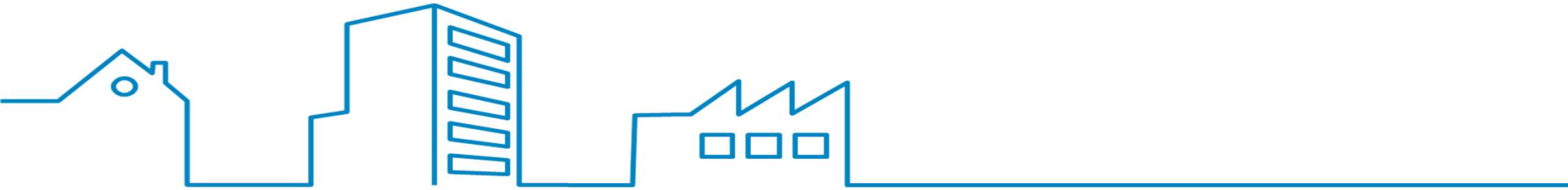
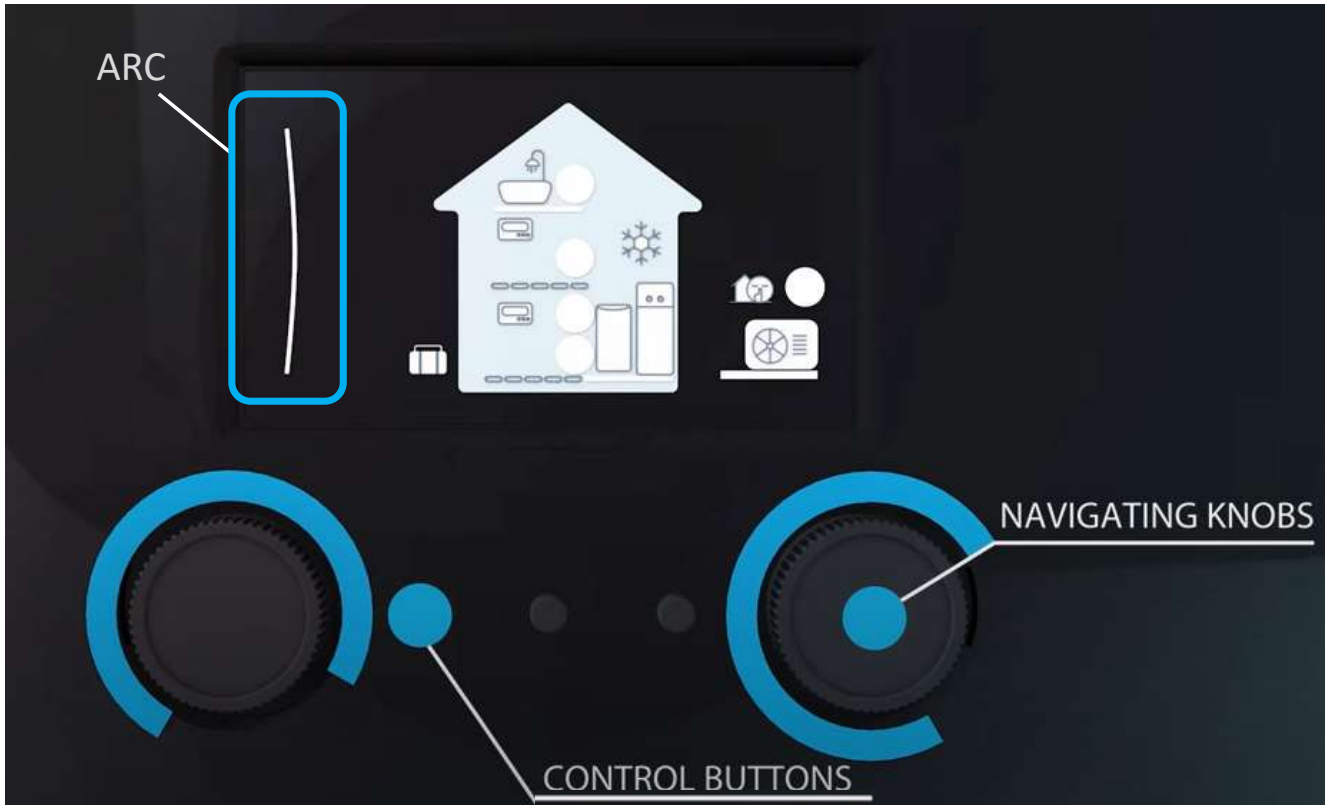
MMI Basics



MMI (Man Machine Interface)

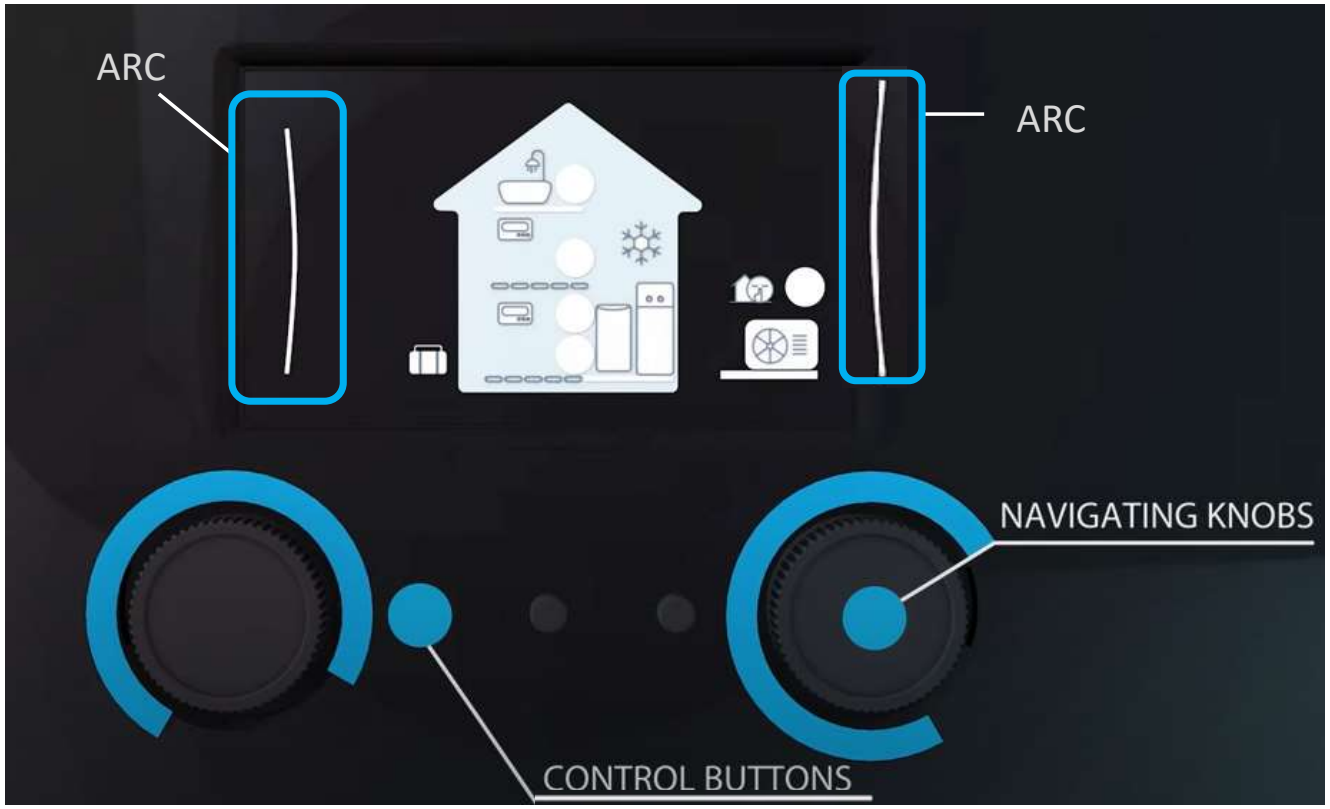


Turn the Left dial to highlight the appropriate menu item and press the left dial to enter.

The Arc on the screen indicates when you can use the left dial to navigate the menu

MMI (Man Machine Interface)

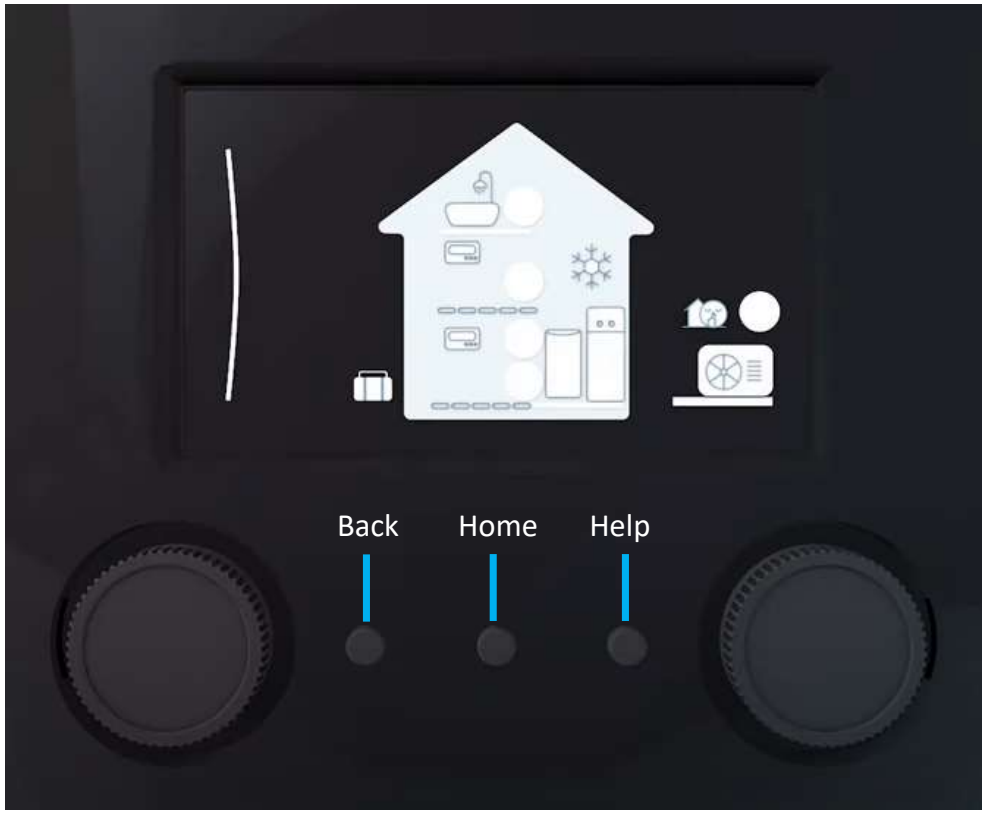
MMI (Man Machine Interface)



Turn the right dial to highlight the change settings in certain menu items and press the right dial to confirm.

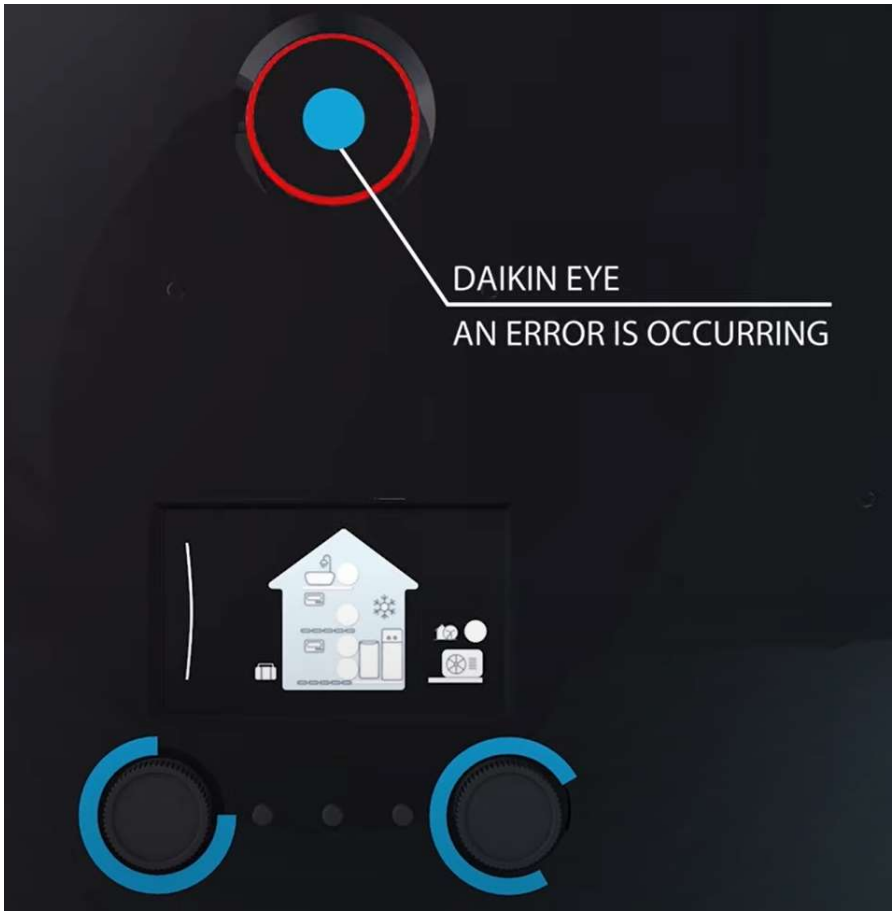
The Arc on the right side of the screen indicates when you can use the right dial to navigate the menu

MMI (Man Machine Interface)



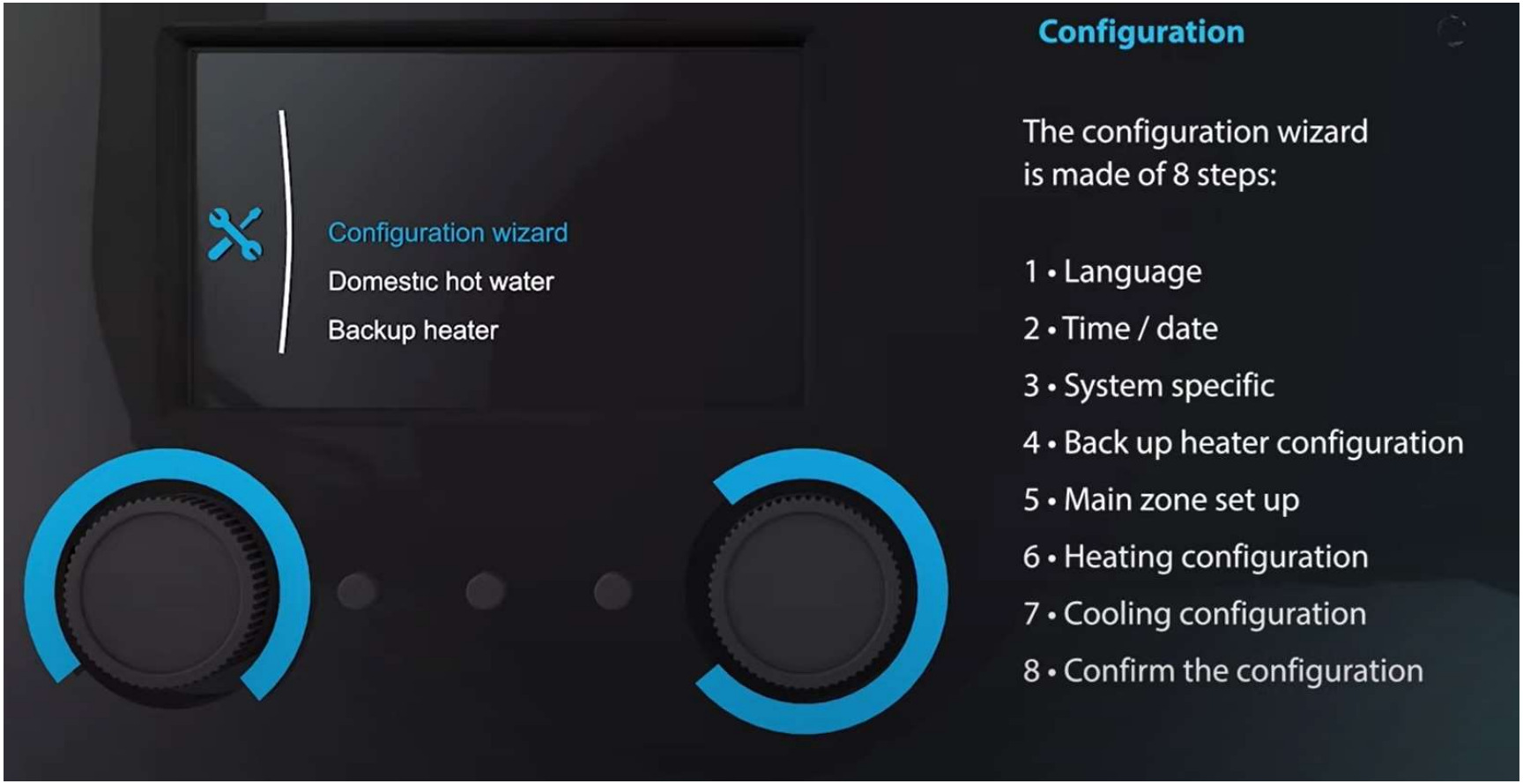
Button	Description
Back button	Press to go back 1 step in the menu structure
Home button	Press to go back to the home screen
Help button	Press to show a help text related to the current page (if available)

MMI (Man Machine Interface)



Configuration Wizard

When turning power onto the unit for the first time the MMI controller will ask a few simple questions to start the setup process, this is called the Commission Wizard.

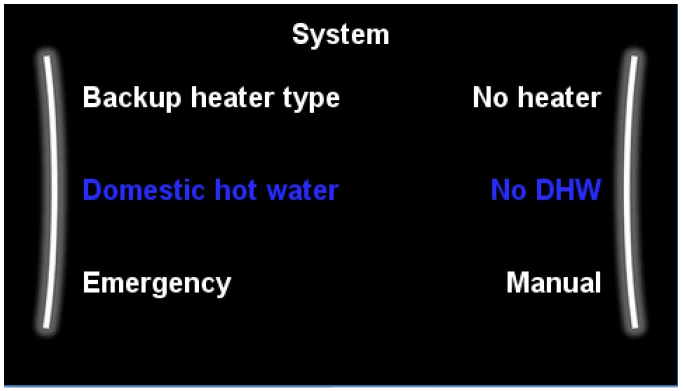


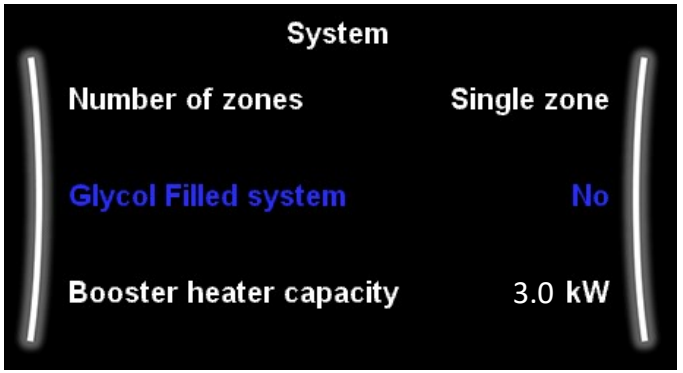
Configuration Wizard

You will first need to enter some basic information to get started

Configuration Wizard – System set Up

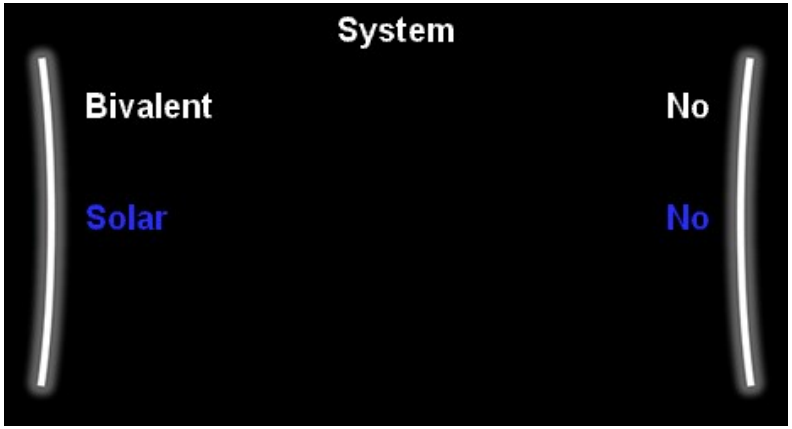
- BUH Type and Size
  - 6V
  - 9W
  - No Heater
- DHW Tank installed and what type
  - EKHWS/E - Unvented
  - EKHWP/ HYC - Thermal Store
  - No DHW
- Emergency Mode Operation Logic
  - Manual
  - Automatic
  - Auto SH Reduced / DHW on
  - Auto SH Reduced / DHW off
  - Auto SH Normal / DHW off
- Number of LWT zones
  - Single Zone
  - Dual Zone
- Glycol Installed
  - Yes
  - No
- What is the Booster Heater KW rating (for monitoring purposes only)





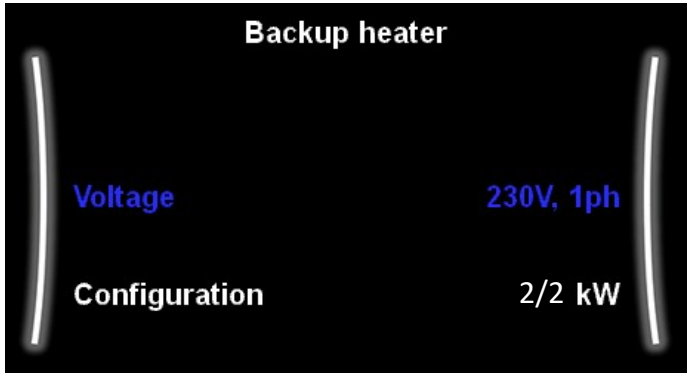
Configuration Wizard – System set Up

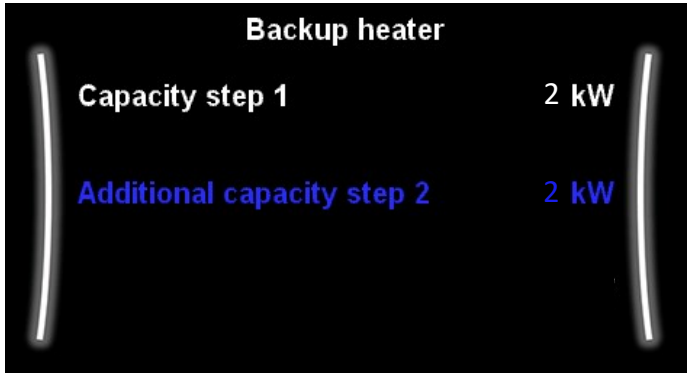
- Bivalent Installed – Yes / No
- Solar Installed – Yes / No



Configuration Wizard – Back Up Heater

- BUH Voltage and Phase
- Configuration – Number of Steps
- Capacity of first step
- Capacity of second step

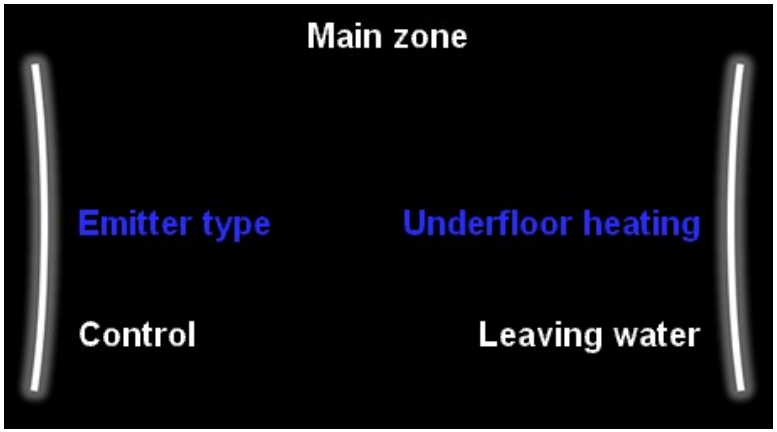


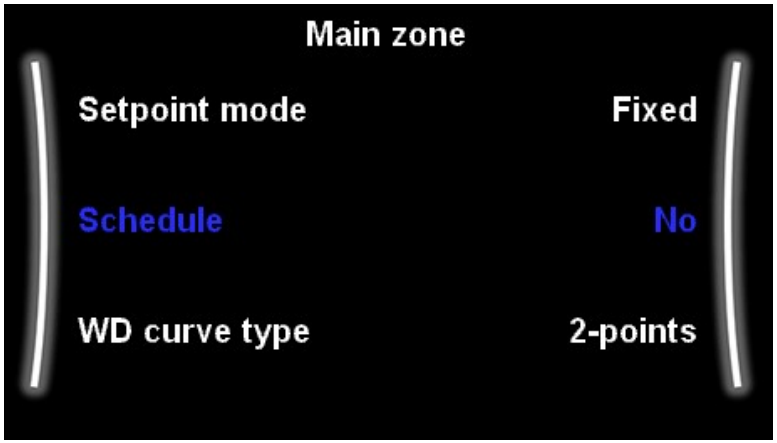


Note – Configuration (9.3.3) and Additional capacity step 2 (9.3.5) settings are linked.

Configuration Wizard – Main Zone

- Emitter Type – - UFH
  - Radiators
  - Fan Coils
- Control – - RT Control
  - Ext RT Control
  - LWT
- Set Point Mode - - Fixed
  - Weather Dependant
- Schedule – - Yes
  - No
- WD Curve Type – - 2 Points
  - Slope offset

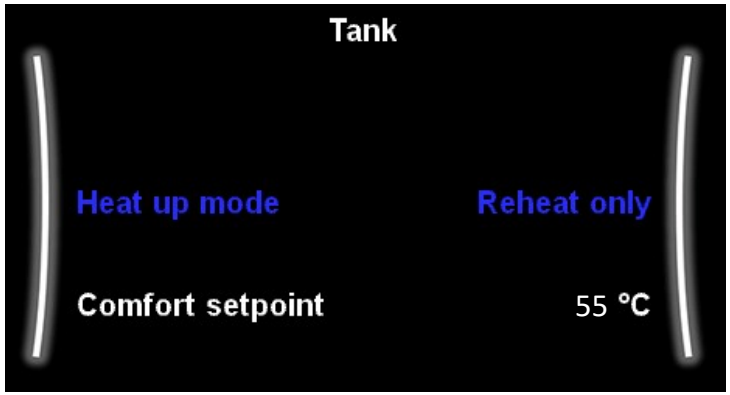




If dual zone is activated you will complete this page again for the Additional zone.

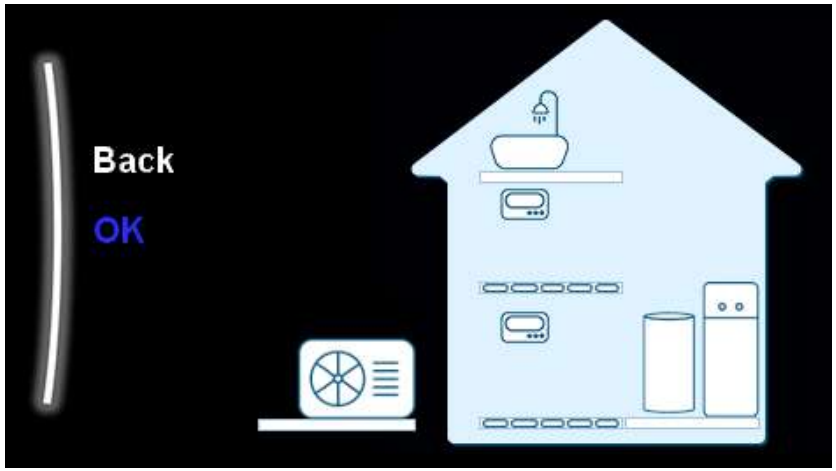
Configuration Wizard – Tank

- Tank Heat Up Mode
  - Reheat Only
  - Scheduled
  - Reheat + Scheduled
- Comfort Set Point
- Eco Set Point
- Reheat Set Point
- Hysteresis – Number of degrees drop on Reheat Mode

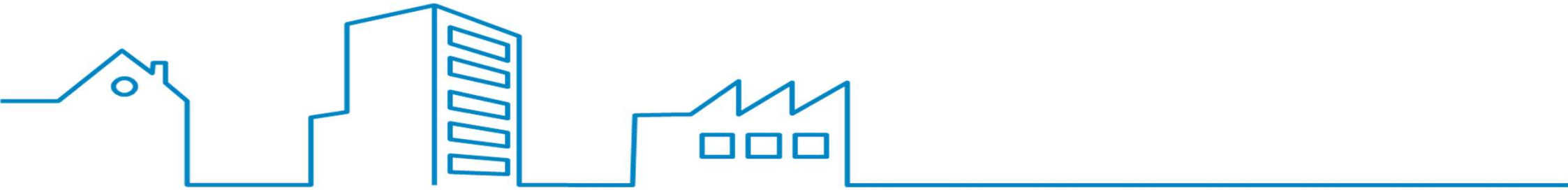


Configuration Wizard – Confirm Changes

- Once all the settings have been entered you have to confirm the changes.
- At this point you can still go back and change options.

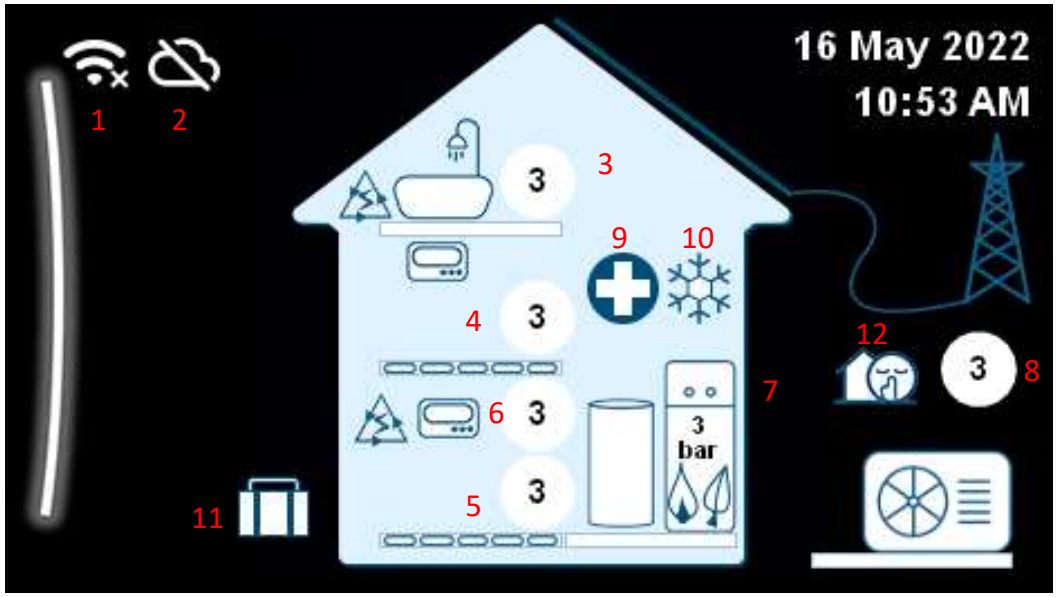


MMI Settings



Home Screen

Once the Commissioning wizard has completed and the system has synchronised you will end up at the home screen. How you have configured the system will determine what is shown on the screen.



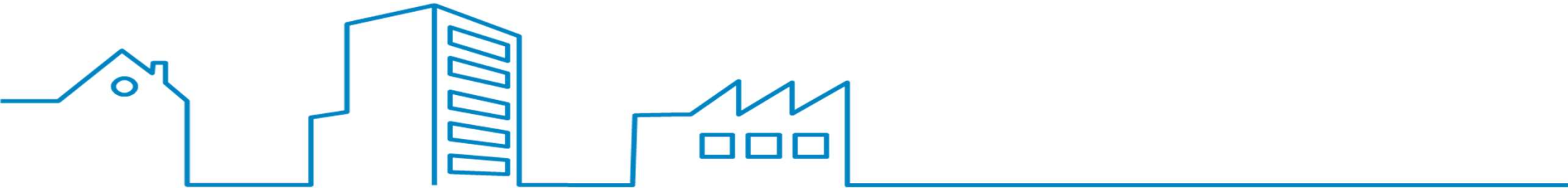
1) Lan Adapter Connection
2) Weather Compensation
3) Tank Temperature
4) Zone 1 LWT Temperature
5) Zone 2 LWT Temperature
6) Room Temperature (If Daikin Stat utilised)
7) Water Pressure
8) Ambient Temperature
9) Emergency Mode Operation
10) Heating / Cooling Mode Indication
11) Holiday Mode
12) Quiet Mode

Main Menu Structure

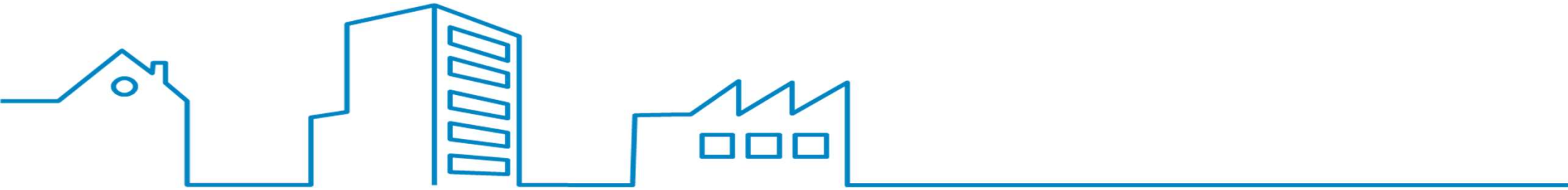
Upon entering the main menu, by pressing or turning the left dial you can enter the main menu. Depending on user profile activated you can access the following options.

- Room
- Main Zone
- Additional Zone
- Space Heating/ Cooling
- Tank
- Instant Hot Water
- User Settings
- Information
- Installer Settings
- Commissioning
- User Profile
- Operation
- Wireless Gateway
- Malfunctioning

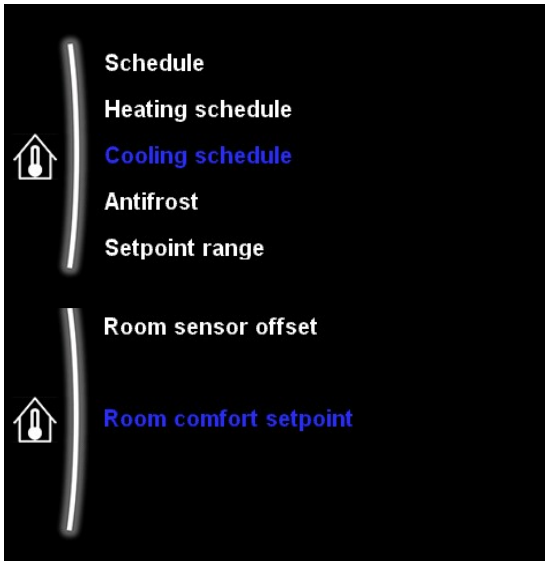
MMI Menu Settings



MMI Menu- Room



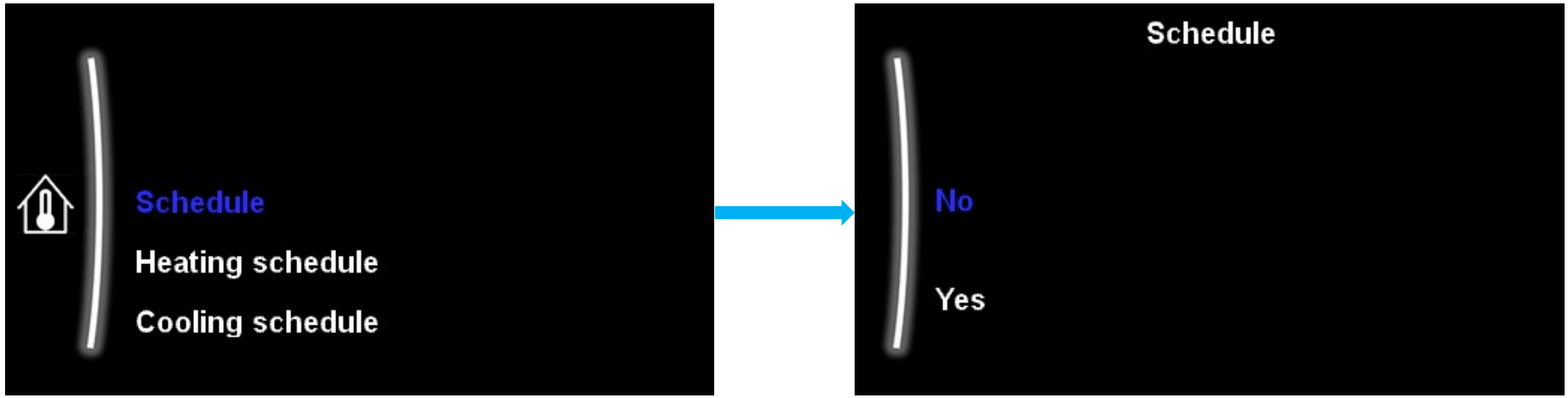
MMI Settings - Room



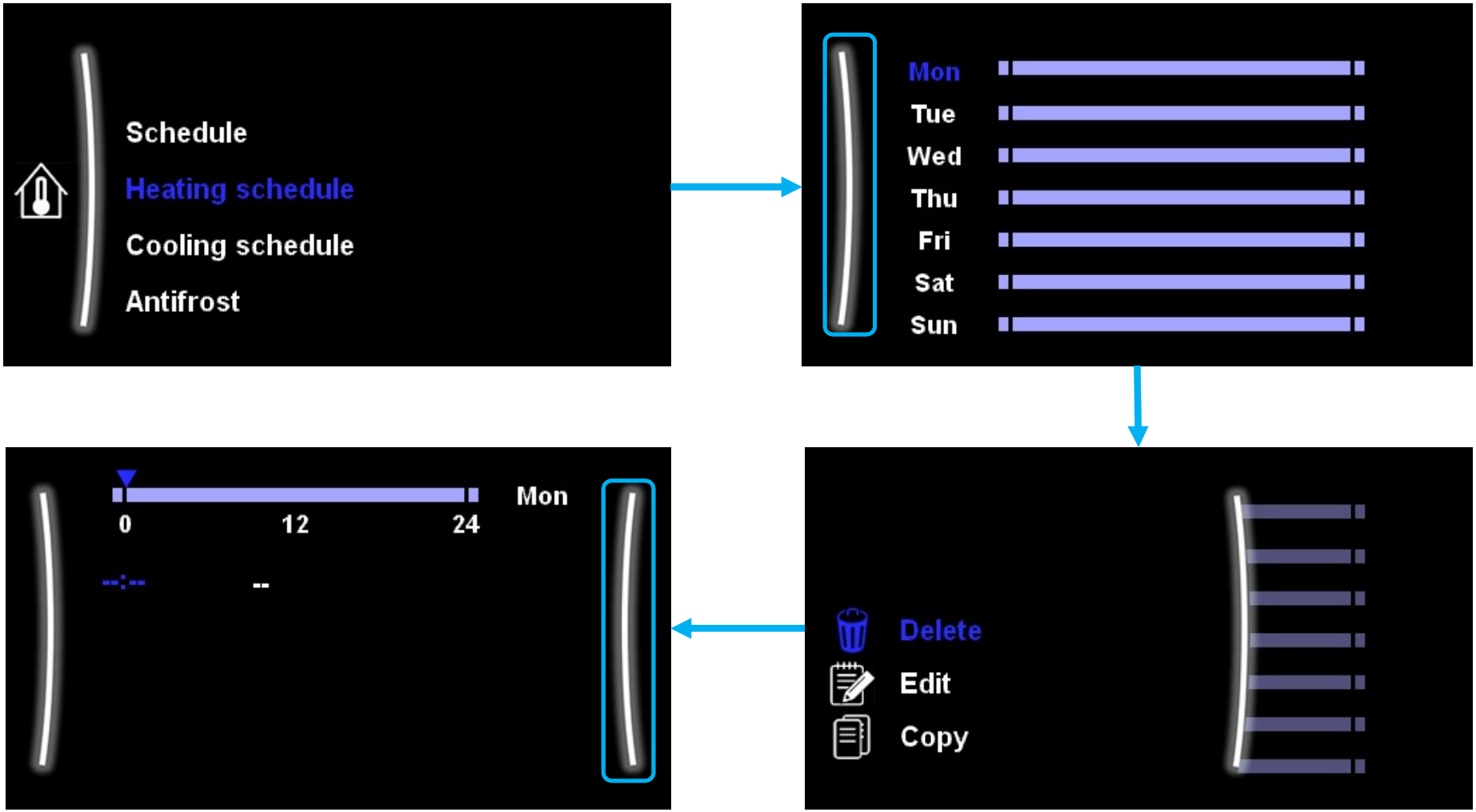
The Main “Room” page enables you to alter the Madoka room thermostat set point from the MMI. If you choose another operation mode such as Ext RT Control this option will not be available

All the settings applicable to the Roomstat are located in this sub menu.

