

Residential System Sizing Calculation

Summary

Project Title:
Indigo Model

Lake City, FL

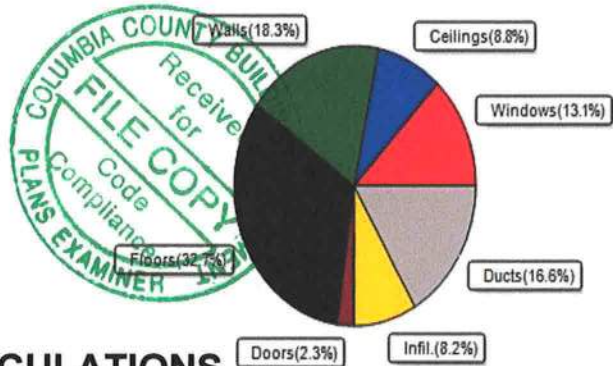
3/11/2020

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	30426 Btuh	Total cooling load calculation	23854 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	118.3 36000	Sensible (SHR = 0.85)	153.5 30600
Heat Pump + Auxiliary(0.0kW)	118.3 36000	Latent	137.8 5400
		Total (Electric Heat Pump)	150.9 36000

WINTER CALCULATIONS

Winter Heating Load (for 2110 sqft)

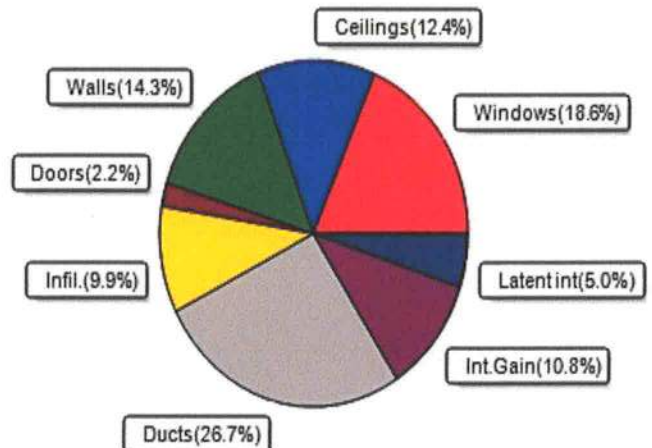
Load component		Load	
Window total	301 sqft	3973	Btuh
Wall total	1612 sqft	5558	Btuh
Door total	44 sqft	704	Btuh
Ceiling total	2110 sqft	2688	Btuh
Floor total	2110 sqft	9959	Btuh
Infiltration	57 cfm	2501	Btuh
Duct loss		5043	Btuh
Subtotal		30426	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		30426	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2110 sqft)

Load component		Load	
Window total	301 sqft	4435	Btuh
Wall total	1612 sqft	3411	Btuh
Door total	44 sqft	528	Btuh
Ceiling total	2110 sqft	2957	Btuh
Floor total		0	Btuh
Infiltration	43 cfm	891	Btuh
Internal gain		2580	Btuh
Duct gain		5132	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		19934	Btuh
Latent gain(ducts)		1242	Btuh
Latent gain(infiltration)		1478	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		3920	Btuh
TOTAL HEAT GAIN		23854	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

3-12-20

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Indigo Model

Lake City, FL

3/11/2020

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	0.22, 0.33	No	No	N	11.5f	1.3ft	25.0	0.0	25.0	11	11	272 Btuh
2	2 NFRC	0.22, 0.33	No	No	N	11.5f	1.3ft	72.0	0.0	72.0	11	11	785 Btuh
3	2 NFRC	0.22, 0.33	No	No	W	7.5ft	1.3ft	36.0	29.3	6.7	11	27	503 Btuh
4	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	54.0	0.0	54.0	11	11	588 Btuh
5	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	15.0	0.0	15.0	11	11	163 Btuh
6	2 NFRC	0.22, 0.33	No	No	E	1.5ft	1.3ft	3.0	0.0	3.0	11	27	82 Btuh
7	2 NFRC	0.22, 0.33	No	No	E	1.5ft	1.3ft	15.0	0.0	15.0	11	27	412 Btuh
8	2 NFRC	0.22, 0.33	No	No	E	1.5ft	1.3ft	9.0	0.0	9.0	11	27	247 Btuh
9	2 NFRC	0.22, 0.33	No	No	S	7.5ft	1.3ft	18.0	18.0	0.0	11	13	196 Btuh
10	2 NFRC	0.22, 0.33	No	No	S	7.5ft	1.3ft	18.0	18.0	0.0	11	13	196 Btuh
11	2 NFRC	0.22, 0.33	No	No	W	1.5ft	1.3ft	16.0	0.0	16.0	11	27	440 Btuh
12	2 NFRC	0.22, 0.33	No	No	W	1.5ft	1.3ft	20.0	0.0	20.0	11	27	550 Btuh
Window Total								301 (sqft)					4435 Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load			
1	Frame - Wood - Ext		0.09		13.0/0.6		146.0		2.2		321 Btuh		
2	Frame - Wood - Ext		0.09		13.0/0.6		64.0		2.2		141 Btuh		
3	Frame - Wood - Ext		0.09		13.0/0.6		171.0		2.2		376 Btuh		
4	Frame - Wood - Ext		0.09		13.0/0.6		378.0		2.2		831 Btuh		
5	Frame - Wood - Ext		0.09		13.0/0.6		84.0		2.2		185 Btuh		
6	Frame - Wood - Ext		0.09		13.0/0.6		45.0		2.2		99 Btuh		
7	Frame - Wood - Ext		0.09		13.0/0.6		32.7		2.2		72 Btuh		
8	Frame - Wood - Ext		0.09		13.0/0.6		45.0		2.2		99 Btuh		
9	Frame - Wood - Ext		0.09		13.0/0.6		84.0		2.2		185 Btuh		
10	Frame - Wood - Ext		0.09		13.0/0.6		66.0		2.2		145 Btuh		
11	Frame - Wood - Ext		0.09		13.0/0.6		39.0		2.2		86 Btuh		
12	Frame - Wood - Ext		0.09		13.0/0.6		222.0		2.2		488 Btuh		
13	Frame - Wood - Adj		0.09		13.0/0.6		235.0		1.6		385 Btuh		
Wall Total							1612 (sqft)			3411 Btuh			
Doors	Type	Area (sqft)		HTM		Load							
1	Insulated - Exterior		24.0		12.0		288 Btuh						
2	Insulated - Garage		20.0		12.0		240 Btuh						
Door Total							44 (sqft)			528 Btuh			
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load			
1	Vented Attic/Light/Shingle		0.032		30.0/0.0		2110.0		1.40		2957 Btuh		
Ceiling Total							2110 (sqft)				2957 Btuh		
Floors	Type	R-Value		Size		HTM		Load					
1	Slab On Grade		0.0		2110 (ft-perimeter)		0.0				0 Btuh		
Floor Total							2110.0 (sqft)				0 Btuh		
Envelope Subtotal:											11331 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Indigo Model

