



RESUBMITTAL COVER SHEET

PROJECT

Cincinnati Classical Academy

ENGINEER

Cunning and Associates

ARCHITECT

Silverpeak Engineering

SPECIFICATIONS NO.

ITEM

Ph. 2 Package Units

Resubmittal #: 021.2

- Approved
- Disapproved

Date: 1/27/2025

Submitted by: David Day

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SUBMITTAL

Project

CCA Cincinnati Classical Academy

Date

Monday, January 27, 2025

**ALL BELT DRIVE RTU'S
RTU-1,2 PAGES 5, 10, 11
RTU-3 PAGES 16, 20, 21
RTU-4 PAGES 26, 30, 31
RTU-5,6 PAGES 36, 41, 42
RTU-7,8 PAGES 47, 53, 54**

Jeff Harman

Table Of Contents

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM

RTU-1,2 Humidimizer	3
Unit Report.....	4
Certified Drawing.....	5
Performance Summary.....	9
Unit Feature Sheet.....	12
Spec Sheet.....	13
RTU-3 Humidimizer	14
Unit Report.....	15
Certified Drawing.....	16
Performance Summary.....	19
Unit Feature Sheet.....	22
Spec Sheet.....	23
RTU-4 Humidimizer	24
Unit Report.....	25
Certified Drawing.....	26
Performance Summary.....	29
Unit Feature Sheet.....	32
Spec Sheet.....	33
RTU-5,6 Humidimizer	34
Unit Report.....	35
Certified Drawing.....	36
Performance Summary.....	40
Unit Feature Sheet.....	43
Spec Sheet.....	44
RTU-7,8 Humidimizer	45
Unit Report.....	46
Certified Drawing.....	47
Performance Summary.....	52
Unit Feature Sheet.....	55
Spec Sheet.....	56

RTU-1,2 Humidimizer

**Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report
Unit Feature Sheet
Spec Sheet**

Unit Report For RTU-1,2 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Unit Parameters

Unit Model: **48FEEN09B2A6-8F2A0**
 Unit Size: **09 (8.5 Tons)**
 Volts-Phase-Hertz: **460-3-60**
 Heating Type: **Gas**
 Refrigerant: **R-454B**
 Heat Control: **Medium Gas Heat**
 Duct Cfg: **Vertical Supply / Vertical Return**
 DX Options: **Single Circuit with Humidi-MiZer, Two Stage Cooling**

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length: **7' 4.125"**
 Unit Width: **4' 11.5"**
 Unit Height: **4' 1.375"**
Total Operating Weight: 1160 lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size: **3/4**
 Condensate Drain Line Size: **3/4**
 Return Air Filter Type: **Throwaway**
 Return Air Filter Quantity: **4**
 Return Air Filter Size: **20 x 20 x 2**

Selection includes construction throwaway filter into the base fan curve.

Unit Configuration

Medium Gas Heat
 Single Circuit with Humidi-MiZer, Two Stage Cooling
 RA Smoke Detector
 Standard/Medium Static - EcoBlue Vane Axial Fan
 Al/Cu - Al/Cu
 Electro-mechanical Controls with POL224
 Standard Leak Enthalpy Economizer w/ Barometric Relief
 Powered Convenience Outlet
 Standard Packaging
 Humidi-MiZer™ Adaptive Dehumidification System

SUBMITTAL REVIEW

Submission of information by the Contractor is taken as evidence that the Contractor has prepared the information for the specific application, and has verified that adequate and complete conditions for installation and subsequent operation and maintenance will exist.

Engineers review is for general conformance with the design concepts of the project, and for general compliance with the information given in the contract documents. The Contractor is responsible for access and clearance code compliance, work methods and conditions, coordination of trades, safety, all in satisfactory performance of work.

- | | |
|---------------------------------------------------------|----------------------------------------------|
| <input checked="" type="checkbox"/> NO EXCEPTIONS TAKEN | <input type="checkbox"/> REJECTED-RESUBMIT |
| <input type="checkbox"/> EXCEPTIONS AS NOTED | <input type="checkbox"/> REVISE AND RESUBMIT |

CUNNING & ASSOCIATES MCE

Date: Jan 27 2025

By: Norm Cunning

Warranty Information

1-Year parts(std.)
 5-Year compressor parts(std.)
 10-Year heat exchanger - Aluminized(std.)

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48FEEN09B2A6-8F2A0	Rooftop Unit	2
Field Installed Accessories		
CRRFCURB003A01	14-inch Tall Roof Curb	2

Certified Drawing for RTU-1,2 Humidifier

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- NOTES:
1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [] ARE IN MILLIMETERS.
 2. CENTER OF GRAVITY
 3. DIRECTION OF AIR FLOW
 4. ALL VIEW DRAWN USING 3RD ANGLE

UNIT	OUTDOOR COIL TYPE	J	K	H
48FE-M08	RTPF	41 1/4 [1048]	33 3/4 [857]	15 7/8 [403]
48FE-M09	RTPF	49 3/8 [1253]	36 3/8 [925]	15 7/8 [403]
48FE-M12	RTPF	49 3/8 [1253]	36 3/8 [925]	15 7/8 [403]

RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)

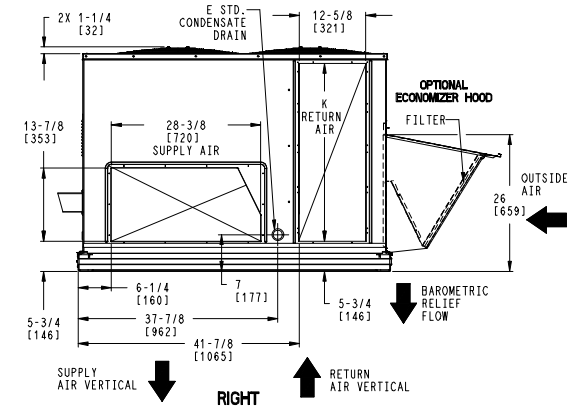
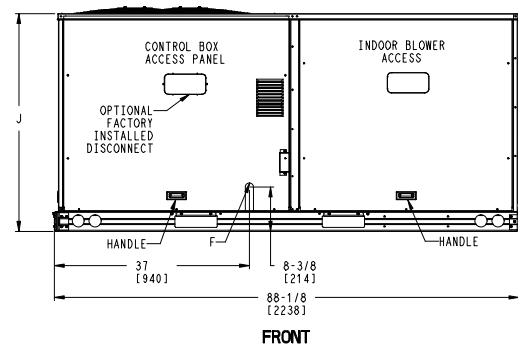
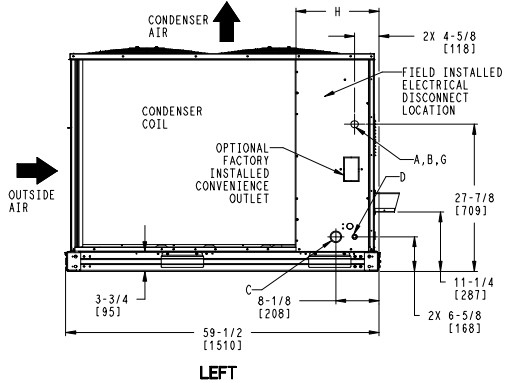
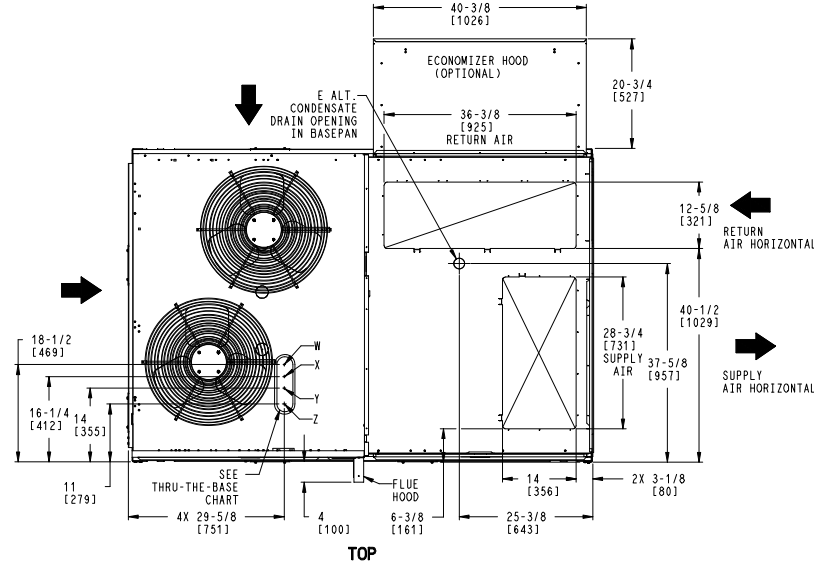
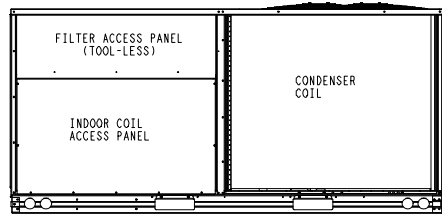
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CONNECTION SIZES	
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2 1/2" [64] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [51] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
F	1/2"-14 NPT GAS CONNECTION 3/4"-14 NPT GAS CONNECTION
G	2" [51] DIA POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART (FIELD INST)			
THESE HOLES REQUIRED FOR USE WITH ACCY KITS: CRBTMPW002A01: GAS THRU CURB CRBTMPW004A01: GAS THRU BASEPAN			
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	ACC.	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y	1 1/4" (002,004)	POWER	1 3/4" [44.4]
Z *	(004) 3/4" FPT	GAS	1 3/4" [44.4]
*	(002) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING. HOLE SIZE: 2" [50.8]		

THRU-THE-BASE CHART (FIOP)	
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED. **	
** FOR BELOW LISTED MODELS, A FIELD SUPPLIED 1/2" ADAPTER IS REQUIRED BETWEEN BASE PAN FITTING AND GAS VALVE: 48FCD, S+08, 09	



ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009320	REV
U.S. ECCN:NSR	1 OF 3	8/8/23	-			-

Certified Drawing for RTU-1,2 Humidifier

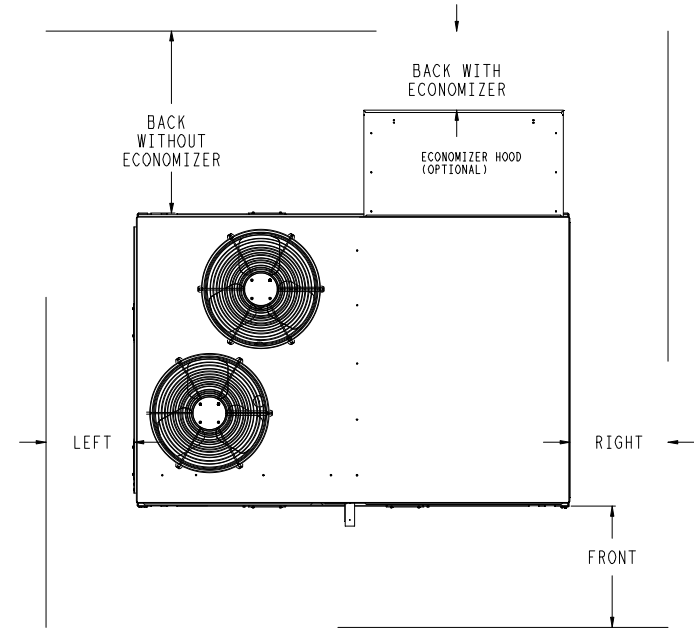
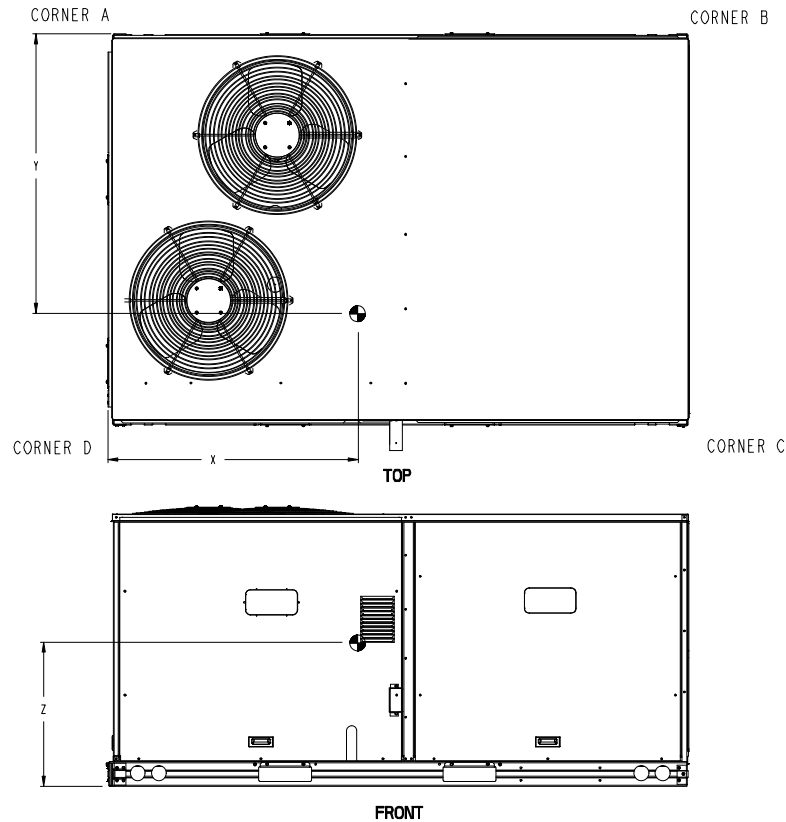
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UNIT	OUTDOOR COIL TYPE	STD. UNIT WEIGHT ***		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.			
		LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z	
48FE-M08	RTPF	787	357	181	82	150	68	207	94	249	113	40	1/2 [1016]	34 1/2 [876]	19 3/8 [492]
48FE-M09	RTPF	868	394	197	89	160	73	229	104	282	128	39 1/2 [1003]	35 [889]	18 5/8 [473]	
48FE-M12	RTPF	878	398	213	97	175	80	221	100	268	121	39 7/8 [1013]	33 1/4 [841]	18 1/2 [470]	

RTPF - ROUND TUBE, PLATE FIN [COPPER/ALUM]

*** STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING. FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



NOTE:

1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

SURFACE	SERVICE WITH:		OPERATING CLEARANCE
	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/O ECON	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/ECON	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

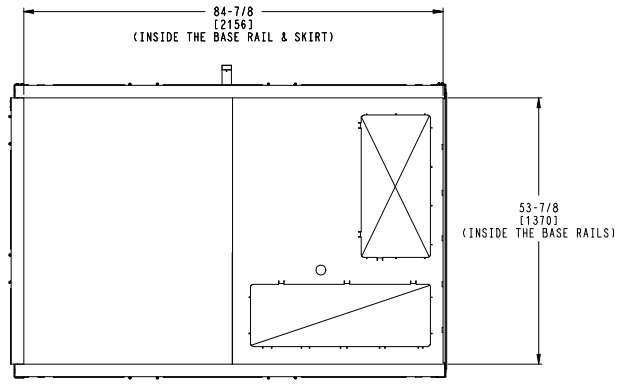
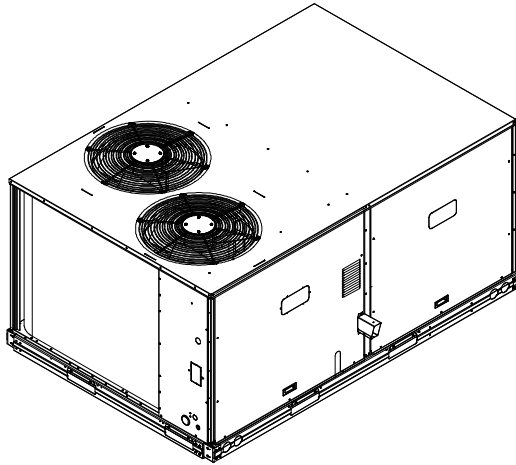
ITC CLASSIFICATION U.S. ECCN: NSR	SHEET 2 OF 3	DATE 8/8/23	SUPERCEDES -	48FE 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009320	REV -
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Certified Drawing for RTU-1,2 Humidimizer

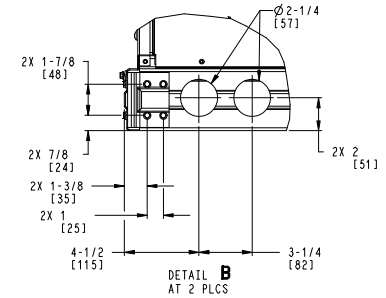
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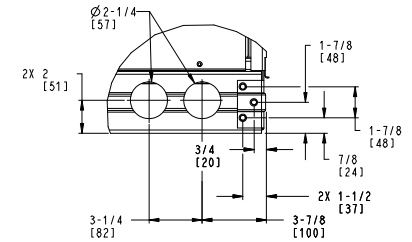
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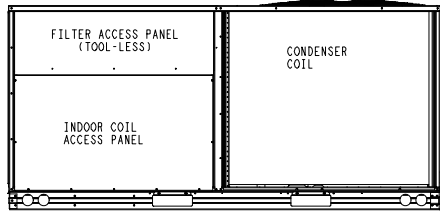
INSIDE BASERAIL DIMENSIONS
BOTTOM



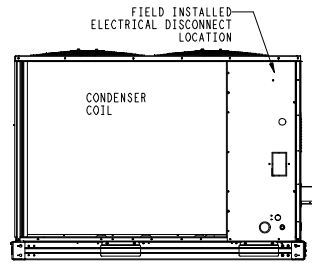
DETAIL B
 AT 2 PLCS



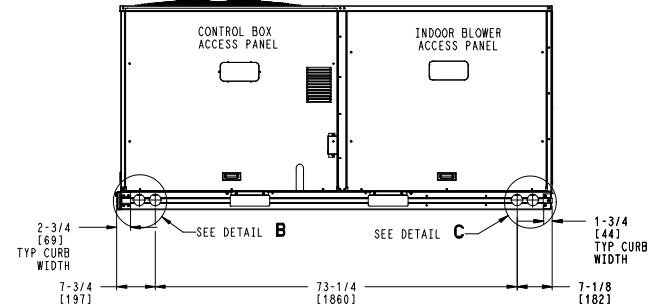
DETAIL C
 AT 2 PLCS



BACK



LEFT



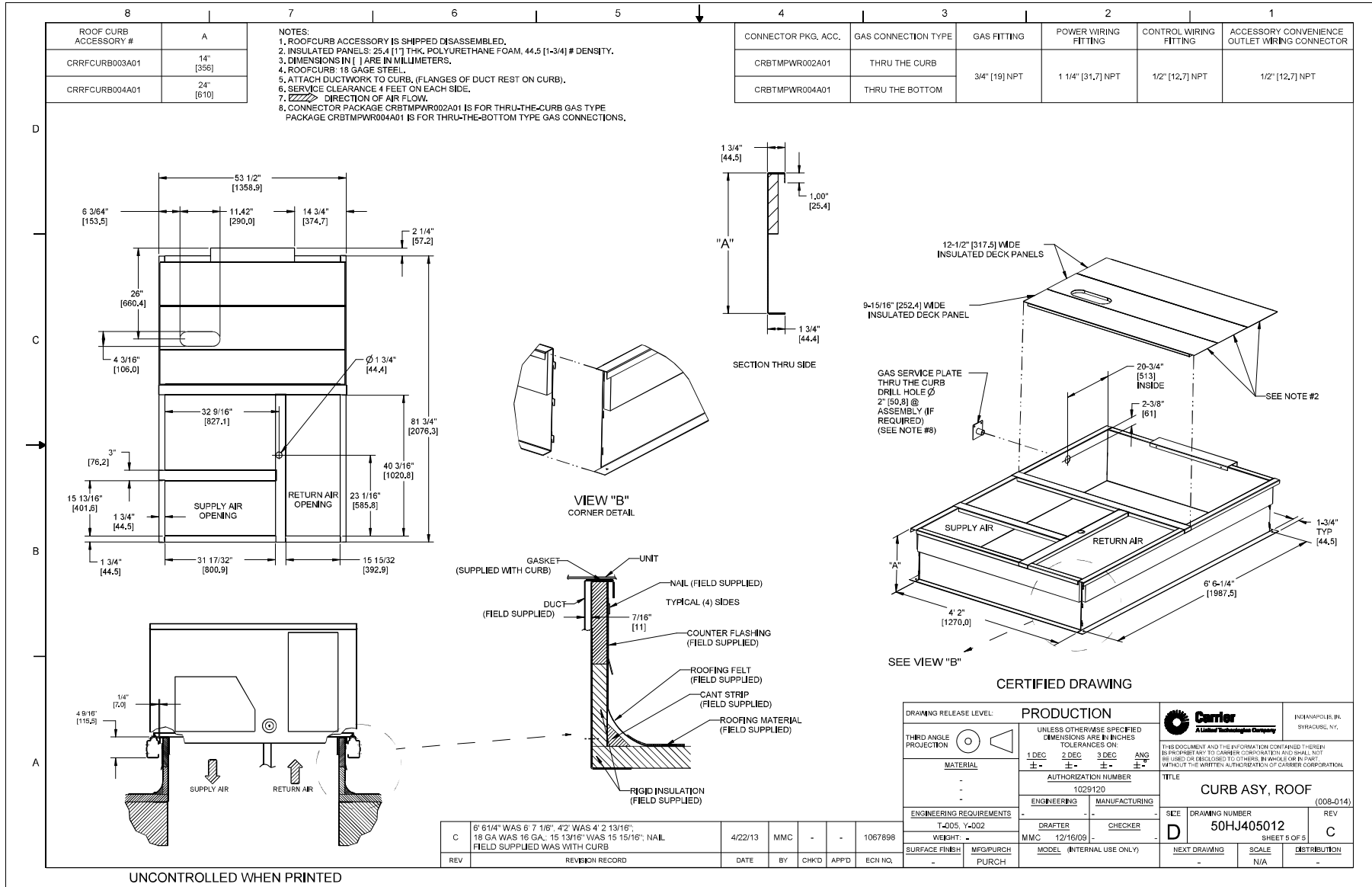
FRONT

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009320	REV
U. S. ECCN: NSR	3 OF 3	8/8/23	-			-

