

Residential System Sizing Calculation

Summary

Jordan, Doug & Lucy

Project Title:
220402 Jordan Res

Lake City, FL

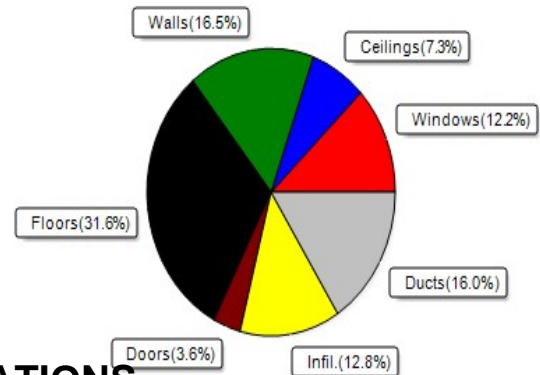
2022-04-05

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	37497	Btuh	Total cooling load calculation	32460	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	109.3	41000	Sensible (SHR = 0.75)	113.9	30750
Heat Pump + Auxiliary(0.0kW)	109.3	41000	Latent	187.5	10250
			Total (Electric Heat Pump)	126.3	41000

WINTER CALCULATIONS

Winter Heating Load (for 2460 sqft)

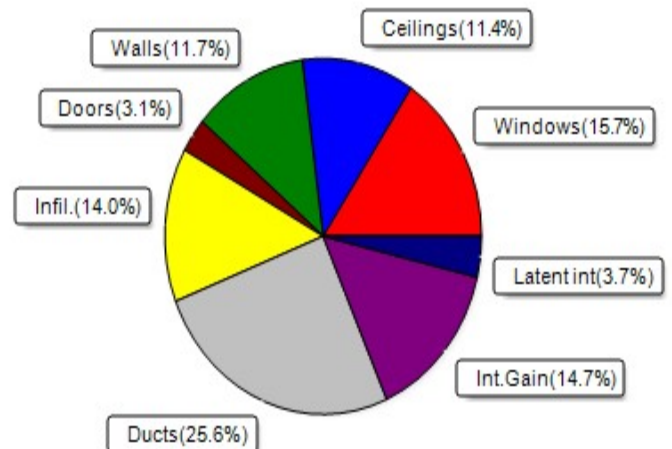
Load component	Load	
Window total	381 sqft	4576 Btuh
Wall total	1738 sqft	6170 Btuh
Door total	84 sqft	1344 Btuh
Ceiling total	2710 sqft	2751 Btuh
Floor total	2460 sqft	11847 Btuh
Infiltration	110 cfm	4798 Btuh
Duct loss		6010 Btuh
Subtotal		37497 Btuh
Ventilation	0 cfm	0 Btuh
TOTAL HEAT LOSS		37497 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2460 sqft)

Load component	Load	
Window total	381 sqft	5085 Btuh
Wall total	1738 sqft	3812 Btuh
Door total	84 sqft	1008 Btuh
Ceiling total	2710 sqft	3714 Btuh
Floor total		0 Btuh
Infiltration	82 cfm	1709 Btuh
Internal gain		4780 Btuh
Duct gain		6886 Btuh
Sens. Ventilation	0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		26994 Btuh
Latent gain(ducts)		1430 Btuh
Latent gain(infiltration)		2836 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		1200 Btuh
Total latent gain		5466 Btuh
TOTAL HEAT GAIN		32460 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: **Evan Beamsley**
DATE: 2022-04-05

