

Residential System Sizing Calculation

Summary

Spec House

Project Title:

210183 Spec - Lot 33 Fort White Park

Fort White, FL

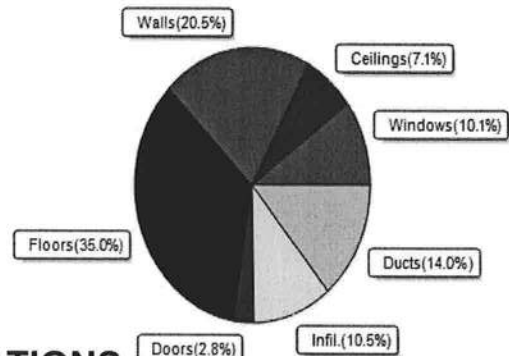
2021-02-15

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	23593 Btuh	Total cooling load calculation	20255 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	106.0 25000	Sensible (SHR = 0.75)	111.2 18750
Heat Pump + Auxiliary(0.0kW)	106.0 25000	Latent	184.3 6250
		Total (Electric Heat Pump)	123.4 25000

WINTER CALCULATIONS

Winter Heating Load (for 1526 sqft)

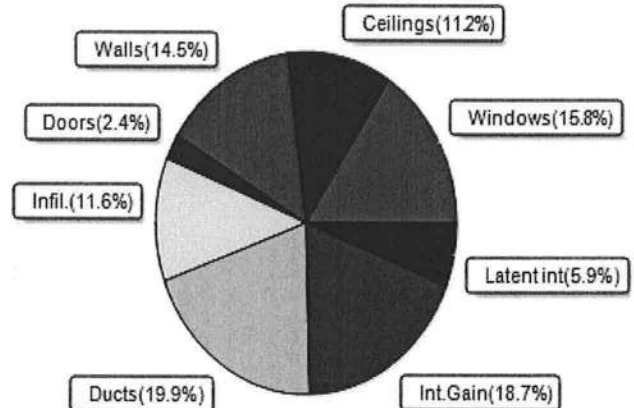
Load component		Load	
Window total	171 sqft	2389	Btuh
Wall total	1360 sqft	4829	Btuh
Door total	41 sqft	658	Btuh
Ceiling total	1650 sqft	1675	Btuh
Floor total	1526 sqft	8260	Btuh
Infiltration	57 cfm	2487	Btuh
Duct loss		3294	Btuh
Subtotal		23593	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		23593	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1526 sqft)

Load component		Load	
Window total	171 sqft	3207	Btuh
Wall total	1360 sqft	2931	Btuh
Door total	41 sqft	493	Btuh
Ceiling total	1650 sqft	2261	Btuh
Floor total		0	Btuh
Infiltration	43 cfm	886	Btuh
Internal gain		3780	Btuh
Duct gain		3306	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		16865	Btuh
Latent gain(ducts)		721	Btuh
Latent gain(infiltration)		1470	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		3391	Btuh
TOTAL HEAT GAIN		20255	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: **Evan Beamsley**
DATE: **2021-02-15**

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Spec House

Project Title:

Fort White, FL

210183 Spec - Lot 33 Fort White Park

Building Type: User

2021-02-15

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 0.25	Metal	0.35	N	9.0		14.0	126 Btuh
2	2, NFRC 0.25	Metal	0.35	N	20.0		14.0	280 Btuh
3	2, NFRC 0.25	Metal	0.35	N	30.0		14.0	420 Btuh
4	2, NFRC 0.25	Metal	0.35	W	30.0		14.0	420 Btuh
5	2, NFRC 0.25	Metal	0.35	S	6.7		14.0	93 Btuh
6	2, NFRC 0.25	Metal	0.35	S	45.0		14.0	630 Btuh
7	2, NFRC 0.25	Metal	0.35	E	30.0		14.0	420 Btuh
	Window Total					170.7(sqft)		2389 Btuh
Walls	Type	Omt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	138		3.55	489 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	102		3.55	362 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	186		3.55	660 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	303		3.55	1076 Btuh
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	198		3.55	704 Btuh
6	Frame - Wood	- Adj	(0.089)	13.0/0.0	57		3.55	202 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	118		3.55	420 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	258		3.55	916 Btuh
	Wall Total					1360(sqft)		4829 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		13		16.0	213 Btuh
2	Insulated - Garage,	n	(0.400)		18		16.0	284 Btuh
3	Insulated - Exterior,	n	(0.400)		10		16.0	160 Btuh
	Door Total					41(sqft)		658Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	1650		1.0	1675 Btuh
	Ceiling Total					1650(sqft)		1675Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	175.0	ft(perim.)	47.2	8260 Btuh
	Floor Total					1526	sqft	8260 Btuh
	Envelope Subtotal:							17811 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio		CFM=	Load
	Natural		0.24	14497	1.00		56.8	2487 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Con)					(DLM of 0.162)		3294 Btuh
All Zones	Sensible Subtotal All Zones							23593 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Spec House

