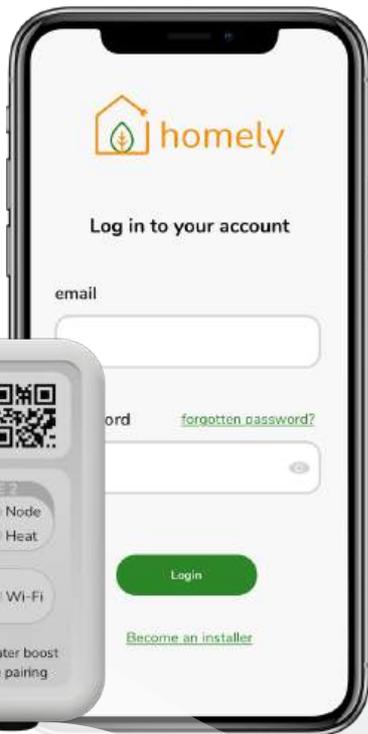




# Installation Manual



# Safety Symbols

The following symbols are used in this manual.



## **DANGER**

Hazards or unsafe practices that may result in electric shock and severe personal injury or death.



## **WARNING**

Hazards or unsafe practices that may result in severe personal injury or death.

# Safety Information



## **DANGER**

Before proceeding, ensure that all power supplies in the property are isolated. Failure to isolate the power supply may result in electric shock, fire or death.



## **WARNING**

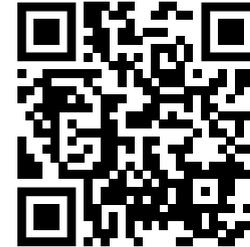
- All electrical works must be conducted by a qualified technician and must comply with local regulations.
- Installation by unqualified persons may result in product malfunction, electric shock or fire.
- The installation must be performed in accordance with the installation instructions before energising.
- Incorrect installation of equipment may result in electric shock or fire.

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# Installation videos

For a seamless installation, we've created detailed videos for each of our integrations. Please refer to this manual and watch our step-by-step videos to ensure a smooth setup of Homely.



[www.homelyenergy.com/manual/videos](http://www.homelyenergy.com/manual/videos)

# Installation requirements

## Found in the box

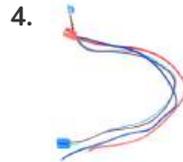
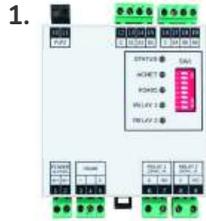


No.	Component
1	Homely Hub
2	Homely Node (temperature sensor)
3	Node wall mounting adhesive
4	Hub wall mounting adhesive
5	5V Hub power supply
6	120-ohm resistor
7	2x crimp ferrule
8	Cable ties

## Tools required

No.	Component
1	Wire strippers
2	Crimp tool
3	Pliers
4	Screwdrivers
5	Multimeter

## Items required but not found in the box



The Relpol relay is required in the instances where a Samsung heat pump is installed with hydronic separation and the primary pump is connect to the Samsung control PCB terminals B7 and B8 (see the system diagram on page 8&9 for information on the terminology).



No.	Component
1	Modbus adapter (Daikin install only)
2	Power supply (Daikin install only)
3	Samsung MIM-B19N (Samsung install only)
4	MIM-B19N Cables (Samsung install only)
5	REL POL Relay R15-2012-23-5230-WTL (Samsung install only)
6	REL POL Socket GZ8-01 (Samsung install only)
7	Modbus cable (Belden 9841 or stranded CAT-5 recommend)
8	Homely installer app
9	Homely customer app

# Homely Installation

## STEP 1: Pre-installation checks

1. Before starting the Homely installation, ensure that the heat pump has been installed in accordance with the manufacturer's instructions.
2. Ensure your heat pump can directly control any valves or pumps included in your system design. Homely itself only controls the heat pump, so any additional valves or pumps must be controlled by the heat pump for Homely to work.



