

Residential System Sizing Calculation

Summary

Mike Radwan
1134 SW Custom Made Cr
Lake City, FL

Project Title:
210345 Radwan

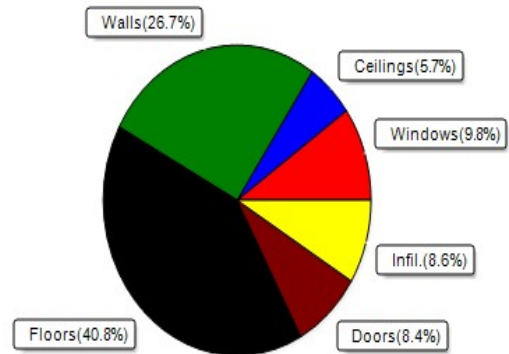
2021-03-02

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	5089	Btuh	Total cooling load calculation	5008	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Window/Wall Heat Pump)	108.1	5500	Sensible (SHR = 0.75)	94.8	4125
Heat Pump + Auxiliary(0.0kW)	108.1	5500	Latent	209.2	1375
			Total (Window/Wall Heat Pump)	109.8	5500

WINTER CALCULATIONS

Winter Heating Load (for 288 sqft)

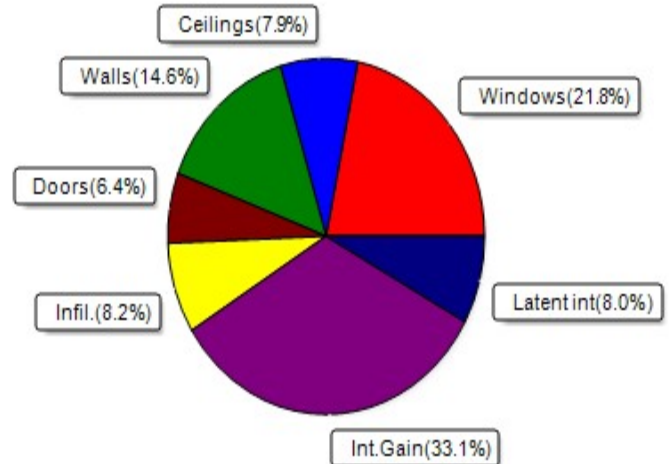
Load component		Load	
Window total	42 sqft	500	Btuh
Wall total	382 sqft	1358	Btuh
Door total	27 sqft	427	Btuh
Ceiling total	288 sqft	292	Btuh
Floor total	288 sqft	2077	Btuh
Infiltration	10 cfm	435	Btuh
Duct loss		0	Btuh
Subtotal		5089	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		5089	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 288 sqft)

Load component		Load	
Window total	42 sqft	1092	Btuh
Wall total	382 sqft	730	Btuh
Door total	27 sqft	320	Btuh
Ceiling total	288 sqft	395	Btuh
Floor total		0	Btuh
Infiltration	7 cfm	155	Btuh
Internal gain		1660	Btuh
Duct gain		0	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		4351	Btuh
Latent gain(ducts)		0	Btuh
Latent gain(infiltration)		257	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		400	Btuh
Total latent gain		657	Btuh
TOTAL HEAT GAIN		5008	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-03-02

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Mike Radwan
1134 SW Custom Made Cr
Lake City, FL

Project Title:
210345 Radwan
Building Type: User

2021-03-02

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 0.20	Metal	0.30	W	26.7		12.0	320 Btuh
2	2, NFRC 0.20	Metal	0.30	E	15.0		12.0	180 Btuh
	Window Total				41.7(sqft)			500 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	78		3.55	276 Btuh
2	Frame - Wood	- Adj	(0.089)	13.0/0.0	36		3.55	128 Btuh
3	Frame - Wood	- Adj	(0.089)	13.0/0.0	27		3.55	96 Btuh
4	Frame - Wood	- Adj	(0.089)	13.0/0.0	173		3.55	613 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	69		3.55	245 Btuh
	Wall Total				382(sqft)			1358 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		7		16.0	107 Btuh
2	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
	Door Total				27(sqft)			427Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	288		1.0	292 Btuh
	Ceiling Total				288(sqft)			292Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	44.0 ft(perim.)		47.2	2077 Btuh
	Floor Total				288 sqft			2077 Btuh
	Envelope Subtotal:							4654 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio		CFM=	Load
	Natural		0.23	2592	1.00		9.9	435 Btuh
Duct load	NA, R0.0, Supply(), Return() (DLM of 0.000)							0 Btuh
All Zones	Sensible Subtotal All Zones							5089 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Mike Radwan
1134 SW Custom Made Cr
Lake City, FL

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210345 Radwan
Building Type: User

2021-03-02

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	5089 Btuh 0 Btuh 5089 Btuh
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EQUIPMENT

1. Window/Wall Heat Pump	#	5500 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

Mike Radwan
1134 SW Custom Made Cr
Lake City, FL

Project Title:
210345 Radwan

2021-03-02

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	0.20, 0.30	No	No	No	W	1.5ft	1.5ft	26.7	0.0	26.7	10	25	666	Btuh
2	2 NFRC	0.20, 0.30	No	No	No	E	20.0f	1.5ft	15.0	15.0	0.0	10	25	149	Btuh
	Excursion													277	Btuh
	Window Total								42 (sqft)					1092 Btuh	
Walls	Type				U-Value		R-Value		Area(sqft)			HTM		Load	
							Cav/Sheath								
1	Frame - Wood - Ext				0.09		13.0/0.0		77.7			2.3		176 Btuh	
2	Frame - Wood - Adj				0.09		13.0/0.0		36.0			1.7		61 Btuh	
3	Frame - Wood - Adj				0.09		13.0/0.0		27.0			1.7		46 Btuh	
4	Frame - Wood - Adj				0.09		13.0/0.0		172.8			1.7		291 Btuh	
5	Frame - Wood - Ext				0.09		13.0/0.0		69.0			2.3		156 Btuh	
	Wall Total								382 (sqft)					730 Btuh	
Doors	Type								Area (sqft)			HTM		Load	
1	Insulated - Exterior								6.7			12.0		80 Btuh	
2	Insulated - Garage								20.0			12.0		240 Btuh	
	Door Total								27 (sqft)					320 Btuh	
Ceilings	Type/Color/Surface				U-Value		R-Value		Area(sqft)			HTM		Load	
1	Vented Attic/DarkShingle				0.025		38.0/0.0		288.0			1.37		395 Btuh	
	Ceiling Total								288 (sqft)					395 Btuh	
Floors	Type						R-Value		Size			HTM		Load	
1	Slab On Grade						0.0		288 (ft-perimeter)			0.0		0 Btuh	
	Floor Total								288.0 (sqft)					0 Btuh	
	Envelope Subtotal:													2536 Btuh	
Infiltration	Type				Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural				0.17		2592		1		7.5		155 Btuh		
Internal gain					Occupants		Btuh/occupant		Appliance				Load		
					2		X 230		+		1200		1660 Btuh		
	Sensible Envelope Load:													4351 Btuh	
Duct load	NA, Supply(R0.0-None), Return(R0.0-None)											(DGM of 0.000)		0 Btuh	
	Sensible Load All Zones													4351 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

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Lake City, FL

Project Title:
210345 Radwan

Climate:FL_GAINESVILLE_REGIONAL_A

2021-03-02

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	4351 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	4351 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	4351 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	257 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	657 Btuh
	TOTAL GAIN	5008 Btuh

EQUIPMENT

1. PTAC and Room Unit	#	5500 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