Lake City, FL

3/11/2020

Infiltration	Type Natural	Average ACH 0.14	Volume(cuft) 18990	Wall Ratio 1	CFM= 42.8	Load 891 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	1200	Load 2580 Btuh
	Sensible Envelope Load:					14802 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.347)					5132 Btuh
	Sensible Load All Zones					19934 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title:
Indigo Model

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL

3/11/2020

WHOLE HOUSE TOTALS		
Whole House Totals for Cooling	Sensible Envelope Load All Zones	14802 Btuh
	Sensible Duct Load	5132 Btuh
	Total Sensible Zone Loads	19934 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	19934 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1478 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1242 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3920 Btuh
	TOTAL GAIN	23854 Btuh

EQUIPMENT		
1. Central Unit	#	36000 Btuh

*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

Lake City, FL

Project Title:
Indigo Model
Building Type: User

3/11/2020

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 0.22	Vinyl	0.33	N	25.0		13.2	330 Btuh
2	2, NFRC 0.22	Vinyl	0.33	N	72.0		13.2	950 Btuh
3	2, NFRC 0.22	Vinyl	0.33	W	36.0		13.2	475 Btuh
4	2, NFRC 0.22	Vinyl	0.33	N	54.0		13.2	713 Btuh
5	2, NFRC 0.22	Vinyl	0.33	N	15.0		13.2	198 Btuh
6	2, NFRC 0.22	Vinyl	0.33	E	3.0		13.2	40 Btuh
7	2, NFRC 0.22	Vinyl	0.33	E	15.0		13.2	198 Btuh
8	2, NFRC 0.22	Vinyl	0.33	E	9.0		13.2	119 Btuh
9	2, NFRC 0.22	Vinyl	0.33	S	18.0		13.2	238 Btuh
10	2, NFRC 0.22	Vinyl	0.33	S	18.0		13.2	238 Btuh
11	2, NFRC 0.22	Vinyl	0.33	W	16.0		13.2	211 Btuh
12	2, NFRC 0.22	Vinyl	0.33	W	20.0		13.2	264 Btuh
Window Total					301.0(sqft)			3973 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	146		3.45	503 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	64		3.45	221 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	171		3.45	590 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	378		3.45	1304 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	84		3.45	290 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	45		3.45	155 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	33		3.45	113 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	45		3.45	155 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	84		3.45	290 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	66		3.45	228 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	39		3.45	134 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	222		3.45	766 Btuh
13	Frame - Wood	- Adj	(0.086)	13.0/0.6	235		3.45	810 Btuh
Wall Total					1612(sqft)			5558 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
2	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					44(sqft)			704Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	2110		1.3	2688 Btuh
Ceiling Total					2110(sqft)			2688Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	211.0 ft(perim.)		47.2	9959 Btuh
Floor Total					2110 sqft			9959 Btuh
Envelope Subtotal:								22882 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Lake City, FL

Project Title:
Indigo Model
Building Type: User

3/11/2020

Infiltration	Type Natural	Wholehouse ACH 0.18	Volume(cuft) 18990	Wall Ratio 1.00	CFM= 57.1	2501 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.199)					5043 Btuh
All Zones	Sensible Subtotal All Zones					30426 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	30426 Btuh 0 Btuh 30426 Btuh
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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

