

Residential System Sizing Calculation

Summary

Project Title:
Darby Residence

, FL

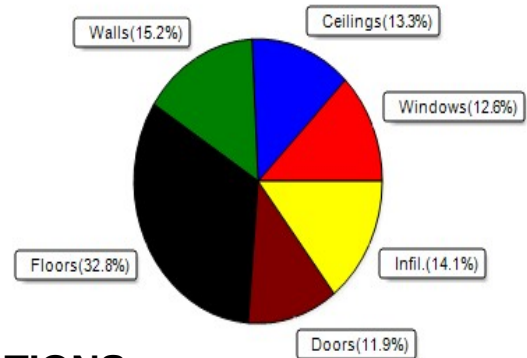
8/12/2022

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	29034 Btuh	Total cooling load calculation	20935 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	165.3 48000	Sensible (SHR = 0.85)	235.7 40800
Heat Pump + Auxiliary(0.0kW)	165.3 48000	Latent	198.5 7200
		Total (Electric Heat Pump)	229.3 48000

WINTER CALCULATIONS

Winter Heating Load (for 2984 sqft)

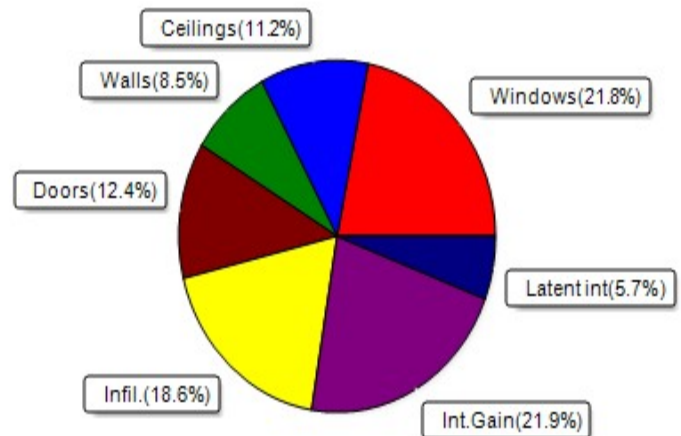
Load component	Load
Window total 351 sqft	3650 Btuh
Wall total 1726 sqft	4425 Btuh
Door total 216 sqft	3456 Btuh
Ceiling total 2984 sqft	3863 Btuh
Floor total See detail report	9534 Btuh
Infiltration 94 cfm	4105 Btuh
Duct loss	0 Btuh
Subtotal	29034 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	29034 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2984 sqft)

Load component	Load
Window total 351 sqft	4567 Btuh
Wall total 1726 sqft	1770 Btuh
Door total 216 sqft	2592 Btuh
Ceiling total 2984 sqft	2337 Btuh
Floor total	0 Btuh
Infiltration 70 cfm	1462 Btuh
Internal gain	4580 Btuh
Duct gain	0 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	17309 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	2426 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	3626 Btuh
TOTAL HEAT GAIN	20935 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Darby Residence

, FL

8/12/2022

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	No	N	11.5f	2.3ft.	72.0	0.0	72.0	9	9	659	Btuh		
2	2 NFRC	0.20, 0.26	No	No	No	E	1.5ft.	2.3ft.	40.0	0.0	40.0	9	24	969	Btuh		
3	2 NFRC	0.20, 0.26	No	No	No	S	1.5ft.	2.3ft.	12.0	12.0	0.0	9	11	110	Btuh		
4	2 NFRC	0.20, 0.26	No	No	No	S	1.5ft.	2.3ft.	72.0	72.0	0.0	9	11	659	Btuh		
5	2 NFRC	0.20, 0.26	No	No	No	W	1.5ft.	2.3ft.	20.0	0.0	20.0	9	24	484	Btuh		
6	2 NFRC	0.20, 0.26	No	No	No	N	1.5ft.	2.3ft.	60.0	0.0	60.0	9	9	549	Btuh		
7	2 NFRC	0.20, 0.26	No	No	No	E	1.5ft.	2.3ft.	30.0	0.0	30.0	9	24	727	Btuh		
8	2 NFRC	0.20, 0.26	No	No	No	S	1.5ft.	2.3ft.	45.0	45.0	0.0	9	11	412	Btuh		
	Window Total								351 (sqft)					4567 Btuh			
Walls	Type							U-Value	R-Value	Area(sqft)		HTM		Load			
									Cav/Sheath								
	1	Concrete Blk,Hollow - Ext						0.06	13.0/0.0	316.5		1.0		325 Btuh			
	2	Concrete Blk,Hollow - Ext						0.06	13.0/0.0	224.0		1.0		230 Btuh			
	3	Concrete Blk,Hollow - Ext						0.06	13.0/0.0	460.5		1.0		472 Btuh			
	4	Concrete Blk,Hollow - Ext						0.06	13.0/0.0	298.0		1.0		306 Btuh			
	5	Concrete Blk,Hollow - Ext						0.06	13.0/0.0	116.0		1.0		119 Btuh			
	6	Concrete Blk,Hollow - Ext						0.06	13.0/0.0	311.0		1.0		319 Btuh			
	Wall Total								1726 (sqft)					1770 Btuh			
Doors	Type									Area (sqft)		HTM		Load			
	1	Insulated - Exterior								48.0		12.0		576 Btuh			
	2	Insulated - Exterior								48.0		12.0		576 Btuh			
	3	Insulated - Exterior								48.0		12.0		576 Btuh			
	4	Insulated - Exterior								24.0		12.0		288 Btuh			
	5	Insulated - Exterior								48.0		12.0		576 Btuh			
		Door Total								216 (sqft)					2592 Btuh		
Ceilings	Type/Color/Surface							U-Value	R-Value	Area(sqft)		HTM		Load			
	1	Cath/Sngl Assem/Light/Metal						0.032	30.0/0.0	2326.0		0.78		1822 Btuh			
	2	Cath/Sngl Assem/Light/Metal						0.032	30.0/0.0	658.0		0.78		515 Btuh			
		Ceiling Total								2984 (sqft)					2337 Btuh		
Floors	Type							R-Value		Size		HTM		Load			
	1	Slab On Grade						0.0		2326 (ft-perimeter)		0.0		0 Btuh			
	2	Interior						0.0		658 (sqft)		0.0		0 Btuh			
		Floor Total								2984.0 (sqft)					0 Btuh		
		Envelope Subtotal:													11266 Btuh		
Infiltration	Type							Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural							0.16		26198		1		70.3		1462 Btuh	
Internal gain								Occupants		Btuh/occupant		Appliance		Load			
								6		X 230		+		3200		4580 Btuh	
	Sensible Envelope Load:													17309 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Darby Residence

