

Daikin Altherma 3 heat pump configuration guide for IQ Energy Router+

Applicable regions: EN-INT

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Other information

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User documentation is updated frequently; check the Enphase website (enphase.com/support) for the latest information.

Enphase did not author and takes no responsibility for the functionality or accuracy of the information for third-party content linked in this document.

Environmental protection

Waste electrical products should not be disposed of as household waste. Recycle where facilities exist. Check your local authority or retailer for advice on recycling.



Audience

This manual is intended for use by professional installation and maintenance personnel.

Safety

Follow the instructions in this manual. These instructions are key to the installation and maintenance of the SG Ready Relay. To ensure the safe installation and operation of the SG Ready Relay, note the

following safety symbols that appear throughout this document to indicate dangerous conditions and important safety instructions.

Read this first



DANGER: This indicates a hazardous situation, which, if not avoided, will result in death or serious injury.



WARNING: This indicates a situation where failure to follow instructions may be a safety hazard or cause equipment malfunction. Use extreme caution and follow instructions carefully.



NOTE: This indicates information that is particularly important for optimal system operation. Follow instructions carefully.

Safety instructions

	DANGER:	Risk of electrocution. Do not attempt to repair the SG Ready Relay. It contains no user-serviceable parts. Tampering with or dismantling the SG Ready Relay will void the warranty. If the equipment fails, contact Enphase Support (enphase.com/support) for assistance or replacement equipment.
	DANGER:	Risk of electric shock. Do not use SG Ready Relay in a manner not specified by the manufacturer. Doing so may cause death or injury to persons or damage to equipment. All sources of equipment being serviced must be disconnected external to the device. In particular, the storage system may energize conductors, so storage circuits must always be isolated via a circuit breaker or disconnected before working on any portion of the system. Be aware that installation of this equipment includes the risk of electric shock.
	DANGER:	Risk of electric shock. Risk of fire. Only use electrical system components approved for wet locations. Only qualified personnel should troubleshoot, install, or add parts to the SG Ready Relay. Ensure that all wiring is correct and that none of the wires are pinched or damaged. Do not work alone. Someone should be within your voice range or close enough to come to your aid when you work with or near electrical equipment. Remove rings, bracelets, necklaces, watches, and so on, when working with batteries, photovoltaic modules, or other electrical equipment.
	WARNING:	Before installing or using the SG Ready Relay, read all instructions and cautionary markings in the technical description and on the components.



NOTE:

Using unapproved attachments or accessories could result in damage or injury.
Perform all electrical installations according to all national and local electrical codes.

1. Introduction

This document provides the information to configure and set up the supported Daikin heat pump for use with the IQ Energy Router+ and the Enphase Home Energy Management (HEM).

For further information regarding installing the IQ Energy Router+ package, review the quick install guide available in the Enphase [documentation center](#).

This document is developed after obtaining permission from Daikin. Observe the safety instructions from Daikin concerning the installation, operation, and maintenance of the heat pump and its equipment which you can find in the [References](#) section at the end of this document. The information from Daikin might change. Therefore, when in doubt, contact [Daikin](#).

1.1 Heat pumps compatible with this document

Heat pump	Indoor unit	
Altherma 3 R W	EHBX-E6V	
	EHBH-E6V	
	EHBX-E9W	
	EHBH-E9W	
	EHVZ-E6V	
	EHVH-E6V	
	Altherma 3 R F	EHVH-E9W
		EHVX-E6V
	Altherma 3 H HT F	EHVX-E3V
		EHVX-E9W
	Altherma 3 H HT W	EHVX-E6VG
		ETBX-E6V7
		ETBX-E9W7
		ETVH-E9W7

2. Optimizing the heat pump using the SG Ready interface

Using the SG Ready interface, connect the Enphase IQ Energy Router to a supported heat pump. Once configured, the IQ Energy Router can optimize the heat pump operation to increase the self-consumption of solar energy and lower the energy use from the public electricity grid.



