



Submittal ID: 89351

## Shop Drawing Submittal

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Send To: **MOODY NOLAN, INC.**  
300 SPRUCE STREET, SUITE 300  
COLUMBUS, OH 43215-

Attention: Mark Kossman

Project Id: 2018-0164

Project Name: CONNOR BUILDING EXPANSION

Discipline: HVAC

Spec Description: 237313 MODULAR AIR-HANDLING UNITS

Submittal Description: RESUBMITTAL OF PRODUCT DATA FOR MODULAR AIR-HANDLING UNITS

Date Recv'd: 2/17/2022

Date Sent: 2022-02-28

Copies Recv'd: 1 E-COPY

Copies Sent: 1 E-COPY

### Action Taken

### Comments:

<input type="checkbox"/>	Approved
<input checked="" type="checkbox"/>	Approved As Noted
<input type="checkbox"/>	Revise and Resubmit
<input type="checkbox"/>	Reviewed
<input type="checkbox"/>	Returned without review per "Submittals" Specification

Mechanical Contractor to coordinate the deviation from the base of design with the Electrical Contractor. Mechanical Contractor is responsible for all Electrical revisions required.

Logged In By:: AMS

Marked/Logged Out By: AMS

Checked By: Klaiss, Alexandria

Initials: ARK Date: 02/25/2022

Coordinated By: Lowe, Daniel  
~~Jones, Rob~~

Initials: RDL Date: 02/26/2022

Coordinated By: \_\_\_\_\_

Initials: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: *Alexandra Klaiss*





## SUBMITTAL DATA

**Project:** The Connor Group Office & Hangar  
**Bid Category :** PLUMBING  
**Project No.:** E1108  
**TP Tab No.:** 205  
**Construction Manager:** The Daimler Group, Inc.  
**Architect/Engineer:** Moody Nolan / Korda  
**Submittal For:** AHU  
**Specification #:** 23 73 13  
**Manufacturer:** Trane  
**Supplier:** Trane

The attached submittal data has been reviewed by TP Mechanical Contractors for compliance with the Architect/Engineer's specifications and plan schedule for this project.

In order to maintain the project schedule, we request that this submittal be returned to TP Mechanical Contractors **within 7 days**.

**NOTE: Material cannot be released without Architect/Engineer's approval of submittal.**

*(Please place stamp of approval here)*

<u>  X  </u>	PRODUCT DATA
<u>      </u>	DRAWINGS
<u>      </u>	DATE SUBMITTED
<u>2/17/22</u>	DATE RESUBMITTED
T. P. MECHANICAL CONTRACTORS	
BY	<u>  <b>Josh Bolton - LW</b>  </u>
This drawing or brochure has been checked to quality or proper components only. Approval of this drawing or brochure shall not relieve the supplier of responsibility for accuracy or dimensions of full compliance with plans and specifications and purchase order.	

**The Connor Group Office & Hangar  
TP Job No.: E1000108**

**Spec. Section 23 73 13 - AHU**

<u>Service</u>	<u>Manufacturer</u>	<u>Model #</u>
AHU2	Trane	CSAA050UA



# Air Handling Unit Submittal R1

## Tag: AHU2

**Prepared For:**  
All Bidders

**Date:** February 11, 2022

**Job Name:**  
Connor Group Office Annex

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Trane U.S. Inc. is pleased to provide the following submittal for your review and approval.

### Product Summary

#### Qty Product

1 Performance Climate Changer (CSAA)

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**Jon Schroeder,**  
**Trane U.S. Inc.**  
10300 Springfield Pike  
Cincinnati, OH 45215  
Office Phone: (513) 771-8884  
Fax: (513) 772-7281

*The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.*

*Product performance and submittal data is valid for a period of 6 months from the date of submittal generation. If six months or more has elapsed between submittal generation and equipment release, the product performance and submittal data will need to be verified. It is the customer's responsibility to obtain such verification.*

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**Tag Data - Performance Climate Changer (CSAA) (Qty: 1)**

Item	Tag(s)	Qty	Description	Model Number
A1	AHU2	1	Performance Climate Changer (CSAA)	CSAA050UA

**Product Data - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2

**Unit level options**

- Indoor unit
- Unit size 50
- 6in. integral base frame
- UL listed unit
- Multiple composite handles/latches
- Total unit length
- Field Provided (mtrs, lights, controls)
- No hurricane certification

**Controls and VFD/starter**

- No controller (Controller provided lose by Temperature Controls Contractor)
- Supply ext junc box, field provided NEMA (VFD provided loose for same manufacturer on all VFDs)

**Air mixing section (Pos #1)**

- Air mixing section
- Mixing box w/filter
- Door- right side
- Test port on right side
- Marine LED light
- Back rectangular opening
- Front full face opening
- 2in./4in. combo w/ space for dual sensor
- 4in. cartridge - standard (Field Installed)
- MERV 13
- 2" Pleated media (Field Installed)
- MERV 8

**Coil section (Pos #2)**

- Horizontal coil
- Small
- Door- right side
- Thermal window - right side
- Test port on right side
- Right side - coil supply
- Unit coil height
- Heating coil
- Hot water
- 5W Coil
- 1 row
- Coil fins per foot (fins per meter)
- Aluminum fins
- Prima flo E (energy efficient)
- .020" (0.508 mm) copper tubes
- 5/8in. tube diameter (15.875 mm)
- Stainless steel coil casing
- No turbulators
- Marine LED light
- Coil connections - Standard

**Coil section (Pos #3)**

- Horizontal coil
- Medium large
- Stainless steel drain pan
- Right side - drain connection
- Right side - coil supply
- Unit coil height
- Cooling coil
- Chilled water

Type "W" coil  
8 rows  
Coil fins per foot (fins per meter)  
Aluminum fins  
Prima flo H (Hi efficient)  
.020" (0.508 mm) copper tubes  
5/8in. tube diameter (15.875 mm)  
Stainless steel coil casing  
No turbulators  
Coil connections - Standard

**Access section (Pos #4)**

Access/blank/turning section  
Extended medium  
Door- right side  
Thermal window - right side  
Test port on right side  
Marine LED light

**Fan section (Pos #5)**

Fan section  
Supply fan  
Door- right side  
Outward swing  
Thermal window - right side  
Test port on right side  
Perforated panels  
27in. dd plenum, 80% width, H press  
Higher efficiency  
Fan quantity  
Plenum fan  
Right side drive  
NEMA premium compliant ODP  
Voltage 460/3  
NEMA motor hps only  
20 max applied hp  
1800 RPM  
Inverter balance with shaft grounding  
Top rectangular discharge  
Standard transmitter flow meter  
Marine LED light  
External junction box

## Performance Data - Performance Climate Changer (CSAA)

Tags	AHU2	
<b>Unit level options</b>		
<b>Position</b>		
Length (in)	169.776	
Width (in)	125.500	
Height (in)	79.250	
Rigging weight (lb)	6479.3	
Installed weight (lb)	7023.9	
Roof curb weight (lb)	0.0	
Actual airflow (cfm)	22000	
Unit elevation (ft)	0.00	
Shipping split 1 weight (lb)	4014.7	
Shipping split 2 weight (lb)	3009.2	
<b>Fan section</b>		
<b>Position</b>	<b>#5</b>	
Section length (in)	59.823	
Section weight (lb)	2648.4	
Fan airflow (cfm)	22000	
Elevation (ft)	0.00	
Overall ESP (in H2O)	2.700	
Total static pressure (in H2O)	5.570	
Maximum TSP @ 60 Hz (in H2O)	5.570	
Fan pressure drop (in H2O)	2.934	
Speed (rpm)	1852	
Total brake horsepower (hp)	30.258	
Unit static efficiency (%)	63.85	
Motor hertz (Hz)	63.00	
Discharge 1 top - airflow (cfm)	22000	
Discharge 1 top - face velocity (ft/min)	1367	
Discharge 1 top - pressure drop (in H2O)	0.234	
Discharge 1 top - area (sq ft)	16.09	
<b>Access section</b>		
<b>Position</b>	<b>#4</b>	
Section length (in)	19.000	
Section weight (lb)	360.8	
<b>Coil section</b>		
<b>Position</b>	<b>#2</b>	<b>#3</b>
Section length (in)	31.328	24.500
Section weight (lb)	789.5	2324.4
Coil performance airflow (cfm)	22000	22000
Unit airflow (cfm)	22000	22000
Coil face area (sq ft)	47.08	48.26
Coil face velocity (ft/min)	467	456
Air pressure drop (in H2O)	0.060	0.877
Coil section pressure drop (in H2O)	0.060	0.877
Coil rigging weight (lb)	200.4	1413.5
Coil installed weight (lb)	260.1	1898.4
Top or single coil dry weight (lb)	90.2	625.6
Middle or bottom coil dry weight (lb)	110.2	787.8
Leaving dry bulb (F)	77.70	53.00
Leaving wet bulb (F)	-	52.90
Entering dry bulb (F)	50.00	75.40
Entering wet bulb (F)	-	64.80
Fluid type	Water	Propylene glycol
Coil fluid percentage (%)	100.00	30.00
Entering fluid temperature (F)	180.00	44.00

<b>Tags</b>	<b>AHU2</b>	
Leaving fluid temperature (F)	150.00	56.00
Fluid temperature rise (F)	-	12.00
Fluid temperature drop (F)	30.00	-
Standard fluid flow rate (gpm)	44.02	140.20
Fluid pressure drop (ft H2O)	2.10	15.56
Fluid velocity (ft/s)	2.43	3.78
Fluid volume (gal)	7.17	51.65
Sensible capacity (MBh)	-	542.73
Total capacity (MBh)	660.89	777.73
<b>Air mixing section</b>		
<b>Position</b>	<b>#1</b>	
Section length (in)	35.000	
Section weight (lb)	900.9	
Opening 1 back - airflow (cfm)	22000	
Opening 1 front - airflow (cfm)	22000	
Opening 1 back - area (sq ft)	17.20	
Opening 1 front - area (sq ft)	58.43	
Opening 1 back - face velocity (ft/min)	1279	
Opening 1 back - pressure drop (in H2O)	0.000	
Opening 1 back total pressure drop (in H2O)	0.000	
Back inlet type	Ducted	
Greatest entry PD (in H2O)	0.000	
Filter condition	User specified PD	
Filter airflow (cfm)	22000	
Filter area (sq ft)	55.00	
Filter total pressure drop (in H2O)	1.700	
Total mixing section pressure drop (in H2O)	1.700	
Front total pressure drop (in H2O)	0.000	
Back total pressure drop (in H2O)	0.000	
Top total pressure drop (in H2O)	0.000	
Bottom total pressure drop (in H2O)	0.000	
Right side total pressure drop (in H2O)	0.000	
Left side total pressure drop (in H2O)	0.000	

**Product Report - Performance Climate Changer (CSAA)**  
 Item: A1 Qty: 1 Tag(s): AHU2

## Trane Performance Climate Changer Air Handler

Unit Overview - AHU2						
Application	Unit Size	External Dimensions			Weight	
		Height	Width	Length	Installed	Rigging
Indoor unit	CSAA050	79.3 in	125.5 in	169.8 in	7024 lb	6479 lb
Quantity of Shipping Sections		Largest Ship Split			Heaviest Ship Split	Elevation
		Height	Width	Length		
2 piece(s)		79.3 in	125.5 in	90.8 in	4015 lb	0.00 ft
Supply Fan						
Airflow	22000 cfm	Total Static Pressure	5.570 in H2O			

Construction Features	
Panel	2in. foam injected R-13 with thermal break
Panel Material	All unit inner panels - galvanized
Integral Base Frame	6in. integral base frame
Paint	Slate gray
Short Circuit Current Rating	5 kA
Agency Approval	UL listed unit

Mechanical Contractor is responsible for all Electrical revisions required to accommodate this deviation from the base of design. This should not be billed to the owner. Mechanical contractor is to coordinate with the Electrical Contractor for these revisions.

