

Residential System Sizing Calculation

Summary

Project Title:
Katzker

, FL

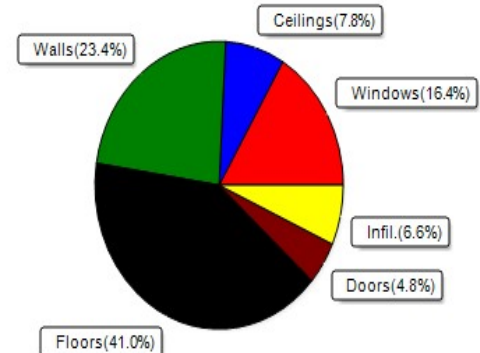
2/16/2021

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	13134	Btuh	Total cooling load calculation	9571	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	182.7	24000	Sensible (SHR = 0.85)	235.5	20400
Heat Pump + Auxiliary(0.0kW)	182.7	24000	Latent	395.4	3600
			Total (Electric Heat Pump)	250.8	24000

WINTER CALCULATIONS

Winter Heating Load (for 800 sqft)

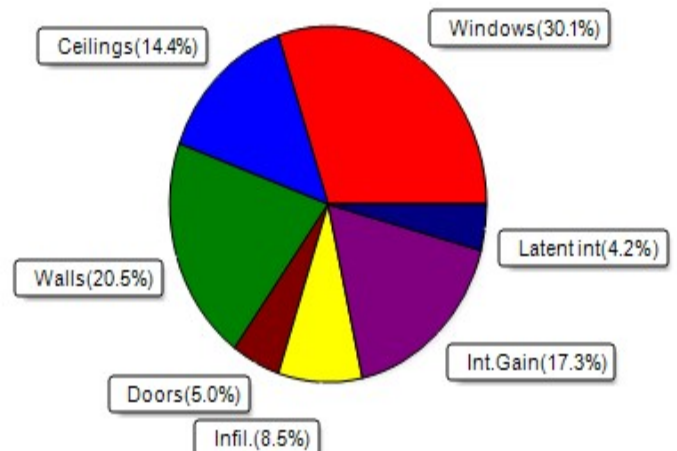
Load component	Load
Window total 90 sqft	2160 Btuh
Wall total 866 sqft	3076 Btuh
Door total 76 sqft	635 Btuh
Ceiling total 800 sqft	1019 Btuh
Floor total 800 sqft	5381 Btuh
Infiltration 20 cfm	863 Btuh
Duct loss	0 Btuh
Subtotal	13134 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	13134 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 800 sqft)

Load component	Load
Window total 90 sqft	2880 Btuh
Wall total 866 sqft	1961 Btuh
Door total 76 sqft	476 Btuh
Ceiling total 800 sqft	1376 Btuh
Floor total	0 Btuh
Infiltration 15 cfm	308 Btuh
Internal gain	1660 Btuh
Duct gain	0 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	8661 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	510 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	400 Btuh
Total latent gain	910 Btuh
TOTAL HEAT GAIN	9571 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Katzker

, FL

2/16/2021

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	0.27, 0.60	No	No	E		1.5ft	2.3ft	16.0	0.0	16.0	17	37	599	Btuh	
2	2 NFRC	0.27, 0.60	No	No	E		1.5ft	2.3ft	15.0	0.0	15.0	17	37	561	Btuh	
3	2 NFRC	0.27, 0.60	No	No	S		1.5ft	2.3ft	9.0	9.0	0.0	17	19	154	Btuh	
4	2 NFRC	0.27, 0.60	No	No	S		1.5ft	2.3ft	15.0	15.0	0.0	17	19	256	Btuh	
5	2 NFRC	0.27, 0.60	No	No	W		1.5ft	2.3ft	15.0	0.0	15.0	17	37	561	Btuh	
6	2 NFRC	0.27, 0.60	No	No	W		1.5ft	2.3ft	20.0	0.0	20.0	17	37	749	Btuh	
Window Total									90 (sqft)					2880 Btuh		
Walls	Type						U-Value		R-Value		Area(sqft)		HTM		Load	
									Cav/Sheath							
1	Frame - Wood - Ext						0.09		13.0/0.0		196.0		2.3		444 Btuh	
2	Frame - Wood - Ext						0.09		13.0/0.0		249.0		2.3		564 Btuh	
3	Frame - Wood - Ext						0.09		13.0/0.0		156.4		2.3		354 Btuh	
4	Frame - Wood - Ext						0.09		13.0/0.0		265.0		2.3		600 Btuh	
Wall Total												866 (sqft)		1961 Btuh		
Doors	Type										Area (sqft)		HTM		Load	
1	Insulated - Exterior										20.0		6.3		126 Btuh	
2	Insulated - Exterior										20.0		6.3		126 Btuh	
3	Insulated - Exterior										35.6		6.3		224 Btuh	
Door Total												76 (sqft)		476 Btuh		
Ceilings	Type/Color/Surface						U-Value		R-Value		Area(sqft)		HTM		Load	
1	Vented Attic/DarkShingle						0.032		30.0/0.0		800.0		1.72		1376 Btuh	
Ceiling Total												800 (sqft)		1376 Btuh		
Floors	Type								R-Value		Size		HTM		Load	
1	Slab On Grade								0.0		800 (ft-perimeter)		0.0		0 Btuh	
Floor Total												800.0 (sqft)		0 Btuh		
	Envelope Subtotal:													6693 Btuh		
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural						0.12		7200		1		14.8		308 Btuh	
Internal gain							Occupants		Btuh/occupant		Appliance		Load			
							2		X 230		+		1200		1660 Btuh	
	Sensible Envelope Load:													8661 Btuh		
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)													0 Btuh		
	Sensible Load All Zones													8661 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title:
Katzker

Climate: FL_GAINESVILLE_REGIONAL_A

, FL

2/16/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	8661 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	8661 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	8661 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	510 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	910 Btuh
	TOTAL GAIN	9571 Btuh

EQUIPMENT

1. PTAC and Room Unit	#	24000 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:
Katzker
Building Type: User

, FL

2/16/2021

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 0.27	Vinyl	0.60	E	16.0		24.0	384 Btuh
2	2, NFRC 0.27	Vinyl	0.60	E	15.0		24.0	360 Btuh
3	2, NFRC 0.27	Vinyl	0.60	S	9.0		24.0	216 Btuh
4	2, NFRC 0.27	Vinyl	0.60	S	15.0		24.0	360 Btuh
5	2, NFRC 0.27	Vinyl	0.60	W	15.0		24.0	360 Btuh
6	2, NFRC 0.27	Vinyl	0.60	W	20.0		24.0	480 Btuh
	Window Total				90.0(sqft)			2160 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	196		3.55	696 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	249		3.55	884 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	156		3.55	555 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	265		3.55	941 Btuh
	Wall Total				866(sqft)			3076 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.210)		20		8.4	168 Btuh
2	Insulated - Exterior, n		(0.210)		20		8.4	168 Btuh
3	Insulated - Exterior, n		(0.210)		36		8.4	299 Btuh
	Door Total				76(sqft)			635Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.032)	30.0/0.0	800		1.3	1019 Btuh
	Ceiling Total				800(sqft)			1019Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	114.0 ft(perim.)		47.2	5381 Btuh
	Floor Total				800 sqft			5381 Btuh
	Envelope Subtotal:							12271 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	7200	1.00	19.7		863 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)						(DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones							13134 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Katzker
Building Type: User

, FL

2/16/2021

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	13134 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	13134 Btuh

EQUIPMENT

1. Electric Heat Pump	#	24000 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