

Residential System Sizing Calculation

Summary

Aaron Simque Homes
Lot 54 The Preserve
Lake City, FL

Project Title:
210556 2281 Model

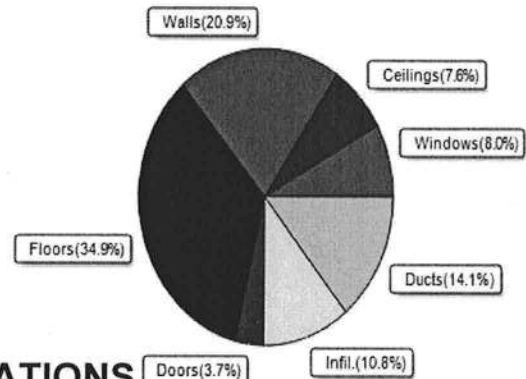
2021-04-28

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)			
Winter design temperature(TMY3 99%)	30 F	Summer design temperature(TMY3 99%)	94 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	40 F	Summer temperature difference	19 F
Total heating load calculation	31892 Btuh	Total cooling load calculation	29043 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	109.7 35000	Sensible (SHR = 0.75)	108.1 26250
Heat Pump + Auxiliary(0.0kW)	109.7 35000	Latent	184.1 8750
		Total (Electric Heat Pump)	120.5 35000

WINTER CALCULATIONS

Winter Heating Load (for 2281 sqft)

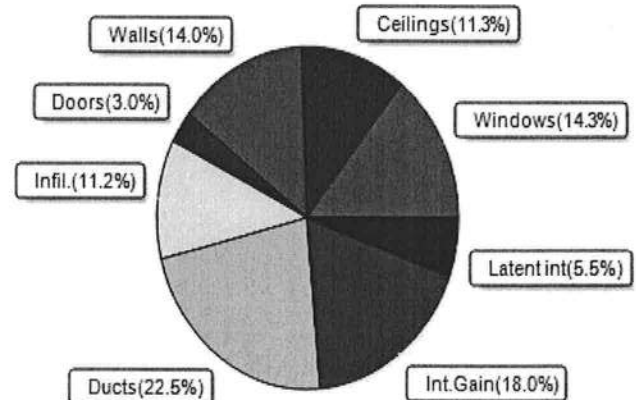
Load component		Load	
Window total	211 sqft	2547 Btuh	
Wall total	1875 sqft	6656 Btuh	
Door total	74 sqft	1180 Btuh	
Ceiling total	2387 sqft	2423 Btuh	
Floor total	2281 sqft	11139 Btuh	
Infiltration	79 cfm	3447 Btuh	
Duct loss		4499 Btuh	
Subtotal		31892 Btuh	
Ventilation	0 cfm	0 Btuh	
TOTAL HEAT LOSS		31892 Btuh	



SUMMER CALCULATIONS

Summer Cooling Load (for 2281 sqft)

Load component		Load	
Window total	211 sqft	4156 Btuh	
Wall total	1875 sqft	4075 Btuh	
Door total	74 sqft	885 Btuh	
Ceiling total	2387 sqft	3272 Btuh	
Floor total		0 Btuh	
Infiltration	59 cfm	1228 Btuh	
Internal gain		5240 Btuh	
Duct gain		5433 Btuh	
Sens. Ventilation	0 cfm	0 Btuh	
Blower Load		0 Btuh	
Total sensible gain		24289 Btuh	
Latent gain(ducts)		1116 Btuh	
Latent gain(infiltration)		2038 Btuh	
Latent gain(ventilation)		0 Btuh	
Latent gain(internal/occupants/other)		1600 Btuh	
Total latent gain		4753 Btuh	
TOTAL HEAT GAIN		29043 Btuh	



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-04-28

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Aaron Simque Homes
Lot 54 The Preserve
Lake City, FL

