

Residential System Sizing Calculation

Summary

Wentworth Res
912 SW Sassafras Street
Fort White, FL 32038

Project Title:
210607 Wentworth Res

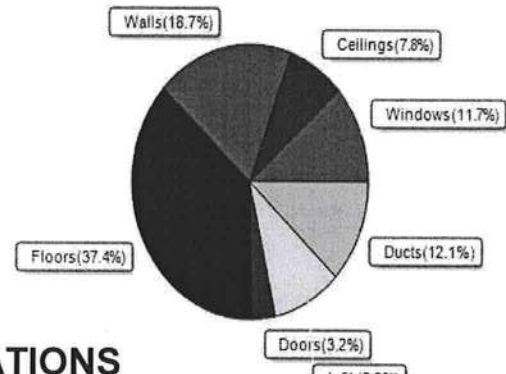
2021-04-26

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			19200	Btuh	
Total cooling load calculation			20136	Btuh	
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	109.4	21000	Sensible (SHR = 0.75)	92.2	15750
Heat Pump + Auxiliary(0.0kW)	109.4	21000	Latent	171.7	5250
			Total (Electric Heat Pump)	104.3	21000

WINTER CALCULATIONS

Winter Heating Load (for 1331 sqft)

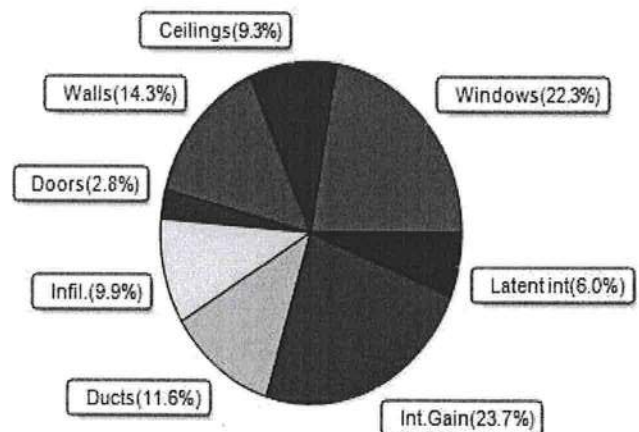
Load component			Load	
Window total	168	sqft	2239	Btuh
Wall total	1066	sqft	3597	Btuh
Door total	40	sqft	608	Btuh
Ceiling total	1555	sqft	1499	Btuh
Floor total	1331	sqft	7174	Btuh
Infiltration	42	cfm	1764	Btuh
Duct loss			2320	Btuh
Subtotal			19200	Btuh
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			19200	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1331 sqft)

Load component			Load	
Window total	168	sqft	4499	Btuh
Wall total	1066	sqft	2887	Btuh
Door total	40	sqft	560	Btuh
Ceiling total	1555	sqft	1874	Btuh
Floor total			0	Btuh
Infiltration	32	cfm	835	Btuh
Internal gain			4780	Btuh
Duct gain			1643	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			17078	Btuh
Latent gain(ducts)			696	Btuh
Latent gain(infiltration)			1162	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1200	Btuh
Total latent gain			3058	Btuh
TOTAL HEAT GAIN			20136	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-04-26

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Wentworth Res
912 SW Sassafra Street
Fort White, FL 32038

Project Title:
210607 Wentworth Res
Building Type: User

2021-04-26

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

This calculation is for Worst Case. The house has been rotated 225 degrees.

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.25	Metal	0.35	SW	11.1		13.3	148 Btuh
2	2, NFRC 0.25	Metal	0.35	SW	22.2		13.3	296 Btuh
3	2, NFRC 0.25	Metal	0.35	SW	9.0		13.3	120 Btuh
4	2, NFRC 0.25	Metal	0.35	SW	15.0		13.3	200 Btuh
5	2, NFRC 0.25	Metal	0.35	NW	30.0		13.3	399 Btuh
6	2, NFRC 0.25	Metal	0.35	NW	6.0		13.3	80 Btuh
7	2, NFRC 0.25	Metal	0.35	NE	75.0		13.3	998 Btuh
Window Total					168.3(sqft)			2239 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	196		3.37	662 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	64		3.37	216 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	78		3.37	264 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	249		3.37	841 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	257		3.37	867 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	221		3.37	747 Btuh
Wall Total					1066(sqft)			3597 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		7		15.2	101 Btuh
2	Insulated - Exterior,	n	(0.400)		13		15.2	203 Btuh
3	Insulated - Exterior,	n	(0.400)		20		15.2	304 Btuh
Door Total					40(sqft)			608Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load	
1	Unvent Attic/D/Shing	(0.241)	0.0/22.0	1555		1.0	1499 Btuh	
Ceiling Total					1555(sqft)			1499Btuh
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load	
1	Slab On Grade	(1.180)	0.0	160.0 ft(perim.)		44.8	7174 Btuh	
Floor Total					1331 sqft			7174 Btuh
Envelope Subtotal:								15117 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	Load	
	Natural		0.22	11314	1.00	42.4	1764 Btuh	
Duct load	Average sealed, R6.0, Supply(Att), Return(Con)					(DLM of 0.137)		2320 Btuh
All Zones	Sensible Subtotal All Zones							19200 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Wentworth Res
912 SW Sassafras Street
Fort White, FL 32038

