Slant/Fin

Hydronic Explorer

for

Android
Tablet/Phone

User Manual

DISCLAIMER

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Introduction

Slant/Fin's Hydronic Explorer performs fast and accurate heat loss calculations for hot water systems and helps you select the right boiler and baseboard for each job. It is easy to use, and, whether the job is to provide heating for a single room or for a multilevel structure, the procedure is always the same: you simply enter the required data for each room, and Hydronic Explorer does the rest.

Caution: This app is for use with hot water systems only. Do not use to size steam systems.

To further help you in selecting the right equipment, Hydronic Explorer provides links to Slant/Fin's website to view additional product information on boilers and baseboard by simply tapping the screen on your Android tablet or phone.

Note: This manual provides instructions and illustrations as they appear on the Android tablet. The procedures are the same when using the Android phone, but the illustrations may vary slightly.

Using Hydronic Explorer

Hydronic Explorer requires little computer experience. If you already know how to use your Android tablet or phone, you are well on your way. If necessary, refer to your Android tablet or phone literature for operation instructions.

Downloading Hydronic Explorer

Hydronic Explorer is intended for use on an Android tablet, version 3.0 (Honeycomb) or later and an Android phone, version 2.3 (Gingerbread) or later. To download the Hydronic Explorer app, use the Google *Play Store* app on your device and search for Slant/Fin Hydronic Explorer.

After you have downloaded the app, the Slant/Fin icon will appear on your screen.

Slant/Fin Icon

Starting Hydronic Explorer

Opening Hydronic Explorer

Tap on the Slant/Fin icon to open the Hydronic Explorer app.

The app opens displaying the *Home* screen containing title bars for *Heat Loss Calculator, Boiler Selector*, *Baseboard Selector*, and *Contact Us*. Tapping one of these bars will open the section indicated.

The bottom of the screen provides links to: Facebook, YouTube, and SlantFin.com.

Note: An internet connection is required to access the above links and the online pdf manual.

Home Screen

The three main sections allow you to do the following:

- *Heat Loss Calculator* – allows you calculate the heat loss of individual rooms, floors, and the entire structure, and it makes baseboard recommendations.

- *Boiler Selector* – allows you to select a boiler based on the heat loss. It provides information for each boiler and allows you to access Slant/Fin's website for additional details.

- *Baseboard Selector* – takes into consideration the heat loss and your length requirements for each room and identifies baseboards that meet your requirements. It provides information for each of the baseboards and allows you to access Slant/Fin's website for additional details.

Each of these three selections is discussed in this manual.
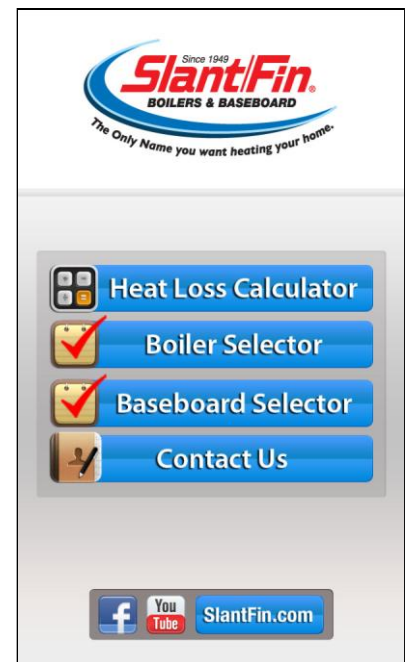
Navigating Hydronic Explorer

As indicated above, you can navigate to a desired section by tapping on one of bars in the *Home* screen.

At times, the **Back** button will be displayed allowing you to return to the previous screen or the **Home** button allowing you to return to the *Home* screen.

Accessing Instructions

Back & Home Buttons

When the **i** button is displayed in one of the upper corners, you can tap on it do display instructions. The instructions will also display the PDF icon in the upper right corner. You can tap on the icon to view the online user manual. An internet connection is required.
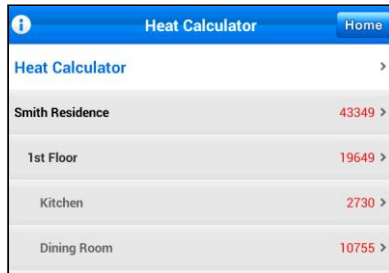
i (information) Button

Instructions – PDF Icon

Heat Loss Calculator

Purpose

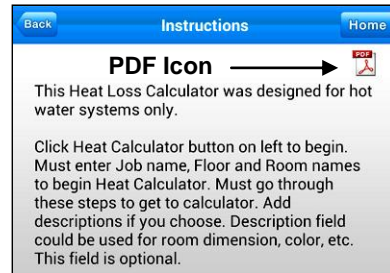The primary objective of Hydronic Explorer is to help you design a heating system that will provide the required heating comfort for a specific job. The first step towards this goal is to determine the heat loss (Btu/hour) using *Heat Loss Calculator*. Construction, outside temperature, and indoor temperature are significant factors in this calculation.

Heat Loss Calculator

The *Heat Loss Calculator* is your main work area where you use the following procedure:

1. Create a job by giving it a name.

2. Identify each floor by giving it a name.

3. Identify the rooms on each floor by naming each of them.

4. Select the rooms, one at a time, and enter the required data in each cell.

Repeat the above procedure if you want to enter more jobs.

Note: It is not necessary to identify all floors and rooms before you start entering data. You may identify a room, enter its data and then identify another room and so on.

