

Residential System Sizing Calculation

Summary

Project Title:
Dalton Residence

, FL

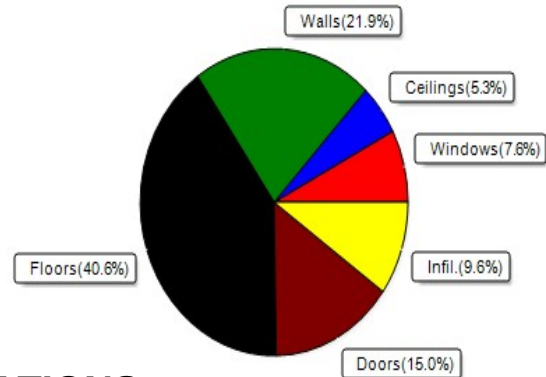
11/19/2021

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(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	41879 Btuh	Total cooling load calculation	26608 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	114.6 48000	Sensible (SHR = 0.85)	180.3 40800
Heat Pump + Auxiliary(0.0kW)	114.6 48000	Latent	181.0 7200
		Total (Electric Heat Pump)	180.4 48000

WINTER CALCULATIONS

Winter Heating Load (for 3409 sqft)

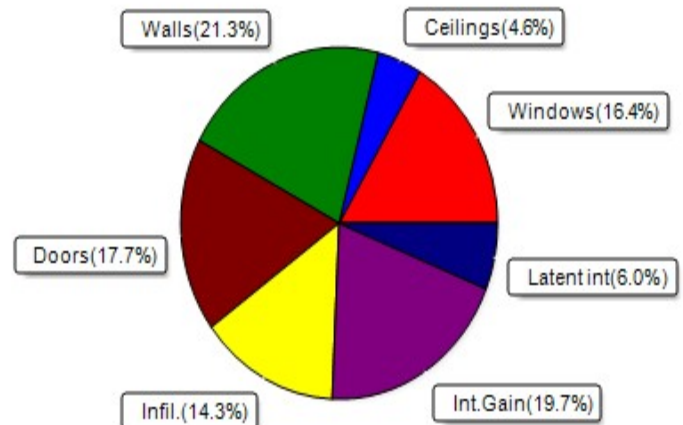
Load component		Load	
Window total	307 sqft	3188	Btuh
Wall total	2658 sqft	9165	Btuh
Door total	392 sqft	6272	Btuh
Ceiling total	3409 sqft	2239	Btuh
Floor total	3409 sqft	16992	Btuh
Infiltration	92 cfm	4022	Btuh
Duct loss		0	Btuh
Subtotal		41879	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		41879	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3409 sqft)

Load component		Load	
Window total	307 sqft	4365	Btuh
Wall total	2658 sqft	5668	Btuh
Door total	392 sqft	4704	Btuh
Ceiling total	3409 sqft	1220	Btuh
Floor total		0	Btuh
Infiltration	69 cfm	1433	Btuh
Internal gain		5240	Btuh
Duct gain		0	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		22630	Btuh
Latent gain(ducts)		0	Btuh
Latent gain(infiltration)		2378	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		3978	Btuh
TOTAL HEAT GAIN		26608	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Dalton Residence

