

Residential System Sizing Calculation

Summary

Cynthia Koon

Project Title:

Lake City, FL

Koon Addition

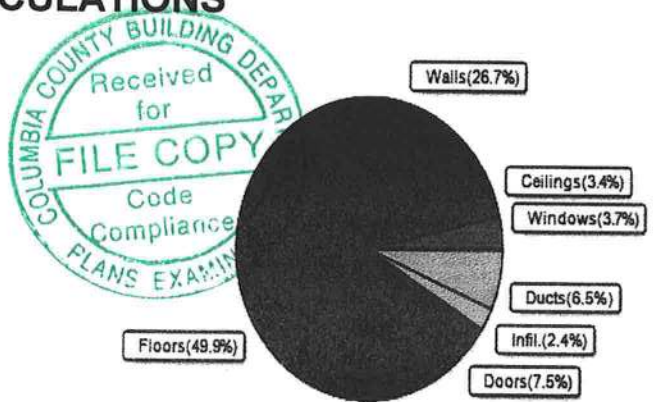
7/26/2021

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(54gr.)					
Winter design temperature(MJ8 99%)	33	F	Summer design temperature(MJ8 99%)	92	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	37	F	Summer temperature difference	17	F
Total heating load calculation			4551	Btuh	
Total cooling load calculation			3357	Btuh	
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	527.4	24000	Sensible (SHR = 0.75)	719.5	18000
Heat Pump + Auxiliary(0.0kW)	527.4	24000	Latent	701.4	6000
			Total (Electric Heat Pump)	714.8	24000

WINTER CALCULATIONS

Winter Heating Load (for 132 sqft)

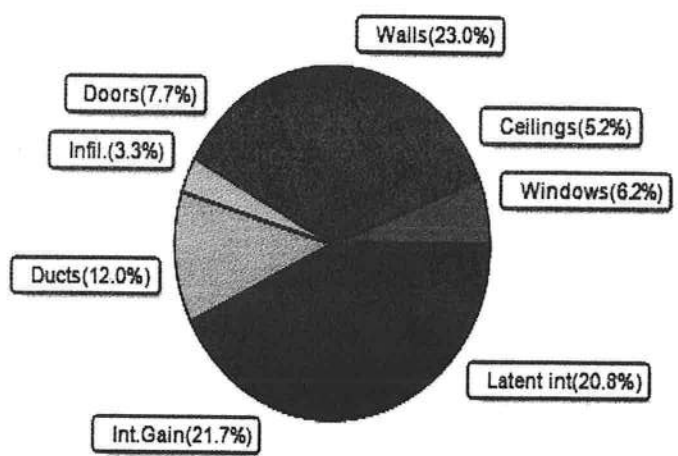
Load component		Load	
Window total	14 sqft	168	Btuh
Wall total	387 sqft	1215	Btuh
Door total	20 sqft	340	Btuh
Ceiling total	132 sqft	155	Btuh
Floor total	132 sqft	2270	Btuh
Infiltration	3 cfm	109	Btuh
Duct loss		294	Btuh
Subtotal		4551	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		4551	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 132 sqft)

Load component		Load	
Window total	14 sqft	208	Btuh
Wall total	387 sqft	771	Btuh
Door total	20 sqft	258	Btuh
Ceiling total	132 sqft	176	Btuh
Floor total		0	Btuh
Infiltration	2 cfm	37	Btuh
Internal gain		730	Btuh
Duct gain		322	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		2502	Btuh
Latent gain(ducts)		82	Btuh
Latent gain(infiltration)		74	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		700	Btuh
Total latent gain		855	Btuh
TOTAL HEAT GAIN		3357	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: *[Signature]*
DATE: 7/26/21

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Cynthia Koon
Lake City, FL

Project Title:
Koon Addition
Building Type: User

7/26/2021

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 F (MJ8 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.21	Metal	0.33	S	9.2		12.2	112 Btuh
2	2, NFRC 0.21	Metal	0.33	W	4.6		12.2	56 Btuh
	Window Total				13.8(sqft)			168 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.085)	13.0/1.0	80		3.14	251 Btuh
2	Frame - Wood	- Ext	(0.085)	13.0/1.0	101		3.14	318 Btuh
3	Frame - Wood	- Ext	(0.085)	13.0/1.0	75		3.14	237 Btuh
4	Frame - Wood	- Ext	(0.085)	13.0/1.0	130		3.14	409 Btuh
	Wall Total				387(sqft)			1215 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	Vented Attic/L/Metal		(0.032)	30.0/0.0	132		1.2	155 Btuh
	Ceiling Total				132(sqft)			155Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	52.0 ft(perim.)		43.7	2270 Btuh
	Floor Total				132 sqft			2270 Btuh
Envelope Subtotal:								4148 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.15	1052	1.00	2.7		109 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.069)							294 Btuh
All Zones	Sensible Subtotal All Zones							4551 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	4551 Btuh 0 Btuh 4551 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Cynthia Koon

Lake City, FL

Project Title:
Koon Addition
Building Type: User

7/26/2021

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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Cynthia Koon

Project Title:
Koon Addition

Lake City, FL

7/26/2021

Reference City: Gainesville, FL

Temperature Difference: 17.0F(MJ8 99%)

Humidity difference: 54gr.

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	0.21, 0.33	B-L	No	S		2.0ft	1.0ft	9.2	9.2	0.0	8	9	70	Btuh
2	2 NFRC	0.21, 0.33	B-L	No	W		2.0ft	1.0ft	4.6	0.6	4.0	8	19	80	Btuh
	Excursion													58	Btuh
	Window Total								14 (sqft)					208	Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Frame - Wood - Ext						0.08	13.0/1.0		80.0		2.0		160	Btuh
2	Frame - Wood - Ext						0.08	13.0/1.0		101.2		2.0		202	Btuh
3	Frame - Wood - Ext						0.08	13.0/1.0		75.4		2.0		150	Btuh
4	Frame - Wood - Ext						0.08	13.0/1.0		130.3		2.0		260	Btuh
	Wall Total									387 (sqft)				771	Btuh
Doors	Type	U-Value		R-Value		Area (sqft)		HTM		Load					
1	Insulated - Exterior									20.0		12.9		258	Btuh
	Door Total									20 (sqft)				258	Btuh
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Vented Attic/Light/Metal						0.032	30.0/0.0		131.5		1.34		176	Btuh
	Ceiling Total									132 (sqft)				176	Btuh
Floors	Type	U-Value		R-Value		Size		HTM		Load					
1	Slab On Grade							0.0		132 (ft-perimeter)		0.0		0	Btuh
	Floor Total									131.5 (sqft)				0	Btuh
	Envelope Subtotal:													1413 Btuh	
Infiltration	Type	Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load					
	Natural						0.11	1052		1		2.0		37	Btuh
Internal gain		Occupants		Btuh/occupant		Appliance		Load							
							1	X	230	+		500		730	Btuh
	Sensible Envelope Load:													2180 Btuh	
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)	(DGM of 0.148)		Load											
	Sensible Load All Zones													2502 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Cynthia Koon

Project Title:
Koon Addition

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL

7/26/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	2180 Btuh
	Sensible Duct Load	322 Btuh
	Total Sensible Zone Loads	2502 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	2502 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	74 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	82 Btuh
	Latent occupant gain (1.0 people @ 200 Btuh per person)	200 Btuh
	Latent other gain	500 Btuh
	Latent total gain	855 Btuh
	TOTAL GAIN	3357 Btuh

EQUIPMENT

1. Central 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