Unit Electrical				
Circuit	Voltage/Phase/Frequency	FLA	MCA	Max Fuse Size
Circuit number 1 Supply fan motor (each x 2)	460/3/60	24.50 A	30.63 A	50.00 A
Circuit number 2 Lights + switch	115/1/60	2.61 A	3.26 A	15.00 A
Circuit number 3 Receptacle	115/1/60	8.00 A	10.00 A	15.00 A

Unit Controls	
Controller Type	No controller

Warranty	
Warranty section	Extd. warranty

Air mixing section - Position: 1							
Openings							
Face	Path	Type	Airflow	Face Velocity	Area	Pressure Drop	Hood
Back	Return	Sizeable rectangular opening	22000 cfm	1279 ft/min	17.20 sq ft	0.000 in H2O	
Filter							
Type	Frame	MERV Rating	Quantity	Size			
4in. cartridge - MERV 13 - standard	2"/4" combo	MERV 13	1.00 4.00 12.00	16in.x20in. 16in.x25in. 20in.x25in.			
Prefilter							
Type	Frame	MERV Rating	Quantity	Size	Pressure Drop		
Section Options							
Door Location	Right						
Marine Light	Marine LED light						

**Product Report - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2

Heating coil section - Position: 2	
<b>Coil Construction</b>	<b>Coil Performance</b>
<b>Model</b> Hot water - 5W	<b>Capacity</b>
<b>Rows</b> 1	<b>Total</b> 660.89 MBh
<b>Tube Diameter</b> 5/8in. tube diameter (15.875 mm)	<b>Air</b>
<b>Coil Connection</b> Standard	<b>Flow</b> 22000 cfm
<b>Tube Mat/Wall Thickness</b> .020" (0.508 mm) copper tubes	<b>Entering Dry Bulb</b> 50.00 F
<b>Fin Spacing</b> 80 Per Foot	<b>Leaving Dry Bulb</b> 77.70 F
<b>Fin Material</b> Aluminum fins	<b>Pressure Drop</b> 0.060 in H2O
<b>Fin Type</b> Prima flo E (energy efficient)	<b>Face Velocity</b> 467 ft/min
<b>Face Area</b> 47.08 sq ft	<b>Fluid</b>
<b>Coil (top/single) H x L</b> 27 in. (686 mm) X 113" (2870 mm) finned length	<b>Flow</b> 44.02 gpm
<b>Coil (middle/bottom) H x L</b> 33 in. (838 mm) X 113" (2870 mm) finned length	<b>Entering</b> 180.00 F
<b>Casing</b> Stainless steel	<b>Leaving</b> 150.00 F
<b>Turbulators</b> Not Included	<b>Pressure Drop</b> 2.10 ft H2O
<b>Rigging Weight</b> 200.4 lb	<b>Tube Velocity</b> 2.43 ft/s
<b>Installed Weight</b> 260.1 lb	<b>Reynolds Number</b> 30679.20
<b>Coil Section Options</b>	<b>Type</b> Water
<b>Extended Drain and Vent</b> Holes only	<b>Concentration</b> 100.00 %
<b>Drain Pan Size</b> Small	<b>Fouling Factor</b> 0.00025 hr-sq ft-deg F/Btu
<b>Door Location</b> Right	<b>Volume</b> 7.17 gal
<b>Test Port</b> Right side	<b>AHRI 410 Classification</b>
<b>Window</b> Right - thermal	<b>AHRI 410 Classification</b> AHRI ACHC Certified
<b>Marine Light</b> YES	<b>Data Generation Date</b> 1/7/2022
	<b>Trane Select Assist update number</b> 2540

Note: Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org).



Cooling coil section - Position: 3	
<b>Coil Construction</b>	<b>Coil Performance</b>
<b>Model</b> Chilled water - W	<b>Capacity</b>
<b>Rows</b> 8	<b>Total</b> 777.73 MBh
<b>Tube Diameter</b> 5/8in. tube diameter (15.875 mm)	<b>Sensible</b> 542.73 MBh
<b>Coil Connection</b> Standard	<b>Air</b>
<b>Tube Mat/Wall Thickness</b> .020" (0.508 mm) copper tubes	<b>Flow</b> 22000 cfm
<b>Fin Spacing</b> 129 Per Foot	<b>Entering Dry Bulb</b> 75.40 F
<b>Fin Material</b> Aluminum fins	<b>Entering Wet Bulb</b> 64.80 F
<b>Fin Type</b> Prima flo H (Hi efficient)	<b>Leaving Dry Bulb</b> 53.00 F
<b>Face Area</b> 48.26 sq ft	<b>Leaving Wet Bulb</b> 52.90 F
<b>Coil (top/single) H x L</b> 27 in. (686 mm) X 113" (2870 mm) finned length	<b>Pressure Drop</b> 0.877 in H2O
<b>Coil (middle/bottom) H x L</b> 34 in. (864 mm) X 113" (2870 mm) finned length	<b>Face Velocity</b> 456 ft/min
<b>Casing</b> Stainless steel	<b>Fluid</b>
<b>Turbulators</b> Not Included	<b>Flow</b> 140.20 gpm
<b>Rigging Weight</b> 1413.5 lb	<b>Entering</b> 44.00 F
<b>Installed Weight</b> 1898.4 lb	<b>Leaving</b> 56.00 F
<b>Coil Section Options</b>	<b>Pressure Drop</b> 15.56 ft H2O
<b>Extended Drain and Vent</b> Holes only	<b>Tube Velocity</b> 3.78 ft/s
<b>Drain Pan</b> Stainless steel	<b>Reynolds Number</b> 4596.62
<b>Drain Connection</b> Right	<b>Type</b> Propylene glycol
<b>Minimum Trap Height (L)</b> 12.031 in	<b>Concentration</b> 30.00 %
<b>H Trap Dimension</b> 7.187 in	<b>Fouling Factor</b> 0.00000 hr-sq ft-deg F/Btu
<b>J Trap Dimension</b> 3.594 in	<b>Volume</b> 51.65 gal
	<b>AHRI 410 Classification</b>
	<b>AHRI 410 Classification</b> NOT Certified by AHRI
	<b>Data Generation Date</b> 1/7/2022
	<b>Trane Select Assist update number</b> 2540

Note: Coil is NOT certified by AHRI. Coil is within the scope of AHRI Standard 410.

**Product Report - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2

**Access/blank/turning section - Position: 4**

Options	
Section Length	19.000 in
Door Location 1	Right
Test Port	Right side
Window 1	Right - thermal
Marine Light	Marine LED light

**Supply fan section - Position: 5**

Fan Data		Motor Data	
Wheel Diameter/Type/Class	27in. dd plenum, 80% width, H press	Power / Fan	20 hp
Fan Quantity	2	Voltage	460/3
Discharge Location	Top front	Speed	1800
Motor Location	Right side drive	Class	NEMA premium compliant ODP
Blades	Higher eff.(some bands lower,more spike)	Efficiency	93.20 %
Drive Service Factor	Direct drive	Part Load Efficiency	88.65 %
<b>Fan Performance</b>		Fan Electrical Power	24.10 kW
Airflow	22000 cfm	Note: DOL motor fan electrical power calculated in accordance with AHRI 430.	
Total Static Pressure	5.570 in H2O	<b>Fan Section Options</b>	
Total Brake Power	30.258 hp	Fan Wheel Balance	Inverter balance with shaft grounding
Operating Speed	1852 rpm	Perforated Panel	Perforated panels
Total Brake HP	30.258 hp	Door Location	Right
AMCA FEG	FEG85	Test Port	Right side
Unit Static Efficiency	63.85 %	Window	Right - thermal
<b>Motor Interface Options</b>		Door Guard	Yes
Selection Type	External junction box	Marine Light	Marine LED light
Voltage	460/3		
VFD Frequency	63.00 Hz		

Fan Discharge Options							
Face	Type	Airflow	Face Velocity	Area	Pressure Drop	Damper Torque Requirement	Exhaust Hood
Top Face Feature	Sizeable rectangular opening	22000 cfm	1367 ft/min	16.09 sq ft	0.234 in H2O	N/A	N/A

Note: Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third party verified. Certified units may be found in the AHRI Directory at [www.ahrirectory.org](http://www.ahrirectory.org).



**Pressure Drop in (in w.g.)**

Supply fan	
Air mixing section	1.70
Coil section	0.06
Coil section	0.88
Fan section	0.23
<b>Internal Static Pressure</b>	<b>2.87</b>
<b>External Static Pressure</b>	<b>2.70</b>
<b>Total Static Pressure</b>	<b>5.57</b>



**Mechanical Specifications - Performance Climate Changer (CSAA)****Item: A1 Qty: 1 Tag(s): AHU2****GENERAL**

Per ASHRAE 62.1 recommendation, indoor air handling units will be shipped stretch-wrapped to protect unit from in-transit rain and debris.

Installing contractor is responsible for long term storage in accordance with the Installation, Operation, and Maintenance manual (CLCH-SVX07B-EN).

Unit shall be UL and C-UL Listed.

Supply fans within the scope of AHRI Standard 430 are "Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third-party verified. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org)".

Unit sound performance data shall be reported as sound power. Trane, in providing this program and data, does not certify or warrant NC levels. These levels are affected by factors specific to each application and/or installation and therefore unable to be predicted or certified by Trane. Refer to product data for specific fan footnote references.

**Unit Construction**

All unit panels shall be 2" solid, double-wall construction to facilitate cleaning of unit interior. Unit panels shall be provided with a mid-span, no-through-metal, internal thermal break. Casing thermal performance shall be such that under 55°F supply air temperature and design conditions on the exterior of the unit of 81°F dry bulb and 73°F wet bulb, condensation shall not form on the casing exterior.

All exterior and interior indoor AHU panels will be made of galvanized steel.

**Unit Paint**

External surface of unit casing will be coated with water-based polyurethane paint. Color to be standard "Slate Gray". Factory-painted units will be able to withstand a salt spray test in accordance with ASTM B117 for a minimum of 500 consecutive hours and shall meet the following requirements following the salt-spray test:

- Mean scribe creepage rating of at least 6 per ASTM D1654 procedure A
- Blister size no larger than #6 per ASTM D714
- Blister density no greater than Medium per ASTM D714
- No onset of red rust

**Casing Deflection**

The casing shall not exceed 0.0042 inch deflection per inch of panel span at 6 inch static pressure.

**Floor Construction**

The unit floor shall be of sufficient strength to support a 300.0 lb load during maintenance activities and shall deflect no more than 0.0042 inch per inch of panel span.

**Unit base**

Manufacturer to provide a full perimeter integral base frame for either ceiling suspension of units or to support and raise all sections of the unit for proper trapping. Indoor unit base frame will either be bolted construction or welded construction. All outdoor unit base frames shall be welded construction. For indoor units, refer to schedule for base height and construction type. Contractor will be responsible for providing a housekeeping pad when unit base frame is not of sufficient height to properly trap unit. Unit base frames not constructed of galvanized steel shall be chemically cleaned and coated with both a rust-inhibiting primer and finished coat of rust-inhibiting enamel. Unit base height to be included in total height required for proper trap height.

**Insulation**

Panel insulation shall provide a minimum thermal resistance (R) value of 13 ft<sup>2</sup>-h-°F/Btu throughout the entire unit. Insulation shall completely fill the panel cavities in all directions so that no voids exist and settling of insulation is prevented. Panel insulation shall comply with NFPA 90A.

**Drain Pan**

In sections provided with a drain pan, the drain pan shall be designed in accordance with ASHRAE 62.1. To address indoor air quality (IAQ) the drain pan shall be sloped in two planes promoting positive drainage to eliminate stagnant water conditions. Drain pan shall be insulated, and of double wall construction. The outlet shall be the lowest point on the pan, and shall be of sufficient diameter to preclude drain pan overflow under normally expected operating conditions. All drain pans connections shall have a threaded connection, extending a minimum of 2-1/2" beyond the unit base, and shall be made from the same material as the drain pan. Drain pan located under a cooling coil shall be of sufficient size to collect all condensate produced from the coil.

Refer to Product Data for specific information on which sections are supplied with a drain pan, the drain pan material and connection location.

**Access Door Construction**

Access doors shall be 2" double wall construction. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels respectively. All doors shall be provided with a thermal break construction of door panel and door frame. Gasketing shall be provided around the full perimeter of the doors to prevent air leakage. Surface mounted handles shall be provided to allow quick access to the interior of the functional section and to prevent through cabinet penetrations that could likely weaken the casing leakage and thermal performance. Handle hardware shall be designed to prevent unintended closure. Access doors shall be hinged and removable for quick easy access. Hinges shall be interchangeable with the door handle hardware to allow for alternating door swing in the field to minimize access interference due to unforeseen job site obstructions. Door handle hardware shall be adjustable and visually indicate locking position of door latch external to the section. Door hinges shall be galvanized.

