

44741



Residential System Sizing Calculation

Summary

Project Title:
Collar

, FL

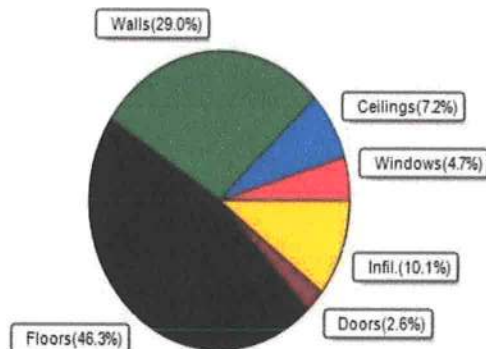
4/20/2022

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	24471 Btuh	Total cooling load calculation	12671 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	147.1 36000	Sensible (SHR = 0.85)	277.9 30600
Heat Pump + Auxiliary(0.0kW)	147.1 36000	Latent	325.1 5400
		Total (Electric Heat Pump)	284.1 36000

WINTER CALCULATIONS

Winter Heating Load (for 2700 sqft)

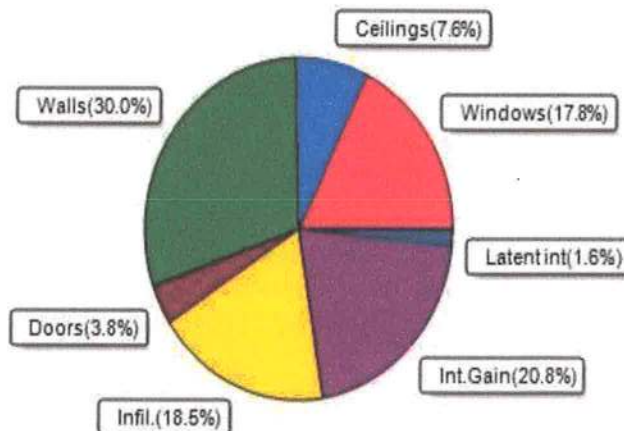
Load component		Load	
Window total	111 sqft	1154	Btuh
Wall total	1769 sqft	7104	Btuh
Door total	40 sqft	640	Btuh
Ceiling total	2700 sqft	1773	Btuh
Floor total	2700 sqft	11328	Btuh
Infiltration	56 cfm	2471	Btuh
Duct loss		0	Btuh
Subtotal		24471	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		24471	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2700 sqft)

Load component		Load	
Window total	111 sqft	2253	Btuh
Wall total	1769 sqft	3801	Btuh
Door total	40 sqft	480	Btuh
Ceiling total	2700 sqft	967	Btuh
Floor total		0	Btuh
Infiltration	42 cfm	880	Btuh
Internal gain		2630	Btuh
Duct gain		0	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		11010	Btuh
Latent gain(ducts)		0	Btuh
Latent gain(infiltration)		1461	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		200	Btuh
Total latent gain		1661	Btuh
TOTAL HEAT GAIN		12671	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

[Signature]
4-20-22

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Collar

, FL

4/20/2022

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	0.20, 0.26	No	No	E	1.5ft.	2.3ft.	36.0	0.0	36.0	9	24	872	Btuh		
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft.	2.3ft.	15.0	0.0	15.0	9	9	137	Btuh		
3	2 NFRC	0.20, 0.26	No	No	W	1.5ft.	2.3ft.	45.0	0.0	45.0	9	24	1090	Btuh		
4	2 NFRC	0.20, 0.26	No	No	S	1.5ft.	2.3ft.	15.0	15.0	0.0	9	11	137	Btuh		
Excursion													16	Btuh		
Window Total								111 (sqft)				2253 Btuh				
Walls	Type			U-Value			R-Value			Area(sqft)			HTM		Load	
							Cav/Sheath									
1	Frame - Steel - Ext			0.10			19.0/0.0			684.0			2.1		1470 Btuh	
2	Frame - Steel - Ext			0.10			19.0/0.0			225.0			2.1		483 Btuh	
3	Frame - Steel - Ext			0.10			19.0/0.0			635.0			2.1		1364 Btuh	
4	Frame - Steel - Ext			0.10			19.0/0.0			225.0			2.1		483 Btuh	
Wall Total								1769 (sqft)				3801 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	Cath/Sngl Assem/Light/Metal			0.016			30.0/30.0			2700.0			0.36		967 Btuh	
Ceiling Total								2700 (sqft)				967 Btuh				
Floors	Type						R-Value			Size			HTM		Load	
1	Slab On Grade						0.0			2700 (ft-perimeter)			0.0		0 Btuh	
Floor Total								2700.0 (sqft)				0 Btuh				
Envelope Subtotal:													7500 Btuh			
Infiltration	Type			Average ACH			Volume(cuft)			Wall Ratio			CFM=		Load	
Natural			0.12			21600			1			42.3		880 Btuh		
Internal gain	Occupants						Btuh/occupant			Appliance			Load			
			1			X			230 +			2400		2630 Btuh		
Sensible Envelope Load:													11010 Btuh			
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi)								(DGM of 0.000)				0 Btuh			
Sensible Load All Zones													11010 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title:
Collar

