

Residential System Sizing Calculation

Summary

1740 Left - Spec House

Project Title:

210058 Lot 29 Cannon Creek Place

Lake City, FL

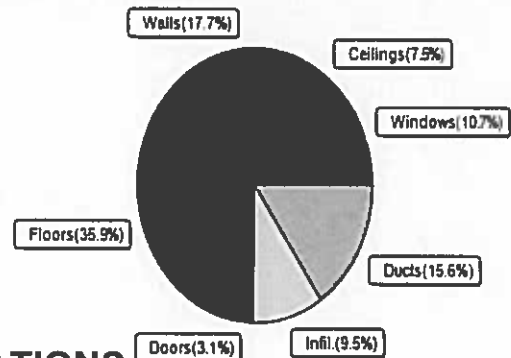
2021-01-20

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	26811 Btuh	Total cooling load calculation	23981 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	108.2 29000	Sensible (SHR = 0.75)	107.4 21750
Heat Pump + Auxiliary(0.0kW)	108.2 29000	Latent	194.1 7250
		Total (Electric Heat Pump)	120.9 29000

WINTER CALCULATIONS

Winter Heating Load (for 1740 sqft)

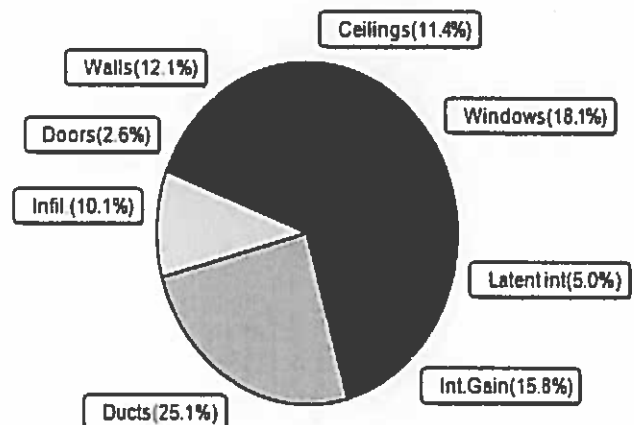
Load component		Load	
Window total	239 sqft	2863	Btuh
Wall total	1336 sqft	4744	Btuh
Door total	51 sqft	818	Btuh
Ceiling total	1986 sqft	2016	Btuh
Floor total	1740 sqft	9629	Btuh
Infiltration	58 cfm	2548	Btuh
Duct loss		4194	Btuh
Subtotal		26811	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		26811	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1740 sqft)

Load component		Load	
Window total	239 sqft	4332	Btuh
Wall total	1336 sqft	2911	Btuh
Door total	51 sqft	613	Btuh
Ceiling total	1986 sqft	2722	Btuh
Floor total		0	Btuh
Infiltration	44 cfm	908	Btuh
Internal gain		3780	Btuh
Duct gain		4980	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		20246	Btuh
Latent gain(ducts)		1029	Btuh
Latent gain(infiltration)		1506	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		3735	Btuh
TOTAL HEAT GAIN		23981	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-01-20

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

1740 Left - Spec House

Project Title:

210058 Lot 29 Cannon Creek Place

Lake City, FL

Building Type: User

2021-01-20

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)
This calculation is for Worst Case. The house has been rotated 90 degrees.

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Metal	0.30	E	30.0		12.0	360 Btuh
2	2, NFRC 0.20	Metal	0.30	S	11.1		12.0	133 Btuh
3	2, NFRC 0.20	Metal	0.30	E	45.0		12.0	540 Btuh
4	2, NFRC 0.20	Metal	0.30	N	17.8		12.0	213 Btuh
5	2, NFRC 0.20	Metal	0.30	E	30.0		12.0	360 Btuh
6	2, NFRC 0.20	Metal	0.30	S	30.0		12.0	360 Btuh
7	2, NFRC 0.20	Metal	0.30	S	6.0		12.0	72 Btuh
8	2, NFRC 0.20	Metal	0.30	W	30.0		12.0	360 Btuh
9	2, NFRC 0.20	Metal	0.30	W	30.0		12.0	360 Btuh
10	2, NFRC 0.20	Metal	0.30	W	6.7		12.0	80 Btuh
11	2, NFRC 0.20	Metal	0.30	N	2.0		12.0	24 Btuh
Window Total					238.6(sqft)			2863 Btuh
Walls	Type	Omt.	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:

210058 Lot 29 Cannon Creek Place

Lake City, FL

Building Type: User

2021-01-20

	Envelope Subtotal:						20070 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.23	Volume(cuft) 15312	Wall Ratio 1.00	CFM= 58.2		2548 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.185)						4194 Btuh
All Zones	Sensible Subtotal All Zones						26811 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	26811 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	26811 Btuh

EQUIPMENT

1. Electric Heat Pump	#	29000 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:

210058 Lot 29 Cannon Creek Place

Lake City, FL

2021-01-20

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

This calculation is for Worst Case. The house has been rotated 90 degrees.

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	E		1.5ft	0.5ft	30.0	4.5	25.5	10	25	682	Btuh
2	2 NFRC	0.20, 0.30	No	No	S		99.0ft	0.5ft	11.1	11.1	0.0	10	11	110	Btuh
3	2 NFRC	0.20, 0.30	No	No	E		6.7ft	1.0ft	45.0	40.8	4.2	10	25	509	Btuh
4	2 NFRC	0.20, 0.30	No	No	N		99.0ft	1.0ft	17.8	0.0	17.8	10	10	176	Btuh
5	2 NFRC	0.20, 0.30	No	No	E		1.5ft	0.5ft	30.0	4.5	25.5	10	25	682	Btuh
6	2 NFRC	0.20, 0.30	No	No	S		1.5ft	0.5ft	30.0	30.0	0.0	10	11	297	Btuh
7	2 NFRC	0.20, 0.30	No	No	S		1.5ft	0.5ft	6.0	6.0	0.0	10	11	59	Btuh
8	2 NFRC	0.20, 0.30	No	No	W		1.5ft	4.0ft	30.0	0.0	30.0	10	25	749	Btuh
9	2 NFRC	0.20, 0.30	No	No	W		1.5ft	0.5ft	30.0	4.5	25.5	10	25	682	Btuh
10	2 NFRC	0.20, 0.30	No	No	W		8.3ft	0.5ft	6.7	6.4	0.3	10	25	70	Btuh
11	2 NFRC	0.20, 0.30	No	No	N		1.5ft	0.5ft	2.0	0.0	2.0	10	10	20	Btuh
	Excursion													295	Btuh
	Window Total								239 (sqft)					4332 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:													10578 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

1740 Left - Spec House

Project Title:

Climate: FL_GAINESVILLE_REGIONAL_A

210058 Lot 29 Cannon Creek Place

Lake City, FL

2021-01-20

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 15312	Wall Ratio 1	CFM= 43.6	Load 908 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	2400	Load 3780 Btuh
					Sensible Envelope Load:	15266 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.326)	4980 Btuh
					Sensible Load All Zones	20246 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

1740 Left - Spec House

Project Title:

Climate: FL_GAINESVILLE_REGIONAL_A

210058 Lot 29 Cannon Creek Place

Lake City, FL

2021-01-20

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15266 Btuh
	Sensible Duct Load	4980 Btuh
	Total Sensible Zone Loads	20246 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	20246 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1506 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1029 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3735 Btuh
	TOTAL GAIN	23981 Btuh

EQUIPMENT

1. Central Unit	#	29000 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))

(Omt - compass orientation)



Version 8