



CASRTU1-E.402-18-5T (#1)

MU-1

Weight: 1256 lbs./103 curb

RTU with Electric Heat and 18" Direct Drive Mixed Flow Plenum Fan, 240V 3 phase, 40 KW maximum - 1 modulating stage & 1 on/off stage.

SUPPLY MOTOR

Model DTP1/54 • 1.500 HP, 3 Phs, 208 V, 60 Hz, 4.4 FLA, ODP, Premium (E-Plus3) Eff.

SUPPLY PERFORMANCE

Supply Air:	2000 CFM	RPM:	1514
Return Air:	0 CFM	Outdoor Air:	2000 CFM
Tip Speed:	7135 ft/min	BHP:	1.0960
SP:	1.579" w.g. (0.700" Ductwork Discharge ESP + 0.879" Opt.)		
Altitude:	704 ft		

BLOWER

18 Inch Mixed Flow Plenum Fan for size 1 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

- Side Discharge - Air Flow Left -> Right

CURB & SUPPORTS

- ROOF CURB - 41" Width, 71" Length, 20" Supply Height, Insulated

SUPPLY INSTALLATION INFORMATION

Unit Voltage:	3 phs 208 V 60Hz
Motor/Control Circuit:	25.1 Amps MCA • 30 Amps MOP • 208 V • 10 AWG Wire Min.
Coil Circuit:	120.3 Amps MCA • 125 Amps MOP • 208 V • 1 AWG Wire Min.
SCCR:	10 kAmp

HEATING SCHEDULE

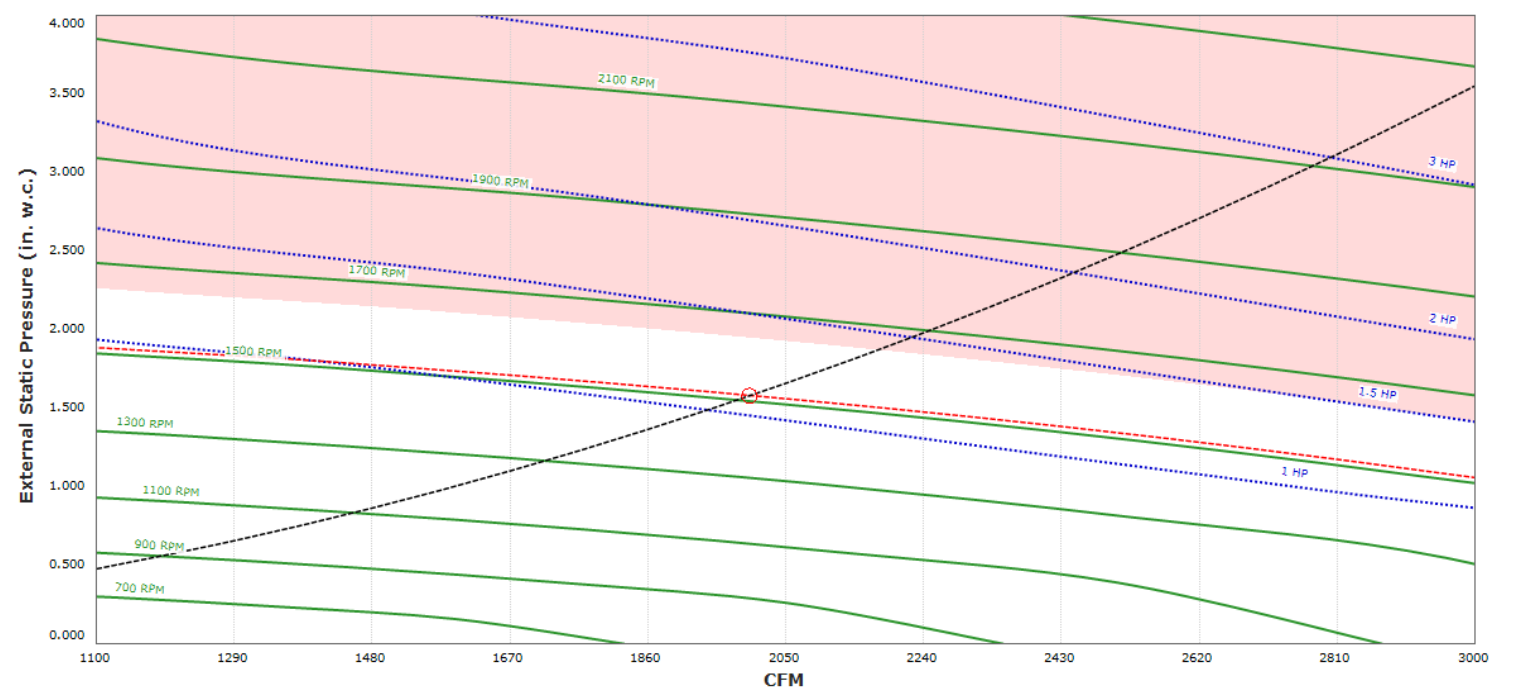
Altitude:	704 ft
Based Off:	kWs Actual Air Density
HEAT PUMP	
Entering Temp:	40.0°F
Max Temp Rise:	25.0°F
Discharge Dry Bulb Temp:	65.0°F
COP:	3.5
ELECTRIC HEAT	
Winter Outdoor Air Dry Bulb Temp:	40.0°F
Temp Rise:	50.0°F
Discharge Dry Bulb Temp:	90.0°F
kW:	29

COOLING SCHEDULE

Outdoor Air Dry Bulb Temp:	70.9°F
Outdoor Air Wet Bulb Temp:	66.0°F
Max Outdoor Air %:	100%
Mixed Air Dry Bulb Temp:	70.9°F
Mixed Air Wet Bulb Temp:	66.0°F
Mixed Air Dew Point:	63.7°F
Leaving Dry Bulb Temp:	55.1°F
Leaving Wet Bulb Temp:	55.1°F
Leaving Dew Point:	55.2°F
Moisture Removal Rate:	29.9 Lb/Hr
Total Capacity:	66.0 MBH
Sensible Capacity:	33.8 MBH
Latent Capacity:	32.2 MBH
Reheat Coil Capacity:	53.0 MBH
Reheat Coil Leaving Dry Bulb Temp:	70.0°F
Reheat Coil Leaving Wet Bulb Temp:	60.7°F
Reheat Coil Leaving Relative Humidity:	59%
IEER:	17.9
ISMRE:	6.1

CONFIGURED OPTIONS

- CFM monitoring for MUA units. Uses rivet nuts, 1/4" airflow tubing and push to connect fittings.
 - Intake Firestat. Set to 135°F
 - Freezestat factory set at 35°F and 10 minutes.
 - Discharge Firestat. Set to 240°F
 - Separate Electric Heat Connection - RTU. QNTY 1 750va Transformer Used for controls. Two primary connections 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.
 - 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 13 Filters for Size 1 RTU. QTY 4, 16 x 16 x 2 Merv 13 Filters
 - 2" Merv 8 Filters for Size 1 RTU. QTY 4, 16 x 16 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 Fixed 100% Outdoor Air Intake.
- RTU Size 1 No Return
 - RTU Size 1 Side Discharge Electric Heat. Used with 10 - 45kW Electric Heaters.
 - Size 1 RTU Curb Duct Hanger - Adjustable Duct Hanger Support Brackets installed for both return and discharge duct.
 - Duct Mounted Smoke Detector For Commercial Direct Fired Heater. Complete with detector (D4120) and sampling tube (DST-1.5). Ships Loose
 - Occupied Scheduling Defaulted for IBT/RTU.
 - Clogged Filter Switch with Notification on HMI
 - GFCI 15 amp Convenience Outlet For RTU1 Enclosure. 120V power supply by others. Includes receptacle, jbox & cover.
 - VAV (Variable-Air-Volume) Wiring Package for Commercial Fans. Manual Speed Control Variable Frequency Drive Included
 - Supply Variable Frequency Drive - 1-1/2 HP Max., 200/240 V, Single or Three Phase Input, 6.0 A Max., NEMA 1 Enclosure, with 2RJ-45 FOR MODBUS
 - 5 Ton Modulating Cooling Option with Heat Pump, 208/230V. R410A Refrigerant, Variable Speed Inverter Duty Compressor, ECM Condensing Fan(s).
 - RTU Compressor Oil Sensor Factory Installed. M12 Style Connector.
 - 5 Ton Heat Pump Modulating Reheat Option for Space Control



