

Residential System Sizing Calculation

Summary

Ben Martin
157 SE Rachel Way
LAKE CITY, FL 32025

Project Title:
Model 1125 - Rachel Way

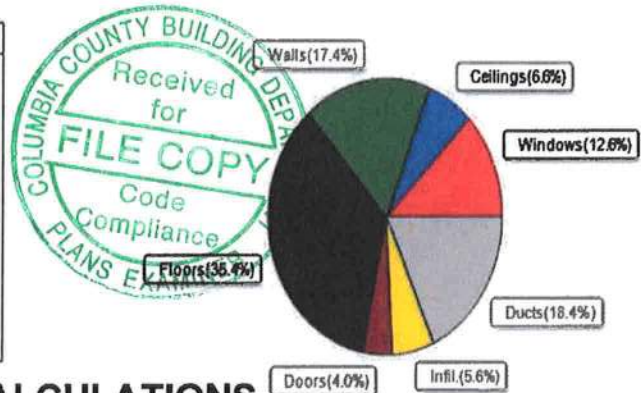
9/28/2021

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	18265 Btuh	Total cooling load calculation	13308 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 18265	Sensible (SHR = 0.80)	94.9 10647
Heat Pump + Auxiliary(0.0kW)	100.0 18265	Latent	127.2 2662
		Total (Electric Heat Pump)	100.0 13308

WINTER CALCULATIONS

Winter Heating Load (for 1125 sqft)

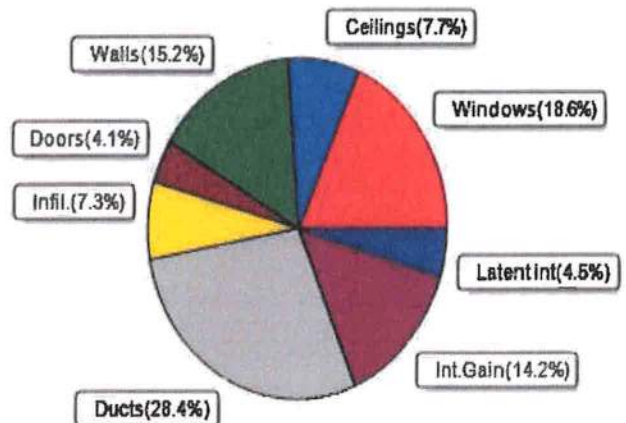
Load component		Load	
Window total	160 sqft	2304	Btuh
Wall total	893 sqft	3172	Btuh
Door total	40 sqft	736	Btuh
Ceiling total	1181 sqft	1199	Btuh
Floor total	1125 sqft	6466	Btuh
Infiltration	24 cfm	1030	Btuh
Duct loss		3358	Btuh
Subtotal		18265	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		18265	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1125 sqft)

Load component		Load	
Window total	160 sqft	2473	Btuh
Wall total	893 sqft	2022	Btuh
Door total	40 sqft	552	Btuh
Ceiling total	1181 sqft	1019	Btuh
Floor total		0	Btuh
Infiltration	18 cfm	367	Btuh
Internal gain		1890	Btuh
Duct gain		2893	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		11216	Btuh
Latent gain(ducts)		884	Btuh
Latent gain(infiltration)		609	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		600	Btuh
Total latent gain		2092	Btuh
TOTAL HEAT GAIN		13308	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Ben Martin
157 SE Rachel Way
LAKE CITY, FL 32025

