AIR-MAX
HEATING & COOLING, Inc.
CAC 048100

August 4, 2023

City of Green Cove Springs
321 Walnut Street
Green Cove Springs, FL 32043
Email: sthomas@greencovesprings.com

Ref: EOC – 1001 Idlewild Ave

We propose to remove and replace (1) existing AAON unit with a roof top mounted CAPTIVE AIRE unit.

*Price includes but is not limited to the following:

The new unit. New controllers, new curb, new duct work to existing duct work, new drain line, all roofing, electrical, and mechanical contactors will be State of Florida licensed contractors.

Delivery time on the new unit is approx. 5-6 weeks.

The warranty will be one-year on labor and functional parts with five-years on the compressor. *All warranties are subject to the manufacturer's specifications.

The price for the above-mentioned work will be $125,657.00. Payments are to be made 100% upon completion.

This Quote is good for 60 days.

Thank you for the opportunity of submitting this quote.

Acceptance: _____ Date: _____

Thank you,

Michael C. Taylor
President/C.E.O.

CASRTU3-E.322-24-20T (#1) RTU-1 Weight: 2532 lbs./104 curb

RTU with Electric Heat and 24" Direct Drive Plenum Fan, 240V 3 phase, 32 KW maximum - 1 modulating stage & 1 On/Off Stages.

SUPPLY MOTOR

Model DTP0054 • 5.000 HP, 3 Phs, 208 V, 60 Hz, 15.0 FLA, ODP, Premium (E-Plus3) Eff.

SUPPLY PERFORMANCE

Supply Air:	2500 CFM	RPM:	937
Return Air:	0 CFM	Outside Air:	2500 CFM
Tip Speed:	5887 ft/min	BHP:	1.8370
Static Pressure:	1.521" w.g. (1.250" Ext. + 0.271" Opt.)		
Altitude:	95 ft		

BLOWER

24 Inch Plenum Fan for size 3 RTU. Hub specified to match motor shaft.

TEMPERATURE CONTROL

50-90°F Space Temp Control • Space Sensor Ships Loose • Heating/Cooling Activation Based On Either Intake or Space Set Point • Manual Blower Mode. Use with MUA.

AIRFLOW DIRECTION

- Down Discharge - Air Flow Left -> Right

CURB & SUPPORTS

- ROOF CURB - 59.5" Width, 91" Length, 14" Supply Height, Insulated.

SUPPLY INSTALLATION INFORMATION

Unit Voltage:	3 phs 208 V 60Hz
Unit Main Input:	117.7 Amps MCA • 125 Amps MOP • 208 V • 1 AWG Wire Min.
SCCR:	10 kAmp

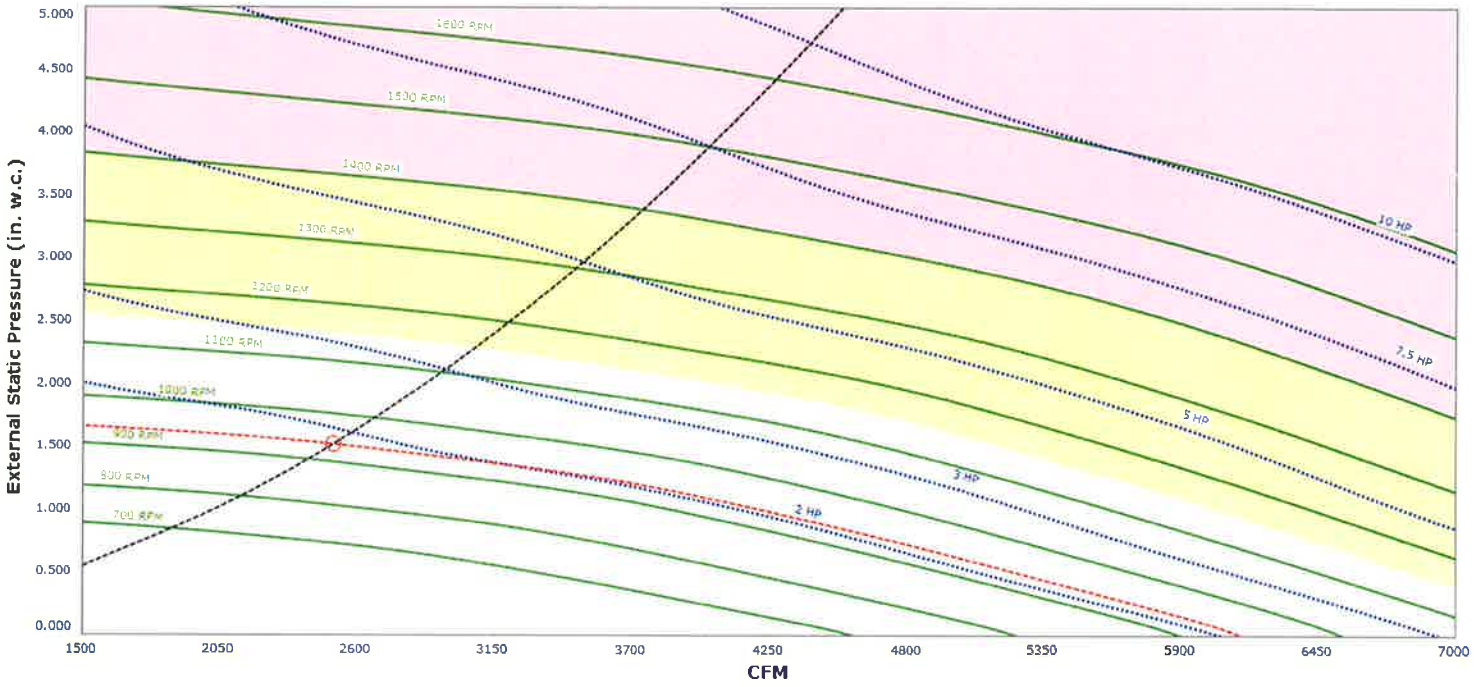
HEATING SCHEDULE

Altitude:	95 ft
Winter Outdoor Air Dry Bulb Temp:	35°F
Temp Rise:	40°F
kW:	31
Based Off:	kWs Actual Air Density

COOLING SCHEDULE

Outdoor Air Dry Bulb Temperature:	95.0°F
Outdoor Air Wet Bulb Temperature:	78.0°F
Max Outdoor Air %:	100%
Mixed Air Dry Bulb Temperature:	95.0°F
Mixed Air Wet Bulb Temperature:	78.0°F
Mixed Air Dew Point:	71.8°F
Leaving Dry Bulb Temperature:	46.3°F
Leaving Wet Bulb Temperature:	42.7°F
Leaving Dew Point:	38.8°F
Moisture Removal Rate:	123.3 Lb/Hr
Total Capacity:	264.0 MBH
Sensible Capacity:	127.7 MBH
Latent Capacity:	136.3 MBH
Reheat Coil Capacity:	129.6 MBH
Reheat Coil Leaving Dry Bulb Temperature:	70.0°F
Reheat Coil Leaving Wet Bulb Temperature:	53.5°F
Reheat Coil Leaving Relative Humidity:	32%
IEER:	18.2
ISMRE:	6.0

- CFM monitoring for MUA units. Uses rivet nuts, 1/4" airflow tubing and push to connect fittings.
- CASLink building monitoring system communications module. Requires internet & field wired ethernet connection or 3G cellular service. Includes Rev 3 Comm Module, RJ45 to modbus converter, 3 FT cat5 cable, and 1 FT of shielded twisted pair.
- 2" Merv 8 Filters for Size 3 RTU. QTY 4, 20 x 25 x 2 Merv 8 Filters
- Overheat Stat factory set at 80°F and 10 minutes. Prevents unit from overheating the space when cooling.
- VFD factory mounted and wired in unit control vestibule.
- RTU Size 3 Down Discharge Electric Heat. Used with 15 - 60kW Electric Heaters
- Remote Room Sensor Option. Wall Mountable 10k Temp and Humidity Room Sensor Included.
- VAV (Variable-Air-Volume) Wiring Package for Commercial Fans. Manual Speed Control Variable Frequency Drive Included
- Supply Variable Frequency Drive - 5 HP Max., 200/240 V, Three Phase, 16.5 A Max., NEMA 1 Enclosure, with 2RJ-45 FOR MODBUS
- Clogged Filter Switch
- Commercial Smoke Detector Interlock (Detector By Others)
- RTU Size 3 Hail Guard for outdoor coil. Includes magnets and washers for installation.
- Remote MSTP BACnet monitoring
- RTU Size 3 No Return
- RTU Fixed 100% Outdoor Air Intake.
- 20 Ton Modulating Cooling Option, 208/230V. R410A Refrigerant, Variable Speed Inverter Duty Compressor, ECM Condensing Fan(s).
- RTU Compressor Oil Sensor Factory Installed. M12 Style Connector.
- 20 Ton Cooling Only Modulating Reheat Option for Space Control
- Occupied Scheduling Defaulted for IBT/RTU.
- Single Point Electric Heat Connection - RTU. QNTY 1 750va Transformer used for controls. One primary connection required for RTU with electric heat. If a Non-DCV Prewire controls this unit, the #28, #47, "MA", or "E2" Option Prewire must be selected. Do not provide supply starter in prewire.
- Miami Dade Impact and Wind Load Certification - Miami Dade County Product Control Approved. Florida Building Code approval. Curbs up to 20" high must be 18 gauge Aluminized.
- GFCI 15 amp Powered Convenience Outlet For RTU3 Enclosure. Includes receptacle, jbox, cover and transformer.
- Size 3 RTU Curb Duct Hanger - Adjustable Duct Hanger Support Brackets installed for both return and discharge duct.
- Indicates that a custom kW electric coil is needed for RTU.
- 24VAC Fire Input



CASRTU3-E.322-24-20T SOUND (937 RPM) AT 5 FT. IN OCTAVES:

1	2	3	4	5	6	7	8
83.4	83.7	81	80.4	80.4	75.6	74.7	73.1

LWA:	84.6	Sones:	21.3	DBA:	73.8

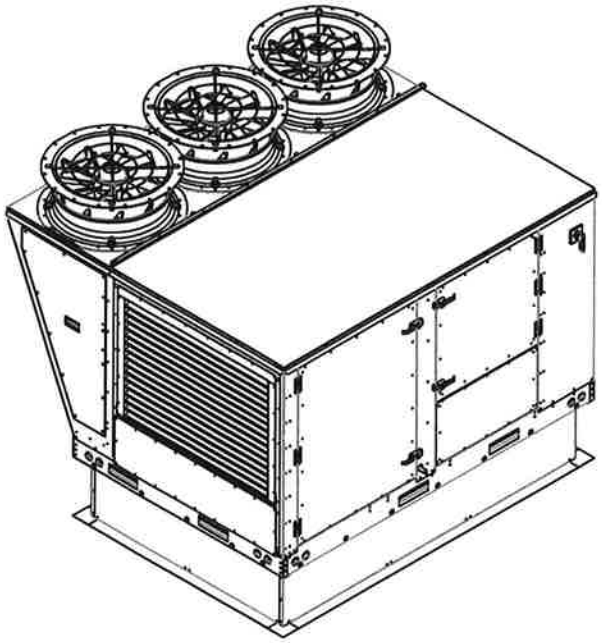
Note: Sound data across operational range. Tested in accordance to AHRI Standard 270/370.

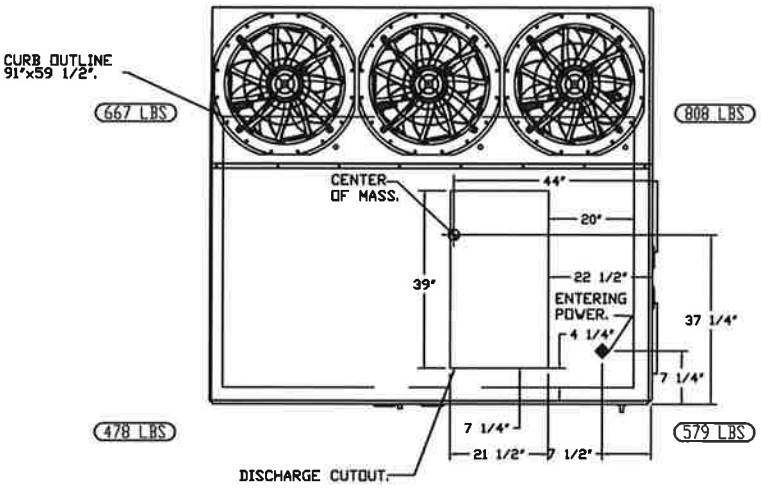
FAN #1 CASRTU3-E.322-24-20T - HEATER (RTU-1)

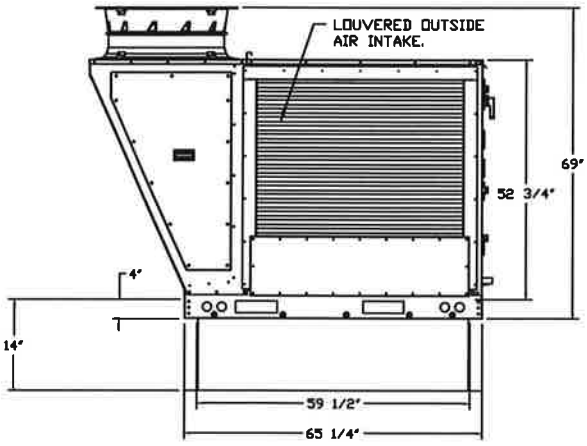
NOTES:

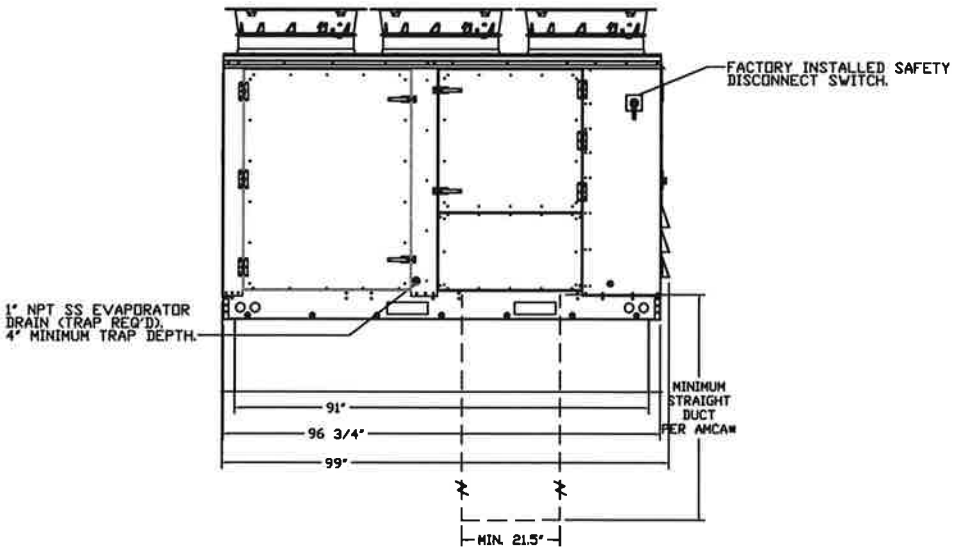
1. DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
2. ( ) DENOTES CORNER WEIGHT.
3. ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.

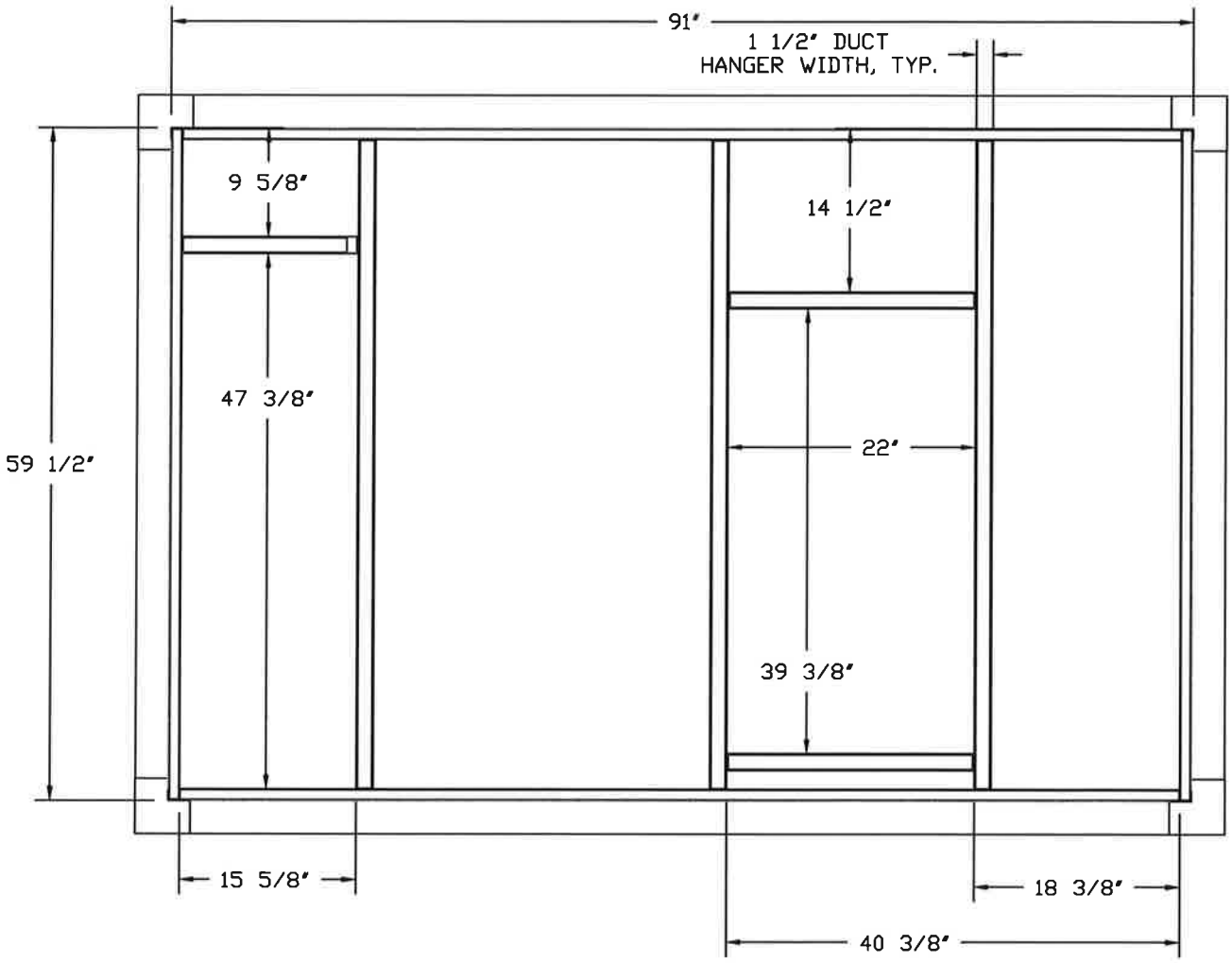
*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 21.5" x 39".

