

Residential System Sizing Calculation

Summary

Project Title:
David & Ellie Miller

Lake City, FL 32024

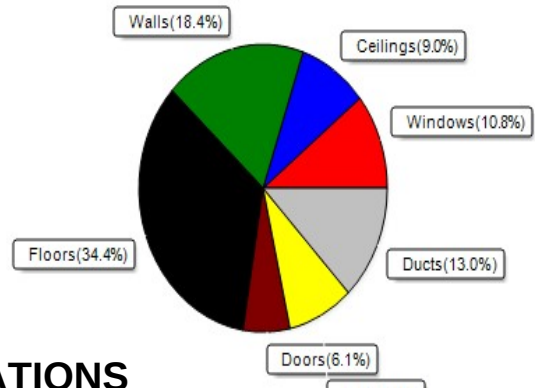
7/27/2020

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	33653 Btuh	Total cooling load calculation	29531 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	124.8 42000	Sensible (SHR = 0.85)	138.9 35700
Heat Pump + Auxiliary(0.0kW)	124.8 42000	Latent	164.3 6300
		Total (Electric Heat Pump)	142.2 42000

WINTER CALCULATIONS

Winter Heating Load (for 2385 sqft)

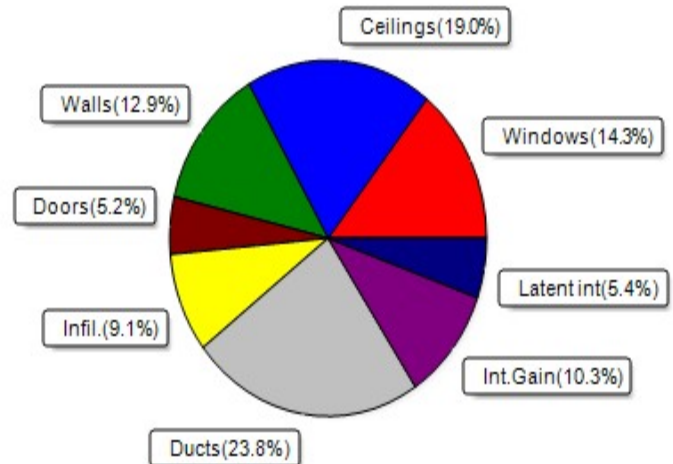
Load component		Load	
Window total	275 sqft	3630	Btuh
Wall total	1794 sqft	6185	Btuh
Door total	128 sqft	2048	Btuh
Ceiling total	2385 sqft	3038	Btuh
Floor total	2385 sqft	11564	Btuh
Infiltration	65 cfm	2827	Btuh
Duct loss		4361	Btuh
Subtotal		33653	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		33653	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2385 sqft)

Load component		Load	
Window total	275 sqft	4224	Btuh
Wall total	1794 sqft	3815	Btuh
Door total	128 sqft	1536	Btuh
Ceiling total	2385 sqft	5621	Btuh
Floor total		0	Btuh
Infiltration	48 cfm	1007	Btuh
Internal gain		3040	Btuh
Duct gain		6455	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		25697	Btuh
Latent gain(ducts)		563	Btuh
Latent gain(infiltration)		1671	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		3834	Btuh
TOTAL HEAT GAIN		29531	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

7-25-20

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
David & Ellie Miller

Lake City, FL 32024

7/27/2020

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%) Humidity difference: 51gr.