NOTE: The Enphase IQ Energy Router+ only uses the SG Ready states: 2 as **Normal** and 3 as **Recommended**. The SG Ready signal in state 3 is only a recommendation for starting the heat

pump. The Enphase IQ Energy Router+ can never force the heat pump on or off, as states 1 **Off** and 4 **Forced** are not used. User comfort is always guaranteed and proper operation of the heat pump system is always ensured.

3. Performing the prerequisite checks

Perform the following prerequisite checks before proceeding with the wiring and configuration of the heat pump equipment and SG Ready Relay.

- Follow the HEM installation and commissioning instructions in the Enphase Installer App.
- Activate the Enphase IQ Energy Router+ and configure it such that it can detect and connect to the other components, such as SG Ready Relay or Energy Meter referred to in this documentation.

3.1 Hardware requirements

Install the following hardware before you proceed with this document:

- Enphase hardware
 - IQ Gateway
 - IQ Battery
 - IQ Microinverters
- Enphase Home Energy Management hardware (hard copy guides provided in the box)
 - IQ Energy Router
 - Energy Meter
 - SG Ready Relay
- Heat pump system
 - Supported Daikin heat pump system



NOTE: Install and connect the SG Ready Relay and Energy Meter to the same LAN of the customer.

4. Connecting heat pump indoor unit and SG Ready Relay



DANGER: Electric shock. Do not touch live components as it can lead to dangerous injuries due to electrical current. Disconnect the entire system before working on it with a separate fuse or via the main fuse, check that no voltage is present afterwards and secure against switching on

again. There is a risk that a few components still carry voltage after the main voltage has been switched off.

To set up the SG Ready Relay functionality, connect the SG Ready Relay to the heat pump indoor unit or to the controller of the heat pump via cables. The cable connection differs depending on the connection type.

4.1 Opening indoor unit ETBX-E6V, EHBH/EHBX/ETBX-E6V/E9W

Perform the following steps to connect the indoor unit with the SG Ready Relay.



Figure 1: Indoor unit

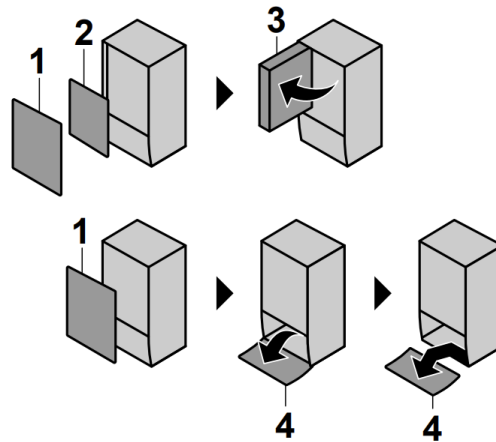


Figure 2: Indoor unit overview

Table 1: Indoor unit overview

Part number	Description
1	Front cover
2	Control box cover
3	Control box
4	Controller interface panel