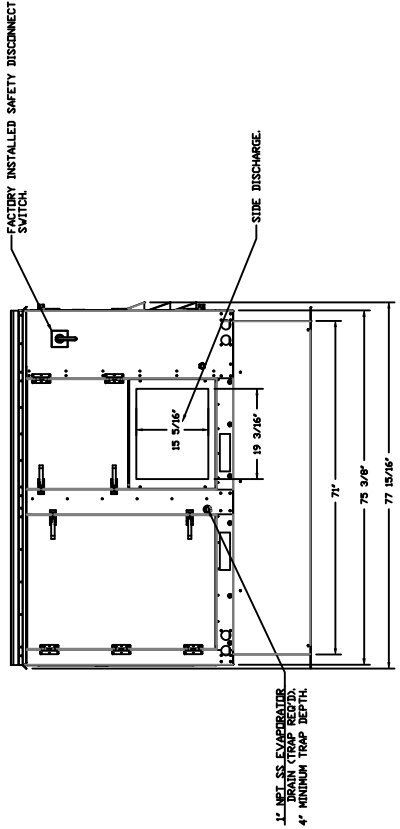
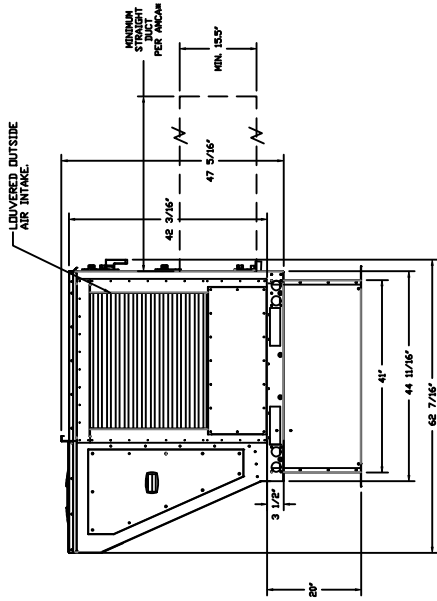
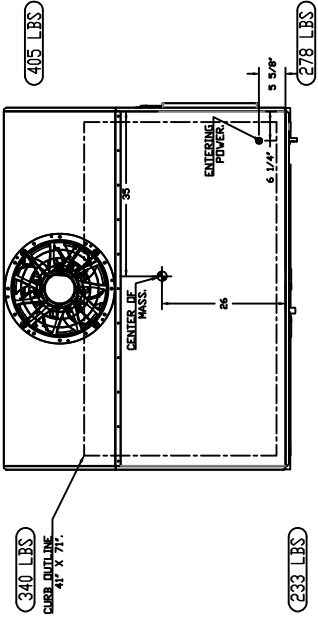
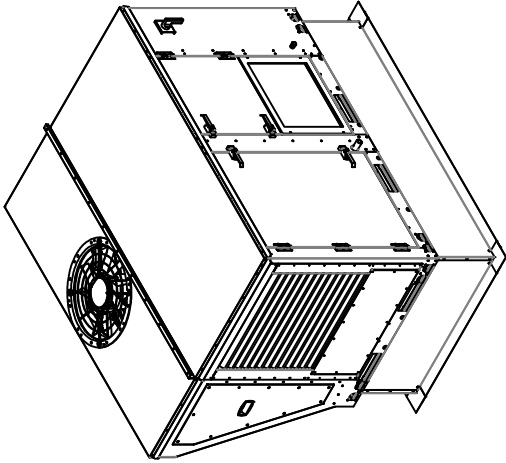
CASRTU1-E.402-18-5T SOUND (1514 RPM) AT 5 FT. IN OCTAVES:							
1	2	3	4	5	6	7	8
81.8	81.6	78.1	75.4	75.7	72.2	69.6	71.6
LWA:	80.4	Sones:	19.5	DBA:	70.1		