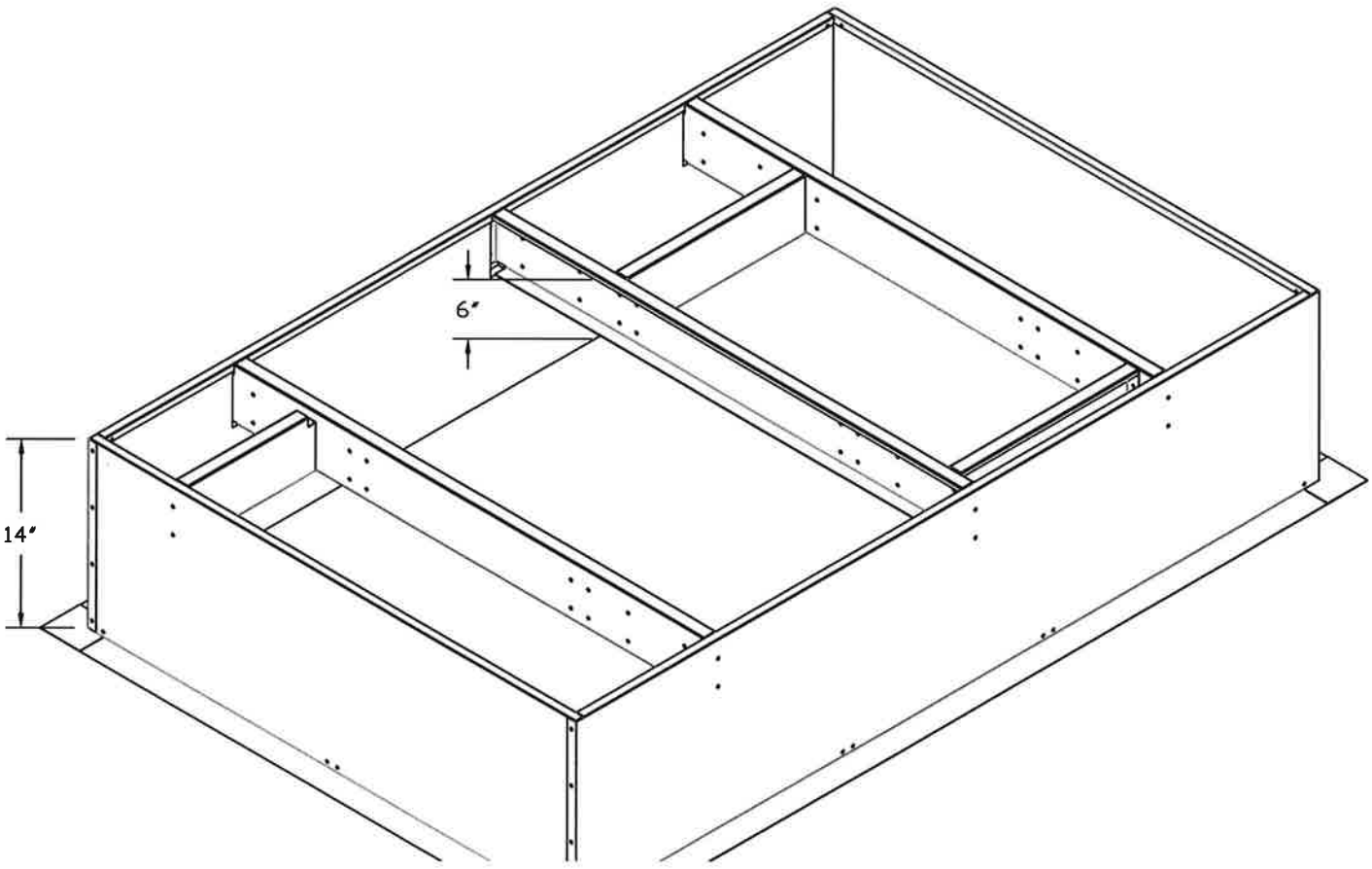


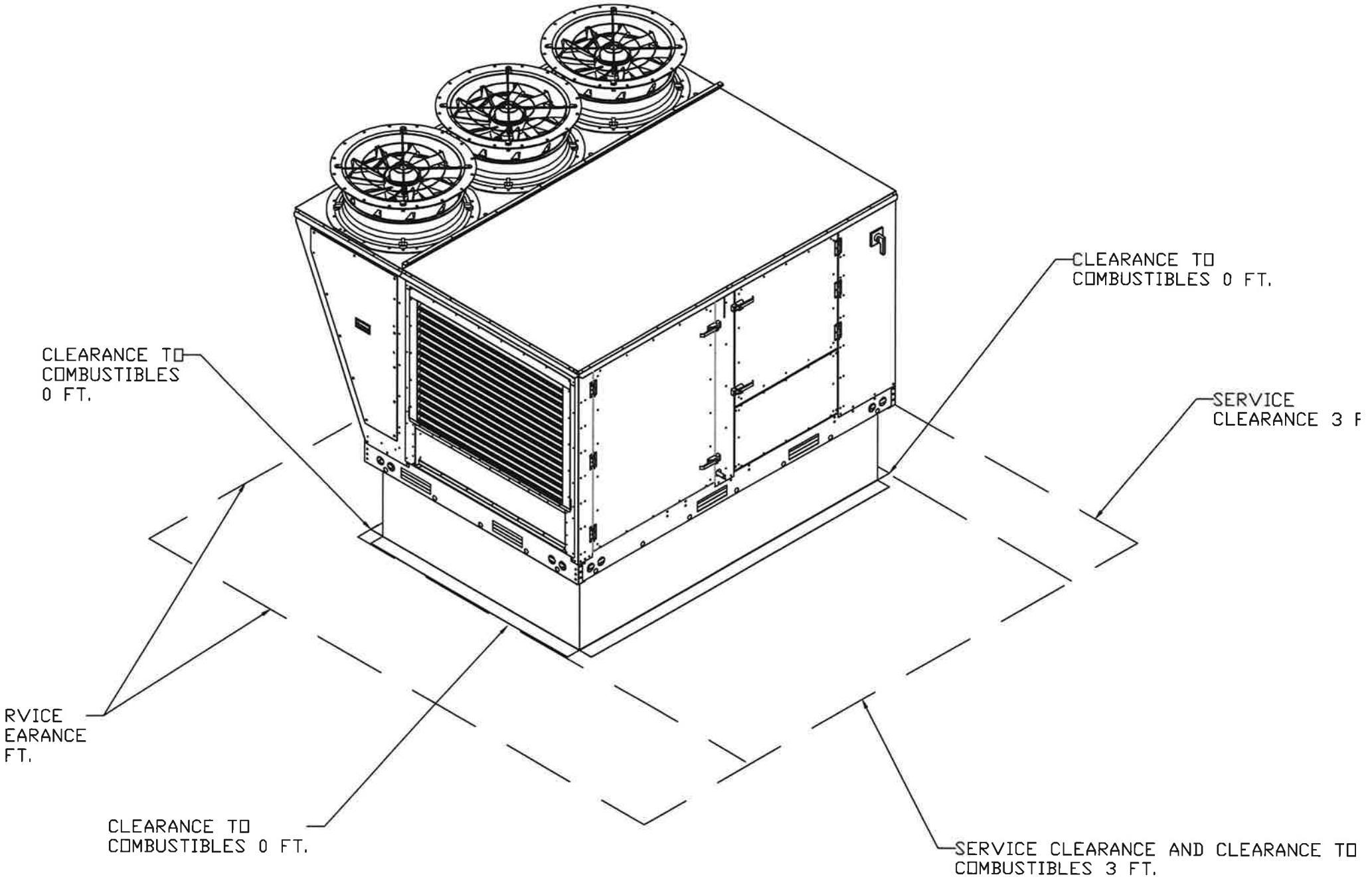


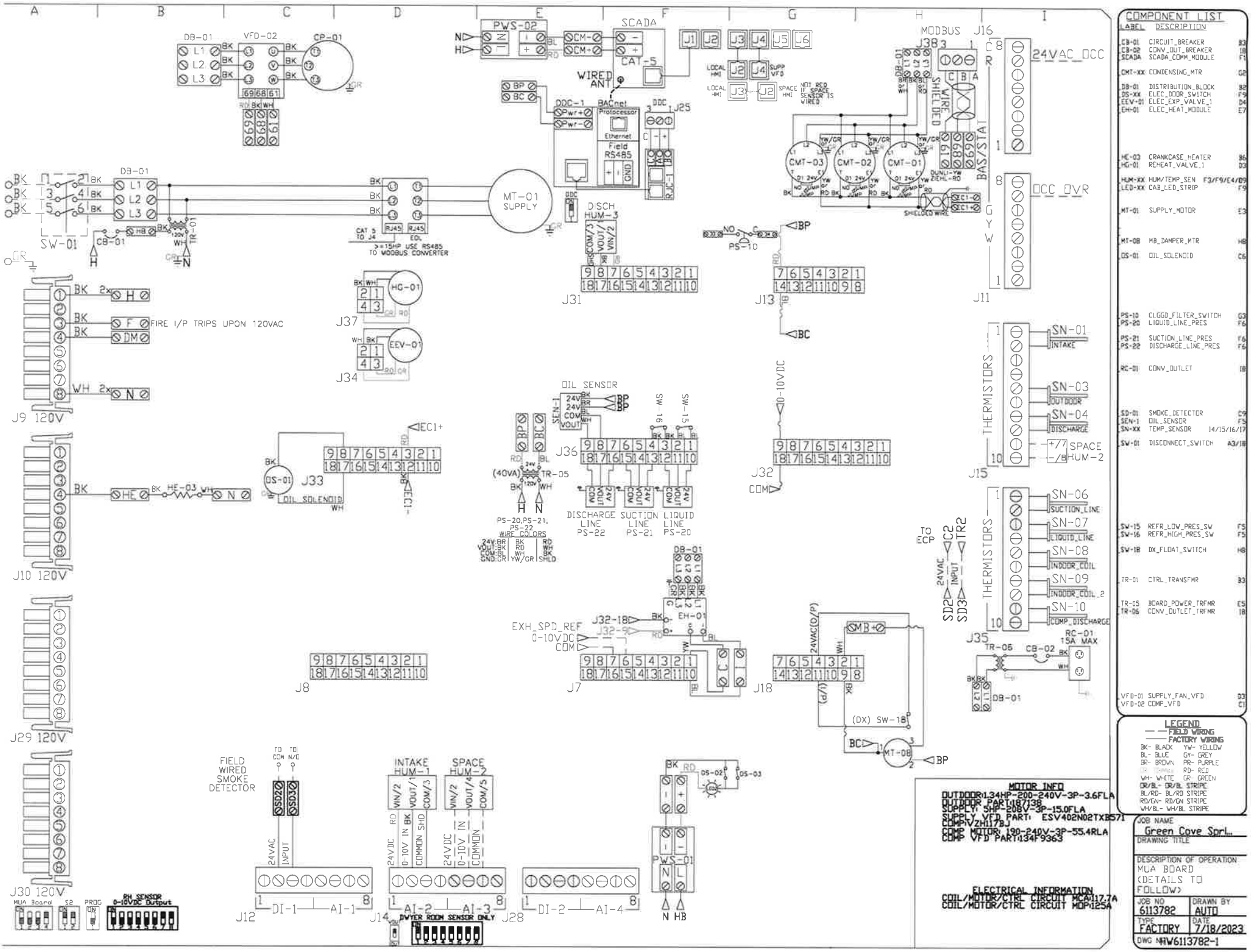





91"
1 1/2" DUCT
HANGER WIDTH, TYP.
9 5/8"
14 1/2"
47 3/8"
59 1/2"
22"
39 3/8"
15 5/8"
18 3/8"
40 3/8"


6"
14"


CLEARANCE TO
COMBUSTIBLES
0 FT.
RVICE
EARANCE
FT.
CLEARANCE TO
COMBUSTIBLES 0 FT.
CLEARANCE TO
COMBUSTIBLES 0 FT.
SERVICE
CLEARANCE 3 F
SERVICE CLEARANCE AND CLEARANCE TO
COMBUSTIBLES 3 FT.



COMPONENT LIST

LABEL	DESCRIPTION	
CB-01	CIRCUIT_BREAKER	B3
CB-02	CONV_OUT_BREAKER	I8
SCADA	SCADA_COMM_MODULE	F1
CMT-XX	CONDENSING_MTR	G2
DB-01	DISTRIBUTION_BLOCK	B2
DS-XX	ELEC_DOOR_SWITCH	F9
EEV-01	ELEC_EXP_VALVE_1	G4
EH-01	ELEC_HEAT_MODULE	E7
HE-03	CRANKCASE_HEATER	B6
HG-01	REHEAT_VALVE_1	D3
HUM-XX	HUM/TEMP_SEN	F3/F9/E4/D9
LED-XX	CAB_LED_STRIP	F9
MT-01	SUPPLY_MOTOR	E3
MT-08	MB_DAMPER_MTR	H8
OS-01	OIL_SOLENOID	C6
PS-10	CLGGD_FILTER_SWITCH	G3
PS-20	LIQUID_LINE_PRES	F6
PS-21	SUCTION_LINE_PRES	F6
PS-22	DISCHARGE_LINE_PRES	F6
RC-01	CONV_OUTLET	I8
SD-01	SMOKE_DETECTOR	C9
SEN-1	OIL_SENSOR	F5
SN-XX	TEMP_SENSOR	14/15/16/17
SW-01	DISCONNECT_SWITCH	A3/I8
SW-15	REFR_LOW_PRES_SW	F5
SW-16	REFR_HIGH_PRES_SW	F5
SW-18	DX_FLOAT_SWITCH	H8
TR-01	CTRL_TRANSFMR	B3
TR-05	BOARD_POWER_TRFMR	E5
TR-06	CONV_OUTLET_TRFMR	I8
VFD-01	SUPPLY_FAN_VFD	D3
VFD-02	COMP_VFD	C1

LEGEND

FIELD WIRING
FACTORY WIRING

BK- BLACK YW- YELLOW
BL- BLUE GY- GREY
BR- BROWN PR- PURPLE
OR- ORANGE RD- RED
WH- WHITE GR- GREEN
OR/BL- OR/BL STRIPE
BL/RD- BL/RD STRIPE
RD/GN- RD/GN STRIPE
WH/BL- WH/BL STRIPE

MOTOR INFO

OUTDOOR:1.34HP-200-240V-3P-3.6FLA
OUTDOOR PART#:18738
SUPPLY: 5HP-208V-3P-15.0FLA
SUPPLY VFD PART: ESV402N02TXB571
COMP:VZH117BJ
COMP MOTOR: 190-240V-3P-55.4RLA
COMP VFD PART:134F9363

ELECTRICAL INFORMATION

COIL/MOTOR/CTRL CIRCUIT MCA:17.7A
COIL/MOTOR/CTRL CIRCUIT MOP:125A

JOB NAME: Green Cove Spri...
DRAWING TITLE:
DESCRIPTION OF OPERATION: MUA BOARD (DETAILS TO FOLLOW)
JOB NO: 6113782
DRAWN BY: AUTO
TYPE: FACTORY
DATE: 7/18/2023
DWG NO: MW6113782-1

SUPPLY DRIVE PARAMETER SETTINGS

P100	(START SOURCE) = 01 (TERMINAL STRIP)
P150	(TB-30 OUTPUT) = 1
P194	PASSWORD = 225
P410	MODBUS ADDRESS = 21

ADJUST MANUALLY ON ALL DRIVES	
P103	VFD MAX FREQUENCY
P107	00 (IF 120 OR 208 VAC)
	OR 01 IF(230, 480 OR 575VAC)
P108	MOTOR FLA X 100 / DRIVE OUTPUT RATING
P167	REFERENCE BUILD SHEET

*NOTE: THE DEFAULT FOR THE DRIVE IS "225".

All external control wires to motor speed control should be 16-20 AWG shielded multi-conductor cables and must not be run in the same conduit or raceway with any high power wiring. Ground Shielded Cable at the drive chassis ONLY.

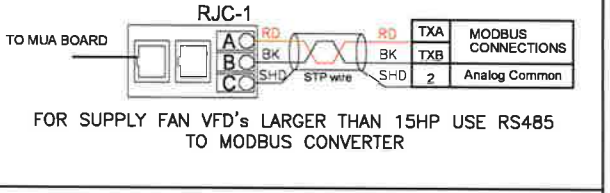
PG. 11, 19, 23 OF THE DRIVE MANUAL DESCRIBES THE PROPER HANDLING OF THE VARIABLE FREQUENCY DRIVE.

