

Residential System Sizing Calculation

Summary

Austen Seay

Project Title:

BB Seay

Lake City, FL

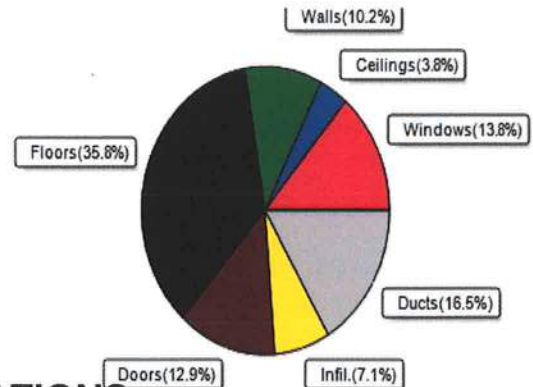
9/8/2023

Location for weather data: Gainesville, FL - Defaults: Latitude(30) Altitude(164 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (76F) Humidity difference(47gr.)			
Winter design temperature(MJ8 99%)	33 F	Summer design temperature(MJ8 99%)	92 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	37 F	Summer temperature difference	17 F
Total heating load calculation	43350 Btuh	Total cooling load calculation	31189 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	152.2 66000	Sensible (SHR = 0.75)	201.3 49500
Heat Pump + Auxiliary(0.0kW)	152.2 66000	Latent	250.1 16500
		Total (Electric Heat Pump)	211.6 66000

WINTER CALCULATIONS

Winter Heating Load (for 3085 sqft)

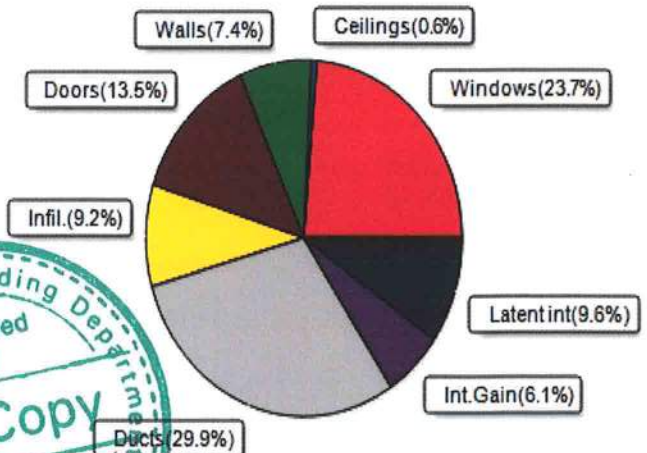
Load component	Load
Window total 489 sqft	5965 Btuh
Wall total 2383 sqft	4406 Btuh
Door total 328 sqft	5583 Btuh
Ceiling total 3085 sqft	1645 Btuh
Floor total See detail report	15521 Btuh
Infiltration 76 cfm	3079 Btuh
Duct loss	7152 Btuh
Subtotal	43350 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	43350 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3085 sqft)

Load component	Load
Window total 489 sqft	7380 Btuh
Wall total 2383 sqft	2310 Btuh
Door total 328 sqft	4225 Btuh
Ceiling total 3085 sqft	181 Btuh
Floor total	0 Btuh
Infiltration 57 cfm	1061 Btuh
Internal gain	1890 Btuh
Duct gain	7544 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	24591 Btuh
Latent gain(ducts)	1785 Btuh
Latent gain(infiltration)	1813 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	3000 Btuh
Total latent gain	6598 Btuh
TOTAL HEAT GAIN	31189 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: *[Signature]*

DATE: 9/8/23

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Austen Seay

Project Title:

BB Seay

Lake City, FL

Building Type: User

9/8/2023

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 99%)

Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.21	Metal	0.33	N	20.0		12.2	244 Btuh
2	2, NFRC 0.21	Metal	0.33	N	40.5		12.2	495 Btuh
3	2, NFRC 0.21	Metal	0.33	S	30.0		12.2	366 Btuh
4	2, NFRC 0.21	Metal	0.33	S	72.0		12.2	879 Btuh
5	2, NFRC 0.21	Metal	0.33	W	30.0		12.2	366 Btuh
6	2, NFRC 0.21	Metal	0.33	W	12.0		12.2	147 Btuh
7	2, NFRC 0.21	Metal	0.33	E	30.0		12.2	366 Btuh
8	2, NFRC 0.21	Metal	0.33	E	224.0		12.2	2735 Btuh
9	2, NFRC 0.21	Metal	0.33	S	30.0		12.2	366 Btuh
Window Total					488.5(sqft)			5965 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.074)	19.0/1.0	205		2.74	561 Btuh
2	Frame - Wood	- Ext	(0.074)	19.0/1.0	152		2.74	415 Btuh
3	Frame - Wood	- Int	(0.077)	19.0/0.0	324		0.00	0 Btuh
4	Frame - Wood	- Ext	(0.074)	19.0/1.0	363		2.74	994 Btuh
5	Frame - Wood	- Ext	(0.074)	19.0/1.0	368		2.74	1006 Btuh
6	Frame - Wood	- Ext	(0.074)	19.0/1.0	158		2.74	433 Btuh
7	Frame - Wood	- Ext	(0.074)	19.0/1.0	196		2.74	537 Btuh
8	Frame - Wood	- Ext	(0.074)	19.0/1.0	168		2.74	460 Btuh
9	Frame - Wood	- Int	(0.077)	19.0/0.0	450		0.00	0 Btuh
Wall Total					2383(sqft)			4406 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		24		17.0	408 Btuh
2	Insulated - Exterior,	n	(0.460)		24		17.0	408 Btuh
3	Insulated - Exterior,	n	(0.460)		24		17.0	408 Btuh
4	Insulated - Exterior,	n	(0.460)		24		17.0	408 Btuh
5	Insulated - Exterior,	n	(0.460)		24		17.0	408 Btuh
6	Insulated - Exterior,	n	(0.460)		24		17.0	408 Btuh
7	Insulated - Exterior,	n	(0.460)		72		17.0	1225 Btuh
8	Wood - Exterior,	n	(0.460)		72		17.0	1225 Btuh
9	Insulated - Exterior,	n	(0.460)		20		17.0	340 Btuh
10	Insulated - Exterior,	n	(0.460)		20		17.0	340 Btuh
Door Total					328(sqft)			5583Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/M/Shing		(0.014)	30.0/38.0	1985		0.53	1058 Btuh
2	Flat ceil/M/Shing		(0.014)	30.0/38.0	1100		0.53	586 Btuh
Ceiling Total					3085(sqft)			1645Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	211.5 ft(perim.)		43.7	9234 Btuh
2	Slab On Grade		(1.180)	0.0	144.0 ft(perim.)		43.7	6287 Btuh
Floor Total					3085 sqft			15521 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Austen Seay

Lake City, FL

Project Title:
BB Seay
Building Type: User

9/8/2023

	Envelope Subtotal:						33119 Btuh
Infiltration	Type Natural	Wholehouse	ACH 0.16	Volume(cuft) 27765	Wall Ratio 1.00	CFM= 76.0	3079 Btuh
Duct load	(DLM of Mixed ducts)						7152 Btuh
All Zones	Sensible Subtotal All Zones						43350 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss						43350 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)						0 Btuh
	Total Heat Loss						43350 Btuh

EQUIPMENT

1. Electric Heat Pump	#	42000 Btuh
2. Electric Heat Pump	#	24000 Btuh

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

Austen Seay

Project Title:

BB Seay

Lake City, FL

9/8/2023

Reference City: Gainesville, FL (Defaults)

Temperature Difference: 17.0F(MJ8 99%)

Humidity difference: 47gr.

Summer Setpoint: 75 °F (Required Manual J default)

