

SAMSUNG

EHS Heat Pumps

Heat Pump User Guide

**EVERYTHING YOU NEED TO KNOW ABOUT
YOUR SAMSUNG HEAT PUMP**

Your new Samsung Heat Pump

In this user guide you will find information and guidelines that will help you to use your heat pump in the most energy and cost efficient way.

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System overview:

To get the most out of your heat pump, it is important you understand the basic principles of how it operates.

An Air Source Heat Pump uses the outdoor air to heat a property. The heat pump heats the water that flows around your central heating system and separately, when required, heats the hot water in your hot water tank.

Outdoor unit:

The heat pump is located outside the house. It can extract heat from the outside air even when the outside temperature is less than 0°C. The heat pump pulls heat in from the rear of the unit, heat from the air is extracted, and then blows cooled air out the front. This heat is then transferred to a 'refrigerant' which acts as a medium to transport the heat to the exchanger, where the heat is exchanged to the water in the central heating system.

Hot water cylinder:

The hot water cylinder is what will supply water to your taps and showers. You may have already used a hot water cylinder if you have had a 'System' gas boiler. The hot water cylinder is usually set to store the hot water at 50°C, to ensure that the running costs remain low. Depending on the type of tariff you have, the cylinder will be set to heat up the water during the cheapest off-peak electricity rate, or during the day when the outside temperature is higher, and the heat pump can work most efficiently.

The heat pump is programmed to heat the water above 60°C once a week to ensure the water in the tank remains safe and free from bacteria.

Unlike with a 'Combi' gas boiler where the hot water is heated on demand (when a tap or shower is turned on), the water stored in the cylinder is already heated. This means that if you have multiple bathrooms, the hot water can be used simultaneously.

Programmable Room Thermostat:

A programmable room thermostat will most likely be located in the hallway or within certain rooms, like the living room. This controls when the house is heated and to what temperature. It is likely that your thermostat will be set to temperatures within the range of 18-21°C.



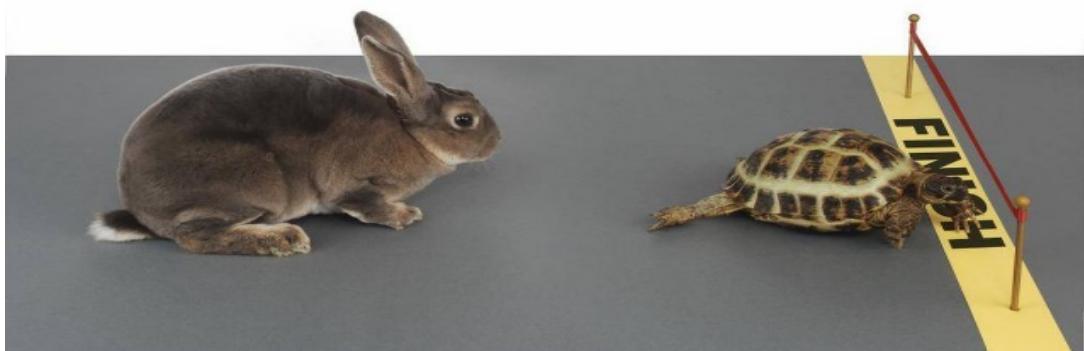
Your heat pump will work to keep your home at the temperature that you set on the thermostat. Setting the thermostat to the maximum temperature doesn't make the house heat up more quickly! If the current temperature is 16 inside and you want it to be 20°C, then just set the thermostat to 20°C; setting it to 23°C will not make the house heat more quickly – it will just heat less efficiently and will cost you more money.

Heat Pumps Vs Gas Boilers:

Heat pumps work differently from gas boilers in that they run “long-and-steady”; Gas boilers give sudden and frequent bursts of heat.

The gas boiler behaves like a ‘Hare’ accelerating to 40mph, then letting the speed fall back to 20mph then accelerating again to 40mph. The heat pump acts like a ‘Tortoise’ that accelerates gently and then keeps their foot on the pedal at exactly 30mph.

Because of this, your heat pump will work most efficiently when the thermostat in the house is set and left at a steady temperature.



Schedule system



Daytime:

If you set the temperature down at 16°C during the day (if you're out at work) then the heat pump will turn off during the day. Then when it wakes up, it will have to work extra hard in the evening to get back to 20°C (especially when it's very cold outside). It's more efficient to just set it to 19°C or 18°C during the day. That way the heat pump will run more smoothly and more efficiently.



Night-time:

You can turn the temperature down overnight or when you are out, but we recommend that you only turn the temperature down by a couple of degrees. For example, if it's on 20°C, just put it down to 19°C or 18°C before bed, and then back up in the morning. You can either do this directly on the thermostat; or you can set schedules (see schedules guide).

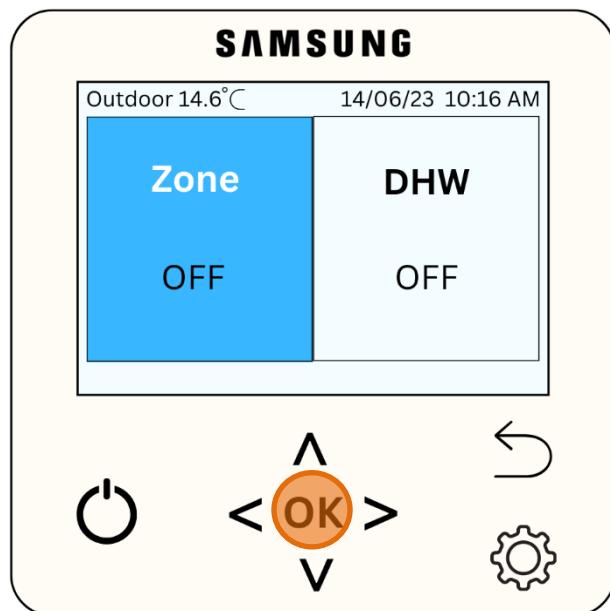
Going away:



If you go away for more than 1 day during the winter, we recommend leaving the heating on but turning it down to 16°C;

How to use the Thermostat/Controller:

The basics:



