Residential System Sizing Calculation

Summary

Project Title:
BB Robinson

, FL 32055

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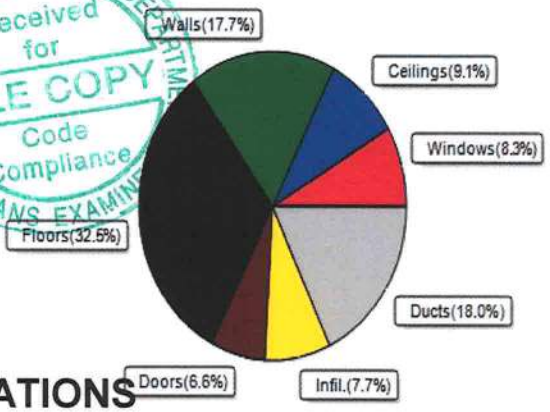
Location for weather data: Gainesville, FL - Defaults: Latitude(30) Altitude(164 ft.) Temp Range(M) Humidity data: Interior RH (50%) Outdoor wet bulb (76F) Humidity difference(47gr.)					
Winter design temperature(MJ8 99%)	33	F	Summer design temperature(MJ8 99%)	92	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	37	F	Summer temperature difference	17	F
Total heating load calculation	**25782**	**Btuh**	**Total cooling load calculation**	**20016**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	186.2	48000	Sensible (SHR = 0.75)	226.0	36000
Heat Pump + Auxiliary(0.0kW)	186.2	48000	Latent	293.5	12000
			Total (Electric Heat Pump)	239.8	48000

WINTER CALCULATIONS

Winter Heating Load (for 2000 sqft)

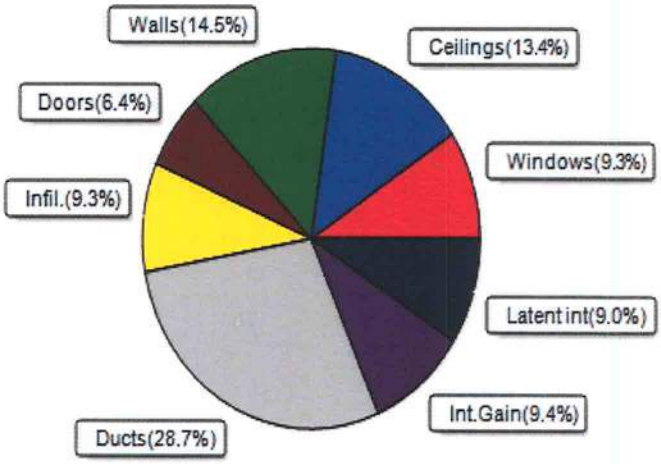
Load component			Load	
Window total	176	sqft	2149	Btuh
Wall total	1452	sqft	4558	Btuh
Door total	100	sqft	1702	Btuh
Ceiling total	2000	sqft	2357	Btuh
Floor total	2000	sqft	8383	Btuh
Infiltration	49	cfm	1996	Btuh
Duct loss			4637	Btuh
Subtotal			**25782**	**Btuh**
Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS			**25782**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 2000 sqft)

Load component			Load	
Window total	176	sqft	1863	Btuh
Wall total	1452	sqft	2895	Btuh
Door total	100	sqft	1288	Btuh
Ceiling total	2000	sqft	2675	Btuh
Floor total			0	Btuh
Infiltration	37	cfm	688	Btuh
Internal gain			1890	Btuh
Duct gain			4628	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load			0	Btuh
Total sensible gain			**15927**	**Btuh**
Latent gain(ducts)			1113	Btuh
Latent gain(infiltration)			1176	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1800	Btuh
Total latent gain			**4089**	**Btuh**
TOTAL HEAT GAIN			**20016**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY:
DATE: 9/13/23

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
BB Robinson
, FL 32055 Building Type: User

9/13/2023

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	25.0	12.2	305 Btuh
2	2, NFRC 0.21	Metal	0.33	N	9.0	12.2	110 Btuh
3	2, NFRC 0.21	Metal	0.33	N	15.0	12.2	183 Btuh
4	2, NFRC 0.21	Metal	0.33	N	6.0	12.2	73 Btuh
5	2, NFRC 0.21	Metal	0.33	E	16.0	12.2	195 Btuh
6	2, NFRC 0.21	Metal	0.33	E	9.0	12.2	110 Btuh
7	2, NFRC 0.21	Metal	0.33	S	10.0	12.2	122 Btuh
8	2, NFRC 0.21	Metal	0.33	S	15.0	12.2	183 Btuh
9	2, NFRC 0.21	Metal	0.33	S	50.0	12.2	610 Btuh
10	2, NFRC 0.21	Metal	0.33	W	6.0	12.2	73 Btuh
11	2, NFRC 0.21	Metal	0.33	W	15.0	12.2	183 Btuh
	Window Total				176.0(sqft)		2149 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.085)	13.0/1.0	286	3.14	898 Btuh
2	Frame - Wood	- Ext	(0.085)	13.0/1.0	175	3.14	549 Btuh
3	Frame - Wood	- Ext	(0.085)	13.0/1.0	263	3.14	826 Btuh
4	Frame - Wood	- Ext	(0.085)	13.0/1.0	299	3.14	939 Btuh
5	Frame - Wood	- Ext	(0.085)	13.0/1.0	162	3.14	509 Btuh
6	Frame - Wood	- Ext	(0.085)	13.0/1.0	267	3.14	838 Btuh
	Wall Total				1452(sqft)		4558 Btuh