MMI Settings – Room - Schedules



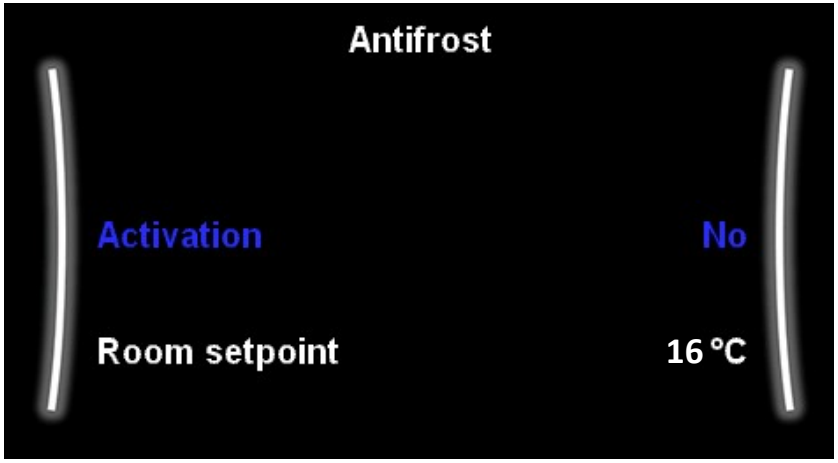
MMI Settings – Room – Heating / Cooling - Schedules



MMI Settings – Room - Antifrost

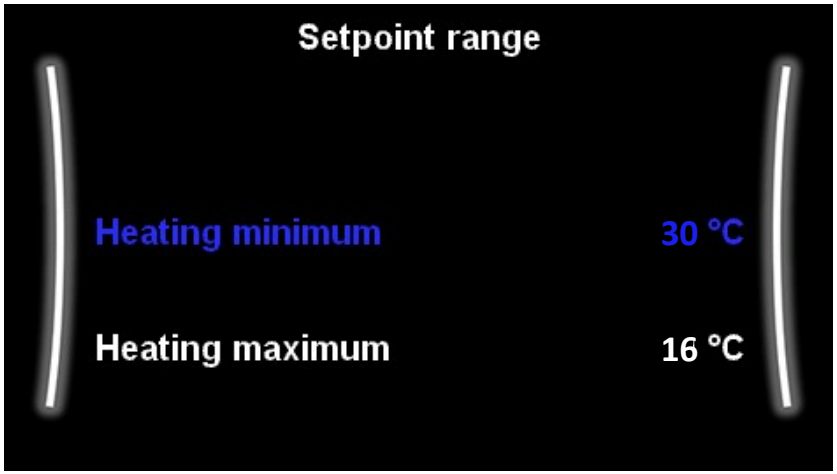
The Antifrost setting can utilise the Madoka Room thermostat to activate on a frost prevention cycle should the room temperature drop below a temperature you set.

There is another frost prevention setting in the field settings that will circulate the water pump at 7°C and activate the compressor/BUH at LWT of 5°C.



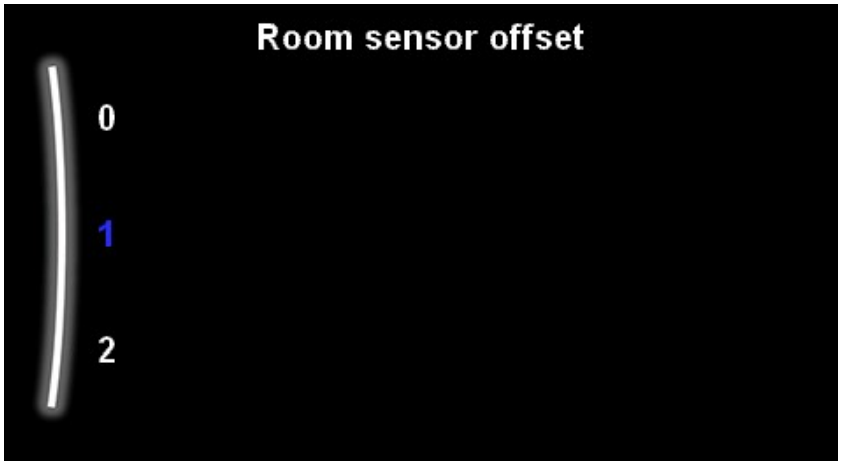
MMI Settings – Room – Setpoint Range

The Maximum and minimum room stat set points can be set here for both heating and cooling if you have a reversible model.



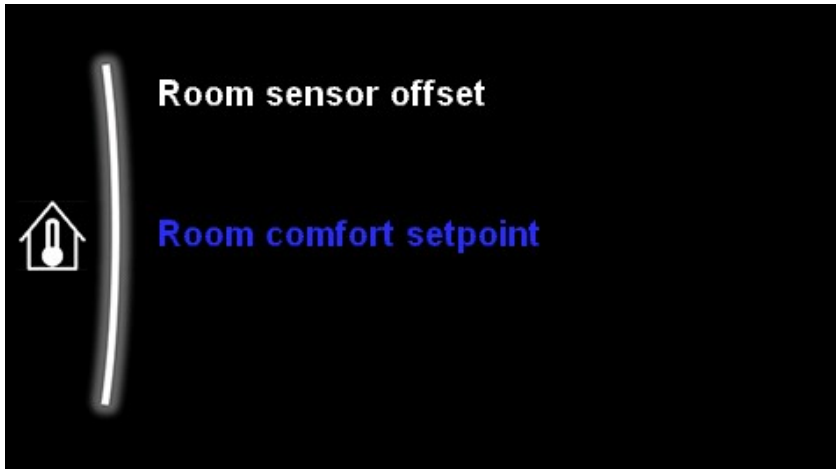
MMI Settings – Room – Room Sensor Offset

Should the room stat be installed in the sunlight, heat emitter or natural draught it may not be reading the correct temperature. It would always be advisable to reposition the room-stat / sensor to rectify the problem. However the MMI offers the option to adjust the sensor -5 to 5°C to alleviate the issue.

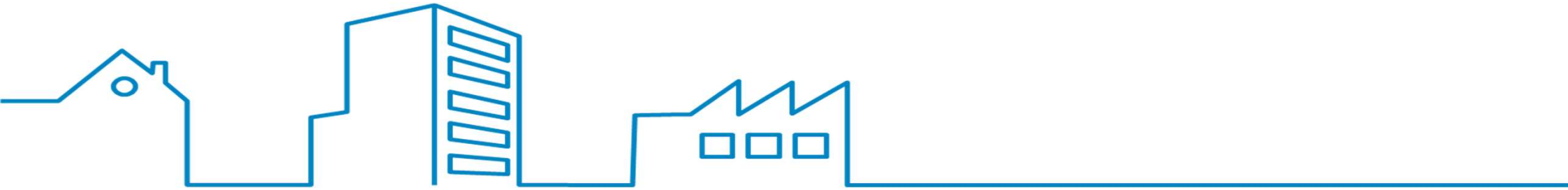


MMI Settings – Room – Comfort Setpoint

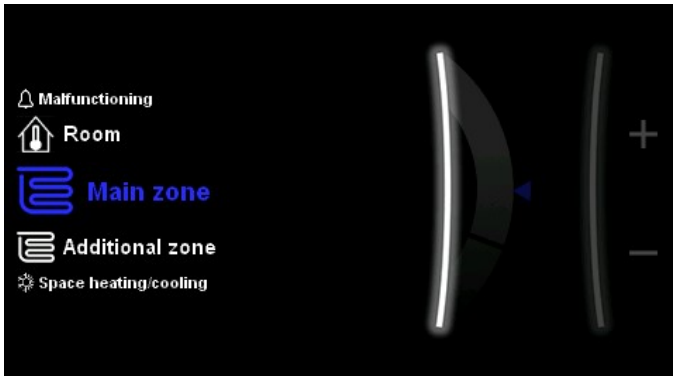
If you have smart grid enabled (*9.8.4 = Smart Grid*) and Room buffering is enabled (*9.8.7 = Yes*) any extra energy from the PV panels is buffered into the DHW tank and into the space heating / cooling circuits. These Comfort setpoints are the target temperatures for this buffering mode in heating mode.

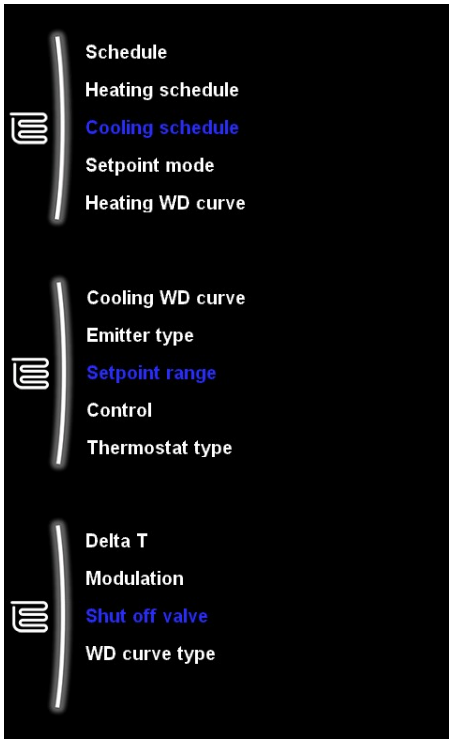


MMI Menu- Main Zone



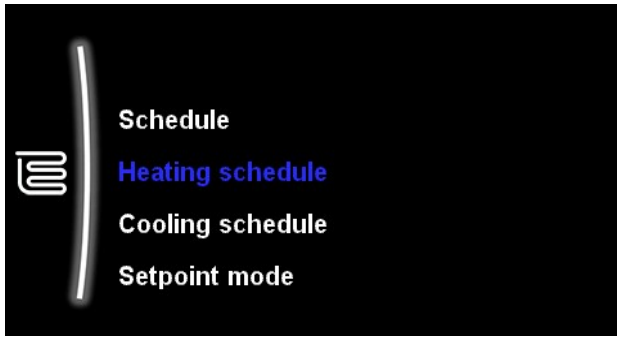
MMI Settings – Main Zone

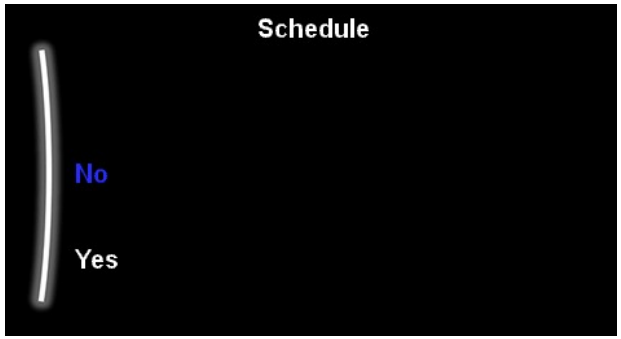


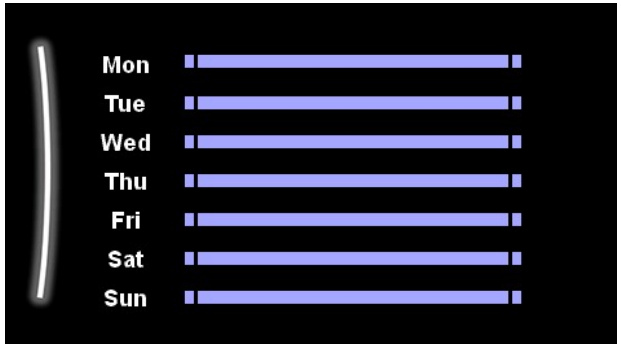


The “Main Zone” home page will contain all the required settings to control your LWT for that zone. This can be the zone controlled via the Madoka or 3rd Party stat wired across X2M – 30 & 35.

MMI Settings – Main Zone – Schedule + Setpoint Mode







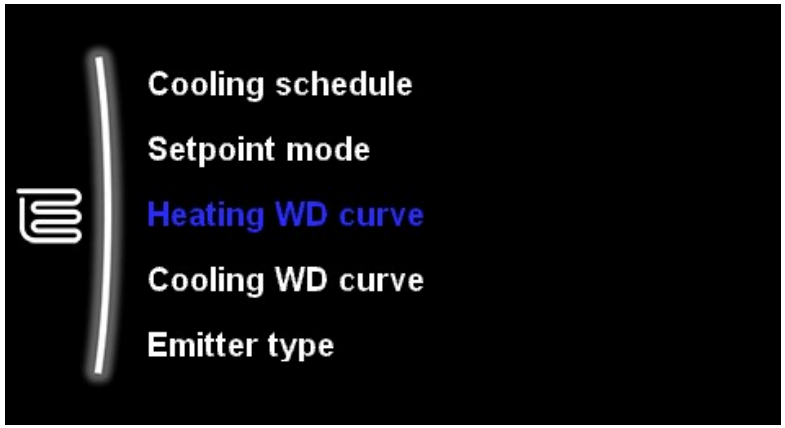
The main zone schedule is available only if the unit is LWT Control.

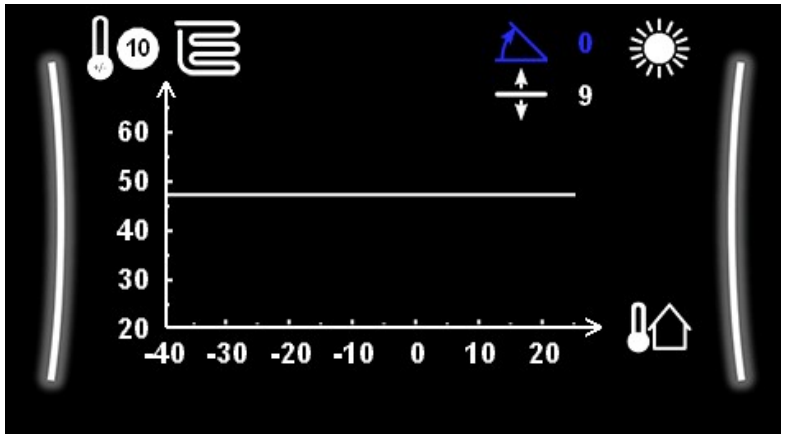
Unlike the schedule set up in room, which focuses on room temperature in the space, this schedule enables you to run different flow temperatures at different times of the day, for both heating and cooling if applicable.

You can leave the **Schedule** Option to “NO” if you wish to run at only 1 temperature or weather compensated curve (this is the norm on most installations).

Setpoint mode is where you can choose between Fixed flow temperature or Weather Compensated curve. This selection will impact on the figures you can select in any Main Zone Schedule (i.e Fixed temperature selections or an offset figure).

MMI Settings – Main Zone – Heating + Cooling WD Curve



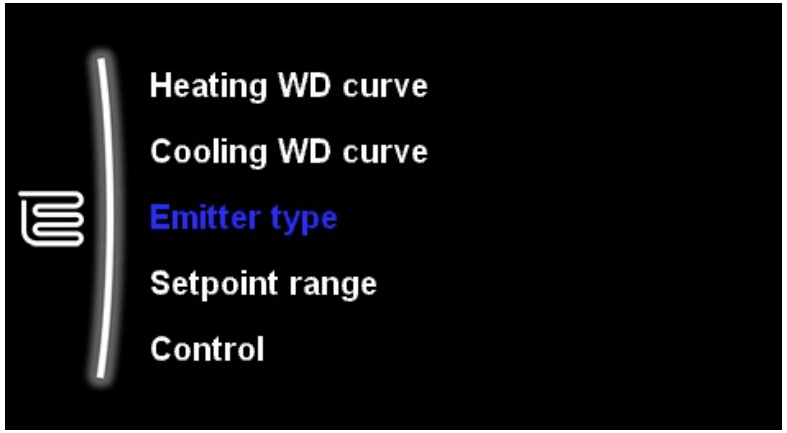


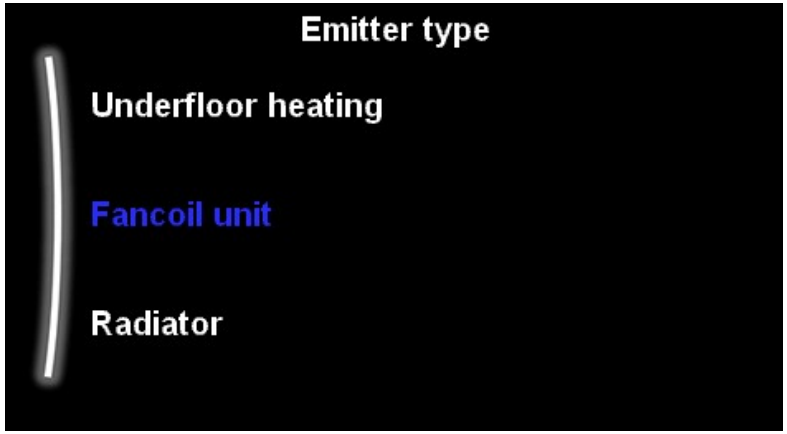
Both Heating and cooling zones can be set with a weather dependant (WD) curve to alter the flow temperatures at different ambient temperatures.

This mode of operation can increase customer comfort as well as reducing energy requirements by being able to reduce LWT set point as the outdoor temperature increases.

Weather Dependant curve information should come directly from the design stage and should not be estimated. They should be based on heat loss of the property and emitter size to correctly determine the change in LWT required as the ambient temperature alters.

MMI Settings – Main Zone – Emitter Type



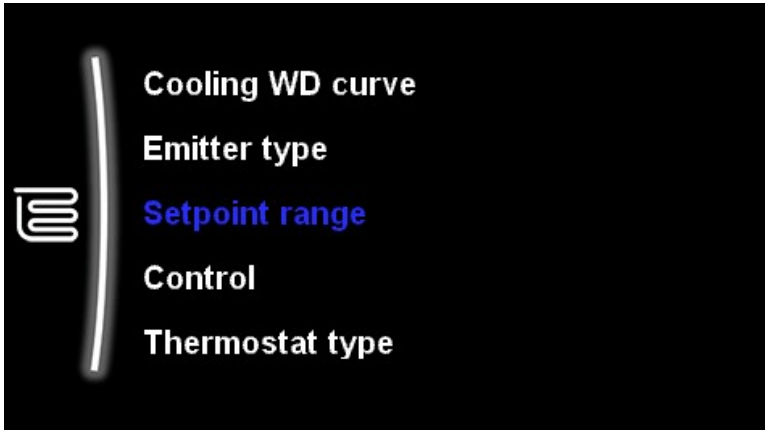


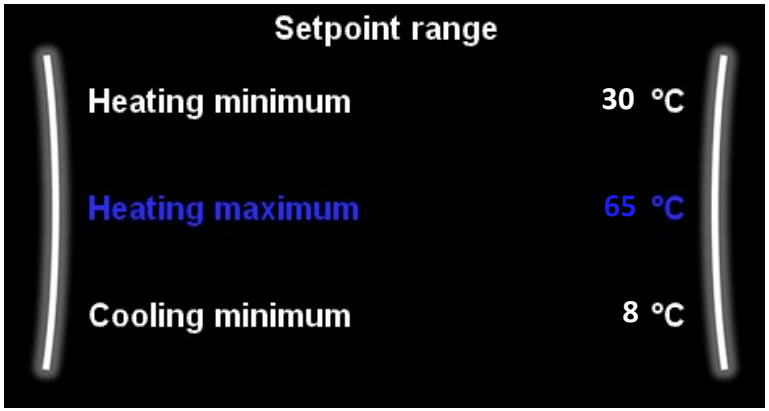
Emitter Type	SH Setpoint Maximum	Delta T
UFH	55°C	3 - 10°C
Fancoil Unit	55°C	3 - 10°C
Radiators	55 - 60°C*	Fixed - 10°C

* Depending on Model maximum LWT

- The main zone of a 2 x zone installation should be the one with the lowest LWT setpoint.
- A blending valve / aquastat should be installed on the lowest zone to protect against the higher flow temperature of the 2nd Zone when both are calling for heat as this will target the higher LWT of zone 2.
- Take care when designing emitter sizes in relation to mean water temperature (LWT – (Delta T/2)). In 2 zone systems with UFH and Radiators the radiators could have a lower mean water temperature due to the higher DT.

MMI Settings – Main Zone – Set Point Range





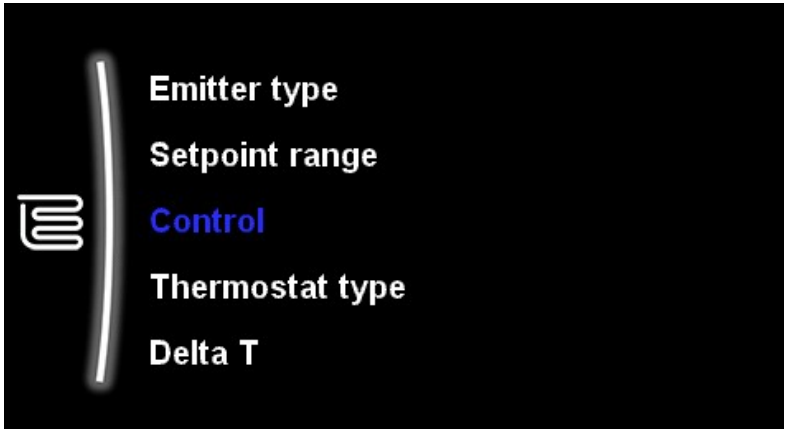
You can cap both heating and cooling (if applicable) LWT maximum and minimum temperatures.

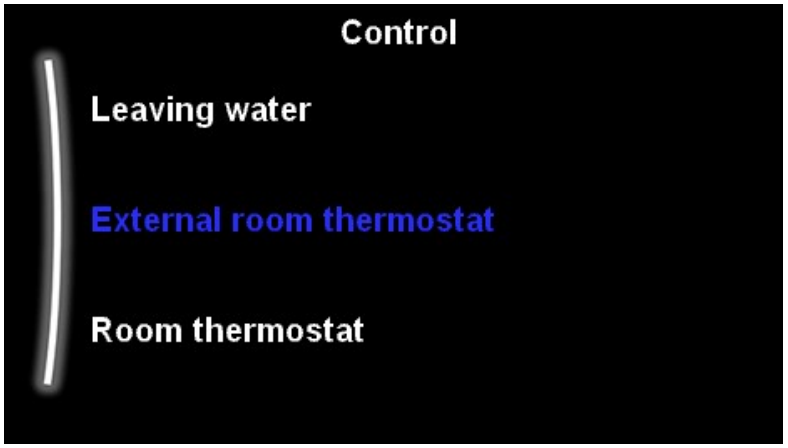
If you are installing UFH only without a blending valve it is advisable to limit the LWT to ensure protection of the floor.

If using Antifreeze valves on external water pipework with a reversible model you muxt set the cooling minimum temperature to 7°C to avoid accidental Antifreeze valve activation during cooling mode.

Always balance between the desired leaving water temperature with the desired room temperature and/or the capacity (according to the design and selection of the heat emitters). The desired leaving water temperature is the result of several settings (pre-set values, shift values, weather-dependent curves, modulation). **As a result, too high or too low leaving water temperatures could occur which lead to overtemperatures or capacity shortage.** By limiting the leaving water temperature range to adequate values (depending on the heat emitter), such situations can be avoided.

MMI Settings – Main Zone – Control

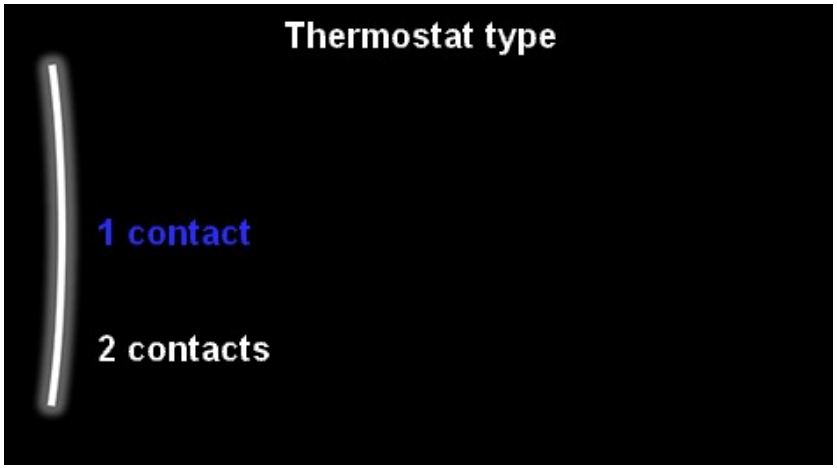




This setting selects the mode of control for this zone.

- Leaving Water – Unit operation based on LWT setpoint and delta T regardless of room temperature and any thermostat demand elsewhere on the system.
- External Room Thermostat – Operation based on demand from external thermostat across X2M – 30-35 or Additional Stat 30 – 35A
- Room Thermostat – Operation based on control of Madoka Room Thermostat setpoint / mode of operation.

MMI Settings – Main Zone – Thermostat Type



Thermostat type dictates the type of control an external stat has:

1 Contact:

The used external room thermostat can only send a thermo ON/OFF condition. There is no separation between heating or cooling demand. The room thermostat is connected to only 1 digital input (X2M/35).

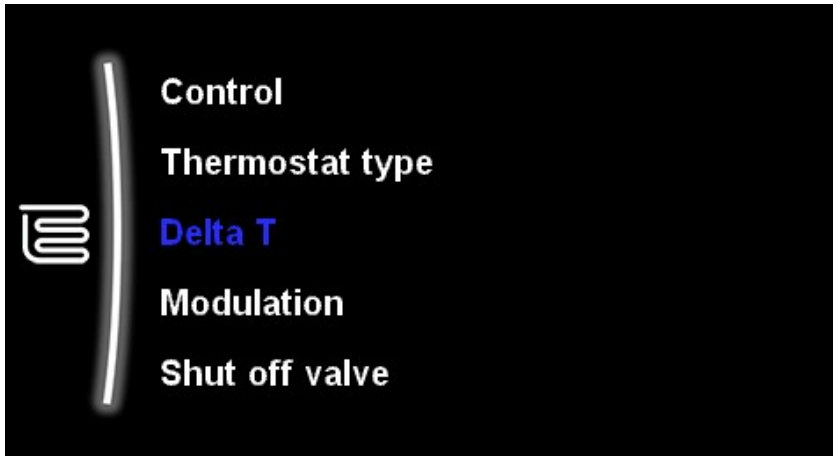
Select this value in case of a connection to the heat pump convector (FWXV)

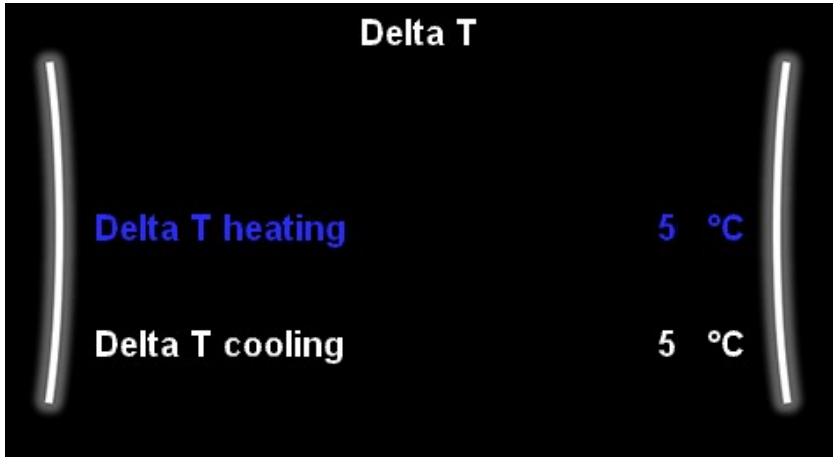
2 Contacts:

The used external room thermostat can send a separate heating/cooling thermo ON/OFF condition. The room thermostat is connected to 2 digital inputs (X2M/35 and X2M/34).

Select this value in case of a connection to multi-zoning wired controls

MMI Settings – Main Zone – delta T



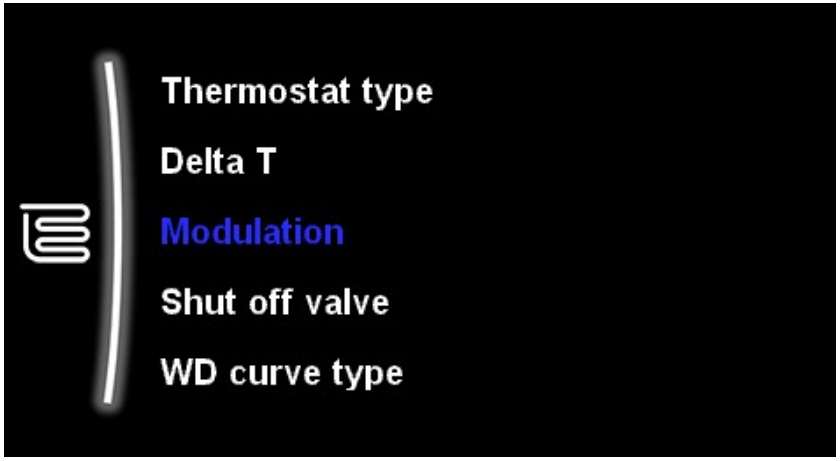


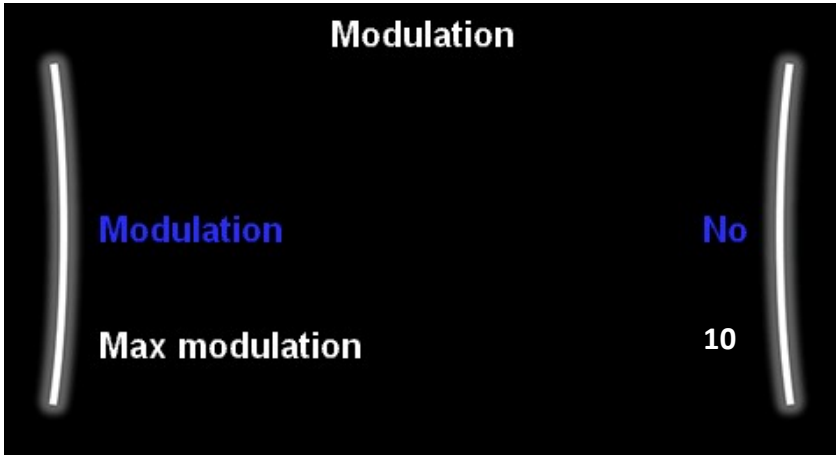
Set the delta T for the Main Zone heating and cooling loops.

Radiators are set to a fixed delta T of 10°K

Fan Coils and UFH can be manually adjusted in this setting. This setting should be adjusted only to what the system design suggests. Incorrect delta T will effect the mean water temperature of the zone which can lead to capacity shortages if it becomes too low.

MMI Settings – Main Zone – Modulation





Modulation is only available if the Madoka Room thermostat is installed to control the zone.

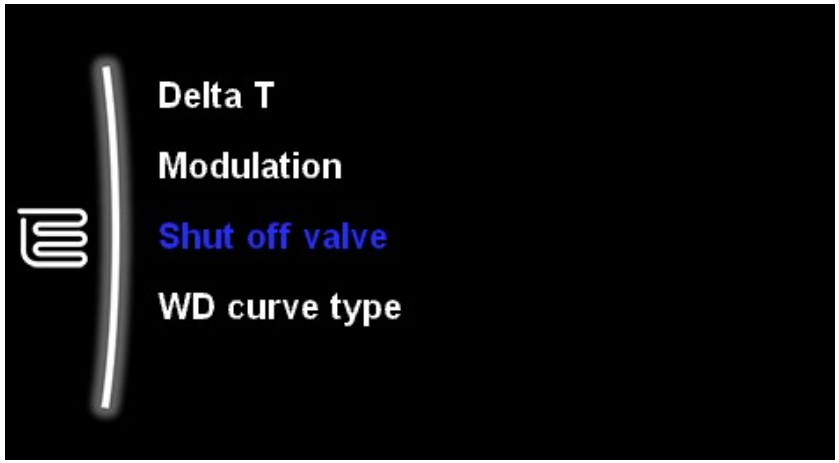
This setting enables the customer to set the room temperature via the Madoka and the system will calculate the correct LWT based on the desired room temperature and actual room temperature.

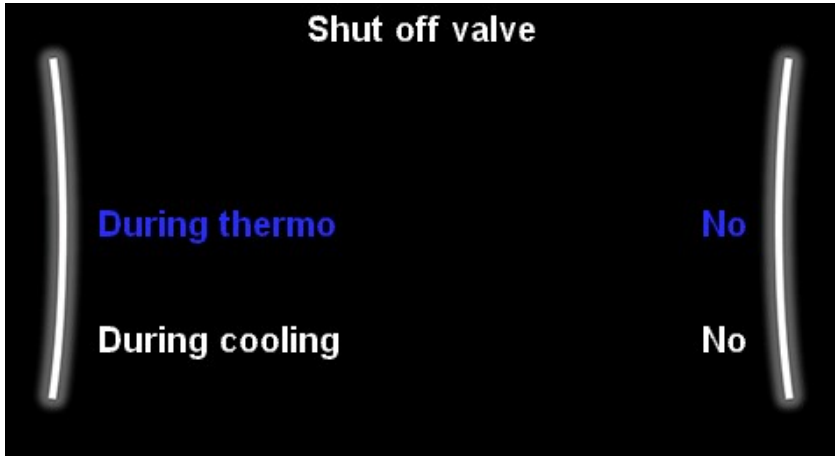
The setting will alter the LWT set point (either a fixed LWT or current WD setpoint) if the room temperature is increasing too quickly or too slowly. The number of degrees the LWT can move is determined by the “Max Modulation” setting (0-10°C).

The benefits of this setting are:

- More stable room temperatures
- Less on/off cycles
- Water Temperatures as low as possible to match the desired room temperature
- Overall lower noise level, higher comfort and higher efficiency.

MMI Settings – Main Zone – Shut Off Valve





The shut off valve option is available if you have 2 LWT zones installed on the MMI.

The shut off valve can be installed in the heating cooling circuit and can be set up to work during thermo (heating) or during cooling modes.

During Thermo - Yes

The shut off valve closes when there is no heating demand from the main zone.

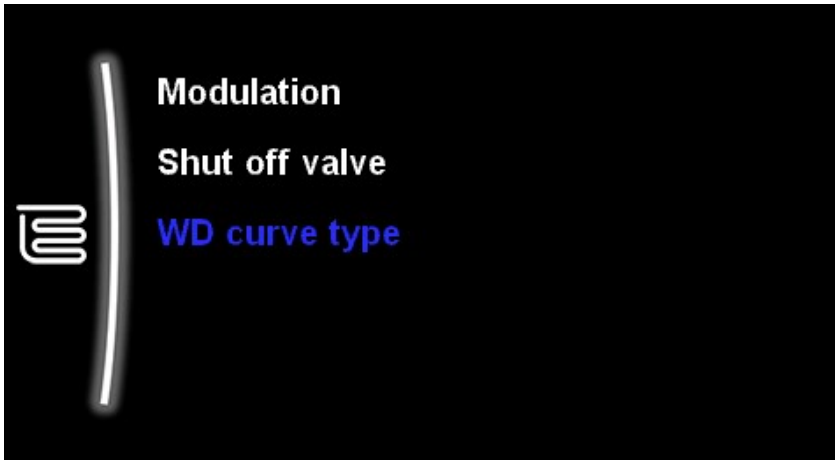
- avoid leaving water supply to the heat emitters in the main LWT zone (through the mixing valve station) when there is request from the additional LWT zone.
- activate the ON/OFF pump of the mixing valve station ONLY when there is demand.

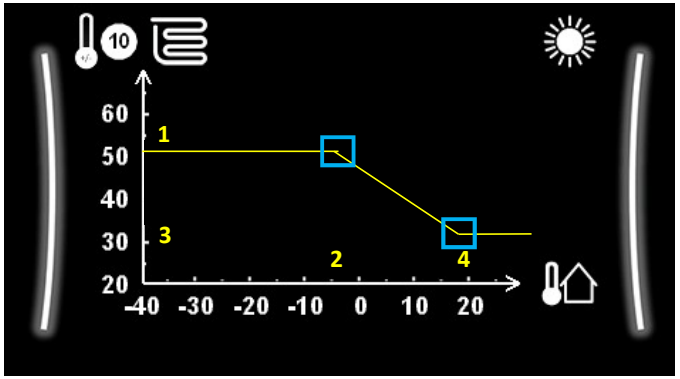
During Cooling – Yes

The shut off valve closes when the unit is running in cooling operation mode.

