

Residential System Sizing Calculation

Summary

1740 Left - Spec House

Project Title:
200261 1740-93 Emerald Cove

Lake City, FL

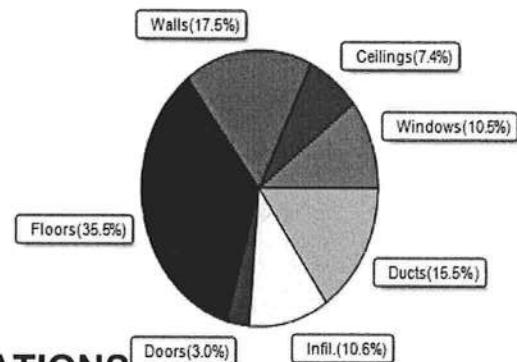
2020-03-23

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	27152	Btuh	Total cooling load calculation	24325	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	117.9	32000	Sensible (SHR = 0.75)	117.8	24000
Heat Pump + Auxiliary(0.0kW)	117.9	32000	Latent	202.2	8000
			Total (Electric Heat Pump)	131.6	32000

WINTER CALCULATIONS

Winter Heating Load (for 1740 sqft)

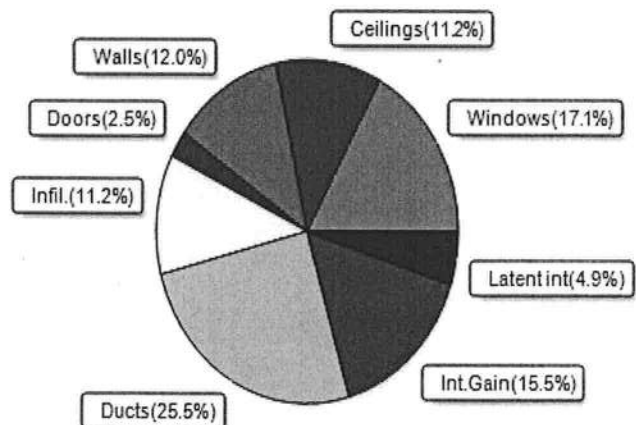
Load component			Load	
Window total	239	sqft	2863	Btuh
Wall total	1336	sqft	4744	Btuh
Door total	51	sqft	818	Btuh
Ceiling total	1986	sqft	2016	Btuh
Floor total	1740	sqft	9629	Btuh
Infiltration	66	cfm	2887	Btuh
Duct loss			4195	Btuh
Subtotal			27152	Btuh
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			27152	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1740 sqft)

Load component			Load	
Window total	239	sqft	4170	Btuh
Wall total	1336	sqft	2911	Btuh
Door total	51	sqft	613	Btuh
Ceiling total	1986	sqft	2722	Btuh
Floor total			0	Btuh
Infiltration	49	cfm	1028	Btuh
Internal gain			3780	Btuh
Duct gain			5145	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			20369	Btuh
Latent gain(ducts)			1049	Btuh
Latent gain(infiltration)			1707	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1200	Btuh
Total latent gain			3956	Btuh
TOTAL HEAT GAIN			24325	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2020-03-23

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

1740 Left - Spec House

Project Title:

200261 1740-93 Emerald Cove

Lake City, FL

Building Type: User

2020-03-23

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	Metal	0.30	W	30.0		12.0	360 Btuh
2	2, NFRC 0.20	Metal	0.30	N	11.1		12.0	133 Btuh
3	2, NFRC 0.20	Metal	0.30	W	45.0		12.0	540 Btuh
4	2, NFRC 0.20	Metal	0.30	S	17.8		12.0	213 Btuh
5	2, NFRC 0.20	Metal	0.30	W	30.0		12.0	360 Btuh
6	2, NFRC 0.20	Metal	0.30	N	30.0		12.0	360 Btuh
7	2, NFRC 0.20	Metal	0.30	N	6.0		12.0	72 Btuh
8	2, NFRC 0.20	Metal	0.30	E	30.0		12.0	360 Btuh
9	2, NFRC 0.20	Metal	0.30	E	30.0		12.0	360 Btuh
10	2, NFRC 0.20	Metal	0.30	E	6.7		12.0	80 Btuh
11	2, NFRC 0.20	Metal	0.30	S	2.0		12.0	24 Btuh
Window Total					238.6(sqft)			2863 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	135		3.55	478 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55	84 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	90		3.55	318 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	17		3.55	60 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	67		3.55	237 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	341		3.55	1212 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	67		3.55	237 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	45		3.55	161 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	57		3.55	204 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	55		3.55	194 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	21		3.55	73 Btuh
12	Frame - Wood	- Adj	(0.089)	13.0/0.0	51		3.55	180 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	147		3.55	522 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	221		3.55	786 Btuh
Wall Total					1336(sqft)			4744 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		7		16.0	107 Btuh
2	Insulated - Exterior, n		(0.400)		7		16.0	107 Btuh
3	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
4	Insulated - Garage, n		(0.400)		18		16.0	284 Btuh
Door Total					51(sqft)			818Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	1986		1.0	2016 Btuh
Ceiling Total					1986(sqft)			2016Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	204.0 ft(perim.)		47.2	9629 Btuh
Floor Total					1740 sqft			9629 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

1740 Left - Spec House

Project Title:

