

Residential System Sizing Calculation

Summary

Foxx, Ronnie & Joy
141 SW Erskine Ct.
Lake City, FL 32024

Project Title:
230217 Foxx

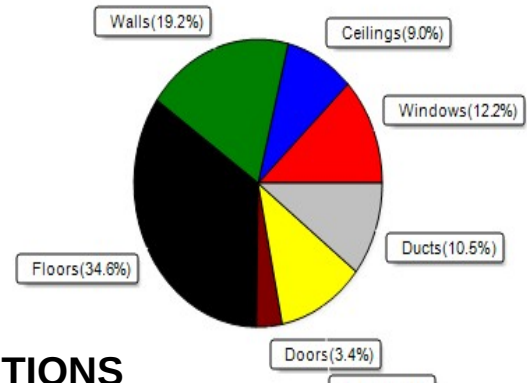
2023-02-23

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	36236 Btuh	Total cooling load calculation	28789 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	107.6 39000	Sensible (SHR = 0.75)	121.4 29250
Heat Pump + Auxiliary(0.0kW)	107.6 39000	Latent	207.3 9750
		Total (Electric Heat Pump)	135.5 39000

WINTER CALCULATIONS

Winter Heating Load (for 2550 sqft)

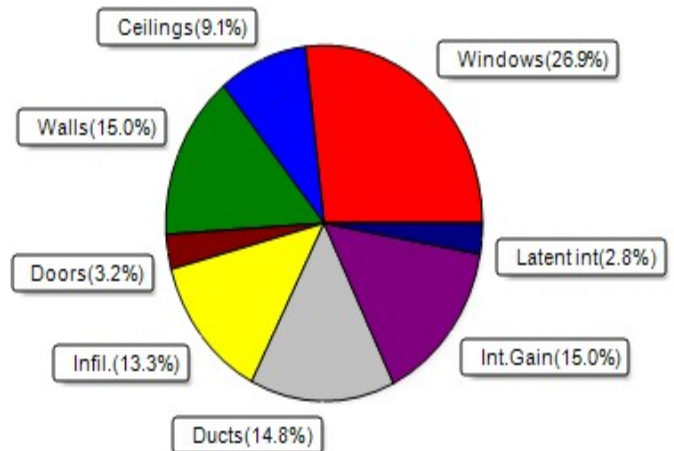
Load component		Load	
Window total	367 sqft	4404	Btuh
Wall total	1956 sqft	6943	Btuh
Door total	76 sqft	1216	Btuh
Ceiling total	2707 sqft	3262	Btuh
Floor total	2550 sqft	12555	Btuh
Infiltration	92 cfm	4034	Btuh
Duct loss		3822	Btuh
Subtotal		36236	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		36236	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2550 sqft)

Load component		Load	
Window total	367 sqft	7748	Btuh
Wall total	1956 sqft	4323	Btuh
Door total	76 sqft	912	Btuh
Ceiling total	2707 sqft	2610	Btuh
Floor total		0	Btuh
Infiltration	69 cfm	1437	Btuh
Internal gain		4320	Btuh
Duct gain		2736	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		24086	Btuh
Latent gain(ducts)		1518	Btuh
Latent gain(infiltration)		2385	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		4703	Btuh
TOTAL HEAT GAIN		28789	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2023-02-23

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Foxx, Ronnie & Joy
141 SW Erskine Ct.
Lake City, FL 32024

Project Title:
230217 Foxx
Building Type: User

2023-02-23

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	Vinyl	0.30	NW	54.0		12.0	648 Btuh
2	2, NFRC 0.20	Vinyl	0.30	NE	48.0		12.0	576 Btuh
3	2, NFRC 0.20	Vinyl	0.30	NW	72.0		12.0	864 Btuh
4	2, NFRC 0.20	Vinyl	0.30	NW	32.0		12.0	384 Btuh
5	2, NFRC 0.20	Vinyl	0.30	NW	24.0		12.0	288 Btuh
6	2, NFRC 0.20	Vinyl	0.30	NE	6.0		12.0	72 Btuh
7	2, NFRC 0.20	Vinyl	0.30	NE	16.0		12.0	192 Btuh
8	2, NFRC 0.20	Vinyl	0.30	NE	4.0		12.0	48 Btuh
9	2, NFRC 0.20	Vinyl	0.30	SE	36.0		12.0	432 Btuh
10	2, NFRC 0.20	Vinyl	0.30	NW	32.0		12.0	384 Btuh
11	2, NFRC 0.20	Vinyl	0.30	SW	15.0		12.0	180 Btuh
12	2, NFRC 0.20	Vinyl	0.30	SW	4.0		12.0	48 Btuh
13	2, NFRC 0.20	Vinyl	0.30	SW	24.0		12.0	288 Btuh
Window Total					367.0(sqft)			4404 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	99		3.55	351 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	22		3.55	76 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	30		3.55	107 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	198		3.55	703 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	88		3.55	312 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	592		3.55	2102 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	98		3.55	346 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	29		3.55	101 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	13		3.55	45 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	74		3.55	261 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	74		3.55	261 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	13		3.55	45 Btuh
14	Frame - Wood	- Adj	(0.089)	13.0/0.0	178		3.55	632 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	433		3.55	1536 Btuh
Wall Total					1956(sqft)			6943 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		16		16.0	256 Btuh
2	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
3	Insulated - Exterior, n		(0.400)		16		16.0	256 Btuh
4	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					76(sqft)			1216Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Unvent Attic/D/Shing		(0.241)	0.0/22.0	2707		1.2	3262 Btuh
Ceiling Total					2707(sqft)			3262Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Foxx, Ronnie & Joy
141 SW Erskine Ct.
Lake City, FL 32024

