

LMC P-9035 Music Building Controls Upgrade

CCCCD

2700 E Leland Rd
Pittsburgh, CA 94565


As Prepared By:



Air Systems Inc.

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Project Number: 22281-59
Drawing Designation: As-Built
Drawing Date: 6/7/2023

 Air Systems <i>An EMCOR Company</i> 940 Remillard Ct San Jose, CA 95122	PROJECT: LMC P-9035 Music Building Controls Upgrade 2700 E Leland Rd Pittsburgh, CA 94565	0				DRAWING NAME: Cover
	FILENAME: -	CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT	0			
		REV	DESCRIPTION	DATE	BY	

Symbol Legend

LEGEND

TE-# ← Field Mounted Instrument

- Pneumatic Tubing
- Line Voltage Wire
- Ethernet (Cat 6 Cable)
- Fiber Optic Cable
- Low Voltage Panel Wiring
- Low Voltage Field Wiring
- ARC156
- Modbus
- BACNet MS/TP

120 Ω 120 Ohm End of Line Resistor, 1/4 Watt, +/- 1%

BT485 Plug-In EOL Terminator & Bias Amplifier for ARC156 Network

PROT485 Surge protection device for ARC156 Network

DIAG485 Diagnostic board showing communication signal levels and bias control

N Campus/Building Ethernet Network Lan Connection

L N G 120 VAC High Voltage Terminals

A# AC Low Voltage Power Terminal
C# AC Low Voltage Common Terminal

DC# DC Low Voltage Power Connection
D# DC Low Voltage Ground Connection

P# Pressure Pickup Probe

Sheet Note

Revision Number

Actuator Fail Position Notations
 FLP = Fails At Last Position
 FC = Fails Closed
 FO = Fails Open

DEVICE TAG DESCRIPTIONS

TAG	DESCRIPTION	TAG	DESCRIPTION
AA	Remote Annunciator Module & Auto Dialer	P	Pressure Probe
ALC	Automated Logic Controller	PDS	Pressure Differential Switch
ASA	Smoke Detector	PDT	Pressure Differential Transmitter
CR	Control Relay	PS	Pressure Switch
ENC	Enclosure	PT	Pressure Transmitter
ES	Direct Current Power Supply	QT	Gas Transmitter
FCV	Flow Control Valve / Damper Actuator	ST	Speed Transmitter
FE	Flow Element	SUB	Subpanel
FS	Flow Switch	TE	Temperature Element
FT	Flow Transmitter	TS	Temperature Switch
G	Generic Device	TSH	Temperature Switch High
IP	Electro-Pneumatic Transducer	TSL	Temperature Switch Low
IS	Current Switch	TT	Temperature Transmitter
ISE	Circuit Breaker	TY	Dew Pt./Enthaply/Wet Bulb Transducer
IT	Current Transducer	V	Valve
JT	BTU Meter	VT	Vibration Transmitter / Switch
JY	Power Meter	X	Unclassified
KS	Electronic Timeclock	XF	Transformer
LS	Level Switch	YKS	Position Transmitter
LT	Level Transmitter	YL	Position Transmitter
MS	Humidistat	YS	Leak Detector
MT	Humidity Transmitter	YSE	Emergency Stop
MTE	Humidity Transmitter w/ Temperature Element	YY	Transducer
MTT	Humidity Transmitter w/ Temperature Transmitter	ZS	Position Indicating Switch
N	Accessories	ZT	Position Transmitter
NY	Network Device		

WIRE COLOR CODE

NO. OF COND	COLOR	APPLICATION
1	White	Signal
2	Black	Common
3	Red	24 VAC/VDC Power
4	Green	Gnd or Actuator Feedback

COMMON SCHEMATIC ABBREVIATIONS

AC - AIR CONDITIONING UNIT
 AHU - AIR HANDLING UNIT
 AI - ANALOG INPUT
 AO - ANALOG OUTPUT
 AUTO - AUTOMATIC
 AUX - AUXILIARY
 BLDG - BUILDING
 CH - CHILLER
 CHB - CHILL BEAM
 CHW - CHILLED WATER
 CHWP - CHILLED WATER PUMP
 CHWR - CHILLED WATER RETURN
 CHWS - CHILLED WATER SUPPLY
 COM - COMMON
 COMM - COMMUNICATION
 COND - CONDENSER
 CORP - CORPORATE
 CW - CONDENSER WATER
 CWP - CONDENSER WATER PUMP
 CWR - CONDENSER WATER RETURN
 CWS - CONDENSER WATER SUPPLY
 DA - DISCHARGE AIR
 DCW - DOMESTIC COLD WATER
 DCWS - DOMESTIC COLD WATER SUPPLY
 DCWR - DOMESTIC COLD WATER RETURN
 DHW - DOMESTIC HOT WATER
 DHWS - DOMESTIC HOT WATER SUPPLY
 DHWR - DOMESTIC HOW WATER RETURN
 DI - DIGITAL INPUT
 DO - DIGITAL OUTPUT
 DP - DIFFERENTIAL PRESSURE
 DPT - DIFFERENTIAL PRESSURE TRANSMITTER
 EA - EXHAUST AIR
 EF - EXHAUST FAN
 ELEC - ELECTRICAL
 EOL - END OF LINE
 EVAP - EVAPORATOR
 F - FAHRENHEIT
 FCU - FAN COIL UNIT
 FLR - FLOOR
 FLS - FIRE LIFE SAFETY
 HOA - HAND/OFF/AUTO
 HI - HIGH
 HP - HEAT PUMP
 HR- HOME RUN (COMM RUN ON TXPS)
 HRU - HEAT RECOVERY UNIT
 HW - HOT WATER
 HWP - HOT WATER PUMPHWR - HOT WATER RETURN
 HWS - HOT WATER SUPPLY
 HX - HEAT EXCHANGER

LCP - LIGHTING CONTROL PANEL
 LO - LOW
 LOC - LOCATION
 MAX - MAXIMUM
 MECH - MECHANICAL
 MIN - MINIMUM
 MISC - MISCELLANEOUS
 NC - NORMALLY CLOSED
 NO - NORMALLY OPEN
 NSR - NON SPRING RETURN
 OA - OUTSIDE AIR
 OSA - OUTSIDE AIR
 PM - POWER METER
 PRES - PRESSURE
 RA - RETURN AIR
 REL - RELAY
 RF - RETURN FAN OR RELIEF FAN
 RH - RELATIVE HUMIDITY
 RM - ROOM
 RTU - ROOF-TOP UNIT
 SA - SUPPLY AIR
 SCHEM - SCHEMATIC
 SF - SUPPLY FAN
 SP - STATIC PRESSURE
 TCP - TEMPERATURE CONTROL PANEL
 TCV - TEMPERATURE CONTROL VALVE
 TEMP - TEMPERATURE
 TXP - TRANSFORMER PANEL
 TYP- TYPICAL
 UH - UNIT HEATER
 UV - UNIT VENTILATOR
 VAV - VARIABLE AIR VOLUME
 VFD - VARIABLE FREQUENCY DRIVE
 W/ - WITH
 W/O - WITHOUT
 WSPH - WATER-SOURCE HEAT PUMP

Wire Specification 1

WIRE SPECIFICATION							
Typical Application	Cable Line Types	Wire Type	Jacket Color	Conductor Color	Circuit Type	Supplier	Supplier Part No.
ARC156	22/2 SHLD (ARCnet)	22 AWG / 2 Conductors; Stranded, shielded, plenum rated & twisted pair Low Capacitance	GREEN JACKET	WHITE BLACK	NET+ NET-	Connect Air	W221P-2227RIB
BACnet MS/TP	22/2 SHLD (BACnet MSTP)	22 AWG / 2 Conductors; Stranded, shielded, plenum rated & twisted pair Low Capacitance.	ORANGE JACKET	WHITE BLACK	NET+ NET-	Connect Air	W221P-2227SNBT
MODBUS COMMUNICATION	22/2 SHLD (MODBUS)	22 AWG / 2 Conductors; Stranded, shielded, plenum rated & twisted pair Low Capacitance.	BLUE JACKET	WHITE BLACK	NET+ NET-	Connect Air	W221P-2227BLUB
AUTOMATED LOGIC T-STAT	18/4 UNSHLD (RNET T-STAT)	18 AWG / 4 Conductors; Stranded, unshielded, plenum rated & double pair	PURPLE JACKET W/ WHITE STRIPE	RED GREEN WHITE BLACK	12V GND NET+ NET-	Connect Air	W184C-2099PUWH
GENERAL T-STAT	22/4 SHLD (T-STAT)	22 AWG / 4 Conductors; Stranded, shielded, plenum rated & double pair	PURPLE JACKET W/ WHITE STRIPE	RED GREEN WHITE BLACK	12V GND NET+ NET-	Connect Air	W224C-2020PUWHB
VDC FIELD POWER WIRING (100-200ft)	14/2 UNSHLD (24VDC)	14 AWG / 2 Conductors; Stranded, unshielded, plenum rated; THHN/THWN	WHITE JACKET W/ RED STRIPE	RED BLACK	24VAC POWER 24VAC NEUTRAL	Connect Air	W141P-2013WRDB
VAC FIELD POWER WIRING (0-100ft)	16/2 UNSHLD (24VAC)	16 AWG / 2 Conductors; Stranded, unshielded, plenum rated; THHN/THWN	WHITE JACKET W/ RED STRIPE	RED BLACK	24VAC POWER 24VAC NEUTRAL	Connect Air	W161P-2062WRDB
I/O WIRING	18/2 SHLD (FIELD)	18 AWG / 2 Conductors; Stranded, shielded, plenum rated & twisted pair	WHITE JACKET	WHITE BLACK	SIGNAL GND CLASS 2 WIRING ONLY	Connect Air	W181P-2040RIB
I/O WIRING	18/4 SHLD (FIELD)	18 AWG / 4 Conductors; Stranded, shielded, plenum rated	WHITE JACKET	WHITE BLACK RED GREEN	SIGNAL GND POWER FEEDBACK CLASS 2 WIRING ONLY	Connect Air	W184C-2059RIB
I/O WIRING	18/x SHLD (FIELD)	18 AWG / 6 Conductors; Stranded, shielded, plenum rated 18 AWG / 8 Conductors 18 AWG / 10 Conductors 18 AWG / 12 Conductors	WHITE JACKET	BLACK, RED, WHITE, GREEN, BROWN, BLUE ORANGE, YELLOW VIOLET, GRAY, PINK, TAN	CLASS 2 WIRING ONLY	Connect Air	W186C-2054B W188C-2046B W1810C-2078B W1812C-2148B
NETWORK WIRE	CAT-5e ETHERNET	24 AWG / 4 Pairs, twisted, plenum rated	GREEN JACKET	-	NETWORK COMMUNICATIONS	Connect Air	W244P-2175GNB
VRF SYSTEM	18/2 SHLD	18 AWG / 2 Conductors; Stranded, shielded, plenum rated & twisted pair	WHITE JACKET	WHITE BLACK	INA INB CLASS 2 WIRING ONLY	Connect Air	W181P-2040RIB

Notes:
 1. Or Approved Equivalent
 2. If unshielded using shielded cable, cut back shield, and safe off

COMMON WIRING ABBREVIATIONS

AWG	AMERICAN WIRE GAUGE	RX+/-	RECEIVE POSITIVE/NEGATIVE POLARITY DESIGNATION
CAT-5,5E,6,6E	ETHERNET CABLE	ST/SC	FPR COMMUNICATIONS
CLASS 2	NEC CLASSIFICATION, FOR INDOOR USE, PROTECTION AGAINST FALLING DIRT, AND DRIPPING/LIGHT SPLASHING	ST	FIBER OPTIC CONNECTOR
EIA-232	COMMUNICATION PROTOCOL	TEMP	STRAIGHT TIP FIBER OPTIC CONNECTOR
EIA-485	COMMUNICATION PROTOCOL	TEMP	TEMPERATURE ° F/°C
G, GND	GROUND	TFFN	A THERMOPLASTIC-INSULATED, NYLON-JACKETED CONDUCTOR SIGNED FOR US IN DRY LOCATIONS AND AN OPERATING TEMPERATURE OF UP TO 90°C
I/O	INPUT/OUTPUT	TX+/-	TRANSMIT POSITIVE/NEGATIVE POLARITY DESIGNATION FOR COMMUNICATIONS
INA/INB	INPUT A/INPUT B	VAC	VOLTAGE ALTERNATING CURRENT
MS/TP	MASTER-SLAVE/TOKEN-PASSING PROTOCOL	VDC+	VOLTAGE DIRECT CURRENT, POSITIVE SIDE
NEC	NATIONAL ELECTRICAL CODE		
NET+/-	POSITIVE/NEGATIVE POLARITY DESIGNATION FOR COMMUNICATIONS		



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 2700 E Leland Rd
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FILENAME: -

REV	DESCRIPTION	DATE	BY
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DRAWING NAME:
Wire Specification 1

CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 0.0.3

Wire Specification 2

RS-485 (Arcnet, MS/TP, Modbus RTU) Wire Specification	
Description	Single twisted pair, low capacitance (12pF), CL2P, 22 AWG (7x30), TC foam FEP, plenum rated cable
Conductor	22 AWG stranded copper (tin plated) 0.030 in. (0.762 mm) O.D. NOTE 24 AWG can be used for segments <200 ft. (6.7 m).
Insulation	Foamed FEP 0.015 in. (0.381 mm) wall 0.060 in. (1.524 mm) O.D.
Color code	Black/white
Twist lay	2 in. (50.8 mm) lay on pair 6 twists/foot (20 twists/meter) nominal
Shielding	Aluminum/Mylar shield with 24 AWG (7x32) TC drain wire
Jacket	SmokeGard (SmokeGard PVC) 0.021 in. (0.5334 mm) wall 0.175 in. (4.445 mm) O.D. Halar (E-CTFE) 0.010 in. (0.254 mm) wall 0.144 in. (3.6576 mm) O.D.
DC resistance	15.2 Ohms/1000 feet (50 Ohms/km) nominal
Capacitance	12.5 pF/ft (41 pF/meter) nominal conductor to conductor
Characteristic impedance	100 Ohms nominal
Weight	12 lb/1000 feet (17.9 kg/km)
UL temperature rating	SmokeGard 167°F (75°C) Halar -40 to 302°F (-40 to 150°C)
Voltage	300 Vac, power limited
Listing	UL: NEC CL2P, or better

Rnet Wire Specification	
Description	4 conductor, shielded, CMP, plenum rated cable
Conductor	18 AWG Stranded Copper
Maximum length	500 feet (152 meters)
Insulation	Low-smoke PVC (or equivalent)
Color Code	Black, white, green, red
Shielding	If shielded, Aluminum/Mylar shield (100% coverage) with TC drain wire, terminated at controller
UL temperature rating	32-167°F (0-75°C)
Voltage	300 Vac, power limited
Listing	UL: NEC CL2P, or better

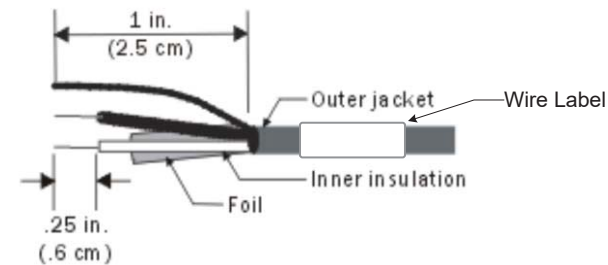
Cable Wiring Instructions

1. Partially cut, then bend and pull off 1" of the outer jacket of the cable(s). Do not nick the inner insulation.
2. Strip about 0.25 inch (0.6 cm) of the inner insulation from each wire.
3. If wiring two cables to the controller, twist together the shield wires from both cables.
4. Insert the wires into the terminal block.

CAUTION! Do not allow more than .125 inch (.3 cm) bare communication wire to protrude.

NOTE: For ARC156 wiring - Do not ground the shield to earth ground or to the controller's power ground. The PROT485 and the individual controllers allow the shield to float a limited amount so that there are no ground loops. If the voltage on the shield becomes too great relative to the earth ground, then the excess voltage is bled off with protective devices on the PROT485 or on the controllers.

If bare wire contacts the cable's foil shield, shield wire, or a metal surface other than the terminal block, communications may fail.



Communication Bus Wiring Installation Detail

Ethernet Wire Specification

All Ethernet cabling shall be to CAT5e or CAT6 standards with jacket CMP as required by installation location and local building codes.

Code Requirements

Install all wiring to local electrical code requirements. The wiring requirements detailed here are a minimum – any additional requirements to meet the code in use at the time of installation will supersede these wiring specifications. If there is a conflict between the wire specifications here and local code requirements, contact Air Systems, Inc. for further guidance.