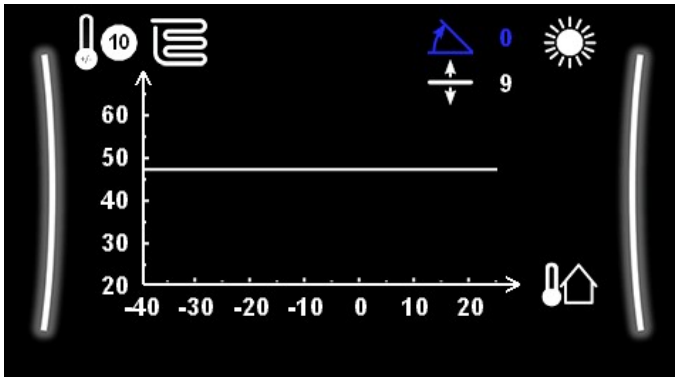
- avoid cold leaving water through the heat emitter and the forming of condensation (e.g. under floor heating loops or radiators)

MMI Settings – Main Zone – WD Curve Type



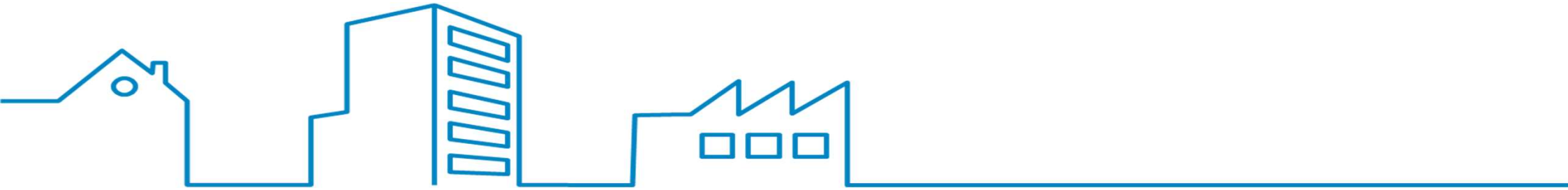


2 Point Control enables you enter the LWT temp (1) at the equilibrium temperature (2) and then the LWT (3) at the warmest temperature required for the system (4). These 4 entered points will plot the WD curve required for the property.

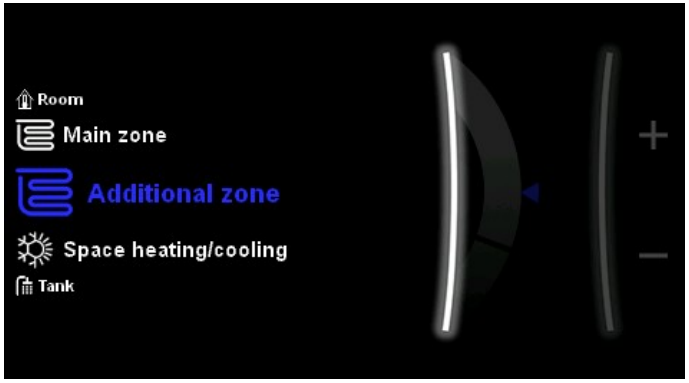


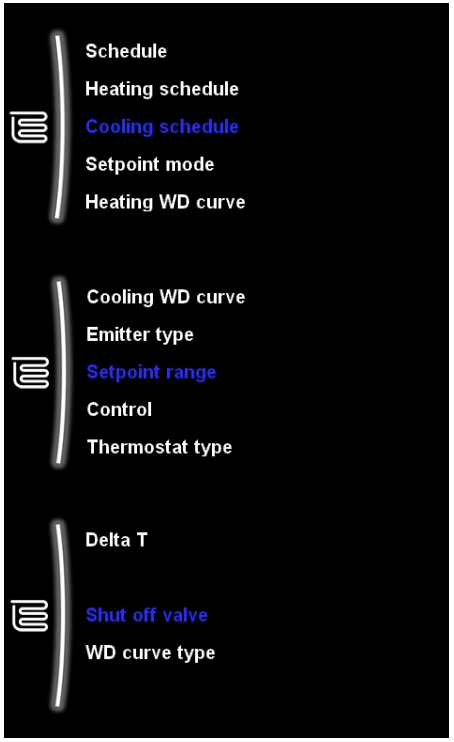
Slope – Offset enables you to control the angle of the slope with the first setting and then the offset of the slop with the second setting.

MMI Menu – Additional Zone



MMI Settings – Additional Zone



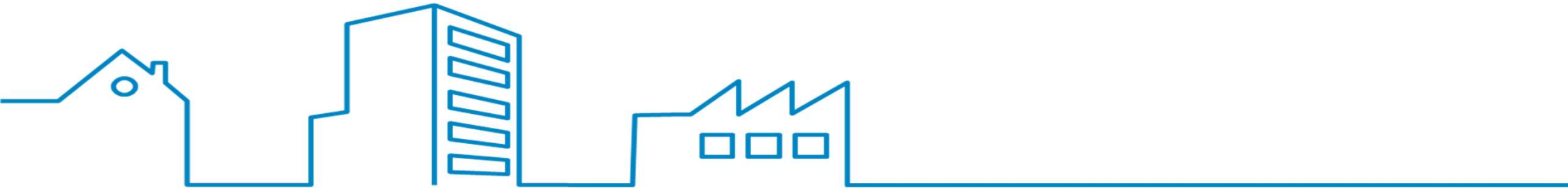


The “Additional Zone” home page will contain all the required settings to control your LWT for an additional zone if this has been installed and set up on the MMI during the configuration wizard.

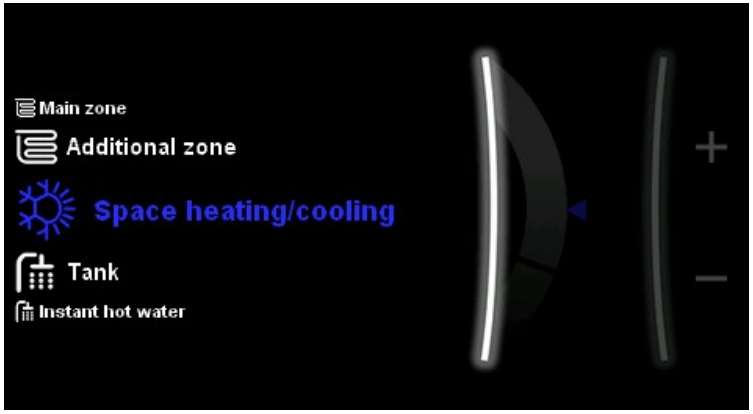
It will contain all the settings covered by the Main Zone section

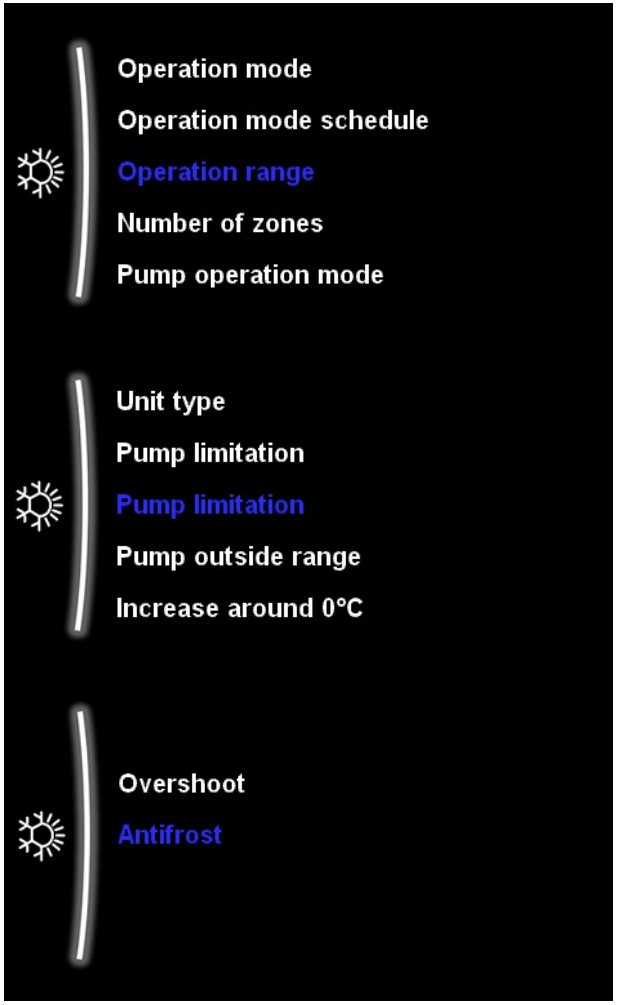
This can be the zone controlled via a 3rd Party stat wired across X2M – 30 & 35a. (30 and 34a for cooling)

MMI Menu – Space Heating / Cooling



MMI Settings – Space Heating / Cooling



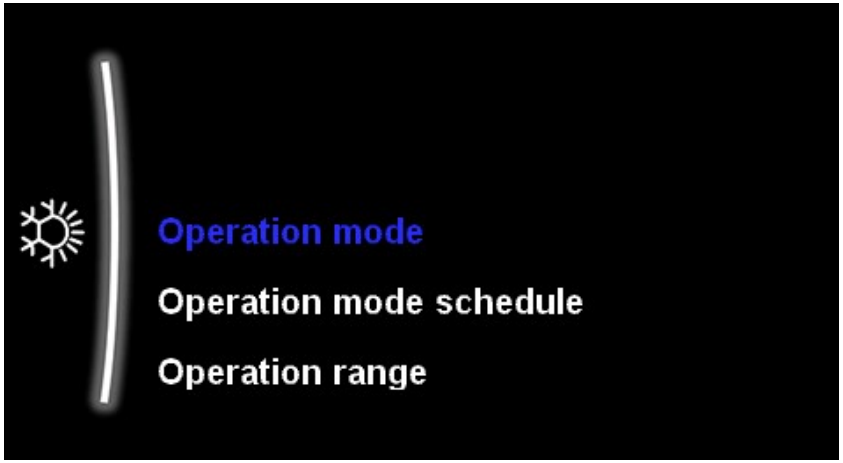


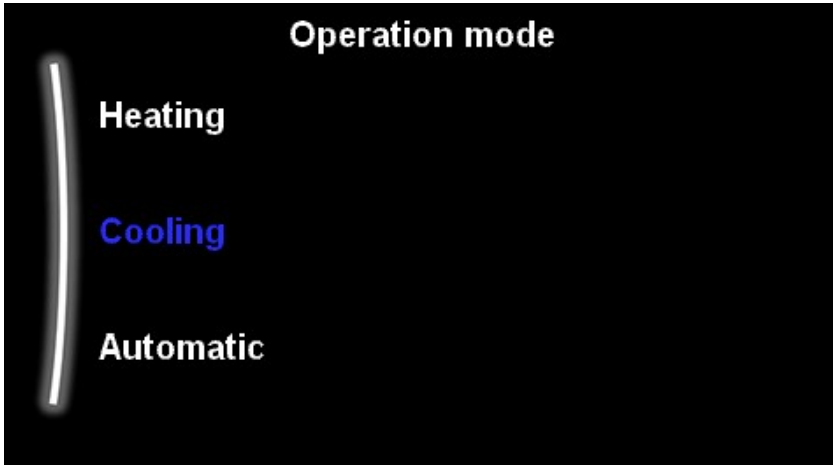
In this sub menu you can set up the operational changeover of the Heating / cooling operation if applicable.

It also offers options to control the water pump operation, including frost prevention.

In a heating only model the top 2 options will be absent as they are related to heating / cooling switch over

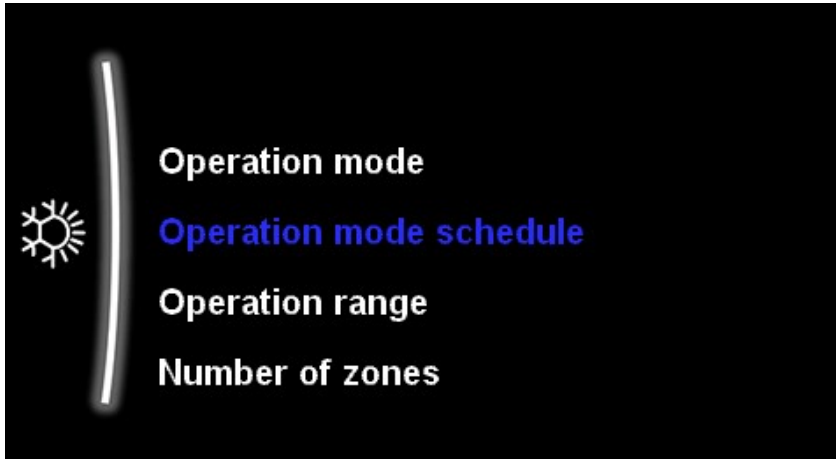
MMI Settings – Space Heating / Cooling – Operation Mode

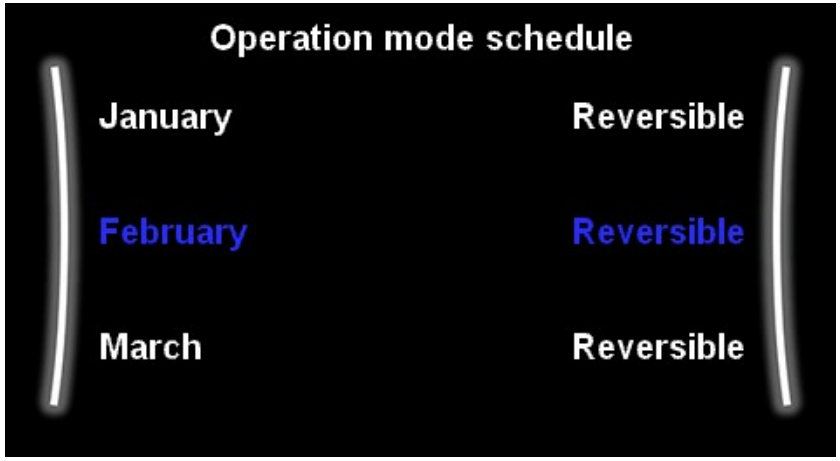




This option, with a reversible unit, allows the customer to select the mode of operation required to heat / cool the space.

MMI Settings – Space Heating / Cooling – Operation Mode Schedule





In this sub menu you can set up the operational changeover of the Heating / cooling operation via a schedule if the Operation Mode was set to "Automatic"

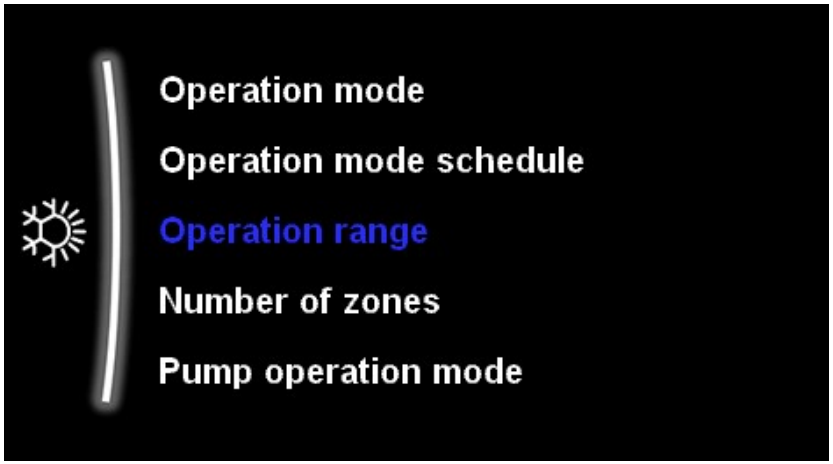
For each month of the heat you can select Heating, Cooling or Reversible.

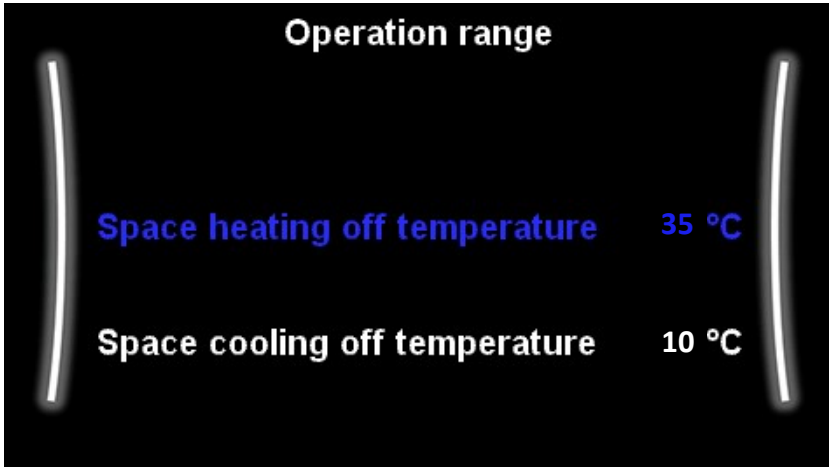
The unit on a Madoka Room Thermostat will always look to operate within the "Operation Range" settings.

3rd Party Thermostats will send the appropriate signal to X2M 35/35a (Heating) and 34/34a (Cooling).

RT Controlled single zone with quick emitters works slightly differently in regards to control. Check the IRG for more details.

MMI Settings – Space Heating / Cooling – Operation Range



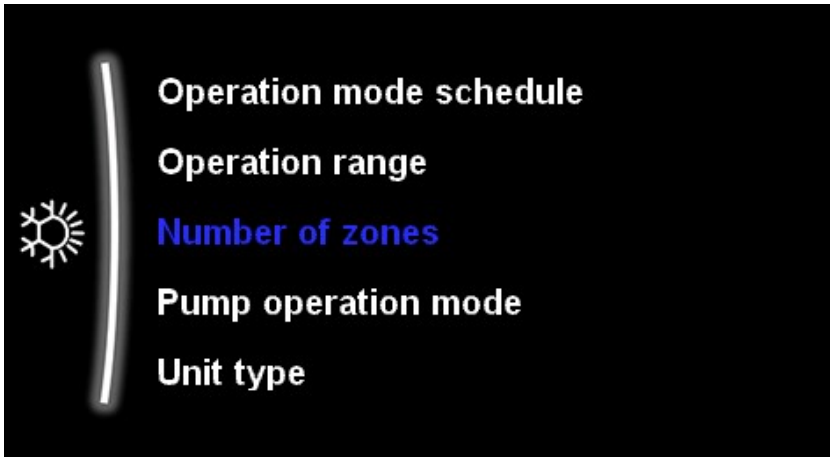


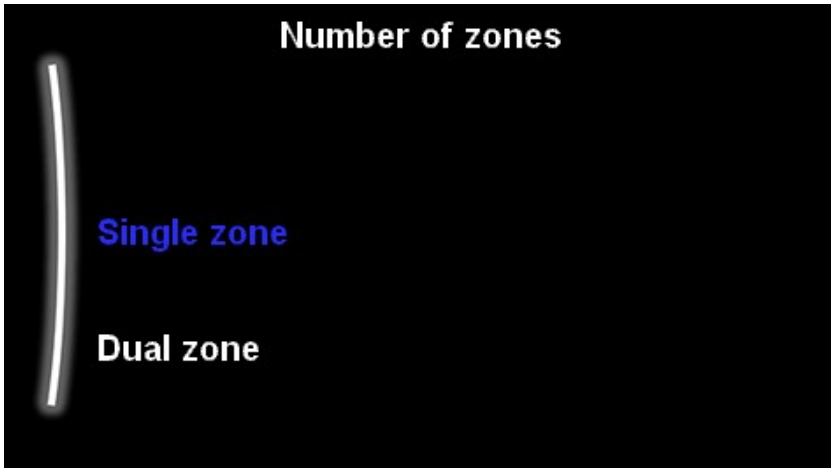
These settings limit the operation of the Space Heating and Cooling based on the Ambient temperature.

Working at too high an ambient temperature in heating mode could effect the operation of the unit (high pressure / temps etc), likewise for cooling in lower ambient temperatures as the rejection of heat could be an issue.

Mode	Min Temp	Max Max
Heating	14	35
Cooling	10	35

MMI Settings – Space Heating / Cooling – Number of Zones





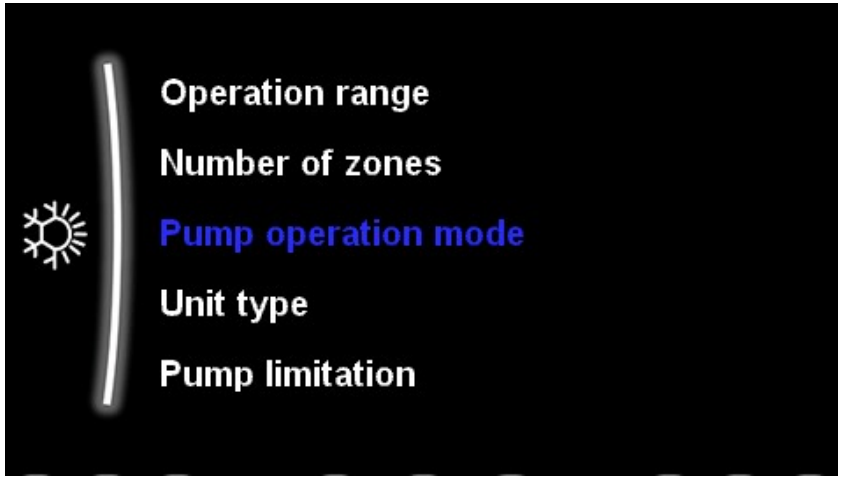
How many <u>temperature zones</u> does your system have?

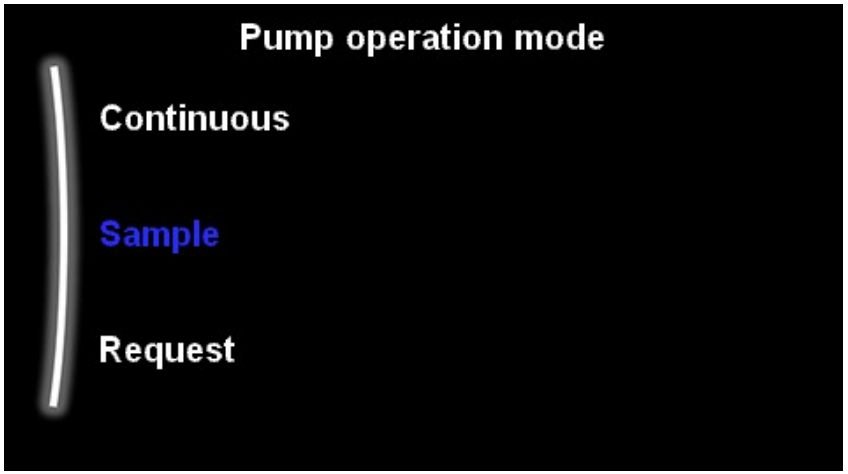
If it is all radiators / emitters running at the same LWT then dual zone operation is not really required.

Dual zone is designed for different zones running at different LWT / mean temperatures, for example UFH downstairs and Radiators / fan coils upstairs.

If this is the case you will need to ensure the higher temperature required to satisfy the higher (additional) temperature zone does not damage the downstairs floor / emitters. To this end you should install a blending valve/ mixing station on the main zone to lower any higher temperature water that tries to enter this zone.

MMI Settings – Space Heating / Cooling – Pump Operation Mode

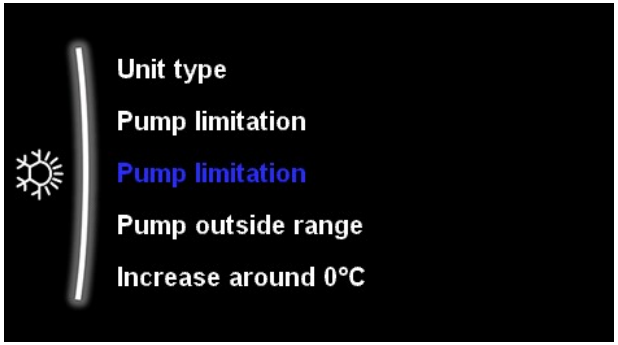


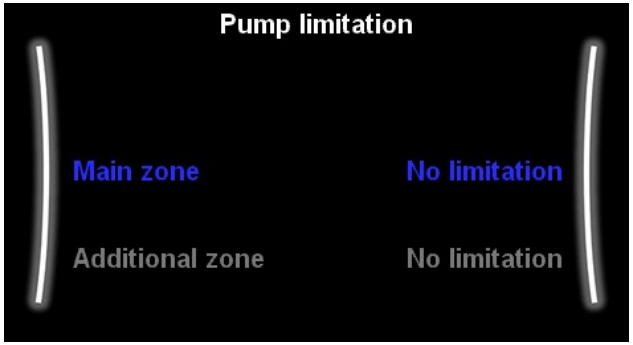


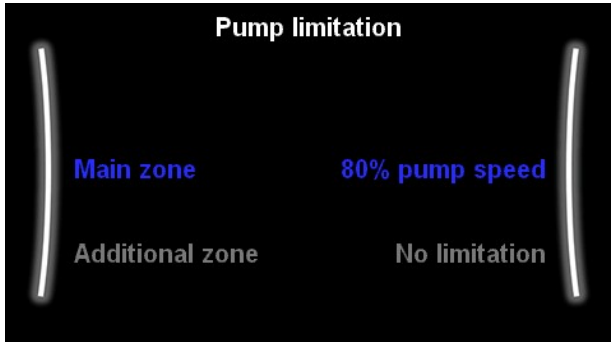
There are 3 ways to run the system water pump in heating mode. Depending with Control method you have opted for there will always be 2 of these options available.

- **Continuous** – The water pump will run continuously regardless of CH demand.
- **Sample** – During CH demand the unit will run continuously if LWT set point has not been reached. Once achieved the pump will turn off but run every 3 minutes to check the water temperature and demand heating or cooling if necessary. **Only available in LWT control**
- **Request** – The pump will activate and deactivate based on demand from the thermostat.

MMI Settings – Space Heating / Cooling – Pump Limitation





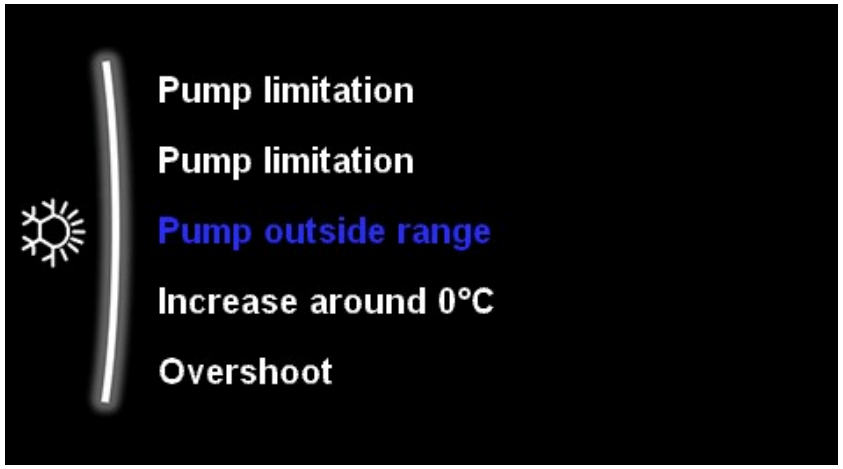


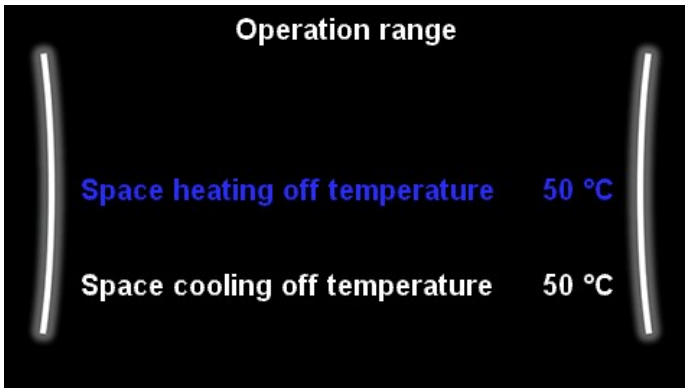
You can limit the pump speed, either all the time or when there is sampling of the water system (Pump operation – sample).

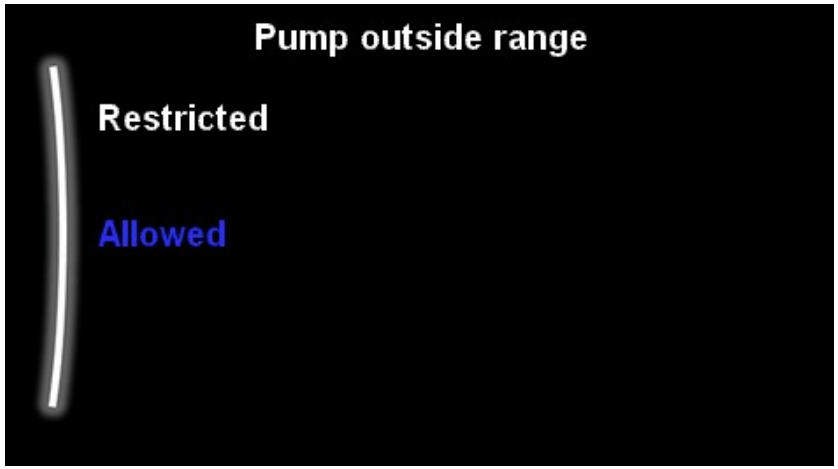
This should only be attempted if you have calculated the pump speeds through the pipework using a hydronics calculation tool and you are looking to balance a system delta T to the system or eliminate water flow noise.

Due to higher flow rates achieving higher efficiencies it is advisable to leave this setting at “No limitation”

MMI Settings – Space Heating / Cooling – Pump Outside Range



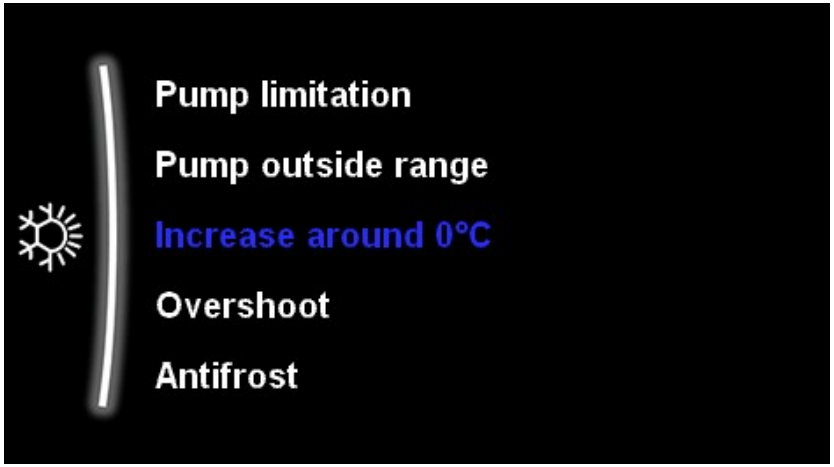


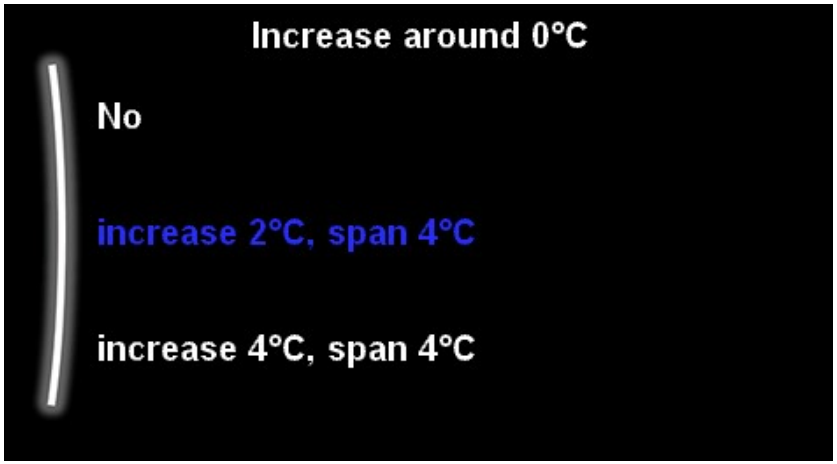


You can restrict the pump operation in space heating / cooling mode if the ambient temperature were to surpass the heating off temperature, or drop lower than the space cooling off temperature set in operation range.

This is usually left default to allow the water pump to run at all ambient temperatures.

MMI Settings – Space Heating / Cooling – Increase around 0°C



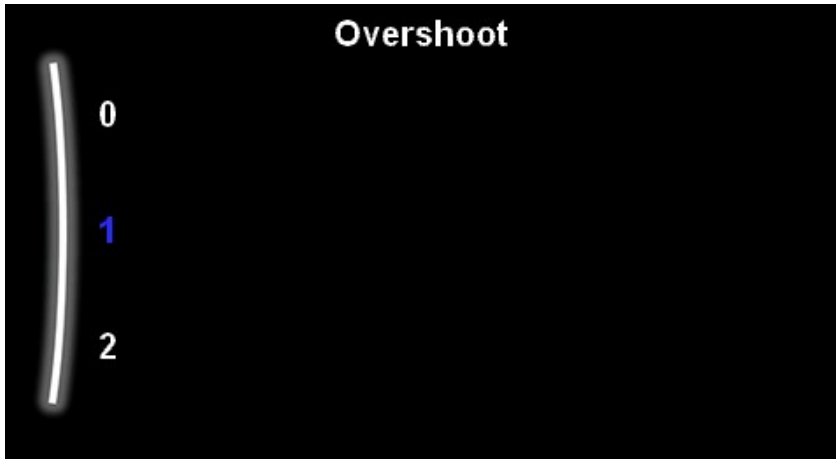


Higher heat losses occur from a property due to the evaporation of frost, ice and snow.

It is because the frozen water needs energy to transform from a solid to a liquid or even a gas. It will take this energy from the envelope of the house by attracting the heat inside the property outside to the colder temperature stuck to the roof / walls / roof.

This setting allows you to alter the LWT +2°C or 4°C degrees to compensate for this extra heat loss during the ambient temperatures of either -2°C - +2°C or -4°C - 4°C

MMI Settings – Space Heating / Cooling – Overshoot

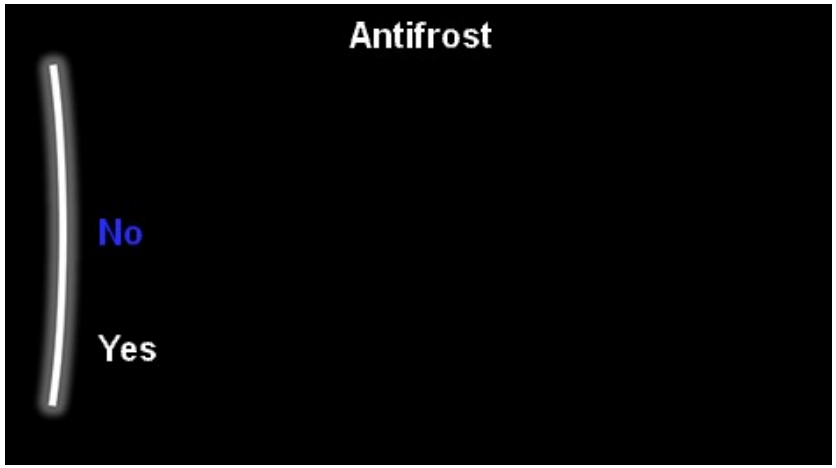


This setting is only available in heating mode.

It limits the number of degrees the LWT can overshoot the target setpoint in its goal of achieving thermostat satisfied.

The range of this setting is 1 – 4 degrees.

MMI Settings – Space Heating / Cooling – Antifrost



This mode is linked to the Antifrost operation in “Room” Menu.

