



**Ultimate Renewables Supplies**

*Supplying your renewable future*

**URS Commissioning & User Guide**

**Samsung EHS Mono R290 (Gen 7)**

**SAMSUNG**





## Content

### End User Guide

Powering up	3
Setting up the controller and the time	3
Starting the unit in heating mode	3
Starting the system in domestic hot water mode (DHW)	4
Cylinder Timer, if you are heating a hot water cylinder	4
Getting the best from your system	4
End User Trouble Shooting	5

### Commissioning Guide

Start-up procedure	6
Setting up the cylinder immersion heater	6
Cylinder legionella cycle	6
Check the tank sensor	6
System waterside	6
Powering Up	6
Setting Up The Controller and The Time	7
Field Settings For Heating	7
Field Settings For Hot Water	7
Using the Samsung Controller as the Room Thermostat	8
Cylinder Timer, If You Are Heating A Hot Water Cylinder	8
Starting The Unit In Heating Mode	8
Use Of Self-Test Mode	9
Checking Flow Rate	9
Run Test In Hot Water Mode	10
Starting The System In Hot Water Mode	10
How To Read The Flow Rate From The Controller	10
Resetting The Controller Back To Factory Settings	11
Troubleshooting	11

### Warranty

System EHS Commissioning & Extended Warranty Request Sheet	
▪ QR Code to scan and download	11
▪ Hard copy	12



## End User Guide

### Powering up

If scanning1 does not show after 30 seconds check the outdoor unit is powered up.



### Setting clock and date

- Press the gear button, bottom right.
- Press **▼**
- then **>** option, press **OK**
- User Mode, press **OK**
- Wired remote controller, press **OK**
- LED **>** to on
- Button Mute **>** on
- Current time **>**
- Date **>** **OK**
- Adjust day with **▲** and **▼** ,
- press **>** adjust the Month with **▲** and **▼** ,
- press **>** adjust Year adjust with **▲** and **▼** press **OK**.
- Go to Time, adjust hour with **▲** and **▼** ,
- press **>** adjust the mins with **▲** and **▼** , press **OK**.



### Starting the unit in heating mode

- Press the left button so the Zone is highlight in blue,
  - Press the power button a temperature will show.
- Display will change to set 0.0 the pump will start within 3 minutes.  
The compressor in the outdoor unit starts after 3 minutes, the pipework will begin to heat up.
- If you press the **OK** button, you can see the water outlet flow temperature rising.
- If the outdoor unit doesn't start after 5-minutes, see problems page.  
Over time the heating system radiators/UFH should start to warm up.



In weather dependent mode, the heating flow temp will be lower on warm/mild days and then become hotter as the outside temperature drops. But your comfort level remains the same.

Where the 0.0 is shown on the screen you can increase this up to 5.0c if you want the house warmer also reduce it up to -5.0c if you wish the house cooler.



## End User Guide

### Starting the system in domestic hot water mode (DHW)

- Press return to get to the normal screen. With the zone highlighted in blue press the power button, heating will stop.
  - Now press > to highlight the DHW and press the power button again.
  - The DHW will start the display will show 48°C set standard press **OK**.
  - The cylinder set temperature and current temperature will show.
  - To adjust the temperature press ^ and v set it to **48°C**.
  - Press **OK** to switch between standard 50°C approximately, eco **45°C** approximately
- The heat pump will start heating the cylinder if its colder than **43°C** and will heat it up to **50°C** then it will stop. The unit will take up to 6 minutes to start in Hot water mode, be patient.

### Cylinder Timer, if you are heating a hot water cylinder

To avoid the cylinder heating being switched off accidentally we normally add 2 on timers a day, one at 12:30 am and one at 15:00 pm.

This stops nuisance tripping, resets the unit after power cuts and ensures the cylinder is hot 24 hours a day. We don't normally set any off times.

To set the cylinder up as above:

- From the front screen press the gear button, scroll right > to schedule, press **OK**.
- If any timers are showing highlight them and select delete. When no timers are shown we can add some new ones.
- Highlight + add schedule, press **OK**.
- Highlight daily schedule, press **OK**.
- Type - quiet will show, press v to DHW, do not use quiet.
- Press > press ^ to set to Standard, press >, adjust hour to 12:30 am, press **OK**
- Scroll up ^ to + add a timer.
- Highlight + add schedule, press **OK**.
- Highlight daily schedule, press **OK**.
- Type quiet will show, press v to DHW, do not use quiet.
- Press > press ^ to set to Standard, press >, adjust hour to 15:00 pm, press **OK**

### Getting the best from your system

There are a few ways you could run your system, for example:

Our Technical managers property. He turns his system on at 05.00 aiming to heat his house to 20c, the system is running on a low trickle heat input.