### WARNING

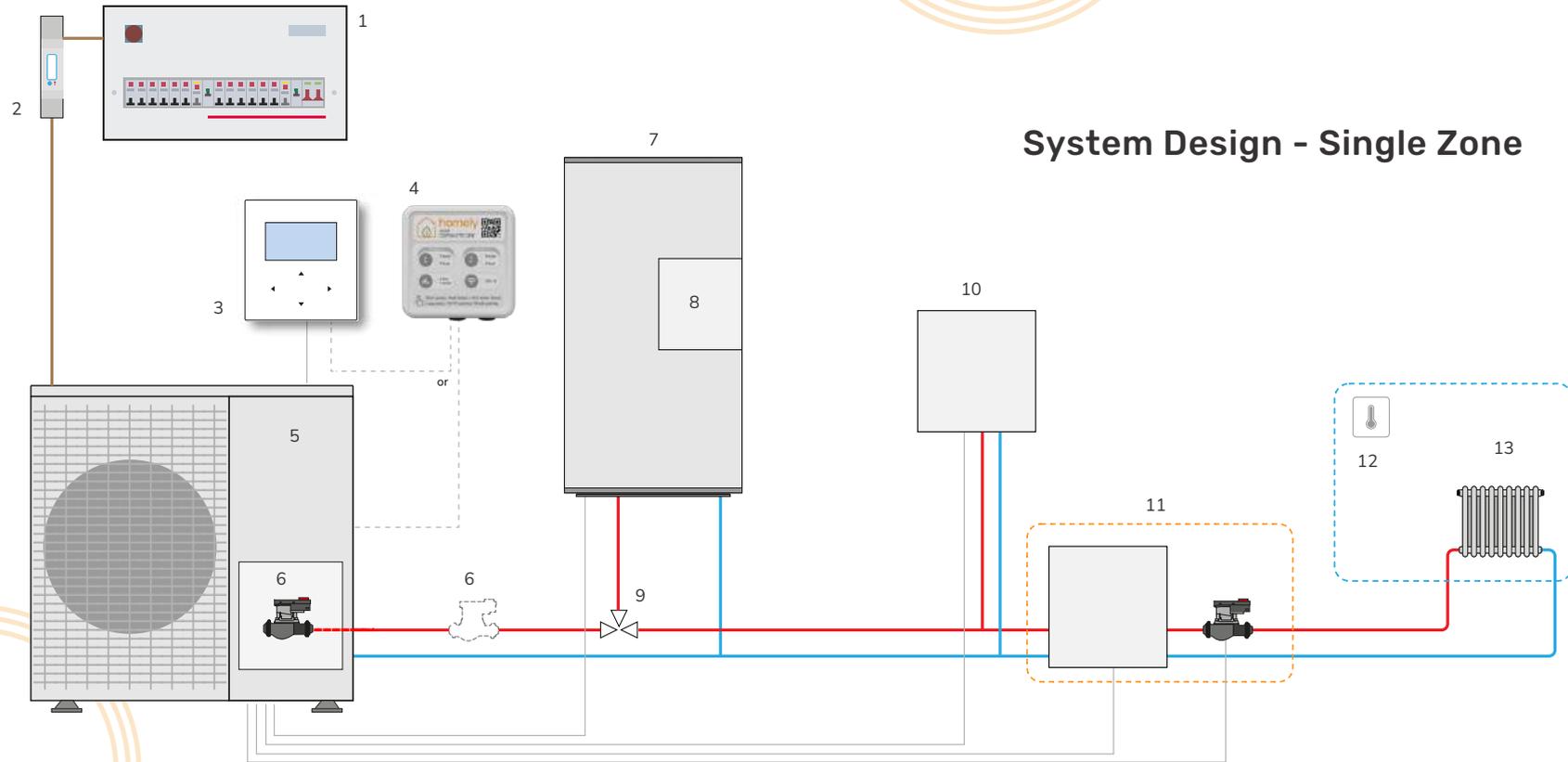
Ensure that safety and warranty-critical functions have been set up correctly on the heat pump.

e.g. Legionella and frost protection

This table refers to the system design on pages 8-9:

No.	Component
1	Consumer unit
2	Heat pump electricity meter (optional)
3	Heat pump controller
4	Homely
5	Heat pump
6	Primary pump (location may vary depending on heat pump brand)
7	DHW tank
8	Tank booster heater (optional)
9	3-port valve (can also be a 2-port valve)
10	Additional heat source (optional)
11	Header, buffer, heat exchanger & secondary pump (optional)
12	Homely Node (temperature sensor)
13	Underfloor or radiator

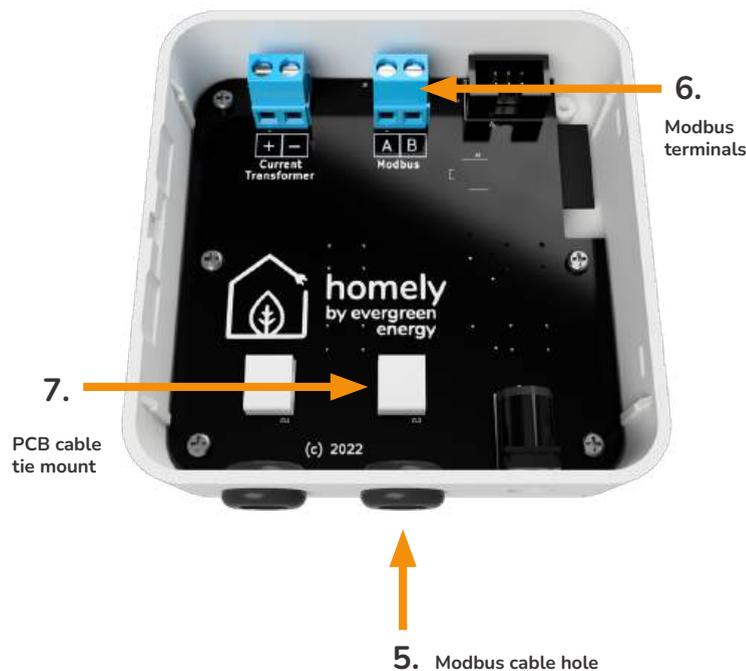
## System Design - Single Zone



## STEP 2: Wiring Homely

1. For the Homely Hub placement, find a dry indoor spot within 16 meters of the main living space (where the temperature node will go) with a good Wi-Fi signal and near a standard mains power outlet.
2. Remove the back plate of the Homely Hub.
3. Mount the back plate to the wall, ensuring its orientation aligns correctly with the front section of the Hub before drilling any holes.
4. Strip and attach two crimp ferrules (page 2 - 3 item 7) to a single twisted pair of wires from the Modbus cable.
5. Pass the Modbus cable through the cable hole in the bottom of the Hub as shown opposite (figure 1).
6. Connect one wire from the Modbus cable to terminal A, and connect the other wire to terminal B, noting which wire goes to which terminal. Take care not to overtighten the terminals.
7. Secure the cable in place using a cable tie and the cable tie mount on the PCB.
8. Reattach the Hub to the back plate on the wall.

figure 1



## STEP 3: Connecting to heat pump system

**Standard R32** (Midea, Riello, Worcester Bosch, Clivet, Nordis, Airwell)



### DANGER

Ensure the heat pump system is powered down when installing Homely

### Connect the Homely Hub

Homely's Modbus interface must be wired into the indoor heat pump controller.

1. Connect terminal A in the Homely Hub to H2 in the heat pump controller.
2. Connect terminal B in the Homely Hub to H1 in the heat pump controller.
3. Connect the supplied 120-ohm resistor between the controller terminals as shown (figure 2).

