

Residential System Sizing Calculation

Summary

Sparks Construction
165 SW Defender Dr
Lake City, FL 32055

Project Title:
165 SW Defender Dr

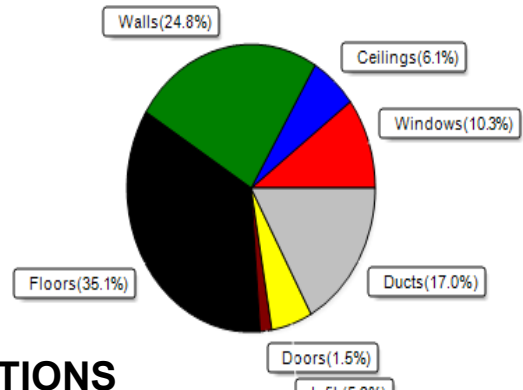
5/12/2022

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	
Winter setpoint			70	F	
Winter temperature difference			40	F	
Summer design temperature(TMY3 99%)			94	F	
Summer setpoint			75	F	
Summer temperature difference			19	F	
Total heating load calculation		24065	Btuh	Total cooling load calculation	
Submitted heating capacity		% of calc	Btuh	Submitted cooling capacity	
Total (Electric Heat Pump)		91.8	22099	Sensible (SHR = 0.70)	
Heat Pump + Auxiliary(0.0kW)		91.8	22099	Latent	
				Total (Electric Heat Pump)	
				97.2	
				16353	

WINTER CALCULATIONS

Winter Heating Load (for 1377 sqft)

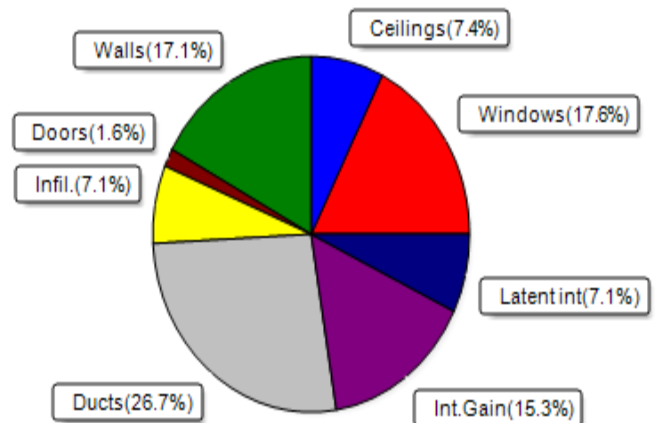
Load component		Load	
Window total	172 sqft	2477	Btuh
Wall total	1133 sqft	5964	Btuh
Door total	20 sqft	368	Btuh
Ceiling total	1445 sqft	1467	Btuh
Floor total	1377 sqft	8439	Btuh
Infiltration	29 cfm	1260	Btuh
Duct loss		4089	Btuh
Subtotal		24065	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		24065	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1377 sqft)

Load component		Load	
Window total	172 sqft	2961	Btuh
Wall total	1133 sqft	2878	Btuh
Door total	20 sqft	276	Btuh
Ceiling total	1445 sqft	1247	Btuh
Floor total		0	Btuh
Infiltration	22 cfm	449	Btuh
Internal gain		2580	Btuh
Duct gain		3455	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		13846	Btuh
Latent gain(ducts)		1039	Btuh
Latent gain(infiltration)		745	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		2985	Btuh
TOTAL HEAT GAIN		16830	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 5 / 12 / 2022

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Sparks Construction
165 SW Defender Dr
Lake City, FL 32055

Project Title:
165 SW Defender Dr
Building Type: User

5/12/2022

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 0.25	Vinyl	0.36	W	32.0		14.4	461 Btuh
2	2, NFRC 0.25	Vinyl	0.36	W	32.0		14.4	461 Btuh
3	2, NFRC 0.25	Vinyl	0.36	S	16.0		14.4	230 Btuh
4	2, NFRC 0.25	Vinyl	0.36	E	4.0		14.4	58 Btuh
5	2, NFRC 0.25	Vinyl	0.36	E	12.0		14.4	173 Btuh
6	2, NFRC 0.25	TIM	0.36	E	40.0		14.4	576 Btuh
7	2, NFRC 0.25	TIM	0.36	E	20.0		14.4	288 Btuh
8	2, NFRC 0.25	Vinyl	0.36	N	16.0		14.4	230 Btuh
Window Total					172.0(sqft)			2477 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	164		5.26	863 Btuh
2	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	192		5.26	1010 Btuh
3	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	171		5.26	898 Btuh
4	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	192		5.26	1010 Btuh
5	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	156		5.26	821 Btuh
6	Conc Blk,Hollow - Ext		(0.132)	5.0/0.0	259		5.26	1361 Btuh
Wall Total					1133(sqft)			5964 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		18.4	368 Btuh
Door Total					20(sqft)			368Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Metal		(0.025)	38.0/0.0	1445		1.0	1467 Btuh
Ceiling Total					1445(sqft)			1467Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	178.8 ft(perim.)		47.2	8439 Btuh
Floor Total					1377 sqft			8439 Btuh
Envelope Subtotal:								18715 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	11016	1.00	28.8		1260 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.205)							4089 Btuh
All Zones	Sensible Subtotal All Zones							24065 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Sparks Construction
165 SW Defender Dr
Lake City, FL 32055