Certified Drawing for RTU-1,2 Humidimizer

Project: CCA Cincinnati Classical Academy
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01/27/2025
09:34AM



Performance Summary For RTU-1,2 Humidifier

Project: CCA Cincinnati Classical Academy
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 09:34AM

Part Number: 48FEEN09B2A6-8F2A0

Refrigerant:.....	R-454B
ARI EER:.....	11.20
IEER (Max Cooling at Normal Cooling Design Mode):.....	15.0

Base Unit Dimensions

Unit Length:.....	88.1 in
Unit Width:.....	59.5 in
Unit Height:.....	49.4 in

Operating Weight

Base Unit Weight:.....	868 lb
Medium Gas Heat:.....	15 lb
Single Circuit with Humidi-MiZer, Two Stage Cooling:.....	34 lb
RA Smoke Detector:.....	7 lb
Standard Leak Enthalpy Economizer w/ Barometric Relief:.....	57 lb
Powered Convenience Outlet:.....	36 lb

Accessories

14-inch Tall Roof Curb:.....	143 lb
Total Operating Weight:.....	1160 lb

Unit

Unit Voltage-Phase-Hertz:.....	460-3-60
Air Discharge:.....	Vertical
Fan Drive Type:.....	Vane Axial
Actual Airflow:.....	2800 CFM
Site Altitude:.....	0 ft

Cooling Performance

Condenser Entering Air DB:.....	95.0 F
Evaporator Entering Air DB:.....	80.0 F
Evaporator Entering Air WB:.....	67.0 F
Evaporator Entering Air Enthalpy:.....	31.44 BTU/lb
Evaporator Leaving Air DB:.....	56.7 F
Evaporator Leaving Air WB:.....	55.9 F
Evaporator Leaving Air Enthalpy:.....	23.71 BTU/lb
Gross Cooling Capacity:.....	97.41 MBH
Gross Sensible Capacity:.....	70.44 MBH
Compressor Power Input:.....	6.90 kW
Coil Bypass Factor:.....	0.109

Heating Performance

Heating Airflow:.....	2800 CFM
Entering Air Temp:.....	70.0 F
Leaving Air Temp:.....	118.9 F
Gas Heating Input Capacity:.....	120.0 / 180.0 MBH
Gas Heating Output Capacity:.....	98.0 / 148.0 MBH
Temperature Rise:.....	48.9 F
Thermal Efficiency (%):.....	82.0

Supply Fan

External Static Pressure:.....	1.20 in wg
Options / Accessories Static Pressure	
Humidi-MiZer Dehumidification System:.....	0.11 in wg
Economizer:.....	0.09 in wg
Application External Static (ESP + Unit Opts/Acc.):.....	1.41 in wg
Fan RPM:.....	1712
Fan Power:.....	1.84 BHP

NOTE:..... **Selected IFM RPM Range: 1110 - 2000**

Performance Summary For RTU-1,2 Humidimizer

Project: CCA Cincinnati Classical Academy
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01/27/2025
 09:34AM

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Electrical Data

Voltage Range:	414 - 506
Compressor #1 RLA:	6
Compressor #1 LRA:	49
Compressor #2 RLA:	6
Compressor #2 LRA:	49
Indoor Fan Motor Type:	MED
Indoor Fan Motor FLA (Total):	3
Combustion Fan Motor FLA (ea):	0.25
Power Supply MCA:	21
Power Supply MOCP (Fuse or HACR):	25
Disconnect Size FLA:	22
Disconnect Size LRA:	108
Electrical Convenience Outlet FLA (based on unit line voltage):	2.2
Outdoor Fan [Qty / FLA (ea)]:	2 / 0.8

NOTE: Convenience outlet must be field connected to the line/load side of the unit disconnect per local code.

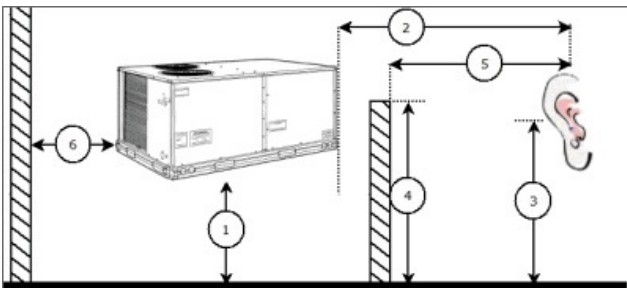
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	90.2	85.0	85.6
125 Hz	86.5	80.7	84.7
250 Hz	79.4	73.5	80.5
500 Hz	76.2	68.8	76.0
1000 Hz	77.4	69.0	72.4
2000 Hz	74.0	63.3	68.0
4000 Hz	69.7	55.7	62.8
8000 Hz	60.7	49.2	59.3
A-Weighted	81.7	73.4	79.0

Advanced Acoustics



Advanced Acoustics Parameters

1. Unit height above ground:	30.0	ft
2. Horizontal distance from unit to receiver:	50.0	ft
3. Receiver height above ground:	5.7	ft
4. Height of obstruction:	0.0	ft
5. Horizontal distance from obstruction to receiver:	0.0	ft
6. Horizontal distance from unit to obstruction:	0.0	ft

Performance Summary For RTU-1,2 Humidimizer

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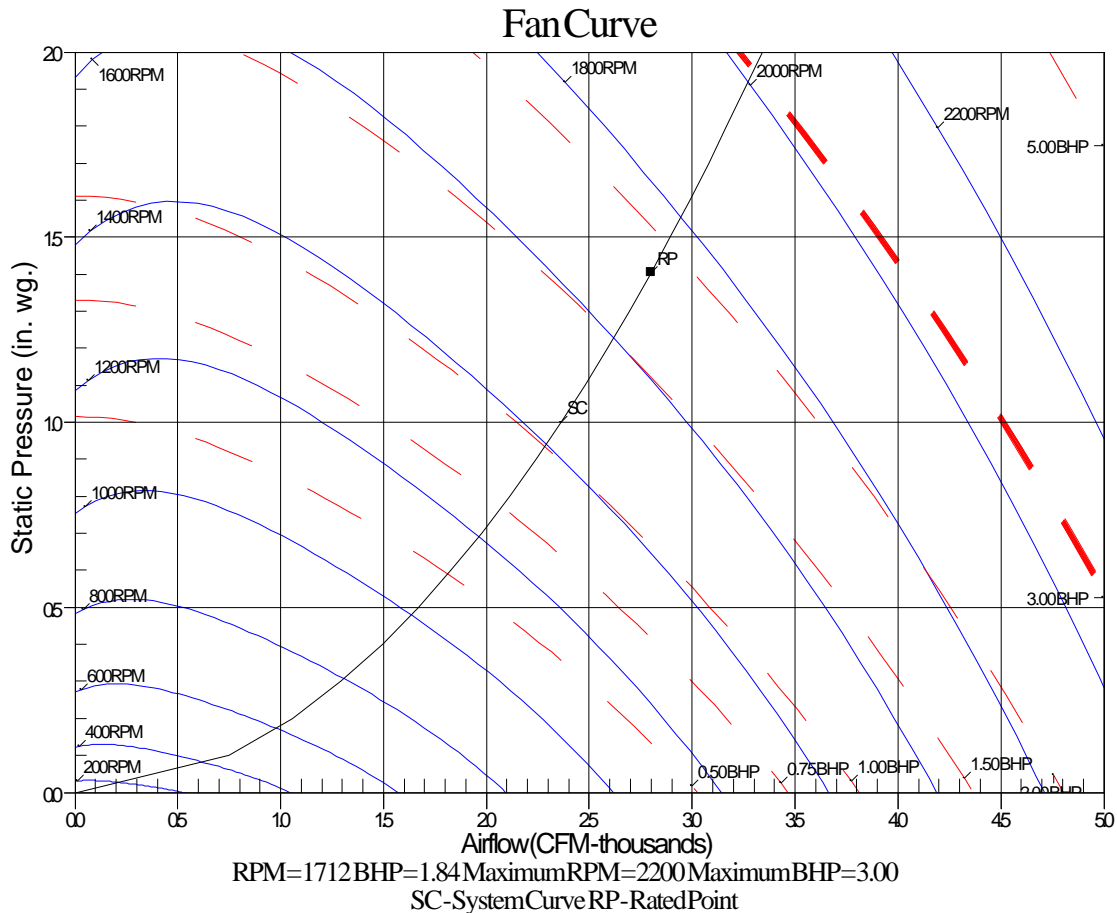
Detailed Acoustics Information

Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3	89.2 Lw
B	59.4	68.6	71.9	72.8	72.4	69.2	63.8	58.2	78.5 LwA
C	53.2	52.3	48.1	43.6	40.0	35.6	30.4	26.9	56.8 Lp
D	27.0	36.2	39.5	40.4	40.0	36.8	31.4	25.8	46.1 LpA

Legend

- A Sound Power Levels at Unit's Acoustic Center, Lw
- B A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA
- C Sound Pressure Levels at Specific Distance from Unit, Lp
- D A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.



Unit Feature Sheet for RTU-1,2 Humidimizer

Project: CCA Cincinnati Classical Academy
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09:34AM



PURON ADVANCE™ PACKAGED ROOFTOP GAS HEATING/ELECTRIC COOLING UNITS WITH ECOBLUE™ TECHNOLOGY - 7.5, 8.5, 10, 12.5, 15 TONS

48 FE units are single packaged electric cooling, gas heating rooftops. All units are pre-wired and pre-charged with Carrier's new, low global warming potential Puron Advance™ (R-454B) refrigerant. Puron Advance represents a 75% reduction in refrigerant GWP over legacy Puron™ (R-410A) models. All units are factory tested in both heating and cooling modes and used to stage cooling capacity control.



PERFORMANCE FEATURES

- " Puron Advance (R-454B) refrigerant
- " Two-stage cooling capacity control on all models
- " IEEERS up to 15.0
- " New-A2 Leak detection and dissipation system factory installed standard
- " Leak system ensures unit and occupant safety during operation and includes an alarm relay for optional use
- " Onboard recallable leak detection history for easier troubleshooting and service
- " Direct Drive EcoBlue™ Technology Indoor fan system uses Vane Axial fan design and electronically commutated motor
- " New Unit Control Board with intuitive quick fan speed adjustment
- " ASHRAE 90.1 and IECC code compliant
- " Sound levels as low as 79 dB
- " Exclusive non-corrosive composite condensate pans in accordance with ASHRAE 62 Standard, sloping design; side or center drain
- " AFUE Gas efficiencies up to 82%
- " Induced draft combustion design
- " Redundant gas valve, with up to 2 stages of heating
- " Pre-painted exterior panels and primer-coated interior panel tested to 500 hours salt spray protection
- " TXV refrigerant metering system on all models
- " Exclusive IGC solid-state control for on-board diagnostics with LED error code designation, burner control logic and energy saving indoor fan motor delay

PERFORMANCE FEATURES (continued)

- " Standard cooling operating range up to 125 °F (52 °C), except 14 size models with 115 °F (46 °C) and down to 40 °F (-4 °C), except 14 size models with 0 °F (-18 °C) Low Ambient kit allows cooling operation down to 0 °F (-18 °C).
- " Rated in accordance with AHRI Standards 340/360
- " Designed in accordance with Underwriters Laboratories Standard UL 60335-1 and UL 60335-2-40
- " Listed by UL and CUL-Canada

MAINTENANCE FEATURES

- " Large access panels with easy grip handles
- " Innovative, easy starting, no-strips screw feature on unit access panels
- " Two-inch disposable return air filters
- " Tool-less filter access door
- " New Vane Axial evaporator-fan system has no fan belts, pulleys, blower shaft, and blower bearings with side out design.
- " Unit control board facilitates simple safety circuit troubleshooting and simplified control box arrangement.

INSTALLATION FEATURES

- " Field Convertible from vertical to horizontal airflow on all models. No special kit required on 08-14 models. Supply duct kit required for 16 size model only.
- " Provisions for thru-the-bottom power entry capability
- " Single point gas and electric connections
- " Full perimeter base rail with built-in rigging adapters and fork truck slots

STANDARD LIMITED PARTS WARRANTY

- " 10-year heat exchanger - Aluminum
- " 15-year heat exchanger - Stainless Steel
- " 5-year compressor parts
- " 3-year SystemVu™ controller
- " 1-year parts

AVAILABLE OPTIONS:

- " Patented Humid-MiZer™ adaptive dehumidification system. This option also includes Low Ambient controls
- " Through the base connections for gas and electric available as option
- " Stainless steel gas heat exchanger includes tubes, vestibule plate and collector box.
- " Disconnect and convenience outlet options
- " High static motor options
- " Smoke detector, supply and/or return air
- " Corrosion resistant options for evaporator and condenser coils
- " CO2 Sensor
- " Phase Monitor Protection
- " 4 MERV-13 Filters
- " 2-position damper
- " Hinged access panels
- " Integrated economizer system. Low and ULTRA Low Leak versions.
- " Condensate overflow switch
- " SystemVu Controls

Spec Sheet for RTU-1,2 Humidimizer

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RTU-3 Humidimizer

**Tag Cover Sheet
Unit Report
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Spec Sheet**

Unit Report For RTU-3 Humidimizer

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Unit Parameters

Unit Model: **48FEEB04A2A6-8F2A0**
 Unit Size: **04 (3 Tons)**
 Volts-Phase-Hertz: **460-3-60**
 Heating Type: **Gas**
 Refrigerant: **R-454B**
 Heat Control: **Medium Heat**
 Duct Cfg: **Vertical Supply / Vertical Return**
 DX Options: **Standard One Stage Cooling Models with Humidi-MiZer (04-06)**

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length: **6' 2.375"**
 Unit Width: **3' 10.625"**
 Unit Height: **2' 9.375"**
Total Operating Weight: 749 lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size: **1/2**
 Condensate Drain Line Size: **3/4**
 Return Air Filter Type: **Throwaway**
 Return Air Filter Quantity: **2**
 Return Air Filter Size: **16 x 25 x 2**

SUBMITTAL REVIEW

Submission of information by the Contractor is taken as evidence that the Contractor has prepared the information for the specific application, and has verified that adequate and complete conditions for installation and subsequent operation and maintenance will exist.

Selection includes construction throwaway filter into the base fan curbs

Contractor's review is for general conformance with the design concepts of the project, and for general compliance with the information given in the contract documents. The Contractor is responsible for access and clearance code compliance, work methods and conditions, coordination of trades, safety, all in satisfactory performance of work.

Unit Configuration

Medium Heat
 Standard One Stage Cooling Models with Humidi-MiZer (04-06)
 Standard/Medium Static - EcoBlue Vane Axial Fan
 Al/Cu - Al/Cu
 Electromechanical with POL224 EconomizerONE (includes FDD)
 Standard Leak Enthalpy Economizer with Barometric Relief
 Powered Convenience Outlet
 Standard Packaging
 Humidi-MiZer™ Adaptive Dehumidification System

NO EXCEPTIONS TAKEN REJECTED-RESUBMIT
 EXCEPTIONS AS NOTED REVISE AND RESUBMIT

CUNNING & ASSOCIATES MCE

Warranty Information

1-Year parts(std.)
 5-Year compressor parts(std.)
 10-Year heat exchanger - Aluminized(std.)

Date: Jan 27 2025 By: Norm Cunning

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48FEEB04A2A6-8F2A0	Rooftop Unit	1
Field Installed Accessories		
CRRFCURB001A01	14-inch Tall Roof Curb	1

Certified Drawing for RTU-3 Humidifier

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM

NOTES:

1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE

UNIT	J	K
48FE**04	33 3/8 [847]	18 5/8 [472]
48FE**05	33 3/8 [847]	14 7/8 [377]
48FE**06	33 3/8 [847]	14 7/8 [377]
48FE**07	41 3/8 [1051]	18 5/8 [472]



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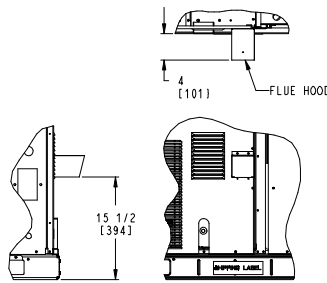
SUBMISSION OF THESE DRAWINGS OR DOCUMENTS DOES NOT CONSTITUTE PART PERFORMANCE OR ACCEPTANCE OF CONTRACT.

CONNECTION SIZES	
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2" [50] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [51] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
F	1/2"-14 NPT GAS CONNECTION
G	2 1/2" [64] DIA POWER SUPPLY KNOCK-OUT

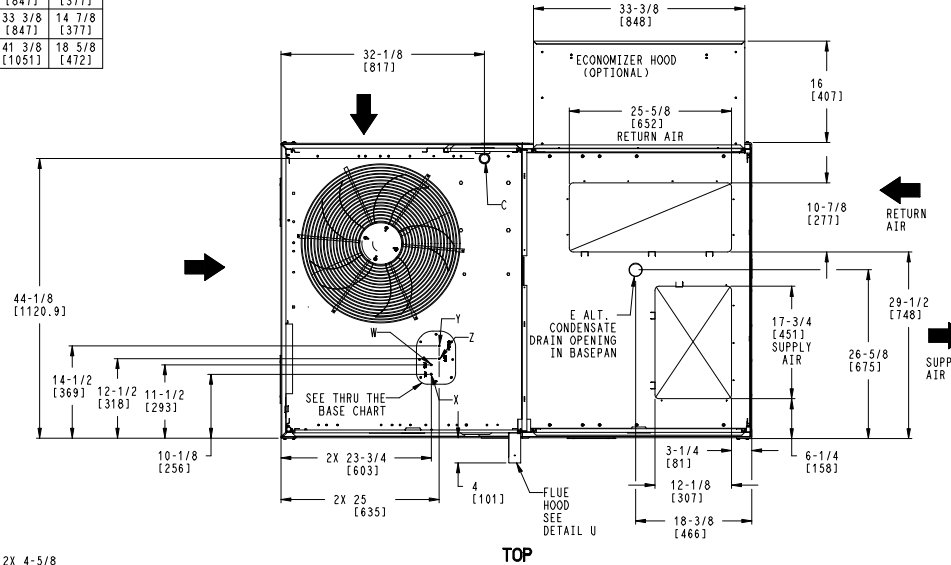
THRU-THE-BASE CHART THESE HOLES REQUIRED FOR USE CRBTMPR008A00, 009A00			
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	115V	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y	3/4"	POWER	1-1/8" [28.6]
Z*	(009A00) 1/2" FPT	GAS	1-1/8" [28.6]

FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED

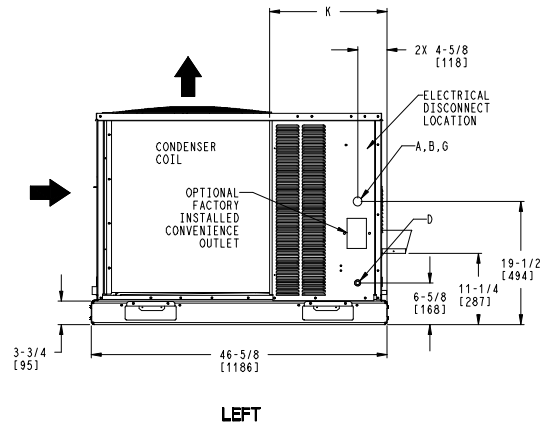
(008A00) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING.



