

Residential System Sizing Calculation

Summary

Aaron Simque Homes
Lot 145 The Preserve
Lake City, FL

Project Title:
210661 1995-Model B

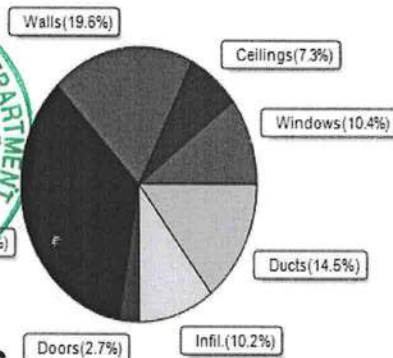
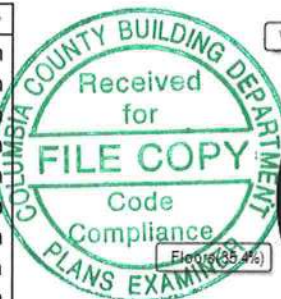
2021-05-10

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	29640 Btuh	Total cooling load calculation	26134 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	108.0 32000	Sensible (SHR = 0.75)	106.7 24000
Heat Pump + Auxiliary(0.0kW)	108.0 32000	Latent	219.5 8000
		Total (Electric Heat Pump)	122.4 32000

WINTER CALCULATIONS

Winter Heating Load (for 1995 sqft)

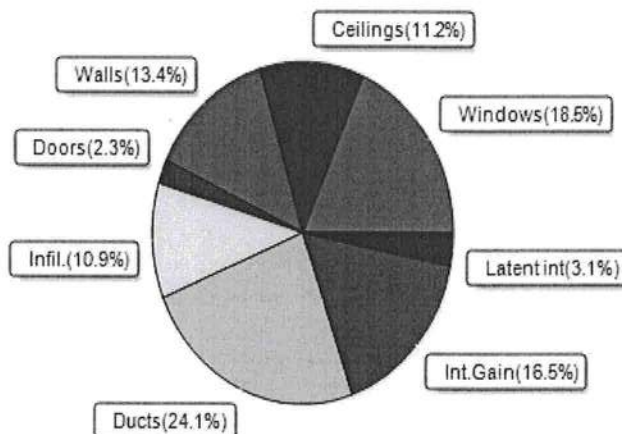
Load component		Load	
Window total	256 sqft	3076 Btuh	
Wall total	1636 sqft	5807 Btuh	
Door total	50 sqft	796 Btuh	
Ceiling total	2130 sqft	2162 Btuh	
Floor total	1995 sqft	10478 Btuh	
Infiltration	69 cfm	3015 Btuh	
Duct loss		4305 Btuh	
Subtotal		29640 Btuh	
Ventilation	0 cfm	0 Btuh	
TOTAL HEAT LOSS		29640 Btuh	



SUMMER CALCULATIONS

Summer Cooling Load (for 1995 sqft)

Load component		Load	
Window total	256 sqft	4825 Btuh	
Wall total	1636 sqft	3506 Btuh	
Door total	50 sqft	597 Btuh	
Ceiling total	2130 sqft	2919 Btuh	
Floor total		0 Btuh	
Infiltration	52 cfm	1074 Btuh	
Internal gain		4320 Btuh	
Duct gain		5249 Btuh	
Sens. Ventilation	0 cfm	0 Btuh	
Blower Load		0 Btuh	
Total sensible gain		22490 Btuh	
Latent gain(ducts)		1062 Btuh	
Latent gain(infiltration)		1782 Btuh	
Latent gain(ventilation)		0 Btuh	
Latent gain(internal/occupants/other)		800 Btuh	
Total latent gain		3644 Btuh	
TOTAL HEAT GAIN		26134 Btuh	



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-05-10

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Aaron Simque Homes
Lot 145 The Preserve
Lake City, FL

Project Title:
210661 1995-Model B
Building Type: User

2021-05-10

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	54.0		12.0	648 Btuh
2	2, NFRC 0.20	Metal	0.30	N	16.0		12.0	192 Btuh
3	2, NFRC 0.20	Metal	0.30	N	36.0		12.0	432 Btuh
4	2, NFRC 0.20	Metal	0.30	W	8.3		12.0	100 Btuh
5	2, NFRC 0.20	Metal	0.30	W	16.0		12.0	192 Btuh
6	2, NFRC 0.20	Metal	0.30	W	8.0		12.0	96 Btuh
7	2, NFRC 0.20	Metal	0.30	W	36.0		12.0	432 Btuh
8	2, NFRC 0.20	Metal	0.30	S	8.0		12.0	96 Btuh
9	2, NFRC 0.20	Metal	0.30	S	36.0		12.0	432 Btuh
10	2, NFRC 0.20	Metal	0.30	E	12.0		12.0	144 Btuh
11	2, NFRC 0.20	Metal	0.30	E	8.0		12.0	96 Btuh
12	2, NFRC 0.20	Metal	0.30	E	18.0		12.0	216 Btuh
	Window Total				256.3(sqft)			3076 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	78		3.55	277 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	114		3.55	405 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	177		3.55	628 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	328		3.55	1163 Btuh
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	156		3.55	554 Btuh
6	Frame - Wood	- Adj	(0.089)	13.0/0.0	21		3.55	75 Btuh
7	Frame - Wood	- Adj	(0.089)	13.0/0.0	22		3.55	78 Btuh
8	Frame - Wood	- Adj	(0.089)	13.0/0.0	141		3.55	501 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	22		3.55	78 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	45		3.55	160 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	81		3.55	288 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	451		3.55	1601 Btuh
	Wall Total				1636(sqft)			5807 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		8		16.0	128 Btuh
2	Insulated - Garage, n		(0.400)		18		16.0	284 Btuh
3	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
	Door Total				50(sqft)			796Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	2130		1.0	2162 Btuh
	Ceiling Total				2130(sqft)			2162Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	222.0 ft(perim.)		47.2	10478 Btuh
	Floor Total				1995 sqft			10478 Btuh
	Envelope Subtotal:							22320 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Aaron Simque Homes
Lot 145 The Preserve
Lake City, FL