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FILENAME: -

REV	DESCRIPTION	DATE	BY
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DRAWING NAME:
Wire Specification 2
CONTRACT NO: 22281-59 SE:AC DE: TT PR: MT

DRAWING NO.:0.0.4

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2.0.0	AHU-8 Control Schematic
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3.6.0	VAV Box Schematic w/RH - ZS2P-C-ALC
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3.8.0	VAV Box Schematic w/RH - ZS2P-M-ALC

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PROJECT:
LMC P-9035 Music Building Controls Upgrade
2700 E Leland Rd
Pittsburgh, CA 94565

FILENAME: -

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DRAWING NAME:
Table of Contents

CONTRACT NO: 22281-59	SE: AC	DE: TT	PR: MT
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DRAWING NO.:0.0.5

REV	DESCRIPTION	DATE	BY
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Summary BOM

Summary Bill of Material			
Manufacturer	Part Number	Product Description	Quantity
ABB	CL-502R	Pilot Light, LED, 24VAC/VDC, Red	2
ACI	ECMCS25-A	Current Switch, Split Core, N.O., 0.1A @30VAC/DC, Adj. Trip 0.075A-0.5A	3
Automated Logic	FIO48u	I/O Expander, 4 UO, 8 UI	1
Automated Logic	FIO812U	I/O Expander, 8 UO, 12 UI	2
Automated Logic	OF342-E2	Advanced VAV Controller, Actuator, Rnet, 4UI, 2AO, 3DO	20
Automated Logic	OFBBC	BACnet Building Controller, supports up to nine expanders	1
Automated Logic	TBPL-24-H-A	BACnet Plus Thermostat, Temperature and Humidity, ALC Logo	2
Automated Logic	ZS2-ALC	ZS2 Std Space Temp Sensor, Rnet	3
Automated Logic	ZS2-M-ALC	ZS2 Std Space Temp Sensor w/Motion, Rnet	1
Automated Logic	ZS2P-ALC	ZS2 Pro Space Temp Senso, Rnet, LCD, SP Adj, Ovr	2
Automated Logic	ZS2P-C-ALC	ZS2 Pro Space Temp Sensor w/CO2, Rnet, LCD, SP Adj, Ovr	6
Automated Logic	ZS2P-M-ALC	ZS2 ProM Space Temp Sensor, Rnet, LCD, SP Adj, Ovr, Motion, Fan Spd, Mode Sel.	9
BAPI	BA/ZPS-ACC10	Outdoor Air Pressure Pick Up.	1
BAPI	ZPS-SR-EZ-ST-IN	Diff. Press. Transmitter, Dry, 4-20 mA/0-5V/0-10V, LCD, Selectable Range	4
Belimo	B210+TR24-SR/300	2-Way CCV, 1/2", CV=1.2, Mod Act, SS Ball/Stem	10
Belimo	B211+TR24-SR/300	2-Way CCV, 1/2", CV=1.9, Mod Act, SS Ball/Stem	1
Belimo	B213+TR24-SR/300	2-Way CCV, 1/2", CV=4.7, Mod Act, SS Ball/Stem	2
Belimo	TR24-SR/300	24 VAC, Modulating Actuator	8
Dwyer	ADPS-05-2-N	Press. Diff. Air. Sw. 0.80 to 4.00 in. WC, SPDT, Range Field Selectable	3
Dwyer	TE-DFN-B0448-00	Duct, 4" Insertion, No Box, 8' Lead	3
Dwyer	TE-DFN-B0648-00	Duct, 8" Insertion, No Box, 8' Lead	14
Dwyer	TE-DFN-B1248-00	Duct, 12" Insertion, No Box, 8' Lead	4
Functional Devices	PSH100AB10	Enclosed Single Pwr Supply, 100VA	1
Functional Devices	RIB2401SB	Enclosed Relay, 20 Amp SPST-N/O, Override Switch, 24VAC/DC or 120VAC Coil	1
Hoffman	A-24N20ALP+A-24N20MPP	NEMA 1 24x20x6.62 Enclosure, Hinged-Cover, w/ 21x18.5 Perf Panel	2
Hoffman	CSD24206+CP2420	NEMA 4 24x20x6 Enclosure, Hinged-Cover, w/ 22.2x18.2 Panel	1
Hoffman	CSD36248+CP3624	NEMA 4 36x24x8 Enclosure, Hinged-Cover, w/ 34.2x22.2 Panel	1
Kele	MP1-30B11	Black Push Button, Momentary	2
Mitsubishi	PAC-US445CN-1	Mitsubishi Thermostat Interface	2
Phoenix Contact	1088478	STEP3 DC Power Supply Unit, DIN Rail, 1-phase, output: 24 V DC / 5 A / 120 W	6
Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	13
Phoenix Contact	RIF-1-RPT-LV-24AC/1X21 - 2903341	SPDT Relay & Base, 24VAC Coil, 10A Switching Current	3
Phoenix Contact	RIF-1-RPT-LV-24AC/2x21 - 2903333	DPDT Relay & Base, 24VAC Coil, 8A Switching Current	2
Phoenix Contact	RIF-2-RPT-LV-24AC/4x21 - 2903306	4PDT Relay & Base, 24VAC Coil, 5A Switching Current	2



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FILENAME: 00 - Summary BOM

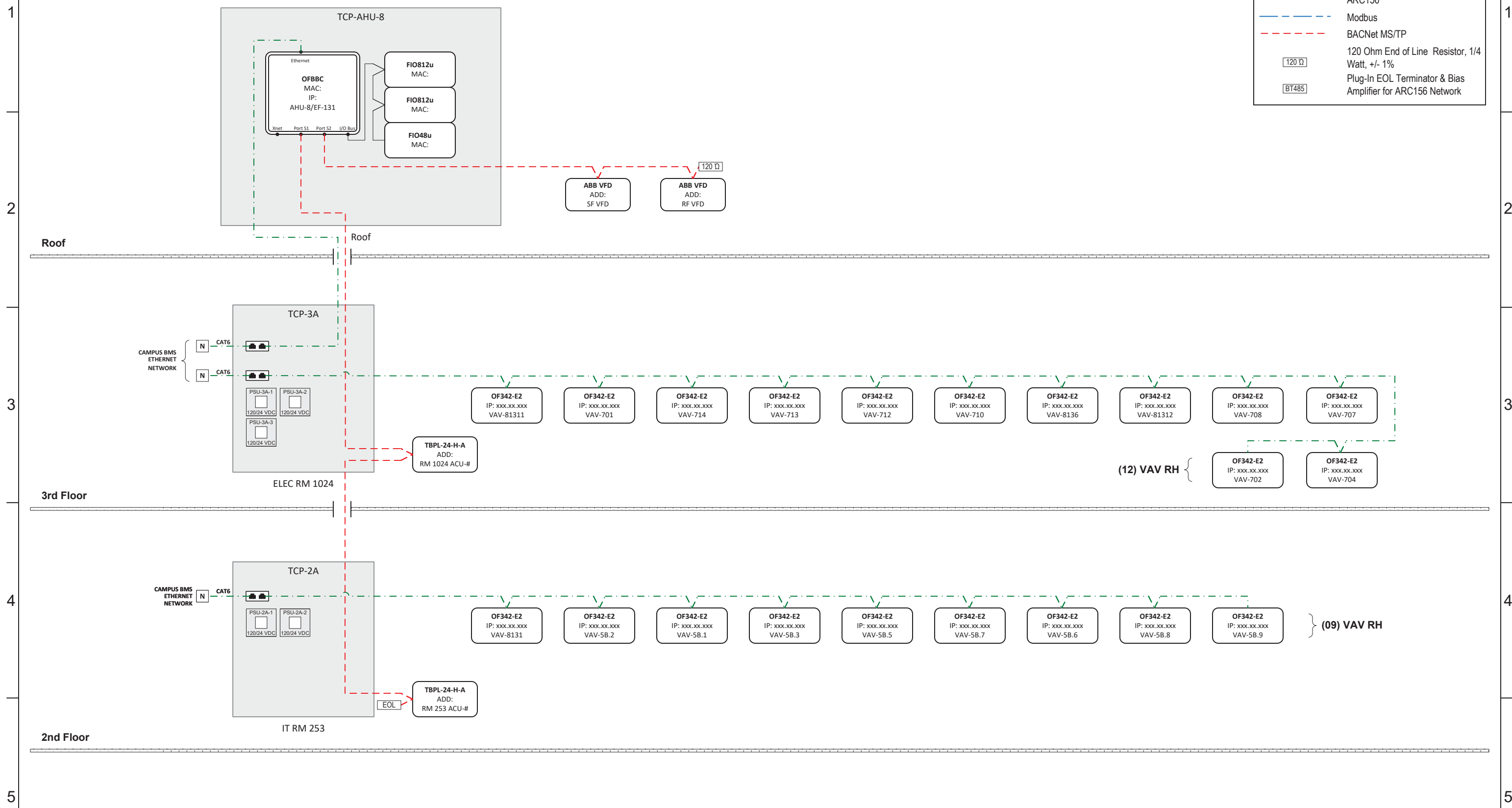
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REV	DESCRIPTION	DATE	BY

DRAWING NAME:
Summary BOM
 CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 0.1.0

Network Riser Diagram

Cable Reference	
	Ethernet (CAT-5e RJ45 Cable)
	Fiber Optic Cable
	ARC156
	Modbus
	BACNet MS/TP
	120 Ohm End of Line Resistor, 1/4 Watt, +/- 1%
	Plug-In EOL Terminator & Bias Amplifier for ARC156 Network

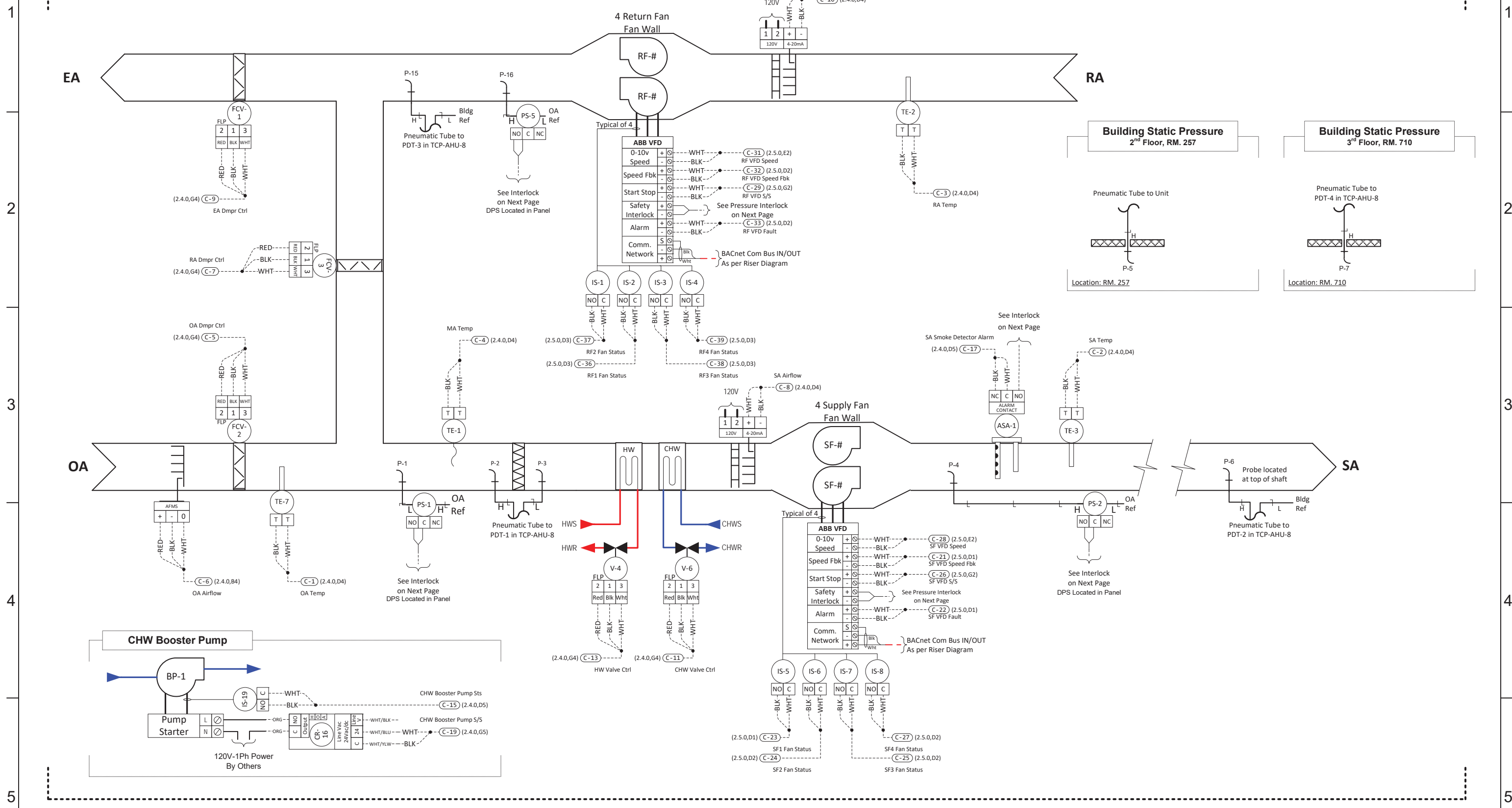


- Notes:
- All devices are to be wired in a daisy chain configuration.
 - Network IP drops provided by others.

<p>Air Systems An EMCOR Company 940 Remillard Ct San Jose, CA 95122</p>	<p>PROJECT: LMC P-9035 Music Building Controls Upgrade 2700 E Leland Rd Pittsburgh, CA 94565</p>	<p>0</p>	<p>DRAWING NAME: Network Riser Diagram</p>
	<p>FILENAME: 01 - Network Riser Diagram</p>	<p>0 As-Built</p>	<p>6/7/2023</p>
		<p>REV DESCRIPTION DATE BY</p>	<p>DRAWING NO.: 1.0.0</p>

AHU-8 Control Schematic

AHU-8 Control Schematic
Location: Roof



Notes:
1. Existing sensors and devices to remain.



PROJECT:		0		DRAWING NAME:	
LMC P-9035 Music Building Controls Upgrade		0		AHU-8 Control Schematic	
2700 E Leland Rd		0		CONTRACT NO: 22281-59	
Pittsburgh, CA 94565		0		SE: AC DE: TT PR: MT	
FILENAME: 02 - TCP-AHU-8	0 As-Built	6/7/2023	TT	DRAWING NO.: 2.0.0	
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AHU-8 SF/RF Interlock Wiring

