

# Residential System Sizing Calculation

## Summary

Stephen Seraballs  
SW Dawn Lane  
Lake City, FL 32024

Project Title:  
Stephen Seraballs

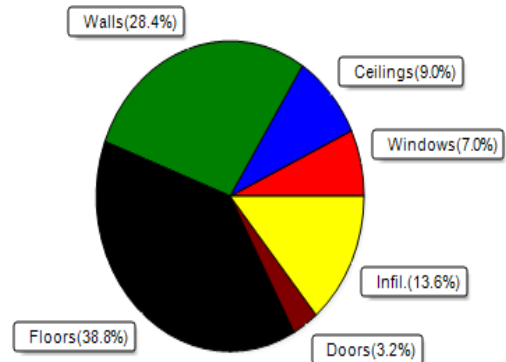
1/23/2023

|                                                                                                       |                   |                                       |                   |
|-------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------|-------------------|
| 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              |
| <b>Total heating load calculation</b>                                                                 | <b>23121 Btuh</b> | <b>Total cooling load calculation</b> | <b>18041 Btuh</b> |
| Submitted heating capacity                                                                            | % of calc Btuh    | Submitted cooling capacity            | % of calc Btuh    |
| Total (Electric Heat Pump)                                                                            | 100.0 23121       | Sensible (SHR = 0.70)                 | 89.1 12629        |
| Heat Pump + Auxiliary(0.0kW)                                                                          | 100.0 23121       | Latent                                | 140.2 5412        |
|                                                                                                       |                   | Total (Electric Heat Pump)            | 100.0 18041       |

## WINTER CALCULATIONS

Winter Heating Load (for 1950 sqft)

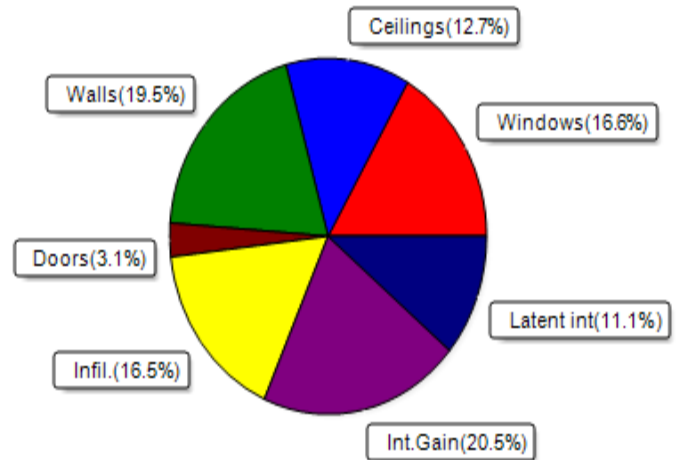
| Load component                  | Load              |
|---------------------------------|-------------------|
| Window total 112 sqft           | 1613 Btuh         |
| Wall total 2128 sqft            | 6578 Btuh         |
| Door total 40 sqft              | 736 Btuh          |
| Ceiling total 2047 sqft         | 2078 Btuh         |
| Floor total 1950 sqft           | 8968 Btuh         |
| Infiltration 72 cfm             | 3149 Btuh         |
| Duct loss                       | 0 Btuh            |
| <b>Subtotal</b>                 | <b>23121 Btuh</b> |
| Ventilation Ex:0 cfm; Sup:0 cfm | 0 Btuh            |
| <b>TOTAL HEAT LOSS</b>          | <b>23121 Btuh</b> |



## SUMMER CALCULATIONS

Summer Cooling Load (for 1950 sqft)

| Load component                        | Load              |
|---------------------------------------|-------------------|
| Window total 112 sqft                 | 3001 Btuh         |
| Wall total 2128 sqft                  | 3519 Btuh         |
| Door total 40 sqft                    | 552 Btuh          |
| Ceiling total 2047 sqft               | 2286 Btuh         |
| Floor total                           | 0 Btuh            |
| Infiltration 54 cfm                   | 1122 Btuh         |
| Internal gain                         | 3700 Btuh         |
| Duct gain                             | 0 Btuh            |
| Sens.Ventilation Ex:0 cfm; Sup:0 cfm  | 0 Btuh            |
| Blower Load                           | 0 Btuh            |
| <b>Total sensible gain</b>            | <b>14180 Btuh</b> |
| Latent gain(ducts)                    | 0 Btuh            |
| Latent gain(infiltration)             | 1861 Btuh         |
| Latent gain(ventilation)              | 0 Btuh            |
| Latent gain(internal/occupants/other) | 2000 Btuh         |
| <b>Total latent gain</b>              | <b>3861 Btuh</b>  |
| <b>TOTAL HEAT GAIN</b>                | <b>18041 Btuh</b> |