Project Title:
210661 1995-Model B
Building Type: User

2021-05-10

Infiltration	Type Natural	Wholehouse ACH 0.23	Volume(cuft) 17955	Wall Ratio 1.00	CFM= 68.8	3015 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.170)					4305 Btuh
All Zones	Sensible Subtotal All Zones					29640 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	29640 Btuh 0 Btuh 29640 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	32000 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 145 The Preserve
Lake City, FL

Project Title:
210661 1995-Model B

2021-05-10

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		14.2f	1.0ft	54.0	0.0	54.0	10	19	1034	Btuh
2	2 NFRC	0.20, 0.30	No	No	N		14.2f	1.0ft	16.0	0.0	16.0	10	19	306	Btuh
3	2 NFRC	0.20, 0.30	No	No	N		1.5ft	1.5ft	36.0	0.0	36.0	10	19	689	Btuh
4	2 NFRC	0.20, 0.30	No	No	W		1.5ft	0.5ft	8.3	8.3	0.0	10	20	83	Btuh
5	2 NFRC	0.20, 0.30	No	No	W		1.5ft	1.5ft	16.0	3.9	12.1	10	20	281	Btuh
6	2 NFRC	0.20, 0.30	No	No	W		1.5ft	1.5ft	8.0	3.9	4.1	10	20	121	Btuh
7	2 NFRC	0.20, 0.30	No	No	W		1.5ft	1.5ft	36.0	5.8	30.2	10	20	662	Btuh
8	2 NFRC	0.20, 0.30	No	No	S		12.5f	1.0ft	8.0	8.0	0.0	10	20	79	Btuh
9	2 NFRC	0.20, 0.30	No	No	S		7.5ft	1.0ft	36.0	36.0	0.0	10	20	357	Btuh
10	2 NFRC	0.20, 0.30	No	No	E		1.5ft	1.5ft	12.0	0.0	12.0	10	19	230	Btuh
11	2 NFRC	0.20, 0.30	No	No	E		1.5ft	4.8ft	8.0	0.0	8.0	10	19	153	Btuh
12	2 NFRC	0.20, 0.30	No	No	E		1.5ft	1.5ft	18.0	0.0	18.0	10	19	345	Btuh
	Excursion													485	Btuh
	Window Total								256 (sqft)					4825 Btuh	
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext					0.09	13.0/0.0	78.0			2.3		177 Btuh		
2	Frame - Wood - Ext					0.09	13.0/0.0	114.0			2.3		258 Btuh		
3	Frame - Wood - Ext					0.09	13.0/0.0	177.0			2.3		401 Btuh		
4	Frame - Wood - Ext					0.09	13.0/0.0	327.7			2.3		742 Btuh		
5	Frame - Wood - Adj					0.09	13.0/0.0	156.0			1.7		263 Btuh		
6	Frame - Wood - Adj					0.09	13.0/0.0	21.0			1.7		35 Btuh		
7	Frame - Wood - Adj					0.09	13.0/0.0	22.0			1.7		37 Btuh		
8	Frame - Wood - Adj					0.09	13.0/0.0	141.0			1.7		238 Btuh		
9	Frame - Wood - Ext					0.09	13.0/0.0	22.0			2.3		50 Btuh		
10	Frame - Wood - Ext					0.09	13.0/0.0	45.0			2.3		102 Btuh		
11	Frame - Wood - Ext					0.09	13.0/0.0	81.0			2.3		183 Btuh		
12	Frame - Wood - Ext					0.09	13.0/0.0	451.0			2.3		1021 Btuh		
	Wall Total								1636 (sqft)					3506 Btuh	
Doors	Type							Area (sqft)			HTM		Load		
1	Insulated - Exterior							8.0			12.0		96 Btuh		
2	Insulated - Garage							17.8			12.0		213 Btuh		
3	Insulated - Exterior							24.0			12.0		288 Btuh		
	Door Total								50 (sqft)					597 Btuh	
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load		
1	Vented Attic/DarkShingle					0.025	38.0/0.0	2130.0			1.37		2919 Btuh		
	Ceiling Total								2130 (sqft)					2919 Btuh	
Floors	Type						R-Value	Size			HTM		Load		
1	Slab On Grade						0.0	1995 (ft-perimeter)			0.0		0 Btuh		
	Floor Total								1995.0 (sqft)					0 Btuh	
	Envelope Subtotal:													11847 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Aaron Simque Homes
Lot 145 The Preserve
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
210661 1995-Model B

2021-05-10

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 17955	Wall Ratio 1	CFM= 51.6	Load 1074 Btuh
Internal gain		Occupants 4	Btuh/occupant X 230	Appliance +	3400	Load 4320 Btuh
					Sensible Envelope Load:	17241 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.304)	5249 Btuh
					Sensible Load All Zones	22490 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Aaron Simque Homes
Lot 145 The Preserve
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
210661 1995-Model B

2021-05-10

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17241 Btuh
	Sensible Duct Load	5249 Btuh
	Total Sensible Zone Loads	22490 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	22490 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1782 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1062 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3644 Btuh
	TOTAL GAIN	26134 Btuh

EQUIPMENT

1. Central Unit	#	32000 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