IT MAY BE REQUIRED TO FULLY POWER DOWN THE DRIVE AND TURN BACK ON IN ORDER TO INITIATE NEW PARAMETER SETTINGS.

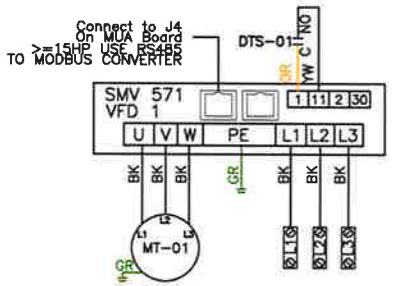
**Min. and Max. Frequency Settings override all other Preset speeds/Parameters. Do not adjust these on the VFD. Min. and Max. Frequency should be adjust on the RTU HMI.

SMV 571 SERIES VFD

Terminal	Description
1	Digital Input:(Start/Stop)
11	Internal DC Supply for External Devices
2	Analog Common
30	Analog Output:Configurable with P150..P155
RJ45	MODBUS COMMUNICATION
PE	Ground Terminal
L1	3 Phase Input or Single Phase Input
L2	3 Phase Input or Single Phase Input
L3 (N)	3 Phase Input (Neutral for 120v)
U	3 Phase AC Motor
V	3 Phase AC Motor
W	3 Phase AC Motor



FOR SUPPLY FAN VFD's LARGER THAN 15HP USE RS485 TO MODBUS CONVERTER

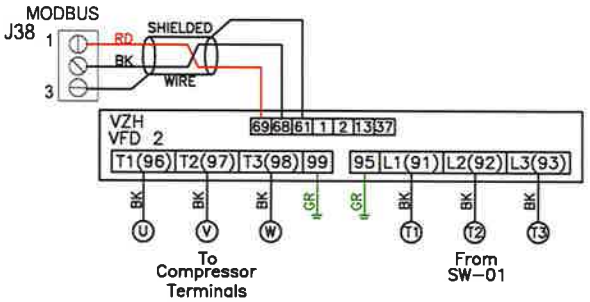


COMPRESSOR DRIVE PARAMETER SETTINGS MUST BE CONFIGURED BEFORE STARTUP

COMPRESSOR VFD 1

0-22	[1610] POWER KW
0-40	[2] PASSWORD
0-60	225
0-61	[1] LCP READ ONLY
0-66	[1] LCP READ ONLY
3-15	[0] NO FUNCTION
3-16	[0] NO FUNCTION
3-41	200.00s
3-42	200.00s
3-51	30.00s
3-52	30.00s
8-01	[2] CTRL WORD ONLY
8-03	10 SECONDS
8-04	[2] STOP
8-30	[2] MODBUS RTU
8-31	1
8-32	19200
8-33	[0] EVEN PARITY, 1 STOP BIT
8-43-2	1610
8-43-3	1610
8-43-4	1613
8-43-5	1613
8-43-6	1614
8-43-7	1614
8-43-8	1690
8-43-9	1690
8-43-10	1634
8-43-12	1694
8-43-13	1694
28-00	DISABLE
28-12	24h

*Must be programmed using software



VZH SERIES COMPRESSOR VFD

TERMINAL	FUNCTION
13	24+
37	Pressure Switch In
1	Relay 1 to oil solenoid
2	Relay 1 to oil solenoid
61	COM RS-485
68	N RS-485
69	P RS-485
95	INPUT Ground
L1 (91)	3 Phase Input or Single Phase Input
L2 (92)	3 Phase Input or Single Phase Input
L3 (93)	3 Phase Input
T1 (96)	Compressor
T2 (97)	Compressor
T3 (98)	Compressor
99	Compressor Ground

MOTOR INFO
OUTDOOR:1.34HP-200-240V-3P-3.6FLA
OUTDOOR PART:187138
SUPPLY: 5HP-208V-3P-15.0FLA
SUPPLY VFD PART: ESV402N02TXB571
COMP:VZH117BJ
COMP MOTOR: 190-240V-3P-55.4RLA
COMP VFD PART:134F9363

ELECTRICAL INFORMATION
COIL/MOTOR/CTRL CIRCUIT MCA:117.7A
COIL/MOTOR/CTRL CIRCUIT MOP:125A

RTU VFD SCHEMATIC

COMPONENT LIST

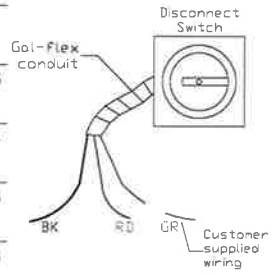
LABEL	DESCRIPTION
DTS-01	Blower Door Sw
MT-01	Supply Motor
PWS-01	24VDC Power Supply
SW-01	Main Disconnect Sw
VFD-1	Supply Motor VFD
VFD-2	Compressor VFD

LEGEND
FIELD WIRING
FACTORY WIRING
BK-BLACK YW-YELLOW
BL-BLUE GY-GREY
BR-BROWN PR-PURPLE
OR-ORANGE RD-RED
WH-WHITE GR-GREEN
OR/BL-OR/BL STRIPE
BU/RD-BU/RD STRIPE
RD/GN-RD/GN STRIPE
WH/BL-WH/BL STRIPE

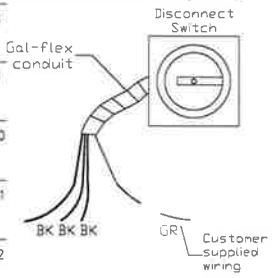
JOB NAME: Green Cove Spri...
DRAWING TITLE:
DESCRIPTION: MUA BOARD (DETAILS TO FOLLOW)
JOB NO: 6113782
DRAWN BY: AUTO
TYPE: FACTORY
DATE: 7/18/2023
DWG NO: RTUVFD6113782-1

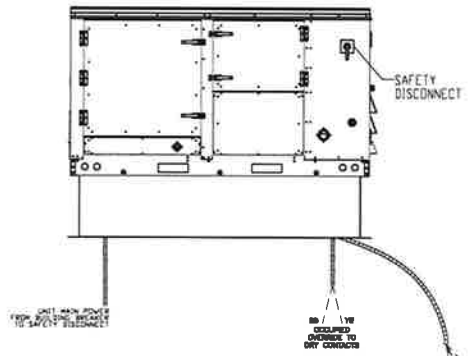
RTU Installation Wiring	JOB	Green Cove Springs Police Replacement	
DRAWING NUMBER INST6113782-1	SHIP DATE 7/18/2023	MODEL	CASRTU3-E,322-24-20T

240 V 1 PH.



208/460/600 V 3 PH.

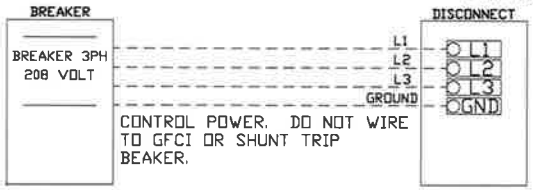




BREAKER TO PRIMARY DISCONNECT

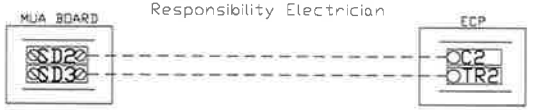
Responsibility Electrician

BREAKER



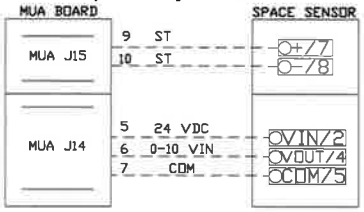
MUA BOARD TO ECP

Responsibility Electrician



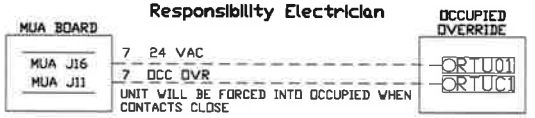
MUA BOARD TO SPACE SENSOR

Responsibility Electrician



MUA BOARD TO OCCUPIED OVERRIDE

Responsibility Electrician

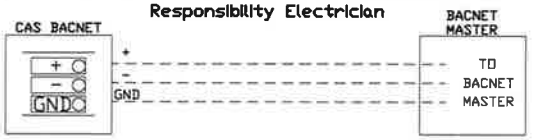


MUA BOARD TO SMOKE DETECTOR

Responsibility Electrician

CAS BACNET TO BACNET MASTER

Responsibility Electrician



Installed Options

OCCUPIED OVERRIDE

SPACE REHEAT CONTROL

NOTES

WIRE COLOR

BK - BLACK	YW - YELLOW
BL - BLUE	GR - GREEN
BR - BROWN	GY - GRAY
OR - ORANGE	PR - PURPLE
RD - RED	PK - PINK
WH - WHITE	

AIR-MAX
HEATING & COOLING, Inc.
CAC 048100

August 4, 2023

City of Green Cove Springs
321 Walnut Street
Green Cove Springs, FL 32043
Email: sthomas@greencovesprings.com

Ref: EOC – 1001 Idlewild Ave

We propose to remove and replace (1) existing AAON unit with a roof top mounted AAON unit.

*Price includes but is not limited to the following:

The new unit. New controllers, new curb, new duct work to existing duct work, new drain line, all roofing, electrical, and mechanical contactors will be State of Florida licensed contractors.

Delivery time on the new unit is approx. 20-30 weeks.

The warranty will be one-year on labor and functional parts with five-years on the compressor. *All warranties are subject to the manufacturer's specifications.

The price for the above-mentioned work will be $133,157.00. Payments are to be made 100% upon completion.

This Quote is good for 60 days.

Thank you for the opportunity of submitting this quote.

Acceptance: _____ Date: _____

Thank you,

Michael C. Taylor
President/C.E.O.

Unit Rating

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094
AAONEcat32 Ver. 4.335 (SN: 6681840-HRDLEDR4)

1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23
R	N	-	0	1	6	-	8	-	0	-	H	A	0	9	-	1	4	2	:	M	0	0	0	-	U	0	B	-	D	P	P
-	B	0	A	-	0	D	E	B	W	B	F	-	0	0	-	0	0	C	0	0	0	0	V	B							

Tag: RTU-1

Job Information

Job Name:	*Green Cove Springs Police Replacement*
Job Number:	*Job #2021040855*
Site Altitude:	*0 ft*
Refrigerant	*R-410A*

Static Pressure

External:	*1.25 in. wg.*
Evaporator:	*0.07 in. wg.*
Filters Clean:	*0.06 in. wg.*
Dirt Allowance	*0.35 in. wg.*

Cooling Section

	Gross	Net
Total Capacity:	*193.48*	*190.30 MBH*
Sensible Capacity:	*104.51*	*101.33 MBH*
Latent Capacity:	*88.97 MBH*	
Mixed Air Temp:	*95.00 °F DB*	*78.00 °F WB*
Entering Air Temp:	*95.00 °F DB*	*78.00 °F WB*
Lv Air Temp (Coil):	*54.25 °F DB*	*54.06 °F WB*
Lv Air Temp (Unit)	*55.41 °F DB*	*54.54 °F WB*
Supply Air Fan:	*1 x 245D60 @ 1.10 BHP*	
SA Fan RPM / Width:	*1018 /2.961"*	
Evaporator Coil:	*19.9 ft² /4 Rows /14 FPI*	
Evaporator Face Velocity:	*125.9 fpm*	

Unit Information

Approx. Op./Ship Weights:	*2371 /2371 lbs. (±5%)*
Supply CFM/ESP:	*2500 /1.25 in. wg.*
Final Filter FV / Qty:	*120.00 fpm /6*
Outside CFM:	*2500*
Ambient Temperature:	*95 °F DB /78 °F WB*
Economizer:	*0.00 in. wg.*
Heating:	*0.02 in. wg.*
Cabinet:	*0.01 in. wg.*
Re-Heat Coil:	*0.01 in. wg.*
Total:	*1.77 in. wg.*

Heating Section

PreHeat Type:	*Std (No Preheat)*
Heating Type:	*Electric Heat*
Heating CFM:	*2500*
Total Capacity:	*102.4 MBH*
OA Temp:	*35.0 °F DB /30.0 °F WB*
RA Temp:	*75.0 °F DB /62.0 °F WB*
Entering Air Temp:	*35.0 °F DB /30.0 °F WB*
Leaving Air Temp:	*72.9 °F DB /49.7 °F WB*
Input:	*30.0 kW*
Heater Qty:	*4*
Electric Heat FLA:	*83.3*

Re-Heat Coil:

Capacity:	*43 MBH*
LA DB /WB:	*70.00 °F /60.14 °F*
RH:	*57%*

Rating Information

Listing Model: RN-016-3-0-DAAY-V0-21-000-A

Cooling Capacity (MBH):	*182.0*
Cooling EER:	*11.5*
Cooling IEER:	*15.5*

Rated in accordance with AHRI 340/360

Application EER @ Op. Conditions: *11.8*

Electrical Data

Rating:	*208/3/60*	Minimum Circuit Amp:	*114*
Unit FLA:	*91*	Maximum Overcurrent:	*125*
SCCR:	*5 KAIC*		

	Qty	HP	VAC	Phase	RPM	FLA	RLA
Compressor 1:	1		208	3			24
Compressor 2:	1		208	3			26.9
Condenser Fans:	2	1.00	208	1	1110	7.4	
Supply Fan:	1	2.00	208	3	1170	7.5	

*Cabinet Sound Power Levels**

Octave Bands:	63	125	250	500	1000	2000	4000	8000
Discharge LW(dB):	85	84	89	89	86	84	77	69
Return LW(dB):	76	74	73	65	64	62	54	45

**Sound power levels are given for informational purposes only. The sound levels are not guaranteed.*

24.5" STAR Plenum

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094
AAONEcat32 Ver. 4.335 (SN: 6681840-HRDLEDR4)

JOB INFORMATION:

Job Name:	*Green Cove Springs Police*
Job Tag:	*Replacement*
Rep Firm:	*RTU-1*
Date:	*06/28/2023*

WHEEL SPECIFICATION:

Max RPM:	*1,800*
Diameter x Qty:	
Width%:	*24.5 in. x 1*
Tip Speed:	*90*
Inertia:	*6,530 FPM*
	10 WR²

OPERATING CONDITIONS:

Air Flow:	*2,500 CFM*
Static Pressure:	*1.77 in. Wg.*
Plenum DP:	*0.00 in. Wg.*
Inlet Grill DP:	*0.00 in. Wg.*
TSP:	*1.77 in. Wg.*
Site Altitude:	*0.00 Ft*
TSP @ Sea Level:	*1.77 in. Wg.*

MOTOR SELECTION:

Rated HP / Bypass:	*2 /No*
Frame Size:	*184T*
Nominal RPM:	*1170*
VAC/PH/HZ:	*208/3/60*
Efficiency	*Premium /0.875*
Enclosure Type:	*ODP*
Max Inertial Load:	*72 WR²*

FAN PERFORMANCE:

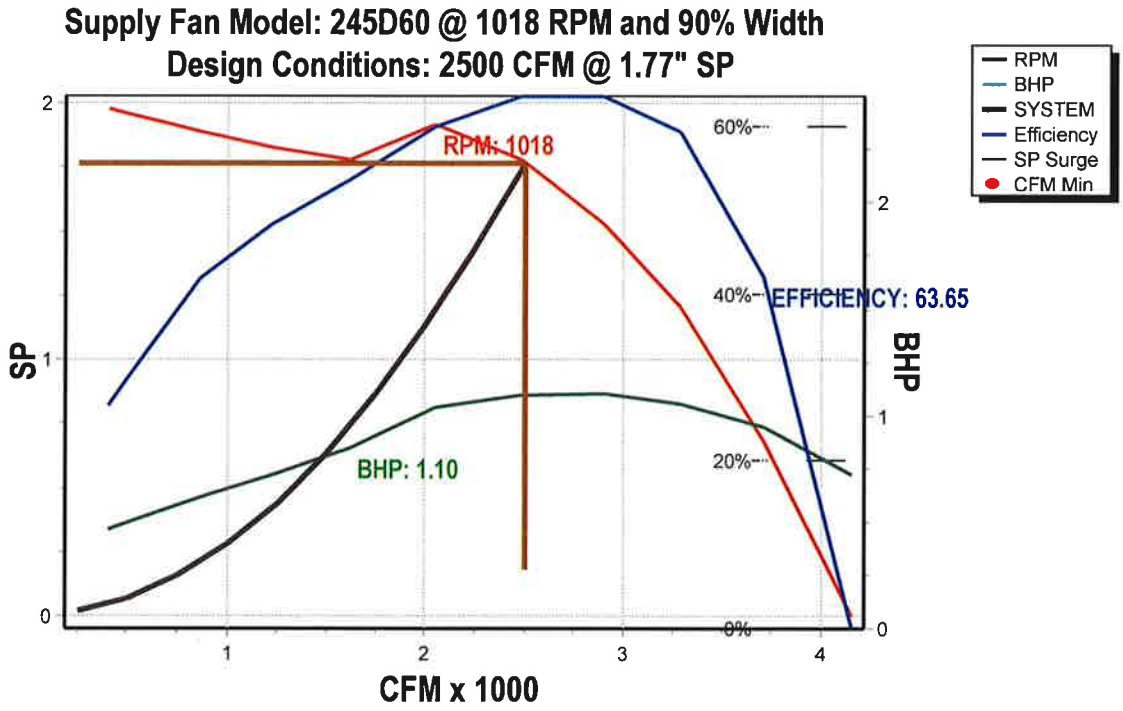
RPM:	*1018*
BHP:	*1.10*
Efficiency:	*63.6%*
In/Out Velocity:	*765/842 FPM*
Plenum Out Velocity:	*42 FPM*