Doors	Type	Storm	Ueff.	Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)	40	17.0	681 Btuh
2	Insulated - Exterior,	n	(0.460)	20	17.0	340 Btuh
3	Insulated - Exterior,	n	(0.460)	40	17.0	681 Btuh
	Door Total			100(sqft)		1702Btuh

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/M/Shing	(0.032)	30.0/0.0	2000	1.2	2357 Btuh
	Ceiling Total			2000(sqft)		2357Btuh

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	192.0 ft(perim.)	43.7	8383 Btuh
	Floor Total			2000 sqft		8383 Btuh

	Envelope Subtotal:	19149 Btuh

Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.16	18000	1.00	49.3	1996 Btuh

Duct load	Average sealed, R6.0, Supply(Att), Return(Att)	(DLM of 0.219)	4637 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
BB Robinson
, FL 32055 Building Type: User

9/13/2023

All Zones	**Sensible Subtotal All Zones**	**25782 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	25782 Btuh 0 Btuh 25782 Btuh

EQUIPMENT

1. Electric Heat Pump	#	48000 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)

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System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
BB Robinson

, FL 32055

9/13/2023

Reference City: Gainesville, FL (Defaults)
Humidity difference: 47gr.

Temperature Difference: 17.0F(MJ8 99%)
Summer Setpoint: 75 °F (Required Manual J default)

Component Loads for Whole House

Window	Type* Panes	SHGC	U	InSh	IS	Ornt	Overhang Len	Hgt	Window Area(sqft) Gross	Shaded	Unshaded	HTM Shaded	Unshaded	Load
1	2 NFRC	0.21,	0.33	B-L	No	N	10.0f	2.0ft	25.0	0.0	25.0	8	8	192 Btuh
2	2 NFRC	0.21,	0.33	B-L	No	N	10.0f	2.0ft	9.0	0.0	9.0	8	8	69 Btuh
3	2 NFRC	0.21,	0.33	B-L	No	N	10.0f	2.0ft	15.0	0.0	15.0	8	8	115 Btuh
4	2 NFRC	0.21,	0.33	B-L	No	N	10.0f	2.0ft	6.0	0.0	6.0	8	8	46 Btuh
5	2 NFRC	0.21,	0.33	B-L	No	E	1.5ft	2.0ft	16.0	0.0	16.0	8	19	301 Btuh
6	2 NFRC	0.21,	0.33	B-L	No	E	1.5ft	2.0ft	9.0	0.0	9.0	8	19	169 Btuh
7	2 NFRC	0.21,	0.33	B-L	No	S	1.5ft	2.0ft	10.0	10.0	0.0	8	9	77 Btuh
8	2 NFRC	0.21,	0.33	B-L	No	S	1.5ft	2.0ft	15.0	15.0	0.0	8	9	115 Btuh
9	2 NFRC	0.21,	0.33	B-L	No	S	6.0ft	2.0ft	50.0	50.0	0.0	8	9	384 Btuh
10	2 NFRC	0.21,	0.33	B-L	No	W	1.5ft	2.0ft	6.0	0.0	6.0	8	19	113 Btuh
11	2 NFRC	0.21,	0.33	B-L	No	W	1.5ft	2.0ft	15.0	0.0	15.0	8	19	282 Btuh
	Window Total								176 (sqft)					1863 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.08	13.0/1.0	286.0	2.0	570 Btuh
2	Frame - Wood - Ext	0.08	13.0/1.0	175.0	2.0	349 Btuh
3	Frame - Wood - Ext	0.08	13.0/1.0	263.0	2.0	524 Btuh
4	Frame - Wood - Ext	0.08	13.0/1.0	299.0	2.0	596 Btuh
5	Frame - Wood - Ext	0.08	13.0/1.0	162.0	2.0	323 Btuh
6	Frame - Wood - Ext	0.08	13.0/1.0	267.0	2.0	532 Btuh
	Wall Total			1452 (sqft)		2895 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	40.0	12.9	515 Btuh
2	Insulated - Exterior	20.0	12.9	258 Btuh
3	Insulated - Exterior	40.0	12.9	515 Btuh
	Door Total	100 (sqft)		1288 Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/Med/Shingle	0.032	30.0/0.0	2000.0	1.34	2675 Btuh
	Ceiling Total			2000 (sqft)		2675 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	2000 (ft-perimeter)	0.0	0 Btuh
	Floor Total		2000.0 (sqft)		0 Btuh
			Envelope Subtotal:		8722 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	18000	1	37.0	688 Btuh

Internal gain	Occupants	Btuh/occupant		Appliance	Load
	3	X 230	+	1200	1890 Btuh
			Sensible Envelope Load:		11300 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: BB Robinson

Climate:FL_GAINESVILLE_REGIONAL_A

, FL 32055

9/13/2023

Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)	(DGM of 0.410)	4628 Btuh
		Sensible Load All Zones	**15927 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: BB Robinson

Climate:FL_GAINESVILLE_REGIONAL_A

, FL 32055

9/13/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**11300 Btuh**
	Sensible Duct Load	4628 Btuh
	Total Sensible Zone Loads	**15927 Btuh**
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	**15927 Btuh**
	Latent infiltration gain (for 47 gr. humidity difference)	1176 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1113 Btuh
	Latent occupant gain (3.0 people @ 200 Btuh per person)	600 Btuh
	Latent other gain	1200 Btuh
	Latent total gain	**4089 Btuh**
	TOTAL GAIN	**20016 Btuh**

EQUIPMENT

1. Central Unit	#	48000 Btuh

*Key: Window types (Panes - 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)

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