All doors shall be a minimum of 60" high when sufficient height is available or the maximum height allowed by the unit height.

Door handles shall be provided for each latching point of the door necessary to maintain the specified air leakage integrity of the unit. Optionally for indoor AHUs and as standard on outdoor AHUs, outward swing doors are provided with a single handle linked to multiple latching points. An optional shatterproof window shall be provided in access doors where indicated on the plans. Window shall either be single pane, or thermal dual pane, as defined on schedule. Window shall be capable of withstanding unit operating pressures and shall be safe for viewing UV-C lamps.

*Refer to Product Data for specific information on which sections are supplied with an access door, the door location, a single handle and a window.*

Test port shall be supplied in each door as specified in Product Data to facilitate the field commissioning of the unit by the test and balance contractor. Test port location can vary on a door due to other door features ordered.

**Marine Light**

A factory-mounted, weather resistant (enclosed and gasketed to prevent water and dust intrusion), light emitting diode (LED) fixture shall be provided in sections of the unit as specified for maintenance and service visibility. Fixture shall be complete with aluminum die cast housing, polycarbonate lens designed for maximum light output, and LEDs wired to a single switch within a factory provided service module. LED lighting shall provide instant-on "white" light and have a minimum 25,000 hour life. Fixtures shall be designed for flexible positioning during maintenance and service activities for optimal location. All lights within the unit shall be wired to a single switch within the factory provided service module. The service module shall include a GFCI receptacle separate from the load side of the equipment. Electrical contractor shall be required to provide a 120V supply to the factory-mounted service module for the marine light circuit and for the GFCI receptacle circuit per NEC.

Service module shall be provided on the fan section.

*Refer to the Product Data section of the submittal for sections with marine lights.*

**MIXING SECTION**

A mixing section shall be provided to support the damper assembly for outdoor, return, and/or exhaust air.

**Title 24**

The following specifications apply only to units with outside air and return air dampers, with actuators. The 5 year warranty applies only to these items.

This unit contains Economizer that meets or exceeds all mandatory requirements prescribed by Title 24, including but not limited to:

- 5 yr parts only warranty
- Successfully tested to 60,000 Actuations
- Less than 10 cfm/sq.ft. of damper leakage at 1" WG per AMCA 500L

## Filters

Mixing sections shall be provided with a filter rack as indicated in the Product Data and As-Built sections of the submittal.

4 inch high efficiency filters constructed with a fine fiber media made into closely spaced pleats shall be provided. The filters shall be capable of operating up to 625 fpm face velocity without loss of filter efficiency and holding capacity. The filter media shall be sealed into a frame assembled in a rigid manner. The manufacturer shall supply a side access filter rack capable of holding 4 inch high efficiency filters.

The 4 inch high efficiency filters shall have a MERV 13 rating when tested in accordance with the ANSI/ASHRAE Standard 52.2.

## Prefilter Type

2-inch pleated media filters made with 100% synthetic fibers that are continuously laminated to a supported steel-wire grid with water repellent adhesive shall be provided. Filters shall be capable of operating up to 625 fpm face velocity without loss of filter efficiency and holding capacity. The filters shall have a MERV 8 rating when tested in accordance with the ANSI/ASHRAE Standard 52.2.

## Differential Pressure Gage

A differential pressure gage shall be flush-mounted with casing outer wall with probes piped to both sides of the filter bank to indicate status. Combination filter frames will be provided with a separate differential pressure gage piped across each of the high-efficient and pre-filter banks. The gage shall be diaphragm-actuated dial-type and shall maintain a +/- 5 percent accuracy within operating temperature limits of the air handler. Range shall be 0 - 2.0 in. w.g,

## COIL SECTION WITH FACTORY INSTALLED COIL

The coil section shall be provided complete with coil and coil holding frame. The coils shall be installed such that headers and return bends are enclosed by unit casings. If two or more cooling coils are stacked in the unit, an intermediate drain pan shall be installed between each coil and be of the same material as the primary drain pan. Like the primary drain pan, the intermediate drain pan shall be designed being of sufficient size to collect all condensation produced from the coil and sloped to promote positive drainage to eliminate stagnant water conditions. The intermediate pan shall begin at the leading face of the water-producing device and be of sufficient length extending downstream to prevent condensate from passing through the air stream of the lower coil. Intermediate drain pan shall include downspouts to direct condensate to the primary drain pan. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition.

## Coil with Inspection

The coil section shall include an inspection section complete with a double-wall, removable door downstream of the coil for inspection, cleaning, and maintenance. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels, respectively. All doors shall be provided with a thermal break construction of door panel and door frame.

Casing penetrations supplied for hydronic drain and vents. Piping contractor shall provide extended piping.

## Water Coils (UP, WP, UW, UU, UA, 3W, 3U, W, 5W, 5A, WD, 5D, D1, D2, P, or TT)

The coils shall have aluminum fins and seamless copper tubes. Copper fins may be applied to coils with 5/8-inch tubes. Fins shall have collars drawn, belled, and firmly bonded to tubes by mechanical expansion of the tubes. The coil casing may be galvanized or stainless steel. Refer to the Product Data section of the submittal for the coil casing material.

The coils shall be proof-tested to 300 psig and leak-tested under water to 200 psig. Coils containing water or ethylene glycol are certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org). Propylene glycol and calcium chloride, or mixtures thereof, are outside the scope of AHRI Standard 410 and, therefore, do not require AHRI 410 rating or certification.

## Water Coils (UP, WP, UW, UU, UA, 3W, 3U, W, 5W, 5A, WD, 5D, D1, D2, P, or TT)

The coils shall have aluminum fins and seamless copper tubes. Copper fins may be applied to coils with 5/8-inch tubes. Fins shall have collars drawn, belled, and firmly bonded to tubes by mechanical expansion of the tubes. The

coil casing may be galvanized or stainless steel. Refer to the Product Data section of the submittal for the coil casing material.

The coils shall be proof-tested to 300 psig and leak-tested under water to 200 psig. Coils containing water or ethylene glycol are not certified by AHRI. Propylene glycol and calcium chloride, or mixtures thereof, are outside the scope of AHRI Standard 410 and, therefore, do not require AHRI 410 rating or certification.

Coil connections are constructed of cast iron with female connections, steel block with female connections or steel pipe with male connections. Type P or TT coil connections do not extend out of unit casing. All other water coil types have connections that extend out beyond unit casing. Headers on downstream coil bank of staggered coil sections do not extend beyond the unit casing and must be completed by the on-site piping contractor.

Tubes are 5/8" [16 mm] OD 0.020" [0.508 mm] thick copper.

### **ACCESS/INSPECTION / TURNING SECTION**

A section shall be provided to allow additional access/inspection of unit components and space for field-installed components as needed. An access door shall be provided for easy access. All access sections shall be complete with a double-wall, removable door downstream for inspection, cleaning, and maintenance. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels, respectively. All doors downstream of cooling coils shall be provided with a thermal break construction of door panel and door frame.

### **DIRECT-DRIVE PLENUM FAN SECTION**

The fan type shall be provided as required for stable operation and optimum energy efficiency. The fan shall be a single-width, single-inlet, multiblade-type direct-drive plenum fan. Motor bearing life of the direct-drive plenum fan shall be not less than L-10 250,000 hrs. *Refer to the Product Data section for fan quantity and number of blades selected within each unit.* Central Station Air Handling Unit Supply Fans are "Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third-party verified. Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org)" Central Station Air Handling Unit Supply Fans shall be tested and rated in-accordance with AHRI Standard 260 for sound performance.

Fans that are selected with inverter balancing shall first be dynamically balanced at design RPM. The fans then will be checked in the factory from 25% to 100% of design RPM to insure they are operating within vibration tolerance specifications, and that there are no resonant frequency issues throughout this operating range. Inverter balancing that requires lockout frequencies inputted into a variable frequency drive to in order to bypass resonant frequencies shall not be acceptable. If supplied in this manner by the unit manufacturer, the contractor will be responsible for rebalancing in the field after unit installation. Fans selected with inverter balancing shall have a maintenance free grounding assembly installed on the fan motor to discharge both static and induced shaft currents to ground.

On units supplied with plenum or motorized impeller fans, door guard(s) shall be supplied on the access door(s) to the fan and those downstream access door(s) where unintended access to the plenum or motorized impeller fan could occur. Door guard is intended to deter unauthorized entry and incidental contact with rotating components. *Refer to the Product Data section for fans with access door guard(s).*

### **Motor Frame**

The motor shall be mounted integral to the isolated fan assembly and furnished by the unit manufacturer. The motor is mounted inside the unit casing on an adjustable base to permit adjustment of drive belt tension (not applicable for direct drive plenum fans). The motor shall meet or exceed all NEMA Standards Publication MG 1 requirements and comply with NEMA Premium efficiency levels when applicable except for fractional horsepower motors which are not covered by the NEMA classification. The motor shall be T-frame, squirrel cage with size, type, and electrical characteristics as shown on the equipment schedule. *Refer to the Product Data section for selected fan motors within each unit.*

### **Two-Inch Spring Isolators**

Direct-drive fan and motor assemblies shall be internally isolated from the unit casing with 2-inch (50.8 mm) deflection spring isolators. The isolation system shall be designed to resist loads produced by external forces, such as earthquakes, and conform to the current IBC seismic requirements.

### **Standard transmitter**

The fan shall have an airflow measurement system to measure fan airflow directly or to measure differential pressure that can be used to calculate fan airflow. The system shall predict airflow within +/-5 percent total accuracy (device & transmitter) when operating within the stable operating region of the fan curve. On units supplied with multiple direct

drive fans, one fan is tubed and one transmitter is supplied for the total array. The submitted fan airflow performance and noise levels shall not be affected by the installation of the device. Any device that provides an obstruction to the fan inlet will not be accepted. Refer to the Product Data section for fans with flow meters.

**Indoor Units with an External Motor Junction Box**

The fan section shall have motor leads extended to a factory-installed NEMA external junction box to facilitate field supplied starter or VFD wiring and to maintain air leakage integrity of the casing. For units with a full-load amp rating less than or equal to 110 amps, the enclosure shall be a NEMA 1 enclosure. For units with a full-load amp rating greater than 110 amps, the enclosure shall be a NEMA 4 enclosure. *Refer to the Product Data section for fans with an external motor junction box.*

**Lifting Instructions**

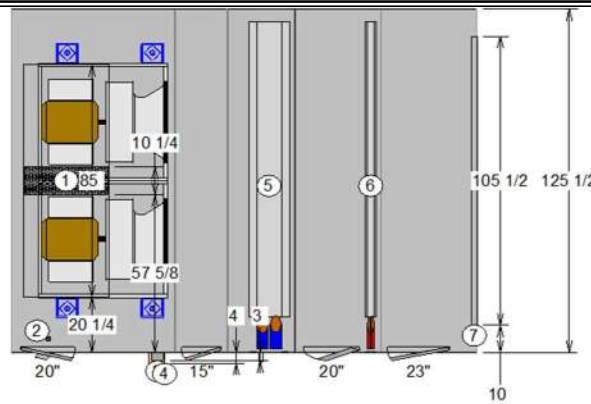
The air handling units must be rigged, lifted, and installed in strict accordance with the Installation, Operation, and Maintenance manual (CLCH-SVX07G-EN). The units are also to be installed in strict accordance with the specifications. Units may be shipped fully assembled or disassembled to the minimum functional section size in accordance with shipping and job site requirements.

Indoor units shall be shipped on an integral base frame (variable from the standard 2.5" to 8" height) for the purpose of mounting units to a housekeeping pad and providing additional height to properly trap condensate from the unit. The integral base frame may be used for ceiling suspension, external isolation, or as a housekeeping pad. Indoor sizes 3 to 30 will also be shipped with a shipping skid designed for forklift transport. Refer to the unit As-Built or Product Data section of the submittal for the base frame height of each unit.

All units will be shipped with an integral base frame designed with the necessary number of lift points for safe installation. All lifting lugs are to be utilized during lift. The lift points will be designed to accept standard rigging devices and be removable after installation. Units shipped in sections will have a minimum of four points of lift.