You can use the Hydronic Explorer app to store multiple jobs. All data that you enter is automatically saved. You can also view and email each job summary. This procedure is discussed in *Section View Summary for this Job* in this manual.

### Adding a New Job

To create a new job, do the following:

1. Tap the **Heat Loss Calculator** button. The *Heat Calculator* screen is displayed with **Heat Calculator** as its title.

2. Tap the **Heat Calculator** bar. The *Create New Job* screen is displayed with a keyboard at the bottom of the screen.

3. Tap the **Job Title** and key in the name of the job.
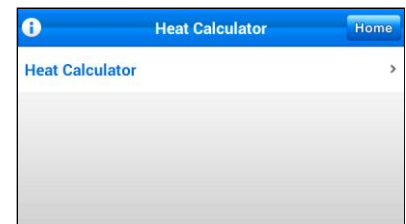
Heat Calculator Screen

4. You may choose to provide additional information in the **Description** cell. Tap the cell and key in the information. This is optional, and you are not required to make any entries into this cell.

5. The current date is displayed in the **Date** cell. Tap the **Date** cell and use the keyboard to change the date, if necessary.
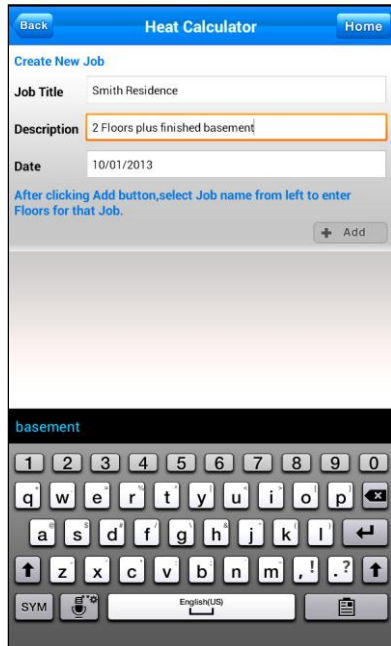

Create New Job Screen-1
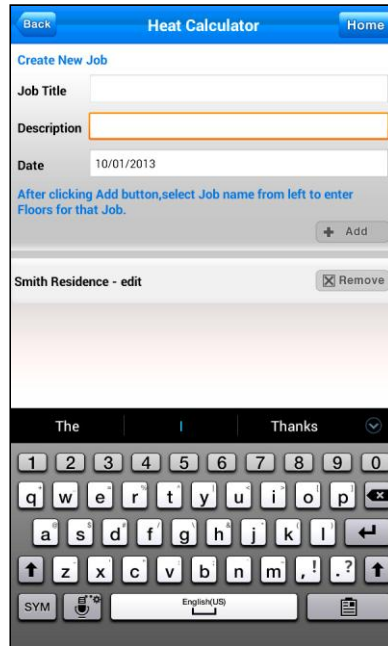
Create New Job Screen-2

6. Tap the **Add** button. The job will be displayed in the lower part of the screen with a **Remove** button. This button is used to delete the job. If you left the **Description** cell blank, the *Missing Field* screen will be displayed. Tap **OK** to continue or **Cancel** to return to *Create New Job*.

Missing Field Screen

7. Tap the **Back** button in the upper left corner of the screen. The *Heat Calculator* screen is displayed showing the job titles you created. Below the job title, **View Summary For This Job** is displayed. This is created for each job. Tap on it to display a summary of the data that you entered for a specific job. Completed illustrations are provided in *Section View Summary for this Job* in this manual.
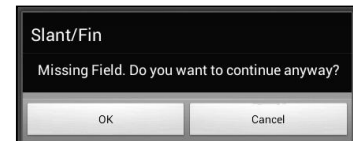
Heat Calculator Screen

Repeat the above procedure for each new job that you wish to add.

Adding a Floor

For each job, you must enter one or more floors as follows:

1. Tap the job name you created in the *Heat Calculator* screen. The *Floor* screen is displayed with the job name as its title.

2. Tap the **Floor Title** cell. Key in the floor name using the displayed keyboard.

3. You may choose to provide additional information in the **Description** cell. Tap the cell and key in the information. This is optional, and you are not required to make any entries into this cell.
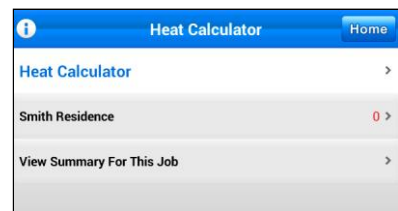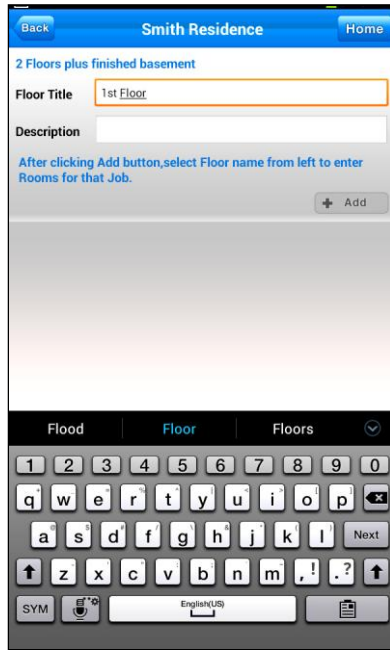
4. Tap the **Add** button. The floor will be displayed in the lower part of the screen with a **Remove** button. This button is used to delete the floor. If you left the **Description** cell blank, the *Missing Field* screen will be displayed. Tap **OK** to continue or **Cancel** to return to *Floor* screen.