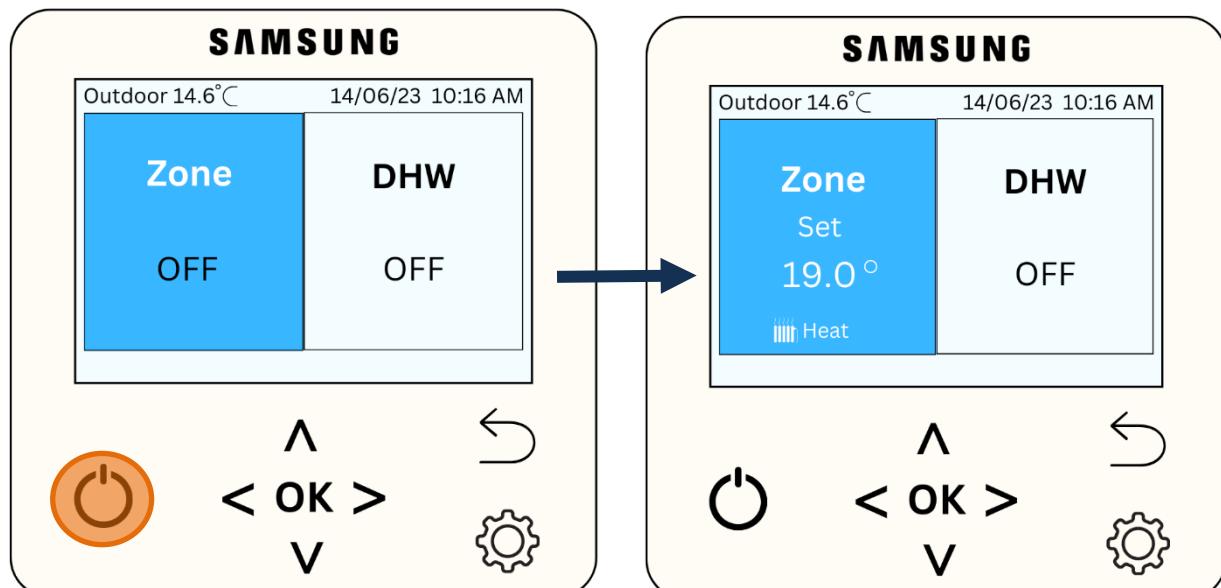
If the backlight is turned **OFF**, press the **OK** button to turn the screen on.

The left-hand panel **Zone** controls the heating for your home, and the right-hand panel **DHW** controls the hot water. If heating and hot water are **OFF**, the display will show **OFF** under **Zone** and **DHW** (as displayed in the image on the left).

How to turn on/off the heating:

Using the Thermostat/Controller:

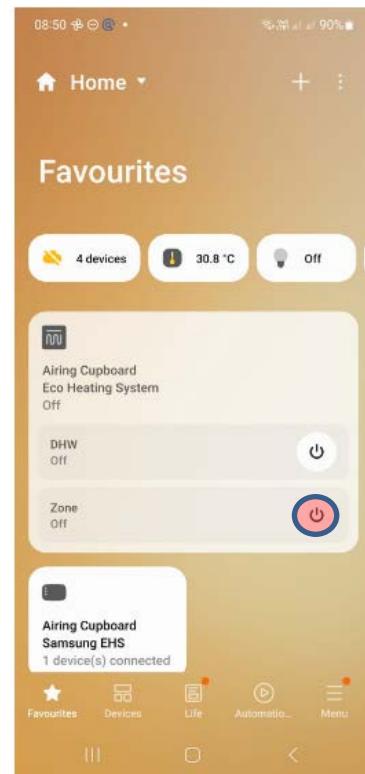
Press the **on/off**  button in the bottom left.



You can also turn on/off the heating from the **SmartThings mobile App**. If this hasn't been set up then contact info@cleanheatstreets.com and we'll help you set it up.

Using the SmartThings mobile App:

1. First, find the **“Eco Heating System”** device;
2. To turn on the heating just press the **on/off button**  .
3. Press the **on/off button** again to turn it off.

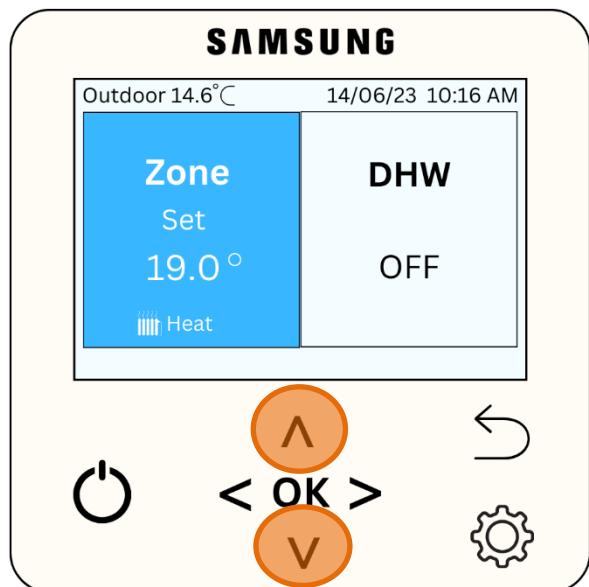


Note: if you have any heating schedules set, then to turn off the heating for a long period (e.g. if you go away for a week, or you want to turn it off for the summer) you will also need to turn off any schedules. This is because an active schedule could tell the heating to turn back on. Please see the scheduling user guide (add hyperlink in digital version). You will need to do this either on the controller if your schedules are set on the controller, or in the app if your schedules are set in the app.

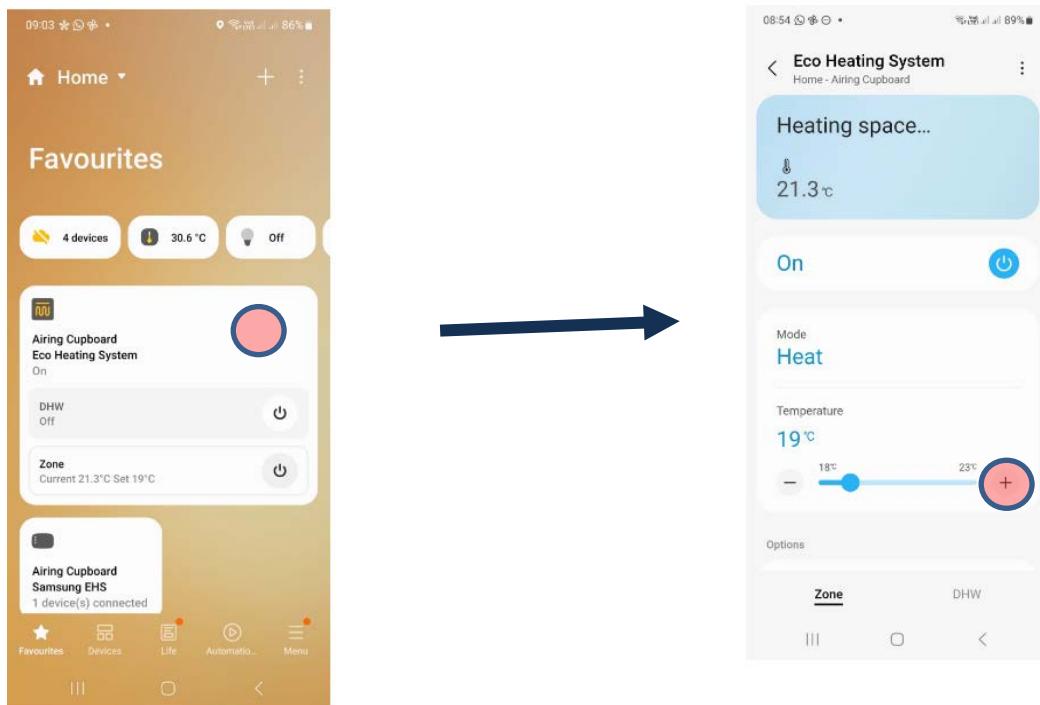
How to turn the heating up/down:

Using the thermostat/controller:

1. Make sure the heating is **on** (**Zone area doesn't say OFF**);
2. Use the **arrows** to make the Zone section blue (as seen in image);
3. Press **ok** to go to the temperature setting screen;
4. Use the **up/down arrow** to change the temperature you want your house to be at.