### Heat pump controller

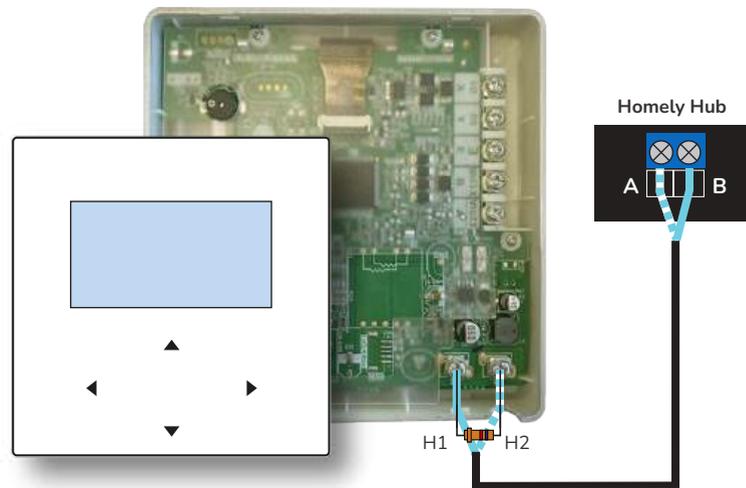


figure 2

## Standard R290 (Midea)



### DANGER

Ensure the heat pump system is powered down when installing Homely

### Connect the Homely hub

Homely's Modbus interface must be wired into the indoor heat pump controller.

1. Connect terminal A in the Homely Hub to H1 in the heat pump controller.
2. Connect terminal B in the Homely Hub to H2 in the heat pump controller.
3. Connect the supplied 120-ohm resistor between the heat pump controller terminals as shown (figure 3).

### Heat pump controller

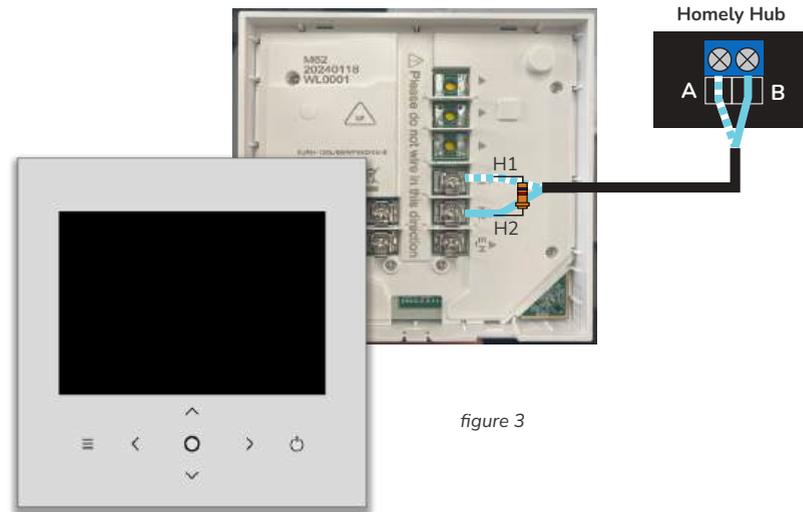


figure 3

## Ebac

**DANGER**

Ensure the heat pump system is powered down when installing Homely

**Connect the Homely hub**

The Homely's Modbus interface must be wired into the indoor heat pump controller.

1. Connect terminal A in the Homely Hub to terminal A in the Ebac controller.
2. Connect terminal B in the Homely Hub to terminal B in the Ebac controller.
3. Connect the supplied 120-ohm resistor between the controller terminals as shown on the next page (figure 6).

