

Residential System Sizing Calculation

Summary

Paul & Angela Seals
county road 240
Lake City, FL 32024

Project Title:
201218 Seals

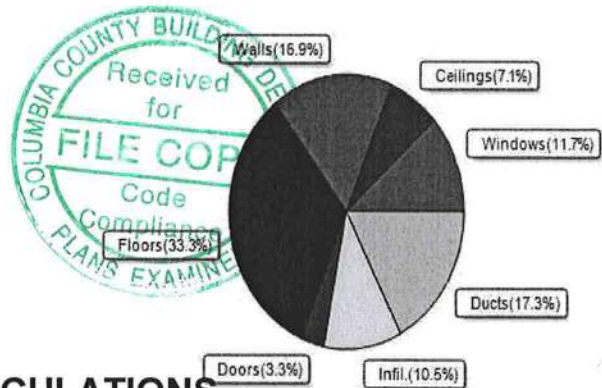
2021-01-26

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	38011	Btuh	Total cooling load calculation	31485	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	110.5	42000	Sensible (SHR = 0.75)	121.3	31500
Heat Pump + Auxiliary(0.0kW)	110.5	42000	Latent	190.0	10500
			Total (Electric Heat Pump)	133.4	42000

WINTER CALCULATIONS

Winter Heating Load (for 2650 sqft)

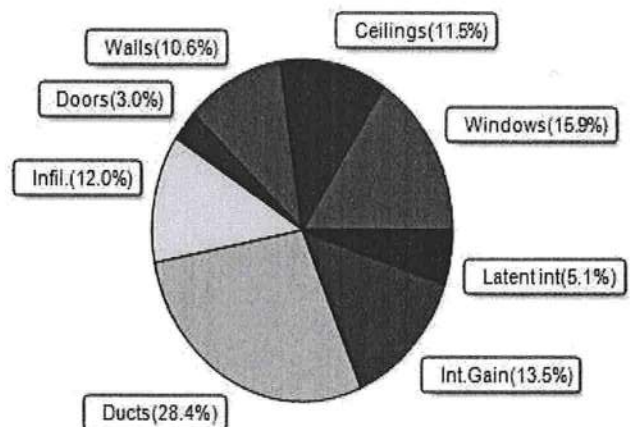
Load component		Load	
Window total	316 sqft	4431	Btuh
Wall total	2016 sqft	6408	Btuh
Door total	78 sqft	1243	Btuh
Ceiling total	2650 sqft	2690	Btuh
Floor total	2650 sqft	12650	Btuh
Infiltration	91 cfm	4004	Btuh
Duct loss		6585	Btuh
Subtotal		38011	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		38011	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2650 sqft)

Load component		Load	
Window total	316 sqft	4999	Btuh
Wall total	2016 sqft	3347	Btuh
Door total	78 sqft	932	Btuh
Ceiling total	2650 sqft	3632	Btuh
Floor total		0	Btuh
Infiltration	69 cfm	1427	Btuh
Internal gain		4240	Btuh
Duct gain		7382	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		25958	Btuh
Latent gain(ducts)		1559	Btuh
Latent gain(infiltration)		2367	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		5527	Btuh
TOTAL HEAT GAIN		31485	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-01-26

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Paul & Angela Seals
county road 240
Lake City, FL 32024