Using the Mobile App:

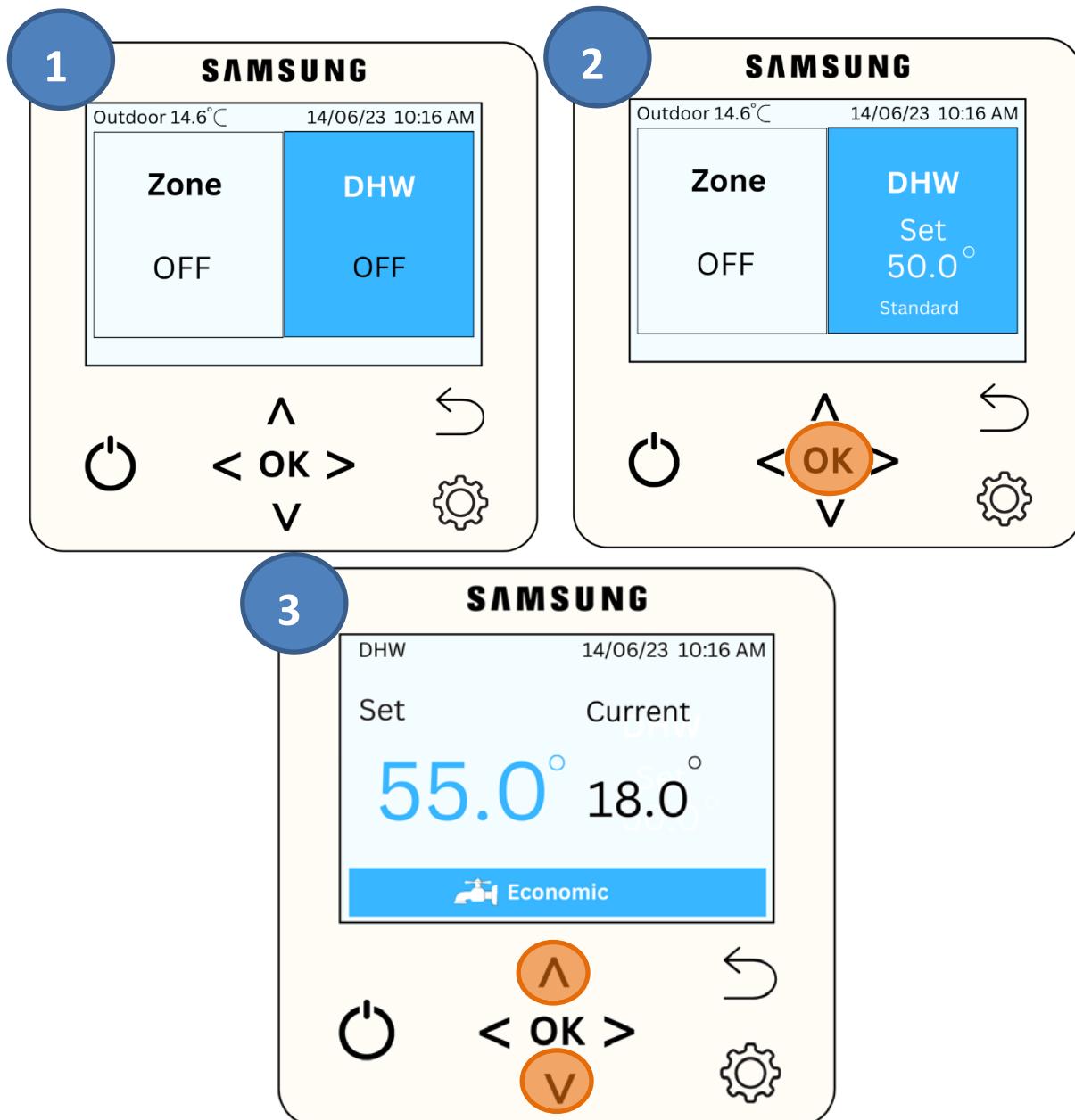


1. If the heating is off then press the **on/off button**  to turn it on;
2. **Press anywhere** within the Eco Heating system box to go to the temperature setting screen;
3. Press **up (+)** or **down (-)** to increase or decrease the temperature you want the house at;

How to turn on/off the hot water

Using the thermostat/controller:

1. Use the right arrow to turn the Zone panel blue and press the **on/off** button in the bottom left
2. Once the hot water is on, press the **OK** button to go to the temperature setting screen:
3. Use the **up/down arrow** to change the temperature you want your hot water to be at (50°C).



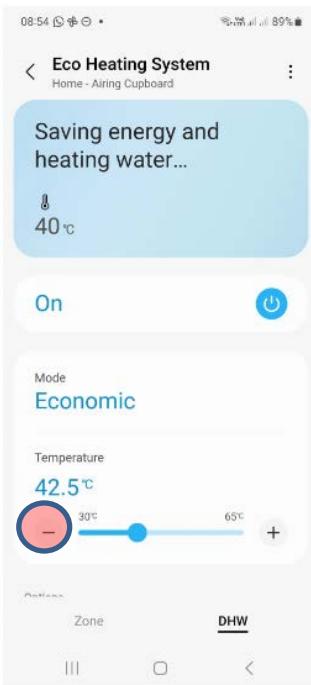
Using the SmartThings App:

1. Click on the '**HOT WATER**' tab.
2. Press the **+- buttons** to turn the target temperature up or down.

We recommend setting it at **no higher than 50 degrees**.

Setting it higher than 50 degrees will significantly increase your energy bills.

And remember that 50 degree water is scalding hot! Your shower will mix the 50 degree water with cold water to give you 38 degree(ish) water which is a hot shower temperature. When your tank is heating up, if the "current" temperature has reached 40 degrees you should be able to have a hot shower.



Hot water modes:

There are **4 hot water modes** that you can choose from on your thermostat/controller or the SmartThings App:

We recommend always using "**Eco**" mode unless you need hot water urgently.

Eco mode means that only the heat pump is used to heat the water in the tank. This is more efficient than the immersion heater and will save you money.

Standard mode uses the heat pump for 30 minutes and then also uses the immersion heater in the tank. The immersion heater is a much larger version of the electric heating coil you have in a kettle. The immersion is expensive to run so you should avoid using it if possible by using Eco mode.

Power mode and **Forced mode** both use the heat pump and the immersion heater for extra-fast heating. If you have a cold tank and can't wait for an hour you can use "Forced mode". This will heat up the tank more quickly, but it uses a lot more energy than Eco mode, so it will automatically turn off after one hour. If you use one of these modes then make sure to change it back to **Economic mode** afterwards!

Unless you are on an Octopus 'Cosy time-of-use tariff', and/or have solar panels, we recommend leaving the hot water "on" in Economic mode all of the time. See the Cosy tariff guide and the Solar panels guides for more information.

If you go away for more than 1 day, you can turn off the hot water if you want to. This will save you some money, but if you are away for more than 2 days you may need to wait for the tank to heat up for 1 hour after turning back on. If you want an immediate shower as soon as you get home you can use the mobile app to turn it on when you're on your way home!

