

Chapter 17

Power Track

Modern devices are mostly two-way - they can both send and receive. Most importantly then can often be configured to transmit their status when locally controlled.

Using that 2-way feature HCA contains *Power Track* which is a method for keeping track of what time a device is turned on and when it is turned off. This information is recorded in a file for each device.

HCA can analyze these files and produce both current power usage graphs – how much power are your devices using at this moment – and how much power have my devices used over a selected time period, for example, the last seven days, or the last 48 hours.

This chapter describes:

- How to enable Power Track on a device
- The current power graph
- Historical Power Graphs
- Displays and Graphs
- Support for the Insteon Power Meter device

Enabling Power Tracking

Before you can use the Power Track features you must enable power track for a device. This is accomplished on the Power Track tab of a device's properties dialog.



All you need do is to tick the checkbox and supply how much current the device draws when at full power. For lighting this is the bulb wattage. For appliances this is usually listed on a sticker someplace on the device.

Once this is done, HCA creates a power log file for the device in the Power Track folder in your HCA documents area. The filename is created from the name of the device – replacing any invalid filename characters with ‘_’s and adding month suffix. Each month a new file is created. These files are small so there shouldn’t be a disk space issue.

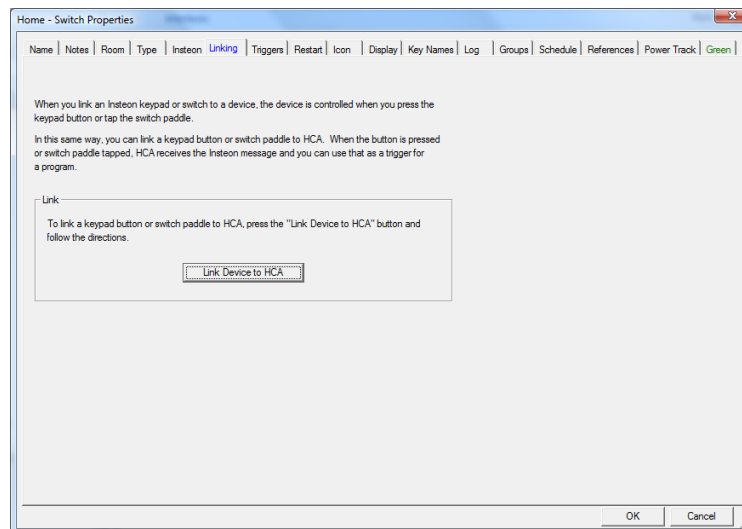
Once these files exist, then each time HCA controls the device – from a schedule, a program, or when you interact with the user interface - an entry is made in the file.

But this is only half the situation: If you locally control the device you want HCA to receive notice so that the power track file can be kept up to date.

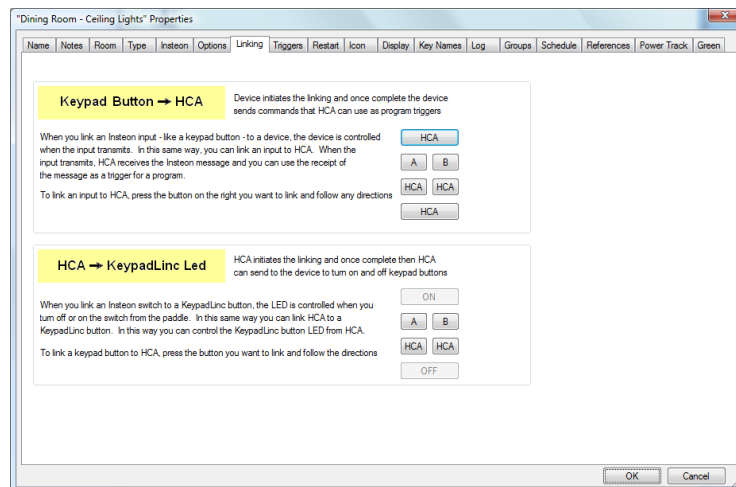
Insteon Devices

For Insteon devices you need to link the device to HCA. Just like when you link two devices together so that when one device is controlled it sends to the other device – for example, tap a switch paddle and a module is controlled also – you must link HCA to the device as well.

