



Residential System Sizing Calculation

Summary

Thornton Res.
386 SW Roanoke Terrace
Fort White, FL

Project Title:
220210 Thornton

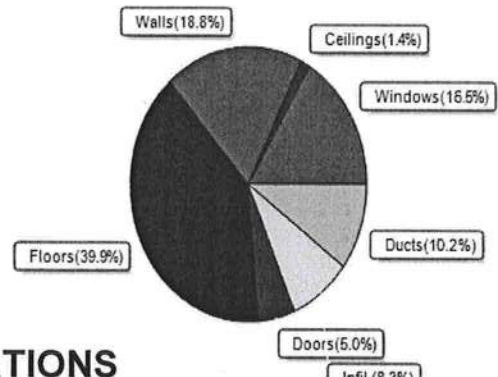
2022-04-01

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (79F) Humidity difference(54gr.)			
Winter design temperature(MJ8 99%)	32 F	Summer design temperature(MJ8 99%)	99 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	38 F	Summer temperature difference	24 F
Total heating load calculation	27519 Btuh	Total cooling load calculation	24816 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	105.4 29000	Sensible (SHR = 0.75)	103.9 21750
Heat Pump + Auxiliary(0.0kW)	105.4 29000	Latent	186.9 7250
		Total (Electric Heat Pump)	116.9 29000

WINTER CALCULATIONS

Winter Heating Load (for 1870 sqft)

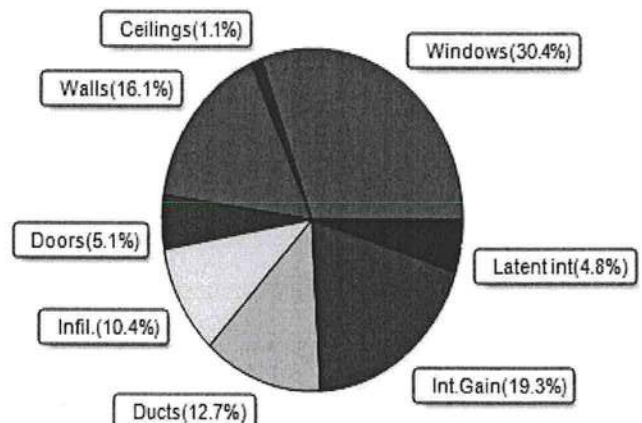
Load component		Load
Window total	341 sqft	4529 Btuh
Wall total	1533 sqft	5169 Btuh
Door total	91 sqft	1385 Btuh
Ceiling total	2155 sqft	373 Btuh
Floor total	1870 sqft	10986 Btuh
Infiltration	55 cfm	2276 Btuh
Duct loss		2801 Btuh
Subtotal		27519 Btuh
Ventilation	0 cfm	0 Btuh
TOTAL HEAT LOSS		27519 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1870 sqft)

Load component		Load
Window total	341 sqft	7556 Btuh
Wall total	1533 sqft	3999 Btuh
Door total	91 sqft	1276 Btuh
Ceiling total	2155 sqft	281 Btuh
Floor total		0 Btuh
Infiltration	41 cfm	1078 Btuh
Internal gain		4780 Btuh
Duct gain		1968 Btuh
Sens. Ventilation	0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		20937 Btuh
Latent gain(ducts)		1180 Btuh
Latent gain(infiltration)		1500 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		1200 Btuh
Total latent gain		3880 Btuh
TOTAL HEAT GAIN		24816 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2022-04-01

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Thornton Res.
386 SW Roanoke Terrace
Fort White, FL

Project Title:
220210 Thornton
Building Type: User

2022-04-01

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 38.0 F (MJ8 99%)

