

Residential System Sizing Calculation

Summary

Project Title:

Woodborough Subdivision
Lake City, FL

Mr & Mrs S Rowan Barndominium

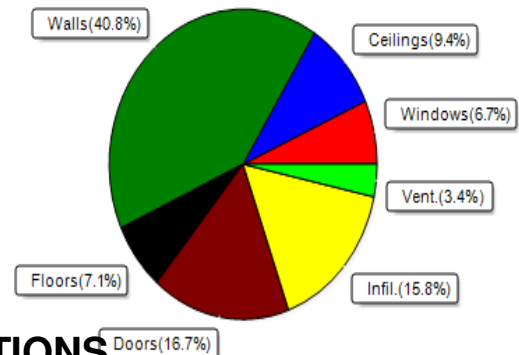
2/16/2022

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	12899 Btuh	Total cooling load calculation	11350 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Window/Wall Heat Pump)	160.3 20672	Sensible (SHR = 0.70)	102.8 9660
Heat Pump + Auxiliary(0.0kW)	160.3 20672	Latent	212.4 4140
		Total (Window/Wall Heat Pump)	121.6 13800

WINTER CALCULATIONS

Winter Heating Load (for 1360 sqft)

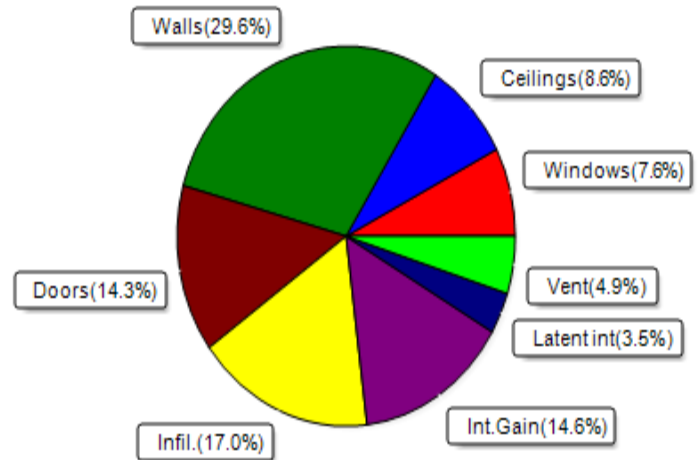
Load component	Load
Window total 54 sqft	864 Btuh
Wall total 1483 sqft	5266 Btuh
Door total 120 sqft	2160 Btuh
Ceiling total 1008 sqft	1215 Btuh
Floor total See detail report	919 Btuh
Infiltration 47 cfm	2037 Btuh
Duct loss	0 Btuh
Subtotal	12461 Btuh
Ventilation 10 cfm	438 Btuh
TOTAL HEAT LOSS	12899 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1360 sqft)

Load component	Load
Window total 54 sqft	859 Btuh
Wall total 1483 sqft	3357 Btuh
Door total 120 sqft	1620 Btuh
Ceiling total 1008 sqft	972 Btuh
Floor total	0 Btuh
Infiltration 35 cfm	726 Btuh
Internal gain	1660 Btuh
Duct gain	0 Btuh
Sens. Ventilation 10 cfm	208 Btuh
Blower Load	0 Btuh
Total sensible gain	9401 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1204 Btuh
Latent gain(ventilation)	345 Btuh
Latent gain(internal/occupants/other)	400 Btuh
Total latent gain	1949 Btuh
TOTAL HEAT GAIN	11350 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:

