

PRODUCT
UPDATE
V2 RELEASE



HEAT PUMP CONTROLLER V2
MANUAL

INSTALLATION
OPERATION
MAINTENANCE



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IMPORTANT

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

WARNING

This appliance may deliver water at high temperature. Refer to the Plumbing Code of Australia (PCA), local requirements and installation instructions to determine if additional delivery temperature control is required.

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PRODUCT UPDATE V2 RELEASE

APRIL 2023 PRODUCT SUPPLY CHANGES

As of April 2023, Reclaim Energy will launch the next generation of heat pump with some substantial improvements. Unless specified below, all other parameters/specifications are the same between V1 and V2 models. The two key changes are summarised in Table A and Table B below:

	V1	V2
STATUS	DISCONTINUED FROM 2023	AVAILABLE FROM 2023
Model Name	EHPE-4540P	EHPE-4550P-A
Max rated power input (kW)	2.3	2.5
COMPRESSOR		
Compressing volume (cm ³)	3.80	4.5
Refrigeration Capacity (W)	3470	4900
Communications with the controller	RJ45 cable	Modbus
Connectivity to controllers	V1 & V1.1 models ONLY	V1, V1.1, V2 models

Table A: Key updates on the Reclaim Energy heat pump

V1 – DISCONTINUED



COMES WITH:

- Power cable
- Temperature sensor cable
- RJ45 cable

V1.1



COMES WITH:

- Power cable
- Temperature sensor cable
- RJ45 cable

V2



COMES WITH:

- Power cable
- Temperature sensor cable
- Modbus cable

Figure A: The images of 3 controllers

	V1	V1.1	V2
STATUS	DISCONTINUED FROM 2023	AVAILABLE FROM FEBRUARY 2023	SOFT LAUNCH FROM APRIL 2023
Connectivity to heat pump	RJ 45 cable	RJ 45 cable	Modbus
Connectivity to PV inverters and home management systems	Not available	Dry Contact	
Connectivity to Reclaim Mobile app using house Wifi	Not available		Available
Option 1	24/7 time-block		
Option 2	10 pm – 7 am		
Option 3	Midnight – 6 am		
Option 4	10 am – 4 pm		
Option 5	Two time-blocks – first must be set for a minimum of 6 hours and second can be set as little as 0 hours!	Two time-blocks – first must be set for a minimum of 3 hours and second can be set as little as 0 hours!	Two time-blocks – first must be set for a minimum of 3 hours and second can be set as little as 0 hours! Additionally, the turn on temperature can be adjusted for the second time block (i.e., default is 37°C)
Option 6	N/A	One shot boost is activated by a dry contact signal from home management or PV inverters or dry contact smart switches. This is called "Remote" option.	Two time-blocks – first must set for a minimum of 3 hours and second can be set for as little as 0 hours! Additionally, both turn on and turn off temperatures can be adjusted for the second time block (i.e. default is 37°C & 59°C respectively).
Option 7	N/A		One shot boost is activated by a dry contact/modbus signal from home management or PV inverters or dry contact smart switches. This is called "Remote" option. Additionally, a time clock should be adjusted for when the signal is not received by the controller in the 18-hour cycle (i.e. this is to ensure any legionella bacterial growth is controlled in a 24 hour cycle).
Option 8	N/A		Holiday Mode (Trial) – this option is recommended if the hot water user does not require hot water at least 7 days per week. A day and time of the week is to be selected, the heat pump will start at the specified day/time ONCE per week to meet legionella requirements by AS 3498. As per the normal operation of the heat pump, there may be additional cycles over winter for the anti-freeze function operation. (i.e. heating of the water if water in the pipes drops below approximately 3°C).
Boost function	Available		
Manual Boost function	Available / Website		
Manuals	Website		