, FL

11/19/2021

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	0.20, 0.26	No	No	N		1.5ft	2.3ft	9.0	0.0	9.0	9	9	82	Btuh
2	2 NFRC	0.20, 0.26	No	No	N		1.5ft	2.3ft	72.0	0.0	72.0	9	9	659	Btuh
3	2 NFRC	0.20, 0.26	No	No	N		17.5f	2.3ft	30.0	0.0	30.0	9	9	274	Btuh
4	2 NFRC	0.20, 0.26	No	No	N		1.5ft	2.3ft	72.0	0.0	72.0	9	9	659	Btuh
5	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	30.0	0.0	30.0	9	24	727	Btuh
6	2 NFRC	0.20, 0.26	No	No	S		1.5ft	2.3ft	10.0	10.0	0.0	9	11	91	Btuh
7	2 NFRC	0.20, 0.26	No	No	S		1.5ft	2.3ft	15.0	15.0	0.0	9	11	137	Btuh
8	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	3.0	0.0	3.0	9	24	73	Btuh
9	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	30.0	0.0	30.0	9	24	727	Btuh
10	2 NFRC	0.20, 0.26	No	No	S		1.5ft	2.3ft	15.0	15.0	0.0	9	11	137	Btuh
11	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	16.0	0.0	16.0	9	24	388	Btuh
12	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	4.5	0.0	4.5	9	24	109	Btuh
	Excursion													302	Btuh
	Window Total								307 (sqft)					4365 Btuh	
Walls	Type	U-Value				R-Value		Area(sqft)			HTM		Load		
						Cav/Sheath									
1	Frame - Wood - Ext					0.09	13.0/0.6		222.3			2.2		489	Btuh
2	Frame - Wood - Ext					0.09	13.0/0.6		136.0			2.2		299	Btuh
3	Frame - Wood - Ext					0.09	13.0/0.6		214.0			2.2		470	Btuh
4	Frame - Wood - Ext					0.09	13.0/0.6		246.3			2.2		542	Btuh
5	Frame - Wood - Ext					0.09	13.0/0.6		128.0			2.2		281	Btuh
6	Frame - Wood - Ext					0.09	13.0/0.6		71.7			2.2		158	Btuh
7	Frame - Wood - Ext					0.09	13.0/0.6		50.5			2.2		111	Btuh
8	Frame - Wood - Ext					0.09	13.0/0.6		208.5			2.2		458	Btuh
9	Frame - Wood - Ext					0.09	13.0/0.6		70.0			2.2		154	Btuh
10	Frame - Wood - Ext					0.09	13.0/0.6		88.3			2.2		194	Btuh
11	Frame - Wood - Ext					0.09	13.0/0.6		201.7			2.2		443	Btuh
12	Frame - Wood - Ext					0.09	13.0/0.6		170.7			2.2		375	Btuh
13	Frame - Wood - Ext					0.09	13.0/0.6		207.0			2.2		455	Btuh
14	Frame - Wood - Ext					0.09	13.0/0.6		108.3			2.2		238	Btuh
15	Frame - Wood - Ext					0.09	13.0/0.6		222.8			2.2		490	Btuh
16	Frame - Wood - Adj					0.09	13.0/0.6		311.7			1.6		511	Btuh
	Wall Total								2658 (sqft)					5668 Btuh	
Doors	Type	U-Value				R-Value		Area (sqft)			HTM		Load		
1	Insulated - Exterior								24.0			12.0		288	Btuh
2	Insulated - Exterior								96.0			12.0		1152	Btuh
3	Insulated - Exterior								24.0			12.0		288	Btuh
4	Insulated - Exterior								48.0			12.0		576	Btuh
5	Insulated - Exterior								20.0			12.0		240	Btuh
6	Insulated - Exterior								24.0			12.0		288	Btuh
7	Insulated - Exterior								60.0			12.0		720	Btuh
8	Insulated - Exterior								48.0			12.0		576	Btuh
9	Insulated - Exterior								48.0			12.0		576	Btuh
	Door Total								392 (sqft)					4704 Btuh	
Ceilings	Type/Color/Surface	U-Value				R-Value		Area(sqft)			HTM		Load		
1	Cath/Sngl Assem/Light/Shingle					0.016	30.0/30.0		3409.0			0.36		1220	Btuh
	Ceiling Total								3409 (sqft)					1220 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Dalton Residence

, FL

11/19/2021

Floors 1	Type Slab On Grade Floor Total	R-Value 0.0	Size 3409 (ft-perimeter) 3409.0 (sqft)	HTM 0.0	Load 0 Btuh 0 Btuh
	Envelope Subtotal:				15957 Btuh
Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 34090	Wall Ratio 1	CFM= 68.9
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3400
	Sensible Envelope Load:				22630 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)				0 Btuh
	Sensible Load All Zones				22630 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Dalton Residence

, FL

11/19/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	22630 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	22630 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	22630 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2378 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3978 Btuh
	TOTAL GAIN	26608 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

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Dalton Residence
Building Type: User

, FL

11/19/2021

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 0.20	Vinyl	0.26	N	9.0		10.4	94 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	72.0		10.4	749 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	30.0		10.4	312 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	72.0		10.4	749 Btuh
5	2, NFRC 0.20	Vinyl	0.26	W	30.0		10.4	312 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	10.0		10.4	104 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
8	2, NFRC 0.20	Vinyl	0.26	W	3.0		10.4	31 Btuh
9	2, NFRC 0.20	Vinyl	0.26	W	30.0		10.4	312 Btuh
10	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
11	2, NFRC 0.20	Vinyl	0.26	W	16.0		10.4	166 Btuh
12	2, NFRC 0.20	Vinyl	0.26	W	4.5		10.4	47 Btuh
Window Total					306.5(sqft)			3188 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	222		3.45	767 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	136		3.45	469 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	214		3.45	738 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	246		3.45	849 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	128		3.45	441 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	72		3.45	247 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	51		3.45	174 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	209		3.45	719 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	70		3.45	241 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	88		3.45	305 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	202		3.45	695 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	171		3.45	589 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	207		3.45	714 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	108		3.45	374 Btuh
15	Frame - Wood	- Ext	(0.086)	13.0/0.6	223		3.45	768 Btuh
16	Frame - Wood	- Adj	(0.086)	13.0/0.6	312		3.45	1075 Btuh
Wall Total					2658(sqft)			9165 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
2	Insulated - Exterior, n		(0.400)		96		16.0	1536 Btuh
3	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
4	Insulated - Exterior, n		(0.400)		48		16.0	768 Btuh
5	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
6	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
7	Insulated - Exterior, n		(0.400)		60		16.0	960 Btuh
8	Insulated - Exterior, n		(0.400)		48		16.0	768 Btuh
9	Insulated - Exterior, n		(0.400)		48		16.0	768 Btuh
Door Total					392(sqft)			6272Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Dalton Residence
Building Type: User

11/19/2021

Ceilings 1	Type/Color/Surface Cathedral/L/Shing Ceiling Total	Ueff. (0.016)	R-Value 30.0/30.0	Area X 3409 3409(sqft)	HTM= 0.7	Load 2239 Btuh 2239Btuh
Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 360.0 ft(perim.) 3409 sqft	HTM= 47.2	Load 16992 Btuh 16992 Btuh
Envelope Subtotal:						37856 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 34090	Wall Ratio 1.00	CFM= 91.9	4022 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					41879 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	41879 Btuh 0 Btuh 41879 Btuh
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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