Name a Floor

Multiple Floors

5. Repeat Steps 2 – 4 to add more floors.

6. Tap the **Back** button in the upper left corner of the screen. The *Heat Calculator* screen is displayed showing the job and floor titles.

Note that you can edit or delete any floor. The procedures are discussed in *Section Deleting/Editing Jobs, Floors and Rooms* in this manual.

Adding a Room
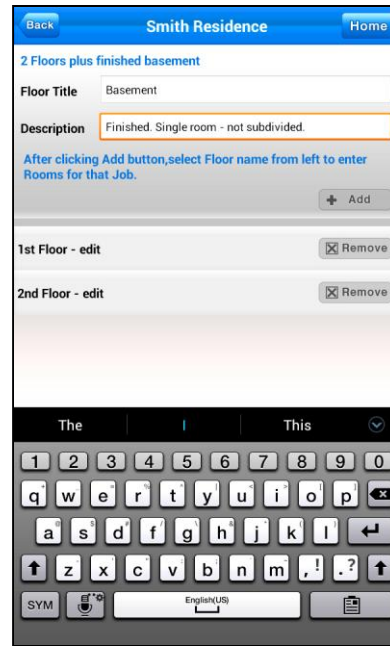
For each floor, you must enter one or more rooms as follows:

1. Tap a floor name in the *Heat Calculator* screen. The *Room* screen is displayed with the floor name as its title.
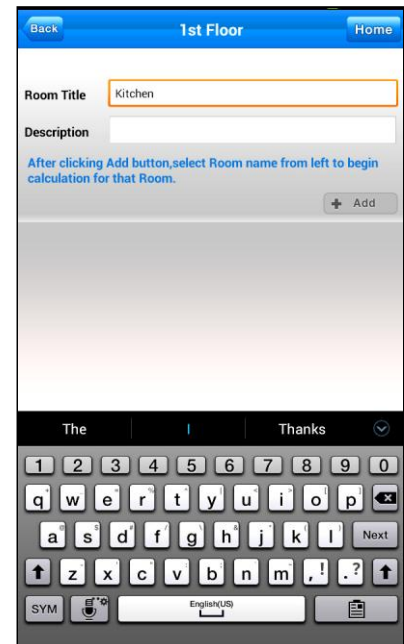
Name a Room

2. Tap the **Room Title** cell. Key in the room name using the displayed keyboard.

3. You may choose to provide additional information in the **Description** cell. Tap the cell and key in the information. This is optional, and you are not required to make any entries into this cell.

4. Tap the **Add** button. The room will be displayed in the lower part of the screen with a **Remove** button. This button is used to delete the room. If you left the **Description** cell blank, the *Missing Field* screen will be displayed. Tap **Ok** to continue or **Cancel** to return to *Floor* screen.

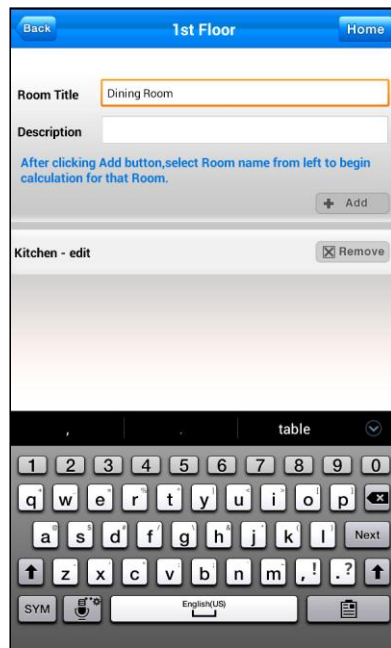5. Repeat Steps 2 – 4 to add more rooms to the same floor.

6. Tap the **Back** button in the upper left corner of the screen. The *Heat Calculator* screen is displayed showing the job, floor titles, and room titles. Repeat Steps 1 – 5 to add rooms to another floor.
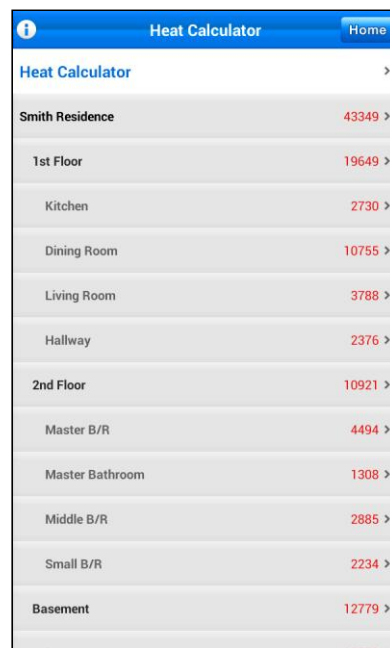
More Rooms	**Multiple Floors & Rooms**

Deleting/Editing Jobs, Floors and Rooms

You can delete jobs, floors and rooms or edit them such as changing names, correcting typos or adding information in the **Description** cell. Starting in the *Home* screen (tap the **Home** button in the upper right corner), tap on the **Heat Loss Calculator** button. The *Heat Calculator* screen is displayed.

To delete a job:

1. Tap on the **Heat Calculator** bar to delete a job. All jobs will be displayed.

2. Tap the **Remove** button of the job to be deleted.

To delete a floor:

1. Tap on a job name to delete a floor. All floors will be displayed.

2. Tap the **Remove** button of the floor to be deleted.

To delete a room:

1. Tap on a floor name to delete a room. All rooms on that floor will be displayed.

2. Tap the **Remove** button of the room to be deleted.

To edit a job:

1. Tap on the **Heat Calculator** bar to edit a job. All jobs will be displayed.

2. In the lower part of the screen, tap the bar containing the job name and the word **edit**. The **Add** button in the upper part of the screen is replaced with an **Update** button.

