

How to connect Panasonic heat pump with Reduxi Gateway

Save up to 30% on energy costs: control the SG-ready contacts of your Panasonic heat pump via the Reduxi Gateway and align it with fluctuating energy prices.

🔧 Panasonic heat pump · Reduxi Controller · Reduxi Gateway

🌐 SG-ready contacts on CZ-NS5P via 2 gateway relays

🔌 Contacts BIT 1, BIT 2 and VCC

Panasonic
heating & cooling solutions

IN THIS ARTICLE

1. Prepare the connection
 - Technical documentation
 - Required components
2. Connect the Reduxi Gateway and the heat pump
 - Overview
 - Relays to SG-ready contacts
 - Current sensors
3. Log in to the Reduxi web interface
 - Via the Reduxi app
 - Via a web browser
4. Add the heat pump to Reduxi
 - Basic settings
 - Communication settings
 - Test communication
 - Advanced settings
5. Check the readings
 - Last measurements
 - Enable control by Reduxi
6. Summary
7. Common issues
8. Related articles

1 Prepare the connection

1.1 Technical documentation

Panasonic describes the optional PCB for Aquarea heat pumps (CZ-NS5P for Aquarea K and L Generations) here:

- [Panasonic Aquarea PCB for additional functions](#) – Optional PCB CZ-NS4P and CZ-NS5P for Aquarea heat pumps

1.2 Required components

Two Reduxi components connect the Reduxi Controller to the Panasonic heat pump:

- ☐ Reduxi Controller
- ☐ Reduxi Gateway device with 3x (30:1A) current sensors (CTs)
- ☐ UTP cable, only for the wired connection (LAN) of the gateway
- ☐ Laptop or tablet with internet access to configure the device in Reduxi

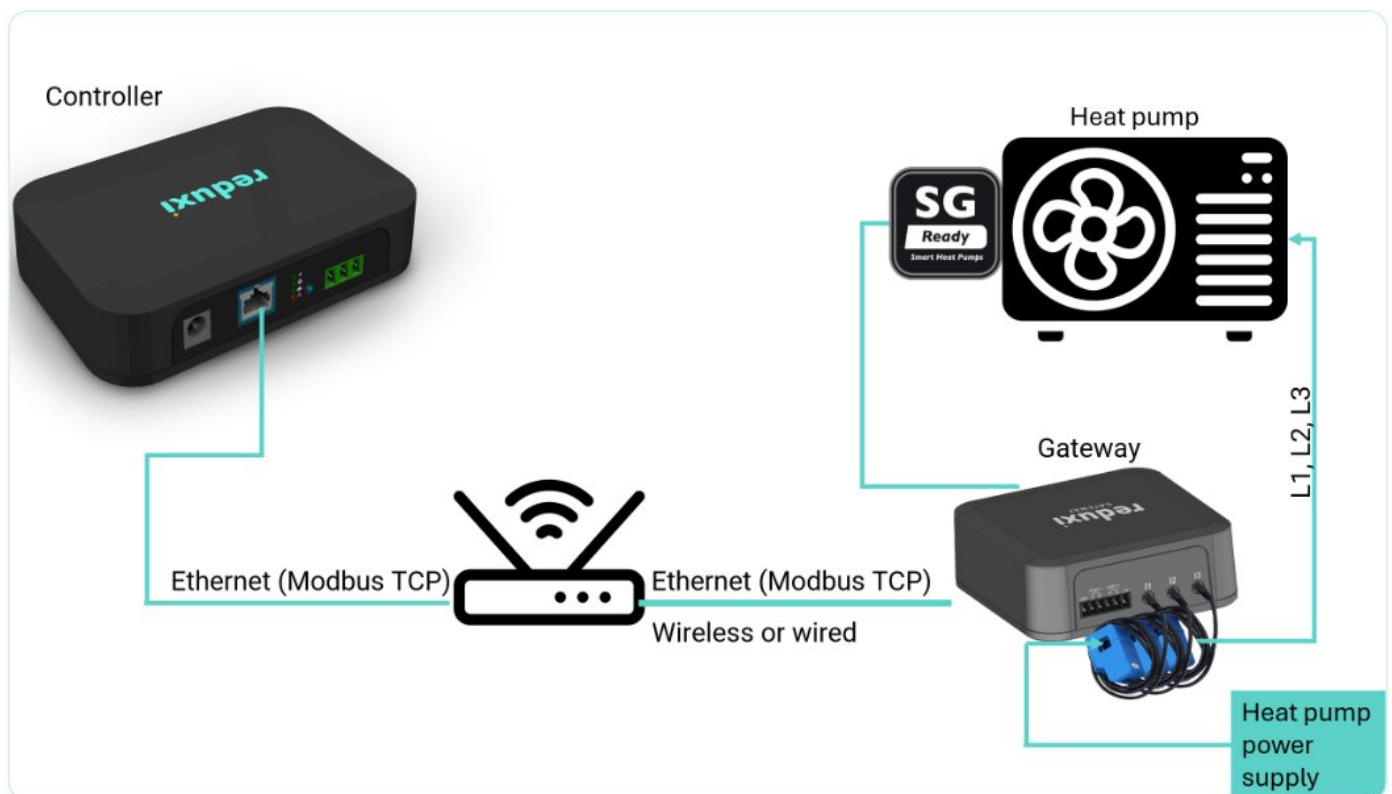
First add the Reduxi Gateway device to the Reduxi Controller. The gateway then controls the operating modes of the heat pump. The connection is wireless (WLAN) or wired via a UTP cable (LAN). More about this: [Gateway to Controller connection](#).

