

# Submittal Cover Sheet

## River valley Elementary School Renovation

2220 Veterans Pkwy  
Jeffersonville IN

Architect: N/A

Engineer: N/A

HVAC: Perfection Group, Inc.

Item: 25 Ton RTU

Spec. No. \_\_\_\_\_



Approved as Submitted  
 Approved as Noted  
 Revise and Resubmit  
Job # 23104  
Date: \_\_\_\_\_

Signed: \_\_\_\_\_  
Jeremy Carrier

## **25 Ton VAV**

Project: River Valley School  
Prepared By: Jeff Gries

06/29/2023  
03:06PM

## **25 Ton VAV**

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



Turn to the experts

## Light Commercial Variable Air Volume (VAV) Packaged Rooftops / 6 to 25 Tons



Performance, Innovation, Reliability.

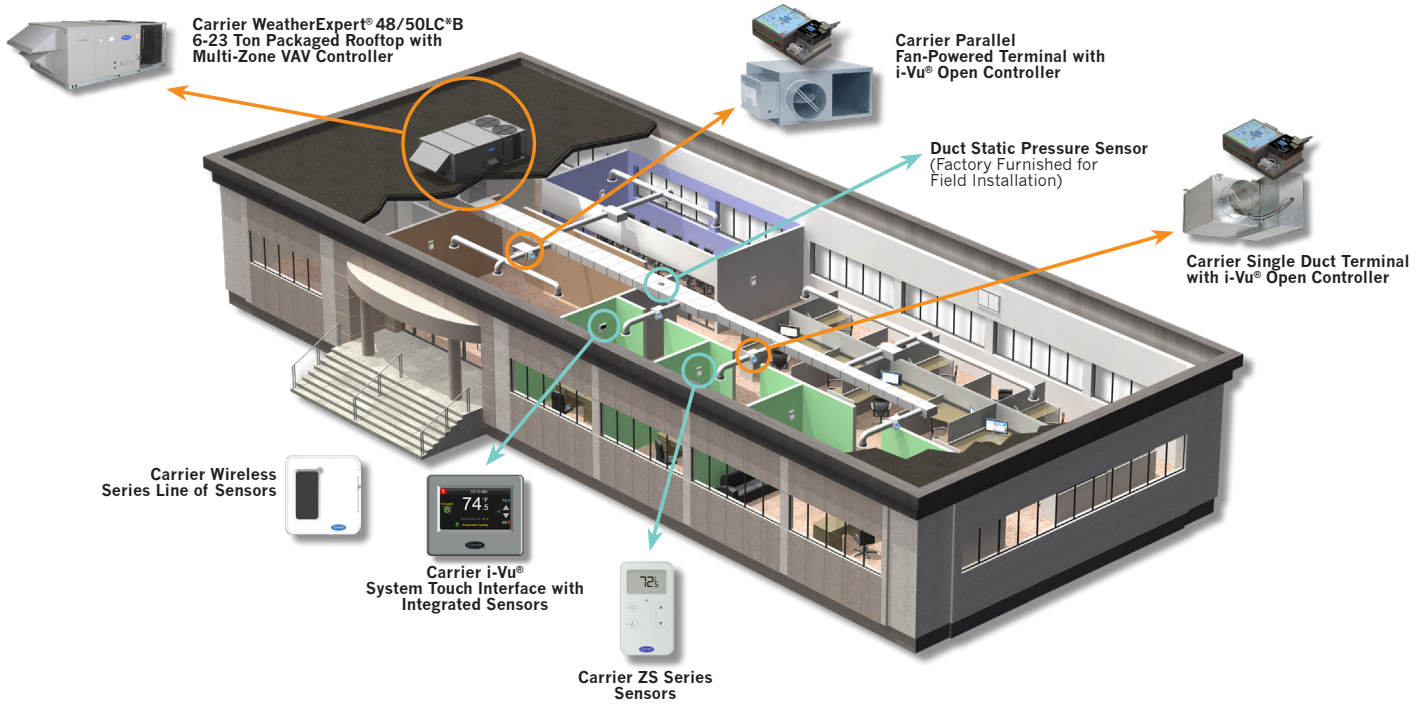
**Carrier® is once again leading innovative and efficient comfort solutions with the WeatherExpert® Multi-Zone Variable Air Volume (VAV) Packaged Rooftop from 6 to 25 tons.**

