

Residential System Sizing Calculation

Summary

Mr & Mrs Patterson

Project Title:
201263 Patterson Accessory

Lake City, FL

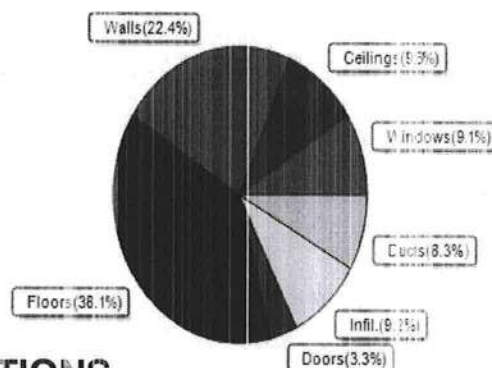
2020-11-18

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	14358 Btuh	Total cooling load calculation	11090 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	104.5 15000	Sensible (SHR = 0.75)	124.2 11250
Heat Pump + Auxiliary(0.0kW)	104.5 15000	Latent	184.4 3750
		Total (Electric Heat Pump)	135.3 15000

WINTER CALCULATIONS

Winter Heating Load (for 792 sqft)

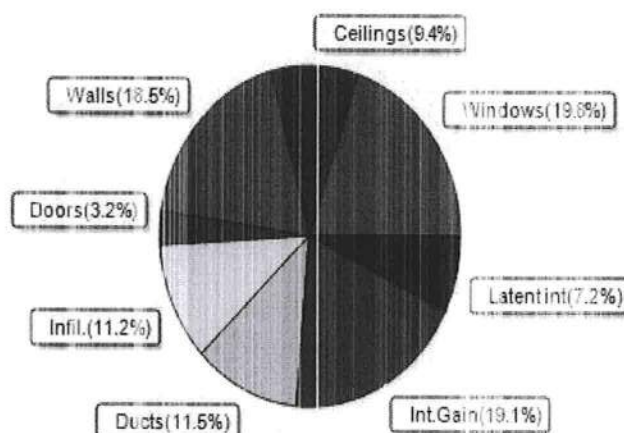
Load component		Load	
Window total	109 sqft	1302	Btuh
Wall total	906 sqft	3215	Btuh
Door total	30 sqft	480	Btuh
Ceiling total	792 sqft	1383	Btuh
Floor total	792 sqft	5475	Btuh
Infiltration	30 cfm	1314	Btuh
Duct loss		1188	Btuh
Subtotal		14358	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		14358	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 792 sqft)

Load component		Load	
Window total	109 sqft	2199	Btuh
Wall total	906 sqft	2049	Btuh
Door total	30 sqft	360	Btuh
Ceiling total	792 sqft	1038	Btuh
Floor total		0	Btuh
Infiltration	23 cfm	468	Btuh
Internal gain		2120	Btuh
Duct gain		821	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		9055	Btuh
Latent gain(ducts)		457	Btuh
Latent gain(infiltration)		777	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		2034	Btuh
TOTAL HEAT GAIN		11090	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2020-11-18

47736

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Mr & Mrs Patterson

Project Title:

201263 Patterson Accessory

Lake City, FL

Building Type: User

2020-11-18

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

This calculation is for Worst Case. The house has been rotated 45 degrees.

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Metal	0.30	NE	9.0		12.0	108 Btuh
2	2, NFRC 0.20	Metal	0.30	SE	9.0		12.0	108 Btuh
3	2, NFRC 0.20	Metal	0.30	SW	45.0		12.0	540 Btuh
4	2, NFRC 0.20	Metal	0.30	NW	8.0		12.0	96 Btuh
5	2, NFRC 0.20	Metal	0.30	NW	37.5		12.0	450 Btuh
	Window Total				108.5(sqft)			1302 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	174		3.55	618 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	300		3.55	1065 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	153		3.55	543 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	279		3.55	989 Btuh
	Wall Total				906(sqft)			3215 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		15		16.0	240 Btuh
2	Insulated - Exterior, n		(0.400)		15		16.0	240 Btuh
	Door Total				30(sqft)			480Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Unvent Attic/D/Shing		(0.044)	0.0/22.0	792		1.7	1383 Btuh
	Ceiling Total				792(sqft)			1383Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	116.0 ft(perim.)		47.2	5475 Btuh
	Floor Total				792 sqft			5475 Btuh
	Envelope Subtotal:							11855 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio		CFM=	
	Natural		0.25	7128	1.00		30.0	1314 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)						(DLM of 0.090)	1188 Btuh
All Zones	Sensible Subtotal All Zones							14358 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Mr & Mrs Patterson

