CHOFU

CONTROL PANEL
CMR-4100M
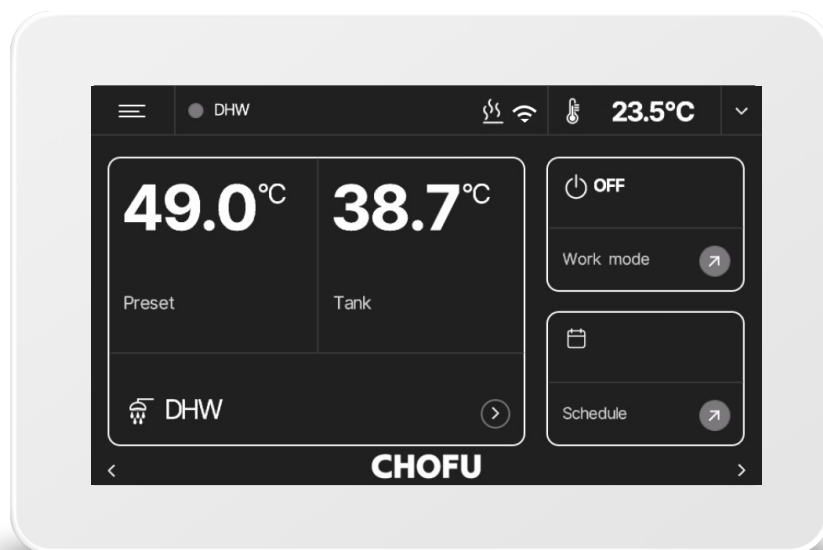
INSTALLATION AND OPERATION MANUAL

ISSUE: 1.0

CE

Made in UE

CHOFU

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Recommendations regarding safety

- Incorrect electrical connection between the control panel and heat pump may result in damage to both devices.
- Installation has to be carried out by an installer.
- The control panel manual is a supplement for heat pump technical documentation.
- User should read the manual thoroughly (we bear no responsibility for damages caused by non-observance of this manual).
- Keep this manual for future reference.

General information

The CMR-4100M control panel is designed to control the CHOFU heat pump. Provides connection to the local Wi-Fi (2.4 GHz, IEEE 802.11 B/G/N) and on-line control of the heat pump via a https://comfy-connect-chofu.jp website and Comfy Connect CHOFU APK/APP mobile application. The control panel acts as a thermostat and corrects the heat pump preset temperature if the room temperature is not appropriate.

☞ A description heat pump installation and operation is available in the main manual for the heat pump.

Control panel installation

The control panel is intended to be installed on the wall or placing it on the flat surface, only in dry room. Control panel cannot be used under water vapor condensation conditions and must be protected against water. The control panel must be installed on the height allowing its convenient use, typically 1.5 m over the floor. In order to reduce the interference of temperature measurement by the control panel, avoid sunny places with poor air circulation, close to the heating devices and places directly at doors and windows (typically at least 200 mm from the door edge).
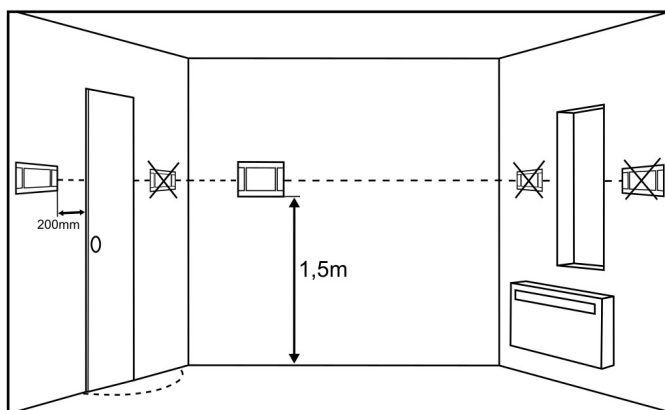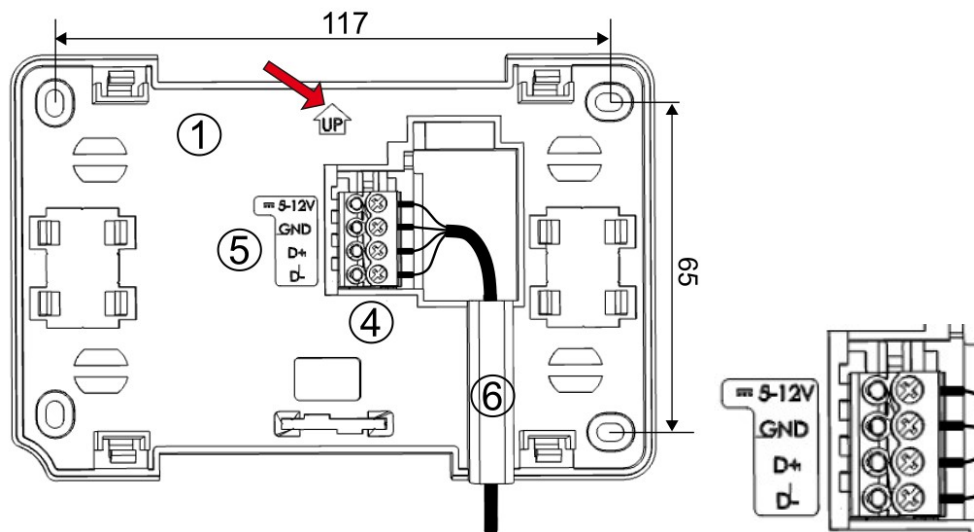

