

Residential System Sizing Calculation

Summary

SW Charles Terrace
Lake City, FL

Project Title:
Alexis Norris Residence

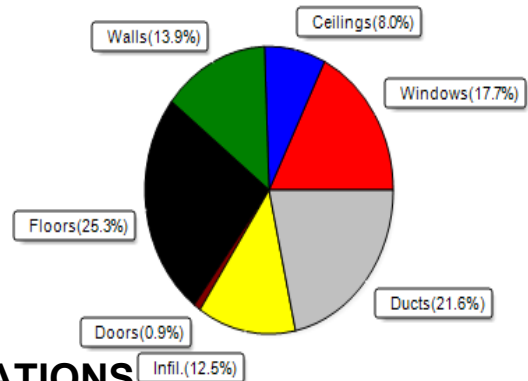
2/16/2024

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%/Cu)33	F	Summer design temperature(MJ8 99%/Cu)99	F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	37 F	Summer temperature difference	24 F
Total heating load calculation	37211 Btuh	Total cooling load calculation	39630 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	108.0 40204	Sensible (SHR = 0.70)	78.2 25618
Heat Pump + Auxiliary(0.0kW)	108.0 40204	Latent	159.8 10979
		Total (Electric Heat Pump)	92.3 36597

WINTER CALCULATIONS

Winter Heating Load (for 2880 sqft)

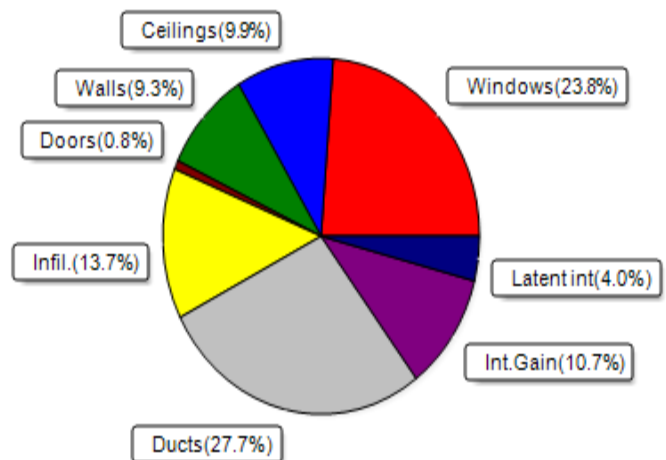
Load component	Load
Window total 494 sqft	6580 Btuh
Wall total 1806 sqft	5164 Btuh
Door total 20 sqft	340 Btuh
Ceiling total 3168 sqft	2975 Btuh
Floor total 2880 sqft	9431 Btuh
Infiltration 115 cfm	4665 Btuh
Duct loss	8056 Btuh
Subtotal	37211 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	37211 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2880 sqft)

Load component	Load
Window total 494 sqft	9427 Btuh
Wall total 1806 sqft	3684 Btuh
Door total 20 sqft	322 Btuh
Ceiling total 3168 sqft	3940 Btuh
Floor total	0 Btuh
Infiltration 86 cfm	2270 Btuh
Internal gain	4240 Btuh
Duct gain	8875 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	32759 Btuh
Latent gain(ducts)	2114 Btuh
Latent gain(infiltration)	3157 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	6871 Btuh
TOTAL HEAT GAIN	39630 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 2 / 16 / 2024

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

SW Charles Terrace
Lake City, FL

Project Title:
Alexis Norris Residence
Building Type: User

2/16/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 99%/Cu)
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 0.25	Vinyl	0.36	S	18.0		13.3	240 Btuh
2	2, NFRC 0.25	Vinyl	0.36	S	42.0		13.3	559 Btuh
3	2, NFRC 0.25	TIM	0.36	S	48.0		13.3	639 Btuh
4	2, NFRC 0.25	Vinyl	0.36	S	24.0		13.3	320 Btuh
5	2, NFRC 0.25	Vinyl	0.36	S	30.0		13.3	400 Btuh
6	2, NFRC 0.25	Vinyl	0.36	S	36.0		13.3	480 Btuh
7	2, NFRC 0.25	Vinyl	0.36	E	20.0		13.3	266 Btuh
8	2, NFRC 0.25	Vinyl	0.36	E	4.0		13.3	53 Btuh
9	2, NFRC 0.25	Vinyl	0.36	E	16.0		13.3	213 Btuh
10	2, NFRC 0.25	Vinyl	0.36	E	8.0		13.3	107 Btuh
11	2, NFRC 0.25	Vinyl	0.36	E	20.0		13.3	266 Btuh
12	2, NFRC 0.25	Vinyl	0.36	N	42.0		13.3	559 Btuh
13	2, NFRC 0.25	TIM	0.36	N	48.0		13.3	639 Btuh
14	2, NFRC 0.25	Vinyl	0.36	N	24.0		13.3	320 Btuh
15	2, NFRC 0.25	Vinyl	0.36	N	30.0		13.3	400 Btuh
16	2, NFRC 0.25	Vinyl	0.36	N	4.0		13.3	53 Btuh
17	2, NFRC 0.25	Vinyl	0.36	N	18.0		13.3	240 Btuh
18	2, NFRC 0.25	Vinyl	0.36	W	54.0		13.3	719 Btuh
19	2, NFRC 0.25	Vinyl	0.36	W	8.0		13.3	107 Btuh
Window Total					494.0(sqft)			6580 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	182		2.86	520 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	136		2.86	389 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	164		2.86	469 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	412		2.86	1178 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	180		2.86	515 Btuh
6	Frame - Wood	- Ext	(0.077)	19.0/0.0	136		2.86	389 Btuh
7	Frame - Wood	- Ext	(0.077)	19.0/0.0	178		2.86	509 Btuh
8	Frame - Wood	- Ext	(0.077)	19.0/0.0	418		2.86	1195 Btuh
Wall Total					1806(sqft)			5164 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		17.0	340 Btuh
Door Total					20(sqft)			340Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Metal		(0.025)	38.0/0.0	3168		0.94	2975 Btuh
Ceiling Total					3168(sqft)			2975Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	216.0 ft(perim.)		43.7	9431 Btuh
Floor Total					2880 sqft			9431 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

