

Residential System Sizing Calculation

Summary

Flanders Res
171 NW Ambleside Dr.
Lake City, FL

Project Title:
220767 Flanders

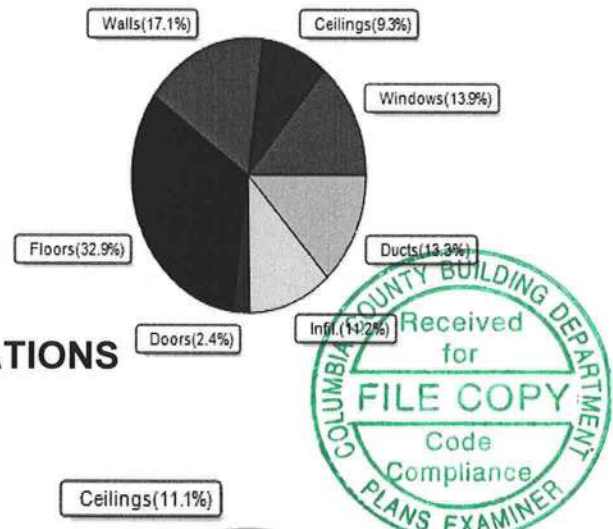
2022-06-29

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (79F) Humidity difference(54gr.)					
Winter design temperature(MJ8 99%)	32	F	Summer design temperature(MJ8 99%)	99	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	38	F	Summer temperature difference	24	F
Total heating load calculation	29338	Btuh	Total cooling load calculation	25945	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	109.1	32000	Sensible (SHR = 0.75)	110.2	24000
Heat Pump + Auxiliary(0.0kW)	109.1	32000	Latent	192.2	8000
			Total (Electric Heat Pump)	123.3	32000

WINTER CALCULATIONS

Winter Heating Load (for 2298 sqft)

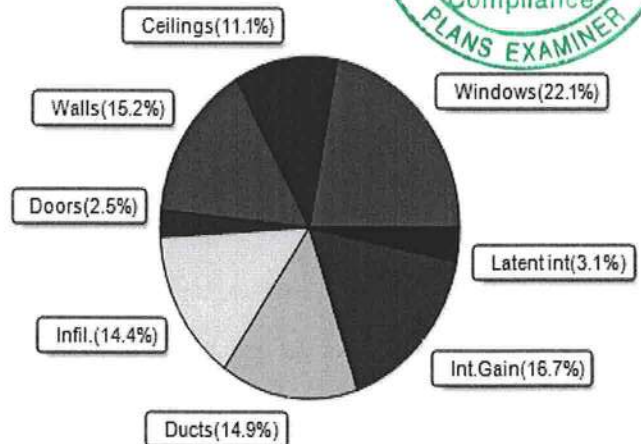
Load component			Load	
Window total	334	sqft	4065	Btuh
Wall total	1488	sqft	5018	Btuh
Door total	47	sqft	709	Btuh
Ceiling total	2578	sqft	2717	Btuh
Floor total	2298	sqft	9641	Btuh
Infiltration	79	cfm	3299	Btuh
Duct loss			3890	Btuh
Subtotal			29338	Btuh
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			29338	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2298 sqft)

Load component			Load	
Window total	334	sqft	5730	Btuh
Wall total	1488	sqft	3939	Btuh
Door total	47	sqft	653	Btuh
Ceiling total	2578	sqft	2888	Btuh
Floor total			0	Btuh
Infiltration	59	cfm	1563	Btuh
Internal gain			4320	Btuh
Duct gain			2689	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			21782	Btuh
Latent gain(ducts)			1189	Btuh
Latent gain(infiltration)			2173	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			800	Btuh
Total latent gain			4163	Btuh
TOTAL HEAT GAIN			25945	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2022-06-29

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Flanders Res
171 NW Ambleside Dr.
Lake City, FL

Project Title:
220767 Flanders
Building Type: User

2022-06-29

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 38.0 F (MJ8 99%)