Project Title:
201218 Seals
Building Type: User

2021-01-26

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 0.30	Metal	0.35	N	7.5		14.0	105 Btuh
2	2, NFRC 0.30	Metal	0.35	N	45.0		14.0	630 Btuh
3	2, NFRC 0.30	Metal	0.35	N	54.0		14.0	756 Btuh
4	2, NFRC 0.30	Metal	0.35	N	13.3		14.0	187 Btuh
5	2, NFRC 0.30	Metal	0.35	N	54.0		14.0	756 Btuh
6	2, NFRC 0.30	Metal	0.35	N	9.0		14.0	126 Btuh
7	2, NFRC 0.30	Metal	0.35	E	15.0		14.0	210 Btuh
8	2, NFRC 0.30	Metal	0.35	S	30.0		14.0	420 Btuh
9	2, NFRC 0.30	Metal	0.35	S	30.0		14.0	420 Btuh
10	2, NFRC 0.30	Metal	0.35	S	4.0		14.0	56 Btuh
11	2, NFRC 0.30	Metal	0.35	S	30.0		14.0	420 Btuh
12	2, NFRC 0.30	Metal	0.35	W	12.0		14.0	168 Btuh
13	2, NFRC 0.30	Metal	0.35	W	6.0		14.0	84 Btuh
14	2, NFRC 0.30	Metal	0.35	W	6.7		14.0	93 Btuh
Window Total					316.5(sqft)			4431 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	185		3.09	570 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	134		3.09	413 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	57		3.09	176 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	63		3.09	195 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	245		3.09	757 Btuh
6	Frame - Wood	- Ext	(0.077)	19.0/0.0	285		3.09	881 Btuh
7	Frame - Wood	- Ext	(0.077)	19.0/0.0	132		3.09	408 Btuh
8	Frame - Wood	- Ext	(0.077)	19.0/0.0	23		3.09	70 Btuh
9	Frame - Wood	- Ext	(0.077)	19.0/0.0	87		3.09	269 Btuh
10	Frame - Wood	- Ext	(0.077)	19.0/0.0	45		3.09	139 Btuh
11	Frame - Wood	- Ext	(0.077)	19.0/0.0	117		3.09	362 Btuh
12	Frame - Wood	- Adj	(0.089)	13.0/0.0	143		3.55	506 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	98		3.55	348 Btuh
14	Frame - Wood	- Adj	(0.089)	13.0/0.0	44		3.55	154 Btuh
15	Frame - Wood	- Adj	(0.089)	13.0/0.0	98		3.55	346 Btuh
16	Frame - Wood	- Ext	(0.077)	19.0/0.0	263		3.09	814 Btuh
Wall Total					2016(sqft)			6408 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		7		16.0	107 Btuh
2	Insulated - Exterior,	n	(0.400)		11		16.0	176 Btuh
3	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
4	Insulated - Garage,	n	(0.400)		20		16.0	320 Btuh
5	Insulated - Garage,	n	(0.400)		20		16.0	320 Btuh
Door Total					78(sqft)			1243Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Paul & Angela Seals
county road 240
Lake City, FL 32024

Project Title:
201218 Seals
Building Type: User

2021-01-26

Ceilings 1	Type/Color/Surface Vented Attic/D/Shing Ceiling Total	Ueff. (0.025)	R-Value 38.0/0.0	Area X 2650 2650(sqft)	HTM= 1.0	Load 2690 Btuh 2690Btuh
Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 268.0 ft(perim.) 2650 sqft	HTM= 47.2	Load 12650 Btuh 12650 Btuh
Envelope Subtotal:						27421 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.23	Volume(cuft) 23850	Wall Ratio 1.00	CFM= 91.4	4004 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.210)					6585 Btuh
All Zones	Sensible Subtotal All Zones					38011 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	38011 Btuh 0 Btuh 38011 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	42000 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

Manual J Summer Calculations

Residential Load - Component Details (continued)

Paul & Angela Seals
county road 240
Lake City, FL 32024

Project Title:
201218 Seals

Climate:FL_GAINESVILLE_REGIONAL_A

2021-01-26

	Envelope Subtotal:					12910 Btuh
Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 23850	Wall Ratio 1	CFM= 68.6	Load 1427 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	2400	Load 4240 Btuh
	Sensible Envelope Load:					18576 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.397)	7382 Btuh
	Sensible Load All Zones					25958 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Paul & Angela Seals
county road 240
Lake City, FL 32024

Project Title:
201218 Seals

Climate:FL_GAINESVILLE_REGIONAL_A

2021-01-26

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	18576 Btuh
	Sensible Duct Load	7382 Btuh
	Total Sensible Zone Loads	25958 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	25958 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2367 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1559 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5527 Btuh
	TOTAL GAIN	31485 Btuh