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

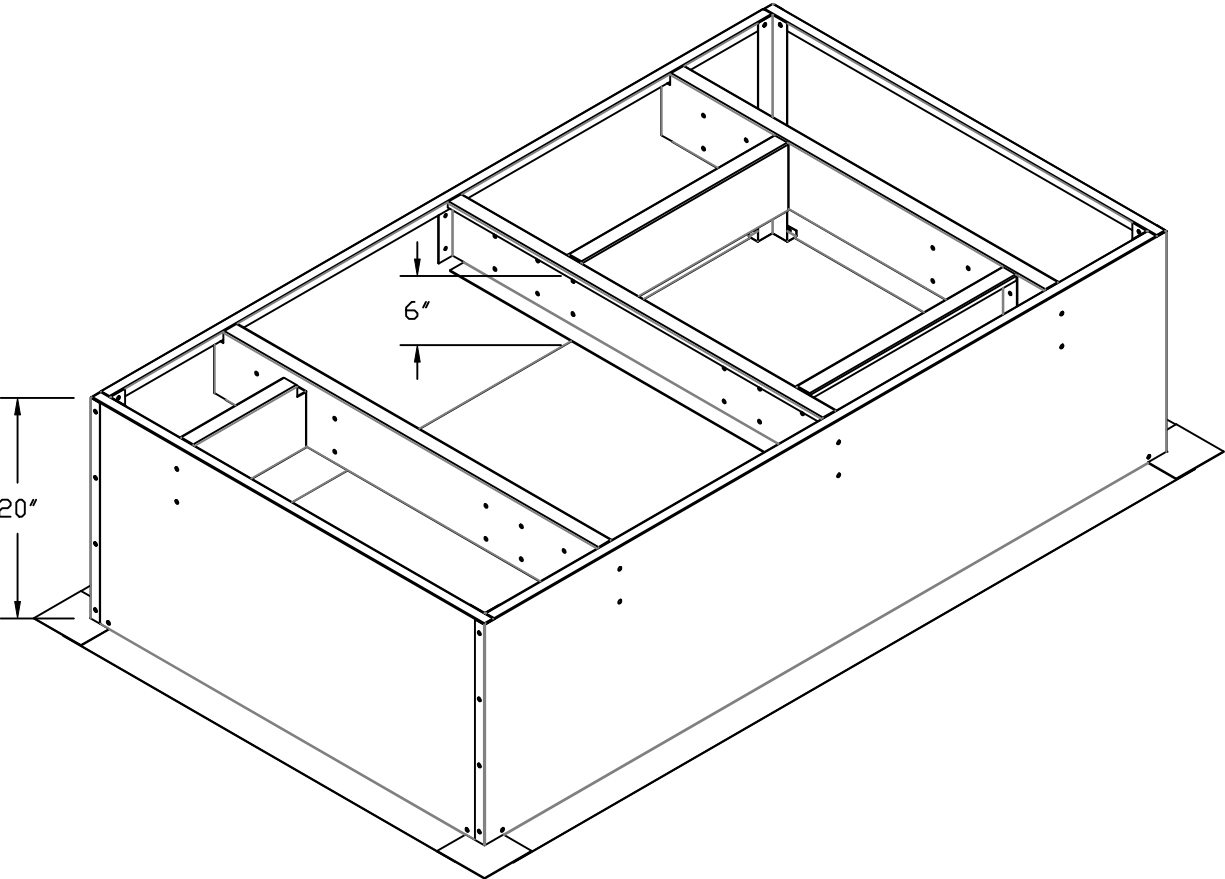
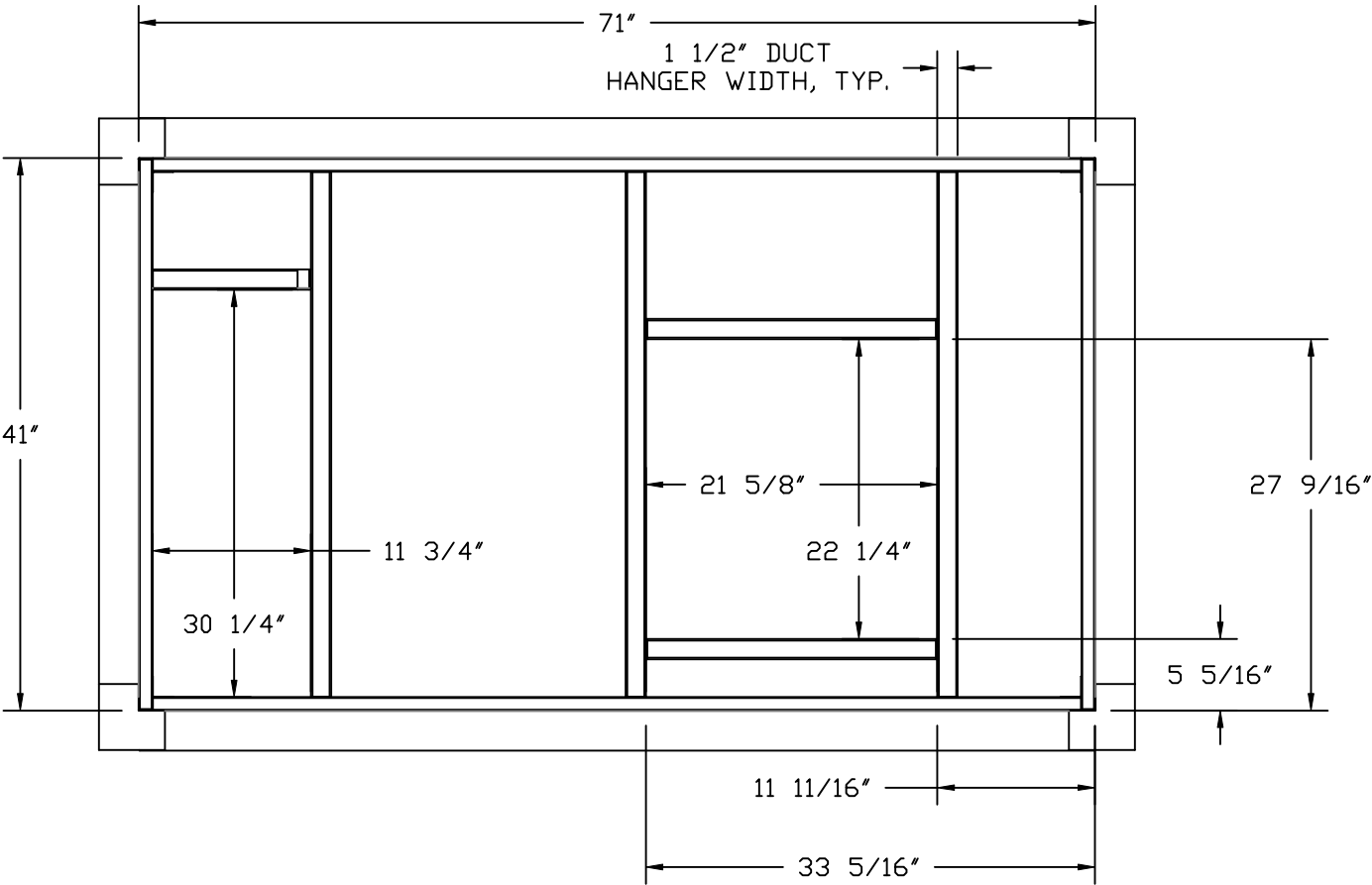
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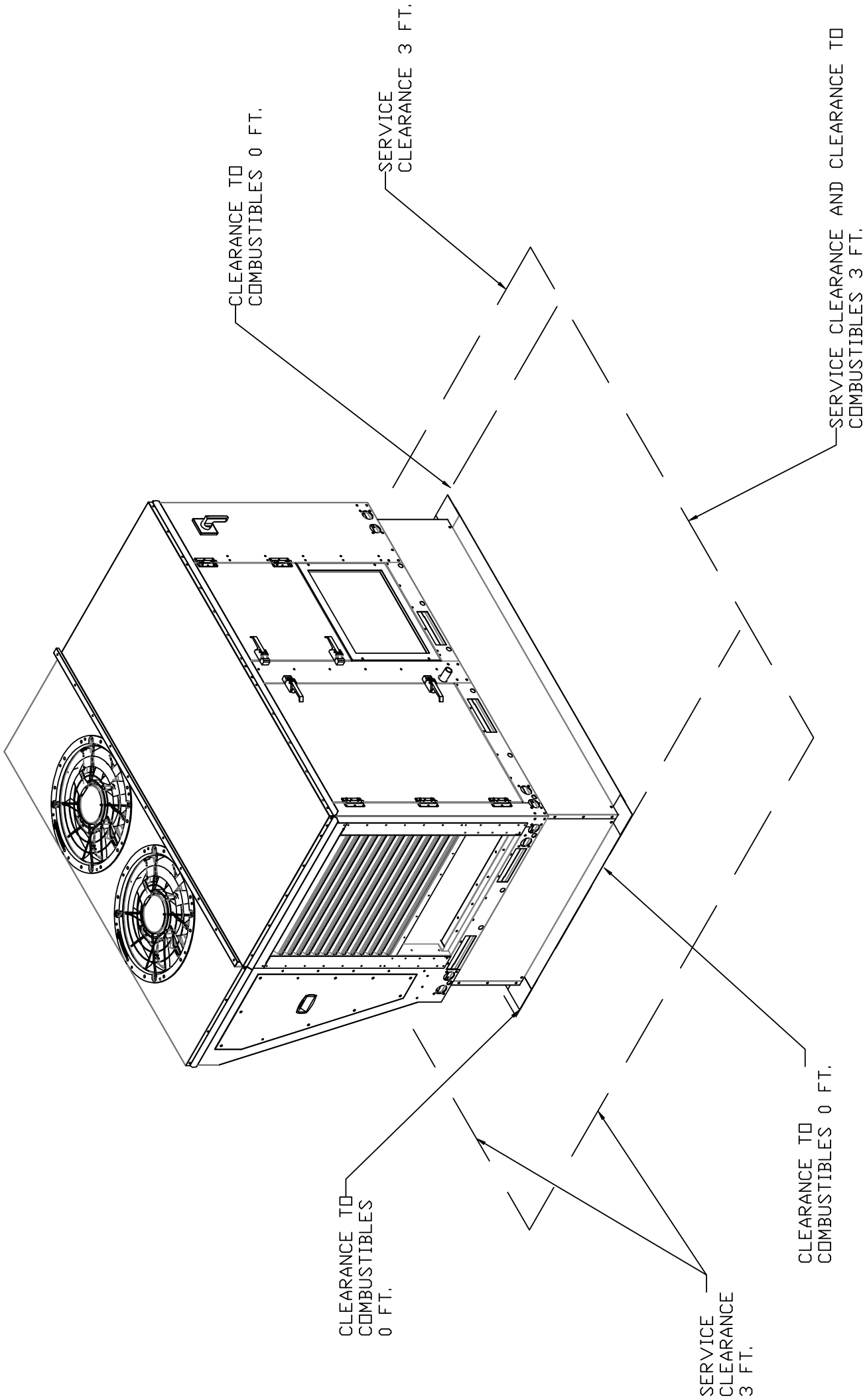
1. DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
2. () DENOTES CORNER WEIGHT.
3. ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.
4. CONNECTION FROM BREAKER TO UNITS SAFETY DISCONNECT SWITCH TO BE COPPER WIRE ONLY.

*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 15.5" x 19.25".

