

Certificate of Product Ratings

AHRI Certified Reference Number : 209842226 Date : 08-15-2023 Model Status : Active

AHRI Type : HRCU-A-CB (Split System: Heat Pump with Remote Outdoor Unit-Air-Source)

Outdoor Unit Brand Name : TRANE

Outdoor Unit Model Number (Condenser or Single Package) : 4TWR4036N1

Indoor Unit Model Number (Evaporator and/or Air Handler) : TEM4B0C37M31+TDR

The manufacturer of this TRANE product is responsible for the rating of this system combination.

Rated as follows in accordance with the latest edition of AHRI 210/240 – 2023, Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment and subject to rating accuracy by AHRI-sponsored, independent, third party testing:

Cooling Capacity (A_{Full}) – Single or High Stage (95F), btuh : 34400

SEER2 : 14.30

EER2 (A_{Full}) – Single or High Stage (95F) : 11.70

Heating Capacity (H1_{Full}) – Single or High Stage (47F), btuh : 31800

HSPF2 (Region IV) : 7.50



†"Active" Model Status are those that an AHRI Certification Program Participant is currently producing AND selling or offering for sale; OR new models that are being marketed but are not yet being produced. "Production Stopped" Model Status are those that an AHRI Certification Program Participant is no longer producing BUT is still selling or offering for sale.

Ratings that are accompanied by WAS indicate an involuntary re-rate. The new published rating is shown along with the previous (i.e. WAS) rating.

The Department of Energy has published updated energy efficiency metrics for central air conditioners and heat pumps. This publication reflects both the 1987 metric (SEER) and the 2023 metric (SEER2). Efficiency requirements are published at 10 C.F.R. 430.32(c). Please refer to www.AHRInet.org for more information about updated energy efficiency metrics.

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CERTIFICATE VERIFICATION

The information for the model cited on this certificate can be verified at www.ahridirectory.org, click on "Verify Certificate" link and enter the AHRI Certified Reference Number and the date on which the certificate was issued, which is listed above, and the Certificate No., which is listed at bottom right.

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CERTIFICATE NO.:

133365843614442680



Manual S Compliance Report

Entire House

Air Ducks Heating & Air, Inc

Job:
Date: Apr 05, 2023
By:

2601 Nw 74th place, Gainesville, FL 32653 Phone: 352-215-4624 Email: Airducksac@gmail.com Web: airducksac.com License: CAC1817288

Project Information

For: DWC Constuction
Amelia landing lot 12

Cooling Equipment

Design Conditions

Outdoor design DB:	92.2°F	Sensible gain:	25567	Btuh	Entering coil DB:	75.8°F
Outdoor design WB:	75.8°F	Latent gain:	4102	Btuh	Entering coil WB:	62.9°F
Indoor design DB:	75.0°F	Total gain:	29668	Btuh		
Indoor RH:	50%	Estimated airflow:	1167	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Trane	Model:	4TWR4036N1+TEM4B0C37M31S*	
Actual airflow:	1167	cfm		
Sensible capacity:	27114	Btuh	106% of load	
Latent capacity:	5525	Btuh	135% of load	
Total capacity:	32639	Btuh	110% of load	SHR: 83%

Heating Equipment

Design Conditions

Outdoor design DB:	33.2°F	Heat loss:	33864	Btuh	Entering coil DB:	67.6°F
Indoor design DB:	68.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Trane	Model:	4TWR4036N1+TEM4B0C37M31S*	
Actual airflow:	1167	cfm		
Output capacity:	26251	Btuh	78% of load	Capacity balance: 33 °F
Supplemental heat required:	7613	Btuh		Economic balance: -99 °F

Backup equipment type:	Elec strip			
Manufacturer:		Model:		
Actual airflow:	1167	cfm		
Output capacity:	9.6	kW	96% of load	Temp. rise: 50 °F

Meets all requirements of ACCA Manual S.



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Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1
15 Mar 09

Header Information

Contractor:	Air Ducks Heating & Air, Inc	REQUIRED ATTACHMENTS	ATTACHED
Mechanical license:	CAC1817288	Manual J1 Form (and supporting worksheets):	Yes ☐ No ☐
Building plan #:		or MJ1AE Form* (and supporting worksheets):	Yes ☐ No ☐
Home address (Street or Lot#, Block, Subdivision):	Amelia landing lot 12, Entire House	OEM performance data (heating, cooling, blower):	Yes ☐ No ☐
		Manual D Friction Rate Worksheet:	Yes ☐ No ☐
		Duct distribution sketch:	Yes ☐ No ☐

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature: 33 °F
Indoor temperature: 68 °F
Total heat loss: 33864 Btuh

