

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Elliot Res

Lake City, FL

Project Title:
210632 Elliot Res
Building Type: User

2021-04-28

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	Metal	0.30	N	15.0		12.0	180 Btuh
2	2, NFRC 0.22	Metal	0.30	N	36.0		12.0	432 Btuh
3	2, NFRC 0.22	Metal	0.30	E	36.0		12.0	432 Btuh
4	2, NFRC 0.22	Metal	0.30	N	72.0		12.0	864 Btuh
5	2, NFRC 0.22	Metal	0.30	N	32.0		12.0	384 Btuh
6	2, NFRC 0.22	Metal	0.30	E	6.0		12.0	72 Btuh
7	2, NFRC 0.22	Metal	0.30	S	4.0		12.0	48 Btuh
8	2, NFRC 0.22	Metal	0.30	S	18.0		12.0	216 Btuh
9	2, NFRC 0.22	Metal	0.30	S	32.0		12.0	384 Btuh
10	2, NFRC 0.22	Metal	0.30	S	18.0		12.0	216 Btuh
11	2, NFRC 0.22	Metal	0.30	W	12.5		12.0	150 Btuh
12	2, NFRC 0.22	Metal	0.30	W	15.0		12.0	180 Btuh
13	2, NFRC 0.22	Metal	0.30	W	4.0		12.0	48 Btuh
Window Total					300.5(sqft)			3606 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	201		3.55	714 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	48		3.55	170 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	99		3.55	351 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	303		3.55	1076 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	59		3.55	209 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	51		3.55	181 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	18		3.55	64 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	21		3.55	75 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	18		3.55	64 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	93		3.55	330 Btuh
11	Frame - Wood	- Adj	(0.089)	13.0/0.0	33		3.55	117 Btuh
12	Frame - Wood	- Adj	(0.089)	13.0/0.0	163		3.55	579 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	329		3.55	1166 Btuh
Wall Total					1436(sqft)			5096 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
2	Insulated - Exterior, n		(0.400)		16		16.0	256 Btuh
3	Insulated - Exterior, n		(0.400)		16		16.0	256 Btuh
4	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					76(sqft)			1216Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	2167		1.0	2200 Btuh
Ceiling Total					2167(sqft)			2200Btuh
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
Floor Total					2061 sqft			9534 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Elliot Res
Lake City, FL

Project Title:
210632 Elliot Res
Building Type: User

2021-04-28

	Envelope Subtotal:						21653 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.23	18755	1.00	72.2	3163 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.237)	5890 Btuh
All Zones	Sensible Subtotal All Zones						30705 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	30705 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	30705 Btuh

