Home Energy Audit Kit Instructions

Town of Port Hedland

Power-mate Meter

Please note that incorrect and improper use could lead to an electrical shock. Please follow the instructions below and stay safe.

The Power-mate is intended for INDOOR use only

- DO NOT use the Power-mate if the case or cord is damaged – report straight away to your librarian
- DO NOT use the Power-mate if it becomes wet
- AVOID using the Power-mate in the bathroom or other wet areas
- DO NOT expose the Power-mate to heat
- DO NOT dismantle the Power-mate
- Please INFORM our Environmental and Sustainability team straight away if you have any concerns.
- If you are unsure about the tariff costs please refer to the A1 tariff which can be obtained through the Department of Finance website: www.finance.wa.gov.au/cms/Public_Utilities_Office/Homes_and_Communities/Electricity/Electricity_prices.aspx.

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How to use the Power-mate

1. Plug the Power-mate into the electrical point with no other appliances attached to the device
2. Clear the memory by pressing the [MODE] button until you reach CLEAR then press [ENTER] Please note that this should be done for every new appliance tested or new readings may be inaccurate.
3. Check that the cost per unit is set correctly

- Push the [MODE] button until you reach the SETUP menu
- Push the [ENTER] button to reach the S rATE menu
- Push the [ENTER] button again and the cost per unit should show.
- To change the cost use the [+] and [-] buttons to adjust the value, push [ENTER] to move to the next number and [ENTER] to complete (please do not adjust the value if correct)

4. Plug the appliance you would like to measure into the adaption point on the Power-mate. It is best to leave the appliance attached to the Power-mate for at least 15 mins for small appliances and at least 1 hour for larger appliances to let the Power-mate generate a more accurate average for each type of reading. Don't forget to clear the memory after each appliance.

Generating an average power reading (Watts)

1. Use the [MODE] button to set the Power-mate to read POWER

2. From this point you can read the average watts for this appliance.

3. You may also want to look at the MAX POWER and MIN POWER by pressing the [+] and [-] buttons.

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Generating an average cost ($)

1. Use the [MODE] button to move into the COST menu

2. The cost displayed is the energy consumption cost of the appliance since you plugged the appliance in, in a dollar amount.

3. To find out the YEARLY COST press the [+] button

4. To find out the QUARTERLY COST press the [-] button

5. To find out the HOURLY COST press the [ENTER] button

Generating an average Kilowatt hours (kWh)

1. Use the [MODE] button to move into the ENERGY menu

2. This will give you the average kWh of energy your appliance has consumed since you plugged it in.

3. To find out the YEARLY ENERGY AMOUNT CONSUMED press the [+] button

4. To find out the QUARTERLY ENERGY AMOUNT CONSUMED press the [-] button

5. To find out the HOURLY ENERGY AMOUNT CONSUMED press the [ENTER] button

Generating an average Greenhouse Gas amount (kg)

1. Use the [MODE] button to move into the G GAS menu

2. This will give you the average kg amount of greenhouse gas that your appliance has released since you plugged it in.

3. To find out the YEARLY AMOUNT OF GREENHOUSE GAS press the [+] button

4. To find out the QUARTERLY AMOUNT OF GREENHOUSE GAS press the [-] button

5. To find out the HOURLY AMOUNT OF GREENHOUSE GAS press the [ENTER] button

Other functions you can also measure:

- Volts – average, max and min
- Current (amps) – average, max and min
- Hours – how long the appliance has been connected in Hours, Minutes, Seconds
- Clear – start recording again

Infrared Thermometer

CAUTION - Please read before using the Infrared Thermometer

- DO NOT point the Infrared Thermometer beam directly at people or pets faces and eyes
- DO NOT point the Infrared Thermometer beam at a reflective surface in case it enters your eyes
- DO NOT point the Infrared Thermometer for an extended amount of time at any one object
- DO NOT point the Infrared Thermometer at any gas that may have explosive properties

How to use the Infrared Thermometer

1. Stand within 1 meter of the object or area you wish to measure
2. Hold the Infrared Thermometer and aim it at the object or area
3. Press the trigger and hold until the temperature level settles (it may change erratically for a few moments as it generates an average)
4. Release the trigger once the temperature settles
5. The temperature will remain on the LCD screen for approximately 5 seconds giving you time to record the temperature if you wish
6. Repeat the process, pointing at different areas if you are trying to identify hot or cold spots in your roof or walls

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Indoor/Outdoor Thermometer

To be used on an external glass sliding door.