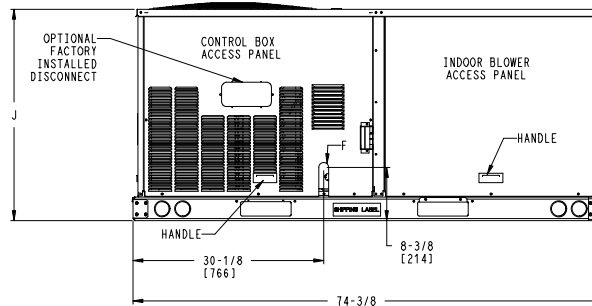
DETAIL U
FLUE HOOD OPENING FOR
ULTRA LOW NOX UNITS ONLY
SCALE 1:8



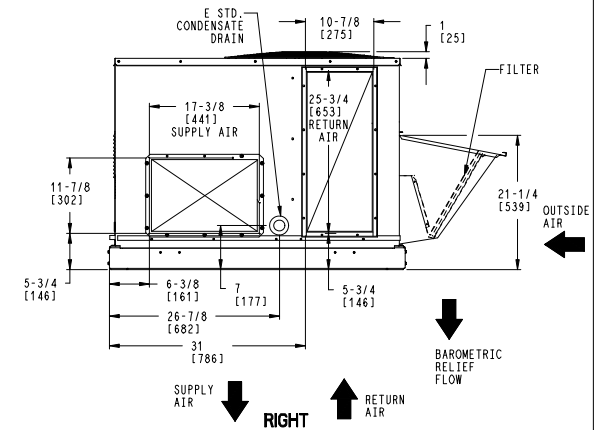
TOP



LEFT



FRONT



RIGHT

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC00694	REV
U.S. ECCN:NSR	1 OF 3	11/17/23	-			-

Certified Drawing for RTU-3 Humidifier

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM

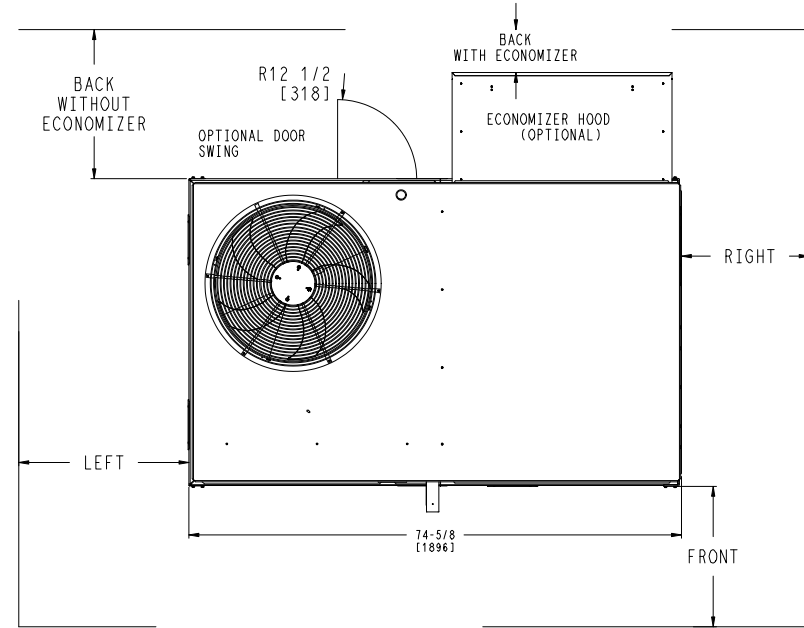
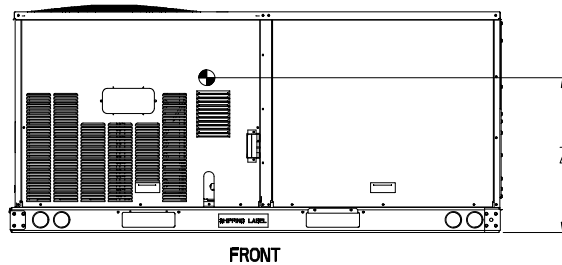
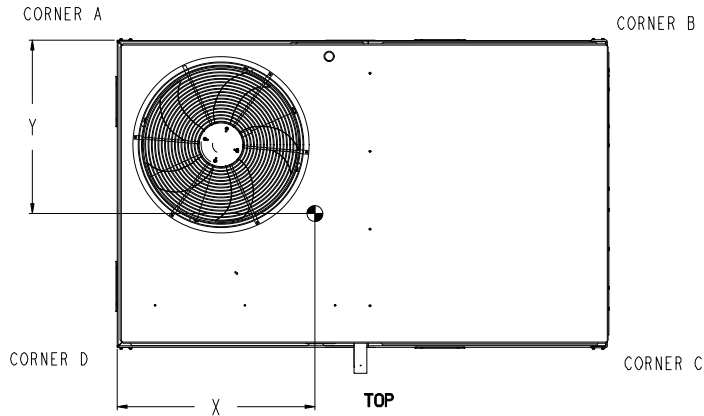
UNIT	STD. UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.			HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z	
48FE**04	482	219	113	51	116	53	128	58	125	57	37 5/8 [956]	24 9/16 [624]	18 1/4 [464]	[464]
48FE**05	543	246	138	63	133	60	133	60	138	63	36 1/2 [927]	23 3/8 [594]	18	[457]
48FE**06	556	252	142	64	136	62	136	62	142	64	36 1/2 [927]	23 3/8 [594]	18	[457]
48FE**07	607	275	162	73	152	69	141	64	151	68	36 [914]	22 1/2 [572]	19 3/8 [492]	

* STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.

THIS TABLE IS FOR "ULTRA LOW NOX" UNITS ONLY

UNIT	STD. UNIT WEIGHT**		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.			HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z	
48FEG*04	512	233	120	55	122	55	136	62	134	61	37 1/2 [953]	24 11/16 [627]	18 1/8 [460]	
48FEG*05	573	260	146	66	139	63	141	64	147	67	36 3/8 [924]	23 1/2 [597]	18	[457]
48FEG*06	586	266	149	68	143	65	144	65	151	69	36 3/8 [924]	23 1/2 [597]	18	[457]

** STANDARD UNIT WEIGHT IS WITH WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



NOTES:

1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

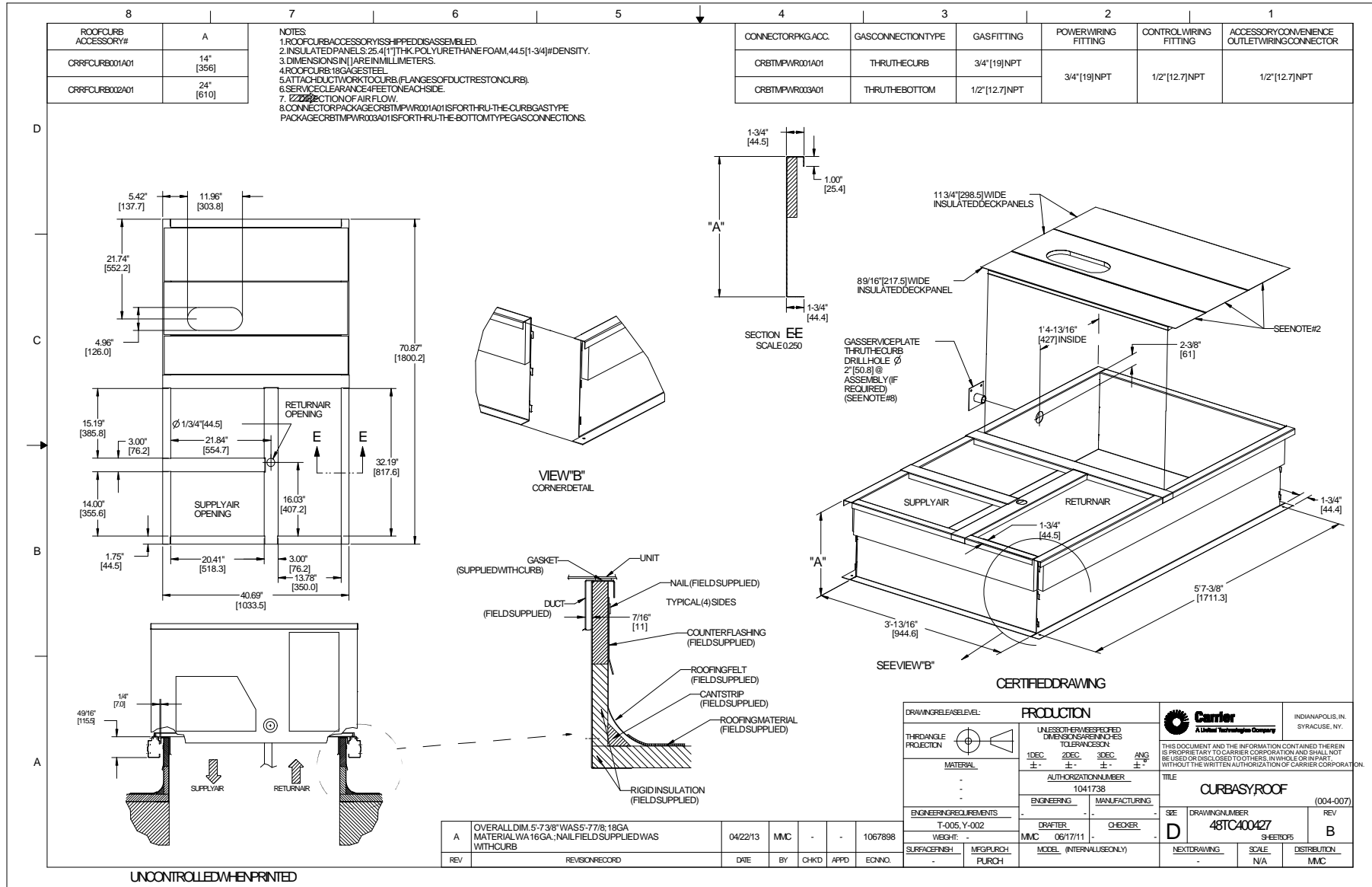
SURFACE	CLEARANCE		OPERATING CLEARANCE
	SERVICE WITH CONDUCTIVE BARRIER	SERVICE WITH NONCONDUCTIVE BARRIER	
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/O HOOD	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

ITC CLASSIFICATION U.S. ECCN:NSR	SHEET 2 OF 3	DATE 11/17/23	SUPERCEDES -	48FE 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC006964	REV -
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Certified Drawing for RTU-3 Humidimizer

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM



Performance Summary For RTU-3 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Part Number: 48FEEB04A2A6-8F2A0

Refrigerant: R-454B
 ARI SEER: 14.00
 ARI SEER2: 13.40

Base Unit Dimensions

Unit Length: 74.4 in
 Unit Width: 46.6 in
 Unit Height: 33.4 in

Operating Weight

Base Unit Weight: 482 lb
 Medium Heat: 57 lb
 Standard One Stage Cooling Models with Humidi-MiZer (04-06): 24 lb
 Standard Leak Enthalpy Economizer with Barometric Relief: 35 lb
 Powered Convenience Outlet: 36 lb

Accessories

14-inch Tall Roof Curb: 115 lb
 Total Operating Weight: 749 lb

Unit

Unit Voltage-Phase-Hertz: 460-3-60
 Air Discharge: Vertical
 Fan Drive Type: Vane Axial
 Actual Airflow: 1200 CFM
 Site Altitude: 0 ft

Cooling Performance

Condenser Entering Air DB: 95.0 F
 Evaporator Entering Air DB: 80.0 F
 Evaporator Entering Air WB: 67.0 F
 Evaporator Entering Air Enthalpy: 31.44 BTU/lb
 Evaporator Leaving Air DB: 60.4 F
 Evaporator Leaving Air WB: 57.9 F
 Evaporator Leaving Air Enthalpy: 24.94 BTU/lb
 Gross Cooling Capacity: 35.10 MBH
 Gross Sensible Capacity: 25.40 MBH
 Compressor Power Input: 2.50 kW
 Coil Bypass Factor: 0.060

Heating Performance

Heating Airflow: 1200 CFM
 Entering Air Temp: 70.0 F
 Leaving Air Temp: 137.9 F
 Gas Heating Input Capacity: 82.0 / 110.0 MBH
 Gas Heating Output Capacity: 65.0 / 88.0 MBH
 Temperature Rise: 67.9 F
 Thermal Efficiency (%): 80.0

Supply Fan

External Static Pressure: 1.20 in wg
 Options / Accessories Static Pressure
 Humidi-MiZer Dehumidification System: 0.04 in wg
 Economizer: 0.04 in wg
 Application External Static (ESP + Unit Opts/Acc.): 1.29 in wg
 Fan RPM: 2132
 Fan Power: 0.71 BHP
 NOTE: Selected IFM RPM Range: 1112 - 2190

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Performance Summary For RTU-3 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Electrical Data

Voltage Range:	414 - 506
Compressor #1 RLA:	5.8
Compressor #1 LRA:	44
Indoor Fan Motor Type:	MED
Indoor Fan Motor FLA (Total):	1.2
Combustion Fan Motor FLA (ea):	0.25
Power Supply MCA:	12
Power Supply MOCP (Fuse or HACR):	15
Disconnect Size FLA:	12
Disconnect Size LRA:	50
Electrical Convenience Outlet FLA (based on unit line voltage):	2.2
Outdoor Fan [Qty / FLA (ea)]:	1 / 0.8

NOTE: Convenience outlet must be field connected to the line/load side of the unit disconnect per local code.

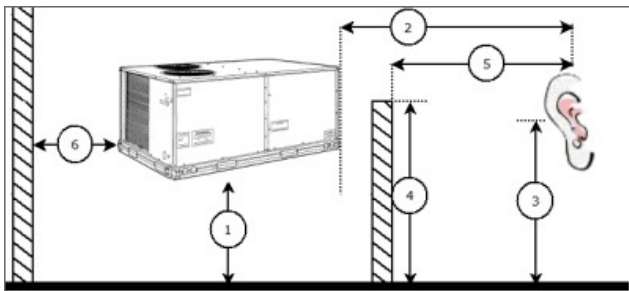
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	94.6	88.0	85.6
125 Hz	85.3	81.6	84.7
250 Hz	78.8	71.9	80.5
500 Hz	71.4	65.1	76.0
1000 Hz	68.9	66.6	72.4
2000 Hz	66.2	58.4	68.0
4000 Hz	61.6	52.6	62.8
8000 Hz	57.9	44.7	59.3
A-Weighted	76.8	71.6	79.0

Advanced Acoustics



Advanced Acoustics Parameters

1. Unit height above ground:	30.0 ft
2. Horizontal distance from unit to receiver:	50.0 ft
3. Receiver height above ground:	5.7 ft
4. Height of obstruction:	0.0 ft
5. Horizontal distance from obstruction to receiver:	0.0 ft
6. Horizontal distance from unit to obstruction:	0.0 ft

Detailed Acoustics Information

Performance Summary For RTU-3 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

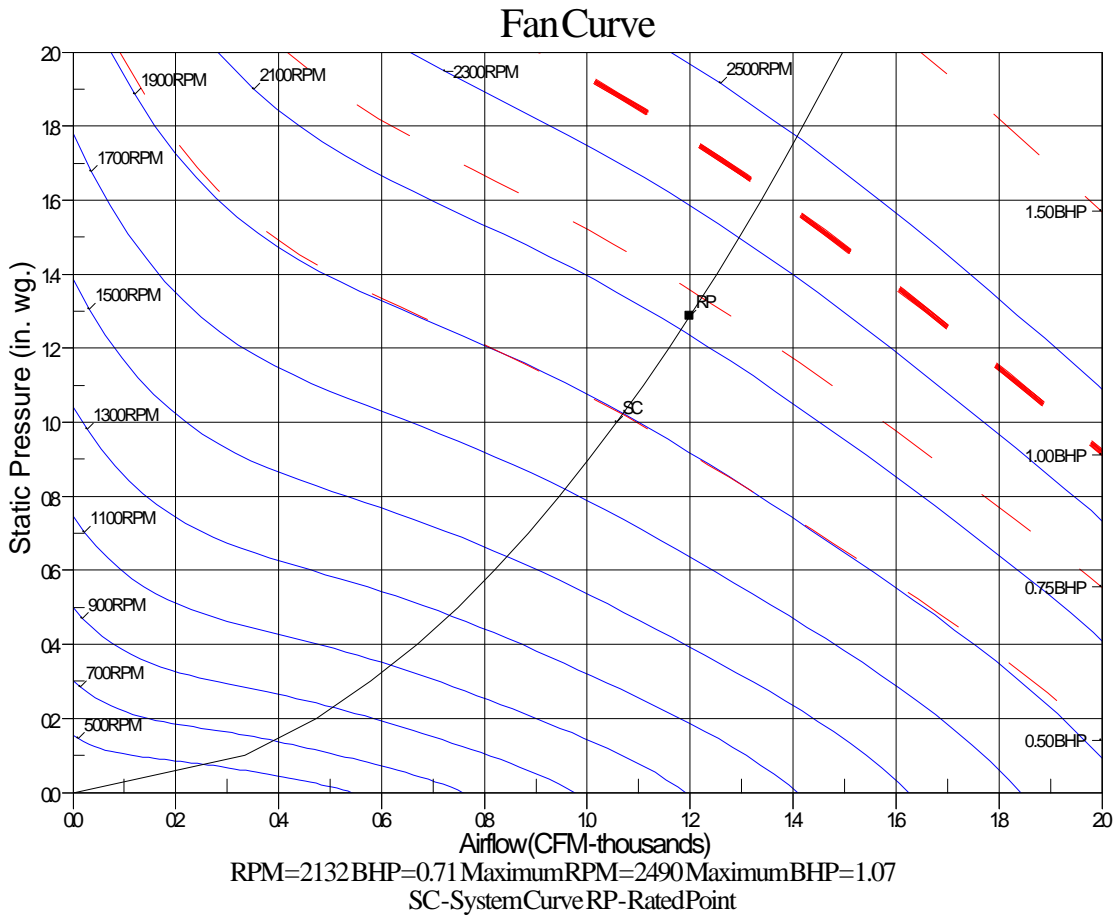
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Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3	89.2 Lw
B	59.4	68.6	71.9	72.8	72.4	69.2	63.8	58.2	78.5 LwA
C	53.2	52.3	48.1	43.6	40.0	35.6	30.4	26.9	56.8 Lp
D	27.0	36.2	39.5	40.4	40.0	36.8	31.4	25.8	46.1 LpA

Legend

- A Sound Power Levels at Unit's Acoustic Center, Lw
- B A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA
- C Sound Pressure Levels at Specific Distance from Unit, Lp
- D A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.



Unit Feature Sheet for RTU-3 Humidimizer

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM



PURON ADVANCE™ PACKAGED ROOFTOP GAS HEATING/ELECTRIC COOLING UNITS 3, 4, 5 TONS – 13.4 SEER2, 6 TON – 15.5 IEER

48FE units are single-packaged electric cooling, gas heating rooftops. All units are prewired and pre-charged with Carrier's new, low global warming potential Puron Advance™ (R-454B) refrigerant. Puron Advance represents a 75% reduction in refrigerant GWP over legacy Puron™ (R-410A) models. All units are factory tested in both heating and cooling modes. 3–5-ton models use single stage cooling capacity control. 6-ton model uses two stage cooling capacity control.



Use of the AHRI Certified™ Mark indicates a manufacturer's participation in the program for verification of certification for individual products; go to www.ahrirefactory.org.