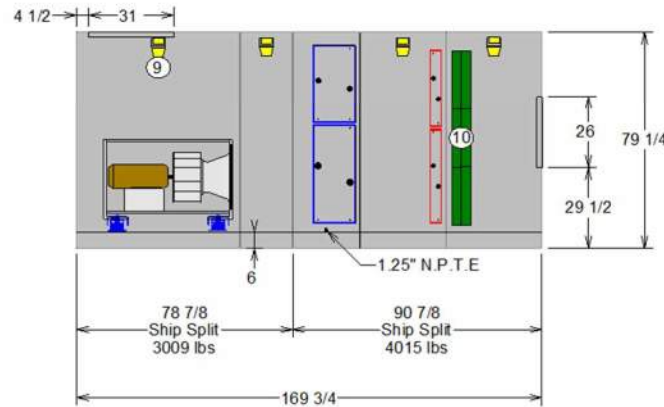
**Dimensional Drawings - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2



- 1 Opening top  
85 x 31
- 2 Plenum fan - 27in. dd plenum, 80% width, H press Supply fan 20 hp 460/3 None
- 3 Light switch and/or receptacle RH
- 4 External junction box RH
- 5 Cooling coil - 8 Coil type W
- 6 Heating coil - 1 Coil type 5W (3)
- 7 Opening back  
26 x 105.5
- 8 1.25" N.P.T.E
- 9 Marine light
- 10 Combo filters -

- Doors
- 20 width x 69 height
  - 15 width x 69 height
  - 20 width x 61 height
  - 23 width x 69 height



**For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.**

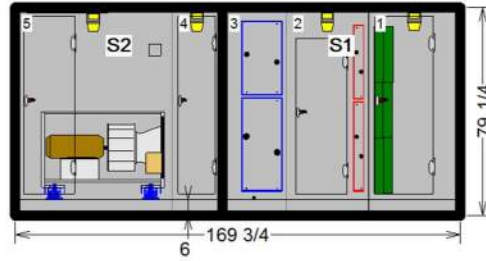
*OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE*

Unit size: 50	Job Name: Connor Group Office Annex	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 22000 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office: Cincinnati	Tags: AHU2
Paint: Slate gray		Rigging/Installed Weight: 6479.3 lb / 7023.9 lb



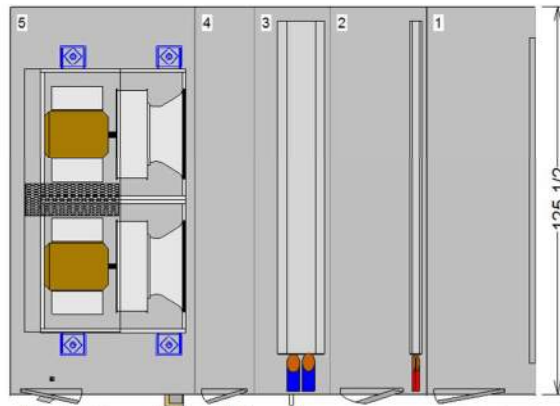
**Dimensional Drawings - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2



For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length sh

Pos #	Module	Length	Weight
1	Air mixing section	35	900.89
2	Coil section	31 3/8	789.45
3	Coil section	24 5/8	2324.39
4	Access section	19 1/8	360.83
5	Fan section	59 7/8	2648.35
			Installed Unit Weight 7023.91 lbs



Basic Overall Plan View: Top - Measurements in inches

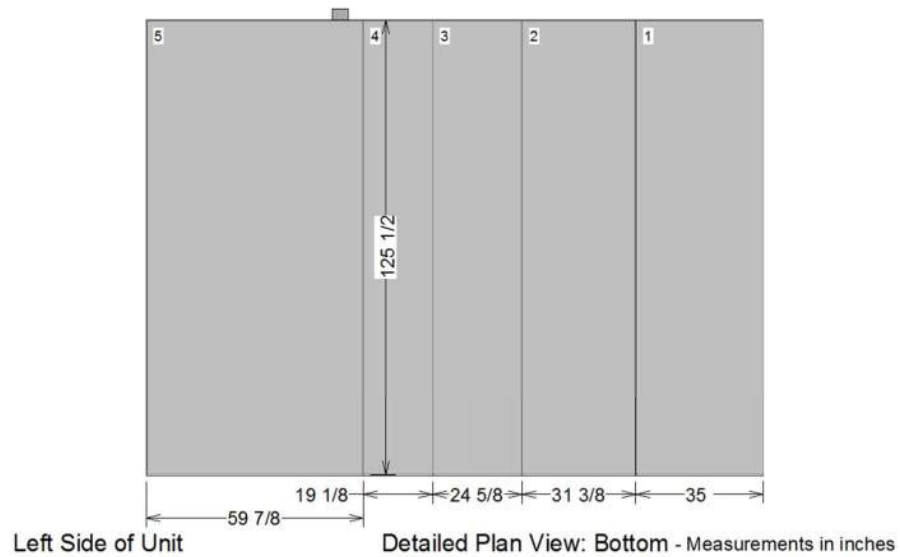
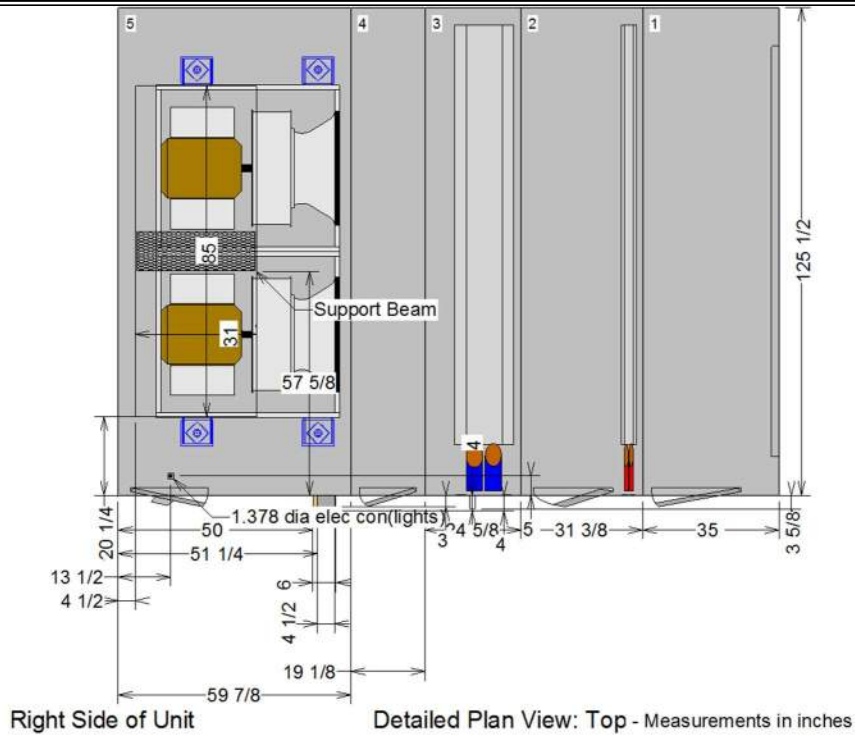
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Paint: Slate gray		Rigging/Installed Weight: 6479.3 lb / 7023.9 lb



**Dimensional Drawings - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2



**\*\*Placement of electrical conduit may vary by a tolerance of 8" in any direction.**

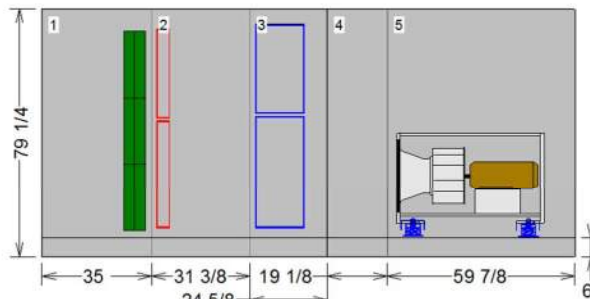
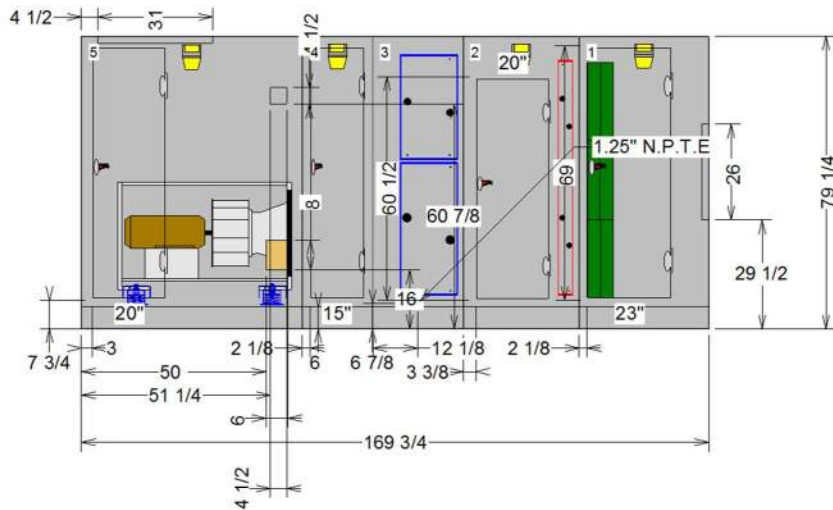
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**Dimensional Drawings - Performance Climate Changer (CSAA)**

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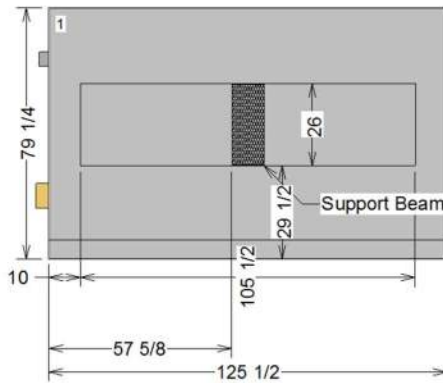


**Dimensional Drawings - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2



Detailed Elevation View: Front - Measurements in inches



Detailed Elevation View: Back - Measurements in inches

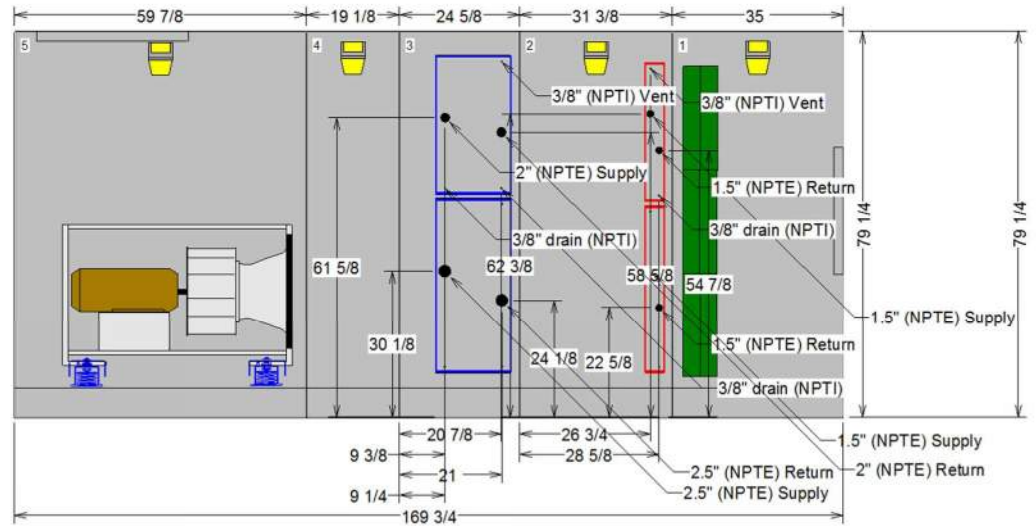
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Product group: Indoor unit	Actual airflow: 22000 cfm	Proposal Number:
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Paint: Slate gray		Rigging/Installed Weight: 6479.3 lb / 7023.9 lb