- **Leaving Water Temperature control** –

No Demand - Ambient Temp 6°C < water pump will run and setpoint of LWT will be lowered

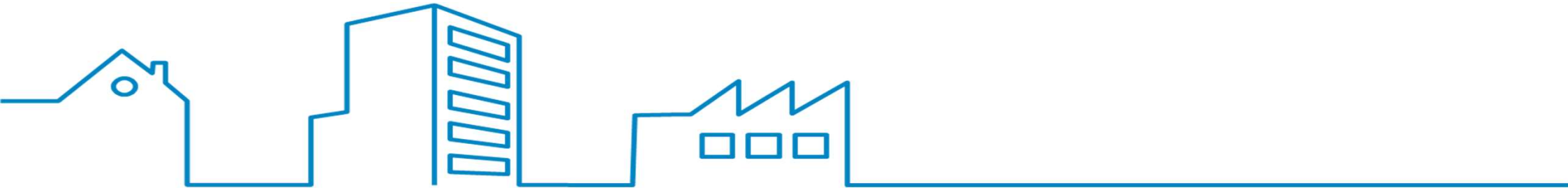
- **3rd Party External Room Stat** –

No Demand - Ambient Temp 6°C < water pump will run and setpoint of LWT will be lowered

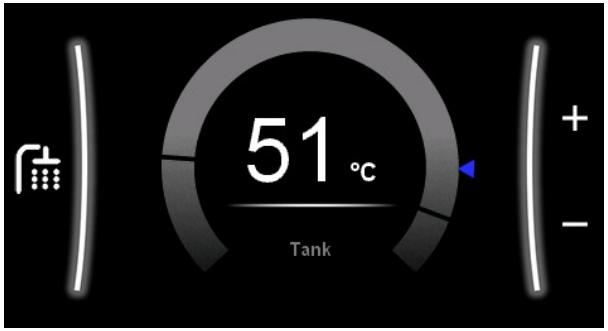
- **RT Control – Madoka**

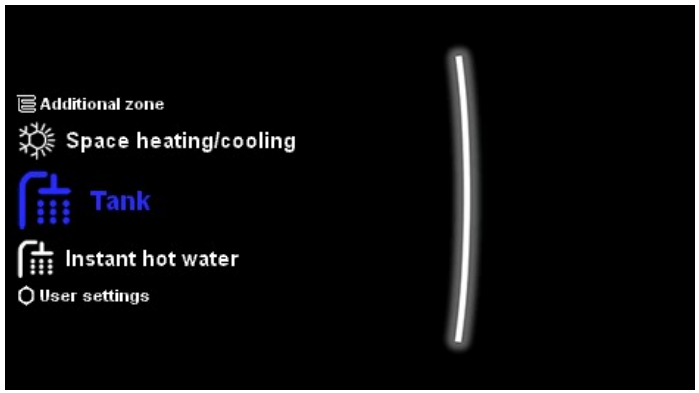
Set anti-frost comfort set point (in overview 2-05)

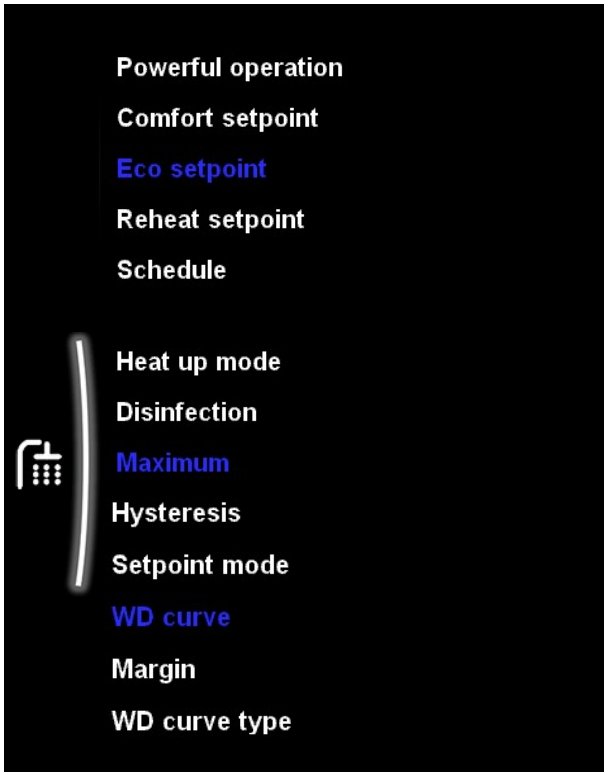
MMI Menu - Tank



MMI Settings – Tank



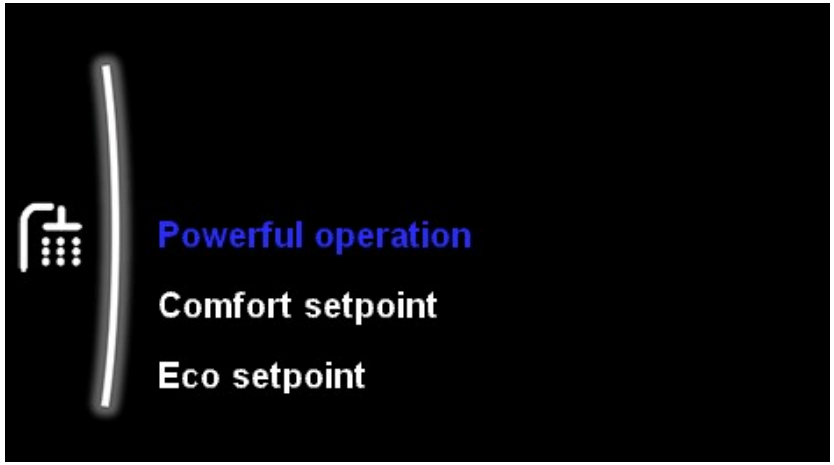


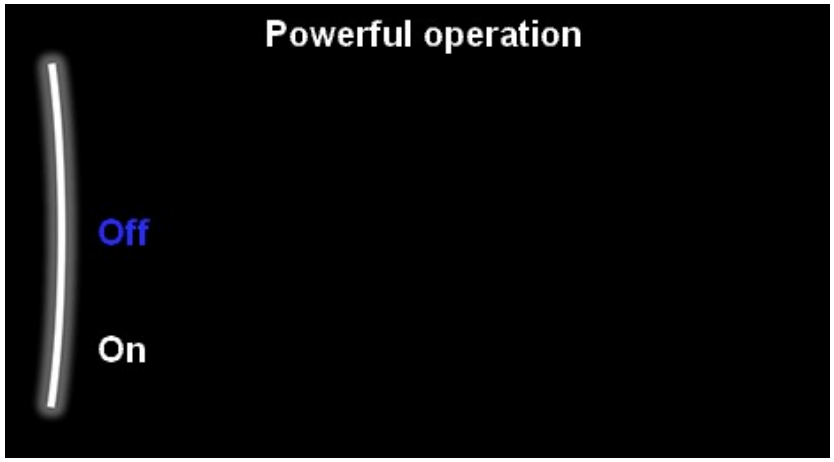


The Tank Menu contains all the settings you need to configure your DHW set up.

This menu will be unavailable to the installer / end user if the MMI has not been configured to include a DHW cylinder.

MMI Settings – Tank – Powerful Operation





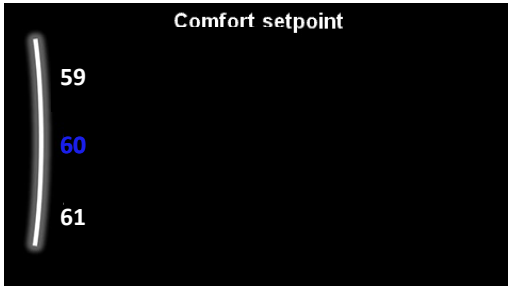
Powerful mode will activate an extra boost of DHW regardless of whatever mode of operation it is in currently.

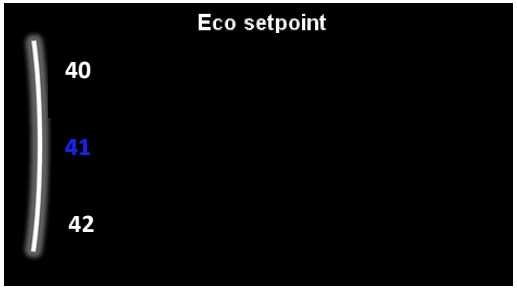
This will use extra power as it may look to utilise the Booster heater as well as heat pump to achieve the target temperature asap.

The Target temperature is set in the next setting “Comfort Setpoint”.

Once the Powerful Mode is operating you will see the below symbol on the home screen display

MMI Settings – Tank – Comfort + Eco Setpoints



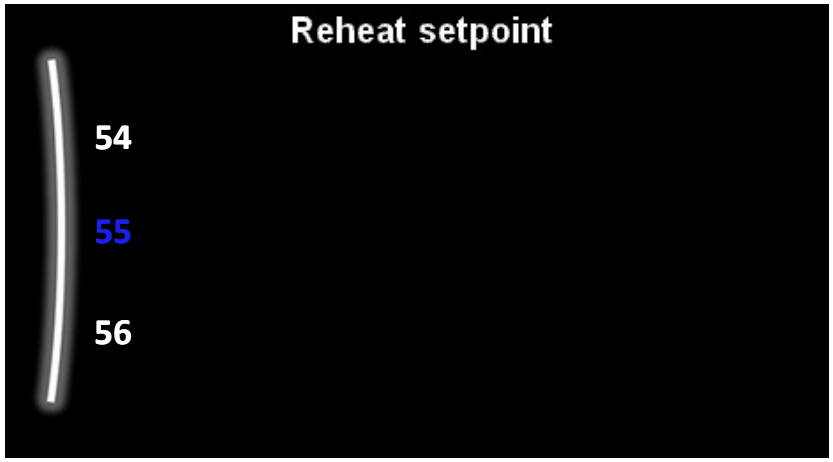


When using Schedule or Reheat + Schedule as a heat up mode you will utilise the Comfort and Eco setpoints as your Higher and Lower Tank temperature targets.

Comfort – Desired Upper Target Temperature. This temperature is also the target temperature for the Powerful mode on the previous slide.

Eco – Lower Temperature Target. This is the temperature you don't want to fall below. So you may not wish to heat up the tank fully, using more energy when you may only require a small amount of DHW. This setting will bring the water back up to this temperature when it falls below to maintain a "minimum" DHW temperature.

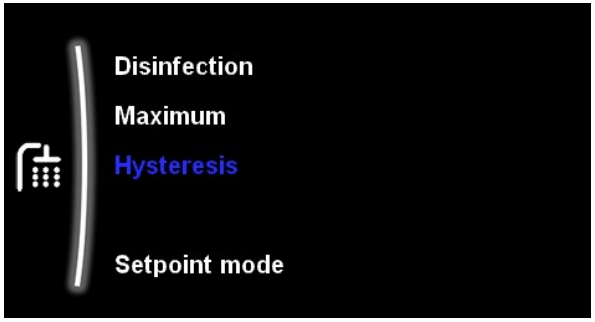
MMI Settings – Tank – Reheat Setpoints



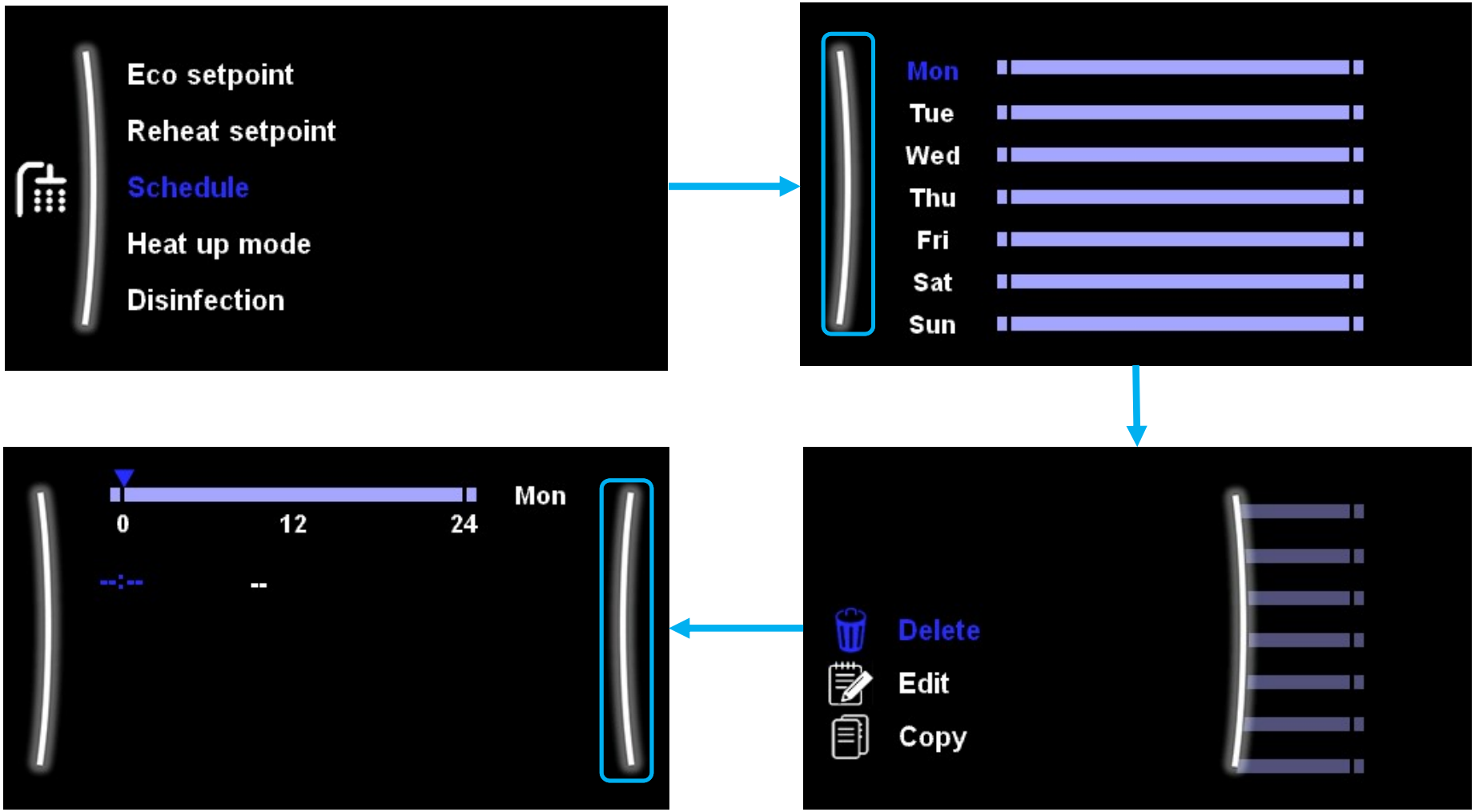
When using Reheat Only or Reheat + Schedule as a heat up mode this is the target setpoint for your DHW.

Simply enter a figure (for Reheat + schedule) or use the main Tank Thermostat for Reheat only and the unit will heat the DHW to that temperature.

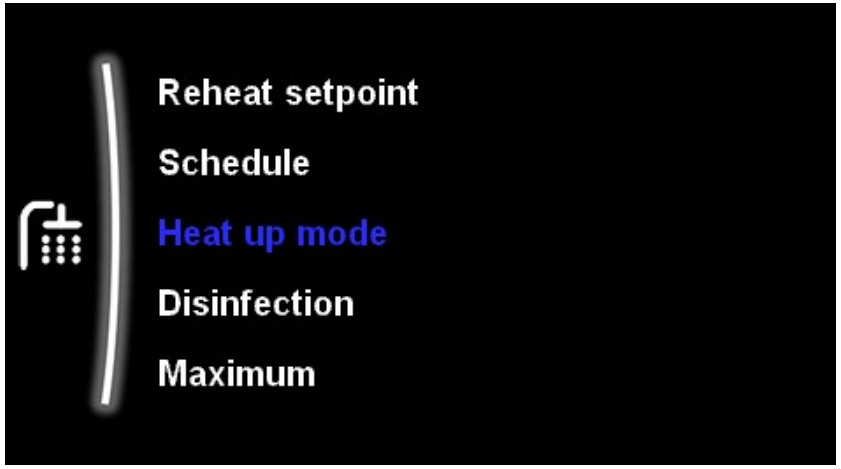
As soon as the water falls below the temperature drop selected in the “Hysteresis” menu (shown below) it will heat back up to the Reheat temperature.

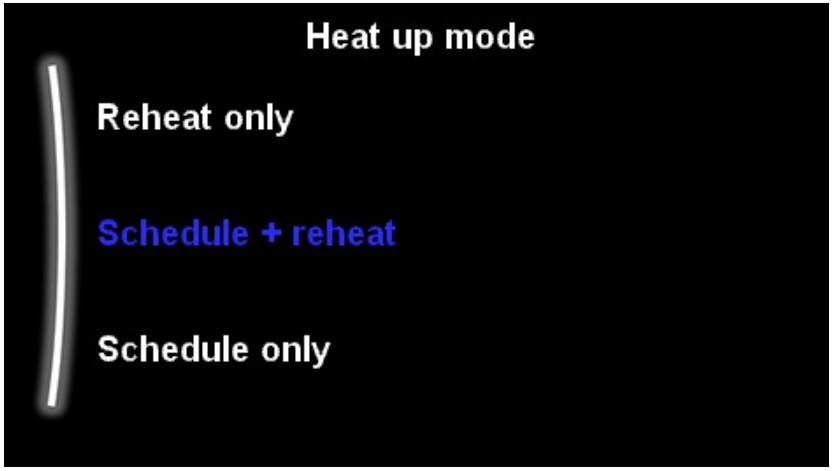


MMI Settings – Tank - Schedule



MMI Settings – Tank – Heat Up Mode





This should have already been set up in the configuration wizard on first power up. However you may wish to change the DHW operation logic after start up.

Reheat only

Works by operating between target temperature and hysteresis temperatures. You will only heat up the tank when it drops in temperature i.e DHW draw off. **Best for ease of use for customer**

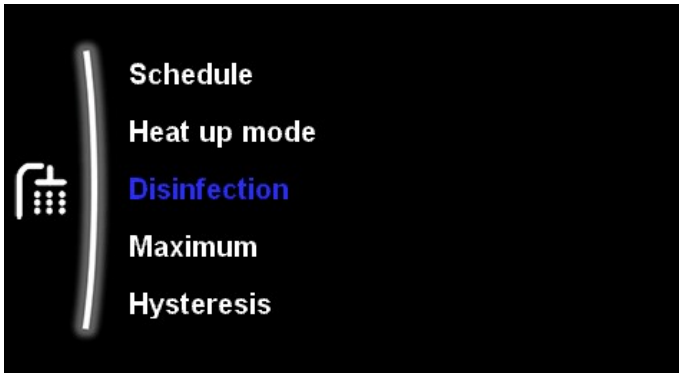
Schedule only

Set a schedule using Comfort (on) temperatures and Eco (off) temperatures to satisfy DHW demand. **Best for energy efficiency**

Schedule + Reheat

Use both modes together. This would allow for reheat operation with the chance to add comfort schedules should you need a higher DHW volume at certain times throughout the week.

MMI Settings – Tank – Disinfection



Disinfection is required once per week to ensure the cleansing of the cylinder from bacteria.

It is recommended to raise the temperature of the tank to above 60 degrees for a suitable period to ensure all bacteria has been destroyed.

Good examples of disinfection set ups are:

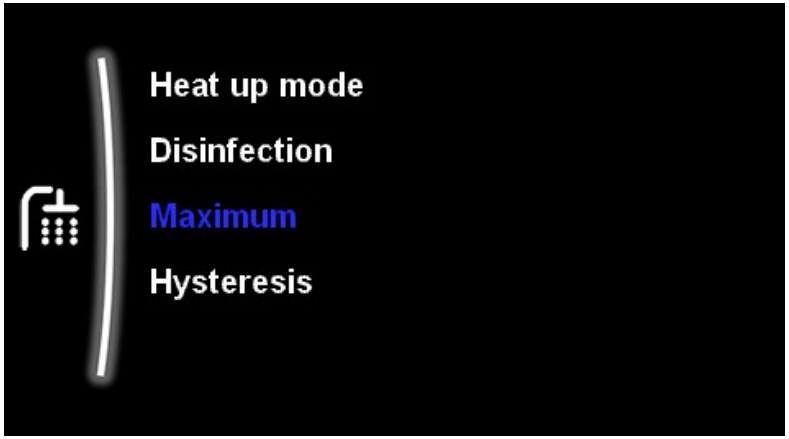
Tank set Point - 70°C – Duration 10 Mins

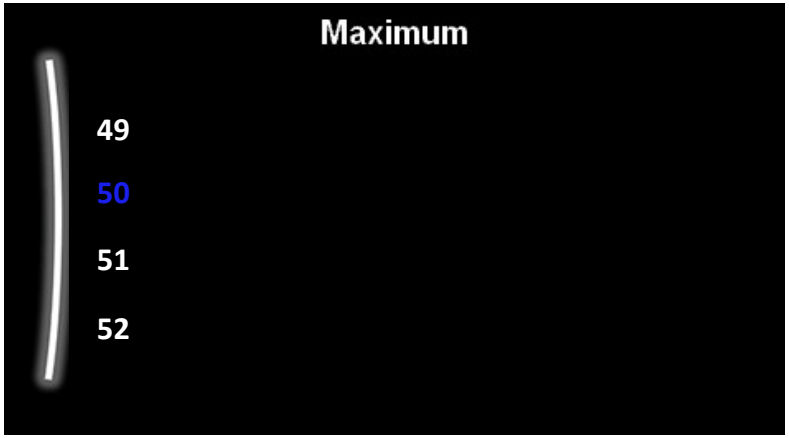
Tank set Point - 65°C – Duration 30 Mins

Tank set Point - 60°C – Duration 60 Mins

Default Disinfection is Friday – 23:00. Set Point - 70°C, Duration 10 Mins

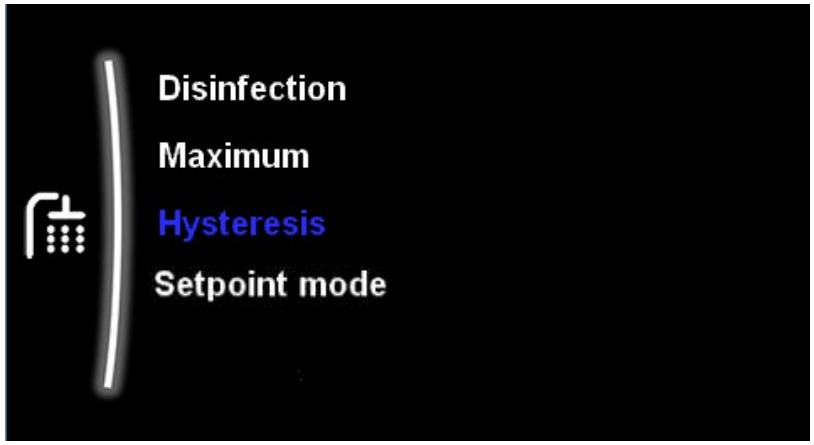
MMI Settings – Tank – Maximum Set Point

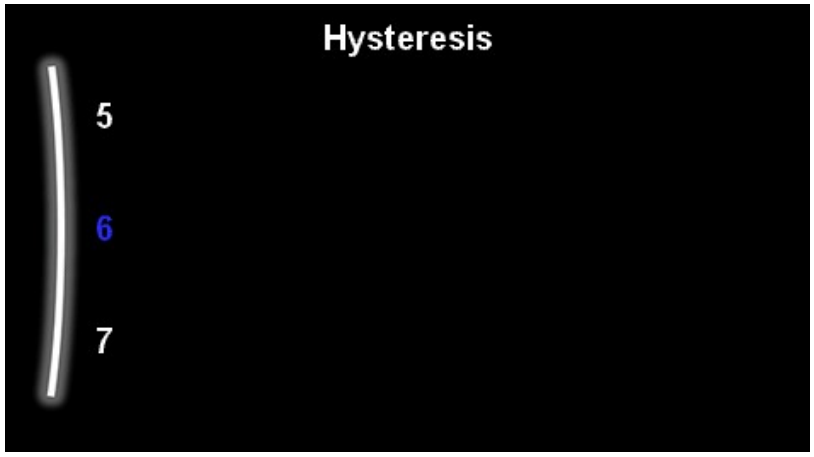




This setting enables you to set a maximum DHW storage temperature to prevent the end user turning up the DHW temperature to a point that could effect the running cost and efficiency of the heat pump.

MMI Settings – Tank - Hysteresis





The Hysteresis setting is the reheat set back temperature.

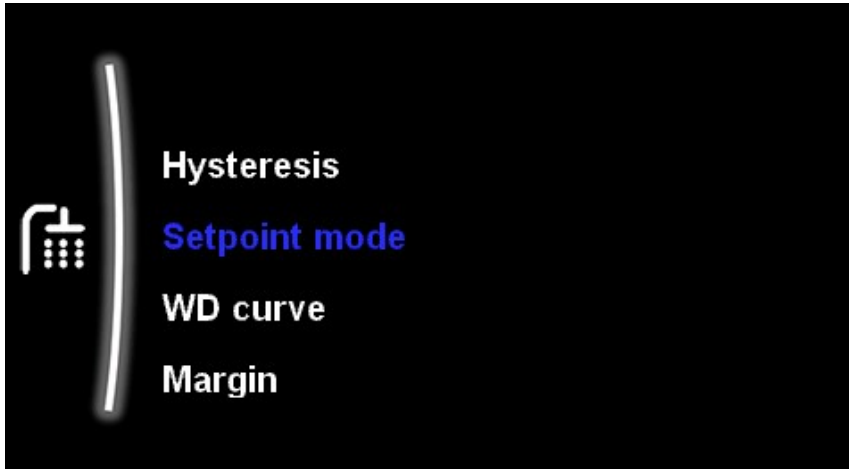
For example, with a Reheat Temperature set at 55°C a hysteresis of 6°C would see the unit drop to 49°C before heating the cylinder back up to the set point of 55°C.

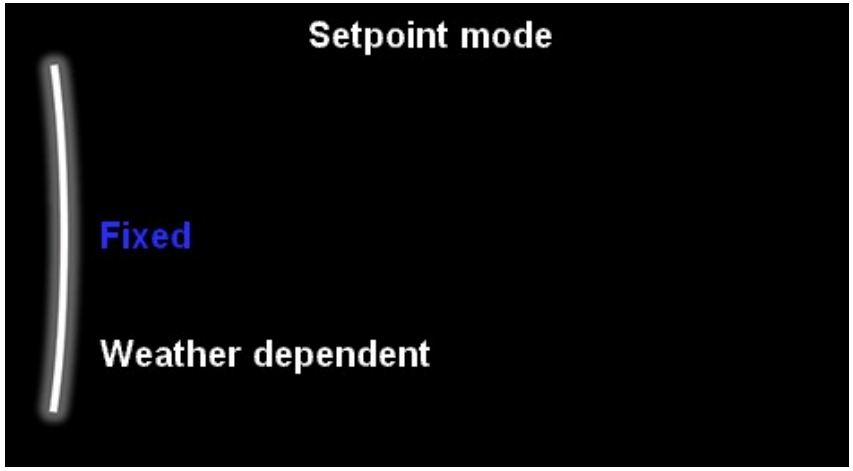
Always check this setting is correct and is not set too high i.e 20°C as this would see the DHW drop to an unusable temperature before it begins to heat back up.

The Lower the Hysteresis the more often the DHW mode will activate but also the quicker it will complete the reheat.

A Hysteresis of 3-8°C is most common.

MMI Settings – Tank – Set Point Mode and WD Curve

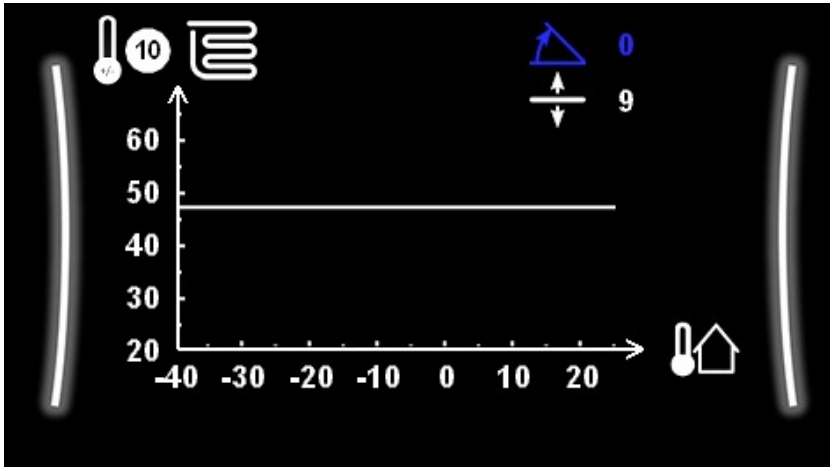




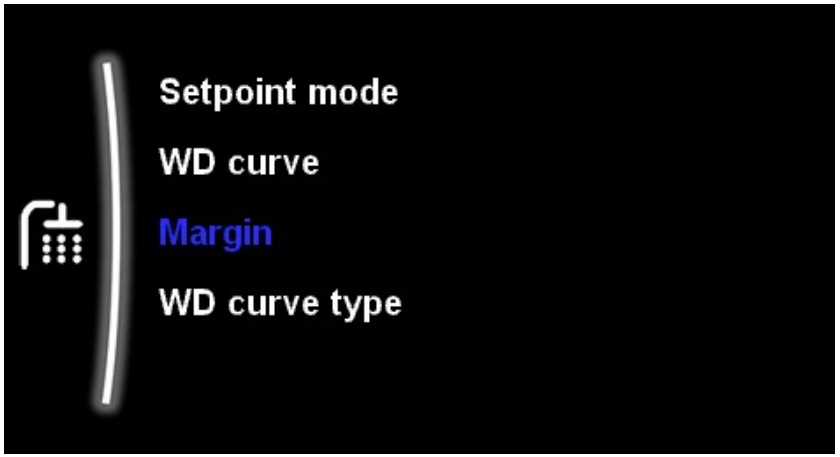
The DHW can also be put into weather dependant mode just like the LWT of the central heating system.

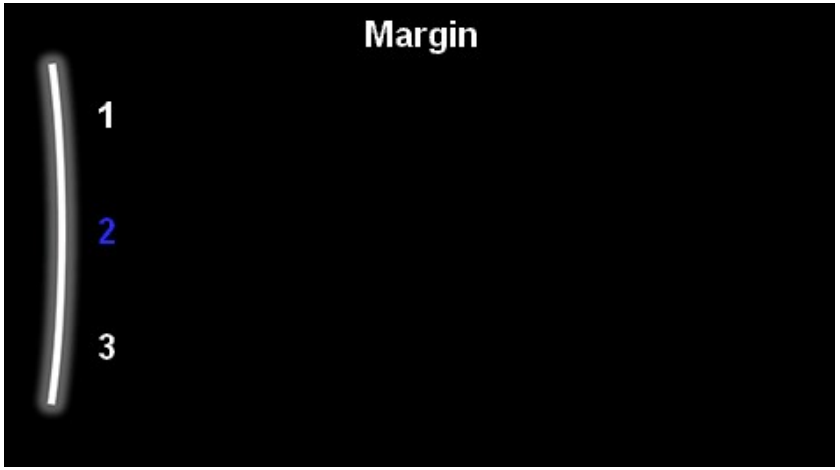
This mode will change the stored temperature of the DHW based on the ambient temperature.

The WD Curve can be set in the “WD Curve” Setting below “Setpoint Mode”.



MMI Settings – Tank – Margin





The Margin set point relates to Overview setting 6-01.

It is the number of degrees below the max DHW water temperature for that unit that the compressor turns off.

For example:

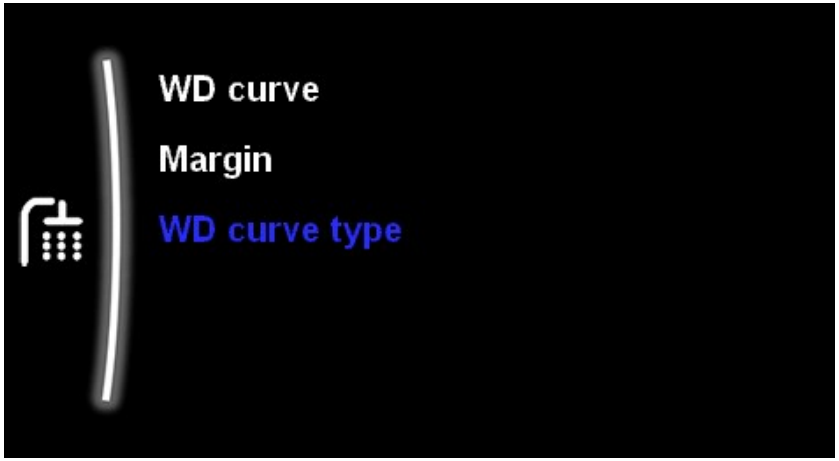
Max DHW temp of 55°C capable from a unit.

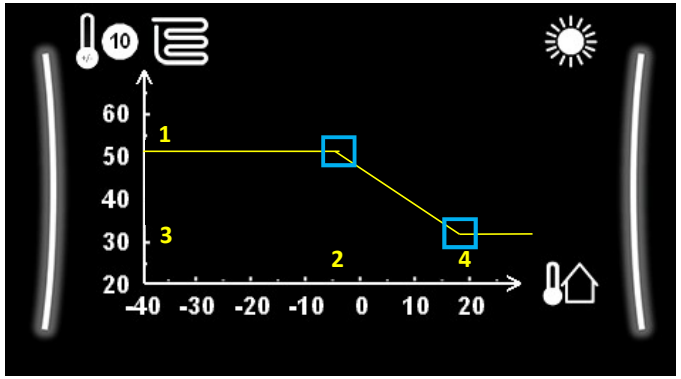
Margin of 2 °C

Compressor would turn off at 53°C and booster heater would raise from there.

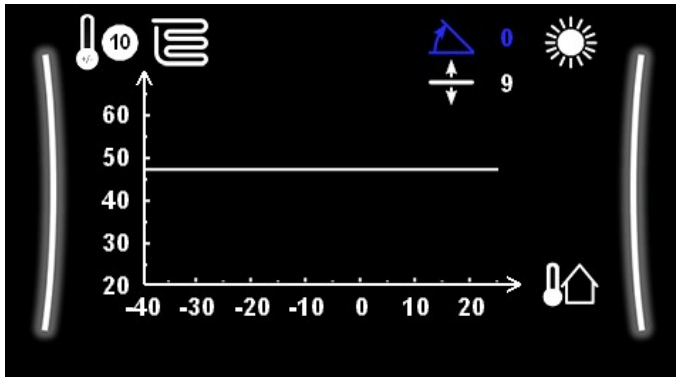
Most units on reheat only should target an approximate set point of 7°C below Maximum LWT temperature for efficiency of heat transfer.

MMI Settings – Tank – WD Curve Type



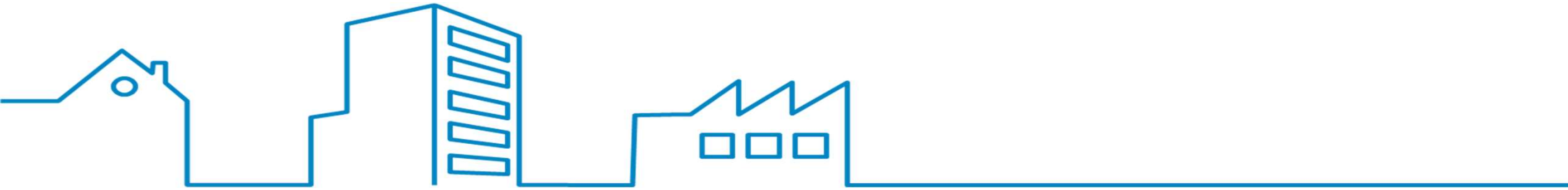


2 Point Control enables you enter the DHW temp (1) at the equilibrium temperature (2) and then the DHW (3) at the warmest temperature required for the system (4). These 4 entered points will plot the WD curve required for the property.

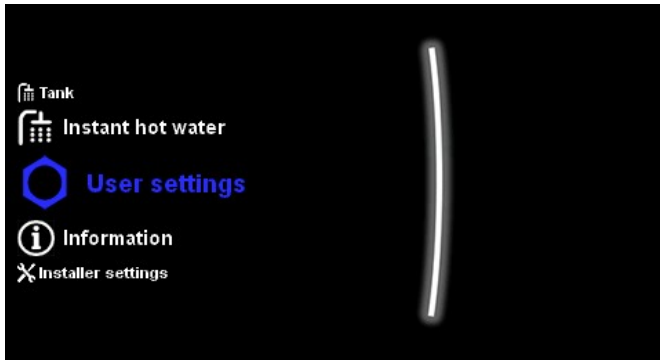


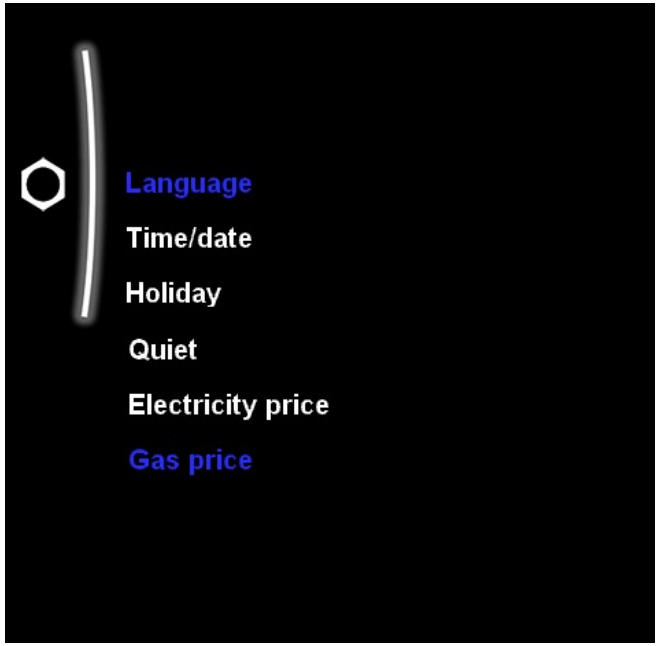
Slope – Offset enables you to control the angle of the slope with the first setting and then the offset of the slop with the second setting.

MMI Menu – User Settings



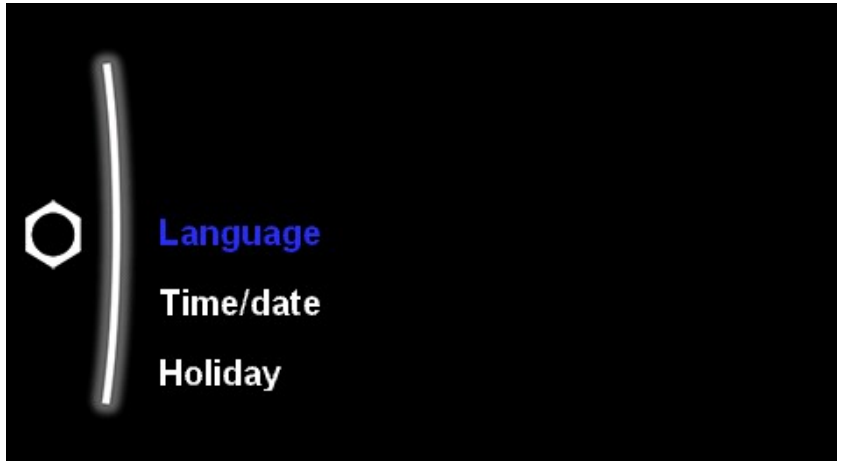
MMI Settings – User Settings

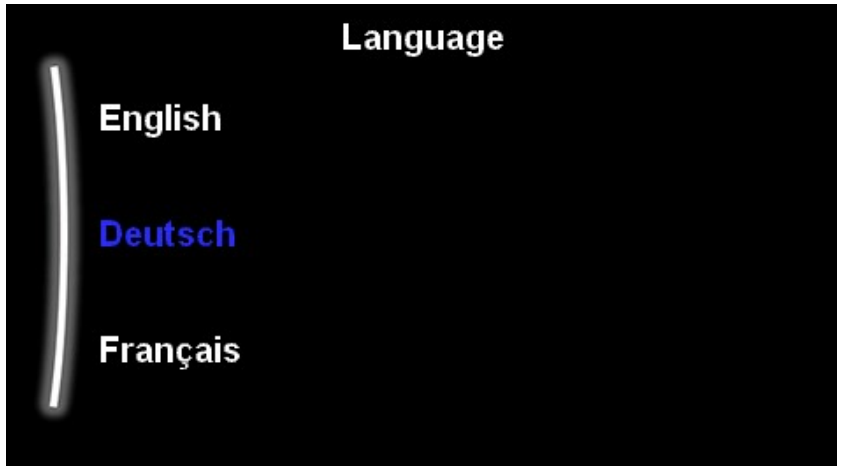




The User settings contain basic setting menus that the end user can access without effecting the operation of the system too much.