Table B: Key updates on the Reclaim Energy controllers

BEFORE YOU BEGIN INSTALLATION

Case tools required	Phillips 1 screwdriver for lid screws (if required to remove cover) Pozi 2 screwdriver for mounting screws
	READ THESE SAFETY PRECAUTIONS and LIMIT OF LIABILITY BEFORE YOU BEGIN The following pages contain instructions for qualified personnel only. They involve potentially hazardous adjustments and high voltage mains wiring information.
General Safety Precautions	The installation is to be checked at least annually for damage or malfunction. All servicing is to be carried out by qualified personnel only. All aspects of the installation must comply with local electrical and plumbing regulations.
WARNING	These products are not designed for use in, and should not be used for, applications which are in conjunction with items that are critical to any person's health (e.g., life support systems). For any critical installation, independent fail-safe back-up systems must always be implemented.
Installation Precautions	Make sure the controller is installed out of direct sunlight, flammable liquids, or radiant heat sources. Power leads must face directly down. Ensure controller is in a safe environment for users to inspect display panel. Sensor leads should be kept 300mm (12 inches) away from mains and comms cables if run parallel to those cables. A readily accessible power disconnect device is required.



CAUTION

**Dangerous Voltages may be present.
No user serviceable parts.**

**Protective enclosure must only be opened
by qualified personnel.**

**Remove ALL power sources before removing
protective cover. The Reclaim Controller must
be installed by a qualified person.**

**Ensure suitable over-current protection and RCD
protection for the Reclaim Controller is in place.**



FIRST TIME COMMISSIONING PROCEDURE

The following steps are required during the commissioning of controller:

1. The controller is connected to the power point and has power on it.

2. The correct version of controller is chosen on the heat pump.

- a. V2 controller required "r1" to be set at "2". This can be checked as follows on the PCB main of the heat pump. Change the value of "r1" to "2" as follows:
 - i. Press and hold UP (▲) and DOWN (▼) buttons.
 - ii. The value displayed is "r1" & "1".
 - iii. Change the value of "r1" to "2" by pressing the RIGHT (▶) or LEFT (◀) button.
 - iv. Press and hold UP (▲) and DOWN (▼) button to complete the setting when display returns to its original display (i.e. blank display).
 - v. To check if "r1" & "2" is established, try step 1 one additional time and then go to step 4 to exit.

3. The controller shows the correct time of day: SETTING THE TIME OF DAY

- a. If the LCD backlight is OFF, press any key once to turn it ON.
- b. Press the OK button once to enter the Setup Menu, "1. OPERATION MODE" is displayed.
- c. Press the ↓ button once, "2. CLOCK" is displayed.
- d. Press the OK button once, "AUTO SET TIME > YES" is displayed.
 - i. If the controller is not connected to Wi-Fi:
 - press the ↑ button or ↓ button to change the option to NO.
 - press the OK button to proceed, e.g. "SET DATE > 2023/01/01" is displayed.
 - o press the ↑ button or ↓ button to change the value of the Year/Month/Day.
 - o press the ← button or → button to move the position of the blinking cursor.
 - press the OK button to proceed and validate the date, e.g., "SET TIME > 12:00 AM" is displayed.
 - o press the ↑ button or ↓ button to change the value of the Hour/Minute.
 - o press the ← button or → button to move the position of the blinking cursor.
 - press the OK button to proceed and validate the time.

ii. If the controller is connected to Wi-Fi:

- press the OK button to proceed, "LOCATION > VIC" is displayed.
- press the ↑ button or ↓ button to change the location as required.
- press the OK button to validate, "AUTO ADJUST DST > YES" is displayed.
- press the ↑ button or ↓ button to change the option to YES or NO as required (select YES if Daylight Savings Time is applicable at the selected Location)
- press the OK button to validate.

The controller will then sync the clock with internet time according to the Location and DST settings.

