

Residential System Sizing Calculation

Summary

Aaron Simque Homes

Project Title:
201147 1995-Model Elevation C

Lake City, FL

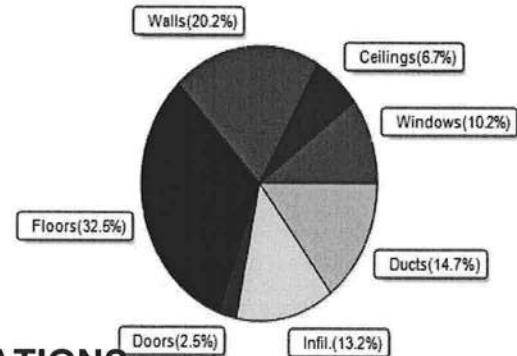
2020-11-17

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	32228 Btuh	Total cooling load calculation	27953 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	117.9 38000	Sensible (SHR = 0.75)	121.6 28500
Heat Pump + Auxiliary(0.0kW)	117.9 38000	Latent	210.4 9500
		Total (Electric Heat Pump)	135.9 38000

WINTER CALCULATIONS

Winter Heating Load (for 1995 sqft)

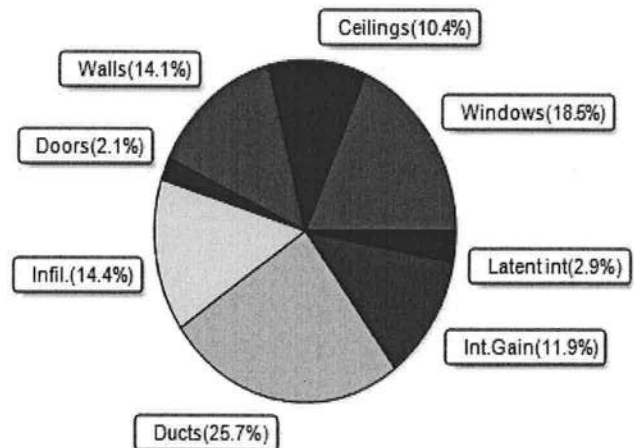
Load component		Load	
Window total	274 sqft	3292 Btuh	
Wall total	1833 sqft	6509 Btuh	
Door total	50 sqft	796 Btuh	
Ceiling total	2130 sqft	2162 Btuh	
Floor total	1995 sqft	10478 Btuh	
Infiltration	97 cfm	4262 Btuh	
Duct loss		4727 Btuh	
Subtotal		32228 Btuh	
Ventilation	0 cfm	0 Btuh	
TOTAL HEAT LOSS		32228 Btuh	



SUMMER CALCULATIONS

Summer Cooling Load (for 1995 sqft)

Load component		Load	
Window total	274 sqft	5176 Btuh	
Wall total	1833 sqft	3931 Btuh	
Door total	50 sqft	597 Btuh	
Ceiling total	2130 sqft	2919 Btuh	
Floor total		0 Btuh	
Infiltration	73 cfm	1518 Btuh	
Internal gain		3320 Btuh	
Duct gain		5976 Btuh	
Sens. Ventilation	0 cfm	0 Btuh	
Blower Load		0 Btuh	
Total sensible gain		23437 Btuh	
Latent gain(ducts)		1196 Btuh	
Latent gain(infiltration)		2520 Btuh	
Latent gain(ventilation)		0 Btuh	
Latent gain(internal/occupants/other)		800 Btuh	
Total latent gain		4516 Btuh	
TOTAL HEAT GAIN		27953 Btuh	



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2020-11-17

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Aaron Simque Homes

Lake City, FL

Project Title:
201147 1995-Model Elevation C
Building Type: User

2020-11-17

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)
This calculation is for Worst Case. The house has been rotated 315 degrees.

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Metal	0.30	NW	54.0		12.0	648 Btuh
2	2, NFRC 0.20	Metal	0.30	NW	16.0		12.0	192 Btuh
3	2, NFRC 0.20	Metal	0.30	NW	36.0		12.0	432 Btuh
4	2, NFRC 0.20	Metal	0.30	NE	8.3		12.0	100 Btuh
5	2, NFRC 0.20	Metal	0.30	NE	16.0		12.0	192 Btuh
6	2, NFRC 0.20	Metal	0.30	NE	8.0		12.0	96 Btuh
7	2, NFRC 0.20	Metal	0.30	NE	36.0		12.0	432 Btuh
8	2, NFRC 0.20	Metal	0.30	SE	8.0		12.0	96 Btuh
9	2, NFRC 0.20	Metal	0.30	SE	36.0		12.0	432 Btuh
10	2, NFRC 0.20	Metal	0.30	SW	12.0		12.0	144 Btuh
11	2, NFRC 0.20	Metal	0.30	SW	8.0		12.0	96 Btuh
12	2, NFRC 0.20	Metal	0.30	SW	36.0		12.0	432 Btuh
Window Total					274.3(sqft)			3292 Btuh
Walls	Type	Omt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	95		3.55	338 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	127		3.55	450 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	201		3.55	712 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	372		3.55	1320 Btuh
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	173		3.55	615 Btuh
6	Frame - Wood	- Adj	(0.089)	13.0/0.0	23		3.55	83 Btuh
7	Frame - Wood	- Adj	(0.089)	13.0/0.0	26		3.55	94 Btuh
8	Frame - Wood	- Adj	(0.089)	13.0/0.0	157		3.55	556 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	28		3.55	99 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	50		3.55	178 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	94		3.55	334 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	487		3.55	1730 Btuh
Wall Total					1833(sqft)			6509 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:								23238 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Aaron Simque Homes