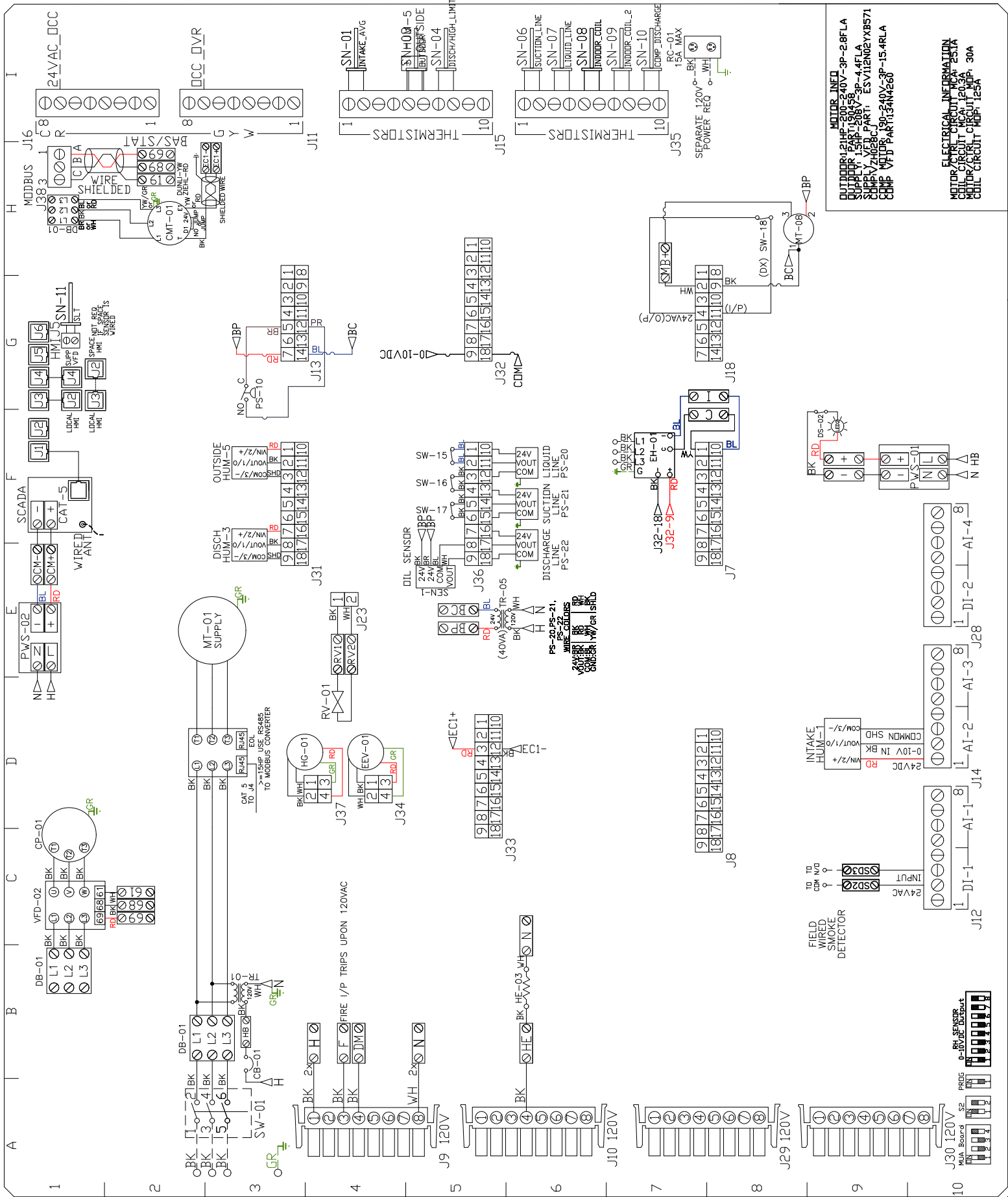


Fan #1 Curb
ROOF CURB - 41" Width, 71" Length, 20" Supply
Height, Insulated





LEGEND FIELD MARKING BK- BLACK Y- YELLOW GR- GREY W- WHITE BL- BLUE DP- DRAPE RD- RED GR- GREEN WH- WHITE DK- DK BL STRIPE MD- MD BL STRIPE RD- RD BL STRIPE WBL- W/BL STRIPE	JOB NAME Piedmont 500 Bl... DRAWING TITLE DRAWINGS TITLE DESCRIPTION OF OPERATION MUA BOARD (DETAILS TO FOLLOW) JOB NO 6708147 DRAWN BY AUTO DATE 3/28/2024 FWG 0166708147-1
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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.

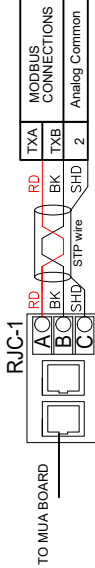
COMPRESSOR DRIVE PARAMETER SETTINGS
MUST BE CONFIGURED BEFORE STARTUP

0-60	225
1-71	10 SECONDS
3-02	30.00
3-15	[0] NO FUNCTION
3-16	[0] NO FUNCTION
3-41	200.00s
3-42	200.00s
4-18	IF 208V = 76(020), 81(030), 106(044) IF 480/575V = 76(020), 80(030), 116(044)
8-01	[2] CTRL WORD ONLY
8-03	20 SECONDS
8-04	[2] STOP
8-30	[2] MODBUS RTU
8-31	1
8-32	19200
8-33	[0] EVEN PARTY, 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
28-11	15m
28-12	24h
28-15(14)	100Hz (3000RPM)
28-17(16)	140Hz (4200RPM)

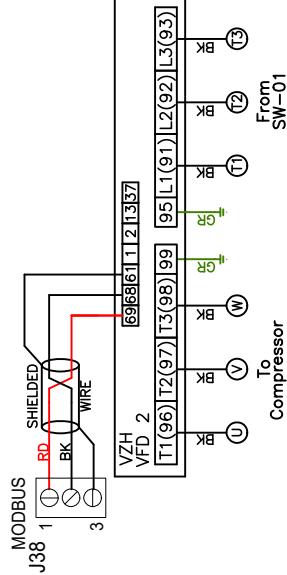
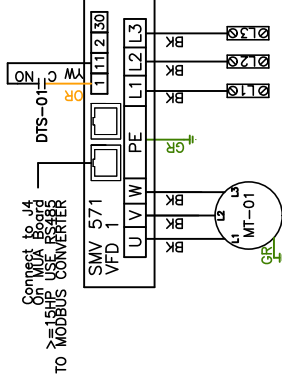
*Must be programmed using software

SMV 571 SERIES VFD

Terminal	Description
1	Digital Input(Start/Stop)
11	Internal DC Supply for External Devices
2	Analog Common
30	Analog OutputConfigurable 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



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:1.2HP-200-240V-3P-2.8FLA
OUTDOOR PART:190458
SUPPLY:1.5HP-208V-3P-4.4FLA
INDOOR:1.2HP-200-240V-3P-2.8FLA
COMP VZHD2C1: ESV112N02YXB571
COMP MOTOR:190240V-3P-16.4RLA
COMP VFD PART:134N4260

ELECTRICAL INFORMATION
MOTOR/CIRCUIT BREAKER: 25.1A
COIL CIRCUIT MCA: 120.3A
COIL CIRCUIT MOP: 30A
COIL 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
VFD-1	Supply Motor VFD
VFD-2	Compressor VFD

LEGEND	
FIELD WIRING	
— BLACK	YW-YELLOW
— BLUE	GY-GREY
— BROWN	PR-PURPLE
— ORANGE	RD-RED
— WHITE	GR-GREEN
ORBL-ORBL STRIPE	
BLRD-BLRD STRIPE	
RDGN-RDGN STRIPE	
WHBL-WHBL STRIPE	

JOB NAME	Piedmont 500 Bl...
DRAWING TITLE	
DESCRIPTION OF OPERATION	MUA BOARD (DETAILS TO FOLLOW)
JOB NO	6708147
DRAWN BY	AUTO
TYPE	FACTORY
DATE	3/28/2024
DWG	RTU VFD0708147-1