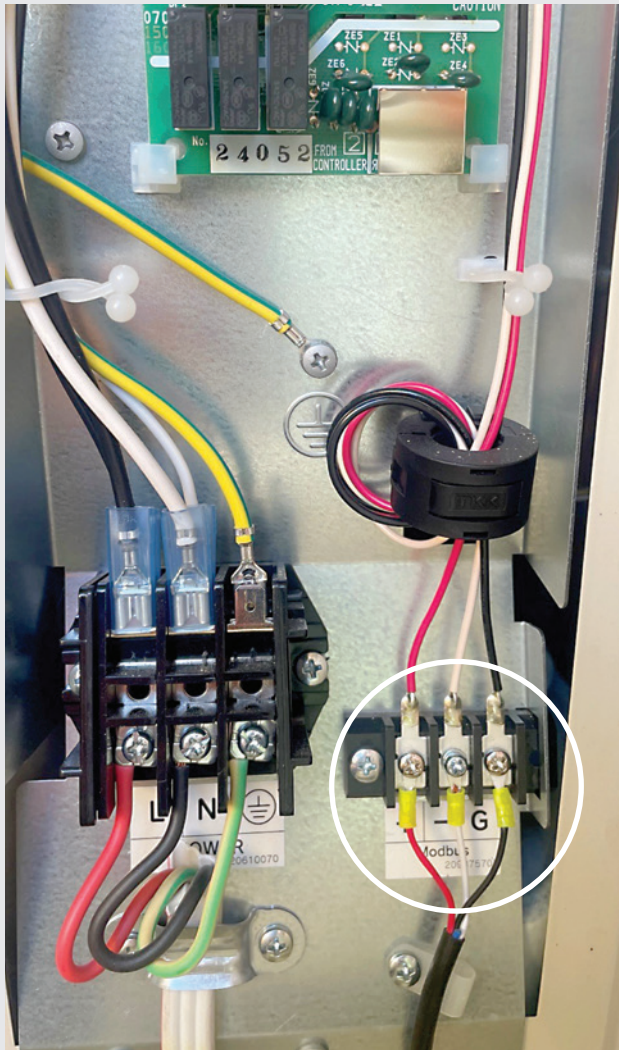
To validate the clock time is correct scroll to the Date/Time status display screen.

NOTE

Note: If no button is pressed for 60 seconds, the display reverts to Status Display Mode.

FIRST TIME COMMISSIONING PROCEDURE CONT.

4. Connect the ring terminals of the Modbus cable to the Modbus Port of the Heat Pump following colour code.



5. Initiate the purge cycle. To activate Purge Mode, perform the following steps:

- If the LCD backlight is OFF, press any key once to turn it ON.
- Press and hold down the OK button for 5 seconds.
- The LCD will display the Heat Pump Temperature screen for 20seconds.
e.g.: "HEAT PUMP: PURGE > TANK:58"
- The LCD will then display the Purge status screen.
e.g.: "PURGE ON > 10:00AM-10:05AM"
- The heat pump heat-up operation will be stopped, if active.
- The heat pump air purge operation will start and remain active for 5 minutes as indicated by the time.
- After 5 minutes has elapsed, the purge output will turn off.
- All control functionalities will resume.

NOTE

Note: Purge mode can be turned off at any time, by pressing and holding the OK button for 5 seconds. Purge mode is automatically turned off if the module is currently displaying heat pump Modbus error or other heat pump error code.

INSTALLING THE RECLAIM CONTROLLER

MOUNTING

- Fix mounting bracket to a solid structure with the screws and wall plug kit provided.
- Slide the controller on, locking it in place.
- To remove unit, lift and gently pull away from structure.

SENSOR MOUNTING

WARNING: IT IS CRITICAL THE SENSOR IS MOUNTED CORRECTLY FOR ACCURATE READINGS, SAFE AND EFFICIENT OPERATION OF THE SYSTEM, DURABILITY OF THE SENSORS.

- The sensor should be fitted into a dry metal immersion 'pocket' in the hot water cylinder.
- Apply plenty of heat transfer compound (available from your distributor) between the sensor and the lining of the 'pocket'.
- Insert the rubber sleeve into the 'pocket' and tighten the cable gland.
- Seal against water ingress where the cable exists the cylinder with neutral cure silicon.