8th Edition

EnergyGauge® System Sizing

PREPARED BY: \_\_\_\_\_

DATE: 01 / 23 / 2023

# System Sizing Calculations - Winter

## Residential Load - Whole House Component Details

Stephen Seraballs  
SW Dawn Lane  
Lake City, FL 32024

Project Title:  
Stephen Seraballs  
Building Type: User

1/23/2023

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

### Component Loads for Whole House

| Window             | Panes/Type                                  | Frame      | U       | Orientation         | Area(sqft)       | X    | HTM= | Load       |
|--------------------|---------------------------------------------|------------|---------|---------------------|------------------|------|------|------------|
| 1                  | 2, NFRC 0.25                                | Vinyl      | 0.36    | S                   | 24.0             |      | 14.4 | 346 Btuh   |
| 2                  | 2, NFRC 0.25                                | Vinyl      | 0.36    | E                   | 12.0             |      | 14.4 | 173 Btuh   |
| 3                  | 2, NFRC 0.25                                | TIM        | 0.36    | E                   | 40.0             |      | 14.4 | 576 Btuh   |
| 4                  | 2, NFRC 0.25                                | Vinyl      | 0.36    | N                   | 24.0             |      | 14.4 | 346 Btuh   |
| 5                  | 2, NFRC 0.25                                | Vinyl      | 0.36    | W                   | 12.0             |      | 14.4 | 173 Btuh   |
| Window Total       |                                             |            |         |                     | 112.0(sqft)      |      |      | 1613 Btuh  |
| Walls              | Type                                        | Ornt.      | Ueff.   | R-Value<br>(Cav/Sh) | Area             | X    | HTM= | Load       |
| 1                  | Frame - Wood                                | - Ext      | (0.077) | 19.0/0.0            | 736              |      | 3.09 | 2275 Btuh  |
| 2                  | Frame - Wood                                | - Ext      | (0.077) | 19.0/0.0            | 308              |      | 3.09 | 952 Btuh   |
| 3                  | Frame - Wood                                | - Ext      | (0.077) | 19.0/0.0            | 736              |      | 3.09 | 2275 Btuh  |
| 4                  | Frame - Wood                                | - Ext      | (0.077) | 19.0/0.0            | 348              |      | 3.09 | 1076 Btuh  |
| Wall Total         |                                             |            |         |                     | 2128(sqft)       |      |      | 6578 Btuh  |
| Doors              | Type                                        | Storm      | Ueff.   |                     | Area             | X    | HTM= | Load       |
| 1                  | Insulated - Exterior, n                     |            | (0.460) |                     | 20               |      | 18.4 | 368 Btuh   |
| 2                  | Insulated - Exterior, n                     |            | (0.460) |                     | 20               |      | 18.4 | 368 Btuh   |
| Door Total         |                                             |            |         |                     | 40(sqft)         |      |      | 736Btuh    |
| Ceilings           | Type/Color/Surface                          |            | Ueff.   | R-Value             | Area             | X    | HTM= | Load       |
| 1                  | Flat ceil/M/Metal                           |            | (0.025) | 38.0/0.0            | 2047             |      | 1.0  | 2078 Btuh  |
| Ceiling Total      |                                             |            |         |                     | 2047(sqft)       |      |      | 2078Btuh   |
| Floors             | Type                                        |            | Ueff.   | R-Value             | Size             | X    | HTM= | Load       |
| 1                  | Slab On Grade                               |            | (1.180) | 0.0                 | 190.0 ft(perim.) |      | 47.2 | 8968 Btuh  |
| Floor Total        |                                             |            |         |                     | 1950 sqft        |      |      | 8968 Btuh  |
| Envelope Subtotal: |                                             |            |         |                     |                  |      |      | 19973 Btuh |
| Infiltration       | Type                                        | Wholehouse | ACH     | Volume(cuft)        | Wall Ratio       | CFM= |      | Load       |
|                    | Natural                                     |            | 0.18    | 23400               | 1.00             | 71.9 |      | 3149 Btuh  |
| Duct load          | NA, R0.0, Supply(), Return() (DLM of 0.000) |            |         |                     |                  |      |      | 0 Btuh     |
| All Zones          | Sensible Subtotal All Zones                 |            |         |                     |                  |      |      | 23121 Btuh |