DRAWING NUMBER
INST6708147-1

SHIP DATE 3/28/2024

MODEL CASRTU1-E.402-18-5T

2

3

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11

1

1

3

5

16

17

18

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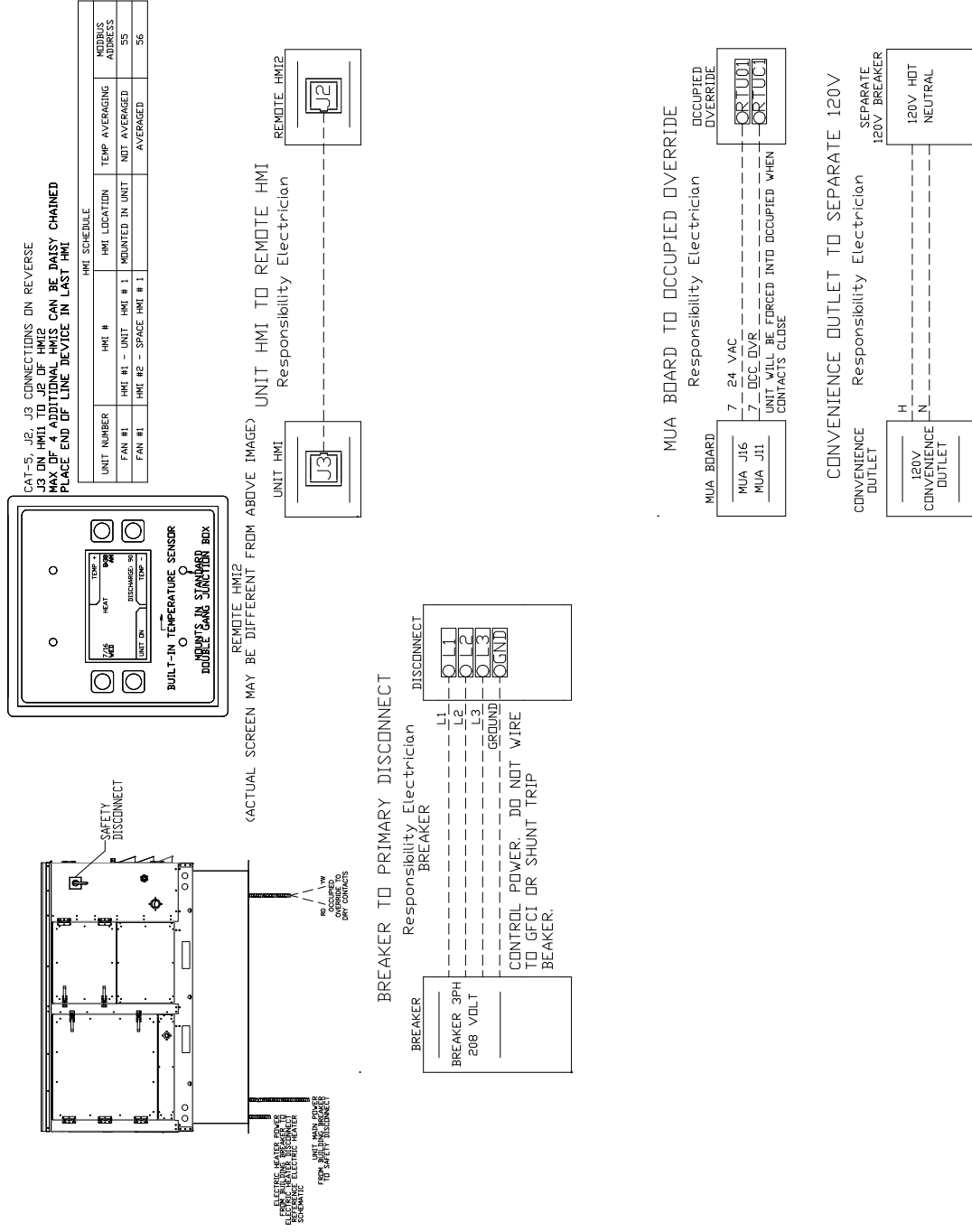
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UNIT BOARD TO SMOKE DETECTOR
Responsibility Electrician

WIRE COLOR

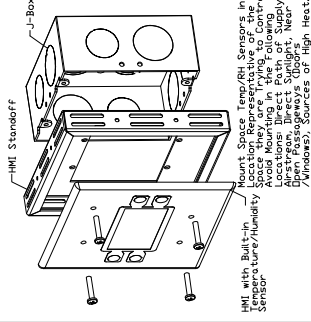
WIRE COLOR	
BK - BLACK	YW - YELLOW
BL - BLUE	GR - GREEN
BR - BROWN	GY - GRAY
OR - ORANGE	PR - PURPLE
RD - RED	PK - PINK
WH - WHITE	

NOTES

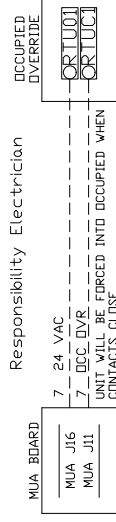
— — — Field Wiring

Installed Options

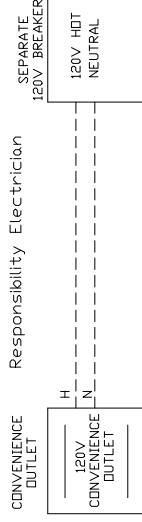
OCCUPIED OVERRIDE



MUA BOARD TO OCCUPIED OVERRIDE



CONVENIENCE OUTLET TO SEPARATE 120V





CASRTU1-E.402-18-5T (#2)

MU-2

Weight: 1256 lbs./103 curb

RTU with Electric Heat and 18" Direct Drive Mixed Flow Plenum Fan, 240V 3 phase, 40 KW maximum - 1 modulating stage & 1 on/off stage.