The gateway measures the current of each phase of the heat pump with the 3x (30:1A) current sensors. Its two relay outputs send the signals to the SG-ready contacts and set the operating mode of the heat pump.

2 Connect the Reduxi Gateway and the heat pump

2.1 Overview of the connection

The picture shows the entire connection from the Reduxi Controller to the heat pump.



Connection from the Reduxi Controller to the heat pump

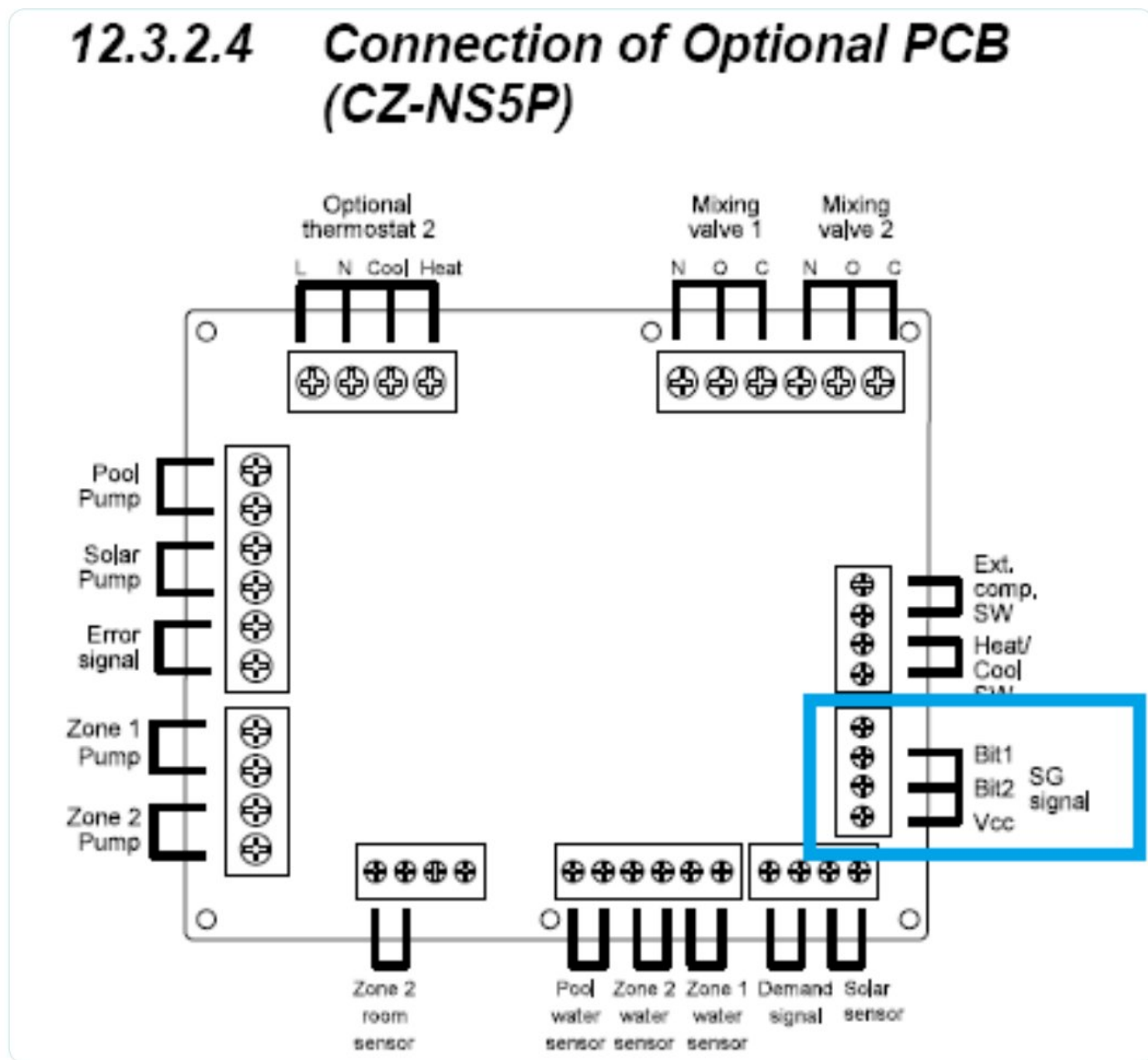
Text description of this image

For further information on how to connect the Reduxi Gateway device, see [How to configure the Reduxi Gateway](#).