3. Tap the title or description cell and use the keyboard to make changes or enter data.

4. Tap the **Update** button.

To edit a floor:

1. Tap on a job name to edit a floor. All floors will be displayed.

2. In the lower part of the screen, tap the bar containing the floor name and the word **edit**. The **Add** button is replaced with an **Update** button.

3. Tap the title or description cell and use the keyboard to make changes or enter data.

4. Tap the **Update** button.

To edit a room:

1. Tap on a floor name to edit a room. All rooms on that floor will be displayed.

2. In the lower part of the screen, tap the bar containing the room name and the word **edit**. The **Add** button is replaced with an **Update** button.

3. Tap the title or description cell and use the keyboard to make changes or enter data.

4. Tap the **Update** button.
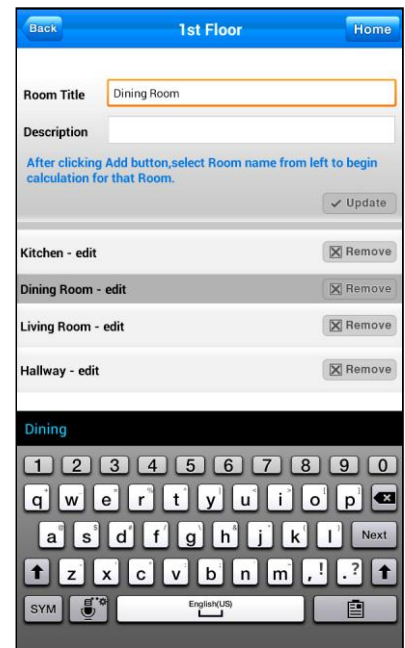
Update a Room

Heat Loss Calculations

The Hydronic Explorer app calculates heat loss for each room using data that you enter into each cell within the *Heat Loss* screen. Tapping on a cell will permit you to enter values using the displayed numeric keypad, or you may be presented with additional options. The top of the *Heat Loss* screen

displays the room's heat loss in BTU/HR. The bottom of the screen displays recommended baseboards and required lengths.

As you enter data for additional rooms, the app will update the heat loss for the floor and for the entire job.

Data Entry

Enter room data as follows:

1. Tap on a room in the *Heat Calculator* screen. The *Heat Loss* screen will be displayed where you will enter values into cells using the displayed numeric keypad. (If the keypad is not displayed, tap on a cell.) The two figures, below provide examples of entered values for a specific room.

2. Tap on each cell and provide the required values.

3. After making all entries or editing an individual cell, tap the **Done** button in the upper right corner to update the heat loss calculation for the room. The **Done** button will be replaced with the **Home** button.

Heat Loss Screen (Scroll to Top)   **Heat Loss Screen (Scroll to Bottom)**

Cell Descriptions

The following describes the cells in the *Heat Loss* screen.

Room Height, Room Length, and Room Width

Tap each cell and enter the values. All dimensions are in feet.

Doors & Glass (sq ft)

Tap the Glass (sq ft) or Door (sq ft) cells, click "Add Glass"/"Add Door" button and modify the title if desired. Then, enter the dimensions in inches then click Add. (If you want to delete a door or glass pane, after clicking the "Add Glass" or "Add Door" button, click the "Remove" button for the glass pane or door you want to remove.)

Door & Glass Factor

If you know the value, tap the white area in the cell and enter the value using the keyboard. Alternatively, tap the cell. The *Door & Glass Factor* frame is displayed. Tap on one of the items. The value is automatically inserted.

Door & Glass Factor

Exposed Wall Length

Determine the length of each wall in the room that is exposed to the outdoors and enter the total (in feet).

Exposed Wall Factor

If you know the value, tap the white area in the cell and enter the value using the keypad. Alternatively, do the following:

1. Tap on the cell. The *Exposed Wall Factor* screen is displayed.

2. Tap on the cell that describes the wall's construction. In our example, we chose **Frame**. A new screen representing the selected construction will be displayed.

3. Tap on a cell to select an option, or tap on **More options…** for more choices. The value will automatically be inserted.
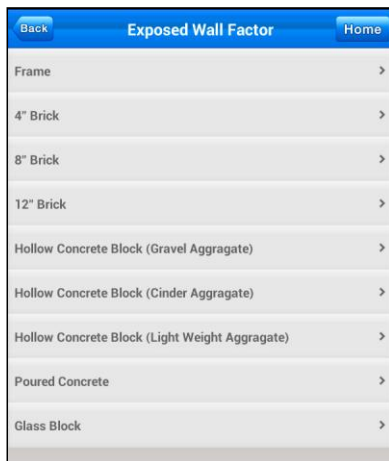
Exposed Wall Factor

Wall Factor - Screen
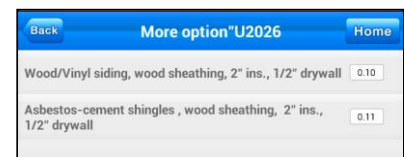
Wall Factor - More Options

Cold Partition Length

Determine the length of each wall in the room that is exposed to adjoining unheated areas of the building and enter the total (in feet).

