

EarthLinked® SYSTEM SIZING GUIDE AIR HEATING



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This worksheet applies to systems using a DX air handler or cased coil to supply heat in a climate where the heating load of the structure dominates.

- Determine heating and cooling requirements of the structure, based on **ACCA Manual J (latest edition)** procedure using the **99.6% heating design temperature** and the **0.4% cooling design temperature** from the **EarthLinked® System Sizing and Performance Tables**. Elite RHVAC or Wrightsoft Right-J software is recommended.

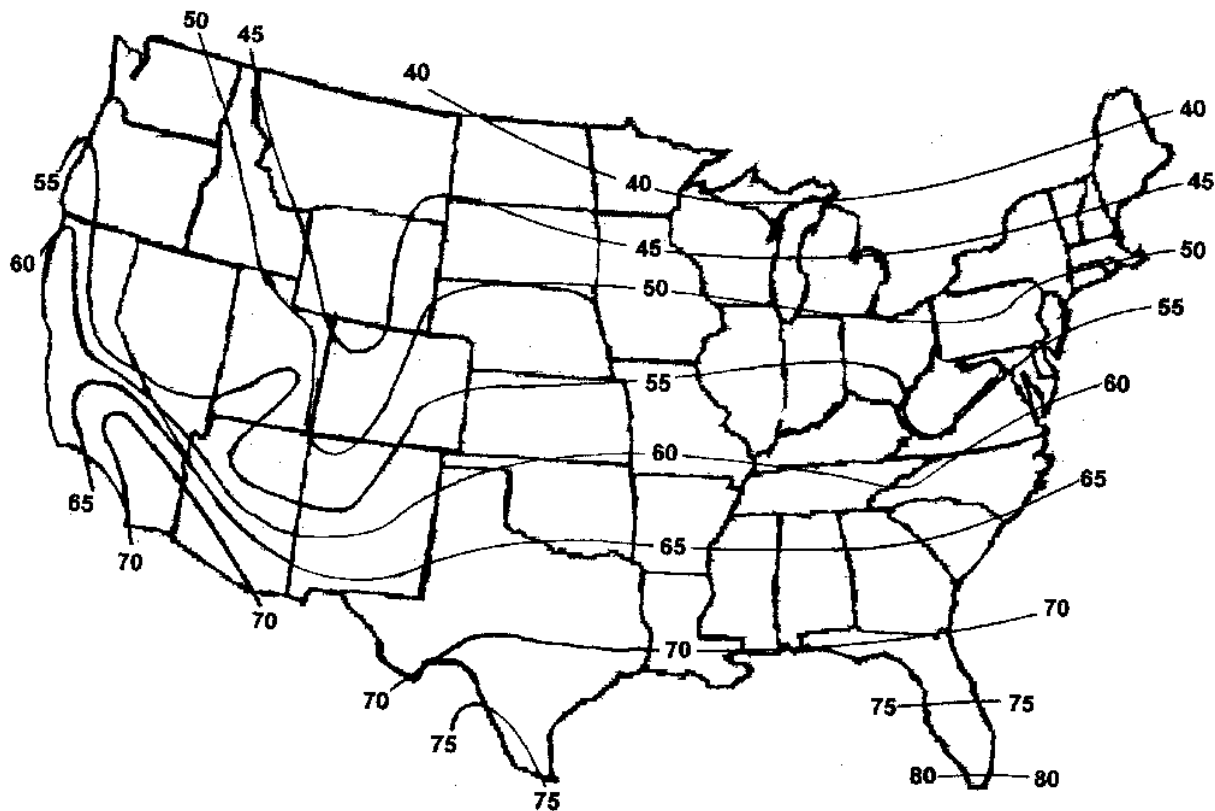
If domestic water heating by Heat Recovery Module (HRM) is part of the system, add 2,000 BTUH for each adult and teenager to the Design Heating Load.

If domestic water heating by Domestic Water Module (DWM) is part of the system, add 2,000 BTUH for each adult and teenager to the Design Heating and Cooling Loads.