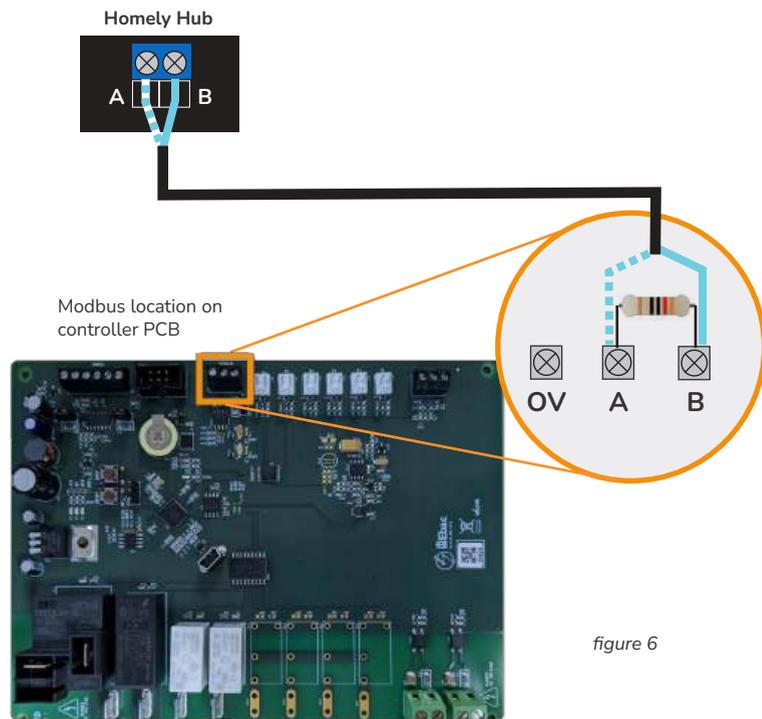
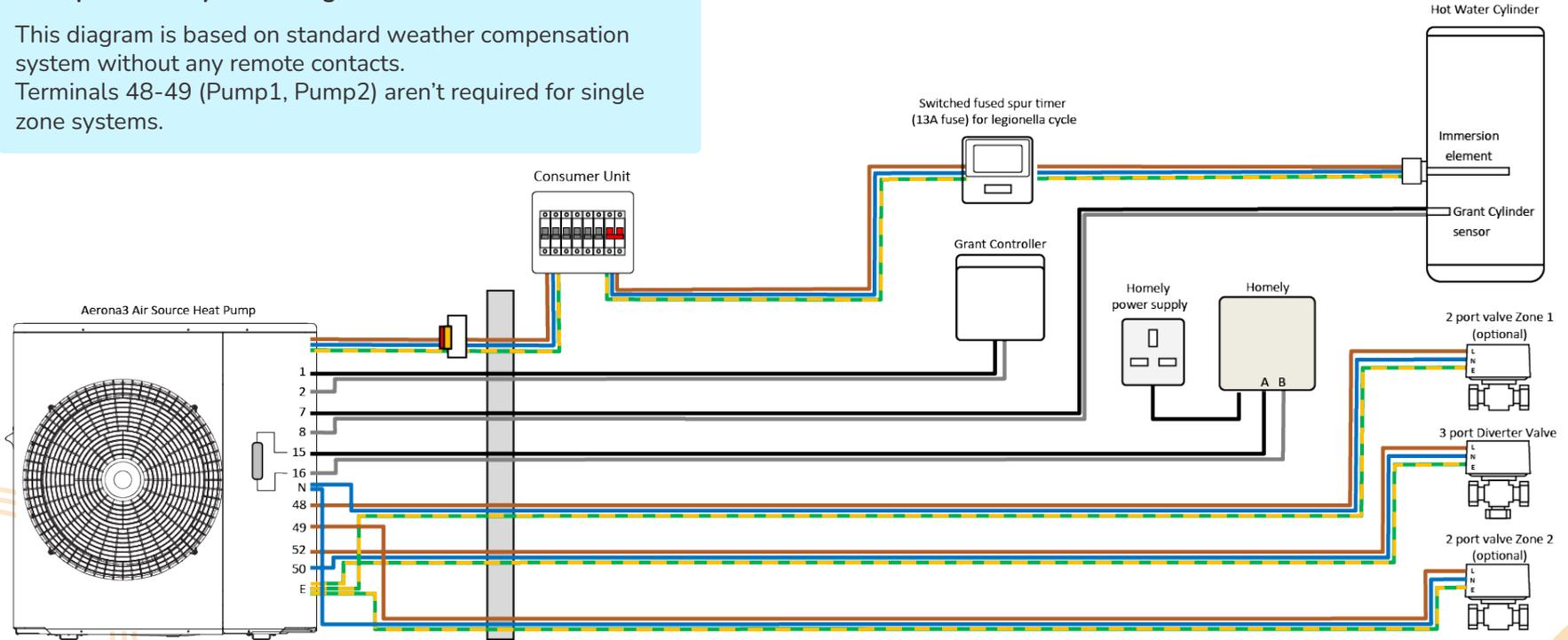
**Ebac indoor controller**

figure 6

## Example Grant System Design

This diagram is based on standard weather compensation system without any remote contacts. Terminals 48-49 (Pump1, Pump2) aren't required for single zone systems.



**DANGER**

Ensure the heat pump system is powered down when installing Homely

**Connect the Homely hub**

The Homely's Modbus interface must be wired into the outdoor heat pump unit.

1. Connect terminal A in the Homely Hub to terminal 15 in the outdoor unit.
2. Connect terminal B in the Homely Hub to terminal 16 in the outdoor unit.
3. The supplied 120-ohm resistor must be placed between the outdoor unit's control PCB terminals as shown on the next page (figure 7).

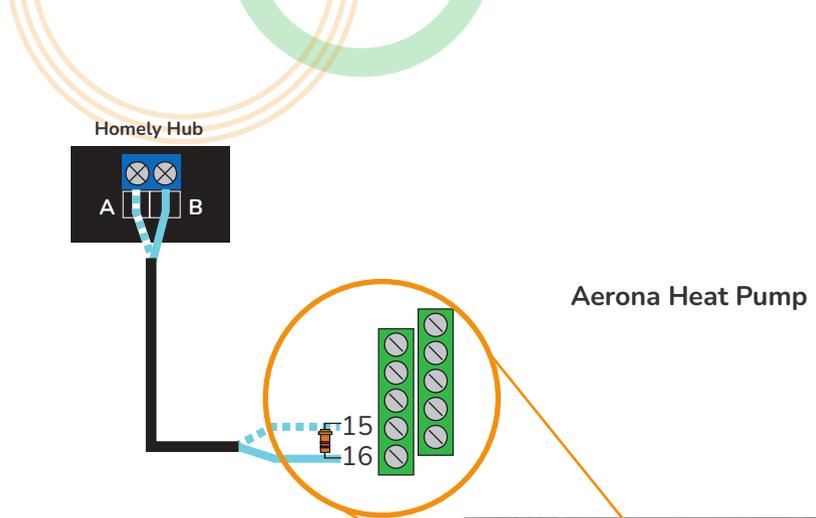


figure 7



## Daikin

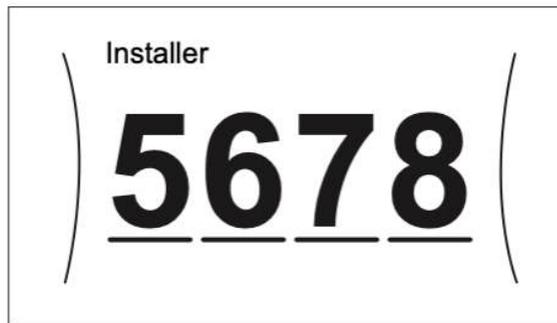
To install Homely on a Daikin heat pump you will require a Modbus adapter with a power supply; go to pages 4 & 5 (items 1 & 2) for details.

### Controller configuration

1. On the controller, scroll to the “User Profile” setting with the left wheel.
2. Select it with the left button.



3. Enter the password, to allow access to the installer settings.
4. Use the right wheel to select each number, then confirm with the right button (inside the right wheel).
5. When all numbers are entered, press the left button.



The default password is 5678

- Go to “Installer Settings” (figure 8).