CONNECT TO HEAT PUMP

- Connect the ring terminals of the Modbus cable to the Modbus Port of the Heat Pump

CONNECT PV REMOTE WIRES (ONLY IF APPLICABLE)

- Push the PV Remote Wires through the slit rubber grommet and connect them to terminal block J7.

PLUG IN THE CONTROLLER TO THE POWER SOURCE

- Before powering up read all safety instructions, warnings and liability statements.
- Controller will run through start up checks and begin operating according to default settings. The controller will display the date/time it thinks it is. Page 7 has details on how to adjust the date/time.

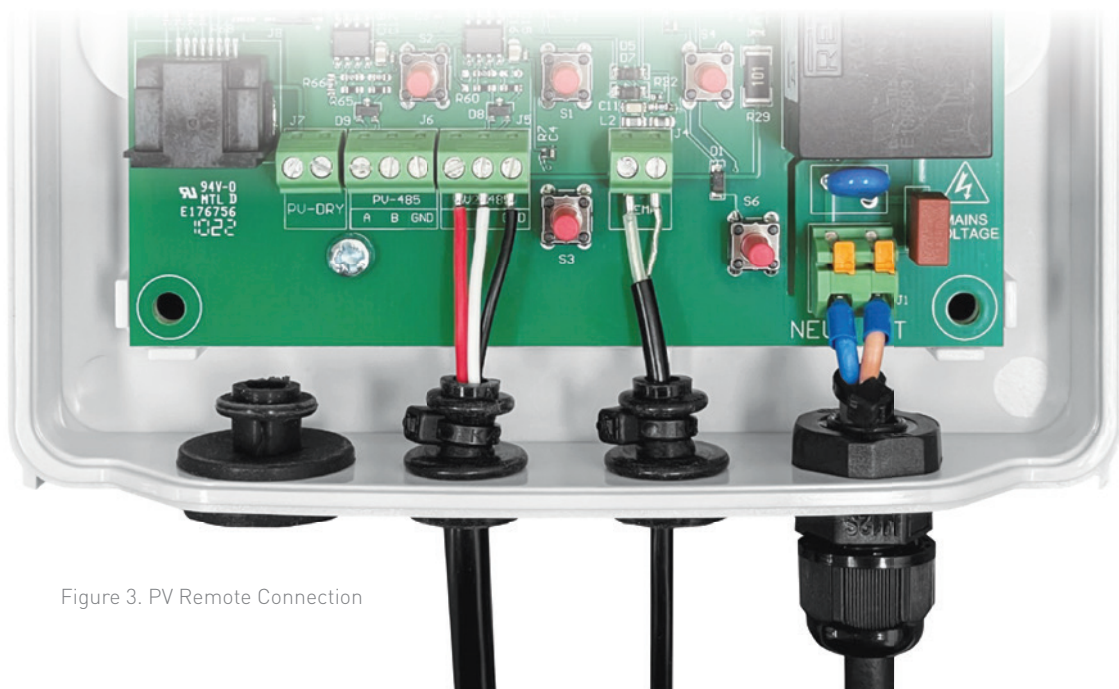


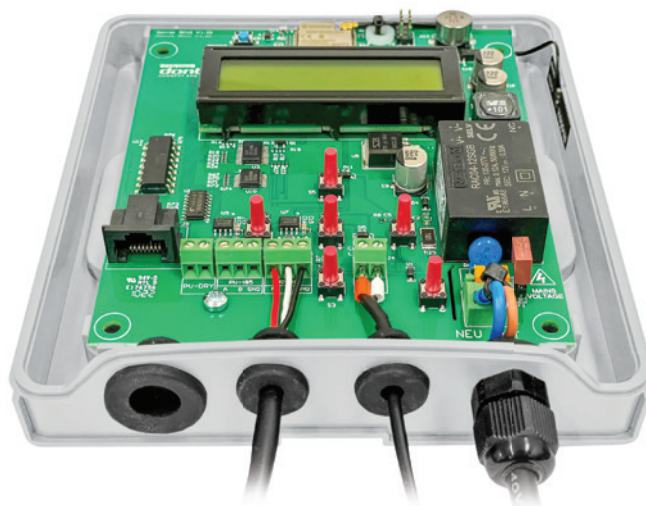
Figure 3. PV Remote Connection

1. INTRODUCTION

1.1 V2 CONTROLLER

The controller comes with

- Modbus Cable 1.5m
- Temperature Sensor 2.5m
- Power Cable 1.5m



1.2 INTERFACE

The user interface consists of a 2x16 backlit LCD with 4 indicator arrows. There are 4 navigation buttons, 1 Enter button and 1 Boost button, as shown below.