**Dimensional Drawings - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2



**NPTI : National Pipe Thread Internal Connection**  
**NPTE : National Pipe Thread External Connection**

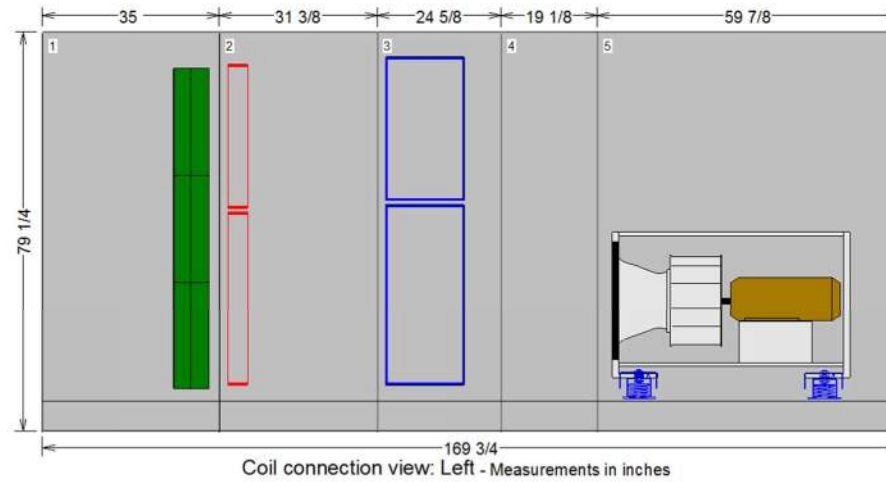
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**Dimensional Drawings - Performance Climate Changer (CSAA)**

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**NPTI : National Pipe Thread Internal Connection**  
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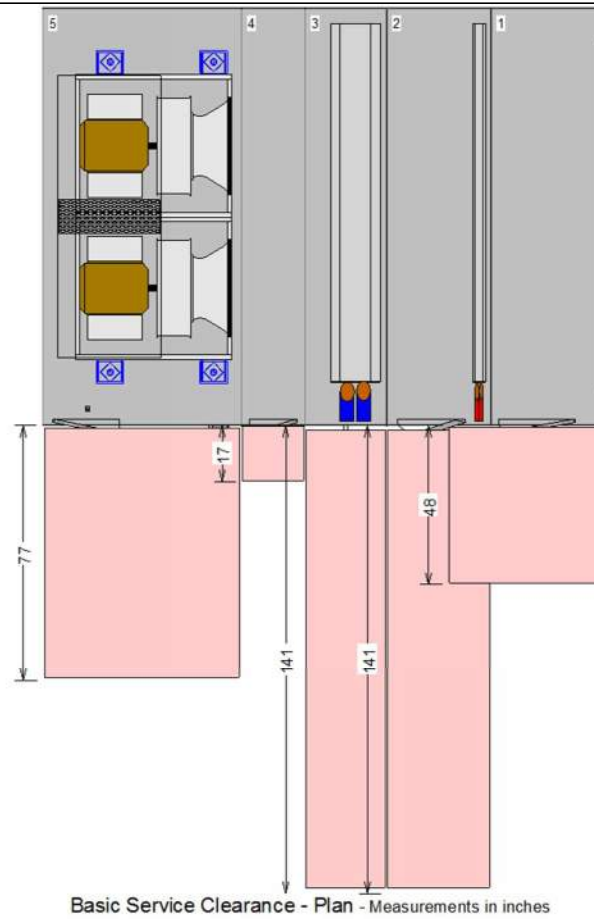
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**Dimensional Drawings - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2



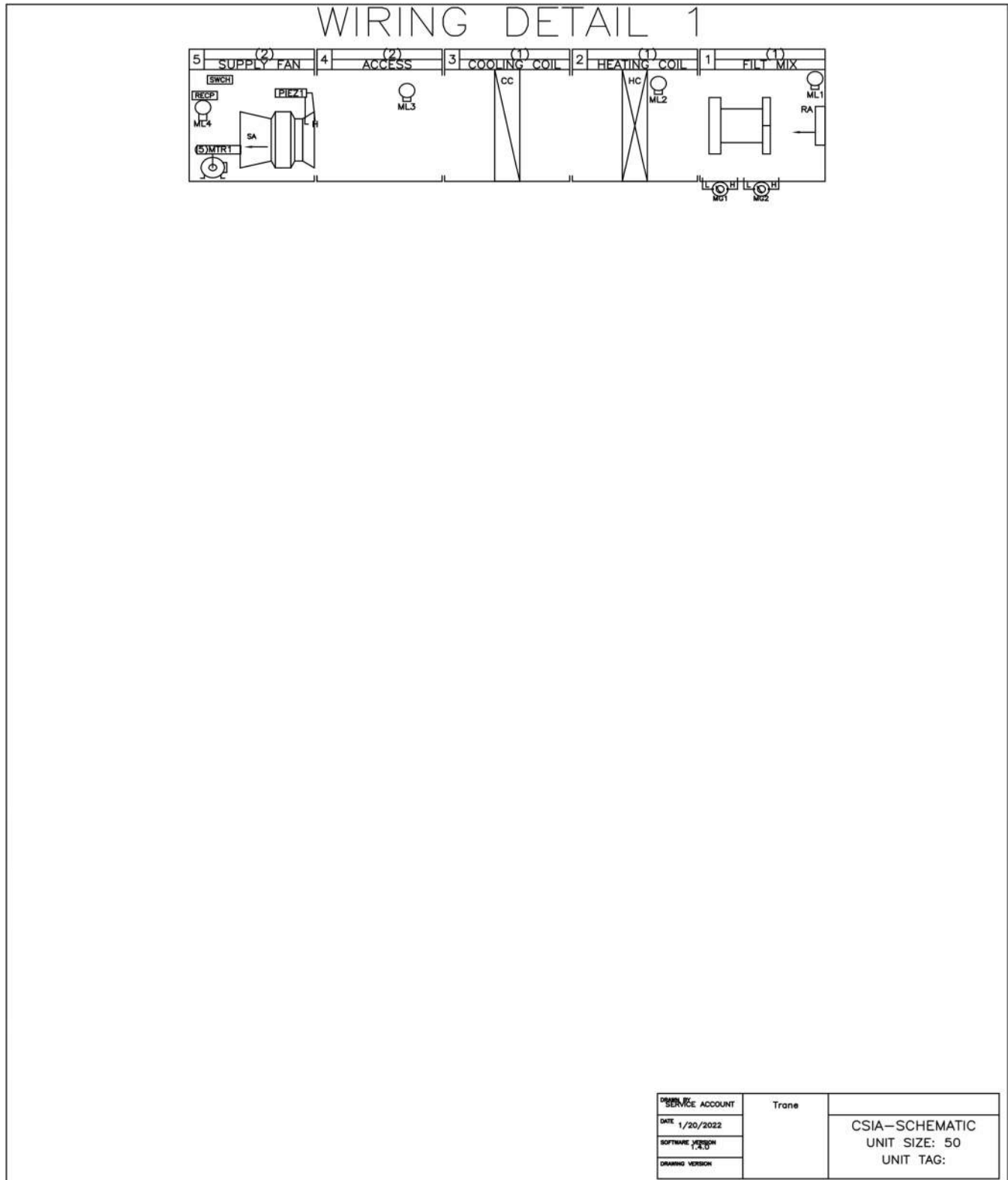
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Controls Wiring Diagrams - Performance Climate Changer (CSAA)

Item: A1 Qty: 1 Tag(s): AHU2

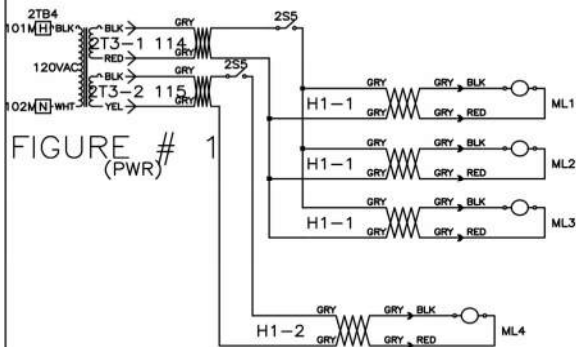


Controls Wiring Diagrams - Performance Climate Changer (CSAA)

Item: A1 Qty: 1 Tag(s): AHU2

MARINE LIGHT BOX

(SEPARATE BOX)



DESIGNED BY	Trane	CSIA-SCHEMATIC UNIT SIZE: 50 UNIT TAG:
DATE	1/20/2022	
SOFTWARE VERSION	1.4.0	
DRAWING VERSION		

**Controls Wiring Diagrams - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2

LEGEND DETAIL 1

POS#	BUILD GROUP	DESCRIPTION	PT	LABEL	PWR HR-WIRE	SIGNAL HR-WIRE	FMR	POWER VA
0		150VA TRANSFORMER		2T3				
1	1	Marine Light		ML1			2T3-1	22
1	1	Minihelic Gauge		MG1				
1	1	Minihelic Gauge		MG2				
2	1	Marine Light		ML2			2T3-1	22
4	2	Marine Light		ML3			2T3-1	22
5	2	Marine Light		ML4			2T3-2	22
5	2	Flow meter		PIEZ1				

ISSUED BY	Trane	CSIA-SCHEMATIC UNIT SIZE: 50 UNIT TAG:
DATE		
SOFTWARE VERSION		
DRAWING VERSION		

**Fan Curve - Performance Climate Changer (CSAA)**

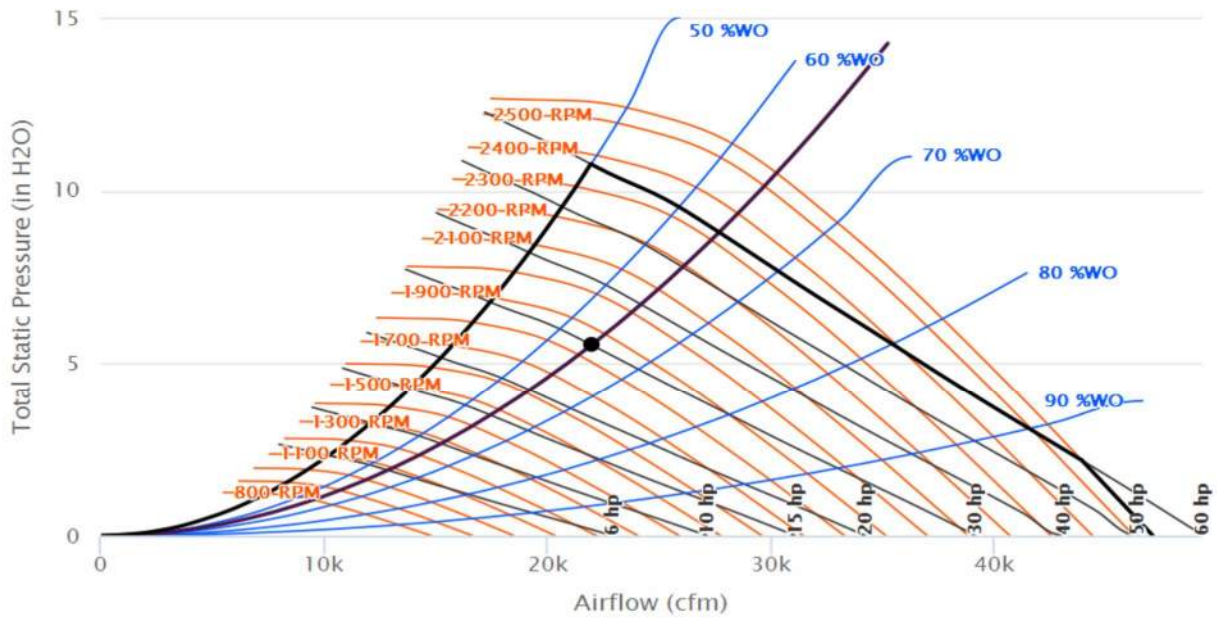
Item: A1 Qty: 1 Tag(s): AHU2

**Fan Details**

<b>Unit Size</b>	27UR	<b>Operating Brake Power</b>	30.258 hp
<b>Motor Frequency</b>	63.00 Hz	<b>Altitude</b>	0.00 ft
<b>Operating Airflow</b>	22,000 cfm	<b>Design Temp.</b>	70.00 F
<b>Operating Static Pressure</b>	5.570 in H2O	<b>Efficiency</b>	63.85 %
<b>Operating RPM</b>	1,852 rpm		

