

Residential System Sizing Calculation

Summary

Lewis, Edward and Ann

Project Title:
231074 Lewis

Fort White, FL

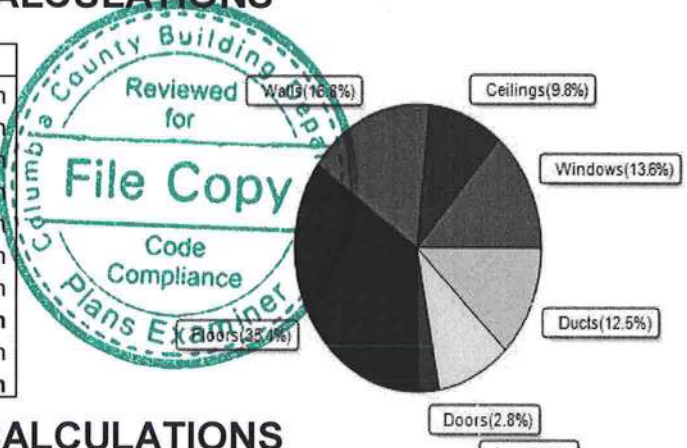
2023-08-29

Location for weather data: Gainesville, FL - Defaults: Latitude(30) Altitude(164 ft.) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (78F) Humidity difference(47gr.)					
Winter design temperature(MJ8 99%)	30	F	Summer design temperature(MJ8 99%)	99	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	40	F	Summer temperature difference	24	F
Total heating load calculation	23135	Btuh	Total cooling load calculation	19394	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	108.1	25000	Sensible (SHR = 0.75)	112.9	18750
Heat Pump + Auxiliary(0.0kW)	108.1	25000	Latent	223.8	6250
			Total (Electric Heat Pump)	128.9	25000

WINTER CALCULATIONS

Winter Heating Load (for 1686 sqft)

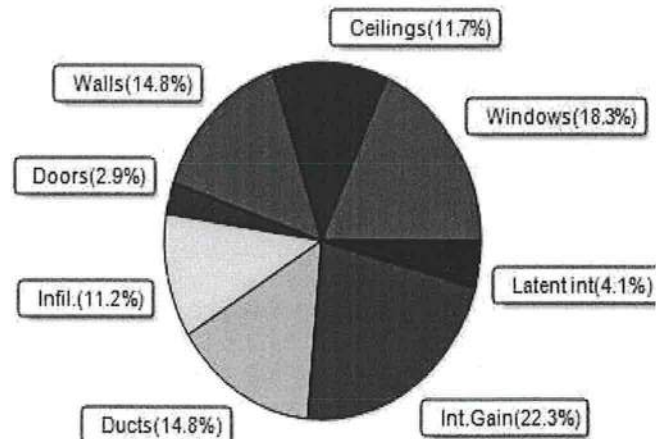
Load component		Load	
Window total	246 sqft	3153	Btuh
Wall total	1092 sqft	3878	Btuh
Door total	40 sqft	640	Btuh
Ceiling total	1891 sqft	2279	Btuh
Floor total	1686 sqft	8118	Btuh
Infiltration	50 cfm	2183	Btuh
Duct loss		2884	Btuh
Subtotal		23135	Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
TOTAL HEAT LOSS		23135	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1686 sqft)

Load component		Load	
Window total	246 sqft	3541	Btuh
Wall total	1092 sqft	2861	Btuh
Door total	40 sqft	560	Btuh
Ceiling total	1891 sqft	2279	Btuh
Floor total		0	Btuh
Infiltration	37 cfm	982	Btuh
Internal gain		4320	Btuh
Duct gain		2058	Btuh
Sens. Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		16601	Btuh
Latent gain(ducts)		804	Btuh
Latent gain(infiltration)		1189	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		2793	Btuh
TOTAL HEAT GAIN		19394	Btuh



