Residential System Sizing Calculation

Summary

Norris - Keene Addition

Lake City, FL 32055

Project Title:
Norris - Keene Addition

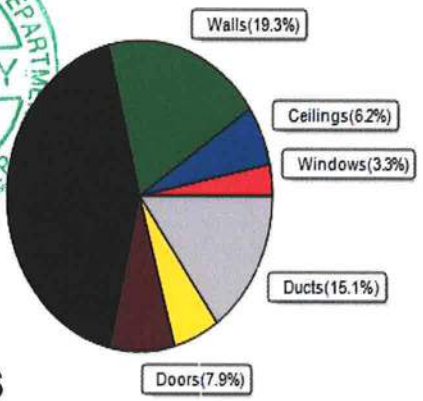
6/14/2021

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(54gr.)					
Winter design temperature(MJ8 99%)	33	F	Summer design temperature(MJ8 99%)	92	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	37	F	Summer temperature difference	17	F
Total heating load calculation	**10999**	**Btuh**	**Total cooling load calculation**	**9675**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	163.7	18000	Sensible (SHR = 0.75)	182.6	13500
Heat Pump + Auxiliary(0.0kW)	163.7	18000	Latent	197.3	4500
			Total (Electric Heat Pump)	186.1	18000

WINTER CALCULATIONS

Winter Heating Load (for 730 sqft)

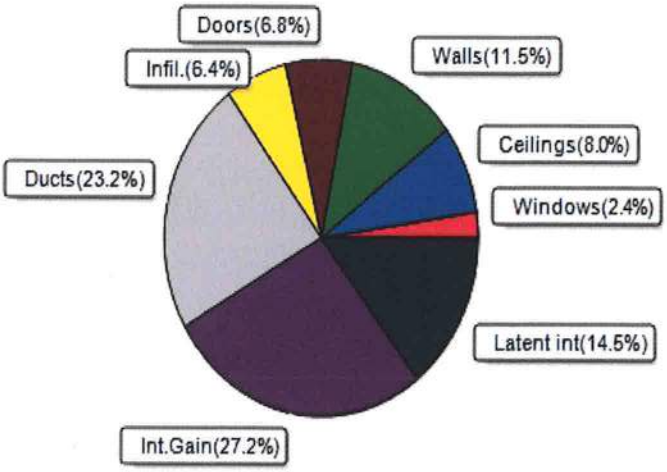
Load component			Load	
Window total	30	sqft	366	Btuh
Wall total	776	sqft	2126	Btuh
Door total	51	sqft	870	Btuh
Ceiling total	730	sqft	686	Btuh
Floor total	730	sqft	4689	Btuh
Infiltration	15	cfm	603	Btuh
Duct loss			1659	Btuh
Subtotal			**10999**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**10999**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 730 sqft)

Load component			Load	
Window total	30	sqft	230	Btuh
Wall total	776	sqft	1114	Btuh
Door total	51	sqft	658	Btuh
Ceiling total	730	sqft	778	Btuh
Floor total			0	Btuh
Infiltration	11	cfm	208	Btuh
Internal gain			2630	Btuh
Duct gain			1775	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			**7394**	**Btuh**
Latent gain(ducts)			472	Btuh
Latent gain(infiltration)			408	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1400	Btuh
Total latent gain			**2280**	**Btuh**
TOTAL HEAT GAIN			**9675**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY:
DATE:

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Norris - Keene Addition

Lake City, FL 32055

Project Title:
Norris - Keene Addition
Building Type: User

6/14/2021

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 F (MJ8 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft) X	HTM=	Load
1	2, NFRC 0.21	Metal	0.33	S	30.0	12.2	366 Btuh
	Window Total				30.0(sqft)		366 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.074)	19.0/1.0	234	2.74	641 Btuh
2	Frame - Wood	- Ext	(0.074)	19.0/1.0	177	2.74	484 Btuh
3	Frame - Wood	- Ext	(0.074)	19.0/1.0	222	2.74	608 Btuh
4	Frame - Wood	- Ext	(0.074)	19.0/1.0	143	2.74	392 Btuh
	Wall Total				776(sqft)		2126 Btuh

Doors	Type	Storm	Ueff.		Area X	HTM=	Load
1	Wood - Exterior,	n	(0.460)		18	17.0	303 Btuh
2	Insulated - Exterior,	n	(0.460)		33	17.0	567 Btuh
	Door Total				51(sqft)		870Btuh

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Vented Attic/L/Shing	(0.025)	38.0/0.0	730	0.9	686 Btuh
	Ceiling Total			730(sqft)		686Btuh

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	107.4 ft(perim.)	43.7	4689 Btuh
	Floor Total			730 sqft		4689 Btuh

	Envelope Subtotal:	8736 Btuh

Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.15	5838	1.00	14.9	603 Btuh

Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.178)	1659 Btuh
All Zones	**Sensible Subtotal All Zones**	**10999 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	10999 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	10999 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Norris - Keene Addition

Lake City, FL 32055

Project Title:
Norris - Keene Addition
Building Type: User

6/14/2021

EQUIPMENT

1. Electric Heat Pump	#	18000 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

Norris - Keene Addition

Lake City, FL 32055

Project Title:
Norris - Keene Addition

6/14/2021

Reference City: Gainesville, FL Temperature Difference: 17.0F(MJ8 99%) Humidity difference: 54gr.

Component Loads for Whole House

	Type*						Overhang		Window Area(sqft)			HTM		Load
Window	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded	
1	2 NFRC	0.21, 0.33	B-L	No		S	2.0ft	1.0ft	30.0	30.0	0.0	8	9	230 Btuh
	Window Total								30 (sqft)					230 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.07	19.0/1.0	234.2	1.4	336 Btuh
2	Frame - Wood - Ext	0.07	19.0/1.0	176.7	1.4	254 Btuh
3	Frame - Wood - Ext	0.07	19.0/1.0	222.0	1.4	319 Btuh
4	Frame - Wood - Ext	0.07	19.0/1.0	143.3	1.4	206 Btuh
	Wall Total			776 (sqft)		1114 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Wood - Exterior	17.8	12.9	229 Btuh
2	Insulated - Exterior	33.3	12.9	429 Btuh
	Door Total	51 (sqft)		658 Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/Light/Shingle	0.025	38.0/0.0	730.0	1.07	778 Btuh
	Ceiling Total			730 (sqft)		778 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	730 (ft-perimeter)	0.0	0 Btuh
	Floor Total		730.0 (sqft)		0 Btuh
			Envelope Subtotal:		2781 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.11	5838	1	11.2	208 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		1	X 230	+	2400	2630 Btuh
				Sensible Envelope Load:		5619 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.316)		1775 Btuh
				Sensible Load All Zones		**7394 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Norris - Keene Addition
Lake City, FL 32055

Project Title: Norris - Keene Addition
Climate:FL_GAINESVILLE_REGIONAL_A

6/14/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**5619 Btuh**
	Sensible Duct Load	1775 Btuh
	Total Sensible Zone Loads	**7394 Btuh**
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	**7394 Btuh**
	Latent infiltration gain (for 54 gr. humidity difference)	408 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	472 Btuh
	Latent occupant gain (1.0 people @ 200 Btuh per person)	200 Btuh
	Latent other gain	1200 Btuh
	Latent total gain	**2280 Btuh**
	TOTAL GAIN	**9675 Btuh**

EQUIPMENT

1. Central Unit	#	18000 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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