200261 1740-93 Emerald Cove

Lake City, FL

Building Type: User

2020-03-23

	Envelope Subtotal:					20070 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=
	Natural		0.25	15660	1.00	65.9
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.183)					4195 Btuh
All Zones	Sensible Subtotal All Zones					27152 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	27152 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	27152 Btuh

EQUIPMENT

1. Electric Heat Pump	#	32000 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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

1740 Left - Spec House

Project Title:

200261 1740-93 Emerald Cove

Lake City, FL

2020-03-23

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, 0.30	No	No	W		1.5ft	0.5ft	30.0	4.5	25.5	10	25	682 Btuh
2	2 NFRC	0.20, 0.30	No	No	N		99.0f	0.5ft	11.1	0.0	11.1	10	10	110 Btuh
3	2 NFRC	0.20, 0.30	No	No	W		6.7ft	1.0ft	45.0	40.8	4.2	10	25	509 Btuh
4	2 NFRC	0.20, 0.30	No	No	S		99.0f	1.0ft	17.8	17.8	0.0	10	11	176 Btuh
5	2 NFRC	0.20, 0.30	No	No	W		1.5ft	0.5ft	30.0	4.5	25.5	10	25	682 Btuh
6	2 NFRC	0.20, 0.30	No	No	N		1.5ft	0.5ft	30.0	0.0	30.0	10	10	297 Btuh
7	2 NFRC	0.20, 0.30	No	No	N		1.5ft	0.5ft	6.0	0.0	6.0	10	10	59 Btuh
8	2 NFRC	0.20, 0.30	No	No	E		1.5ft	4.0ft	30.0	0.0	30.0	10	25	749 Btuh
9	2 NFRC	0.20, 0.30	No	No	E		1.5ft	0.5ft	30.0	4.5	25.5	10	25	682 Btuh
10	2 NFRC	0.20, 0.30	No	No	E		8.3ft	0.5ft	6.7	6.4	0.3	10	25	70 Btuh
11	2 NFRC	0.20, 0.30	No	No	S		1.5ft	0.5ft	2.0	2.0	0.0	10	11	20 Btuh
	Excursion													133 Btuh
	Window Total								239 (sqft)					4170 Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
					Cav/Sheath									
1	Frame - Wood - Ext		0.09		13.0/0.0		134.7		2.3	305 Btuh				
2	Frame - Wood - Ext		0.09		13.0/0.0		23.6		2.3	53 Btuh				
3	Frame - Wood - Ext		0.09		13.0/0.0		89.7		2.3	203 Btuh				
4	Frame - Wood - Ext		0.09		13.0/0.0		16.9		2.3	38 Btuh				
5	Frame - Wood - Ext		0.09		13.0/0.0		66.7		2.3	151 Btuh				
6	Frame - Wood - Ext		0.09		13.0/0.0		341.3		2.3	773 Btuh				
7	Frame - Wood - Ext		0.09		13.0/0.0		66.7		2.3	151 Btuh				
8	Frame - Wood - Ext		0.09		13.0/0.0		45.3		2.3	103 Btuh				
9	Frame - Wood - Ext		0.09		13.0/0.0		57.3		2.3	130 Btuh				
10	Frame - Wood - Ext		0.09		13.0/0.0		54.7		2.3	124 Btuh				
11	Frame - Wood - Ext		0.09		13.0/0.0		20.7		2.3	47 Btuh				
12	Frame - Wood - Adj		0.09		13.0/0.0		50.7		1.7	85 Btuh				
13	Frame - Wood - Adj		0.09		13.0/0.0		146.9		1.7	248 Btuh				
14	Frame - Wood - Ext		0.09		13.0/0.0		221.3		2.3	501 Btuh				
	Wall Total							1336 (sqft)				2911 Btuh		
Doors	Type	Area (sqft)		HTM		Load								
1	Insulated - Exterior		6.7		12.0	80 Btuh								
2	Insulated - Exterior		6.7		12.0	80 Btuh								
3	Insulated - Exterior		20.0		12.0	240 Btuh								
4	Insulated - Garage		17.8		12.0	213 Btuh								
	Door Total							51 (sqft)				613 Btuh		
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Vented Attic/DarkShingle		0.025		38.0/0.0		1986.0		1.37	2722 Btuh				
	Ceiling Total							1986 (sqft)				2722 Btuh		
Floors	Type	R-Value		Size		HTM		Load						
1	Slab On Grade		0.0		1740 (ft-perimeter)		0.0			0 Btuh				
	Floor Total							1740.0 (sqft)				0 Btuh		
	Envelope Subtotal:										10416 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

1740 Left - Spec House

Project Title:

Climate:FL_GAINESVILLE_REGIONAL_A

200261 1740-93 Emerald Cove

Lake City, FL

2020-03-23

Infiltration	Type Natural	Average ACH 0.19	Volume(cuft) 15660	Wall Ratio 1	CFM= 49.4	Load 1028 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	2400	Load 3780 Btuh
	Sensible Envelope Load:					15224 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.338)					5145 Btuh
	Sensible Load All Zones					20369 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

1740 Left - Spec House

Project Title:

Climate:FL_GAINESVILLE_REGIONAL_A

200261 1740-93 Emerald Cove

Lake City, FL

2020-03-23

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15224 Btuh
	Sensible Duct Load	5145 Btuh
	Total Sensible Zone Loads	20369 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	20369 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1707 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1049 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3956 Btuh
	TOTAL GAIN	24325 Btuh

EQUIPMENT

1. Central Unit	#	32000 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