

Residential System Sizing Calculation

Summary

Norris - Johnson
Lake City, FL 32024

Project Title:
Norris - Johnson

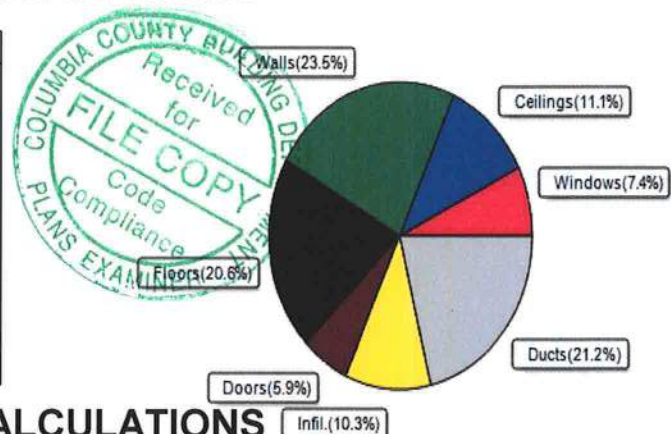
9/22/2020

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	19090 Btuh	Total cooling load calculation	18046 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	220.0 42000	Sensible (SHR = 0.75)	227.9 31500
Heat Pump + Auxiliary(0.0kW)	220.0 42000	Latent	248.7 10500
		Total (Electric Heat Pump)	232.7 42000

WINTER CALCULATIONS

Winter Heating Load (for 1796 sqft)

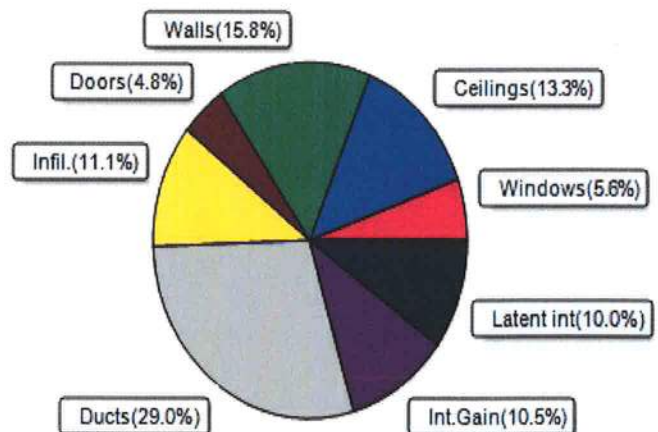
Load component		Load	
Window total	115 sqft	1404	Btuh
Wall total	1429 sqft	4487	Btuh
Door total	67 sqft	1135	Btuh
Ceiling total	1796 sqft	2116	Btuh
Floor total	1796 sqft	3925	Btuh
Infiltration	49 cfm	1968	Btuh
Duct loss		4054	Btuh
Subtotal		19090	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		19090	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1796 sqft)

Load component		Load	
Window total	115 sqft	1006	Btuh
Wall total	1429 sqft	2850	Btuh
Door total	67 sqft	859	Btuh
Ceiling total	1796 sqft	2402	Btuh
Floor total		0	Btuh
Infiltration	36 cfm	678	Btuh
Internal gain		1890	Btuh
Duct gain		4140	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		13825	Btuh
Latent gain(ducts)		1090	Btuh
Latent gain(infiltration)		1332	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1800	Btuh
Total latent gain		4222	Btuh
TOTAL HEAT GAIN		18046	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY:
DATE: 9/28/2020

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Norris - Johnson
Lake City, FL 32024

Project Title:
Norris - Johnson
Building Type: User

9/22/2020

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	30.0		12.2	366 Btuh
2	2, NFRC 0.21	Metal	0.33	E	6.0		12.2	73 Btuh
3	2, NFRC 0.21	Metal	0.33	E	5.0		12.2	61 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	25.0		12.2	305 Btuh
7	2, NFRC 0.21	Metal	0.33	S	9.0		12.2	110 Btuh
Window Total					115.0(sqft)			1404 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.085)	13.0/1.0	443		3.14	1392 Btuh
2	Frame - Wood	- Ext	(0.085)	13.0/1.0	255		3.14	799 Btuh
3	Frame - Wood	- Ext	(0.085)	13.0/1.0	282		3.14	885 Btuh
4	Frame - Wood	- Ext	(0.085)	13.0/1.0	266		3.14	833 Btuh
5	Frame - Wood	- Ext	(0.085)	13.0/1.0	184		3.14	578 Btuh
Wall Total					1429(sqft)			4487 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		33		17.0	567 Btuh
2	Insulated - Exterior, n		(0.460)		13		17.0	227 Btuh
3	Insulated - Exterior, n		(0.460)		20		17.0	340 Btuh
Door Total					67(sqft)			1135Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	1796		1.2	2116 Btuh
Ceiling Total					1796(sqft)			2116Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	89.9 ft(perim.)		43.7	3925 Btuh
Floor Total					1796 sqft			3925 Btuh
Envelope Subtotal:								13067 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.18	16160	1.00	48.6		1968 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.270)							4054 Btuh
All Zones	Sensible Subtotal All Zones							19090 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Norris - Johnson
Lake City, FL 32024

