

Residential System Sizing Calculation

Summary

Shuman, Ronnie
205 SW Madison Court
Lake City, FL

Project Title:
211179 Shuman

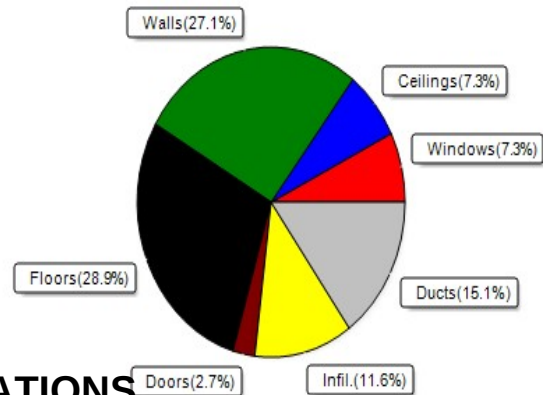
2021-08-31

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	34022 Btuh	Total cooling load calculation	27179 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	108.8 37000	Sensible (SHR = 0.75)	123.4 27750
Heat Pump + Auxiliary(0.0kW)	108.8 37000	Latent	197.3 9250
		Total (Electric Heat Pump)	136.1 37000

WINTER CALCULATIONS

Winter Heating Load (for 2260 sqft)

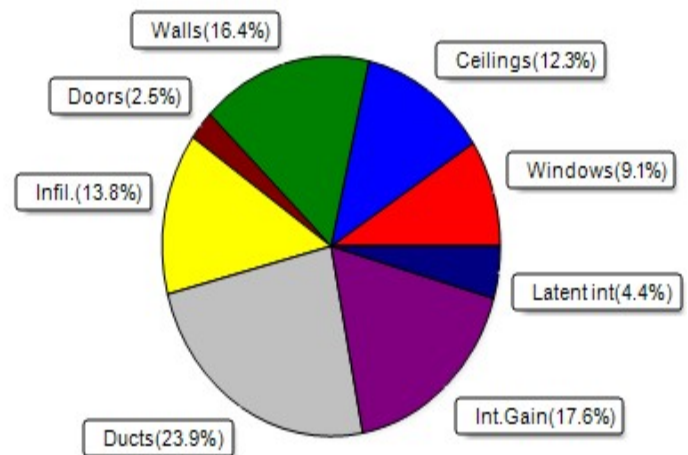
Load component	Load
Window total 195 sqft	2492 Btuh
Wall total 1685 sqft	9232 Btuh
Door total 57 sqft	907 Btuh
Ceiling total 2436 sqft	2473 Btuh
Floor total 2260 sqft	9818 Btuh
Infiltration 90 cfm	3958 Btuh
Duct loss	5143 Btuh
Subtotal	34022 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	34022 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2260 sqft)

Load component	Load
Window total 195 sqft	2482 Btuh
Wall total 1685 sqft	4444 Btuh
Door total 57 sqft	680 Btuh
Ceiling total 2436 sqft	3339 Btuh
Floor total	0 Btuh
Infiltration 68 cfm	1410 Btuh
Internal gain	4780 Btuh
Duct gain	5355 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	22490 Btuh
Latent gain(ducts)	1149 Btuh
Latent gain(infiltration)	2340 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	4689 Btuh
TOTAL HEAT GAIN	27179 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-08-31

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Shuman, Ronnie
205 SW Madison Court
Lake City, FL

Project Title:
211179 Shuman
Building Type: User

2021-08-31

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 0.22	Vinyl	0.32	N	9.0		12.8	115 Btuh
2	2, NFRC 0.22	Vinyl	0.32	N	18.0		12.8	230 Btuh
3	2, NFRC 0.22	Vinyl	0.32	N	26.7		12.8	341 Btuh
4	2, NFRC 0.22	Vinyl	0.32	N	9.0		12.8	115 Btuh
5	2, NFRC 0.22	Vinyl	0.32	S	18.0		12.8	230 Btuh
6	2, NFRC 0.22	Vinyl	0.32	S	72.0		12.8	922 Btuh
7	2, NFRC 0.22	Vinyl	0.32	S	18.0		12.8	230 Btuh
8	2, NFRC 0.22	Vinyl	0.32	W	24.0		12.8	307 Btuh
	Window Total				194.7(sqft)			2492 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Conc Blk,Hollow	- Ext	(0.151)	4.0/0.0	359		6.06	2177 Btuh
2	Frame - Wood	- Adj	(0.089)	13.0/0.0	50		3.55	177 Btuh
3	Frame - Wood	- Adj	(0.089)	13.0/0.0	341		3.55	1210 Btuh
4	Conc Blk,Hollow	- Ext	(0.151)	4.0/0.0	56		6.06	339 Btuh
5	Conc Blk,Hollow	- Ext	(0.151)	4.0/0.0	19		6.06	113 Btuh
6	Conc Blk,Hollow	- Ext	(0.151)	4.0/0.0	119		6.06	720 Btuh
7	Conc Blk,Hollow	- Ext	(0.151)	4.0/0.0	37		6.06	226 Btuh
8	Conc Blk,Hollow	- Ext	(0.151)	4.0/0.0	297		6.06	1802 Btuh
9	Conc Blk,Hollow	- Ext	(0.151)	4.0/0.0	290		6.06	1759 Btuh
10	Conc Blk,Hollow	- Ext	(0.151)	4.0/0.0	117		6.06	709 Btuh
	Wall Total				1685(sqft)			9232 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
3	Insulated - Exterior,	n	(0.400)		23		16.0	373 Btuh
	Door Total				57(sqft)			907Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	2436		1.0	2473 Btuh
	Ceiling Total				2436(sqft)			2473Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	208.0 ft(perim.)		47.2	9818 Btuh
	Floor Total				2260 sqft			9818 Btuh
	Envelope Subtotal:							24921 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.24	22600	1.00	90.4		3958 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.178)							5143 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Shuman, Ronnie
205 SW Madison Court
Lake City, FL

