

A. Air Heating, 100% load

EarthLinked® SYSTEM SIZING GUIDE AIR HEATING, 100%



EARTHLINKED
TECHNOLOGIES

DOMINANT LOAD: HEATING

SIZING TO: 100% OF HEATING LOAD

1/3

➔ This worksheet applies to systems using a DX air handler or cased coil.

1) Heating and Cooling Loads:

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

Winter Design Temp: °F

Heating Load: BTUH

Summer Design Temp: °F

Total Cooling Load: BTUH

Sensible Cooling Load: BTUH

2) Local Earth Temperature

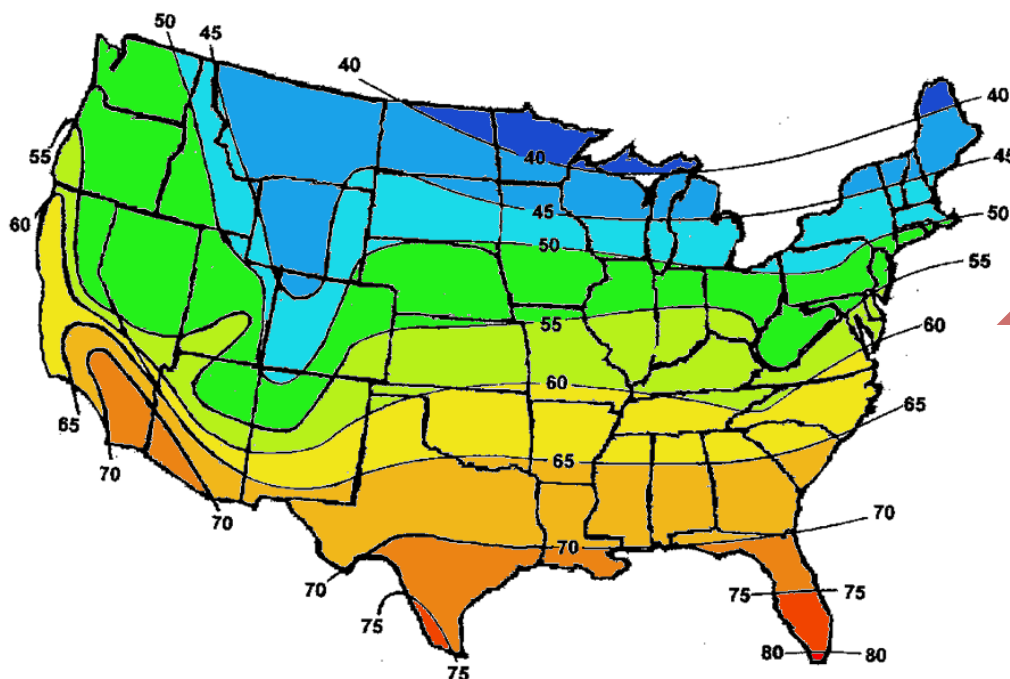
Determine local earth temperature from Temperature Map.

Site Location:

Earth Temp: °F

City

State/Prov.



ROUND DOWN
in heating

EARTH TEMPERATURES IN CONTIGUOUS UNITED STATES AND SOUTHERN CANADA

3) System parameters:

Locate the System Performance Data in the *Air Heating Performance Table (SSPT-section IV)* based on:

- a) Compressor type: _____ (Classic Series or Prime Series)
 b) Earth Temperature _____ (see step 2)
 c) Earth Loop Configuration _____ (H1B, V1, D1, V1.5, D1.5, V2 or D2 based upon available land area and geology of the earth at the site)

4) System Size and Heating Output:

- Size of the system determined by: **Heating Output (Design Capacity) of the system.**

Use the appropriate *Air Heating Performance Table (SSPT-section IV)* selected based on step 3 above.

- The initial selection of a system size (nominal capacity) should have a **Heating Output of at least 100% of the Heating Load** in step 1.

Supplemental heat with a rating of at least 20% of the heating load, in BTUH, is a required component of the system.

System Size (nominal capacity)	Heating Output (Design Capacity @ 100% Load)	Heating Load (see Step 1)
_____ kBTUH	_____ BTUH	_____ BTUH

Is Heating Output at least 100% of the heating load? YES NO

Does the performance table require that the unit be equipped with an HPE? YES NO

*(HPE: Heating Performance Enhancement Kit is a required component to enhance heating performance for Horizontal loops where ground temperature is 70°F or higher. It is **recommended for any applications where automatic change-over or switching between heating and cooling occurs within a 24-hour period**)*

5) Cooling Outputs:

From the appropriate *Air Cooling Performance Table (SSPT-section IV)* determine the Total and Sensible Cooling Outputs using:

- System parameters (see Step 3)
 ➤ System size (see Step 4)

Re-Enter the system size (see Step 4) and the Total Cooling Load and Sensible Cooling Load values (see Step 1) below:

System Size (nominal capacity)	Cooling Output (Design Capacities)	Cooling Loads (see Step 1)
_____ kBTUH	TOTAL: _____ BTUH	TOTAL: _____ BTUH
	SENSIBLE: _____ BTUH	SENSIBLE: _____ BTUH

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

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

Does the performance table require that the unit be equipped with an HCM? YES NO

(HCM: Hybrid Cooling Module is a required component to enhance cooling mode system efficiency and performance when required by the performance tables or in any Cooling dominant application where soil thermal conductivity is unknown or known to be less than 1 BTU/hr.ft.°F)

6) Selected system:

System Size: kBTUH Compressor Unit Model:

Air Handler/Cased Coil Model:

Supplemental Electric Heat Kit: 5kW 10kW 15kW 20kW (must be ≥ 20% heat load)

Earth Loop Model:

Domestic Water Heating: (Heat Recovery Module Model)

Heating Performance Enhancement Kit (HPE):

Hybrid Cooling Module (HCM):

7) Balance Point:

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

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

- **Design capacity @ 100% Load** (see Step 4).
- **Maximum capacity** (the MAXIMUM heating capacity taken from the *Air Heating Performance Table (SSPT-section IV)* for the specific system selected. Row right above the “Design capacity @ 100% Load”)

To access the Balance Point Calculator: go to www.earthlinked.com/dealers. Sign in under the “EXISTING USERS LOG IN” section. The Calculator can be found in Technical Manuals: under the “Sizing Worksheets” header in the “Sheets & Forms” section. Download and open the excel file.

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

I N P U T	U.S. Units of Measure	
	BUILDING HEATING LOAD @DT =	<input type="text" value="37,500"/> BTUH <input type="button" value="RESET"/>
	OUTDOOR WINTER DESIGN TEMP = (ASHRAE 99.6% DB)	<input type="text" value="3.5"/> °F
	EQUIPMENT MAXIMUM CAPACITY =	<input type="text" value="60,400"/> BTUH
	EQUIPMENT DESIGN CAPACITY =	<input type="text" value="38,400"/> BTUH
O U T P U T	RESULTS	
	BALANCE POINT CAPACITY =	<input type="text" value="38,067.2"/> BTUH
	BALANCE POINT TEMPERATURE =	<input type="text" value="2.5"/> °F <small>70°F INDOOR DESIGN (fixed)</small>

Balance Point Capacity = BTUH

Balance Point Temperature = °F

See step 1 and Manual J

See step 7

See step 4