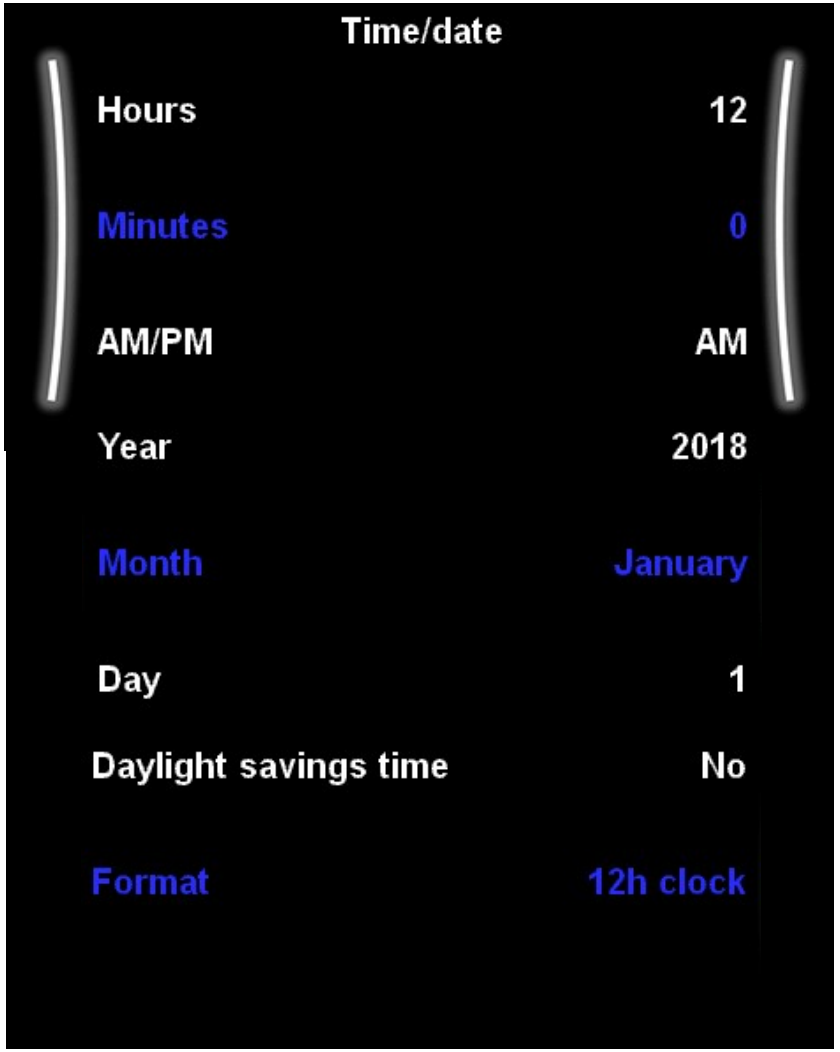
MMI Settings – User Settings - Language



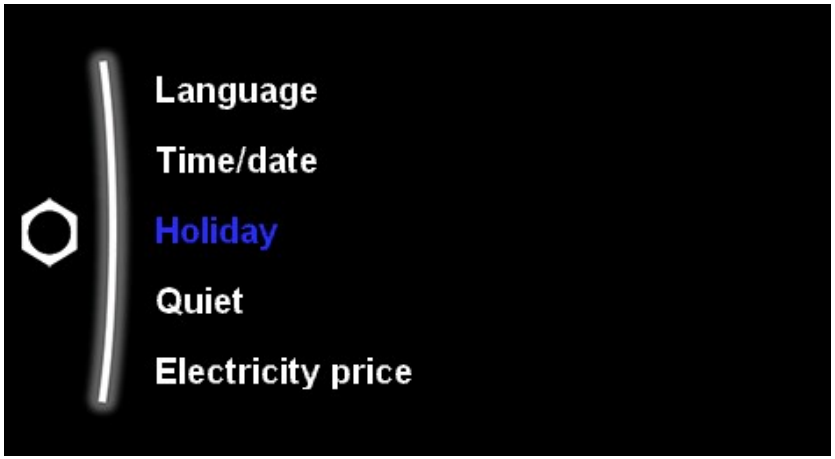


You can change the Language from default English to 25 other language options

MMI Settings – User Settings – Time / Date



MMI Settings – User Settings – Holiday

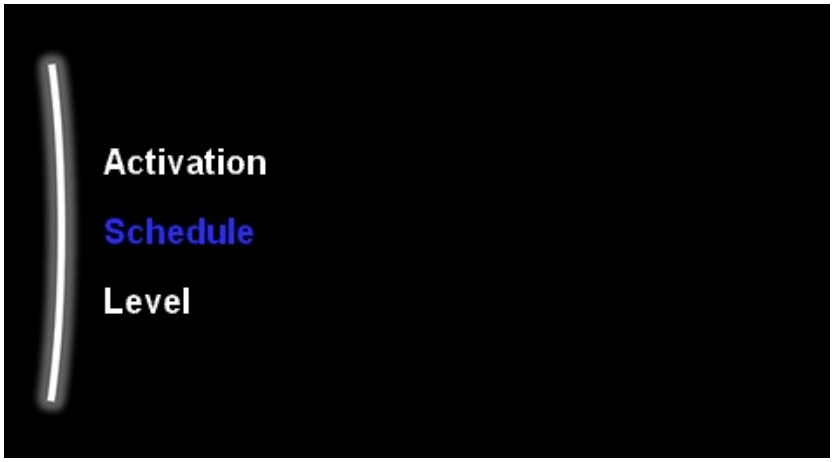


The Holiday setting allows you to deviate from your normal schedules without having to alter them.

Whilst Holiday mode is activated the space heating and DHW will be turned off whilst frost protection and DHW disinfection operations will remain active.

Simply enter the start and end dates of your holiday and the system will deactivate operation of SH and DHW during these times. When you return after your holiday the normal operation and schedules will recommence as normal.

MMI Settings – User Settings – Quiet Mode

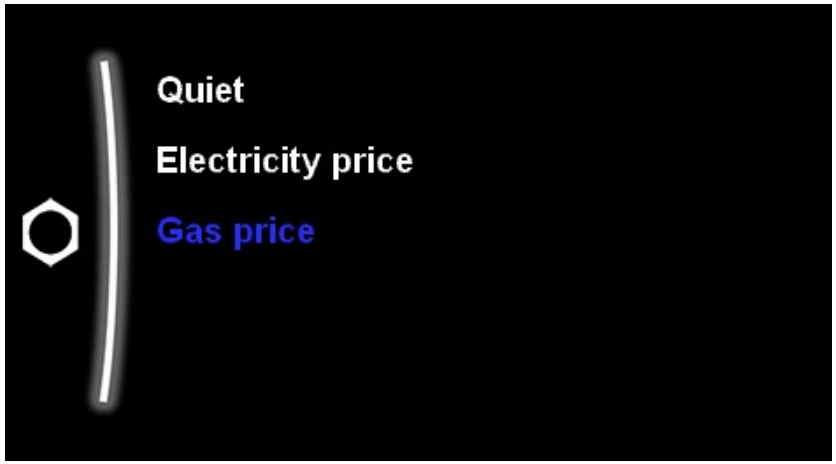


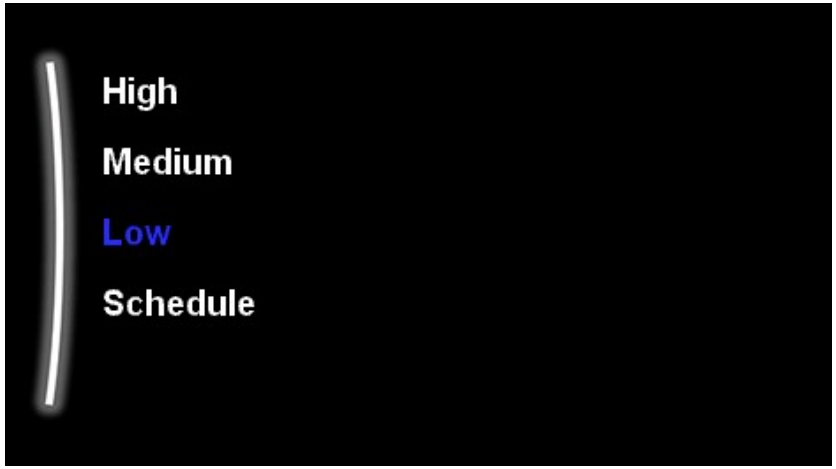
You can use quiet mode to decrease the sound of the outdoor unit. However, this also decreases the heating/cooling capacity of the system.

There are multiple quiet mode levels and can be activated automatically by entering a schedule to change the quiet mode level at different times.

As the unit reduces capacity with every level it drops it is recommended to NOT use the “most quiet” setting if the ambient temperature is below 0°C.

MMI Settings – User Settings – Gas / Electricity Price

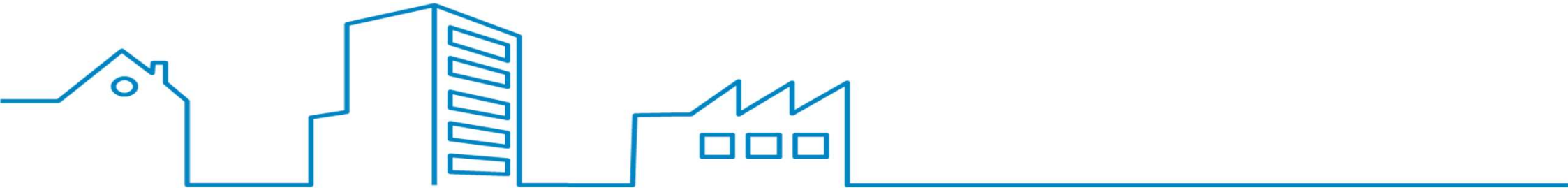




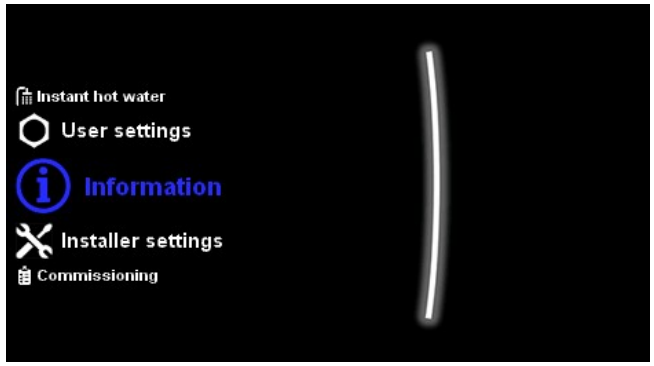
If you have a bivalent system (and have told the Altherma unit such), utilising another heat source such as a gas boiler, you can enter the fuel prices for electricity and the fuel cost of the bivalent heat source. This will allow for a more economical change over of operation as it will take into account these fuel costs when calculating the change over.

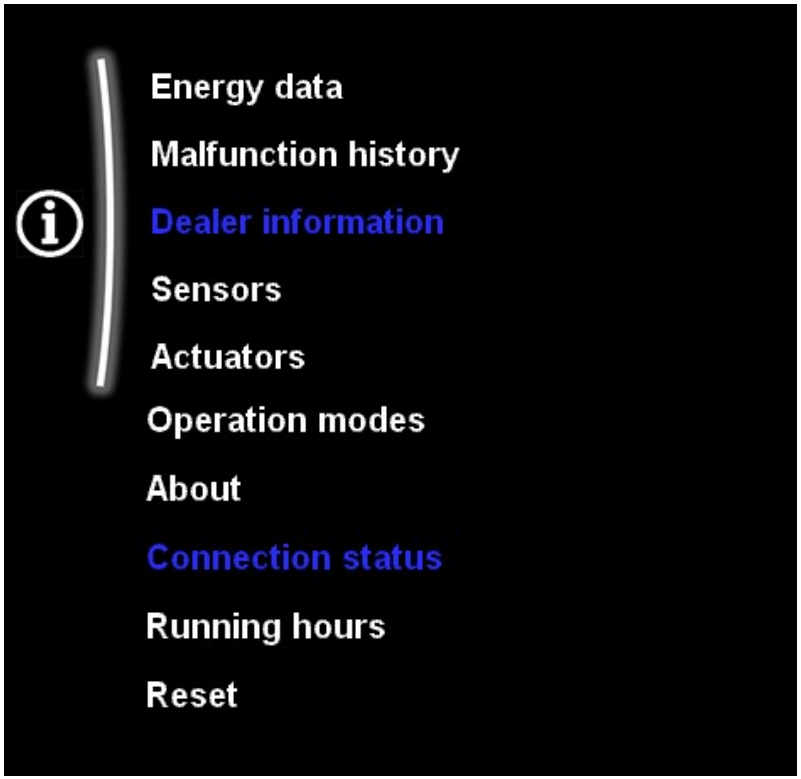
You can even schedule the Electricity prices in case you have an EV tariff etc that charges different prices per kw/hr based on the time of day.

MMI Menu - Information



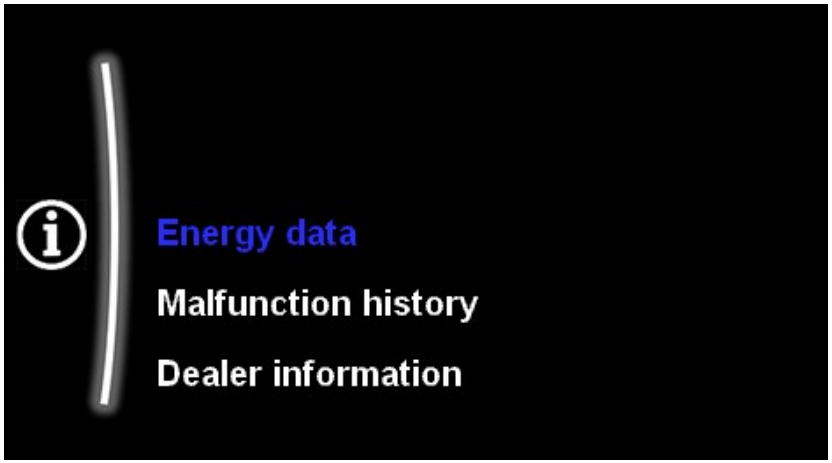
MMI Settings – Information





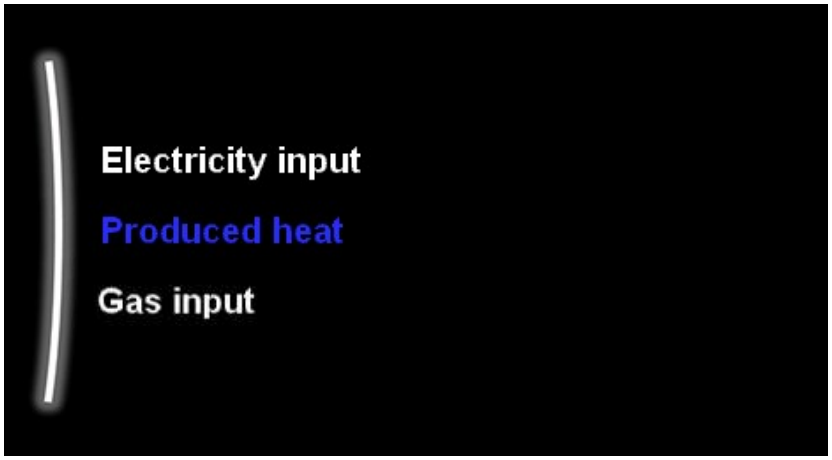
The Information Menu offers the end user and installer valuable information on the current operational status of the unit.

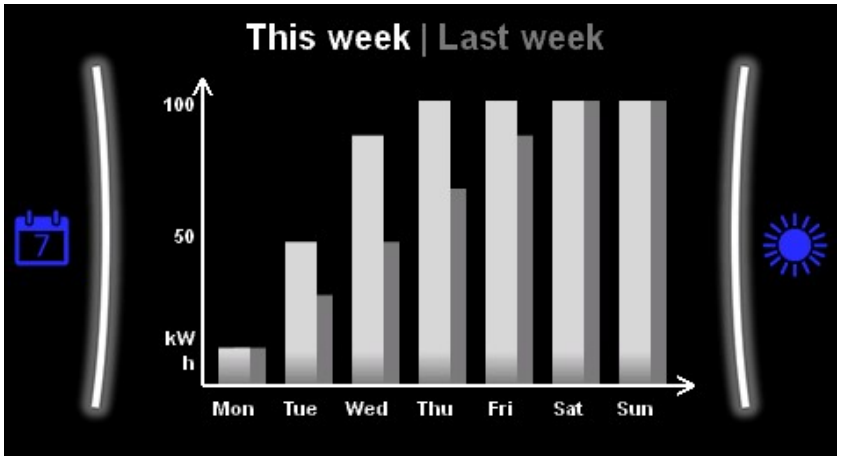
MMI Settings – Information – Energy Data



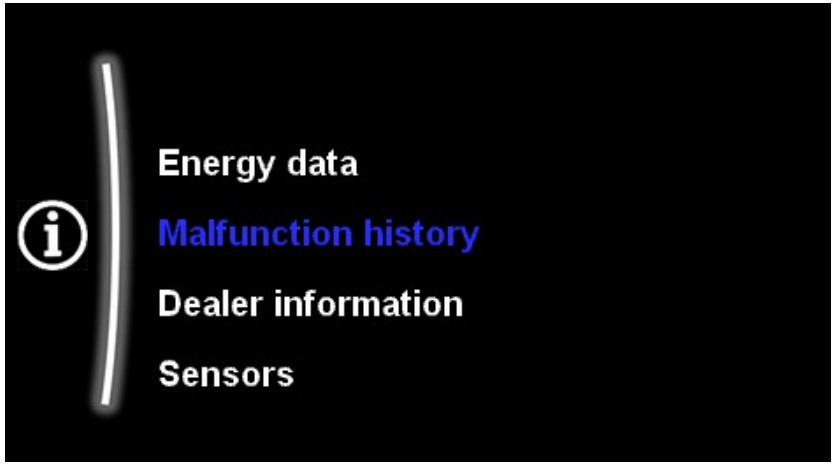
The onboard energy monitoring system allows you to look at consumed and produced energy for the system.

It can also estimate the total gas used from a bivalent gas boiler.





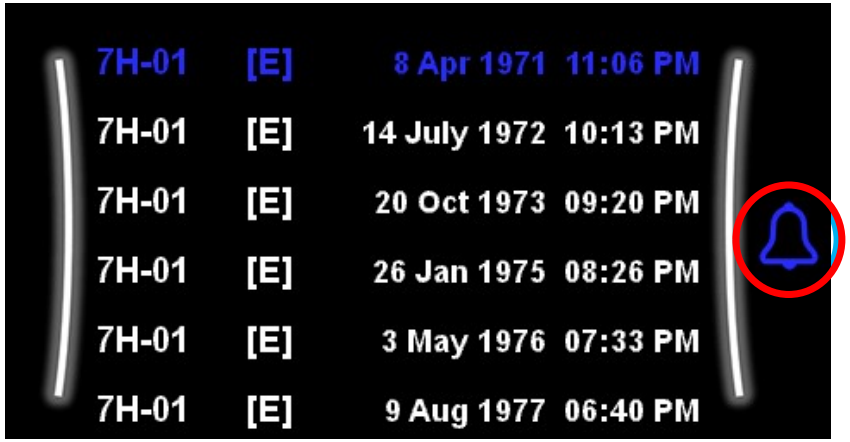
MMI Settings – Information – Malfunction History



This menu will show you all the past error and warning messages the unit has recorded, and also the time and date they occurred.

Error messages will stop the operation of the unit until the fault has cleared.

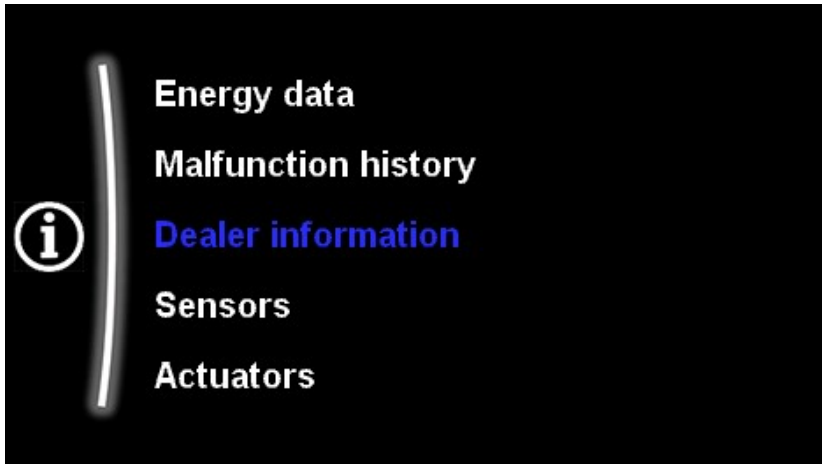
Warning Messages may not stop the operation of the system if the warning does not effect its current operation mode. For example AH-00 Disinfection mode will not stop CH or DHW operation.



Error Message

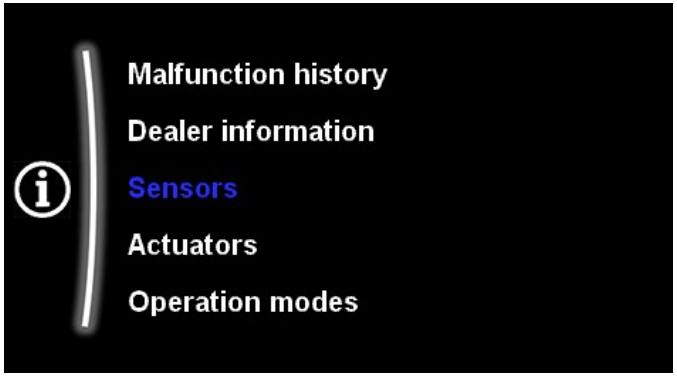
Warning Message

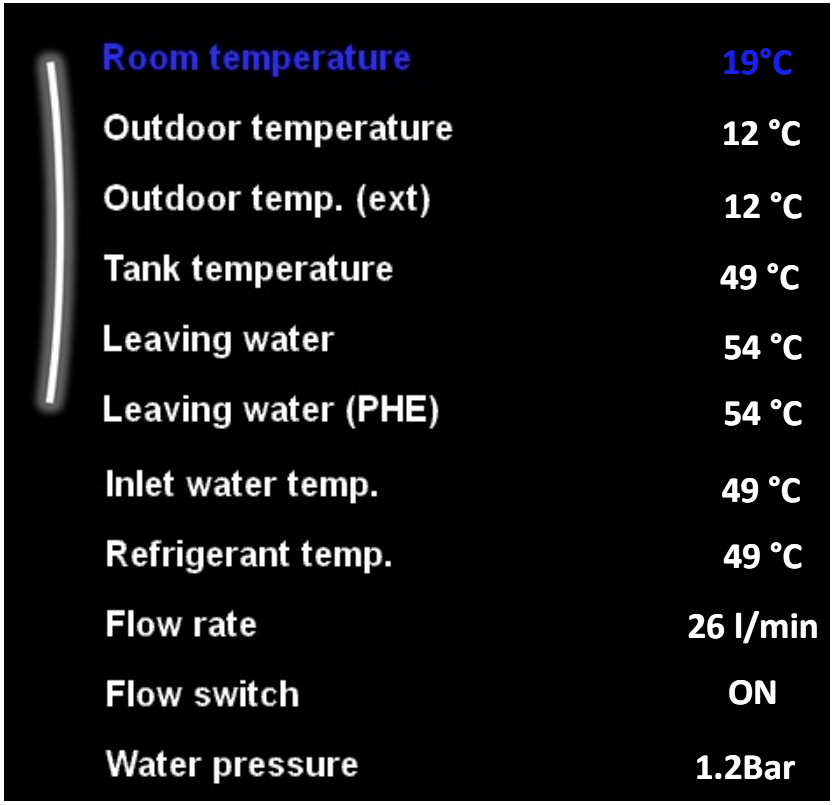
MMI Settings – Information – Dealer Information



In Dealer Information you can enter your Installer contact details / contact number into the system. These will then be available for the customer if they have an issue or require a service etc.

MMI Settings – Information – Sensors

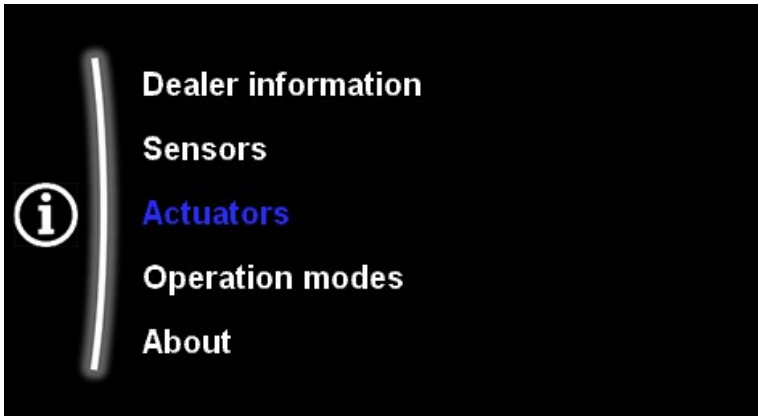


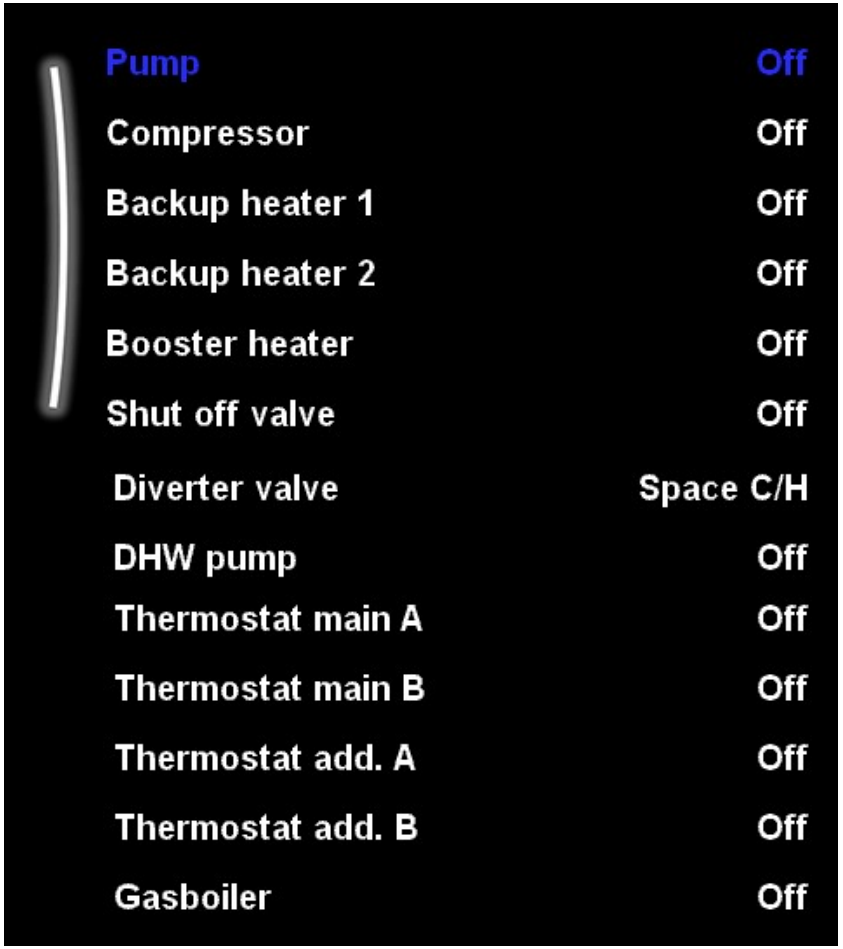


The sensors page will give you a snapshot of what the sensors are reading at that precise moment in time.

It will list every sensor available on the current set up of that unit being worked on.

MMI Settings – Information – Actuators

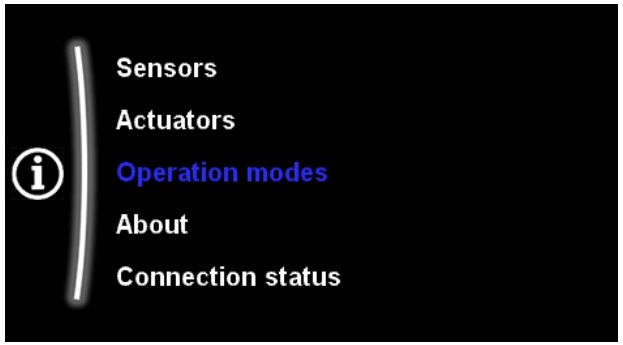


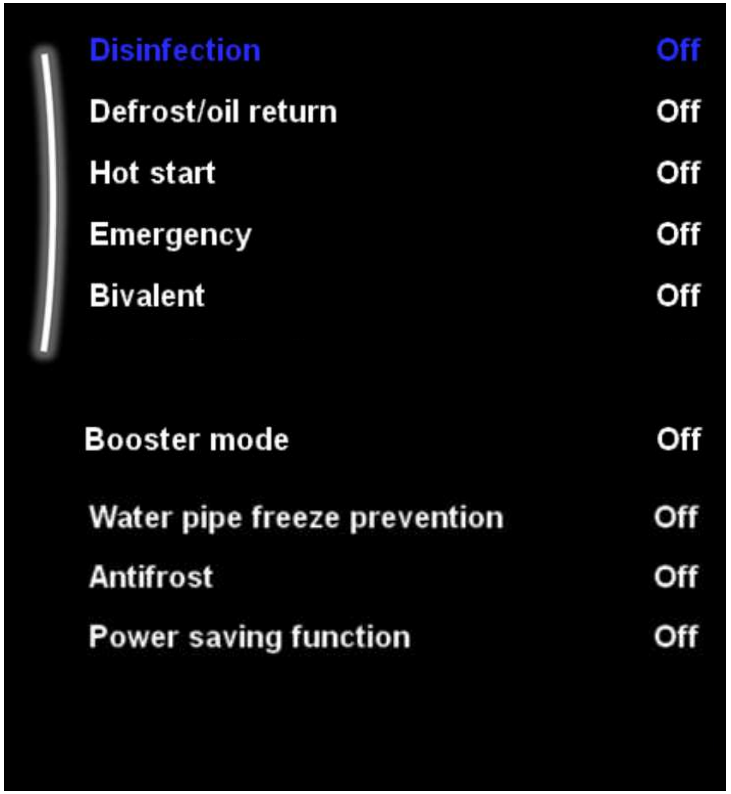


The actuators page will give you a snapshot of what the unit is doing at that precise moment in time.

It will list every actuator available on the current set up of that unit being worked on.

MMI Settings – Information – Operation Modes

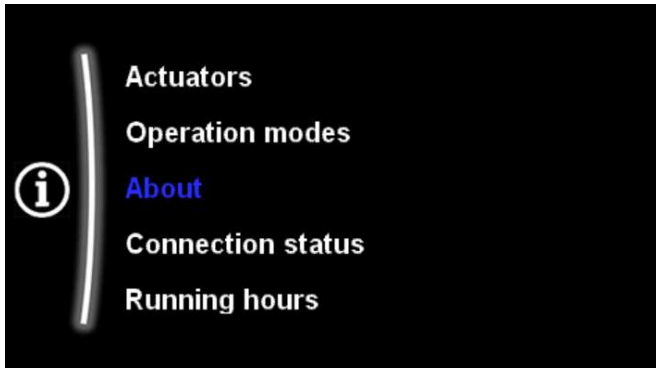


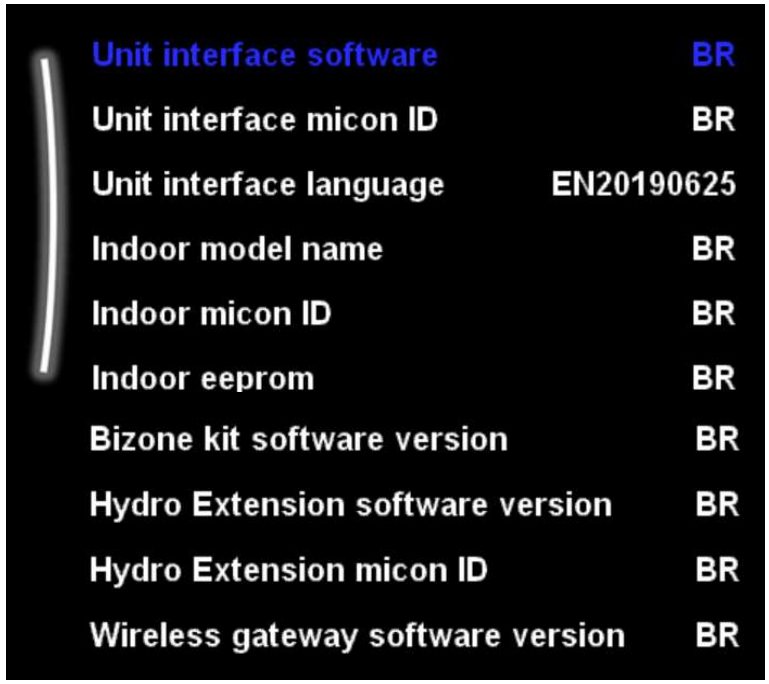


The operation modes page will give you an overview of what special modes of operation the unit is doing at that precise moment.

This page will vary depending on your unit and what functions and options you have set up on your installation.

MMI Settings – Information – About

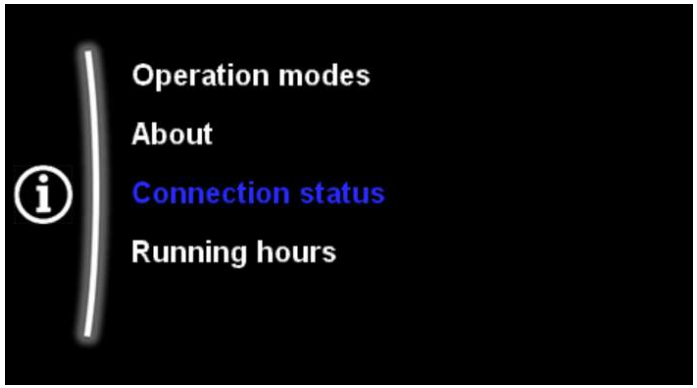


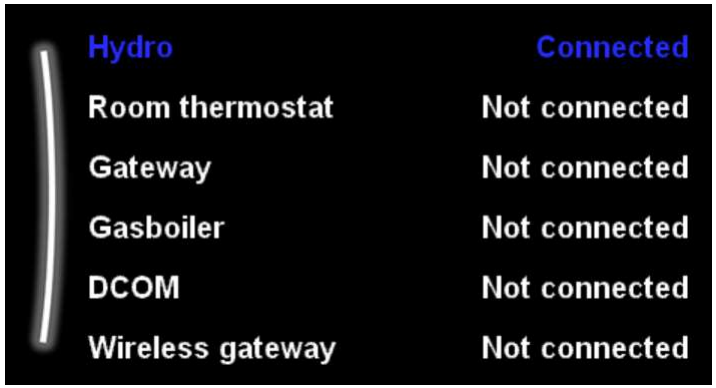


The about page will detail all the information about the unit.

This contains all the information regarding software versions of all units associated with your install as well as connected controllers.

MMI Settings – Information – Connection Status

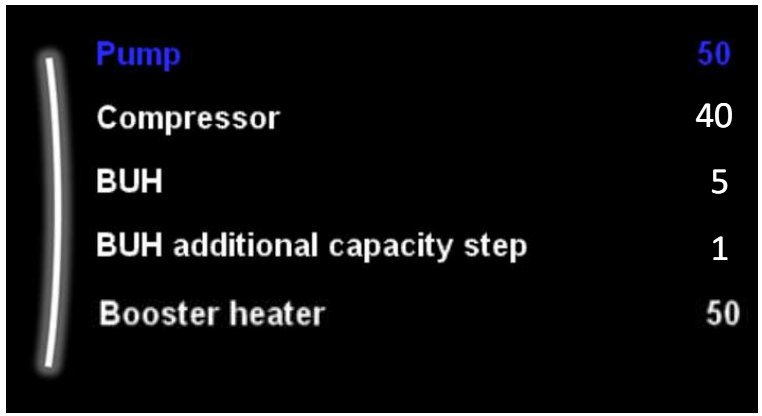




The connection status page will show what accessories the Altherma is connected to.

This is particularly useful when checking is the wireless gateway / Lan adapter is connected and running.

MMI Settings – Information – Running Hours

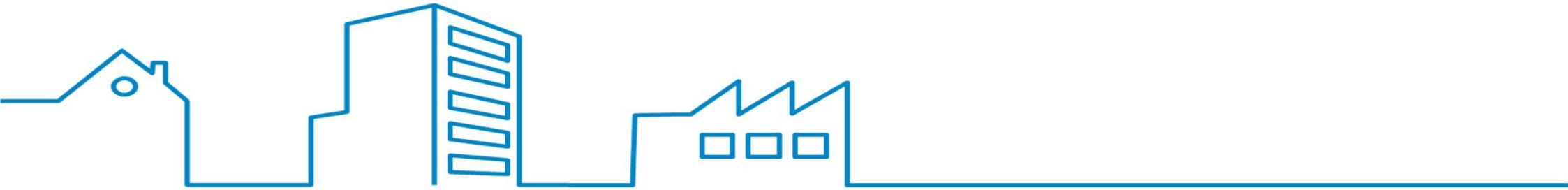


This page shows the total running hours of the components listed on the page.

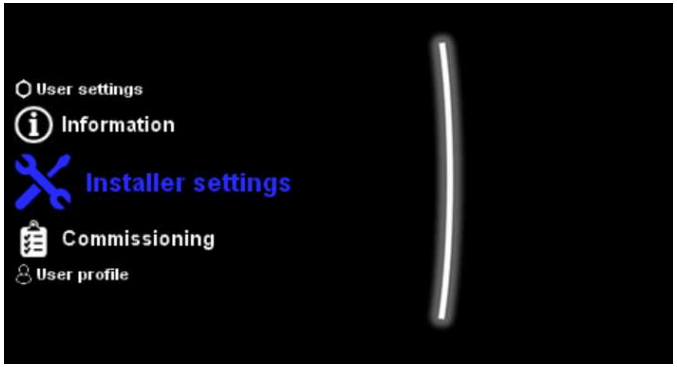
This page is useful in diagnosing issues such as high energy usage. For example if the Booster heater running hours were higher than expected it could indicate a DHW setpoint too high.

