EarthLinked®
SYSTEM SIZING GUIDE
RADIANT PANEL HYDRONIC HEATING

EARTHLINKED TECHNOLOGIES

This worksheet applies to systems using a hydronic water module (HWM) or a compressor equipped with an internal refrigerant to water heat exchanger, to supply heat in a climate where the heating load of the structure dominates.

1. 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.

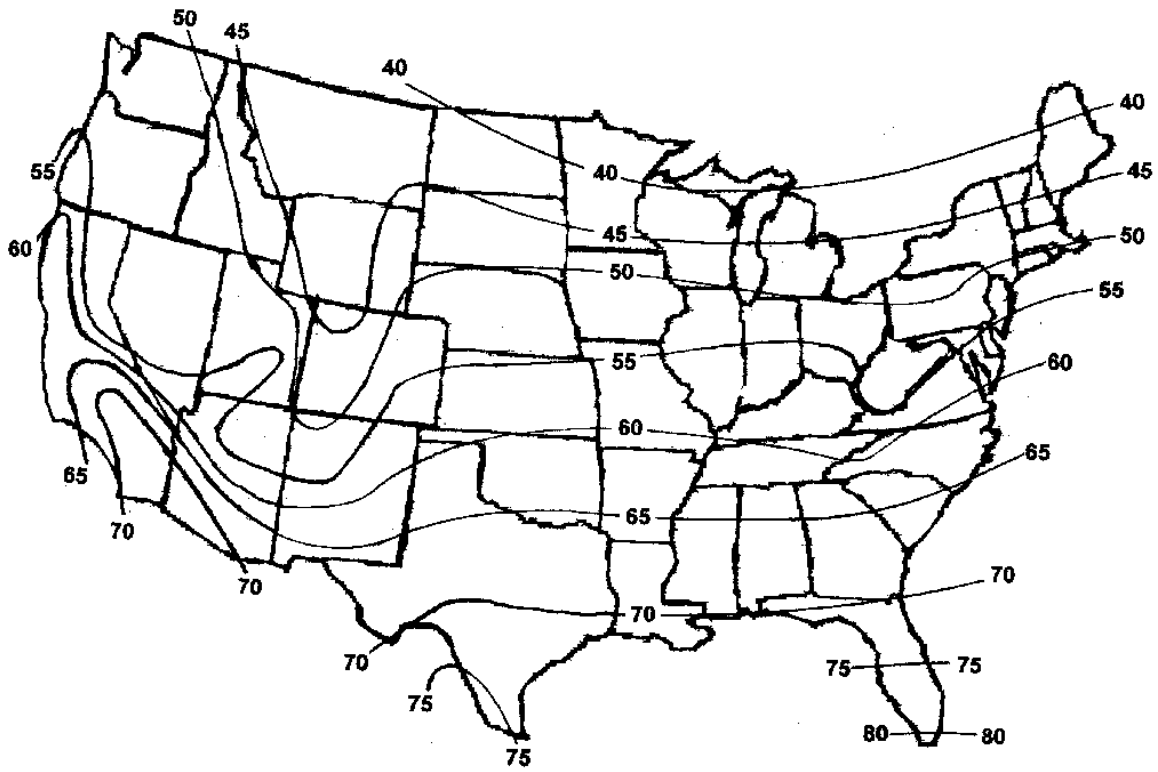
   If domestic water heating by Domestic Water Module (DWM) is part of the system, add 2,000 BTUH for each adult and teenager to the Design Heating and Cooling Loads.

   Winter Design Temp: _____ °F Design Heating Load: _____ BTUH

   Summer Design Temp: _____ °F Design Cooling Load: _____ BTUH

2. 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 **Hydronic 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 (100% Load)**, from the Hydronic Heating Performance Table selected, based on steps 2 and 3. The initial selection of a system size (capacity) should have an **Adjusted Heat Output** of at least 100% of the Design Heating Load in step 1. **Electrical supplemental heat of at least 20% of the design heating load, in BTUH, is a required component of the storage water heater. Enter information below:**

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

5. **Adjusted Heat Output**

   The Adjusted Heat Output is the Heat Output @ Design (100% Load) multiplied by the appropriate correction factor on the performance data page. The correction factor is based on the Leaving Water Temperature.

