

Residential System Sizing Calculation

Summary

Kinsey, Curtis

Project Title:
220513 Kinsey

Lake City, FL

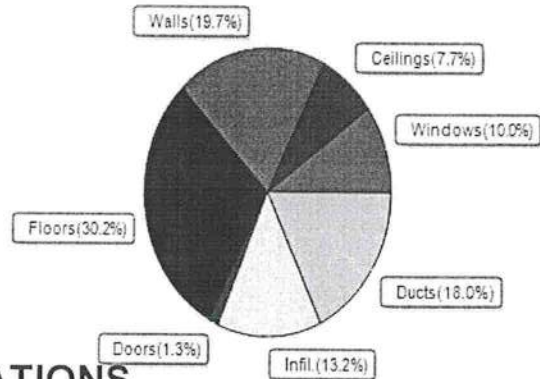


Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)			
Winter design temperature(TMY3 99%)	30 F	Summer design temperature(TMY3 99%)	94 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	40 F	Summer temperature difference	19 F
Total heating load calculation	40804 Btuh	Total cooling load calculation	37474 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	107.8 44000	Sensible (SHR = 0.75)	106.9 33000
Heat Pump + Auxiliary(0.0kW)	107.8 44000	Latent	166.8 11000
		Total (Electric Heat Pump)	117.4 44000

WINTER CALCULATIONS

Winter Heating Load (for 3085 sqft)

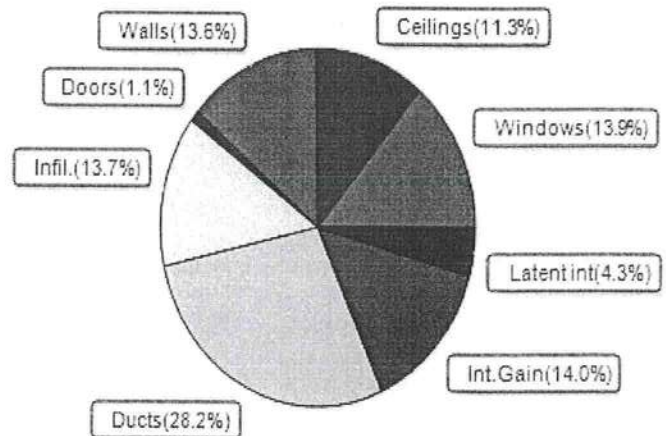
Load component		Load	
Window total	317 sqft	4064	Btuh
Wall total	2259 sqft	8021	Btuh
Door total	33 sqft	533	Btuh
Ceiling total	3085 sqft	3132	Btuh
Floor total	3085 sqft	12319	Btuh
Infiltration	123 cfm	5403	Btuh
Duct loss		7332	Btuh
Subtotal		40804	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		40804	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3085 sqft)

Load component		Load	
Window total	317 sqft	5215	Btuh
Wall total	2259 sqft	5113	Btuh
Door total	33 sqft	400	Btuh
Ceiling total	3085 sqft	4228	Btuh
Floor total		0	Btuh
Infiltration	93 cfm	1925	Btuh
Internal gain		5240	Btuh
Duct gain		8759	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		30880	Btuh
Latent gain(ducts)		1800	Btuh
Latent gain(infiltration)		3194	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		6594	Btuh
TOTAL HEAT GAIN		37474	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2022-04-28

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Kinsey, Curtis
Lake City, FL

Project Title:
220513 Kinsey
Building Type: User

2022-04-28

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	Metal	0.32	N	40.0		12.8	512 Btuh
2	2, NFRC 0.22	Metal	0.32	N	14.0		12.8	179 Btuh
3	2, NFRC 0.22	Metal	0.32	N	54.0		12.8	691 Btuh
4	2, NFRC 0.22	Metal	0.32	W	18.0		12.8	230 Btuh
5	2, NFRC 0.22	Metal	0.32	W	7.5		12.8	96 Btuh
6	2, NFRC 0.22	Metal	0.32	S	36.0		12.8	461 Btuh
7	2, NFRC 0.22	Metal	0.32	S	20.0		12.8	256 Btuh
8	2, NFRC 0.22	Metal	0.32	S	36.0		12.8	461 Btuh
9	2, NFRC 0.22	Metal	0.32	S	36.0		12.8	461 Btuh
10	2, NFRC 0.22	Metal	0.32	W	36.0		12.8	461 Btuh
11	2, NFRC 0.22	Metal	0.32	W	20.0		12.8	256 Btuh
Window Total					317.5(sqft)			4064 Btuh
Walls	Type	Omt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	632		3.55	2244 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	359		3.55	1273 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	214		3.55	760 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	55		3.55	195 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	27		3.55	95 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	137		3.55	485 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	161		3.55	571 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	242		3.55	857 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	434		3.55	1541 Btuh
Wall Total					2259(sqft)			8021 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		7		16.0	107 Btuh
2	Insulated - Exterior,	n	(0.400)		7		16.0	107 Btuh
3	Insulated - Exterior,	n	(0.400)		7		16.0	107 Btuh
4	Insulated - Exterior,	n	(0.400)		13		16.0	213 Btuh
Door Total					33(sqft)			533Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	3085		1.0	3132 Btuh
Ceiling Total					3085(sqft)			3132Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	261.0 ft(perim.)		47.2	12319 Btuh
Floor Total					3085 sqft			12319 Btuh
Envelope Subtotal:								28069 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall	Ratio	CFM=	Load
	Natural		0.24	30850	1.00		123.4	5403 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Kinsey, Curtis
Lake City, FL