Project Title:
210607 Wentworth Res
Building Type: User

2021-04-26

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	19200 Btuh 0 Btuh 19200 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	21000 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

Wentworth Res
912 SW Sassafras Street
Fort White, FL 32038

Project Title:
210607 Wentworth Res

2021-04-26

Reference City: Gainesville, FL Temperature Difference: 24.0F(MJ8 99%) Humidity difference: 54gr.
This calculation is for Worst Case. The house has been rotated 225 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	0.25, 0.35	No	No	SW	9.5ft	1.0ft	11.1	11.1	0.0	14	26	152	Btuh
2	2 NFRC	0.25, 0.35	No	No	SW	9.5ft	1.0ft	22.2	22.2	0.0	14	26	304	Btuh
3	2 NFRC	0.25, 0.35	No	No	SW	9.5ft	1.0ft	9.0	9.0	0.0	14	26	123	Btuh
4	2 NFRC	0.25, 0.35	No	No	SW	1.5ft	1.0ft	15.0	4.4	10.6	14	26	339	Btuh
5	2 NFRC	0.25, 0.35	No	No	NW	1.5ft	4.0ft	30.0	0.0	30.0	14	25	756	Btuh
6	2 NFRC	0.25, 0.35	No	No	NW	1.5ft	7.0ft	6.0	0.0	6.0	14	25	151	Btuh
7	2 NFRC	0.25, 0.35	No	No	NE	7.5ft	1.0ft	75.0	0.0	75.0	14	25	1890	Btuh
	Excursion												785	Btuh
	Window Total							168 (sqft)					4499 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)			HTM		Load			
					Cav/Sheath									
1	Frame - Wood - Ext		0.09		13.0/0.0			196.3		2.7		531	Btuh	
2	Frame - Wood - Ext		0.09		13.0/0.0			64.0		2.7		173	Btuh	
3	Frame - Wood - Ext		0.09		13.0/0.0			78.3		2.7		212	Btuh	
4	Frame - Wood - Ext		0.09		13.0/0.0			249.3		2.7		675	Btuh	
5	Frame - Wood - Ext		0.09		13.0/0.0			257.0		2.7		696	Btuh	
6	Frame - Wood - Ext		0.09		13.0/0.0			221.3		2.7		599	Btuh	
	Wall Total							1066 (sqft)					2887 Btuh	
Doors	Type	Area (sqft)		HTM		Load								
1	Insulated - Exterior		6.7		14.0		93	Btuh						
2	Insulated - Exterior		13.3		14.0		187	Btuh						
3	Insulated - Exterior		20.0		14.0		280	Btuh						
	Door Total						40 (sqft)					560	Btuh	
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Unvented Attic/DarkShingle		0.241		0.0/22.0		1555.0		1.20		1874	Btuh		
	Ceiling Total						1555 (sqft)				1874	Btuh		
Floors	Type	R-Value		Size		HTM		Load						
1	Slab On Grade		0.0		1331 (ft-perimeter)		0.0		0	Btuh				
	Floor Total						1331.0 (sqft)				0	Btuh		
	Envelope Subtotal:											9819 Btuh		
Infiltration	Type	Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load				
	Natural		0.17		11314		1		31.8		835	Btuh		
Internal gain		Occupants		Btuh/occupant		Appliance		Load						
			6		X 230		+		3400		4780	Btuh		
	Sensible Envelope Load:											15435 Btuh		
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Condi) (DGM of 0.106)											1643 Btuh		
	Sensible Load All Zones											17078 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Wentworth Res
912 SW Sassafras Street
Fort White, FL 32038

Project Title: 210607 Wentworth Res

Climate: FL_GAINESVILLE_REGIONAL_A

2021-04-26

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15435 Btuh
	Sensible Duct Load	1643 Btuh
	Total Sensible Zone Loads	17078 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	17078 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	1162 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	696 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3058 Btuh
	TOTAL GAIN	20136 Btuh

EQUIPMENT

1. Central Unit	#	21000 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