

Residential System Sizing Calculation

Summary

Project Title:
Klamfoth Residence

, FL

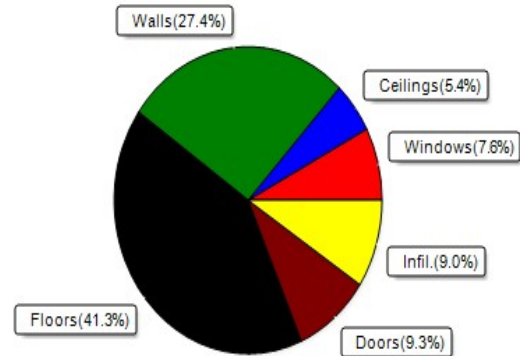
11/16/2023

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 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	38734 Btuh	Total cooling load calculation	24901 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	154.9 60000	Sensible (SHR = 0.85)	240.1 51000
Heat Pump + Auxiliary(0.0kW)	154.9 60000	Latent	245.6 9000
		Total (Electric Heat Pump)	241.0 60000

WINTER CALCULATIONS

Winter Heating Load (for 2954 sqft)

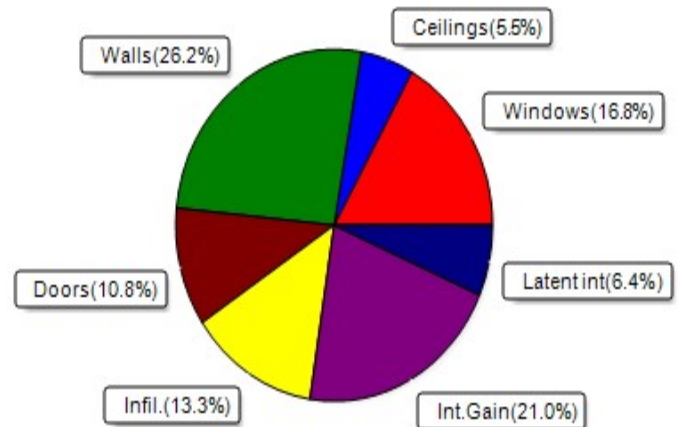
Load component	Load
Window total 284 sqft	2954 Btuh
Wall total 2989 sqft	10613 Btuh
Door total 224 sqft	3584 Btuh
Ceiling total 2954 sqft	2091 Btuh
Floor total 2954 sqft	16001 Btuh
Infiltration 80 cfm	3491 Btuh
Duct loss	0 Btuh
Subtotal	38734 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	38734 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2954 sqft)

Load component	Load
Window total 284 sqft	4174 Btuh
Wall total 2989 sqft	6533 Btuh
Door total 224 sqft	2688 Btuh
Ceiling total 2954 sqft	1359 Btuh
Floor total	0 Btuh
Infiltration 60 cfm	1244 Btuh
Internal gain	5240 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	21238 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	2064 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	3664 Btuh
TOTAL HEAT GAIN	24901 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

11-15-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Klamfoth Residence

, FL

11/16/2023

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

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, 0.26	No	No	N	1.5ft	2.3ft	18.0	0.0	18.0	9	9	165	Btuh
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	72.0	0.0	72.0	9	9	659	Btuh
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	24.0	0.0	24.0	9	9	220	Btuh
4	2 NFRC	0.20, 0.26	No	No	W	1.5ft	2.3ft	36.0	0.0	36.0	9	24	872	Btuh
5	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	36.0	0.0	36.0	9	9	329	Btuh
6	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	8.0	0.0	8.0	9	24	194	Btuh
7	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	12.0	0.0	12.0	9	24	291	Btuh
8	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	18.0	18.0	0.0	9	11	165	Btuh
9	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	18.0	18.0	0.0	9	11	165	Btuh
10	2 NFRC	0.20, 0.26	No	No	W	1.5ft	2.3ft	36.0	0.0	36.0	9	24	872	Btuh
11	2 NFRC	0.20, 0.26	No	No	W	1.5ft	2.3ft	6.0	0.0	6.0	9	24	145	Btuh
	Excursion												99	Btuh
	Window Total							284 (sqft)					4174 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)			HTM		Load			
					Cav/Sheath									
1	Frame - Wood - Ext		0.09		13.0/0.0			145.3		2.3		329	Btuh	
2	Frame - Wood - Ext		0.09		13.0/0.0			120.0		2.3		272	Btuh	
3	Frame - Wood - Ext		0.09		13.0/0.0			252.0		2.3		570	Btuh	
4	Frame - Wood - Ext		0.09		13.0/0.0			24.0		2.3		54	Btuh	
5	Frame - Wood - Ext		0.09		13.0/0.0			124.0		2.3		281	Btuh	
6	Frame - Wood - Ext		0.09		13.0/0.0			200.0		2.3		453	Btuh	
7	Frame - Wood - Ext		0.09		13.0/0.0			197.3		2.3		447	Btuh	
8	Frame - Wood - Ext		0.09		13.0/0.0			30.0		2.3		68	Btuh	
9	Frame - Wood - Ext		0.09		13.0/0.0			40.0		2.3		91	Btuh	
10	Frame - Wood - Ext		0.09		13.0/0.0			132.0		2.3		299	Btuh	
11	Frame - Wood - Ext		0.09		13.0/0.0			40.0		2.3		91	Btuh	
12	Frame - Wood - Ext		0.09		13.0/0.0			178.0		2.3		403	Btuh	
13	Frame - Wood - Adj		0.09		13.0/0.0			404.3		1.7		682	Btuh	
14	Frame - Wood - Ext		0.09		13.0/0.0			104.0		2.3		235	Btuh	
15	Frame - Wood - Ext		0.09		13.0/0.0			24.0		2.3		54	Btuh	
16	Frame - Wood - Ext		0.09		13.0/0.0			96.0		2.3		217	Btuh	
17	Frame - Wood - Ext		0.09		13.0/0.0			24.0		2.3		54	Btuh	
18	Frame - Wood - Ext		0.09		13.0/0.0			104.0		2.3		235	Btuh	
19	Frame - Wood - Ext		0.09		13.0/0.0			101.7		2.3		230	Btuh	
20	Frame - Wood - Ext		0.09		13.0/0.0			102.0		2.3		231	Btuh	
21	Frame - Wood - Ext		0.09		13.0/0.0			25.0		2.3		57	Btuh	
22	Frame - Wood - Ext		0.09		13.0/0.0			98.7		2.3		223	Btuh	
23	Frame - Wood - Ext		0.09		13.0/0.0			423.0		2.3		957	Btuh	
	Wall Total							2989 (sqft)					6533 Btuh	
Doors	Type				Area (sqft)			HTM		Load				
1	Insulated - Exterior						48.0		12.0		576	Btuh		
2	Insulated - Exterior						24.0		12.0		288	Btuh		
3	Insulated - Garage						24.0		12.0		288	Btuh		
4	Insulated - Exterior						40.0		12.0		480	Btuh		
5	Insulated - Exterior						48.0		12.0		576	Btuh		
6	Insulated - Exterior						40.0		12.0		480	Btuh		
	Door Total							224 (sqft)					2688 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Klamfoth Residence