Component Loads for Whole House							
Window	Panes/Type	Frame	U	Orientation	Area(sqft) X	HTM=	Load
1	2, NFRC 0.25	Metal	0.35	N	12.0	13.3	160 Btuh
2	2, NFRC 0.25	Metal	0.35	N	30.0	13.3	399 Btuh
3	2, NFRC 0.25	Metal	0.35	E	26.7	13.3	355 Btuh
4	2, NFRC 0.25	Metal	0.35	NE	11.1	13.3	148 Btuh
5	2, NFRC 0.25	Metal	0.35	NW	10.0	13.3	133 Btuh
6	2, NFRC 0.25	Metal	0.35	N	36.0	13.3	479 Btuh
7	2, NFRC 0.25	Metal	0.35	N	26.7	13.3	355 Btuh
8	2, NFRC 0.25	Metal	0.35	N	30.0	13.3	399 Btuh
9	2, NFRC 0.25	Metal	0.35	SE	15.0	13.3	200 Btuh
10	2, NFRC 0.25	Metal	0.35	S	15.0	13.3	200 Btuh
11	2, NFRC 0.25	Metal	0.35	SW	15.0	13.3	200 Btuh
12	2, NFRC 0.25	Metal	0.35	S	15.0	13.3	200 Btuh
13	2, NFRC 0.25	Metal	0.35	S	17.8	13.3	236 Btuh
14	2, NFRC 0.25	Metal	0.35	S	13.3	13.3	177 Btuh
15	2, NFRC 0.25	Metal	0.35	S	17.0	13.3	226 Btuh
16	2, NFRC 0.25	Metal	0.35	S	13.5	13.3	180 Btuh
17	2, NFRC 0.25	Metal	0.35	S	4.5	13.3	60 Btuh
18	2, NFRC 0.25	Metal	0.35	S	12.0	13.3	160 Btuh
19	2, NFRC 0.25	Metal	0.35	W	8.0	13.3	106 Btuh
20	2, NFRC 0.25	Metal	0.35	W	12.0	13.3	160 Btuh
Window Total					340.6(sqft)		4529 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	155	3.37	524 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	92	3.37	310 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	14	3.37	48 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	17	3.37	56 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	175	3.37	589 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	270	3.37	911 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	28	3.37	93 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	21	3.37	71 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	28	3.37	93 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	51	3.37	173 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	62	3.37	208 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	37	3.37	126 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	92	3.37	310 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	32	3.37	107 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	40	3.37	135 Btuh
16	Frame - Wood	- Adj	(0.089)	13.0/0.0	82	3.37	277 Btuh
17	Frame - Wood	- Adj	(0.089)	13.0/0.0	27	3.37	90 Btuh
18	Frame - Wood	- Adj	(0.089)	13.0/0.0	19	3.37	63 Btuh
19	Frame - Wood	- Adj	(0.089)	13.0/0.0	133	3.37	450 Btuh
20	Frame - Wood	- Ext	(0.089)	13.0/0.0	159	3.37	535 Btuh
Wall Total					1533(sqft)		5169 Btuh

EnergyGauge® / USRCZB v7.0.00

Manual J Winter Calculations

Residential Load - Component Details (continued)

Thornton Res.
386 SW Roanoke Terrace
Fort White, FL

Project Title:
220210 Thornton
Building Type: User

2022-04-01

Doors	Type	Storm Ueff.		Area X	HTM=	Load
1	Insulated - Exterior,	n (0.400)		13	15.2	203 Btuh
2	Insulated - Exterior,	n (0.400)		7	15.2	101 Btuh
3	Insulated - Exterior,	n (0.400)		13	15.2	203 Btuh
4	Insulated - Exterior,	n (0.400)		7	15.2	101 Btuh
5	Insulated - Garage,	n (0.400)		18	15.2	270 Btuh
6	Insulated - Garage,	n (0.400)		33	15.2	507 Btuh
	Door Total			91(sqft)		1385Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Unvent Attic/D/Shing	(0.025)	38.0/22.0	1870	0.1	190 Btuh
2	Knee Wall/D/Shing	(0.017)	38.0/22.0	285	0.6	183 Btuh
	Ceiling Total			2155(sqft)		373Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	245.0 ft(perim.)	44.8	10986 Btuh
	Floor Total			1870 sqft		10986 Btuh
	Envelope Subtotal:					22442 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=
	Natural		0.22	14960	1.00	54.7
						2276 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.113)					2801 Btuh
All Zones	Sensible Subtotal All Zones					27519 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	27519 Btuh 0 Btuh 27519 Btuh
--------------------	--	------------------------------------