At nighttime he runs a setback of 18.5c.

Because his property is older housing stock, he has found it much more efficient to run the system for longer periods, this allows his house not to drop to much in comfort temperature.

**Heat pumps should not be used in the same way as gas boiler**

It has been proven that a low steady heat input to a property is the best way to get the heat pump running at its most efficient. Finding a comfort simmering point.

He also has an Octopus GO electrical tariff, this gives him a cheaper rate at night between 00:30 and 04.30, in this time he charges his hot water to its full capacity, then sometimes needs to do a hot water top up mid-afternoon.

Thus, making the benefits of the cheaper electrical rate.

**There are many cheaper tariffs available now for heat pumps it is best to shop around.**





## End User Guide

### Trouble Shooting

#### **00 Shows on the Remote Controller:**

00 shows when the MIM control box is first powered up it means the MIM PCB has activated but no outdoor unit can be seen.

Check the F1 F2 wiring is ok between the outdoor and indoor unit and check the outdoor unit has power.

#### **01 Shows on the Remote Controller:**

01 means that the remote controller has power and it can see the outdoor unit too, this is good, in a few seconds this will disappear.

#### **E911 Low Flow Alarm:**

If your flow rate is good (see above) but you see an E911 low flow alarm, you need to test your flow switch.

E911 is not a fault, it's a warning, it stops the unit because the water is moving too slowly through the system. With the pump running test the flow rate.

If your flow rate is less than recommended you need to turn up the pumps, open any valves that might be closed, clean filters and get rid of any air.

The unit MUST have the correct flow rate before it will try to run.

Also check the flow switch is in the right way round (there is an arrow on it) and its plugged in.

#### **E904 Communications Error:**

Check that the outdoor heat pump unit is powered up, or the main fuse hasn't blown.

Try resetting the fuse, turn the unit on at the isolator.

#### **Cold Weather Protection, my unit won't start:**

Check the flow temperature. If this is below 10°C the compressor will not start.

You must warm up the water to get the unit to run, the easiest way to do this is to add a cylinder and use the immersion to warm up the cylinder first, the warm water from the cylinder will preheat the heat pump and it will start to operate.





**VERY IMPORTANT**  
When commissioning this system, you need to follow ALL the procedure below  
**DO NOT SKIP** - if you do the unit won't work properly.

### Start-up procedure

Filling and flushing, when installing any Heat pump, we insist on a thorough system flush before connection in line with the Building Regulations for England and Wales, Part L, 2006. Using a power flusher machine helps to fill the system, there is no pressure sensor in the outdoor unit so we can operate from open vented to 3 bar maximum.

### Setting up the cylinder immersion heater

For the Legionella cycle, please check that **the stat in the immersion heater** is set to **60°C minimum**, on a Telford cylinder **set it to 4**.

### Cylinder legionella cycle

For the legionella cycle, set the supplied Immersion Timer to once a week, say on a **Tuesday at 3 am**. The supplied timer must be powered up for a few hours before it can be programmed.

### Check the tank sensor

The **blue tank sensor** MUST be installed above the immersion heater, it must be securely fixed in the tank right into the back of the pocket, I would use heat paste and cable ties to do this.

### System waterside

Make sure that the system is filled, with as much air removed as possible, especially UFH circuits.  
Hot water cylinders are filled.



### Powering Up

**VERY IMPORTANT**  
In really cold weather the system must be power on at least 8 hours before trying to run the system.  
Please ask our office for the Cold Weather starting procedure sheet.

- Apply power to outdoor and indoor control unit, you should see red lights on the PCBs of both units. If there are no lights you will need the electrician to check for power.
- The remote controller will light up after a short time, it will say scanning 0, after a few seconds it will say scanning 1.
- Scanning 0 means the indoor unit is ok, scanning 1 means the outdoor unit is ok.
- If scanning 1 does not show after 30 seconds check the outdoor unit is powered up.
- Remove the cover and check the PCB is lit up.





## Setting Up The Controller and The Time

- Press the gear button, bottom right. Press **✓**, then **➤** option, press **OK**
- User Mode, press **OK**
- Wired remote controller, press **OK**
- LED **➤** to on
- Button Mute **➤** on
- Current time **➤**
- Date **➤** **OK**
- Adjust day with **▲** and **▼**, press **➤** adjust the Month with **▲** and **▼**, press **➤**
- Adjust Year adjust with **▲** and **▼** press, **OK**
- Go to Time, adjust hour with **▲** and **▼**, press **➤** adjust the mins with **▲** and **▼** press **OK**