EQUIPMENT

1. Electric Heat Pump	#	33000 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

Elliot Res

Project Title:
210632 Elliot Res

Lake City, FL

2021-04-28

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, 0.30	No	No	N		1.5ft	1.5ft	15.0	0.0	15.0	10	10	155 Btuh	
2	2 NFRC	0.22, 0.30	No	No	N		1.5ft	1.5ft	36.0	0.0	36.0	10	10	372 Btuh	
3	2 NFRC	0.22, 0.30	No	No	E		27.0f	1.5ft	36.0	36.0	0.0	10	27	372 Btuh	
4	2 NFRC	0.22, 0.30	No	No	N		10.8f	1.5ft	72.0	0.0	72.0	10	10	744 Btuh	
5	2 NFRC	0.22, 0.30	No	No	N		10.8f	1.5ft	32.0	0.0	32.0	10	10	330 Btuh	
6	2 NFRC	0.22, 0.30	No	No	E		1.5ft	8.5ft	6.0	0.0	6.0	10	27	161 Btuh	
7	2 NFRC	0.22, 0.30	No	No	S		1.5ft	1.5ft	4.0	4.0	0.0	10	12	41 Btuh	
8	2 NFRC	0.22, 0.30	No	No	S		7.5ft	3.0ft	18.0	18.0	0.0	10	12	186 Btuh	
9	2 NFRC	0.22, 0.30	No	No	S		9.5ft	3.0ft	32.0	32.0	0.0	10	12	330 Btuh	
10	2 NFRC	0.22, 0.30	No	No	S		7.5ft	3.0ft	18.0	18.0	0.0	10	12	186 Btuh	
11	2 NFRC	0.22, 0.30	No	No	W		1.5ft	4.0ft	12.5	0.0	12.5	10	27	336 Btuh	
12	2 NFRC	0.22, 0.30	No	No	W		1.5ft	12.0f	15.0	0.0	15.0	10	27	404 Btuh	
13	2 NFRC	0.22, 0.30	No	No	W		1.5ft	9.0ft	4.0	0.0	4.0	10	27	108 Btuh	
	Window Total								301 (sqft)					3725 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load		
								Cav/Sheath							
	1	Frame - Wood - Ext					0.09	13.0/0.0	201.0		2.3		455 Btuh		
	2	Frame - Wood - Ext					0.09	13.0/0.0	48.0		2.3		109 Btuh		
	3	Frame - Wood - Ext					0.09	13.0/0.0	99.0		2.3		224 Btuh		
	4	Frame - Wood - Ext					0.09	13.0/0.0	303.0		2.3		686 Btuh		
	5	Frame - Wood - Ext					0.09	13.0/0.0	59.0		2.3		134 Btuh		
	6	Frame - Wood - Ext					0.09	13.0/0.0	51.0		2.3		115 Btuh		
	7	Frame - Wood - Ext					0.09	13.0/0.0	18.0		2.3		41 Btuh		
	8	Frame - Wood - Ext					0.09	13.0/0.0	21.0		2.3		48 Btuh		
	9	Frame - Wood - Ext					0.09	13.0/0.0	18.0		2.3		41 Btuh		
	10	Frame - Wood - Ext					0.09	13.0/0.0	93.0		2.3		210 Btuh		
	11	Frame - Wood - Adj					0.09	13.0/0.0	33.0		1.7		56 Btuh		
	12	Frame - Wood - Adj					0.09	13.0/0.0	163.0		1.7		275 Btuh		
	13	Frame - Wood - Ext					0.09	13.0/0.0	328.5		2.3		744 Btuh		
	Wall Total								1436 (sqft)			3136 Btuh			
Doors	Type						Area (sqft)				HTM		Load		
	1	Insulated - Exterior					24.0				12.0		288 Btuh		
	2	Insulated - Exterior					16.0				12.0		192 Btuh		
	3	Insulated - Exterior					16.0				12.0		192 Btuh		
	4	Insulated - Garage					20.0				12.0		240 Btuh		
		Door Total								76 (sqft)			912 Btuh		
Ceilings	Type/Color/Surface					U-Value		R-Value	Area(sqft)		HTM		Load		
	1 Vented Attic/DarkShingle					0.025		38.0/0.0		2167.0		1.37		2970 Btuh	
	Ceiling Total								2167 (sqft)			2970 Btuh			
Floors	Type					R-Value			Size		HTM		Load		
	1 Slab On Grade					0.0			2061 (ft-perimeter)		0.0		0 Btuh		
	Floor Total								2061.0 (sqft)			0 Btuh			
	Envelope Subtotal:													10743 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Elliot Res

Project Title:
210632 Elliot Res

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL

2021-04-28

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 18755	Wall Ratio 1	CFM= 54.2	Load 1127 Btuh
Internal gain		Occupants 1	Btuh/occupant X 230	Appliance +	3400	Load 3630 Btuh
					Sensible Envelope Load:	15500 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.503)					7794 Btuh
					Sensible Load All Zones	23294 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Elliot Res

Project Title:
210632 Elliot Res

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL

2021-04-28

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15500 Btuh
	Sensible Duct Load	7794 Btuh
	Total Sensible Zone Loads	23294 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	23294 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1870 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1729 Btuh
	Latent occupant gain (1.0 people @ 200 Btuh per person)	200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3798 Btuh
	TOTAL GAIN	27092 Btuh

EQUIPMENT

1. Central Unit	#	33000 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