EQUIPMENT

1. Electric Heat Pump	#	29000 Btuh
-----------------------	---	------------

Manual J Winter Calculations

Residential Load - Component Details (continued)

Thornton Res.
386 SW Roanoke Terrace
Fort White, FL

Project Title:
220210 Thornton
Building Type: User

2022-04-01

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

Thornton Res.
386 SW Roanoke Terrace
Fort White, FL

Project Title:
220210 Thornton

2022-04-01

Reference City: Gainesville, FL

Temperature Difference: 24.0F(MJ8 99%)

Humidity difference: 54gr.

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, 0.35	No	No	N		1.5ft	0.5ft	12.0	0.0	12.0	14	25	302 Btuh
2	2 NFRC	0.25, 0.35	No	No	N		1.5ft	0.5ft	30.0	0.0	30.0	14	25	756 Btuh
3	2 NFRC	0.25, 0.35	No	No	E		41.8f	0.3ft	26.7	0.0	26.7	14	25	672 Btuh
4	2 NFRC	0.25, 0.35	No	No	NE		17.0f	0.3ft	11.1	0.0	11.1	14	14	152 Btuh
5	2 NFRC	0.25, 0.35	No	No	NW		99.0f	0.0ft	10.0	10.0	0.0	14	33	137 Btuh
6	2 NFRC	0.25, 0.35	No	No	N		12.8f	0.3ft	36.0	0.0	36.0	14	25	907 Btuh
7	2 NFRC	0.25, 0.35	No	No	N		12.8f	0.3ft	26.7	0.0	26.7	14	25	672 Btuh
8	2 NFRC	0.25, 0.35	No	No	N		12.8f	0.3ft	30.0	0.0	30.0	14	25	756 Btuh
9	2 NFRC	0.25, 0.35	No	No	SE		1.5ft	0.5ft	15.0	2.2	12.8	14	33	445 Btuh
10	2 NFRC	0.25, 0.35	No	No	S		1.5ft	0.5ft	15.0	5.9	9.1	14	26	320 Btuh
11	2 NFRC	0.25, 0.35	No	No	SW		1.5ft	0.5ft	15.0	15.0	0.0	14	16	205 Btuh
12	2 NFRC	0.25, 0.35	No	No	S		1.5ft	3.0ft	15.0	0.0	15.0	14	26	395 Btuh
13	2 NFRC	0.25, 0.35	No	No	S		5.0ft	4.0ft	17.8	11.3	6.5	14	26	325 Btuh
14	2 NFRC	0.25, 0.35	No	No	S		5.0ft	4.0ft	13.3	8.5	4.9	14	26	244 Btuh
15	2 NFRC	0.25, 0.35	No	No	S		5.0ft	1.0ft	17.0	17.0	0.0	14	26	232 Btuh
16	2 NFRC	0.25, 0.35	No	No	S		1.5ft	3.0ft	13.5	0.0	13.5	14	26	355 Btuh
17	2 NFRC	0.25, 0.35	No	No	S		1.5ft	1.0ft	4.5	4.4	0.1	14	26	63 Btuh
18	2 NFRC	0.25, 0.35	No	No	S		1.5ft	0.5ft	12.0	5.9	6.1	14	26	241 Btuh
19	2 NFRC	0.25, 0.35	No	No	W		1.5ft	0.5ft	8.0	3.9	4.1	14	26	161 Btuh
20	2 NFRC	0.25, 0.35	No	No	W		1.5ft	0.5ft	12.0	7.9	4.1	14	26	216 Btuh
Window Total									341 (sqft)					7556 Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
				Cav/Sheath										
1	Frame - Wood - Ext	0.09		13.0/0.0		155.3		2.7		421 Btuh				
2	Frame - Wood - Ext	0.09		13.0/0.0		92.0		2.7		249 Btuh				
3	Frame - Wood - Ext	0.09		13.0/0.0		14.2		2.7		39 Btuh				
4	Frame - Wood - Ext	0.09		13.0/0.0		16.7		2.7		45 Btuh				
5	Frame - Wood - Ext	0.09		13.0/0.0		174.7		2.7		473 Btuh				
6	Frame - Wood - Ext	0.09		13.0/0.0		270.0		2.7		731 Btuh				
7	Frame - Wood - Ext	0.09		13.0/0.0		27.7		2.7		75 Btuh				
8	Frame - Wood - Ext	0.09		13.0/0.0		21.0		2.7		57 Btuh				
9	Frame - Wood - Ext	0.09		13.0/0.0		27.7		2.7		75 Btuh				
10	Frame - Wood - Ext	0.09		13.0/0.0		51.3		2.7		139 Btuh				
11	Frame - Wood - Ext	0.09		13.0/0.0		61.7		2.7		167 Btuh				
12	Frame - Wood - Ext	0.09		13.0/0.0		37.2		2.7		101 Btuh				
13	Frame - Wood - Ext	0.09		13.0/0.0		92.0		2.7		249 Btuh				
14	Frame - Wood - Ext	0.09		13.0/0.0		31.7		2.7		86 Btuh				
15	Frame - Wood - Ext	0.09		13.0/0.0		40.0		2.7		108 Btuh				
16	Frame - Wood - Adj	0.09		13.0/0.0		82.2		2.1		175 Btuh				
17	Frame - Wood - Adj	0.09		13.0/0.0		26.7		2.1		57 Btuh				
18	Frame - Wood - Adj	0.09		13.0/0.0		18.7		2.1		40 Btuh				
19	Frame - Wood - Adj	0.09		13.0/0.0		133.3		2.1		284 Btuh				
20	Frame - Wood - Ext	0.09		13.0/0.0		158.7		2.7		430 Btuh				
Wall Total						1533 (sqft)				3999 Btuh				