*Note: This differs from **Exposed Wall Length**, above where the wall is exposed to the outside.*

Cold Partition Factor

If you know the value, tap the white area in the cell and enter the value using the keypad. Alternatively, tap the cell then tap on one of the options in the *Cold Partition Factor* screen. The proper value is automatically inserted.
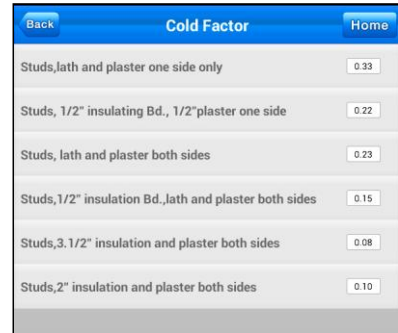
Cold Partition Factor

Ceiling Factor

If you know the value, tap the white area in the cell and enter the value using the keypad. Alternatively, do the following:

1. Tap on the cell. The *Ceiling Factor* screen is displayed.

2. Tap on a cell that describes the ceiling. In our example we chose **Attic Space Above**, which displayed a new screen with insulation options.

3. Tap on one of the options. The proper value is automatically inserted.

Ceiling Factor

Ceiling Factor – Attic Space Above

Floor Factor

If you know the value, tap the white area in the cell and enter the value using the keypad. Alternatively, do the following:

1. Tap on the cell. The *Floor Factor* screen is displayed.

2. Tap on a cell that describes the floor. In our example, we chose **Wood Over Enclosed UNHEATED Space**.

3. If you select one of the other options, another screen is displayed. Tap on one of the options. The proper value is automatically inserted.
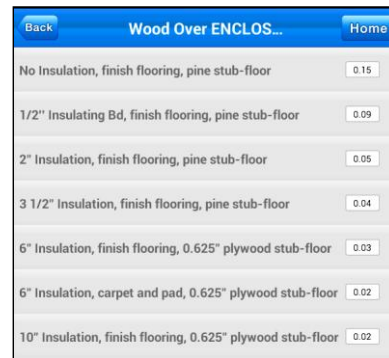
Floor Factor   **Floor Factor – Wood Over ENCLOSED**

Infiltration Factor

If you know the value, tap the white area in the cell and enter the value using the keypad. Alternatively, do the following:

1. Tap on the cell. The *Infiltration Factor* screen is displayed.

2. Tap on the cell that best describes the room. In our example we chose **Windows and Doors Weather-stripped OR With Storm Sash.** A new screen is displayed.

3. Tap on one of the options. In our example, we chose **Rooms with windows or exterior doors, one side only**. The proper value is automatically inserted.

Infiltration Factor   **Infiltration Factor – Windows and Doors**

Indoor Temperature

Tap the white area in the cell and enter the minimum indoor temperature (^{o}F) to be maintained by the heating system.

Outdoor Temperature

Tap the white area in the cell and enter the outdoor temperature (^{o}F). See *Section Outdoor Design Temperatures for Cities* in this manual.

Room Heat Loss and Baseboard Recommendations

At this point you have entered all of the necessary data for a specific room. Scroll to the top of the *Heat Loss* screen to read the heat loss in BTU/HR for the room. Scroll to the bottom of the *Heat Loss* screen to view recommended baseboard products and required lengths that will meet the room's heat requirements.

Note: For baseboard lengths, the app suggests actual "finned length" required. Actual output of element is 4 inches less (finned length) than actual tube length per piece of baseboard. This should be taken into account when deciding on final requirements of baseboard per room.

If you want to include any of the suggested baseboard products in the job summary, tap the adjacent (+). To remove them, tap the (–). To view the job summary, return to the *Heat Calculator* screen (tap the **Back** button on top of the screen) and select **View Summary for this Job**.

Viewing and selecting additional baseboard products and boilers are discussed in the following sections.

Room Heat Loss (BTU/HR)   **Recommended Baseboard Products**

As you enter data for additional rooms, you can view the heat loss for each room, floor, and the entire job in the *Heat Calculator* screen. Tap the **Back** button in the upper left corner to return to the *Heat Calculator* screen.

View Heat Loss

View Summary for this Job

A summary is automatically created for each job and is continuously updated as you enter or modify data. You can access the summary by tapping **View Summary for this Job** in the *Heat Calculator* screen.

Job Summary- Top

Job Summary- Bottom

Emailing the Summary

The app allows you to email the summary to anyone you choose including to your own computer for backing up your data. Tap the email icon in the lower right and enter the required information. An internet connection and email account are required.

Baseboard Selector

Purpose

As you determine the heat loss for each room, you can select baseboard that will provide the necessary heat for that room. This section will help you make that selection.

Heat Loss per Foot Calculation

For each room, you need to calculate the heat loss per foot (BTU/HR/FT). Do the following:

1. Determine the heat loss for a specific room. You can find this value on top of the *Heat Loss* screen for that room or in the *Heat Calculator* screen.

2. Divide the heat loss by the length of baseboard that you plan to install in that room. This is the heat loss per foot.

   Note: For baseboard lengths, the app suggests actual "finned length" required. Actual output of element is 4 inches less (finned length) than actual tube length per piece of baseboard. This should be taken into account when deciding on final requirements of baseboard per room.

Selecting Baseboard

Return to the *Home* screen and do the following:

1. Tap on **Baseboard Selector**. The *BaseBoard Selector* screen is displayed.

2. Tap on the **Heat Loss (BTU/HR/FT)** cell. The numeric keypad is displayed.

3. Enter the heat loss per foot that you calculated in the above procedure then tap the **Done** button in the upper right corner. A list of baseboard products that meet your requirements is displayed.