8th Edition

EnergyGauge® System Sizing
 PREPARED BY: Evan Beamsley
 DATE: 2023-08-29

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Lewis, Edward and Ann

Project Title:

231074 Lewis

Fort White, FL

Building Type: User

2023-08-29

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (MJ8 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 0.22	Metal	0.32	N	16.0		12.8	205 Btuh
2	2, NFRC 0.22	Metal	0.32	N	26.7		12.8	341 Btuh
3	2, NFRC 0.22	Metal	0.32	N	18.0		12.8	230 Btuh
4	2, NFRC 0.22	Metal	0.32	E	30.0		12.8	384 Btuh
5	2, NFRC 0.22	Metal	0.32	E	15.0		12.8	192 Btuh
6	2, NFRC 0.22	Metal	0.32	S	60.0		12.8	768 Btuh
7	2, NFRC 0.22	Metal	0.32	S	30.0		12.8	384 Btuh
8	2, NFRC 0.22	Metal	0.32	S	13.3		12.8	171 Btuh
9	2, NFRC 0.22	Metal	0.32	S	13.3		12.8	171 Btuh
10	2, NFRC 0.22	Metal	0.32	W	16.0		12.8	205 Btuh
11	2, NFRC 0.22	Metal	0.32	W	8.0		12.8	102 Btuh
Window Total					246.3(sqft)			3153 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	215		3.55	765 Btuh
2	Frame - Wood	- Adj	(0.089)	13.0/0.0	132		3.55	469 Btuh
3	Frame - Wood	- Adj	(0.089)	13.0/0.0	35		3.55	123 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	168		3.55	598 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	294		3.55	1044 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	104		3.55	369 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55	85 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	120		3.55	426 Btuh
Wall Total					1092(sqft)			3878 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		13		16.0	213 Btuh
2	Insulated - Garage,	n	(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior,	n	(0.400)		7		16.0	107 Btuh
Door Total					40(sqft)			640Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Metal		(0.241)	0.0/22.0	1004		1.2	1210 Btuh
2	Sloped ce/D/Metal		(0.241)	0.0/22.0	737		1.2	888 Btuh
3	Knee wall/D/Metal		(0.241)	0.0/22.0	150		1.2	181 Btuh
Ceiling Total					1891(sqft)			2279Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	172.0 ft(perim.)		47.2	8118 Btuh
Floor Total					1686 sqft			8118 Btuh
Envelope Subtotal:								18068 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.20	15174	1.00	49.9		2183 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Lewis, Edward and Ann

Project Title:
231074 Lewis
Building Type: User

Fort White, FL

2023-08-29

Duct load	Average sealed, R6.0, Supply(Att), Return(Con) (DLM of 0.142)	2884 Btuh
All Zones	Sensible Subtotal All Zones	23135 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	23135 Btuh 0 Btuh 23135 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	25000 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

Lewis, Edward and Ann

Project Title:

231074 Lewis

Fort White, FL

2023-08-29

Reference City: Gainesville, FL (Defaults)

Temperature Difference: 24.0F(MJ8 99%)

Humidity difference: 47gr.