This is accomplished on the linking tab of the device’s properties dialog. In the case of a switch, there is only a single button:



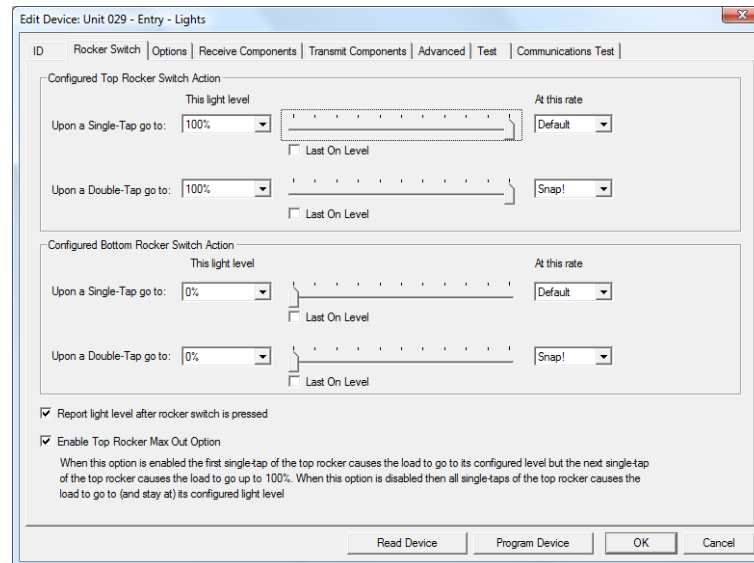
In the case of a KeypadLinc, you should link the “On” button to HCA.



More on linking is in the *Insteon* Appendix.

UPB Devices

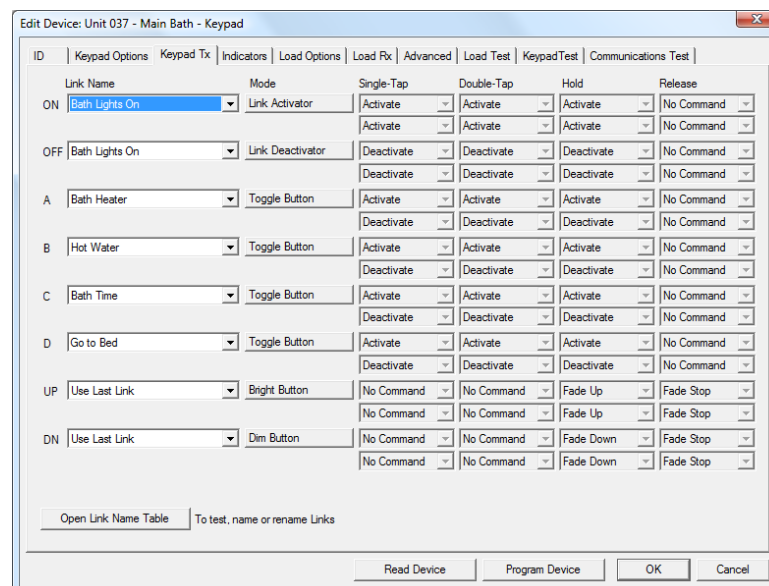
UPB Devices use a simpler mechanism to enable them to report status when locally controlled. In the UPB Configuration program – UPStart - the properties of each device type that controls a load contains an option to report status when locally controlled. This option is on one of the device property tabs. For example, here is a switch:



Note the 2nd checkbox from the bottom.

You don't have to use that option if the device is set to transmit a link from the switch paddle or keypad button. Once you have imported your UPB Network into HCA, the transmission of the link from the device will keep HCA up to date on the device status.

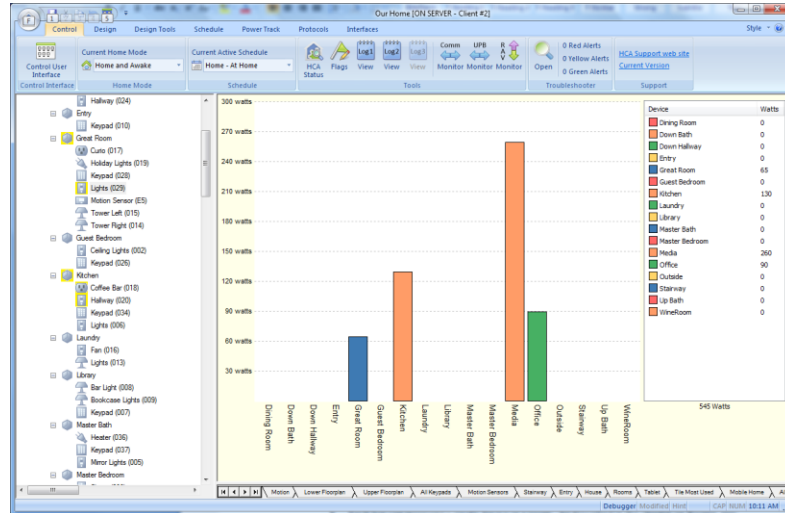
For example, here is a KPLD configuration.