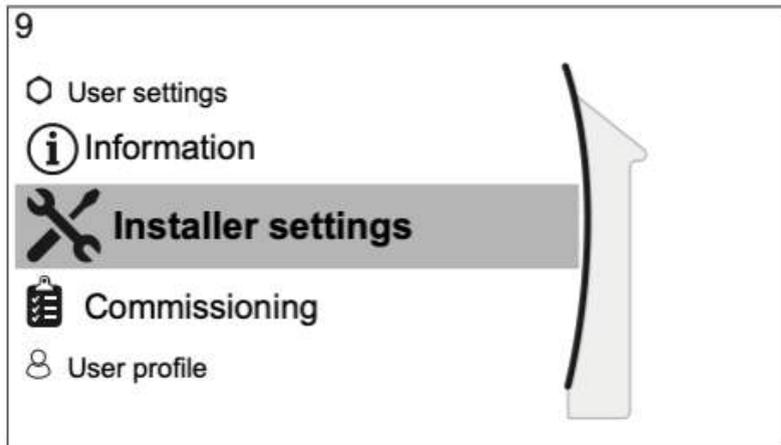


figure 8

- Enter the “Main Zone” menu.
- Select your emitter type and press the right button. Set “Control” to “Leaving Water” and press the right button. Set “Set Point” to “Fixed” and press the right button. Confirm all the settings on this menu with a left button press.

- Confirm the “Tank” menu setting “Heat Up Mode” is “Reheat Only” and press left button.
- Finally, confirm the setup with OK.
- Wait for new configuration to be applied to the heat pump and then the Modbus adapter unit.
- For more information on the settings and menu navigation, please see your heat pump’s installation manual.

### Install the Modbus adapter

The Daikin controller is connected to the outdoor unit via a 2-wire P1/P2 connection (figure 10, page 26). Optionally, a wired thermostat may also be connected, extending the daisy chain (figure 9) of devices.

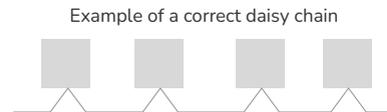


figure 9

Refer to the Daikin manual for a wire specification for this bus.

A typical Daikin heat pump installation includes these components:

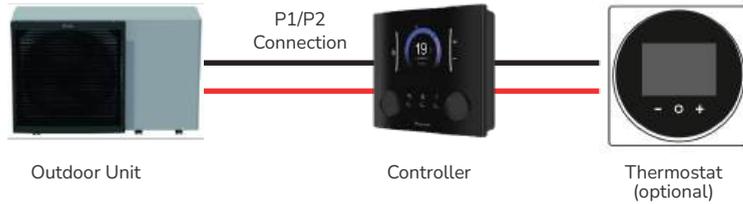


figure 10



**DANGER** - Ensure the heat pump system is powered down when installing the Modbus adapter

To connect Homely you'll need to:

1. Mount the Modbus adapter unit in accordance with its manufacturer's instructions.
2. Connect the Modbus adapter to either end of the daisy chain.
3. On the adaptor DIP switches, set switch 8 ON and the switches 1-7 OFF (figure 12).
4. Connect the Modbus adapter power supply to terminals 1 & 2 as shown (figure 11).



### WARNING

Don't mix up the Modbus adapter power supply with the Homely power supply.

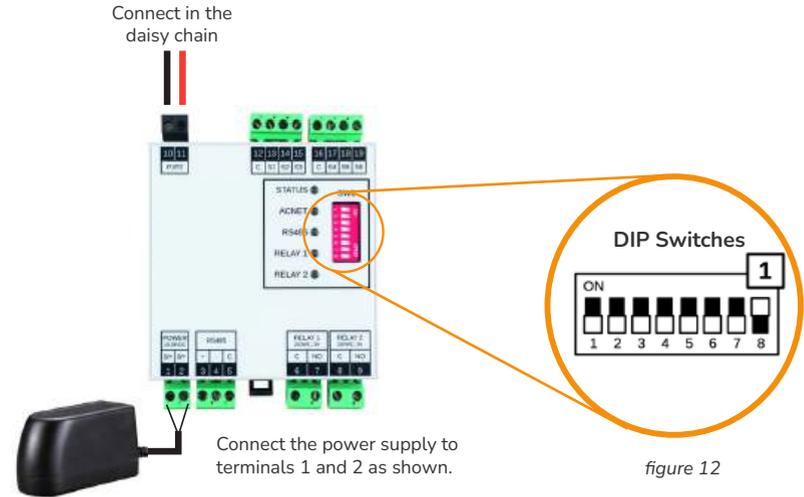


figure 11

figure 12

**DANGER**

Ensure the heat pump system is powered down when installing Homely

**Connect the Homely hub**

The Homely's Modbus interface must be wired into the Modbus adapter.

1. Connect terminal A in the Homely Hub to terminal 3 on the Modbus adapter.
2. Connect terminal B in the Homely Hub to terminal 4 on the Modbus adapter.
3. Connect the supplied 120-ohm resistor between the controller terminals as shown on the next page (figure 13).

