

Residential System Sizing Calculation

Summary

Raulerson Res
369 SW Pinehurst Dr
Lake City, FL

Project Title:
231200 Raulerson Res

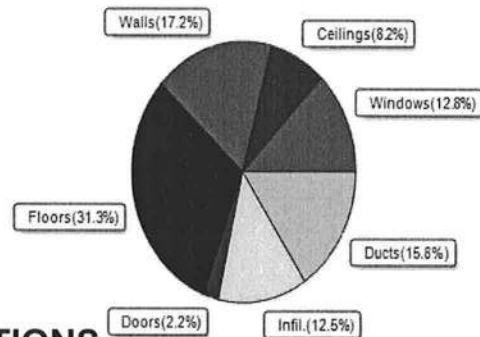
2023-11-16

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 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	29906 Btuh	Total cooling load calculation	26029 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	127.1 38000	Sensible (SHR = 0.75)	127.8 28500
Heat Pump + Auxiliary(0.0kW)	127.1 38000	Latent	254.8 9500
		Total (Electric Heat Pump)	146.0 38000

WINTER CALCULATIONS

Winter Heating Load (for 1926 sqft)

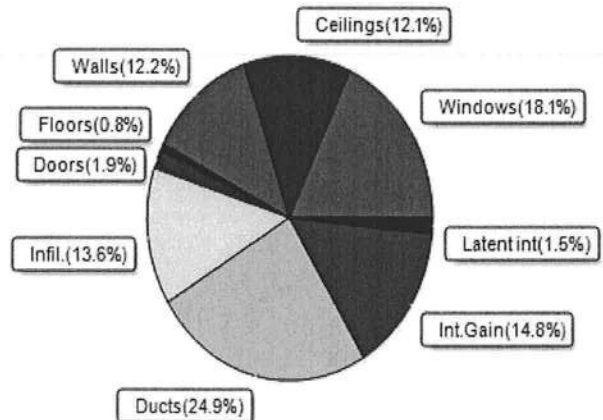
Load component		Load
Window total	274 sqft	3833 Btuh
Wall total	1451 sqft	5152 Btuh
Door total	41 sqft	658 Btuh
Ceiling total	2229 sqft	2449 Btuh
Floor total	See detail report	9351 Btuh
Infiltration	85 cfm	3741 Btuh
Duct loss		4722 Btuh
Subtotal		29906 Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS		29906 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1926 sqft)

Load component		Load
Window total	274 sqft	4714 Btuh
Wall total	1451 sqft	3185 Btuh
Door total	41 sqft	493 Btuh
Ceiling total	2229 sqft	3142 Btuh
Floor total		200 Btuh
Infiltration	64 cfm	1333 Btuh
Internal gain		3860 Btuh
Duct gain		5374 Btuh
Sens. Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		22301 Btuh
Latent gain(ducts)		1116 Btuh
Latent gain(infiltration)		2212 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		400 Btuh
Total latent gain		3728 Btuh
TOTAL HEAT GAIN		26029 Btuh



8th Edition



EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2023-11-16

EnergyGauge® / USRCZB v7.5.00

System Sizing Calculations - Winter

Residential Load - Room by Room Component Details

Raulerson Res
369 SW Pinehurst Dr
Lake City, FL

Project Title:
231200 Raulerson Res
Building Type: User

2023-11-16

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Room #1: Main							
Window	Panes/Type	Frame	U	Orientation	Area(sqft) X	HTM=	Load
1	2, NFRC 0.25	Metal	0.35	N	12.0	14.0	168 Btuh
2	2, NFRC 0.25	Metal	0.35	N	25.0	14.0	350 Btuh
3	2, NFRC 0.25	Metal	0.35	N	20.0	14.0	280 Btuh
4	2, NFRC 0.25	Metal	0.35	N	9.0	14.0	126 Btuh
5	2, NFRC 0.25	Metal	0.35	N	30.0	14.0	420 Btuh
6	2, NFRC 0.25	Metal	0.35	E	6.0	14.0	84 Btuh
7	2, NFRC 0.25	Metal	0.35	E	30.0	14.0	420 Btuh
8	2, NFRC 0.25	Metal	0.35	S	37.5	14.0	525 Btuh
9	2, NFRC 0.25	Metal	0.35	S	7.8	14.0	109 Btuh
10	2, NFRC 0.25	Metal	0.35	S	6.7	14.0	93 Btuh
11	2, NFRC 0.25	Metal	0.35	S	4.3	14.0	61 Btuh
12	2, NFRC 0.25	Metal	0.35	S	15.0	14.0	210 Btuh
13	2, NFRC 0.25	Metal	0.35	S	15.0	14.0	210 Btuh
14	2, NFRC 0.25	Metal	0.35	W	20.0	14.0	280 Btuh
15	2, NFRC 0.25	Metal	0.35	W	16.0	14.0	224 Btuh
16	2, NFRC 0.25	Metal	0.35	W	4.5	14.0	63 Btuh
Window Total					258.8(sqft)		3623 Btuh
Walls	Type	Omt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	18	3.55	64 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	18	3.55	64 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	102	3.55	362 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	18	3.55	64 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	95	3.55	336 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	78	3.55	277 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	18	3.55	64 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	74	3.55	261 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	267	3.55	948 Btuh
10	Frame - Wood	- Adj	(0.089)	13.0/0.0	173	3.55	613 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	21	3.55	75 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	65	3.55	229 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	36	3.55	128 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	22	3.55	79 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	36	3.55	128 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	39	3.55	138 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	45	3.55	160 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	105	3.55	371 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	15	3.55	53 Btuh
20	Frame - Wood	- Ext	(0.089)	13.0/0.0	119	3.55	422 Btuh
Wall Total					1362(sqft)		4836 Btuh
Doors	Type	Storm	Ueff.		Area X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		13	16.0	213 Btuh
2	Insulated - Garage, n		(0.400)		18	16.0	284 Btuh
3	Insulated - Exterior, n		(0.400)		10	16.0	160 Btuh
Door Total					41(sqft)		658Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