BOM on Panel Layout Page

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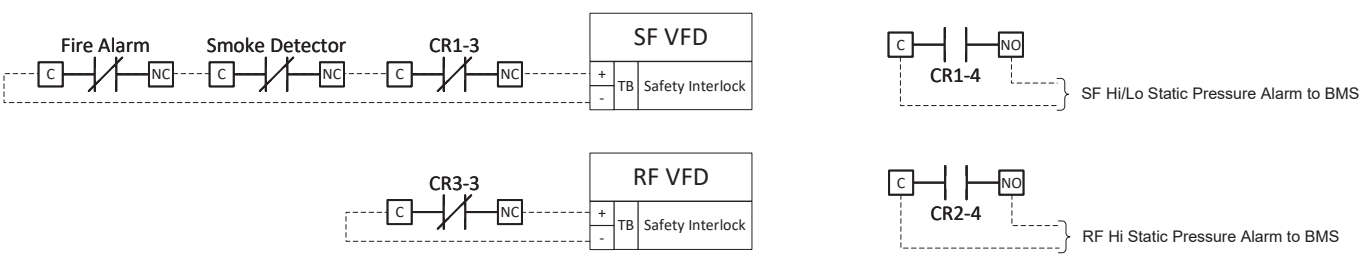
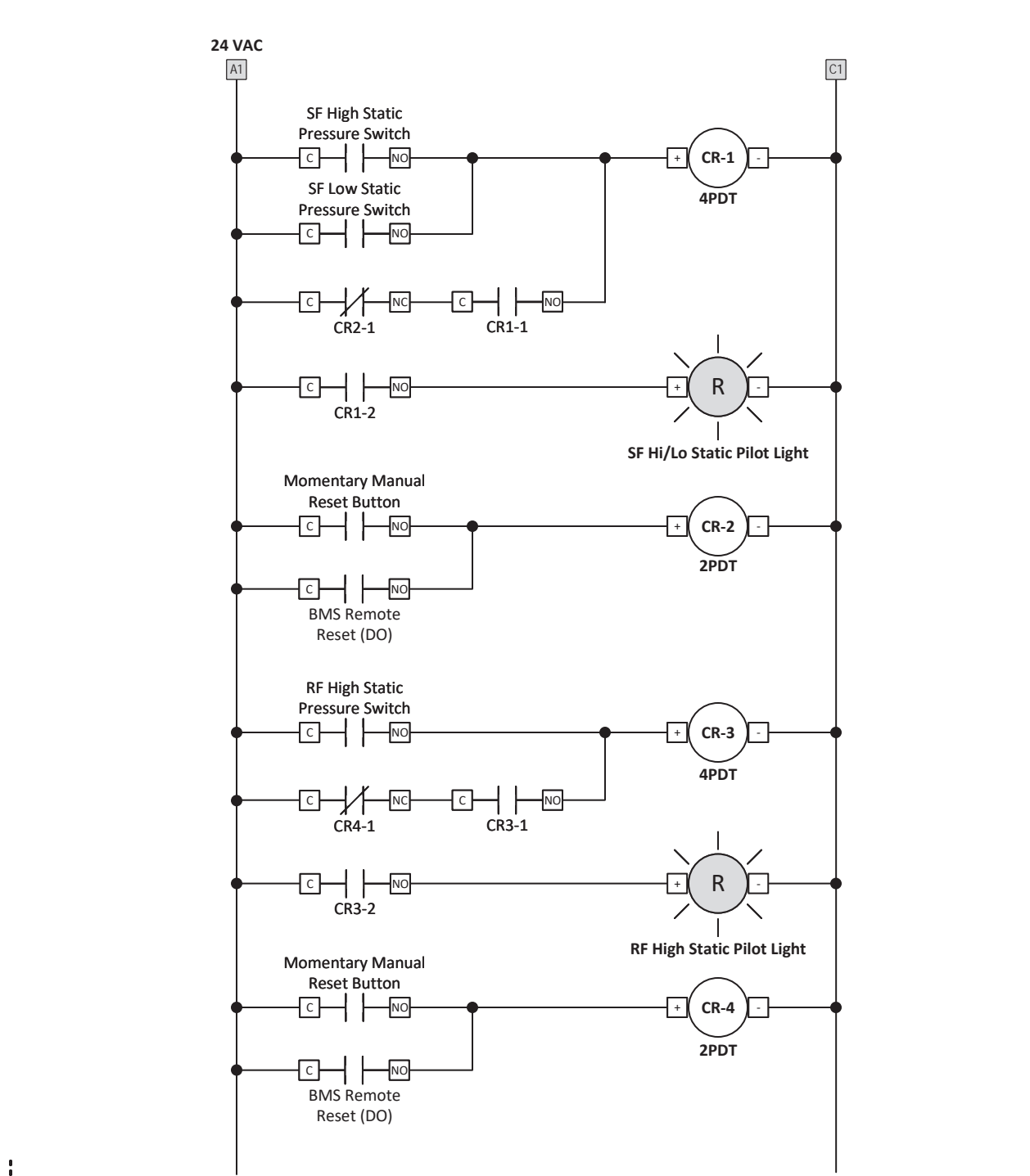
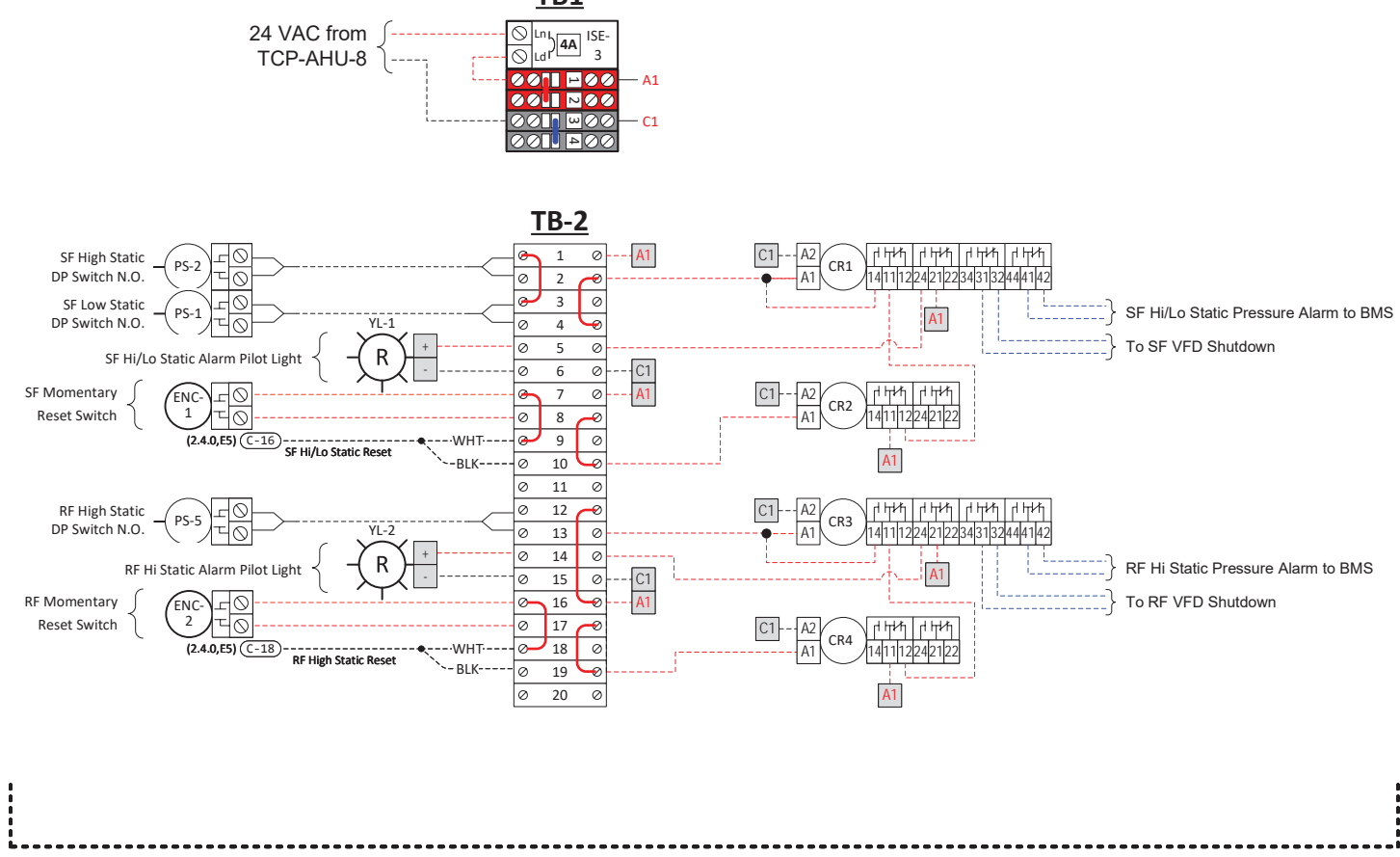
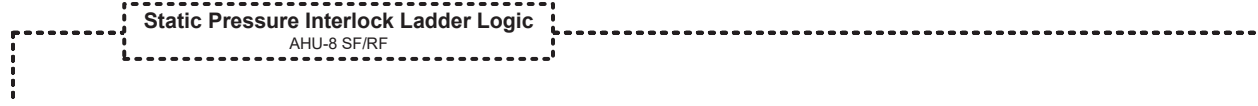
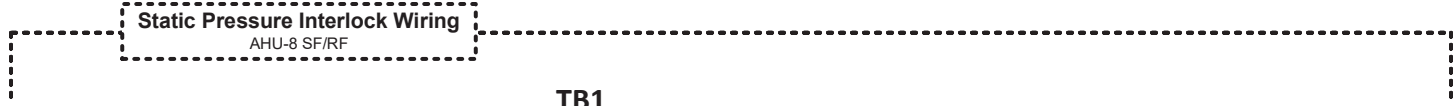
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- Notes:**
- 24 VAC power provided by transformer within AHU panel.
 - High and Low Duct DP switch located within pressure



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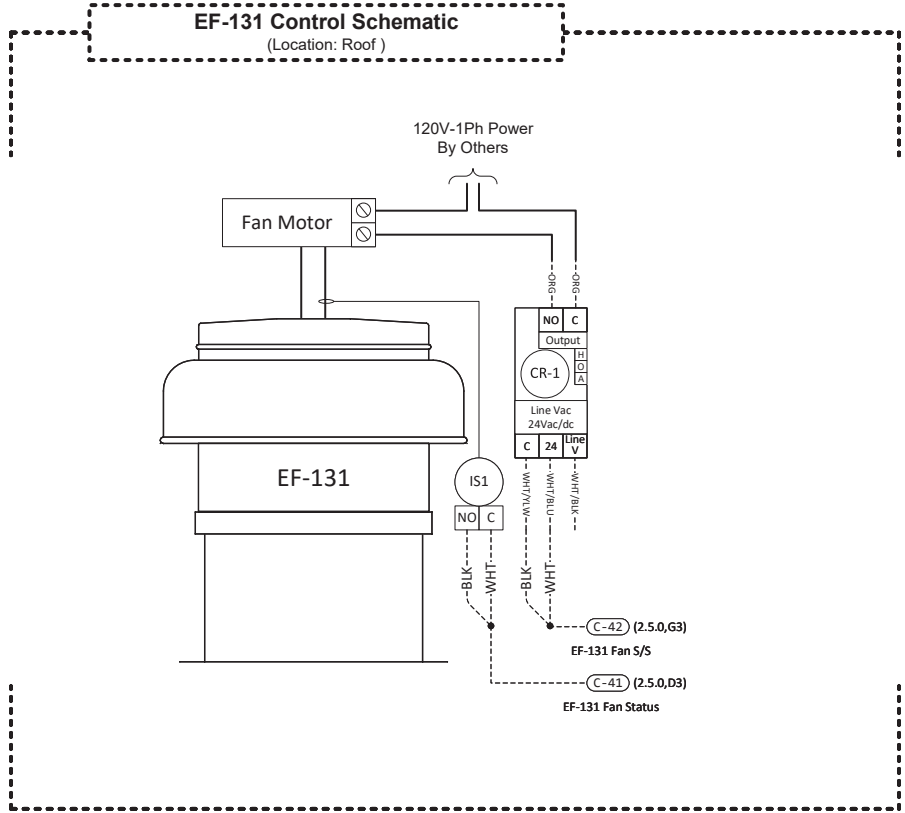
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REV	DESCRIPTION	DATE	BY
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DRAWING NAME: AHU-8 SF/RF Interlock Wiring			
CONTRACT NO: 22281-59	SE: AC	DE: TT	PR: MT
DRAWING NO.: 2.1.0			

EF-131 Control Schematic

Bill of Material w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
IS1	ACI	ECMCS25-A	Current Switch N.O., 0.1A @30VAC/DC, Adj. Trip 0.075A-0.5A,	1
CR-1	Functional Devices	RIB2401SB	Enclosed Relay, 20 Amp SPST-N/O, Override Switch, 24VAC/DC or 120VAC Coil	1



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DRAWING NAME:
EF-131 Control Schematic

CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 2.2.0

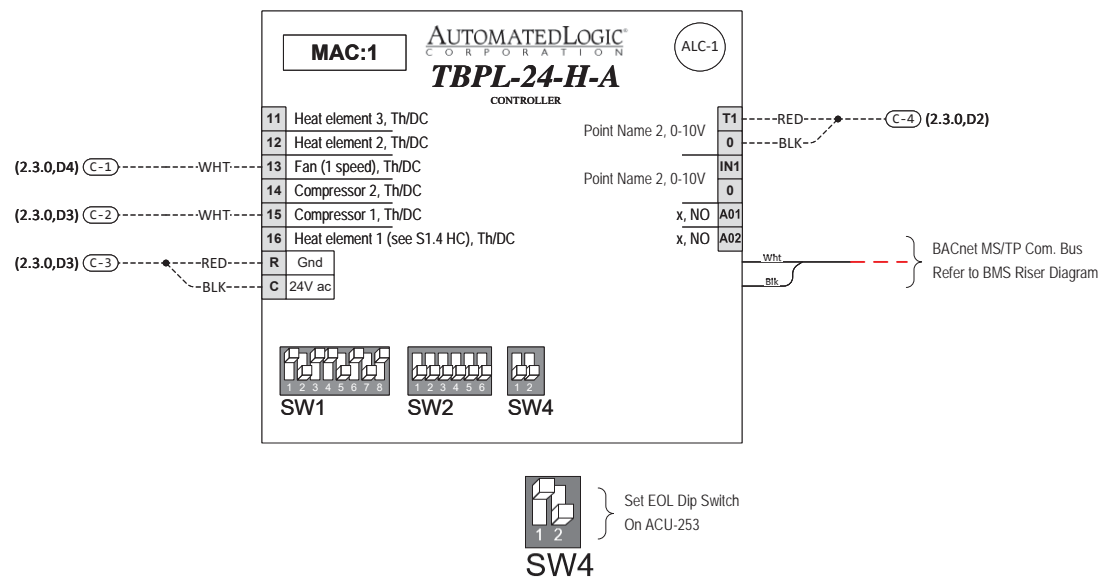
ACU Control Schematic - IT-253 & RM-1024

Typical of 2

Bill of Material w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
IS1	ACI	ECMCS25-A	Current Switch N.O., 0.1A @30VAC/DC, Adj. Trip 0.075A-0.5A,	2
ALC-1	Automated Logic	TBPL-24-H-A	BACnet Plus Thermostat, Temperature and Humidity, ALC Logo	2
N1	Mitsubishi	PAC-US445CN-1	Mitsubishi Thermostat Interface	2

ACU Control Schematic
(Typical of 2)

ALC OptiPoint BACnet Plus Thermostat
Wiring Diagram
(Typical of 2)



ACU SPLIT-SYSTEM SCHEDULE

TAG	MANUFACTURER	MODEL NO.	LOCATION	SERVING	ELECTRICAL		NOTES
					V/PH/Hz		
ACU-253	Mitsubishi	PKA-A12HA4	IT 253	IT 253	208/1PH/60		THERMOSTAT INTERFACE PAC-US445CN-1
ACU-1024	Mitsubishi	PKA-A12HA4	RM 1024	RM 1024	208/1PH/60		THERMOSTAT INTERFACE PAC-US445CN-1

Notes:
1. PAC-US445CN-1 thermostat interface furnished by ASI.



PROJECT:
LMC P-9035 Music Building Controls Upgrade
2700 E Leland Rd
Pittsburgh, CA 94565

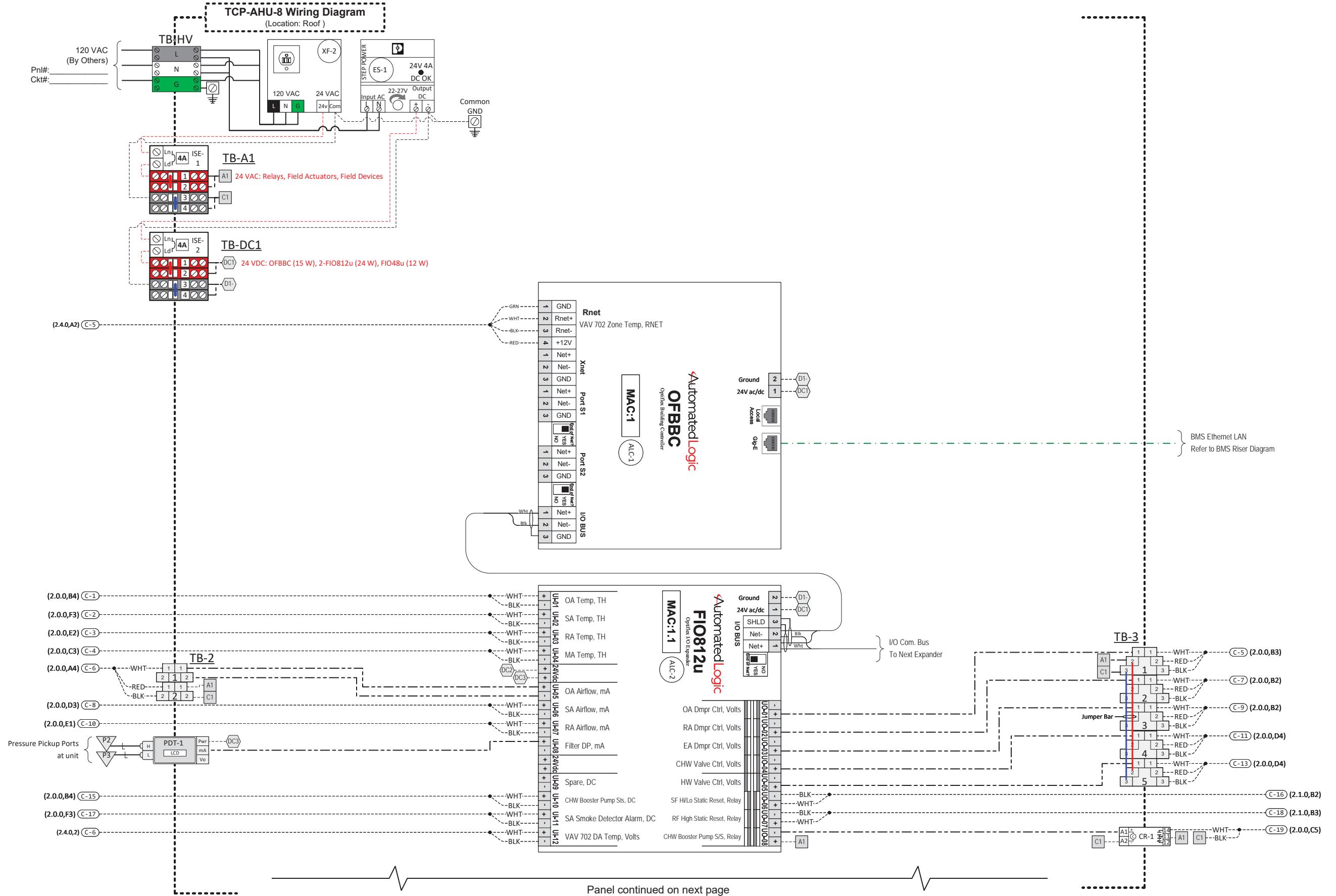
FILENAME: 02 - TCP-AHU-8

REV	DESCRIPTION	DATE	BY
0	As-Built	6/7/2023	TT

DRAWING NAME:
ACU Control Schematic - IT-253 & RM-1024
CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 2.3.0

TCP-AHU-8 Wiring Diagram (A)



Panel continued on next page

- Notes:
- 120 VAC power to control panel by others.
 - New PDT's to accommodate utilizing existing enclosure.