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.22	Vinyl	0.32	N	30.0		12.2	365 Btuh
2	2, NFRC 0.22	Vinyl	0.32	N	20.0		12.2	243 Btuh
3	2, NFRC 0.22	Vinyl	0.32	N	5.3		12.2	65 Btuh
4	2, NFRC 0.22	Vinyl	0.32	W	16.0		12.2	195 Btuh
5	2, NFRC 0.22	Vinyl	0.32	W	5.3		12.2	65 Btuh
6	2, NFRC 0.22	Vinyl	0.32	N	24.0		12.2	292 Btuh
7	2, NFRC 0.22	Vinyl	0.32	N	13.3		12.2	162 Btuh
8	2, NFRC 0.22	Vinyl	0.32	N	12.0		12.2	146 Btuh
9	2, NFRC 0.22	Vinyl	0.32	E	16.0		12.2	195 Btuh
10	2, NFRC 0.22	Vinyl	0.32	E	5.3		12.2	65 Btuh
11	2, NFRC 0.22	Vinyl	0.32	N	20.0		12.2	243 Btuh
12	2, NFRC 0.22	Vinyl	0.32	E	30.0		12.2	365 Btuh
13	2, NFRC 0.22	Vinyl	0.32	E	6.0		12.2	73 Btuh
14	2, NFRC 0.22	Vinyl	0.32	S	15.0		12.2	182 Btuh
15	2, NFRC 0.22	Vinyl	0.32	S	17.8		12.2	216 Btuh
16	2, NFRC 0.22	Vinyl	0.32	S	14.2		12.2	172 Btuh
17	2, NFRC 0.22	Vinyl	0.32	S	24.0		12.2	292 Btuh
18	2, NFRC 0.22	Vinyl	0.32	S	18.0		12.2	219 Btuh
19	2, NFRC 0.22	Vinyl	0.32	S	8.0		12.2	97 Btuh
20	2, NFRC 0.22	Vinyl	0.32	W	4.0		12.2	49 Btuh
21	2, NFRC 0.22	Vinyl	0.32	W	30.0		12.2	365 Btuh
Window Total					334.3(sqft)			4065 Btuh
Walls	Type	Omt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	95		3.37	319 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	87		3.37	294 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	64		3.37	215 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	117		3.37	396 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	64		3.37	215 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	81		3.37	274 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	279		3.37	942 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	29		3.37	97 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	20		3.37	67 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	32		3.37	107 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	20		3.37	67 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	29		3.37	97 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.37	81 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	48		3.37	162 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	74		3.37	250 Btuh
16	Frame - Wood	- Adj	(0.089)	13.0/0.0	153		3.37	517 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	15		3.37	49 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	257		3.37	868 Btuh
Wall Total					1488(sqft)			5018 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Flanders Res
171 NW Ambleside Dr.
Lake City, FL

Project Title:
220767 Flanders
Building Type: User

2022-06-29

Doors	Type	Storm Ueff.		Area X	HTM=	Load
1	Insulated - Exterior, n	(0.400)		7	15.2	101 Btuh
2	Insulated - Exterior, n	(0.400)		20	15.2	304 Btuh
3	Insulated - Garage, n	(0.400)		20	15.2	304 Btuh
	Door Total			47(sqft)		709Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Unvent Attic/D/Shing	(0.241)	0.0/22.0	2298	1.0	2215 Btuh
2	Knee Wall/D/Shing	(0.047)	0.0/22.0	280	1.8	502 Btuh
	Ceiling Total			2578(sqft)		2717Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	215.0 ft(perim.)	44.8	9641 Btuh
	Floor Total			2298 sqft		9641 Btuh
	Envelope Subtotal:					22150 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.23	20682	1.00	79.3	3299 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Con) (DLM of 0.153)					3890 Btuh
All Zones	Sensible Subtotal All Zones					29338 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	29338 Btuh 0 Btuh 29338 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	32000 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

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Building Type: User

2022-06-29

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

Flanders Res
171 NW Ambleside Dr.
Lake City, FL

Project Title:
220767 Flanders

2022-06-29

Reference City: Gainesville, FL

Temperature Difference: 24.0F(MJ8 99%)

Humidity difference: 54gr.