SW Charles Terrace
Lake City, FL

Project Title:
Alexis Norris Residence
Building Type: User

2/16/2024

	Envelope Subtotal:	24490 Btuh
Infiltration	Type Wholehouse ACH Volume(cuft) Wall Ratio CFM= Natural 0.24 28800 1.00 115.2	4665 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.276)	8056 Btuh
All Zones	Sensible Subtotal All Zones	37211 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	37211 Btuh 0 Btuh 37211 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	40204 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

SW Charles Terrace
Lake City, FL

Project Title:
Alexis Norris Residence

2/16/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 54gr.

Temperature Difference: 24.0F(MJ8 99%/Cu)
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	0.25, 0.36	No	No	S		1.5ft.	2.0ft.	18.0	18.0	0.0	14	16	250	Btuh
2	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	6.0ft.	42.0	17.7	24.3	14	16	631	Btuh
3	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	6.0ft.	48.0	15.1	32.9	14	16	731	Btuh
4	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	24.0	24.0	0.0	14	16	334	Btuh
5	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	30.0	30.0	0.0	14	16	417	Btuh
6	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	2.0ft.	36.0	36.0	0.0	14	16	500	Btuh
7	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	3.0ft.	20.0	0.0	20.0	14	33	655	Btuh
8	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	4.0ft.	4.0	0.0	4.0	14	33	131	Btuh
9	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	5.0ft.	16.0	0.0	16.0	14	33	524	Btuh
10	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	5.0ft.	8.0	0.0	8.0	14	33	262	Btuh
11	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	3.0ft.	20.0	0.0	20.0	14	33	655	Btuh
12	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	6.0ft.	42.0	0.0	42.0	14	14	584	Btuh
13	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	6.0ft.	48.0	0.0	48.0	14	14	667	Btuh
14	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	24.0	0.0	24.0	14	14	334	Btuh
15	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	30.0	0.0	30.0	14	14	417	Btuh
16	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	2.0ft.	4.0	0.0	4.0	14	14	56	Btuh
17	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	2.0ft.	18.0	0.0	18.0	14	14	250	Btuh
18	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	4.0ft.	54.0	0.0	54.0	14	33	1768	Btuh
19	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	4.0ft.	8.0	0.0	8.0	14	33	262	Btuh
	Window Total								494 (sqft)					9427 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Frame - Wood - Ext	0.08		19.0/0.0		182.0		2.0		371 Btuh					
2	Frame - Wood - Ext	0.08		19.0/0.0		136.0		2.0		277 Btuh					
3	Frame - Wood - Ext	0.08		19.0/0.0		164.0		2.0		335 Btuh					
4	Frame - Wood - Ext	0.08		19.0/0.0		412.0		2.0		840 Btuh					
5	Frame - Wood - Ext	0.08		19.0/0.0		180.0		2.0		367 Btuh					
6	Frame - Wood - Ext	0.08		19.0/0.0		136.0		2.0		277 Btuh					
7	Frame - Wood - Ext	0.08		19.0/0.0		178.0		2.0		363 Btuh					
8	Frame - Wood - Ext	0.08		19.0/0.0		418.0		2.0		853 Btuh					
	Wall Total						1806 (sqft)			3684 Btuh					
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior	20.0		16.1		322 Btuh									
	Door Total 20 (sqft) 322 Btuh														
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Vented Attic/DarkMetal/RB	0.025		38.0/0.0		3168.0		1.24		3940 Btuh					
	Ceiling Total						3168 (sqft)			3940 Btuh					
Floors	Type	R-Value		Size		HTM		Load							
1	Slab On Grade	0.0		2880 (ft-perimeter)		0.0		0 Btuh							
	Floor Total						2880.0 (sqft)			0 Btuh					
	Envelope Subtotal:											17373 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

SW Charles Terrace
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Alexis Norris Residence

2/16/2024

Infiltration	Type Natural	Average ACH 0.18	Volume(cuft) 28800	Wall Ratio 1	CFM= 86.4	Load 2270 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	2400	Load 4240 Btuh
	Sensible Envelope Load:					23883 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.372)					8875 Btuh
	Sensible Load All Zones					32759 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

SW Charles Terrace
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Alexis Norris Residence

2/16/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	23883 Btuh
	Sensible Duct Load	8875 Btuh
	Total Sensible Zone Loads	32759 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	32759 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	3157 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	2114 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	6871 Btuh
	TOTAL GAIN	39630 Btuh

EQUIPMENT

1. Central Unit	#	36597 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