2.2 Connect the gateway relays to the SG-ready contacts

First find the SG-ready contacts on the circuit board of the heat pump. The picture shows their location on the circuit board of the Panasonic heat pump.

The SG-ready contacts are on the circuit board **CZ-NS5P**.

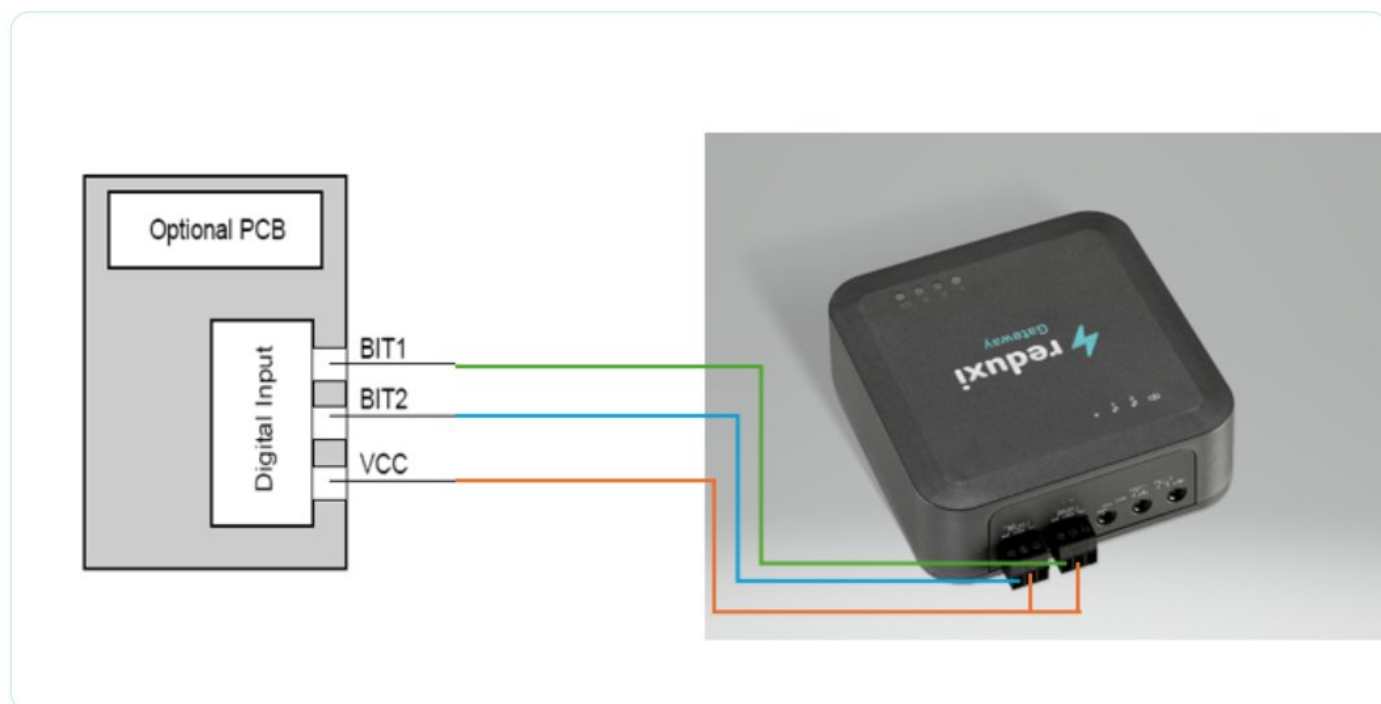


SG-ready contacts on the circuit board CZ-NS5P

Text description of this image

Connect the relays of the Reduxi Gateway device to the SG-ready contacts of the heat pump:

REDUXI GATEWAY RELAY CONTACT	HEAT PUMP CONTACT ON CZ-NS5P	WIRE COLOUR
Relay 1, NO contact	BIT 1	Blue
Relay 2, NO contact	BIT 2	Green
COM contact of both relays	VCC	Brown



Connection of the relays to the SG-ready contacts

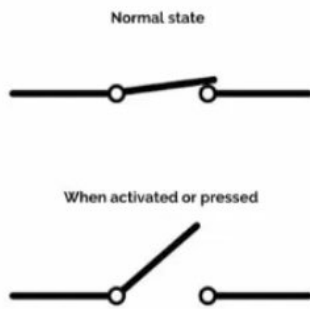
Text description of this image



Note

The Reduxi Gateway can use each relay output as permanently closed (**Normally Closed, NC**) or opened (**Normally Opened, NO**). The Panasonic heat pump uses the **NO** contacts.

