(31)

Residential System Sizing Calculation

Summary

Ronnie & Chyrle Munson
1382 SW FAULKNER DRIVE
FT WHITE, FL 32038

Project Title:
Munson Residence

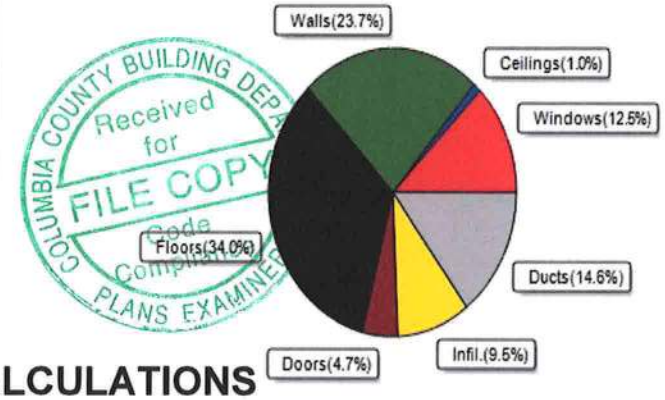
2/25/2021

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	**23431**	**Btuh**	**Total cooling load calculation**	**15993**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	100.0	23431	Sensible (SHR = 0.70)	92.1	11195
Heat Pump + Auxiliary(0.0kW)	100.0	23431	Latent	125.0	4798
			Total (Electric Heat Pump)	100.0	15993

WINTER CALCULATIONS

Winter Heating Load (for 1773 sqft)

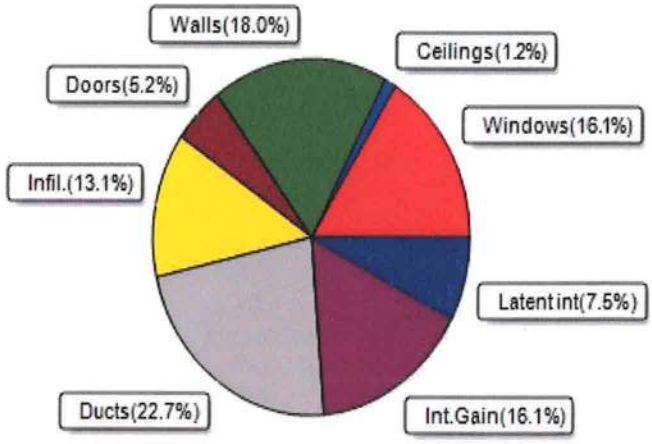
Load component			Load	
Window total	244	sqft	2932	Btuh
Wall total	1382	sqft	5552	Btuh
Door total	60	sqft	1104	Btuh
Ceiling total	1862	sqft	236	Btuh
Floor total	1773	sqft	7961	Btuh
Infiltration	51	cfm	2218	Btuh
Duct loss			3429	Btuh
Subtotal			**23431**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**23431**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 1773 sqft)

Load component			Load	
Window total	244	sqft	2575	Btuh
Wall total	1382	sqft	2883	Btuh
Door total	60	sqft	828	Btuh
Ceiling total	1862	sqft	189	Btuh
Floor total			0	Btuh
Infiltration	38	cfm	790	Btuh
Internal gain			2580	Btuh
Duct gain			2309	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			**12154**	**Btuh**
Latent gain(ducts)			1327	Btuh
Latent gain(infiltration)			1311	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1200	Btuh
Total latent gain			**3838**	**Btuh**
TOTAL HEAT GAIN			**15993**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 2/25/2021

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Ronnie & Chyrle Munson
1382 SW FAULKNER DRIVE
FT WHITE, FL 32038

Project Title:
Munson Residence
Building Type: User

2/25/2021

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 0.23	Vinyl	0.30	S	60.0	12.0	720 Btuh
2	2, NFRC 0.23	Vinyl	0.30	S	6.0	12.0	72 Btuh
3	2, NFRC 0.23	TIM	0.30	S	13.3	12.0	160 Btuh
4	2, NFRC 0.23	Vinyl	0.30	E	75.0	12.0	900 Btuh
5	2, NFRC 0.23	TIM	0.30	E	20.0	12.0	240 Btuh
6	2, NFRC 0.23	Vinyl	0.30	N	40.0	12.0	480 Btuh
7	2, NFRC 0.23	Vinyl	0.30	N	6.0	12.0	72 Btuh
8	2, NFRC 0.23	Vinyl	0.30	N	12.0	12.0	144 Btuh
9	2, NFRC 0.23	Vinyl	0.30	N	12.0	12.0	144 Btuh
	Window Total				244.3(sqft)		2932 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Steel	- Ext	(0.100)	19.0/0.0	344	4.02	1382 Btuh
2	Frame - Steel	- Ext	(0.100)	19.0/0.0	305	4.02	1225 Btuh
3	Frame - Steel	- Ext	(0.100)	19.0/0.0	373	4.02	1499 Btuh
4	Frame - Steel	- Adj	(0.100)	19.0/0.0	360	4.02	1446 Btuh
	Wall Total				1382(sqft)		5552 Btuh