Project Title:
Model 1125 - Rachel Way
Building Type: User

9/28/2021

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 0.25	Vinyl	0.36	S	75.0		14.4	1080 Btuh
2	2, NFRC 0.25	Vinyl	0.36	E	30.0		14.4	432 Btuh
3	2, NFRC 0.25	Vinyl	0.36	N	15.0		14.4	216 Btuh
4	2, NFRC 0.25	Vinyl	0.36	N	40.0		14.4	576 Btuh
	Window Total				160.0(sqft)			2304 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	230		3.55	818 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	191		3.55	679 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	270		3.55	960 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	201		3.55	715 Btuh
	Wall Total				893(sqft)			3172 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
2	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
	Door Total				40(sqft)			736Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	1181		1.0	1199 Btuh
	Ceiling Total				1181(sqft)			1199Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	137.0 ft(perim.)		47.2	6466 Btuh
	Floor Total				1125 sqft			6466 Btuh
	Envelope Subtotal:							13877 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio		CFM=	
	Natural		0.16	9000	1.00		23.5	1030 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.225)		3358 Btuh
All Zones	Sensible Subtotal All Zones							18265 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Ben Martin
157 SE Rachel Way
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Project Title:
Model 1125 - Rachel Way
Building Type: User

9/28/2021

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	18265 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	18265 Btuh

EQUIPMENT

1. Electric Heat Pump	#	18265 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

Ben Martin
157 SE Rachel Way
LAKE CITY, FL 32025

Project Title:
Model 1125 - Rachel Way

9/28/2021

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	S	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded		
1	2 NFRC	0.25, 0.36	No	No	S			1.5ft.	1.0ft.	75.0	75.0	0.0	12	14	907	Btuh
2	2 NFRC	0.25, 0.36	No	No	E			1.5ft.	1.0ft.	30.0	1.5	28.5	12	31	901	Btuh
3	2 NFRC	0.25, 0.36	No	No	N			1.5ft.	1.0ft.	15.0	0.0	15.0	12	12	181	Btuh
4	2 NFRC	0.25, 0.36	No	No	N			1.5ft.	1.0ft.	40.0	0.0	40.0	12	12	484	Btuh
	Window Total								160 (sqft)					2473 Btuh		
Walls	Type	U-Value					R-Value		Area(sqft)			HTM		Load		
							Cav/Sheath									
1	Frame - Wood - Ext	0.09					13.0/0.0		230.3			2.3		521 Btuh		
2	Frame - Wood - Ext	0.09					13.0/0.0		191.3			2.3		433 Btuh		
3	Frame - Wood - Ext	0.09					13.0/0.0		270.3			2.3		612 Btuh		
4	Frame - Wood - Ext	0.09					13.0/0.0		201.3			2.3		456 Btuh		
	Wall Total								893 (sqft)					2022 Btuh		
Doors	Type	U-Value					R-Value		Area (sqft)			HTM		Load		
1	Insulated - Exterior								20.0			13.8		276 Btuh		
2	Insulated - Exterior								20.0			13.8		276 Btuh		
	Door Total								40 (sqft)					552 Btuh		
Ceilings	Type/Color/Surface	U-Value					R-Value		Area(sqft)			HTM		Load		
1	Vented AtticLight/Shingle/RB	0.025					38.0/0.0		1181.0			0.86		1019 Btuh		
	Ceiling Total								1181 (sqft)					1019 Btuh		
Floors	Type	U-Value					R-Value		Size			HTM		Load		
1	Slab On Grade						0.0		1125 (ft-perimeter)			0.0		0 Btuh		
	Floor Total								1125.0 (sqft)					0 Btuh		
	Envelope Subtotal:														6066 Btuh	
Infiltration	Type	Average ACH					Volume(cuft)		Wall Ratio		CFM=		Load			
	Natural	0.12					9000		1		17.6		367 Btuh			
Internal gain	Occupants					Btuh/occupant			Appliance			Load				
	3					X 230			+			1890 Btuh				
	Sensible Envelope Load:														8323 Btuh	
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)										(DGM of 0.348)			2893 Btuh		
	Sensible Load All Zones														11216 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Ben Martin
157 SE Rachel Way
LAKE CITY, FL 32025

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Model 1125 - Rachel Way

9/28/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	8323 Btuh
	Sensible Duct Load	2893 Btuh
	Total Sensible Zone Loads	11216 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	11216 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	609 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	884 Btuh
	Latent occupant gain (3.0 people @ 200 Btuh per person)	600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2092 Btuh
	TOTAL GAIN	13308 Btuh

EQUIPMENT

1. Central Unit	#	13308 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