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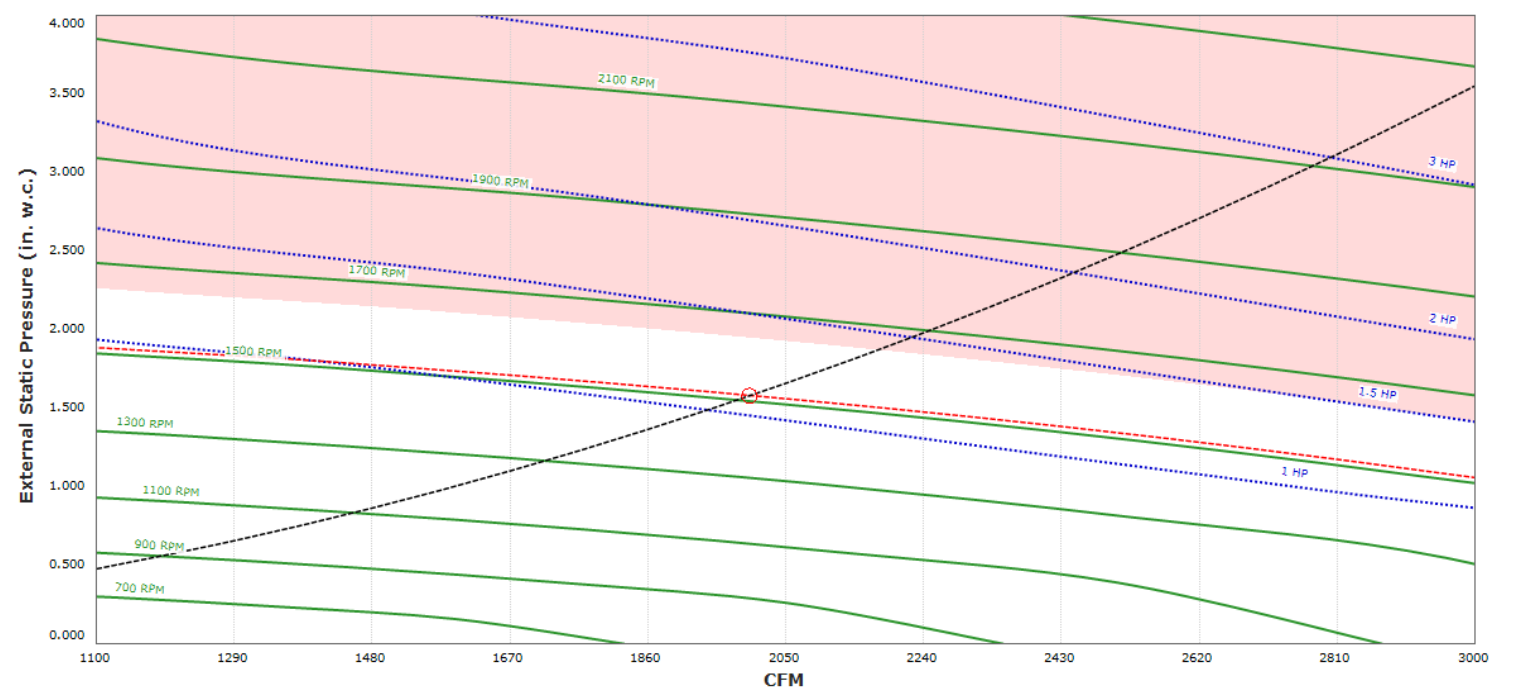
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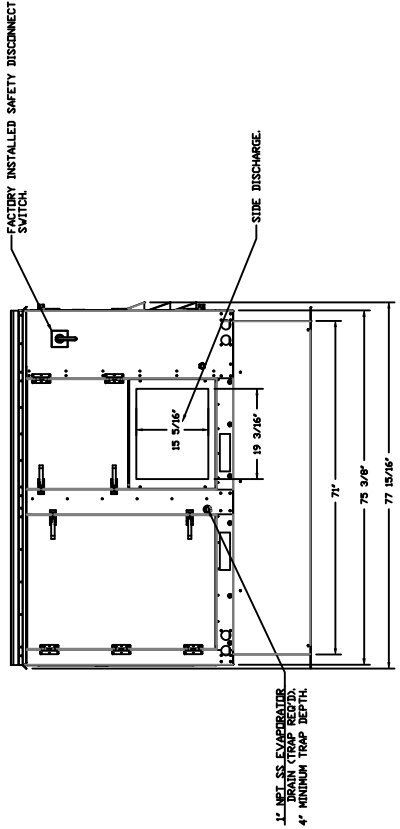
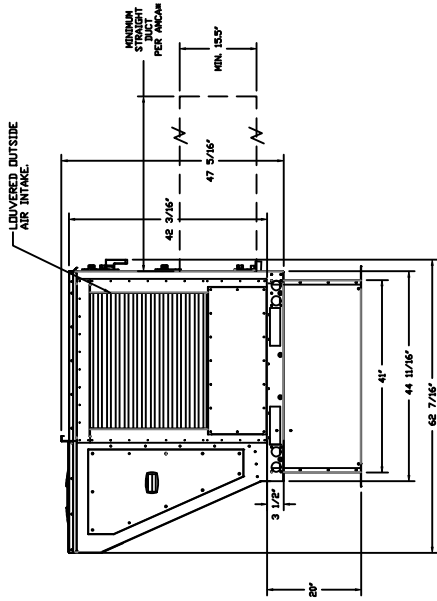
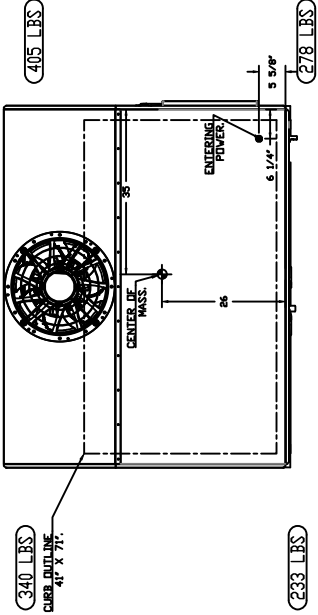
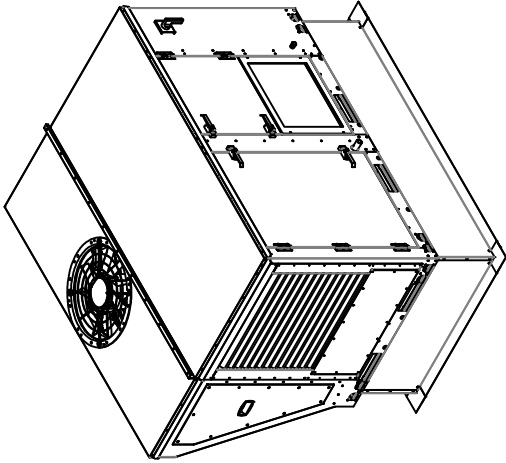
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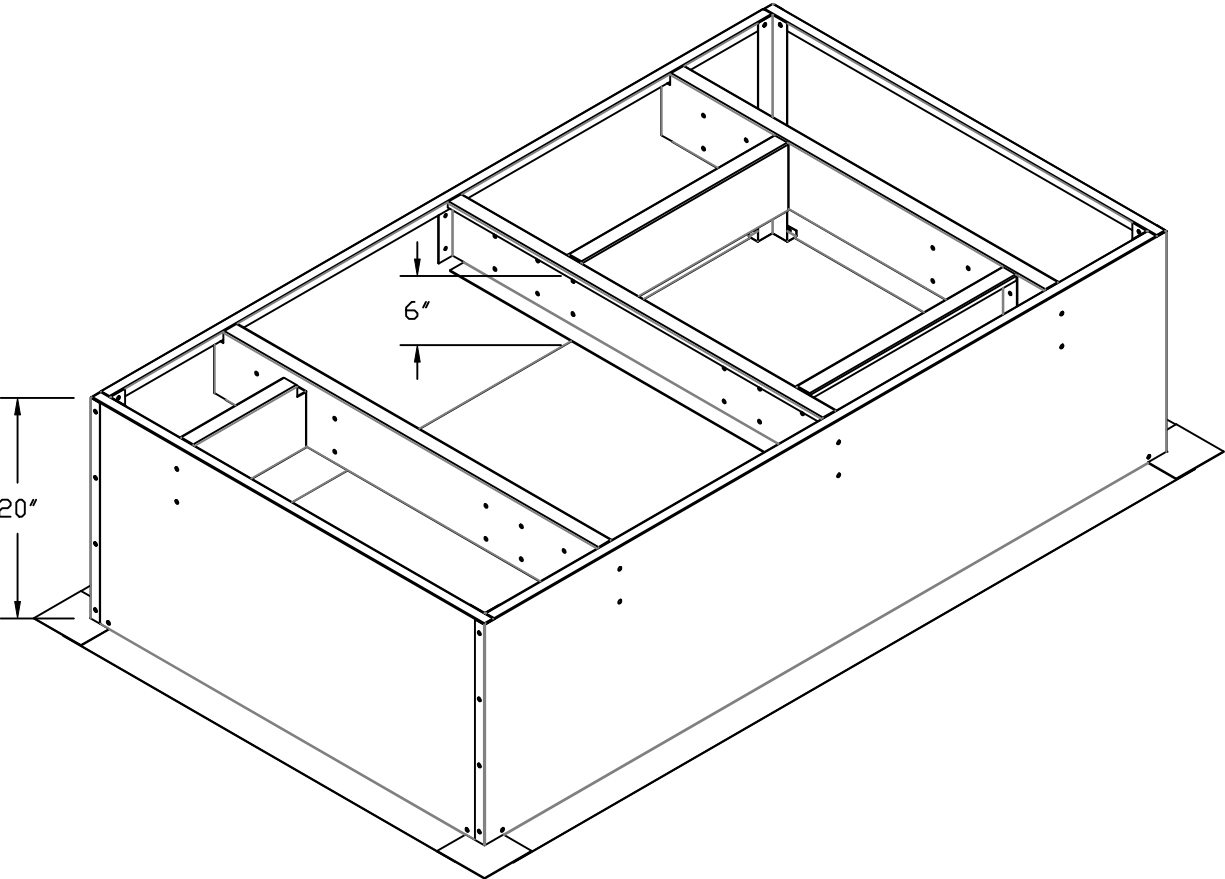