Installation.
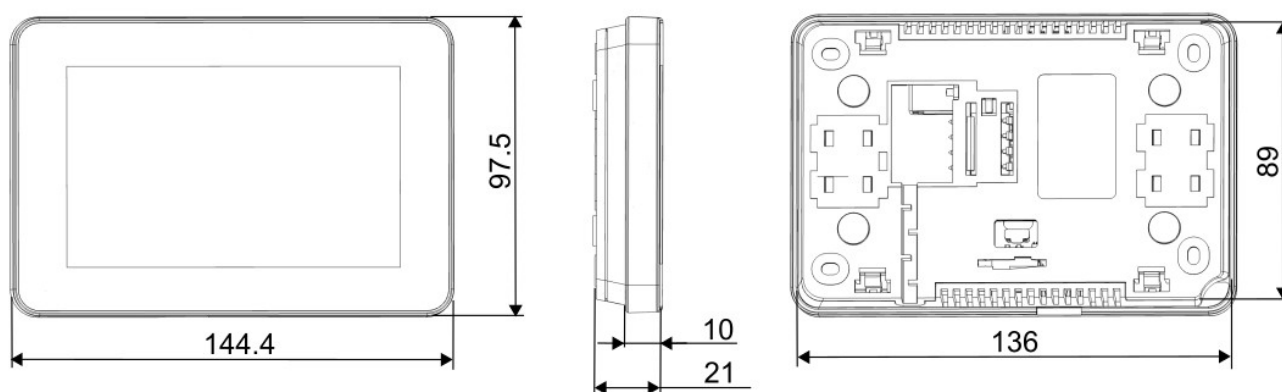
Disconnect the installation frame (1) from the back of control panel housing (2). The frame is attached to the panel housing with latches. Use a flat screwdriver to detach the frame. Using sharp tool cut out holes in four places of the cover (3) for the screw terminals.

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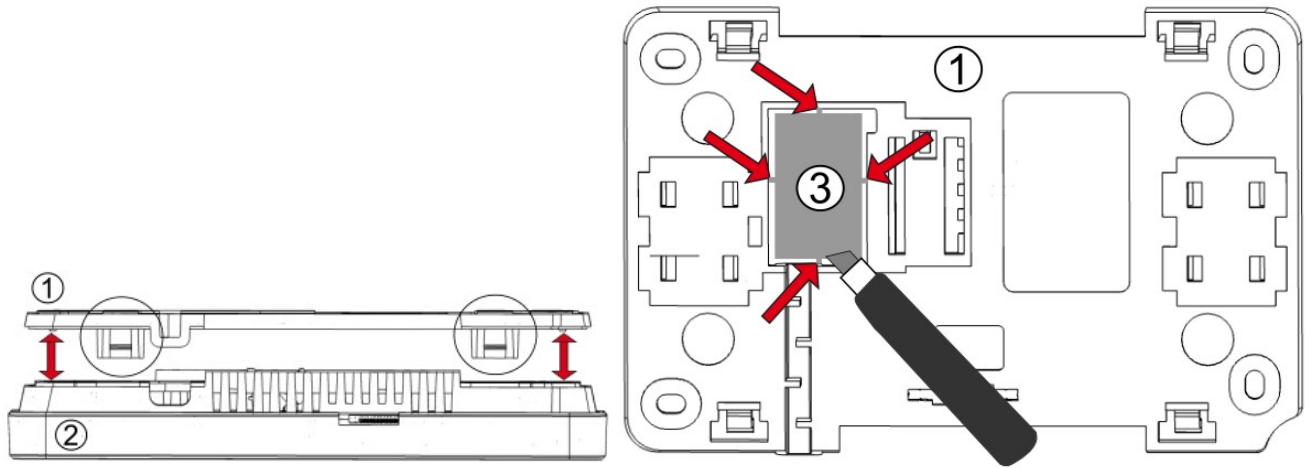
Connect the cable to the screw terminal (4) as described on the plate (5). The cable, if the diameter is suitable, can be routed in a cable tray (6).


Drill holes in the wall and using screws (max. Ø 3 mm) fix the installation frame in the selected place on the wall, maintaining its proper position (UPyh). The spacing of holes can be determined by placing the frame on the wall. Next fix the panel to the installation frame using latches.

Tip: before installation, please note/saved the serial number e.g. 1007585303 from the panel label plate to confirm installation confirmation in the Comfy Connect CHOFU. If the serial number is not saved, it can be read later from the information *Serial number* parameter in the *General settings/ Wi-Fi settings* control panel menu.
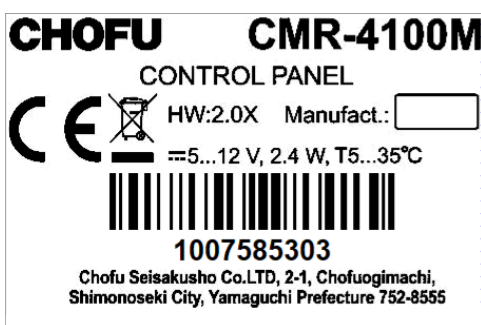

