow for fresh air requirements. An auto-reset low limit temperature controller will be set at 42°F (adj.) to close the outside air dampers and alarm the central workstation should the mixed air temperature be below 42°F (adj.). If the mixed air temperature continues to fall the manual-reset low limit temperature controller set for 38°F (adj.) will shut down the supply fan and alarm the central workstation. The supply air temperature setpoint will be 55°F (adj.).



All Wire To And From Drives Will Be Twisted Shielded Wire
All Shields Will Be Grounded At The Drive (Do Not Land Shields In The ALC Control Panel).



24Vac will be provided by the Aeon unit control transformer. See Aeon documentation for wiring terminations.

Master Bill Of Material

Bill Of Material		
QT	Part Number	Part Description
35	ALC/10K-2-D-12	12" Duct Temperature Sensor
2	ALC/10K-2-A-12	12' Duct Averaging Temperature Sensor
2	S6104	Control Module
6	GCA161.1U	Damper Actuator, Spring Return, 0-10vdc Modulating Control, 24vac Power
2	A70GA-1	Auto Reset Freezestat DPDT
2	A70HA-1	Manual Reset Freezestat DPDT
2	P32AC-2	Filter Status Switch
2	AFS-460-DSS	High Duct Static Safety Switch, Manual Reset
2	PX-100	Adjustable Static Pressure Sensor 4-20mA
2	H540	Current Switch With Start / Stop Relay
31	U341V+	VAV Controller
31	LSPRO	Thermostat With Setpoint Adjust , And Timed Local Override and Display
31	H800	Current Switch With .5 Amp Trip Point
2	UNI/16	Control Module for U341V+ Networking
1	LGC	Gateway Controller For The Automated Logic Control System
1	RET3826	Control Panel
1	T-PB-203-1	24 Vac Control Transformer
1	PROT485	Network Protection Board
1	DIAG485	Network Module With Terminator Resistors
1	Modem	56K Modem With Modem Cable
1	Dell Computer	Dell Computer, Windows 2000 Operating System With Printer