### Features

- Cooling Efficiencies up to 21 IEER
- Cooling-Only Models with Gas or Electric Heat
- Supply Air Temperature Control with Optional Reset
- Full-Face Evaporator Coil with Dual TXV Metering Device Design
- Integrated Mechanical Cooling and Economizer Operation
- Morning Warm-Up and Occupied Heat Capabilities
- Variable Speed Fan to Maintain Supply Duct Static Pressure
- Supply Air Tempering Capability
- VAV-RTU Open Controller Provides All Unit Operation and Permits the Use of Carrier Open VAV on All System Terminals for Optimum Integrated System Solution
- Factory Furnished: Supply Duct Static Pressure Sensor, Supply and Return Air Temperature Sensors and Freeze Protection



# One System. Optimum Integrated Comfort Control.



## Gas Heat/Electric Cooling Models

Model	Ton Size	CFM Range (Min-Max)	Cooling Efficiency AHRI Rated – IEER		Gas Heating Data (Output Capacity – BTUH)			Dimensions (LxWxH) in.
			208V	230/460/575V	Low	Medium	High	
48LC*B07	6	650 - 3000	20.5	20.3	59,000	103,000	148,000	88x60x49
48LC*B08	7.5	750 - 3750	19.8	19.4	120,000	146,000	195,000	116x63x57
48LC*B09	8.5	850 - 4250	20.8	19.8	120,000	146,000	195,000	116x63x57
48LC*B12	10	1000 - 5000	20.3	20.6	146,000	195,000	252,000	116x63x57
48LC*B14	12.5	1000 - 6250	19.1		143,000	178,000	251,000	128x86x49
48LC*B17	15	1250 - 7500	18.4		178,000	251,000	324,000	142x86x57
48LC*B20	17.5	1400 - 8750	17.7	17.5	178,000	251,000	324,000	142x86x57
48LC*B24	20	1550 - 10000	18.0		178,000	251,000	324,000	158x86x57
48LC*B26	25	2100 - 11250	17.8		178,000	251,000	324,000	158x86x57

AHRI - Air-Conditioning, Heating, & Refrigeration Institute

## Electric Heat/Electric Cooling Models

Model	Ton Size	CFM Range (Min-Max)	Cooling Efficiency AHRI Rated – IEER		Electric Heat Nominal (kW)	Dimensions (LxWxH) in.
			208V	230/460/575V		
50LC*B07	6	650 - 3000	20.7	20.5	6, 15, 23	88x60x49
50LC*B08	7.5	750 - 3750	19.9	19.4	10, 15, 30	116x63x57
50LC*B09	8.5	850 - 4250	21.0	19.9	10, 15, 30	116x63x57
50LC*B12	10	1000 - 5000	20.5	20.8	10, 15, 30, 45	116x63x57
50LC*B14	12.5	1000 - 6250	19.3		15, 25, 50	128x86x49
50LC*B17	15	1250 - 7500	18.5		25, 50, 75	142x86x57
50LC*B20	17.5	1400 - 8750	17.9	17.7	25, 50, 75	142x86x57
50LC*B24	20	1550 - 10000	18.2		25, 50, 75	158x86x57
50LC*B26	25	2100 - 11250	18.3		25, 50, 75	158x86x57

AHRI - Air-Conditioning, Heating, & Refrigeration Institute



Turn to the experts

[carrier.com/commercial](http://carrier.com/commercial)

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## Unit Report For 25 Ton VAV

Project: River Valley School  
 Prepared By: Jeff Gries

06/29/2023  
 03:06PM

**Unit Parameters**

Unit Model:..... **48LCEB26A3A6-1S0C0**  
 Unit Size:.....**26 (23 Tons)**  
 Volts-Phase-Hertz:.....**460-3-60**  
 Heating Type:.....**Gas**  
 Heat Control:..... **Medium Gas Heat**  
 Duct Cfg:..... **Vertical Supply / Vertical Return**  
 DX Options: **Multi-Stage cooling capacity control for VAV operation**.....

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

Unit Length:..... **13' 1.75"**  
 Unit Width:..... **7' 2.375"**  
 Unit Height: ..... **4' 10.5"**  
**Total Operating Weight:..... 2993 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.