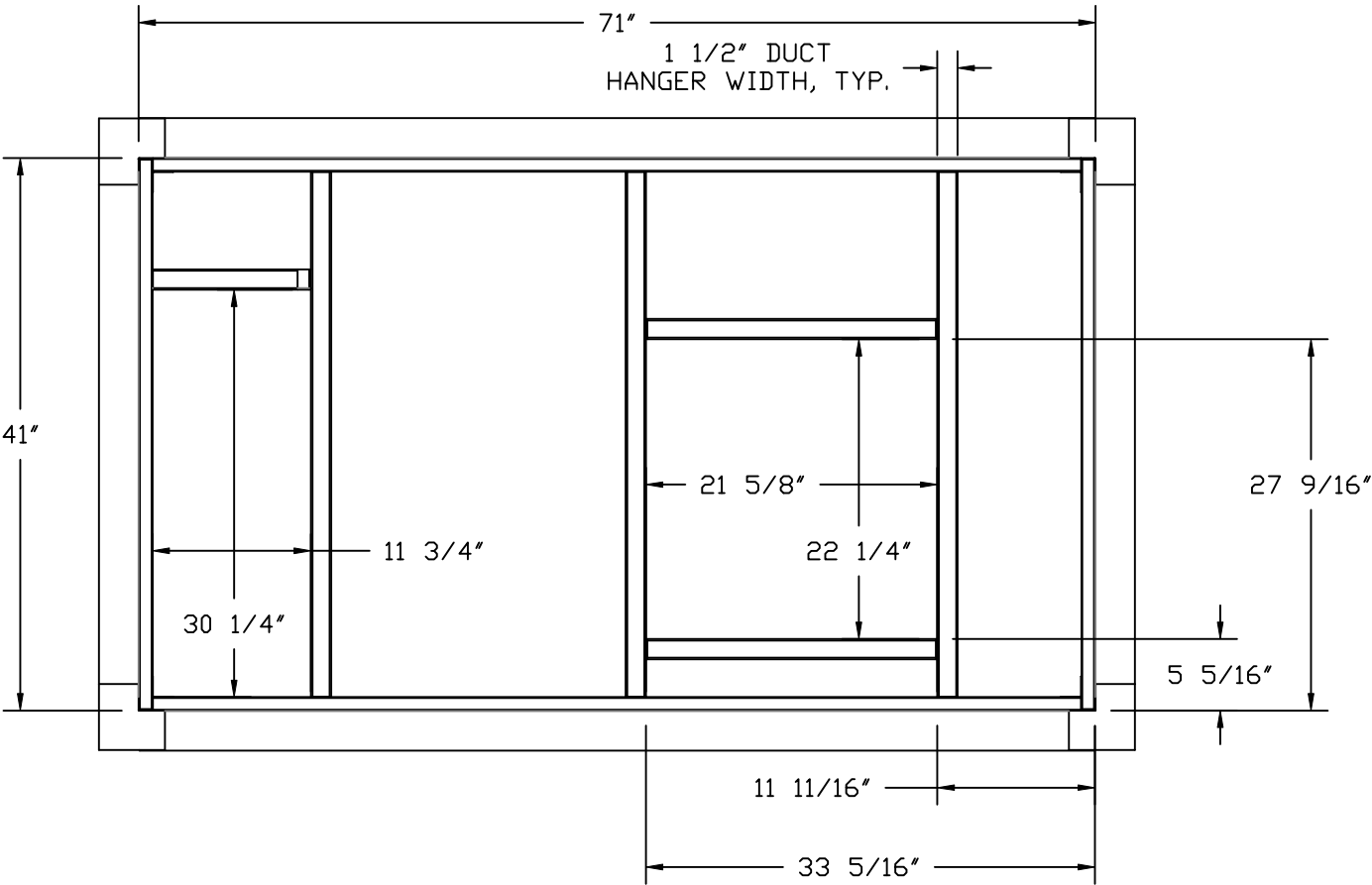
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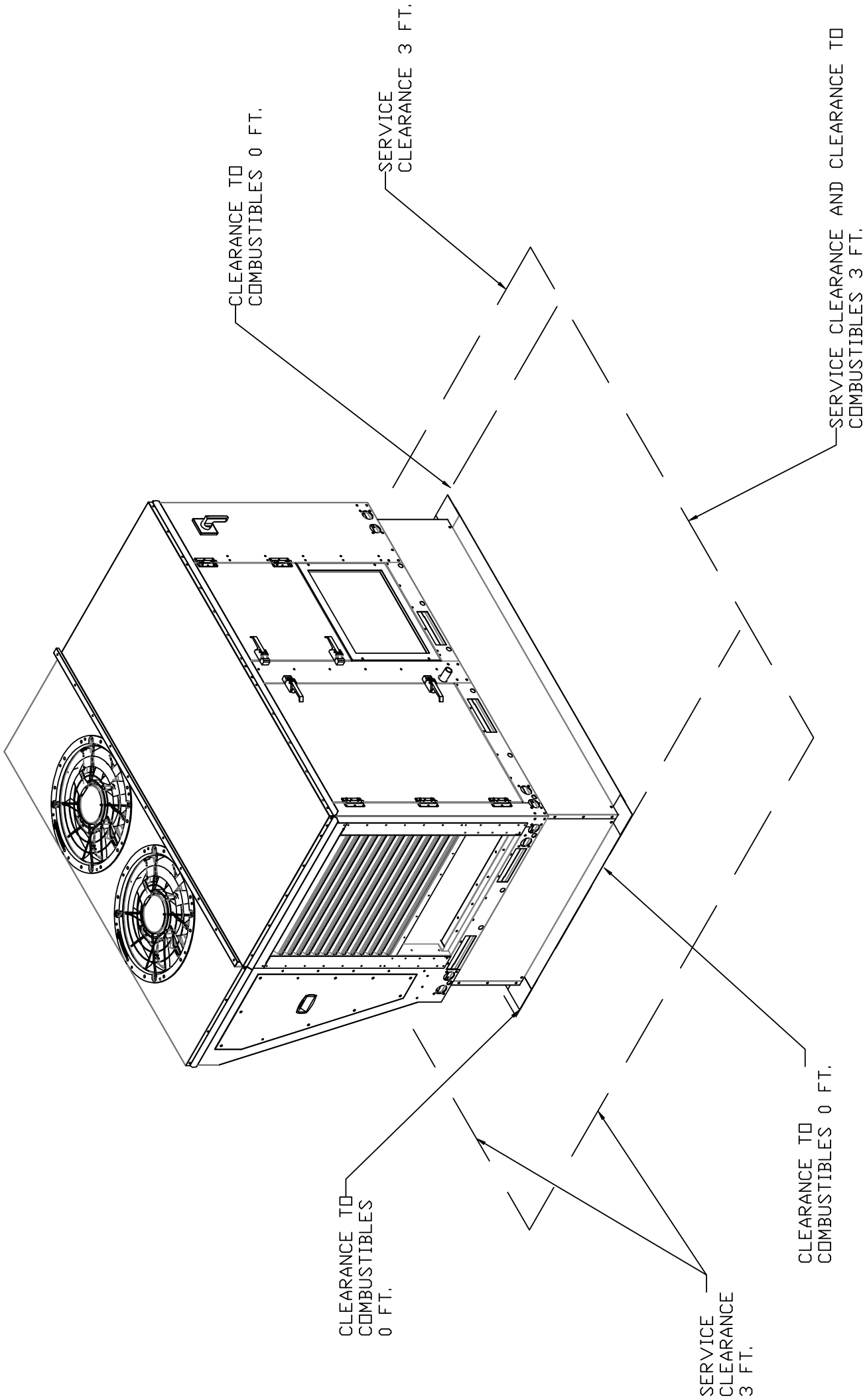
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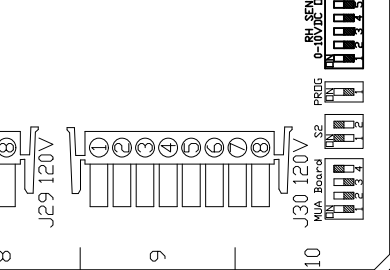
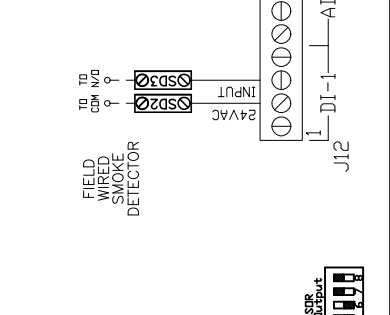
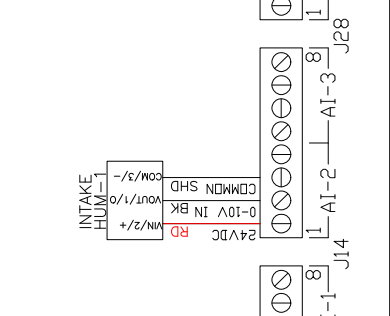
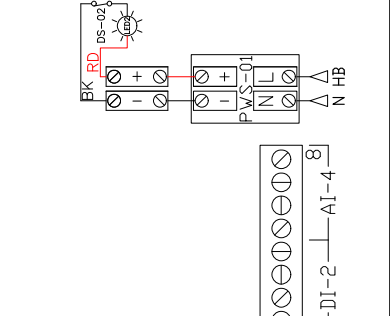
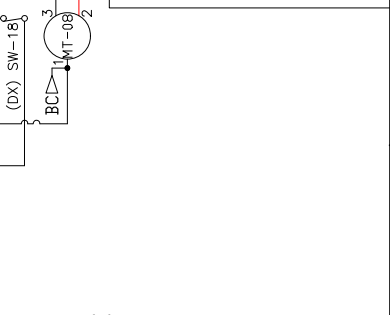
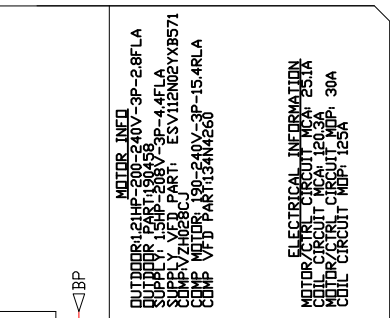