Label plate
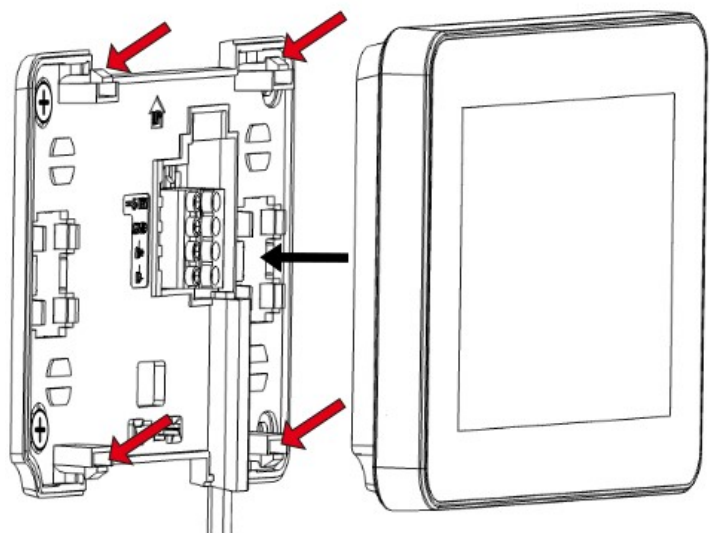
In order to place the control panel on a flat surface use a dedicated stand.
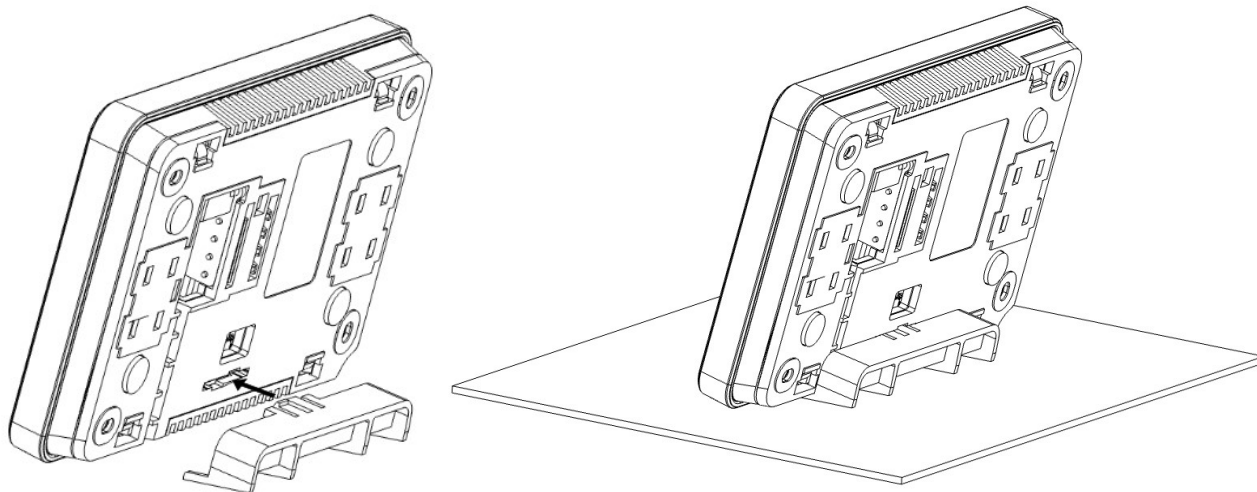
Electrical connection

1.Isolate the mains power supply for the unit from the power source. Do not connect the control panel cord with the power on.

2. Connect the control panel cord to the PCB(Terminal), Connect the control panel to No. 1 (12 VDC), No. 2 (GND), No. 15 (D+), and No. 16 (D-).
- Each terminal has a polarity, so be careful when connecting it.
- Take care not to let your screwdriver etc. touch any of the other electronic parts.
- Do not use a power driver. It can damage the terminal screw holes.