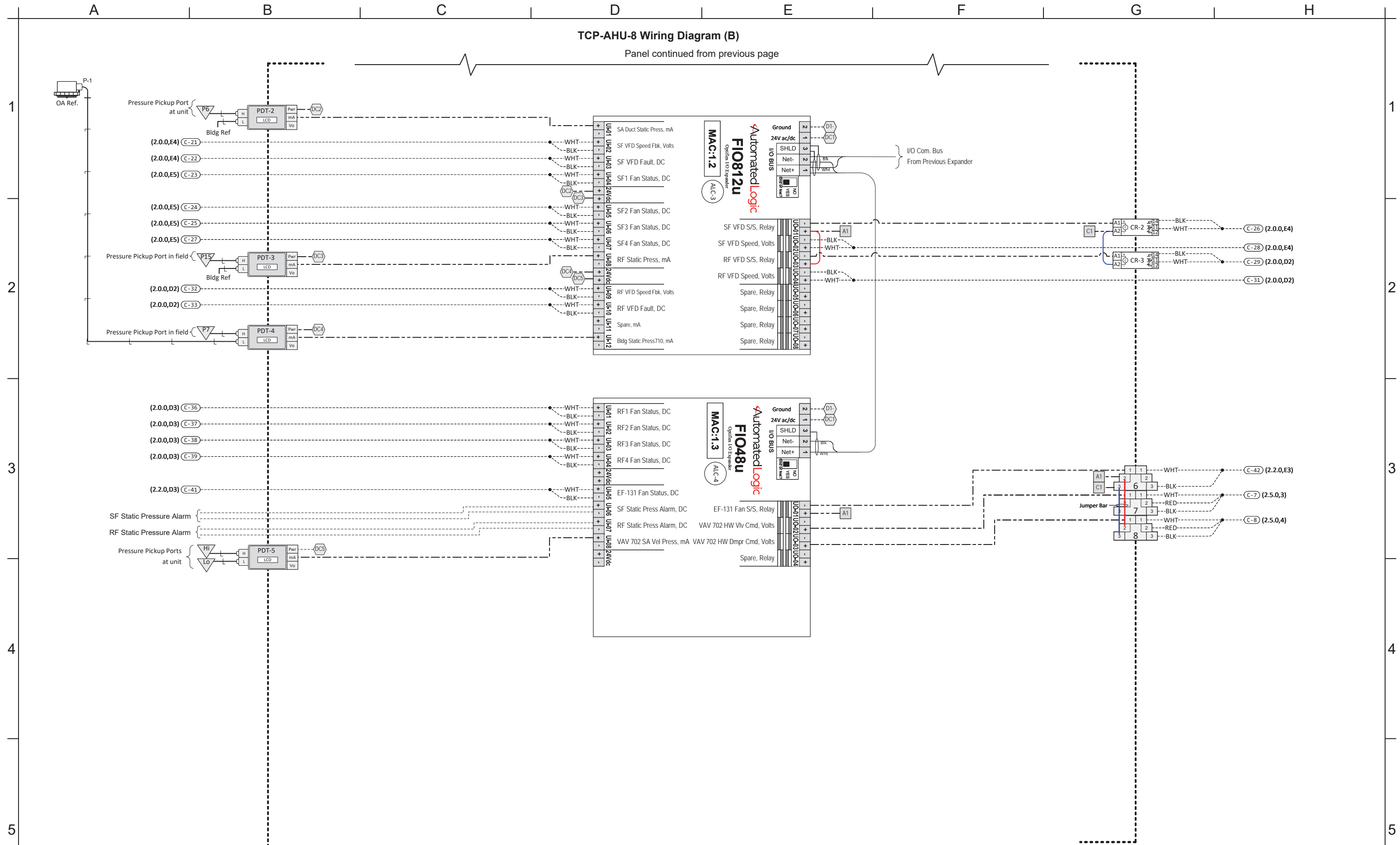
PROJECT: LMC P-9035 Music Building Controls Upgrade
 2700 E Leland Rd
 Pittsburgh, CA 94565
 FILENAME: 02 - TCP-AHU-8

REV	DESCRIPTION	DATE	BY
0	As-Built	6/7/2023	TT

DRAWING NAME:
 TCP-AHU-8 Wiring Diagram (A)
 CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT
DRAWING NO.: 2.4.0

TCP-AHU-8 Wiring Diagram (B)

Panel continued from previous page



Notes:
1. 120 VAC power to control panel by others.



PROJECT:
LMC P-9035 Music Building Controls Upgrade
2700 E Leland Rd
Pittsburgh, CA 94565

FILENAME: 02 - TCP-AHU-8

REV	DESCRIPTION	DATE	BY
0	As-Built	6/7/2023	TT

DRAWING NAME:
TCP-AHU-8 Wiring Diagram (B)
CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

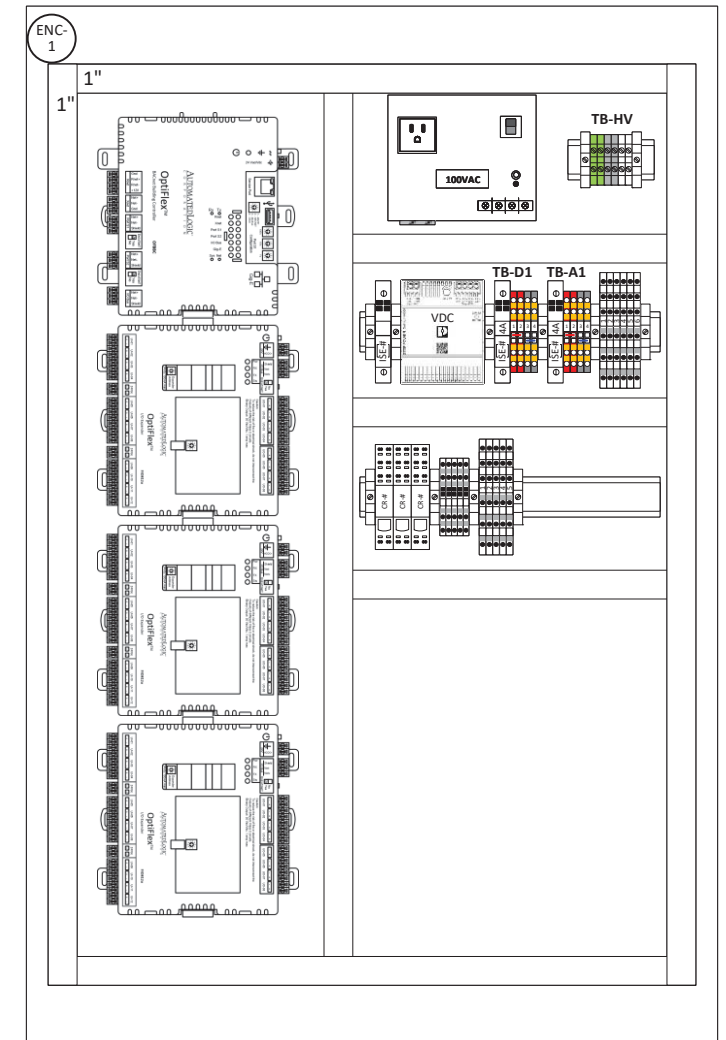
DRAWING NO.: 2.5.0

TCP-AHU-8 Panel Layout & BOM

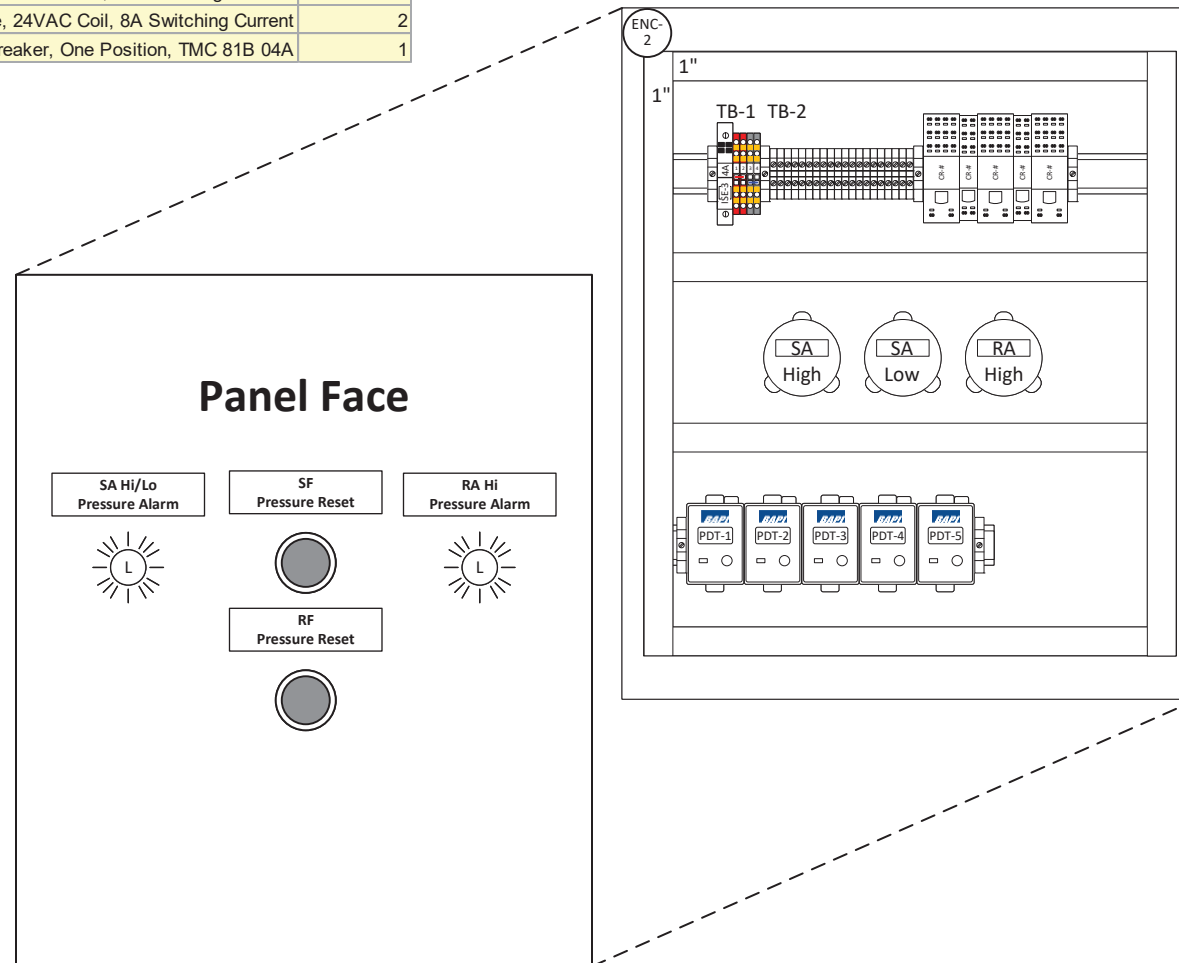
TCP-AHU-8 Bill of Material w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
ALC-1	Automated Logic	OFBBC	BACnet Building Controller, supports up to nine expanders	1
ALC-2	Automated Logic	FIO812U	I/O Expander, 8 UO, 12 UI	1
ALC-3	Automated Logic	FIO812U	I/O Expander, 8 UO, 12 UI	1
ALC-4	Automated Logic	FIO48u	I/O Expander, 4 UO, 8 UI	1
P-1	BAPI	BA/ZPS-ACC10	Outdoor Air Pressure Pick Up.	1
PDT-1 thru 5	BAPI	ZPS-SR-EZ-ST-IN	Diff. Press. Transmitter, Dry, 4-20 mA/0-5V/0-10V, LCD, Selectable Range	1
XF-2	Functional Devices	PSH100AB10	Enclosed Single Pwr Supply, 100VA	1
ENC-1	Hoffman	CSD36248+CP3624	NEMA 4 36x24x8 Enclosure, Hinged-Cover, w/ 34.2x22.2 Panel	1
CR-1 to 3	Phoenix Contact	RIF-1-RPT-LV-24AC/1X21 - 2903341	SPDT Relay & Base, 24VAC Coil, 10A Switching Current	3
ES-1	Phoenix Contact	1088478.00	STEP3 DC Power Supply Unit, DIN Rail, 1-phase, output: 24 V DC / 5 A / 120 W	1
ISE-1,2	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	2

SF/RF VFD Interlock Panel Bill of Material w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
YL-1,2	ABB	CL-502R	Pilot Light, LED, 24VAC/VDC, Red	2
PDT-1 thru 5	BAPI	ZPS-SR-EZ-ST-IN	Diff. Press. Transmitter, Dry, 4-20 mA/0-5V/0-10V, LCD, Selectable Range	5
PS-1,2,5	Dwyer	ADPS-05-2-N	Press. Diff. Air. Sw. 0.80 to 4.00 in. WC, SPDT, Range Field Selectable	3
ENC-2	Hoffman	CSD24206+CP2420	NEMA 4 24x20x6 Enclosure, Hinged-Cover, w/ 22.2x18.2 Panel	1
ENC-1	Kele	MP1-30B11	Black Push Button, Momentary	1
ENC-2	Kele	MP1-30B11	Black Push Button, Momentary	1
CR1,3	Phoenix Contact	RIF-2-RPT-LV-24AC/4x21 - 2903306	4PDT Relay & Base, 24VAC Coil, 5A Switching Current	2
CR2,4	Phoenix Contact	RIF-1-RPT-LV-24AC/2x21 - 2903333	DPDT Relay & Base, 24VAC Coil, 8A Switching Current	2
ISE-3	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1

TCP-AHU-8
36"x24"x8" (NEMA-4)
 Location: Roof

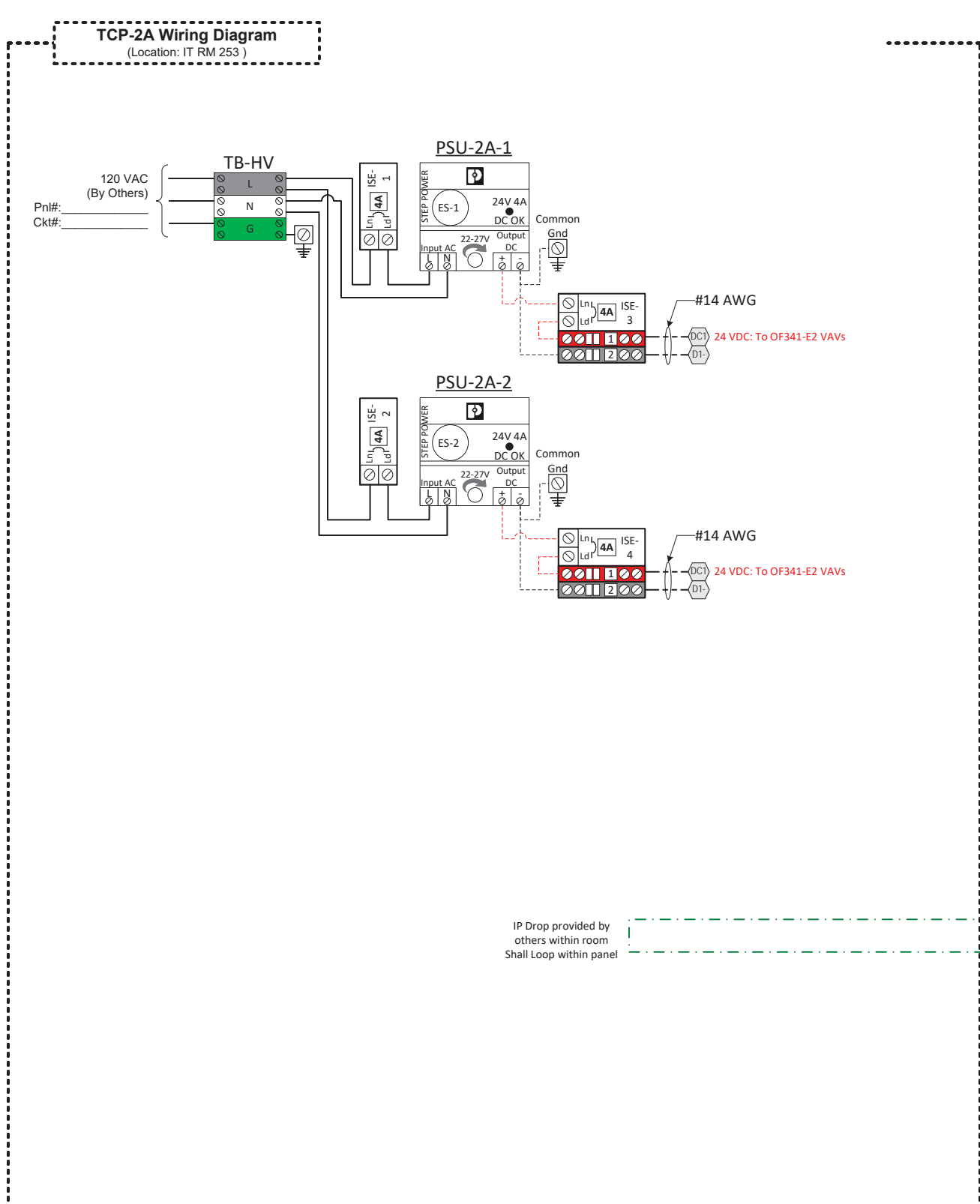


SF/RF VFD Interlock
24"x22"x6.62" (NEMA-4)
 Location: Roof, adjacent TCP-AHU-8



<p>Air Systems An EMCOR Company 940 Remillard Ct San Jose, CA 95122</p>	PROJECT: LMC P-9035 Music Building Controls Upgrade 2700 E Leland Rd Pittsburgh, CA 94565	0 0 0 0	DRAWING NAME: TCP-AHU-8 Panel Layout & BOM
	FILENAME: 02 - TCP-AHU-8	0 As-Built REV DESCRIPTION	6/7/2023 DATE BY