Scheduling

Heating

If you like the house to be at different temperatures over the day or week you can either just adjust temperature manually on the controller, or you can set an automatic schedule. The schedule automatically changes the temperature on your thermostat at the times you want.

For example, if you like a slightly cooler house during the night you can set a schedule that says: "At 10pm turn down the temperature on the thermostat to 18°C". Then "At 6am turn the temperature on the thermostat back up to 20°C".

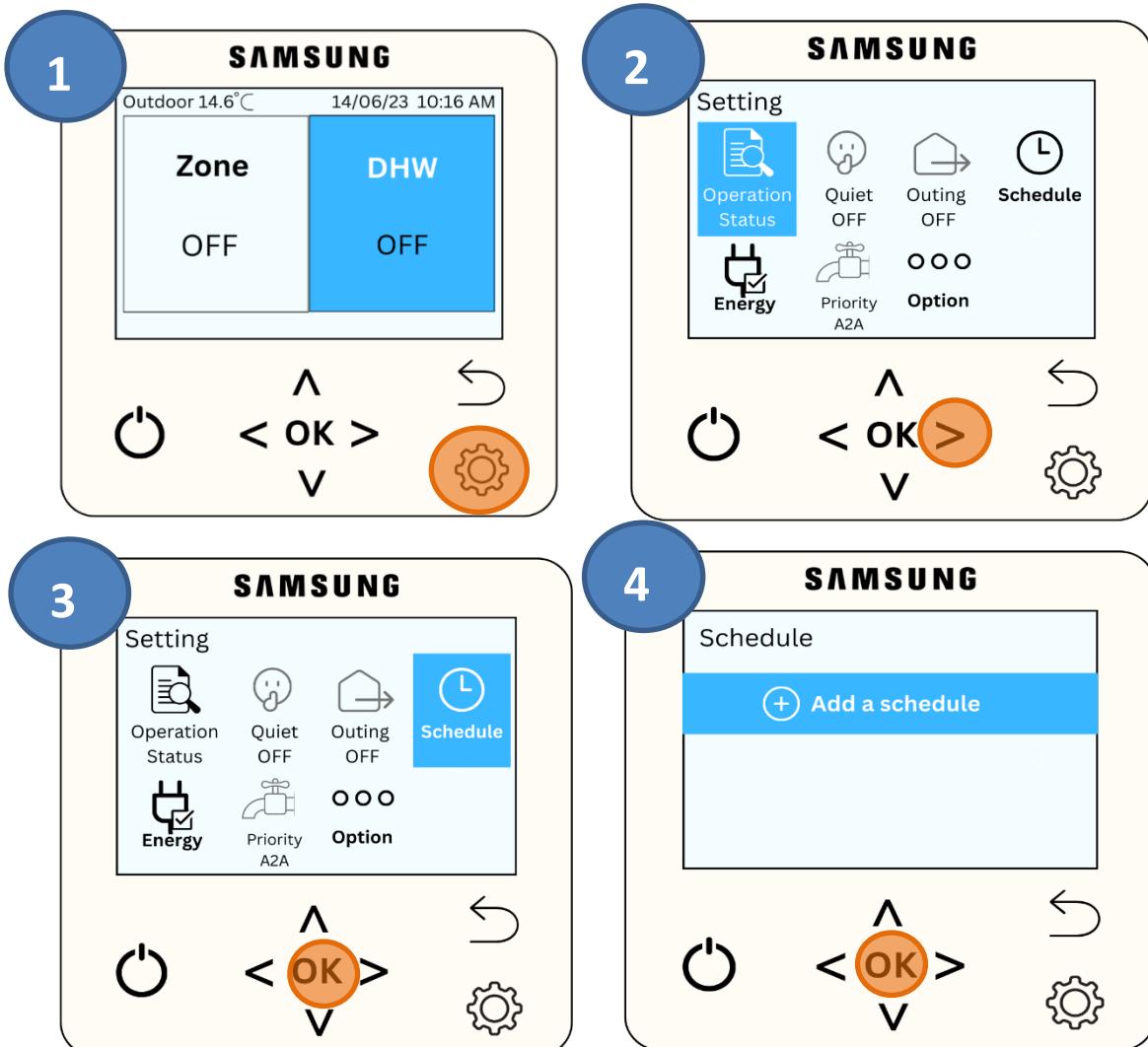
How to set a schedule for your heating

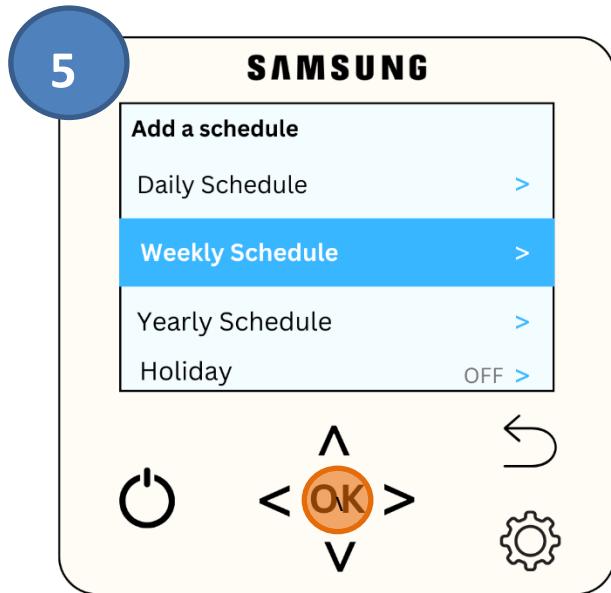
Please note that Weekly schedule is for heating; Daily schedule is for hot water.

Using the thermostat/controller:

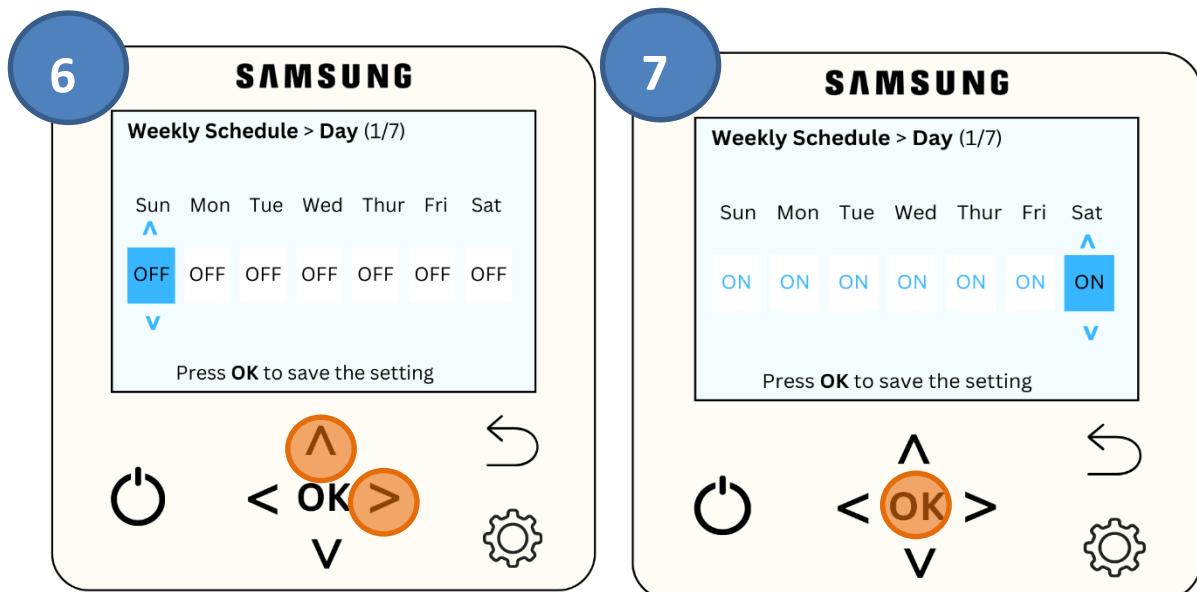
Follow the steps below to and select a "weekly schedule"

You must use the **Weekly Schedule** to control your heating, even if you want the same each day. Follow the steps below.