Project Title:

Fort White, FL

210183 Spec - Lot 33 Fort White Park

Building Type: User

2021-02-15

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	23593 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	23593 Btuh

EQUIPMENT

1. Electric Heat Pump	#	25000 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

Spec House

Project Title:

210183 Spec - Lot 33 Fort White Park

Fort White, FL

2021-02-15

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	0.25, 0.35	No	No	N		12.8f	1.5ft	9.0	9.0	0.0	12	31	107	Btuh
2	2 NFRC	0.25, 0.35	No	No	N		12.8f	1.5ft	20.0	20.0	0.0	12	31	238	Btuh
3	2 NFRC	0.25, 0.35	No	No	N		1.5ft	1.5ft	30.0	0.0	30.0	12	31	923	Btuh
4	2 NFRC	0.25, 0.35	No	No	W		1.5ft	1.5ft	30.0	30.0	0.0	12	14	357	Btuh
5	2 NFRC	0.25, 0.35	No	No	S		9.5ft	1.5ft	6.7	6.4	0.3	12	31	85	Btuh
6	2 NFRC	0.25, 0.35	No	No	S		9.5ft	1.5ft	45.0	45.0	0.0	12	31	536	Btuh
7	2 NFRC	0.25, 0.35	No	No	E		1.5ft	1.5ft	30.0	0.0	30.0	12	12	357	Btuh
	Excursion													604	Btuh
	Window Total								171 (sqft)					3207 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load	
								Cav/Sheath							
1	Frame - Wood - Ext						0.09	13.0/0.0	137.7			2.3		312 Btuh	
2	Frame - Wood - Ext						0.09	13.0/0.0	102.0			2.3		231 Btuh	
3	Frame - Wood - Ext						0.09	13.0/0.0	186.0			2.3		421 Btuh	
4	Frame - Wood - Ext						0.09	13.0/0.0	303.0			2.3		686 Btuh	
5	Frame - Wood - Adj						0.09	13.0/0.0	198.2			1.7		334 Btuh	
6	Frame - Wood - Adj						0.09	13.0/0.0	57.0			1.7		96 Btuh	
7	Frame - Wood - Ext						0.09	13.0/0.0	118.3			2.3		268 Btuh	
8	Frame - Wood - Ext						0.09	13.0/0.0	258.0			2.3		584 Btuh	
	Wall Total								1360 (sqft)					2931 Btuh	
Doors	Type								Area (sqft)			HTM		Load	
1	Insulated - Exterior								13.3			12.0		160 Btuh	
2	Insulated - Garage								17.8			12.0		213 Btuh	
3	Insulated - Exterior								10.0			12.0		120 Btuh	
	Door Total								41 (sqft)					493 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)			HTM		Load	
1	Vented Attic/DarkShingle						0.025	38.0/0.0	1650.0			1.37		2261 Btuh	
	Ceiling Total								1650 (sqft)					2261 Btuh	
Floors	Type							R-Value	Size			HTM		Load	
1	Slab On Grade							0.0	1526 (ft-perimeter)			0.0		0 Btuh	
	Floor Total								1526.0 (sqft)					0 Btuh	
	Envelope Subtotal:													8893 Btuh	
Infiltration	Type						Average ACH		Volume(cuft)	Wall Ratio		CFM=	Load		
	Natural						0.18		14497	1		42.6	886 Btuh		
Internal gain							Occupants		Btuh/occupant			Appliance	Load		
							6		X 230	+		2400	3780 Btuh		
	Sensible Envelope Load:													13559 Btuh	
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Condi) (DGM of 0.244)													3306 Btuh	
	Sensible Load All Zones													16865 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Spec House

Project Title:

Climate: FL_GAINESVILLE_REGIONAL_A

Fort White, FL

210183 Spec - Lot 33 Fort White Park

2021-02-15

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	13559 Btuh
	Sensible Duct Load	3306 Btuh
	Total Sensible Zone Loads	16865 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16865 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1470 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	721 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3391 Btuh
	TOTAL GAIN	20255 Btuh

EQUIPMENT

1. Central Unit	#	25000 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