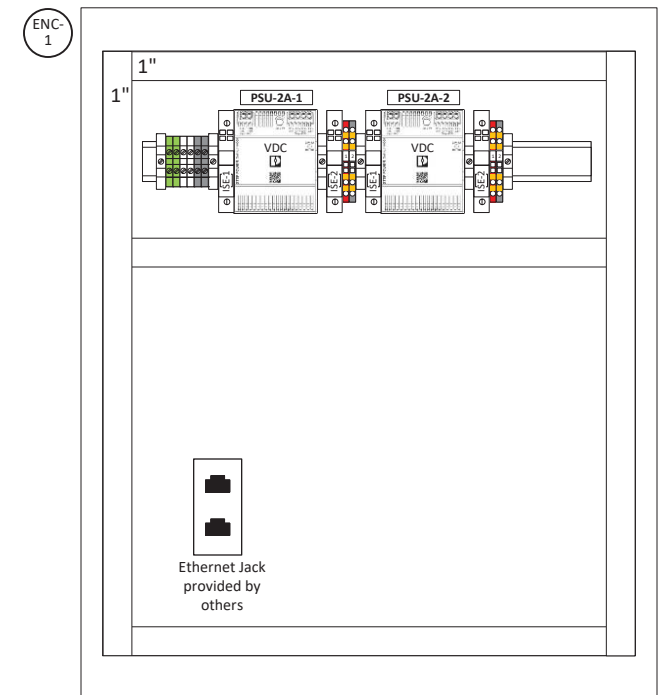
TCP-2A Wiring Diagram - 2nd Floor VAV



Bill of Materials w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
ENC-1	Hoffman	A-24N20ALP+A-24N20MPP	NEMA 1 24x20x6.62 Enclosure, Hinged-Cover, w/ 21x18.5 Perf Panel	1
ES-1	Phoenix Contact	1088478	STEP3 DC Power Supply Unit, DIN Rail, 1-phase, output: 24 V DC / 5 A / 120 W	1
ES-2	Phoenix Contact	1088478	STEP3 DC Power Supply Unit, DIN Rail, 1-phase, output: 24 V DC / 5 A / 120 W	1
ISE-1	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1
ISE-2	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1
ISE-3	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1
ISE-4	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1

PSU-#	Watts	Ckt/HR #	Power Homerun Route	Load %
PSU-2A-1	120	1	VAV-8131 (18.5W), VAV-5B.2 (18.5W), VAV-5B.1 (18.5W), VAV-5B.3 (18.5W), VAV-5B.5 (18.5W)	77%
PSU-2A-2	120	1	VAV-5B.7 (18.5W), VAV-5B.6 (18.5W), VAV-5B.8 (18.5W), VAV-5B.9 (18.5W)	62%
				0%
				0%
				0%

TCP-2A
24"x20"x6.62" (NEMA-1)
Location: IT 253



Notes:
1. Network IP drops provided by owner. ASI to run CAT cabling from TCP to owner provided network port.



PROJECT:
LMC P-9035 Music Building Controls Upgrade
2700 E Leland Rd
Pittsburgh, CA 94565

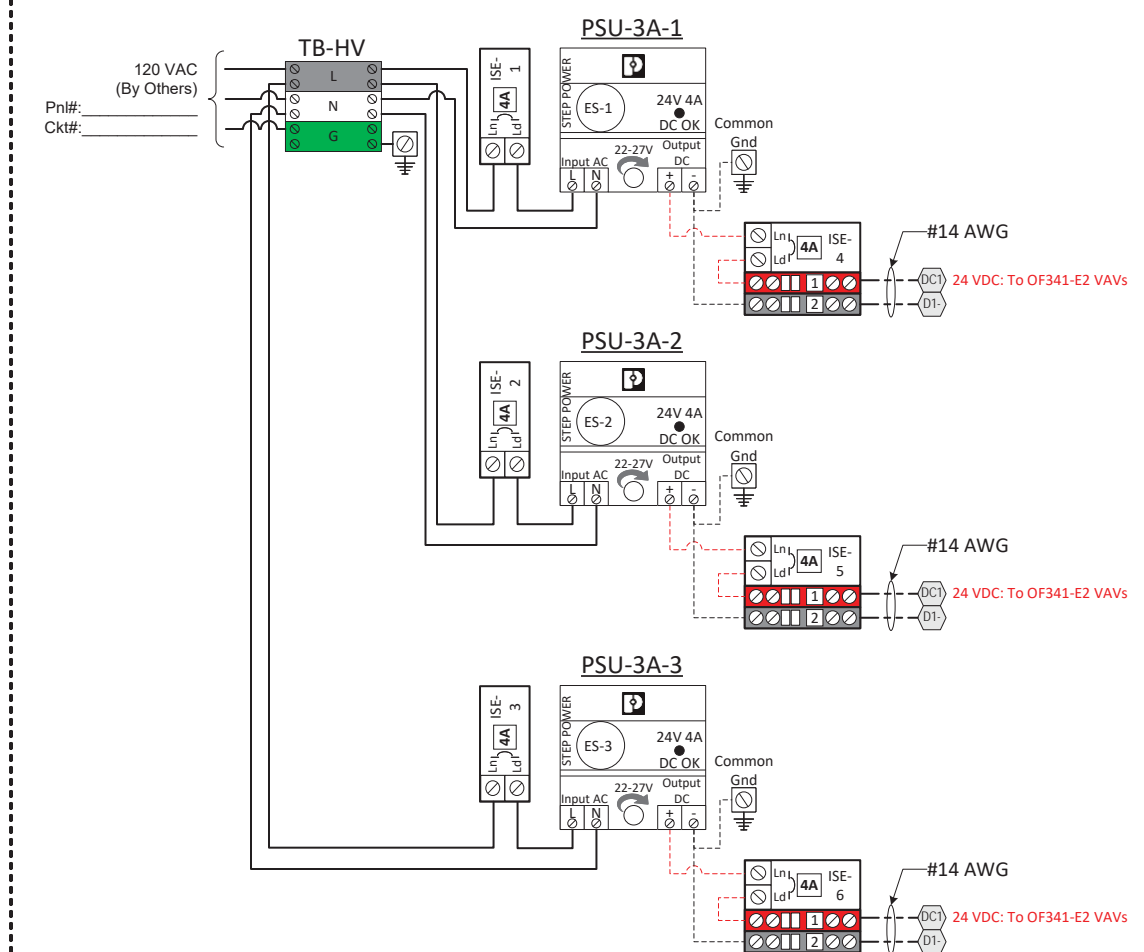
FILENAME: 03 - VAV Box Schematics

REV	DESCRIPTION	DATE	BY
0	As-Built	6/7/2023	TT

DRAWING NAME:
TCP-2A Wiring Diagram - 2nd Floor VAV
CONTRACT NO: 22281-59 SE:AC DE: TT PR: MT
DRAWING NO.: 3.0.0

TCP-3A Wiring Diagram - 3rd Floor VAV

TCP-3A Wiring Diagram
(Location: ELEC RM 1024)



IP Drop provided by others within room
Shall Loop within panel

Campus BMS
Ethernet Network
BACnet/IP to VAV IP Controllers
Refer to Network Riser

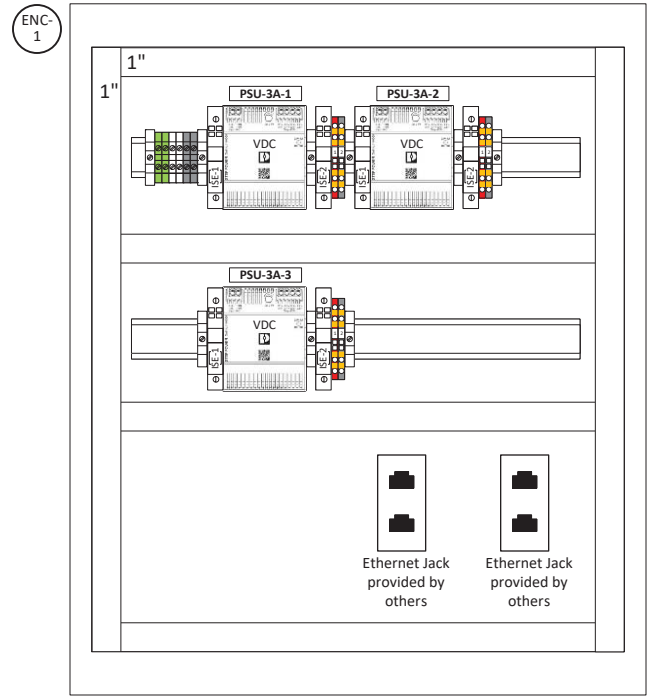
IP Drop provided by others within room
Shall Loop within panel

Campus BMS
Ethernet Network
BACnet/IP to TCP-AHU-8
Refer to Network Riser

Bill of Materials w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
ENC-1	Hoffman	A-24N20ALP+A-24N20MPP	NEMA 1 24x20x6.62 Enclosure, Hinged-Cover, w/ 21x18.5 Perf Panel	1
ES-1	Phoenix Contact	1088478	STEP3 DC Power Supply Unit, DIN Rail, 1-phase, output: 24 V DC / 5 A / 120 W	1
ES-2	Phoenix Contact	1088478	STEP3 DC Power Supply Unit, DIN Rail, 1-phase, output: 24 V DC / 5 A / 120 W	1
ES-3	Phoenix Contact	1088478	STEP3 DC Power Supply Unit, DIN Rail, 1-phase, output: 24 V DC / 5 A / 120 W	1
ISE-1	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1
ISE-2	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1
ISE-3	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1
ISE-4	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1
ISE-5	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1
ISE-6	Phoenix Contact	2907481	4A Thermomagnetic Circuit Breaker, One Position, TMC 81B 04A	1

PSU-#-#	Watts	Ckt/HR #	Power Homerun Route	Load %
PSU-3A-1	120	1	VAV-81311 (18.5W), VAV-701 (18.5W), VAV-714 (18.5W), VAV-713 (18.5W)	62%
PSU-3A-2	120	1	VAV-712 (18.5W), VAV-710 (18.5W), VAV-8136 (18.5W), VAV-81312 (18.5W)	62%
PSU-3A-3	120	1	VAV-708 (18.5W), VAV-707 (18.5W), VAV-704 (18.5W), VAV-702 (18.5W)	62%
				0%
				0%

TCP-3A
24"x20"x6.62" (NEMA-1)
Location: ELEC RM 1024



Notes:
1. Network IP drops provided by owner. ASI to run CAT cabling from TCP to owner provided network port.



PROJECT:
LMC P-9035 Music Building Controls Upgrade
2700 E Leland Rd
Pittsburgh, CA 94565

FILENAME: 03 - VAV Box Schematics

0		0	
0		0	
0		0	
0		0	
0	As-Built	6/7/2023	TT
REV	DESCRIPTION	DATE	BY

DRAWING NAME:
TCP-3A Wiring Diagram - 3rd Floor VAV

CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 3.1.0

VAV Valve Schedule

Summary Bill of Material			
Manufacturer	Part Number	Product Description	Quantity
Belimo	B210+TR24-SR/300	2-Way CCV, 1/2", CV=1.2, Mod Act, SS Ball/Stem	10
Belimo	B211+TR24-SR/300	2-Way CCV, 1/2", CV=1.9, Mod Act, SS Ball/Stem	1
Belimo	B213+TR24-SR/300	2-Way CCV, 1/2", CV=4.7, Mod Act, SS Ball/Stem	2
Belimo	TR24-SR/300	24 VAC, Modulating Actuator	8
Dwyer	TE-DFN-B0648-00	Duct, 4" Insertion, No Box, 8' Lead	3
Dwyer	TE-DFN-B0648-00	Duct, 8" Insertion, No Box, 8' Lead	14
Dwyer	TE-DFN-B1248-00	Duct, 12" Insertion, No Box, 8' Lead	4

VAV BOX VALVE SCHEDULE

Equip. #	VAV Box #	Room #	Box Size	Max. Clg. CFM	Min. CFM	Max. Htg. CFM	Min OA Area	Min OA Occupancy	Reheat Valves														Occupied-Standby	CO2 Sensor	ALC TSTAT	TSTAT Type	Duct Probe	Note
									GPM	Calc. CV	Valve CV	Design DP PSI	Actual PD	Valve Size	Body Type	Signal Type	Manuf.	Valve Model #	Actuator Model #	Assembly Part #								
Sector 5B	VAV-5B.1	CLASSROOM 255	10	1000	150	750	150	385	2.00	1.00	1.2	2	2.8	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	N	Y	ZS2P-C-ALC	3CC	6"	Valves Existing		
Sector 5B	VAV-5B.2	RESTROOMS	10	800	800	800	-	-	2.00	1.00	1.2	2	2.8	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	N	N	ZS2-ALC	3A	6"	Valves Existing		
Sector 5B	VAV-5B.3	OFFICE 252	6	200	30	100	15	-	0.50	0.25	0.3	2	2.8	1/2	2W	2-10v	Belimo	B207B	TR24-SR/300 US	B207B+TR24-SR/300 US	Y	N	ZS2P-M-ALC	3CM	4"	Valves Existing		
Sector 5B	VAV-5B.5	CLASSROOM 256	10	1000	170	660	170	430	1.50	0.75	0.8	2	3.5	1/2	2W	2-10v	Belimo	B209B	TR24-SR/300 US	B209B+TR24-SR/300 US	N	Y	ZS2P-C-ALC	3CC	6"	Valves Existing		
Sector 5B	VAV-5B.6	MEETING 260	6	300	85	150	85	-	0.50	0.25	0.3	2	2.8	1/2	2W	2-10v	Belimo	B207B	TR24-SR/300 US	B207B+TR24-SR/300 US	Y	N	ZS2P-M-ALC	3CM	4"	Valves Existing		
Sector 5B	VAV-5B.7	CLASSROOM 254	10	1000	120	675	120	310	1.50	0.75	0.8	2	3.5	1/2	2W	2-10v	Belimo	B209B	TR24-SR/300 US	B209B+TR24-SR/300 US	N	Y	ZS2P-C-ALC	3CC	6"	Valves Existing		
Sector 5B	VAV-5B.8	OFFICE 258, OFFICE 259	6	300	30	150	25	-	0.50	0.25	0.3	2	2.8	1/2	2W	2-10v	Belimo	B207B	TR24-SR/300 US	B207B+TR24-SR/300 US	N	N	ZS2P-ALC	3C	4"	Valves Existing		
Sector 5B	VAV-5B.9	CLASSROOM 257	10	1000	135	675	135	340	1.50	0.75	0.8	2	3.5	1/2	3W	2-10v	Belimo	B309B	TR24-SR/300 US	B309B+TR24-SR/300 US	N	Y	ZS2P-C-ALC	3CC	6"	Valves Existing		
Sector 13	VAV-701	ROOM 701	12 x 12	330	30	100	30	-	0.50	0.25	1.2	2	0.2	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	Y	N	ZS2P-M-ALC	3CM	6"			
Sector 13	VAV-702	MUSIC LAB 702	20 x 24	2800	215	300	215	545	9.20	4.60	4.7	2	3.8	1/2	3W	2-10v	Belimo	B313B	TR24-SR/300 US	B313B+TR24-SR/300 US	N	Y	ZS2P-C-ALC	3CC	12"	Valves Existing		
Sector 13	VAV-704	ROOMS 704, 705, 706	11 x 10	370	60	155	60	-	0.60	0.30	1.2	2	0.3	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	N	N	ZS2P-ALC	3C	6"			
Sector 13	VAV-707	ROOM 707	6 x 12	300	15	40	15	-	0.50	0.25	1.2	2	0.2	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	Y	N	ZS2P-M-ALC	3CM	6"			
Sector 13	VAV-708	ROOM 708	6 x 12	300	15	40	15	-	0.50	0.25	1.2	2	0.2	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	Y	N	ZS2P-M-ALC	3CM	6"			
Sector 13	VAV-710	BAND LAB 710	24 x 24	2850	225	1200	225	570	7.50	3.75	4.7	2	2.5	1/2	2W	2-10v	Belimo	B213B	TR24-SR/300 US	B213B+TR24-SR/300 US	N	Y	ZS2P-C-ALC	3CC	12"			
Sector 13	VAV-712	ROOM 712	12 x 12	500	35	165	35	-	0.70	0.35	1.2	2	0.3	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	Y	N	ZS2P-M-ALC	3CM	6"			
Sector 13	VAV-713	ROOM 713	12 x 6	225	55	115	55	-	0.50	0.25	1.2	2	0.2	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	Y	N	ZS2P-M-ALC	3CM	6"			
Sector 13	VAV-714	ROOM 714	12 x 6	225	15	100	15	-	0.50	0.25	1.2	2	0.2	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	Y	N	ZS2P-M-ALC	3CM	6"			
Sector 13	VAV-8136	LOBBY ENTRY	9 x 12	340	120	70	120	-	0.50	0.25	1.2	2	0.2	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	Y	N	ZS2-M-ALC	3AM	6"			
Sector 13	VAV-81312	LOBBY	24 x 12	1400	475	35	475	-	2.90	1.45	1.9	2	2.3	1/2	2W	2-10v	Belimo	B211B	TR24-SR/300 US	B211B+TR24-SR/300 US	N	N	ZS2-ALC	3A	12"			
Sector 13	VAV-81311	ROOM 703	12 x 6	330	0	165	-	-	0.50	0.25	1.2	2	0.2	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	Y	N	ZS2P-M-ALC	3CM	6"			
Sector 13	VAV-8131	RESTROOMS	24 x 12	1375	1375	1375	-	-	1.40	0.70	1.2	2	1.4	1/2	2W	2-10v	Belimo	B210B	TR24-SR/300 US	B210B+TR24-SR/300 US	N	N	ZS2-ALC	3A	12"			

Type:	Tag	
ALC model	ZS2 Standard	ZS2 Pro
Distech model	EC-SmartAir	EC-SmartVue
Display	Blank	LCD
Temperature only	TS-3A	TS-3C
With motion	TS-3AM	TS-3CM
With CO2	TS-3AC	TS-3CC

Spec Section 250000 2.9.F.3.a.