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

Stephen Seraballs  
SW Dawn Lane  
Lake City, FL 32024

Project Title:  
Stephen Seraballs  
Building Type: User

1/23/2023

### WHOLE HOUSE TOTALS

|                           |                                                   |            |
|---------------------------|---------------------------------------------------|------------|
| <b>Totals for Heating</b> | Subtotal Sensible Heat Loss                       | 23121 Btuh |
|                           | Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) | 0 Btuh     |
|                           | Total Heat Loss                                   | 23121 Btuh |

### EQUIPMENT

|                       |   |            |
|-----------------------|---|------------|
| 1. Electric Heat Pump | # | 23121 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)



Version 8

# System Sizing Calculations - Summer

## Residential Load - Whole House Component Details

Stephen Seraballs  
SW Dawn Lane  
Lake City, FL 32024

Project Title:  
Stephen Seraballs

1/23/2023

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 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   | S  |      | 1.0ft.      | 4.0ft. | 24.0              | 13.5   | 10.5                | 12     | 14        | 311            | Btuh      |        |  |
| 2             | 2 NFRC                                   | 0.25, 0.36 | No | No   | E  |      | 1.0ft.      | 5.0ft. | 12.0              | 0.0    | 12.0                | 12     | 31        | 371            | Btuh      |        |  |
| 3             | 2 NFRC                                   | 0.25, 0.36 | No | No   | E  |      | 1.0ft.      | 5.0ft. | 40.0              | 0.0    | 40.0                | 12     | 31        | 1238           | Btuh      |        |  |
| 4             | 2 NFRC                                   | 0.25, 0.36 | No | No   | N  |      | 1.0ft.      | 4.0ft. | 24.0              | 0.0    | 24.0                | 12     | 12        | 290            | Btuh      |        |  |
| 5             | 2 NFRC                                   | 0.25, 0.36 | No | No   | W  |      | 1.0ft.      | 4.0ft. | 12.0              | 0.0    | 12.0                | 12     | 31        | 371            | Btuh      |        |  |
|               | Excursion                                |            |    |      |    |      |             |        |                   |        |                     |        |           | 419            | Btuh      |        |  |
|               | Window Total                             |            |    |      |    |      |             |        | 112 (sqft)        |        |                     |        |           | 3001 Btuh      |           |        |  |
| Walls         | Type                                     |            |    |      |    |      | U-Value     |        | R-Value           |        | Area(sqft)          |        | HTM       |                | Load      |        |  |
|               |                                          |            |    |      |    |      |             |        | Cav/Sheath        |        |                     |        |           |                |           |        |  |
| 1             | Frame - Wood - Ext                       |            |    |      |    |      | 0.08        |        | 19.0/0.0          |        | 736.0               |        | 1.7       |                | 1217      | Btuh   |  |
| 2             | Frame - Wood - Ext                       |            |    |      |    |      | 0.08        |        | 19.0/0.0          |        | 308.0               |        | 1.7       |                | 509       | Btuh   |  |
| 3             | Frame - Wood - Ext                       |            |    |      |    |      | 0.08        |        | 19.0/0.0          |        | 736.0               |        | 1.7       |                | 1217      | Btuh   |  |
| 4             | Frame - Wood - Ext                       |            |    |      |    |      | 0.08        |        | 19.0/0.0          |        | 348.0               |        | 1.7       |                | 575       | Btuh   |  |
|               | Wall Total                               |            |    |      |    |      |             |        |                   |        | 2128 (sqft)         |        |           |                | 3519 Btuh |        |  |
| Doors         | Type                                     |            |    |      |    |      |             |        |                   |        | Area (sqft)         |        | HTM       |                | Load      |        |  |
|               |                                          |            |    |      |    |      |             |        |                   |        |                     |        |           |                |           |        |  |
| 1             | Insulated - Exterior                     |            |    |      |    |      |             |        |                   |        | 20.0                |        | 13.8      |                | 276       | Btuh   |  |
| 2             | Insulated - Exterior                     |            |    |      |    |      |             |        |                   |        | 20.0                |        | 13.8      |                | 276       | Btuh   |  |
|               | Door Total                               |            |    |      |    |      |             |        |                   |        | 40 (sqft)           |        |           |                | 552 Btuh  |        |  |
| Ceilings      | Type/Color/Surface                       |            |    |      |    |      | U-Value     |        | R-Value           |        | Area(sqft)          |        | HTM       |                | Load      |        |  |
|               |                                          |            |    |      |    |      |             |        |                   |        |                     |        |           |                |           |        |  |
| 1             | Vented Attic/Med/Metal/RB                |            |    |      |    |      | 0.025       |        | 38.0/0.0          |        | 2047.0              |        | 1.12      |                | 2286      | Btuh   |  |
|               | Ceiling Total                            |            |    |      |    |      |             |        |                   |        | 2047 (sqft)         |        |           |                | 2286 Btuh |        |  |
| Floors        | Type                                     |            |    |      |    |      |             |        | R-Value           |        | Size                |        | HTM       |                | Load      |        |  |
|               |                                          |            |    |      |    |      |             |        |                   |        |                     |        |           |                |           |        |  |
| 1             | Slab On Grade                            |            |    |      |    |      |             |        | 0.0               |        | 1950 (ft-perimeter) |        | 0.0       |                | 0         | Btuh   |  |
|               | Floor Total                              |            |    |      |    |      |             |        |                   |        | 1950.0 (sqft)       |        |           |                | 0 Btuh    |        |  |
|               | Envelope Subtotal:                       |            |    |      |    |      |             |        |                   |        |                     |        |           | 9358 Btuh      |           |        |  |
| Infiltration  | Type                                     |            |    |      |    |      | Average ACH |        | Volume(cuft)      |        | Wall Ratio          |        | CFM=      |                | Load      |        |  |
|               | Natural                                  |            |    |      |    |      | 0.14        |        | 23400             |        | 1                   |        | 53.9      |                | 1122 Btuh |        |  |
| Internal gain |                                          |            |    |      |    |      | Occupants   |        | Btuh/occupant     |        |                     |        | Appliance |                | Load      |        |  |
|               |                                          |            |    |      |    |      | 10          |        | X 230             |        | +                   |        | 1400      |                | 3700 Btuh |        |  |
|               | Sensible Envelope Load:                  |            |    |      |    |      |             |        |                   |        |                     |        |           | 14180 Btuh     |           |        |  |
| Duct load     | NA, Supply(R0.0-None), Return(R0.0-None) |            |    |      |    |      |             |        |                   |        |                     |        |           | (DGM of 0.000) |           | 0 Btuh |  |
|               | Sensible Load All Zones                  |            |    |      |    |      |             |        |                   |        |                     |        |           | 14180 Btuh     |           |        |  |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

