

Residential System Sizing Calculation

Summary

Winnett Res
719 SW Happy Jack Tr.
Lake City, FL

Project Title:
210380 Winnett

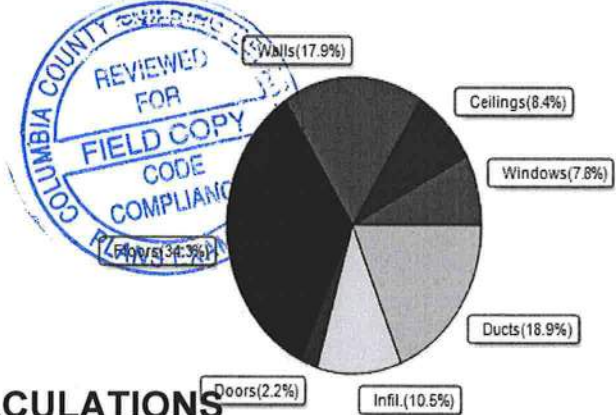
2021-03-11

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	29146 Btuh	Total cooling load calculation	25839 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	109.8 32000	Sensible (SHR = 0.75)	114.0 24000
Heat Pump + Auxiliary(0.0kW)	109.8 32000	Latent	167.2 8000
		Total (Electric Heat Pump)	123.8 32000

WINTER CALCULATIONS

Winter Heating Load (for 2307 sqft)

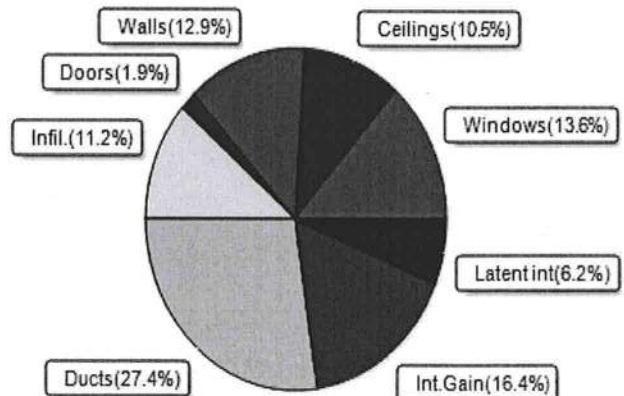
Load component		Load	
Window total	188 sqft	2260	Btuh
Wall total	1471 sqft	5223	Btuh
Door total	40 sqft	640	Btuh
Ceiling total	2422 sqft	2459	Btuh
Floor total	2307 sqft	10006	Btuh
Infiltration	70 cfm	3060	Btuh
Duct loss		5498	Btuh
Subtotal		29146	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		29146	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2307 sqft)

Load component		Load	
Window total	188 sqft	3506	Btuh
Wall total	1471 sqft	3329	Btuh
Door total	40 sqft	480	Btuh
Ceiling total	2422 sqft	2705	Btuh
Floor total		0	Btuh
Infiltration	52 cfm	1090	Btuh
Internal gain		4240	Btuh
Duct gain		5704	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		21055	Btuh
Latent gain(ducts)		1375	Btuh
Latent gain(infiltration)		1809	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		4784	Btuh
TOTAL HEAT GAIN		25839	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-03-11

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Winnett Res
719 SW Happy Jack Tr.
Lake City, FL

Project Title:
210380 Winnett
Building Type: User

2021-03-11

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	0.30	N	26.7		12.0	320 Btuh
2	2, NFRC 0.25	Metal	0.30	N	30.0		12.0	360 Btuh
3	2, NFRC 0.25	Metal	0.30	N	15.0		12.0	180 Btuh
4	2, NFRC 0.25	Metal	0.30	E	15.0		12.0	180 Btuh
5	2, NFRC 0.25	Metal	0.30	S	30.0		12.0	360 Btuh
6	2, NFRC 0.25	Metal	0.30	S	13.3		12.0	160 Btuh
7	2, NFRC 0.25	Metal	0.30	S	13.3		12.0	160 Btuh
8	2, NFRC 0.25	Metal	0.30	S	30.0		12.0	360 Btuh
9	2, NFRC 0.25	Metal	0.30	W	15.0		12.0	180 Btuh
Window Total					188.3(sqft)			2260 Btuh
Walls	Type	Omt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	222		3.55	788 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	64		3.55	227 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	84		3.55	299 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	388		3.55	1376 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	143		3.55	509 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	36		3.55	128 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	31		3.55	109 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	36		3.55	128 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	143		3.55	509 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	324		3.55	1149 Btuh
Wall Total					1471(sqft)			5223 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
2	Insulated - Exterior,	n	(0.400)		13		16.0	213 Btuh
3	Insulated - Exterior,	n	(0.400)		7		16.0	107 Btuh
Door Total					40(sqft)			640Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Metal		(0.025)	38.0/0.0	2422		1.0	2459 Btuh
Ceiling Total					2422(sqft)			2459Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	212.0 ft(perim.)		47.2	10006 Btuh
Floor Total					2307 sqft			10006 Btuh
Envelope Subtotal:								20588 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.22	18917	1.00	69.9		3060 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.232)		5498 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Winnett Res
719 SW Happy Jack Tr.
Lake City, FL