3. If shielded wire is used, connect it to Terminal No.3(GND) on the PCB(Terminal).
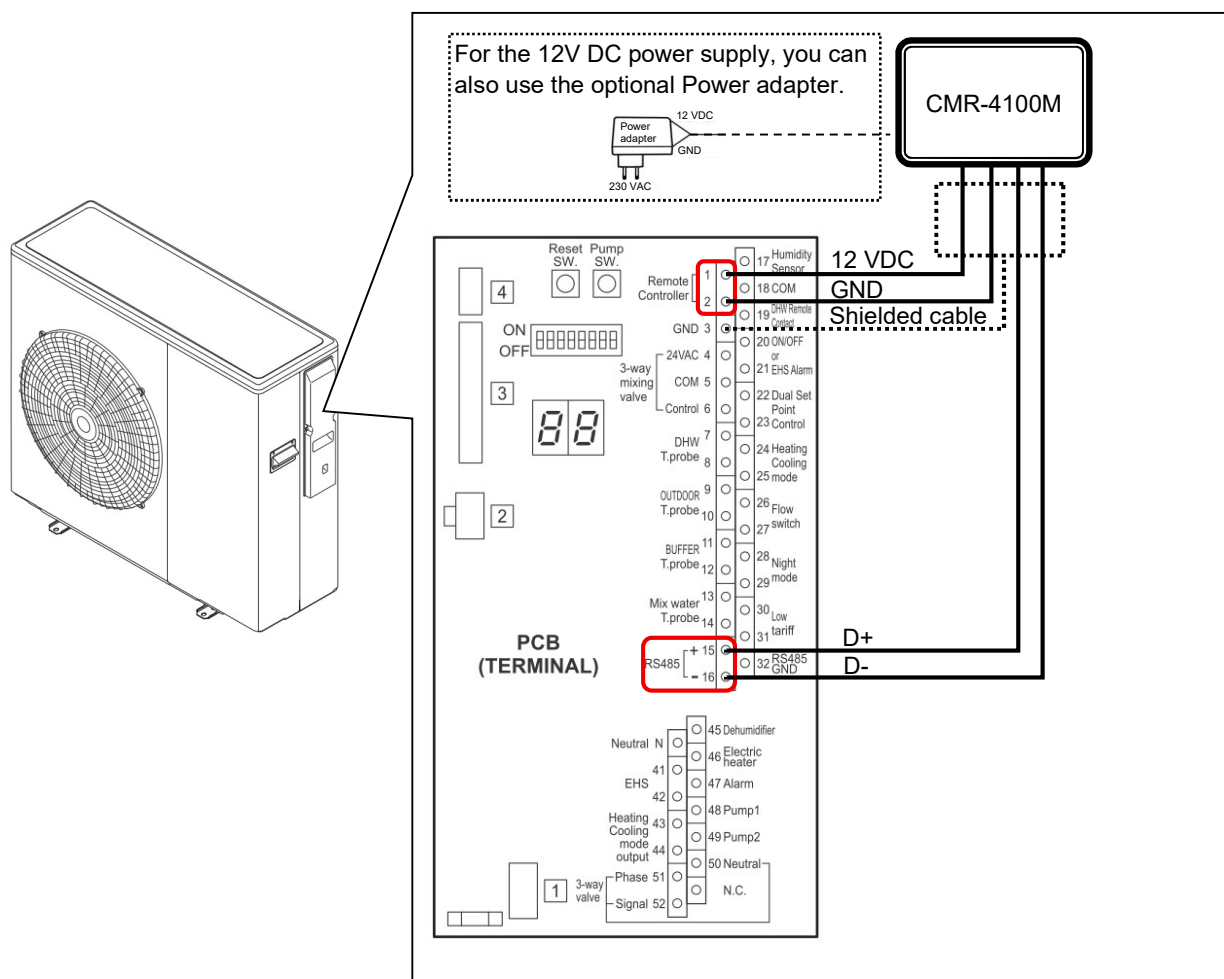
The maximum length of the Control panel cord is 100m.

Use shielded wire in case of the length with 25m or longer.

Connect the shielded wire to Terminal No.3(GND) on the PCB(Terminal).

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Distance	Cable(mm^2) cross-sectional area	Shield
Up to 25m	0.14 to 0.34	non-shielded
25 to 50m	0.34 to 1.00	shielded
50 to100m	MIN 1.00	

Cables with a larger cross-sectional area can be used in place of those with a smaller cross-sectional area.

5. Heat pump support

The heat pump parameters are edited by touching the selected symbol on the control panel screen. The main symbols mean:

☰	General settings: *Heat pump, DHW, Schedule, User settings, Service settings, Alarms, Instruction manual*	⚠	Heat pump active alarms.
⌄⌄ ^^ ⌄ ^	Setting value heat pump preset temperature. Selecting time intervals in the schedule.	🚿	DHW settings screen.
♨	Heating work mode is enabled.	⌾	Heat pump settings screen.
❄	Cooling word mode is enabled.	📶 📵	Wi-Fi settings and Wi-Fi status – connected or no connected gateway.
🌡	Outdoor temperature value.	⌄ ^ < <	Changing parameters/screens.
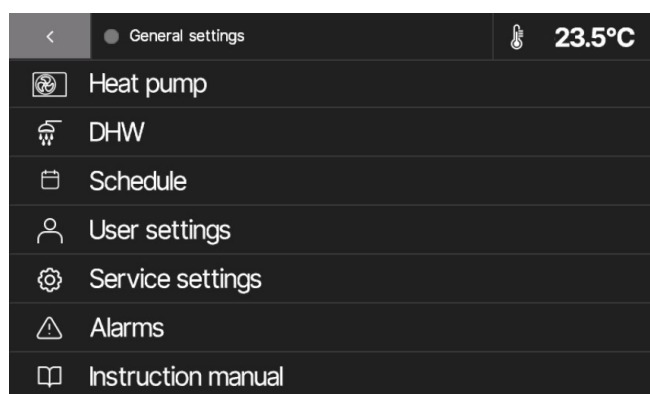
Heat pump settings.
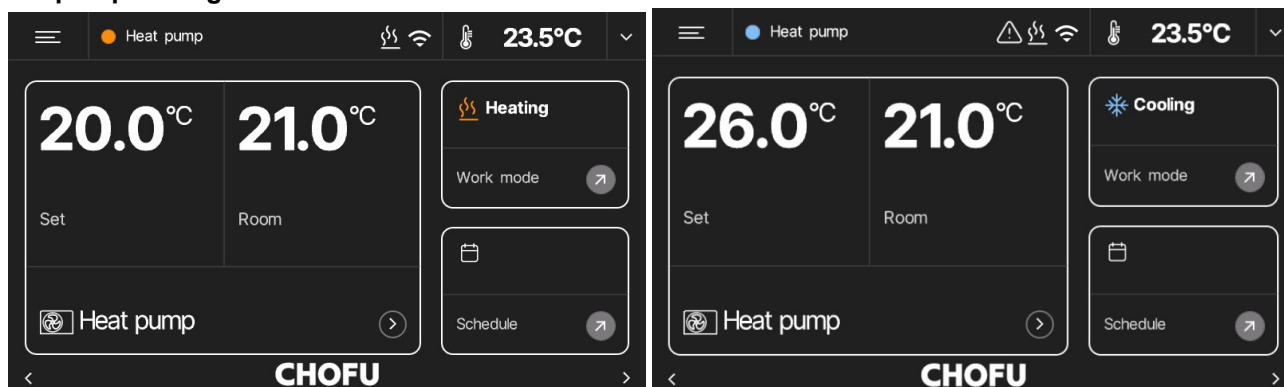
- *Work mode* – selection of the heat pump operating mode: *OFF* – the heat pump is off, *Heating* – the heat pump is working in heating mode, *Cooling* - the heat pump is working in cooling mode.
- *Schedule* – time zone setting in heating and cooling mode. To choose: *OFF, Comfort, Economy*.
- *Economy set temp. for Heating, Economy set temp. for Cooling, Comfort set temp. for Heating, Comfort set temp. for Cooling* - setting the set temperature for working modes in heating or cooling mode.
- *Installation* – turn on or off the heat pump installation support.
- *Schema* - heat pump installation scheme.