- The controller has 6 main buttons.
- 1. OK button**
 - a. It is used to bring on the main menu or to accept the settings.
 - 2. Boost button**
 - a. It is used to activate one shot boost function.
 - 3. Navigation buttons**
 - a. > to move forward in the menu
 - b. < to move backward in the menu
 - i. if this is held for 1 second, it acts as an exit and the initial display will appear.
 - c. Up and down arrows are to increase/decrease the numbers/values in settings or navigate through the menu



Figure 1-1: LCD & Buttons

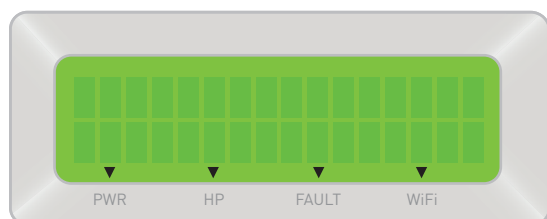
During status display, the following actions are available. Note: key presses are not registered when the LCD backlight is turned off. If the backlight is OFF, press any key to turn it on.

KEY	PRESS	HOLD
 Left	Move cursor left (if applicable) Go up one menu level	Exit back to main status display screen (1 second)
 Right	Move cursor right (if applicable)	N/A
 Up	Increment value Go to previous item in list	N/A
 Down	Decrement value Go to next item in list	N/A
 OK	Validate selection	N/A
 Boost	Change input type (Wi-Fi password entry menu only)	N/A

Table 11: Usage of keys in setup menus

INTRODUCTION CONT.

There are four indicator arrows on the LCD which will be turned on/off and blinking to indicate different status information, as follows.



ARROW	OFF	ON	BLINKING
PWR	Unit is powered off	Unit is powered on	Temperature control enabled
HP	Heat pump is off	Heat pump is on	Boost is active
FAULT	No faults	Fault detected	N/A
WIFI	Wi-Fi not connected	Wi-Fi online	Continuous: Wi-Fi not configured Single: Incoming/outgoing data

Table 1: Usage of indicator arrows

1.3 KEY MODES OF OPERATION

1.3.1 TIME CONTROL MODE:

The temperature control mode can be enabled and disabled during certain periods within the 24-hour cycle, as outlined on page 5 in Table B. The user can select to permanently enable, four preset time periods or can opt for two adjustable time periods (e.g., time zone 1 minimum hours is 3 hours and time zone 2 minimum hours is 0 hours). Also note, regardless of what is set for the first time zone, the system for the first cycle only runs until it reaches the set point temperature of 59°C). For the second and subsequent time settings, the time control takes priority over the temperature mode (i.e., the heat pump operation may stop due to time settings before the T-off temperature of 59°C is reached). When the Time Control Mode is active the Power ON LED flashes.

1.3.2 BOOST MODE:

The Boost mode can also be turned on and off via a momentary press of the boost button. When activated, temperature control mode is enabled, as above, signalling

the heat pump to turn on. The heat pump will remain on until the temperature reaches 59°C (plus 3 seconds), or the 6-hour period has elapsed, whichever occurs first. The On Call LED will start flashing, indicating the heat pump has been turned on via Boost Mode. If inadvertently pressed, boost mode can be turned off by pressing the Boost button again.

Note that if a faulty temperature sensor is detected (eg-8 or eg-9), the Boost function will still operate, and turn the heat pump on for 6 hours.