Project Title:
220513 Kinsey
Building Type: User

2022-04-28

Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.219)	7332 Btuh
All Zones	Sensible Subtotal All Zones	40804 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	40804 Btuh 0 Btuh 40804 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	44000 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

Kinsey, Curtis
Lake City, FL

Project Title:
220513 Kinsey

2022-04-28

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, 0.32	No	No	N	11.5f	2.5ft	40.0	0.0	40.0	11	11	428	Btuh	
2	2 NFRC	0.22, 0.32	No	No	N	11.5f	2.5ft	14.0	0.0	14.0	11	11	150	Btuh	
3	2 NFRC	0.22, 0.32	No	No	N	11.5f	2.5ft	54.0	0.0	54.0	11	11	578	Btuh	
4	2 NFRC	0.22, 0.32	No	No	W	1.5ft	3.0ft	18.0	0.0	18.0	11	27	491	Btuh	
5	2 NFRC	0.22, 0.32	No	No	W	1.5ft	3.0ft	7.5	0.0	7.5	11	27	205	Btuh	
6	2 NFRC	0.22, 0.32	No	No	S	1.5ft	3.0ft	36.0	33.1	2.9	11	12	390	Btuh	
7	2 NFRC	0.22, 0.32	No	No	S	8.5ft	2.5ft	20.0	20.0	0.0	11	12	214	Btuh	
8	2 NFRC	0.22, 0.32	No	No	S	7.0ft	2.5ft	36.0	36.0	0.0	11	12	385	Btuh	
9	2 NFRC	0.22, 0.32	No	No	S	1.5ft	6.0ft	36.0	15.1	20.9	11	12	421	Btuh	
10	2 NFRC	0.22, 0.32	No	No	W	1.5ft	3.0ft	36.0	0.0	36.0	11	27	982	Btuh	
11	2 NFRC	0.22, 0.32	No	No	W	1.5ft	3.0ft	20.0	0.0	20.0	11	27	546	Btuh	
Excursion													423	Btuh	
Window Total								317 (sqft)					5215		Btuh
Walls	Type	U-Value	R-Value	Area(sqft)		HTM		Load							
				Cav/Sheath											
1	Frame - Wood - Ext	0.09	13.0/0.0	632.0		2.3		1430		Btuh					
2	Frame - Wood - Ext	0.09	13.0/0.0	358.7		2.3		812		Btuh					
3	Frame - Wood - Ext	0.09	13.0/0.0	214.0		2.3		484		Btuh					
4	Frame - Wood - Ext	0.09	13.0/0.0	55.0		2.3		124		Btuh					
5	Frame - Wood - Ext	0.09	13.0/0.0	26.7		2.3		60		Btuh					
6	Frame - Wood - Ext	0.09	13.0/0.0	136.5		2.3		309		Btuh					
7	Frame - Wood - Ext	0.09	13.0/0.0	160.8		2.3		364		Btuh					
8	Frame - Wood - Ext	0.09	13.0/0.0	241.5		2.3		547		Btuh					
9	Frame - Wood - Ext	0.09	13.0/0.0	434.0		2.3		982		Btuh					
Wall Total				2259 (sqft)				5113		Btuh					
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior	6.7		12.0		80		Btuh							
2	Insulated - Exterior	6.7		12.0		80		Btuh							
3	Insulated - Exterior	6.7		12.0		80		Btuh							
4	Insulated - Exterior	13.3		12.0		160		Btuh							
Door Total		33 (sqft)				400		Btuh							
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM		Load								
1	Vented Attic/DarkShingle	0.025	38.0/0.0	3085.0	1.37		4228		Btuh						
Ceiling Total				3085 (sqft)			4228		Btuh						
Floors	Type	R-Value		Size	HTM		Load								
1	Slab On Grade	0.0		3085 (ft-perimeter)	0.0		0		Btuh						
Floor Total				3085.0 (sqft)			0		Btuh						
Envelope Subtotal:											14957		Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Kinsey, Curtis

Project Title:
220513 Kinsey

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL

2022-04-28

Infiltration	Type Natural	Average ACH 0.18	Volume(cuft) 30850	Wall Ratio 1	CFM= 92.5	Load 1925 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3400	Load 5240 Btuh
	Sensible Envelope Load:					22121 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.396)					8759 Btuh
	Sensible Load All Zones					30880 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Kinsey, Curtis
Lake City, FL

Project Title:
220513 Kinsey

Climate: FL_GAINESVILLE_REGIONAL_A

2022-04-28

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	22121 Btuh
	Sensible Duct Load	8759 Btuh
	Total Sensible Zone Loads	30880 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	30880 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	3194 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1800 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	6594 Btuh
	TOTAL GAIN	37474 Btuh

EQUIPMENT

1. Central Unit	#	44000 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(1/2))
 (Ornt - compass orientation)



Version 8