**Unit Configuration**

High Static Option - Vertical Models with VFD controller  
 Al/Cu - Al/Cu  
 VAV-RTU Open Controller  
 Enth. Ultra Low Leak EconoMi\$er w/ Power Exhaust (cent) - Vertical Air Only  
 Non-Fused Disconnect  
 Standard Packaging

**Warranty Information**

1-Year parts  
 5-Year compressor parts  
 10-Year heat exchanger - Aluminized

No optional warranties were selected.

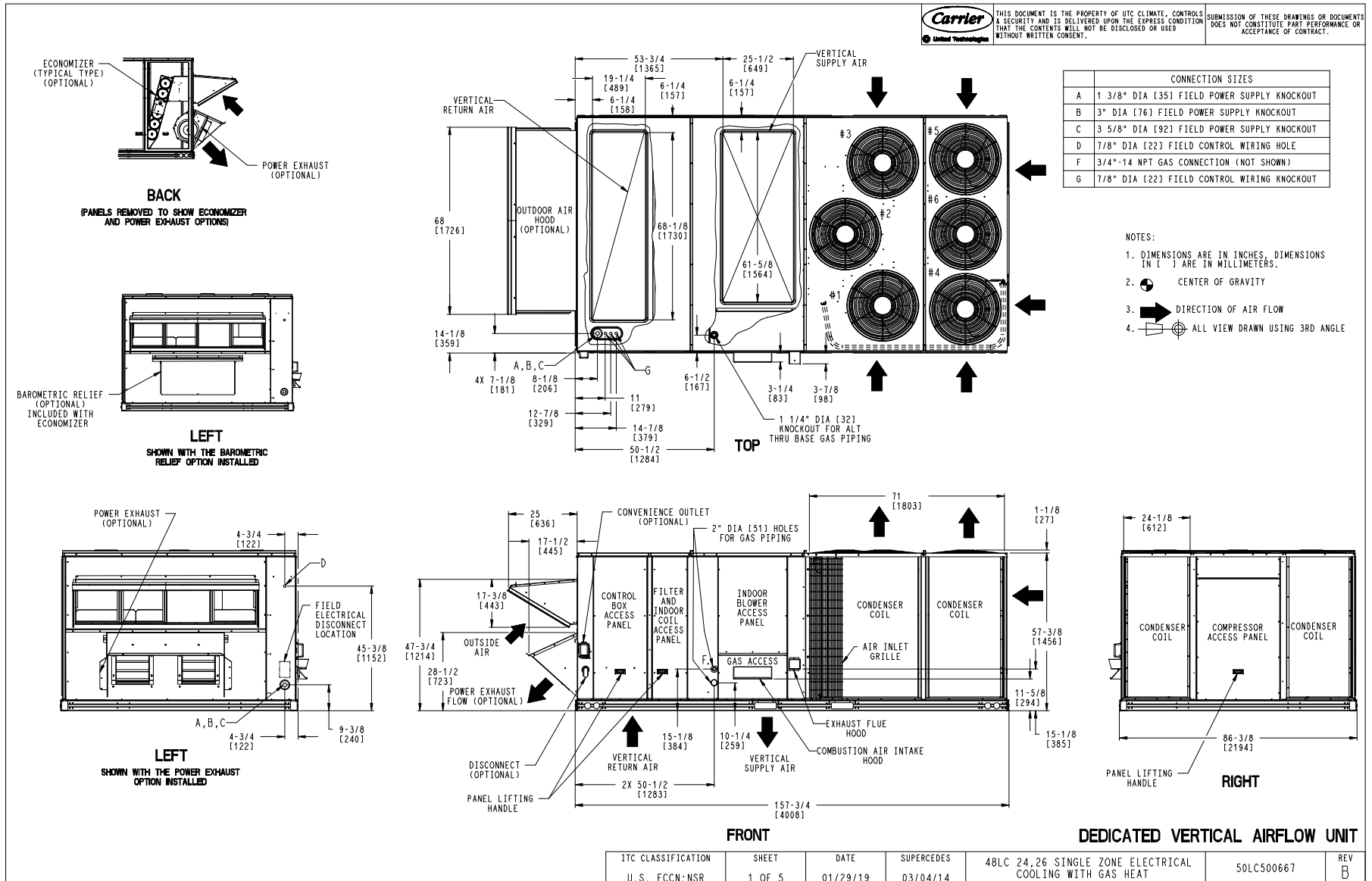
**Ordering Information**

Part Number	Description	Quantity
48LCEB26A3A6-1S0C0	Rooftop Unit	1
	Base Unit	
	High Static Option - Vertical Models with VFD controller	
	Non-Fused Disconnect	
	VAV-RTU Open Bacnet Control	
	Ultra Low Leak Enthalpy Economizer	
	Centrifugal Power Exhaust	