PERFORMANCE FEATURES

- Puron Advance (R-454B) refrigerant
- Single-stage cooling capacity 04-06 models, Two Stage on 07 models
- SEER2s up to 13.4
- IEERs up to 15.5
- New - A2L leak detection and dissipation system factory installed standard
- Leak system ensures unit and occupant safety during operation and includes an alarm relay for optional use
- Onboard recallable leak detection history for easier troubleshooting and service
- Direct Drive – EcoBlue™ Technology Indoor fan system uses Vane Axial fan design and electronically commutated motor
- New Unit Control Board with intuitive quick fan speed adjustment
- Sound levels as low as 79 dB
- Exclusive non-corrosive composite condensate pans in accordance with ASHRAE 62 Standard, sloping design; side or center drain
- AFUE Gas efficiencies up to 81%
- Induced draft combustion design
- Redundant gas valve, with up to 2 stages of heating
- Pre-painted exterior panels and primer-coated interior panels tested to 500 hours salt spray protection
- Acutrol™ refrigerant metering system on 04-06 models, TXV on 07 size models
- Exclusive IGC solid-state control for on-board diagnostics with LED error code designation, burner control logic and energy saving indoor fan motor delay

PERFORMANCE FEATURES (continued)

- Dedicated 3-5 ton "Low NOx and Ultra Low NOx" models available that meet California Air Quality Management NOx requirement. Models of 40 nanogram/joule and 14 nanogram/joule are available. Both Low NOx models include stainless steel heat exchangers
- Standard cooling operating range up to 115°F (46°C), and down to 40°F (4°C). Low Ambient allows cooling operation down to -20°F (-29°C).
- Rated in accordance with AHRI Standards 210/240 (04-06 sizes) and 340/360 (07 size)
- Designed in accordance with Underwriters' Laboratories Standard UL 60335-1 and UL 60335-2-40
- Listed by UL and CUL-Canada

MAINTENANCE FEATURES

- Large access panels with easy grip handles
- Innovative, easy starting, no-strip screw feature on unit access panels
- Two-inch disposable return air filters
- Tool-less filter access door
- New central terminal board facilitating simple safety circuit troubleshooting and simplified control box arrangement

INSTALLATION FEATURES

- Field Convertible from vertical to horizontal airflow on all models. No special kit required.
- Provisions for thru-the-bottom power entry capability
- Single point gas and electric connections
- Full perimeter base rail with built-in rigging adapters and fork truck slots
- Two stage cooling thermostats required on 07 size to help provide energy saving and comfort benefits.

STANDARD LIMITED PARTS WARRANTY

- 10-year heat exchanger - Aluminized
- 15-year heat exchanger - Stainless Steel
- 10-year heat exchanger - Ultra/Low NOx models
- 5-year compressor parts
- 3-year SystemVu™ controller
- 1-year parts

AVAILABLE OPTIONS:

- Patented Humidi-MiZer® adaptive dehumidification system. This option also includes Low Ambient controls
- Through the base connections for gas and electric available as option
- Stainless steel gas heat exchanger includes tubes, vestibule plate and collector box. Stainless Steel Heat Exchangers are standard on all Low NOx and Ultra Low NOx models.
- Disconnect and convenience outlet options
- Medium and High static motor options
- Smoke detector, supply and/or return air
- Corrosion resistant options for evaporator and condenser coils
- CO2 Sensor
- Phase Monitor Protection
- 4" MERV-13 Filters
- 2-position damper
- Hinged access panels
- Integrated economizer system. Low and ULTRA Low Leak versions.
- Condensate overflow switch
- SystemVu Controls

Spec Sheet for RTU-3 Humidimizer

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM

RTU-4 Humidimizer

**Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report
Unit Feature Sheet
Spec Sheet**

Unit Report For RTU-4 Humidifier

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Unit Parameters

Unit Model: 48FEEB06B3A6-8M2A0
 Unit Size: 06 (5 Tons)
 Volts-Phase-Hertz: 460-3-60
 Heating Type: Gas
 Refrigerant: R-454B
 Heat Control: Medium Heat
 Duct Cfg: Vertical Supply / Vertical Return

DX Options: Standard One Stage Cooling Models with Humidi-MiZer (04-06)

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length: 6' 2.375"
 Unit Width: 3' 10.625"
 Unit Height: 2' 9.375"
Total Operating Weight: 836 lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size: 1/2
 Condensate Drain Line Size: 3/4
 Return Air Filter Type: Throwaway
 Return Air Filter Quantity: 2
 Return Air Filter Size: 16 x 25 x 2

Selection includes construction throwaway filter into the base fan curve.

Unit Configuration

Medium Heat
 Standard One Stage Cooling Models with Humidi-MiZer (04-06)
 RA Smoke Detector
 High Static - EcoBlue Vane Axial Fan
 Al/Cu - Al/Cu
 Electromechanical with POL224 EconomizerONE (includes FDD)
 ULL Enthalpy Economizer with Barometric Relief and CO2 sensor for DCV
 Powered Convenience Outlet
 Standard Packaging
 Humidi-MiZer™ Adaptive Dehumidification System

SUBMITTAL REVIEW

Submission of information by the Contractor is taken as evidence that the Contractor has prepared the information for the specific application, and has verified that adequate and complete conditions for installation and subsequent operation and maintenance will exist.

Engineers review is for general conformance with the design concepts of the project, and for general compliance with the information given in the contract documents. The Contractor is responsible for access and clearance code compliance, work methods and conditions, coordination of trades, safety, all in satisfactory performance of work.

NO EXCEPTIONS TAKEN REJECTED-RESUBMIT
 EXCEPTIONS AS NOTED REVISE AND RESUBMIT

CUNNING & ASSOCIATES MCE

Warranty Information

1-Year parts(std.)
 5-Year compressor parts(std.)
 10-Year heat exchanger - Aluminized(std.)

Date: Jan 27 2025 By: Norm Cunning

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48FEEB06B3A6-8M2A0	Rooftop Unit	1
Field Installed Accessories		
CRRFCURB001A01	14-inch Tall Roof Curb	1

Certified Drawing for RTU-4 Humidifier

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM

NOTES:

1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE

UNIT	J	K
48FE**04	33 3/8 [847]	18 5/8 [472]
48FE**05	33 3/8 [847]	14 7/8 [377]
48FE**06	33 3/8 [847]	14 7/8 [377]
48FE**07	41 3/8 [1051]	18 5/8 [472]

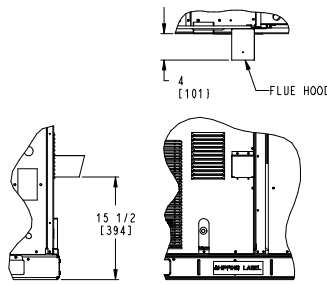


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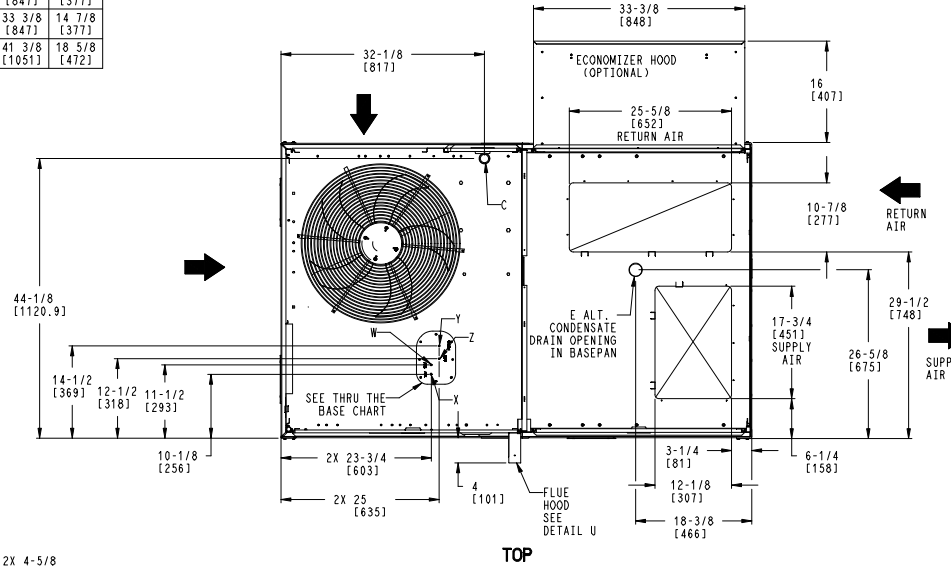
SUBMISSION OF THESE DRAWINGS OR DOCUMENTS DOES NOT CONSTITUTE PART PERFORMANCE OR ACCEPTANCE OF CONTRACT.

CONNECTION SIZES			
A	1 3/8" [35]	DIA	FIELD POWER SUPPLY HOLE
B	2" [50]	DIA	POWER SUPPLY KNOCKOUT
C	1 3/4" [51]	DIA	GAUGE ACCESS PLUG
D	7/8" [22]	DIA	FIELD CONTROL WIRING HOLE
E	3/4"-14	NPT	CONDENSATE DRAIN
F	1/2"-14	NPT	GAS CONNECTION
G	2 1/2" [64]	DIA	POWER SUPPLY KNOCK-OUT

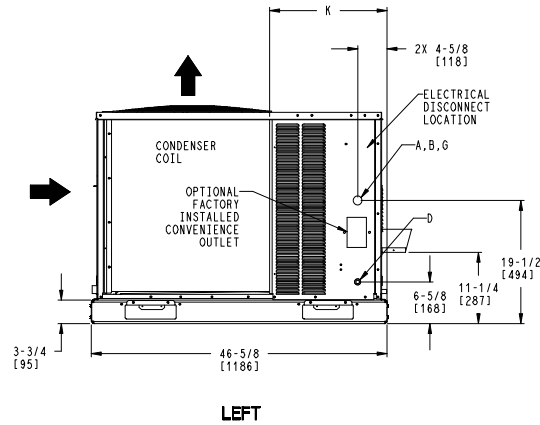
THRU-THE-BASE CHART THESE HOLES REQUIRED FOR USE CRBTMPR008A00, 009A00			
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	115V	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y	3/4"	POWER	1-1/8" [28.6]
Z*	(009A00) 1/2" FPT	GAS	1-1/8" [28.6]
* FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED			
# (008A00) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING.			



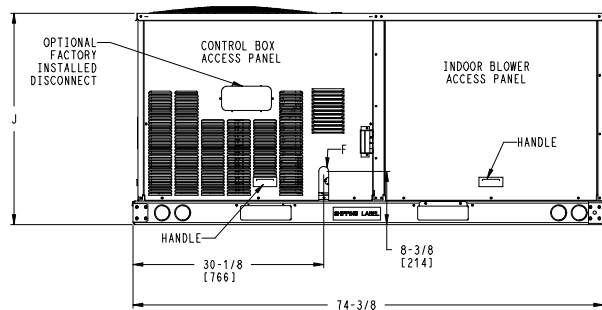
DETAIL U
FLUE HOOD OPENING FOR ULTRA LOW NOX UNITS ONLY
SCALE 1:8



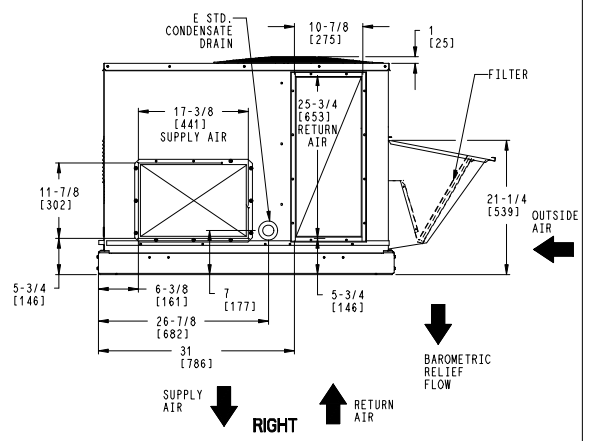
TOP



LEFT



FRONT



RIGHT

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC00694	REV
U.S. ECCN:NSR	1 OF 3	11/17/23	-			-

Certified Drawing for RTU-4 Humidifier

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM

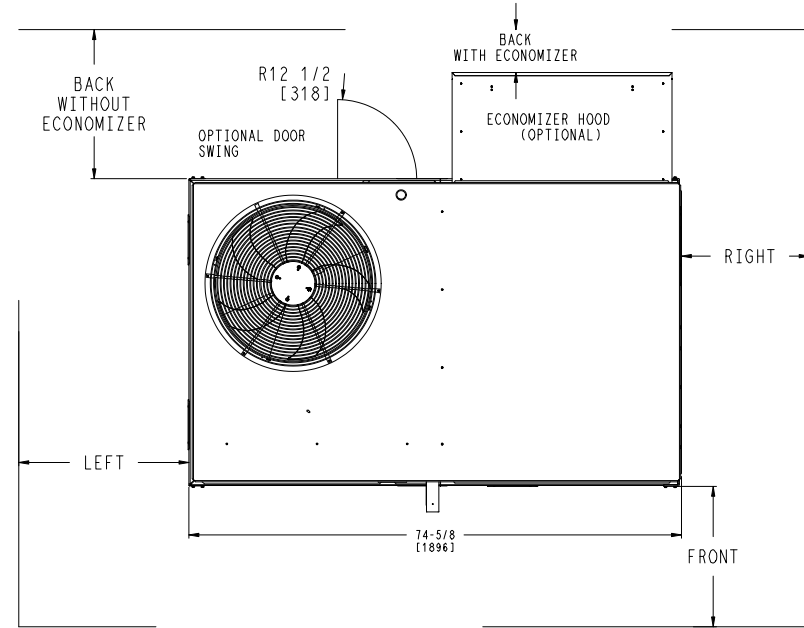
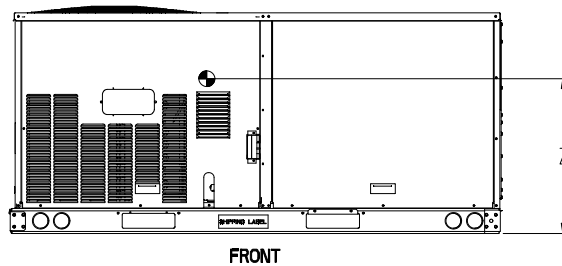
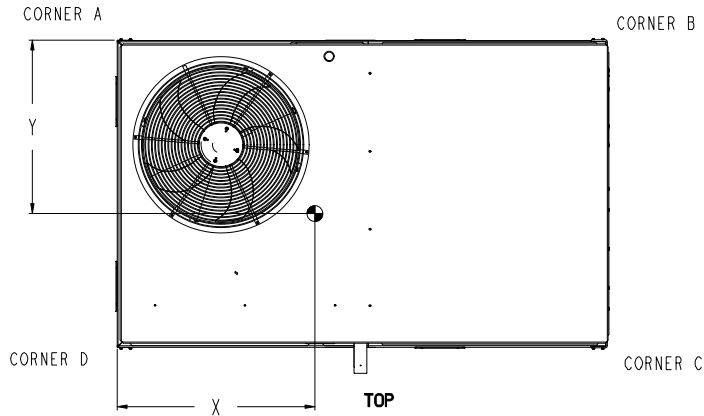
UNIT	STD. UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.			HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z	
48FE**04	482	219	113	51	116	53	128	58	125	57	37 5/8 [956]	24 9/16 [624]	18 1/4 [464]	[464]
48FE**05	543	246	138	63	133	60	133	60	138	63	36 1/2 [927]	23 3/8 [594]	18	[457]
48FE**06	556	252	142	64	136	62	136	62	142	64	36 1/2 [927]	23 3/8 [594]	18	[457]
48FE**07	607	275	162	73	152	69	141	64	151	68	36 [914]	22 1/2 [572]	19 3/8 [492]	

* STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.

THIS TABLE IS FOR "ULTRA LOW NOX" UNITS ONLY

UNIT	STD. UNIT WEIGHT**		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.			HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z	
48FEG*04	512	233	120	55	122	55	136	62	134	61	37 1/2 [953]	24 11/16 [627]	18 1/8 [460]	
48FEG*05	573	260	146	66	139	63	141	64	147	67	36 3/8 [924]	23 1/2 [597]	18	[457]
48FEG*06	586	266	149	68	143	65	144	65	151	69	36 3/8 [924]	23 1/2 [597]	18	[457]

** STANDARD UNIT WEIGHT IS WITH WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



NOTES:

1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

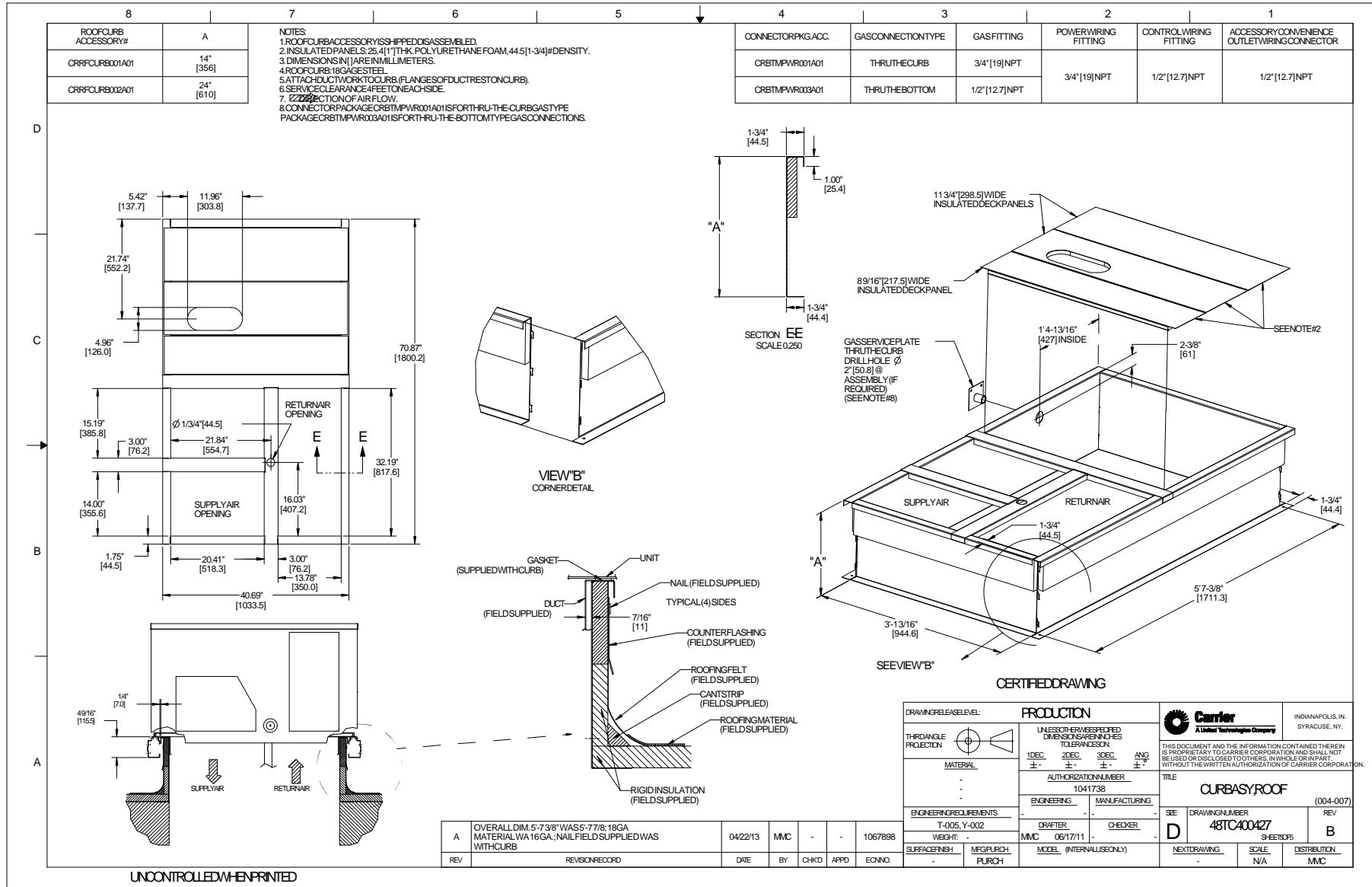
SURFACE	CLEARANCE		OPERATING CLEARANCE
	SERVICE WITH CONDUCTIVE BARRIER	SERVICE WITH NONCONDUCTIVE BARRIER	
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/O HOOD	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