FAN SOUND POWER (Inlet/Outlet):

Octave Band:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
(Re 10^-12 watts)								
	85	*83*	*83*	*81*	*77*	*76*	*72*	*68*
	85	*84*	*89*	*91*	*89*	*87*	*80*	*72*

SOUND POWER A-Weighted: 86 / 92 dB

Max Duct SP with Blocked Airway: **1.9 in. Wg. @ 1018 rpm**



Unit Submittal

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094
AAONEcat32 Ver. 4.335 (SN: 6681840-HRDLEDR4)

1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23
R	N	0	1	6	-	8	-	0	-	H	A	0	9	1	4	2	:	M	0	0	0	-	U	0	B	-	D	P	P	-	B

0	A	0	D	E	B	W	B	F	-	0	0	-	0	0	C	0	0	0	0	V	B

Tag: RTU-1

Job Name: *Green Cove Springs Police Replacement*
Job Number: *Job #2021040855*
Unit Submittal For:
Unit Submittal Date: *June 28, 2023*

	Base Option	Description
R	Series	Roof Top Unit
N	Generation	Ninth Generation
016	Unit Size	Sixteen
8	Voltage	208V/3Ø/60Hz
0	Interior Protection	Standard
H	Refrigerant Style	R-410A Variable Capacity Scroll Compressor + Two-Step Compressor - High Efficiency
A	Unit Configuration	Air-Cooled Cond. + Std Evap. Coil
0	Coil Coating	Standard
9	Cooling/Heat Pump Staging	Modulating - 1 VCC + 1 Staged Comp.
1	Heating Type	Electric Heat
4	Heating Designation	Heat 4 - 30 kW
2	Heating Staging	2 Stage

	Feature Option	Description
M	1A. RA/OA Section	Motorized 100% Outside Air Dampers - No RA Opening
0	1B. RA/EA Blower Configuration	Standard - None
0	1C. RA/EA Blower	Standard - None
0	1D. RA/EA Blower Motor	Standard - None
U	2. OA Control	2 Position Actuator
0	3. Heat Options	Standard
B	4. Maintenance Options	115V Convenience Outlet - Factory Wired
D	5A. SA Blower Configuration	1 Blower + Premium Efficiency Motor + 1 VFD
P	5B. SA Blower	24" Direct Drive Backward Curved Plenum - 60% Width
P	5C. SA Motor	2.0 hp - 1170 rpm
B	6A. Pre Filter Type	Metal Mesh OA Pre Filter
0	6B. Unit Filter Type	2" Pleated - 30% Eff
A	6C. Filter Options	Clogged Filter Switch
0	7. Refrigeration Control	Standard - Adj Comp. Cooling Lock Out Through Unit Controls
D	8. Refrigeration Options	Modulating Hot Gas Reheat
E	9. Refrigeration Accessories	ECM Condenser Fan - Head Pressure Control
B	10. Power Options	Non-fused Disconnect Power Switch - 150 Amps
W	11. Safety Options	Remote Safety Shutdown Terminals + High Condensate Level Switch
B	12. Controls	Phase & Brown Out Protection
F	13. Special Controls	Make Up Air Unit Controller - CV Cool + CV Heat
0	14A. Outside Air Configuration	Standard - None
0	14B. Preheat Sizing	Standard - None
0	15. Glycol Percent	Water or No WSHP
0	16. Interior Cabinet Options	Standard - Double Wall + R-13 Foam Insulation + Stainless Steel Drain Pan
C	17. Exterior Cabinet Options	Cond. Coil Guards
0	18. Electrical Rating	Standard - 5 KAIC
0	19. Code Options	Standard - ETL U.S.A. Listing
0	20. Crating	Standard
0	21. Water-Cooled Cond.	Standard - None
V	22. Control Vendors	VCC-X Controls + Integrated BACnet MSTP
B	23. Type	Standard - Includes AAON Gray Paint

VCCX Components

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094
AAONEcat32 Ver. 4.335 (SN: 6681840-HRDLEDR4)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

RN-016-8-0-HA09-142:M000-U0B-DPP-B0A-0DEBWBF-00-00C0000VB

Tag: RTU-1

Job Name: *Green Cove Springs Police Replacement*

VCCX For:

Job Number: *Job #2021040855*

VCCX Date: *June 28, 2023*

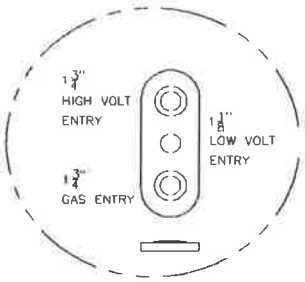
Hardware Included For VCCX Controller

Part #	Included Parts	Assigned Channel	BACnet Point
ASM01698	VCCX2 CONTROLLER		
ASM01692	OSA Temp/Hum Sensor	EBUS2 communicating sensor	AI:16,AI:17,AI:18,AI:19
R82890	Supply Temp Sensor - Field Installed	VCCX control point AI 3	AI:9
	Supply Fan Control Signal 0-10VDC	VCCX control point AO 1	AI:22
	Economizer	VCCX control point AO 2	AI:30
R62330	Proof of Air Flow	VCCX control point BI 1	BI:6, BI:24
R64580	Dirty Filter Sensor	VCCX control point BI 2	BI:25
	Safety Shut Down	VCCX control point BI 8	BI:26
	Supply Fan	Configured Relay Point	BI:47
	Heat 1	Configured Relay Point	BI:48
	Heat 2	Configured Relay Point	BI:49
ASM02201	DIGITAL REFRIGERATION MODULE		
R57800	Comp Discharge Temp A	RSMD point TEMP1	AI:66
V38391	Suction Pressure Sensor A	RSMD point SP-1	AI:48
V38410	Discharge Pressure Sensor A	RSMD point HP-1	AI:50
V38410	Discharge Pressure Sensor B	RSMD point HP-2	AI:75
R63950	Modulated Condenser Signal B	RSMD point AO2	AI:47
R63950	Modulated Condenser Signal A	RSMD point AO1	AI:46
	Comp Status Input A	RSMD point BIN1	BI:77
	Comp Status Input B	RSMD point BIN2	BI:78
	Emergency Shutdown	RSMD point BIN4	BI:83
	Comp Unload Signal A	RSMD point T1	AI:44
	Comp Enable A	RSMD Fixed Relay point	BI:84
	Comp Enable B	RSMD Fixed Relay point	BI:85
ASM01670	MODULATING HOT GAS REHEAT MODULE		
	Reheat HGR Valve	MHGRV-X	AI:42

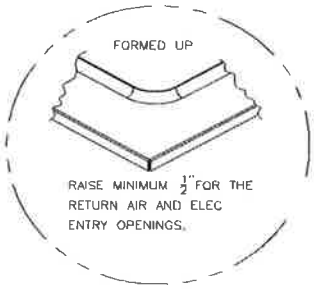
RN SERIES
C - CABINET STANDARD ~ 16-30 TON

CLEARANCES

LOCATION	• UNIT SIZE • 16 - 30 TON
OUTSIDE AIR (BACK)	48
CONTROLS SIDE (FRONT)	48
LEFT SIDE	6
RIGHT SIDE	60
TOP	UNOBSTRUCTED



DETAIL A

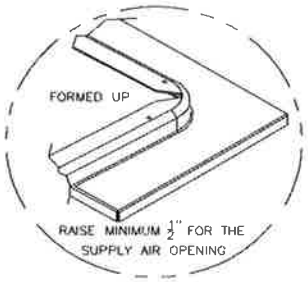


DETAIL B

NUMBER OF CONDENSER FANS

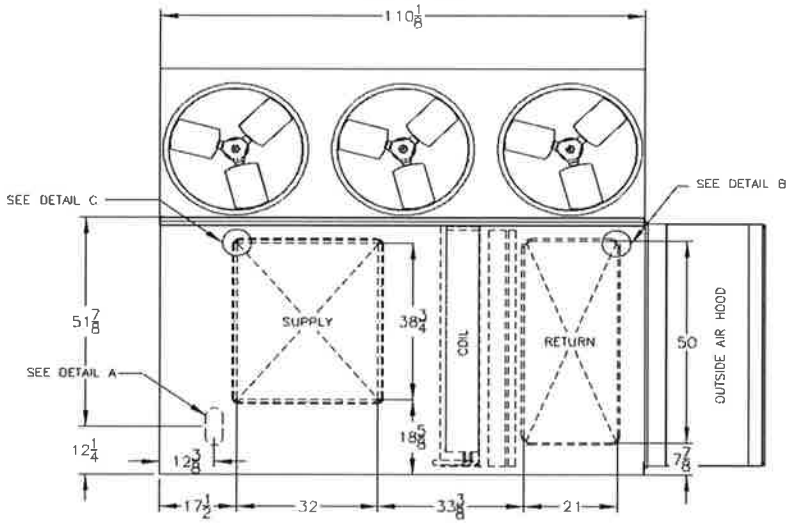
16,18 & 20 TON - 2 FANS

25 & 30 TON - 3 FANS

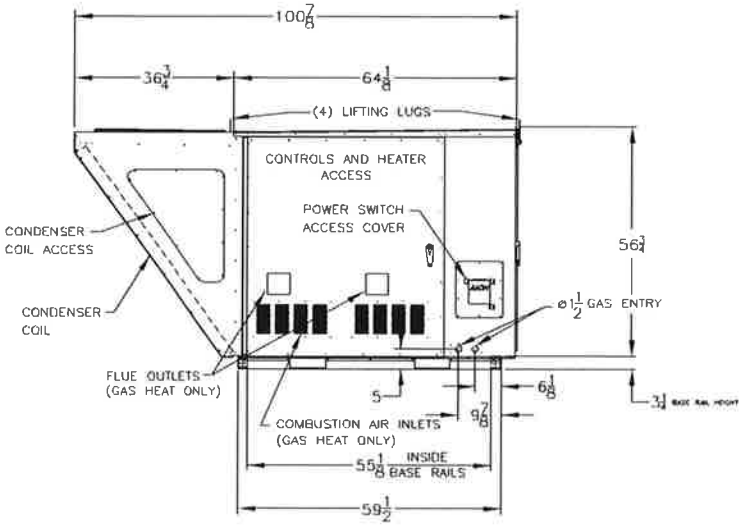


DETAIL C

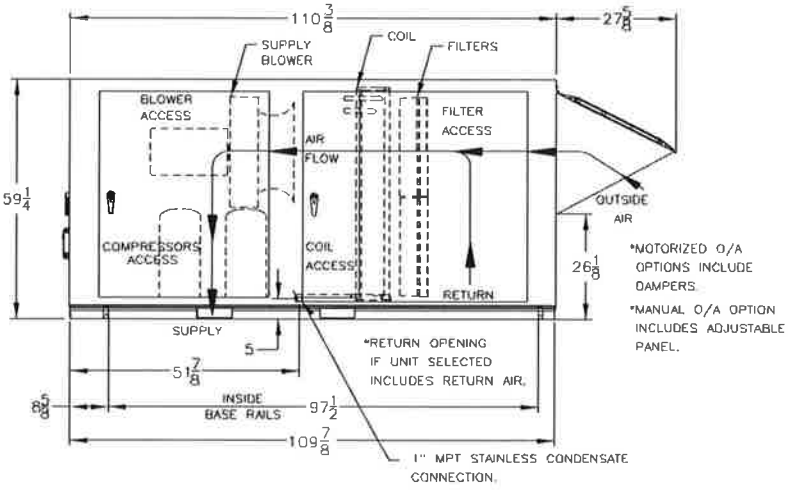
TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW



*NOTORIZED O/A OPTIONS INCLUDE DAMPERS.

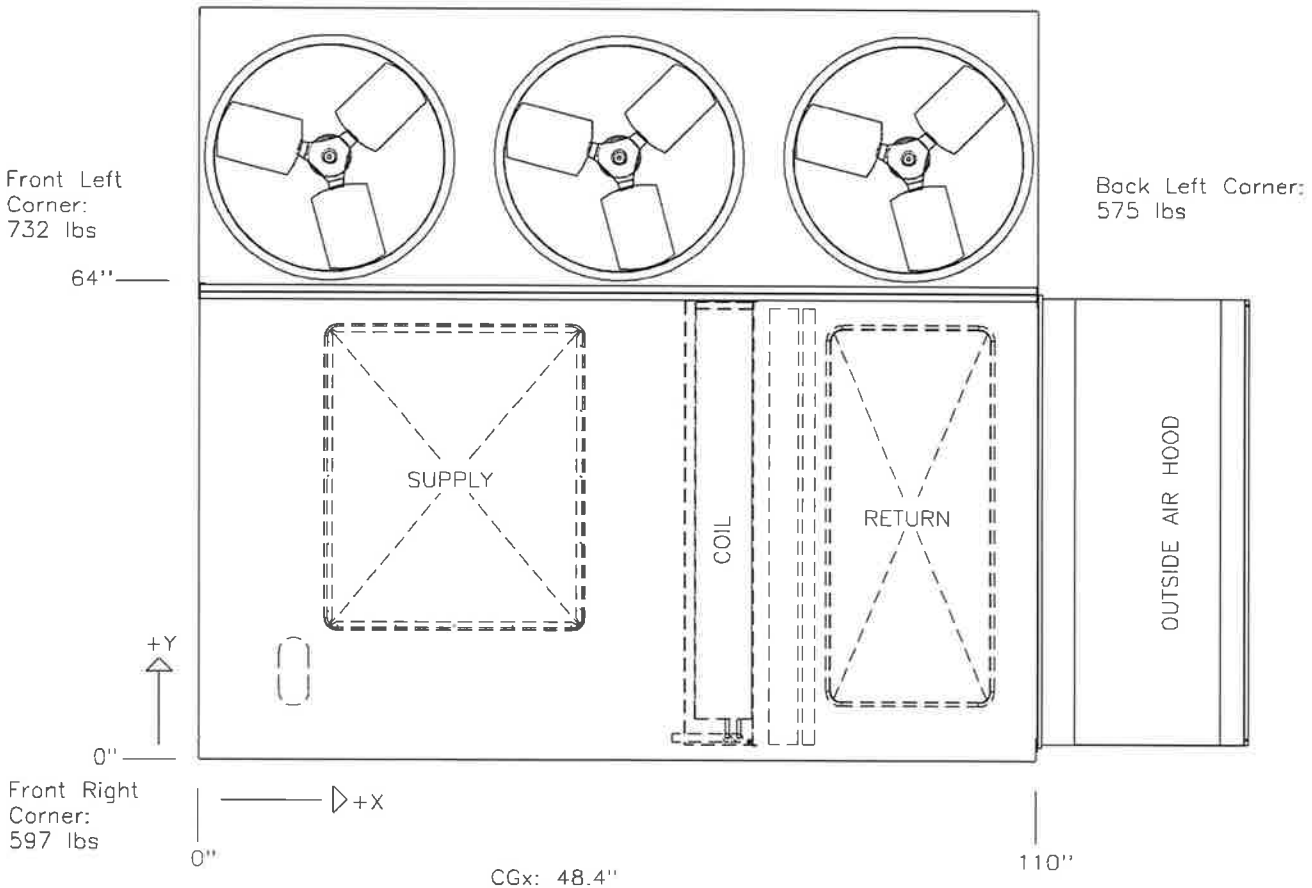
*MANUAL O/A OPTION INCLUDES ADJUSTABLE PANEL.

RNC-00001 REV:E 08/20/14 MLW

NOTE: ALL DIMENSIONS ARE IN INCHES

RNC CABINET
AIR COOLED CONDENSING UNIT

RN-016-8-0-HA09-142:M000-U0B-DPP-B0A-0DEBWBF-00-00C0000VB



Disclaimer:
This weight estimate does not account for any SPAs.

AIR-MAX
HEATING & COOLING, Inc.
CAC 048100

August 4, 2023

City of Green Cove Springs
321 Walnut Street
Green Cove Springs, FL 32043
Email: sthomas@greencovesprings.com

Ref: EOC – 1001 Idlewild Ave

We propose to remove and replace (1) existing AAON unit with a roof top mounted VALENT unit.

*Price includes but is not limited to the following:

The new unit. New controllers, new curb, new duct work to existing duct work, new drain line, all roofing, electrical, and mechanical contactors will be State of Florida licensed contractors.

Delivery time on the new unit is approx. 20-30 weeks.

The warranty will be one-year on labor and functional parts with five-years on the compressor. *All warranties are subject to the manufacturer's specifications.

The price for the above-mentioned work will be $129,700.00. Payments are to be made 100% upon completion.

This Quote is good for 60 days.

Thank you for the opportunity of submitting this quote.