Summer Design Conditions

Outdoor temperature: 92 °F
Indoor temperature: 75 °F
Grains difference: 44 gr/lb @50% RH
Sensible heat gain: 26303 Btuh
Latent heat gain: 4220 Btuh
Total heat gain: 30523 Btuh

Building Construction Information

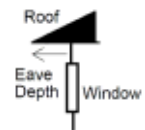
Building

Orientation: Front Door faces West
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms: 1
Conditioned floor area: 1843 ft²
Number of occupants: 5

Windows

Eave overhang depth: 0 ft
Internal shade: blinds
Blinds, drapes, etc.
Number of skylights: 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type: Split ASHP
Furnace, Heat pump, Boiler, etc.
Model: Trane
4TWR4036N1+TEM4B0C37M31S*
Heating output capacity: 26251 Btuh
Heat pumps - capacity at winter design outdoor conditions
Aux. heating output capacity: 32587 Btuh

Cooling Equipment Data

Equipment type: Split ASHP
Air Conditioner, Heat pump, etc.
Model: Trane
4TWR4036N1+TEM4B0C37M31S*
Total cooling capacity: 32639 Btuh
Sensible cooling capacity: 27114 Btuh
Latent cooling capacity: 5525 Btuh

Blower Data

Heating cfm: 1167
Cooling cfm: 1167
Static pressure: 0.50 in H₂O
Fan's rated external static pressure for design airflow

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow: 1167 cfm	Longest supply duct: 315 ft	Duct Materials Used
Equipment design ESP: 0.50 in H ₂ O	Longest return duct: 92 ft	Trunk duct: Fiberglass board, Round flex vinyl
Total device pressure losses: 0 in H ₂ O	Total effective length (TEL): 407 ft	Branch duct: Round flex vinyl
Available static pressure (ASP): 0.50 in H ₂ O	Friction rate: 0.123 in/100ft Friction Rate = ASP ÷ (TEL × 100)	

I declare the load calculation, equipment, equipment selection and duct design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's printed name: _____

Contractor's signature: _____ Date: _____

Reserved for County, Town Municipality or Authority having jurisdiction use.

*Home qualifies for MJ1AE Form based on Abridged Edition Checklist



Load Short Form

Entire House

Air Ducks Heating & Air, Inc

Job:
Date: Apr 05, 2023
By:

2601 Nw 74th place, Gainesville, FL 32653 Phone: 352-215-4624 Email: Airducksac@gmail.com Web: airducksac.com License: CAC1817288

Project Information

For: DWC Constuction
Amelia landing lot 12

Design Information

	Htg	Clg	Infiltration	Simplified
Outside db (°F)	33	92	Method	Average
Inside db (°F)	68	75	Construction quality	0
Design TD (°F)	35	17	Fireplaces	
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	29	44		

HEATING EQUIPMENT

Make Trane
Trade TRANE
Model 4TWR4036N1
AHRI ref 209842226
Efficiency 8.2 HSPF
Heating input
Heating output 34400 Btuh @ 47°F
Temperature rise 27 °F
Actual air flow 1167 cfm
Air flow factor 0.034 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat
Capacity balance point = 33 °F

Backup:

Input = 10 kW, Output = 32587 Btuh, 100 AFUE

COOLING EQUIPMENT

Make Trane
Trade TRANE
Cond 4TWR4036N1
Coil TEM4B0C37M31S*
AHRI ref 209842226
Efficiency 11.5 EER, 14.3 SEER
Sensible cooling 24500 Btuh
Latent cooling 10500 Btuh
Total cooling 35000 Btuh
Actual air flow 1167 cfm
Air flow factor 0.046 cfm/Btuh
Static pressure 0.50 in H2O
Load sensible heat ratio 0.86

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Master	389	7614	4638	262	212
WIC 1	56	927	446	32	20
WIC 2	48	67	111	2	5
Master bath	199	4181	2538	144	116
Living	375	9091	8985	313	410
Kitchen	216	1919	3472	66	158
Laundry	70	2183	1401	75	64
WIC 3	42	0	0	0	0
Pantry	42	0	0	0	0
Bed 2	144	2953	1324	102	60
Bath	54	1333	595	46	27
Bed 1	144	3598	2056	124	94
Hall	18	0	0	0	0

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



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Entire House	1797	33864	25567	1167	1167
Other equip loads		0	0		
Equip. @ 0.97 RSM			24851		
Latent cooling			4102		
TOTALS	1797	33864	28953	1167	1167

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



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Project Summary
Entire House
Air Ducks Heating & Air, Inc

Job:
Date: Apr 05, 2023
By:

2601 Nw 74th place, Gainesville, FL 32653 Phone: 352-215-4624 Email: Airducksac@gmail.com Web: airducksac.com License: CAC1817288

