

Residential System Sizing Calculation

Summary

Jesse Hubbart
Crrn of SW CR 18 & Tustenuggee Ave
Lake City, FL 32024

Project Title:
Hubbart In-Law Suite

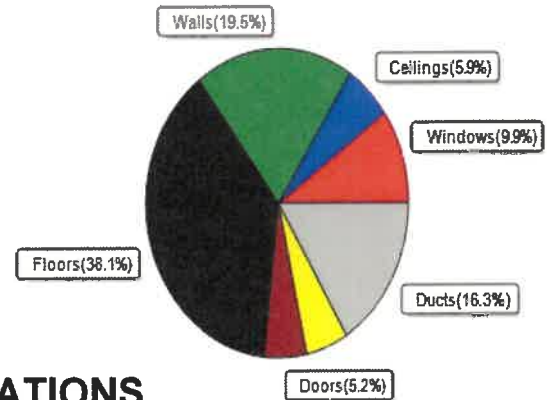
4/6/2021

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	14218	Btuh	Total cooling load calculation	10812	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	100.0	14218	Sensible (SHR = 0.70)	84.3	7562
Heat Pump + Auxiliary(0.0kW)	100.0	14218	Latent	176.4	3241
			Total (Electric Heat Pump)	99.9	10803

WINTER CALCULATIONS

Winter Heating Load (for 793 sqft)

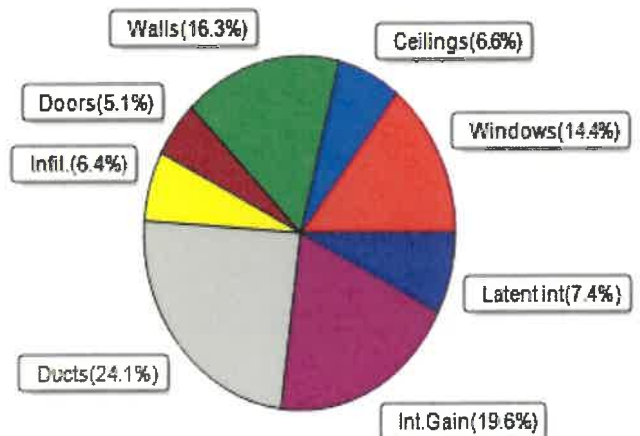
Load component			Load	
Window total	98	sqft	1406	Btuh
Wall total	780	sqft	2768	Btuh
Door total	40	sqft	736	Btuh
Ceiling total	833	sqft	845	Btuh
Floor total	793	sqft	5412	Btuh
Infiltration	17	cfm	726	Btuh
Duct loss			2325	Btuh
Subtotal			14218	Btuh
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			14218	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 793 sqft)

Load component			Load	
Window total	98	sqft	1559	Btuh
Wall total	780	sqft	1765	Btuh
Door total	40	sqft	552	Btuh
Ceiling total	833	sqft	719	Btuh
Floor total			0	Btuh
Infiltration	12	cfm	259	Btuh
Internal gain			2120	Btuh
Duct gain			2002	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			8975	Btuh
Latent gain(ducts)			608	Btuh
Latent gain(infiltration)			429	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			800	Btuh
Total latent gain			1837	Btuh
TOTAL HEAT GAIN			10812	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

4/6/2021

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Jesse Hubbart
Cnr of SW CR 18 & Tustenuggee Ave
Lake City, FL 32024