# Certified Drawing for 25 Ton VAV

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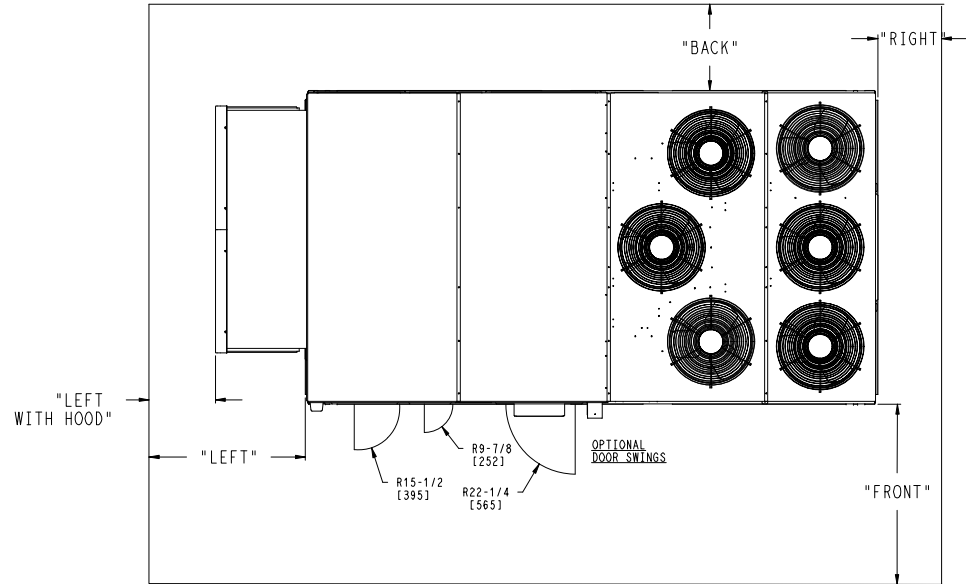
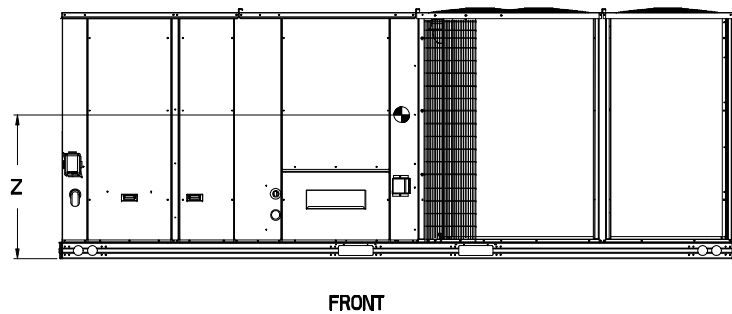
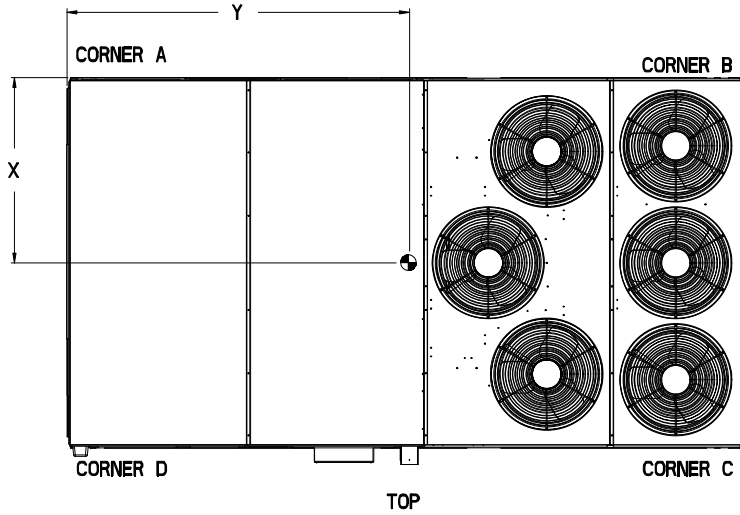
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UNIT	STD UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C. G.			
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z	
48LC24	2347	1067.0	485.0	220.4	568.8	258.5	715.5	325.2	610.1	277.3	48	1/32 [1219.20]	85 1/32 [2159.79]	19 [482.6]
48LC26	2492	1132.6	563.2	256.0	627.7	285.3	702.4	319.3	630.3	286.5	45 1/2 [1155.70]	83 1/32 [2108.99]	19 [482.6]	