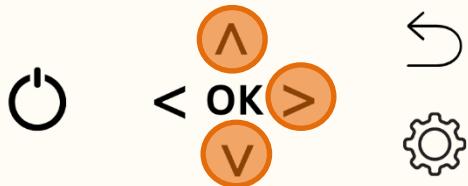
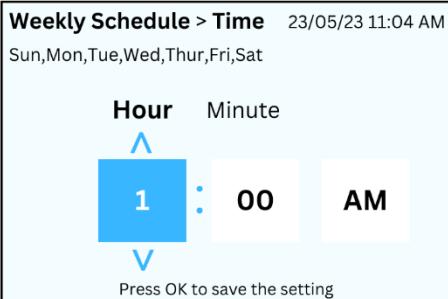


1. Click on the **settings button** in the bottom right of the controller.
2. Then press the **right hand arrow 3 times** until you have '**schedule**' highlighted in blue on the screen.
3. Click **ok** to select schedule.
4. Click **ok** to select 'add a schedule'.
5. Press the **down arrow** until '**weekly schedule**' is highlighted in blue. Click **ok** to select.

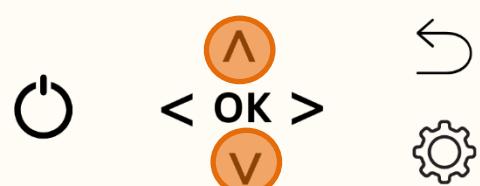
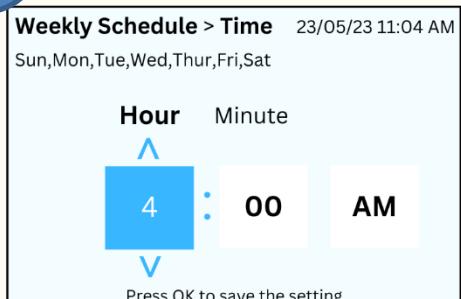


6. You now choose which days you want your schedule to run. Most people will want it every day – so press the **up button** to change **OFF** to **ON** and the **right button** to move across to the next day.
7. Once all the days are showing **ON**, press **OK** to move to the next step

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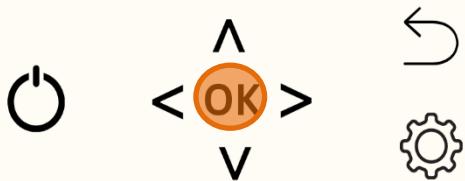
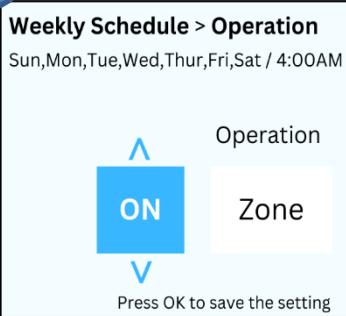
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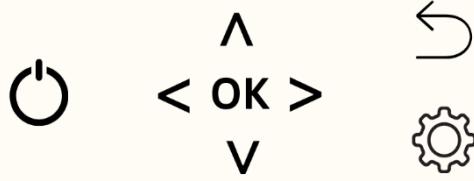
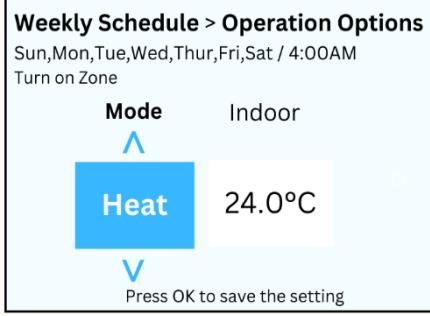
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- Now use the **up and down arrows** to select the hour at which you want the temperature to change and use the **right hand arrow** to move to select the minutes.
- Then use the **up and down arrows** to select the minutes. In this example we want it to change at 4am. Once you have the correct time press **OK** to move to the next step.

10

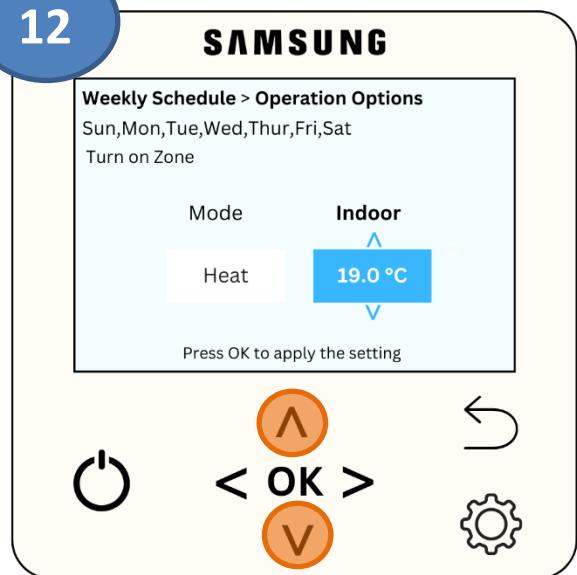
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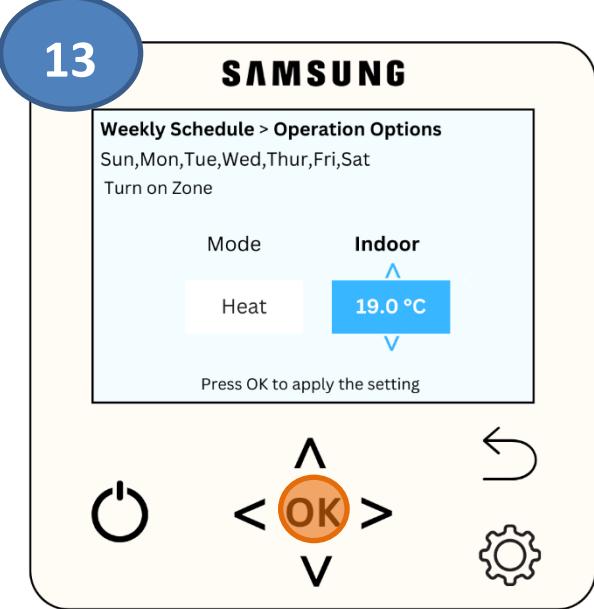
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- Make sure the schedule says **ON** this screen. If you want to turn a schedule off without deleting it you can do this on this screen. When you're happy hit **OK** to move to the next screen.
- Make sure the Mode says **HEAT**; press the **right arrow**.

