

Residential System Sizing Calculation

Summary

Norris Construction

Project Title:
Norris Construction - Spec

Lake City, FL 32055

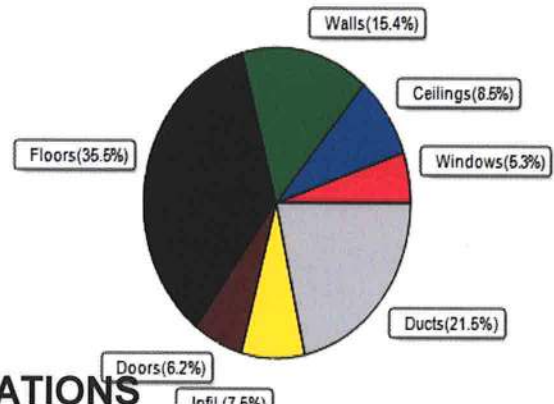
5/24/2021

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(54gr.)			
Winter design temperature(MJ8 99%)	33 F	Summer design temperature(MJ8 99%)	92 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	37 F	Summer temperature difference	17 F
Total heating load calculation	25047 Btuh	Total cooling load calculation	19267 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	191.6 48000	Sensible (SHR = 0.75)	245.1 36000
Heat Pump + Auxiliary(0.0kW)	191.6 48000	Latent	261.9 12000
		Total (Electric Heat Pump)	249.1 48000

WINTER CALCULATIONS

Winter Heating Load (for 2272 sqft)

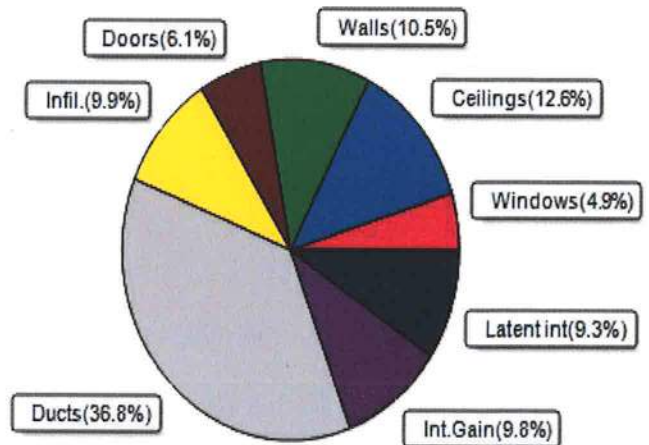
Load component		Load
Window total	109 sqft	1331 Btuh
Wall total	1411 sqft	3863 Btuh
Door total	91 sqft	1551 Btuh
Ceiling total	2272 sqft	2134 Btuh
Floor total	2272 sqft	8902 Btuh
Infiltration	46 cfm	1877 Btuh
Duct loss		5390 Btuh
Subtotal		25047 Btuh
Ventilation	0 cfm	0 Btuh
TOTAL HEAT LOSS		25047 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2272 sqft)

Load component		Load
Window total	109 sqft	941 Btuh
Wall total	1411 sqft	2025 Btuh
Door total	91 sqft	1174 Btuh
Ceiling total	2272 sqft	2422 Btuh
Floor total		0 Btuh
Infiltration	35 cfm	647 Btuh
Internal gain		1890 Btuh
Duct gain		5586 Btuh
Sens. Ventilation	0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		14685 Btuh
Latent gain(ducts)		1512 Btuh
Latent gain(infiltration)		1270 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		1800 Btuh
Total latent gain		4582 Btuh
TOTAL HEAT GAIN		19267 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY:

DATE:

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Norris Construction
Lake City, FL 32055

Project Title:
Norris Construction - Spec
Building Type: User

5/24/2021

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 F (MJ8 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.21	Metal	0.33	N	9.0		12.2	110 Btuh
2	2, NFRC 0.21	Metal	0.33	N	15.0		12.2	183 Btuh
3	2, NFRC 0.21	Metal	0.33	E	6.0		12.2	73 Btuh
4	2, NFRC 0.21	Metal	0.33	S	15.0		12.2	183 Btuh
5	2, NFRC 0.21	Metal	0.33	S	25.0		12.2	305 Btuh
6	2, NFRC 0.21	Metal	0.33	S	30.0		12.2	366 Btuh
7	2, NFRC 0.21	Metal	0.33	S	3.0		12.2	37 Btuh
8	2, NFRC 0.21	Metal	0.33	W	6.0		12.2	73 Btuh
Window Total					109.0(sqft)			1331 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.074)	19.0/1.0	363		2.74	993 Btuh
2	Frame - Wood	- Ext	(0.074)	19.0/1.0	307		2.74	840 Btuh
3	Frame - Wood	- Ext	(0.074)	19.0/1.0	239		2.74	655 Btuh
4	Frame - Wood	- Ext	(0.074)	19.0/1.0	174		2.74	476 Btuh
5	Frame - Wood	- Ext	(0.074)	19.0/1.0	329		2.74	900 Btuh
Wall Total					1411(sqft)			3863 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		18		17.0	303 Btuh
2	Insulated - Exterior,	n	(0.460)		20		17.0	340 Btuh
3	Insulated - Exterior,	n	(0.460)		33		17.0	567 Btuh
4	Insulated - Exterior,	n	(0.460)		20		17.0	340 Btuh
Door Total					91(sqft)			1551 Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value		Area	X	HTM=	Load
1	Vented Attic/L/Shing	(0.025)	38.0/0.0		2272		0.9	2134 Btuh
Ceiling Total					2272(sqft)			2134 Btuh
Floors	Type	Ueff.	R-Value		Size	X	HTM=	Load
1	Slab On Grade	(1.180)	0.0		203.9 ft(perim.)		43.7	8902 Btuh
Floor Total					2272 sqft			8902 Btuh
Envelope Subtotal:								17781 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.15	18174	1.00	46.3		1877 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.274)							5390 Btuh
All Zones	Sensible Subtotal All Zones							25047 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Norris Construction