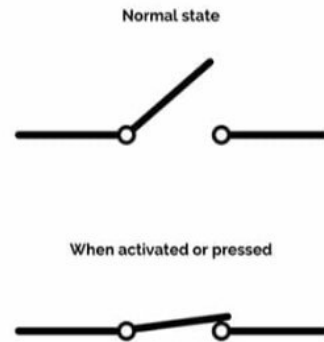
A normally closed (NC) contact/switch



Normally closed (NC)

Text description of this image

A normally open (NO) contact/switch



Normally open (NO)

2. Text description of this image

Diagram on a white background with the title "A

2.3 Connect the current sensors

The current sensors measure the current of the heat pump. They provide the real-time power consumption of the heat pump. The voltage comes from the Reduxi Controller. If it is not available, the default voltage of 230 V is used.

Connect the current sensors (CTs) from the Reduxi Gateway kit to the three inputs, one for each phase, as shown in the picture.



Current sensor inputs of the Reduxi Gateway

Text description of this image

Each current sensor covers one phase wire (L1, L2, L3) of the heat pump:



Current sensors on the phase wires

Text description of this image

3 Log in to the Reduxi web interface

You can open the Reduxi web interface in two ways:



REMOTE

Reduxi app

Via tunnel connection · works from anywhere



Web browser

In the local network · via IP address or reduxि.local

3.1 Via the Reduxi app

1 Open the app and log in

Launch the Reduxi app on your smartphone or tablet and log in with your credentials.

2 Open Reduxi devices

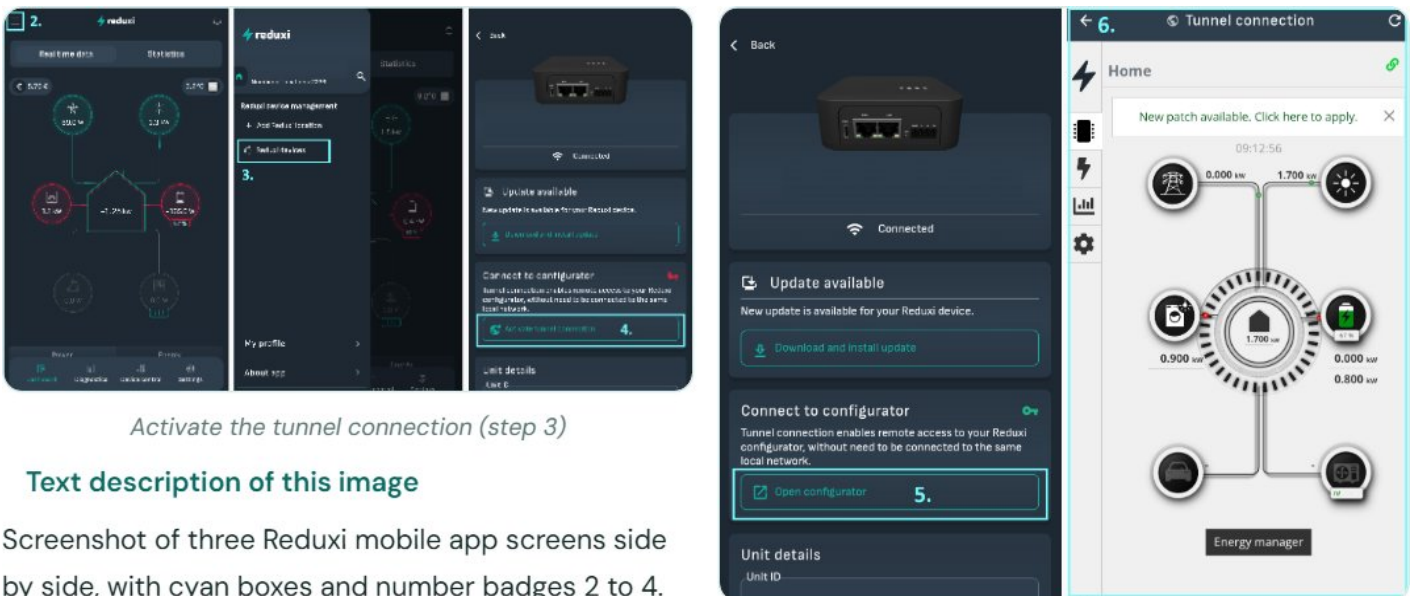
Tap the menu icon (three lines, top left) and select **Reduxi devices**.

3 Activate the tunnel connection

Switch on the tunnel connection and wait a moment until it is active.

4 Open the configurator

Tap **Open configurator**. The Reduxi web interface opens.



Activate the tunnel connection (step 3)

Text description of this image

Screenshot of three Reduxi mobile app screens side by side, with cyan boxes and number badges 2 to 4. Left screen (dashboard, dark theme): menu icon at top left marked with a box and badge 2; 'reduxi' logo; tabs 'Real time data' (active) and 'Statistics'; price 5.79

Open configurator (step 4)

2. Text description of this image

3.2 Via a web browser

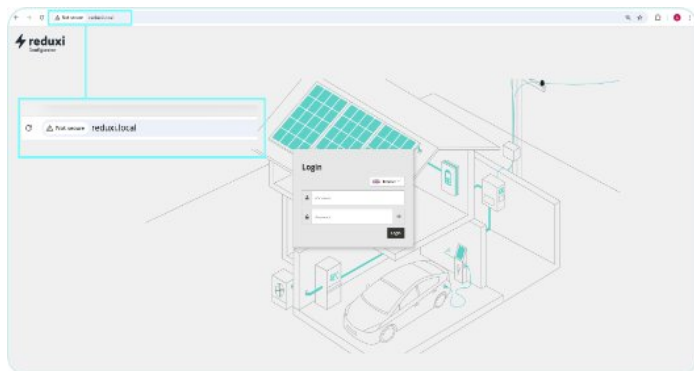
1 Open the login page

On a device in the same network, open a web browser and enter the controller's IP address or <http://reduxi.local>. You can find the controller's IP address in your router's device list or in the Reduxi app under **Reduxi devices**.