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

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**NOTES:**

1. CLEARANCE ABOVE THE UNIT TO BE 72"
2. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

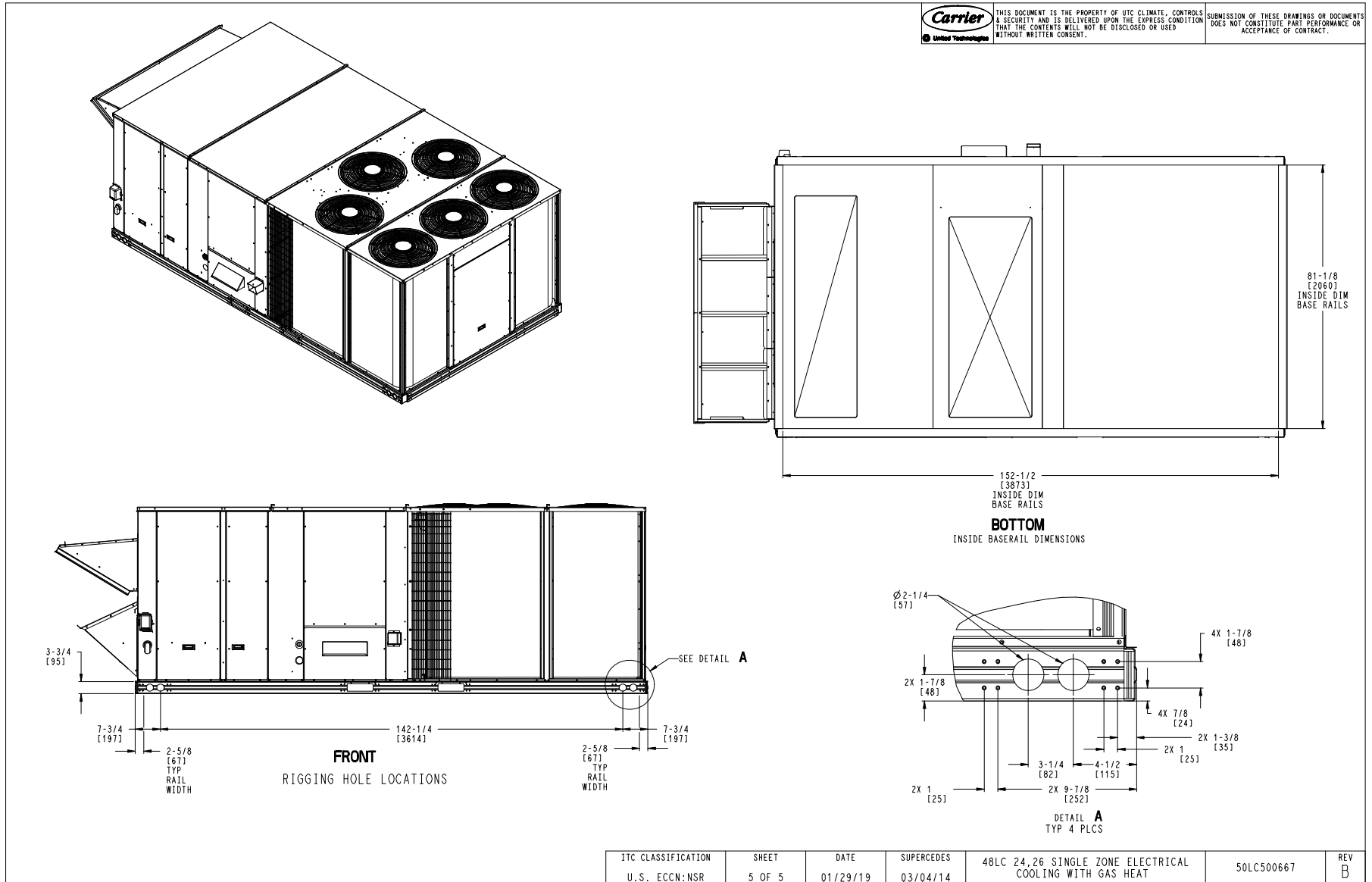
SURFACE	CLEARANCE		
	SERVICE WITH: CONDUCTIVE BARRIER	SERVICE WITH: NONCONDUCTIVE BARRIER	OPERATING CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK	42 [1067mm]	36 [914mm]	18 [457mm]
LEFT WITH HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]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