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Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/D/Shing	(0.025)	38.0/0.0	1531	1.0	1554 Btuh
2	Knee wall/D/Shing	(0.025)	38.0/0.0	44	1.0	45 Btuh
	Ceiling Total			1575(sqft)		1599Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	186.0 ft(perim.)	47.2	8779 Btuh
	Floor Total			1586 sqft		8779 Btuh
Room Envelope Subtotal:						19495 Btuh
Infiltration	Type	Wholehouse ACH	Room Volume	Wall Ratio	CFM=	Load
	Natural	0.30	14274	0.94	80.1	3512 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DLM of 0.205)					4722 Btuh
Room #1	Sensible Room Subtotal					27729 Btuh

Component Loads for Room #2: bonus Room

Window	Panes/Type	Frame U	Orientation	Area(sqft) X	HTM=	Load
17	2, NFRC 0.25	Metal 0.35	S	15.0	14.0	210 Btuh
	Window Total			15.0(sqft)		210 Btuh
Walls	Type	Omt. Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
21	Frame - Wood - Ext	(0.089)	13.0/0.0	89	3.55	316 Btuh
	Wall Total			89(sqft)		316 Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
3	Flat ceil/D/Shing	(0.032)	30.0/0.0	203	1.3	259 Btuh
4	Single as/D/Shing	(0.034)	30.0/0.0	192	1.4	261 Btuh
5	Knee wall/D/Shing	(0.032)	30.0/0.0	259	1.3	330 Btuh
	Ceiling Total			654(sqft)		850Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
2	Raised Wood - Adj	(0.050)	19.0	285.0 sqft	2.0	572 Btuh
3	Interior	(0.050)	0.0	55.0 sqft	0.0	0 Btuh
	Floor Total			340 sqft		572 Btuh
Room Envelope Subtotal:						1947 Btuh
Infiltration	Type	Wholehouse ACH	Room Volume	Wall Ratio	CFM=	Load
	Natural	0.30	2720	0.06	5.2	229 Btuh
Duct load	No ducts assigned to this zone. (DLM of 0.000)					0 Btuh

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Manual J Winter Calculations

Residential Load - Component Details (continued)

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Building Type: User

2023-11-16

Room #2	Sensible Room Subtotal	2177 Btuh
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SYSTEM GROUPS (BLOCK LOADS)

Heating Loads For System(s):1 Block #1:Block1 Serving Rooms: 1	Block load	27729 Btuh
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Heating Loads For System(s):2 Block #2:Block2 Serving Rooms: 2	Block load	2177 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	29906 Btuh 0 Btuh 29906 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	30000 Btuh
2. Electric Heat Pump	#	8000 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Raulerson Res
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Building Type: User

2023-11-16

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 - Room by Room Component Details