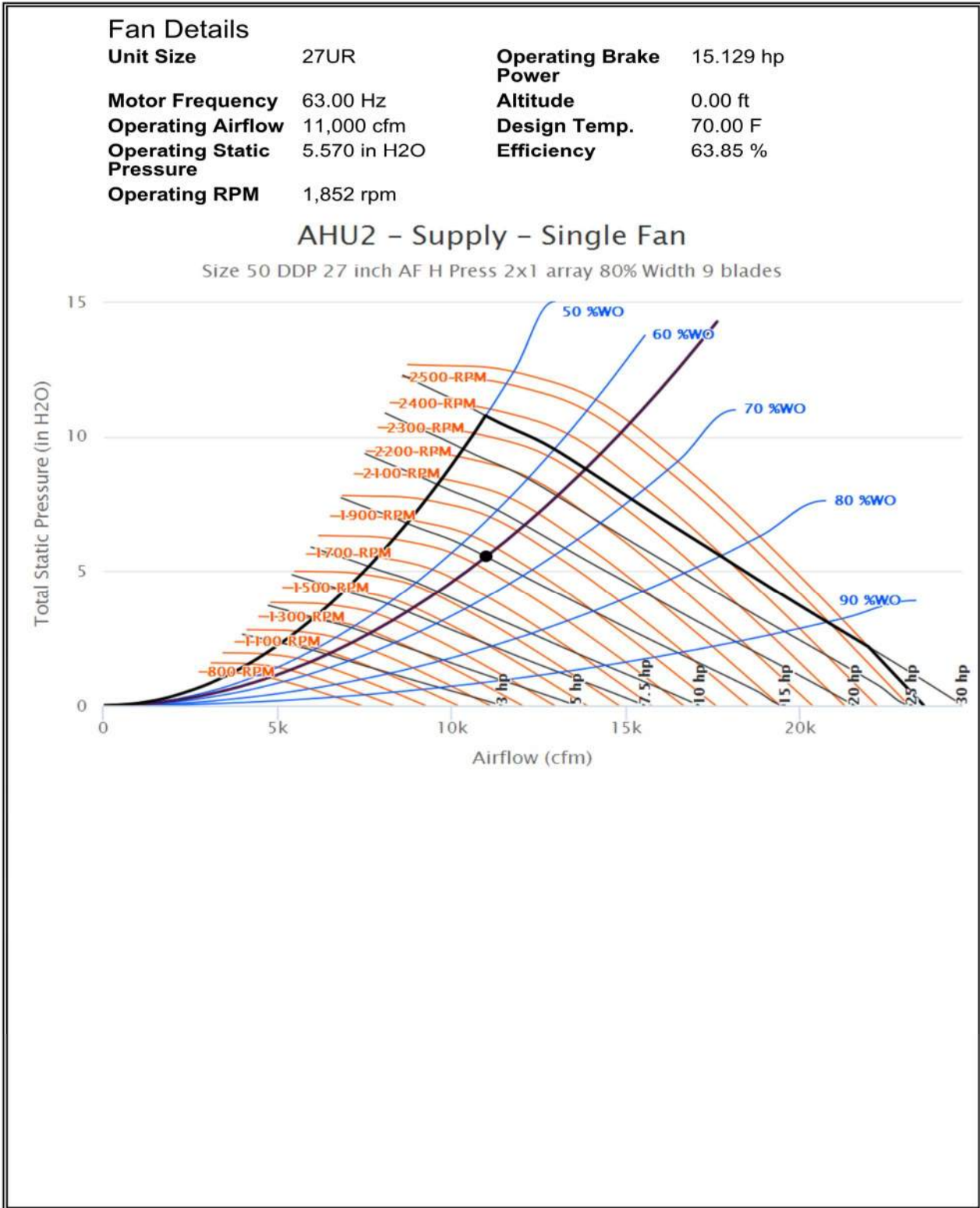
**AHU2 – Supply**

Size 50 DDP 27 inch AF H Press 2x1 array 80% Width 9 blades



**Fan Curve - Performance Climate Changer (CSAA)**

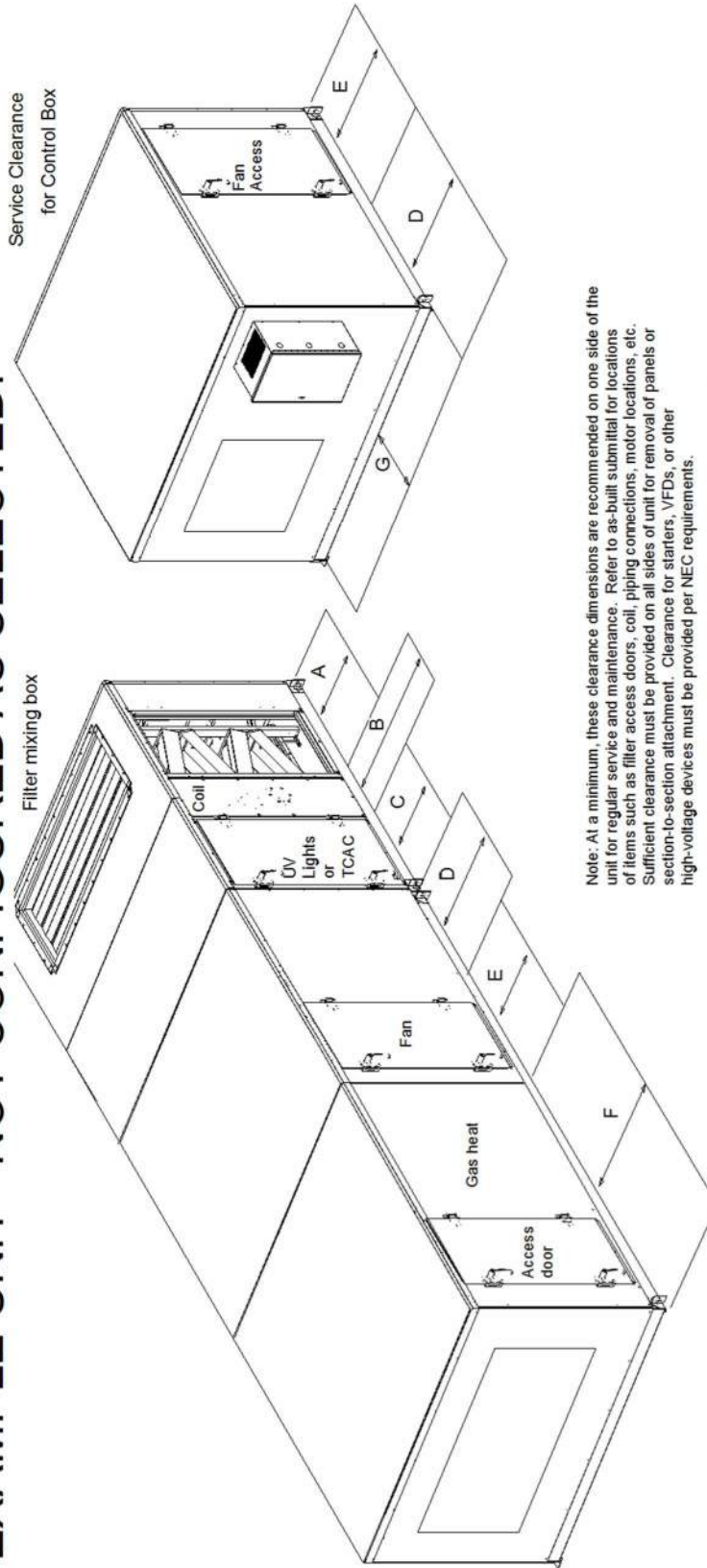
Item: A1 Qty: 1 Tag(s): AHU2



**Accessory - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2

**EXAMPLE UNIT - NOT CONFIGURED AS SELECTED.**

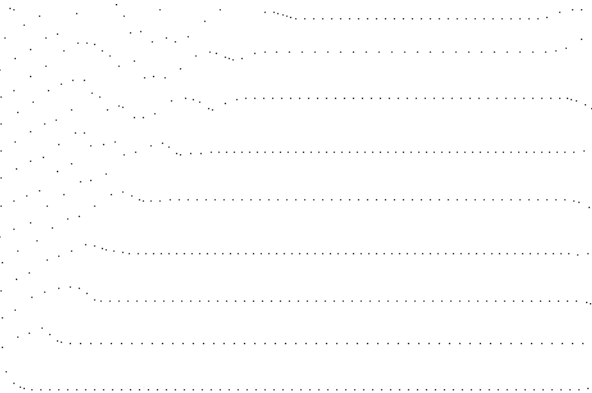


Component	3	4	6	8	10	12	14	17	21	25	30	35	40	50	57	66	80	100	120
A (filter)	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	52	56	58	58
B (coil, humidifier)	48	59	66	77	82	87	87	87	95	95	109	115	128	141	141	156	156	170	197
B (staggered coil)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	67	67	76	80	88	96	96	105	105	113	129
C (UV Lights)	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	52	56	58	58
C (TCAC)	43	59	63	75	81	83	83	83	58	58	83	75	83	83	83	83	83	75	83
D (External Starter, VFD, LV box or Overload box)	61	61	61	61	61	61	61	61	64	64	64	64	64	64	64	64	64	64	64
D (Internal Starter or VFD)	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
E (fan)	48	48	48	48	51	54	58	61	60	66	66	66	70	77	77	93	93	101	101
F (Gas Heat Ext Vestible)	N/A	N/A	89	90	108	100	100	105	115	115	118	136	140	156	156	170	179	180	N/A
F (Gas Heat Int Vestible)	N/A	N/A	56	63	74	79	84	84	92	92	106	112	125	138	138	153	153	167	194

Component	All Sizes
G (Side mount LV box)	36
G (Front mount LV box)	13

Accessory - Performance Climate Changer (CSAA)  
Item: A1 Qty: 1 Tag(s): AHU2

# Base Detail



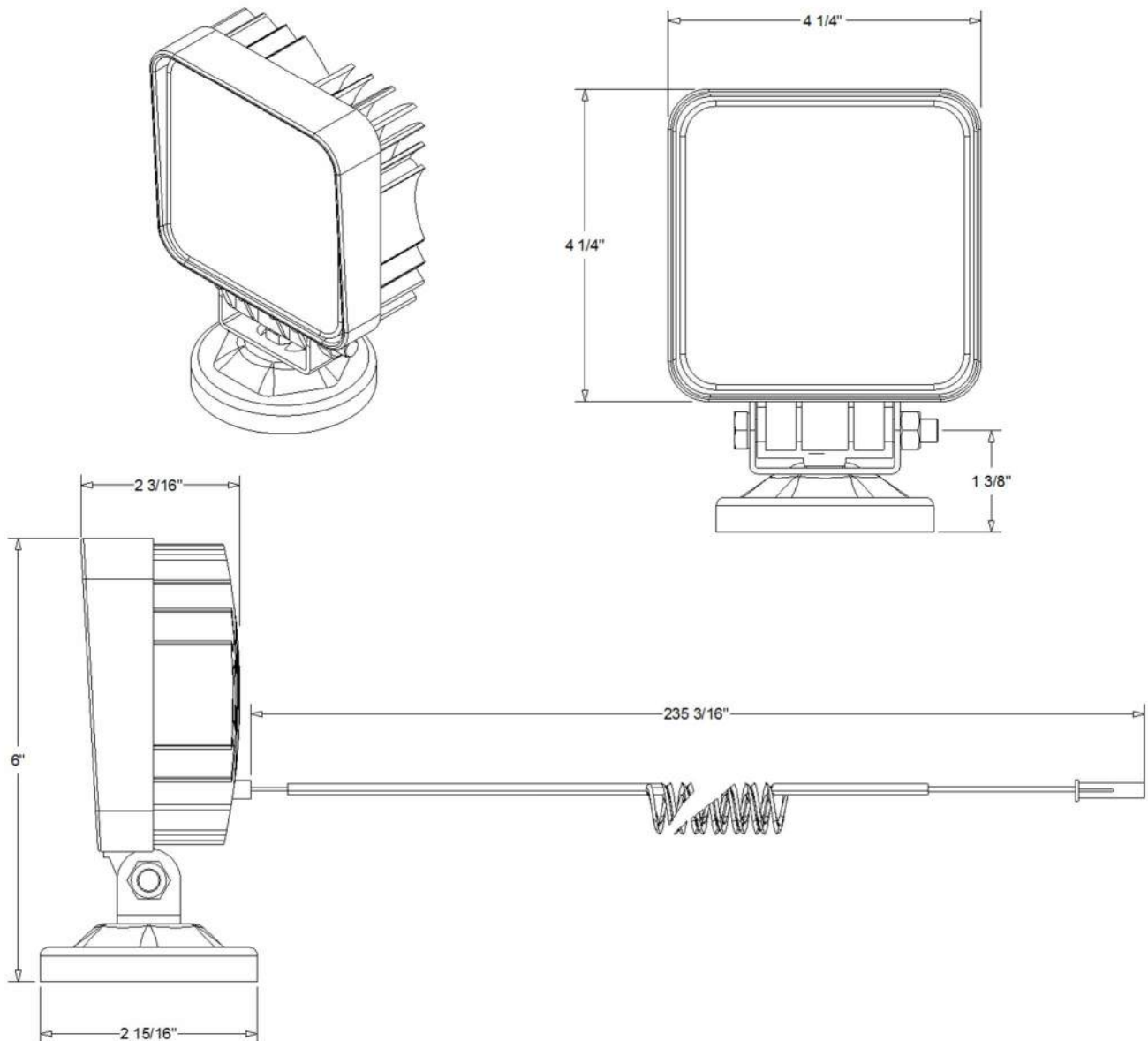
**Accessory - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2