Project Title:
210556 2281 Model
Building Type: User

2021-04-28

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Metal	0.30	N	30.0		12.0	360 Btuh
2	2, NFRC 0.20	Metal	0.30	N	53.3		12.0	640 Btuh
3	2, NFRC 0.20	Metal	0.30	E	30.0		12.0	360 Btuh
4	2, NFRC 0.20	Metal	0.30	E	8.0		12.0	96 Btuh
5	2, NFRC 0.20	Metal	0.30	E	10.0		12.0	120 Btuh
6	2, NFRC 0.20	Metal	0.30	E	15.0		12.0	180 Btuh
7	2, NFRC 0.20	Metal	0.30	S	15.0		12.0	180 Btuh
8	2, NFRC 0.20	Metal	0.30	W	15.0		12.0	180 Btuh
9	2, NFRC 0.20	Metal	0.30	W	8.3		12.0	100 Btuh
10	2, NFRC 0.20	Metal	0.30	W	5.3		12.0	64 Btuh
11	2, NFRC 0.20	Metal	0.30	W	16.0		12.0	192 Btuh
12	2, NFRC 0.25	Metal	0.35	E	5.3		14.0	75 Btuh
Window Total					211.3(sqft)			2547 Btuh
Walls	Type	Ormt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	123		3.55	437 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	129		3.55	458 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	143		3.55	507 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	502		3.55	1781 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	123		3.55	437 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	117		3.55	415 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	39		3.55	138 Btuh
8	Frame - Wood	- Adj	(0.089)	13.0/0.0	129		3.55	458 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	162		3.55	576 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	408		3.55	1450 Btuh
Wall Total					1875(sqft)			6656 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		16		16.0	256 Btuh
2	Insulated - Exterior, n		(0.400)		16		16.0	256 Btuh
3	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
4	Insulated - Garage, n		(0.400)		18		16.0	284 Btuh
Door Total					74(sqft)			1180Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	2387		1.0	2423 Btuh
Ceiling Total					2387(sqft)			2423Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	236.0 ft(perim.)		47.2	11139 Btuh
Floor Total					2281 sqft			11139 Btuh
Envelope Subtotal:								23946 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Aaron Simque Homes
Lot 54 The Preserve
Lake City, FL

Project Title:
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Building Type: User

2021-04-28

Infiltration	Type Natural	Wholehouse ACH 0.23	Volume(cuft) 20529	Wall Ratio 1.00	CFM= 78.7	3447 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)				(DLM of 0.164)	4499 Btuh
All Zones	Sensible Subtotal All Zones					31892 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	31892 Btuh 0 Btuh 31892 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	35000 Btuh
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Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)
U - (Window U-Factor)
HTM - (ManualJ Heat Transfer Multiplier)



Version 8

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Aaron Simque Homes
Lot 54 The Preserve
Lake City, FL