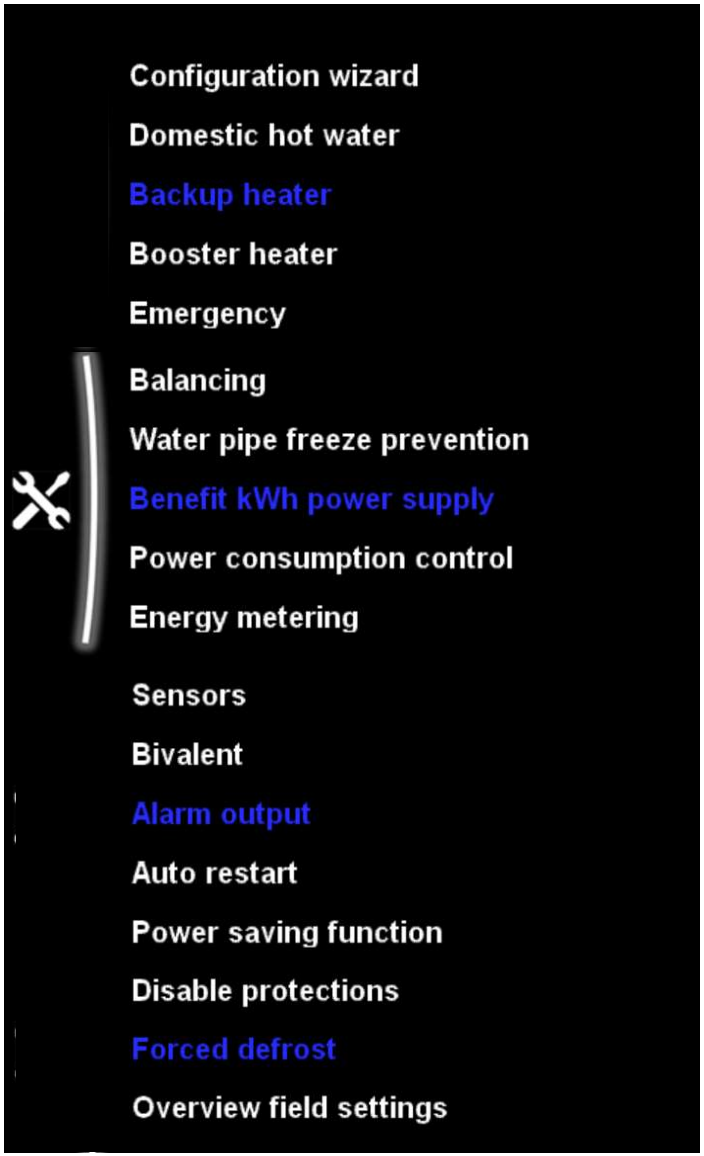
The actuators listed in this page will differ based on the unit and accessories you have installed.

MMI Menu – Installer Settings



MMI Settings – Installation Settings

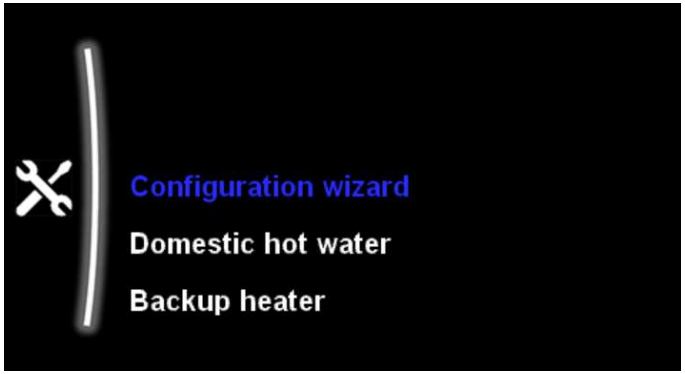


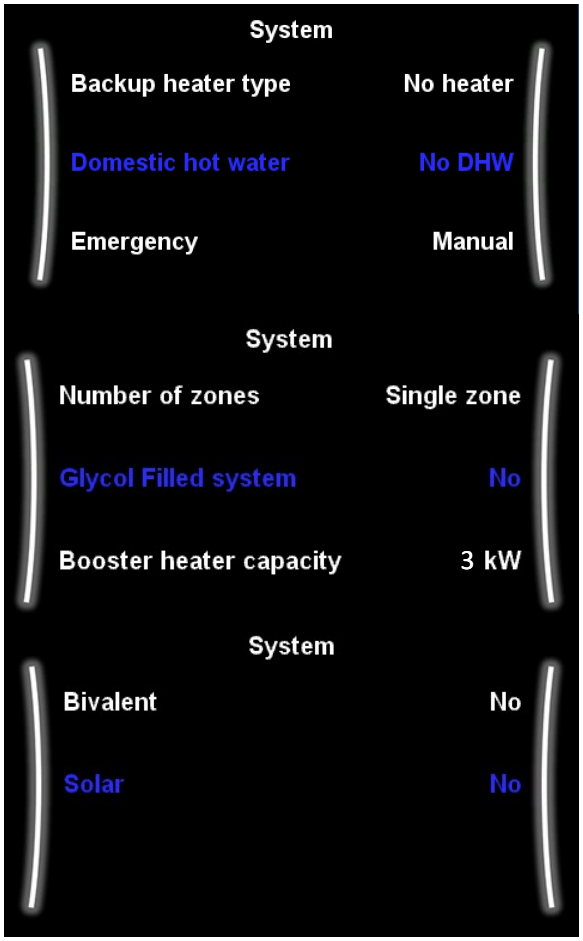


The Installation Settings menu allows the installer to further alter settings of the Altherma to fully control the system.

This menu gives access to options needed when installing advanced options such as solar, bivalent and DCOM cascade systems.

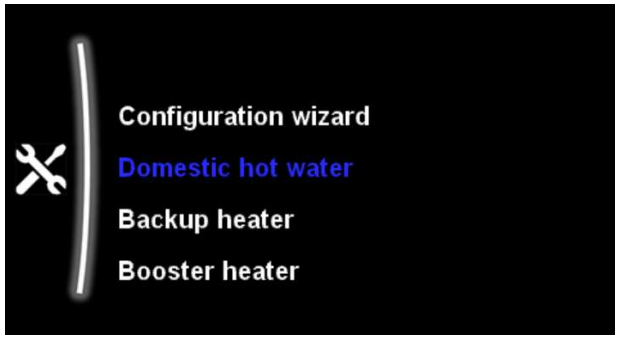
MMI Settings – Installation Settings – Configuration Wizard

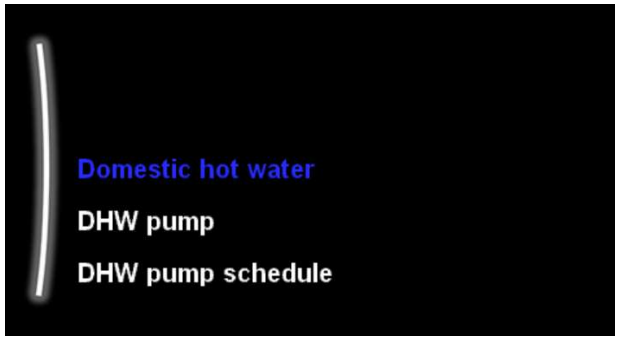


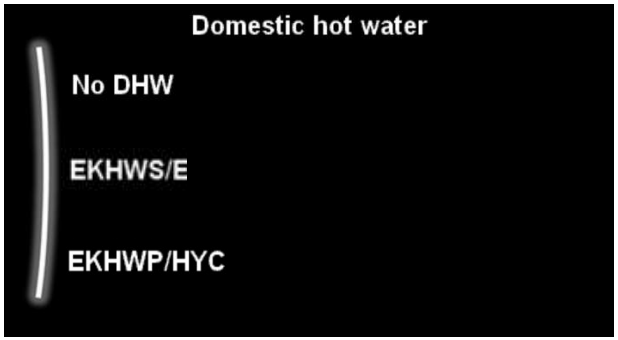


The configuration Wizard option allows you to re enter the configuration wizard you completed upon first power up.

MMI Settings – Installation Settings – Domestic Hot Water







The DHW settings in the Tank section deals with the running of the DHW, such as the mode of operation and disinfection times.

The DHW settings within this installation menu relate to hardware changes such as tank type as can be changed here. Changing this setting will alter the resistance range of the Tank sensor that our unit is looking for to determine the current tank temperature.

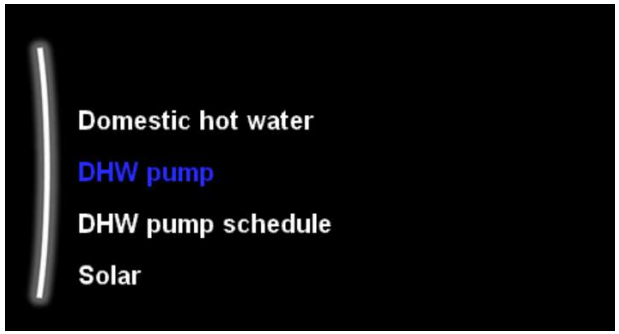
In case of EKHWS*D* / EKHWSU*D*, we recommend to use the following settings:

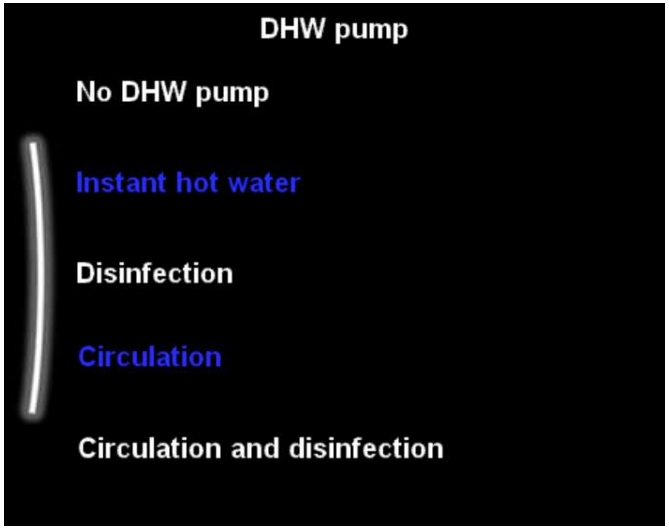
#	Code	Item	EKHWS*D* / EKHWSU*D*	
			150/180	200/250/300
[9.2.1]	[E-07]	Tank type	0: EKHWS/E	5: EKHWP/HYC
N/A	[4-05]	Thermistor type	0: Automatic	1: Type 1
[5.8]	[6-0E]	Maximum tank temperature	≤75°C	

In case of a third-party tank, we recommend to use the following settings:

#	Code	Item	Third-party tank	
			Coil≥1.05 m²	Coil≥1.8 m²
[9.2.1]	[E-07]	Tank type	0: EKHWS/E	5: EKHWP/HYC
N/A	[4-05]	Thermistor type	0: Automatic	1: Type 1
[5.8]	[6-0E]	Maximum tank temperature	≤75°C	

MMI Settings – Installation Settings – Domestic Hot Water - DHW Pump





- **No DHW Pump**

No DHW pump installed

- **Instant Hot Water**

Pump runs to circulate the DHW around the system, via the secondary return pipework, to make available hot water instantly when there is a tap off. A schedule can be set up should this setting be used.

- **Disinfection**

This setting will run the pump during the disinfection cycle.

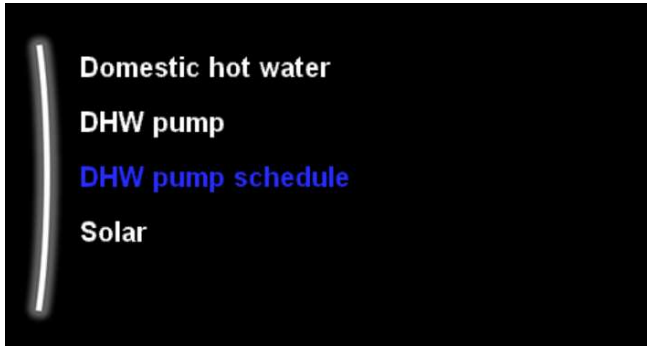
- **Circulation**

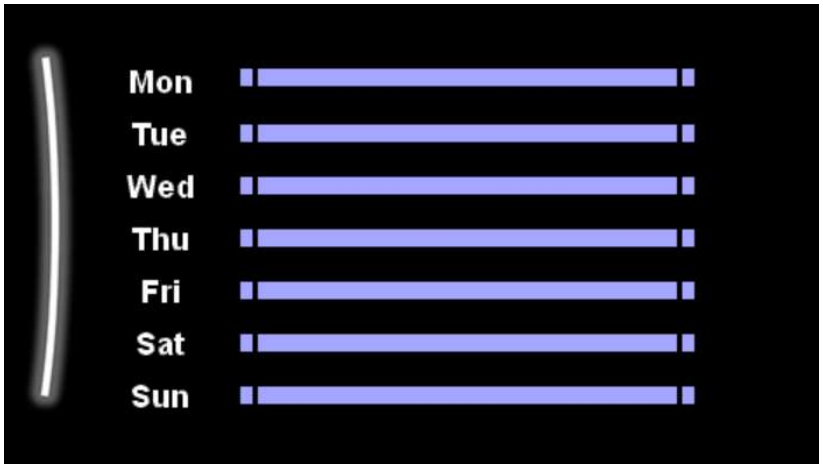
Installed for tank preheating, which is required for any system without a BUH. It runs when the tank is preheated i.e prior to a defrost in DHW mode.

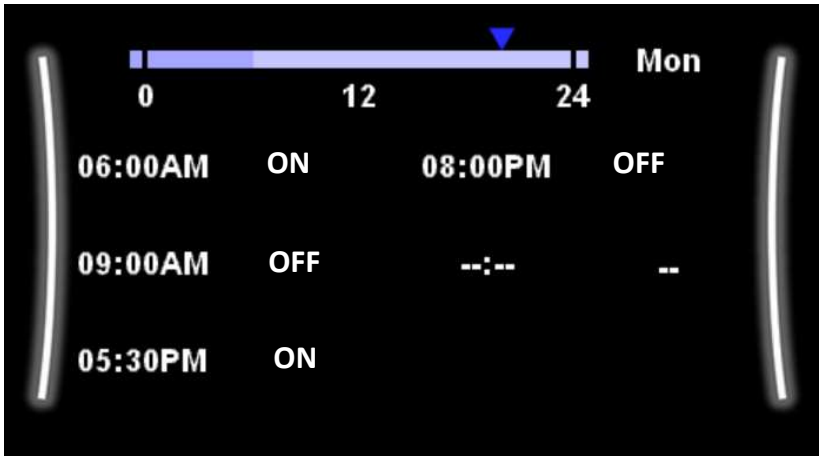
- **Circulation and Disinfection**

Combination of the 2 settings above

MMI Settings – Installation Settings – Domestic Hot Water - DHW Pump Schedule



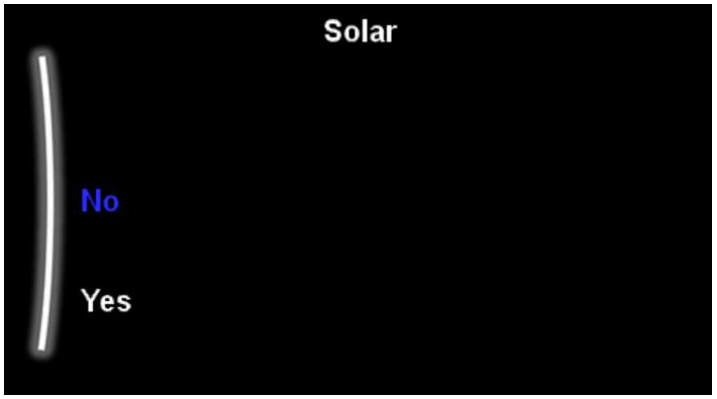




If you select Instant Hot water as the logic to control your secondary return pump you will need to enter a schedule to tell the unit when to power on and off the pump.

It is always advisable to install the secondary return pump in series with a pipe-stat. Once the pipework is up to temperature the stat will interrupt the power supply to the pump reducing the amount of heated water the pump will draw from the cylinder.

MMI Settings – Installation Settings – Domestic Hot Water - Solar

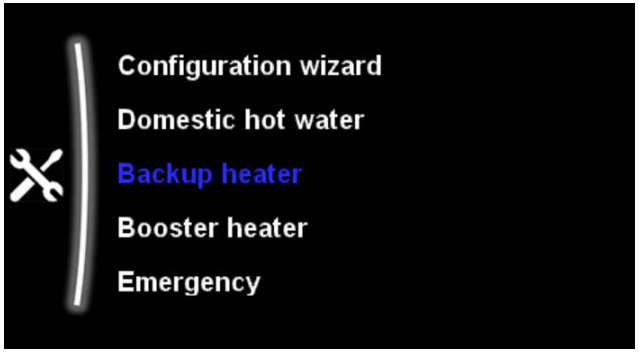


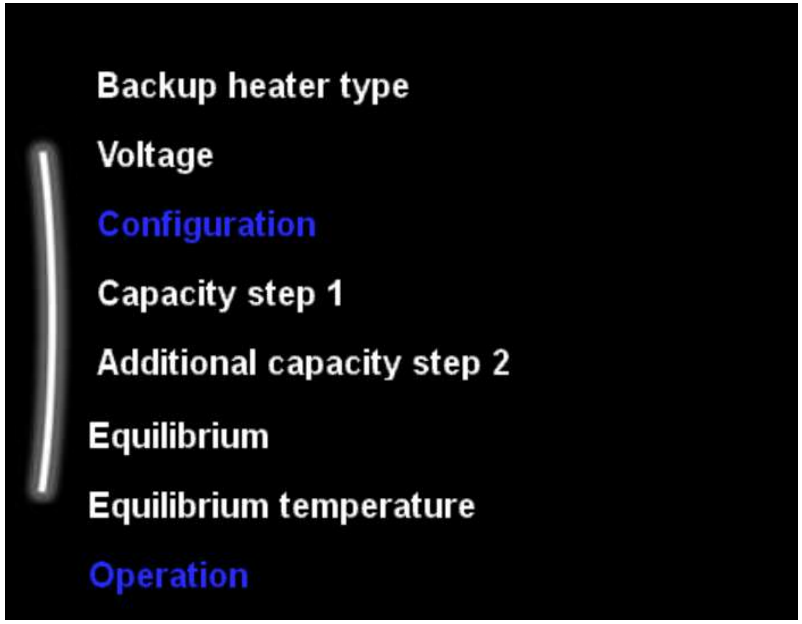
This setting informs the unit if there is solar thermal connected to the unit.

If activated the unit will look for the solar I/O PCB connections, which will be connected to the solar equipment, to see if the unit should run in DHW mode.

If there is solar gain and the BSK contact from the solar equipment is closed the unit will not run in DHW mode at this time. Once the solar gain period has ended the BSK contact will open and the Altherma can run in DHW mode as normal.

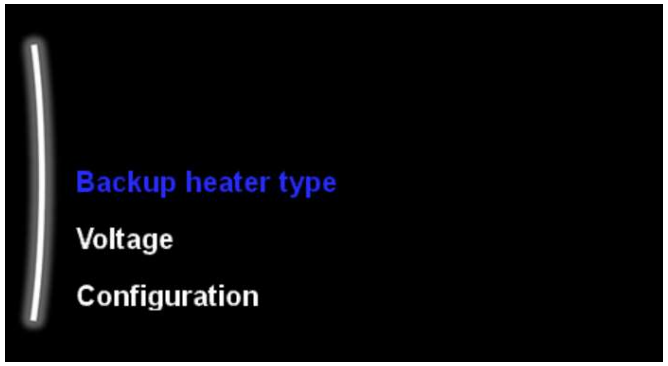
MMI Settings – Installation Settings – Back Up Heater

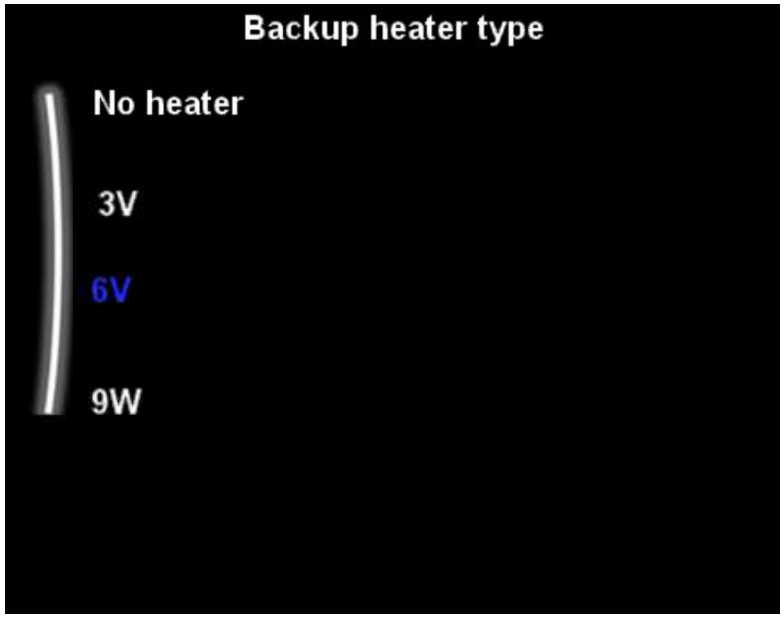




The Backup heater Installer menu contains all the settings required to set up your back up heater configuration correctly.

MMI Settings – Installation Settings – Back Up Heater – Back up Heater Type

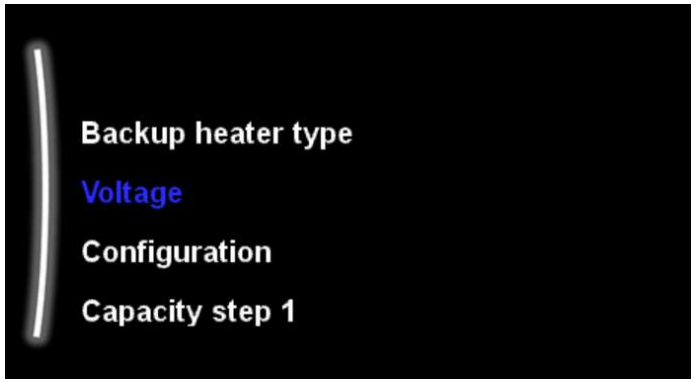


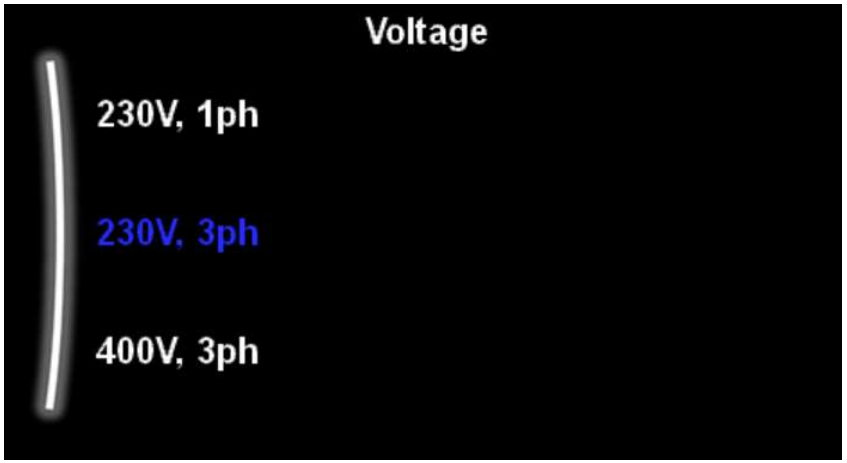


On most Altherma units this option will be “greyed out” and inaccessible. This is because most Altherma units come with a back up heater preinstalled within the equipment and is already pre-set as 6V or 9W.

With equipment that has the back up heater as an optional extra you can input its presence / output in this setting.

MMI Settings – Installation Settings – Back Up Heater – Voltage



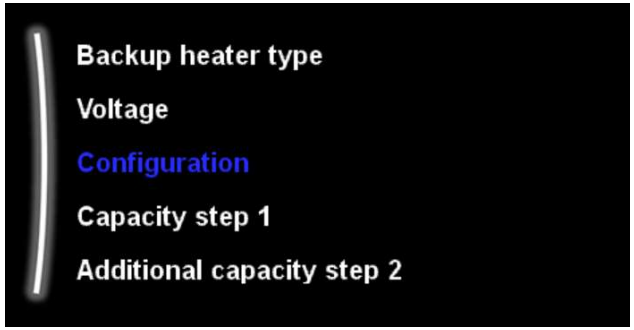


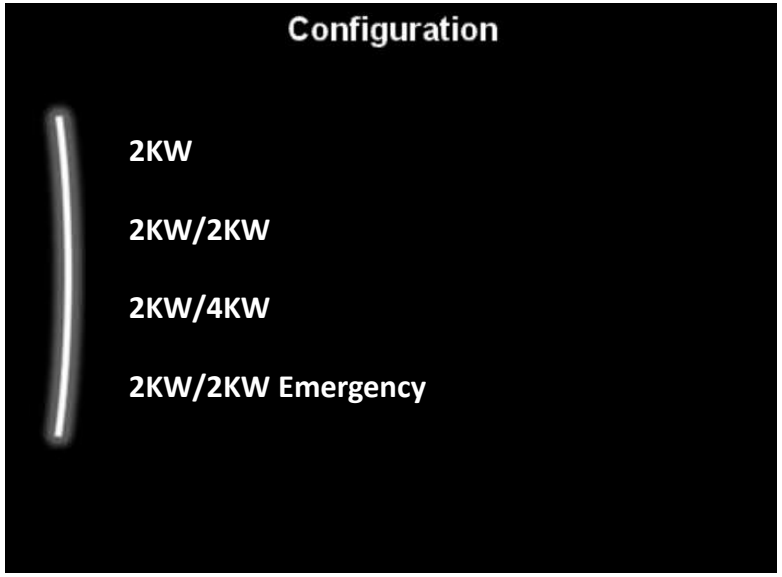
This setting allows the installer to change the power supply requirements for the BUH.

The BUH can be configured in 1ph or 3ph in some of our units.

Should the unit only have a 1ph input then the options on this menu will reflect that.

MMI Settings – Installation Settings – Back Up Heater – Configuration

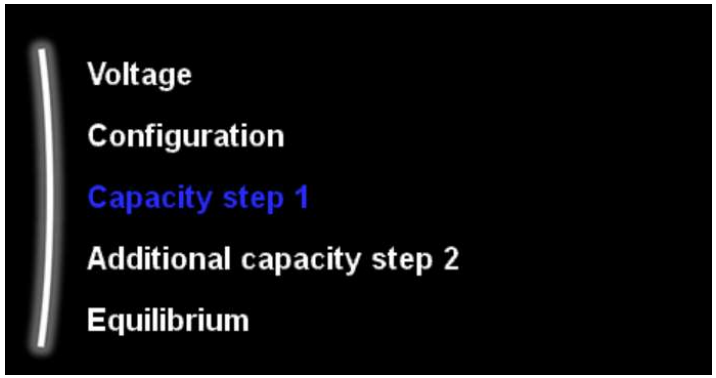


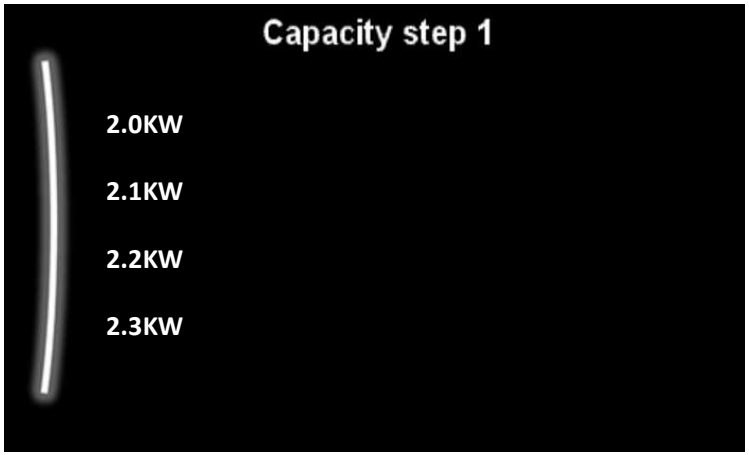


The Backup heater can be configured in different ways. It can be chosen to have a 1-step only backup heater or a backup heater with 2 steps.

If 2 steps, the capacity of the second step depends on this setting. It can also be chosen to have a higher capacity of the second step in emergency.

MMI Settings – Installation Settings – Back Up Heater – Capacity Step 1

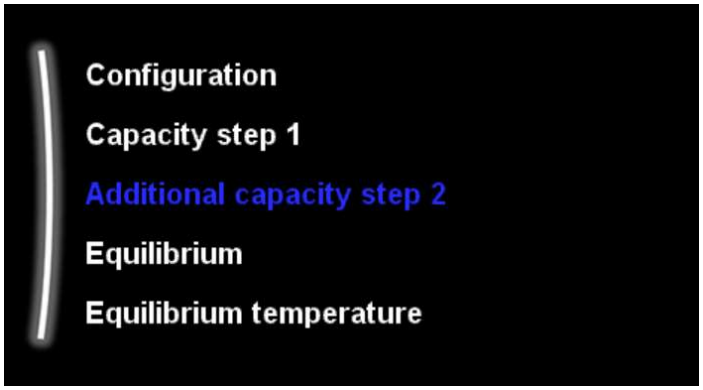


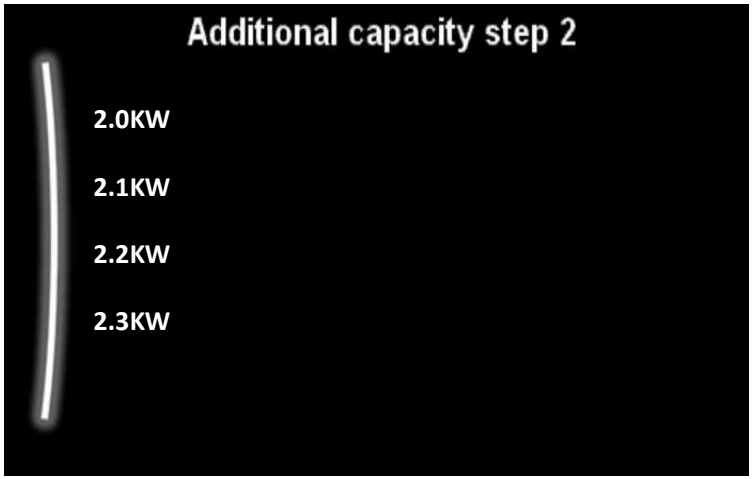


This is the capacity of the BUH first step at the nominal voltage.

This will alter the energy monitoring data based on the KW output entered here.

MMI Settings – Installation Settings – Back Up Heater – Capacity Step 2

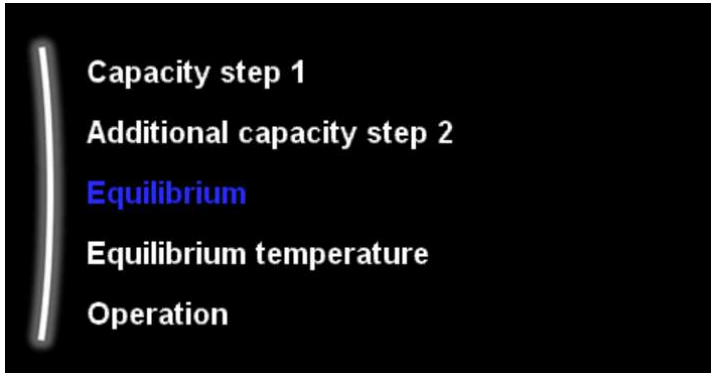


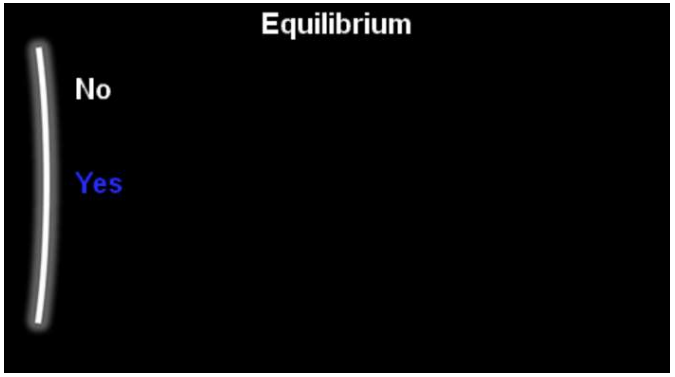


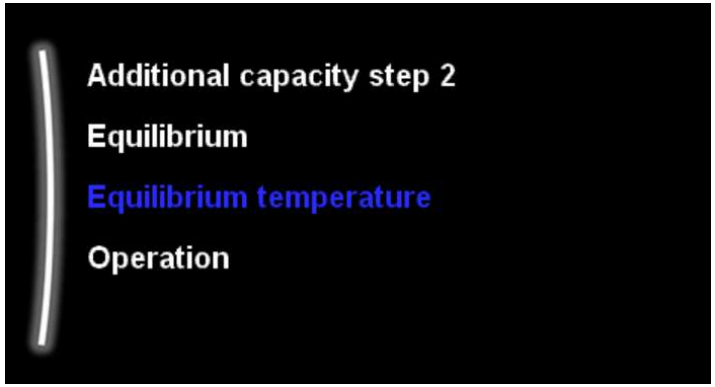
This is the capacity of the BUH additional 2nd step, if selected, at the nominal voltage.

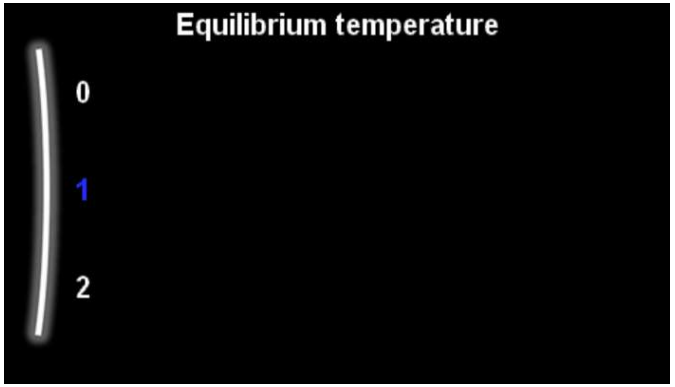
This will alter the energy monitoring data based on the KW output entered here.

MMI Settings – Installation Settings – Back Up Heater – Equilibrium









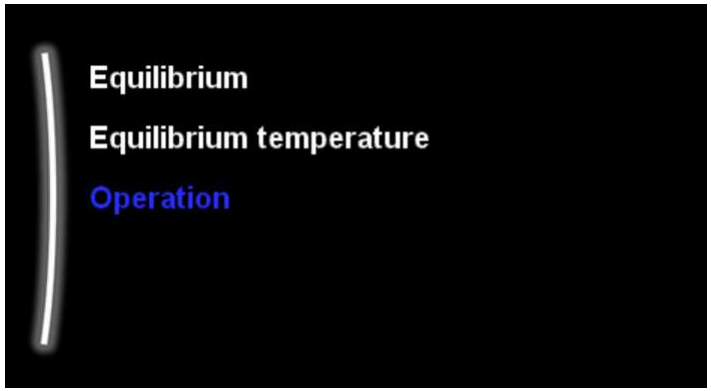
The equilibrium setting is the ability of the BUH to activate above the equilibrium temperature during space heating operation

Yes – BUH Not allowed

No – BUH can activate above equilibrium temperature.

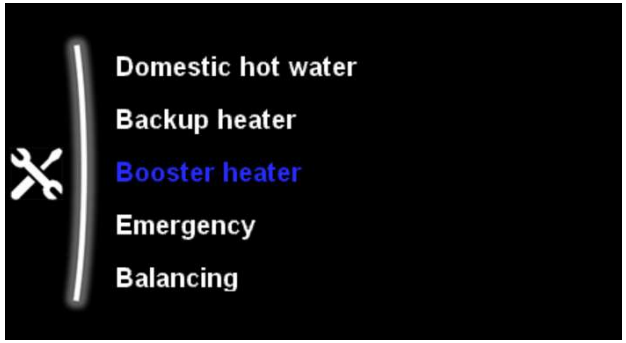
The Temperature set should coincide with the MCS design temperature for the location of the installation.

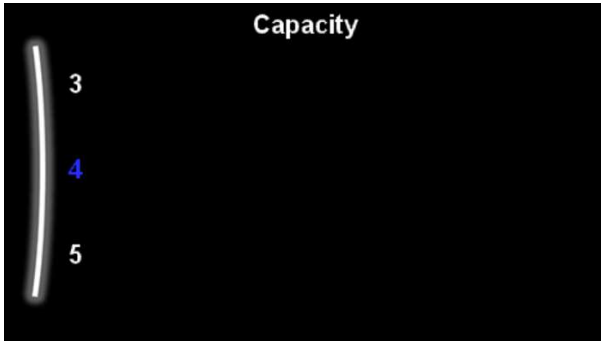
MMI Settings – Installation Settings – Back Up Heater – Operation



Operation setting can restrict the use of the BUH or only make it available for use in DHW mode (in the case of an integrated unit).

MMI Settings – Installation Settings – Booster Heater - Capacity

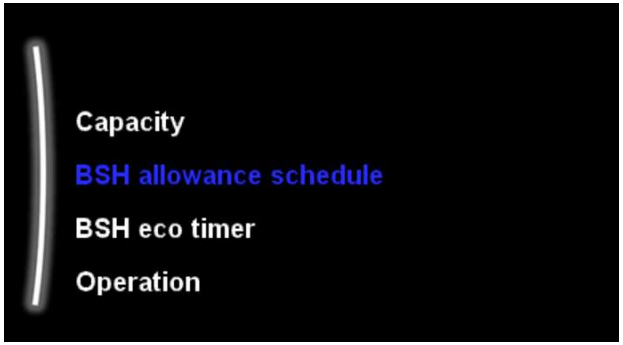


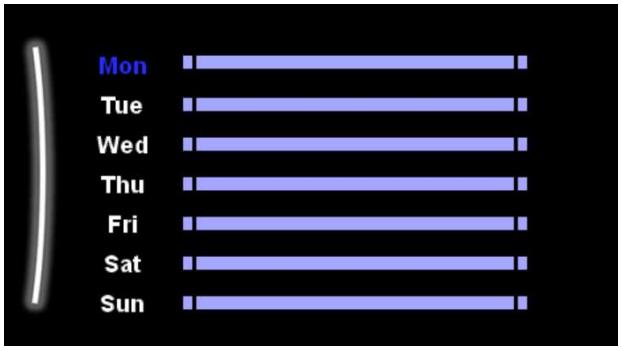


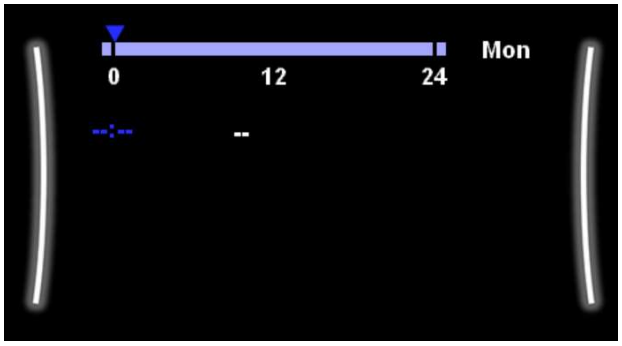
The capacity of the booster heater must be set for the energy metering and/or power consumption control feature to work properly.