Project Title:
Hubbart In-Law Suite
Building Type: User

4/6/2021

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 0.25	Vinyl	0.36	S	45.0		14.4	648 Btuh
2	2, NFRC 0.25	Vinyl	0.36	E	9.0		14.4	130 Btuh
3	2, NFRC 0.25	Vinyl	0.36	E	15.0		14.4	216 Btuh
4	2, NFRC 0.25	Vinyl	0.36	N	20.0		14.4	288 Btuh
5	2, NFRC 0.25	Vinyl	0.36	N	6.0		14.4	86 Btuh
6	2, NFRC 0.25	Vinyl	0.36	N	2.7		14.4	38 Btuh
	Window Total					97.7(sqft)		1406 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	207		3.55	735 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	163		3.55	578 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	223		3.55	793 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	187		3.55	663 Btuh
	Wall Total					780(sqft)		2768 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
2	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
	Door Total					40(sqft)		736Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	833		1.0	845 Btuh
	Ceiling Total					833(sqft)		845Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	114.7 ft(perim.)		47.2	5412 Btuh
	Floor Total					793 sqft		5412 Btuh
	Envelope Subtotal:							11168 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	6344	1.00	16.6		726 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)						(DLM of 0.195)	2325 Btuh
All Zones	Sensible Subtotal All Zones							14218 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Jesse Hubbard
Cnr of SW CR 18 & Tustenuggee Ave
Lake City, FL 32024

Project Title:
Hubbart In-Law Suite
Building Type: User

4/6/2021

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	14218 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	14218 Btuh

EQUIPMENT

1. Electric Heat Pump	#	14218 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

Jesse Hubbart
Cmnr of SW CR 18 & Tustenuggee Ave
Lake City, FL 32024

Project Title:
Hubbart In-Law Suite

4/6/2021

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	0.25, 0.36	No	No	S		1.5ft.	0.5ft.	45.0	45.0	0.0	12	14	544 Btuh
2	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	0.5ft.	9.0	2.2	6.8	12	31	236 Btuh
3	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	0.5ft.	15.0	2.2	12.8	12	31	422 Btuh
4	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	0.5ft.	20.0	0.0	20.0	12	12	242 Btuh
5	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	0.5ft.	6.0	0.0	6.0	12	12	73 Btuh
6	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	0.5ft.	2.7	0.0	2.7	12	12	32 Btuh
	Excursion													9 Btuh
	Window Total								98 (sqft)					1559 Btuh
Walls	Type		U-Value		R-Value		Area(sqft)		HTM		Load			
					Cav/Sheath									
1	Frame - Wood - Ext		0.09		13.0/0.0		207.0		2.3		469 Btuh			
2	Frame - Wood - Ext		0.09		13.0/0.0		162.7		2.3		368 Btuh			
3	Frame - Wood - Ext		0.09		13.0/0.0		223.3		2.3		505 Btuh			
4	Frame - Wood - Ext		0.09		13.0/0.0		186.7		2.3		422 Btuh			
	Wall Total						780 (sqft)				1765 Btuh			
Doors	Type		Area (sqft)		HTM		Load							
1	Insulated - Exterior		20.0		13.8		276 Btuh							
2	Insulated - Exterior		20.0		13.8		276 Btuh							
	Door Total		40 (sqft)				552 Btuh							
Ceilings	Type/Color/Surface		U-Value		R-Value		Area(sqft)		HTM		Load			
1	Vented Attic/Light/Shingle/RB		0.025		38.0/0.0		832.7		0.86		719 Btuh			
	Ceiling Total						833 (sqft)				719 Btuh			
Floors	Type		R-Value		Size		HTM		Load					
1	Slab On Grade		0.0		793 (ft-perimeter)		0.0		0 Btuh					
	Floor Total				793.0 (sqft)				0 Btuh					
	Envelope Subtotal:													4594 Btuh
Infiltration	Type		Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load			
	Natural		0.12		6344		1		12.4		259 Btuh			
Internal gain	Occupants		Btuh/occupant		Appliance		Load							
	4		X 230		+ 1200		2120 Btuh							
	Sensible Envelope Load:													6973 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)		(DGM of 0.287)		Load									
					2002 Btuh									
	Sensible Load All Zones													8975 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Jesse Hubbart
Cnr of SW CR 18 & Tustenuggee Ave
Lake City, FL 32024

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Hubbart In-Law Suite

4/6/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	6973 Btuh
	Sensible Duct Load	2002 Btuh
	Total Sensible Zone Loads	8975 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	8975 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	429 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	608 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	1837 Btuh
	TOTAL GAIN	10812 Btuh

EQUIPMENT

1. Central Unit	#	10803 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