Woodborough Subdivision
Lake City, FL

Mr & Mrs S Rowan Barndominium

2/16/2022

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	0.25, 0.40	B-L	No	N		1.3ft	1.0ft	9.0	0.0	9.0	10	10	91	Btuh
2	2 NFRC	0.25, 0.40	B-L	No	W		1.3ft	2.0ft	12.0	0.0	12.0	10	23	280	Btuh
3	2 NFRC	0.25, 0.40	B-L	No	E		1.3ft	2.0ft	9.0	0.0	9.0	10	23	210	Btuh
4	2 NFRC	0.25, 0.40	B-L	No	N		1.3ft	2.0ft	24.0	0.0	24.0	10	10	242	Btuh
	Excursion													36	Btuh
	Window Total								54 (sqft)					859 Btuh	
Walls	Type					U-Value	R-Value		Area(sqft)			HTM		Load	
							Cav/Sheath								
1	Frame - Wood - Ext					0.09	13.0/0.0		183.0			2.3		414 Btuh	
2	Frame - Wood - Ext					0.09	13.0/0.0		117.3			2.3		266 Btuh	
3	Frame - Wood - Ext					0.09	13.0/0.0		152.0			2.3		344 Btuh	
4	Frame - Wood - Ext					0.09	13.0/0.0		105.3			2.3		238 Btuh	
5	Frame - Wood - Ext					0.09	13.0/0.0		172.0			2.3		389 Btuh	
6	Frame - Wood - Ext					0.09	13.0/0.0		298.3			2.3		675 Btuh	
7	Frame - Wood - Ext					0.09	13.0/0.0		152.0			2.3		344 Btuh	
8	Frame - Wood - Ext					0.09	13.0/0.0		303.3			2.3		687 Btuh	
	Wall Total								1483 (sqft)					3357 Btuh	
Doors	Type								Area (sqft)			HTM		Load	
1	Insulated - Exterior								20.0			12.0		240 Btuh	
2	Insulated - Exterior								20.0			13.8		276 Btuh	
3	Insulated - Exterior								20.0			13.8		276 Btuh	
4	Insulated - Exterior								20.0			13.8		276 Btuh	
5	Insulated - Exterior								40.0			13.8		552 Btuh	
	Door Total								120 (sqft)					1620 Btuh	
Ceilings	Type/Color/Surface					U-Value	R-Value		Area(sqft)			HTM		Load	
1	Unvented Attic/Light/Metal					0.241	0.0/38.0		1008.0			0.96		972 Btuh	
	Ceiling Total								1008 (sqft)					972 Btuh	
Floors	Type						R-Value		Size			HTM		Load	
1	Slab On Grade						19.0		352 (ft-perimeter)			0.0		0 Btuh	
2	Interior						19.0		1008 (sqft)			0.0		0 Btuh	
	Floor Total								1360.0 (sqft)					0 Btuh	
	Envelope Subtotal:													6808 Btuh	
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural(Adjusted for ventilation)					0.19		10880		1		34.9		726 Btuh	
Internal gain					Occupants		Btuh/occupant				Appliance		Load		
					2		X 230		+		1200		1660 Btuh		
	Sensible Envelope Load:													9193 Btuh	
Duct load	NA, Supply(R0.0-None), Return(R0.0-None)										(DGM of 0.000)			0 Btuh	
	Sensible Load All Zones													9193 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Woodborough Subdivision
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Mr & Mrs S Rowan Barndominium

2/16/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	9193 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	9193 Btuh
	Sensible ventilation	208 Btuh
	Blower	0 Btuh
	Total sensible gain	9401 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1204 Btuh
	Latent ventilation gain	345 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	1949 Btuh
	TOTAL GAIN	11350 Btuh

EQUIPMENT

1. PTAC and Room Unit	#	13800 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

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Woodborough Subdivision
Lake City, FL

Project Title:
Mr & Mrs S Rowan Barndominium
Building Type: User

2/16/2022

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	0.40	N	9.0		16.0	144 Btuh
2	2, NFRC 0.25	Vinyl	0.40	W	12.0		16.0	192 Btuh
3	2, NFRC 0.25	Vinyl	0.40	E	9.0		16.0	144 Btuh
4	2, NFRC 0.25	Vinyl	0.40	N	24.0		16.0	384 Btuh
	Window Total				54.0(sqft)			864 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	183		3.55	650 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	117		3.55	417 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	152		3.55	540 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	105		3.55	374 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	172		3.55	611 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	298		3.55	1059 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	152		3.55	540 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	303		3.55	1077 Btuh
	Wall Total				1483(sqft)			5266 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
2	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
3	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
4	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
5	Insulated - Exterior, n		(0.460)		40		18.4	736 Btuh
	Door Total				120(sqft)			2160Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Unvent Attic/L/Metal		(0.241)	0.0/38.0	1008		1.2	1215 Btuh
	Ceiling Total				1008(sqft)			1215Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(0.295)	19.0	78.0 ft(perim.)		11.8	919 Btuh
2	Interior		(0.295)	19.0	1008.0 sqft		0.0	0 Btuh
	Floor Total				1360 sqft			919 Btuh
	Envelope Subtotal:							10424 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural(Adjusted for ventilation)		0.26	10880	1.00	46.5		2037 Btuh
Duct load	NA, R0.0, Supply(), Return() (DLM of 0.000)							0 Btuh
All Zones	Sensible Subtotal All Zones							12461 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Woodborough Subdivision
Lake City, FL

Project Title:
Mr & Mrs S Rowan Barndominium
Building Type: User

2/16/2022

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	12461 Btuh
	Ventilation Sensible Heat Loss	438 Btuh
	Total Heat Loss	12899 Btuh

EQUIPMENT

1. Window/Wall Heat Pump	#	20672 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