

Residential System Sizing Calculation

Summary

Dawes Res

Project Title:
210456 Dawes

Lake City, FL

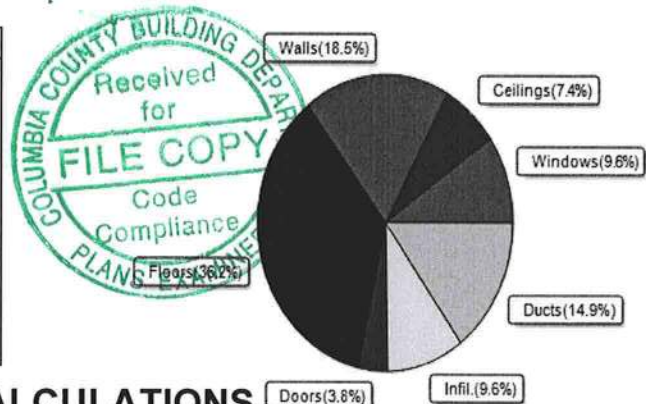
2021-03-29

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	21648 Btuh	Total cooling load calculation	21788 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	110.9 24000	Sensible (SHR = 0.75)	97.0 18000
Heat Pump + Auxiliary(0.0kW)	110.9 24000	Latent	185.2 6000
		Total (Electric Heat Pump)	110.2 24000

WINTER CALCULATIONS

Winter Heating Load (for 1358 sqft)

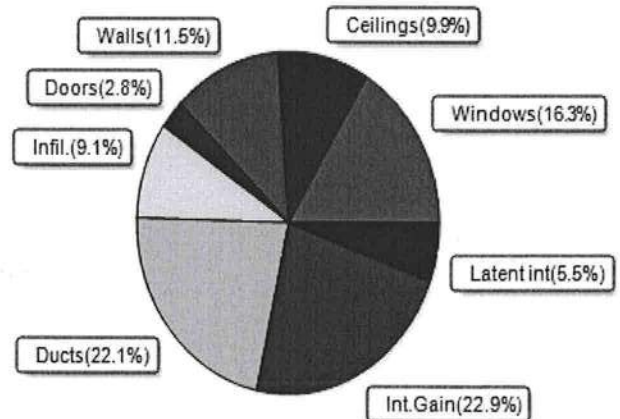
Load component		Load	
Window total	149 sqft	2086 Btuh	
Wall total	1129 sqft	4009 Btuh	
Door total	51 sqft	818 Btuh	
Ceiling total	1568 sqft	1592 Btuh	
Floor total	1358 sqft	7835 Btuh	
Infiltration	48 cfm	2084 Btuh	
Duct loss		3224 Btuh	
Subtotal		21648 Btuh	
Ventilation	0 cfm	0 Btuh	
TOTAL HEAT LOSS		21648 Btuh	



SUMMER CALCULATIONS

Summer Cooling Load (for 1358 sqft)

Load component		Load	
Window total	149 sqft	3553 Btuh	
Wall total	1129 sqft	2508 Btuh	
Door total	51 sqft	613 Btuh	
Ceiling total	1568 sqft	2149 Btuh	
Floor total		0 Btuh	
Infiltration	36 cfm	742 Btuh	
Internal gain		4980 Btuh	
Duct gain		4002 Btuh	
Sens. Ventilation	0 cfm	0 Btuh	
Blower Load		0 Btuh	
Total sensible gain		18548 Btuh	
Latent gain(ducts)		808 Btuh	
Latent gain(infiltration)		1232 Btuh	
Latent gain(ventilation)		0 Btuh	
Latent gain(internal/occupants/other)		1200 Btuh	
Total latent gain		3240 Btuh	
TOTAL HEAT GAIN		21788 Btuh	



8th Edition

EnergyGauge® System Sizing
PREPARED BY: **Evan Beamsley**
DATE: **2021-03-29**

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Dawes Res
Lake City, FL

Project Title:
210456 Dawes
Building Type: User

2021-03-29

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)
This calculation is for Worst Case. The house has been rotated 225 degrees.

