

Residential System Sizing Calculation

Summary

Project Title:
Liberty - Addition

, FL

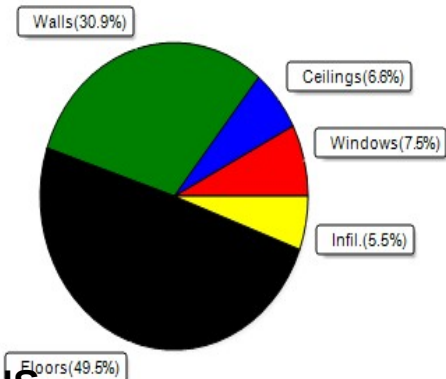
12/1/2021

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	4147 Btuh	Total cooling load calculation	2332 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 4147	Sensible (SHR = 0.85)	113.5 2040
Heat Pump + Auxiliary(0.0kW)	100.0 4147	Latent	67.4 360
		Total (Electric Heat Pump)	102.9 2400

WINTER CALCULATIONS

Winter Heating Load (for 210 sqft)

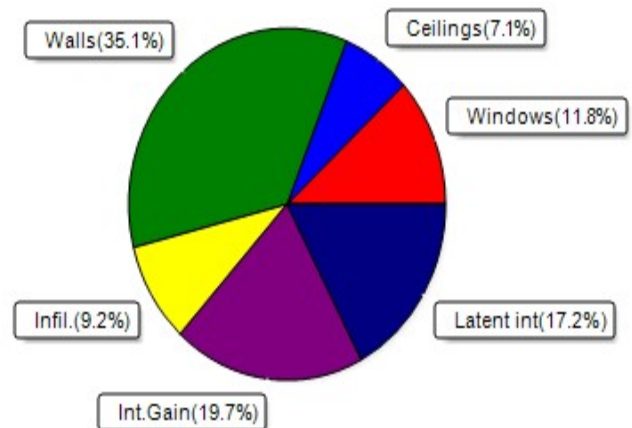
Load component	Load
Window total 30 sqft	312 Btuh
Wall total 362 sqft	1283 Btuh
Door total 0 sqft	0 Btuh
Ceiling total 210 sqft	272 Btuh
Floor total 210 sqft	2053 Btuh
Infiltration 5 cfm	227 Btuh
Duct loss	0 Btuh
Subtotal	4147 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	4147 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 210 sqft)

Load component	Load
Window total 30 sqft	274 Btuh
Wall total 362 sqft	818 Btuh
Door total 0 sqft	0 Btuh
Ceiling total 210 sqft	164 Btuh
Floor total	0 Btuh
Infiltration 4 cfm	81 Btuh
Internal gain	460 Btuh
Duct gain	0 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	1798 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	134 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	400 Btuh
Total latent gain	534 Btuh
TOTAL HEAT GAIN	2332 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

12-1-21

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Liberty - Addition

, FL

12/1/2021

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	0.20, 0.26	No	No	No	N	1.5ft	2.3ft	30.0	0.0	30.0	9	9	274 Btuh			
	Window Total								30 (sqft)					274 Btuh			
Walls	Type						U-Value		R-Value		Area(sqft)		HTM		Load		
									Cav/Sheath								
	1	Frame - Wood - Ext					0.09		13.0/0.0		132.0		2.3		299 Btuh		
	2	Frame - Wood - Ext					0.09		13.0/0.0		97.5		2.3		221 Btuh		
	3	Frame - Wood - Ext					0.09		13.0/0.0		132.0		2.3		299 Btuh		
	Wall Total								362 (sqft)					818 Btuh			
Ceilings	Type/Color/Surface						U-Value		R-Value		Area(sqft)		HTM		Load		
1	Cath/Sngl Assem/Light/Shingle						0.032		30.0/0.0		210.0		0.78		164 Btuh		
	Ceiling Total								210 (sqft)					164 Btuh			
Floors	Type								R-Value		Size		HTM		Load		
1	Slab On Grade								0.0		210 (ft-perimeter)		0.0		0 Btuh		
	Floor Total								210.0 (sqft)					0 Btuh			
	Envelope Subtotal:													1257 Btuh			
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural						0.12		1890		1		3.9		81 Btuh		
Internal gain							Occupants		Btuh/occupant		Appliance		Load				
							2		X 230		+		0		460 Btuh		
	Sensible Envelope Load:													1798 Btuh			
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi)													(DGM of 0.000)		0 Btuh	
	Sensible Load All Zones													1798 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Liberty - Addition

, FL

12/1/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	1798 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	1798 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	1798 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	134 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (2.0 people @ 200 Btuh per person)	400 Btuh
	Latent other gain	0 Btuh
	Latent total gain	534 Btuh
	TOTAL GAIN	2332 Btuh

EQUIPMENT

1. Central Unit	#	2400 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

Project Title:
Liberty - Addition
Building Type: User

, FL

12/1/2021

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 0.20	Vinyl	0.26	N	30.0		10.4	312 Btuh
	Window Total				30.0(sqft)			312 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	132		3.55	469 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	98		3.55	346 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	132		3.55	469 Btuh
	Wall Total				362(sqft)			1283 Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Cathedral/L/Shing		(0.032)	30.0/0.0	210		1.3	272 Btuh
	Ceiling Total				210(sqft)			272Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	43.5 ft(perim.)		47.2	2053 Btuh
	Floor Total				210 sqft			2053 Btuh
	Envelope Subtotal:							3920 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio		CFM=	
	Natural		0.16	1890	1.00		5.2	227 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)						(DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones							4147 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	4147 Btuh 0 Btuh 4147 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	4147 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Liberty - Addition
Building Type: User

, FL

12/1/2021

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