EQUIPMENT

1. Central Unit	#	42000 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 - Summer

Residential Load - Whole House Component Details

Paul & Angela Seals
county road 240
Lake City, FL 32024

Project Title:
201218 Seals

2021-01-26

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	0.30, 0.35	No	No	N		1.5ft	1.5ft	7.5	0.0	7.5	13	13	97	Btuh
2	2 NFRC	0.30, 0.35	No	No	N		1.5ft	1.5ft	45.0	0.0	45.0	13	13	583	Btuh
3	2 NFRC	0.30, 0.35	No	No	N		1.5ft	1.5ft	54.0	0.0	54.0	13	13	700	Btuh
4	2 NFRC	0.30, 0.35	No	No	N		15.0f	1.0ft	13.3	0.0	13.3	13	13	173	Btuh
5	2 NFRC	0.30, 0.35	No	No	N		15.0f	1.0ft	54.0	0.0	54.0	13	13	700	Btuh
6	2 NFRC	0.30, 0.35	No	No	N		15.0f	1.0ft	9.0	0.0	9.0	13	13	117	Btuh
7	2 NFRC	0.30, 0.35	No	No	E		1.5ft	1.5ft	15.0	0.0	15.0	13	36	534	Btuh
8	2 NFRC	0.30, 0.35	No	No	S		1.5ft	1.5ft	30.0	30.0	0.0	13	15	389	Btuh
9	2 NFRC	0.30, 0.35	No	No	S		1.5ft	1.5ft	30.0	30.0	0.0	13	15	389	Btuh
10	2 NFRC	0.30, 0.35	No	No	S		6.5ft	1.0ft	4.0	4.0	0.0	13	15	52	Btuh
11	2 NFRC	0.30, 0.35	No	No	S		6.5ft	1.0ft	30.0	30.0	0.0	13	15	389	Btuh
12	2 NFRC	0.30, 0.35	No	No	W		1.5ft	1.5ft	12.0	0.0	12.0	13	36	427	Btuh
13	2 NFRC	0.30, 0.35	No	No	W		1.5ft	1.5ft	6.0	0.0	6.0	13	36	213	Btuh
14	2 NFRC	0.30, 0.35	No	No	W		1.5ft	1.5ft	6.7	0.0	6.7	13	36	237	Btuh
Window Total									316 (sqft)					4999 Btuh	
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext					0.08	19.0/0.0	184.5			1.7		305 Btuh		
2	Frame - Wood - Ext					0.08	19.0/0.0	133.5			1.7		221 Btuh		
3	Frame - Wood - Ext					0.08	19.0/0.0	57.0			1.7		94 Btuh		
4	Frame - Wood - Ext					0.08	19.0/0.0	63.0			1.7		104 Btuh		
5	Frame - Wood - Ext					0.08	19.0/0.0	245.0			1.7		405 Btuh		
6	Frame - Wood - Ext					0.08	19.0/0.0	285.0			1.7		471 Btuh		
7	Frame - Wood - Ext					0.08	19.0/0.0	132.0			1.7		218 Btuh		
8	Frame - Wood - Ext					0.08	19.0/0.0	22.5			1.7		37 Btuh		
9	Frame - Wood - Ext					0.08	19.0/0.0	87.0			1.7		144 Btuh		
10	Frame - Wood - Ext					0.08	19.0/0.0	45.0			1.7		74 Btuh		
11	Frame - Wood - Ext					0.08	19.0/0.0	117.0			1.7		193 Btuh		
12	Frame - Wood - Adj					0.09	13.0/0.0	142.5			1.7		240 Btuh		
13	Frame - Wood - Adj					0.09	13.0/0.0	98.0			1.7		165 Btuh		
14	Frame - Wood - Adj					0.09	13.0/0.0	43.5			1.7		73 Btuh		
15	Frame - Wood - Adj					0.09	13.0/0.0	97.5			1.7		164 Btuh		
16	Frame - Wood - Ext					0.08	19.0/0.0	263.3			1.7		435 Btuh		
Wall Total									2016 (sqft)					3347 Btuh	
Doors	Type							Area (sqft)			HTM		Load		
1	Insulated - Exterior							6.7			12.0		80 Btuh		
2	Insulated - Exterior							11.0			12.0		132 Btuh		
3	Insulated - Exterior							20.0			12.0		240 Btuh		
4	Insulated - Garage							20.0			12.0		240 Btuh		
5	Insulated - Garage							20.0			12.0		240 Btuh		
Door Total									78 (sqft)					932 Btuh	
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load		
1	Vented Attic/DarkShingle					0.025	38.0/0.0	2650.0			1.37		3632 Btuh		
Ceiling Total									2650 (sqft)					3632 Btuh	
Floors	Type						R-Value	Size			HTM		Load		
1	Slab On Grade						0.0	2650 (ft-perimeter)			0.0		0 Btuh		
Floor Total									2650.0 (sqft)					0 Btuh	