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	0.21, 0.33	B-L	No	N		1.5ft	2.0ft	20.0	0.0	20.0	8	8	153	Btuh
2	2 NFRC	0.21, 0.33	B-L	No	N		15.5f	2.0ft	40.5	0.0	40.5	8	8	311	Btuh
3	2 NFRC	0.21, 0.33	B-L	No	S		1.5ft	2.0ft	30.0	30.0	0.0	8	9	230	Btuh
4	2 NFRC	0.21, 0.33	B-L	No	S		1.5ft	2.0ft	72.0	72.0	0.0	8	9	553	Btuh
5	2 NFRC	0.21, 0.33	B-L	No	W		1.5ft	2.0ft	30.0	0.0	30.0	8	19	565	Btuh
6	2 NFRC	0.21, 0.33	B-L	No	W		1.5ft	2.0ft	12.0	0.0	12.0	8	19	226	Btuh
7	2 NFRC	0.21, 0.33	B-L	No	E		1.5ft	2.0ft	30.0	0.0	30.0	8	19	565	Btuh
8	2 NFRC	0.21, 0.33	B-L	No	E		1.5ft	2.0ft	224.0	0.0	224.0	8	19	4216	Btuh
9	2 NFRC	0.21, 0.33	B-L	No	S		1.5ft	2.0ft	30.0	30.0	0.0	8	9	230	Btuh
	Excursion													331	Btuh
	Window Total								489 (sqft)					7380 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Frame - Wood - Ext	0.07	19.0/1.0		205.0	1.4	294	Btuh							
2	Frame - Wood - Ext	0.07	19.0/1.0		151.5	1.4	218	Btuh							
3	Frame - Wood - Int	0.08	19.0/0.0		324.0	0.0	0	Btuh							
4	Frame - Wood - Ext	0.07	19.0/1.0		363.0	1.4	521	Btuh							
5	Frame - Wood - Ext	0.07	19.0/1.0		367.5	1.4	528	Btuh							
6	Frame - Wood - Ext	0.07	19.0/1.0		158.0	1.4	227	Btuh							
7	Frame - Wood - Ext	0.07	19.0/1.0		196.0	1.4	281	Btuh							
8	Frame - Wood - Ext	0.07	19.0/1.0		168.0	1.4	241	Btuh							
9	Frame - Wood - Int	0.08	19.0/0.0		450.0	0.0	0	Btuh							
	Wall Total				2383 (sqft)		2310	Btuh							
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior	24.0	12.9	309	Btuh										
2	Insulated - Exterior	24.0	12.9	309	Btuh										
3	Insulated - Exterior	24.0	12.9	309	Btuh										
4	Insulated - Exterior	24.0	12.9	309	Btuh										
5	Insulated - Exterior	24.0	12.9	309	Btuh										
6	Insulated - Exterior	24.0	12.9	309	Btuh										
7	Insulated - Exterior	72.0	12.9	927	Btuh										
8	Wood - Exterior	72.0	12.9	927	Btuh										
9	Insulated - Exterior	20.0	12.9	258	Btuh										
10	Insulated - Exterior	20.0	12.9	258	Btuh										
	Door Total		328 (sqft)		4225 Btuh										
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load									
1	Vented Attic/Med/Shingle	0.014	30.0/38.0	1985.0	0.04	86	Btuh								
2	Vented Attic/Med/Shingle	0.014	30.0/38.0	1100.0	0.09	95	Btuh								
	Ceiling Total			3085 (sqft)		181	Btuh								
Floors	Type	R-Value		Size	HTM	Load									
1	Slab On Grade	0.0	1985 (ft-perimeter)	0.0	0	Btuh									
2	Slab On Grade	0.0	1100 (ft-perimeter)	0.0	0	Btuh									
	Floor Total		3085.0 (sqft)		0	Btuh									
	Envelope Subtotal:						14095 Btuh								

Manual J Summer Calculations

Residential Load - Component Details (continued)

Austen Seay

Project Title:
BB Seay

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL

9/8/2023

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 27765	Wall Ratio 1	CFM= 57.0	Load 1061 Btuh
Internal gain		Occupants 3	Btuh/occupant X 230	Appliance +	1200	Load 1890 Btuh
	Sensible Envelope Load:					17046 Btuh
Duct load	(DGMs vary for Mixed ducts)					7544 Btuh
	Sensible Load All Zones					24591 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Austen Seay

Project Title:

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL

BB Seay

9/8/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17046 Btuh
	Sensible Duct Load	7544 Btuh
	Total Sensible Zone Loads	24591 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	24591 Btuh
	Latent infiltration gain (for 47 gr. humidity difference)	1813 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1785 Btuh
	Latent occupant gain (3.0 people @ 200 Btuh per person)	600 Btuh
	Latent other gain	2400 Btuh
	Latent total gain	6598 Btuh
	TOTAL GAIN	31189 Btuh

EQUIPMENT

1. Central Unit	#	42000 Btuh
2. Central Unit	#	24000 Btuh

*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