

Residential System Sizing Calculation

Summary

Norris Construction

Project Title:
Norris Construction - Spec

Lake City, FL 32055

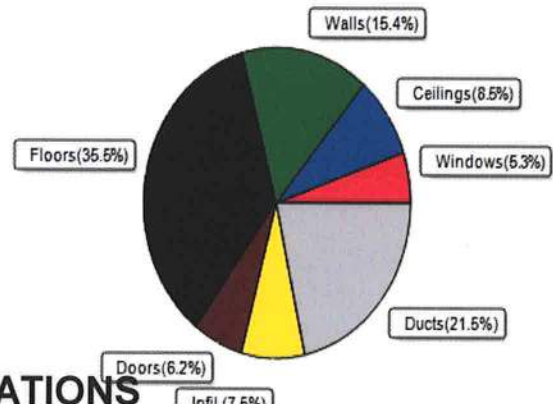
5/24/2021

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)

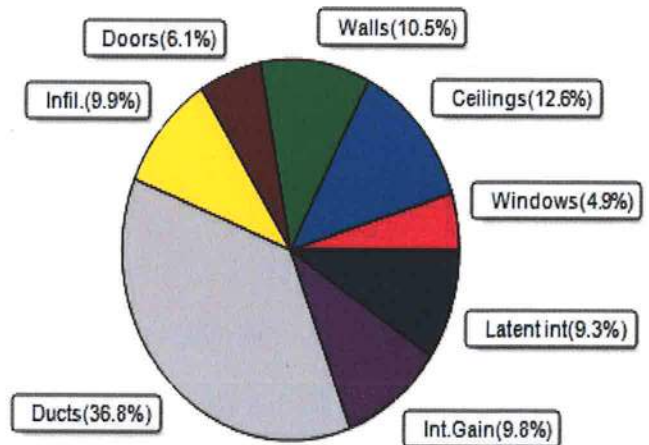
Load component		Load
Window total	109 sqft	1331 Btuh
Wall total	1411 sqft	3863 Btuh
Door total	91 sqft	1551 Btuh
Ceiling total	2272 sqft	2134 Btuh
Floor total	2272 sqft	8902 Btuh
Infiltration	46 cfm	1877 Btuh
Duct loss		5390 Btuh
Subtotal		25047 Btuh
Ventilation	0 cfm	0 Btuh
TOTAL HEAT LOSS		25047 Btuh



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: *[Signature]*
DATE: *[Signature]*

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)			1551Btuh
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)			2134Btuh
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 Btuh	
Internal gain							Occupants		Btuh/occupant		Appliance		Load			
							3		X 230		+		1200		1890 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