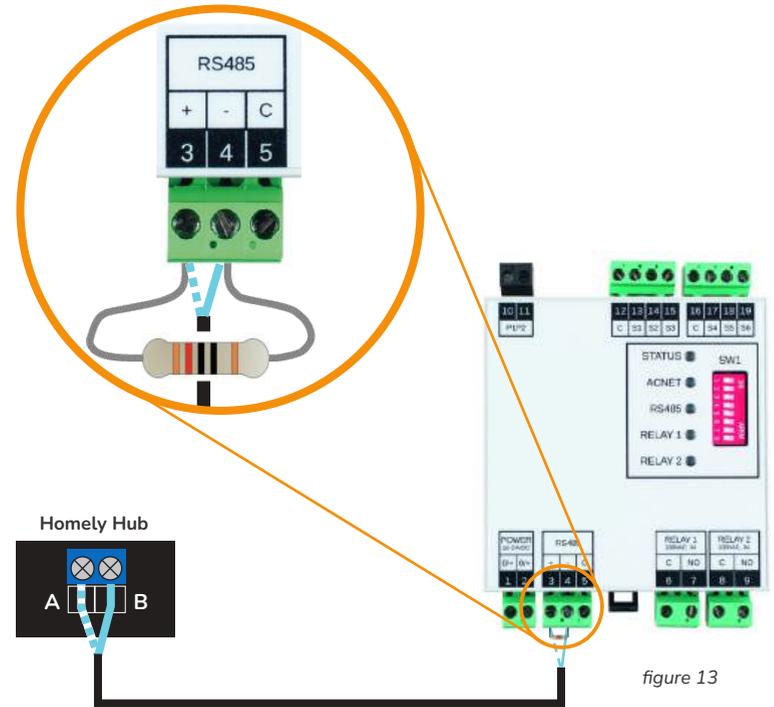


figure 13

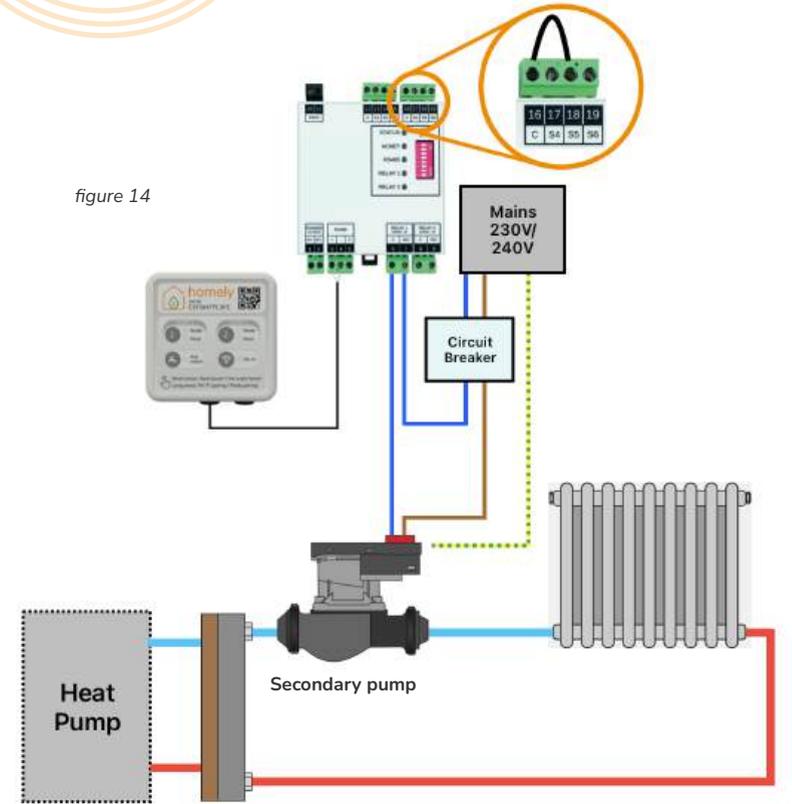
## Secondary pump consideration

For systems with a secondary system pump, (the meaning of this can be found on page 9), use the Modbus adapter Relay 1 output (terminals 6 & 7) to drive the pump. The pump must comply with the following requirements:

- The pump must have built-in safety mechanisms so that it will not operate in the case of a fault condition (e.g. overheating).
- The pump must be installed with the necessary external safety devices (e.g. correctly rated fuses/breakers).
- The pump is installed according to the manufacturer's instructions.
- The pump must draw no more than 3 amps at maximum operating power.

Modbus adapter input S5 (terminal 18) must be short-circuited directly to input C (terminal 15) for correct operation.

An example of the connection into a secondary system is shown opposite (figure 14):



Check the compatibility of the heat pump. On the cover of the outdoor unit there needs to be an option for SIEMENS protocol.

### Controller configuration

1. Power the controller and use the left and right arrows to navigate to the “Setting” icon and press OK.
2. With the “Setting” icon displayed, make a note of the version number in the lower right corner: this forms the default installer password. In the example opposite, the default password is 3056 (figure 15).



figure 15

3. Now press and hold the up arrow to enter “Installer mode”.
4. Enter the password when prompted to reveal the Installer menu.

5. Navigate to Configuration > Select Temperature Sensor and ensure that the Control Standard entry reads “Water” as shown below (figure 16).



figure 16

6. Navigate to Configuration > Use External Pump and ensure that the entry reads “Heat & Cool” (figure 17).
7. Press “OK” to confirm selection.



figure 17

8. Navigate to Room Heating > Heating temp. setting and ensure that the entry reads “Outlet” as show below (figure 18).
9. Press the back arrow to return to the “Installer menu”.



figure 18

10. Finally, navigate to Connectivity > Modbus Address and modify the entry to “01” (figure 19).



figure 19

11. Press OK and then use the back arrow to return to the top menu.
12. After returning to the main screen, ensure that the operation mode is set to “Heat” and **not** “Auto”.



**DANGER**

Ensure the heat pump system is powered down when installing Homely

**Connect the Homely hub**

The Homely's Modbus interface must be wired into the heat pump system.

1. In the outdoor heat pump unit, locate terminals A and B. Remove the plastic cover, if there is one.
2. Connect terminal A in the Homely Hub to terminal A in the outdoor unit.
3. Connect terminal B in the Homely Hub to terminal B in the outdoor unit.
4. Fit the supplied 120-ohm resistor between terminals A and B in the outdoor unit as shown on the next page (figure 20).
5. Refit the plastic cover, if removed.