# Marine LED Light

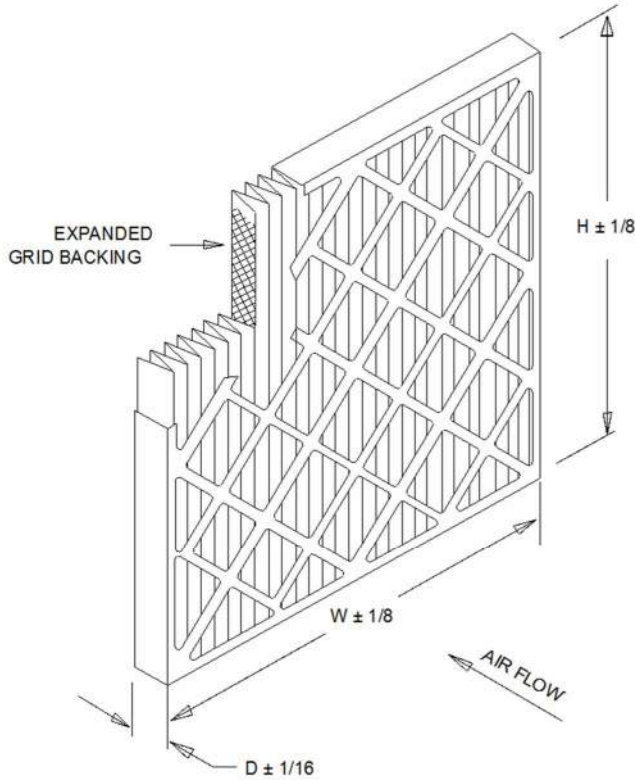
**SPECIFICATIONS:**

VOLTAGE: 24VAC +33 % -25 %  
POWER CONSUMPTION: 19VA  
WIRE: 16 GA RED AND BLACK  
LIFE: 25,000 HRS  
TEMPERATURE RANGE: -40C TO 40C  
CONNECTION: AC SUPPLY  
ENVIRONMENTAL PROTECTION: WATER/DUST INTRUSTION  
IP RATING: IP65  
MAGNETIC FLUX DENSITY: 1200 GAUSS ±100



**Accessory - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2



**STANDARD CONSTRUCTION**

1. 100 % Synthetic White Un-Dyed Media
2. 10.0 Pleats Per Foot
3. Expanded Metal Pleat Supports
4. Moisture Resistant Beverage Board Frame
5. Double Wall Frame

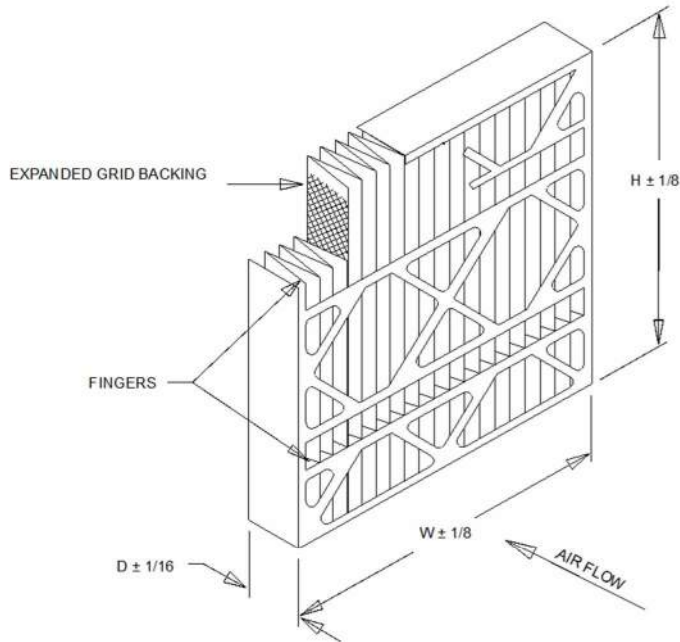
**NOTES**

1. MERV 8-A Per ASHRAE 52.2-2007 Appendix J.
2. Final Resistance: 1/0" W.G.
3. Rated Velocity: 500 FPM
4. Class 2 Filter Per U.L. Standard 900
5. Maximum Operating Temperature: 225 DEG. F

MODEL NUMBER	NOMINAL SIZE IN. W X H X D	ACTUAL SIZE IN. W X H X D	RATED AIR FLOW CFM	INITIAL RESISTANCE IN. W.G.	MEDIA AREA SQ. FT.
MX40-STD2-217	10 X 20 X 2	9-1/2 X 19-1/2 X 1-3/4	700	0.29	4.7
MX40-STD2-220	12 X 20 X 2	11-1/2 X 19-1/2 X 1-3/4	840	0.29	5.5
MX40-STD2-210	12 X 24 X 2	11-3/8 X 23-3/8 X 1-3/4	1000	0.29	6.2
MX40-STD2-239	14 X 20 X 2	13-1/2 X 19-1/2 X 1-3/4	980	0.29	5.7
MX40-2TD2-241	14 X 25 X 2	13-1/2 X 24-1/2 X 1-3/4	1220	0.29	7.1
MX40-STD2-245	15 X 20 X 2	14-1/2 X 19-1/2 X 1-3/4	1050	0.29	6.2
MX40-STD2-201	16 X 20 X 2	15-1/2 X 19-1/2 X 1-3/4	1120	0.29	6.7
MX40-STD2-216	16 X 24 X 2	15-3/8 X 23-3/8 X 1-3/4	1340	0.29	8.0
MX40-STD2-202	16 X 24 X 2	15-1/2 X 24-1/2 X 1-3/4	1400	0.29	8.0
MX40-STD2-280	15 X 20 X 2	17-1/2 X 19-1/2 X 1-3/4	1250	0.29	7.8
MX40-STD2-212	18 X 24 X 2	17-3/8 X 23-3/8 X 1-3/4	1500	0.29	9.3
MX40-STD2-285	18 X 25 X 2	17-1/2 X 24-1/2 X 1-3/4	1570	0.29	9.7
MX40-STD2-203	20 X 20 X 2	19-1/2 X 19-1/2 X 1-3/4	1400	0.29	8.3
MX40-STD2-211	20 X 24 X 2	19-3/8 X 23-3/8 X 1-3/4	1670	0.29	9.9
MX40-STD2-204	20 X 25 X 2	19-1/2 X 24-1/2 X 1-3/4	1750	0.29	10.3
MX40-STD2-205	24 X 24 X 2	23-3/8 X 23-3/8 X 1-3/4	2000	0.29	11.7
MX40-STD2-225	25 X 25 X 2	24-1/2 X 24-1/2 X 1-3/4	2170	0.29	13.6

**Accessory - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2



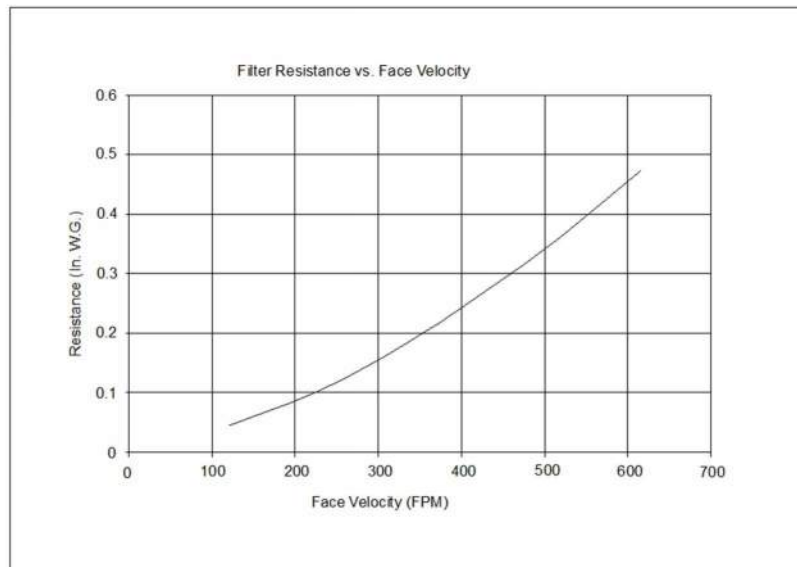
**STANDARD CONSTRUCTION**

1. 100 % Synthetic Un-Dyed Media
2. 11 Pleats Per Foot
3. Expanded Metal Pleat Supports
4. Moisture Resistant Beverage Board Frame
5. Double Wall Frame
6. (2) Rows of Fingers on Air Entering Side

**NOTES**

1. MERV 13 per ASHRAE 52.2-2012  
Tested at 492 FPM on 24x24x4 Nominal Size
2. Final Resistance: 1.0" W.G.
3. Rated Velocity: 500 FPM
4. Classified Per U.L. Standard 900 for Flammability
5. Maximum Operating Temperature: 200 deg. F

NOMINAL SIZE (WxHxD)	ACTUAL SIZE (WxHxD)	RATED AIR FLOW (IN. W.G.)	INITIAL RESISTANCE (IN. W.G.)	MEDIA AREA (SQUARE FEET)	FILTER UNIT WEIGHT (LBS)
12x24x4	11-3/8 x 23-3/8 x 3-3/4	1000	0.34	12.4	1.7
16x20x4	15-1/2 x 19-1/2 x 3-3/4	1120	0.34	14.6	1.7
16x25x4	15-1/2 x 24-1/2 x 3-3/4	1400	0.34	18.3	2.1
20x20x4	19-1/2 x 19-1/2 x 3-3/4	1400	0.34	18.8	2.1
20x24x4	19-3/8 x 23-3/8 x 3-3/4	1670	0.34	22.4	2.5
20x25x4	19-1/2 x 24-1/2 x 3-3/4	1750	0.34	23.5	2.6
24x24x4	23-3/8 x 23-3/8 x 3-3/4	2000	0.34	27.4	3.0

