

Residential System Sizing Calculation

Summary

1500 Model

Project Title:
200985 - 10 Haight Ashbury

Lake City, FL

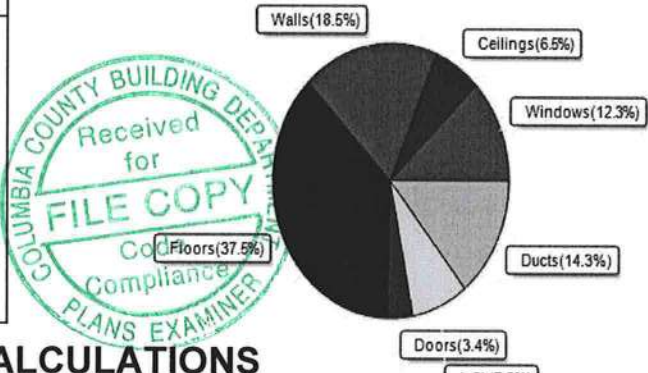
2020-09-04

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	24931 Btuh	Total cooling load calculation	21709 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	108.3 27000	Sensible (SHR = 0.75)	109.4 20250
Heat Pump + Auxiliary(0.0kW)	108.3 27000	Latent	210.9 6750
		Total (Electric Heat Pump)	124.4 27000

WINTER CALCULATIONS

Winter Heating Load (for 1500 sqft)

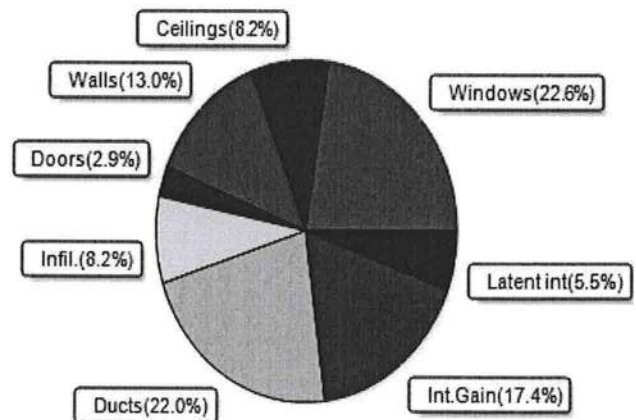
Load component			Load	
Window total	219	sqft	3066	Btuh
Wall total	1298	sqft	4607	Btuh
Door total	53	sqft	853	Btuh
Ceiling total	1600	sqft	1624	Btuh
Floor total	1500	sqft	9346	Btuh
Infiltration	43	cfm	1876	Btuh
Duct loss			3559	Btuh
Subtotal			24931	Btuh
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			24931	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1500 sqft)

Load component			Load	
Window total	219	sqft	4914	Btuh
Wall total	1298	sqft	2824	Btuh
Door total	53	sqft	640	Btuh
Ceiling total	1600	sqft	1787	Btuh
Floor total			0	Btuh
Infiltration	32	cfm	668	Btuh
Internal gain			3780	Btuh
Duct gain			3894	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			18508	Btuh
Latent gain(ducts)			892	Btuh
Latent gain(infiltration)			1109	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1200	Btuh
Total latent gain			3201	Btuh
TOTAL HEAT GAIN			21709	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2020-09-04