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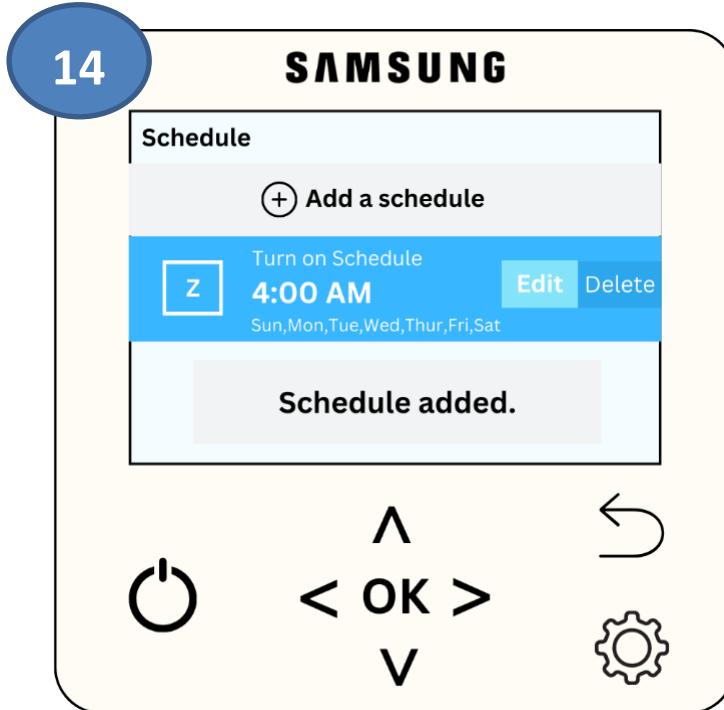


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12. Then use the **UP and DOWN arrows** to set the temperature you want the house to be at the selected time (in this example 4am).
13. Once you have the temperature you want press **OK** to apply the setting.
14. It will say "**Schedule added**". You can then edit or delete a schedule using the **EDIT** and **DELETE** options. If you do this then use the **OK** button to scroll through the screens until you get to the setting that you want to change.

14



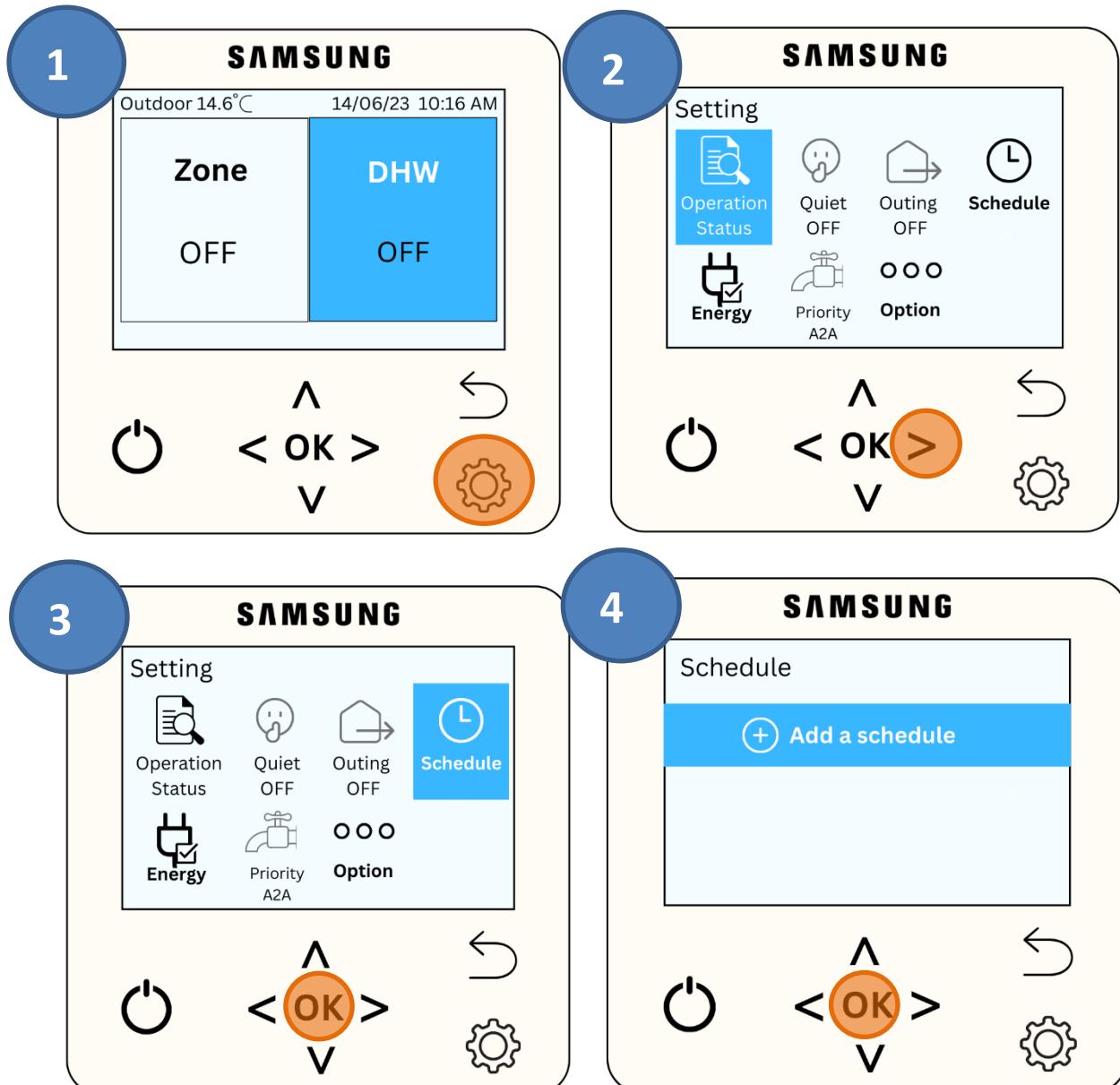
Finally, check that the Z for Zone icon is to the left of the correct heating schedule for each time of day. Note that when you change one time, the times of day may show in a different order.