Outdoor unit

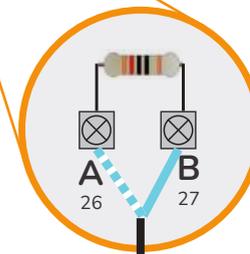
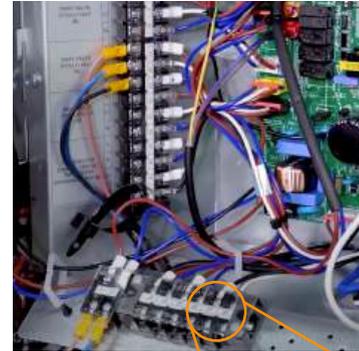
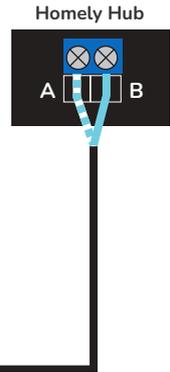


figure 20



## Set DIP Switches

1. In the outdoor heat pump unit, locate the two DIP switches labelled SW1 (figure 21) and SW2 (figure 22). Switches for circuit board Generations 3 and 4 are shown opposite.
2. A. On SW1, ensure that switches 1 and 2 are ON by moving to the right as shown opposite (figure 21).  
 B. On SW2, ensure that switches 1 and 8 are OFF by moving to the left as shown opposite (figure 22).
3. The other switches may be left in their original positions.

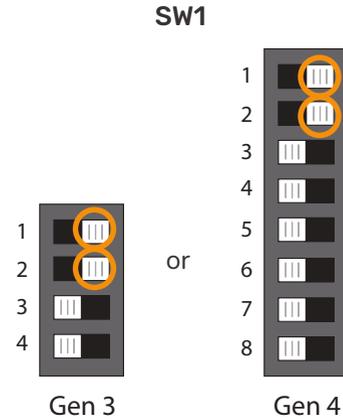


figure 21

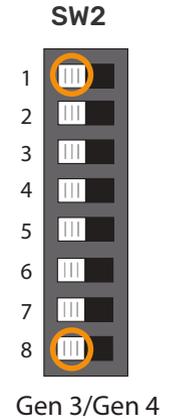


figure 22

## Samsung

This installation will require a Samsung MIM-B19N board and MIM-B19N cables, see page 4 & 5, items 3, 4, 5, 6 for details.

### Configure the Samsung controller

Change the following settings on the Samsung controller.

1. Navigate to the “Service Mode” by pressing the up and down arrows together. Enter the password, by default this is “0202”
2. Go to “Water Law” and find “2091 External Thermostat Application #1”. Set to “Not Use” (figure 23).
3. Select “DHW” on the controller. Press the cog icon and navigate to “Schedule”. Ensure that no schedules are stored.
4. Select “Heating” on the controller. Press the cog icon and navigate to “Schedule”. Ensure that no schedules are stored.

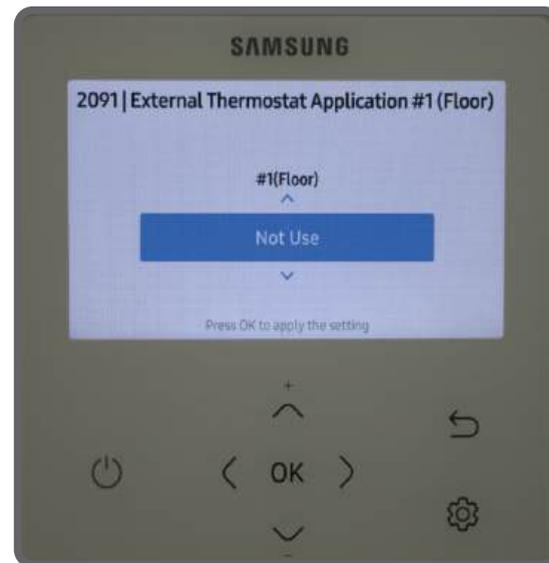


figure 23

## Determine primary pump type

The heat pump may be installed with a PWM pump (variable speed) or a standard pump (fixed speed) as the primary pump (see page 8 for explanation of primary pump). To determine which type of pump has been installed, look for which terminals the primary pump has been connected to:

- If the primary pump is connected to terminals B1 and B6, it is a PWM pump and no further wiring or alterations are required. Go to 'Install the MIM-B19 board' (page 46).
- If the primary pump is connected to terminals B7 and B8, and there are no connections on B1 and B6, it is a standard pump (fixed speed). Follow the instructions for "standard pump additional wiring" (page 45).



### WARNING

The order in which you connect the wiring is not important, however ensure that the system is fully turned off before altering any wiring.

## Standard pump additional wiring

1. Use a 2-core cable to connect the relay to B6 and B7 on the Samsung control board .
2. Add a wire between B20 and B22 in addition to the changes shown (figure 24).

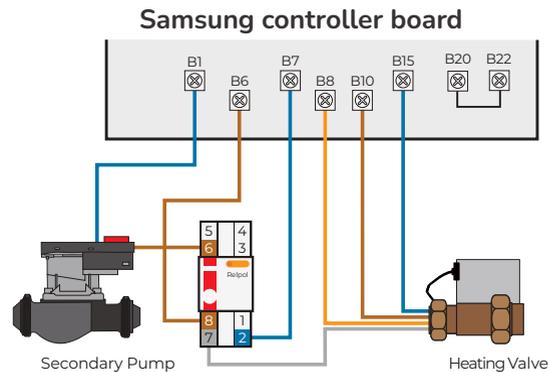


figure 24

### Fixed-speed primary pump configuration

Once additional wiring is complete, energise the heat pump (not Homely) and ensure the system now runs correctly when operated by the heat pump controller.

## Install the MIM-B19N

Install the MIM-B19N into the Samsung outdoor unit. Follow the manufacturer's instructions included with the MIM-B19N (figure 25). The MIM-B19N may already have a mounting case installed in the outdoor unit, depending on the version of heat pump used.



figure 25



### WARNING

Ensure that the installation work is performed in accordance with all installation instructions. Incorrect installation of equipment may result in electric shock or fire.