When HCA sees the “Bath Lights On” link being transmitted it “knows” that the load has been turned on and at what level.

Current Power Graph

The current power graph appears in the display pane. For example:



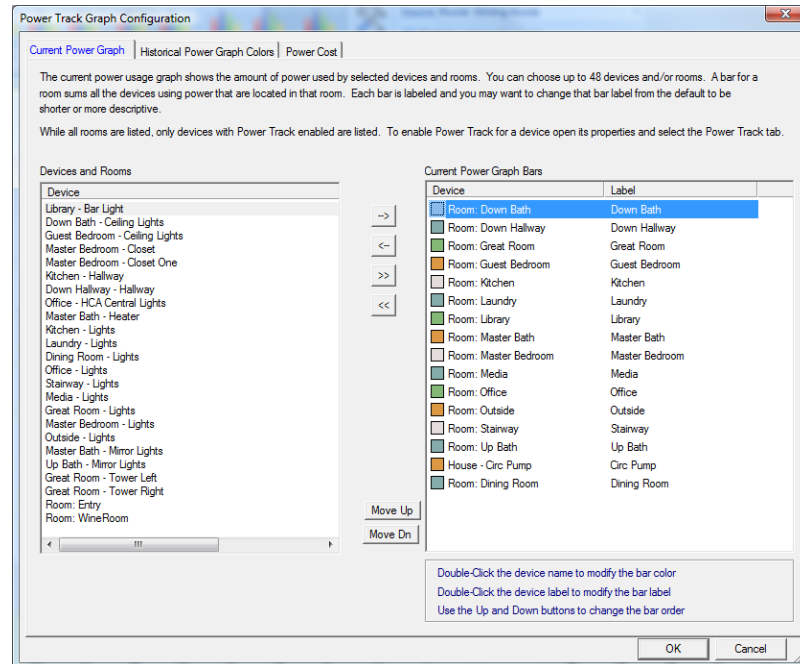
Each device or room shows as a bar representing the current power usage in watts. The list on the right shows the data in tabular form.

There are several important items to note about the current power graph.

- Before you can display the graph it must be configured. This is described in the next section.
- The graph is limited to 48 bars
- Instead of showing the current wattage, you can have the graph show the current cost of the power. In the ribbon is a checkbox that toggles between showing percentage and cost. The cost per watt hour is defined in the setup and is described in the next section.
- Each bar can represent a single device or a room. As described in the chapter on Rooms, any device that contributes to the state of a room includes its power usage to the bar for the room.

Configuring the current power graph

To configure the current power graph, press the *Graph Setup* button from the ribbon *Power Track* category.



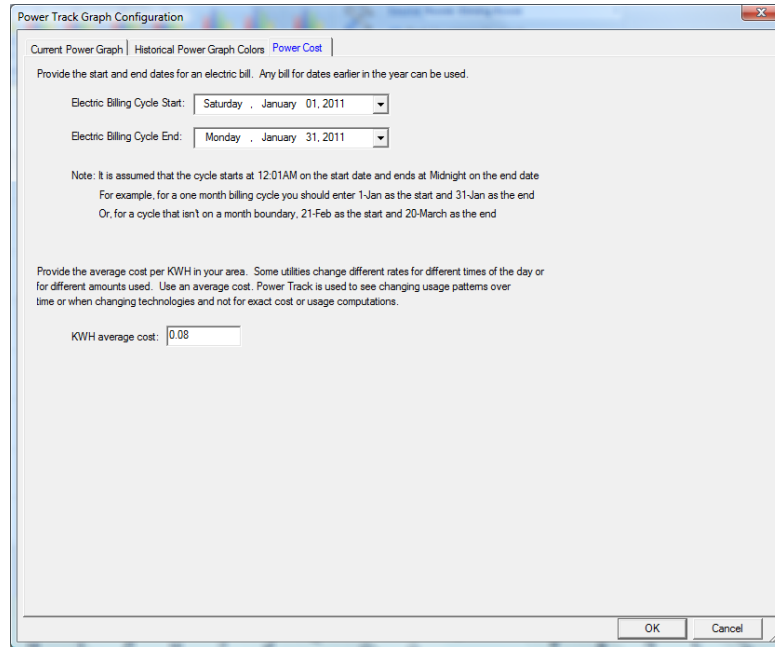
This dialog lets you select what bars appear in the Power Track graph, how they are labeled, what color is used for the bar, and the order of the bars.