1.3.3 TEMPERATURE CONTROL MODE:

The "temperature control" turns the heat pump on at the T-on setting (37°C), and off at the T-off setting (59°C). On the first start, the heat pump is turned on if the temperature is less than 59°C. On the subsequent starts the heat pump is turned on when the temperature in the tank drops to the T-on setting (37°C) and turns off when the temperature reaches the T-off setting (59°C).

2. SETUP MENU

The setup menu allows to view and/or change the following items:

- Operation Mode
- Clock
- Wi-Fi
- Service Menu
- About
- Operational parameters

2.1 OPERATION MODE

This menu allows setup of the operation mode. Press the ▼ / ▲ keys to choose the operation mode and press ENTER to confirm.

2.1.1 PRE-SET MODES 1-4

Modes 1-4 are pre-sets with pre-defined timers.

- Note that for operation modes 2, 3 & 4, the default times can be changed in the Service Menu and the new times will be reflected in the menus above.

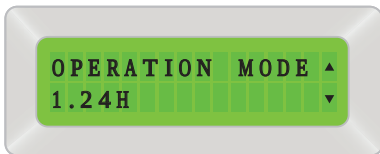


Figure 2-1: Setup operation to mode 1 – 24H

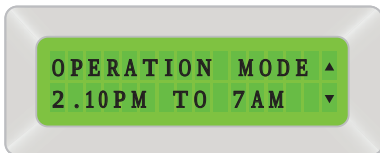


Figure 2-2: Setup operation to mode 2 – 10PM to 7AM

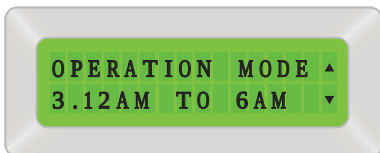


Figure 2-3: Setup operation to mode 3 – 12AM to 6AM

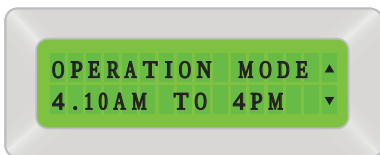


Figure 2-4: Setup operation to mode 4 – 10AM to 4PM

2.1.2 MODE 5 – TIMERS

When option 5 is selected, the following menus are then displayed to enter the timer start times and stop times.

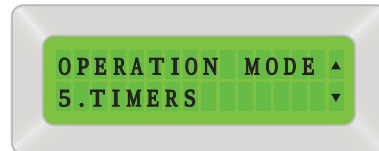


Figure 2-5: Setup operation to mode 5 – timers

The input cursor will blink on the timer 1 start hour; press the ▲ / ▼ keys to change the time and press ENTER to confirm. The cursor will then move to the stop hour and so on to timer 2. The ▲ / ▼ keys can be used to move the cursor between the start hour and stop hour.

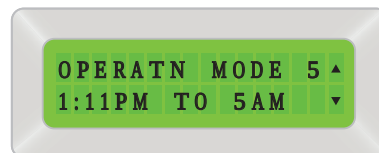


Figure 2-6: Mode 5, set timer 1 start time and run time

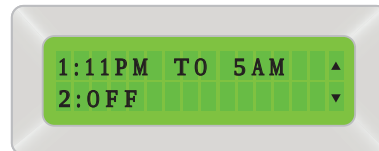


Figure 2-7: Mode 5, set timer 2 off

If timer 2 is OFF, press the ▲ key to set it to on and proceed to setting the start time and stop time.

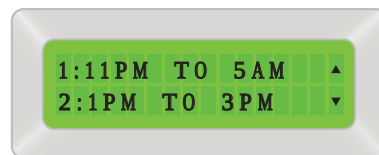


Figure 2-8: Mode 5, set timer 1 for 6 hours, set timer 2 for 2 hours

Press the ENTER key to confirm the start time and stop time. The timer 2 T-On temperature can then be set.

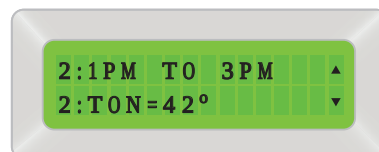


Figure 2-9: Mode 5, set timer 2 T-On temperature

The input cursor will blink on the temperature; press the ▲ / ▼ keys to change the temperature and press ENTER to confirm.