Project Title:
Norris - Johnson
Building Type: User

9/22/2020

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	19090 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	19090 Btuh

EQUIPMENT

1. Electric Heat Pump	#	42000 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 - Johnson

Project Title:
Norris - Johnson

Lake City, FL 32024

9/22/2020

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	2.0ft	30.0	0.0	30.0	8	8	230	Btuh	
2	2 NFRC	0.21, 0.33	B-L	No	E		2.0ft	2.0ft	6.0	0.0	6.0	8	19	113	Btuh	
3	2 NFRC	0.21, 0.33	B-L	No	E		2.0ft	2.0ft	5.0	0.0	5.0	8	19	94	Btuh	
4	2 NFRC	0.21, 0.33	B-L	No	S		2.0ft	2.0ft	15.0	15.0	0.0	8	9	115	Btuh	
5	2 NFRC	0.21, 0.33	B-L	No	S		2.0ft	2.0ft	25.0	25.0	0.0	8	9	192	Btuh	
6	2 NFRC	0.21, 0.33	B-L	No	S		7.0ft	2.0ft	25.0	25.0	0.0	8	9	192	Btuh	
7	2 NFRC	0.21, 0.33	B-L	No	S		7.0ft	2.0ft	9.0	9.0	0.0	8	9	69	Btuh	
	Window Total								115 (sqft)					1006 Btuh		
Walls	Type						U-Value		R-Value		Area(sqft)		HTM		Load	
									Cav/Sheath							
1	Frame - Wood - Ext						0.08		13.0/1.0		443.3		2.0		884 Btuh	
2	Frame - Wood - Ext						0.08		13.0/1.0		254.5		2.0		507 Btuh	
3	Frame - Wood - Ext						0.08		13.0/1.0		281.8		2.0		562 Btuh	
4	Frame - Wood - Ext						0.08		13.0/1.0		265.5		2.0		529 Btuh	
5	Frame - Wood - Ext						0.08		13.0/1.0		184.3		2.0		367 Btuh	
	Wall Total								1429 (sqft)					2850 Btuh		
Doors	Type								Area (sqft)		HTM		Load			
1	Insulated - Exterior								33.3		12.9		429 Btuh			
2	Insulated - Exterior								13.3		12.9		172 Btuh			
3	Insulated - Exterior								20.0		12.9		258 Btuh			
	Door Total								67 (sqft)					859 Btuh		
Ceilings	Type/Color/Surface						U-Value		R-Value		Area(sqft)		HTM		Load	
1	Vented Attic/Light/Shingle						0.032		30.0/0.0		1796.0		1.34		2402 Btuh	
	Ceiling Total								1796 (sqft)					2402 Btuh		
Floors	Type								R-Value		Size		HTM		Load	
1	Slab On Grade								0.0		1796 (ft-perimeter)		0.0		0 Btuh	
	Floor Total								1796.0 (sqft)					0 Btuh		
	Envelope Subtotal:													7117 Btuh		
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural						0.14		16160		1		36.4		678 Btuh	
Internal gain							Occupants		Btuh/occupant		Appliance		Load			
							3		X 230		+		1200		1890 Btuh	
	Sensible Envelope Load:													9685 Btuh		
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)											(DGM of 0.427)		4140 Btuh		
	Sensible Load All Zones													13825 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Norris - Johnson

Project Title:
Norris - Johnson

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32024

9/22/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	9685 Btuh
	Sensible Duct Load	4140 Btuh
	Total Sensible Zone Loads	13825 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	13825 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	1332 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1090 Btuh
	Latent occupant gain (3.0 people @ 200 Btuh per person)	600 Btuh
	Latent other gain	1200 Btuh
	Latent total gain	4222 Btuh
	TOTAL GAIN	18046 Btuh

EQUIPMENT

1. Central Unit	#	42000 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