Project Information

For: DWC Constuction
Amelia landing lot 12

Notes:

Design Information

Weather: Gainesville Regional, FL, US

Winter Design Conditions

Outside db	33 °F
Inside db	68 °F
Design TD	35 °F

Summer Design Conditions

Outside db	92 °F
Inside db	75 °F
Design TD	17 °F
Daily range	M
Relative humidity	50 %
Moisture difference	44 gr/lb

Heating Summary

Structure	26987 Btuh
Ducts	6878 Btuh
Central vent (0 cfm) (none)	0 Btuh
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	33864 Btuh

Sensible Cooling Equipment Load Sizing

Structure	18187 Btuh
Ducts	7380 Btuh
Central vent (0 cfm) (none)	0 Btuh
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.97
Equipment sensible load	24851 Btuh

Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

Latent Cooling Equipment Load Sizing

Structure	2507 Btuh
Ducts	1595 Btuh
Central vent (0 cfm) (none)	0 Btuh
Equipment latent load	4102 Btuh

	Heating	Cooling
Area (ft ²)	1843	1843
Volume (ft ³)	15251	15251
Air changes/hour	0.38	0.20
Equiv. AVF (cfm)	97	51

Equipment Total Load (Sen+Lat)	28953 Btuh
Req. total capacity at 0.70 SHR	3.0 ton

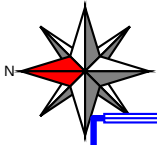
Heating Equipment Summary

Make	Trane
Trade	TRANE
Model	4TWR4036N1
AHRI ref	209842226
Efficiency	8.2 HSPF
Heating input	
Heating output	34400 Btuh @ 47°F
Temperature rise	27 °F
Actual air flow	1167 cfm
Air flow factor	0.034 cfm/Btuh
Static pressure	0.50 in H2O
Space thermostat	
Capacity balance point = 33 °F	
Backup:	
Input = 10 kW, Output = 32587 Btuh, 100 AFUE	