Acceptance: _____ Date: _____

Thank you,

Michael C. Taylor
President/C.E.O.

valent

Printed Date: 08/03/2023
Job: Green Cove EOC
Mark: RTU-1
Model: VX-112-15I-1-E1

VX-112-15I-1-E1

Unit Performance

Design Conditions

Elevation (ft)	Summer		Winter DB (F)	Supply (CFM)	Outdoor Air (CFM)	Exhaust Air (CFM)
	DB (F)	WB (F)				
33	95.0	78.0	29.2	2,500	2,500	-

Unit Specifications

Qty	Weight (lb)	Cooling Type	Heating Type	Unit Installation	Unit ETL Listing
1	2,305 (+/- 5%)	Packaged DX	Electric	Outdoor	UL\cUL 1995

Configuration

Outdoor Air		Exhaust Air	
Intake	Discharge	Intake	Discharge
End	Bottom	None	-

ASHRAE 90.1-2019 Compliance

	ASHRAE 90.1 Min. Efficiency	Calculated Efficiency	Compliance
ISMRE	4	8.4	✓

Cooling Specifications

Type	Total Capacity (MBH)	Sensible Capacity (MBH)	Lead Compressor Type	Coil (DB/WB)		Reheat	
				EAT (F)	LAT (F)	Capacity (MBH)	LAT (F)
Packaged DX	205.5	110.1	Inverter Scroll	95.0 / 78.0	55.1 / 55.1	99.4	91.9

Heating Specifications

Type	Capacity (kW)	Full Load Amps (FLA)	Capacity Control	Performance	
				EAT (F)	LAT (F)
Electric	28.7	79.66	Modulating (SCR)	29.2	65.5

Air Performance

Type	Total Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	FRPM	Fan		
					Qty	Type	Drive-Type
Supply	2,500	1.25	1.706	1455	1	Plenum	Direct

Motor Specifications

Motor	Qty	Operating Power (hp)	Size (hp)	Enclosure	Efficiency	RPM
Supply	1	1.06	1-1/2	ODP	PE	1170

Electrical Specifications

Power Supply	Rating (V/C/P)	MCA (A)	MOP (A)	FLA (A)	Fan Power (W/CFM)*
Unit	208/60/3	106.0	125.0	84.8	0.315

*Fan Power (W/CFM) = (Supply BHP + Exhaust BHP) / Supply CFM

Construction Features And Accessories

Unit	
Unit Installation - Outdoor	Std
Unit Construction - Double Wall	Std
Insulation - 2 inch 2.4# R13 foam	Std
Corrosion Resistant Fasteners	Std
Hinged Access	Std
Factory Wired Non-Fused Disconnect Switch	X
Direct Drive Plenum Blower & Motor Assemblies	X
Factory Wired VFDs	Std
Unit Finish - Permatector, Concrete Gray (RAL 7023)	X
Stainless Steel Condensate Drain Pan and Connection	Std
Condensate Drain Trap	Std
Short Circuit Current - 5 kA	Std
Controls	
Unit Controls - Full Control	Std
Internally Mounted Control Center with 24 VAC control transformer(s) and control circuiting fusing	Std
BMS Protocol - BACNetMSTP	X
BMS Monitoring Points	
Supply Fan Control - Constant Volume-Adj. Setpoint	X
Exhaust Fan Control	
Exhaust Fan Only Power	
Energy Wheel Rotation Sensor	
Web-Based User Interface	Std
Damper Control - Constant Volume-Adj. Setpoint	X
Economizer Control	
Control Accessories	
Remote Display	
Dirty Filter Sensor(s)	
Airflow Monitor	
Room Thermostat	
Phase/Brownout Protection	Std
Economizer Fault Detection Diagnostics	

Accessories	
Recirc Air Damper	
Outdoor Air Damper - Low Leakage	X
Return Air Damper	
Roof Curb - GKD - 45.9/91.9-G14	X
Supply Air Filters - 2" Merv 8, 2-20x20x2, 2-20x24x2	Std
Service Outlet	
Piping Vestibule	
Service Lights	
Condensate Overflow Switch	X
Spare Filters	
Exhaust Discharge Gravity Backdraft Damper	
ElectroFin Coil Coating	
Motor Shaft Grounding	X
UV Lights	
Bipolar Ionization	
Smoke Detector(s)	
Barometric Relief Damper	
Hail Guards	
Warranty Options	
Unit Warranty - 18 Months (Std.)	Std
Compressor Warranty - 5.5 Yrs. (4 Yrs. Extended)	X

Standard Option	Std
Not Included	
Included	X

Notes
Outdoor Air Damper supplied is low leakage, motorized VCD-23 (leakage rate of 3 CFM / ft^2 @ 1 in. wg), Class 1A

Supply Fan Charts And Performance

Supply Fan Performance

Total Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor		Fan		
					Qty	Size (hp)	Qty	Type	Drive-Type
2,500	1.25	1.706	1455	1.06	1	1-1/2	1	Plenum	Direct

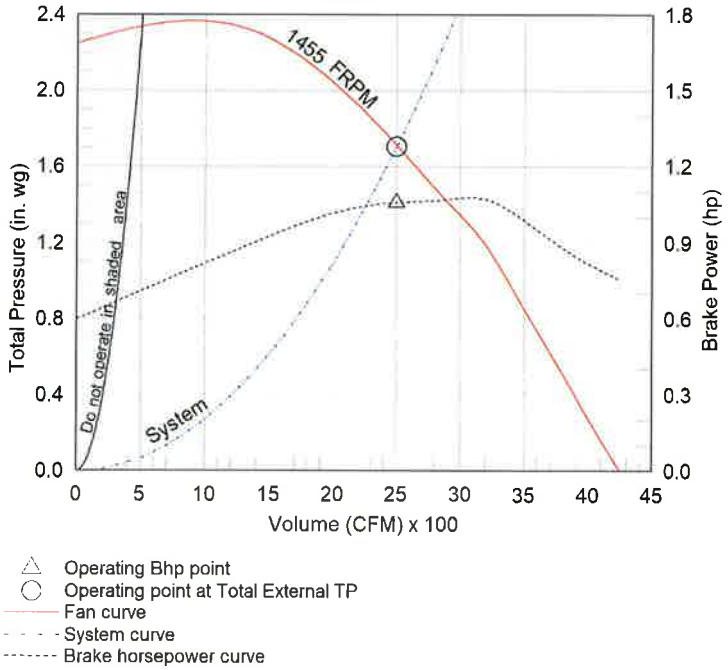
Pressure Drop (in. wg)

Weatherhood	Filter	Damper	Cooling	Heating	External	Total
0.05	0.081	0.02	0.2	0.084	1.25	1.706

Sound Performance in Accordance with AMCA

Sound Power by Octave Band								Lwa	dBA	Sones
62.5	125	250	500	1000	2000	4000	8000			
73	77	82	71	66	62	74	61	78	67	16

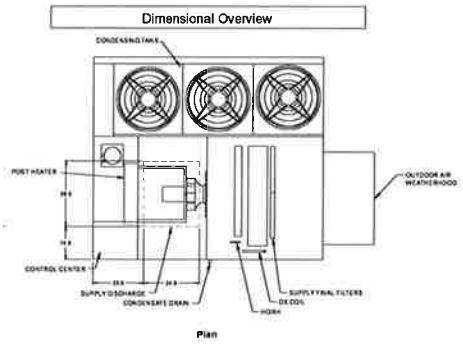
Supply Fan



△ Operating Bhp point
◯ Operating point at Total External TP
——— Fan curve
- - - - System curve
------- Brake horsepower curve

Radiated Sound

Position A



Position D

Position B

Position C

"E" is the Top Plane

Supply Air Flow Nominal, Largest Tonnage Condensing Section Available, PDX units only

Radiated Sound Levels										
Plane	Octave Bands (Lw)								Plane Lw	Plane LwA
	1	2	3	4	5	6	7	8		
A	73	85	78	80	81	73	67	62	88	83
B	71	79	69	78	73	68	64	57	83	78
C	79	77	69	76	75	70	60	59	83	78
D	74	77	72	74	74	67	61	58	82	77
E	77	84	78	79	77	72	65	61	87	81
Total	83	89	82	85	84	78	71	67	93	87

AMCA 320-07 - Laboratory Methods of Sound Testing of Fans Using Sound Intensity
Tests conducted in accordance with this standard.
Free field measurement plane created 1 foot from unit on all sides and top.
Sound Intensity measured in Watts/m^2.
Sound data converted to Sound Power (Lw) for the chart above.
A-Weighted Sound Power was determined using AMCA Standard 301-90 Clause 9.1.
Plane E sound data was measured above the top plane of the unit.

Cooling Performance

Cooling Specifications

Nominal Tonnage	Entering Air (F)		Leaving Air (F)		Capacity (MBH)		Reheat		Condensing Ambient Temp (F)
	DB	WB	DB	WB	Total	Sensible	Capacity (MBH)	LAT (F)	
15.0	95.0	78.0	55.1	55.1	205.5	110.1	99.4	91.9	95.0

Coil Information

PDX Coil Model	Fins Per Inch	Rows Deep	Face Vel. (ft/min)	Coil PD (in. wg)	Refrigerant	Refrig. Velocity (ft/min)	Face Area (ft2)	Suction Temp (F)
DR516L06S14-45X42.5-LH	14	6	188	0.2	R-410A	1,452	13.3	51.3

Compressor Details

Lead Compressor Type	Compressor Qty	Compressor RLA/MRC (A)		Compressor LRA (A)	
		Comp. #1	Comp. #2	Comp. #1	Comp. #2
Inverter Scroll	1	51.3	-	NA	-

Unit Details

Refrigerant charges provided by the factory are approximate and may require adjustment in the field
Hermetic scroll type compressors
Compressors mounted on neoprene vibration isolation
Stainless steel double sloped drain pan
Moisture-indicating sight glass
Service/charging valves
Refrigerant high pressure switch (manual reset)
Liquid-Line filter drier
Multiple low sound condensing fans with Lead ECM condensing fan for modulating head pressure control
Inverter scroll compressor
Electronic expansion valve

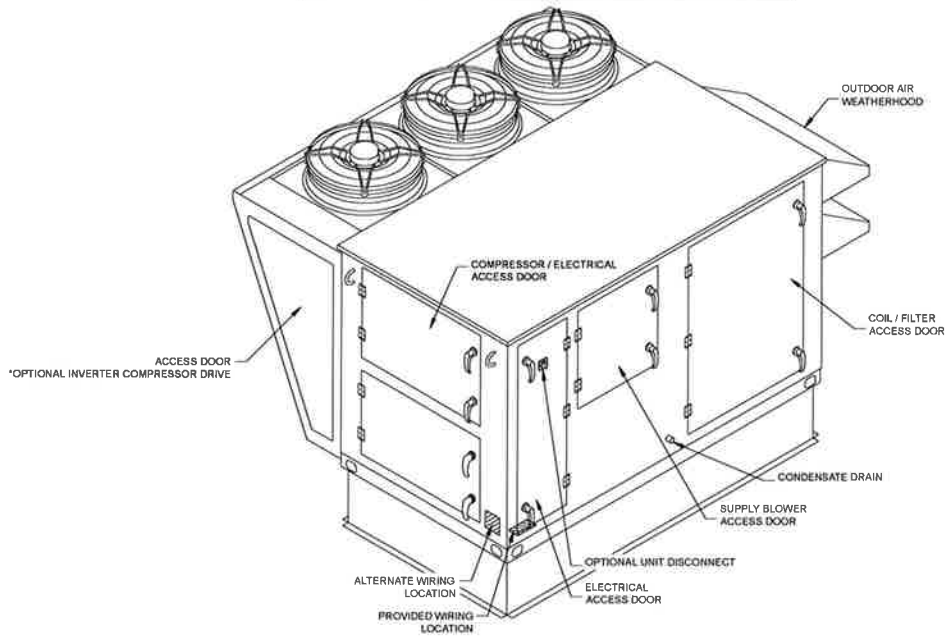
Heating Performance

Heating Specifications					
Type	Capacity (kW)	Full Load Amps (FLA)	Capacity Control	Performance	
				EAT (F)	LAT (F)
Electric	28.7	79.66	Modulating (SCR)	29.2	65.5

Unit Details
Open coil heating elements
High grade Nickel-Chrome alloy coils
SCR controller
Unit can run compressors or electric heater independently. Simultaneous operation of heating and cooling cannot occur, and will be locked out. Unit MCA/MOCP will be sized for greater of the compressor or heater load.
Unit controller maximum allowable supply discharge air set point is 100F (37.8C)