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		1.5ft	2.5ft	30.0	30.0	0.0	12	14	369 Btuh
2	2 NFRC	0.22, 0.32	No	No	N		1.5ft	2.5ft	20.0	20.0	0.0	12	14	246 Btuh
3	2 NFRC	0.22, 0.32	No	No	N		1.5ft	1.0ft	5.3	5.3	0.0	12	14	66 Btuh
4	2 NFRC	0.22, 0.32	No	No	W		1.5ft	2.5ft	16.0	0.0	16.0	12	29	462 Btuh
5	2 NFRC	0.22, 0.32	No	No	W		1.5ft	1.0ft	5.3	1.0	4.4	12	29	138 Btuh
6	2 NFRC	0.22, 0.32	No	No	N		1.5ft	2.5ft	24.0	24.0	0.0	12	14	295 Btuh
7	2 NFRC	0.22, 0.32	No	No	N		1.5ft	2.5ft	13.3	12.0	1.3	12	14	166 Btuh
8	2 NFRC	0.22, 0.32	No	No	N		1.5ft	1.0ft	12.0	12.0	0.0	12	14	148 Btuh
9	2 NFRC	0.22, 0.32	No	No	E		1.5ft	2.5ft	16.0	0.0	16.0	12	29	462 Btuh
10	2 NFRC	0.22, 0.32	No	No	E		1.5ft	1.0ft	5.3	1.0	4.4	12	29	138 Btuh
11	2 NFRC	0.22, 0.32	No	No	N		1.5ft	2.5ft	20.0	20.0	0.0	12	14	246 Btuh
12	2 NFRC	0.22, 0.32	No	No	E		1.5ft	0.5ft	30.0	4.5	25.5	12	29	793 Btuh
13	2 NFRC	0.22, 0.32	No	No	E		1.5ft	0.5ft	6.0	1.5	4.5	12	29	149 Btuh
14	2 NFRC	0.22, 0.32	No	No	S		1.5ft	3.0ft	15.0	0.0	15.0	12	12	185 Btuh
15	2 NFRC	0.22, 0.32	No	No	S		8.0ft	4.0ft	17.8	0.0	17.8	12	12	219 Btuh
16	2 NFRC	0.22, 0.32	No	No	S		8.0ft	1.0ft	14.2	0.0	14.2	12	12	174 Btuh
17	2 NFRC	0.22, 0.32	No	No	S		1.5ft	2.5ft	24.0	0.0	24.0	12	12	295 Btuh
18	2 NFRC	0.22, 0.32	No	No	S		1.5ft	2.5ft	18.0	0.0	18.0	12	12	222 Btuh
19	2 NFRC	0.22, 0.32	No	No	S		1.5ft	1.0ft	8.0	0.0	8.0	12	12	98 Btuh
20	2 NFRC	0.22, 0.32	No	No	W		1.5ft	0.5ft	4.0	3.0	1.0	12	29	66 Btuh
21	2 NFRC	0.22, 0.32	No	No	W		1.5ft	0.5ft	30.0	4.5	25.5	12	29	793 Btuh
	Window Total								334 (sqft)					5730 Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Frame - Wood - Ext		0.09		13.0/0.0		94.7		2.7	256 Btuh				
2	Frame - Wood - Ext		0.09		13.0/0.0		87.2		2.7	236 Btuh				
3	Frame - Wood - Ext		0.09		13.0/0.0		63.7		2.7	172 Btuh				
4	Frame - Wood - Ext		0.09		13.0/0.0		117.3		2.7	318 Btuh				
5	Frame - Wood - Ext		0.09		13.0/0.0		63.7		2.7	172 Btuh				
6	Frame - Wood - Ext		0.09		13.0/0.0		81.3		2.7	220 Btuh				
7	Frame - Wood - Ext		0.09		13.0/0.0		279.3		2.7	756 Btuh				
8	Frame - Wood - Ext		0.09		13.0/0.0		28.7		2.7	78 Btuh				
9	Frame - Wood - Ext		0.09		13.0/0.0		20.0		2.7	54 Btuh				
10	Frame - Wood - Ext		0.09		13.0/0.0		31.7		2.7	86 Btuh				
11	Frame - Wood - Ext		0.09		13.0/0.0		20.0		2.7	54 Btuh				
12	Frame - Wood - Ext		0.09		13.0/0.0		28.7		2.7	78 Btuh				
13	Frame - Wood - Ext		0.09		13.0/0.0		24.0		2.7	65 Btuh				
14	Frame - Wood - Ext		0.09		13.0/0.0		48.1		2.7	130 Btuh				
15	Frame - Wood - Ext		0.09		13.0/0.0		74.2		2.7	201 Btuh				
16	Frame - Wood - Adj		0.09		13.0/0.0		153.3		2.1	327 Btuh				
17	Frame - Wood - Ext		0.09		13.0/0.0		14.7		2.7	40 Btuh				
18	Frame - Wood - Ext		0.09		13.0/0.0		257.3		2.7	697 Btuh				
	Wall Total								1488 (sqft)		3939 Btuh			
Doors	Type	Area (sqft)		HTM		Load								
1	Insulated - Exterior		6.7		14.0	93 Btuh								
2	Insulated - Exterior		20.0		14.0	280 Btuh								
3	Insulated - Garage		20.0		14.0	280 Btuh								
	Door Total								47 (sqft)		653 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Flanders Res
171 NW Ambleside Dr.
Lake City, FL

Project Title:
220767 Flanders

Climate:FL_GAINESVILLE_REGIONAL_A

2022-06-29

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Unvented Attic/DarkShingle	0.241	0.0/22.0	2298.0	1.20	2769 Btuh
2	Knee Wall/DarkShingle	0.047	0.0/22.0	280.0	0.42	119 Btuh
	Ceiling Total			2578 (sqft)		2888 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	2298 (ft-perimeter)	0.0	0 Btuh
	Floor Total			2298.0 (sqft)		0 Btuh
	Envelope Subtotal:					13210 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.17	20682	1	59.5	1563 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		4	X 230	+	3400	4320 Btuh
	Sensible Envelope Load:					19093 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Condi)			(DGM of 0.141)		2689 Btuh
	Sensible Load All Zones					21782 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Flanders Res
171 NW Ambleside Dr.
Lake City, FL

Project Title:
220767 Flanders

Climate:FL_GAINESVILLE_REGIONAL_A

2022-06-29

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	19093 Btuh
	Sensible Duct Load	2689 Btuh
	Total Sensible Zone Loads	21782 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21782 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	2173 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1189 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4163 Btuh
	TOTAL GAIN	25945 Btuh

EQUIPMENT

1. Central Unit	#	32000 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