Winter Design Temp: _____ °F Design Heating Load: _____ BTUH
Summer Design Temp: _____ °F Total Cooling Load: _____ BTUH
Sensible Cooling Load: _____ BTUH

- Determine local earth temperature from Temperature Map:

Site Location: _____ city _____ state/prov. Earth Temp.: _____ °F



EARTH TEMPERATURES IN CONTIGUOUS UNITED STATES AND SOUTHERN CANADA

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3. Locate the System Performance Data for **Air Heating** based on the following parameters:

- Local Earth Temperature: _____ °F (enter temperature from map)
- Earth Loop Configuration: _____ (V1, H1, etc. based upon available land area and geology of the earth at the site)

4.. The size of the system will be determined by the **heat output of the system at Design** from the appropriate Air Heating Performance Table selected based on steps 2 and 3 above. The initial selection of a system size (capacity) should have a heat output of at least 100% of the Design Heating Load in step 1. **Electric supplemental heat with a rating of at least 20% of the design heating load, in BTUH, is a required component of the system.**

Enter information below:

System Size	Heat Output @ Design (100% Load)	Design Heating Load
_____ Tons	_____ BTUH	_____ BTUH

Is Heating Output at least 100% Yes No

5. From the appropriate **Air Cooling** Performance Table determined by steps 2 and 3 the selected system size (in Tons), **enter the system size in Tons, DESIGN Total and DESIGN Sensible values below. Re-Enter the Total Cooling Load and Sensible Cooling Load values below.** They are the same as the values in step 1.

System Size	Design Cooling (100% Load)	Cooling Load
_____ Tons	Total: _____ BTUH	Total: _____ BTUH
	Sensible: _____ BTUH	Sensible: _____ BTUH

Check to see that the cooling outputs are 5% greater than the cooling loads.

Is DESIGN Total 5% greater than Total Cooling Load? YES NO

Is DESIGN Sensible 5% greater than Sensible Cooling Load? YES NO

Both Output values must be 5% greater than both Load values.

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6. Final system size is as follows:

System Size: _____ Tons

Compressor Unit Model: _____

Air Handler/Cased Coil Model: _____

Supplemental Electric Heat: _____ kW

Earth Loop Model: _____

Domestic Water Module Model: _____

Heat Recovery Module Model: _____

7. Balance Point

The balance point temperature for a heating system must be determined **if an outdoor thermostat is installed to initiate supplemental heat**. The outdoor thermostat set point is adjusted to be the balance point temperature.

For EarthLinked® R-410A systems two values must be known to determine balance point temperature:

- **Heating output capacity @ design point (100% Load)**, determined in 4.
- **Heating output capacity @ 5% Load**, determined by the procedure that follows.

Heating output capacity @ 5% Load is the MAXIMUM heating capacity taken from the performance table for the specific system selected.

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With the above information and the building heating load determined by the Manual J method, access the Earthlinked Technologies website at www.earthlinked.com to access the **Balance Point Calculator**.

Under the heading “**Dealer Info**”, scroll down and click on “**Dealers Login only**”.

Go to “**Dealer Resource Center**” and scroll down to “**Forms and Policies**”.

Click on “**Balance Point Calculator**” and you will see the following:

BALANCE POINT CALCULATOR

(Applies only to Heating—do not use for Cooling)

enter data

BUILDING LOAD AT DESIGN TEMP IN BTUH =

OUTDOOR DESIGN TEMP =

EQUIPMENT CAPACITY @ 5% LOAD VALUE =

EQUIPMENT CAPACITY @ 100% LOAD =

results

BALANCE POINT CAPACITY =

BALANCE POINT TEMPERATURE = 70°F INDOOR DESIGN (fixed)

Under “ENTER DATA”, input the values for Building Design Heating Load (from 1.); Outdoor Winter Design Temperature (from 1.); Heating Output (Equipment) Capacity @ 5% Load (from 7.above); and Heating Output (Equipment) Capacity@ Design (100% Load) (from 4.).

The resulting balance point capacity and temperature can be read under “RESULTS”.

Balance Point Capacity = _____ BTUH

Balance Point Temperature = _____ °F