## Field Settings For Heating

- Press **OK** to wake the controller up.
- Press **▲** and **▼** together for 6 seconds, password shows, enter **0202**, you are now in service mode.
- Go through the options to **20\*\*** Water Law.
- **2011** Outdoor Temp For Water Law, set Low to **20°C** and set High to **-2**.
- **202\*** Water Out (FLOW) Temperature for **WL1 Heat**, set Low to **20°C** and set High to **40°C** for radiators and **35°C** for underfloor heating, these can be tuned as the seasons progress.
- **2091** External Thermostat Application, set this to **Not Use**.
- **2093** Remote Controller, set to Room Temp **OFF**.
- **4013 Outdoor Temp Heating cutoff**. **14 to 16°C** (sometimes you need to set this higher when commissioning the system in the summer months) The heating will stop as soon as the ambient passes this temperature.
- If the unit is in the shade, then a lower number is recommended, if the unit is in the sun a higher number is recommended.
- Whilst in Service mode go to **Indoor Zone Option** and change Standard Temperature to **Water Outlet**.
- Whilst in the **Indoor Zone Option**, check that the **Temperature Sensor Option** is set to **Wired Remote Controller**.
- You have now set up the weather compensation. **The water in the radiators UFH will be warmer in cold weather and cooler in warm weather.**

## Field Settings For Heating

- **3011** Set DHW Application to, Use **Hysteresis Thermos ON/OFF state**.
- Go to **302\*** Heat Pump.
- **3025** Set Max DHW operating time, set to **60** mins for **200** Litre or **90** mins for **300** Litre cylinders.
- Go to **303\*** Booster Heater.
- **3031** Set Application to, **Not Use**.
- Go to **304\*** disinfection.
- **3041** Set Application to, Not Use, as this is being done via External time switch.
- **3031** and **3041** are not used, as we recommend the Immersion be controlled by a third-party timer, this allows for easy switch on by the end user, if the heat pump fails for any reason.





## Using the Samsung Controller as the Room Thermostat

- Press **OK** to wake the controller up.
- Press **^** and **v** together for **6** seconds, password shows, enter **0202**, you are now in service mode.
- Go to **Indoor Zone Option** and change **Standard Temperature** to **Indoor**.

This now enables the controller to be used as a room thermostat/combined with weather compensation.



## Cylinder Timer, If You Are Heating A Hot Water Cylinder

To avoid the cylinder heating being switched off accidentally we recommend adding 2 on timers a day, one at **12:30 am** and one at **3:00 pm**, for example. This can work nicely with tariffs like **Octopus GO**, where there is a cheaper rate at night.

To set the cylinder up as above:

- From the front screen press the gear button, scroll right **>** to schedule, press **OK**.
- If any timers are showing highlight them and select delete. When no timers are shown we can add some new ones.
- Highlight **+ add schedule**, press **OK**.
- Highlight daily schedule, press **OK**.
- Type - quiet will show, press **v** to DHW, do not use quiet.
- Press **>** press **^** to set to Standard, press **>**, adjust hour to 3, am press **OK**
- Scroll up **^** to **+ add a timer**.
- Highlight **+ add schedule**, press **OK**.
- Highlight daily schedule, press **OK**.
- Type quiet will show, press **v** to DHW, do not use quiet.
- Press **>** press **^** to set to Standard, press **>**, adjust hour to 3, pm press **OK**.
- Once finished turn off the hot water on the main screen.



## Starting The Unit In Heating Mode

- Press the left button so the Zone is highlighted in blue, press the power button the temperature will show.
- The compressor in the outdoor unit starts after **3 minutes**, and the pipework will begin to heat up.
- If you press the **OK** button, you can see the water outlet flow temperature rising.
- If the outdoor unit doesn't start after 5 minutes, see the problems page.
- Over time the unit will warm up, now check all the radiators or under-floor loops are hot as well.
- The Heating must be in **AUTO** mode to make use of the weather compensation.

In really cold weather the system must be powered on at least 8 hours before trying to run the system.  
Please ask our office for the Cold Weather starting procedure sheet.

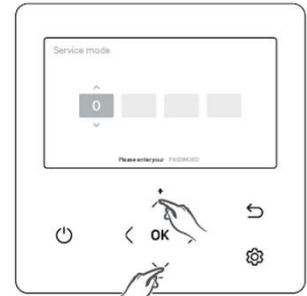






## Use Of Self-Test Mode

- Press **Power** to wake the controller up.
- Press **Up** and **Down** together for 6 seconds, password shows.
- You need to set **0202** pressing **Right**, then **Up** twice, **Right** twice, **Up** twice then press **OK**
- Press **Down** 7 times to self-test mode, press **OK**.
- Press **Down** to water pump press **Right** the main water pump will come on, leave it on.
- Press **Down** to booster heater, press **Right** to switch it on, this is the immersion heater in the tank, check it works, press **Left** to switch it off again.
- Press **Down** to DHW (3 port valve) this is the hot water valve, it will be closed, check it, press **Right** to on, the valve will open, check it, press **Right** to close it again.
- Press **Down** to Zone 1 valve this is the heating valve before the header or plate hex, it will be open, check it, press **Right** to on, the valve will now close, check it, press **Right** to open it again.
- Now check the flow rate as per the instructions below.