Raulerson Res
369 SW Pinehurst Dr
Lake City, FL

Project Title:
231200 Raulerson Res

2023-11-16

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

Component Loads for Room #1: Main

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, 0.35	No	No	N		1.5ft	0.7ft	12.0	0.0	12.0	12	12	143	Btuh
2	2 NFRC	0.25, 0.35	No	No	N		10.0f	1.3ft	25.0	0.0	25.0	12	12	298	Btuh
3	2 NFRC	0.25, 0.35	No	No	N		10.0f	0.7ft	20.0	0.0	20.0	12	12	238	Btuh
4	2 NFRC	0.25, 0.35	No	No	N		1.5ft	1.7ft	9.0	0.0	9.0	12	12	107	Btuh
5	2 NFRC	0.25, 0.35	No	No	N		1.5ft	5.0ft	30.0	0.0	30.0	12	12	357	Btuh
6	2 NFRC	0.25, 0.35	No	No	E		1.5ft	11.0f	6.0	0.0	6.0	12	31	185	Btuh
7	2 NFRC	0.25, 0.35	No	No	E		1.5ft	5.0ft	30.0	0.0	30.0	12	31	923	Btuh
8	2 NFRC	0.25, 0.35	No	No	S		6.0ft	1.5ft	37.5	37.5	0.0	12	14	447	Btuh
9	2 NFRC	0.25, 0.35	No	No	S		10.0f	1.5ft	7.8	7.8	0.0	12	14	93	Btuh
10	2 NFRC	0.25, 0.35	No	No	S		10.0f	1.5ft	6.7	6.7	0.0	12	14	79	Btuh
11	2 NFRC	0.25, 0.35	No	No	S		10.0f	0.3ft	4.3	4.3	0.0	12	14	52	Btuh
12	2 NFRC	0.25, 0.35	No	No	S		6.0ft	1.5ft	15.0	15.0	0.0	12	14	179	Btuh
13	2 NFRC	0.25, 0.35	No	No	S		1.5ft	1.5ft	15.0	15.0	0.0	12	14	179	Btuh
14	2 NFRC	0.25, 0.35	No	No	W		1.5ft	5.0ft	20.0	0.0	20.0	12	31	615	Btuh
15	2 NFRC	0.25, 0.35	No	No	W		1.5ft	4.0ft	16.0	0.0	16.0	12	31	492	Btuh
16	2 NFRC	0.25, 0.35	No	No	W		1.5ft	3.0ft	4.5	0.0	4.5	12	31	138	Btuh
Window Total									259 (sqft)					4523 Btuh	
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext					0.09	13.0/0.0	18.0			2.3		41 Btuh		
2	Frame - Wood - Ext					0.09	13.0/0.0	18.0			2.3		41 Btuh		
3	Frame - Wood - Ext					0.09	13.0/0.0	102.0			2.3		231 Btuh		
4	Frame - Wood - Ext					0.09	13.0/0.0	18.0			2.3		41 Btuh		
5	Frame - Wood - Ext					0.09	13.0/0.0	94.7			2.3		214 Btuh		
6	Frame - Wood - Ext					0.09	13.0/0.0	78.0			2.3		177 Btuh		
7	Frame - Wood - Ext					0.09	13.0/0.0	18.0			2.3		41 Btuh		
8	Frame - Wood - Ext					0.09	13.0/0.0	73.5			2.3		166 Btuh		
9	Frame - Wood - Ext					0.09	13.0/0.0	267.0			2.3		604 Btuh		
10	Frame - Wood - Adj					0.09	13.0/0.0	172.7			1.7		291 Btuh		
11	Frame - Wood - Ext					0.09	13.0/0.0	21.0			2.3		48 Btuh		
12	Frame - Wood - Ext					0.09	13.0/0.0	64.5			2.3		146 Btuh		
13	Frame - Wood - Ext					0.09	13.0/0.0	36.0			2.3		81 Btuh		
14	Frame - Wood - Ext					0.09	13.0/0.0	22.2			2.3		50 Btuh		
15	Frame - Wood - Ext					0.09	13.0/0.0	36.0			2.3		81 Btuh		
16	Frame - Wood - Ext					0.09	13.0/0.0	39.0			2.3		88 Btuh		
17	Frame - Wood - Ext					0.09	13.0/0.0	45.0			2.3		102 Btuh		
18	Frame - Wood - Ext					0.09	13.0/0.0	104.5			2.3		237 Btuh		
19	Frame - Wood - Ext					0.09	13.0/0.0	15.0			2.3		34 Btuh		
20	Frame - Wood - Ext					0.09	13.0/0.0	119.0			2.3		269 Btuh		
Wall Total								1362 (sqft)					2983 Btuh		
Doors	Type					Area (sqft)			HTM		Load				
1	Insulated - Exterior					13.3			12.0		160 Btuh				
2	Insulated - Garage					17.8			12.0		213 Btuh				
3	Insulated - Exterior					10.0			12.0		120 Btuh				
Door Total						41 (sqft)					493 Btuh				
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load		
1	Vented Attic/DarkShingle					0.025	38.0/0.0	1531.0			1.37		2098 Btuh		
2	Knee wall to attic/DarkShingle					0.025	38.0/0.0	44.0			1.37		60 Btuh		
Ceiling Total								1575 (sqft)					2159 Btuh		
Floors	Type					R-Value		Size			HTM		Load		
						Energy Gauge 7 USRCZB v7.5.00 <th colspan="3">1586 (ft-perimeter)<th colspan="2">0.0<th colspan="2"></th></th></th>		1586 (ft-perimeter) <th colspan="2">0.0<th colspan="2"></th></th>			0.0 <th colspan="2"></th>				
1	Slab On Grade					0.0							0 Btuh		
Floor Total								1586.0 (sqft)					0 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Raulerson Res
369 SW Pinehurst Dr
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
231200 Raulerson Res