Notes:
1. 2nd Floor, Sector B valves to remain, NEW valve actuator.



PROJECT:
LMC P-9035 Music Building Controls Upgrade
2700 E Leland Rd
Pittsburgh, CA 94565

FILENAME: 03 - VAV Box Schematics

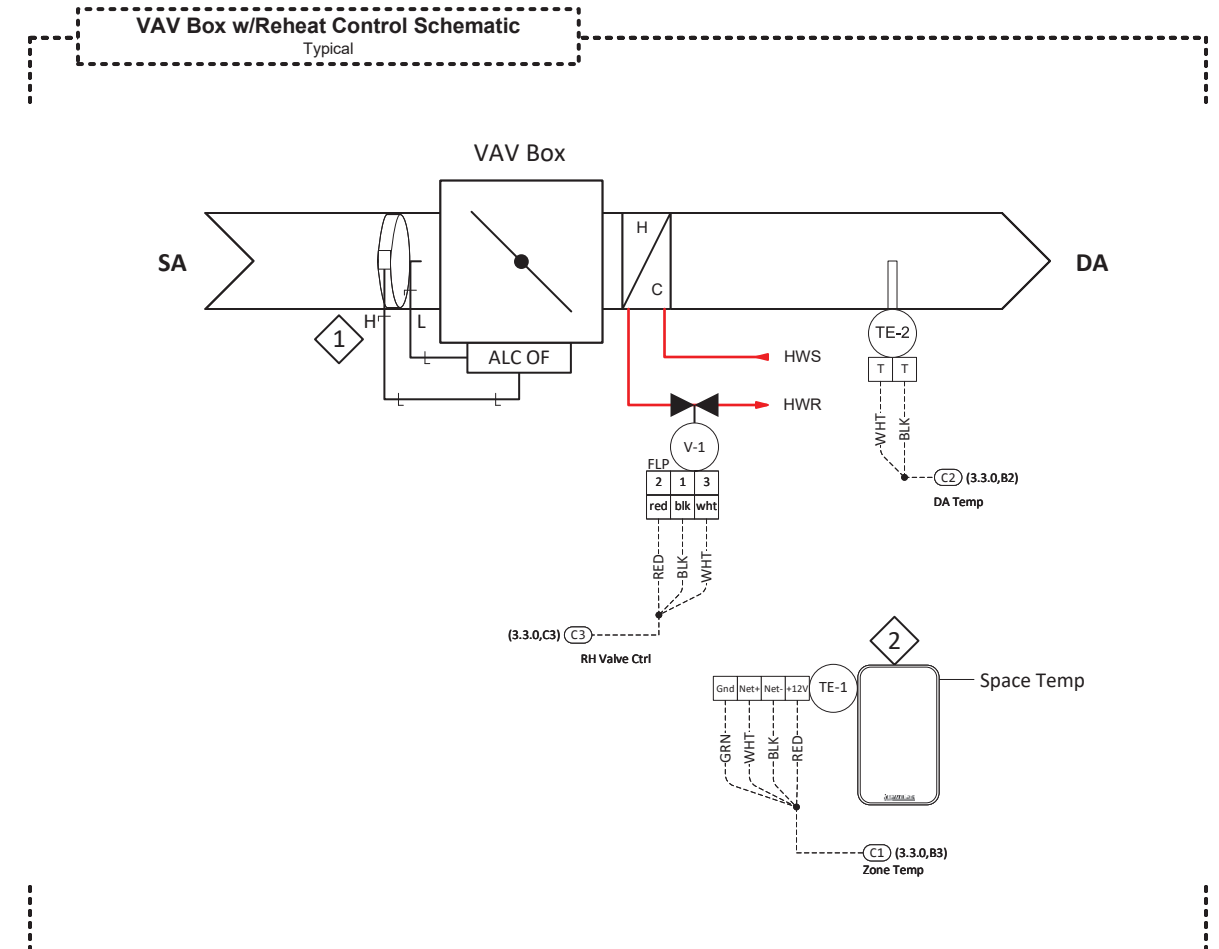
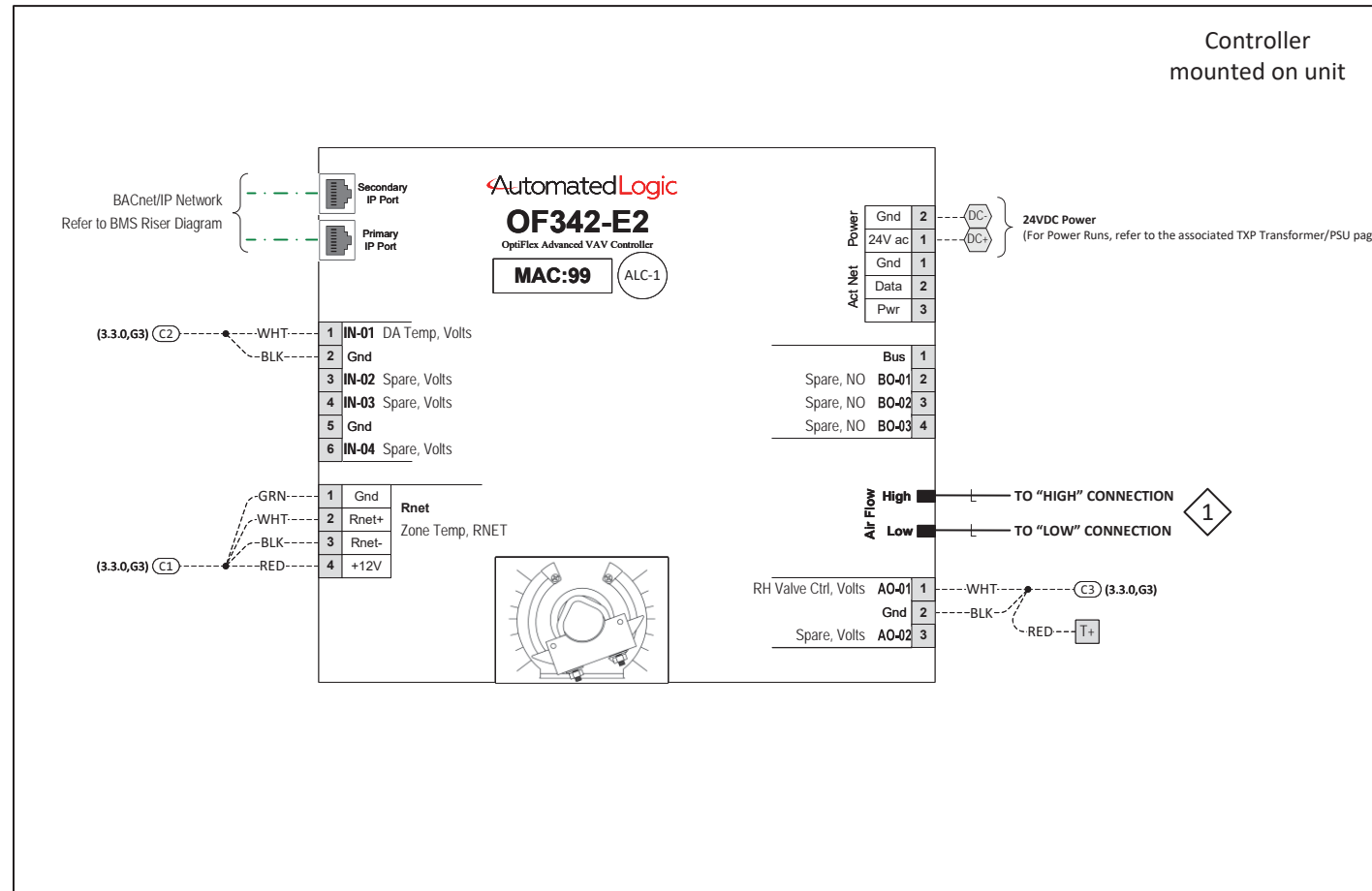
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0	As-Built	6/7/2023	TT	DRAWING NO.: 3.2.0					
REV	DESCRIPTION	DATE	BY						

DRAWING NAME:
VAV Valve Schedule
CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

VAV Box Schematic w/RH - ZS2-ALC

Typical of 3

Bill of Material w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
ALC-1	Automated Logic	OF342-E2	Advanced VAV Controller, Actuator, Rnet, 4UI, 2AO, 3DO	3
TE-1	Automated Logic	ZS2-ALC	ZS2 Std Space Temp Sensor, Rnet	3
TE-2	See Valve Schedule	See Valve Schedule	See VAV Valve Schedule for Probe Size	3
V-1	See Valve Schedule	See Valve Schedule	HW Reheat Control Valve	3



Sector 5B	VAV-5B.2	RESTROOMS
Sector 13	VAV-81312	LOBBY
Sector 13	VAV-8131	RESTROOMS

Notes:

1. Pneumatic tubing connections for Hi/Lo pickup on unit provided and installed by factory.
2. Refer to Mechanical drawings for space temperature sensor locations. Space temperature sensor will be field mounted at 48" AFF or as specified.



PROJECT:
LMC P-9035 Music Building Controls Upgrade
2700 E Leland Rd
Pittsburgh, CA 94565

FILENAME: 03 - VAV Box Schematics

0	As-Built	6/7/2023	TT
REV	DESCRIPTION	DATE	BY

DRAWING NAME:
VAV Box Schematic w/RH - ZS2-ALC

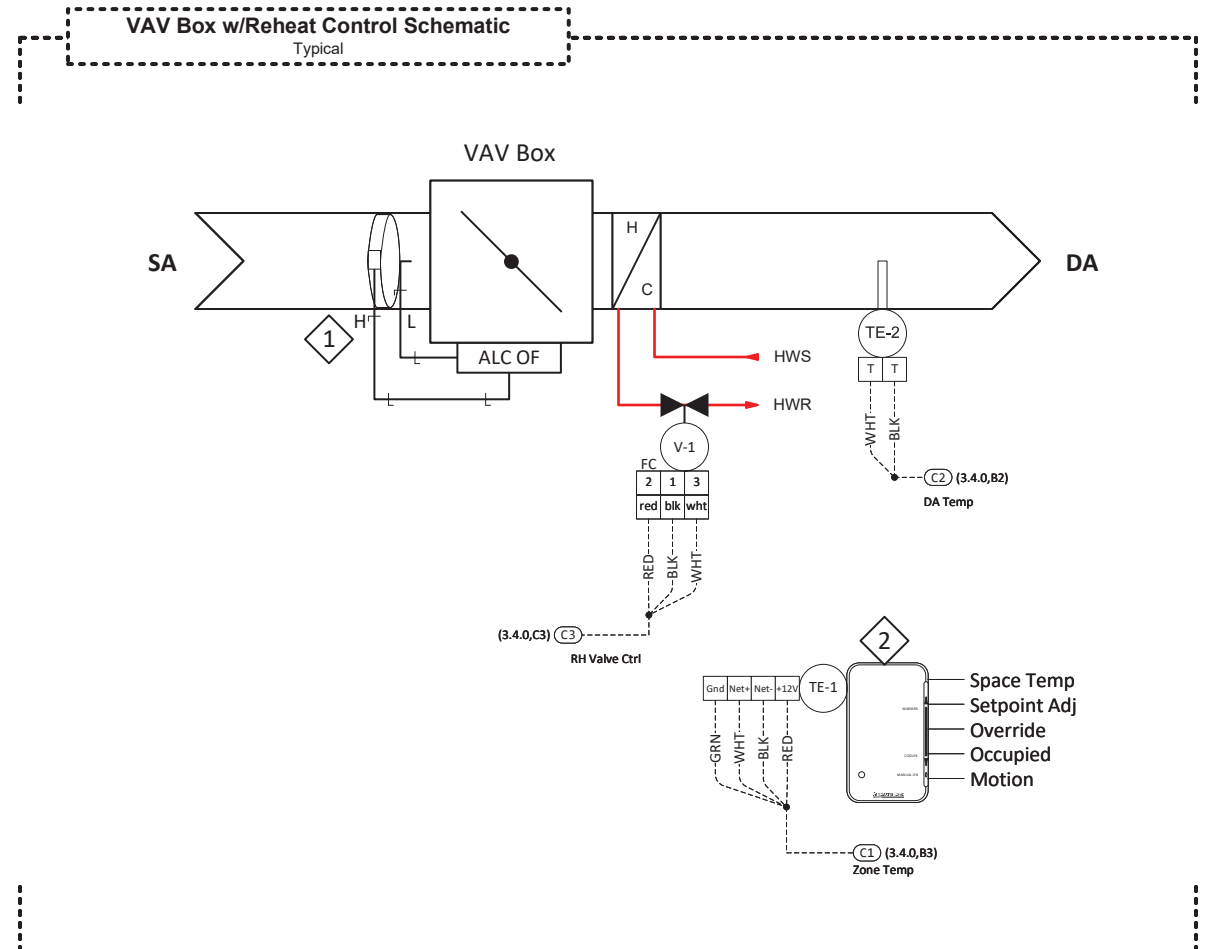
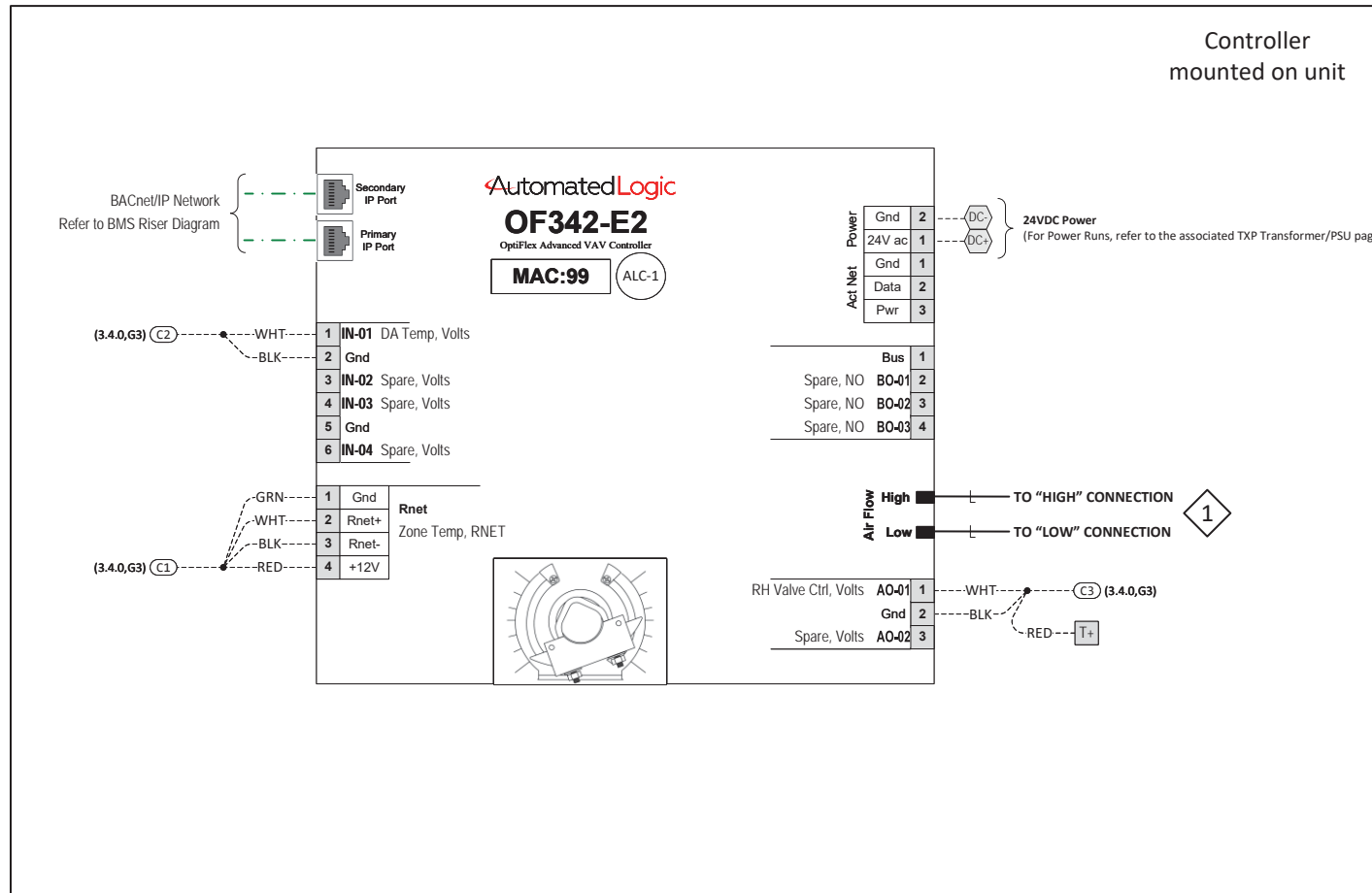
CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 3.3.0