SETUP CONT.

2.1.3 MODE 6 – TIMER & TEMPERATURE

When option 6 is selected, the following menus are then displayed to enter the timer 1 start times, stop times.

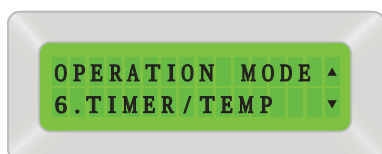


Figure 2-10: Setup operation to mode 6 – timer & temperature

The input cursor will blink on the start hour; press the ▲ / ▼ keys to change the time and press ENTER to confirm. The cursor will then move to the stop hour and so on to timer 2.

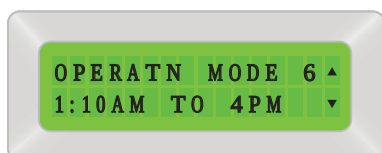


Figure 2-11: Mode 6, set timer 1 start time and stop time

Next, the timer 2 start times and stop times can be changed in the same way, followed by the timer 2 temperatures T-On and T-Off.

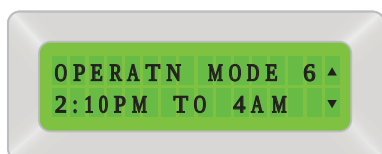


Figure 2-12: Mode 6, set timer 2 start time and stop time

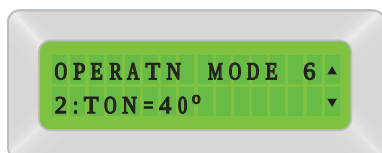


Figure 2-13: Mode 6, set timer 2 T-On temperature

The input cursor will blink on the temperature; press the ▲ / ▼ keys to change the temperature and press ENTER to confirm.

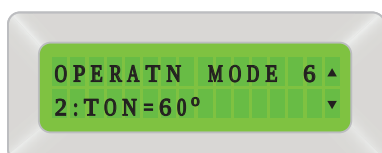


Figure 2-14: Mode 6, set timer 2 T-Off temperature

2.1.4 MODE 7 – PV DEFAULT TIMER

When option 7 is selected, the following menus are then displayed to enter the PV default timer start times and stop times.

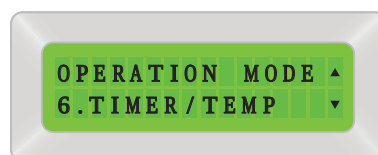


Figure 2-15: Setup operation to mode 7 – PV default timer

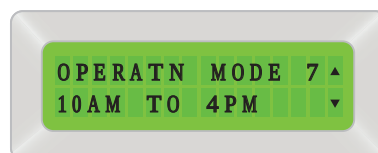


Figure 2-16: Mode 7, set timer start time and run time

The input cursor will blink on the start hour; press the ▲ / ▼ keys to change the time and press ENTER to confirm. The cursor will then move the stop hour.

- If PV input is not enabled, the PV input menu is displayed to configure the PV input.