ITC CLASSIFICATION U.S. ECCN:NSR	SHEET 2 OF 3	DATE 11/17/23	SUPERCEDES -	48FE 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC006964	REV -
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Certified Drawing for RTU-4 Humidifier

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM



Performance Summary For RTU-4 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Part Number: 48FEEB06B3A6-8M2A0

Refrigerant:..... R-454B
 ARI SEER:..... 14.00
 ARI SEER2:..... 13.40

Base Unit Dimensions

Unit Length:..... 74.4 in
 Unit Width:..... 46.6 in
 Unit Height:..... 33.4 in

Operating Weight

Base Unit Weight:..... 556 lb
 Medium Heat:..... 63 lb
 Standard One Stage Cooling Models with Humidi-MiZer (04-06):..... 24 lb
 RA Smoke Detector:..... 7 lb
 ULL Enthalpy Economizer with Barometric Relief and CO2 sensor for DCV:..... 35 lb
 Powered Convenience Outlet:..... 36 lb

Accessories

14-inch Tall Roof Curb:..... 115 lb
 Total Operating Weight:..... 836 lb

Unit

Unit Voltage-Phase-Hertz:..... 460-3-60
 Air Discharge:..... Vertical
 Fan Drive Type:..... Vane Axial
 Actual Airflow:..... 2000 CFM
 Site Altitude:..... 0 ft

Cooling Performance

Condenser Entering Air DB:..... 95.0 F
 Evaporator Entering Air DB:..... 80.0 F
 Evaporator Entering Air WB:..... 67.0 F
 Evaporator Entering Air Enthalpy:..... 31.44 BTU/lb
 Evaporator Leaving Air DB:..... 59.3 F
 Evaporator Leaving Air WB:..... 57.7 F
 Evaporator Leaving Air Enthalpy:..... 24.85 BTU/lb
 Gross Cooling Capacity:..... 59.30 MBH
 Gross Sensible Capacity:..... 44.70 MBH
 Compressor Power Input:..... 4.14 kW
 Coil Bypass Factor:..... 0.040

Heating Performance

Heating Airflow:..... 2000 CFM
 Entering Air Temp:..... 70.0 F
 Leaving Air Temp:..... 110.7 F
 Gas Heating Input Capacity:..... 110.0 MBH
 Gas Heating Output Capacity:..... 88.0 MBH
 Temperature Rise:..... 40.7 F
 Thermal Efficiency (%):..... 80.0

Supply Fan

External Static Pressure:..... 1.00 in wg
 Options / Accessories Static Pressure
 Humidi-MiZer Dehumidification System:..... 0.19 in wg
 Economizer:..... 0.12 in wg
 Application External Static (ESP + Unit Opts/Acc.):..... 1.30 in wg
 Fan RPM:..... 2432
 Fan Power:..... 1.55 BHP

NOTE:..... Selected IFM RPM Range: 1478 - 2836

Performance Summary For RTU-4 Humidifier

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Electrical Data

Voltage Range:.....	414 - 506
Compressor #1 RLA:.....	7.8
Compressor #1 LRA:.....	58
Indoor Fan Motor Type:.....	HIGH
Indoor Fan Motor FLA (Total):.....	3.1
Combustion Fan Motor FLA (ea):.....	0.25
Power Supply MCA:.....	16
Power Supply MOCP (Fuse or HACR):.....	20
Disconnect Size FLA:.....	16
Disconnect Size LRA:.....	66
Electrical Convenience Outlet FLA (based on unit line voltage):.....	2.2
Outdoor Fan [Qty / FLA (ea)]:.....	1 / 0.8

NOTE: Convenience outlet must be field connected to the line/load side of the unit disconnect per local code.

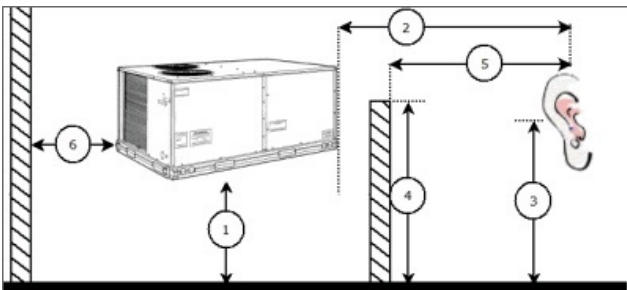
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	97.1	94.2	85.6
125 Hz	89.1	85.0	84.7
250 Hz	83.2	75.6	80.5
500 Hz	78.1	72.2	76.0
1000 Hz	75.9	73.0	72.4
2000 Hz	72.9	64.1	68.0
4000 Hz	68.3	57.9	62.8
8000 Hz	63.1	50.8	59.3
A-Weighted	82.2	77.1	79.0

Advanced Acoustics



Advanced Accoustics Parameters

1. Unit height above ground:.....	30.0 ft
2. Horizontal distance from unit to receiver:.....	50.0 ft
3. Receiver height above ground:.....	5.7 ft
4. Height of obstruction:.....	0.0 ft
5. Horizontal distance from obstruction to receiver:.....	0.0 ft
6. Horizontal distance from unit to obstruction:.....	0.0 ft

Detailed Acoustics Information

Performance Summary For RTU-4 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

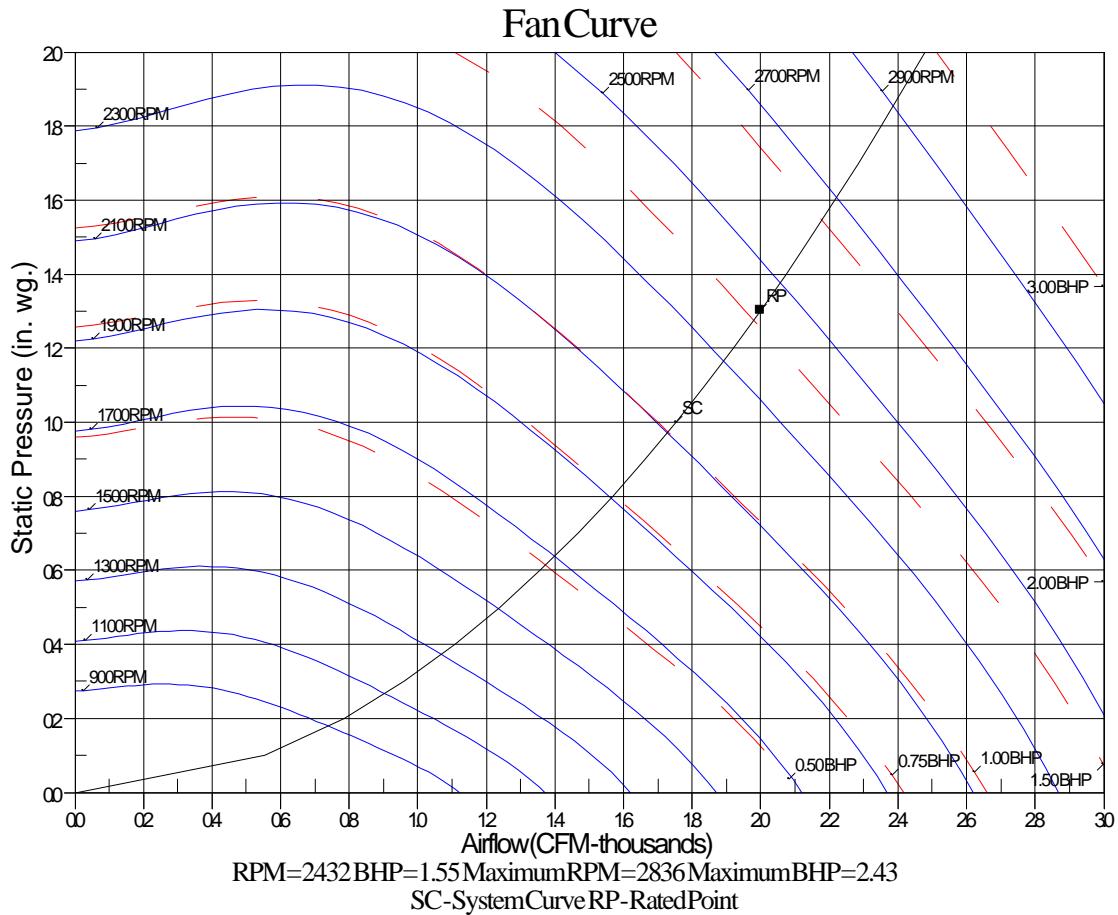
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Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3	89.2 Lw
B	59.4	68.6	71.9	72.8	72.4	69.2	63.8	58.2	78.5 LwA
C	53.2	52.3	48.1	43.6	40.0	35.6	30.4	26.9	56.8 Lp
D	27.0	36.2	39.5	40.4	40.0	36.8	31.4	25.8	46.1 LpA

Legend

- A Sound Power Levels at Unit's Acoustic Center, Lw
- B A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA
- C Sound Pressure Levels at Specific Distance from Unit, Lp
- D A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.



Unit Feature Sheet for RTU-4 Humidimizer

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM



PURON ADVANCE™ PACKAGED ROOFTOP GAS HEATING/ELECTRIC COOLING UNITS 3, 4, 5 TONS – 13.4 SEER2, 6 TON – 15.5 IEER

48FE units are single-packaged electric cooling, gas heating rooftops. All units are prewired and pre-charged with Carrier's new, low global warming potential Puron Advance™ (R-454B) refrigerant. Puron Advance represents a 75% reduction in refrigerant GWP over legacy Puron™ (R-410A) models. All units are factory tested in both heating and cooling modes. 3–5-ton models use single stage cooling capacity control. 6-ton model uses two stage cooling capacity control.



Use of the AHRI Certified™ Mark indicates a manufacturer's participation in the program for verification of certification for individual products; go to www.ahrirefactory.org.



PERFORMANCE FEATURES

- Puron Advance (R-454B) refrigerant
- Single-stage cooling capacity 04-06 models, Two Stage on 07 models
- SEER2s up to 13.4
- IEERs up to 15.5
- New - A2L leak detection and dissipation system factory installed standard
- Leak system ensures unit and occupant safety during operation and includes an alarm relay for optional use
- Onboard recallable leak detection history for easier troubleshooting and service
- Direct Drive – EcoBlue™ Technology Indoor fan system uses Vane Axial fan design and electronically commutated motor
- New Unit Control Board with intuitive quick fan speed adjustment
- Sound levels as low as 79 dB
- Exclusive non-corrosive composite condensate pans in accordance with ASHRAE 62 Standard, sloping design; side or center drain
- AFUE Gas efficiencies up to 81%
- Induced draft combustion design
- Redundant gas valve, with up to 2 stages of heating
- Pre-painted exterior panels and primer-coated interior panels tested to 500 hours salt spray protection
- Acutrol™ refrigerant metering system on 04-06 models, TXV on 07 size models
- Exclusive IGC solid-state control for on-board diagnostics with LED error code designation, burner control logic and energy saving indoor fan motor delay

PERFORMANCE FEATURES (continued)

- Dedicated 3-5 ton "Low NOx and Ultra Low NOx" models available that meet California Air Quality Management NOx requirement. Models of 40 nanogram/joule and 14 nanogram/joule are available. Both Low NOx models include stainless steel heat exchangers
- Standard cooling operating range up to 115°F (46°C), and down to 40°F (4°C). Low Ambient allows cooling operation down to -20°F (-29°C).
- Rated in accordance with AHRI Standards 210/240 (04-06 sizes) and 340/360 (07 size)
- Designed in accordance with Underwriters' Laboratories Standard UL 60335-1 and UL 60335-2-40
- Listed by UL and CUL-Canada

MAINTENANCE FEATURES

- Large access panels with easy grip handles
- Innovative, easy starting, no-strip screw feature on unit access panels
- Two-inch disposable return air filters
- Tool-less filter access door
- New central terminal board facilitating simple safety circuit troubleshooting and simplified control box arrangement

INSTALLATION FEATURES

- Field Convertible from vertical to horizontal airflow on all models. No special kit required.
- Provisions for thru-the-bottom power entry capability
- Single point gas and electric connections
- Full perimeter base rail with built-in rigging adapters and fork truck slots
- Two stage cooling thermostats required on 07 size to help provide energy saving and comfort benefits.

STANDARD LIMITED PARTS WARRANTY

- 10-year heat exchanger - Aluminized
- 15-year heat exchanger - Stainless Steel
- 10-year heat exchanger - Ultra/Low NOx models
- 5-year compressor parts
- 3-year SystemVu™ controller
- 1-year parts

AVAILABLE OPTIONS:

- Patented Humidi-MiZer® adaptive dehumidification system. This option also includes Low Ambient controls
- Through the base connections for gas and electric available as option
- Stainless steel gas heat exchanger includes tubes, vestibule plate and collector box. Stainless Steel Heat Exchangers are standard on all Low NOx and Ultra Low NOx models.
- Disconnect and convenience outlet options
- Medium and High static motor options
- Smoke detector, supply and/or return air
- Corrosion resistant options for evaporator and condenser coils
- CO2 Sensor
- Phase Monitor Protection
- 4" MERV-13 Filters
- 2-position damper
- Hinged access panels
- Integrated economizer system. Low and ULTRA Low Leak versions.
- Condensate overflow switch
- SystemVu Controls

Spec Sheet for RTU-4 Humidimizer

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM

RTU-5,6 Humidimizer

**Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report
Unit Feature Sheet
Spec Sheet**

Unit Report For RTU-5,6 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Unit Parameters

Unit Model: **48FEEN09B2A6-8M2A0**
 Unit Size: **09 (8.5 Tons)**
 Volts-Phase-Hertz: **460-3-60**
 Heating Type: **Gas**
 Refrigerant: **R-454B**
 Heat Control: **Medium Gas Heat**
 Duct Cfg: **Vertical Supply / Vertical Return**
 DX Options: **Single Circuit with Humidi-MiZer, Two Stage Cooling**

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length: **7' 4.125"**
 Unit Width: **4' 11.5"**
 Unit Height: **4' 1.375"**
Total Operating Weight: 1103 lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size: **3/4**
 Condensate Drain Line Size: **3/4**
 Return Air Filter Type: **Throwaway**
 Return Air Filter Quantity: **4**
 Return Air Filter Size: **20 x 20 x 2**

Selection includes construction throwaway filter into the base fan curve.

Unit Configuration

Medium Gas Heat
 Single Circuit with Humidi-MiZer, Two Stage Cooling
 RA Smoke Detector
 Standard/Medium Static - EcoBlue Vane Axial Fan
 Al/Cu - Al/Cu
 Electro-mechanical Controls with POL224
 ULL Enthalpy Economizer w/ Barometric Relief & CO2 Sensor
 Powered Convenience Outlet
 Standard Packaging
 Humidi-MiZer™ Adaptive Dehumidification System



NO EXCEPTIONS TAKEN



REJECTED-RESUBMIT



EXCEPTIONS AS NOTED



REVISE AND RESUBMIT

CUNNING & ASSOCIATES MCE

Warranty Information

1-Year parts(std.)
 5-Year compressor parts(std.)
 10-Year heat exchanger - Aluminized(std.)

No optional warranties were selected.

Date: Jan 27 2025

By: Norm Cunning

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48FEEN09B2A6-8M2A0	Rooftop Unit	2
Field Installed Accessories		
CRRFCURB003A01	14-inch Tall Roof Curb	2

Certified Drawing for RTU-5,6 Humidifier

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM

- NOTES:
1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [] ARE IN MILLIMETERS.
 2. CENTER OF GRAVITY
 3. DIRECTION OF AIR FLOW
 4. ALL VIEW DRAWN USING 3RD ANGLE

UNIT	OUTDOOR COIL TYPE	J	K	H
48FE-M08	RTPF	41 1/4 [1048]	33 3/4 [857]	15 7/8 [403]
48FE-M09	RTPF	49 3/8 [1253]	36 3/8 [925]	15 7/8 [403]
48FE-M12	RTPF	49 3/8 [1253]	36 3/8 [925]	15 7/8 [403]

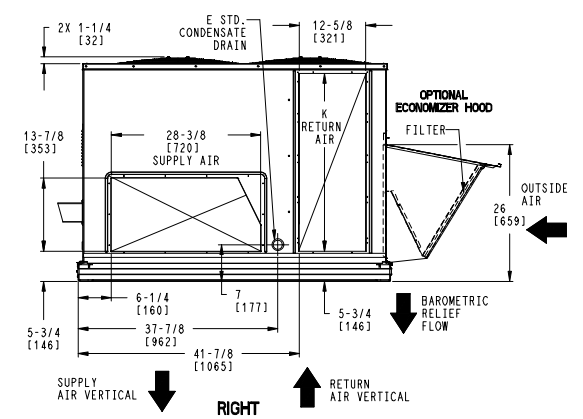
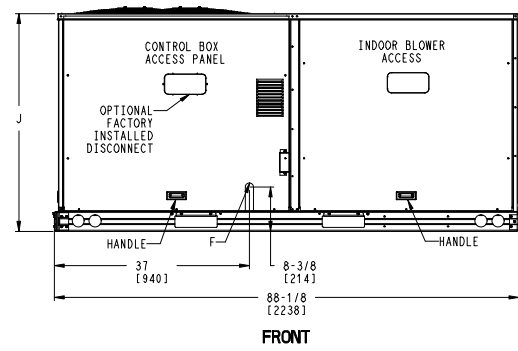
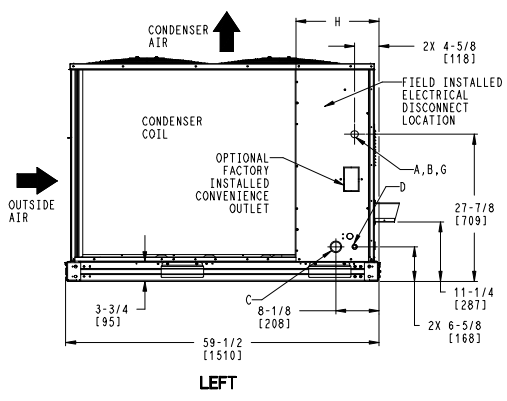
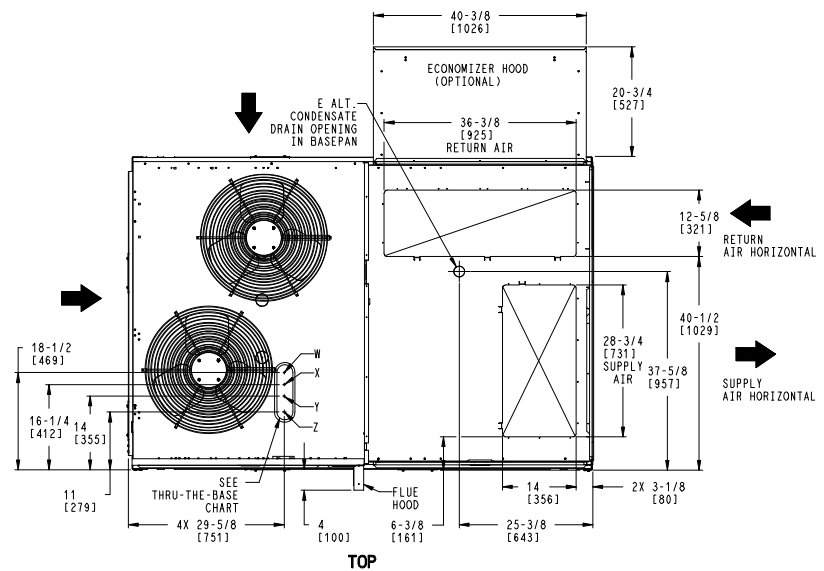
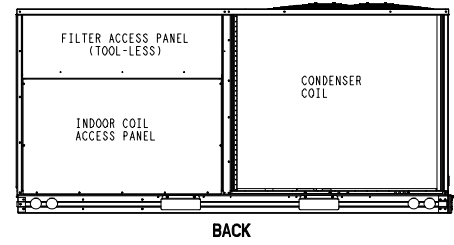
RTPF - ROUND TUBE, PLATE FIN (COPPER/ALUM)

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CONNECTION SIZES	
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2 1/2" [64] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [51] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
F	1/2"-14 NPT GAS CONNECTION 3/4"-14 NPT GAS CONNECTION
G	2" [51] DIA POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART (FIELD INST)			
THESE HOLES REQUIRED FOR USE WITH ACCY KITS: CRBTMPW002A01: GAS THRU CURB CRBTMPW004A01: GAS THRU BASEPAN			
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	ACC.	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y	1 1/4" (002,004)	POWER	1 3/4" [44.4]
Z *	(004) 3/4" FPT	GAS	1 3/4" [44.4]
*	(002) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING. HOLE SIZE: 2" [50.8]		