1. Remove the front panel, as shown in the following figure.

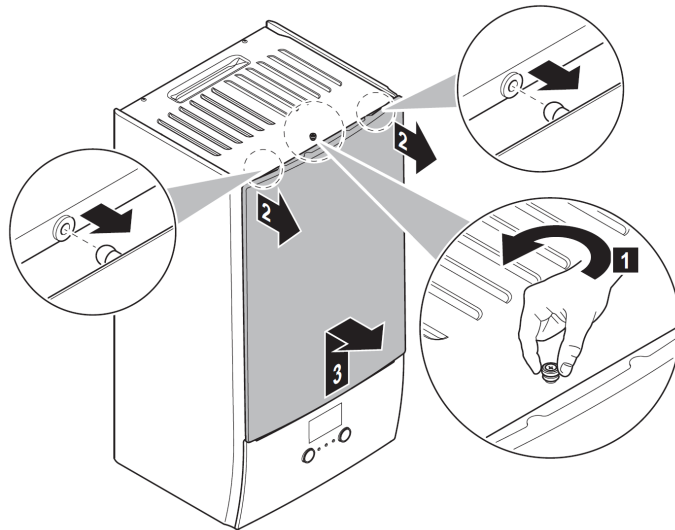


Figure 3: Remove indoor unit front panel

2. Remove the switch box cover.

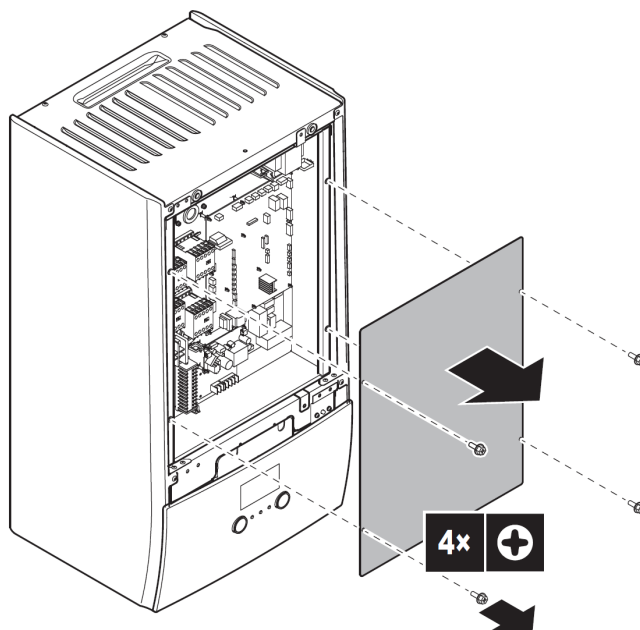


Figure 4: Remove switch box cover

3. Open the switch box.

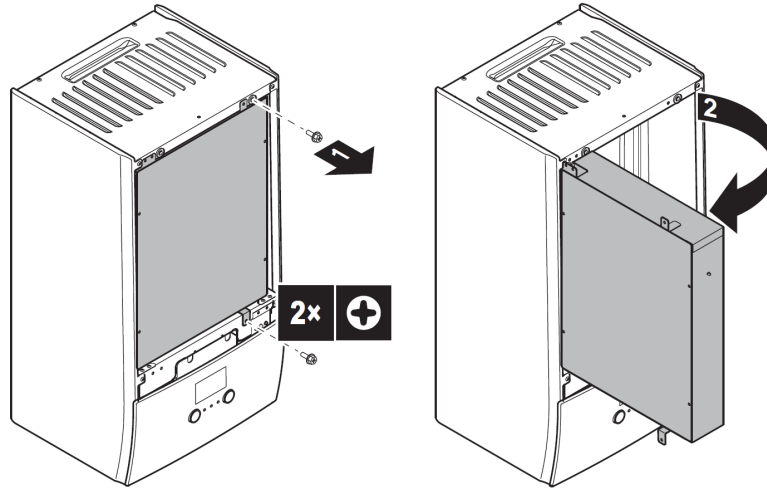


Figure 5: Open switch box

- Now, you should see the electrical connection area. The SG Ready contacts are located on terminal X5M of the control board. Route the SG Ready Relay wires through the cladding.