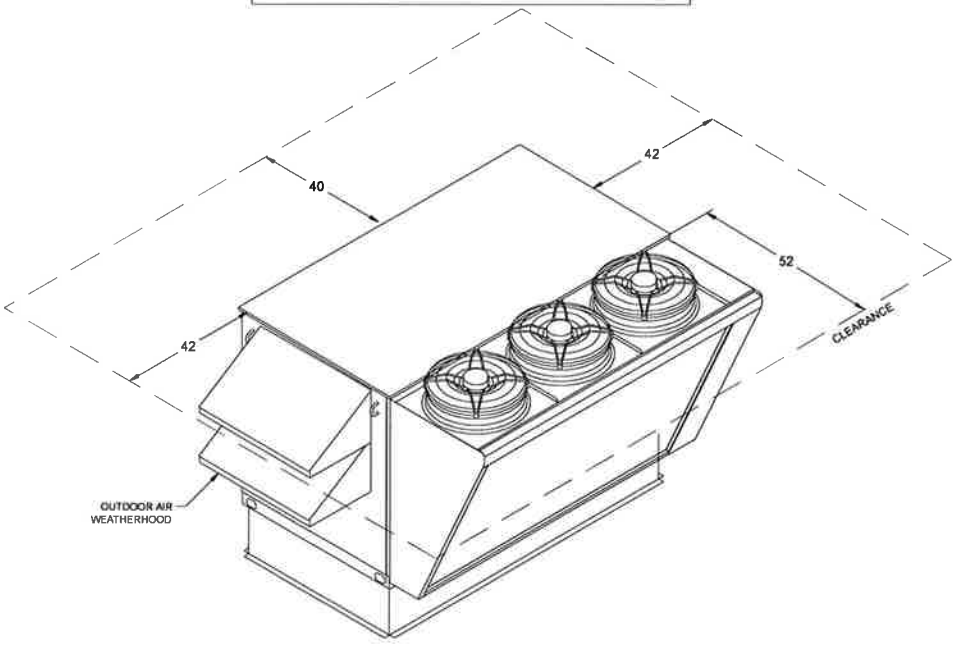
Isometric Drawings

Component Layout



Back Right Isometric

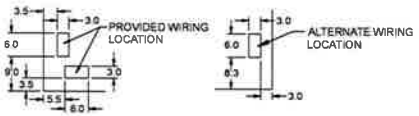
Service Clearances



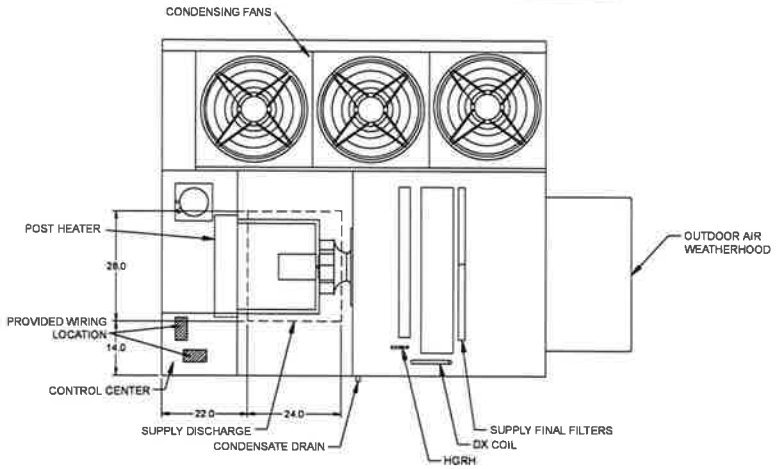
Front Left Isometric

Overview Drawings

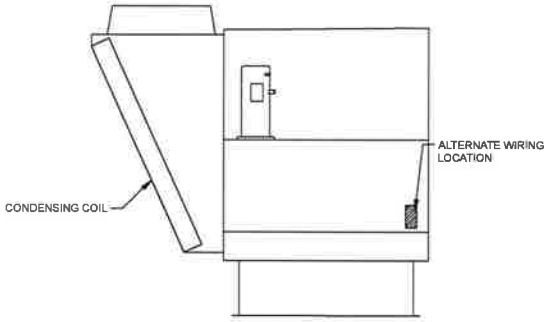
Electrical Connections



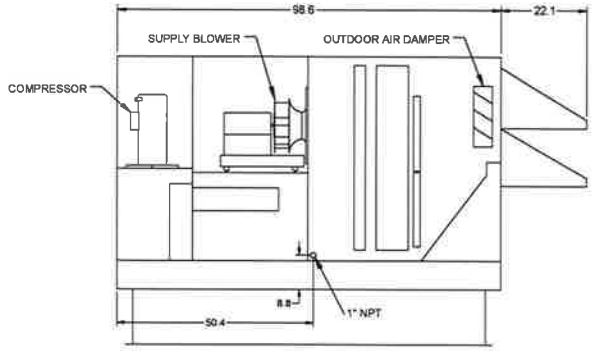
Dimensional Overview



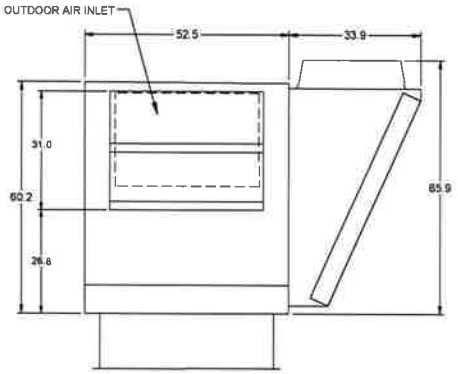
Plan



Left End



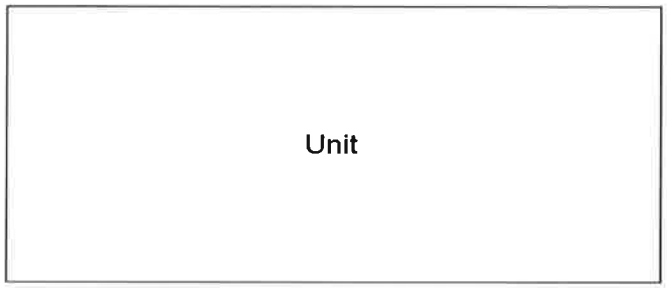
Elevation



Right End

Unit Corner Weights

783 lb 751 lb

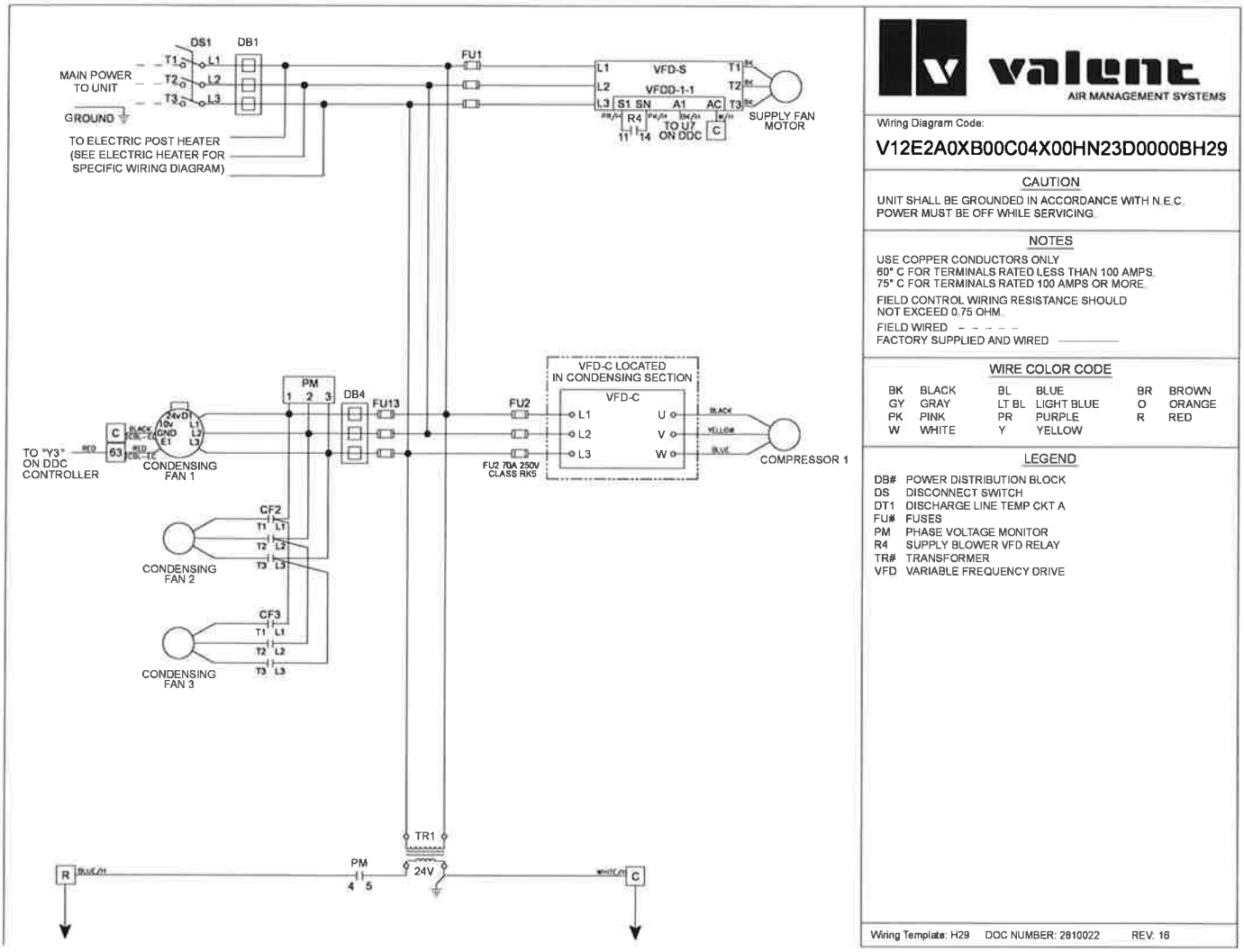


394 lb 378 lb

Note

Estimated corner weights are shown looking down on unit and the outside air intake will be on the right. Weights are applied at the base of the unit. Images not drawn to scale.

Wiring Diagram



valent
AIR MANAGEMENT SYSTEMS

Wiring Diagram Code:

V12E2A0XB00C04X00HN23D0000BH29

CAUTION

UNIT SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C.
POWER MUST BE OFF WHILE SERVICING.

NOTES

USE COPPER CONDUCTORS ONLY
60° C FOR TERMINALS RATED LESS THAN 100 AMPS.
75° C FOR TERMINALS RATED 100 AMPS OR MORE.
FIELD CONTROL WIRING RESISTANCE SHOULD NOT EXCEED 0.75 OHM.
FIELD WIRED - - - - -
FACTORY SUPPLIED AND WIRED ———

WIRE COLOR CODE

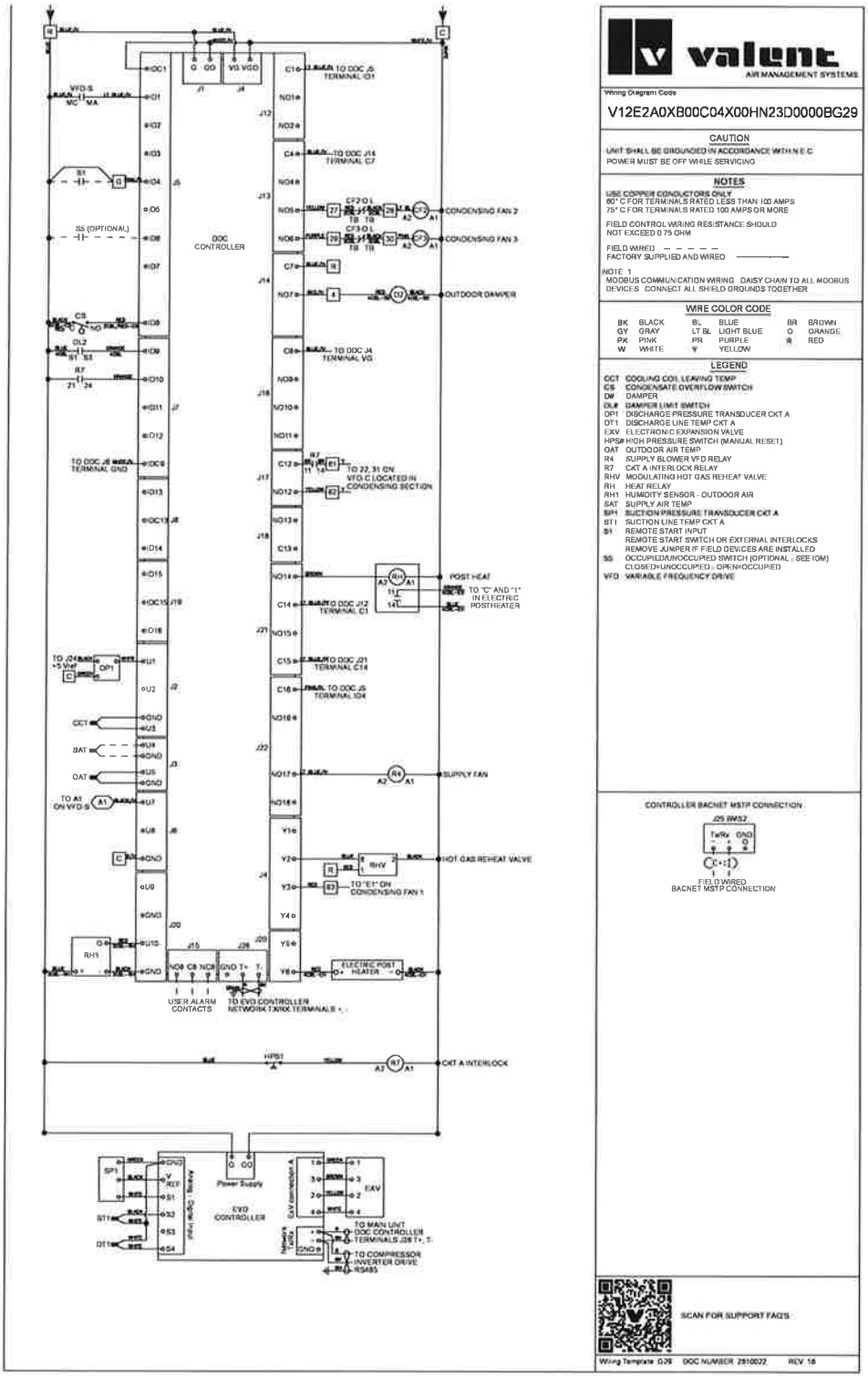
BK	BLACK	BL	BLUE	BR	BROWN
GY	GRAY	LT BL	LIGHT BLUE	O	ORANGE
PK	PINK	PR	PURPLE	R	RED
W	WHITE	Y	YELLOW		

LEGEND

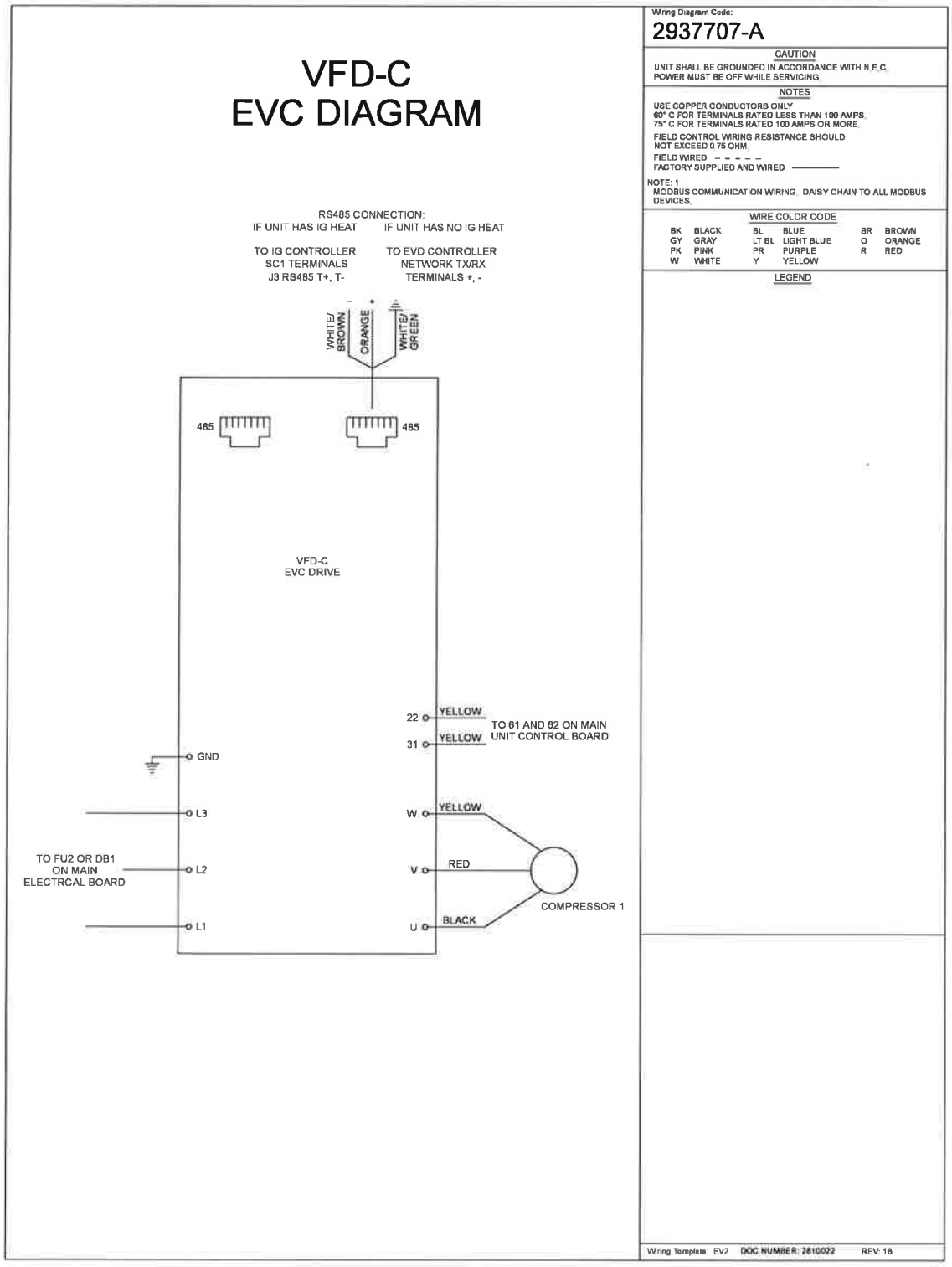
DB#	POWER DISTRIBUTION BLOCK
DS	DISCONNECT SWITCH
DT1	DISCHARGE LINE TEMP CKT A
FU#	FUSES
PM	PHASE VOLTAGE MONITOR
R4	SUPPLY BLOWER VFD RELAY
TR#	TRANSFORMER
VFD	VARIABLE FREQUENCY DRIVE

Wiring Template: H29 DOC NUMBER: 2810022 REV: 16

Wiring Diagram 2



Wiring Diagram 3



Valent Network Interface v8 Modbus/BACnet Points List

Variable	Description	BACnet Object	ModBus Object	Read or Write	Text or Unit of M		Included
					Active	Inactive	
Space_Temp_Analog_Input	Space Temperature	AI-1	30002	R	°F		
Supply_Temp_Analog_Input	Supply Temperature	AI-2	30004	R	°F		X
Outside_Air_Temp_Analog_Input	Outside Air Temperature	AI-3	30006	R	°F		X
Mixed_Temp_Analog_Input	Mixed Temperature	AI-4	30008	R	°F		
Cold_Coil_1_Temp_Analog_Input	Cold Coil 1 Temperature	AI-5	30010	R	°F		X
Return_Temp_Analog_Input	Return Temperature	AI-7	30014	R	°F		
Exhaust_Temp_Analog_Input	Exhaust Temperature	AI-8	30016	R	°F		
Space_RH_Analog_Input	Space % Relative Humidity	AI-9	30018	R	%		
Outside_RH_Analog_Input	Outside % Relative Humidity	AI-10	30020	R	%		
Return_RH_Analog_Input	Return % Relative Humidity	AI-11	30022	R	%		
Return_Duct_Static_Pressure_Analog_Input	Return Duct Static Pressure	AI-12	30024	R	"wc		
Space_Static_Pressure_Analog_Input	Space Static Pressure	AI-13	30026	R	"wc		
Supply_Duct_Static_Pressure_Analog_Input	Supply Duct Static Pressure	AI-14	30028	R	"wc		
Space_CO2_1_Analog_Input	Space 1 CO2 ppm	AI-15	30030	R	ppm		
Return_CO2_Analog_Input	Return CO2 ppm	AI-17	30034	R	ppm		
Circuit_A_Discharge_Temp_Analog_Input	Circuit A Discharge Temperature	AI-20	30040	R	°F		X
Circuit_A_Suction_Temp_Analog_Input	Circuit A Suction Temperature	AI-21	30042	R	°F		X
Circuit_B_Discharge_Temp_Analog_Input	Circuit B Discharge Temperature	AI-22	30044	R	°F		X
Circuit_B_Suction_Temp_Analog_Input	Circuit B Suction Temperature	AI-23	30046	R	°F		X
Circuit_A_Discharge_Pressure_Analog_Input	Circuit A Discharge Pressure	AI-28	30056	R	psig		X
Circuit_A_Suction_Pressure_Analog_Input	Circuit A Suction Pressure	AI-29	30058	R	psig		X
Circuit_B_Discharge_Pressure_Analog_Input	Circuit B Discharge Pressure	AI-30	30060	R	psig		X
Circuit_B_Suction_Pressure_Analog_Input	Circuit B Suction Pressure	AI-31	30062	R	psig		X
Aux_In_Customer_1	Customer defined auxiliary input	AI-36	30072	R	selectable		
Aux_In_Customer_2	Customer defined auxiliary input	AI-37	30074	R	selectable		
Aux_In_Customer_3	Customer defined auxiliary input	AI-38	30076	R	selectable		
Aux_In_Customer_4	Customer defined auxiliary input	AI-39	30078	R	selectable		
Aux_In_Customer_5	Customer defined auxiliary input	AI-40	30080	R	selectable		
Aux_In_Customer_6	Customer defined auxiliary input	AI-41	30082	R	selectable		
Aux_In_Customer_7	Customer defined auxiliary input	AI-42	30084	R	selectable		
Aux_In_Customer_8	Customer defined auxiliary input	AI-43	30086	R	selectable		
Aux_In_Customer_9	Customer defined auxiliary input	AI-44	30088	R	selectable		
Aux_In_Customer_10	Customer defined auxiliary input	AI-45	30090	R	selectable		
Temperature_Setpoint	Main Temperature Set point Supply, Space, or Return target temperature	AV-1	40002	RW	°F		X
Temperature_Heat_Cool_Deadband	Heat/Cool Spt Deadband when Room or Return control is active Clg Spt = Deadband /2 + Temp Spt Htg Spt = Deadband /2 - Temp Spt	AV-2	40004	RW	Delta in °F		
Temperature_Setpoint_Unoccupied	Main Temperature Set point Supply, Space, or Return target temperature	AV-3	40006	RW	°F		
Temperature_Heat_Cool_Deadband_Unoccupied	Heat/Cool Spt Deadband when Room or Return control is active Clg Spt = Deadband /2 + Temp Spt Htg Spt = Deadband /2 - Temp Spt	AV-4	40008	RW	Delta in °F		
Cooling_Coil_Setpoint_Min	Cooling Coil Leaving Air Setpoint	AV-5	40010	RW	°F		X
Cooling_Coil_Setpoint_Max	Maximum Coil Leaving Setpoint	AV-6	40012	RW	°F		X
Dehumidification_Setpoint	Dehumidification Setpoint %RH for Space or Return control	AV-7	40014	RW	%		
Outside_Dewpoint_Setpoint	Outside Dewpoint Dehumidification Trigger	AV-8	40016	RW	°F		X
Indoor_Dewpoint_Setpoint	Indoor Dewpoint Dehumidification Trigger	AV-9	40018	RW	°F		
Unocc_Indoor_Dewpoint_Setpoint	Unoccupied Indoor Dewpoint Dehumidification Trigger	AV-10	40020	RW	°F		
Unoccupied_Dehumidification_Setpoint	Unoccupied Dehumidification %RH Setpoint	AV-11	40022	RW	°F		
Economizer_Temp_Enable_Setpoint	Economizer Ambient Temp Enable Setpoint Allow Econ when OAT is less than Setpoint	AV-12	40024	RW	°F		
Economizer_Enthalpy_Enable_Setpoint	Economizer Enthalpy Enable Setpoint Allow Econ when OA Enthalpy is less than Setpoint	AV-13	40026	RW	btu/lb		
Cooling_Lockout_Setpoint	Cooling Ambient Lockout Setpoint	AV-17	40034	RW	°F		X
Heating_Lockout_Setpoint	Heating Ambient Lockout Setpoint	AV-18	40036	RW	°F		X
Preheat_Lockout_Setpoint	Preheat Ambient Lockout Setpoint	AV-19	40038	RW	°F		
Economizer_Lockout_Setpoint	Economizer Ambient Lockout Setpoint	AV-20	40040	RW	°F		
Return_Duct_Static_Pressure_Setpoint	Return Duct Static Pressure Setpoint	AV-21	40042	R	"wc		
Space_Static_Pressure_Setpoint	Space Static Pressure Setpoint	AV-22	40044	RW	"wc		
Supply_Duct_Static_Pressure_Setpoint	Supply Duct Static Pressure Setpoint	AV-23	40046	RW	"wc		
Space_CO2_Setpoint	Space_CO2_Setpoint	AV-24	40048	RW	ppm		
Outside_Air_Damper_Minimum_Setpoint_Occ	Outside Air Damper Minimum Setpoint	AV-24	40050	RW	%		
Outside_RH_from_BMS	Outside RH from BMS Used when source selection is set to BMS	AV-26	40052	RW	%		X
Outside_Temp_from_BMS	Outside Temp from BMS Used when source selection is set to BMS	AV-27	40054	RW	°F		X
Return_RH_from_BMS	Return RH from BMS Used when source selection is set to BMS	AV-28	40056	RW	%		X
Return_Temp_from_BMS	Return Temp from BMS Used when source selection is set to BMS	AV-29	40058	RW	°F		X