ITC CLASSIFICATION U.S. ECCN:NSR	SHEET 4 OF 5	DATE 01/29/19	SUPERCEDES 03/04/14	48LC 24,26 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	50LC500667	REV B
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# Certified Drawing for 25 Ton VAV

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## Performance Summary For 25 Ton VAV

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### Part Number: 48LCEB26A3A6-1S0C0

ARI EER: ..... 11.10  
 IEER: ..... 17.8

#### Base Unit Dimensions

Unit Length: ..... 157.8 in  
 Unit Width: ..... 86.4 in  
 Unit Height: ..... 58.5 in

#### Operating Weight

Base Unit Weight: ..... 2492 lb  
 Medium Gas Heat: ..... 90 lb  
 Three stage cooling capacity control with multi-zone VAV operation: ..... 3 lb  
 High Static Option - Vertical Models with VFD controller: ..... 20 lb  
 VAV-RTU Open Controller: ..... 2 lb  
 Enth. Ultra Low Leak EconoMi\$er w/ PE (cent) - Vertical Air Only: ..... 371 lb  
 Non-Fused Disconnect: ..... 15 lb  
  
 Total Operating Weight: ..... 2993 lb

#### Unit

Unit Voltage-Phase-Hertz: ..... 460-3-60  
 Air Discharge: ..... Vertical  
 Fan Drive Type: ..... Belt  
 Actual Airflow: ..... 9500 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  
 Entering Air Enthalpy: ..... 31.44 BTU/lb  
 Evaporator Leaving Air DB: ..... 59.5 F  
 Evaporator Leaving Air WB: ..... 57.6 F  
 Evaporator Leaving Air Enthalpy: ..... 24.78 BTU/lb  
 Gross Cooling Capacity: ..... 284.52 MBH  
 Gross Sensible Capacity: ..... 210.47 MBH  
 Compressor Power Input: ..... 20.81 kW  
 Coil Bypass Factor: ..... 0.148

#### Heating Performance

Heating Airflow: ..... 9500 CFM  
 Entering Air Temp: ..... 70.0 F  
 Leaving Air Temp: ..... 94.5 F  
 Gas Heating Input Capacity: ..... 248.0 / 310.0 MBH  
 Gas Heating Output Capacity: ..... 200.0 / 251.0 MBH  
 Temperature Rise: ..... 24.5 F  
 Thermal Efficiency (%): ..... 81.0

#### Supply Fan

External Static Pressure: ..... 1.75 in wg  
 Options / Accessories Static Pressure  
     Economizer: ..... 0.10 in wg  
 Application External Static (ESP + Unit Opts/Acc.): ..... 1.85 in wg  
 Fan RPM: ..... 1286  
 Fan Power: ..... 10.79 BHP  
 NOTE: ..... Selected IFM RPM Range: 1049 - 1291

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

# Performance Summary For 25 Ton VAV

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### Power Exhaust

Return Duct Static: ..... **0.40** in wg  
Max. Air to Exhaust: ..... **4590** CFM

### Electrical Data

Voltage Range: ..... **414 - 506**  
Compressor #1 RLA: ..... **16.7**  
Compressor #1 LRA: ..... **114**  
Compressor #2 RLA: ..... **23.1**  
Compressor #2 LRA: ..... **150**  
Indoor Fan Motor Type: ..... **HIGH**  
**Indoor Fan Motor FLA (Total): ..... 16.9**  
Combustion Fan Motor FLA (ea): ..... **0.3**  
Power Supply MCA: ..... **78.3**  
Power Supply MOCP (Fuse or HACR): ..... **100**  
Disconnect Size FLA: ..... **83**  
Disconnect Size LRA: ..... **391**  
Electrical Convenience Outlet: ..... **None**  
Power Exhaust [Motor Qty / FLA(ea motor)]: ..... **2 / 3.1**  
Outdoor Fan [Qty / FLA (ea)]: ..... **6 / 1.6**

