

Residential System Sizing Calculation

Summary

Project Title:
Daniel Thomas



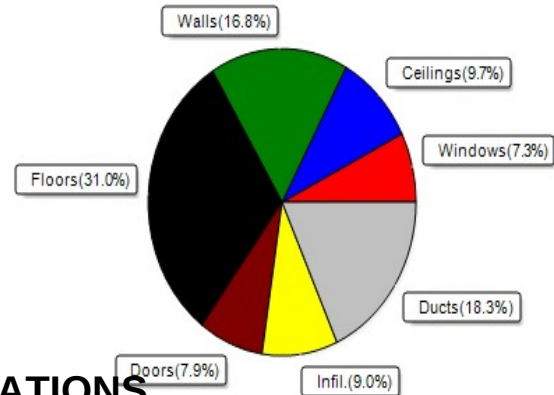
8/1/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 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	29851	Btuh	Total cooling load calculation 29906 Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity % of calc Btuh
Total (Electric Heat Pump)	160.8	48000	Sensible (SHR = 0.75) 142.1 36000
Heat Pump + Auxiliary(0.0kW)	160.8	48000	Latent 262.7 12000
			Total (Electric Heat Pump) 160.5 48000

WINTER CALCULATIONS

Winter Heating Load (for 2280 sqft)

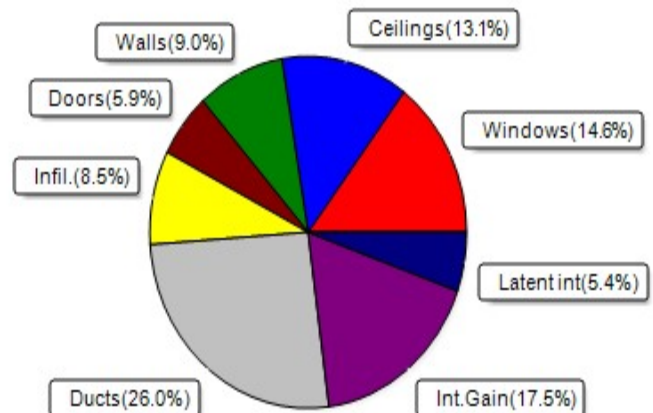
Load component	Load
Window total 210 sqft	2184 Btuh
Wall total 1622 sqft	5014 Btuh
Door total 128 sqft	2355 Btuh
Ceiling total 2280 sqft	2904 Btuh
Floor total 2280 sqft	9251 Btuh
Infiltration 61 cfm	2695 Btuh
Duct loss	5448 Btuh
Subtotal	29851 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	29851 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2280 sqft)

Load component	Load
Window total 210 sqft	4363 Btuh
Wall total 1622 sqft	2682 Btuh
Door total 128 sqft	1766 Btuh
Ceiling total 2280 sqft	3921 Btuh
Floor total	0 Btuh
Infiltration 46 cfm	960 Btuh
Internal gain	5240 Btuh
Duct gain	6405 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	25338 Btuh
Latent gain(ducts)	1376 Btuh
Latent gain(infiltration)	1593 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	4568 Btuh
TOTAL HEAT GAIN	29906 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Daniel Thomas

, FL

8/1/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
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	0.20, 0.26	No	No	W	1.5ft	1.3ft	36.0	0.0	36.0	9	24	872 Btuh		
2	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	16.0	0.0	16.0	9	24	388 Btuh		
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	18.0	0.0	18.0	9	9	165 Btuh		
4	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	12.0	0.0	12.0	9	24	291 Btuh		
5	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	90.0	0.0	90.0	9	24	2180 Btuh		
6	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	18.0	18.0	0.0	9	11	165 Btuh		
7	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	12.0	12.0	0.0	9	11	110 Btuh		
8	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	8.0	0.0	8.0	9	24	194 Btuh		
Window Total								210 (sqft)					4363 Btuh		
Walls	Type					U-Value		R-Value		Area(sqft)		HTM		Load	
								Cav/Sheath							
1	Frame - Wood - Ext					0.08		19.0/0.0		508.0		1.7		840 Btuh	
2	Frame - Wood - Ext					0.08		19.0/0.0		322.0		1.7		532 Btuh	
3	Frame - Wood - Ext					0.08		19.0/0.0		442.0		1.7		731 Btuh	
4	Frame - Wood - Ext					0.08		19.0/0.0		350.0		1.7		579 Btuh	
Wall Total								1622 (sqft)					2682 Btuh		
Doors	Type									Area (sqft)		HTM		Load	
1	Insulated - Exterior									40.0		13.8		552 Btuh	
2	Insulated - Exterior									40.0		13.8		552 Btuh	
3	Insulated - Exterior									24.0		13.8		331 Btuh	
4	Insulated - Exterior									24.0		13.8		331 Btuh	
Door Total								128 (sqft)					1766 Btuh		
Ceilings	Type/Color/Surface					U-Value		R-Value		Area(sqft)		HTM		Load	
1	Vented Attic/DarkShingle					0.032		30.0/0.0		2280.0		1.72		3921 Btuh	
Ceiling Total								2280 (sqft)					3921 Btuh		
Floors	Type							R-Value		Size		HTM		Load	
1	Slab On Grade							0.0		2280 (ft-perimeter)		0.0		0 Btuh	
Floor Total								2280.0 (sqft)					0 Btuh		
	Envelope Subtotal:												12733 Btuh		
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural					0.12		22800		1		46.1		960 Btuh	
Internal gain						Occupants		Btuh/occupant				Appliance		Load	
						8		X 230		+		3400		5240 Btuh	
	Sensible Envelope Load:												18933 Btuh		
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)										(DGM of 0.338)		6405 Btuh		
	Sensible Load All Zones												25338 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title:
Daniel Thomas

Climate:FL_GAINESVILLE_REGIONAL_A

, FL

8/1/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	18933 Btuh
	Sensible Duct Load	6405 Btuh
	Total Sensible Zone Loads	25338 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	25338 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1593 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1376 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4568 Btuh
	TOTAL GAIN	29906 Btuh

EQUIPMENT

1. Central Unit	#	48000 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:
Daniel Thomas
Building Type: User

, FL

8/1/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 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 0.20	Vinyl	0.26	W	36.0		10.4	374 Btuh
2	2, NFRC 0.20	Vinyl	0.26	W	16.0		10.4	166 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	18.0		10.4	187 Btuh
4	2, NFRC 0.20	Vinyl	0.26	E	12.0		10.4	125 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	90.0		10.4	936 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	18.0		10.4	187 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	12.0		10.4	125 Btuh
8	2, NFRC 0.20	Vinyl	0.26	E	8.0		10.4	83 Btuh
	Window Total				210.0(sqft)			2184 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	508		3.09	1570 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	322		3.09	995 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	442		3.09	1366 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	350		3.09	1082 Btuh
	Wall Total				1622(sqft)			5014 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
2	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
3	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
4	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
	Door Total				128(sqft)			2355Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.032)	30.0/0.0	2280		1.3	2904 Btuh
	Ceiling Total				2280(sqft)			2904Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	196.0 ft(perim.)		47.2	9251 Btuh
	Floor Total				2280 sqft			9251 Btuh
	Envelope Subtotal:							21708 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	22800	1.00	61.4		2695 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)						(DLM of 0.223)	5448 Btuh
All Zones	Sensible Subtotal All Zones							29851 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Daniel Thomas
Building Type: User

, FL

8/1/2024

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	29851 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	29851 Btuh

EQUIPMENT

1. Electric Heat Pump	#	48000 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