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, 0.33	No	No	N		12.5f	1.3ft.	36.0	0.0	36.0	11	11	392	Btuh
2	2 NFRC	0.22, 0.33	No	No	W		9.5ft.	1.3ft.	36.0	36.0	0.0	11	27	392	Btuh
3	2 NFRC	0.22, 0.33	No	No	N		1.5ft.	1.3ft.	54.0	0.0	54.0	11	11	588	Btuh
4	2 NFRC	0.22, 0.33	No	No	N		1.5ft.	1.3ft.	15.0	0.0	15.0	11	11	163	Btuh
5	2 NFRC	0.22, 0.33	No	No	E		1.5ft.	1.3ft.	15.0	0.0	15.0	11	27	412	Btuh
6	2 NFRC	0.22, 0.33	No	No	E		1.5ft.	1.3ft.	30.0	0.0	30.0	11	27	824	Btuh
7	2 NFRC	0.22, 0.33	No	No	E		1.5ft.	1.3ft.	9.0	0.0	9.0	11	27	247	Btuh
8	2 NFRC	0.22, 0.33	No	No	S		8.5ft.	1.3ft.	30.0	30.0	0.0	11	13	327	Btuh
9	2 NFRC	0.22, 0.33	No	No	S		8.5ft.	1.3ft.	30.0	30.0	0.0	11	13	327	Btuh
10	2 NFRC	0.22, 0.33	No	No	W		1.5ft.	1.3ft.	20.0	0.0	20.0	11	27	550	Btuh
	Window Total								275 (sqft)					4224 Btuh	
Walls	Type	U-Value			R-Value			Area(sqft)			HTM		Load		
1	Frame - Wood - Ext				0.09		13.0/0.6		166.0			2.2		365	Btuh
2	Frame - Wood - Ext				0.09		13.0/0.6		63.0			2.2		138	Btuh
3	Frame - Wood - Ext				0.09		13.0/0.6		90.0			2.2		198	Btuh
4	Frame - Wood - Ext				0.09		13.0/0.6		54.0			2.2		119	Btuh
5	Frame - Wood - Ext				0.09		13.0/0.6		114.0			2.2		251	Btuh
6	Frame - Wood - Ext				0.09		13.0/0.6		105.0			2.2		231	Btuh
7	Frame - Wood - Ext				0.09		13.0/0.6		24.0			2.2		53	Btuh
8	Frame - Wood - Ext				0.09		13.0/0.6		51.0			2.2		112	Btuh
9	Frame - Wood - Ext				0.09		13.0/0.6		24.0			2.2		53	Btuh
10	Frame - Wood - Ext				0.09		13.0/0.6		192.0			2.2		422	Btuh
11	Frame - Wood - Ext				0.09		13.0/0.6		22.5			2.2		49	Btuh
12	Frame - Wood - Ext				0.09		13.0/0.6		18.0			2.2		40	Btuh
13	Frame - Wood - Ext				0.09		13.0/0.6		105.0			2.2		231	Btuh
14	Frame - Wood - Ext				0.09		13.0/0.6		40.0			2.2		88	Btuh
15	Frame - Wood - Ext				0.09		13.0/0.6		42.0			2.2		92	Btuh
16	Frame - Wood - Ext				0.09		13.0/0.6		36.0			2.2		79	Btuh
17	Frame - Wood - Ext				0.09		13.0/0.6		91.5			2.2		201	Btuh
18	Frame - Wood - Ext				0.09		13.0/0.6		90.0			2.2		198	Btuh
19	Frame - Wood - Ext				0.09		13.0/0.6		28.5			2.2		63	Btuh
20	Frame - Wood - Ext				0.09		13.0/0.6		208.0			2.2		457	Btuh
21	Frame - Wood - Adj				0.09		13.0/0.6		229.0			1.6		375	Btuh
	Wall Total								1794 (sqft)			1.6		3815 Btuh	
Doors	Type	U-Value			R-Value			Area (sqft)			HTM		Load		
1	Insulated - Exterior								40.0			12.0		480	Btuh
2	Insulated - Exterior								40.0			12.0		480	Btuh
3	Insulated - Exterior								28.0			12.0		336	Btuh
4	Insulated - Garage								20.0			12.0		240	Btuh
	Door Total								128 (sqft)					1536 Btuh	
Ceilings	Type/Color/Surface	U-Value			R-Value			Area(sqft)			HTM		Load		
1	UnventedAttic/Light/Shingle				0.032		30.0/0.0		2385.0			2.36		5621	Btuh
	Ceiling Total								2385 (sqft)					5621 Btuh	
Floors	Type	U-Value			R-Value			Size			HTM		Load		
1	Slab On Grade						0.0		2385 (ft-perimeter)			0.0		0	Btuh
	Floor Total								2385.0 (sqft)					0 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
David & Ellie Miller