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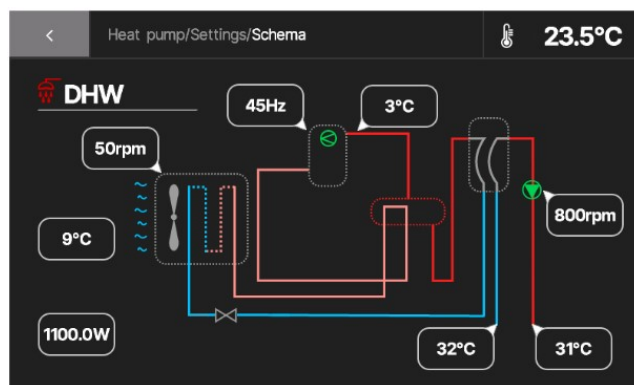
DHW settings.
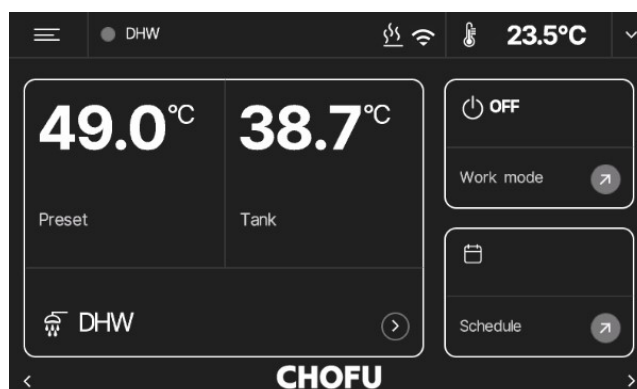
- *Work mode* – selection of the DHW tank operating mode.
- *OFF* – the DHW tank is off. The heat pump does not load the DHW tank, only the circuits.
- *Comfort* – setting the DHW temperature in *Comfort* mode.
- *Economy* - setting the DHW temperature in *Economy* mode.
- *DHW force mode* - Start DHW force mode, to charge the DHW tank until it reaches the over boost set point.
- *Schedule* – time schedule of loading the DHW tank to the set temperature.

> If the remote contact setting is enabled and used with Modbus parameters, the operation may differ from what is shown on the display or scheduled settings. If there are any inconveniences, please contact the Installer.

Schedule.

Turning on or off the time schedule and setting the time schedules for: *Heating mode, Cooling mode, DHW, Low tariff, Night mode*.
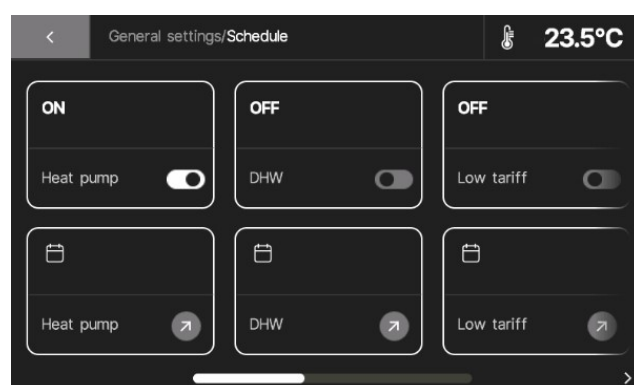
The edit working time screen, allows the user to set all modes for each day of the week.
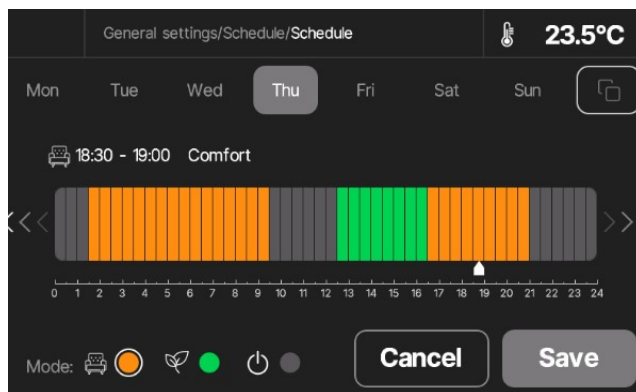
At the top of the screen the user can select the day for which the schedule is being currently set. The upper right part of the screen contains a button that allows the schedule settings to be copied between the selected days of the week. At the bottom of the screen, there is a selection of the mode. The currently selected mode is displayed in the central part of the screen.