THRU-THE-BASE CHART (FIOP)	
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED. **	
** FOR BELOW LISTED MODELS, A FIELD SUPPLIED 1/2" ADAPTER IS REQUIRED BETWEEN BASE PAN FITTING AND GAS VALVE: 48FCD, S+08, 09	



ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009320	REV
U.S. ECCN:NSR	1 OF 3	8/8/23	-			-

Certified Drawing for RTU-5,6 Humidifier

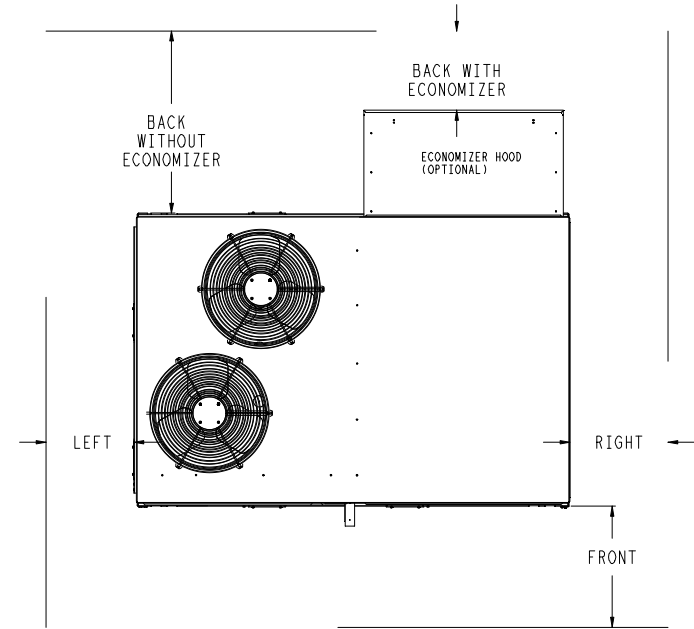
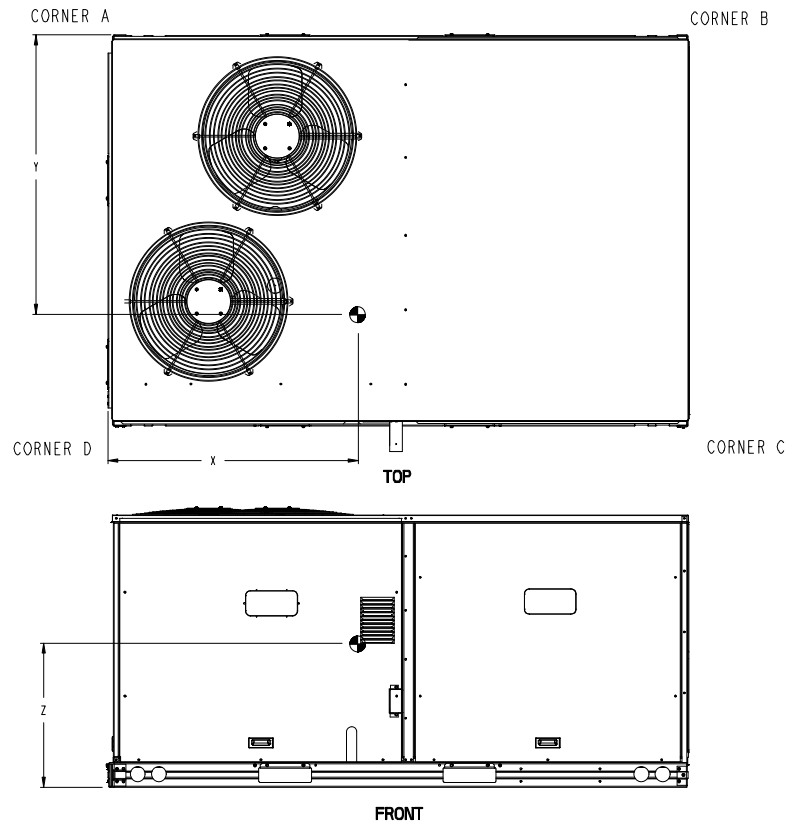
Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
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UNIT	OUTDOOR COIL TYPE	STD. UNIT WEIGHT ***		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.			
		LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z	
48FE-M08	RTPF	787	357	181	82	150	68	207	94	249	113	40	1/2 [1016]	34 1/2 [876]	19 3/8 [492]
48FE-M09	RTPF	868	394	197	89	160	73	229	104	282	128	39 1/2 [1003]	35 [889]	18 5/8 [473]	
48FE-M12	RTPF	878	398	213	97	175	80	221	100	268	121	39 7/8 [1013]	33 1/4 [841]	18 1/2 [470]	

RTPF - ROUND TUBE, PLATE FIN [COPPER/ALUM]

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NOTE:

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SURFACE	CLEARANCE		OPERATING CLEARANCE
	SERVICE WITH CONDUCTIVE BARRIER	SERVICE WITH NONCONDUCTIVE BARRIER	
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/O ECON	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/ECON	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

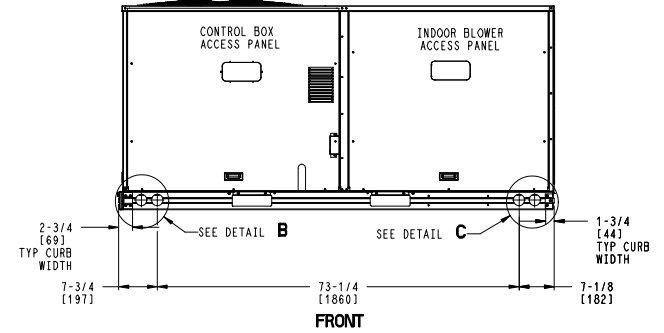
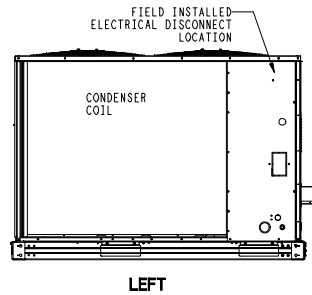
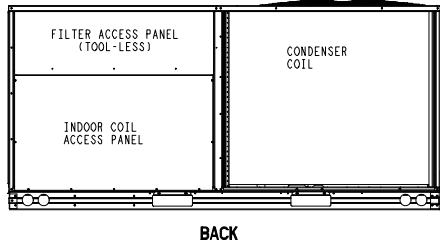
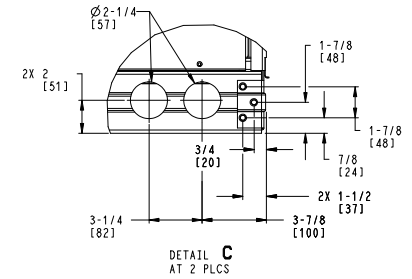
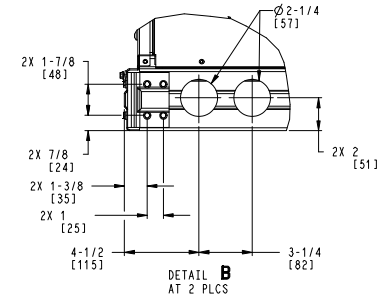
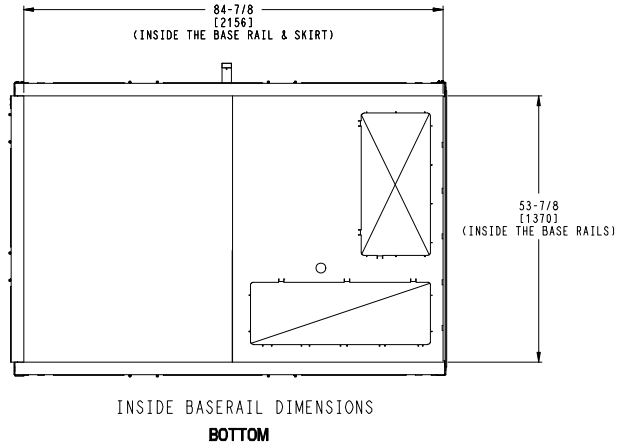
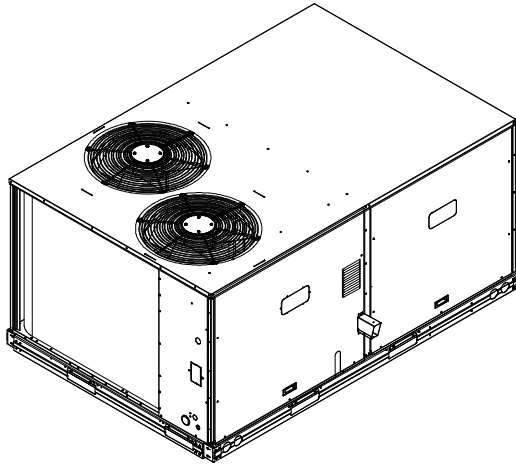
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009320	REV
U.S. ECCN: NSR	2 OF 3	8/8/23	-			-

Certified Drawing for RTU-5,6 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
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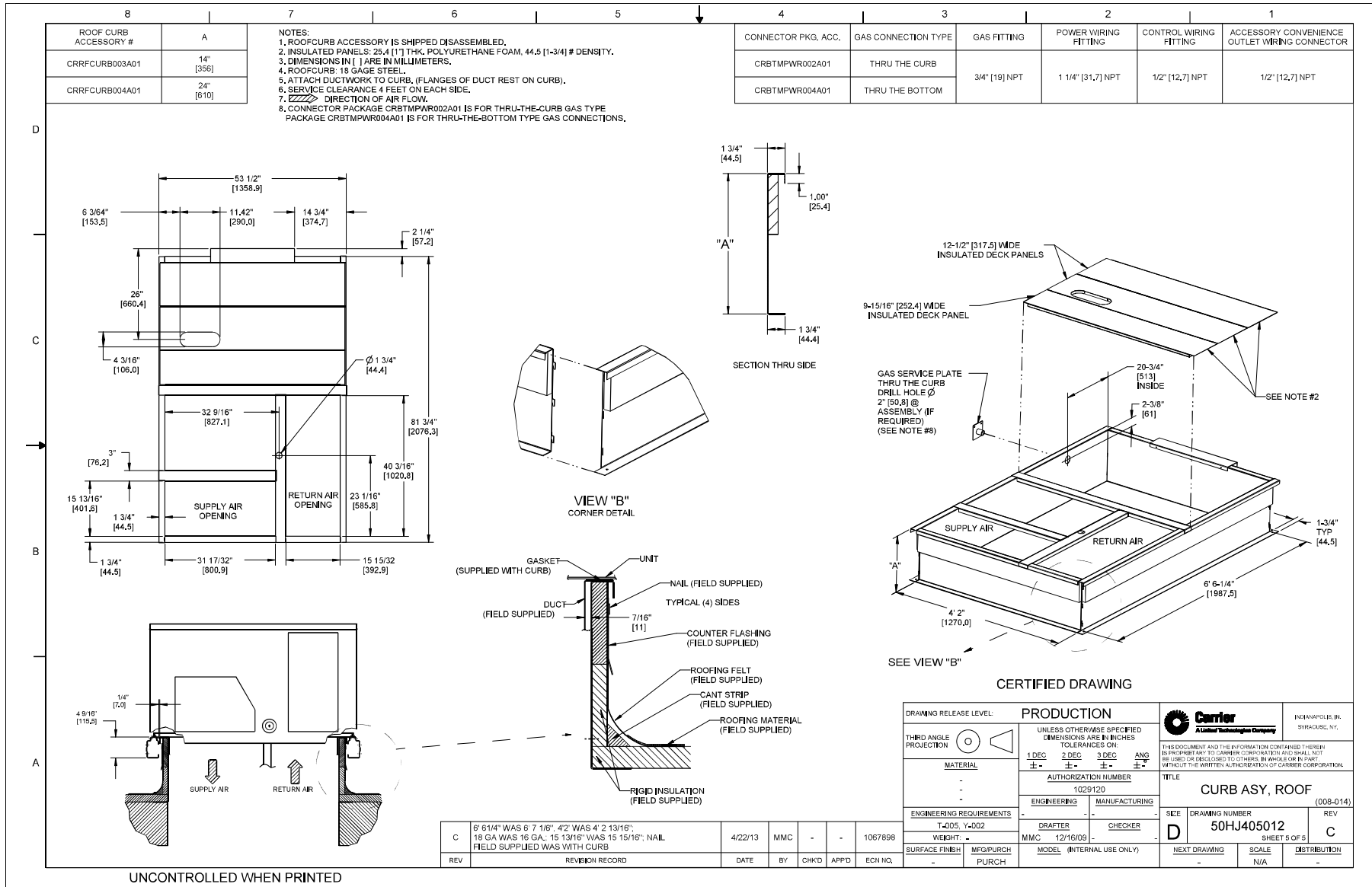


ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 08-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	48TM009320	REV
U. S. ECCN: NSR	3 OF 3	8/8/23	-			-

Certified Drawing for RTU-5,6 Humidimizer

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
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Performance Summary For RTU-5,6 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Part Number: 48FEEN09B2A6-8M2A0

Refrigerant:	R-454B
ARI EER:	11.20
IEER (Max Cooling at Normal Cooling Design Mode):	15.0

Base Unit Dimensions

Unit Length:	88.1	in
Unit Width:	59.5	in
Unit Height:	49.4	in

Operating Weight

Base Unit Weight:	868	lb
Medium Gas Heat:	15	lb
Single Circuit with Humidi-MiZer, Two Stage Cooling:	34	lb
RA Smoke Detector:	7	lb
Powered Convenience Outlet:	36	lb

Accessories		
14-inch Tall Roof Curb:	143	lb
Total Operating Weight:	1103	lb

Unit

Unit Voltage-Phase-Hertz:	460-3-60	
Air Discharge:	Vertical	
Fan Drive Type:	Vane Axial	
Actual Airflow:	2800	CFM
Site Altitude:	0	ft

Cooling Performance

Condenser Entering Air DB:	95.0	F
Evaporator Entering Air DB:	80.0	F
Evaporator Entering Air WB:	67.0	F
Evaporator Entering Air Enthalpy:	31.44	BTU/lb
Evaporator Leaving Air DB:	56.7	F
Evaporator Leaving Air WB:	55.9	F
Evaporator Leaving Air Enthalpy:	23.71	BTU/lb
Gross Cooling Capacity:	97.41	MBH
Gross Sensible Capacity:	70.44	MBH
Compressor Power Input:	6.90	kW
Coil Bypass Factor:	0.109	

Heating Performance

Heating Airflow:	2800	CFM
Entering Air Temp:	70.0	F
Leaving Air Temp:	118.9	F
Gas Heating Input Capacity:	120.0 / 180.0	MBH
Gas Heating Output Capacity:	98.0 / 148.0	MBH
Temperature Rise:	48.9	F
Thermal Efficiency (%):	82.0	

Supply Fan

External Static Pressure:	1.20	in wg
Options / Accessories Static Pressure		
Humidi-MiZer Dehumidification System:	0.11	in wg
Economizer:	0.09	in wg
Application External Static (ESP + Unit Opts/Acc.):	1.41	in wg
Fan RPM:	1712	
Fan Power:	1.84	BHP

NOTE: Selected IFM RPM Range: 1110 - 2000

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Performance Summary For RTU-5,6 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
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Electrical Data

Voltage Range:.....	414 - 506
Compressor #1 RLA:.....	6
Compressor #1 LRA:.....	49
Compressor #2 RLA:.....	6
Compressor #2 LRA:.....	49
Indoor Fan Motor Type:.....	MED
Indoor Fan Motor FLA (Total):.....	3
Combustion Fan Motor FLA (ea):.....	0.25
Power Supply MCA:.....	21
Power Supply MOCP (Fuse or HACR):.....	25
Disconnect Size FLA:.....	22
Disconnect Size LRA:.....	108
Electrical Convenience Outlet FLA (based on unit line voltage):.....	2.2
Outdoor Fan [Qty / FLA (ea)]:.....	2 / 0.8

NOTE: Convenience outlet must be field connected to the line/load side of the unit disconnect per local code.

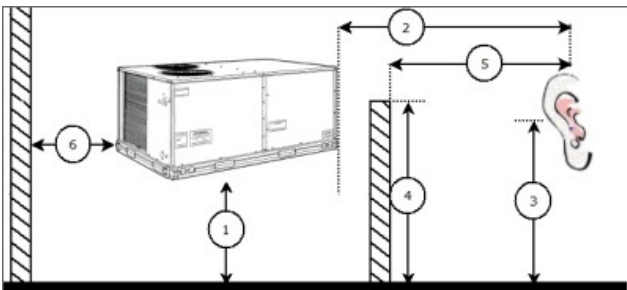
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	90.2	85.0	85.6
125 Hz	86.5	80.7	84.7
250 Hz	79.4	73.5	80.5
500 Hz	76.2	68.8	76.0
1000 Hz	77.4	69.0	72.4
2000 Hz	74.0	63.3	68.0
4000 Hz	69.7	55.7	62.8
8000 Hz	60.7	49.2	59.3
A-Weighted	81.7	73.4	79.0

Advanced Acoustics



Advanced Acoustics Parameters

1. Unit height above ground:.....	30.0 ft
2. Horizontal distance from unit to receiver:.....	50.0 ft
3. Receiver height above ground:.....	5.7 ft
4. Height of obstruction:.....	0.0 ft
5. Horizontal distance from obstruction to receiver:.....	0.0 ft
6. Horizontal distance from unit to obstruction:.....	0.0 ft

Detailed Acoustics Information

Performance Summary For RTU-5,6 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

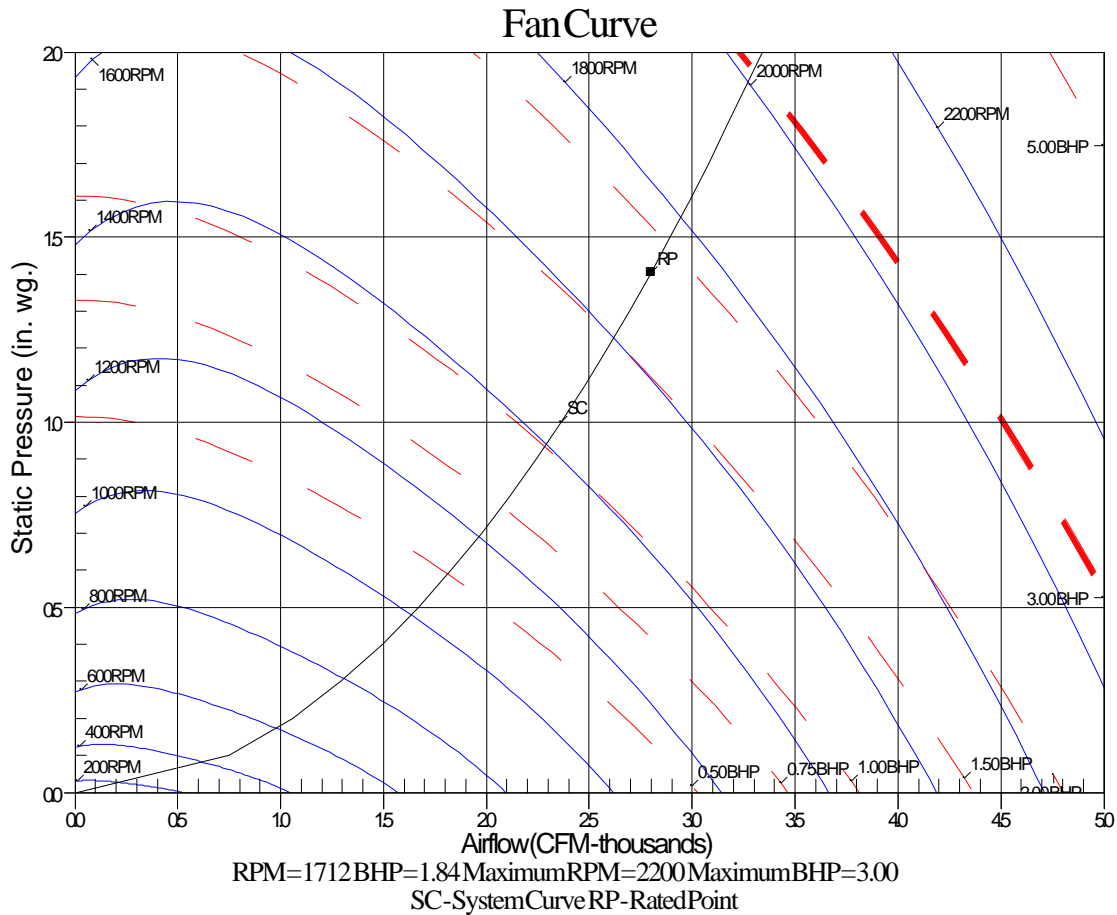
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Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3	89.2 Lw
B	59.4	68.6	71.9	72.8	72.4	69.2	63.8	58.2	78.5 LwA
C	53.2	52.3	48.1	43.6	40.0	35.6	30.4	26.9	56.8 Lp
D	27.0	36.2	39.5	40.4	40.0	36.8	31.4	25.8	46.1 LpA

Legend

- A Sound Power Levels at Unit's Acoustic Center, Lw
- B A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA
- C Sound Pressure Levels at Specific Distance from Unit, Lp
- D A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.