, FL

11/16/2023

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	SnglAsmb no airsp/DarkShingle	0.018	30.0/30.0	2954.0	0.46	1359 Btuh
	Ceiling Total			2954 (sqft)		1359 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	2954 (ft-perimeter)	0.0	0 Btuh
	Floor Total			2954.0 (sqft)		0 Btuh
	Envelope Subtotal:					14754 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	29540	1	59.7	1244 Btuh
Internal gain		Occupants	Btuh/occupant	Appliance		Load
		8	X 230	+	3400	5240 Btuh
	Sensible Envelope Load:					21238 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					21238 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Klamfoth Residence

, FL

11/16/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	21238 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	21238 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21238 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2064 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3664 Btuh
	TOTAL GAIN	24901 Btuh

EQUIPMENT

1. Central Unit	#	60000 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

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Klamfoth Residence
Building Type: User

, FL

11/16/2023

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Vinyl	0.26	N	18.0		10.4	187 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	72.0		10.4	749 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	24.0		10.4	250 Btuh
4	2, NFRC 0.20	Vinyl	0.26	W	36.0		10.4	374 Btuh
5	2, NFRC 0.20	Vinyl	0.26	N	36.0		10.4	374 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	8.0		10.4	83 Btuh
7	2, NFRC 0.20	Vinyl	0.26	E	12.0		10.4	125 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	18.0		10.4	187 Btuh
9	2, NFRC 0.20	Vinyl	0.26	S	18.0		10.4	187 Btuh
10	2, NFRC 0.20	Vinyl	0.26	W	36.0		10.4	374 Btuh
11	2, NFRC 0.20	Vinyl	0.26	W	6.0		10.4	62 Btuh
	Window Total				284.0(sqft)			2954 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	145		3.55	516 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	120		3.55	426 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	252		3.55	895 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55	85 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	124		3.55	440 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	200		3.55	710 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	197		3.55	701 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	30		3.55	107 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	40		3.55	142 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	132		3.55	469 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	40		3.55	142 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	178		3.55	632 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	404		3.55	1436 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	104		3.55	369 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55	85 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	96		3.55	341 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55	85 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	104		3.55	369 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	102		3.55	361 Btuh
20	Frame - Wood	- Ext	(0.089)	13.0/0.0	102		3.55	362 Btuh
21	Frame - Wood	- Ext	(0.089)	13.0/0.0	25		3.55	89 Btuh
22	Frame - Wood	- Ext	(0.089)	13.0/0.0	99		3.55	350 Btuh
23	Frame - Wood	- Ext	(0.089)	13.0/0.0	423		3.55	1502 Btuh
	Wall Total				2989(sqft)			10613 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Klamfoth Residence
Building Type: User

11/16/2023

Doors	Type	Storm Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n (0.400)		48		16.0	768 Btuh
2	Insulated - Exterior,	n (0.400)		24		16.0	384 Btuh
3	Insulated - Garage,	n (0.400)		24		16.0	384 Btuh
4	Insulated - Exterior,	n (0.400)		40		16.0	640 Btuh
5	Insulated - Exterior,	n (0.400)		48		16.0	768 Btuh
6	Insulated - Exterior,	n (0.400)		40		16.0	640 Btuh
	Door Total			224(sqft)			3584Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Shing	(0.018)	30.0/30.0	2954		0.71	2091 Btuh
	Ceiling Total			2954(sqft)			2091Btuh
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	339.0 ft(perim.)		47.2	16001 Btuh
	Floor Total			2954 sqft			16001 Btuh
	Envelope Subtotal:						35243 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.16	29540	1.00	79.6	3491 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)						0 Btuh
All Zones	Sensible Subtotal All Zones						38734 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	38734 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	38734 Btuh

EQUIPMENT

1. Electric Heat Pump	#	60000 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Klamfoth Residence
Building Type: User

, FL

11/16/2023

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