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	0.22, 0.32	No	No	N		9.5ft	0.3ft	16.0	16.0	0.0	12	29	197	Btuh
2	2 NFRC	0.22, 0.32	No	No	N		9.5ft	0.3ft	26.7	26.7	0.0	12	29	328	Btuh
3	2 NFRC	0.22, 0.32	No	No	N		9.5ft	0.3ft	18.0	18.0	0.0	12	29	221	Btuh
4	2 NFRC	0.22, 0.32	No	No	E		1.5ft	8.0ft	30.0	0.0	30.0	12	12	369	Btuh
5	2 NFRC	0.22, 0.32	No	No	E		1.5ft	7.0ft	15.0	0.0	15.0	12	12	184	Btuh
6	2 NFRC	0.22, 0.32	No	No	S		10.5f	0.3ft	60.0	60.0	0.0	12	29	738	Btuh
7	2 NFRC	0.22, 0.32	No	No	S		9.5ft	0.3ft	30.0	30.0	0.0	12	29	369	Btuh
8	2 NFRC	0.22, 0.32	No	No	S		10.5f	0.3ft	13.3	13.3	0.0	12	29	164	Btuh
9	2 NFRC	0.22, 0.32	No	No	S		9.5ft	0.3ft	13.3	13.3	0.0	12	29	164	Btuh
10	2 NFRC	0.22, 0.32	No	No	W		1.5ft	7.0ft	16.0	4.4	11.6	12	14	218	Btuh
11	2 NFRC	0.22, 0.32	No	No	W		1.5ft	7.0ft	8.0	2.2	5.8	12	14	109	Btuh
	Excursion													481	Btuh
	Window Total								246 (sqft)					3541 Btuh	
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext					0.09	13.0/0.0	215.3			2.7		583 Btuh		
2	Frame - Wood - Adj					0.09	13.0/0.0	132.0			2.1		281 Btuh		
3	Frame - Wood - Adj					0.09	13.0/0.0	34.7			2.1		74 Btuh		
4	Frame - Wood - Ext					0.09	13.0/0.0	168.3			2.7		456 Btuh		
5	Frame - Wood - Ext					0.09	13.0/0.0	294.0			2.7		796 Btuh		
6	Frame - Wood - Ext					0.09	13.0/0.0	104.0			2.7		282 Btuh		
7	Frame - Wood - Ext					0.09	13.0/0.0	24.0			2.7		65 Btuh		
8	Frame - Wood - Ext					0.09	13.0/0.0	120.0			2.7		325 Btuh		
	Wall Total								1092 (sqft)					2861 Btuh	
Doors	Type							Area (sqft)			HTM		Load		
1	Insulated - Exterior							13.3			14.0		187 Btuh		
2	Insulated - Garage							20.0			14.0		280 Btuh		
3	Insulated - Exterior							6.7			14.0		93 Btuh		
	Door Total								40 (sqft)					560 Btuh	
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load		
1	Unvented Attic/DarkMetal					0.241	0.0/22.0	1004.0			1.20		1210 Btuh		
2	Unvented Attic/DarkMetal					0.241	0.0/22.0	737.0			1.20		888 Btuh		
3	Knee wall to attic/DarkMetal					0.241	0.0/22.0	150.0			1.20		181 Btuh		
	Ceiling Total								1891 (sqft)					2279 Btuh	
Floors	Type						R-Value	Size			HTM		Load		
1	Slab On Grade						0.0	1686 (ft-perimeter)			0.0		0 Btuh		
	Floor Total								1686.0 (sqft)					0 Btuh	
	Envelope Subtotal:													9241 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Lewis, Edward and Ann

Project Title:
231074 Lewis

Climate:FL_GAINESVILLE_REGIONAL_A

Fort White, FL

2023-08-29

Infiltration	Type Natural	Average ACH 0.15	Volume(cuft) 15174	Wall Ratio 1	CFM= 37.4	Load 982 Btuh
Internal gain		Occupants 4	Btuh/occupant X 230	Appliance +	3400	Load 4320 Btuh
	Sensible Envelope Load:					14543 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Condi) (DGM of 0.141)					2058 Btuh
	Sensible Load All Zones					16601 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Lewis, Edward and Ann
Fort White, FL

Project Title:
231074 Lewis

Climate:FL_GAINESVILLE_REGIONAL_A

2023-08-29

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	14543 Btuh
	Sensible Duct Load	2058 Btuh
	Total Sensible Zone Loads	16601 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16601 Btuh
	Latent infiltration gain (for 47 gr. humidity difference)	1189 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	804 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2793 Btuh
	TOTAL GAIN	19394 Btuh

EQUIPMENT

1. Central Unit	#	25000 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