Valent Network Interface v8 Modbus/BACnet Points List

Variable	Description	BACnet Object	ModBus Object	Read or Write	Text or Unit of M		Included
					Active	Inactive	
Space_1_CO2_from_BMS	Space 1 CO2 from BMS Used when source selection is set to BMS	AV-30	40060	RW	ppm		X
Return_CO2_from_BMS	Return CO2 from BMS Used when source selection is set to BMS	AV-32	40062	RW	ppm		X
Space_RH_from_BMS	Space RH from BMS Used when source selection is set to BMS	AV-33	40066	RW	%		X
Space_Static_from_BMS	Space Static from BMS Used when source selection is set to BMS	AV-34	40068	RW	"wc		X
Space_Temp_from_BMS	Space Temp from BMS Used when source selection is set to BMS	AV-35	40070	RW	°F		X
SF_Control_Signal_BMS	BMS to control signal for supply fan speed	AV-36	40072	RW	%		X
EF_Control_Signal_BMS	BMS to control signal for exhaust fan speed	AV-37	40074	RW	%		X
OAD_Control_Signal_BMS	Allows the BMS to control OAD position	AV-38	40076	RW	%		
Aux_BMS_Analog_Output_1	BMS Commanded auxilary analog output	AV-39	40078	RW	selectable		X
Unit_Status_Mode	Unit Status Mode - See Table	AV-40	30092	R	Real		X
Supply_Temperature_Calculated_Setpoint	Active Supply Temperature Setpoint	AV-41	30094	R	°F		X
Cooling_1_Ramp_Capacity	Cooling Ramp 1 Status Value	AV-42	30096	R	%		X
Defrost_Ramp	Defrost Ramp	AV-44	30100	R	%		
Economizer_Ramp	Economizer Ramp	AV-45	30102	R	%		
Head_Pressure_Control_Ramp_1_Ramp	Head Pressure Control Ramp 1	AV-46	30104	R	%		X
Head_Pressure_Control_Ramp_2_Ramp	Head Pressure Control Ramp 2	AV-47	30106	R	%		
HP_Ramp_Capacity	Heat Pump Heating Ramp	AV-50	30112	R	%		
Heating_Capacity	Heating Ramp	AV-51	30114	R	%		X
Case_Heat_Control_Ramp	Case Heat Ramp	AV-52	30116	R	%		
Hot_Gas_Reheat_Ramp	Hot Gas Reheat Ramp	AV-53	30118	R	%		X
Outside_Dewpoint	Outside Dewpoint	AV-54	30120	R	°F		X
Outside_Enthalpy	Outside Enthalpy	AV-55	30122	R	btu/lb		X
Return_Dewpoint	Return Dewpoint	AV-56	30124	R	°F		
Return_Enthalpy	Return Enthalpy	AV-57	30126	R	btu/lb		
Space_Dewpoint	Space Dewpoint	AV-58	30128	R	°F		
Space_Enthalpy	Space Enthalpy	AV-59	30130	R	btu/lb		
Circuit_A_Superheat	Circuit A Superheat	AV-60	30132	R	°F		X
Circuit_B_Superheat	Circuit B Superheat	AV-61	30134	R	°F		X
Total_Exhaust_Fan_CFM_BMS	Total Exhaust Fan CFM	AV-64	30140	R	CFM		X
Total_Supply_Fan_CFM_BMS	Total Supply Fan CFM	AV-65	30142	R	CFM		X
OAD_CFM_BMS	OAD CFM	AV-66	30144	R	CFM		X
Active_Temperature_Setpoint	Active_Temperature_Setpoint	AV-67	30146	R	°F		X
Chilled_Water_1_Valve_Analog_Output	Chilled Water 1 Valve Analog Output	AV-68	30148	R	%		
Electric_Heater_1_Analog_Output	Electric Heater 1 Analog Output	AV-70	30152	R	%		X
Energy_Recovery_Analog_Output	Energy Recovery Analog Output	AV-72	30156	R	%		
Exhaust_Fan_Speed_Analog_Output	Exhaust Fan Speed Analog Output	AV-73	30158	R	%		
Hot_Water_Valve_1_Analog_Output	Hot Water Valve 1 Analog Output	AV-74	30160	R	%		
Mod_Gas_Furnace_1_Analog_Output	Mod Gas Furnace 1 Analog Output	AV-76	30164	R	%		
Outside_Air_Damper_Analog_Output	Outside Air Damper Analog Output	AV-78	30168	R	%		
Supply_Fan_Speed_Analog_Output	Supply Fan Speed Analog Output	AV-79	30170	R	%		X
Modulating_Compressor_Analog_Output_BMS	First Modulating Compressor Analog Output - BMS	AV-80	30172	R	%		X
Circuit_A_Sat_Discharge_Temperature	Circuit A Saturated Discharge Temperature	AV-82	30176	R	°F		X
Circuit_B_Sat_Discharge_Temperature	Circuit B Saturated Discharge Temperature	AV-83	30178	R	°F		X
Circuit_A_Sat_Suction_Temperature	Circuit A Saturated Suciton Temperature	AV-86	30184	R	°F		X
Circuit_B_Sat_Suction_Temperature	Circuit B Saturated Suciton Temperature	AV-87	30186	R	°F		X
Coil_Temperature_Calculated_Setpoint	Calculated Coil Leaving Set point	AV-90	30192	R	°F		X
Unoccupied_Cooling_Setpoint	Active Cooling Setpoint - Unoccupied	AV-91	30194	R	°F		
Unoccupied_Heating_Setpoint	Active Heating Setpoint - Unoccupied	AV-92	30196	R	°F		
Temperature_Reset_Mode	Occupied Reset Type Setpoint 1-No Reset(Supply Temp Control) 2-Space 3-Return 4-Outside	IV-1	40080	RW	Integer		X
Temperature_Reset_Mode_Unoccupied	Unoccupied Reset Type Setpoint 1-No Reset(Supply Temp Control) 2-Space 3-Return 4-Outside	IV-2	40082	RW	Integer		
Active_Temperature_Reset_Mode	Active Occupied Reset Type Setpoint 1-No Reset(Supply Temp Control) 2-Space 3-Return 4-Outside	IV-3	30198	R	Integer		X
Active_Temperature_Reset_Mode_Unocc	Active Unoccupied Reset Type Setpoint 1-No Reset(Supply Temp Control) 2-Space 3-Return 4-Outside	IV-4	30200	R	Integer		
LatestAlm	Most recent alarm - See Alarm Table	IV-5	30202	R	Integer		X
Device_Enable_DO_Word	Device Enable DO Word - See Table	IV-6	30206	R	Bit Pack		X
Ref_Ckt_PressTemp_Alarm_Word	Refrigeration Circuit Word - See Table	IV-7	30210	R	Bit Pack		X
Device_Offline_Word	Device Offline Word - See Table	IV-8	30214	R	Bit Pack		X
Device_Alarm_Word	Device Alarm Word - See Table	IV-9	30218	R	Bit Pack		X
System_Word	System Word - See Table	IV-10	30222	R	Bit Pack		X
Unit_Status_Word	Unit Status Word - See Table	IV-11	30226	R	Bit Pack		X
Exhaust_Fan_1_Status_Digital_Inpu	Exhaust Fan Status	BI-1	10009	R	Active	Inactive	X
Supply_Fan_1_Status_Digital_Input	Supply Fan Status	BI-2	10010	R	Active	Inactive	X

Valent Network Interface v8 Modbus/BACnet Points List

Variable	Description	BACnet Object	ModBus Object	Read or Write	Text or Unit of M		Included
					Active	Inactive	
Exhaust_Fan_1_Status_Digital_Input	Exhaust Fan Status	BI-1	10009	R	Active	Inactive	X
Supply_Fan_1_Status_Digital_Input	Supply Fan Status	B-2	10010	R	Active	Inactive	X
BMS_Watchdog	BMS Watchdog command Used to determine BMS comm status Must heartbeat within the watch dog timeout delay to detect comm status	BV-1	2	RW	Active	Inactive	X
System_Enable	Master system enable/disable point	BV-2	3	RW	Enable	Disable	X
BMS_Occupancy_Command	Occupancy Command	BV-3	4	RW	Unoccupied	Occupied	X
Reset_All_Alarms	Alarm Reset Command	BV-4	5	RW	Reset	Normal	X
Exhaust_Only_Mode_BMS_Cmd	Emergancy Exhaust Mode Command	BV-5	6	RW	Enable	Disable	
Pressurization_Only_Mode_BMS_Cmd	Emergancy Pressurization Mode Command	BV-6	7	RW	Enable	Disable	
Outside_RH_Source_BMS	Outside RH Source Selection	BV-7	8	RW	BMS	Local	X
Outside_Temp_Source_BMS	Outside Temp Source Selection	BV-8	9	RW	BMS	Local	X
Return_RH_Source_BMS	Return RH Source Selection	BV-9	10	RW	BMS	Local	X
Return_Temp_Source_BMS	Return Temp Source Selection	BV-10	11	RW	BMS	Local	X
Space_1_CO2_Source_BMS	Space 1 CO2 Source Selection	BV-11	12	RW	BMS	Local	X
Space_2_CO2_Source_BMS	Space 2 CO2 Source Selection	BV-12	13	RW	BMS	Local	X
Return_CO2_Source_BMS	Return CO2 Source Selection	BV-13	14	RW	BMS	Local	X
Space_RH_Source_BMS	Space RH Source Selection	BV-14	15	RW	BMS	Local	X
Space_Static_Source_BMS	Space Static Source Selection	BV-15	16	RW	BMS	Local	
Space_Temp_Source_BMS	Space Temp Source Selection	BV-16	17	RW	BMS	Local	X
SF_Control_Source_BMS	Allows the BMS to control supply fan speed	BV-17	18	RW	BMS	Local	X
EF_Control_Source_BMS	Allows the BMS to control exhaust fan speed	BV-18	19	RW	BMS	Local	
OAD_Control_Source_BMS	Allows the BMS to control OAD position	BV-19	20	RW	BMS	Local	
Aux_BMS_Digital_Output_1	BMS Commanded auxilary digital output	BV-20	21	RW	Active	Inactive	
Aux_BMS_Digital_Output_2	BMS Commanded auxilary digital output	BV-21	22	RW	Active	Inactive	
Occupied	Occupancy	BV-22	10002	R	Occupied	Unoccupied	X
Global_Alarm	General alarm point Optionally set to indicate any alarm is active, or a shutdown alarm is active	BV-23	10003	R	Alarm	Normal	X
BMS_Watchdog_Active	Status of the BMS watchdog heartbeat	BV-24	10004	R	Active	Inactive	X
OAD_Feedback_Error_Not_Economizing_Active	Feedback indicates OAD is not opening during economizer	BV-25	10005	R	Alarm	Normal	
OAD_Feedback_Error_Economizing_Active	Feedback indicates OAD is open	BV-26	10006	R	Alarm	Normal	
OAD_Feedback_Error_OAD_Not_Modulating_Active	Feedback indicates the OAD is not modulating	BV-27	10007	R	Alarm	Normal	
OAD_Feedback_Error_Excess_OA_Active	Feedback indicates the OAD is not closing	BV-28	10008	R	Alarm	Normal	

System Word Table (IV-10)	
Bit	System_Word
0	Heat Wheel Enable
1	Preheat Enable
2	Reversing Valve (Cooling (0)/Heating(1))
3	
4	
5	
6	Supply Temp Low Limit Alarm
7	Supply Temp High Limit Alarm
8	Supply High Duct Static Alarm Active
9	Supply Fan 1 Alarm
10	Exhaust Fan 1 Alarm
11	Drain Pan Alarm
12	Freeze Stat Alarm
13	Filter Alarm
14	Space High Static Alarm
15	Return Low Static Alarm
16	Shutdown Input Alarm
17	Energy Recovery Wheel High Diff Pressure
18	Energy Recovery Wheel Rotation Alarm
19	
20	Heat Pump Heating Lock Out Alarm
21	Permanent Memory - Too Many Writes
22	BMS Offline Alarm
23	
24	
25	
26	
27	
28	Heat-Cool Only - Dehumidification Request Active
29	Heat-Cool Only - Heating Request Active
30	Heat-Cool Only - Coil Setpoint Alarm Active
31	Heat-Cool Only - Supply Setpoint Alarm Active

Unit Status Word Table (IV-11)	
Bit	Unit_Status_Word
0	Off/Standby
1	Unoccupied Start
2	Occupied Start
3	Opening Dampers
4	Dampers Open
5	Fan Start Delay
6	Exhaust Fan On
7	Supply Fan On
8	System On
9	Soft Shutdown
10	System Disabled
11	Remote Off
12	System Shutdown Alarm
13	Supply Fan Only
14	Exhaust Fan Only
15	Purge Mode (Supply and Exhaust Only)
16	Case Heat Active
17	Fans Only
18	Economizing
19	Energy Recovery Active
20	Cooling
21	Heating
22	Dehumidifying
23	Hot Gas Reheat Active
24	HGRH Purging
25	Dehum w/Heat
26	Energy Recovery Defrost Active
27	Heat Pump Defrost Active
28	Morning Warm Up/Cool Down Active
29	Winter Ramp Active
30	
31	Overrides Active

Device Enable DO Word Table (IV-6)	
Bit	Device_Enable_DO_Word
0	Compressor 1 Start
1	Compressor 2 Start
2	Compressor 3 Start
3	Compressor 4 Start
4	
5	
6	
7	
8	Condenser Fan Ramp 1 Stage 1 Start
9	Condenser Fan Ramp 1 Stage 2 Start
10	Condenser Fan Ramp 1 Stage 3 Start
11	
12	Condenser Fan Ramp 2 Stage 1 Start
13	Condenser Fan Ramp 2 Stage 2 Start
14	Condenser Fan Ramp 2 Stage 3 Start
15	
16	Furnace 1 Start (External Furnace Controller Only)
17	Furnace 2 Start (External Furnace Controller Only)
18	
19	
20	Supply Fan Start
21	Exhaust Fan Start
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	

Unit Status Word Table (IV-11)	
Bit	Ref_Ckt_PressTemp_Alarm_Word
0	Circuit A Discharge Pressure Sensor Alarm
1	Circuit A Discharge Temp Sensor Alarm
2	Circuit A Suction Pressure Sensor Alarm
3	Circuit A Suction Temp Sensor Alarm
4	Circuit B Discharge Pressure Sensor Alarm
5	Circuit B Discharge Temp Sensor Alarm
6	Circuit B Suction Pressure Sensor Alarm
7	Circuit B Suction Temp Sensor Alarm
8	Circuit A High Pressure Switch Alarm
9	Circuit A Low Pressure Switch Alarm
10	Circuit B High Pressure Switch Alarm
11	Circuit B Low Pressure Switch Alarm
12	Circuit A High Sat Discharge Temp Alarm
13	Circuit B High Sat Discharge Temp Alarm
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	