2

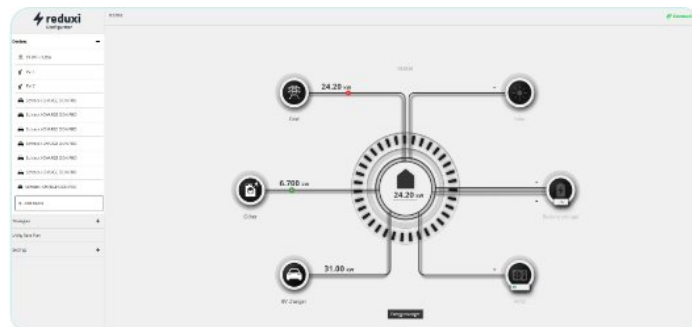
Log in

Username: **admin** · Password: **admin** (factory default)



Reduxi Controller login screen

Text description of this image



Controller web interface after login

2. Text description of this image

Screenshot of the Reduxi Configurator web interface

4 Add the heat pump to Reduxi

Use these steps to add a new heat pump or to edit an existing one.

4.1 Basic settings

Log in locally to the [Reduxi Configurator](#) on the controller (see [Point 3](#)) and press the **Add device** button.

reduxi[⚡]

CONFIGURATOR

Devices



Strategies



+ Add device

+ Add strategy

Settings

Profile

The Add device button

Text description of this image

In the first step (basic settings), select the basic parameters of the device:

- Device type: **HVAC**
- Type: **Reduxi Meter**
- Name: a name of your choice, for example **Panasonic HP**

The image shows a configuration interface with a progress bar at the top indicating three steps: 1. Basic settings, 2. Communication channel, and 3. Advanced settings. The first step, 'Basic settings', is active and contains a form with the following fields:

- Device type ***: A dropdown menu.
- Type ***: A dropdown menu.
- Name ***: A text input field.

At the bottom of the form are two buttons: 'Back' and 'Next'.

Basic settings: device type, type and name

Text description of this image

After you have entered everything, press **Next**.

4.2 Communication settings

The communication channel has three parts.

Part 1: connection between the Reduxi Gateway and the Reduxi Controller. Complete the fields as shown in the image. They are populated automatically.

basic settings Communication channel Network settings

Communication channel and device configuration

Connection *	TCP/IP
IP *	gateway.local
Port *	502
Modbus unit ID *	1

Part 1: gateway connection

Text description of this image

Part 2: current sensors of the Reduxi Gateway. Select **Auto detect from gateway** for all current sensors.

CT-S1	Auto detect from gateway
CT-S2	Auto detect from gateway
CT-S3	Auto detect from gateway

Part 2: current sensors

Text description of this image

Part 3: signals of the gateway relays.



Important

Enable the SG-ready contacts on the heat pump. Follow the instructions in the user manual of the heat pump.

11. Bivalent connection Set if heat pump linked with boiler operation. Connect the start signal of the boiler in boiler contact terminal (main PCB). Set Bivalent connection to YES. After that, please begin setting according to remote controller instruction. Boiler icon will be displayed on remote controller top screen. After Bivalent connection Set YES, there is two option of control pattern to be select. (SG Ready / Auto)	Initial setting: No	<table border="1"> <tr> <td>System setup</td> <td>12:00am, Mon</td> </tr> <tr> <td>Tank heater</td> <td></td> </tr> <tr> <td>Base pan heater</td> <td></td> </tr> <tr> <td>Alternative outdoor sensor</td> <td></td> </tr> <tr> <td>Bivalent connection</td> <td></td> </tr> <tr> <td>⬆ Select</td> <td>[↵] Confirm</td> </tr> </table>	System setup	12:00am, Mon	Tank heater		Base pan heater		Alternative outdoor sensor		Bivalent connection		⬆ Select	[↵] Confirm
System setup	12:00am, Mon													
Tank heater														
Base pan heater														
Alternative outdoor sensor														
Bivalent connection														
⬆ Select	[↵] Confirm													

Enabling the SG-ready contacts on the heat pump

Text description of this image

The complete definition of the SG-ready signals:

- SG control = YES or NO
- Capacity up setting 1
 - Heating capacity [50 ~ 150 %]★
 - DHW capacity [50 ~ 150 %]
- Capacity up setting 2
 - Heating capacity [50 ~ 150 %]★★
 - DHW capacity [50 ~ 150 %]

Control contents:

If SG control on remote control = "Yes", then following control only activate by digital input.