Timer setting for the determinate day:

1. select the day of the week.

2. select the start time of the respective mode.

3. select the work mode.

It is possible to set more than one intervale per day, to set the next interval move the indicator to the desired time.

4. then use the arrows to move the indicator again.

To copy the settings of the day, click on the button. A message about copying schedules will appear in the center of the screen.
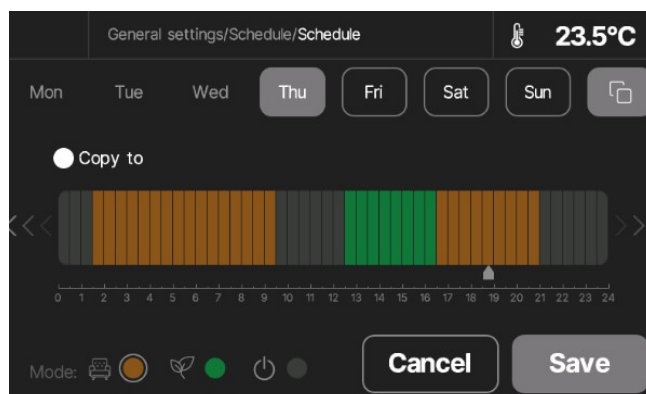
Then select the days to which the currently set schedule will be copied. When the copying is complete, press the *Save* button.

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User settings.
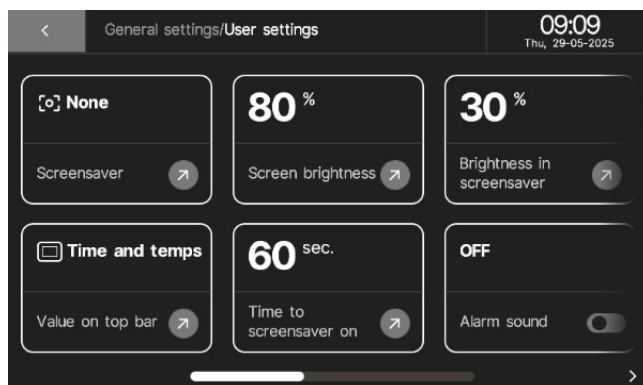
- *Screensaver* - screen saver selection: *None, Economy, Time, Time and temperature*.
- *Screen brightness* - screen brightness intensity.
- *Brightness in screen save* – screen brightness when the screen saver is active.
- *Value on top bar* - toggle the display of values on the top bar: *Outdoor air temp., Time and temps, Time*., Humidity and Time and humidity.
- *Time to screen save on* – time to start the screen saver after the time of inactivity.
- *Screen lock* – turn the screen lock on or off. When the screensaver's set time is reached, the screen will lock. To unlock, press and hold the lock screen.
- *Alarm sound* – turn on or off the alarm sound.
- *Touch sound* - turn on or off keys sound when pressed on the screen.
- *Firmware version* - firmware version: panel, Wi-Fi, Heat pump.
- *Time – Date/Time* setting.
- *Language* - menu language selection.
    - *Panel temperature correction* - Temperature sensor built into the panel and correction of room temperature values. Room temperature can be measured using a thermometer or similar device, and the difference between this measured value and the temperature displayed on the panel can be input as the value for this parameter to make a correction.

To prevent sudden and significant temperature fluctuations from disturbing the system, the temperature reading is averaged using a moving average algorithm. Also, to prevent distortion of the temperature reading as a result of the user operating the panel (e.g. due to human body heat or the temperature rise of internal electronic components), the reading is blocked for a specific period of time.

- *Timezone* - time zone selection. When changing the time zone, Wi-Fi will be temporarily disconnected due to the Wi-Fi module restarting. If the connection cannot be established after waiting for a while, please go to General settings / Wi-Fi settings, turn the Wi-Fi module OFF once, and then turn it ON.
- *Firmware update* - firmware update is possible via Wi-Fi (website or mobile application) or via the microSD HC memory card (max. 32 GB, FAT32 files format) inserted into a slot in the control panel housing. The card should contain the new firmware in *.pfc format (the new firmware should be copied directly to the memory card, not to a subdirectory). In order to replace the firmware, insert the memory card into the control panel slot. The firmware will be replaced automatically after inserting the card.