2023-11-16

	Zone Envelope Subtotal:					10158 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.23	14274	0.94	60.0	1251 Btuh
Internal gain		Occupants	Btuh/occupant	Appliance		Load
		1	X 230 +	3400		3630 Btuh
	Sensible Envelope Load:					15040 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.357)					5374 Btuh
	Sensible Zone Load					20413 Btuh

Component Loads for Room #2: bonus Room

Window	Type*						Overhang		Window Area(sqft)			HTM		Load
	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded	
17	2 NFRC	0.25, 0.35	No	No	No	S	1.5ft	3.0ft	15.0	15.0	0.0	12	14	179 Btuh
	Window Total									15 (sqft)			179 Btuh	
Walls	Type					U-Value	R-Value		Area(sqft)			HTM		Load
21	Frame - Wood - Ext					0.09	Cav/Sheath		89.0			2.3		201 Btuh
	Wall Total									89 (sqft)			201 Btuh	
Ceilings	Type/Color/Surface					U-Value	R-Value		Area(sqft)			HTM		Load
3	Vented Attic/DarkShingle					0.032	30.0/0.0		203.0			1.72		349 Btuh
4	SnglAsmb w airsp/DarkShingle					0.034	30.0/0.0		192.0			0.99		189 Btuh
5	Knee wall to attic/DarkShingle					0.032	30.0/0.0		259.0			1.72		445 Btuh
	Ceiling Total									654 (sqft)			984 Btuh	
Floors	Type					R-Value		Size			HTM		Load	
2	Raised Wood - Adj					19.0		285 (sqft)			0.7		200 Btuh	
3	Interior					0.0		55 (sqft)			0.0		0 Btuh	
	Floor Total									340.0 (sqft)			200 Btuh	
	Zone Envelope Subtotal:													1564 Btuh
Infiltration	Type	Wholehouse ACH				Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural	0.23				2720		0.06		3.9		82 Btuh		
Internal gain	Occupants					Btuh/occupant			Appliance		Load			
	1					X 230			+		0		230 Btuh	
	Sensible Envelope Load:													1876 Btuh
Duct load	No ducts assigned to this zone. (DGM of 0.000)													0 Btuh
	Sensible Zone Load													1876 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Raulerson Res
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Lake City, FL

Project Title:
231200 Raulerson Res

Climate:FL_GAINESVILLE_REGIONAL_A

2023-11-16

The following window Excursion will be assigned to the system loads.

Windows	July excursion for System 1	0 Btuh
	July excursion for System 2	12 Btuh
	Excursion Subtotal:	12 Btuh
Duct load		0 Btuh
	Sensible Excursion Load	12 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Raulerson Res
369 SW Pinehurst Dr
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Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
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2023-11-16

SYSTEM GROUPS (BLOCK LOADS)

Cooling Loads For System(s): 1 Block #1:Block1 Serving Zones: 1	Sensible Envelope Load	15040 Btuh
	Window Excursion	0 Btuh
	Sensible Duct Load (duct gain multiplier of 0.357)	5374 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Zone Sensible gain	20413 Btuh
	Latent infiltration/ventilation gain	2076 Btuh
	Latent duct gain	1116 Btuh
	Latent occupant gain	200 Btuh
	Latent other gain	0 Btuh
	Total block load	23806 Btuh

Cooling Loads For System(s): 2 Block #2:Block2 Serving Zones: 2	Sensible Envelope Load	1876 Btuh
	Window Excursion	12 Btuh
	Sensible Duct Load (duct gain multiplier of 0.000) (Includes 0 Btuh due to window excursion)	0 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Zone Sensible gain	1888 Btuh
	Latent infiltration/ventilation gain	136 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain	200 Btuh
	Latent other gain	0 Btuh
	Total block load	2223 Btuh

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Residential Load - Component Details (continued)

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2023-11-16

WHOLE HOUSE TOTALS		
Whole House Totals for Cooling	Sensible Envelope Load All Zones	16927 Btuh
	Sensible Duct Load	5374 Btuh
	Total Sensible Zone Loads	22301 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	22301 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2212 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1116 Btuh
	Latent occupant gain (2.0 people @ 200 Btuh per person)	400 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3728 Btuh
	TOTAL GAIN	26029 Btuh

EQUIPMENT		
1. Central Unit	#	30000 Btuh
2. Central Unit	#	8000 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(1/2))
(Ornt - compass orientation)



Version 8