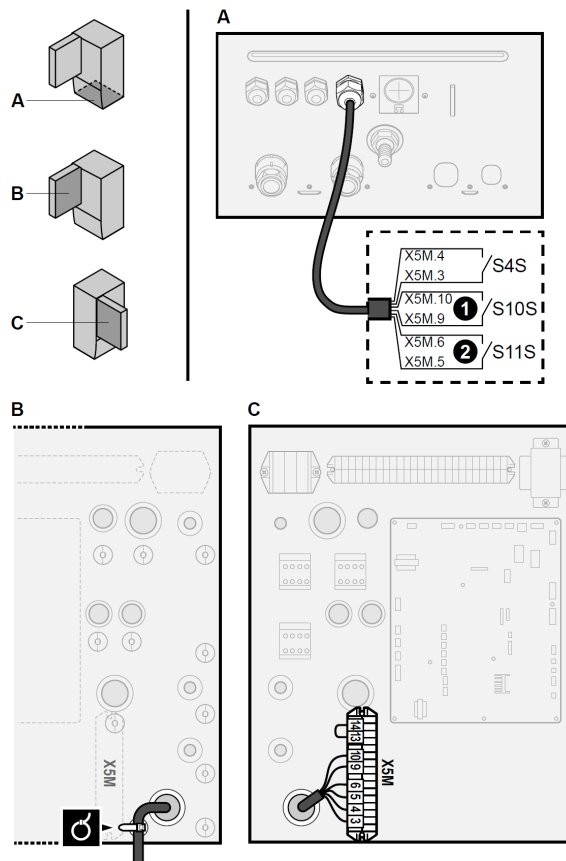


Figure 6: Electrical connection and control board

- For the SG Ready wiring, see [Connection of SG Ready Relay to indoor unit control board](#).

4.2 Opening indoor unit EHVH-E6V/E9W, EHVX-E3V/E6V/E9W, ETVH-E9W

Perform the following steps to connect the indoor unit with the SG Ready Relay.



Figure 7: Indoor unit

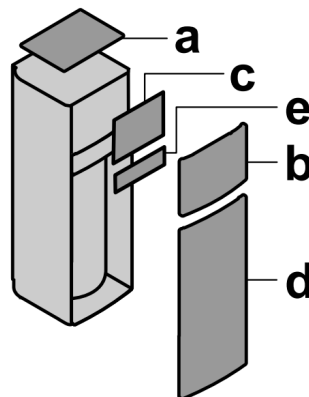



Figure 8: Indoor unit overview

Table 2: Indoor unit overview

Part no.	Description
a	Top panel
b	Control unit cover
c	Control box cover
d	Front panel
e	High-voltage switch box cover