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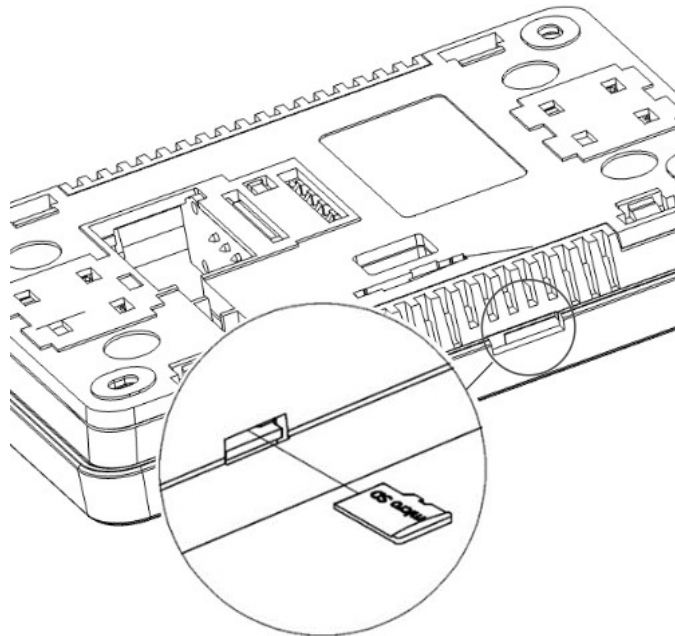
WI-FI settings - only Wi-Fi 2.4 GHz, IEEE 802.11 B/G/N network.

- *Communication mode* – select Wi-Fi mode.
- *SSID* - enter the SSID.
- *Password* - enter the Wi-Fi password.
- *ecoNET Wi-Fi status*
  - *Status* - information about the connection Wi-Fi to the Comfy Connect CHOFU,
  - *Serial number* - control panel serial number to add the installation in the Comfy Connect CHOFU,
  - *Token* - generated one-time password to add the installation in the Comfy Connect CHOFU.
- *Wi-Fi module* - enable *ON* or disable *OFF* the Wi-Fi support in control panel.
- *Signal strength* - (information in %) indicates the strength of the Wi-Fi signal.

Service settings – (Installer: 1245).
The menu available after entering the password.

- *Modbus settings* - the following parameters must be set for proper communication:
  - *Address* – enables setting control panel Modbus address. The address must be different from the heat pump address set. Set: 1.
  - *Band rate* – the desired Modbus transmission rate (settings: 9600, 19200). Default set: 19200.
  - *Parity* – possibility of error control by assimilating the sum of the frame to the value of the additional parity bit. Default set: none.
  - *Stop bits* - number of stop bits terminating a Modbus frame (settings: 1, 2). Default set: 2.

   Parameters: *Band rate, Stop bits, Parity* must be configured identically in all devices on the line. Otherwise, the connection will not be established.

- *Operation time* – the heat pump operating total time.
  - *Accumulated power-on time* – the heat pump total power-on time.
  - *Accumulated rum time* – the heat pump total operation time.
  - *Accumulated heating run time* – the heat pump operating total time in heating mode.
  - *Accumulated cooling run time* – the heat pump operating total time in cooling mode.
  - *Accumulated DHW run time* – the heat pump operating total time in DHW mode.
- *Delete error history* – deleting heat pump all alarms history.
- *Sensor value* - correction to the value measured by the outdoor sensor.

Error history
Errors/codes history code recorded in the heat pump controller.

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The heat pump controller's memory records both the start and end of the alarm (indicated by green and red symbols, respectively). The time and date are correlated with those set on the control panel, so make sure you set them correctly.

Alarms

Please refer to the Installation and instruction manual for "AIR TO WATER HEAT PUMP".
The control panel and heat pump manual is available in the QR code on the screen and heat pump manufacturer link: Manual

6. Remote access to installation

The control panel must be connected to the WI-FI and Comfy Connect CHOFU server - the icon is displayed.

1. Log in to the https://www.comfy-connect-chofu.com website or to the Comfy Connect CHOFU mobile application. Download the Comfy Connect CHOFU apk/app from the QR code or active link below.

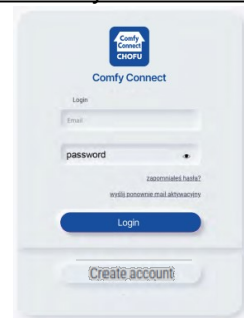| Android APK	iOS APP	https://www.comfy-connect-chofu.com

(for Android only from 8.0 version)

The first time attempt to use the website/mobile application, you must *Create account* in the Comfy Connect CHOFU.
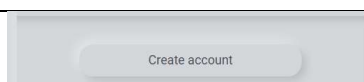
2. After successful login, a screen *Choose installation* will be displayed allowing to create an installation.
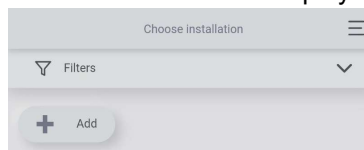
3. After clicking the "+ Add" button, the process of adding the installation to your account will begin. Give a name e.g. "My home" to your installation and enter the serial number e.g. 1007585303 read from the control panel label plate or read from the information *Serial number* parameter in the *ecoNET Wi-Fi status* menu.