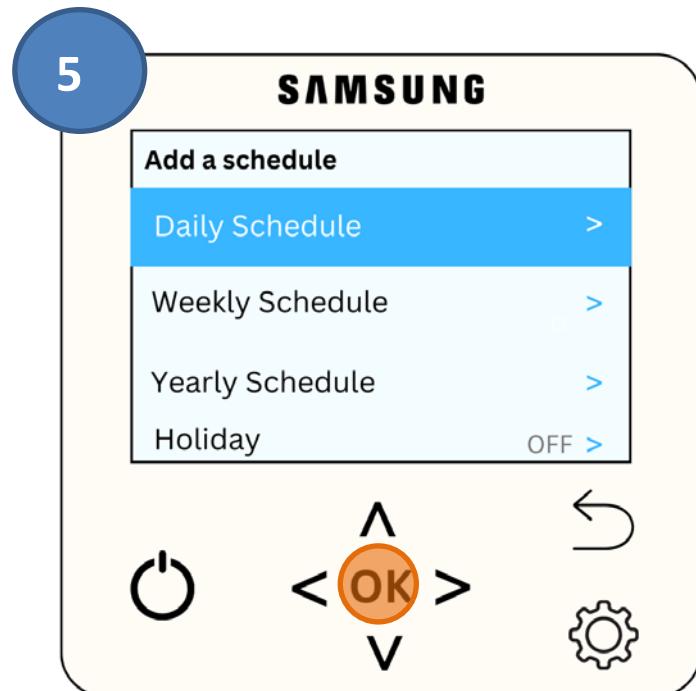
How to set a schedule for your hot water (DHW)

If you do not like the idea of leaving the hot water on all the time, or if you are on a Cosy tariff or have solar panels, you might want to set a schedule for when your heat pump heats your hot water.

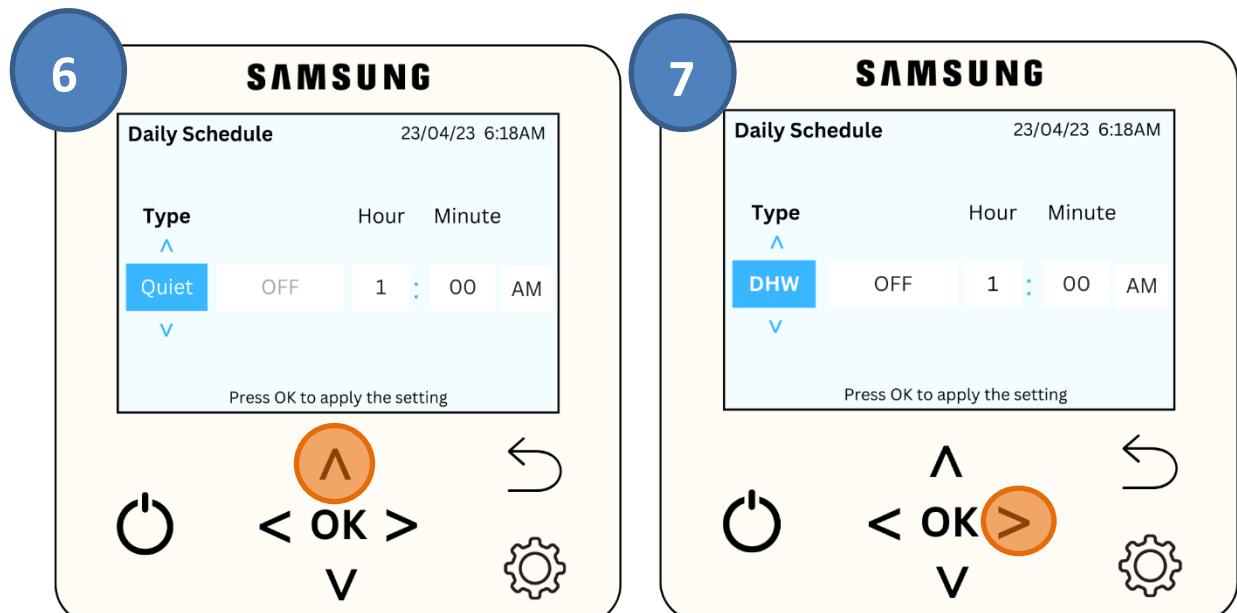
Turning the hot water on for **2 hours** should be enough to heat up your hot water tank. And, unless you use a lot of hot water, one tank's worth should be enough for one day. When you use your hot water you will see that the tank temperature falls. If you keep the hot water on all of the time then as soon as the tank temperature falls it will heat back up. If you have a schedule it will stay warm/cold until you next turn it on.

Follow the steps below to and select a “daily schedule”. In the example below we will set the hot water to turn on at 4am.