1. Loosen the screws of the top panel and remove the top panel.

 **WARNING:** When removing the control box cover, disconnect the cables at the rear of the control unit panel.

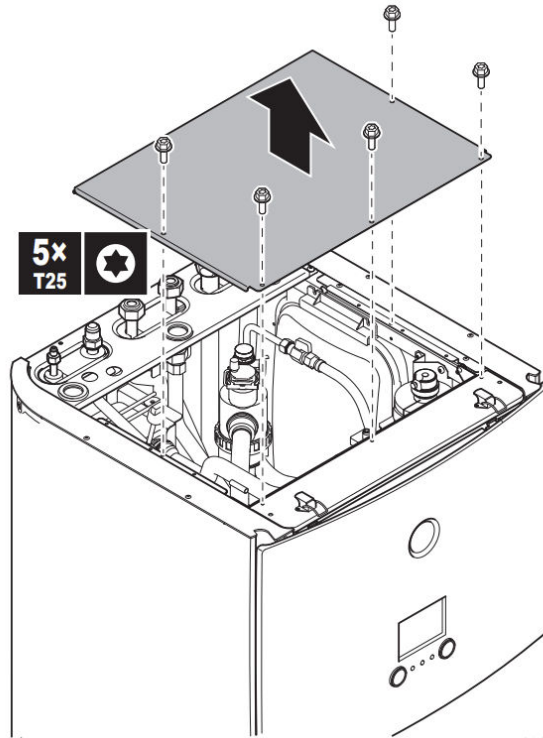


Figure 9: Remove indoor unit top panel

2. Loosen the hinges on the top. Then, slide the top cover forward.

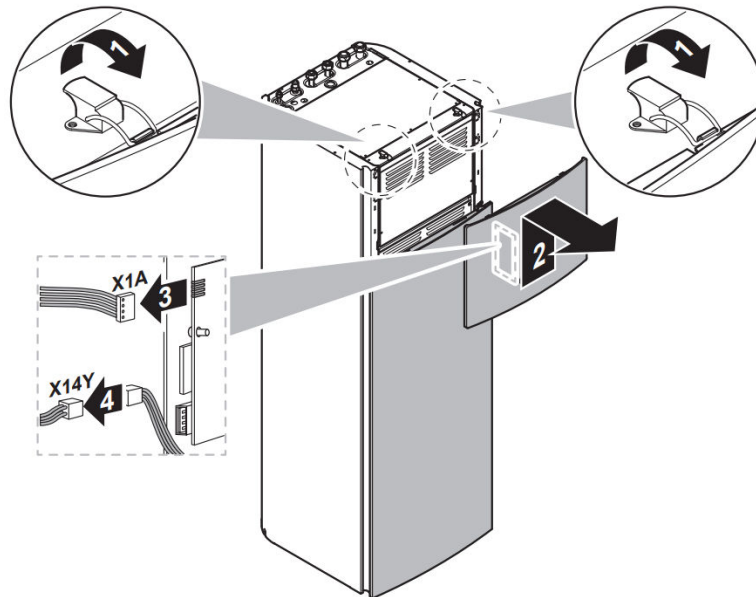


Figure 10: Remove top cover

3. Loosen the screws of the switch box cover and remove the cover.

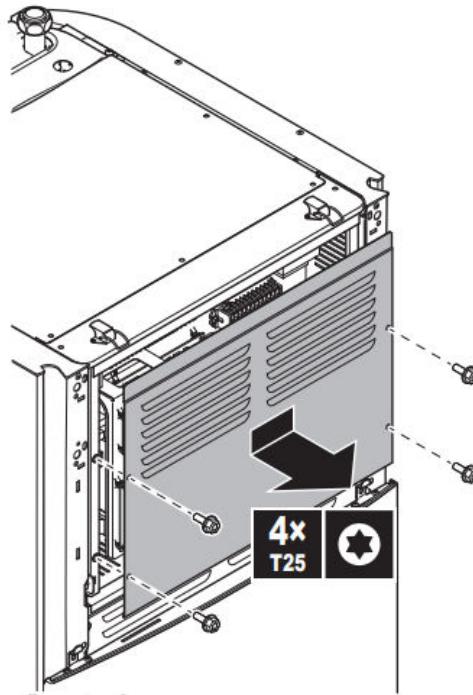


Figure 11: Remove switch box cover

- Now, you should see the electrical connection area. The SG Ready contacts are located on terminal X5M of the control board. Route the SG Ready Relay wires through the cladding, as shown in the following figures.

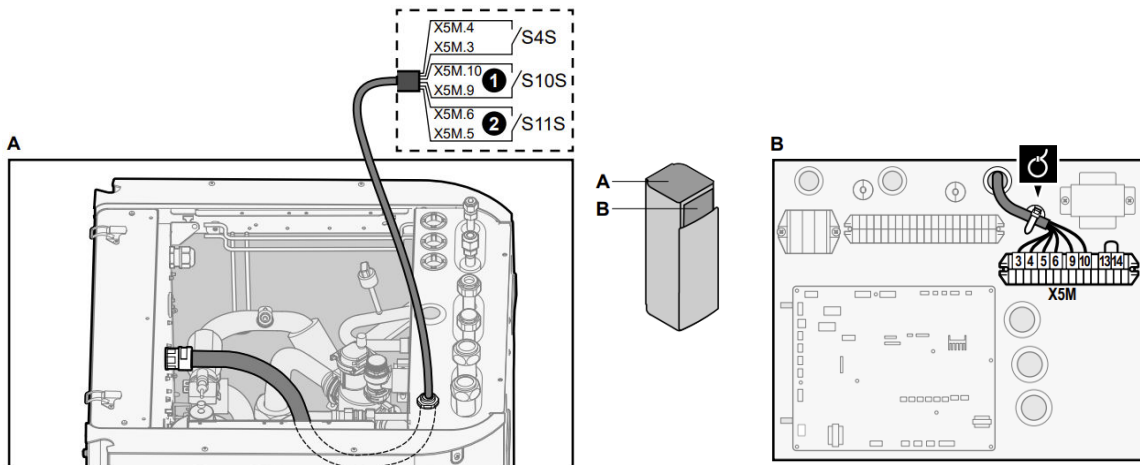


Figure 12: Electrical connection and control board

- For the SG Ready wiring, see [Connection of SG Ready Relay to indoor unit control board](#).