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

1500 Model

Lake City, FL

Project Title:
200985 - 10 Haight Ashbury
Building Type: User

2020-09-04

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 0.25	Metal	0.35	W	15.0		14.0	210 Btuh
2	2, NFRC 0.25	Metal	0.35	SW	10.0		14.0	140 Btuh
3	2, NFRC 0.25	Metal	0.35	W	45.0		14.0	630 Btuh
4	2, NFRC 0.25	Metal	0.35	NW	13.3		14.0	187 Btuh
5	2, NFRC 0.25	Metal	0.35	W	30.0		14.0	420 Btuh
6	2, NFRC 0.25	Metal	0.35	S	30.0		14.0	420 Btuh
7	2, NFRC 0.25	Metal	0.35	S	6.0		14.0	84 Btuh
8	2, NFRC 0.25	Metal	0.35	E	30.0		14.0	420 Btuh
9	2, NFRC 0.25	Metal	0.35	E	30.0		14.0	420 Btuh
10	2, NFRC 0.25	Metal	0.35	E	6.7		14.0	93 Btuh
11	2, NFRC 0.25	Metal	0.35	N	3.0		14.0	42 Btuh
Window Total					219.0(sqft)			3066 Btuh
Walls	Type	Omt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	118		3.55	420 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	17		3.55	59 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55	85 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	60		3.55	214 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	13		3.55	47 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55	85 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	225 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	328		3.55	1165 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	222 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	53		3.55	189 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	52		3.55	185 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	60		3.55	213 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	21		3.55	76 Btuh
14	Frame - Wood	- Adj	(0.089)	13.0/0.0	40		3.55	142 Btuh
15	Frame - Wood	- Adj	(0.089)	13.0/0.0	67		3.55	239 Btuh
16	Frame - Wood	- Adj	(0.089)	13.0/0.0	19		3.55	66 Btuh
17	Frame - Wood	- Adj	(0.089)	13.0/0.0	69		3.55	246 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	205		3.55	728 Btuh
Wall Total					1298(sqft)			4607 Btuh
Doors	Type	Storm	Ueff.	R-Value	Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		7		16.0	107 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 - Garage,	n	(0.400)		20		16.0	320 Btuh
Door Total					53(sqft)			853Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load	
1	Vented Attic/D/Shing	(0.025)	38.0/0.0	1600		1.0	1624 Btuh	
Ceiling Total				1600(sqft)			1624Btuh	

Manual J Winter Calculations

Residential Load - Component Details (continued)

1500 Model
Lake City, FL

Project Title:
200985 - 10 Haight Ashbury
Building Type: User

2020-09-04

Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 198.0 ft(perim.) 1500 sqft	HTM= 47.2	Load 9346 Btuh 9346 Btuh
Envelope Subtotal:						19496 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.21	Volume(cuft) 12000	Wall Ratio 1.00	CFM= 42.8	1876 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.167)					3559 Btuh
All Zones	Sensible Subtotal All Zones					24931 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	24931 Btuh 0 Btuh 24931 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	27000 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

1500 Model

Project Title:

200985 - 10 Haight Ashbury

Lake City, FL

2020-09-04

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	0.25, 0.35	No	No	W	1.5ft	0.0ft	15.0	3.7	11.3	12	31	391	Btuh	
2	2 NFRC	0.25, 0.35	No	No	SW	3.5ft	0.0ft	10.0	8.6	1.4	12	25	136	Btuh	
3	2 NFRC	0.25, 0.35	No	No	W	7.5ft	1.0ft	45.0	45.0	0.0	12	31	536	Btuh	
4	2 NFRC	0.25, 0.35	No	No	NW	10.0f	0.0ft	13.3	0.0	13.3	12	23	313	Btuh	
5	2 NFRC	0.25, 0.35	No	No	W	1.5ft	0.0ft	30.0	7.5	22.5	12	31	782	Btuh	
6	2 NFRC	0.25, 0.35	No	No	S	1.5ft	0.0ft	30.0	30.0	0.0	12	14	357	Btuh	
7	2 NFRC	0.25, 0.35	No	No	S	1.5ft	0.0ft	6.0	6.0	0.0	12	14	71	Btuh	
8	2 NFRC	0.25, 0.35	No	No	E	1.5ft	0.0ft	30.0	7.5	22.5	12	31	782	Btuh	
9	2 NFRC	0.25, 0.35	No	No	E	1.5ft	0.0ft	30.0	7.5	22.5	12	31	782	Btuh	
10	2 NFRC	0.25, 0.35	No	No	E	9.0ft	0.0ft	6.7	6.7	0.0	12	31	79	Btuh	
11	2 NFRC	0.25, 0.35	No	No	N	1.5ft	0.0ft	3.0	0.0	3.0	12	12	36	Btuh	
	Excursion												649	Btuh	
	Window Total							219 (sqft)						4914	Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Frame - Wood - Ext		0.09		13.0/0.0		118.3		2.3		268	Btuh			
2	Frame - Wood - Ext		0.09		13.0/0.0		16.7		2.3		38	Btuh			
3	Frame - Wood - Ext		0.09		13.0/0.0		24.0		2.3		54	Btuh			
4	Frame - Wood - Ext		0.09		13.0/0.0		60.3		2.3		137	Btuh			
5	Frame - Wood - Ext		0.09		13.0/0.0		13.3		2.3		30	Btuh			
6	Frame - Wood - Ext		0.09		13.0/0.0		24.0		2.3		54	Btuh			
7	Frame - Wood - Ext		0.09		13.0/0.0		63.3		2.3		143	Btuh			
8	Frame - Wood - Ext		0.09		13.0/0.0		328.0		2.3		742	Btuh			
9	Frame - Wood - Ext		0.09		13.0/0.0		62.7		2.3		142	Btuh			
10	Frame - Wood - Ext		0.09		13.0/0.0		53.3		2.3		121	Btuh			
11	Frame - Wood - Ext		0.09		13.0/0.0		52.0		2.3		118	Btuh			
12	Frame - Wood - Ext		0.09		13.0/0.0		60.0		2.3		136	Btuh			
13	Frame - Wood - Ext		0.09		13.0/0.0		21.3		2.3		48	Btuh			
14	Frame - Wood - Adj		0.09		13.0/0.0		40.0		1.7		67	Btuh			
15	Frame - Wood - Adj		0.09		13.0/0.0		67.3		1.7		114	Btuh			
16	Frame - Wood - Adj		0.09		13.0/0.0		18.7		1.7		31	Btuh			
17	Frame - Wood - Adj		0.09		13.0/0.0		69.3		1.7		117	Btuh			
18	Frame - Wood - Ext		0.09		13.0/0.0		205.0		2.3		464	Btuh			
	Wall Total							1298 (sqft)					2824	Btuh	
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior		6.7		12.0	80	Btuh								
2	Insulated - Exterior		6.7		12.0	80	Btuh								
3	Insulated - Exterior		20.0		12.0	240	Btuh								
4	Insulated - Garage		20.0		12.0	240	Btuh								
	Door Total					53 (sqft)	640	Btuh							
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Vented Attic/DarkShingle/RB		0.025		38.0/0.0		1600.0		1.12		1787	Btuh			
	Ceiling Total						1600 (sqft)				1787	Btuh			
Floors	Type	R-Value		Size		HTM		Load							
1	Slab On Grade		0.0		1500 (ft-perimeter)		0.0		0	Btuh					
	Floor Total					1500.0 (sqft)	0	Btuh							

Manual J Summer Calculations

Residential Load - Component Details (continued)

1500 Model

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
200985 - 10 Haight Ashbury

Lake City, FL

2020-09-04

	Envelope Subtotal:					10165 Btuh
Infiltration	Type Natural	Average ACH 0.16	Volume(cuft) 12000	Wall Ratio 1	CFM= 32.1	Load 668 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	2400	Load 3780 Btuh
	Sensible Envelope Load:					14614 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.266)					3894 Btuh
	Sensible Load All Zones					18508 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

1500 Model
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
200985 - 10 Haight Ashbury

2020-09-04

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	14614 Btuh
	Sensible Duct Load	3894 Btuh
	Total Sensible Zone Loads	18508 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	18508 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1109 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	892 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3201 Btuh
	TOTAL GAIN	21709 Btuh

EQUIPMENT

1. Central Unit	#	27000 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