Service mode	
Reset All Service Mode	>
Power Master Reset	>
ODU K3 Reset	>
Field Setting Value	>
Self-Test Mode	>
Indoor Unit Option	>

## Checking Flow Rate

- **First you need to clean the filter. Shut the valve, undo the back of the valve, remove the strainer, clean it and replace it then open the valve.**
- Start the pump, see above, the unit will be running in heating mode.
- **Check the flow rate, we need 12l/min on the 5kW unit, 20l/min of flow on the 8kW unit and 30l/min on the 12 and 16kW unit.**
- If there is not enough flow the unit will never operate and it will give fault **E911** see fault code page.
- Make sure you clean the filter, turn up all the pumps, open all the valves and get rid of the air to keep flow rate up.

### How to read the flow rate from the controller

- Press **OK** to wake the controller up
- Press **Up** and **Down** together for 6 seconds, password shows **>**, then **Up** twice, **Right** twice, **Up** twice then press **OK**.
- Press **Down** to indoor zone option, press **OK**
- Press **Down** to indoor status information press **OK**



Checking the flow rate, the optimal required is 12l/min on the 5kW unit, 20l/min of flow on the 8kW unit and 30l/min on the 12 and 16kW units.





## Run Test In Hot Water Mode

- Make a note of the hot water cylinder temperature, after 15 minutes of running check the hot water temperature again, it should have risen, again note the temperature.
- Now clean the filter again.
- The Water storage temperature is lower (48°C) than a normal cylinder. It's important to check that any shower or bath mixers do not further reduce the water temperature. Using your thermometer check that the hot water comes out the tap

## Starting The System In Hot Water Mode

- Check the filter again.
- Press return to get to the normal screen. With the zone highlighted in blue press the power button, heating will stop. Now press > to highlight the DHW and press the power button again.
- The DHW will start the display will show 48°C set standard press OK.
- The cylinder set temperature and current temperature will show.
- To adjust the temperature press ^ and v set it to 48°C.
- Press OK to switch between standard, eco (cold water).
- The heat pump will start heating the cylinder if its colder than 43°C and will heat it up to 50°C then it will stop. The unit will take up to 6 minutes to start in Hot water mode, **be patient**.

## How To Read The Flow Rate From The Controller

- Press OK to wake the controller up.
- Press ^ and v together for 6 seconds, password shows.
- You need to set 0202 pressing >, then ^ twice, > twice, ^ twice then press OK.
- Press v to indoor zone option, press OK.
- Press v to indoor status information press OK.
- All the sensors are listed including flow sensor.
- Press ↶ 4 times to return to normal screen.





## Resetting The Controller Back To Factory Settings

- Press **OK** to wake the controller up.
- Press **^** and **v** together for 6 seconds, password shows.
- You need to set **0202** pressing **>**, then **^** twice, **>** twice, **^** twice then press **OK**.
- Press **v** until you get to reset all service modes, press **OK**.
- Erase all service modes, **OK**.
- Erase all service mode data, press **OK**.
- Initialise remote controller, press **OK**.
- The controller goes blank for 30 seconds and then wakes up.
- All field settings will still stay on the PCB.



## Troubleshooting

### 00 shows on the remote controller:

**00** shows when the MIM control box is first powered up it means the MIM PCB has activated but no outdoor unit can be seen. Check the F1 F2 wiring is ok between the outdoor and indoor unit and check the outdoor unit has power.

### 01 shows on the remote controller:

**01** means that the remote controller has power and it can see the outdoor unit too, this is good, in a few seconds this will disappear.

### E911 low flow alarm:

If your flow rate is good (see above) but you see an **E911 low flow alarm**.

**E911** is not a fault, it's a warning, it stops the unit because the water is moving too slowly through the system. With the pump running test the flow rate. **Check the filter again**.

If your flow rate is less than recommended you need to turn up the pumps, open any valves that might be closed, clean filters and get rid of any air. The unit **MUST** have the correct flow rate before it will try to run. Also check the flow switch is in the right way round (there is an arrow on it) and its plugged in.

### Cold Weather Protection, my unit won't start:

Check the flow temperature. If this is below 10°C the compressor will not start.

You must warm up the water to get the unit to run, the easiest way to do this is to add a cylinder and use the immersion to warm up the cylinder first, the warm water from the cylinder will preheat the heat pump and it will start to operate.

## EHS Commissioning & Extended Warranty Request Sheet

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