

Residential System Sizing Calculation

Summary

Dan & Jeanne Decker

Project Title:
240851 Decker Hanger

Lake City, FL

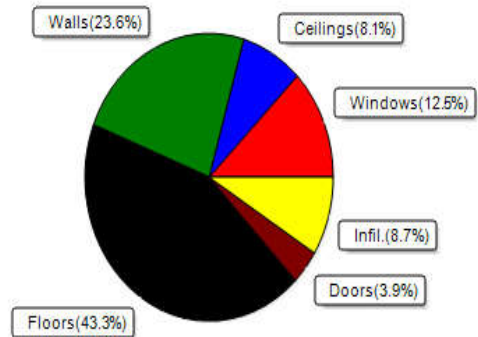
2024-07-30

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(164 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	13737	Btuh	Total cooling load calculation	9388	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	109.2	15000	Sensible (SHR = 0.75)	135.8	11250
Heat Pump + Auxiliary(0.0kW)	109.2	15000	Latent	339.6	3750
			Total (Electric Heat Pump)	159.8	15000

WINTER CALCULATIONS

Winter Heating Load (for 920 sqft)

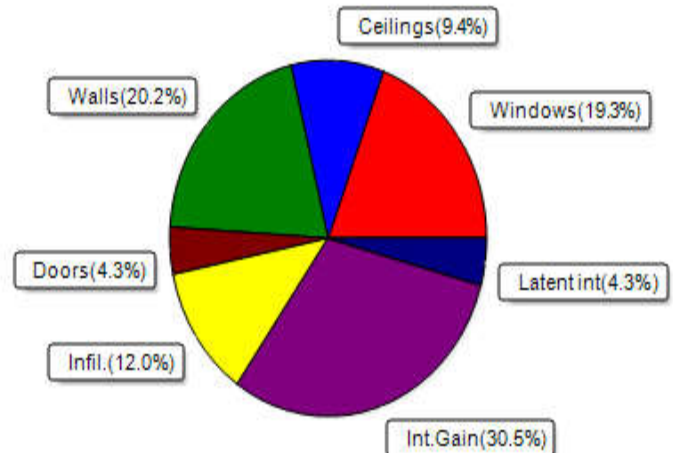
Load component			Load	
Window total	143	sqft	1712	Btuh
Wall total	958	sqft	3245	Btuh
Door total	33	sqft	533	Btuh
Ceiling total	920	sqft	1109	Btuh
Floor total	920	sqft	5947	Btuh
Infiltration	27	cfm	1191	Btuh
Duct loss			0	Btuh
Subtotal			13737	Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS			13737	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 920 sqft)

Load component			Load	
Window total	143	sqft	1815	Btuh
Wall total	958	sqft	1898	Btuh
Door total	33	sqft	400	Btuh
Ceiling total	920	sqft	887	Btuh
Floor total			0	Btuh
Infiltration	20	cfm	424	Btuh
Internal gain			2860	Btuh
Duct gain			0	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load			0	Btuh
Total sensible gain			8284	Btuh
Latent gain(ducts)			0	Btuh
Latent gain(infiltration)			704	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			400	Btuh
Total latent gain			1104	Btuh
TOTAL HEAT GAIN			9388	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2024-07-30

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Dan & Jeanne Decker

Project Title:
240851 Decker Hanger
Building Type: User

Lake City, FL

2024-07-30

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 0.22	Metal	0.30	N	15.0		12.0	180 Btuh
2	2, NFRC 0.22	Metal	0.30	E	45.0		12.0	540 Btuh
3	2, NFRC 0.22	Metal	0.30	E	4.0		12.0	48 Btuh
4	2, NFRC 0.22	Metal	0.30	E	12.0		12.0	144 Btuh
5	2, NFRC 0.22	Metal	0.30	S	60.0		12.0	720 Btuh
6	2, NFRC 0.22	Metal	0.30	S	6.7		12.0	80 Btuh
Window Total					142.7(sqft)			1712 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	192		3.55	682 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	299		3.55	1062 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	127		3.55	451 Btuh
4	Frame - Wood	- Adj	(0.077)	19.0/0.0	340		3.09	1051 Btuh
Wall Total					958(sqft)			3245 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		13		16.0	213 Btuh
2	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					33(sqft)			533Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.241)	0.0/22.0	920		1.2	1109 Btuh
Ceiling Total					920(sqft)			1109Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	126.0 ft(perim.)		47.2	5947 Btuh
Floor Total					920 sqft			5947 Btuh
Envelope Subtotal:								12546 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		Load
	Natural		0.20	8280	1.00	27.2		1191 Btuh
Duct load	Average sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)							0 Btuh
All Zones	Sensible Subtotal All Zones							13737 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Dan & Jeanne Decker