Unit Feature Sheet for RTU-5,6 Humidimizer

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM



PURON ADVANCE™ PACKAGED ROOFTOP GAS HEATING/ELECTRIC COOLING UNITS WITH ECOBLUE™ TECHNOLOGY - 7.5, 8.5, 10, 12.5, 15 TONS

48 FE units are single packaged electric cooling, gas heating rooftops. All units are pre-wired and pre-charged with Carrier's new, low global warming potential Puron Advance™ (R-454B) refrigerant. Puron Advance represents a 75% reduction in refrigerant GWP over legacy Puron™ (R-410A) models. All units are factory tested in both heating and cooling modes and used to stage cooling capacity control.



PERFORMANCE FEATURES

- " Puron Advance (R-454B) refrigerant
- " Two-stage cooling capacity control on all models
- " IEEERS up to 15.0
- " New-A2 Leak detection and dissipation system factory installed standard
- " Leak system ensures unit and occupants safety during operation and includes an alarm relay for optional use
- " Onboard recallable leak detection history for easier troubleshooting and service
- " Direct Drive EcoBlue™ Technology Indoor fan system uses Vane Axial fan design and electronically commutated motor
- " New Unit Control Board with intuitive quick fan speed adjustment
- " ASHRAE 90.1 and IECC code compliant
- " Sound levels as low as 79 dB
- " Exclusive non-corrosive composite condensate pans in accordance with ASHRAE 62 Standard, sloping design; side or center drain
- " AFUE Gas efficiencies up to 82%
- " Induced draft combustion design
- " Redundant gas valve, with up to 2 stages of heating
- " Pre-painted exterior panels and primer-coated interior panel tested to 500 hours salt spray protection
- " TXV refrigerant metering system on all models
- " Exclusive IGC solid-state control for on-board diagnostics with LED error code designation, burner control logic and energy saving indoor fan motor delay

PERFORMANCE FEATURES (continued)

- " Standard cooling operating range up to 125 °F (52 °C), except 14 size models with 115 °F (46 °C) and down to 40 °F (-4 °C), except 14 size models with 0 °F (-18 °C) Low Ambient kit allows cooling operation down to 0 °F (-18 °C).
- " Rated in accordance with AHRI Standards 340/360
- " Designed in accordance with Underwriters Laboratories Standard UL 60335-1 and UL 60335-2-40
- " Listed by UL and CUL-Canada

MAINTENANCE FEATURES

- " Large access panels with easy grip handles
- " Innovative, easy starting, no-strips screw feature on unit access panels
- " Two-inch disposable return air filters
- " Tool-less filter access door
- " New Vane Axial evaporator-fan system has no fan belts, pulleys, blower shaft, and blower bearings with side out design.
- " Unit control board facilitates simple safety circuit troubleshooting and simplified control box arrangement.

INSTALLATION FEATURES

- " Field Convertible from vertical to horizontal airflow on all models. No special kit required on 08-14 models. Supply duct kit required for 16 size model only.
- " Provisions for thru-the-bottom power entry capability
- " Single point gas and electric connections
- " Full perimeter base rail with built-in rigging adapters and fork truck slots

STANDARD LIMITED PARTS WARRANTY

- " 10-year heat exchanger - Aluminum
- " 15-year heat exchanger - Stainless Steel
- " 5-year compressor parts
- " 3-year SystemVu™ controller
- " 1-year parts

AVAILABLE OPTIONS:

- " Patented Humid-MiZer™ adaptive dehumidification system. This option also includes Low Ambient controls
- " Through the base connections for gas and electric available as option
- " Stainless steel gas heat exchanger includes tubes, vestibule plate and collector box.
- " Disconnect and convenience outlet options
- " High static motor options
- " Smoke detector, supply and/or return air
- " Corrosion resistant options for evaporator and condenser coils
- " CO2 Sensor
- " Phase Monitor Protection
- " 4 MERV-13 Filters
- " 2-position damper
- " Hinged access panels
- " Integrated economizer system. Low and ULTRA Low Leak versions.
- " Condensate overflow switch
- " SystemVu Controls

Spec Sheet for RTU-5,6 Humidimizer

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM

RTU-7,8 Humidimizer

**Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report
Unit Feature Sheet
Spec Sheet**

Unit Report For RTU-7,8 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Unit Parameters

Unit Model: **48FEEN28B3A6-8F2A0**
 Unit Size: **28 (25 Tons)**
 Volts-Phase-Hertz: **460-3-60**
 Heating Type: **Gas**
 Refrigerant: **R-454B**
 Heat Control: **Medium Heat**
 Duct Cfg: **Vertical Supply / Vertical Return**
 DX Options: **Two Stage Cooling, Single Circuit with Humidi-MiZer**

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length: **11' 9.5"**
 Unit Width: **7' 2.375"**
 Unit Height: **3' 11.75"**
Total Operating Weight: 2689 lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size: **3/4**
 Condensate Drain Line Size: **3/4**
 Return Air Filter Type: **Throwaway**
 Return Air Filter Quantity: **9**
 Return Air Filter Size: **16 x 25 x 2**

Selection includes construction throwaway filter into the base fan curve

Unit Configuration

Medium Heat
 Two Stage Cooling, Single Circuit with Humidi-MiZer
 RA Smoke Detector
 High Static Option - Vertical Supply
 Al/Cu - Al/Cu
 Electro-mechanical Controls with POL224 (includes FDD)
 Standard Leak Enthalpy Economizer with Barometric Relief
 Powered Convenience Outlet
 Standard Packaging
 Humidi-MiZer™ Adaptive Dehumidification System

Warranty Information

1-Year parts(std.)
 5-Year compressor parts(std.)
 10-Year heat exchanger - Aluminized(std.)

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48FEEN28B3A6-8F2A0	Rooftop Unit	2
Field Installed Accessories		
CRCBDIOX005A00	CO2 Sensor	2
CRRFCURB047A00	14-inch Tall Roof Curb	2

SUBMITTAL REVIEW

Submission of information by the Contractor is taken as evidence that the Contractor has prepared the information for the specific application, and has verified that adequate and complete conditions for installation and subsequent operation and maintenance will exist.

Engineers review is for general conformance with the design concepts of the project, and for general compliance with the information given in the contract documents. The Contractor is responsible for access and clearance code compliance, work methods and conditions, coordination of trades, safety, all in satisfactory performance of work.

- NO EXCEPTIONS TAKEN
- REJECTED-RESUBMIT
- EXCEPTIONS AS NOTED
- REVISE AND RESUBMIT

CUNNING & ASSOCIATES MCE

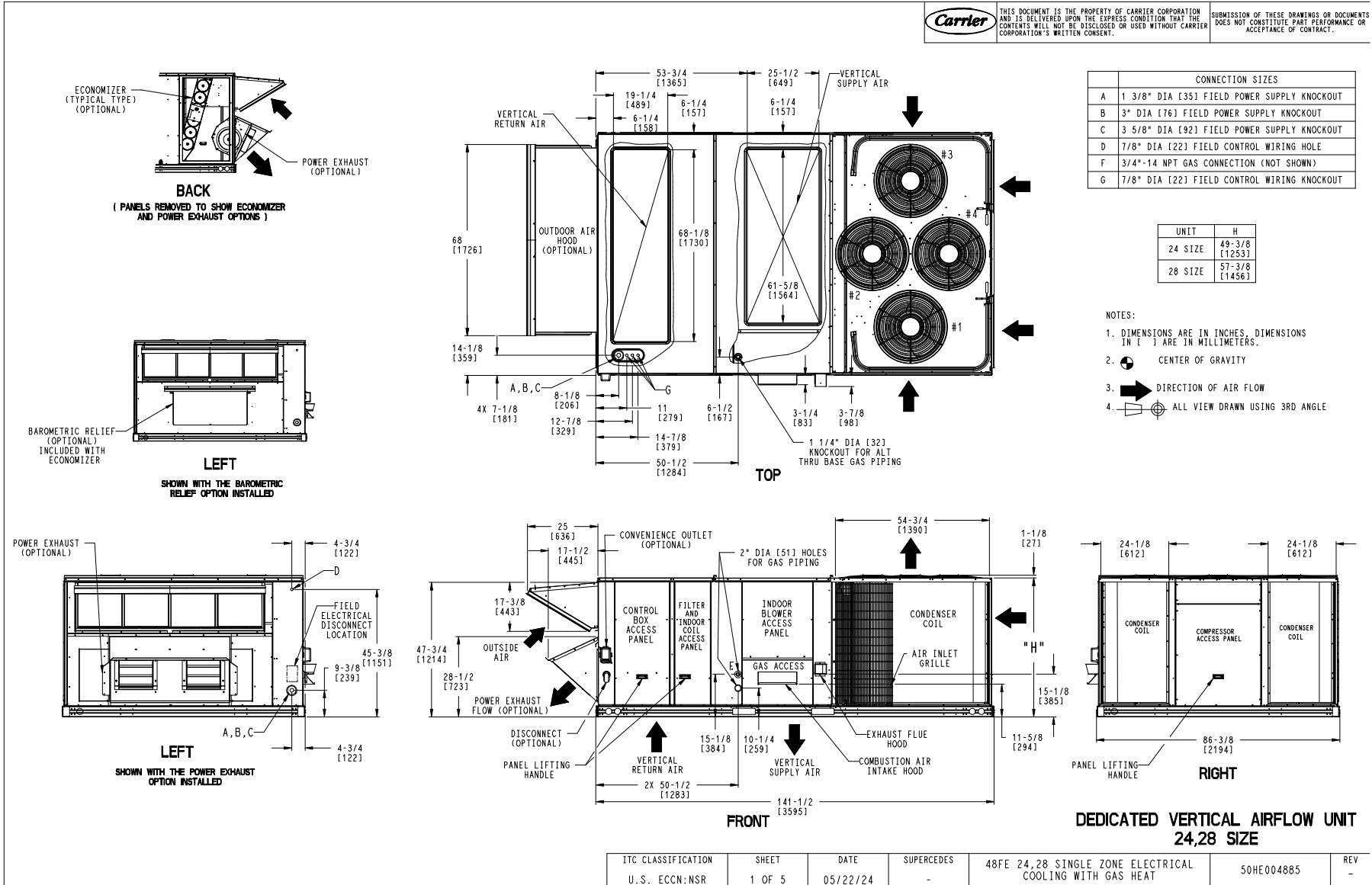
Date: Jan 27 2025 By: Norm Cunning

Certified Drawing for RTU-7,8 Humidifier

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

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Certified Drawing for RTU-7,8 Humidimizer

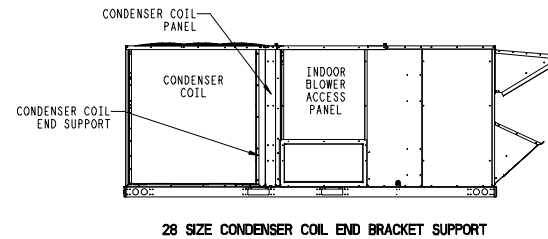
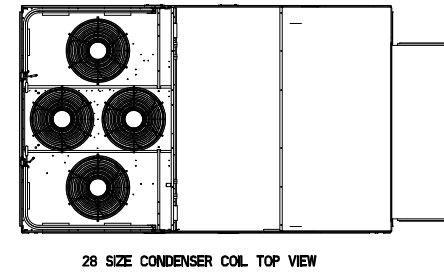
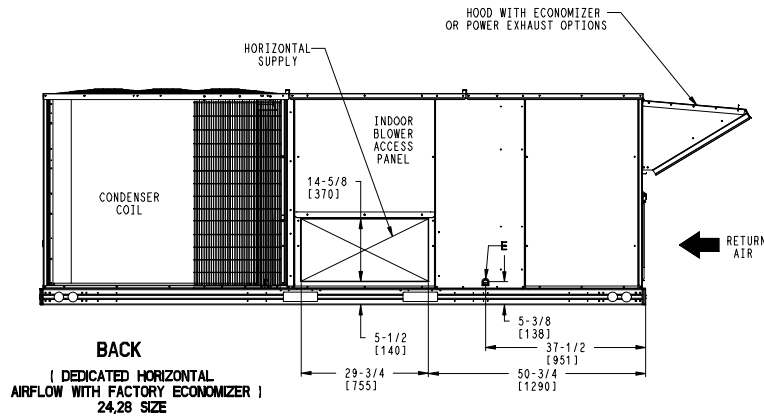
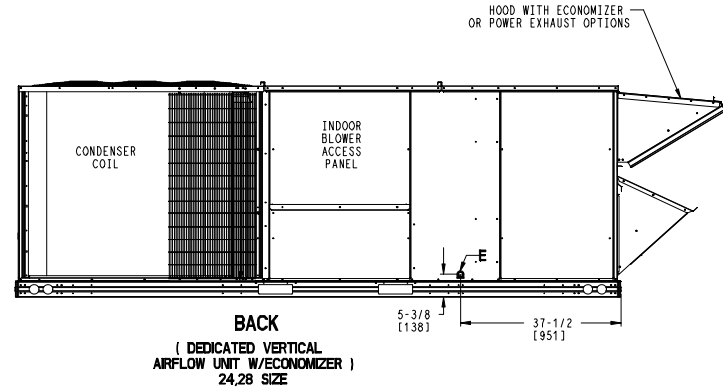
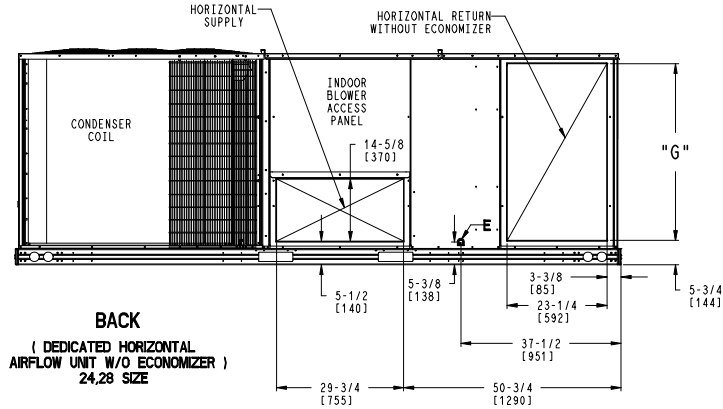
Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

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CONNECTION SIZES	
E	3/4"-14 NPT CONDENSATE DRAIN

UNIT	G
24 SIZE	41-3/8 [1049]
28 SIZE	49-1/4 [1251]

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U. S. ECCN: NSR	3 OF 5	05/22/24	-			-

Certified Drawing for RTU-7,8 Humidimizer

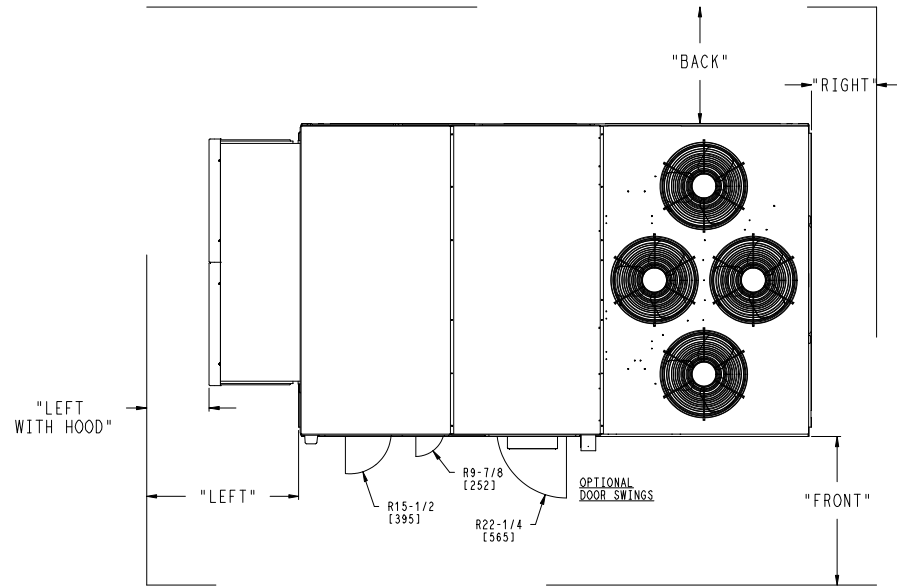
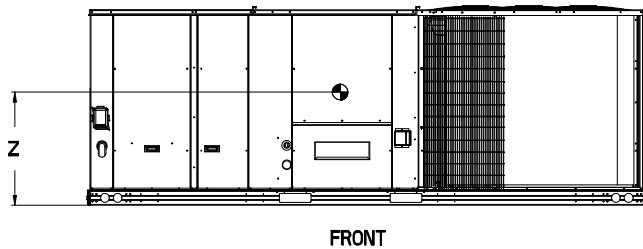
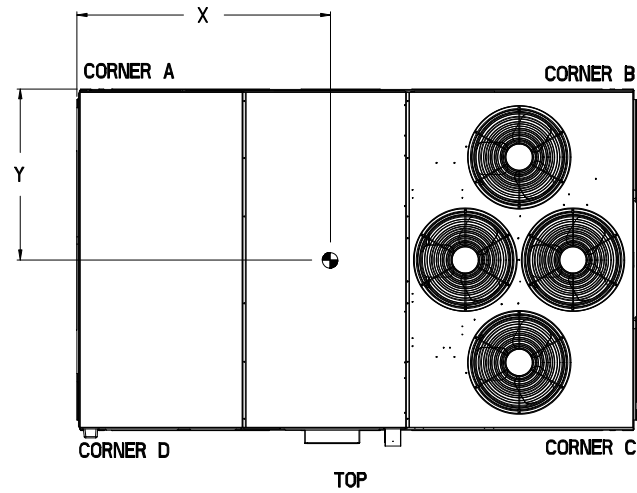
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UNIT	STD UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48FE 24	2000	907	429	195	505	229	576	261	489	222	76 1/2 [1943]	46 [1168]	16 1/2 [419]
48FE 28	2174	986	458	208	583	264	634	288	498	226	79 1/4 [2013]	45 [1143]	19 [483]

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* STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING. FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



- NOTES:
- CLEARANCE ABOVE THE UNIT TO BE 72"
 - FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

SURFACE	SERVICE WITH:		OPERATING CLEARANCE
	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK	42 [1067mm]	36 [914mm]	18 [457mm]
LEFT WITH HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