Climate: FL_GAINESVILLE_REGIONAL_A

, FL

4/20/2022



WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	11010 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	11010 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	11010 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1461 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (1.0 people @ 200 Btuh per person)	200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	1661 Btuh
	TOTAL GAIN	12671 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:

Collar

, FL

Building Type: User

4/20/2022

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 0.20	Vinyl	0.26	E	36.0		10.4	374 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	15.0		10.4	156 Btuh
3	2, NFRC 0.20	Vinyl	0.26	W	45.0		10.4	468 Btuh
4	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
	Window Total				111.0(sqft)			1154 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Steel	- Ext	(0.100)	19.0/0.0	684		4.02	2747 Btuh
2	Frame - Steel	- Ext	(0.100)	19.0/0.0	225		4.02	904 Btuh
3	Frame - Steel	- Ext	(0.100)	19.0/0.0	635		4.02	2550 Btuh
4	Frame - Steel	- Ext	(0.100)	19.0/0.0	225		4.02	904 Btuh
	Wall Total				1769(sqft)			7104 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	Cathedral/L/Metal		(0.016)	30.0/30.0	2700		0.7	1773 Btuh
	Ceiling Total				2700(sqft)			1773Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	240.0 ft(perim.)		47.2	11328 Btuh
	Floor Total				2700 sqft			11328 Btuh
	Envelope Subtotal:							22000 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio		CFM=	
	Natural		0.16	21600	1.00		56.4	2471 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)						(DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones							24471 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Collar
Building Type: User

, FL

4/20/2022

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	24471 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	24471 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

INPUT SUMMARY CHECKLIST REPORT

44741

HOT WATER SYSTEM

✓ #	System Type	Subtype	Location	EF(UEF)	Cap	Use	SetPnt	Fixture Flow	Pipe Ins.	Pipe length
1	Electric	None	Main	0.92 (0.92)	50.00 gal	40 gal	120 deg	Standard	None	99
	Recirculation System	Recirc Control Type	Loop length	Branch length	Pump power	DWHR	Facilities Connected	Equal Flow	DWHR Eff	Other Credits
1	No		NA	NA	NA	No	NA	NA	NA	None

DUCTS

✓ Duct #	Supply Location	R-Value	Area	Return Location	R-Value	Area	Leakage Type	Air Handler	CFM 25 TOT	CFM 25 OUT	QN	RLF	HVAC # Heat Cool
1	Main	6.0	3 ft²	Main	6.0	3 ft²	Prop. Leak Free	Main	---	---	0.03	0.50	1 1

TEMPERATURES

Programable Thermostat: Y				Ceiling Fans: N									
Cooling	[] Jan	[] Feb	[] Mar	[] Apr	[] May	[X] Jun	[X] Jul	[X] Aug	[X] Sep	[] Oct	[] Nov	[] Dec	
Heating	[X] Jan	[X] Feb	[X] Mar	[] Apr	[] May	[] Jun	[] Jul	[] Aug	[] Sep	[] Oct	[X] Nov	[X] Dec	
Venting	[] Jan	[] Feb	[X] Mar	[X] Apr	[] May	[] Jun	[] Jul	[] Aug	[] Sep	[X] Oct	[X] Nov	[] Dec	
Thermostat Schedule: HERS 2006 Reference													
✓ Schedule Type		1	2	3	4	5	6	7	8	9	10	11	12
Cooling (WD)	AM	78	78	78	78	78	78	78	78	80	80	80	80
	PM	80	80	80	80	78	78	78	78	78	78	78	78
Cooling (WEH)	AM	78	78	78	78	78	78	78	78	80	80	80	80
	PM	80	80	80	80	78	78	78	78	78	78	78	78
Heating (WD)	AM	65	65	65	65	65	65	65	68	68	68	68	68
	PM	68	68	68	68	68	68	68	68	68	68	68	68
Heating (WEH)	AM	65	65	65	65	65	65	65	68	68	68	68	68
	PM	68	68	68	68	68	68	68	68	68	68	68	68