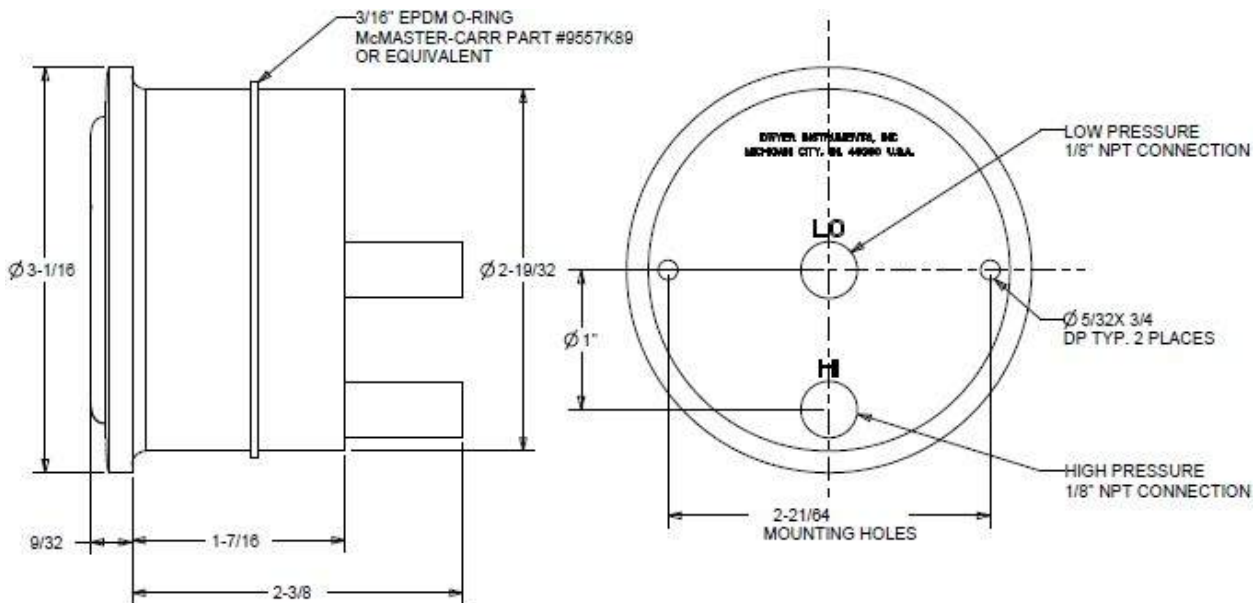
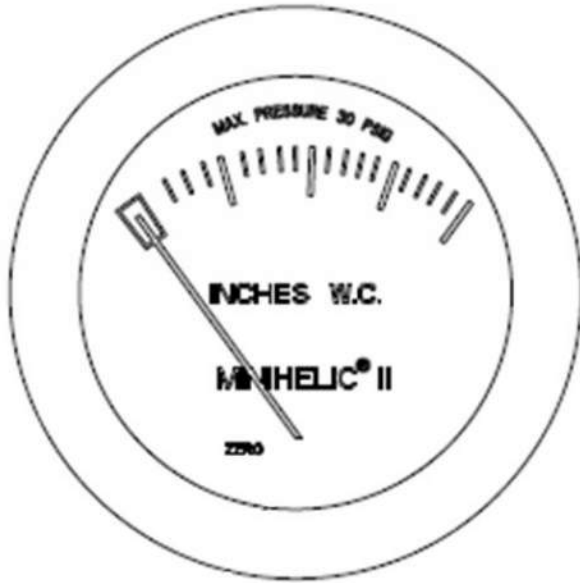


**Accessory - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2

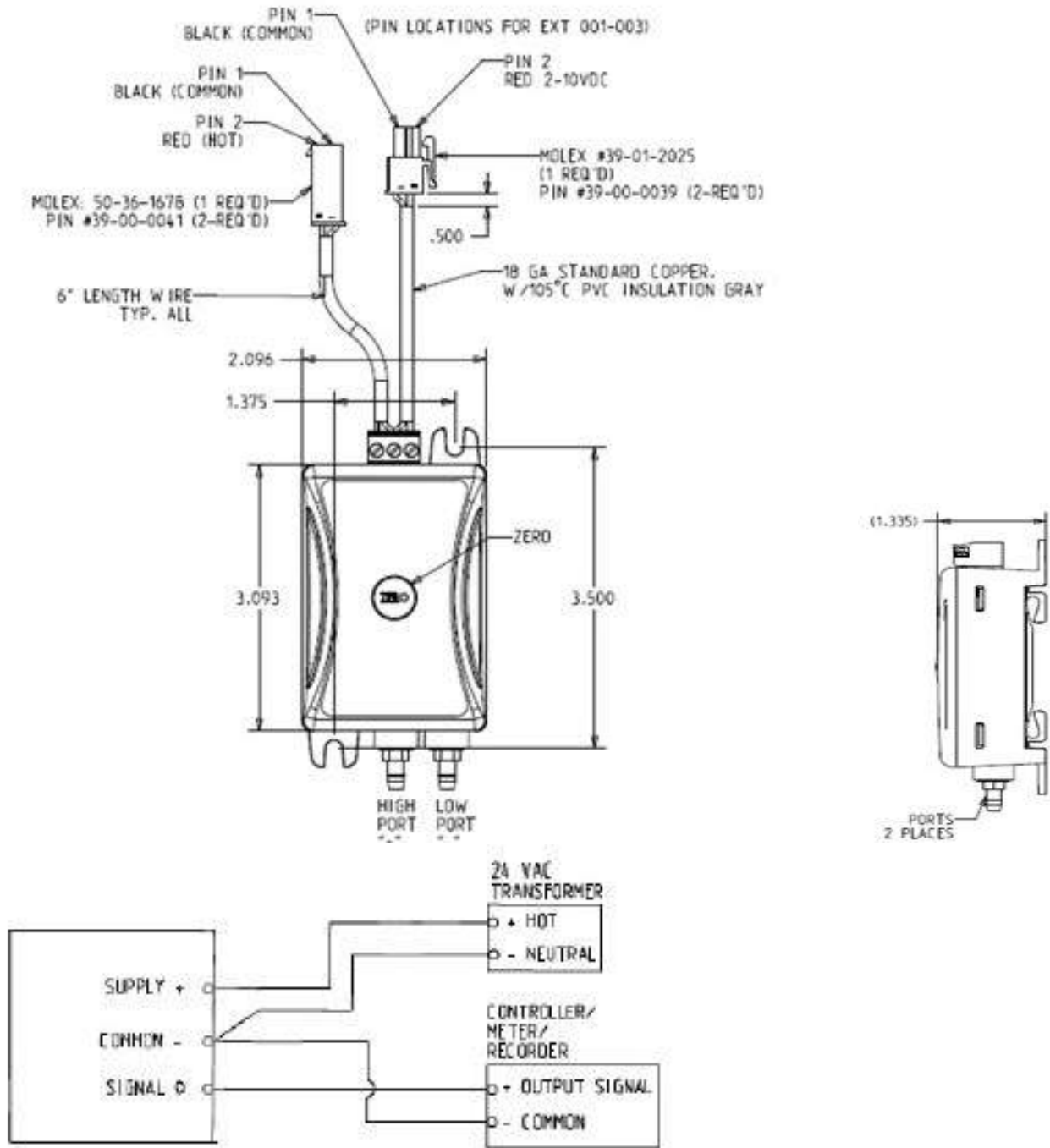
**Dirty Filter Status**

EXT	MODEL	RANGE
01	2-5002-NPT	0-2" WC
03	2-5003-NPT	0-3" WC
04	2-5005-NPT	0-5" WC



**Accessory - Performance Climate Changer (CSAA)**

Item: A1 Qty: 1 Tag(s): AHU2



**NOTE:**

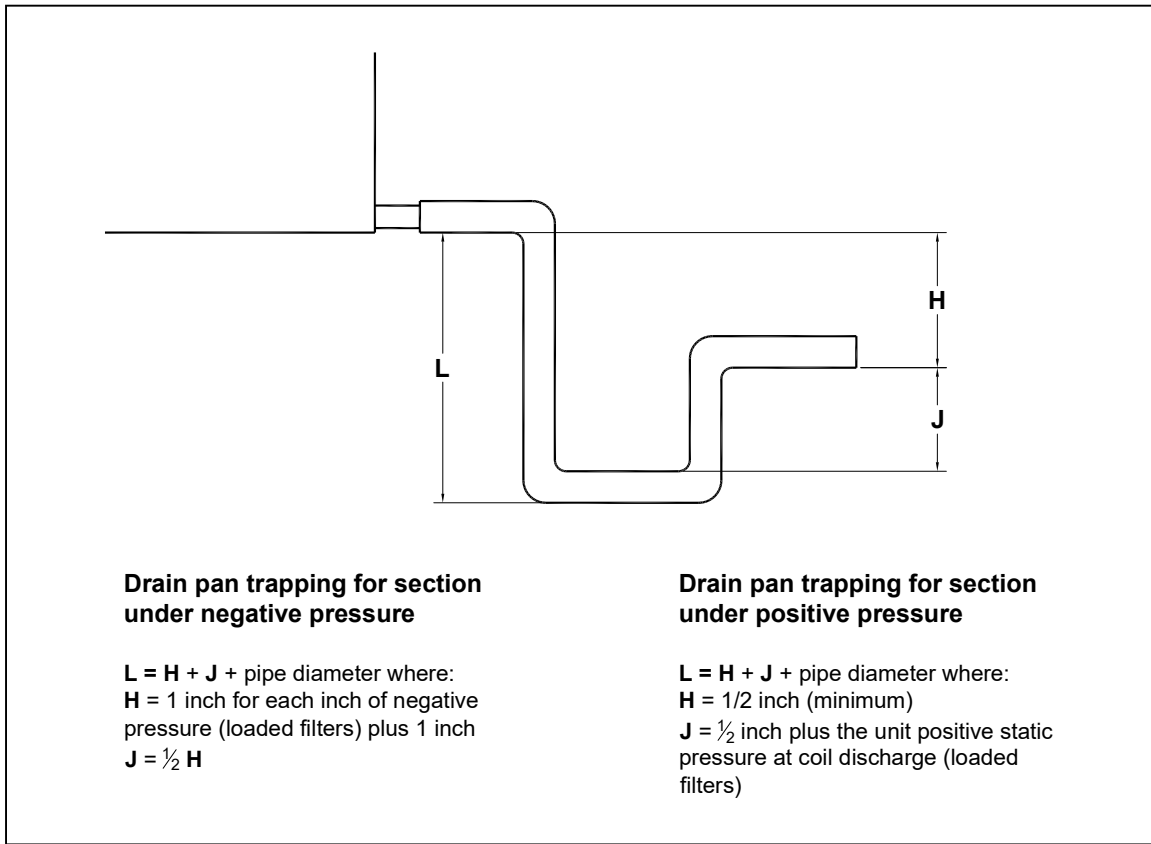
1. PRESSURE CONNECTIONS: 3/16" OD BARBED FITTING FOR 1/4" TUBING
2. OPERATING TEMPERATURE: 0 - 85 C
3. COMPENSATED TEMPERATURE: 0 - 50 C
4. LOAD IMPEDANCE: 500 OHMS
5. TERMINATION: SCREW TERMINAL BLOCK

6. ACCURACY: 0.25%
7. INPUT VOLTAGE: 24VAC (NOMINAL)

**Accessory - Performance Climate Changer (CSAA)**

**Trap Schedule**

Item: A1 Qty: 1 Tag(s): AHU2



Unit Tag(s)	Unit Size	Entering Ext. Static Pressure (in H2O)	Discharge Ext. Static Pressure (in H2O)	Drain pan Section Location	Recommended Trap Dimensions <sup>1</sup>			Selected Baserail Height (in) <sup>1</sup>
					H (in)	J (in)	L (in)	
AHU2 <sup>2</sup>	Unit size 50	1.350	1.350	Coil section [3]	7.187	3.594	12.031	6.000

<sup>1</sup> To ensure proper condensate trapping the field installed housekeeping pad height is the responsibility of the contractor.

<sup>2</sup> The external static pressure used for fan selection was assumed to be divided 50% to entering duct external static pressure and 50% discharge external static pressure.

**Accessory - Performance Climate Changer (CSAA)****Filter Schedule****Item: A1 Qty: 1 Tag(s): AHU2**

Unit Tag(s)	Filter Location	Filter Arrangement	Filter Depth	Filter Type	MERV Rating	Filter Quantity	Filter Size
AHU2	Air mixing section [1]	Flat	2in./4in. combo w/ space for dual sensor	4in. cartridge - standard	MERV 13	1 4 12	16 x 20 16 x 25 20 x 25

**Field Wiring - Performance Climate Changer (CSAA)****MCA MOP Schedule****Item: A1 Qty: 1 Tag(s): AHU2**

Unit Tag(s)	Circuit	Circuit Description	Voltage/Phase/Hz	MCA (A)	MOP (A)
AHU2	1	Supply fan motor (each x 2)	460/3/60	30.63	50.00
	2	Lights + switch	115/1/60	3.26	15.00
	3	Receptacle	115/1/60	10.00	15.00

**Field Installed Options - Part/Order Number Summary**

This is a report to help you locate field installed options that arrive at the jobsite. This report provides part or order numbers for each field installed option, and references it to a specific product tag. It is NOT intended as a bill of material for the job.

**Product Family - Performance Climate Changer (CSAA)**

Item	Tag(s)	Qty	Description	Model Number
A1	AHU2	1	Performance Climate Changer (CSAA)	CSAA050UA

Field Installed Option Description	Part/Ordering Number
4in. cartridge - standard	
2" Pleated media	