Project Title:

Norris Construction - Spec

Lake City, FL 32055

Building Type: User

5/24/2021

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	25047 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	25047 Btuh

EQUIPMENT

1. Electric Heat Pump	#	48000 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

Norris Construction

Project Title:

Norris Construction - Spec

Lake City, FL 32055

5/24/2021

Reference City: Gainesville, FL

Temperature Difference: 17.0F(MJ8 99%)

Humidity difference: 54gr.

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	0.21, 0.33	B-L	No	N		2.0ft	1.0ft	9.0	0.0	9.0	8	8	69	Btuh	
2	2 NFRC	0.21, 0.33	B-L	No	N		2.0ft	1.0ft	15.0	0.0	15.0	8	8	115	Btuh	
3	2 NFRC	0.21, 0.33	B-L	No	E		2.0ft	1.0ft	6.0	1.3	4.7	8	19	98	Btuh	
4	2 NFRC	0.21, 0.33	B-L	No	S		6.0ft	1.0ft	15.0	15.0	0.0	8	9	115	Btuh	
5	2 NFRC	0.21, 0.33	B-L	No	S		6.0ft	1.0ft	25.0	25.0	0.0	8	9	192	Btuh	
6	2 NFRC	0.21, 0.33	B-L	No	S		2.0ft	1.0ft	30.0	30.0	0.0	8	9	230	Btuh	
7	2 NFRC	0.21, 0.33	B-L	No	S		2.0ft	1.0ft	3.0	3.0	0.0	8	9	23	Btuh	
8	2 NFRC	0.21, 0.33	B-L	No	W		2.0ft	1.0ft	6.0	1.3	4.7	8	19	98	Btuh	
	Window Total								109 (sqft)					941		Btuh
Walls	Type					U-Value	R-Value		Area(sqft)			HTM		Load		
							Cav/Sheath									
1	Frame - Wood - Ext					0.07	19.0/1.0		362.6			1.4		521		Btuh
2	Frame - Wood - Ext					0.07	19.0/1.0		306.7			1.4		440		Btuh
3	Frame - Wood - Ext					0.07	19.0/1.0		239.2			1.4		343		Btuh
4	Frame - Wood - Ext					0.07	19.0/1.0		173.7			1.4		249		Btuh
5	Frame - Wood - Ext					0.07	19.0/1.0		328.7			1.4		472		Btuh
	Wall Total								1411 (sqft)					2025		Btuh
Doors	Type								Area (sqft)			HTM		Load		
1	Insulated - Exterior								17.8			12.9		229		Btuh
2	Insulated - Exterior								20.0			12.9		258		Btuh
3	Insulated - Exterior								33.3			12.9		429		Btuh
4	Insulated - Exterior								20.0			12.9		258		Btuh
	Door Total								91 (sqft)					1174		Btuh
Ceilings	Type/Color/Surface					U-Value	R-Value		Area(sqft)			HTM		Load		
1	Vented Attic/Light/Shingle					0.025	38.0/0.0		2272.0			1.07		2422		Btuh
	Ceiling Total								2272 (sqft)					2422		Btuh
Floors	Type						R-Value		Size			HTM		Load		
1	Slab On Grade						0.0		2272 (ft-perimeter)			0.0		0		Btuh
	Floor Total								2272.0 (sqft)					0		Btuh
	Envelope Subtotal:													6562		Btuh
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural					0.11		18174		1		34.8		647 <td>Btuh</td>		Btuh
Internal gain						Occupants		Btuh/occupant			Appliance		Load			
						3		X 230 +			1200		1890 <td>Btuh</td>		Btuh	
	Sensible Envelope Load:													9099		Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)										(DGM of 0.614)			5586		Btuh
	Sensible Load All Zones													14685		Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Norris Construction

Project Title:

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32055

Norris Construction - Spec

5/24/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	9099 Btuh
	Sensible Duct Load	5586 Btuh
	Total Sensible Zone Loads	14685 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	14685 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	1270 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1512 Btuh
	Latent occupant gain (3.0 people @ 200 Btuh per person)	600 Btuh
	Latent other gain	1200 Btuh
	Latent total gain	4582 Btuh
	TOTAL GAIN	19267 Btuh

EQUIPMENT

1. Central Unit	#	48000 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