Project Title:
165 SW Defender Dr
Building Type: User

5/12/2022

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	24065 Btuh 0 Btuh 24065 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	22099 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

Sparks Construction
165 SW Defender Dr
Lake City, FL 32055

Project Title:
165 SW Defender Dr

5/12/2022

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%) Humidity difference: 51gr.

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	0.25, 0.36	No	No	W	5.5ft.	0.5ft.	32.0	32.0	0.0	12	31	387	Btuh			
2	2 NFRC	0.25, 0.36	No	No	W	1.5ft.	0.5ft.	32.0	6.0	26.0	12	31	878	Btuh			
3	2 NFRC	0.25, 0.36	No	No	S	1.0ft.	4.0ft.	16.0	6.7	9.3	12	14	212	Btuh			
4	2 NFRC	0.25, 0.36	No	No	E	1.5ft.	0.5ft.	4.0	1.5	2.5	12	31	96	Btuh			
5	2 NFRC	0.25, 0.36	No	No	E	1.5ft.	0.5ft.	12.0	3.0	9.0	12	31	315	Btuh			
6	2 NFRC	0.25, 0.36	No	No	E	11.0f	0.5ft.	40.0	40.0	0.0	12	31	484	Btuh			
7	2 NFRC	0.25, 0.36	No	No	E	11.5f	0.5ft.	20.0	20.0	0.0	12	31	242	Btuh			
8	2 NFRC	0.25, 0.36	No	No	N	1.0ft.	4.0ft.	16.0	0.0	16.0	12	12	194	Btuh			
	Excursion													154	Btuh		
	Window Total								172 (sqft)					2961 Btuh			
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load				
								Cav/Sheath									
1	Concrete Blk,Hollow- Ext						0.13	5.0/0.0	164.0		2.5		416 Btuh				
2	Concrete Blk,Hollow- Ext						0.13	5.0/0.0	192.0		2.5		488 Btuh				
3	Concrete Blk,Hollow- Ext						0.13	5.0/0.0	170.7		2.5		433 Btuh				
4	Concrete Blk,Hollow- Ext						0.13	5.0/0.0	192.0		2.5		488 Btuh				
5	Concrete Blk,Hollow- Ext						0.13	5.0/0.0	156.0		2.5		396 Btuh				
6	Concrete Blk,Hollow- Ext						0.13	5.0/0.0	258.7		2.5		657 Btuh				
	Wall Total								1133 (sqft)				2878 Btuh				
Doors	Type								Area (sqft)		HTM		Load				
1	Insulated - Exterior								20.0		13.8		276 Btuh				
	Door Total								20 (sqft)				276 Btuh				
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load				
1	Vented Attic/Light/Metal/RB						0.025	38.0/0.0	1445.0		0.86		1247 Btuh				
	Ceiling Total								1445 (sqft)				1247 Btuh				
Floors	Type						R-Value		Size		HTM		Load				
1	Slab On Grade						0.0		1377 (ft-perimeter)		0.0		0 Btuh				
	Floor Total								1377.0 (sqft)				0 Btuh				
	Envelope Subtotal:													7362 Btuh			
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural						0.12		11016		1		21.6		449 Btuh		
Internal gain							Occupants		Btuh/occupant		Appliance		Load				
							6		X 230		+		1200		2580 Btuh		
	Sensible Envelope Load:													10391 Btuh			
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)													(DGM of 0.332)		3455 Btuh	
	Sensible Load All Zones													13846 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Sparks Construction
165 SW Defender Dr
Lake City, FL 32055

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
165 SW Defender Dr

5/12/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	10391 Btuh
	Sensible Duct Load	3455 Btuh
	Total Sensible Zone Loads	13846 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	13846 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	745 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1039 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2985 Btuh
	TOTAL GAIN	16830 Btuh

EQUIPMENT

1. Central Unit	#	16353 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