To select which bars to appear in the graph, use the arrow buttons to move the device or room name from the left list to the right list. A bar is shown for each item in the right list. To change the bar order, use the *Move Up* and *Move Dn* buttons.

There isn't much space in the graph for the bar labels – show vertically below each bar. For long room or device names, you may want to choose a different name so it fits better. To assign a label different from the device or room name, double-click on the label text in the left list and a dialog opens that allows you to change the label text.

To change the color assigned to the bar, double click on the device name in the first column and a color selection dialog opens.

The last item to configure is the cost per Kilowatt Hour (KwH). This is how the graph shows cost information. Press the *Graph Setup* button from the ribbon *Power Track* category and select the *Power Cost* tab.



Power Track Graph Configuration

Current Power Graph | Historical Power Graph Colors | **Power Cost**

Provide the start and end dates for an electric bill. Any bill for dates earlier in the year can be used.

Electric Billing Cycle Start: Saturday, January 01, 2011

Electric Billing Cycle End: Monday, January 31, 2011

Note: It is assumed that the cycle starts at 12:01AM on the start date and ends at Midnight on the end date
 For example, for a one month billing cycle you should enter 1-Jan as the start and 31-Jan as the end
 Or, for a cycle that isn't on a month boundary, 21-Feb as the start and 20-March as the end

Provide the average cost per KWH in your area. Some utilities charge different rates for different times of the day or for different amounts used. Use an average cost. Power Track is used to see changing usage patterns over time or when changing technologies and not for exact cost or usage computations.

KWH average cost: 0.08

OK Cancel

The power cost is at the bottom on the dialog. You can usually get this information from a power company bill. In some locations the power cost varies with time or day or usage over the billing cycle. In this case just enter an approximate average value. For these purposes this is sufficiently accurate.

While you are in this dialog you may want to enter the start and end dates of your billing cycle. Again, this can be determined from your last billing statement. These dates are used by the Historical Power Graphs which are described in the next section.

Historical Power Graphs

While the current power graph is useful it really only reports on what you probably already know – what's on right now. Historical Power Graphs are where the real action is!

By plotting the power usage for one or more devices or rooms over a period of time you can easily see what are the biggest power users and then see if their power usage can be reduced.

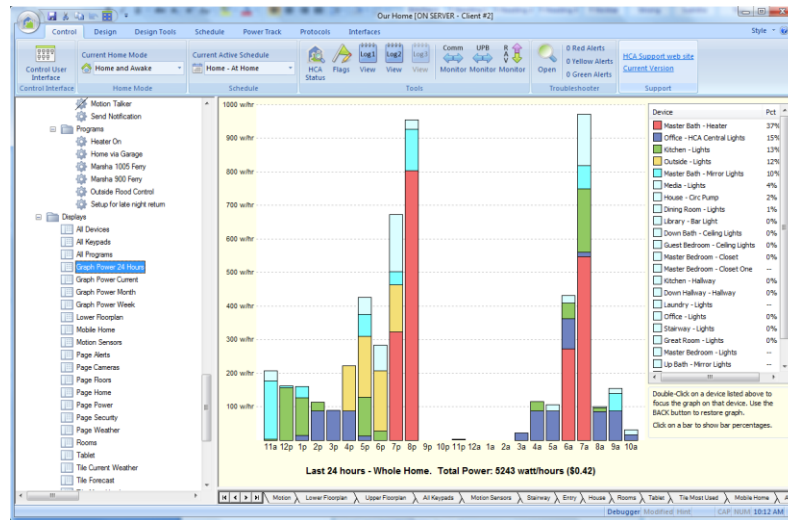
Unlike the current power graph, no setup is needed other than enabling Power Track on one or more devices.