VAV Box Schematic w/RH - ZS2-M-ALC

Typical of 1

Bill of Material w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
ALC-1	Automated Logic	OF342-E2	Advanced VAV Controller, Actuator, Rnet, 4UI, 2AO, 3DO	1
TE-1	Automated Logic	ZS2-M-ALC	ZS2 Std Space Temp Sensor w/Motion, Rnet	1
TE-2	See Valve Schedule	See Valve Schedule	See VAV Valve Schedule for Probe Size	1
V-1	See Valve Schedule	See Valve Schedule	HW Reheat Control Valve	1



Sector 13 VAV-8136 LOBBY ENTRY

- Notes:
1. Pneumatic tubing connections for Hi/Lo pickup on unit provided and installed by factory.
 2. Refer to Mechanical drawings for space temperature sensor locations. Space temperature sensor will be field mounted at 48" AFF or as specified.



PROJECT:
LMC P-9035 Music Building Controls Upgrade
 2700 E Leland Rd
 Pittsburgh, CA 94565

FILENAME: 03 - VAV Box Schematics

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0	As-Built	6/7/2023	TT
REV	DESCRIPTION	DATE	BY

DRAWING NAME:
VAV Box Schematic w/RH - ZS2-M-ALC

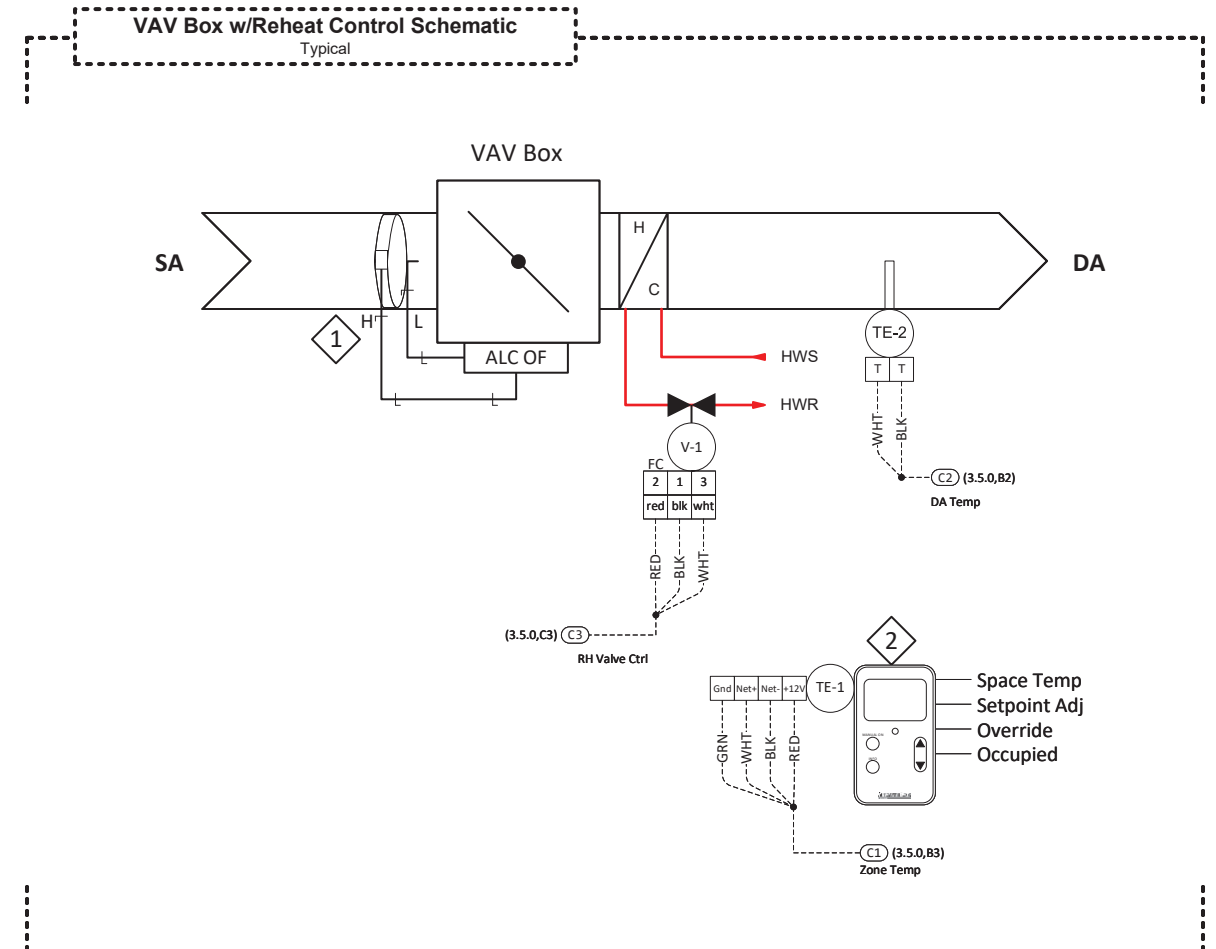
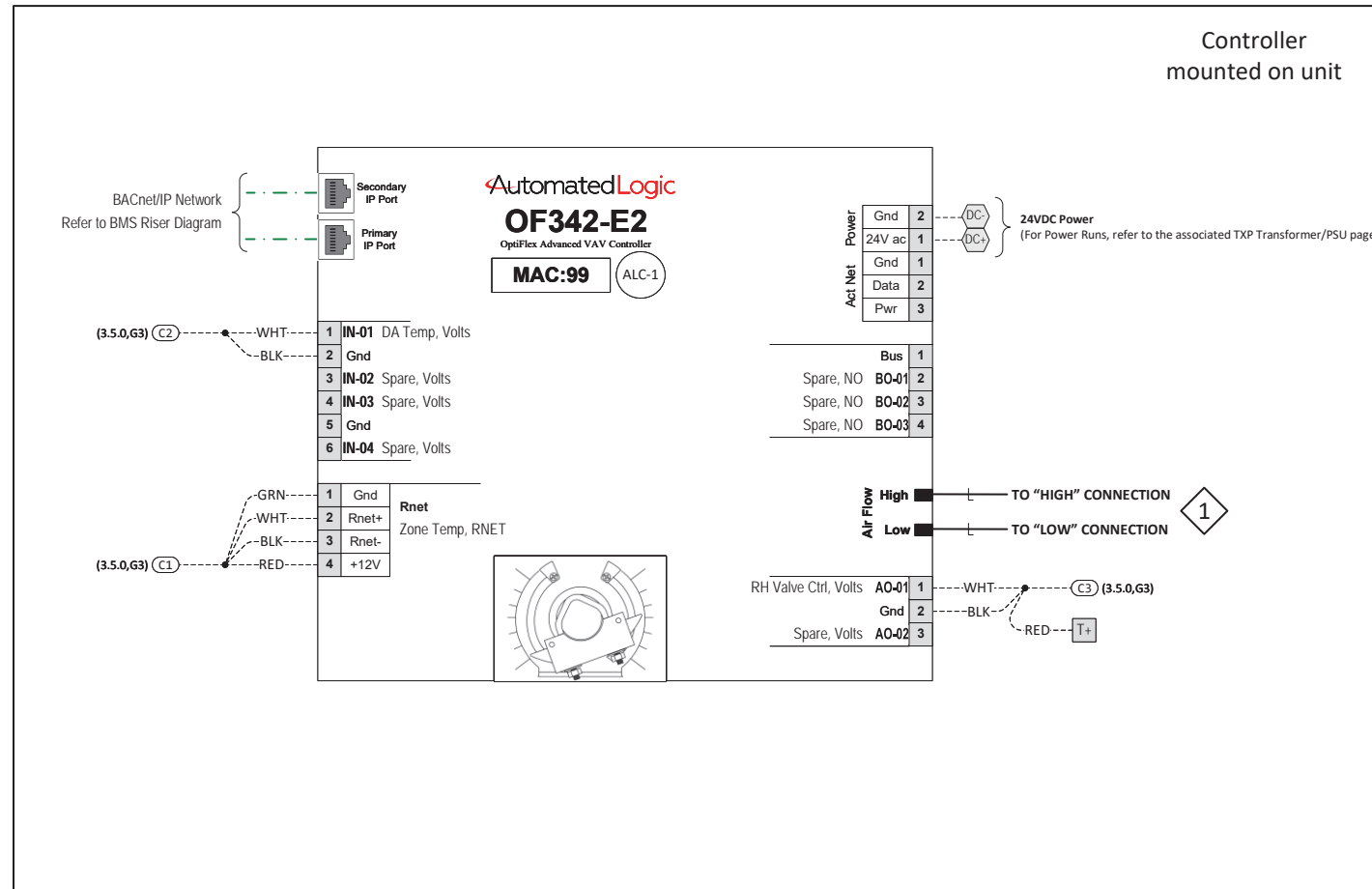
CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 3.4.0

VAV Box Schematic w/RH - ZS2P-ALC

Typical of 2

Bill of Material w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
ALC-1	Automated Logic	OF342-E2	Advanced VAV Controller, Actuator, Rnet, 4UI, 2AO, 3DO	2
TE-1	Automated Logic	ZS2P-ALC	ZS2 Pro Space Temp Senso, Rnet, LCD, SP Adj, Ovr	2
TE-2	See Valve Schedule	See Valve Schedule	See VAV Valve Schedule for Probe Size	2
V-1	See Valve Schedule	See Valve Schedule	HW Reheat Control Valve	2



Sector 5B	VAV-5B.8	OFFICE 258, OFFICE 259
Sector 13	VAV-704	ROOMS 704, 705, 706

- Notes:
- Pneumatic tubing connections for Hi/Lo pickup on unit provided and installed by factory.
 - Refer to Mechanical drawings for space temperature sensor locations. Space temperature sensor will be field mounted at 48" AFF or as specified.



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FILENAME: 03 - VAV Box Schematics

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REV	DESCRIPTION	DATE	BY

DRAWING NAME:
VAV Box Schematic w/RH - ZS2P-ALC

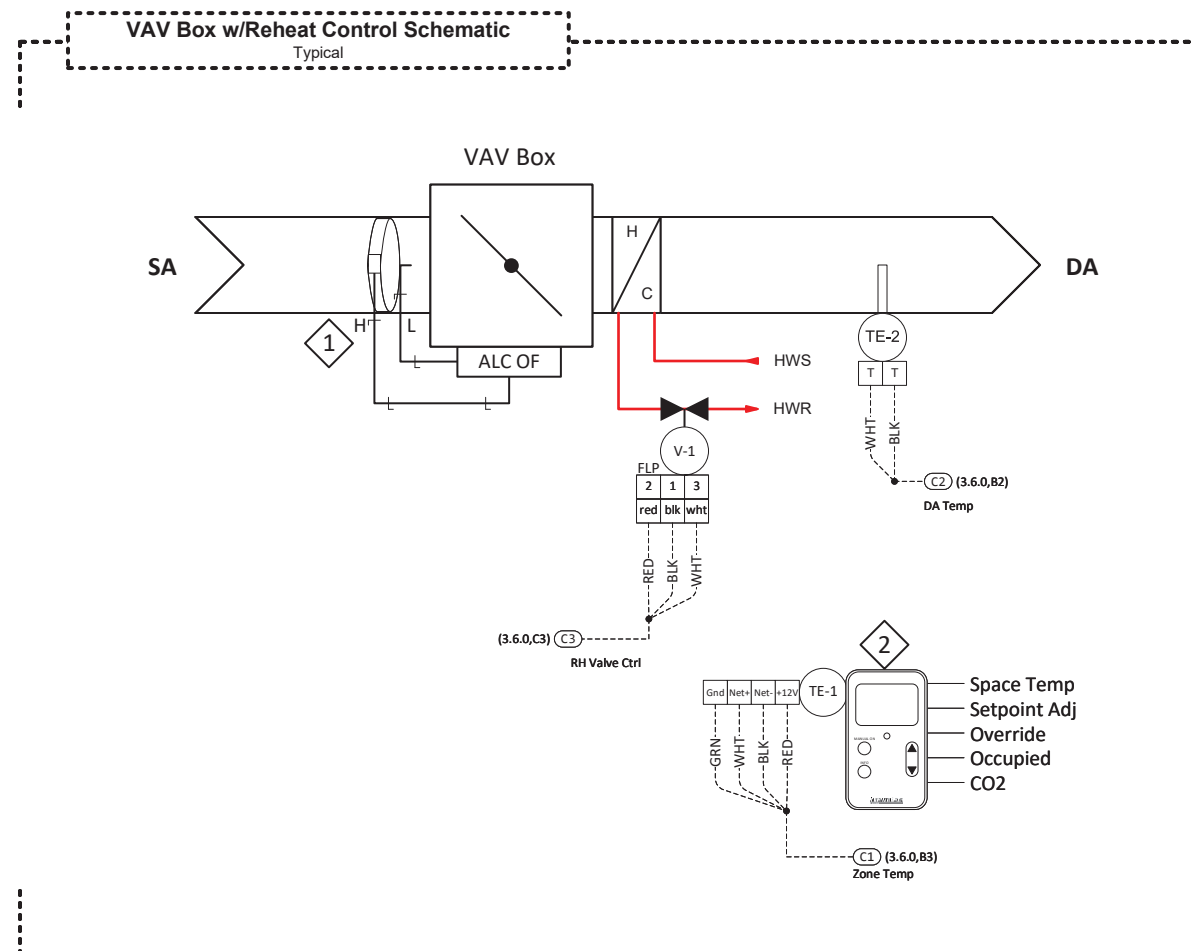
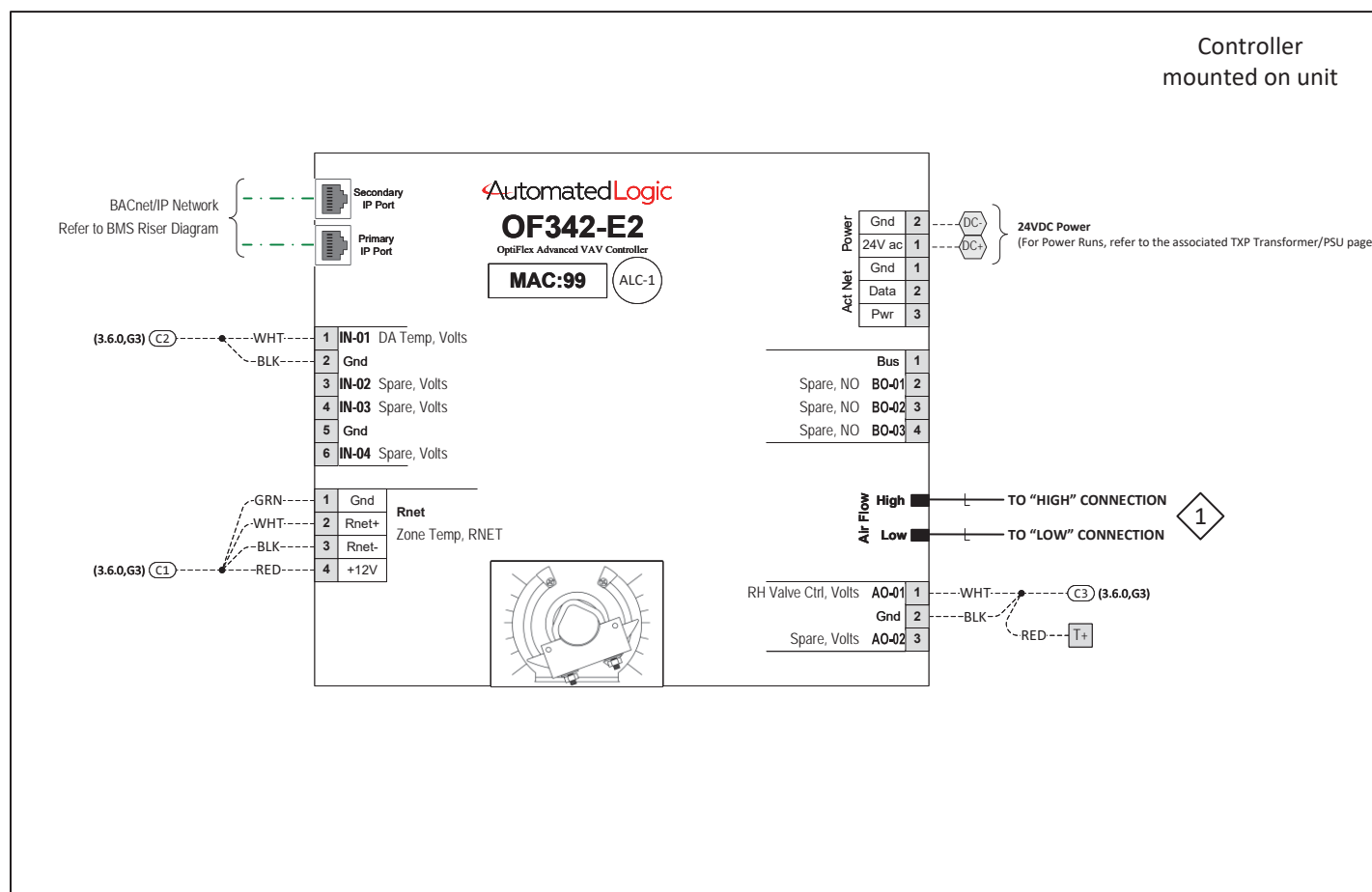
CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 3.5.0