Fan #2 Curb
ROOF CURB - 41" Width, 71" Length, 20" Supply
Height, Insulated





LEGEND FIELD MARKING FACTORY MARKING BK- BLACK Y*- YELLOW GR- GREY W*- WHITE BL- BLUE RP- RED BR- BROWN GR- GREEN WH- WHITE DK- DK BL STRIPE RD- RD BL STRIPE W*- W/BL STRIPE W/B*- W/BL STRIPE	JOB NAME Piedmont 500 Bl... DRAWING TITLE DESCRIPTION OF OPERATION MUA BOARD (DETAILS TO FOLLOW) JOB NO 6708147 DRAWN BY AUTO DATE 3/28/2024 DWG NUMBER HW6708147-2
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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.

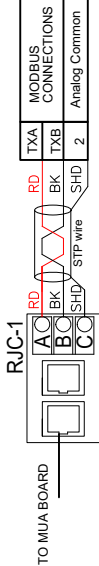
COMPRESSOR DRIVE PARAMETER SETTINGS
MUST BE CONFIGURED BEFORE STARTUP

0-60	225
1-71	10 SECONDS
3-02	30.00
3-15	[0] NO FUNCTION
3-16	[0] NO FUNCTION
3-41	200.00m
3-42	200.00m
4-18	IF 208V = 76(020), 81(030), 106(044) IF 480/575V = 76(020), 80(030), 116(044)
8-01	[2] CTRL WORD ONLY
8-03	20 SECONDS
8-04	[2] STOP
8-30	[2] MODBUS RTU
8-31	1
8-32	19200
8-33	[0] EVEN PARTY, 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
28-11	15m
28-12	24h
28-15(14)	100Hz (3000RPM)
28-17(16)	140Hz (4200RPM)

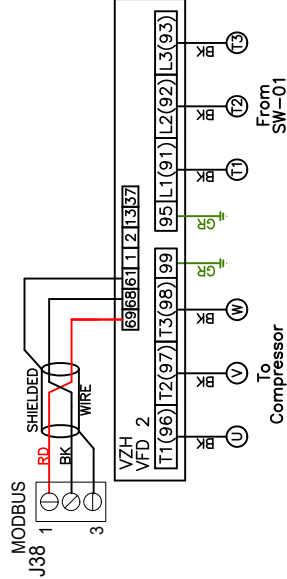
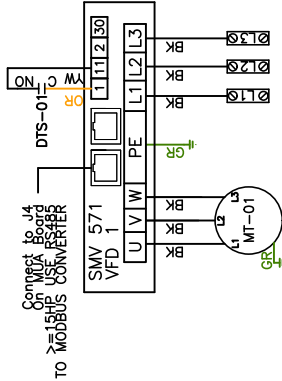
*Must be programmed using software

SMV 571 SERIES VFD

Terminal	Description
1	Digital Input(Start/Stop)
11	Internal DC Supply for External Devices
2	Analog Common
30	Analog OutputConfigurable 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



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:1.2HP-200-240V-3P-2.8FLA
OUTDOOR PART:190458
SUPPLY:1.5HP-208V-3P-4.4FLA
INDOOR:1.2HP-200-240V-3P-2.8FLA
COMP VZHD2C1: ESV112N02YXB571
COMP MOTOR:190240V-3P-16.4RLA
COMP VFD PART:134N4260

ELECTRICAL INFORMATION
MOTOR/CIRCUIT BREAKER: 25.1A
COIL CIRCUIT MCA: 120.3A
COIL CIRCUIT MOP: 30A
COIL CIRCUIT MOP: 125A

RTU VFD
SCHEMATIC

COMPONENT LIST	
<u>LABEL</u>	<u>DESCRIPTION</u>

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

FIELDY WIRING
FACTORY WIRING
BK-BLACK YW-YELLOW
BL-BLUE GY-GREY
BR-BROWN PR-PURPLE
OR-ORANGE RD-RED
WH-WHITE GR-GREEN
ORBL-ORBL STRIPE
BLRD-BL RD STRIPE
RDGN-RD GN STRIPE
WHBL-WH BL STRIPE

JOB NAME
Piedmont 500 Bl...

DRAWING TITLE

DESCRIPTION OF OPERATION
MUA BOARD (DETAILS
TO FOLLOW)

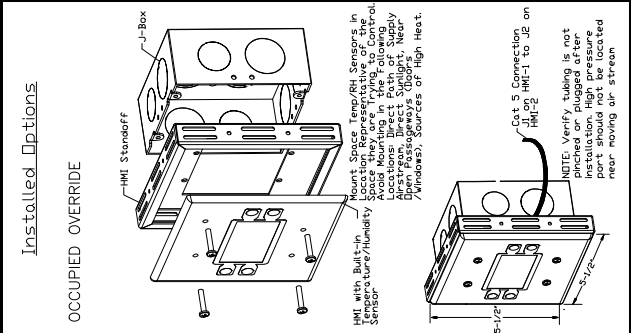
JOB NO
6708147

DRAWN BY
AUTO

TYPE
FACTORY

DATE
3/28/2024

DWG REV VFD0708147-2

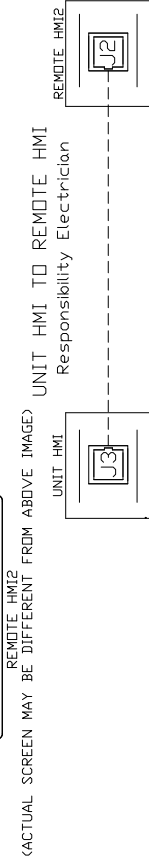
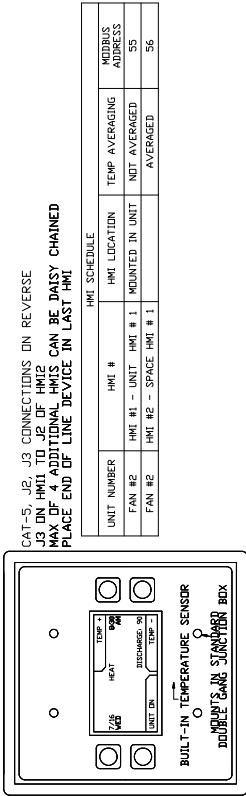


NOTES

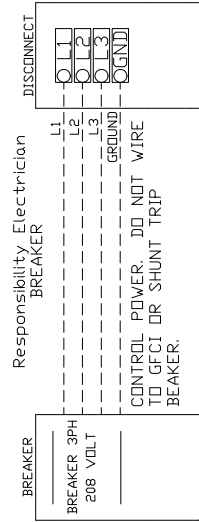
— — — Field Wiring

WIRE COLOR

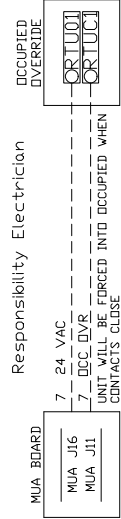
BK	-	BLACK	YW	-	YELLOW
BL	-	BLUE	GR	-	GREEN
BR	-	BROWN	GY	-	GRAY
OR	-	ORANGE	PR	-	PURPLE
RD	-	RED	PK	-	PINK
WH	-	WHITE			



BREAKER TO PRIMARY DISCONNECT



MUA BOARD TO OCCUPIED OVERRIDE



CONVENIENCE OUTLET TO SEPARATE 120V



UNIT BOARD TO SMOKE DETECTOR