Project Title:
230217 Foxx
Building Type: User

2023-02-23

Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 266.0 ft(perim.) 2550 sqft	HTM= 47.2	Load 12555 Btuh 12555 Btuh
	Envelope Subtotal:					28380 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.23	Volume(cuft) 23715	Wall Ratio 1.00	CFM= 92.1	4034 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.118)					3822 Btuh
All Zones	Sensible Subtotal All Zones					36236 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	36236 Btuh 0 Btuh 36236 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	39000 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

Foxx, Ronnie & Joy
141 SW Erskine Ct.
Lake City, FL 32024

Project Title:
230217 Foxx

2023-02-23

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		12.5f	0.5ft	54.0	0.0	54.0	10	19	1034	Btuh
2	2 NFRC	0.20, 0.30	No	No	NE		99.0f	0.0ft	48.0	0.0	48.0	10	19	919	Btuh
3	2 NFRC	0.20, 0.30	No	No	NW		22.0f	0.0ft	72.0	0.0	72.0	10	19	1378	Btuh
4	2 NFRC	0.20, 0.30	No	No	NW		1.5ft	1.0ft	32.0	0.0	32.0	10	19	612	Btuh
5	2 NFRC	0.20, 0.30	No	No	NW		1.5ft	1.0ft	24.0	0.0	24.0	10	19	459	Btuh
6	2 NFRC	0.20, 0.30	No	No	NE		1.5ft	1.0ft	6.0	0.0	6.0	10	19	115	Btuh
7	2 NFRC	0.20, 0.30	No	No	NE		1.5ft	1.0ft	16.0	0.0	16.0	10	19	306	Btuh
8	2 NFRC	0.20, 0.30	No	No	NE		1.5ft	0.8ft	4.0	0.0	4.0	10	19	77	Btuh
9	2 NFRC	0.20, 0.30	No	No	SE		2.0ft	0.3ft	36.0	17.7	18.3	10	20	541	Btuh
10	2 NFRC	0.20, 0.30	No	No	NW		8.2ft	7.0ft	32.0	0.0	32.0	10	19	612	Btuh
11	2 NFRC	0.20, 0.30	No	No	SW		1.5ft	1.0ft	15.0	4.4	10.6	10	20	256	Btuh
12	2 NFRC	0.20, 0.30	No	No	SW		1.5ft	1.0ft	4.0	4.0	0.0	10	20	40	Btuh
13	2 NFRC	0.20, 0.30	No	No	SW		1.5ft	1.0ft	24.0	5.9	18.1	10	20	421	Btuh
	Excursion													978	Btuh
	Window Total								367 (sqft)					7748 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Frame - Wood - Ext		0.09		13.0/0.0		99.0		2.3		224 Btuh				
2	Frame - Wood - Ext		0.09		13.0/0.0		21.5		2.3		49 Btuh				
3	Frame - Wood - Ext		0.09		13.0/0.0		30.0		2.3		68 Btuh				
4	Frame - Wood - Ext		0.09		13.0/0.0		198.0		2.3		448 Btuh				
5	Frame - Wood - Ext		0.09		13.0/0.0		88.0		2.3		199 Btuh				
6	Frame - Wood - Ext		0.09		13.0/0.0		592.0		2.3		1340 Btuh				
7	Frame - Wood - Ext		0.09		13.0/0.0		97.5		2.3		221 Btuh				
8	Frame - Wood - Ext		0.09		13.0/0.0		28.5		2.3		65 Btuh				
9	Frame - Wood - Ext		0.09		13.0/0.0		12.8		2.3		29 Btuh				
10	Frame - Wood - Ext		0.09		13.0/0.0		73.5		2.3		166 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		73.5		2.3		166 Btuh				
13	Frame - Wood - Ext		0.09		13.0/0.0		12.8		2.3		29 Btuh				
14	Frame - Wood - Adj		0.09		13.0/0.0		178.0		1.7		300 Btuh				
15	Frame - Wood - Ext		0.09		13.0/0.0		432.5		2.3		979 Btuh				
	Wall Total								1956 (sqft)					4323 Btuh	
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior		16.0		12.0	192 Btuh									
2	Insulated - Exterior		24.0		12.0	288 Btuh									
3	Insulated - Exterior		16.0		12.0	192 Btuh									
4	Insulated - Garage		20.0		12.0	240 Btuh									
	Door Total								76 (sqft)					912 Btuh	
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Unvented Attic/DarkShingle		0.241		0.0/22.0		2707.0		0.96		2610 Btuh				
	Ceiling Total								2707 (sqft)					2610 Btuh	
Floors	Type	R-Value		Size		HTM		Load							
1	Slab On Grade		0.0		2550 (ft-perimeter)		0.0		0 Btuh						
	Floor Total								2550.0 (sqft)					0 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Foxx, Ronnie & Joy
141 SW Erskine Ct.
Lake City, FL 32024

Project Title:
230217 Foxx

Climate:FL_GAINESVILLE_REGIONAL_A

2023-02-23

	Envelope Subtotal:					15593 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.17	23715	1	69.1	1437 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		4	X 230	+	3400	4320 Btuh
	Sensible Envelope Load:					21350 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.128)					2736 Btuh
	Sensible Load All Zones					24086 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

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141 SW Erskine Ct.
Lake City, FL 32024

Project Title:
230217 Foxx

Climate:FL_GAINESVILLE_REGIONAL_A

2023-02-23

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	21350 Btuh
	Sensible Duct Load	2736 Btuh
	Total Sensible Zone Loads	24086 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	24086 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2385 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1518 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4703 Btuh
	TOTAL GAIN	28789 Btuh

EQUIPMENT

1. Central Unit	#	39000 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