Project Title:

201263 Patterson Accessory

Lake City, FL

Building Type: User

2020-11-18

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	14358 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	14358 Btuh

EQUIPMENT

1. Electric Heat Pump	#	15000 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

Mr & Mrs Patterson

Project Title:

201263 Patterson Accessory

Lake City, FL

2020-11-18

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

This calculation is for Worst Case. The house has been rotated 45 degrees.

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	0.20, 0.30	No	No	NE		1.5ft	1.0ft	9.0	0.0	9.0	10	19	172	Btuh
2	2 NFRC	0.20, 0.30	No	No	SE		1.5ft	1.0ft	9.0	4.4	4.6	10	20	136	Btuh
3	2 NFRC	0.20, 0.30	No	No	SW		1.5ft	8.3ft	45.0	0.0	45.0	10	20	901	Btuh
4	2 NFRC	0.20, 0.30	No	No	NW		1.5ft	1.0ft	8.0	0.0	8.0	10	19	153	Btuh
5	2 NFRC	0.20, 0.30	No	No	NW		1.5ft	1.0ft	37.5	0.0	37.5	10	19	718	Btuh
	Excursion													119	Btuh
	Window Total								109 (sqft)					2199	Btuh
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load		
								Cav/Sheath							
1	Frame - Wood - Ext						0.09	13.0/0.0	174.0		2.3		394 Btuh		
2	Frame - Wood - Ext						0.09	13.0/0.0	300.0		2.3		679 Btuh		
3	Frame - Wood - Ext						0.09	13.0/0.0	153.0		2.3		346 Btuh		
4	Frame - Wood - Ext						0.09	13.0/0.0	278.5		2.3		630 Btuh		
	Wall Total							906 (sqft)				2049 Btuh			
Doors	Type								Area (sqft)	HTM		Load			
1	Insulated - Exterior								15.0	12.0		180 Btuh			
2	Insulated - Exterior								15.0	12.0		180 Btuh			
	Door Total							30 (sqft)				360 Btuh			
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)	HTM		Load			
1	Unvented Attic/DarkShingle						0.044	0.0/22.0	792.0	1.31		1038 Btuh			
	Ceiling Total							792 (sqft)				1038 Btuh			
Floors	Type						R-Value		Size	HTM		Load			
1	Slab On Grade						0.0		792 (ft-perimeter)	0.0		0 Btuh			
	Floor Total							792.0 (sqft)				0 Btuh			
	Envelope Subtotal:													5646 Btuh	
Infiltration	Type						Average ACH	Volume(cuft)	Wall Ratio	CFM=		Load			
	Natural						0.19	7128	1	22.5		468 Btuh			
Internal gain						Occupants	Btuh/occupant			Appliance		Load			
						4	X 230	+		1200		2120 Btuh			
	Sensible Envelope Load:													8234 Btuh	
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)										(DGM of 0.100)		821 Btuh		
	Sensible Load All Zones													9055 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Mr & Mrs Patterson

Project Title:

Climate: FL_GAINESVILLE_REGIONAL_A

201263 Patterson Accessory

Lake City, FL

2020-11-18

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	8234 Btuh
	Sensible Duct Load	821 Btuh
	Total Sensible Zone Loads	9055 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	9055 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	777 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	457 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2034 Btuh
	TOTAL GAIN	11090 Btuh

EQUIPMENT

1. Central Unit	#	15000 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