VAV Box Schematic w/RH - ZS2P-C-ALC

Typical of 5

Bill of Material w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
ALC-1	Automated Logic	OF342-E2	Advanced VAV Controller, Actuator, Rnet, 4UI, 2AO, 3DO	5
TE-1	Automated Logic	ZS2P-C-ALC	ZS2 Pro Space Temp Sensor w/CO2, Rnet, LCD, SP Adj, Ovr	5
TE-2	Dwyer	See Valve Schedule	See VAV Valve Schedule for Probe Size	5
V-1	See Valve Schedule	See Valve Schedule	HW Reheat Control Valve	5



Sector 5B	VAV-5B.1	CLASSROOM 255
Sector 5B	VAV-5B.5	CLASSROOM 256
Sector 5B	VAV-5B.7	CLASSROOM 254
Sector 5B	VAV-5B.9	CLASSROOM 257
Sector 13	VAV-710	BAND LAB 710

Notes:
 1. Pneumatic tubing connections for Hi/Lo pickup on unit provided and installed by factory.
 2. Refer to Mechanical drawings for space temperature sensor locations. Space temperature sensor will be field mounted at 48" AFF or as specified.



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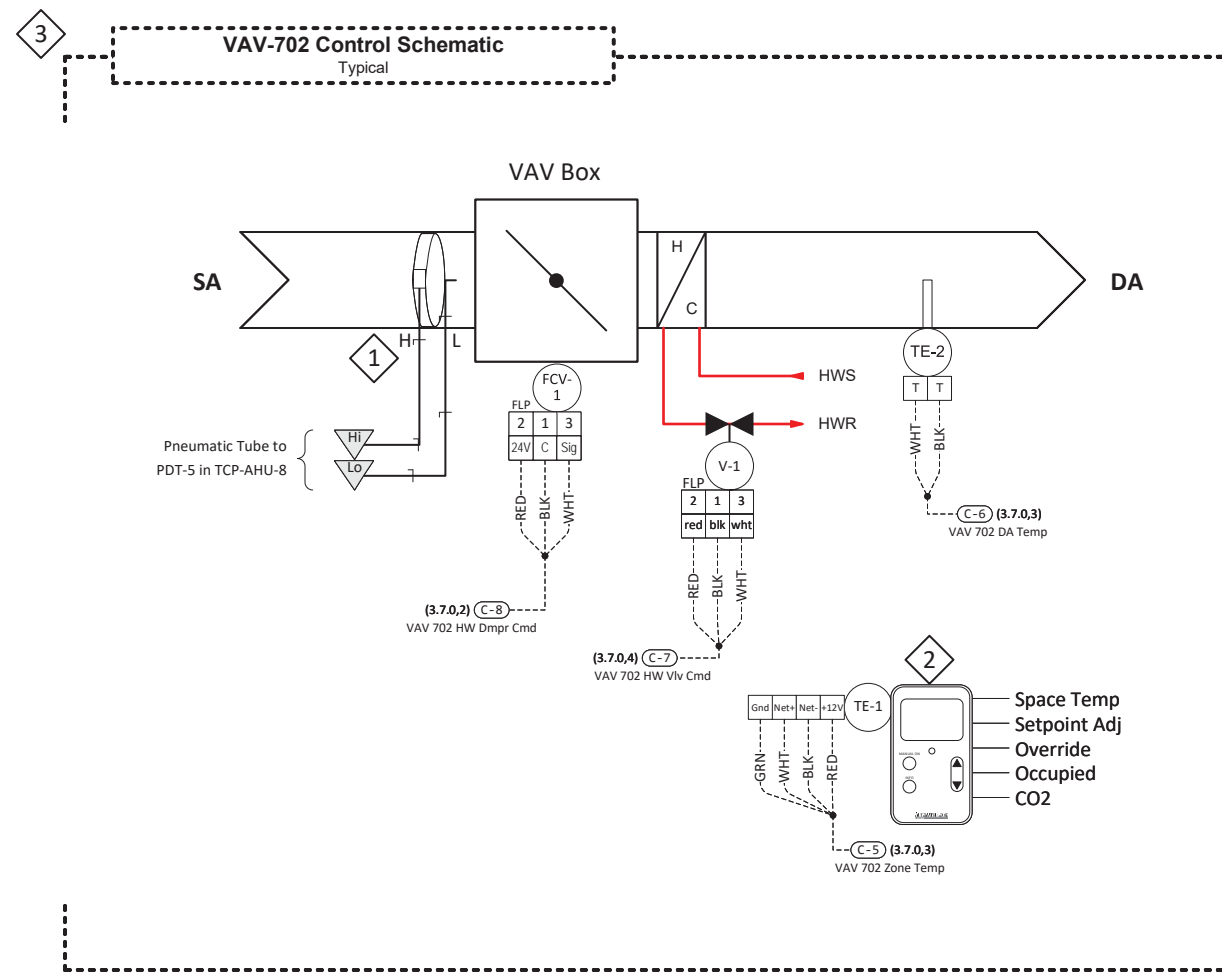
FILENAME: 03 - VAV Box Schematics

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REV	DESCRIPTION	DATE	BY

DRAWING NAME:
 VAV Box Schematic w/RH - ZS2P-C-ALC
 CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 3.6.0

VAV Box Schematic w/RH - ZS2P-C-ALC - VAV-702



Sector 13 | VAV-702 | MUSIC LAB 702

- Notes:**
1. Pneumatic tubing connections for Hi/Lo pickup on unit provided and installed by factory.
 2. Refer to Mechanical drawings for space temperature sensor locations. Space temperature sensor will be field mounted at 48" AFF or as specified.
 3. VAV-702 sensors wired directly to FIO expanders on TCP-AHU-8.



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FILENAME: 03 - VAV Box Schematics

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0	As-Built	6/7/2023	TT
REV	DESCRIPTION	DATE	BY

DRAWING NAME:
VAV Box Schematic w/RH - ZS2P-C-ALC - VAV-702

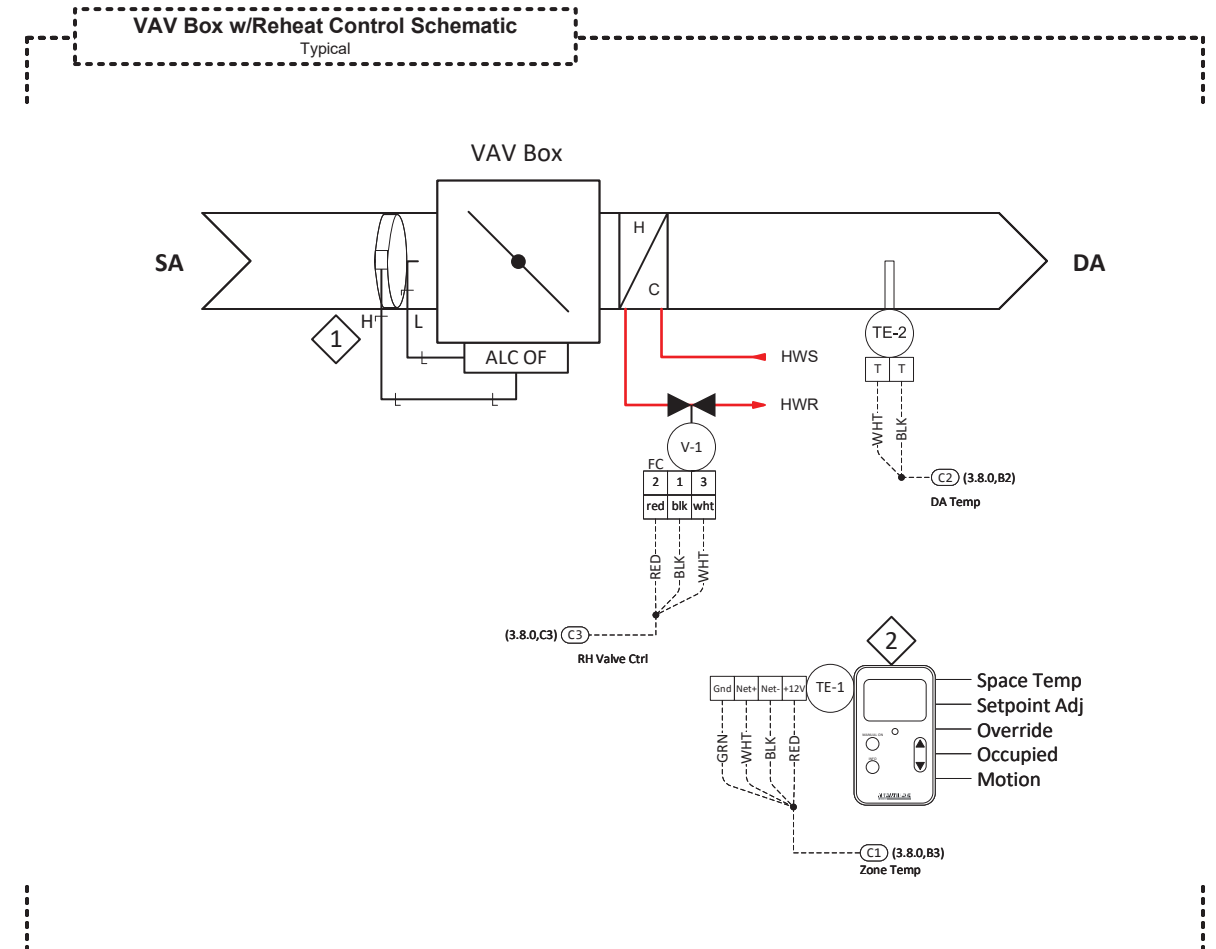
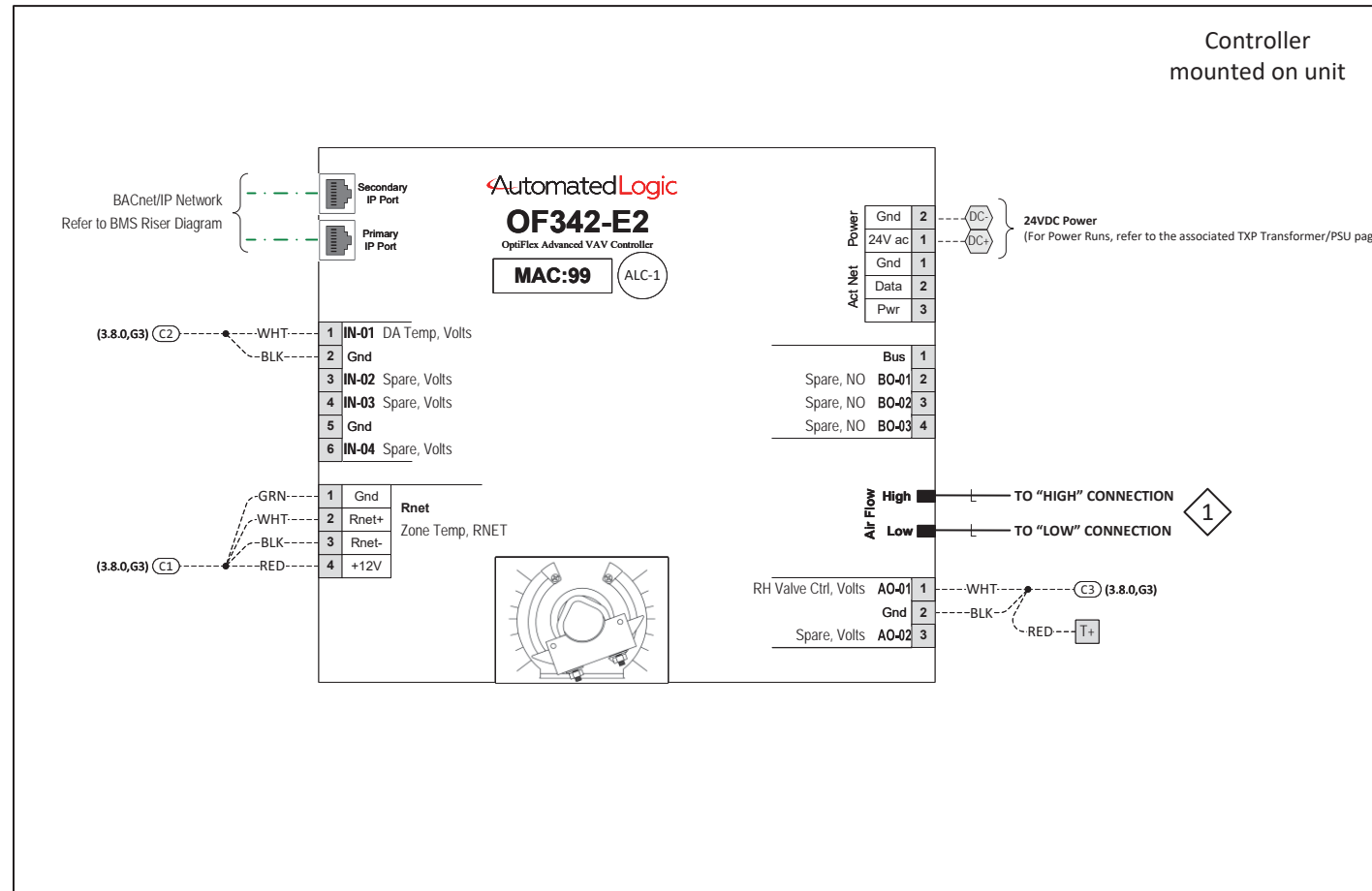
CONTRACT NO: 22281-59 | SE: AC | DE: TT | PR: MT

DRAWING NO.: 3.7.0

VAV Box Schematic w/RH - ZS2P-M-ALC

Typical of 9

Bill of Material w/ Tags				
Tag	Manufacturer	Part Number	Product Description	Quantity
ALC-1	Automated Logic	OF342-E2	Advanced VAV Controller, Actuator, Rnet, 4UI, 2AO, 3DO	9
TE-1	Automated Logic	ZS2P-M-ALC	ZS2 ProM Space Temp Sensor, Rnet, LCD, SP Adj, Ovrd, Motion, Fan Spd, Mode Sel.	9
TE-2	See Valve Schedule	See Valve Schedule	See VAV Valve Schedule for Probe Size	9
V-1	See Valve Schedule	See Valve Schedule	HW Reheat Control Valve	9



Sector 5B	VAV-5B.3	OFFICE 252
Sector 5B	VAV-5B.6	MEETING 260
Sector 13	VAV-701	ROOM 701
Sector 13	VAV-707	ROOM 707
Sector 13	VAV-708	ROOM 708
Sector 13	VAV-712	ROOM 712
Sector 13	VAV-713	ROOM 713
Sector 13	VAV-714	ROOM 714
Sector 13	VAV-81311	ROOM 703

- Notes:
1. Pneumatic tubing connections for Hi/Lo pickup on unit provided and installed by factory.
 2. Refer to Mechanical drawings for space temperature sensor locations. Space temperature sensor will be field mounted at 48" AFF or as specified.



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FILENAME: 03 - VAV Box Schematics

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REV	DESCRIPTION	DATE	BY

DRAWING NAME:
VAV Box Schematic w/RH - ZS2P-M-ALC

CONTRACT NO: 22281-59 SE: AC DE: TT PR: MT

DRAWING NO.: 3.8.0