   Adjusted Heating Output Capacity = Heating Output @ Design _____ BTUH X

   Correction factor _____ = _____ BTUH

6. From the appropriate **Hydronic Water Cooling** (for a chilled water air handler) Performance Table of the selected system size (in Tons), **enter the Tons and Total Cooling at Design (100% Load) below.**

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

7. **Adjusted Cooling Output**

   The Adjusted Cooling Output is the Total Cooling Output @ Design (100% Load) multiplied by the appropriate correction factor on that performance data page. The correction factor is based on the Leaving Water Temperature.

   Check to verify that the Adjusted Cooling Output is 5% greater than the Total Cooling Load as determined in 1.

   Adjusted Cooling Output = Total Cooling Output @ Design _____ BTUH

   X Correction factor _____ = _____ BTUH

   Is Adjusted Cooling Output 5% greater than Total Cooling Load? ☐ YES ☐ NO

8. Final system size is as follows:

   System Size: _____ Tons Compressor Unit Model: _____

   Earth Loop Model: _____

   Domestic Water Module Model: _____

   Hydronic Water Module Model: _____

   Heat Recovery Module Model: _____

   Supplemental Electric Heat: _____ kW

9. **Balance Point Temperature**

   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:

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

   Heating output capacity 5% Load is the <u>MAXIMUM heating capacity</u> taken from the performance table for the specific system selected.

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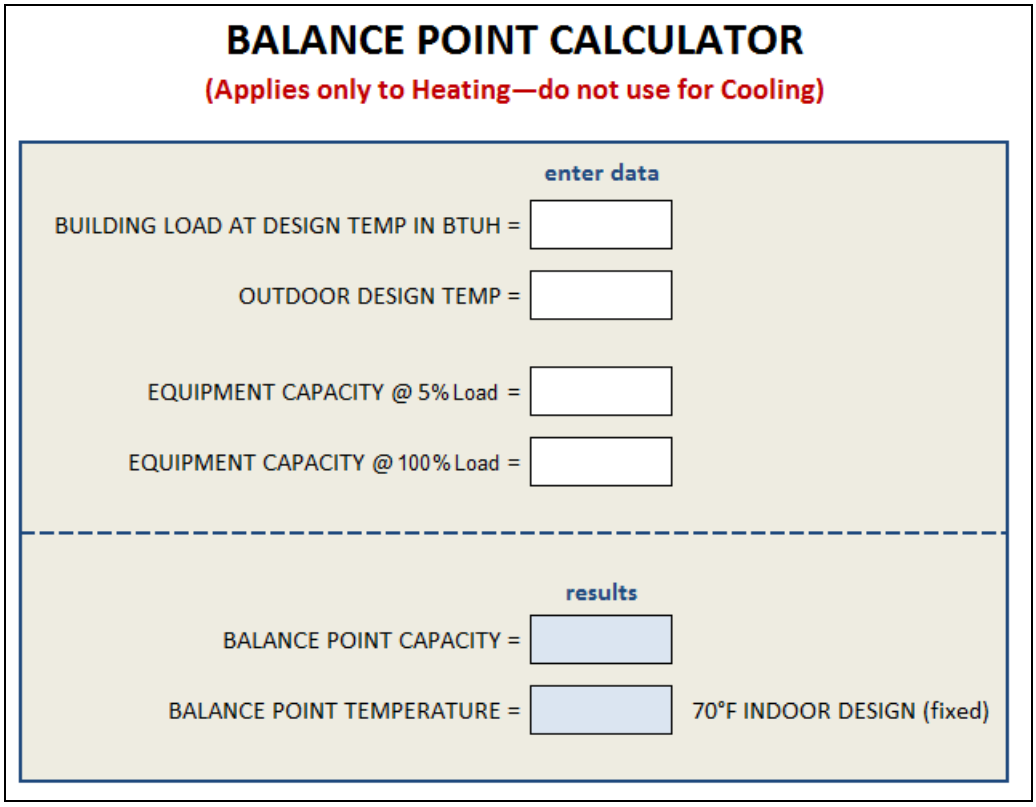
With the above information and the building heating load determined by the Manual J method, access the Earthlinked Technologies website at www.earthlinked.com to access the **Balance Point Calculator.**

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:



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 9. above); and Adjusted Heating Output (Equipment) Capacity@ Design (100% Load) (from 5.).

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

Balance Point Capacity = _____ **BTUH**

Balance Point Temperature = _____ **°F**