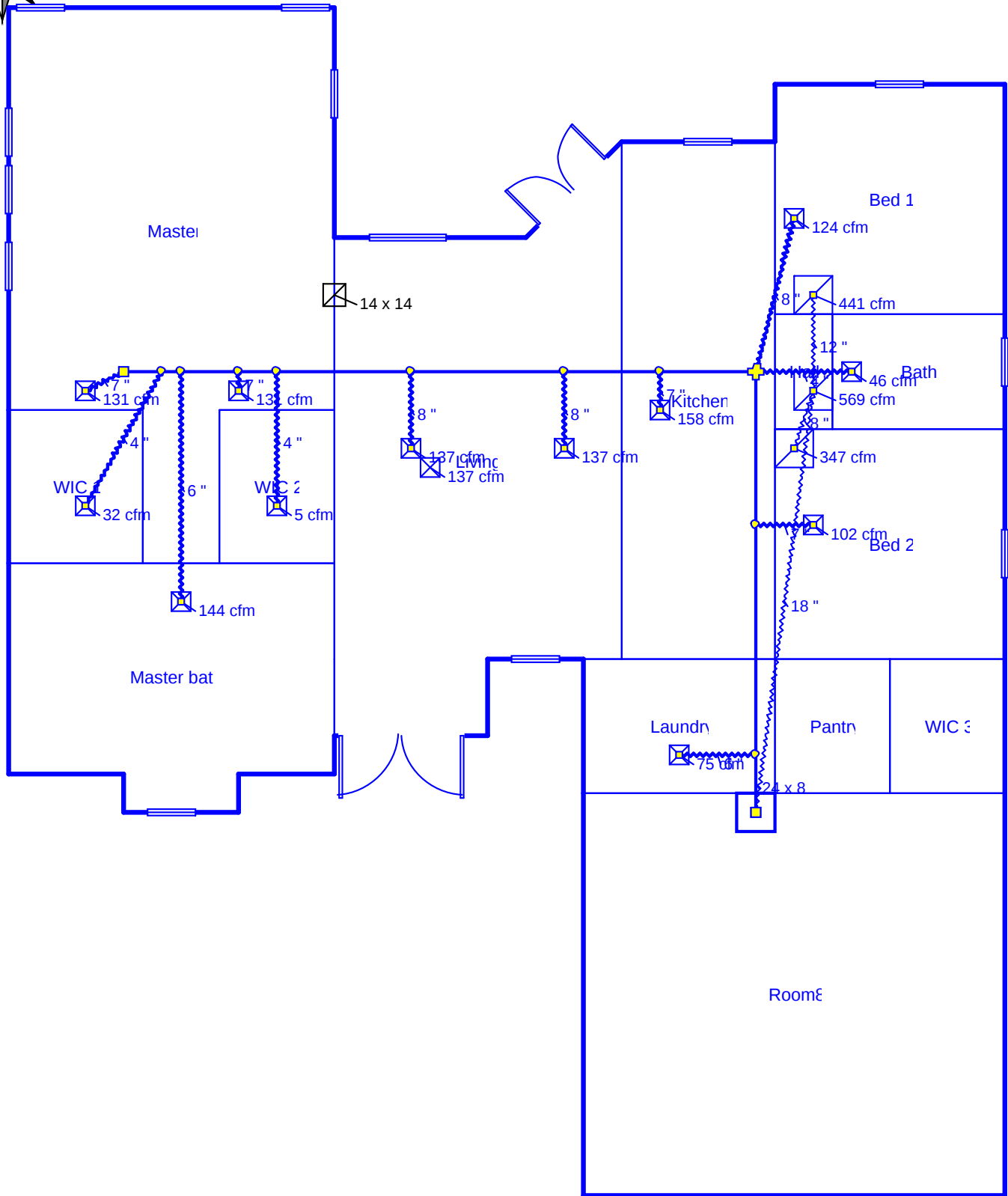
Cooling Equipment Summary

Make	Trane
Trade	TRANE
Cond	4TWR4036N1
Coil	TEM4B0C37M31S*
AHRI ref	209842226
Efficiency	11.5 EER, 14.3 SEER
Sensible cooling	24500 Btuh
Latent cooling	10500 Btuh
Total cooling	35000 Btuh
Actual air flow	1167 cfm
Air flow factor	0.046 cfm/Btuh
Static pressure	0.50 in H2O
Load sensible heat ratio	0.86

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



Sheet 1



Job #:
Performed for:
DWC Constuction
Amelia landing lot 12

Air Ducks Heating & Air, Inc

2601 Nw 74th place
Gainesville, FL 32653
Phone: 352-215-4624
airducksac.com Airducksac@gmail.com

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Duct System Summary

Entire House

Air Ducks Heating & Air, Inc

Job:
Date: Apr 05, 2023
By:

2601 Nw 74th place, Gainesville, FL 32653 Phone: 352-215-4624 Email: Airducksac@gmail.com Web: airducksac.com License: CAC1817288

Project Information

For: DWC Constuction
Amelia landing lot 12

	Heating	Cooling
External static pressure	0.50 in H ₂ O	0.50 in H ₂ O
Pressure losses	0 in H ₂ O	0 in H ₂ O
Available static pressure	0.50 in H ₂ O	0.50 in H ₂ O
Supply / return available pressure	0.387 / 0.113 in H ₂ O	0.387 / 0.113 in H ₂ O
Lowest friction rate	0.123 in/100ft	0.123 in/100ft
Actual air flow	1167 cfm	1167 cfm
Total effective length (TEL)	407 ft	

Supply Branch Detail Table

Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
Bath	h 1333	46	27	0.206	4.0	0x0	VIFx	28.0	160.0	st1
Bed 1	h 3598	124	94	0.202	8.0	0x0	VIFx	31.2	160.0	st1
Bed 2	h 2953	102	60	0.206	7.0	0x0	VIFx	18.0	170.0	st1
Kitchen	c 3472	66	158	0.129	7.0	0x0	VIFx	30.0	270.0	st1
Laundry	h 2183	75	64	0.207	6.0	0x0	VIFx	7.0	180.0	st1
Living	c 2996	104	137	0.126	8.0	0x0	VIFx	37.0	270.0	st1
Living-A	c 2995	104	137	0.123	8.0	0x0	VIFx	45.0	270.0	st1
Living-B	c 2995	104	137	0	0	0x0	VIFx	0	0	
Master	h 3807	131	106	0.126	7.0	0x0	VIFx	51.0	255.0	st1
Master bath	h 4181	144	116	0.125	6.0	0x0	VIFx	65.0	245.0	st1
Master-A	h 3807	131	106	0.137	7.0	0x0	VIFx	58.2	225.0	st1
WIC 1	h 927	32	20	0.130	4.0	0x0	VIFx	62.1	235.0	st1
WIC 2	c 111	2	5	0.123	4.0	0x0	VIFx	55.0	260.0	st1

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	1063	1030	0.123	797	14.2	8 x 24	RectFbg	

Return Branch Detail Table

Name	Grille Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb3	0x 0	441	353	87.2	0.130	561	12.0	0x 0		VIFx	rt1
rb4	0x 0	347	245	85.4	0.133	994	8.0	0x 0		VIFx	rt1
rb5	0x 0	379	569	92.2	0.123	532	14.0	0x 0		VIFx	rt1

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt1	Peak AVF	1167	1167	0.123	660	18.0	0 x 0	VinIFlx	