Doors	Type	Storm	Ueff.	Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)	20	18.4	368 Btuh
2	Insulated - Garage,	n	(0.460)	20	18.4	368 Btuh
3	Insulated - Garage,	n	(0.460)	20	18.4	368 Btuh
	Door Total			60(sqft)		1104Btuh

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Unvent Attic/L/Metal	(0.025)	38.0/38.0	1862	0.1	236 Btuh
	Ceiling Total			1862(sqft)		236Btuh

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	168.7 ft(perim.)	47.2	7961 Btuh
	Floor Total			1773 sqft		7961 Btuh

	Envelope Subtotal:	17785 Btuh

Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.17	17730	1.00	50.6	2218 Btuh

Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.171)	3429 Btuh
All Zones	**Sensible Subtotal All Zones**	**23431 Btuh**

Manual J Winter Calculations

Residential Load - Component Details (continued)

Ronnie & Chyrle Munson
1382 SW FAULKNER DRIVE
FT WHITE, FL 32038

Project Title:
Munson Residence
Building Type: User

2/25/2021

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	23431 Btuh 0 Btuh 23431 Btuh

EQUIPMENT

1. Electric Heat Pump	#	23431 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)

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System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Ronnie & Chyrle Munson
1382 SW FAULKNER DRIVE
FT WHITE, FL 32038

Project Title:
Munson Residence

2/25/2021

Reference City: Gainesville, FL Temperature Difference: 19.0F(TMY3 99%) Humidity difference: 51gr.

Component Loads for Whole House

Window	Type* Panes	SHGC	U	InSh	IS	Ornt	Overhang Len	Hgt	Window Area(sqft) Gross	Shaded	Unshaded	HTM Shaded	Unshaded	Load
1	2 NFRC	0.23, 0.30		No	No	S	11.5f	0.5ft.	60.0	60.0	0.0	11	12	632 Btuh
2	2 NFRC	0.23, 0.30		No	No	S	11.5f	0.5ft.	6.0	6.0	0.0	11	12	63 Btuh
3	2 NFRC	0.23, 0.30		No	No	S	11.5f	0.5ft.	13.3	13.3	0.0	11	12	141 Btuh
4	2 NFRC	0.23, 0.30		No	No	E	17.5f	0.5ft.	75.0	75.0	0.0	11	28	790 Btuh
5	2 NFRC	0.23, 0.30		No	No	E	17.5f	0.5ft.	20.0	20.0	0.0	11	28	211 Btuh
6	2 NFRC	0.23, 0.30		No	No	N	11.5f	0.5ft.	40.0	0.0	40.0	11	11	422 Btuh
7	2 NFRC	0.23, 0.30		No	No	N	11.5f	0.5ft.	6.0	0.0	6.0	11	11	63 Btuh
8	2 NFRC	0.23, 0.30		No	No	N	11.5f	0.5ft.	12.0	0.0	12.0	11	11	126 Btuh
9	2 NFRC	0.23, 0.30		No	No	N	11.5f	0.5ft.	12.0	0.0	12.0	11	11	126 Btuh
	Window Total								244 (sqft)					2575 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Steel- Ext	0.10	19.0/0.0	344.0	2.1	739 Btuh
2	Frame - Steel- Ext	0.10	19.0/0.0	305.0	2.1	655 Btuh
3	Frame - Steel- Ext	0.10	19.0/0.0	373.3	2.1	802 Btuh
4	Frame - Steel- Adj	0.10	19.0/0.0	360.0	1.9	687 Btuh
	Wall Total			1382 (sqft)		2883 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	20.0	13.8	276 Btuh
2	Insulated - Garage	20.0	13.8	276 Btuh
3	Insulated - Garage	20.0	13.8	276 Btuh
	Door Total	60 (sqft)		828 Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Unvented Attic/Light/Metal	0.025	38.0/38.0	1861.6	0.10	189 Btuh
	Ceiling Total			1862 (sqft)		189 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	1773 (ft-perimeter)	0.0	0 Btuh
	Floor Total		1773.0 (sqft)		0 Btuh
			Envelope Subtotal:		6475 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.13	17730	1	38.0	790 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		6	X 230	+	1200	2580 Btuh
				Sensible Envelope Load:		9845 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.235)		2309 Btuh
				Sensible Load All Zones		**12154 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Ronnie & Chyrle Munson
1382 SW FAULKNER DRIVE
FT WHITE, FL 32038

Project Title: Munson Residence

Climate:FL_GAINESVILLE_REGIONAL_A

2/25/2021

WHOLE HOUSE TOTALS

	Sensible Envelope Load All Zones	**9845 Btuh**
	Sensible Duct Load	2309 Btuh
	Total Sensible Zone Loads	**12154 Btuh**
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
Whole House	**Total sensible gain**	**12154 Btuh**
Totals for Cooling	Latent infiltration gain (for 51 gr. humidity difference)	1311 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1327 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	**3838 Btuh**
	TOTAL GAIN	**15993 Btuh**

EQUIPMENT

1. Central Unit	#	15993 Btuh

*Key: Window types (Panes - 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)

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