4. Tap on a baseboard product. In our example, we selected Fine/Line 30 FL-30. The *Fine/Line 30* screen is displayed. Some of the information provided includes:

   - Application (residential hot water heating)

   - Output

BaseBoard Selector Screen

- Height

- Available Lengths

- Depth

You can also tap the **Learn More** button to access additional information online. An internet connection is required.

| Baseboard Selections | Fine/Line 30 Baseboard |
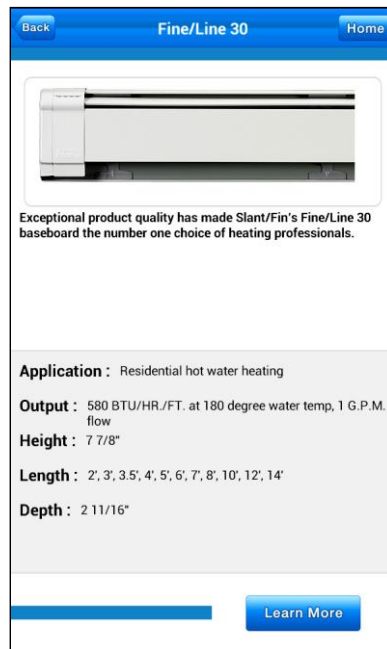
<u>Boiler Selector</u>

Selecting the Right Boiler

This section will help you select the right boiler for your job. You can use the heat loss in BTU/HR that is automatically obtained from the *Heat Loss Calculator*, or, if you already know the heat loss, you can enter the value manually.

Return to the *Home* screen and do the following:

1. Tap on **Boiler Selector**. The *Boiler Selector* screen is displayed showing the heat loss. If that cell is empty and you know the heat loss, you can enter it yourself as follows:

    a. Tap on the empty cell next to **Heat Loss (BTU/HR)**. The numeric keypad is displayed.

    b. Enter the heat loss value then tap the **Done** button in the upper right corner. To view steam boilers, enter zero (0). To view all available Slant/Finn Boilers by fuel type, enter 100.

    Note: You can tap the ***i*** *button in the top left corner to display additional instructions.*
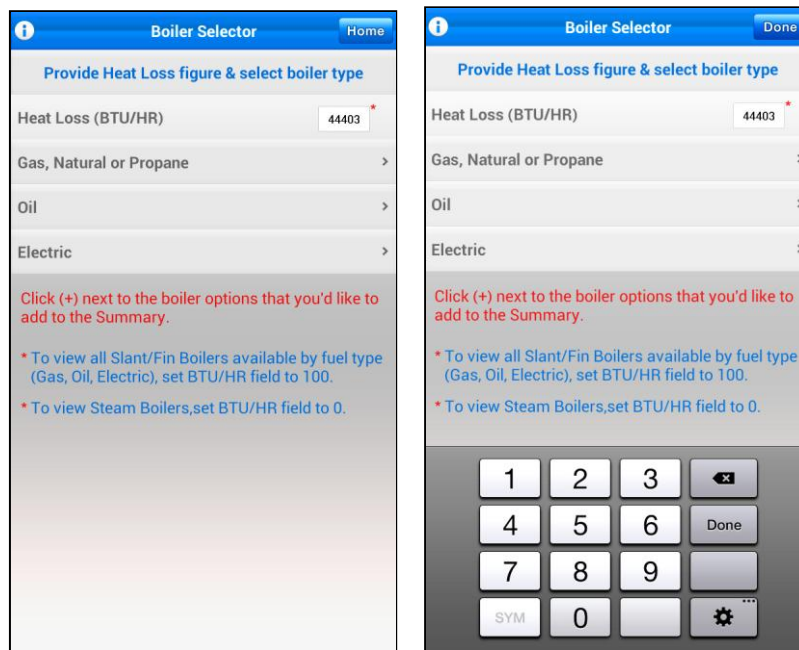
Calculated Heat Loss	**Heat Loss - Manual Entry**

2. Tap on a cell to select the desired fuel type: Gas (Natural or Propane), Oil, or Electric.

    Each selection provides a series of screens where you provide additional information by tapping on the appropriate cells. You will then be provided with a list of boilers that meet your requirements.

3. In our example, we chose **Gas, Natural or Propane**. The *Gas, Natural or Propane* screen is displayed.

4. This selection allows you to enter the operating altitude. You need to enter a value only if the altitude exceeds 5,000 feet. Tap on the cell. The numeric keypad is displayed. Enter a value (in feet) and tap the **Done** button in the upper right corner.

5. Tap on a cell to choose the type of combustion. In our example, we chose **Sealed Combustion**. The *Sealed Combustion* screen is displayed.

6. We are presented with a choice of **Boiler** or **Boiler With Tankless Coil**. In our example, we chose the latter and tapped on **Boiler With Tankless Coil**. The next screen provides a choice of three boilers.