Lake City, FL 32024

7/27/2020

	Envelope Subtotal:					15195 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.14	21465	1	48.4	1007 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		8	X 230	+	1200	3040 Btuh
	Sensible Envelope Load:					19242 Btuh
Duct load	Extremelysealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.335)					6455 Btuh
	Sensible Load All Zones					25697 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
David & Ellie Miller

Lake City, FL 32024

7/27/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	19242 Btuh
	Sensible Duct Load	6455 Btuh
	Total Sensible Zone Loads	25697 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	25697 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1671 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	563 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3834 Btuh
	TOTAL GAIN	29531 Btuh

EQUIPMENT

1. Central Unit	#	42000 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

Lake City, FL 32024

Project Title:
David & Ellie Miller
Building Type: User

7/27/2020

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.22	Vinyl	0.33	N	36.0		13.2	475 Btuh
2	2, NFRC 0.22	Vinyl	0.33	W	36.0		13.2	475 Btuh
3	2, NFRC 0.22	Vinyl	0.33	N	54.0		13.2	713 Btuh
4	2, NFRC 0.22	Vinyl	0.33	N	15.0		13.2	198 Btuh
5	2, NFRC 0.22	Vinyl	0.33	E	15.0		13.2	198 Btuh
6	2, NFRC 0.22	Vinyl	0.33	E	30.0		13.2	396 Btuh
7	2, NFRC 0.22	Vinyl	0.33	E	9.0		13.2	119 Btuh
8	2, NFRC 0.22	Vinyl	0.33	S	30.0		13.2	396 Btuh
9	2, NFRC 0.22	Vinyl	0.33	S	30.0		13.2	396 Btuh
10	2, NFRC 0.22	Vinyl	0.33	W	20.0		13.2	264 Btuh
Window Total					275.0(sqft)			3630 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	166		3.45	572 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	63		3.45	217 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	90		3.45	310 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	54		3.45	186 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	114		3.45	393 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	105		3.45	362 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	24		3.45	83 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	51		3.45	176 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	24		3.45	83 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	192		3.45	662 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	23		3.45	78 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	18		3.45	62 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	105		3.45	362 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	40		3.45	138 Btuh
15	Frame - Wood	- Ext	(0.086)	13.0/0.6	42		3.45	145 Btuh
16	Frame - Wood	- Ext	(0.086)	13.0/0.6	36		3.45	124 Btuh
17	Frame - Wood	- Ext	(0.086)	13.0/0.6	92		3.45	316 Btuh
18	Frame - Wood	- Ext	(0.086)	13.0/0.6	90		3.45	310 Btuh
19	Frame - Wood	- Ext	(0.086)	13.0/0.6	29		3.45	98 Btuh
20	Frame - Wood	- Ext	(0.086)	13.0/0.6	208		3.45	717 Btuh
21	Frame - Wood	- Adj	(0.086)	13.0/0.6	229		3.45	790 Btuh
Wall Total					1794(sqft)			6185 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		40		16.0	640 Btuh
2	Insulated - Exterior, n		(0.400)		40		16.0	640 Btuh
3	Insulated - Exterior, n		(0.400)		28		16.0	448 Btuh
4	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					128(sqft)			2048Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Lake City, FL 32024

Project Title:
David & Ellie Miller
Building Type: User

7/27/2020

Ceilings 1	Type/Color/Surface Unvent Attic/L/Shing Ceiling Total	Ueff. (0.032)	R-Value 30.0/0.0	Area X 2385 2385(sqft)	HTM= 1.3	Load 3038 Btuh 3038Btuh
Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 245.0 ft(perim.) 2385 sqft	HTM= 47.2	Load 11564 Btuh 11564 Btuh
Envelope Subtotal:						26465 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.18	Volume(cuft) 21465	Wall Ratio 1.00	CFM= 64.5	2827 Btuh
Duct load	Extremely sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.149)					4361 Btuh
All Zones	Sensible Subtotal All Zones					33653 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	33653 Btuh 0 Btuh 33653 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	42000 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