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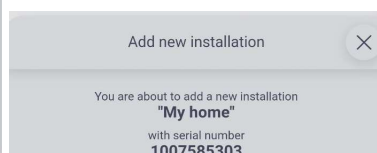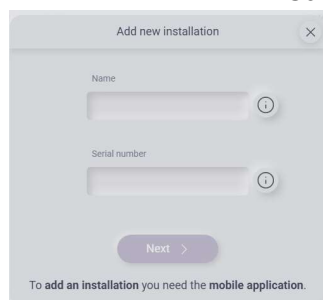
4. Once the serial number is entered correctly, the user will be redirected to the marketing consent acceptance screen and Remote Access Service acceptance screen.
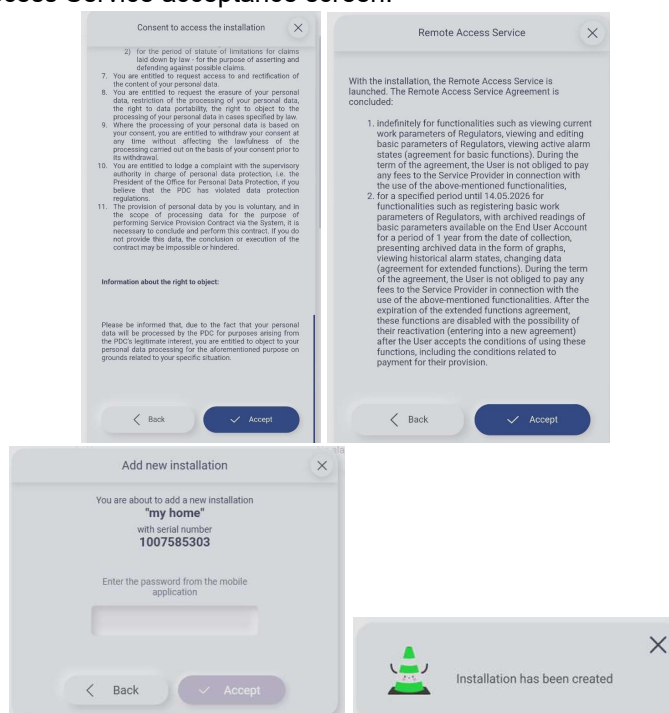
5. After entering the added installation (choose *Open*), need to add a component (select ⌂ icon).

6. After clicking on the "+" icon/tile, the component will be detected automatically. After adding the component, can proceed to control the heat pump via the website/mobile application.

7.Technical data

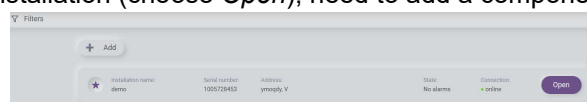| Power adapter (Option)	5…12 VDC, min. 400 mA – from the external power supply.
Power consumption	Max. 2.4 W
Protection level	IP 20
Ambient temp.	0..50°C
Storage temp.	0..65°C
Temperature measuring range	5..35°C
Hysteresis	0.2..5°C
Relative humidity	5…85%, without water vapor condensation.
Display	Color, graphical 800x480 pix, with touch panel.
Transmission	• RS485 (Modbus RTU protocol) with PCB(Terminal) • Wi-Fi 2.4 GHz, IEEE 802.11 B/G/N with website and mobile application
Dimensions	144.4 x 97.5 x 23 mm
Standards	EN 60730-2-9, EN 60730-1
Software update	• via only microSD HC type card (max. 32GB, FAT32 files format) via Wi-Fi by website/mobile application
Installation method	• On the wall or stand (dedicated stand)

Unit box composition: CMR-4100M control panel, control panel mounting frame.

8.Exploitation conditions
Do not expose the control panel to direct weather conditions (rain, sunlight) and vibrations greater than typical during wheeled transport. Do not use in conditions of condensation and protect from water.

9.Cleaning and maintenance procedures
The outer surface and maintenance of the control panel screen.
• The device should be cleaned with a soft, dry cloth.
• It is not allowed to clean the device with a flammable agent or substance (i.e. benzene or any kind of solvents) or a wet cloth. Such treatment can lead to malfunction of the device.

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- It is not allowed to scratch the screen with nails or other sharp objects. It can lead to scratches or damage of the device.
- It is not allowed to clean the device by spraying water on it. If the water gets inside of the device it can cause a fire or lead to electrocution or damage the device.

10.Directive WEEE 2012/19/UE

Purchased product is designed and made of materials of highest quality.

The product meets the requirements of the Directive 2012/19/EU of 4 July 2012 on waste electrical and electronic equipment (WEEE), according to which it is marked by the symbol of crossed-out wheeled bin, meaning that product is subjected to separate collection.

Responsibilities after finishing a period of using product:

- dispose of the packaging and product at the end of their period of use in an appropriate recycling facility,
- do not dispose of the product with other unsorted waste,
- do not burn the product.

By adhering obligations of waste electrical and electronic equipment controlled disposal mentioned above, you avoid harmful.

11.Declaration of conformity

The purchased product meets the requirements of Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonization of the laws of the Member States concerning making available on the market of radio equipment and does not cause harmful interference with radio communications to other equipment, in a residential area, provided that the product is correctly installed and used in accordance with the requirements of this manual.

12.Information about documentation

The control panel manual is a supplement for the heat pump manual. In particular, except for this manual, the heat pump manual should also be observed. We are not responsible for any damages caused by failure to observe these manuals.

This manual, as well as any other applicable documentation, should be stored diligently, so that it was available at any time. In the case of removal or sale of the device, the attached documentation should be handed over to the new user / owner.

Changes register:

☞ The control panel manufacturer reserves a right for making improvements and modifications of the products.

CHOFU

Heat pump manufacturer:
Chofu Seisakusho Co. LTD, 2-1, Chofu Ogi-machi, Shimonoseki-City, Yamaguchi Pref. 752-8555
https://www.chofuglobal.com

plum H V A C

Control panel manufacturer:
Plum Sp. z o.o., ul. Wspólna 19, Ignatki 16-001 Kleosin, Poland
National Waste Database No.: 000009381
https://hvac.plum.pl/en/hvac-home

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