A graph can be constructed for these time periods:

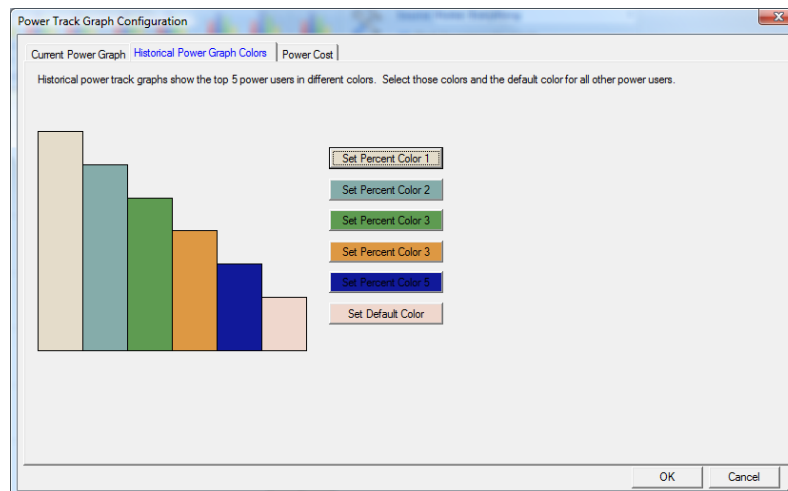
- Last 12 Hours
- Last 24 Hours
- Last 48 Hours
- Current Week – Sunday to Saturday
- Previous Week – Sunday to Saturday
- Last 7 Days
- Last 14 Days
- Last 30 Days

- Current Month
- Previous Month
- Current Billing
- Previous Billing
- Current Year

To show any of these graphs, press the button for that graph in the ribbon. This is an example for a graph over the last 24 hours.



Unlike the current power graph where colors are assigned to individual devices or rooms, here colors used are to show the largest power users. These colors are selected from the Graph Setup dialog on the *Historical Power Graph Colors* tab.



You can assign any colors that appeal to you. Each button on the right of the dialog opens a color selection dialog.

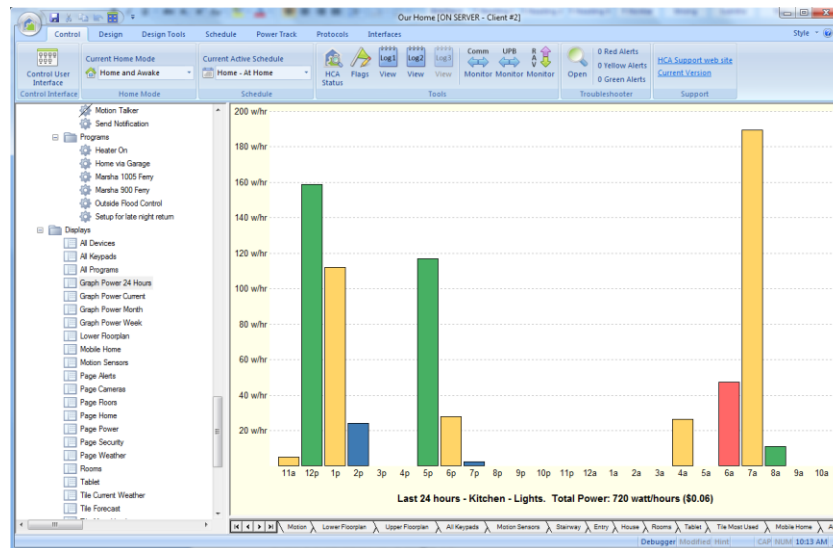
When working with Historical Power Graph there are a number of features you may want to take advantage of. These are described in the next sections.

Focus the graph on a single device or room

While a composite graph – showing data from more than one device or room – gives you an overall picture of power usage over the selected time period – it may be advantageous to focus in on a single device or room for the selected graphing period.

To do this either change the graph “source” dropdown in the ribbon or double click on a device in the tabular list. The graph is redrawn to show just that device or room.

Look again at the graph shown above. By double-clicking on “Kitchen Lights” the graph is redrawn to show power usage for just that device.



To return to the composite graph, use the *Back* button in the ribbon.

Show a breakdown for a single bar

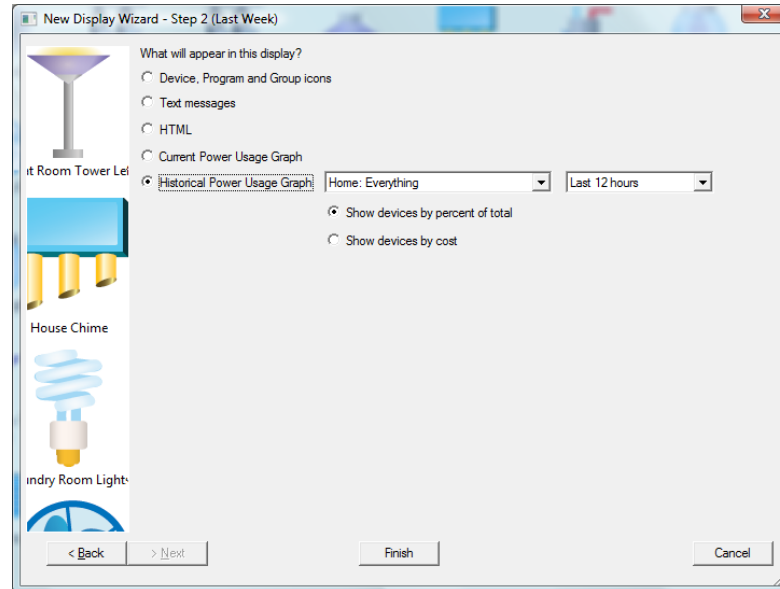
The tabular list on the right side of the graph shows the breakdown – by cost or percentage – for the whole graph. To show the breakdown for a single bar, all you need to is to click on the bar. The label below the bar turns red to show it is selected and the tabular list shows data for only that bar.