Manual J Summer Calculations

Residential Load - Component Details (continued)

Thornton Res.
386 SW Roanoke Terrace
Fort White, FL

Project Title:
220210 Thornton

Climate:FL_GAINESVILLE_REGIONAL_A

2022-04-01

Doors	Type			Area (sqft)	HTM	Load
1	Insulated - Exterior			13.3	14.0	187 Btuh
2	Insulated - Exterior			6.7	14.0	93 Btuh
3	Insulated - Exterior			13.3	14.0	187 Btuh
4	Insulated - Exterior			6.7	14.0	93 Btuh
5	Insulated - Garage			17.8	14.0	249 Btuh
6	Insulated - Garage			33.3	14.0	467 Btuh
	Door Total			91 (sqft)		1276 Btuh
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Unvented Attic/DarkShingle	0.025	38.0/22.0	1870.0	0.13	237 Btuh
2	Knee Wall/DarkShingle	0.017	38.0/22.0	285.0	0.15	43 Btuh
	Ceiling Total			2155 (sqft)		281 Btuh
Floors	Type	R-Value		Size	HTM	Load
1	Slab On Grade	0.0		1870 (ft-perimeter)	0.0	0 Btuh
	Floor Total			1870.0 (sqft)		0 Btuh
	Envelope Subtotal:					13111 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.16	14960	1	41.0	1078 Btuh
Internal gain		Occupants	Btuh/occupant	Appliance		Load
		6	X 230	+ 3400		4780 Btuh
	Sensible Envelope Load:					18969 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.104)	1968 Btuh
	Sensible Load All Zones					20937 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Thornton Res.
386 SW Roanoke Terrace
Fort White, FL

Project Title:
220210 Thornton

Climate: FL_GAINESVILLE_REGIONAL_A

2022-04-01

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	18969 Btuh
	Sensible Duct Load	1968 Btuh
	Total Sensible Zone Loads	20937 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	20937 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	1500 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1180 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3880 Btuh
	TOTAL GAIN	24816 Btuh

EQUIPMENT

1. Central Unit	#	29000 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