Project Title:

201147 1995-Model Elevation C

Lake City, FL

Building Type: User

2020-11-17

Infiltration	Type Natural	Wholehouse ACH 0.29	Volume(cuft) 19950	Wall Ratio 1.00	CFM= 97.3	4262 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.172)					4727 Btuh
All Zones	Sensible Subtotal All Zones					32228 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	32228 Btuh 0 Btuh 32228 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	38000 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

Project Title:

201147 1995-Model Elevation C

Lake City, FL

2020-11-17

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

This calculation is for Worst Case. The house has been rotated 315 degrees.

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	NW	14.2f	1.0ft	54.0	0.0	54.0	10	19	1034 Btuh
2	2 NFRC	0.20, 0.30	No	No	NW	14.2f	1.0ft	16.0	0.0	16.0	10	19	306 Btuh
3	2 NFRC	0.20, 0.30	No	No	NW	1.5ft	1.5ft	36.0	0.0	36.0	10	19	689 Btuh
4	2 NFRC	0.20, 0.30	No	No	NE	1.5ft	0.5ft	8.3	0.0	8.3	10	19	159 Btuh
5	2 NFRC	0.20, 0.30	No	No	NE	1.5ft	1.5ft	16.0	0.0	16.0	10	19	306 Btuh
6	2 NFRC	0.20, 0.30	No	No	NE	1.5ft	1.5ft	8.0	0.0	8.0	10	19	153 Btuh
7	2 NFRC	0.20, 0.30	No	No	NE	1.5ft	1.5ft	36.0	0.0	36.0	10	19	689 Btuh
8	2 NFRC	0.20, 0.30	No	No	SE	12.5f	1.0ft	8.0	8.0	0.0	10	20	79 Btuh
9	2 NFRC	0.20, 0.30	No	No	SE	7.5ft	1.0ft	36.0	36.0	0.0	10	20	357 Btuh
10	2 NFRC	0.20, 0.30	No	No	SW	1.5ft	1.5ft	12.0	1.9	10.1	10	20	221 Btuh
11	2 NFRC	0.20, 0.30	No	No	SW	1.5ft	4.8ft	8.0	0.0	8.0	10	20	160 Btuh
12	2 NFRC	0.20, 0.30	No	No	SW	1.5ft	1.5ft	36.0	5.8	30.2	10	20	662 Btuh
	Excursion												360 Btuh
	Window Total							274 (sqft)					5176 Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load			
				Cav/Sheath									
1	Frame - Wood - Ext		0.09	13.0/0.0		95.3		2.3		216 Btuh			
2	Frame - Wood - Ext		0.09	13.0/0.0		126.7		2.3		287 Btuh			
3	Frame - Wood - Ext		0.09	13.0/0.0		200.7		2.3		454 Btuh			
4	Frame - Wood - Ext		0.09	13.0/0.0		371.7		2.3		841 Btuh			
5	Frame - Wood - Adj		0.09	13.0/0.0		173.3		1.7		292 Btuh			
6	Frame - Wood - Adj		0.09	13.0/0.0		23.3		1.7		39 Btuh			
7	Frame - Wood - Adj		0.09	13.0/0.0		26.4		1.7		45 Btuh			
8	Frame - Wood - Adj		0.09	13.0/0.0		156.7		1.7		264 Btuh			
9	Frame - Wood - Ext		0.09	13.0/0.0		28.0		2.3		63 Btuh			
10	Frame - Wood - Ext		0.09	13.0/0.0		50.0		2.3		113 Btuh			
11	Frame - Wood - Ext		0.09	13.0/0.0		94.0		2.3		213 Btuh			
12	Frame - Wood - Ext		0.09	13.0/0.0		487.3		2.3		1103 Btuh			
	Wall Total							1833 (sqft)			3931 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:					12623 Btuh							

Manual J Summer Calculations

Residential Load - Component Details (continued)

Aaron Simque Homes

Project Title:

Climate: FL_GAINESVILLE_REGIONAL_A

201147 1995-Model Elevation C

Lake City, FL

2020-11-17

Infiltration	Type Natural	Average ACH 0.22	Volume(cuft) 19950	Wall Ratio 1	CFM= 73.0	Load 1518 Btuh
Internal gain		Occupants 4	Btuh/occupant X 230	Appliance +	2400	Load 3320 Btuh
					Sensible Envelope Load:	17461 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.342)		5976 Btuh
					Sensible Load All Zones	23437 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Aaron Simque Homes

Project Title:

Climate: FL_GAINESVILLE_REGIONAL_A

201147 1995-Model Elevation C

Lake City, FL

2020-11-17

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17461 Btuh
	Sensible Duct Load	5976 Btuh
	Total Sensible Zone Loads	23437 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	23437 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2520 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1196 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4516 Btuh
	TOTAL GAIN	27953 Btuh

EQUIPMENT

1. Central Unit	#	38000 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