Project Title:
210380 Winnett
Building Type: User

2021-03-11

All Zones	Sensible Subtotal All Zones	29146 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	29146 Btuh 0 Btuh 29146 Btuh
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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

Winnett Res
719 SW Happy Jack Tr.
Lake City, FL

Project Title:
210380 Winnett

2021-03-11

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, 0.30	No	No	N		9.5ft	0.5ft	26.7	0.0	26.7	11	22	600 Btuh
2	2 NFRC	0.25, 0.30	No	No	N		9.5ft	0.5ft	30.0	0.0	30.0	11	22	675 Btuh
3	2 NFRC	0.25, 0.30	No	No	N		1.5ft	1.0ft	15.0	0.0	15.0	11	22	337 Btuh
4	2 NFRC	0.25, 0.30	No	No	E		1.5ft	10.0f	15.0	0.0	15.0	11	24	354 Btuh
5	2 NFRC	0.25, 0.30	No	No	S		7.5ft	0.5ft	30.0	30.0	0.0	11	24	329 Btuh
6	2 NFRC	0.25, 0.30	No	No	S		12.0f	0.5ft	13.3	13.3	0.0	11	24	146 Btuh
7	2 NFRC	0.25, 0.30	No	No	S		12.0f	0.5ft	13.3	13.3	0.0	11	24	146 Btuh
8	2 NFRC	0.25, 0.30	No	No	S		7.5ft	0.5ft	30.0	30.0	0.0	11	24	329 Btuh
9	2 NFRC	0.25, 0.30	No	No	W		1.5ft	10.0f	15.0	0.0	15.0	11	22	337 Btuh
	Excursion													252 Btuh
	Window Total								188 (sqft)					3506 Btuh
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load	
							Cav/Sheath							
1	Frame - Wood - Ext					0.09	13.0/0.0	222.0			2.3		502 Btuh	
2	Frame - Wood - Ext					0.09	13.0/0.0	64.0			2.3		145 Btuh	
3	Frame - Wood - Ext					0.09	13.0/0.0	84.3			2.3		191 Btuh	
4	Frame - Wood - Ext					0.09	13.0/0.0	387.7			2.3		877 Btuh	
5	Frame - Wood - Ext					0.09	13.0/0.0	143.3			2.3		324 Btuh	
6	Frame - Wood - Ext					0.09	13.0/0.0	36.0			2.3		81 Btuh	
7	Frame - Wood - Ext					0.09	13.0/0.0	30.7			2.3		69 Btuh	
8	Frame - Wood - Ext					0.09	13.0/0.0	36.0			2.3		81 Btuh	
9	Frame - Wood - Ext					0.09	13.0/0.0	143.3			2.3		324 Btuh	
10	Frame - Wood - Ext					0.09	13.0/0.0	323.7			2.3		733 Btuh	
	Wall Total								1471 (sqft)					3329 Btuh
Doors	Type							Area (sqft)			HTM		Load	
1	Insulated - Exterior							20.0			12.0		240 Btuh	
2	Insulated - Exterior							13.3			12.0		160 Btuh	
3	Insulated - Exterior							6.7			12.0		80 Btuh	
	Door Total								40 (sqft)					480 Btuh
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load	
1	Vented Attic/Light/Metal					0.025	38.0/0.0	2422.0			1.12		2705 Btuh	
	Ceiling Total								2422 (sqft)					2705 Btuh
Floors	Type						R-Value	Size			HTM		Load	
1	Slab On Grade						0.0	2307 (ft-perimeter)			0.0		0 Btuh	
	Floor Total								2307.0 (sqft)					0 Btuh
	Envelope Subtotal:													10020 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Winnett Res
719 SW Happy Jack Tr.
Lake City, FL

Project Title:
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Climate:FL_GAINESVILLE_REGIONAL_A

2021-03-11

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 18917	Wall Ratio 1	CFM= 52.4	Load 1090 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	2400	Load 4240 Btuh
	Sensible Envelope Load:					15351 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.372)	5704 Btuh
	Sensible Load All Zones					21055 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Winnett Res
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Lake City, FL

Project Title:
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Climate: FL_GAINESVILLE_REGIONAL_A

2021-03-11

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15351 Btuh
	Sensible Duct Load	5704 Btuh
	Total Sensible Zone Loads	21055 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21055 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1809 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1375 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4784 Btuh
	TOTAL GAIN	25839 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