### DANGER

Ensure the heat pump system is powered down when installing Homely

## Connect the Homely Hub

The Homely's Modbus interface must be wired into the heat pump system.

1. Connect terminal A in the Homely Hub to the A terminal on the MIM-B19N.
2. Connect terminal B in the Homely Hub to the B terminal on the MIM-B19N.
3. The supplied 120-ohm resistor must be placed between the A and B terminals of the MIM-B19N as shown below (figure 26).

MIM-B19N  
board

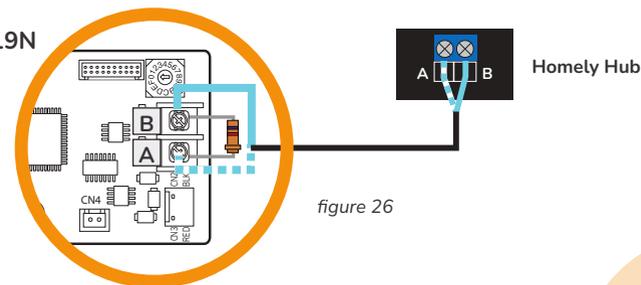


figure 26

## Other

If the brand of heat pump you are looking for is not listed, check our online manual. Any new heat pump integrations or updates will be added there.

[homelyenergy.com/manual](https://homelyenergy.com/manual)

For a full compatibility list and model numbers of heat pumps, please go to:

[homelyenergy.com/manual/compatibility](https://homelyenergy.com/manual/compatibility)

Homely Manuals



Homely Compatibility



## STEP 4: Connect the power supply

1. Connect the power supply to the Hub as shown and then plug into a power outlet.



2. Ensure the power to the heat pump system is now switched back ON.

## STEP 5: System configuration

1. Download the 'Homely Installer' app from the Apple or Google Play Store, or by using the QR code below.
2. If you haven't already registered, please follow the 'Register to be an installer' link on the installer app.
3. Follow the in-app instructions to connect the Hub to a Wi-Fi network, then connect the Node to the Hub and complete the Homely configuration.

Homely Installer App



## STEP 6: Monitor heat pump performance

1. Login to Homely Connect ([homelyenergy.com/homely-connect](https://homelyenergy.com/homely-connect)), on a laptop or desktop computer using the same login details as the installer app.
2. Find the heat pump installation in the list or on the map.
3. View alerts and general information on the 'Overview page'.
4. Check the performance of the heat pump on the 'History page'.
5. Change heat pump parameters remotely using the 'Advanced data' page (only available on selected heat pumps, check our website for details).

Homely Connect





# Homely Specifications

## Homely Hub

Dimensions:  
86 x 86 x 25mm

Communication protocols:  
Proprietary 868MHz  
Bluetooth v4.2  
Wi-Fi 802.11 b/g/n

Power:  
5V  1.0A

Recommended operating conditions:  
10 to 35 °C



## Homely Node

Dimensions:  
43 x 43 x 14mm

Communication protocols:  
Proprietary 868MHz

Power:  
Internal: CR2450 battery

Temperature Sensor Accuracy:  
Internal: 0.4 °C (max), 10 to 85 °C

Humidity Measurement:  
Accuracy: 2% Relative Humidity (RH)

Range: 0% to 100% RH

Recommended operating conditions:  
10 to 35 °C



# UK Declaration of Conformity

This UK Declaration of Conformity is issued under the sole responsibility of Homely Energy Ltd.  
Registered address: Homely Energy Ltd, The Edge Business Centre, The Edge, Clowes Street,  
Manchester M3 5NA. Contact details:

**Email:** [team@homelyenergy.com](mailto:team@homelyenergy.com)  
**Web:** [www.homelyenergy.com](http://www.homelyenergy.com)  
**Phone:** 0161 818 9005

Homely Energy Ltd declares that the Homely system consisting of Homely Hub v3 and Homely Node v2 is in compliance with the essential requirements of the following:

Radio Equipment Regulations 2017  
Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012.

Signed for and on behalf of Homely Energy Ltd:



Name: Steve Elliott  
Function: Technical Director  
Place of issue: United Kingdom  
Date of issue: 07/03/2023



# Standards applied

Standard	Description
ETSI EN 301 489-1 V2.1.1	Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
ETSI EN 301 489-3 V2.1.1	Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz
ETSI EN 301 489-17 V3.1.1	Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 55032:2012	Electromagnetic compatibility of multimedia equipment – Emission requirements
EN 55035:2017	Electromagnetic compatibility of multimedia equipment – Immunity requirements
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements

## EU Declaration of Conformity

This EU Declaration of Conformity is issued under the sole responsibility of Homely Energy Ltd.  
Registered address: Homely Energy Ltd, The Edge Business Centre, The Edge, Clowes Street,  
Manchester M3 5NA, UK. Contact details:

**Email:** [team@homelyenergy.com](mailto:team@homelyenergy.com)  
**Web:** [www.homelyenergy.com](http://www.homelyenergy.com)  
**Phone:** +44 (0)161 818 9005

Homely Energy Ltd declares that the Homely system consisting of Homely Hub v3 and Homely Node v2 is in compliance with the essential requirements of the following:

Directive 2014/53/EU (Radio Equipment)  
Directive 2011/65/EU (RoHS) Electronic Equipment Regulations 2012.

Signed for and on behalf of Homely Energy Ltd:



Name: Steve Elliott  
Function: Technical Director  
Place of issue: United Kingdom  
Date of issue: 07/03/2023



## Harmonised standards applied

Standard	Description
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ETSI EN 301 489-3 V2.1.1	Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz
ETSI EN 301 489-17 V3.1.1	Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 55032:2012	Electromagnetic compatibility of multimedia equipment – Emission requirements
EN 55035:2017	Electromagnetic compatibility of multimedia equipment – Immunity requirements
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements



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