Project Title:
210556 2281 Model

2021-04-28

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

Component Loads for Whole House

Window	Type*					Overhang		Window Area(sqft)			HTM		Load
	Panes	SHGC	U	InSh	IS Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded	
1	2 NFRC	0.20, 0.30	No	No	N	1.5ft	1.5ft	30.0	0.0	30.0	10	19	574 Btuh
2	2 NFRC	0.20, 0.30	No	No	N	15.8f	1.0ft	53.3	0.0	53.3	10	19	1021 Btuh
3	2 NFRC	0.20, 0.30	No	No	E	1.5ft	1.5ft	30.0	0.0	30.0	10	19	574 Btuh
4	2 NFRC	0.20, 0.30	No	No	E	1.5ft	4.8ft	8.0	0.0	8.0	10	19	153 Btuh
5	2 NFRC	0.20, 0.30	No	No	E	1.5ft	1.5ft	10.0	0.0	10.0	10	19	191 Btuh
6	2 NFRC	0.20, 0.30	No	No	E	1.5ft	1.5ft	15.0	0.0	15.0	10	19	287 Btuh
7	2 NFRC	0.20, 0.30	No	No	S	1.5ft	1.5ft	15.0	2.9	12.1	10	20	271 Btuh
8	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.5ft	15.0	2.9	12.1	10	20	271 Btuh
9	2 NFRC	0.20, 0.30	No	No	W	1.5ft	0.5ft	8.3	8.3	0.0	10	20	83 Btuh
10	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.5ft	5.3	3.9	1.5	10	20	68 Btuh
11	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.5ft	16.0	3.9	12.1	10	20	281 Btuh
12	2 NFRC	0.25, 0.35	No	No	E	1.5ft	1.5ft	5.3	0.0	5.3	12	23	125 Btuh
	Excursion												257 Btuh
	Window Total							211 (sqft)					4156 Btuh
Walls	Type		U-Value		R-Value		Area(sqft)			HTM		Load	
					Cav/Sheath								
1	Frame - Wood - Ext		0.09		13.0/0.0		123.0			2.3		278 Btuh	
2	Frame - Wood - Ext		0.09		13.0/0.0		129.0			2.3		292 Btuh	
3	Frame - Wood - Ext		0.09		13.0/0.0		142.7			2.3		323 Btuh	
4	Frame - Wood - Ext		0.09		13.0/0.0		501.7			2.3		1135 Btuh	
5	Frame - Wood - Ext		0.09		13.0/0.0		123.0			2.3		278 Btuh	
6	Frame - Wood - Ext		0.09		13.0/0.0		117.0			2.3		265 Btuh	
7	Frame - Wood - Ext		0.09		13.0/0.0		39.0			2.3		88 Btuh	
8	Frame - Wood - Adj		0.09		13.0/0.0		129.0			1.7		218 Btuh	
9	Frame - Wood - Adj		0.09		13.0/0.0		162.2			1.7		274 Btuh	
10	Frame - Wood - Ext		0.09		13.0/0.0		408.3			2.3		924 Btuh	
	Wall Total							1875 (sqft)					4075 Btuh
Doors	Type		Area (sqft)		HTM		Load						
1	Insulated - Exterior		16.0		12.0		192 Btuh						
2	Insulated - Exterior		16.0		12.0		192 Btuh						
3	Insulated - Exterior		24.0		12.0		288 Btuh						
4	Insulated - Garage		17.8		12.0		213 Btuh						
	Door Total							74 (sqft)					885 Btuh
Ceilings	Type/Color/Surface		U-Value		R-Value		Area(sqft)			HTM		Load	
1	Vented Attic/DarkShingle		0.025		38.0/0.0		2387.0			1.37		3272 Btuh	
	Ceiling Total							2387 (sqft)					3272 Btuh
Floors	Type		R-Value		Size			HTM		Load			
1	Slab On Grade		0.0		2281 (ft-perimeter)			0.0		0 Btuh			
	Floor Total							2281.0 (sqft)					0 Btuh
	Envelope Subtotal:											12388 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Aaron Simque Homes
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Lake City, FL

Project Title:
210556 2281 Model

Climate:FL_GAINESVILLE_REGIONAL_A

2021-04-28

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 20529	Wall Ratio 1	CFM= 59.0	Load 1228 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3400	Load 5240 Btuh
					Sensible Envelope Load:	18856 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.288)	5433 Btuh
					Sensible Load All Zones	24289 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

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Project Title:
210556 2281 Model

Climate:FL_GAINESVILLE_REGIONAL_A

2021-04-28

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	18856 Btuh
	Sensible Duct Load	5433 Btuh
	Total Sensible Zone Loads	24289 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	24289 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2038 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1116 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4753 Btuh
	TOTAL GAIN	29043 Btuh

EQUIPMENT

1. Central Unit	#	35000 Btuh
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*Key: Window types (Panels - Number and type of panes of glass)

(SHGC - Shading coefficient of glass as SHGC numerical value)

(U - Window U-Factor)

(InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))

- For Blinds: Assume medium color, half closed

For Draperies: Assume medium weave, half closed

For Roller shades: Assume translucent, half closed

(IS - Insect screen: none(N), Full(F) or Half(½))

(Ornt - compass orientation)



Version 8