

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Albritton Res

Project Title:
210630 Albritton Res
Building Type: User

Lake City, FL

2021-04-28

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)
This calculation is for Worst Case. The house has been rotated 270 degrees.

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.22	Metal	0.30	W	30.0		12.0	360 Btuh
2	2, NFRC 0.22	Metal	0.30	W	72.0		12.0	864 Btuh
3	2, NFRC 0.22	Metal	0.30	W	16.0		12.0	192 Btuh
4	2, NFRC 0.22	Metal	0.30	W	13.3		12.0	160 Btuh
5	2, NFRC 0.22	Metal	0.30	N	15.0		12.0	180 Btuh
6	2, NFRC 0.22	Metal	0.30	E	15.0		12.0	180 Btuh
7	2, NFRC 0.22	Metal	0.30	E	72.0		12.0	864 Btuh
8	2, NFRC 0.22	Metal	0.30	E	30.0		12.0	360 Btuh
9	2, NFRC 0.22	Metal	0.30	E	15.0		12.0	180 Btuh
10	2, NFRC 0.22	Metal	0.30	S	18.0		12.0	216 Btuh
Window Total					296.3(sqft)			3556 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	115		3.55	407 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	38		3.55	133 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	58		3.55	205 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	20		3.55	69 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	92		3.55	327 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	18		3.55	64 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	100		3.55	353 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	167		3.55	591 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	18		3.55	64 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	56		3.55	200 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	18		3.55	64 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	109		3.55	386 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	125		3.55	442 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	9		3.55	32 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	156		3.55	554 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	9		3.55	32 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	116		3.55	410 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	329		3.55	1166 Btuh
Wall Total					1549(sqft)			5499 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
2	Insulated - Exterior, n		(0.400)		7		16.0	107 Btuh
3	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
4	Insulated - Exterior, n		(0.400)		18		16.0	288 Btuh
Door Total					69(sqft)			1099Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	2270		1.0	2305 Btuh
Ceiling Total					2270(sqft)			2305Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Albritton Res
Lake City, FL

Project Title:
210630 Albritton Res
Building Type: User

2021-04-28

Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 213.0 ft(perim.) 2143 sqft	HTM= 47.2	Load 10054 Btuh 10054 Btuh
	Envelope Subtotal:					22512 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.23	Volume(cuft) 19716	Wall Ratio 1.00	CFM= 76.3	3339 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.168)					4346 Btuh
All Zones	Sensible Subtotal All Zones					30198 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	30198 Btuh 0 Btuh 30198 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	33000 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

Albritton Res

Project Title:
210630 Albritton Res

Lake City, FL

2021-04-28

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

This calculation is for Worst Case. The house has been rotated 270 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	0.22, 0.30	No	No	W		1.5ft	1.5ft	30.0	0.0	30.0	10	27		807 Btuh
2	2 NFRC	0.22, 0.30	No	No	W		13.7f	1.5ft	72.0	72.0	0.0	10	27		744 Btuh
3	2 NFRC	0.22, 0.30	No	No	W		11.5f	1.5ft	16.0	16.0	0.0	10	27		165 Btuh
4	2 NFRC	0.22, 0.30	No	No	W		20.0f	1.5ft	13.3	13.3	0.0	10	27		138 Btuh
5	2 NFRC	0.22, 0.30	No	No	N		1.5ft	7.5ft	15.0	0.0	15.0	10	10		155 Btuh
6	2 NFRC	0.22, 0.30	No	No	E		1.5ft	1.5ft	15.0	0.0	15.0	10	27		404 Btuh
7	2 NFRC	0.22, 0.30	No	No	E		6.5ft	1.5ft	72.0	46.7	25.3	10	27		1162 Btuh
8	2 NFRC	0.22, 0.30	No	No	E		7.5ft	1.5ft	30.0	28.3	1.7	10	27		337 Btuh
9	2 NFRC	0.22, 0.30	No	No	E		1.5ft	1.5ft	15.0	0.0	15.0	10	27		404 Btuh
10	2 NFRC	0.22, 0.30	No	No	S		1.5ft	9.5ft	18.0	0.0	18.0	10	12		217 Btuh
	Excursion														1414 Btuh
	Window Total								296 (sqft)						5946 Btuh
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load	
								Cav/Sheath							
1	Frame - Wood - Ext						0.09	13.0/0.0	114.8			2.3		260 Btuh	
2	Frame - Wood - Ext						0.09	13.0/0.0	37.5			2.3		85 Btuh	
3	Frame - Wood - Ext						0.09	13.0/0.0	57.8			2.3		131 Btuh	
4	Frame - Wood - Ext						0.09	13.0/0.0	19.5			2.3		44 Btuh	
5	Frame - Wood - Ext						0.09	13.0/0.0	92.0			2.3		208 Btuh	
6	Frame - Wood - Ext						0.09	13.0/0.0	18.0			2.3		41 Btuh	
7	Frame - Wood - Ext						0.09	13.0/0.0	99.5			2.3		225 Btuh	
8	Frame - Wood - Ext						0.09	13.0/0.0	166.5			2.3		377 Btuh	
9	Frame - Wood - Ext						0.09	13.0/0.0	18.0			2.3		41 Btuh	
10	Frame - Wood - Ext						0.09	13.0/0.0	56.3			2.3		127 Btuh	
11	Frame - Wood - Ext						0.09	13.0/0.0	18.0			2.3		41 Btuh	
12	Frame - Wood - Ext						0.09	13.0/0.0	108.8			2.3		246 Btuh	
13	Frame - Wood - Ext						0.09	13.0/0.0	124.5			2.3		282 Btuh	
14	Frame - Wood - Ext						0.09	13.0/0.0	9.0			2.3		20 Btuh	
15	Frame - Wood - Ext						0.09	13.0/0.0	156.0			2.3		353 Btuh	
16	Frame - Wood - Ext						0.09	13.0/0.0	9.0			2.3		20 Btuh	
17	Frame - Wood - Ext						0.09	13.0/0.0	115.5			2.3		261 Btuh	
18	Frame - Wood - Ext						0.09	13.0/0.0	328.5			2.3		744 Btuh	
	Wall Total								1549 (sqft)					3506 Btuh	
Doors	Type						Area (sqft)			HTM		Load			
1	Insulated - Exterior						24.0			12.0		288 Btuh			
2	Insulated - Exterior						6.7			12.0		80 Btuh			
3	Insulated - Exterior						20.0			12.0		240 Btuh			
4	Insulated - Exterior						18.0			12.0		216 Btuh			
	Door Total						69 (sqft)					824 Btuh			
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)			HTM		Load	
1	Vented Attic/DarkShingle						0.025	38.0/0.0	2270.0			1.37		3111 Btuh	
	Ceiling Total								2270 (sqft)					3111 Btuh	
Floors	Type						R-Value		Size			HTM		Load	
1	Slab On Grade						0.0		2143 (ft-perimeter)			0.0		0 Btuh	
	Floor Total								2143.0 (sqft)					0 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

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2021-04-28

	Envelope Subtotal:					13387 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.17	19716	1	57.2	1190 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		6	X 230	+	3400	4780 Btuh
	Sensible Envelope Load:					19357 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.312)					6039 Btuh
	Sensible Load All Zones					25396 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Albritton Res
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
210630 Albritton Res

2021-04-28

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	19357 Btuh
	Sensible Duct Load	6039 Btuh
	Total Sensible Zone Loads	25396 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	25396 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1974 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1239 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4413 Btuh
	TOTAL GAIN	29809 Btuh

EQUIPMENT

1. Central Unit	#	33000 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