Stephen Seraballs  
SW Dawn Lane  
Lake City, FL 32024

Project Title:  
Stephen Seraballs

Climate:FL\_GAINESVILLE\_REGIONAL\_A

1/23/2023

### WHOLE HOUSE TOTALS

|                                           |                                                           |                   |
|-------------------------------------------|-----------------------------------------------------------|-------------------|
| <b>Whole House<br/>Totals for Cooling</b> | <b>Sensible Envelope Load All Zones</b>                   | <b>14180 Btuh</b> |
|                                           | Sensible Duct Load                                        | 0 Btuh            |
|                                           | <b>Total Sensible Zone Loads</b>                          | <b>14180 Btuh</b> |
|                                           | Sensible ventilation (Ex:0 cfm; Sup:0 cfm)                | 0 Btuh            |
|                                           | Blower                                                    | 0 Btuh            |
|                                           | <b>Total sensible gain</b>                                | <b>14180 Btuh</b> |
|                                           | Latent infiltration gain (for 51 gr. humidity difference) | 1861 Btuh         |
|                                           | Latent ventilation gain                                   | 0 Btuh            |
|                                           | Latent duct gain                                          | 0 Btuh            |
|                                           | Latent occupant gain (10.0 people @ 200 Btuh per person)  | 2000 Btuh         |
|                                           | Latent other gain                                         | 0 Btuh            |
|                                           | <b>Latent total gain</b>                                  | <b>3861 Btuh</b>  |
|                                           | <b>TOTAL GAIN</b>                                         | <b>18041 Btuh</b> |

### EQUIPMENT

|                 |   |            |
|-----------------|---|------------|
| 1. Central Unit | # | 18041 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(½))  
(Ornt - compass orientation)



Version 8