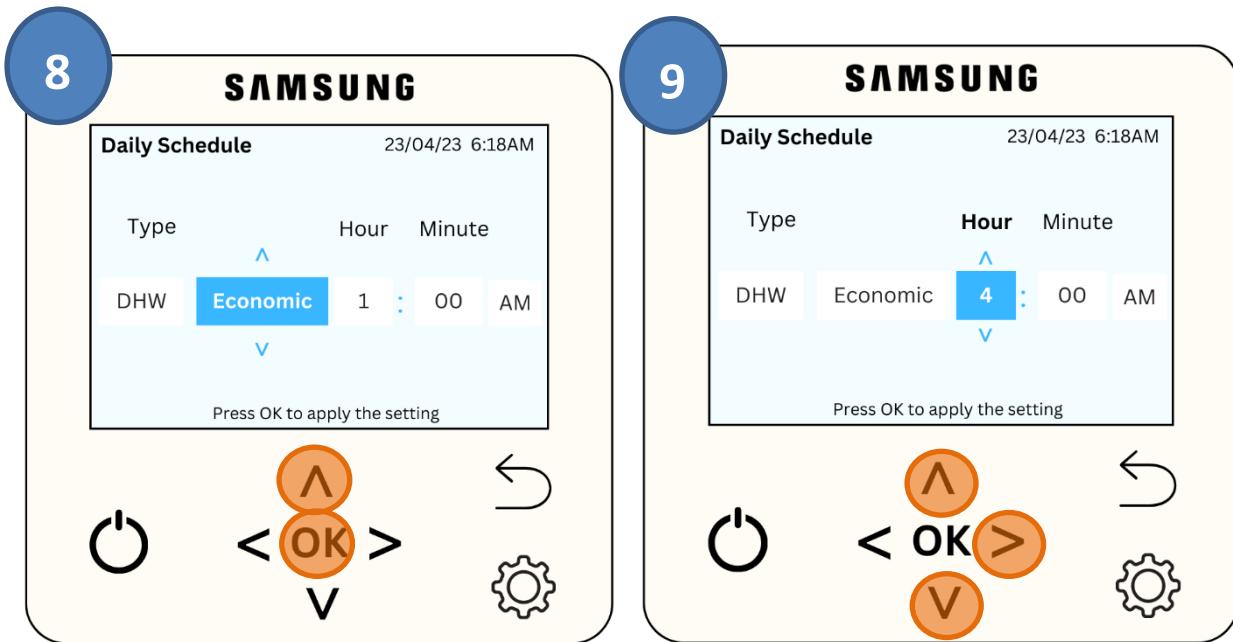




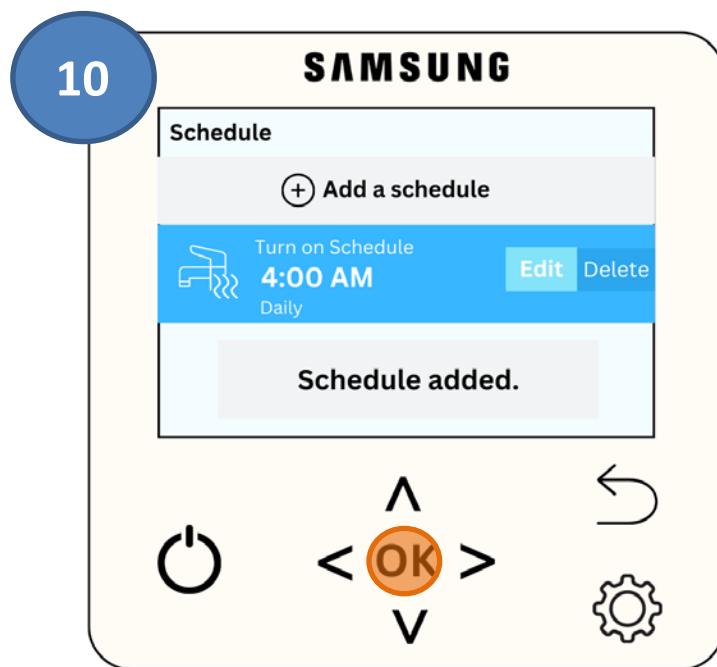
1. Click on the **settings button** in the bottom right of the controller.
2. Then press the **right hand arrow 3 times** until you have '**schedule**' highlighted in blue on the screen.
3. Click **ok** to select schedule.
4. Click **ok** to select '**add a schedule**'.
5. Click **ok** to select '**daily**' is highlighted in blue.



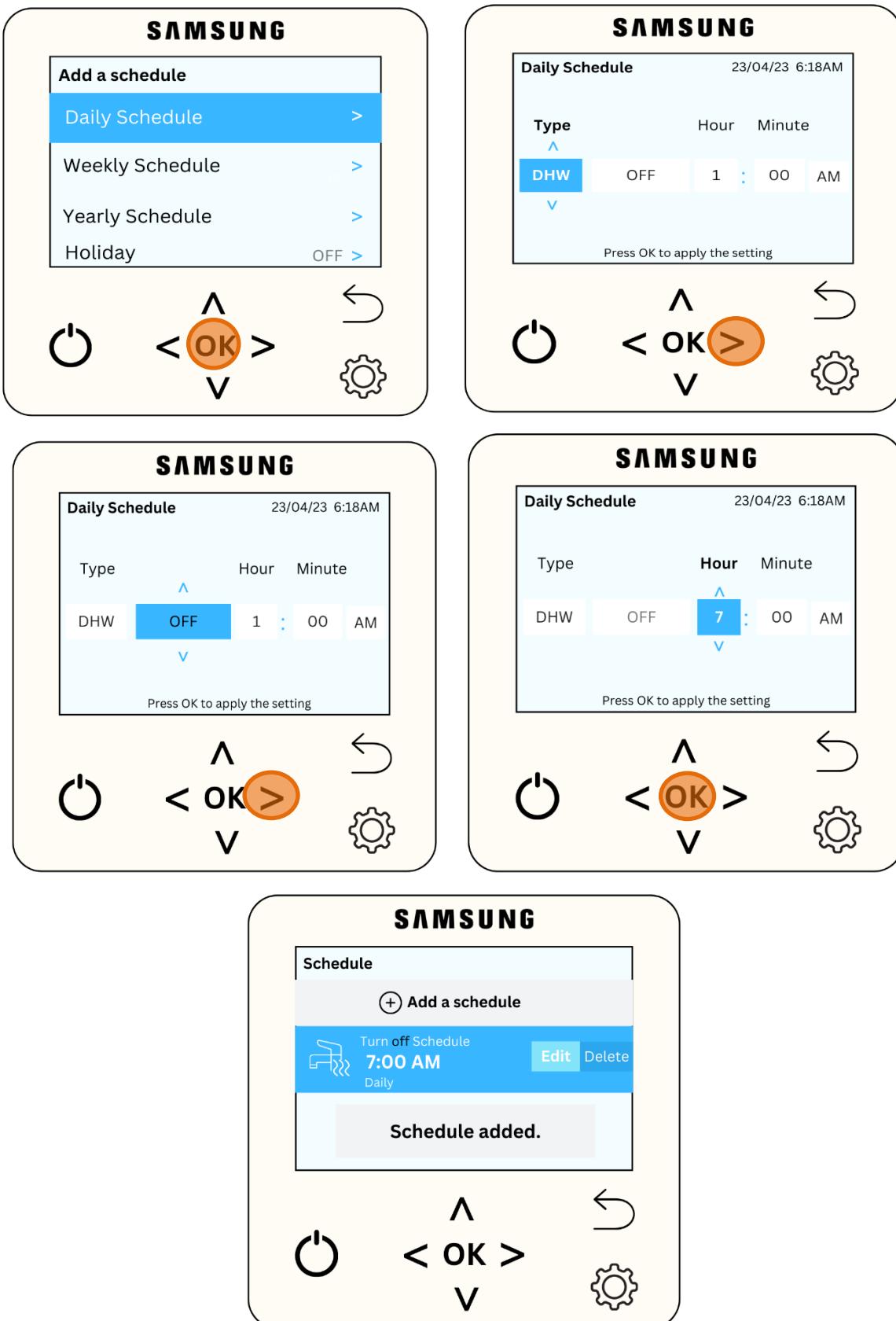
6. Click the **upward arrow** to select '**DHW**'.
7. Scroll across using the **RIGHT arrow**.



- Then click the **UPWARD arrow** to change the setting from **OFF** to the desired hot water heating mode. We recommend always using **ECONOMIC** mode to save energy and money. Once '**ECONOMIC**' is highlighted in blue, click '**Ok**'.
- Scroll across using the **RIGHT arrow** and then use the **UP and DOWN arrows** to select the hour you want the hot water tank to start heating up. Then use the **RIGHT arrow** and then the **UP and DOWN arrows** to select the minutes. In this example we want it to change at 4am. Once you have the correct time press **OK** to move to the next step. You should see '**Schedule added**' at the bottom of the screen.
- Now you need to set a time for the tank to stop heating (turn it off). Click the UP arrows to scroll to "**Add a schedule**" and select **OK**.



Then go through the same steps as setting a time for the hot water to come on, but instead of **ECONOMIC** mode leave the Mode as **OFF**. In the example below the time is set to turn **OFF** at **7am**



It will say “**Schedule added**”. You can then edit or delete a schedule using the **EDIT** and **DELETE** options. If you do this then use the **OK** button to scroll through the screens until you get to the setting that you want to change.

Scheduling using the SmartThings App

This will be added later this year when the App is updated.

Away mode

Away mode applies lower set-points for your heating and hot water whilst it is activated. However, you can only use this if you do not have any active schedules! If you have an active schedule then the schedule will deactivate the away mode when the schedule kicks-in.

Because of this we don’t recommend use of the away mode in this project. If you go away and want to save energy then you can turn off the hot water and reduce the set-point of the heating.

Quiet mode

Quiet mode limits how hard the heatpump is allowed to run; this limits the noise that it makes but also limits the heat that it can produce, so you can’t have this on all the time. However, if you want to set the unit to quiet mode overnight you can do this. Since modern heatpumps are relatively quiet compared to older models, this isn’t a commonly used feature any more.

Maintenance

Regular checks

When your heat pump is located outdoors some external maintenance is required.

Checking grilles and bottom panel- Check that the inlet grille is not clogged by leaves, snow or anything else regularly throughout the year. You should be vigilant during windy conditions and/or in the event of snow as the grilles can become blocked.