Project Title:
211179 Shuman
Building Type: User

2021-08-31

All Zones	Sensible Subtotal All Zones	34022 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	34022 Btuh 0 Btuh 34022 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	37000 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

Shuman, Ronnie
205 SW Madison Court
Lake City, FL

Project Title:
211179 Shuman

2021-08-31

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	0.22, 0.32	No	No	N		1.5ft	4.0ft	9.0	9.0	0.0	11	12	96	Btuh		
2	2 NFRC	0.22, 0.32	No	No	N		18.2f	2.0ft	18.0	18.0	0.0	11	12	193	Btuh		
3	2 NFRC	0.22, 0.32	No	No	N		18.2f	2.0ft	26.7	26.7	0.0	11	12	286	Btuh		
4	2 NFRC	0.22, 0.32	No	No	N		18.2f	2.0ft	9.0	9.0	0.0	11	12	96	Btuh		
5	2 NFRC	0.22, 0.32	No	No	S		1.5ft	2.0ft	18.0	0.0	18.0	11	11	193	Btuh		
6	2 NFRC	0.22, 0.32	No	No	S		1.5ft	2.0ft	72.0	0.0	72.0	11	11	771	Btuh		
7	2 NFRC	0.22, 0.32	No	No	S		1.5ft	2.0ft	18.0	0.0	18.0	11	11	193	Btuh		
8	2 NFRC	0.22, 0.32	No	No	W		1.5ft	2.0ft	24.0	0.0	24.0	11	27	655	Btuh		
	Window Total								195 (sqft)					2482		Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load			
							Cav/Sheath										
1	Concrete Blk,Hollow - Ext						0.15	4.0/0.0			359.2			2.9	1050	Btuh	
2	Frame - Wood - Adj						0.09	13.0/0.0			49.8			1.7	84	Btuh	
3	Frame - Wood - Adj						0.09	13.0/0.0			340.9			1.7	575	Btuh	
4	Concrete Blk,Hollow - Ext						0.15	4.0/0.0			56.0			2.9	164	Btuh	
5	Concrete Blk,Hollow - Ext						0.15	4.0/0.0			18.7			2.9	55	Btuh	
6	Concrete Blk,Hollow - Ext						0.15	4.0/0.0			118.9			2.9	348	Btuh	
7	Concrete Blk,Hollow - Ext						0.15	4.0/0.0			37.3			2.9	109	Btuh	
8	Concrete Blk,Hollow - Ext						0.15	4.0/0.0			297.3			2.9	869	Btuh	
9	Concrete Blk,Hollow - Ext						0.15	4.0/0.0			290.2			2.9	849	Btuh	
10	Concrete Blk,Hollow - Ext						0.15	4.0/0.0			117.0			2.9	342	Btuh	
	Wall Total								1685 (sqft)					4444		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			
3	Insulated - Exterior						23.3			12.0		280		Btuh			
	Door Total								57 (sqft)					680		Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)			HTM		Load			
1	Vented Attic/DarkShingle						0.025	38.0/0.0			2436.0			1.37	3339	Btuh	
	Ceiling Total								2436 (sqft)					3339		Btuh	
Floors	Type						R-Value			Size			HTM		Load		
1	Slab On Grade						0.0			2260 (ft-perimeter)			0.0		0	Btuh	
	Floor Total								2260.0 (sqft)					0		Btuh	
	Envelope Subtotal:													10945		Btuh	
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural						0.18		22600		1		67.8		1410		Btuh
Internal gain							Occupants		Btuh/occupant		Appliance		Load				
							6		X 230		+		3400		4780		Btuh
	Sensible Envelope Load:													17135		Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

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205 SW Madison Court
Lake City, FL

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Climate:FL_GAINESVILLE_REGIONAL_A

2021-08-31

Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.313)	5355 Btuh
	Sensible Load All Zones	22490 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Shuman, Ronnie
205 SW Madison Court
Lake City, FL

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Climate:FL_GAINESVILLE_REGIONAL_A

2021-08-31

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17135 Btuh
	Sensible Duct Load	5355 Btuh
	Total Sensible Zone Loads	22490 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	22490 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2340 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1149 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4689 Btuh
	TOTAL GAIN	27179 Btuh

EQUIPMENT

1. Central Unit	#	37000 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