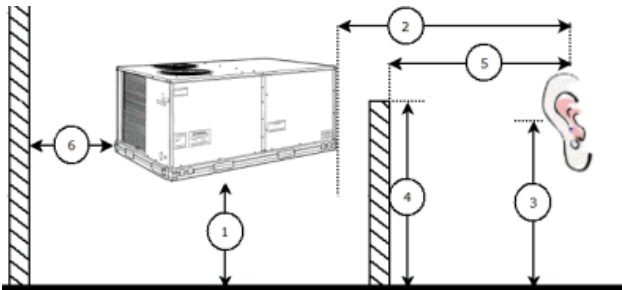
**Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage**

### Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	99.5	101.7	97.1
125 Hz	96.0	84.9	88.3
250 Hz	88.9	76.0	84.4
500 Hz	87.5	66.1	83.3
1000 Hz	82.8	61.6	80.7
2000 Hz	81.0	59.3	77.4
4000 Hz	79.9	52.2	73.4
8000 Hz	73.7	42.9	67.3
A-Weighted	89.9	77.3	86.0

### 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 25 Ton VAV

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## Detailed Acoustics Information

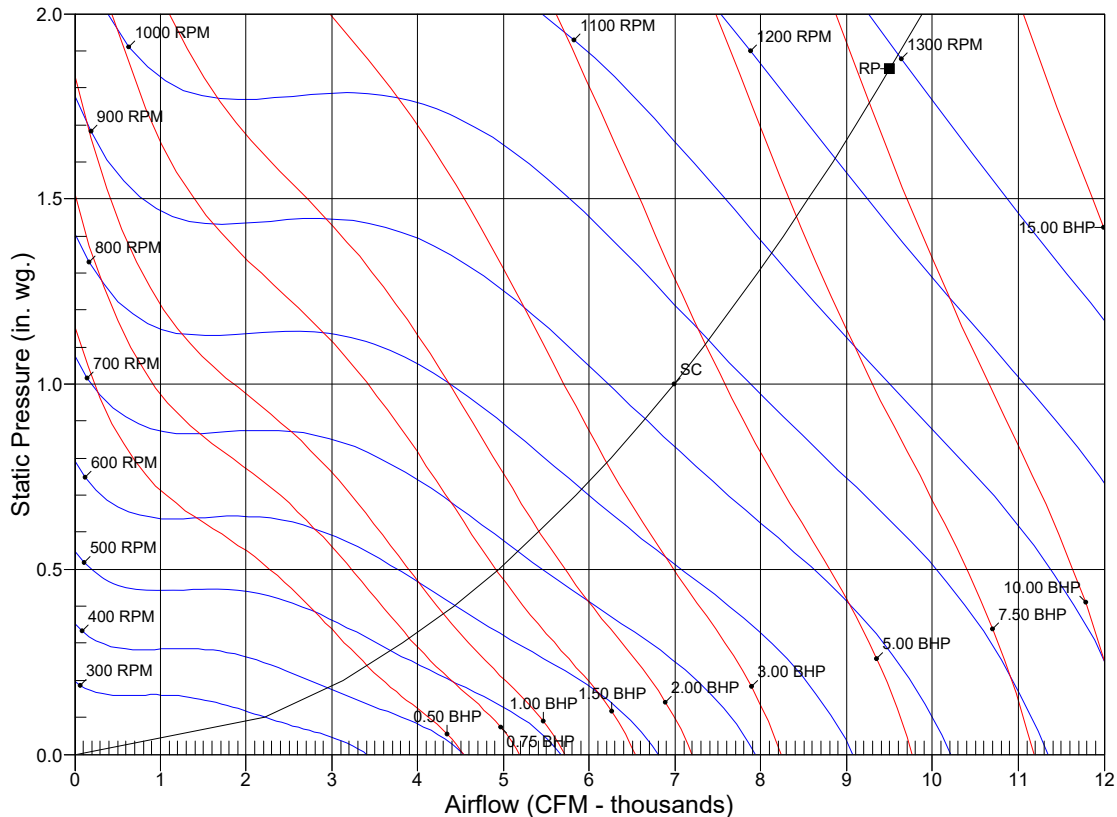
Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	97.1	88.3	84.4	83.3	80.7	77.4	73.4	67.3	98.1 Lw
B	70.9	72.2	75.8	80.1	80.7	78.6	74.4	66.2	85.9 LwA
C	64.7	55.9	52.0	50.9	48.3	45.0	41.0	34.9	65.7 Lp
D	38.5	39.8	43.4	47.7	48.3	46.2	42.0	33.8	53.5 LpA