Project Title:
240851 Decker Hanger
Building Type: User

Lake City, FL

2024-07-30

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	13737 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	13737 Btuh

EQUIPMENT

1. Electric Heat Pump	#	15000 Btuh
-----------------------	---	------------

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

Dan & Jeanne Decker

Project Title:
240851 Decker Hanger

Lake City, FL

2024-07-30

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	0.22, 0.30	No	No	N		1.5ft	1.5ft	15.0	0.0	15.0	10	27	404	Btuh
2	2 NFRC	0.22, 0.30	No	No	E		1.5ft	6.0ft	45.0	22.7	22.3	10	12	503	Btuh
3	2 NFRC	0.22, 0.30	No	No	E		1.5ft	7.0ft	4.0	4.0	0.0	10	12	41	Btuh
4	2 NFRC	0.22, 0.30	No	No	E		1.5ft	7.0ft	12.0	4.6	7.4	10	12	137	Btuh
5	2 NFRC	0.22, 0.30	No	No	S		9.5ft	1.0ft	60.0	60.0	0.0	10	27	620	Btuh
6	2 NFRC	0.22, 0.30	No	No	S		9.5ft	1.0ft	6.7	6.7	0.0	10	27	69	Btuh
	Excursion													41	Btuh
	Window Total								143 (sqft)					1815 Btuh	
Walls	Type	U-Value				R-Value		Area(sqft)			HTM		Load		
						Cav/Sheath									
1	Frame - Wood - Ext	0.09				13.0/0.0		192.0			2.3		435 Btuh		
2	Frame - Wood - Ext	0.09				13.0/0.0		299.0			2.3		677 Btuh		
3	Frame - Wood - Ext	0.09				13.0/0.0		127.0			2.3		287 Btuh		
4	Frame - Wood - Adj	0.08				19.0/0.0		340.0			1.5		499 Btuh		
	Wall Total								958 (sqft)					1898 Btuh	
Doors	Type							Area (sqft)			HTM		Load		
1	Insulated - Exterior							13.3			12.0		160 Btuh		
2	Insulated - Garage							20.0			12.0		240 Btuh		
	Door Total								33 (sqft)					400 Btuh	
Ceilings	Type/Color/Surface	U-Value				R-Value		Area(sqft)			HTM		Load		
1	Unvented Attic/DarkShingle	0.241				0.0/22.0		920.0			0.96		887 Btuh		
	Ceiling Total								920 (sqft)					887 Btuh	
Floors	Type					R-Value		Size			HTM		Load		
1	Slab On Grade					0.0		920 (ft-perimeter)			0.0		0 Btuh		
	Floor Total								920.0 (sqft)					0 Btuh	
	Envelope Subtotal:													4999 Btuh	
Infiltration	Type	Average ACH				Volume(cuft)		Wall Ratio		CFM=		Load			
	Natural	0.15				8280		1		20.4		424 Btuh			
Internal gain		Occupants				Btuh/occupant		Appliance				Load			
		2				X 230		+		2400		2860 Btuh			
	Sensible Envelope Load:													8284 Btuh	
Duct load	Average sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)													0 Btuh	
	Sensible Load All Zones													8284 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Dan & Jeanne Decker

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
240851 Decker Hanger

Lake City, FL

2024-07-30

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	8284 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	8284 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	8284 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	704 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	1104 Btuh
	TOTAL GAIN	9388 Btuh

EQUIPMENT

1. Central Unit	#	15000 Btuh
-----------------	---	------------

*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