Device Alarm Word Table (IV-9)	
Bit	Device_Alarm_Word -Ext
0	Cold Coil Temperature Sensor Alarm
1	
2	Mixed Temperature Sensor Alarm
3	Supply Duct Static Pressure Sensor Alarm
4	Supply Fan AFMS Alarm
5	Supply Air Temp Sensor Alarm
6	Exhaust Fan AFMS Alarm
7	Exhaust Temperature Sensor Alarm
8	Outside Air Temp Sensor Alarm
9	Outside RH Sensor Alarm
10	OAD AMD Alarm
11	Greentrol OAD AFMS Alarm
12	Return CO2 Sensor Alarm
13	Return Duct Static Pressure Sensor Alarm
14	Return Temperature Sensor Alarm
15	Return RH Sensor Alarm
16	Space CO2 Sensor Alarm
17	Space RH Sensor Alarm
18	Space Static Pressure Sensor Alarm
19	Space Temperature Sensor Alarm
20	IG Furnace Alarm
21	
22	Inverter Scroll 1 Alarm
23	
24	EVD Valve A Alarm
25	
26	SF VFD Alarm
27	
28	
29	
30	
31	

Device Offline Word Table (IV-8)	
Bit	Device_Offline_Word - Ext
0	Space TStat 1 Offline
1	Space TStat 2 Offline
2	Space TStat 3 Offline
3	Space TStat 4 Offline
4	VFD Offline Supply Fan
5	
6	
7	
8	Expansion Board 1 Alarm
9	Expansion Board 2 Alarm
10	Expansion Board 3 Alarm
11	Expansion Board 4 Alarm
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	Master Unit Offline Alarm
28	Slave Unit 1 Offline Alarm
29	Slave Unit 2 Offline Alarm
30	Slave Unit 3 Offline Alarm
31	Slave Unit 4 Offline Alarm

UNIT STATUS MODE TABLE (AV-40)			
0	Off/Standby	17	Fans Only Purge
1	Unoccupied Start	18	Case Heat Active
2	Occupied Start	19	Fans Only
3	Opening Dampers	20	Economizing
5	Dampers Open	21	Cooling
6	Fan Start Delay	22	Heating
7	Exhaust Fan Start	23	Dehumidifying
8	Supply Fan Start	25	HGRH Purging
9	Startup Delay	26	Energy Recovery Defrost Active
10	System On	29	Dehumifying w/Heat
11	Soft Shutdown	30	Overrides
12	System Disabled	31	Expansion Offline
13	Remote Off	33	Energy Recovery Active
14	System Shutdown Alarm	34	Hot Gas Reheat Active
15	Pressuization Only	35	Morning Warm Up/Cool Down Active (Sequence)
16	Exhaust Only	36	Heat Pump Defrost

Alarm Table (Latest Alarm IV-5)					
0	No Active Alarms	63	Supply Air Temperature - Low Limit Shutdown	117	High SDT Lockout - Circuit A
1	Supply Fan 1 Run - Status Not Proven	64	Heat Wheel Rotation - Not Detected	118	High SDT Lockout - Circuit B
2	Freeze Protection - Thermostat Tripped	65	Slave Unit 1 Offline -	121	Inverter 1 Alarm -
3	High Supply Duct - Static Pressure	66	Slave Unit 2 Offline -	123	Inverter 1 Lockout - Cycle Power to Unit
4	Low Return Duct - Static Pressure	67	Slave Unit 3 Offline -	125	High SDT Lockout - Circuit A
5	Outside Air Temp - Sensor Value Not Valid	68	Slave Unit 4 Offline -	126	Inverter 1 Foldback - Input Current
6	Supply Air Temperature - Sensor Value Not Valid	69	Master Unit Offline -	127	Inverter 1 Foldback - Inverter Temp
7	Cold Coil 1 Temp - Sensor Value Not Valid	70	Heat Pump Defrost - Mode is Active	131	Inverter 1 Comms Lost - Compressor Offline
9	Exhaust Air Temp - Sensor Value Not Valid	71	Multi Devices per Ch - Contact Tech Support	133	Space Thermostat 1 - Sensor Offline
10	Mixed Air Temperature - Sensor Value Not Valid	74	Shutdown Contact - In Alarm Position	134	Space Thermostat 2 - Sensor Offline
11	Return Air Temperature - Sensor Value Not Valid	75	Comp Maint Alarm - Run Hours Spt Reached	135	Space Thermostat 3 - Sensor Offline
12	Space Temperature - Sensor Value Not Valid	76	Supply Air Temperature - High Limit Shutdown	136	Space Thermostat 4 - Sensor Offline
13	Return Air RH - Sensor Value Not Valid	77	Space High Static Pres - Shutdown	137	IG Furnace 1. No flame - after 3 tries
14	Space RH - Sensor Value Not Valid	78	Internal Board Temp - Exceeds -40F or 158F	138	IG Furnace 1 Large - no flame after 3 tries
15	Outside RH - Sensor Value Not Valid	79	BMS Offline - Watchdog is FALSE	139	IG Furnace 1 combust - fan high pressure sw
16	Low Pressure Switch - Circuit A	80	Clg Coil Setpt Input - Value is not valid	140	IG Furnace 1 Ignition - controller alarm
17	Low Pressure Switch - Circuit B	81	Sup Air Setpt Input - Value is not valid	141	IG Furnace 1 pressure - switch fault alarm
20	High Pressure Switch - Circuit A	82	BACnet License - Not Installed	142	High SDT Lockout - Circuit B
21	High Pressure Switch - Circuit B	83	Low Suction SH ExV A - EVD 1 Alarm	143	IG Furnace 1 - Max retrys
24	Damper End Switch Fail - Dampers are not open	84	Low Suction SH ExV B - EVD 1 Alarm	144	IG Furnace 1 - High Limit Trip
25	Exhaust Fan 1 Run - Status Not Proven	85	LOP A EVD 1 - Low Operating Pressure	145	IG Furnace - pCOe 1 Offline
26	Filters are Dirty - Replace Filters	87	MOP A EVD 1 - Max Operating Pressure	146	IG Furnace 1 IC fault - Check Furnace Wiring
27	Cond Drain Pan Full - Check Drain	89	EEV A EVD 1 - Motor Alarm	147	IG Furnace 2 No flame - after 3 tries
28	Exp Board 1 Status - Board is Offline	91	LowSuct A EVD 1 - Refrigerant Temp	148	IG Furnace 2 Large - no flame after 3 tries
29	Exp Board 2 Status - Board is Offline	93	High Condensing Temp - EVD 1	149	IG Furnace 2 combust - fan high pressure sw
31	Exp Board 4 Status - Board is Offline	94	Sens S1 EVD 1 - Sensor Value Not Valid	150	IG Furnace 2 Ignition - controller alarm
32	Non-Volatile Memory Er - Contact Tech Support	95	Sens S2 EVD 1 - Sensor Value Not Valid	151	IG Furnace 2 pressure - switch fault alarm
33	Space 1 CO2 - Sensor Value Not Valid	96	Sens S3 EVD 1 - Sensor Value Not Valid	152	IG Furnace 2 combust - fan proving alarm
34	Space Static Pressure - Sensor Value Not Valid	97	Sens S4 EVD 1 - Sensor Value Not Valid	153	IG Furnace 2 - Max retrys
35	Supply Duct Stat Press - Sensor Value Not Valid	98	EVD 1 EEPROM Damaged - Call Tech Support	154	IG Furnace 2 - High Limit Trip
36	Return Duct Stat Press - Sensor Value Not Valid	99	Incomplete Closing - EVD 1	155	IG Furnace - pCOe 2 Offline
37	Sup Fan AFMS - Sensor Value Not Valid	101	Emergency Closing - EVD 1	156	IG Furnace 2 IC fault - Check Furnace Wiring
38	Exh Fan AFMS - Sensor Value Not Valid	101	EVD 1 Battery -	157	Outside Air Greentrol - Offline or Flow Error
39	Outside Damper AFMS - Sensor Value Not Valid	102	FW Incompatibility - EVD 1	158	Exhaust Air Greentrol - Offline or Flow Error
40	Space Setpt Adj Slider - Sensor Value Not Valid	103	EVD 1 Config Error -	159	Supply Air Greentrol - Offline or Flow Error
42	Return CO2 - Sensor Value Not Valid	105	High Discharge Temp - First Inverter	170	OA Damper Fault - Not Econ and should be
42	Discharge Press Ckt A - Sensor Value Not Valid	105	Low Discharge Pressure - First Inverter	171	OA Damper Fault - Econ and shouldn't be
43	Discharge Press Ckt A - Sensor Value Not Valid	106	Low Discharge Pressure - First Inverter	171	OA Damper Fault - Econ and shouldn't be
44	Discharge Press Ckt B - Sensor Value Not Valid	107	High Suction Pressure - First Inverter	172	OAD Fault - Damper not Modulating
47	Suction Press Ckt A - Sensor Value Not Valid	108	Low Suction Pressure - First Inverter	173	OAD Fault - Excess Outdoor Air
48	Suction Press Ckt B - Sensor Value Not Valid	109	High Current - First Inverter	174	IG Furnace 1 - Combustion Fan Alarm
51	Discharge Temp Ckt A - Sensor Value Not Valid	110	High Pressure Ratio - First Inverte	175	IG Furnace 2 - Combustion Fan Alarm
52	Discharge Temp Ckt B - Sensor Value Not Valid	111	Low Pressure Ratio - First Inverter	176	Supply Fan - VFD Offline
55	Suction Temp Ckt A - Sensor Value Not Valid	112	Low Delta P - First Inverter	177	OA Damper Fault - Not Econ and should be
56	Suction Temp Ckt B - Sensor Value Not Valid	113	High Discharge Press - First Inverter	178	Return Fan - VFD Offline
59	Ckt A High Saturated - Discharge Temperature	114	Compressor Staging - Order Skipped	179	Energy Recovery - VFD Offline
60	Ckt B High Saturated - Discharge Temperature	115	Heat Pump Heating - Locked Out	180	Embedded EVD Error
		116	EVD 1 Error - Unexpected Position	181	SF VFD Alarm - Check VFD

Factory Controller Sequence of Operation

FACTORY CONTROLLER: Controller shall be provided with required sensors and programming for rooftop unit. Controller shall be factory programmed, mounted and tested. Controller shall have a LCD readout for changing set points and monitoring unit operation.

UNIT START COMMAND (Unit will be enabled to start once a jumper is placed between R to G):

- Factory mounted and wired outdoor air damper actuator is powered
- Supply fan starts after after a (adj.) delay.
- Tempering options to function as described below.

UNIT STOP COMMAND (OR DE-ENERGIZED):

- Supply fan, exhaust fan and tempering options de-energized.
- Outdoor air damper actuator is spring return close.

OCCUPIED/UNOCCUPIED MODES: Shall be based on a 7-day time clock internal to the controller. The schedule shall be set by the end user. When a user initiates an override input, the controller will switch from unoccupied to occupied mode. The controller will return to the scheduled occupied/unoccupied mode after the override time has expired. If internal time clock is disabled, a remote contact or a BMS can control the occupied/unoccupied mode.

Occupied Mode:

- Damper control per below.
- Supply fan ON.
- Heating per below.
- Cooling per below.

Unoccupied Mode (Unit Off): Unit remains off when in unoccupied mode.

- Supply fan OFF
- Tempering OFF
- Outdoor air damper closed.

MORNING WARMUP/COOL DOWN: Prior to occupancy, the unit will run using the warmup or cool down sequence until the occupied set point is achieved. The heating or cooling mode must not be locked out and the space temperature is below or above set point by the unoccupied hysteresis (adj.) (This Sequence must be field configured.)

SUPPLY BLOWER SEQUENCE: The supply blower is provided with a factory mounted variable frequency drive. The supply blower speed will be controlled with the following sequence. Minimum supply fan turndown is 50% of the design maximum operation.

Constant Volume-Adj. Setpoint: The supply blower will operate at a constant speed set point (adj.) during operation.

OUTDOOR AIR DAMPER CONTROL: The outdoor air damper is factory mounted and wired with a non-modulating actuator. When the unit is enabled/occupied the outdoor air damper will open to 100%

COOLING SEQUENCE: The cooling is controlled to maintain the supply temperature set point. The mechanical cooling will be locked out when the outside air is < 55 F (adj.).

Packaged DX Cooling (Inverter Scroll): The controller will provide a modulating signal for cooling. From 0-100%, the inverter scroll will be controlled to maintain discharge temperature. The electronic expansion valve will modulate to maintain 8 of superheat.

Modulating Hot Gas Reheat Sequence: During dehumidification the modulating HGRH is controlled to maintain the supply temperature set point.

Modulating Head Pressure Control: Lead condenser fan will have an EC motor and will modulate to maintain a head pressure set point.

DEHUMIDIFICATION CONTROL SEQUENCE: Dehumidification to be enabled and once enabled the cooling coil will be controlled based on the following sequences. The mechanical cooling will be locked out when the outside air is < 55 F (adj.)

Cold Coil Set Point Control: When in dehumidification mode the controller will control the cooling to maintain a constant cold coil set point. The active set point will be set to local control (55 F, adj.) from the factory and can be field adjusted locally or by the BMS.

Dehumidification Enable: Dehumidification mode to be enabled based on the outside air dew point condition. When the outside air dew point is greater than the desired set point (adj.), the unit will operate in dehumidification mode.

REHEAT SEQUENCE: While the unit is in dehumidification mode the outdoor air will be reheated via Modulating Hot Gas Reheat for space neutral applications.

Modulating Hot Gas Reheat: The controller will modulate the hot gas reheat reheat valve with a 0-10 V signal to maintain the supply temperature set point (adj.).

HEATING SEQUENCE: The heating is controlled to maintain the supply temperature set point. The heating will be locked out when the outside air is > 80 F (adj.).

Electric Heater: The controller will modulate an electric heater to maintain the supply temperature set point (adj.).

TEMPERATURE CONTROL SEQUENCE: The unit will maintain the supply air discharge setpoint per the following. Adjustable locally or by BMS.

Supply Discharge Temperature Control: The supply setpoint will be a constant temperature setpoint from the controller (adj.). Adjustable locally or by BMS.

BUILDING FREEZE PROTECTION: If the supply air temperature drops below 35 F (adj.) for 300s (adj.), the controller will de-energize the unit and activate the alarm output.

ALARMS INDICATION: The controller will display alarms and have one digital output for remote indication of an alarm condition. Possible alarms include:

Building Management System: The controller will send all alarms to the BMS.

Supply Air Alarm: The controller monitors the proving switch on supply blower and sends an alarm in the case of the blower proving switch not engaging for 30s (adj.).

DX Alarm: The controller monitors the refrigerant pressure. In the case of low refrigerant pressure the compressors will shut down until refrigerant pressure returns to normal values and the controller will send an alarm. In the case of high refrigerant pressure the compressors will shut down, requiring a manual reset and the controller will send a alarm.

Temperature Sensor Alarm: The controller sends an alarm in the case of a failed air temperature sensor.

ACCESSORIES: The following accessories will be included with the unit to expand the functionality or usability of the controller.

BMS Interfacing: A BMS port or serial card is provided with the controller for field interfacing with a building management system. Each card is sent out with the default parameters, and the controls contractor must change the appropriate addresses to match the BMS settings.

Phase and Brownout Protection: Factory mounted and wired component which monitors the main power coming into the unit. If a phase drops out, or if the incoming voltage exceeds the acceptable range, the component will turn off the unit to help protect the electrical systems.

Condensate Overflow Unit Shutdown: Factory mounted condensate overflow switch wired to the unit controller. The controller monitors the condensate overflow switch. If the water level in the drain pan reaches a certain level, the unit will shutdown and send an alarm.

Damper End Switch: Damper end switched will be provided to ensure the supply and exhaust fans do not enable until the dampers are proven open.

Warranty Statement for Dedicated Outdoor Air Systems (DOAS)

Unit Warranty

Valent warrants the equipment to be free from defects in material and workmanship for a period of 18 months from ship date. Initial startup must be completed within six months of the shipment date, and a startup report must be submitted to Valent.

Compressor Extended Warranty

Valent warrants the refrigerant compressor(s) to be free from defects in material and workmanship for a period of 5.5 years from the shipment date.

Warranty Notes

Any component which proves defective during the warranty period will be repaired or replaced at Valent's sole option when returned to our factory, transportation prepaid. All warranties do not include labor costs associated with troubleshooting, removal, or installation. Valent will not be liable for any consequential, punitive, or incidental damages resulting from use, repair, or operation of any Valent product. These warranties are exclusive and are in lieu of all other warranties, whether written, oral, or implied, including the warranty of merchantability and the warranty of fitness for a particular purpose. No person (including any agent or salesperson) has authority to expand Seller's obligation beyond the terms of this warranty, or to state that the performance of the product is other than that published by Seller.

As a result of our commitment to continuous improvement, Valent reserves the right to change specifications without notice.

GKD Roof Curb

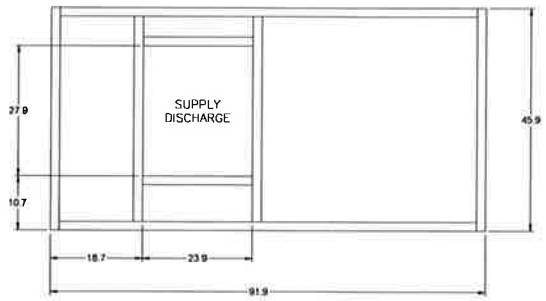
Model: GKD-45.9/91.9-G14

Curb Height (in.)	Curb Length (in.)	Curb Width (in.)	Material	Finish Type	Duct Adapter	Curb Weight (lb)
14	91.9	45.9	Galvanized	Galvanized	Yes	159

Standard Construction Features:
All dimensions shown are actual and in units of in.'s
If unit is selected with side or end discharge/return, there will not be bottom connections supplied with the curb.
14 gauge galvanized steel (perimeter channels).
14 gauge galvanized steel (interior channels).
Ships knocked down for field assembly.
Curb insulation to be provided by others.

Curb Detail

Top View of Curb



Cross-Section View of Unit on Curb