, FL

8/12/2022

Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)	0 Btuh
	Sensible Load All Zones	17309 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Darby Residence

, FL

8/12/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17309 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	17309 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	17309 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2426 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3626 Btuh
	TOTAL GAIN	20935 Btuh

EQUIPMENT

1. Central Unit	#	48000 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(1/2))
(Ornt - compass orientation)



Version 8

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

, FL

Project Title:
Darby Residence
Building Type: User

8/12/2022

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	N	72.0		10.4	749 Btuh		
2	2, NFRC 0.20	Vinyl	0.26	E	40.0		10.4	416 Btuh		
3	2, NFRC 0.20	Vinyl	0.26	S	12.0		10.4	125 Btuh		
4	2, NFRC 0.20	Vinyl	0.26	S	72.0		10.4	749 Btuh		
5	2, NFRC 0.20	Vinyl	0.26	W	20.0		10.4	208 Btuh		
6	2, NFRC 0.20	Vinyl	0.26	N	60.0		10.4	624 Btuh		
7	2, NFRC 0.20	Vinyl	0.26	E	30.0		10.4	312 Btuh		
8	2, NFRC 0.20	Vinyl	0.26	S	45.0		10.4	468 Btuh		
	Window Total				351.0(sqft)			3650 Btuh		
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load		
1	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	317		2.56	811 Btuh		
2	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	224		2.56	574 Btuh		
3	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	461		2.56	1181 Btuh		
4	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	298		2.56	764 Btuh		
5	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	116		2.56	297 Btuh		
6	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	311		2.56	797 Btuh		
	Wall Total				1726(sqft)			4425 Btuh		
Doors	Type		Storm	Ueff.		Area	X	HTM=	Load	
1	Insulated - Exterior, n			(0.400)		48		16.0	768 Btuh	
2	Insulated - Exterior, n			(0.400)		48		16.0	768 Btuh	
3	Insulated - Exterior, n			(0.400)		48		16.0	768 Btuh	
4	Insulated - Exterior, n			(0.400)		24		16.0	384 Btuh	
5	Insulated - Exterior, n			(0.400)		48		16.0	768 Btuh	
	Door Total					216(sqft)			3456Btuh	
Ceilings	Type/Color/Surface			Ueff.		R-Value	Area	X	HTM=	Load
1	Cathedral/L/Metal			(0.032)		30.0/0.0	2326		1.3	3011 Btuh
2	Cathedral/L/Metal			(0.032)		30.0/0.0	658		1.3	852 Btuh
	Ceiling Total						2984(sqft)			3863Btuh
Floors	Type			Ueff.		R-Value	Size	X	HTM=	Load
1	Slab On Grade			(1.180)		0.0	202.0 ft(perim.)		47.2	9534 Btuh
2	Interior			(1.180)		0.0	658.0 sqft		0.0	0 Btuh
	Floor Total						2984 sqft			9534 Btuh
	Envelope Subtotal:								24929 Btuh	
Infiltration	Type		Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=			
	Natural			0.21	26198	1.00	93.7			4105 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)						(DLM of 0.000)			0 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Darby Residence
Building Type: User

8/12/2022

All Zones	Sensible Subtotal All Zones	29034 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	29034 Btuh 0 Btuh 29034 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	48000 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