    Note: Boilers are listed in the order that they fit your BTU requirements. The first boiler shown is the closest match, but larger boilers are also displayed.
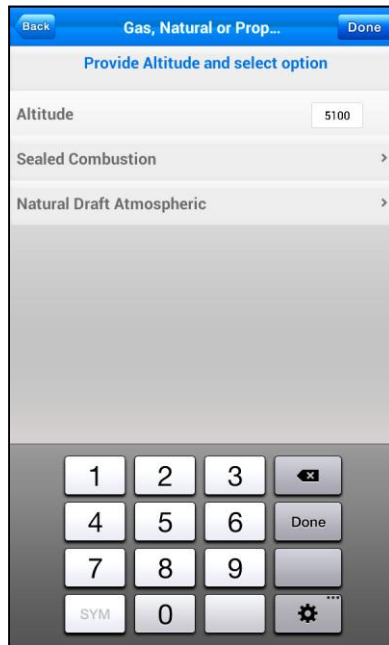
Enter Altitude
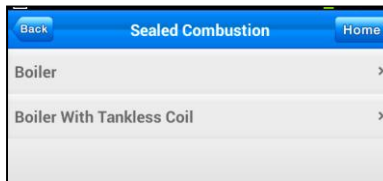
Select Boiler Type
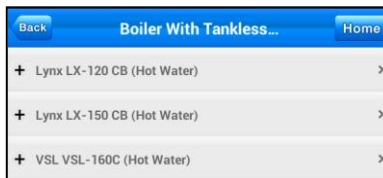
Select Boiler

7. Tap on any of the selections to learn about the individual boilers. In our example, we chose Lynx LX-120 CB (Hot Water). The *Lynx LX-120 CB (Hot Water)* screen is displayed providing the following information:

- Fuel type (Gas)

- System: Hot Water

- Combustion type

- Capacity

- Efficiency

    You can also tap the **Learn More** button to access additional information online.

8. Tap the **Back** button to return to the previous screen. If you want to include a boiler in the job summary, tap the adjacent (+). To remove it, tap (-). To view the job summary, return to the *Heat Calculator* screen and tap **View Summary for this Job**. You may select up to three boilers to be included in the job summary.

    Note: If you exceed this number, the app will randomly include just three of the selected boilers in the job summary.
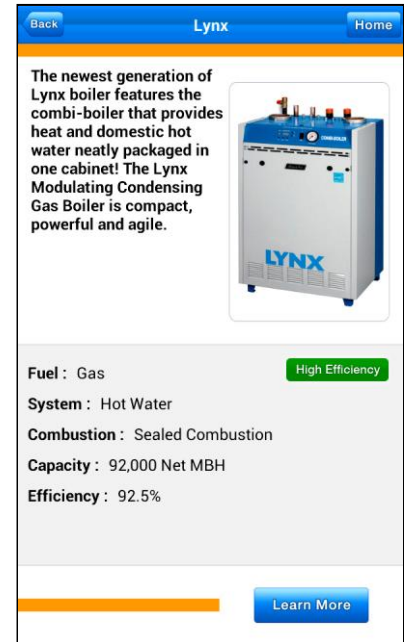
Boiler Information

Quick Answers

Purpose

This section serves as handy reference allowing you to find quick answers to specific questions.

How do I create, edit, or delete a job?

Creating a job:

1. Tap the **Heat Loss Calculator** button. The *Heat Calculator* screen is displayed.

2. Tap the **Heat Calculator** bar. The *Create New Job* screen is displayed.

3. Enter all of the required data in the *Create New Job* screen and tap **Add**.

Editing a job:

1. In the *Create New Job* screen, select the job by tapping the bar with the job name and the word **edit**.

2. Make changes and tap **Update**.

Deleting a job:

In the *Create New Job* screen, tap **Remove** on the same bar as the job name.

How do I add, edit, or delete a floor?

Adding a floor:

1. Tap the job name in the *Heat Calculator* screen.

2. Enter all of the required data in the *Floor* screen and tap **Add**.

Editing a floor:

1. In the *Floor* screen, select the floor by tapping the bar with the floor name and the word **edit**.

2. Make changes and tap **Update**.

Deleting a floor:

In the *Floor* screen, tap **Remove** on the same bar as the floor name.

How do I add, edit, or delete a room?

Adding a room:

1. Tap the floor name in the *Heat Calculator* screen.

2. Enter all of the required data in the *Room* screen and tap **Add**.

Editing a room:

1. In the *Room* screen, select the room by tapping the bar with the room name and the word **edit**.

2. Make changes and tap **Update**.

Deleting a room:

In the *Room* screen, tap **Remove** on the same bar as the room name.

One of my entries for heat loss calculations is incorrect. How do I change it?

Tap on the cell, enter the correct data and tap **Done**.

How do I save my work?

There is no need for you to save your work. The system saves it automatically. However, in the unlikely event that the app crashes, your data will be lost. For this reason, you should email the job summary to yourself at another computer; see *Section View Summary for this Job* in this manual.

How do I email a job summary?

In the *Heat Calculator* screen, tap on **View Summary for this Job** below the job. Tap the email icon in the lower right and enter the required information. An internet connection and email account are required.

How do I select the right boiler for a job?

1. In the *Home* screen, tap on **Boiler Selector**.

2. Enter the heat loss (BTU/HR) in the empty cell. This will be entered automatically if you used the app to calculate the heat loss; otherwise, you can use the numeric keypad to enter it yourself.

3. Tap on the desired fuel type. As additional screens are presented, tap on the appropriate cells. The app will provide a list of boilers that meet your requirements. The first boiler in the list will most closely match your BTU requirements. Tap on a boiler to learn more.

Note: To view steam boilers, enter zero (0) in the heat loss cell. To view all available Slant/Finn Boilers by fuel type, enter 100.

How do I select baseboard?

1. The bottom of the *Heat Loss* screen will display recommended baseboard products and recommended lengths for the room. For more information, tap **Baseboard Selector** in the *Home* screen.

2. Determine the desired baseboard length and divide that into the room's heat loss. Enter that value into the Heat Loss (BTU/HR/FT) cell using the numeric keypad.