- **While Digital input is " 00 " (Normal operation)**
 - Normal operation. Once detect '00' system will operate back to normal condition.
(All the target set temperature for heating side and DHW side will return back to previous set temperature when digital signal change from "10" or "11" back to "00".)
- **While digital input is detected " 01 " (HP stop)★**
 - Heat pump & room heater & tank heater cannot operate.
(Solar control and Boiler back up and 2 Zone control can activate.)
- **While digital input is detected " 10 " (Capacity 1)**
 - Target temperature for heating and DHW Tank is changed according to the percentage set by Remote control setting.
 - Target water temperature of cooling is changed according to the adjustment value set by Remote control setting.
However, which setting temperature is change depend on system setting.
- **While digital input is detected " 11 " (Capacity 2)★★**
 - Target temperature for heating and DHW Tank is changed according to the percentage set by Remote control setting.
 - Target water temperature of cooling is changed according to the adjustment value set by Remote control setting.
However, which setting temperature is change depend on system setting.
- **While digital input is detected " 10 " (Capacity 1)**
 - Setting temperature for heating and Tank is changed.
However, which setting temperature is change depend on system setting.

Complete definition of the SG-ready signals

Text description of this image

The logic of the SG-ready signal combinations:

- 1) SG ready (Only available to set when Optional PCB set to YES)
- SG Ready input from Optional PCB terminal control ON/OFF of boiler and heat pump as below condition

SG signal		Operation pattern
Vcc-bit1	Vcc-bit2	
Open	Open	Heat pump OFF, Boiler OFF
Short	Open	Heat pump ON, Boiler OFF
Open	Short	Heat pump OFF, Boiler ON
Short	Short	Heat pump ON, Boiler ON

Logic of the SG-ready signal combinations

Text description of this image

MODE	RELAY 1	RELAY 2 (SG-READY)
ON (normal operation)	Opened (NO)	Opened (NO)
OFF (heat pump stop)	Opened (NO)	Closed (NC)
ECO (Capacity 1*)	Closed (NC)	Opened (NO)
BOOST (Capacity 2**)	Closed (NC)	NC

NO stands for normally opened. NC stands for normally closed.

Complete configuration of the relay signals in the Reduxi Configurator:

Complete relay signal configuration

Text description of this image

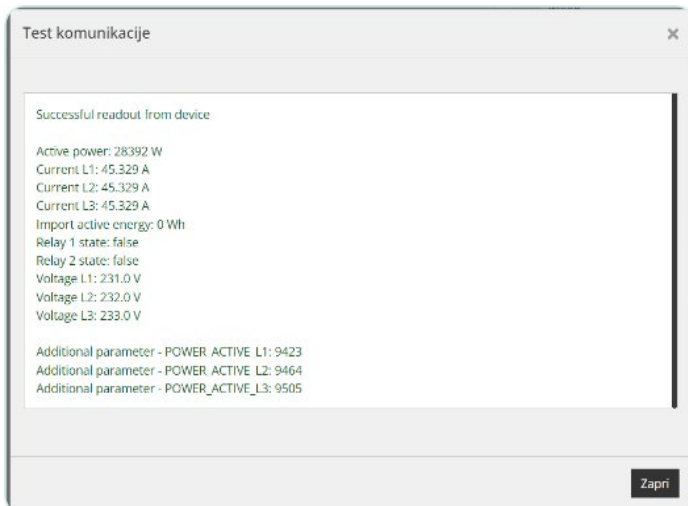
4.3 Test communication

Click **Test communication** at the lower right, below the communication parameters. It reads the device once and saves nothing.

The **Test communication** button

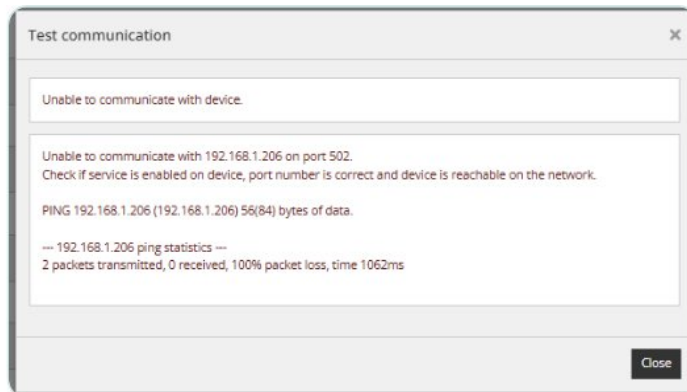
Text description of this image

The test returns one of two results:



1. Communication works properly

Text description of this image



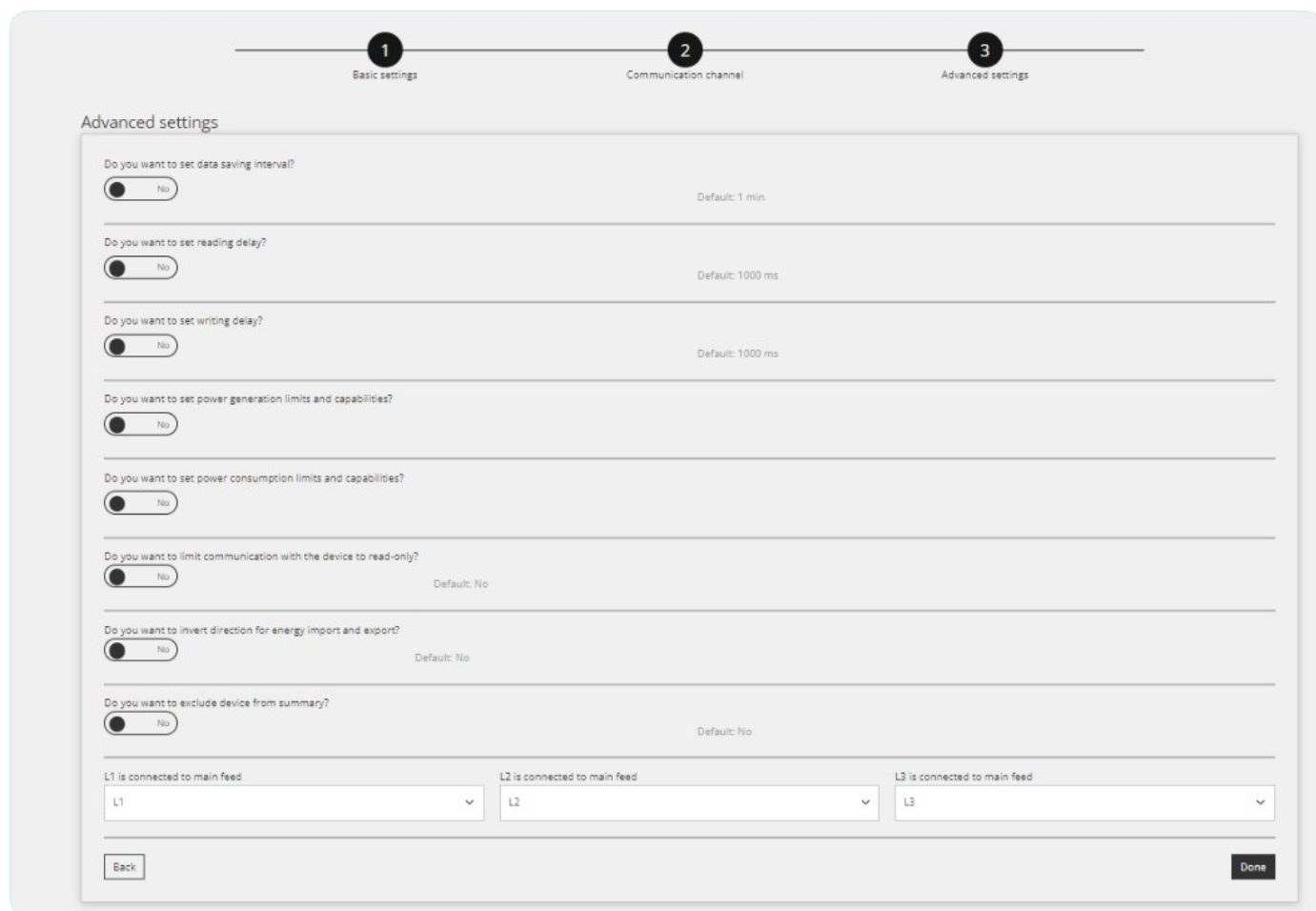
2. Communication does not work properly

2. Text description of this image

Screenshot of a dialog titled Test communication (close x at the top right). First box: Unable to communicate with device. Second box (red text):

4.4 Advanced settings

The advanced settings are optional. They depend on the location where the Reduxi Controller is installed.