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.25	Metal	0.35	SW	9.0		14.0	126 Btuh
2	2, NFRC 0.25	Metal	0.35	SW	20.0		14.0	280 Btuh
3	2, NFRC 0.25	Metal	0.35	SW	30.0		14.0	420 Btuh
4	2, NFRC 0.25	Metal	0.35	NE	90.0		14.0	1260 Btuh
Window Total					149.0(sqft)			2086 Btuh
Walls	Type	Ormt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Adj	(0.089)	13.0/0.0	82		3.55	292 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	122		3.55	432 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	88		3.55	312 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	225 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	309		3.55	1096 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	247		3.55	876 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	219		3.55	776 Btuh
Wall Total					1129(sqft)			4009 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Garage,	n	(0.400)		18		16.0	284 Btuh
2	Insulated - Exterior,	n	(0.400)		13		16.0	213 Btuh
3	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
Door Total					51(sqft)			818Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load	
1	Vented Attic/D/Shing	(0.025)	38.0/0.0	1568		1.0	1592 Btuh	
Ceiling Total					1568(sqft)		1592Btuh	
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load	
1	Slab On Grade	(1.180)	0.0	166.0 ft(perim.)		47.2	7835 Btuh	
Floor Total					1358 sqft		7835 Btuh	
	Envelope Subtotal:						16340 Btuh	
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	Load	
	Natural		0.23	12358	1.00	47.6	2084 Btuh	
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.175)						3224 Btuh	
All Zones	Sensible Subtotal All Zones						21648 Btuh	

Manual J Winter Calculations

Residential Load - Component Details (continued)

Dawes Res
Lake City, FL

Project Title:
210456 Dawes
Building Type: User

2021-03-29

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	21648 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	21648 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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Dawes Res

Project Title:
210456 Dawes

Lake City, FL

2021-03-29

Reference City: Gainesville, FL Temperature Difference: 19.0F(TMY3 99%) Humidity difference: 51gr.
This calculation is for Worst Case. The house has been rotated 225 degrees.

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	0.25, 0.35	No	No	SW		12.5f	0.5ft	9.0	9.0	0.0	12	25	107	Btuh
2	2 NFRC	0.25, 0.35	No	No	SW		12.5f	0.5ft	20.0	20.0	0.0	12	25	238	Btuh
3	2 NFRC	0.25, 0.35	No	No	SW		1.5ft	0.5ft	30.0	11.8	18.2	12	25	587	Btuh
4	2 NFRC	0.25, 0.35	No	No	NE		7.5ft	0.5ft	90.0	0.0	90.0	12	23	2110	Btuh
	Excursion													510	Btuh
	Window Total								149 (sqft)					3553 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load	
								Cav/Sheath							
1	Frame - Wood - Adj						0.09	13.0/0.0	82.2			1.7		139 Btuh	
2	Frame - Wood - Ext						0.09	13.0/0.0	121.7			2.3		275 Btuh	
3	Frame - Wood - Ext						0.09	13.0/0.0	88.0			2.3		199 Btuh	
4	Frame - Wood - Ext						0.09	13.0/0.0	63.3			2.3		143 Btuh	
5	Frame - Wood - Ext						0.09	13.0/0.0	308.7			2.3		699 Btuh	
6	Frame - Wood - Ext						0.09	13.0/0.0	246.7			2.3		558 Btuh	
7	Frame - Wood - Ext						0.09	13.0/0.0	218.7			2.3		495 Btuh	
	Wall Total								1129 (sqft)					2508 Btuh	
Doors	Type								Area (sqft)			HTM		Load	
1	Insulated - Garage								17.8			12.0		213 Btuh	
2	Insulated - Exterior								13.3			12.0		160 Btuh	
3	Insulated - Exterior								20.0			12.0		240 Btuh	
	Door Total								51 (sqft)					613 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)			HTM		Load	
1	Vented Attic/DarkShingle						0.025	38.0/0.0	1568.0			1.37		2149 Btuh	
	Ceiling Total								1568 (sqft)					2149 Btuh	
Floors	Type							R-Value	Size			HTM		Load	
1	Slab On Grade							0.0	1358 (ft-perimeter)			0.0		0 Btuh	
	Floor Total								1358.0 (sqft)					0 Btuh	
	Envelope Subtotal:													8824 Btuh	
Infiltration	Type						Average ACH		Volume(cuft)	Wall Ratio		CFM=	Load		
	Natural						0.17		12358	1		35.7	742 Btuh		
Internal gain							Occupants		Btuh/occupant			Appliance	Load		
							6		X 230	+		3600	4980 Btuh		
	Sensible Envelope Load:													14546 Btuh	
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.275)													4002 Btuh	
	Sensible Load All Zones													18548 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Dawes Res
Lake City, FL

Project Title:
210456 Dawes

Climate:FL_GAINESVILLE_REGIONAL_A

2021-03-29

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	14546 Btuh
	Sensible Duct Load	4002 Btuh
	Total Sensible Zone Loads	18548 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	18548 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1232 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	808 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3240 Btuh
	TOTAL GAIN	21788 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