1. Turn the device over and insert the battery provided, replacing the battery cover
2. Use the two suction cups with the hooks – stick them to the inside of your glass sliding door and hang the thermometer
3. Stick the smaller sensor (attached to the other suction cup) on the outside of your sliding door
4. Gently close your glass sliding door (do not damage the wires)
5. Let the device adjust to the temperature
6. Check every few hours and record the inside and outside temperature

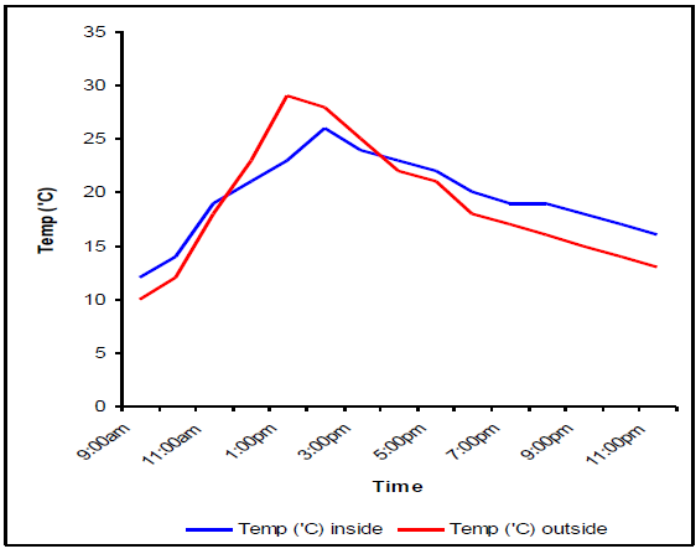
7. When removing the device, please be careful with the sensor attached to the suction cup. Remove the cup by lifting the edges stuck to the glass, not by pulling the cup off by the sensor or hooks
8. Once complete, please remove the battery and place it back into the kit box, replace the battery cover

Optional activity: Temperature change chart

You will need: Pen, paper and computer with Excel (and knowledge to use)

Instructions:

1. Set up the indoor/outdoor thermometer
2. Record the temperature every hour for both inside and outside your home from when you wake up until bedtime (best to use minimal heating and cooling to get effective results that are not effected from external factors)
3. Enter the information you have gathered into Excel. Working in vertical columns, Enter Time into column A, Temperature for the inside into column B and Temperature for the outside into column C
4. Generate a chart mapping your temperature change throughout the day



What does this information tell us?

The graph can identify when the warmest period of the day is how quickly your home responds to changes in temperature. Generally a home will warm quickly in the morning and then retain the heat throughout the day and slowly cool down in the afternoon (as indicated within the graph). A well designed passive solar home will not react as quickly inside to changing temperatures outside – you will see a much "flatter" line for inside temperature.

Generic Thermometer

Fridge/freezer

1. Place the thermometer into the fridge or freezer
2. Leave the thermometer in the fridge/freezer for one hour
3. Record the temperature

It is recommended that the fridge/freezer is not opened too often during this period as this will alter the average temperature of the system.

Hot water Temperature

NOTE: Please DO NOT put the thermometer directly into hot water after it has been taken out of the freezer. Let the thermometer return to room temperature first.

1. Place a bucket under your tap to capture the water
2. Run the hot water tap until hot
3. Hold the thermometer under the tap for 10 seconds
4. Read the temperature
5. Let the water in the bucket cool and use the water in your garden

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Shower Timer

Measuring shower length

1. Turn the device over and insert the battery, replace the battery cover
2. Set the timer for 3 minutes by pressing 3 – 0 – 0
3. Place the shower timer in a safe location within the bathroom (please DO NOT take the timer into the shower with you – the ideal place will be to place it on your bathroom counter or glass mirror)
4. Start the timer and start your shower
5. After 3 minutes the timer will beep and light up
6. Turn the shower off, step out, and turn off the timer

Note that this time is all you require to shower. If you did not succeed in completing your shower within this time, try again next time and keep reducing your time until you achieve 3 minutes.

7. Please remove the batteries once you are dry and place them back into the kit box

Measuring shower flow rate

You will need the Shower timer, your own bucket with a measuring gauge on the bucket, or a separate measuring cup.

1. Set your shower timer for fifteen (15) seconds
2. Place the bucket under the shower
3. Start the shower timer and water at exactly the same time and let the water run for the fifteen (15) seconds
4. Measure how much water is in the bucket by either using the scales on the bucket (if it has one) or pour it into a measuring cup
5. Multiply this number by four (4) to give you the total volume for one (1) minute
6. This will give you the number of litres per minute

If your flow rate is above 10L per minute you can go to any local hardware store and purchase a low-flow shower head and install it as per the instructions on the item. This will save you water, energy, and money. Rebates for low-flow shoer heads may also apply.

Compass

North – Just right: The main living area of your home is best located on the northern-facing side of your home. Northern windows provide good solar heating in winter and should be well-shaded in summer. Adjustable awnings, blinds and shutters are best on these windows. This way you can let in the winter sun to warm the house and keep out the summer sun when it becomes too hot.

South – Cold and breezy: In summer these windows offer the cool southerly breeze from the ocean. Keep these windows open later in the day during summer to allow the breeze in and cool your home. During winter this area of the home will become very cold so hang full-length curtains with pelmets or double-glaze the windows to prevent heat loss.

East – Too hot: During the summer periods these windows admit intense heat into the home due to the angle of the suns rays. Eaves and pergolas have limited effect due to the angle of the sun. Plant trees and high shrubs or build a wall to reduce the amount of direct sunlight hitting the windows.

West – Way too hot: Intense summer sun hits these windows so the best option is to build a shading wall from deciduous shrubs or install vertical shading devices such as blinds, awnings or shutters.

Use the graphic below to determine your house orientation. Adjust this page so that 'north' on this page matches north on your compass.