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Jordan, Doug & Lucy

Project Title:
220402 Jordan Res
Building Type: User

Lake City, FL

2022-04-05

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 0.22	Metal	0.30	N	36.0		12.0	432 Btuh
2	2, NFRC 0.22	Metal	0.30	NE	13.3		12.0	160 Btuh
3	2, NFRC 0.22	Metal	0.30	N	54.0		12.0	648 Btuh
4	2, NFRC 0.22	Metal	0.30	E	32.0		12.0	384 Btuh
5	2, NFRC 0.22	Metal	0.30	N	72.0		12.0	864 Btuh
6	2, NFRC 0.22	Metal	0.30	N	36.0		12.0	432 Btuh
7	2, NFRC 0.22	Metal	0.30	E	15.0		12.0	180 Btuh
8	2, NFRC 0.22	Metal	0.30	E	8.0		12.0	96 Btuh
9	2, NFRC 0.22	Metal	0.30	S	30.0		12.0	360 Btuh
10	2, NFRC 0.22	Metal	0.30	S	32.0		12.0	384 Btuh
11	2, NFRC 0.22	Metal	0.30	S	15.0		12.0	180 Btuh
12	2, NFRC 0.22	Metal	0.30	W	30.0		12.0	360 Btuh
13	2, NFRC 0.22	Metal	0.30	W	8.0		12.0	96 Btuh
	Window Total				381.3(sqft)			4576 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	26		3.55	91 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	91		3.55	322 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	13		3.55	47 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	62		3.55	221 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	12		3.55	43 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	48		3.55	170 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	93		3.55	330 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	142		3.55	503 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	48		3.55	170 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	80		3.55	285 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	48		3.55	170 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	91		3.55	323 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	122		3.55	431 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	53		3.55	186 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	145		3.55	516 Btuh
16	Frame - Wood	- Adj	(0.089)	13.0/0.0	34		3.55	121 Btuh
17	Frame - Wood	- Adj	(0.089)	13.0/0.0	33		3.55	117 Btuh
18	Frame - Wood	- Adj	(0.089)	13.0/0.0	144		3.55	511 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	454		3.55	1612 Btuh
	Wall Total				1738(sqft)			6170 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		8		16.0	128 Btuh
2	Insulated - Exterior,	n	(0.400)		16		16.0	256 Btuh
3	Insulated - Exterior,	n	(0.400)		24		16.0	384 Btuh
4	Insulated - Exterior,	n	(0.400)		16		16.0	256 Btuh
5	Insulated - Garage,	n	(0.400)		20		16.0	320 Btuh
	Door Total				84(sqft)			1344Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Jordan, Doug & Lucy

Project Title:
220402 Jordan Res
Building Type: User

Lake City, FL

2022-04-05

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Knee Wall/D/Shing	(0.025)	38.0/0.0	250	1.0	254 Btuh
2	Vented Attic/D/Shing	(0.025)	38.0/0.0	2460	1.0	2497 Btuh
	Ceiling Total			2710(sqft)		2751Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	251.0 ft(perim.)	47.2	11847 Btuh
	Floor Total			2460 sqft		11847 Btuh
Envelope Subtotal:						26689 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.25	26568	1.00	109.6	4798 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)				(DLM of 0.191)	6010 Btuh
All Zones	Sensible Subtotal All Zones					37497 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	37497 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	37497 Btuh

EQUIPMENT

1. Electric Heat Pump	#	41000 Btuh
-----------------------	---	------------

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

Manual J Summer Calculations

Residential Load - Component Details (continued)

Jordan, Doug & Lucy

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
220402 Jordan Res

Lake City, FL

2022-04-05

Floors	Type	R-Value	Size	HTM	Load	
1	Slab On Grade	0.0	2460 (ft-perimeter)	0.0	0 Btuh	
	Floor Total		2460.0 (sqft)		0 Btuh	
	Envelope Subtotal:				13619 Btuh	
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.19	26568	1	82.2	1709 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		6	X 230	+	3400	4780 Btuh
	Sensible Envelope Load:				20109 Btuh	
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.342)	6886 Btuh	
	Sensible Load All Zones				26994 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Jordan, Doug & Lucy

Project Title: 220402 Jordan Res

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL

2022-04-05

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	20109 Btuh
	Sensible Duct Load	6886 Btuh
	Total Sensible Zone Loads	26994 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	26994 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2836 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1430 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5466 Btuh
	TOTAL GAIN	32460 Btuh

EQUIPMENT

1. Central Unit	#	41000 Btuh
-----------------	---	------------

*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