3. Tap **Done**. A list of baseboards meeting your requirements will be displayed. Tap on a baseboard to learn more.

Outdoor Design Temperature for Cities

Table 1
Outdoor Design Temperatures for Cities
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Alabama		Georgia		Michigan	
Anniston	19	Atlanta	23	Battle Creek	5
Birmingham	22	Augusta	23	Detroit	8
Mobile	29	Macon	27	Flint	3
Montgomery	26	Savannah	27	Grant Rapids	6
				Lansing	6
Alaska		**Idaho**		Sault St. Marie	-8
Anchorage	-20	Boise	10		
Fairbanks	-50	Coeur D'Alene	7	**Minnesota**	
Juneau	-4	Lewiston	12	Duluth	-15
Nome	-28	Pocatello	-2	Minneapolis	-10
				St. Paul	-10
Arizona		**Illinois**			
Flagstaff	5	Chicago	0	**Mississippi**	
Phoenix	34	Moline	-3	Meridian	24
Tucson	32	Peoria	2	Vicksburg	26
Winslow	13	Springfield	4		
Yuma	40	Urbana	4	**Missouri**	
				Columbia	6
Arkansas		**Indiana**		Kansas City	8
Fort Smith	19	Fort Wayne	5	St. Louis	11
Little Rock	23	Indianapolis	4		
				Montana	
California		**Iowa**		Billings	-6
Bakersfield	33	Davenport	-3	Butte	-16
Eureka	35	Des Moines	-3	Helena	-13
Fresno	31	Dubuque	-7	Kalispell	-3
Los Angeles	44	Mason City	-9	Miles City	-15
Oakland	37	Sioux City	-6		
Sacramento	35			**Nebraska**	
San Diego	44	**Kansas**		Lincoln	0
San Francisco	44	Dodge City	7	North Platte	-2
San Jose	36	Topeka	6	Omaha	-1
		Wichita	9		
Colorado				**Nevada**	

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Denver	3	**Kentucky**		Las Vegas	26	
Grand Junction	11	Louisville	12	Reno	8	
Pueblo	-1			Winnemucca	5	
		Louisiana				
Connecticut		New Orleans	35	**New Hampshire**		
Hartford	5	Shreveport	26	Concord	-7	
New Haven	9			Manchester	1	
		Maine				
Delaware		Augusta	-3	**New Jersey**		
Dover	15	Bangor	-4	Atlantic City	18	
Wilmington	15	Caribou	-14	Newark	15	
		Portland	0	Trenton	16	
District Of Columbia						
Washington	19	**Maryland**		**New Mexico**		
		Baltimore	15	Albuquerque	17	
Florida				Roswell	19	
Jacksonville	32	**Massachusetts**				
Miami	47	Boston	10	**New York**		
Pensacola	32	Nantucket	0	Albany	0	
Tampa	39	Springfield	2	Binghamton	2	
		Worcester	1	Buffalo	6	
				Massena	-12	
				New York	15	
				Rochester	5	
				Syracuse	2	

				Canada		
North Carolina		**Tennessee**		**Alberta**	-25	
Asheville	17	Chattanooga	19	Calgary	-26	
Charlotte	22	Knoxville	17	Edmonton		
Greensboro	17	Memphis	21			
Raleigh	20	Nashville	16	**British Columbia**		
Wilmington	27			Vancouver	19	
		Texas		Victoria	23	
North Dakota		Abilene	21			
Bismarck	-19	Amarillo	12	**Manitoba**		
Fargo	-17	Austin	29	Churchill	-38	
		Brownsville	40	Winnipeg	-25	
Ohio		Corpus Christi	36			
Akron	6	Dallas	24	**New Brunswick**		
Cincinnati	12	Del Rio	31	Fredericton	-10	
Cleveland	7	El Paso	25	St. John	-7	
Columbus	7	Fort Worth	24			

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Dayton	6	Galveston	36	**New Foundland**	
Sandusky	8	Houston	32	St. Johns	6
Toledo	5	Port Arthur	33		
		San Antonio	30	**Nova Scotia**	
Oklahoma				Halifax	4
Oklahoma City	15	**Utah**		Yarmouth	9
Tulsa	16	Vernal	-6		
		Salt Lake City	9	**Ontario**	
Oregon				Hamilton	3
Baker	1	**Vermont**		London	3
Eugene	26	Burlington	-7	Ottawa	-13
Medford	23			Toronto	1
Portland	24	**Virginia**			
Salem	25	Lynchburg	19	**Prince Edward Island**	
		Norfolk	23	Charlottetown	-3
Pennsylvania		Richmond	18		
Erie	11	Roanoke	18	**Quebec**	
Harrisburg	13			Montreal	-10
Philadelphia	15	**Washington**		Quebec	-13
Pittsburgh	11	Seattle	32		
Scranton	6	Spokane	4	**Saskatchewan**	
		Yakima	10	Prince Albert	-35
Rhode Island				Saskatoon	-30
Providence	10	**West Virginia**			
		Elkins	5	**Yukon**	
South Carolina		Parkersburg	12	Whitehorse	-42
Charleston	27				
Columbia	23	**Wisconsin**			
Greenville	23	Green Bay	-7		
		LaCrosse	-8		
South Dakota		Madison	-5		
Huron	-12	Milwaukee	-2		
Pierre	-9				
Rapid City	-6	**Wyoming**			
		Cheyenne	-2		
		Lander	-12		
		Sheridan	-7		