

Residential System Sizing Calculation

Summary

Project Title:
Stevens Residence

, FL

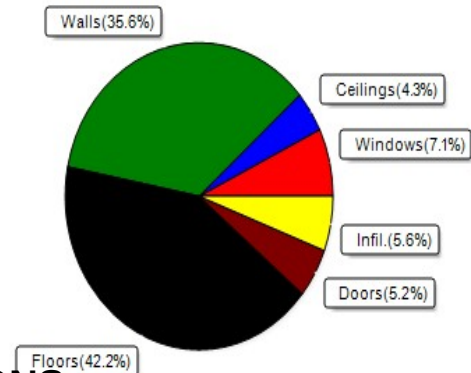
12/13/2022

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 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	12306 Btuh	Total cooling load calculation	10508 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	292.5 36000	Sensible (SHR = 0.85)	329.0 30600
Heat Pump + Auxiliary(0.0kW)	292.5 36000	Latent	447.6 5400
		Total (Electric Heat Pump)	342.6 36000

WINTER CALCULATIONS

Winter Heating Load (for 750 sqft)

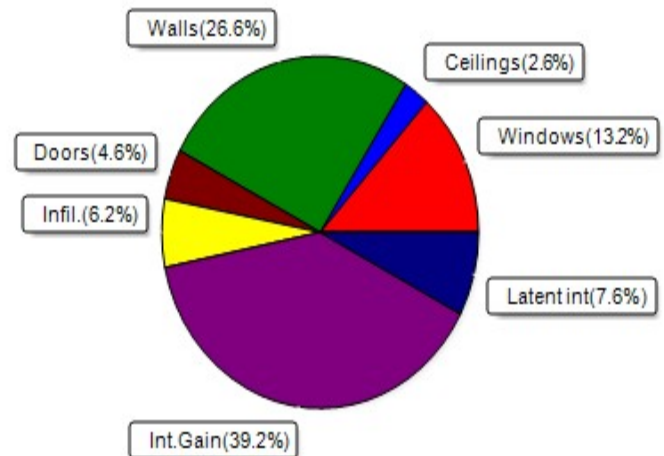
Load component	Load
Window total 84 sqft	874 Btuh
Wall total 976 sqft	4382 Btuh
Door total 40 sqft	640 Btuh
Ceiling total 750 sqft	531 Btuh
Floor total 750 sqft	5192 Btuh
Infiltration 16 cfm	688 Btuh
Duct loss	0 Btuh
Subtotal	12306 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	12306 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 750 sqft)

Load component	Load
Window total 84 sqft	1385 Btuh
Wall total 976 sqft	2793 Btuh
Door total 40 sqft	480 Btuh
Ceiling total 750 sqft	278 Btuh
Floor total	0 Btuh
Infiltration 12 cfm	245 Btuh
Internal gain	4120 Btuh
Duct gain	0 Btuh
Sens. Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	9301 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	406 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	800 Btuh
Total latent gain	1206 Btuh
TOTAL HEAT GAIN	10508 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

12-13-22

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Stevens Residence

, FL

12/13/2022

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
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	0.20, 0.26	No	No	N		1.5ft	2.3ft	15.0	0.0	15.0	9	9	137 Btuh
2	2 NFRC	0.20, 0.26	No	No	E		1.5ft	2.3ft	9.0	0.0	9.0	9	24	218 Btuh
3	2 NFRC	0.20, 0.26	No	No	S		13.5f	2.3ft	30.0	30.0	0.0	9	11	274 Btuh
4	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	30.0	0.0	30.0	9	24	727 Btuh
	Excursion													29 Btuh
	Window Total								84 (sqft)					1385 Btuh
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load	
							Cav/Sheath							
1	Frame - Steel - Ext					0.11	13.0/0.0	285.0			2.9		816 Btuh	
2	Frame - Steel - Ext					0.11	13.0/0.0	221.0			2.9		632 Btuh	
3	Frame - Steel - Ext					0.11	13.0/0.0	250.0			2.9		715 Btuh	
4	Frame - Steel - Ext					0.11	13.0/0.0	220.0			2.9		630 Btuh	
	Wall Total								976 (sqft)					2793 Btuh
Doors	Type							Area (sqft)			HTM		Load	
1	Insulated - Exterior							20.0			12.0		240 Btuh	
2	Insulated - Exterior							20.0			12.0		240 Btuh	
	Door Total								40 (sqft)					480 Btuh
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load	
1	SnglAsmb w airsp/Light/Metal					0.018	30.0/30.0	750.0			0.37		278 Btuh	
	Ceiling Total								750 (sqft)					278 Btuh
Floors	Type						R-Value	Size			HTM		Load	
1	Slab On Grade						0.0	750 (ft-perimeter)			0.0		0 Btuh	
	Floor Total								750.0 (sqft)					0 Btuh
	Envelope Subtotal:													4936 Btuh
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load
	Natural													
Internal gain							Occupants		Btuh/occupant		Appliance		Load	
							4		X 230		+		4120 Btuh	
	Sensible Envelope Load:													9301 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)													0 Btuh
	Sensible Load All Zones													9301 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Stevens Residence

, FL

12/13/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	9301 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	9301 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	9301 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	406 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	1206 Btuh
	TOTAL GAIN	10508 Btuh

EQUIPMENT

1. PTAC and Room Unit	#	36000 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 - Winter

Residential Load - Whole House Component Details

Project Title:
Stevens Residence
Building Type: User

, FL

12/13/2022

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 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 0.20	Vinyl	0.26	N	15.0		10.4	156 Btuh
2	2, NFRC 0.20	Vinyl	0.26	E	9.0		10.4	94 Btuh
3	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
4	2, NFRC 0.20	Vinyl	0.26	W	30.0		10.4	312 Btuh
	Window Total				84.0(sqft)			874 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Steel	- Ext	(0.112)	13.0/0.0	285		4.49	1279 Btuh
2	Frame - Steel	- Ext	(0.112)	13.0/0.0	221		4.49	992 Btuh
3	Frame - Steel	- Ext	(0.112)	13.0/0.0	250		4.49	1122 Btuh
4	Frame - Steel	- Ext	(0.112)	13.0/0.0	220		4.49	988 Btuh
	Wall Total				976(sqft)			4382 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
2	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
	Door Total				40(sqft)			640Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/L/Metal		(0.018)	30.0/30.0	750		0.71	531 Btuh
	Ceiling Total				750(sqft)			531Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	110.0 ft(perim.)		47.2	5192 Btuh
	Floor Total				750 sqft			5192 Btuh
	Envelope Subtotal:							11618 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	6000	1.00	15.7		688 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)						(DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones							12306 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Stevens Residence
Building Type: User

12/13/2022

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	12306 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	12306 Btuh

EQUIPMENT

1. Electric Heat Pump	#	36000 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