4.3 Connection of SG Ready Relay to indoor unit control board

1. Connect the wires from the SG Ready Relay to the control board of the heat pump indoor unit, as shown in the following figure. The colors of the cables are not relevant.

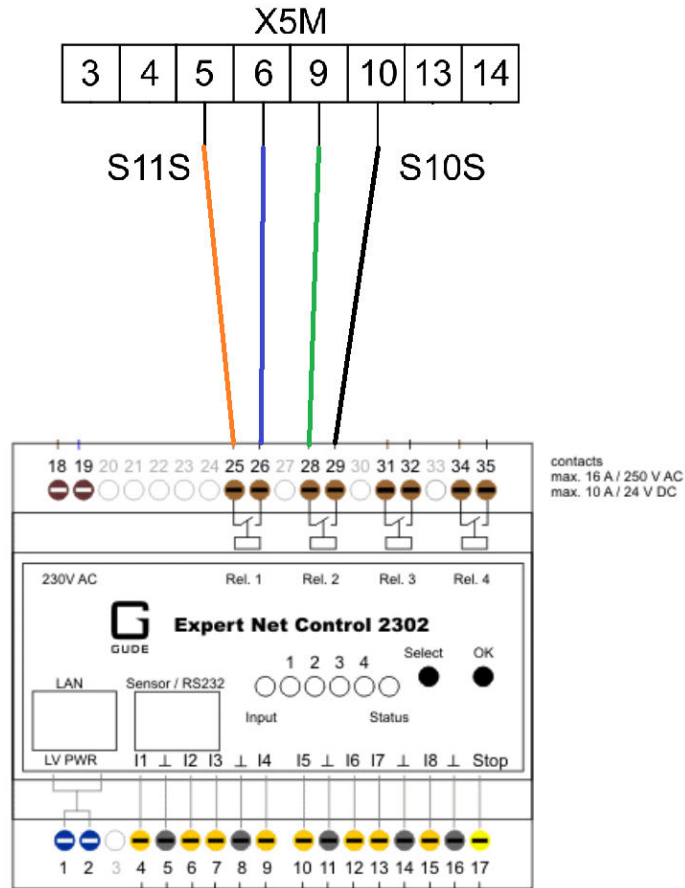


Figure 13: Wiring X5M to SG Ready Relay

Inputs control board	Outputs SG Ready Relay
S11S/5	25
S11S/6	26
S10S/9	28
S10S/10	29

2. After connecting the wires, close the control box of the heat pump control board and the indoor unit again by attaching and screwing down the front cover.

Power on

After performing all the preceding steps, you can apply power by closing the breaker for the heat pump, the Energy Meter, and the SG Ready Relay, and then proceed to the following configuration steps.

5. Configuring the heat pump system controller

After completing the installation process, the SG Ready function must be activated and configured on the heat pump system controller.

The control unit is controlling the heat pump system and is built into the heat pump indoor unit.



Figure 14: Control unit of indoor unit

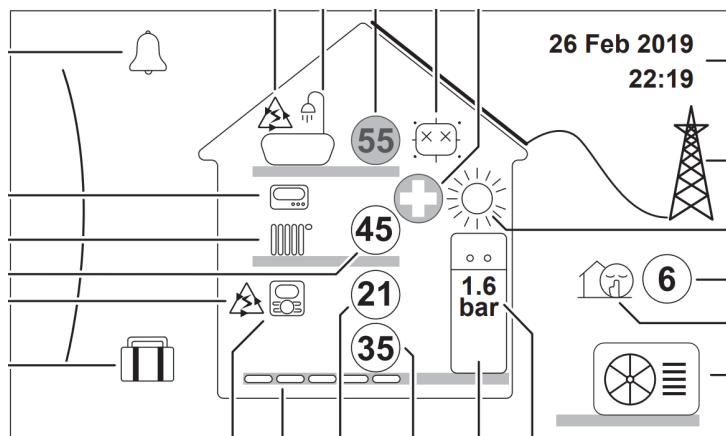


Figure 15: Control unit home screen



WARNING: A wrong configuration at the installer level can lead to damage to the heat pump and the heating system.