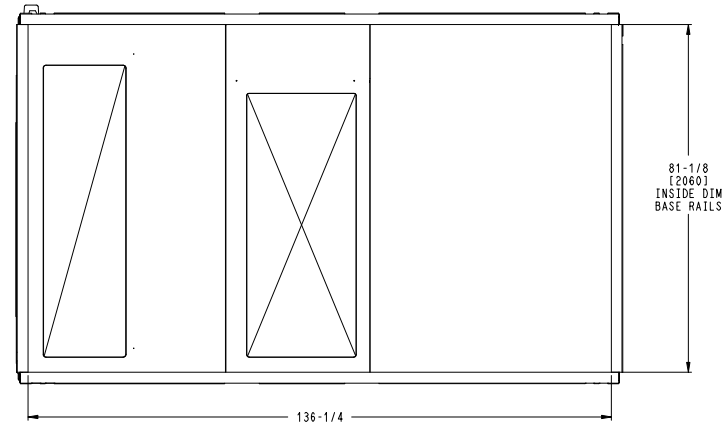
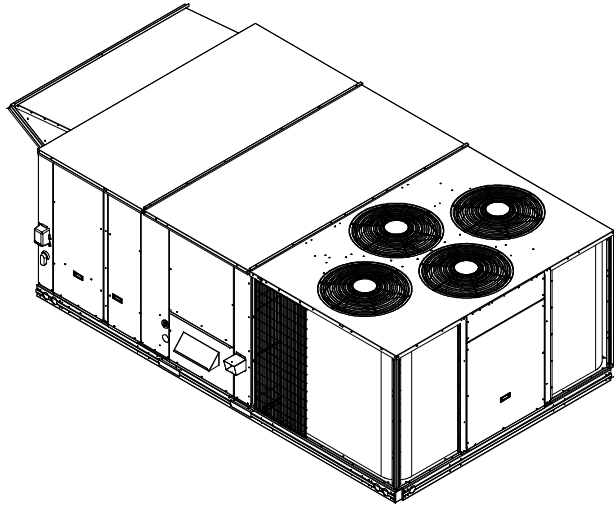
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Certified Drawing for RTU-7,8 Humidimizer

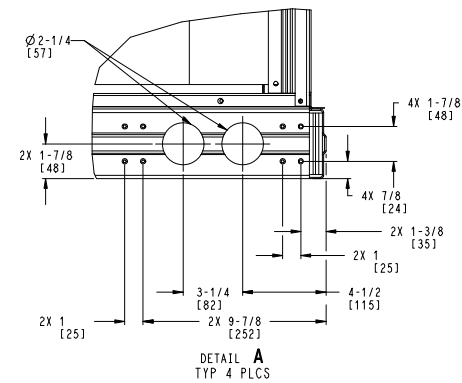
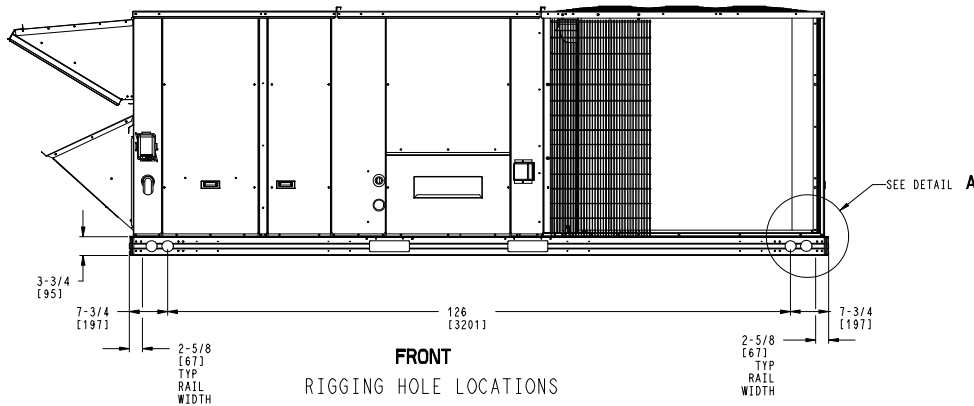
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BOTTOM
INSIDE BASERAIL DIMENSIONS

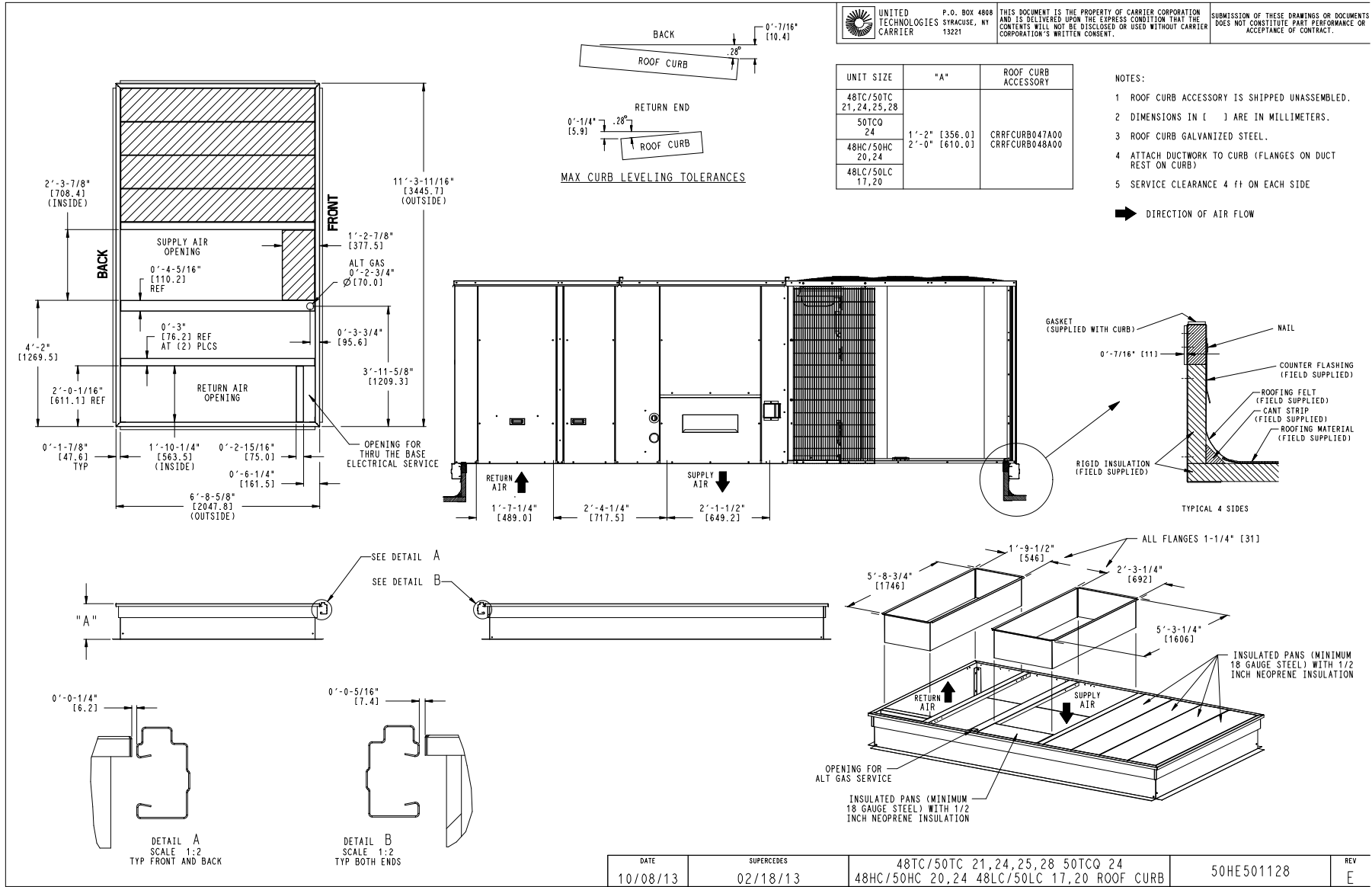


ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FE 24,28 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	50HE004885	REV
U. S. ECCN: NSR	5 OF 5	05/22/24	-			-

Certified Drawing for RTU-7,8 Humidimizer

Project: CCA Cincinnati Classical Academy
Prepared By: Jeff Harman

01/27/2025
09:34AM



Performance Summary For RTU-7,8 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Part Number: 48FEEN28B3A6-8F2A0

Refrigerant:..... **R-454B**
 ARI EER:..... **9.80**
 IEER (Max Cooling at Normal Cooling Design Mode):..... **14.0**

Base Unit Dimensions

Unit Length:..... **141.5** in
 Unit Width:..... **86.4** in
 Unit Height:..... **47.8** in

Operating Weight

Base Unit Weight:..... **2047** lb
 Medium Heat:..... **21** lb
 Two Stage Cooling, Single Circuit with Humidi-MiZer:..... **82** lb
 RA Smoke Detector:..... **7** lb
 Standard Leak Enthalpy Economizer with Barometric Relief:..... **245** lb
 Powered Convenience Outlet:..... **32** lb

Accessories

14-inch Tall Roof Curb:..... **255** lb
 Total Operating Weight:..... **2689** lb

Unit

Unit Voltage-Phase-Hertz:..... **460-3-60**
 Air Discharge:..... **Vertical**
 Fan Drive Type:..... **Vane Axial**
 Actual Airflow:..... **10000** CFM
 Site Altitude:..... **0** ft

Cooling Performance

Condenser Entering Air DB:..... **95.0** F
 Evaporator Entering Air DB:..... **80.0** F
 Evaporator Entering Air WB:..... **67.0** F
 Evaporator Entering Air Enthalpy:..... **31.44** BTU/lb
 Evaporator Leaving Air DB:..... **59.8** F
 Evaporator Leaving Air WB:..... **57.8** F
 Evaporator Leaving Air Enthalpy:..... **24.93** BTU/lb
 Gross Cooling Capacity:..... **293.00** MBH
 Gross Sensible Capacity:..... **218.30** MBH
 Compressor Power Input:..... **23.90** kW
 Coil Bypass Factor:..... **0.160**

Heating Performance

Heating Airflow:..... **10000** CFM
 Entering Air Temp:..... **70.0** F
 Leaving Air Temp:..... **93.2** F
 Gas Heating Input Capacity:..... **248.0 / 310.0** MBH
 Gas Heating Output Capacity:..... **200.0 / 251.0** MBH
 Temperature Rise:..... **23.2** F
 Thermal Efficiency (%):..... **81.0**

Supply Fan

External Static Pressure:..... **1.20** in wg
 Options / Accessories Static Pressure
 Humidi-MiZer Dehumidification System:..... **0.11** in wg
 Economizer:..... **0.10** in wg
 Application External Static (ESP + Unit Opts/Acc.):..... **1.42** in wg
 Fan RPM:..... **1903**
 Fan Power:..... **6.66** BHP

NOTE:..... **Selected IFM RPM Range: 1181 - 2200**

Performance Summary For RTU-7,8 Humidimizer

Project: CCA Cincinnati Classical Academy
 Prepared By: Jeff Harman

01/27/2025
 09:34AM

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Electrical Data

Voltage Range:.....	414 - 506
Compressor #1 RLA:.....	21.6
Compressor #1 LRA:.....	147
Compressor #2 RLA:.....	21.6
Compressor #2 LRA:.....	147
Indoor Fan Motor Type:.....	HIGH
Indoor Fan Motor FLA (Total):.....	5.6
Combustion Fan Motor FLA (ea):.....	0.3
Power Supply MCA:.....	66
Power Supply MOCP (Fuse or HACR):.....	80
Disconnect Size FLA:.....	69
Disconnect Size LRA:.....	320
Electrical Convenience Outlet FLA (based on unit line voltage):.....	2.2
Outdoor Fan [Qty / FLA (ea)]:.....	4 / 0.9

NOTE: Convenience outlet must be field connected to the line/load side of the unit disconnect per local code.

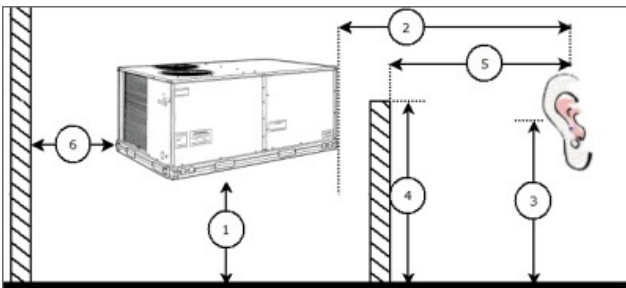
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	96.1	82.5	97.1
125 Hz	94.6	80.5	88.3
250 Hz	90.1	75.2	84.4
500 Hz	90.1	73.0	83.3
1000 Hz	85.9	72.3	80.7
2000 Hz	84.0	67.0	77.4
4000 Hz	79.6	57.8	73.4
8000 Hz	71.0	49.8	67.3
A-Weighted	91.9	76.2	85.9

Advanced Acoustics



Advanced Acoustics Parameters

1. Unit height above ground:.....	30.0 ft
2. Horizontal distance from unit to receiver:.....	50.0 ft
3. Receiver height above ground:.....	5.7 ft
4. Height of obstruction:.....	0.0 ft
5. Horizontal distance from obstruction to receiver:.....	0.0 ft
6. Horizontal distance from unit to obstruction:.....	0.0 ft

Performance Summary For RTU-7,8 Humidimizer

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 Prepared By: Jeff Harman

01/27/2025
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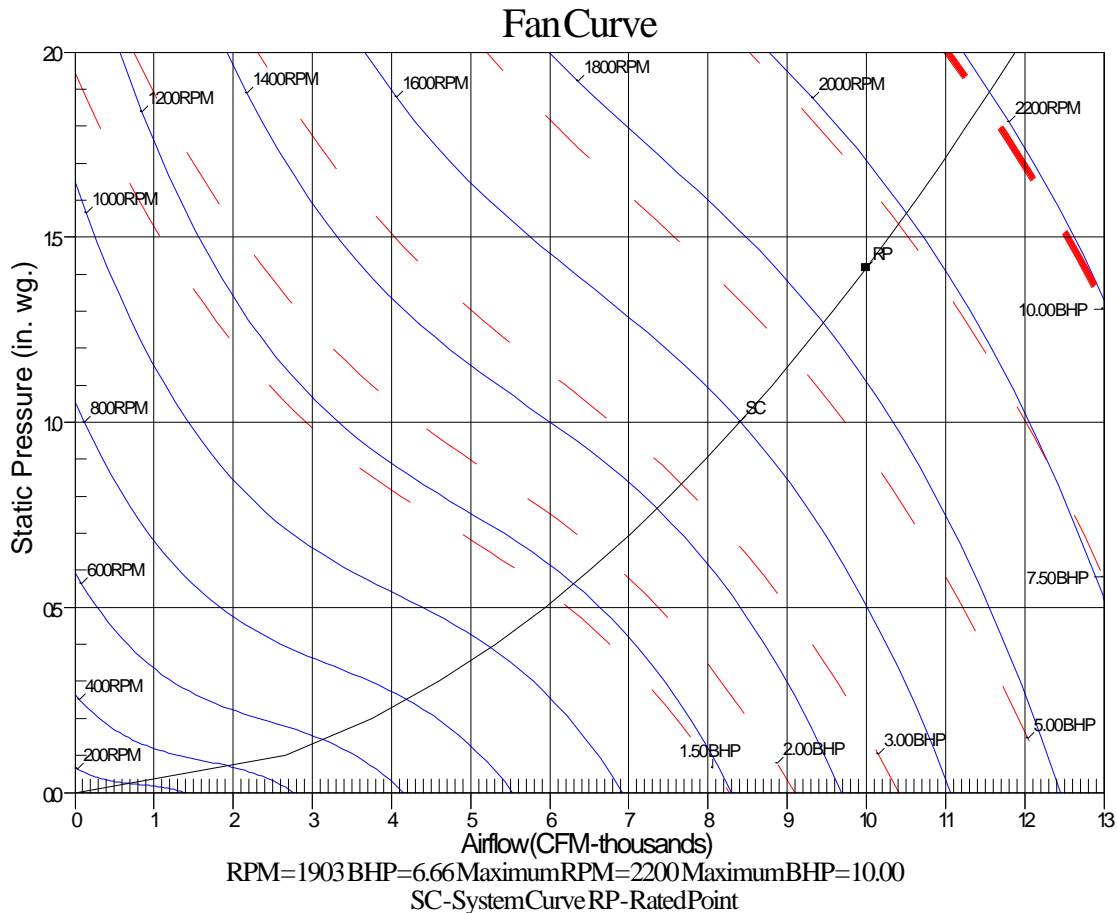
Detailed Acoustics Information

Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	97.1	88.3	84.4	83.3	80.7	77.4	73.4	67.3	98.1 Lw
B	70.9	72.2	75.8	80.1	80.7	78.6	74.4	66.2	85.9 LwA
C	64.7	55.9	52.0	50.9	48.3	45.0	41.0	34.9	65.7 Lp
D	38.5	39.8	43.4	47.7	48.3	46.2	42.0	33.8	53.5 LpA

Legend

- A Sound Power Levels at Unit's Acoustic Center, Lw
- B A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA
- C Sound Pressure Levels at Specific Distance from Unit, Lp
- D A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.



Unit Feature Sheet for RTU-7,8 Humidimizer

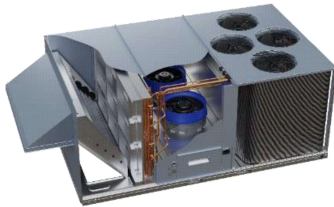
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PURON ADVANCE™ PACKAGED ROOFTOP GAS HEATING/ELECTRIC COOLING UNITS WITH ECOBLUE TECHNOLOGY – 17.5, 20, 25, 27.5 TONS

48FE units are single-packaged electric cooling, gas heating rooftops. All units are prewired and pre-charged with Carrier's new, low global warming potential Puron Advance™ (R-454B) refrigerant. Puron Advance represents a 75% reduction in refrigerant GWP over legacy Puron™ (R-410A) models. All units are factory tested in both heating and cooling modes and use two stage cooling capacity control



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to www.ahridirectory.org.



PERFORMANCE FEATURES

- Puron Advance (R-454B) refrigerant
- Two-stage cooling capacity control on all models
- IEERs up to 14.5
- New - A2L leak detection and dissipation system factory installed standard
- Leak system ensures unit and occupant safety during operation and includes an alarm relay for optional use
- Onboard recallable leak detection history for easier troubleshooting and service
- Direct Drive – EcoBlue™ Technology Indoor fan system uses Vane Axial fan design and electronically commutated motor
- New Unit Control Board with intuitive quick fan speed adjustment
- ASHRAE 90.1 and IECC code compliant
- Sound levels as low as 79 dB
- Exclusive non-corrosive composite condensate pans in accordance with ASHRAE 62 Standard, sloping design; side or center drain
- AFUE Gas efficiencies up to 81%
- Induced draft combustion design
- Redundant gas valve, with up to 2 stages of heating
- Pre-painted exterior panels and primer-coated interior panels tested to 500 hours salt spray protection
- TXV refrigerant metering system on all models
- Exclusive IGC solid-state control for on-board diagnostics with LED error code designation, burner control logic and energy saving indoor fan motor delay

PERFORMANCE FEATURES (continued)

- Standard cooling operating range up to 115°F (46°C), and down to 40°F (4°C). Low Ambient kits allows cooling operation down to -20°F (-29°C).
- Rated in accordance with AHRI Standards 340/360
- Designed in accordance with Underwriters' Laboratories Standard UL 60335-1 and UL 60335-2-40
- Listed by UL and CUL-Canada

MAINTENANCE FEATURES

- Large access panels with easy grip handles
- Innovative, easy starting, no-strip screw feature on unit access panels
- Two-inch disposable return air filters
- Tool-less filter access door
- New Vane Axial evaporator-fan system has no fan belts, pulleys, blower shaft, and blower bearings with side out design.
- Unit control board facilitates simple safety circuit troubleshooting and simplified control box arrangement.

INSTALLATION FEATURES

- Dedicated vertical and horizontal airflow models available ordered as factory option. No special kits required
- Provisions for thru-the-bottom power entry capability
- Single point gas and electric connections
- Full perimeter base rail with built-in rigging adapters and fork truck slots

STANDARD LIMITED PARTS WARRANTY

- 10-year heat exchanger - Aluminized
- 15-year heat exchanger - Stainless Steel
- 5-year compressor parts
- 3-year SystemVu™ controller
- 1-year parts

AVAILABLE OPTIONS:

- Patented Humidi-MiZer® adaptive dehumidification system. This option also includes Low Ambient controls
- Field installed low ambient head pressure controller available
- Through the base connections for gas and electric available as option
- Stainless steel gas heat exchanger includes tubes, vestibule plate and collector box.
- Disconnect and convenience outlet options
- High static motor options
- Smoke detector, supply and/or return air
- Corrosion resistant options for evaporator and condenser coils
- CO2 Sensor
- Phase Monitor Protection
- 4" MERV-13 Filters
- 2-position damper
- Hinged access panels
- Integrated economizer system. Low and ULTRA Low Leak versions.
- Condensate overflow switch
- SystemVu Controls

Spec Sheet for RTU-7,8 Humidimizer

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