### 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.

## Fan Curve



RPM = 1286 BHP = 10.79 Maximum RPM = 1300 Maximum BHP = 13.60  
 SC - System Curve RP - Rated Point

# Unit Feature Sheet for 25 Ton VAV

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## WeatherExpert™ - 48LC\*B

PACKAGED ROOFTOP GAS HEATING/ELECTRIC COOLING UNITS  
With Variable Air Volume (VAV) Operation 12.5, 15, 17.5, 20 and 23 TONS



Optional Economizer/PE Shown

### WeatherExpert® - 48LC\*B

48LC\*B Multi-Zone Variable Air Volume (VAV) units are ultra-high efficiency, single-packaged electric cooling, gas heating units. Units utilize three stages of cooling capacity control with required integrated economizer; full activate evaporator coil and matching indoor fan motor speed control. All models are supplied with belt drive indoor fan motors with Variable Frequency Drive (VFD) speed controller and Direct Drive - ECM outdoor fan motor. Models use Carrier's VAV-RTU Open controller specifically designed for the unit operation. All units are factory tested in both heating and cooling modes, and rated in accordance with AHRI Standards 340/360



Certified to ISO 9001

#### STANDARD FEATURES INCLUDE:

- Puron (R-410A) HFC refrigerant
- Three stage comfort cooling capacity control on all models
- VAV-RTU Open controller provides all unit operation and requires the use of Carrier i-Vu™ VAV zone controls on all system air terminal units for a total system comfort solution
- Single refrigerant circuit with fully activated evaporator coil
- Supply air temperature sensor controls the units required cooling supply air temperature
- Return air sensor for monitoring capabilities only
- IEER up to 19.1 with EER's up to 12.5
- ASHRAE 90.1 compliant, Energy Star qualified
- Meets or exceeds CEE tier II performance criteria
- Belt drive indoor fan and pulley system with Variable Frequency Drive (VFD) motor controller on all models
- High efficiency ECM outdoor fan motor
- Sound levels as low as 84 dB
- Exclusive non-corrosive composite condensate pan in accordance with ASHRAE 62 Standard, sloping design
- 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 device controlled
- Fully insulated cabinet with foil faced insulation in the air stream
- Exclusive IGC solid-state control for on-board diagnostics with LED error code designation
- Standard cooling operating range up to 125°F (52°C), and down to 45°F (7°C). Lower operation with integrated economizer.
- Rated in accordance with AHRI Standard 340/360
- Designed in accordance with Underwriters' Laboratories Standard 1995 and ANSI Z21.47. Listed by ETL
- Morning warm-up and occupied heating capabilities

#### MAINTENANCE FEATURES

- Access panels with easy grip handles
- Innovative, easy starting, no-strip screw feature on access panels
- Two-inch disposable return air filters on slide out track. Four inch track available as field installed accessory.
- Terminal board facilitating 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 as standard
- Single point gas and electric connections
- Full perimeter base rail with built-in rigging and fork truck slots
- Duct static pressure sensor to control fan motor/VFD and maintain duct static pressure. Provided for field installation.

#### RELIABILITY FEATURES

- Permanently lubricated evaporator-fan motor
- Totally enclosed condenser motors with permanently lubricated bearings

#### STANDARD LIMITED PARTS WARRANTY

- 10-year heat exchanger parts - Aluminized
- 15-year heat exchanger parts - Stainless Steel
- 5-year compressor parts
- 1-year parts

#### OPTIONS/ACCY INCLUDE BUT ARE NOT LIMITED TO:

- Stainless steel gas heat exchanger includes tubes, vestibule plate and collector box.
- Powered or non-powered convenience outlet
- Multi High static motor options
- Smoke detector, supply and/or return air