To return the tabular list for the whole graph, click someplace on the graph background.

Displays and Graphs

In addition to using the graphing buttons in the ribbon, you can also create displays that show power track graphs. This can be advantageous when working with the Control Interface as you can then have icons on a page that open a graph.

To create a graph display, use the new Display Wizard. At step 2 of the wizard choose either the current power graph – in which case there are no options – or the historical power graph:



Select the graph source – room, device, or “Everything”, and one of the time period choices.

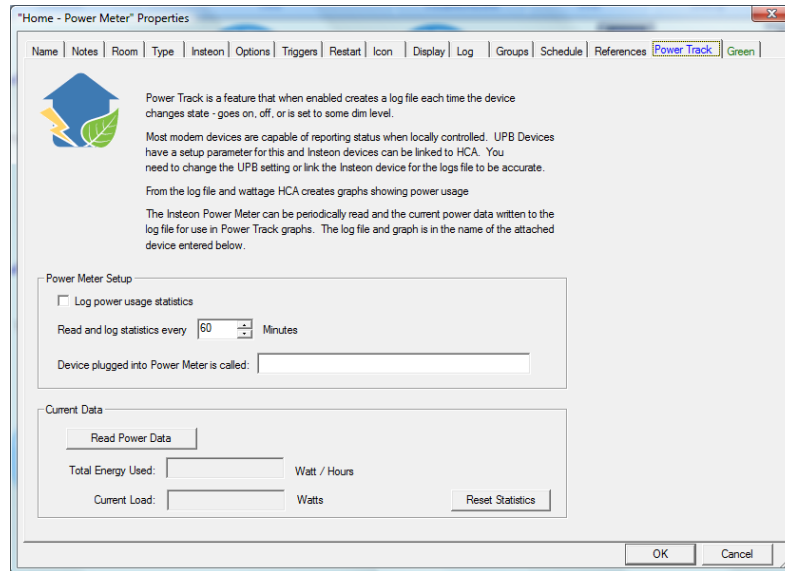
Once you have that graph display defined, selecting it in the design pane or clicking on the icon for it in the display pane opens that graph.

Insteon Power Meter

The Insteon Power Meter is also supported for Power Track. This device provides an actual measurement of a device’s power usage over time. Using it you can get power usage data for devices that are not part of your automation solution – like televisions, refrigerators, etc.

The device is supported by periodically reading the data from it and saving it in a power track file.

After you add the device using any of the methods for adding devices, open its properties and select the Power Track page.



For the Power Meter, the tab appears a bit differently than other devices. Here you specify:

- How often to poll the device to read out the accumulated power
- The name of the device the meter is connected to. This name is used for the filename of the power track file and also used in graphs. This way if you want to relocate the power meter to a different appliance you can just change the name of the appliance it is attached to and you need not rename the Power Meter device in HCA. And because the power track file uses the appliance name, you don't lose the data from the previous usage of the meter nor does the old appliance's data get mixed in with the new one.

You can also use this tab of the dialog to read the device and see the current load and accumulated power.

Here is an important point about the power meter that is best shown by an example:

Suppose the meter records an accumulated power of 100 watt/hours at 10am. Suppose the meter is read again at noon – a poll of every 120 minutes. At that time the accumulated power is 500 watt/hours

You can't tell if the device was off – accumulating no power – for example, from 10 to 11:15 and then turned on and the 400 watt/hours were accumulated in the next 45 minutes.

Because of this, when the graph is constructed for this device, HCA assumes that the power is accumulated evenly over the time period – that is, 200 watt/hours from 10 to 11, and 200 watt/hours from 11 to noon.