Advanced settings

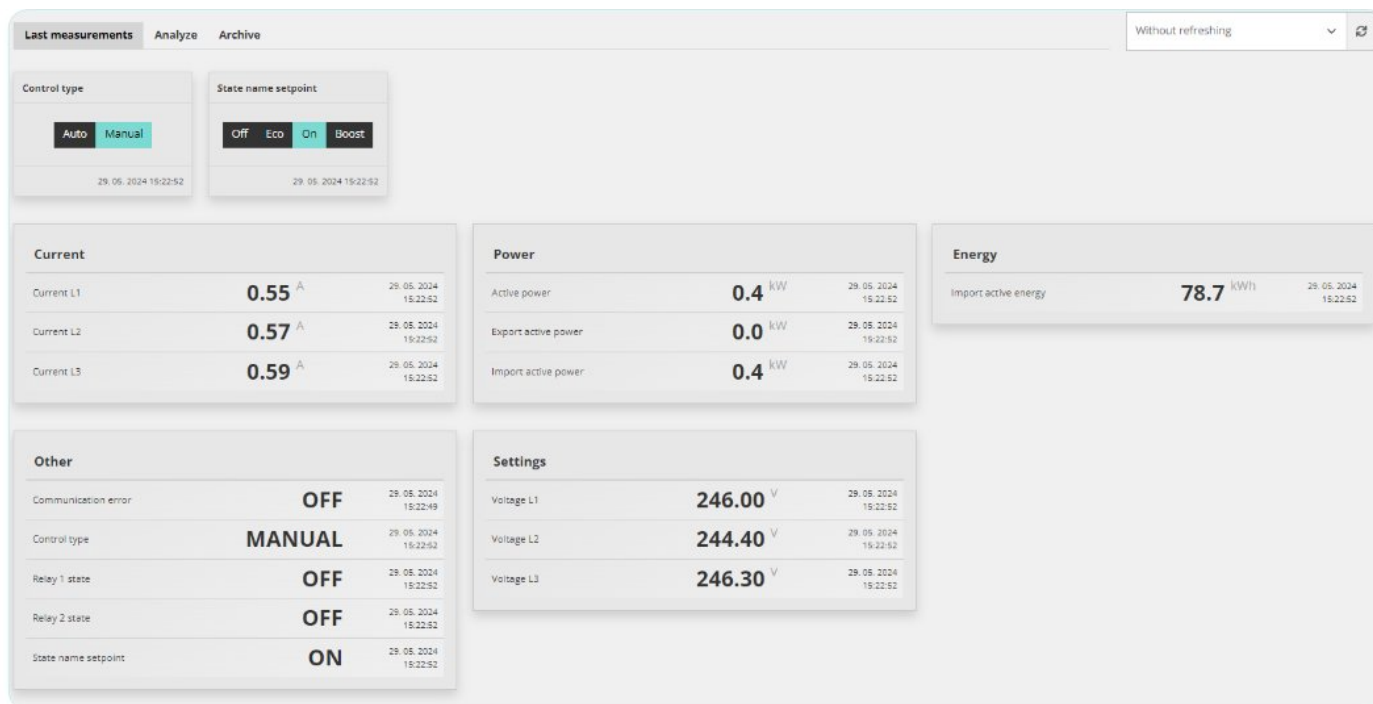
Text description of this image

After the last setting, press **Done** at the lower right. Only **Done** creates the device.

5 Check the readings

5.1 Last measurements

After communication is established, check the values under **Devices – Panasonic HP** in the **Reduxi Configurator** as an additional test.



Last measurements of the heat pump

Text description of this image

5.2 Enable control by Reduxi

For advanced heat pump control, integrate the device into the Reduxi system strategy. Under **Devices – Panasonic HP** in the Reduxi Configurator, set the **control type** to **AUTO**. Only then do strategy commands affect the heat pump.

To achieve maximum flexibility and energy cost reduction with dynamic prices and dynamic tariffs, define a strategy as described in [Strategies for Reduxi controller](#).

After you add the device and check the values, you can also inspect and control it in [the Reduxi application](#).

✓ Summary

Preparation (Point 1): Open the Panasonic documentation. Get the Reduxi Controller and the Reduxi Gateway with 3 current sensors.

Panasonic heat pump (Point 2): Connect the gateway relays to BIT 1, BIT 2 and VCC on CZ-NS5P. Mount the current sensors on the phases L1, L2 and L3.

Add to Reduxi (Points 3–4): Log in to the Reduxi web interface. Add the device with type Reduxi Meter, enable the SG-ready contacts on the heat pump, set the relay signals and test the communication.

Go live (Point 5): Check the last measurements. Set the control type to AUTO and define a strategy.

→ Common issues

ISSUE	SOLUTION
Heat pump does not change its mode	Check the wiring to BIT 1, BIT 2 and VCC (see Point 2.2). Check that the SG-ready contacts are enabled in the heat pump (see Point 4.2). Check that the control type is AUTO (see Point 5.2).
Power readings are missing or wrong	Check that each current sensor covers one phase wire L1, L2 or L3 (see Point 2.3). Check that Auto detect from gateway is selected for all current sensors (see Point 4.2).
Gateway not found in the communication settings	Add the Reduxi Gateway to the Reduxi Controller first, wirelessly (WLAN) or via UTP cable (LAN). See the Reduxi Gateway article.
Open configurator does not open or stays empty	The tunnel is not active yet. Wait about 30 seconds and check that the controller is online.
Login with <code>admin</code> is rejected	The password was changed during installation. Ask the installer. The Reduxi account password does not work here.
<code>reduxi.local</code> does not load	Your device is not in the same network as the controller. Use the IP address or the tunnel connection.
Communication test fails, device shows offline	Check reachability, IP address / port / unit ID, and that the protocol is enabled on the device.



Related articles

Matching guides from the Reduxi knowledge base:



Panasonic Aquarea PCB for additional functions

Optional PCB CZ-NS4P and CZ-NS5P for Aquarea heat pumps.



Device setup guides

All step-by-step guides for connecting devices to the Reduxi Controller



Strategies for the Reduxi Controller

Energy manager and other strategies explained