When measuring the resistance value of the booster heater, you can set the exact heater capacity and this will lead to more accurate energy data.

MMI Settings – Installation Settings – Booster Heater – BSH allowance schedule



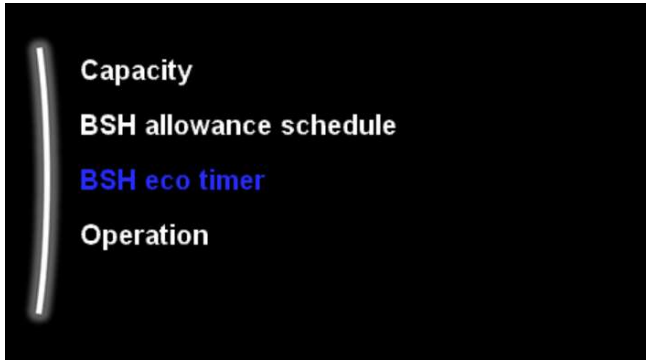




Program when the booster heater can operate. You can set a schedule for the booster heater here using the schedule screen.

Two actions per day are allowed in a week schedule.

MMI Settings – Installation Settings – Booster Heater – BSH eco timer



Booster heater delay timer.

Start-up delay time for the booster heater when domestic hot water mode is active.

▪ When domestic hot water mode is NOT active, the delay time is 20 minutes.

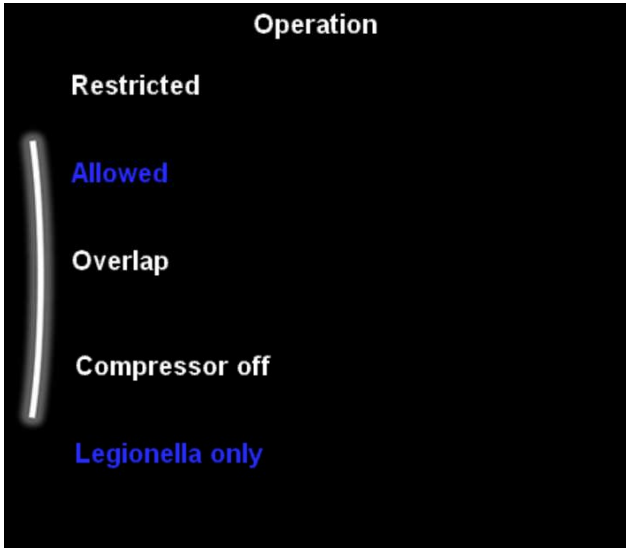
▪ The delay time starts from booster heater ON temperature.

▪ If the booster heater delay time is set too high, it might take a long time before the domestic hot water reaches its set temperature.

▪ The setting [8-03] is only meaningful if setting [4-03]=1. Setting [4-03]=0/2/3/4 limits the booster heater automatically in relation to heat pump operation time in domestic water heating mode.

Range: 20~95 minutes – Default 50

MMI Settings – Installation Settings – Booster Heater – Operation



This setting defines the operation permission of the booster heater depending on ambient, domestic hot water temperature or operation mode of heat pump.

This setting is only applicable in reheat mode for applications with separate domestic hot water tank.

When setting [4-03]=1/2/3/4, the booster heater operation can still be restricted by the booster heater allowance schedule

Restricted (0) – *

Booster heater operation is NOT allowed except for "Disinfection function" and "Powerful domestic water heating.

Allowed (1) –

Booster heater operation is allowed when required.

Overlap (2) –

The booster heater is allowed outside the operation range of the heat pump for domestic hot water operation.

This range includes under space heating priority temperature if this mode is activated (5-03) and/or above 35°C ambient temperature.

Compressor Off (3) –

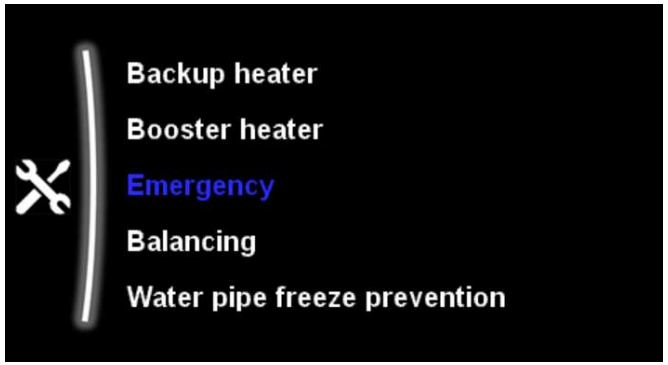
The booster heater is allowed when the heat pump is NOT active in domestic hot water operation. Same as setting 1, but simultaneous heat pump domestic hot water operation and booster heater operation is not allowed.

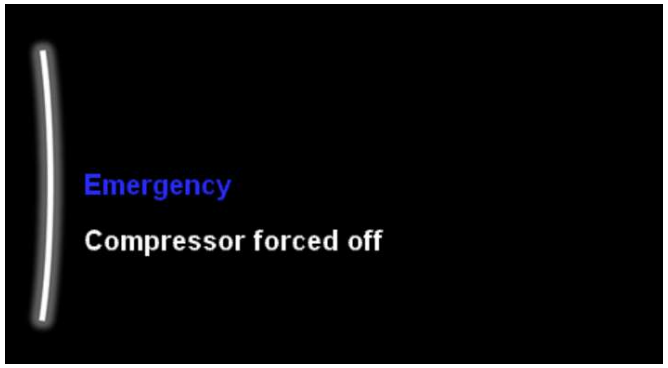
Legionella Only (4) – *

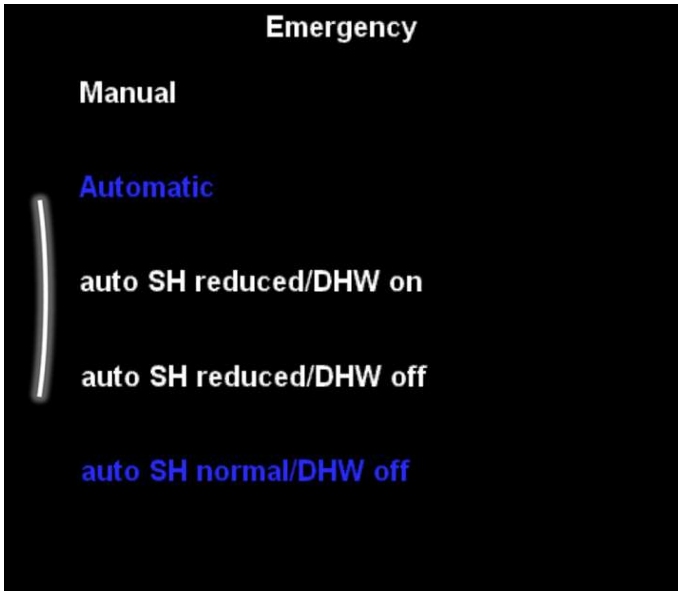
Booster heater operation is NOT allowed except for "Disinfection function".

* Only use “restricted” and “legionella only” in case the capacity of the heat pump can cover the heating requirements of the house and domestic hot water over the complete heating season.

MMI Settings – Installation Settings – Emergency







Manual –

When Emergency is set to Manual and a heat pump failure occurs, the domestic hot water heating and space heating stops. To manually recover it via the user interface, go to the Malfunctioning main menu screen and confirm whether the backup heater and/or booster heater can take over the heat load or not.

Automatic -

When Emergency is set to Automatic and a heat pump failure occurs, the backup heater automatically takes over the heat load, and the booster heater in the optional tank takes over the domestic hot water production.

Auto SH red / DHW on –

space heating is reduced but domestic hot water is still available.

Auto SH red / DHW on -

space heating is reduced and domestic hot water is NOT available.

Auto SH normal / DHW off –

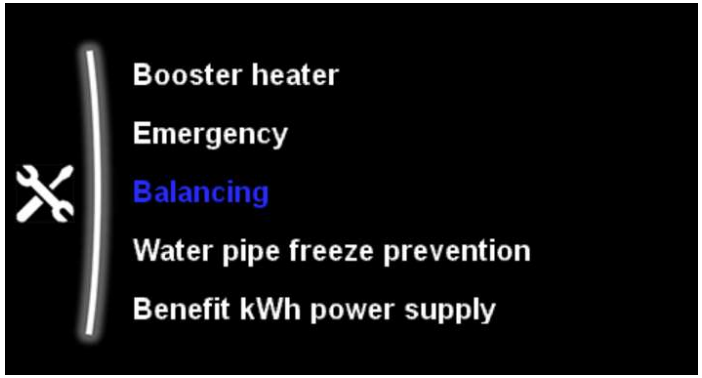
space heating operates as normally but domestic hot water is NOT available.

MMI Settings – Installation Settings – Emergency

Compressor forced off mode can be activated to allow the backup heater to provide domestic hot water and space heating.

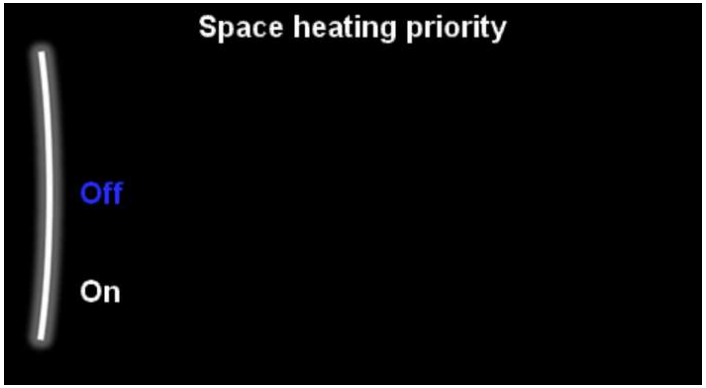
Cooling is NOT possible when this mode is activated

MMI Settings – Installation Settings – Balancing

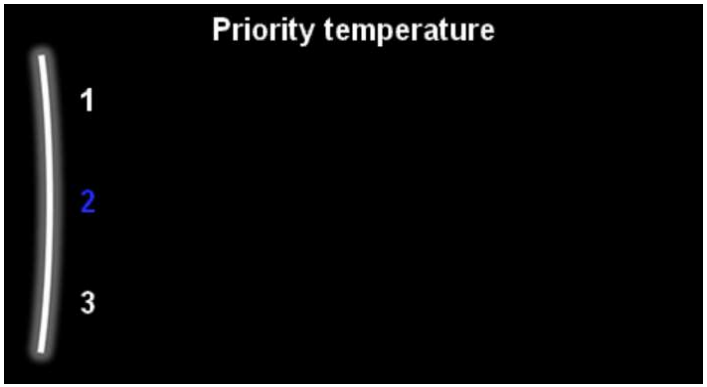


These settings are included to enable the installer to fine tune the operation of the system in terms of running times and priority.

MMI Settings – Installation Settings – Balancing – Space Heating Priority

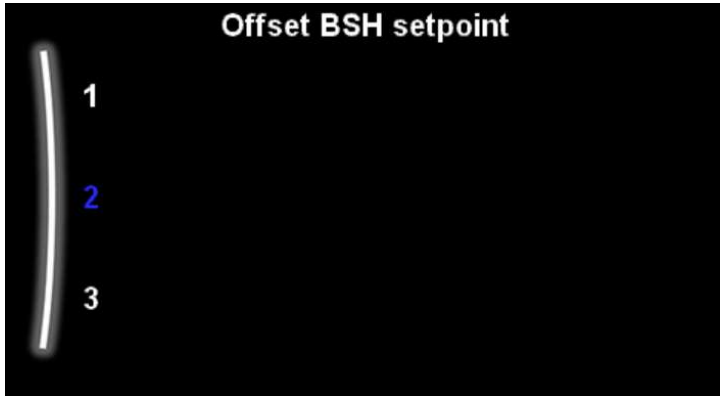


Space heating priority defines whether domestic hot water is made by booster heater only when outdoor temperature is below space heating priority temperature.



Range -15°C - 35°C. It is advised to not change the default value.

MMI Settings – Installation Settings – Balancing – Booster Heater Offset Setpoint



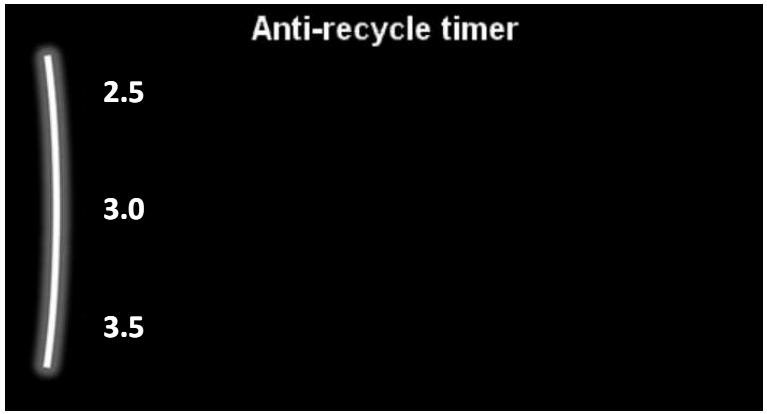
Offset BSH setpoint: Setpoint correction for domestic hot water temperature.

This setting can be applied at low outdoor temperature when space heating priority is enabled.

The corrected (higher) setpoint will make sure that the total heat capacity of the water in the tank remains approximately unchanged, by compensating for the colder bottom water layer of the tank (because the heat exchanger coil is not operational) with a warmer top layer.

Range: 0°C~20°C

MMI Settings – Installation Settings – Balancing – Anti Recycle Timer

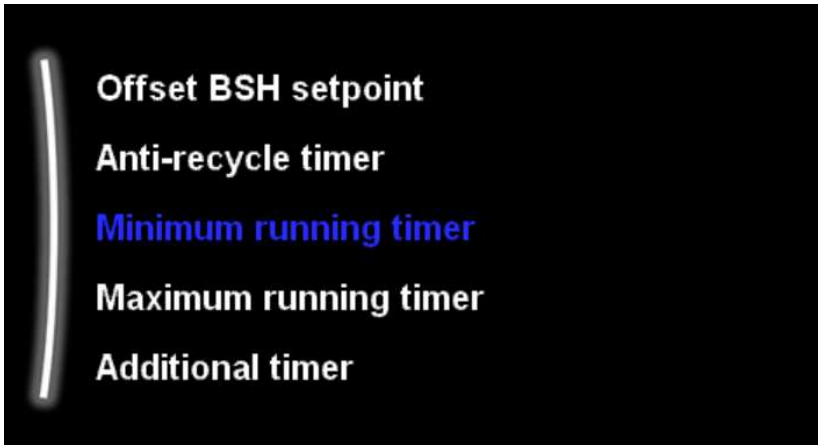


Anti-recycle timer: Minimum time between two cycles for domestic hot water.

The actual anti-recycling time also depends on setting [8-04]. Range: 0~10 hours.

The minimum time is 0.5 hours even when the selected value is 0.

MMI Settings – Installation Settings – Balancing – Minimum Running Timer

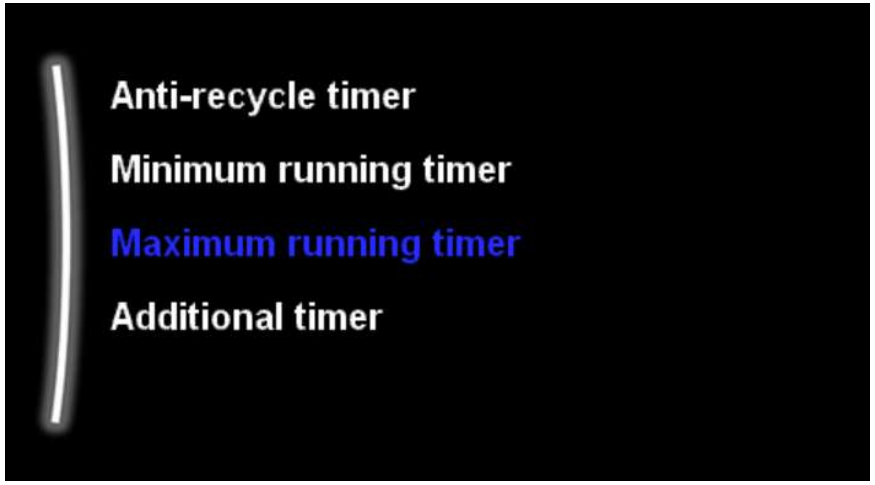


Minimum running time in DHW mode.

Default value is 1 minute which is recommended to not be altered.

Range: 0-20 minutes

MMI Settings – Installation Settings – Balancing – Maximum Running Timer

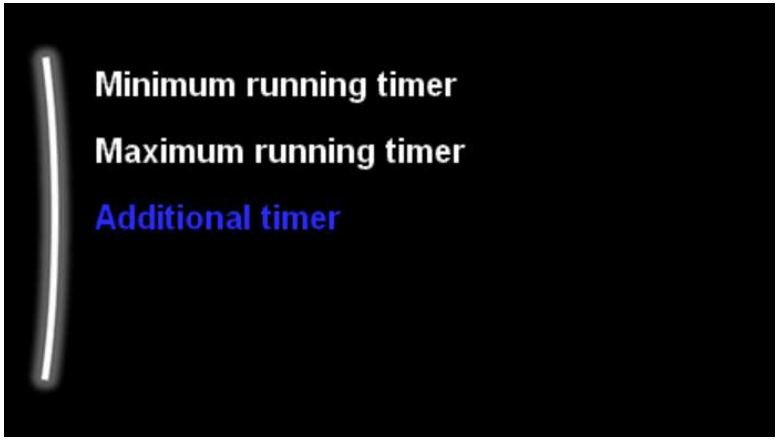


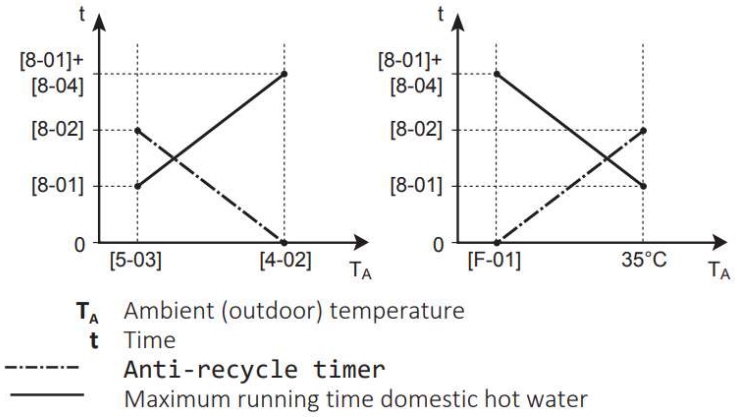
Maximum running time in DHW mode.

Default is 30 mins. Any longer than this, in dual demand, and there may be a cooling of the radiators that the customer may notice. If more DHW reheat time is required and the customer has UFH as the primary heat source it could be acceptable in certain circumstances to increase this value to satisfy the DHW without the customer experiencing a drop in room temperature.

Range: 5 - 95 minutes

MMI Settings – Installation Settings – Balancing – Additional Timer





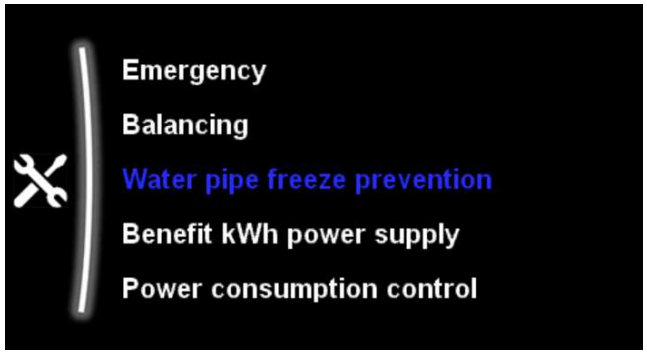
The additional timer setting allows the DHW to run for longer periods in warmer ambient conditions.

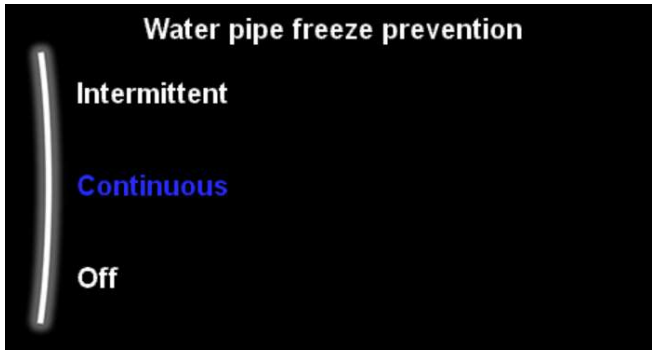
During these warmer temperatures the SH will not be required as much so the DHW can operate for longer periods without a drop in SH comfort for the customer.

As shown in the left hand chart on this slide, the 8-01 “Maximum DHW Running Time” is supplemented by this 8-04 “Additional Timer”. This timer increases the length of DHW operation as the ambient temperature increases up to the 4-02 “ Space Off Temperature”.

Range: 0 - **95** minutes

MMI Settings – Installation Settings – Water Pipe Freeze Prevention

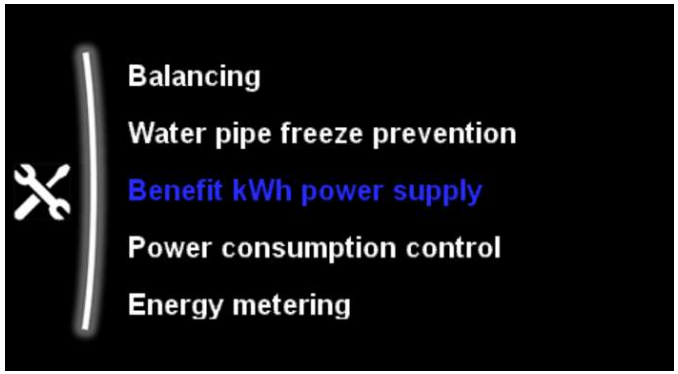


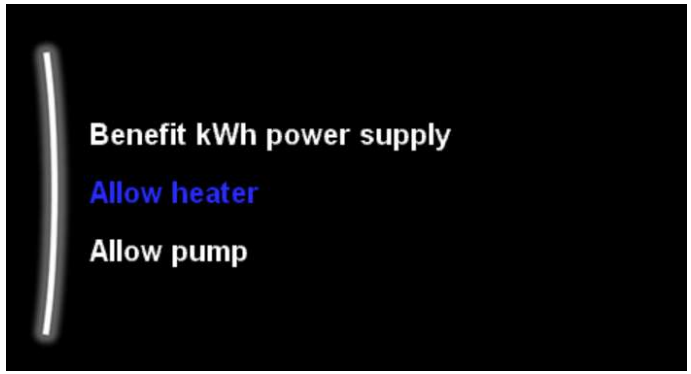


Only relevant for installations with water piping outdoors. This function tries to protect outdoor water piping from freezing.

This setting will operate even if the Space Heating / Cooling operation has been turned off.

MMI Settings – Installation Settings – Benefit KWh Power Supply

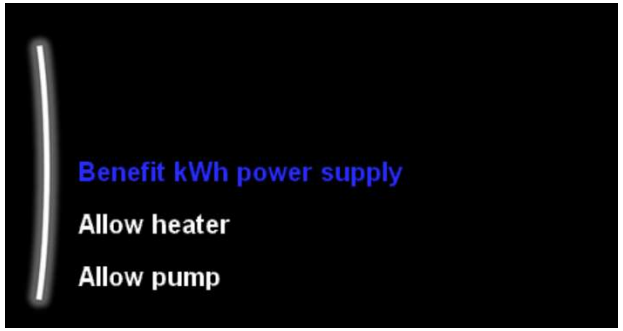




Benefit kWh Supply is an option to connect the system to a signal cable that can “force off” the unit, or parts of it.

The signal is usually sent by electricity companies to turn off you unit in periods of high electricity demand. There is usually a preferential electricity tariff for adopting this relationship.

MMI Settings – Installation Settings – Benefit KWh Power Supply



- **0 No**: The outdoor unit is connected to a normal power supply.

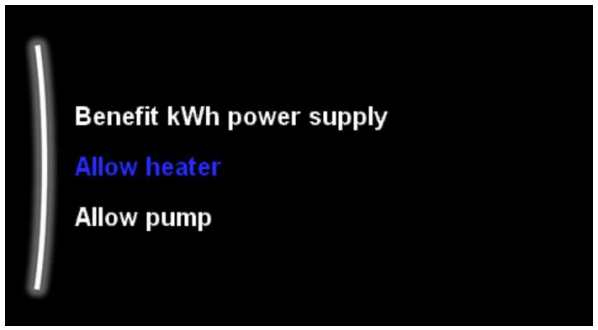
- **1 Open**: The outdoor unit is connected to a preferential kWh rate power supply. When the preferential kWh rate signal is sent by the electricity company, the contact will open and the unit will go in forced off mode. When the signal is released again, the voltage-free contact will close and the unit will restart operation. Therefore, always enable the auto restart function.

- **2 Closed**: The outdoor unit is connected to a preferential kWh rate power supply. When the preferential kWh rate signal is sent by the electricity company, the contact will close and the unit will go in forced off mode. When the signal is released again, the voltage-free contact will open and the unit will restart operation. Therefore, always enable the auto restart function.

- **3 Safety thermostat**: A safety thermostat is connected to the system (normal closed contact)

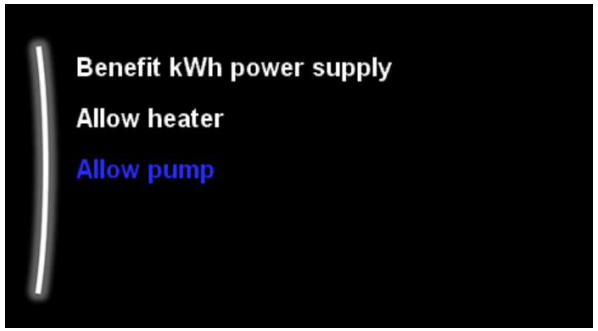
** Connection to a Benefit kWh power supply **or** a Safety thermostat.

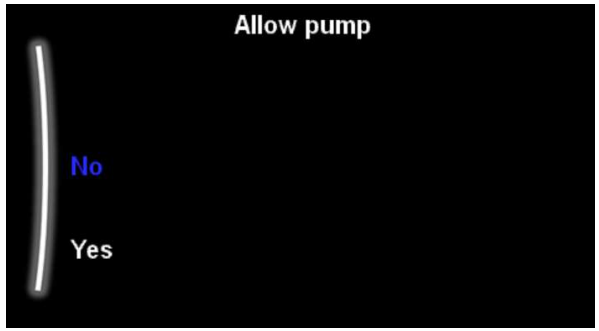
MMI Settings – Installation Settings – Benefit KWh Power Supply



Once Benefit kWh power supply is activated you can limit the use of electrical heaters and the heat pump in the option “Allow heater”.

[D-00]	Booster heater	Backup heater	Compressor
0	Forced OFF	Forced OFF	Forced OFF
1	Permitted		
2	Forced OFF	Permitted	
3	Permitted		

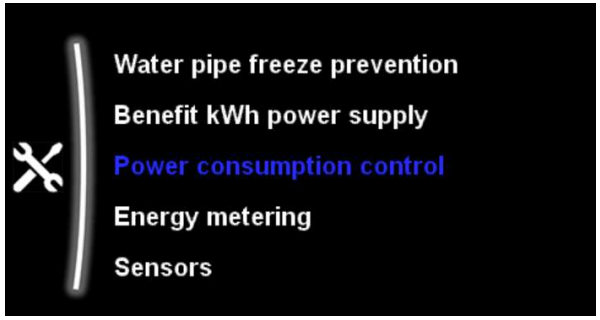


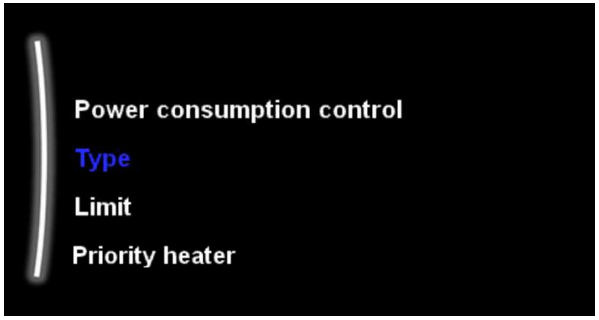


The water pump can also be deactivated in the “Allow pump” setting.

This setting will not effect the Antifreeze prevention if the water were to drop in temperature.

MMI Settings – Installation Settings – Power Consumption Control

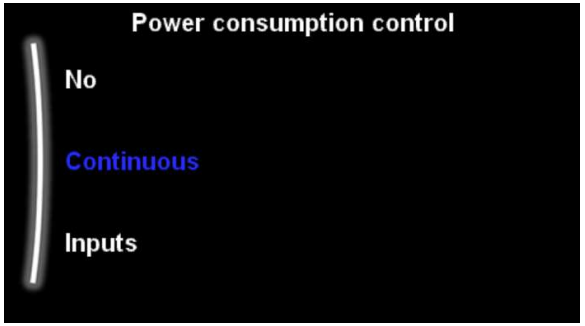




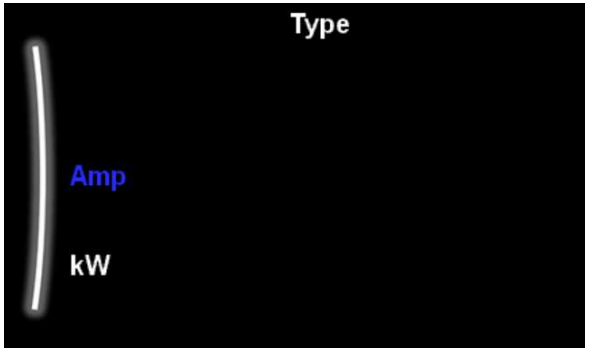
Power consumption control helps you to limit the power consumption of the unit and its heaters.

This could be useful in properties that are close to exceeding their total Ampage of the fuse board.

MMI Settings – Installation Settings – Power Consumption Control

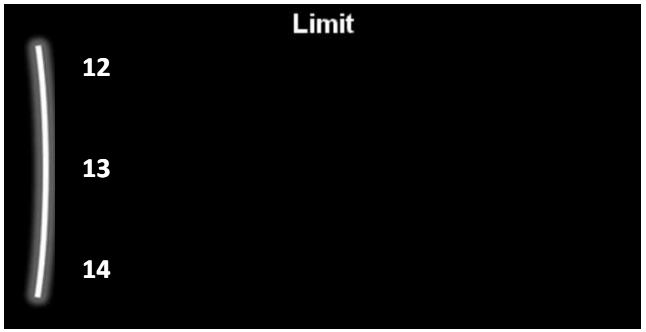


The first option lets you active the mode and choose whether you want a total system value (Continuous) or whether you wish to limit individual parts of the system at different rates (Inputs).



Type gives you the option to limit the system with a Amp or kW figure.

MMI Settings – Installation Settings – Power Consumption Control

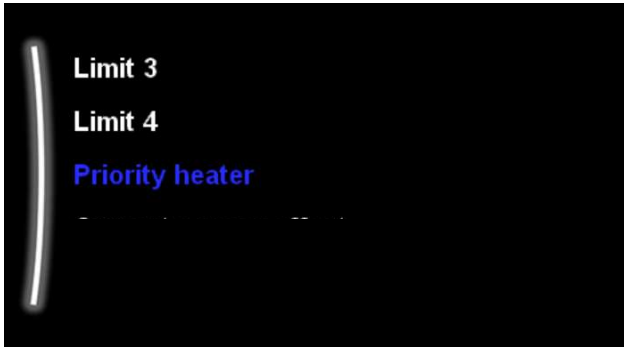


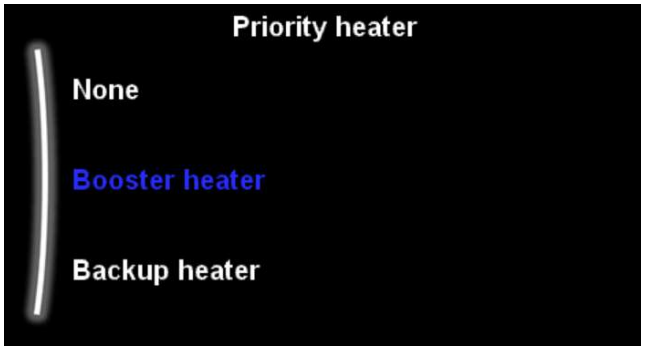
The Limit option is where you enter the figure you require to limit the system to. The settings found here will differ based on the previous 2 settings.

Continuous = Limit
Input = 4 X Limit inputs.

Type = Amp (0-50A) or kW (0-20kW) setting.

Power consumption control ENABLED [4-08]=1/2



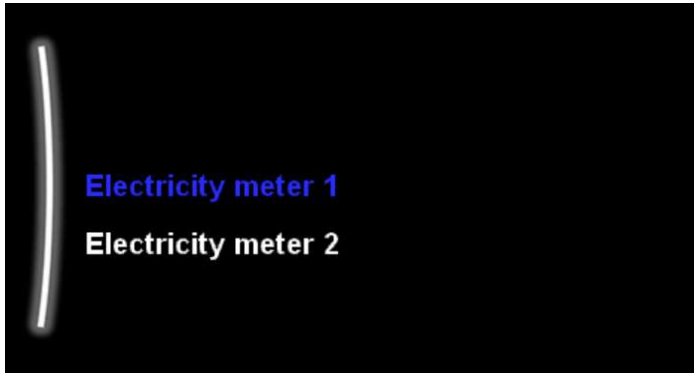


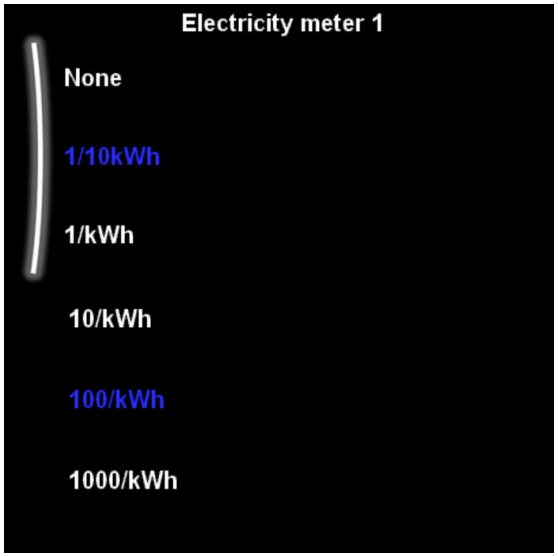
- 0 None : Depending on the power limitation level, the booster heater will be limited first, before the backup heater is limited.

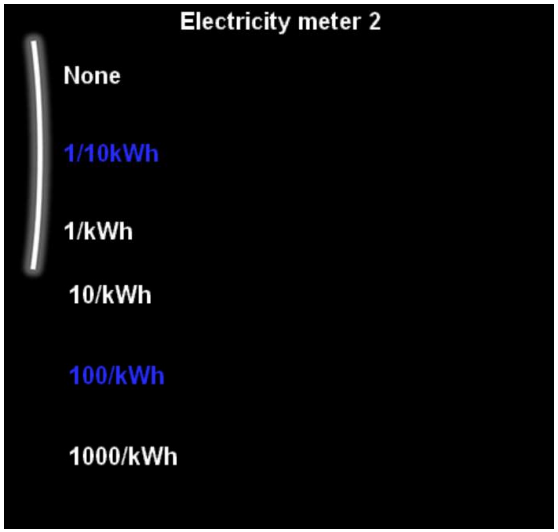
- 1 Booster heater: Depending on the power limitation level, the backup heater will be limited first, before the booster heater is limited.

- 2 Backup heater: Depending on the power limitation level, the booster heater will be limited first, before the backup heater is limited

MMI Settings – Installation Settings – Energy Metering



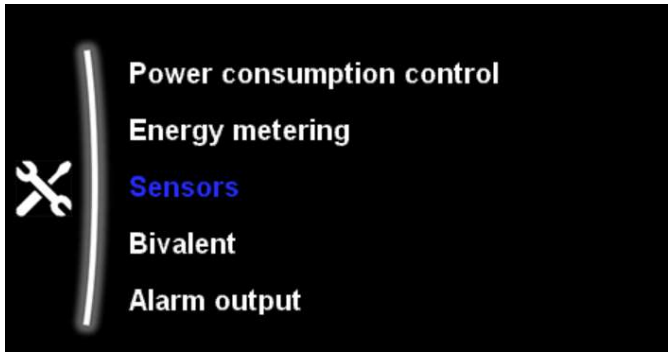


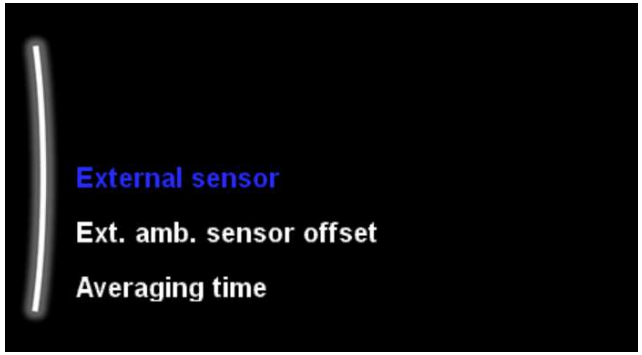


If you install an energy meter select the pulse frequency output of each power meter in accordance with the power meter specifications.

It is possible to connect up to 2 power meters with different pulse frequencies. If only 1 or no power meters are used, select 'None' to indicate the corresponding pulse input is NOT used.