Perform the following steps for the configuration of the control unit.

1. Set the user profile to **Installer**.



1	Go to [B]: User profile.	
		
2	Enter the applicable pin code for the user permission level.	—
<ul style="list-style-type: none"> ▪ Browse through the list of digits and change the selected digit. 		
<ul style="list-style-type: none"> ▪ Move the cursor from left to right. 		
<ul style="list-style-type: none"> ▪ Confirm the pin code and proceed. 		

Figure 16: Control unit menu

2. Enter the following **Installer** pin.

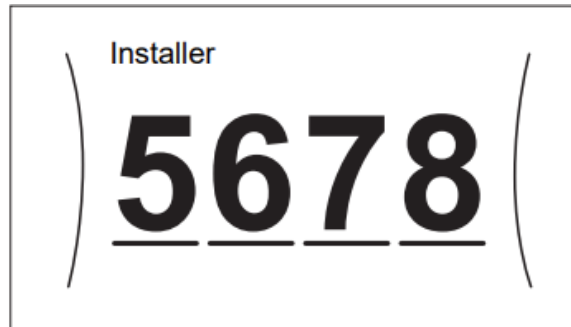


Figure 17: Installer pin

3. Navigate to [9] **Installer settings** > [9.8] **Benefit kWh power supply**.
4. Select [9.8.4] **Benefit kWh power supply** > **Smart grid**. Then, you should see [9.8.5] **Smart grid operation mode**.
5. Select [9.8.6] **Allow electric heaters** > **Yes**.
6. Select [9.8.7] **Enable room buffering** > **Yes**.
7. Return to step 1 and change the user profile to **User** again by entering the following **User** pin:



Figure 18: User pin

8. After changing the settings, a popup appears on the screen with a request to restart the system. Confirm to restart the system. All the changes will be applied.

6. Commissioning and validation of the configuration

Go to the Enphase Installer App. Follow all the commissioning steps and perform the functional validation to validate the SG Ready configuration at the end.



NOTE: Refer to <https://enphase.com/contact/support> if you encounter any problems and need assistance.

7. References

Current installation manuals, product brochures, and further information for Daikin heat pump models and additional hardware are available at the official website www.daikin.eu.

Appendix A

SG Ready operating modes

The following table lists the SG Ready operating modes.

Operating mode	Description
Operating mode 1 (1:0)	<p>Forced off</p> <p>Enforced stop of the compressor and backup heater.</p> <p>The protective functions (water pipe freeze prevention, drain prevention, room frost protection, and tank disinfection) and defrost are not affected by this control.</p>
Operating mode 2 (0:0)	<p>Free running</p> <p>Normal operation.</p>
Operating mode 3 (0:1)	<p>Recommended on</p> <p>If there is no space heating/cooling request and the tank temperature setpoint is already reached, the heat pump can choose to store energy from the PV panels in the room (only in case of room thermostat control) or in the DHW tank.</p> <p>For room buffering, the room will be heated up or cooled down to the set point temperature.</p> <p>For tank buffering, the tank will heat up to the maximum tank temperature.</p> <p>Power of HP can be limited based on available PV surplus energy:</p> <ul style="list-style-type: none"> • If a Smart Grid Pulse meter is available, the power limit is defined by the HP based on the Smart Grid Pulse meter data. • If a Smart Grid Pulse is not available, the power limit is defined by the configuration [9.8.8] Limit setting kW on the HP controller. <p>The protective functions (water pipe freeze prevention, drain prevention, room frost protection, and tank disinfection) and defrost are not affected by this control.</p> <p>When the emergency mode is active, the buffering of energy via the electrical heater is not possible in Recommended on operation modes.</p>
Operating mode 4 (1:1)	<p>Forced on</p> <p>Like Recommended on, just without power limitation.</p> <p>When the emergency mode is active, the buffering of energy via the electrical heater is not possible in Forced on operation modes.</p>

8. Revision history

Revision	Date	Description
IOM-00111-1.0	October 2024	Initial revision concept of configuration manual for Daikin heat pumps.