MMI Settings – Installation Settings – Sensors





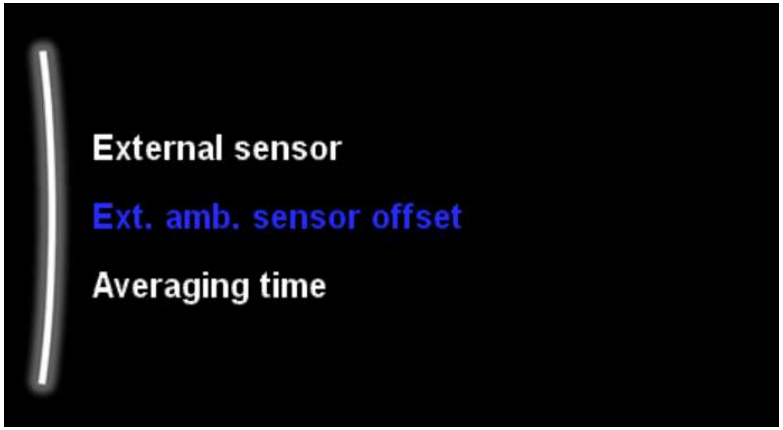
External sensor : When an optional external ambient sensor is connected, the type of the sensor must be set.

- **0 None** : NOT installed. The thermistor in the dedicated Human Comfort Interface and in the outdoor unit are used for measurement.

- **1 Outdoor**: Connected to PCB of the indoor unit measuring the outdoor temperature. Remark: For some functionality, the temperature sensor in the outdoor unit is still used.

- **2 Room**: Connected to PCB of the indoor unit measuring the indoor temperature. The temperature sensor in the Madoka room controller is no longer used / needed for RT Control operation.

MMI Settings – Installation Settings – Sensors External Ambient Sensor Offset



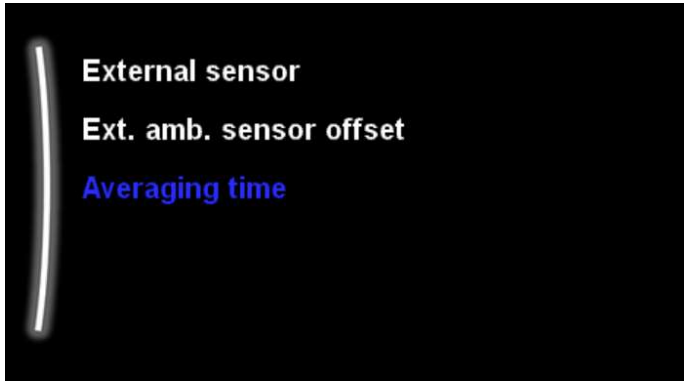
ONLY applicable in case an external outdoor ambient sensor is connected and configured.

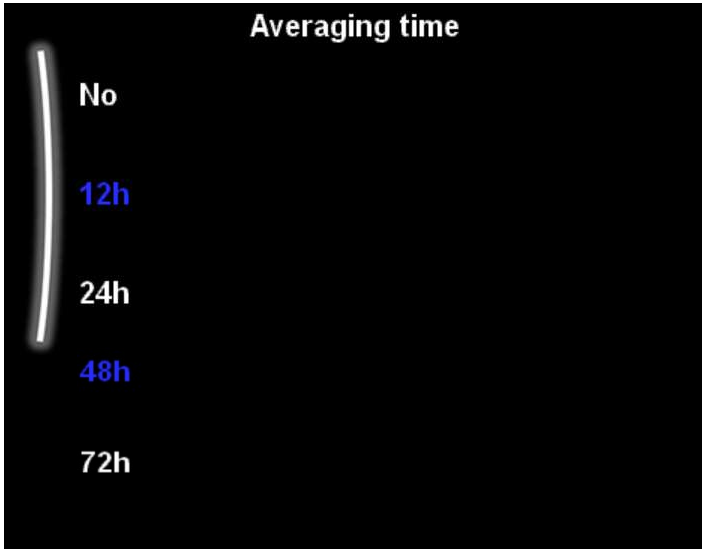
You can calibrate the external outdoor ambient temperature sensor. It is possible to give an offset to the thermistor value.

This setting can be used to compensate for situations where the external outdoor ambient sensor cannot be installed on the ideal installation location.

Range = -5°C ~ 5°C

MMI Settings – Installation Settings – Sensors



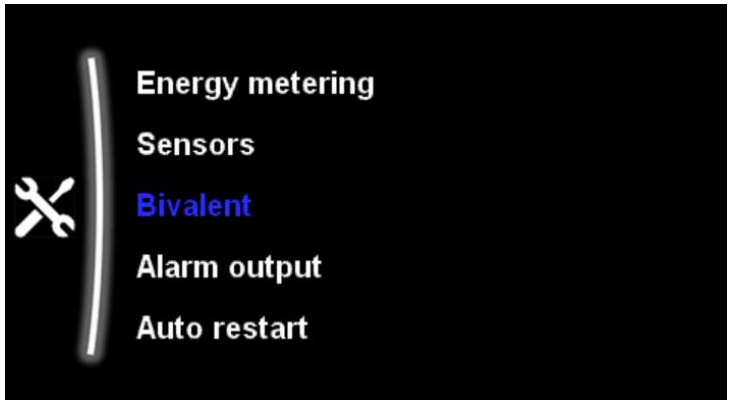


The average timer corrects the influence of ambient temperature variations.

The weather-dependent setpoint calculation is done on the average outdoor temperature.

The outdoor temperature is averaged over the selected time period.

MMI Settings – Installation Settings – Bivalent

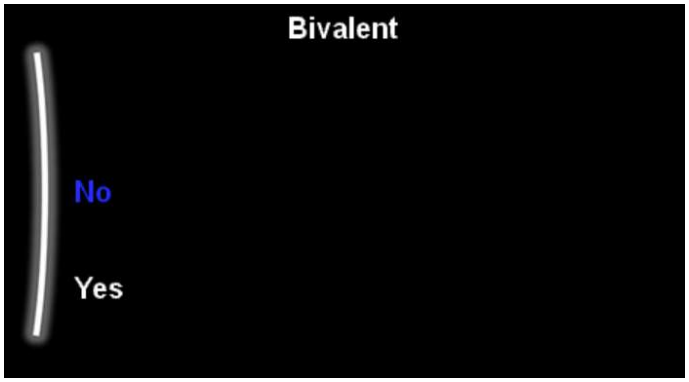


The Bivalent settings are used for connecting another heat source to the system.

The Altherma can output a signal to control the external heat source using the existing Thermostat inputs that control the heat pump.

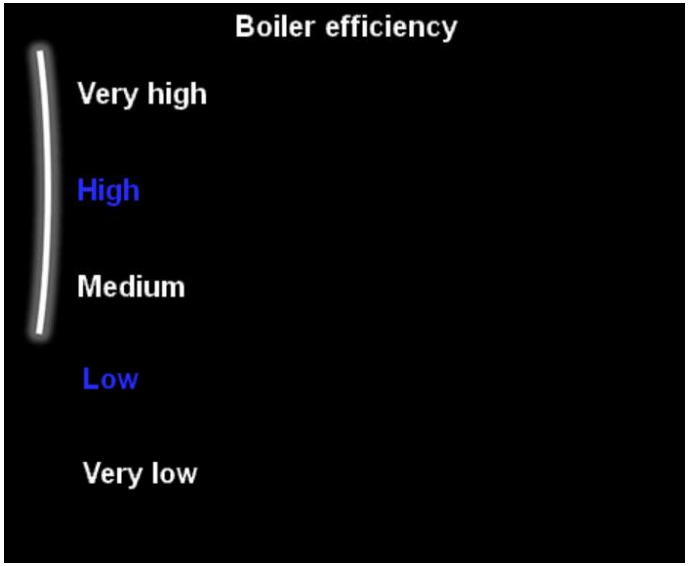
Note: Bivalent is for SH only and the Altherma will control the DHW temperature.

MMI Settings – Installation Settings – Bivalent



Has the system got another heat source controlled via the Altherma?

If you select Yes then the output will engage at the temperatures you select in the next few settings. The Altherma SH will deactivate below these temperatures as it assumes the Gas / Oil boiler will be heating the system at this time.



This is a guide for the Heat Pump to know how efficient the Boiler is to help in determining the switch over point.

MMI Settings – Installation Settings – Bivalent

The switch over point to the auxiliary heat source is based on the settings entered here plus any Electricity / Gas prices you enter into the system. The most up to date prices will assist in finding the most cost effective way to run the heating system.

- **Temperature**

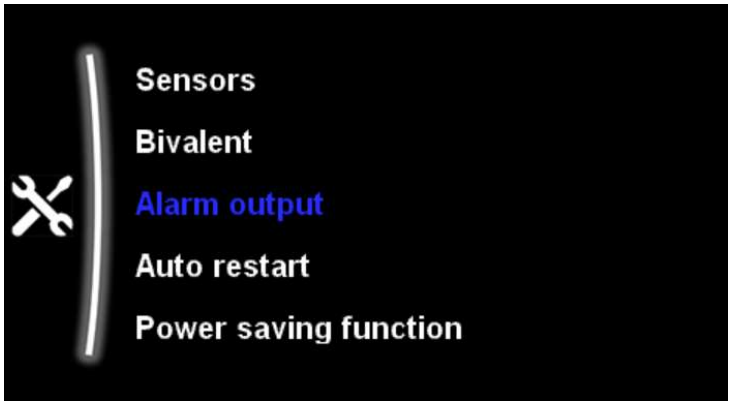
This setting is the temperature below which you desire to activate the Auxiliary heat source.

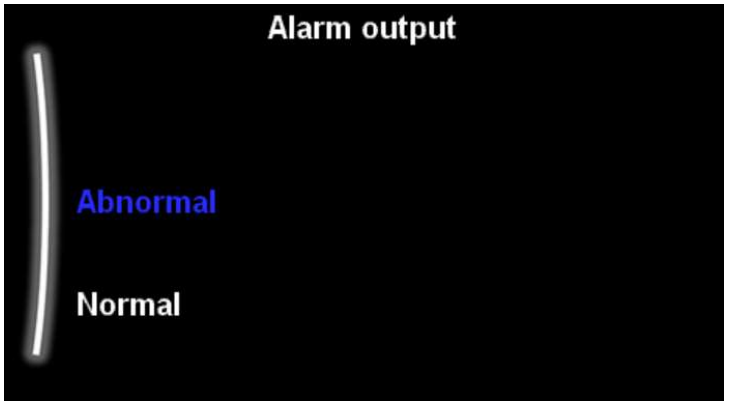
- **Hysteresis**

This figure is the amount of degrees (°C) the ambient temperature is required to rise by before the unit will switch back to Heat pump operation for SH.

This is default at 3°C to prevent short cycling of the Boiler / Heat pump should there be fluctuating ambient temperatures i.e a cloudy day.

MMI Settings – Installation Settings – Alarm Output





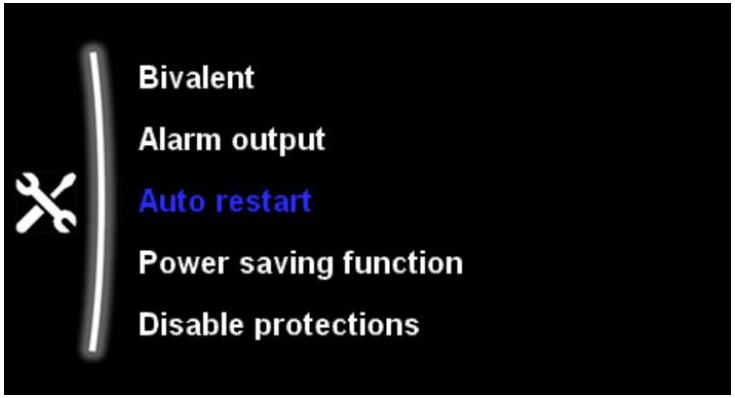
#	Code	Description
[9.D]	[C–09]	`Alarm output`: Indicates the logic of the alarm output on the digital I/O PCB during malfunctioning. ▪ 0 `Abnormal`: The alarm output will be powered when an alarm occurs. By setting this value, a distinction is made between the detection of an alarm, and the detection of a power failure. ▪ 1 `Normal`: The alarm output will NOT be powered when an alarm occurs. See also table below (Alarm output logic).

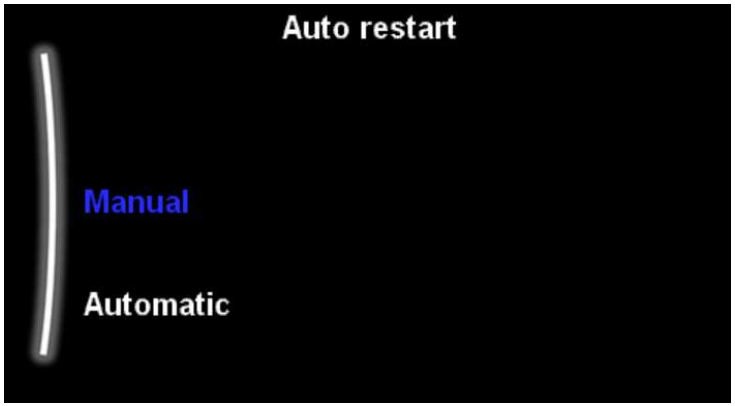
If you require an Alarm output, in the case of a malfunction of the heat pump you can set this up within these settings.

You need to select whether you want the alarm to sound with a fault or a fault AND in the event of a power failure.

[C-09]	Alarm	No alarm	No power supply to unit
0	Closed output	Open output	Open output
1	Open output	Closed output	

MMI Settings – Installation Settings – Auto Restart





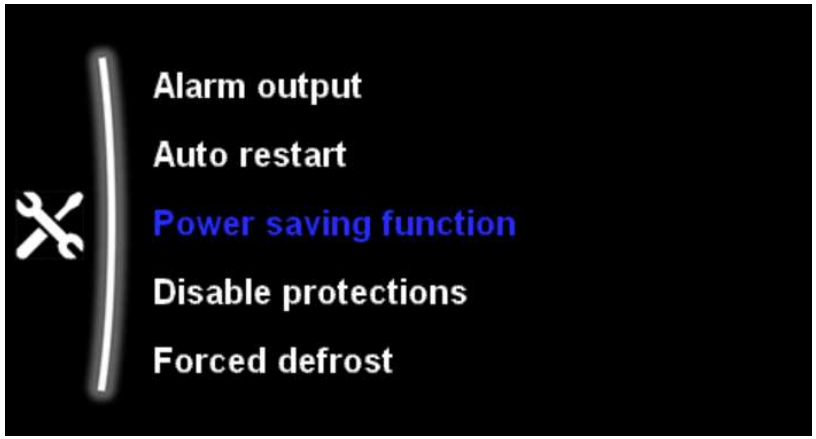
When power returns after a power supply failure, the auto restart function reapplies the remote controller settings at the time of the power failure.

Therefore, it is recommended to always enable the function.

If the preferential kWh rate power supply is of the type that power supply is interrupted, always enable the auto restart function.

Continuous indoor unit control can be guaranteed independent of the preferential kWh rate power supply status, by connecting the indoor unit to a normal kWh rate power supply.

MMI Settings – Installation Settings – Power Saving Functions



Defines whether the outdoor unit power supply can be interrupted (internally by indoor unit control) during stand-still conditions (no space heating/cooling nor domestic hot water demand).

The final decision to allow power interruption of the outdoor unit during standstill depends on the ambient temperature, compressor conditions and minimum internal timers.

To enable the power saving function setting, this setting needs to be enabled on the user interface.

Power saving function. The power saving function is only applicable for V3 models

Range – Yes / No

MMI Settings – Installation Settings – Disable Protections

Protective functions – "Installer-on-site mode". The software is equipped with protective functions, such as room anti-frost.

The unit automatically runs these functions when necessary. During installation or service this behaviour is undesired.

Therefore, the protective functions can be disabled:

▪ At first power-on: The protective functions are disabled by default. After 36hrs they will be automatically enabled.

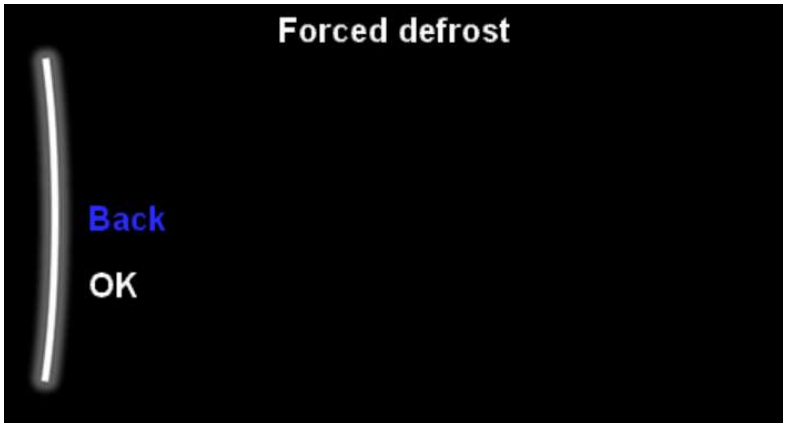
▪ Afterwards: An installer can manually disable the protective functions by setting:

Disable protections=Yes.

***After his work is done, he can enable the protective functions by setting:

Disable protections=No

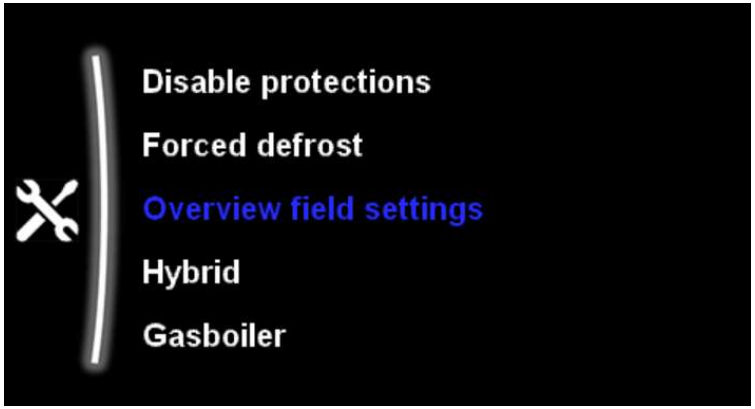
MMI Settings – Installation Settings – Forced Defrost

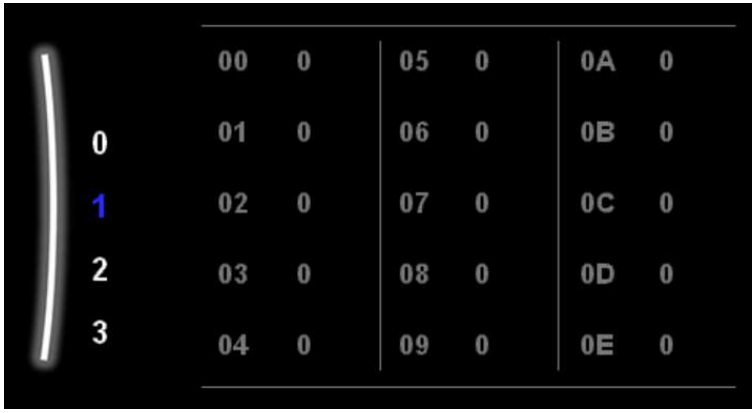


If you need top start a defrost operation you can do so here.

***You can only start a forced defrost when the heating operation has been running a while and has built up a thermal buffer.

MMI Settings – Installation Settings – Overview Field Settings





All settings changed within the normal menu structure have an “overview setting”.

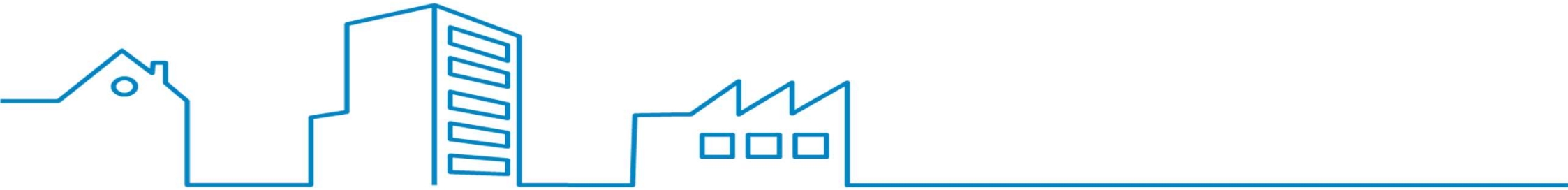
An overview setting is a 3 digit reference that is a different way of observing and altering a setting.

A reference such as 1-07 is an overview setting.

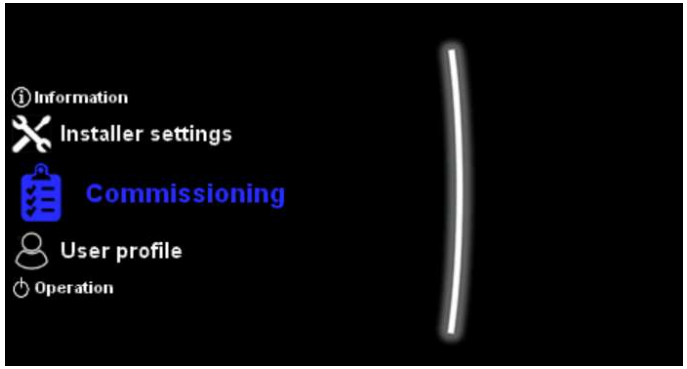
To navigate to this setting:

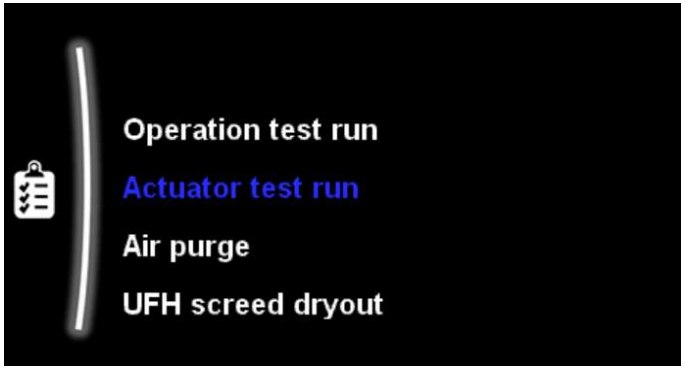
- Go to Overview Settings in the MMI and press the left hand dial.
- Use the left hand dial to scroll down the numbers until “1” is highlighted. Push the left hand dial.
- The highlighted text will now be on the r/h side of the screen. Use the Left hand dial to scroll through the settings until “07” is highlighted along with the numerical value of what is currently set in that setting, which is 1-07.
- Use the right dial to change the overview setting to the desire value.

MMI Menu - Commissioning



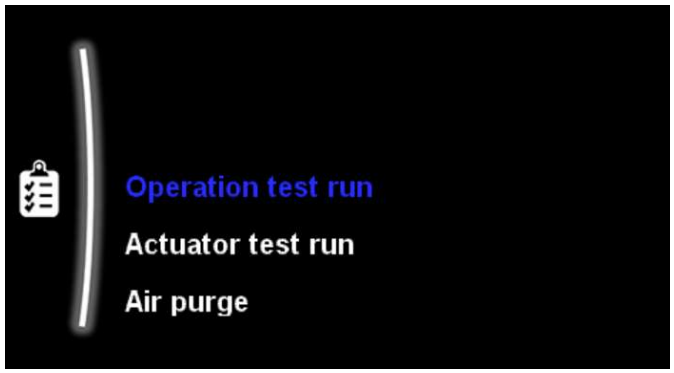
MMI Settings – Commissioning

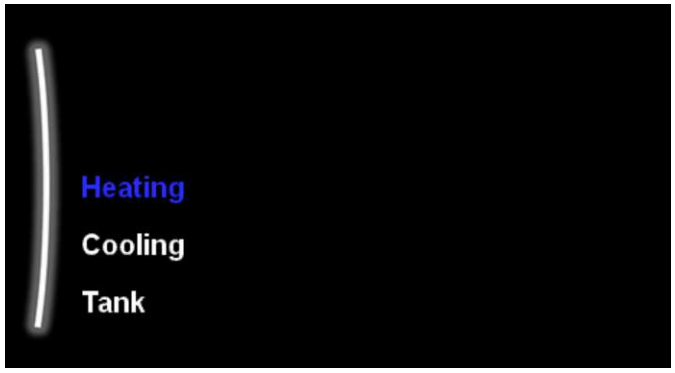




The Commissioning page is useful for when your installation is complete and you require to test the system or certain elements of it to ensure correct operation.

MMI Settings – Commissioning – Operation Test Run





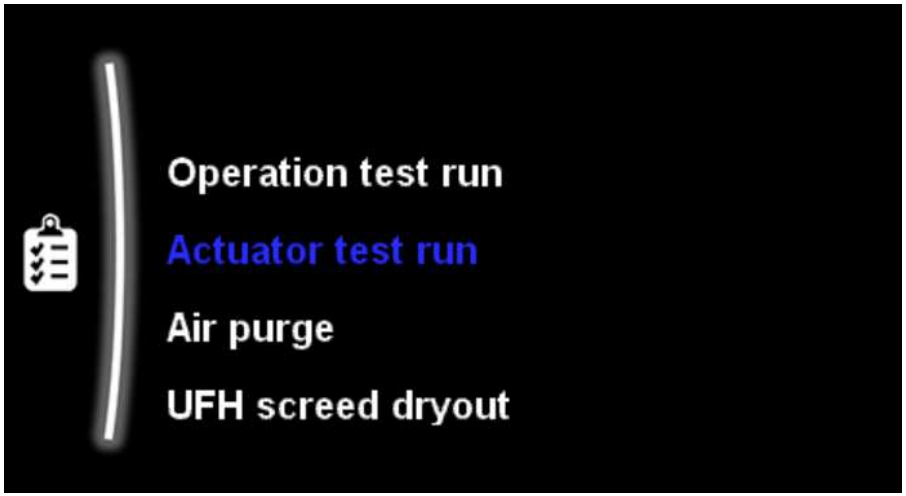
The operation test run can start the unit in:

- Heating
- Cooling (if applicable)
- Tank

The unit will run for approximately 30 minutes in that mode of operation.

During this time you can go into the Information > Sensors page to monitor the sensors to ensure the pipework / valves etc are all correctly installed.

MMI Settings – Commissioning – Actuator Test Run

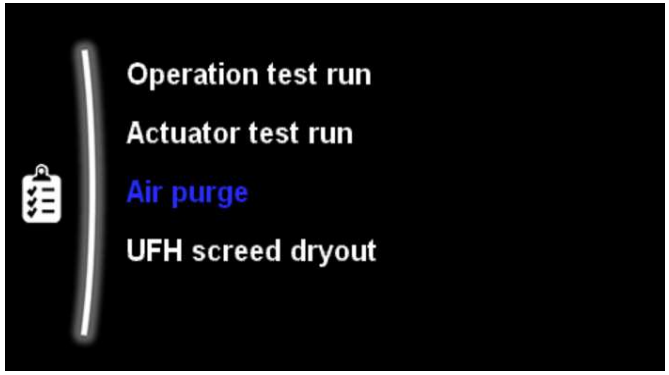


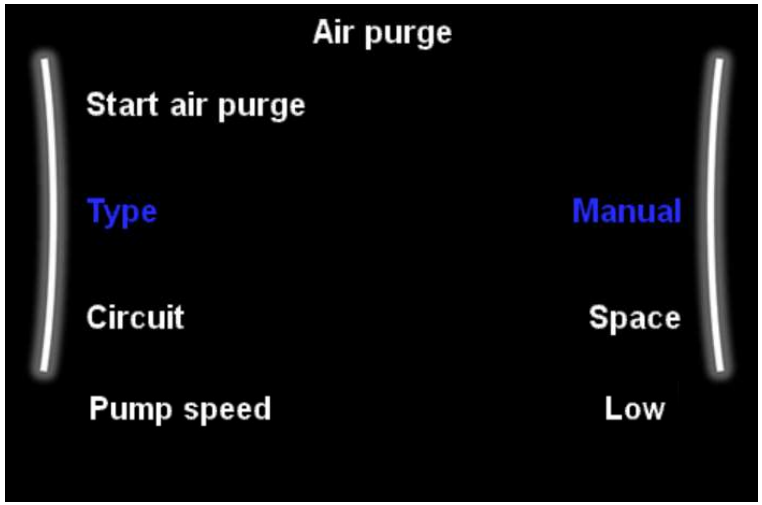
Possible Actuator Test Runs
Booster Heater
Back Up Heater 1
Back Up Heater 2
Pump
Shut Off Valve
Diverter Valve (CH to DHW)
Bivalent Signal
Alarm Output
C/H Signal
DHW Pump

The Actuator test run mode is invaluable for commissioning and service engineers.

It allows you to activate certain parts of your installation to test their operation as well as voltage/current draw etc.

MMI Settings – Commissioning – Air Purge





When commissioning and installing the unit, it is very important to remove all air in the water circuit.

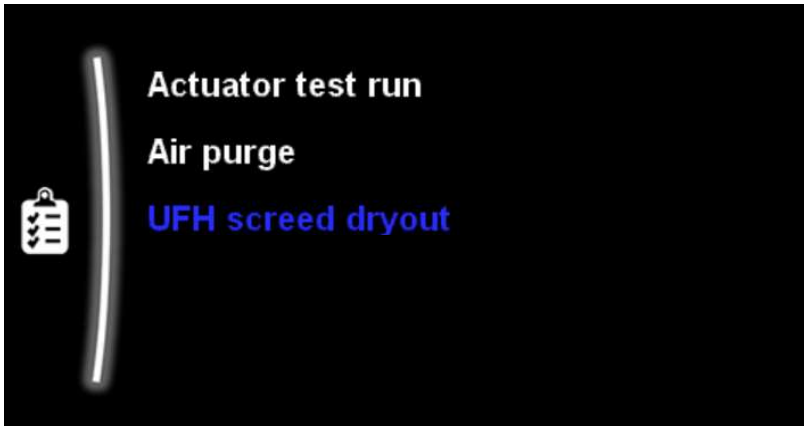
When the air purge function is running, the pump operates without actual operation of the unit and the removal of air in the water circuit will start.

There are 2 modes for purging air:

- Manual: You can set the pump speed to low or high. You can set the circuit (the position of the 3-way valve) to Space or Tank. Air purge must be performed for both space heating and tank (domestic hot water) circuits.

- Automatic: The unit automatically changes the pump speed and switches the position of the 3-way valve between the space heating and the domestic hot water circuit.

MMI Settings – Commissioning – UFH Screed Dryout



This setting can be used to dry the screed of an underfloor system.

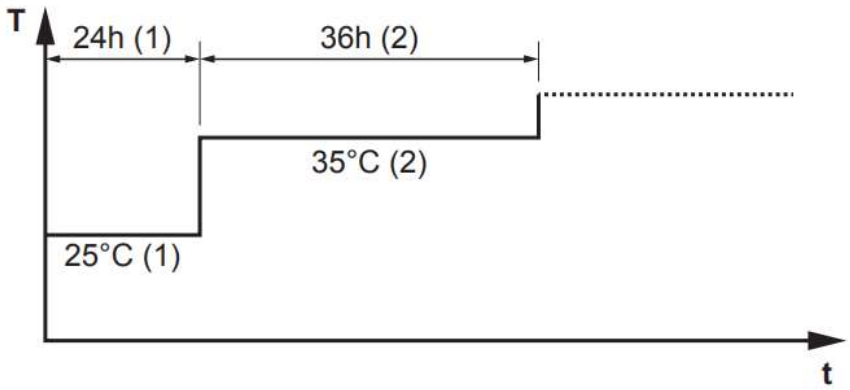
The installer can program up to 20 steps. For each step he needs to enter:

- The duration in hours, up to 72 hours.
- The desired leaving water temperature, up to 55°C.

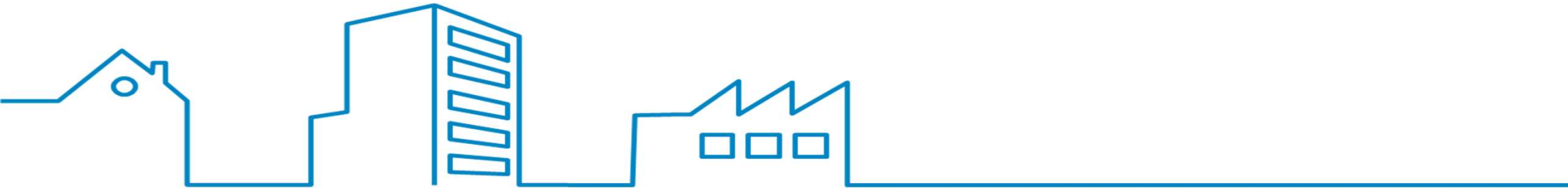
NOTICE

The installer is responsible for:

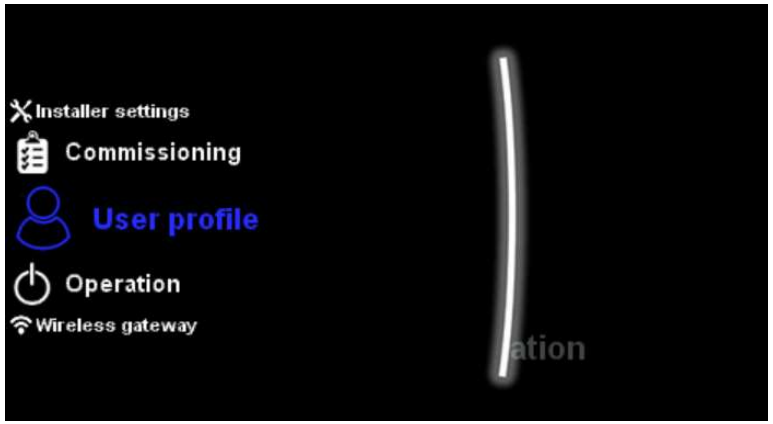
- contacting the screed manufacturer for the maximum allowed water temperature, to avoid cracking the screed,
- programming the underfloor heating screed dryout schedule according to the initial heating instructions of the screed manufacturer,
- checking the proper functioning of the setup on a regular basis,
- performing the correct program complying with the type of the used screed.

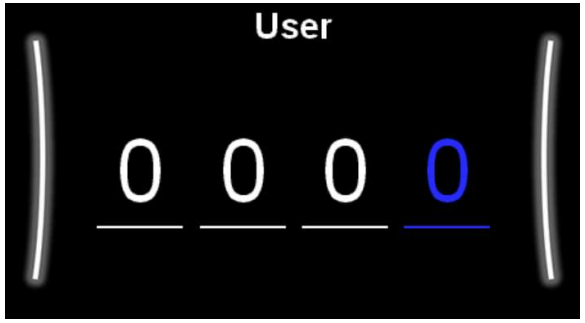


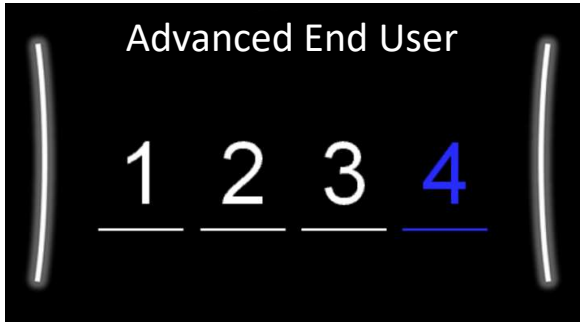
MMI Menu – User Profiles

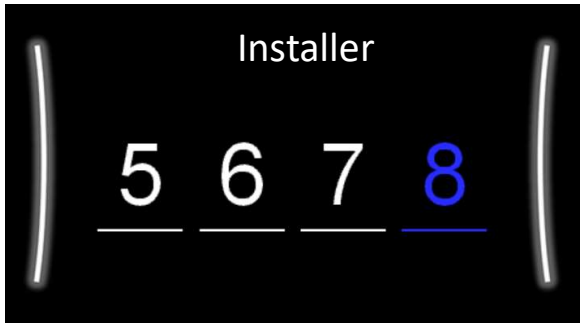


MMI Settings– User Profiles





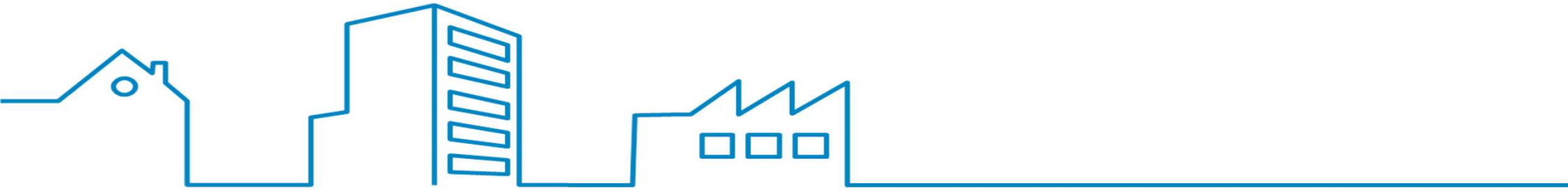




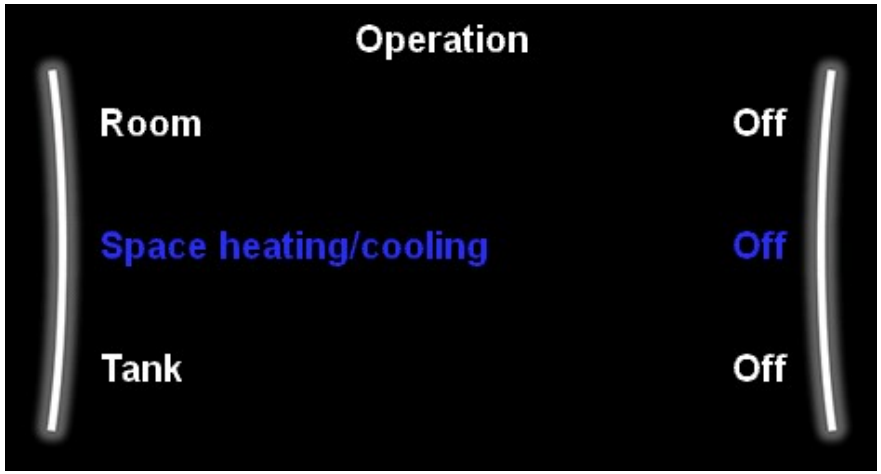
You can change the access profile for the unit by entering the appropriate access code in the User Profile page.

Use the left hand dial to enter into the page and then use the right hand dial to alter the highlighted number and confirm selection.

MMI Menu - Operation



MMI Settings - Operation

In this section you can activate / deactivate the different operation modes that the unit is set up to complete.

Use the left hand to highlight the desires mode of operation and use the right dial to toggle between on/off.