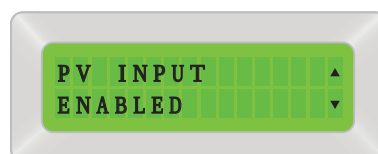


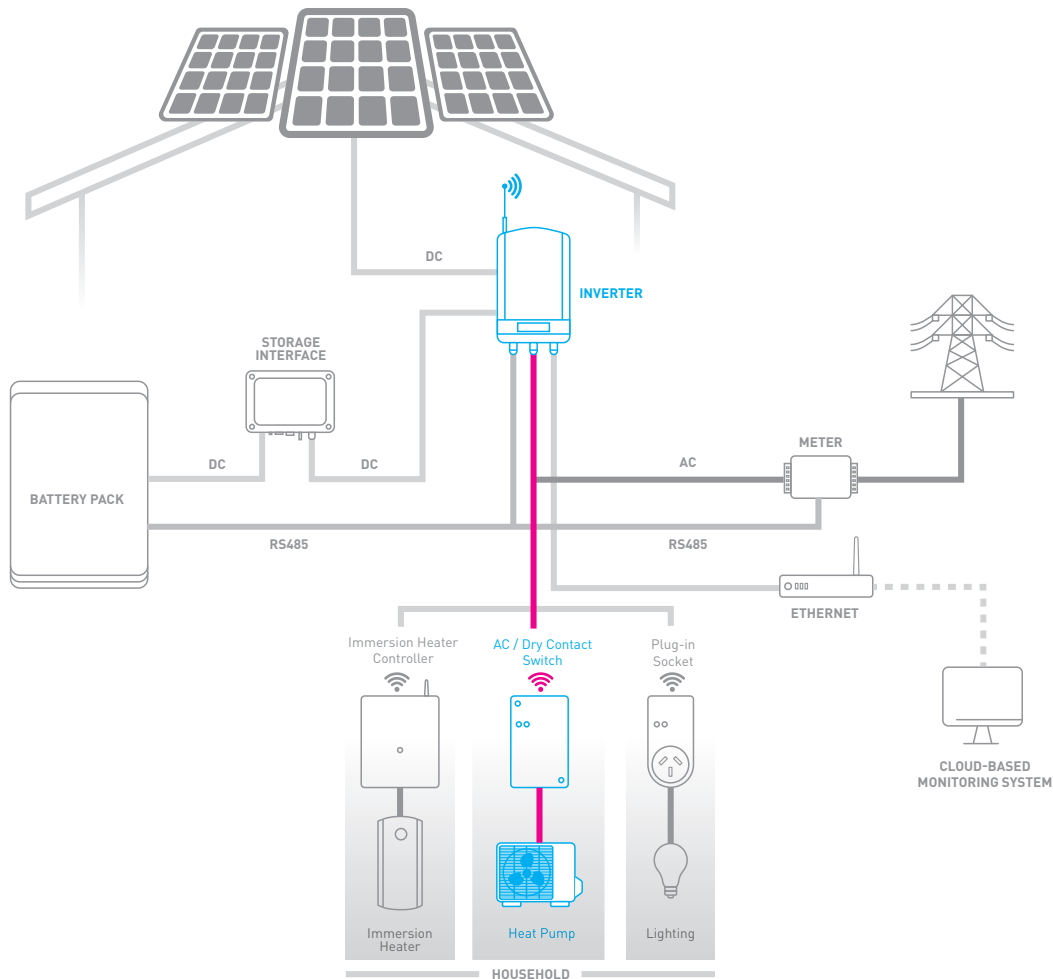
Figure 2-17: PV input setup menu

With option 7, following a remote contact closure, it finishes the heating cycle even if the contacts open again. Also, it will remain in Temperature mode so long as the contacts remain closed.

Dry contact wiring between a dry contact switch and controller



Please note with activation/closure of dry contact the one shot boost function will be activated so the system will stop once the temperature of 59°C is reached. The boost function is triggered by a change in state from open to closed contact. If the dry contact remains closed, the system will go under the "temperature mode" and the green light will be flashing and the next time the system will be running if temperature drops below 37°C. With option 7, if the dry contact does not get closed in a 18 hour cycle, the system will automatically run to meet the legionella requirement 18 hours after the last time that 59°C was reached.



2.2 CLOCK

This menu allows setup of the clock on the controller. When the controller is connected to Wi-Fi, it can use internet time to keep the clock up to date. To do this, set Auto Set Clock to Yes as shown in the following menus.

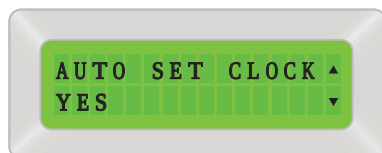


Figure 2-18: Auto set clock

2.2.1 AUTO SET DATE/TIME

If 'Yes' is selected, the location/state of the controller can be set.

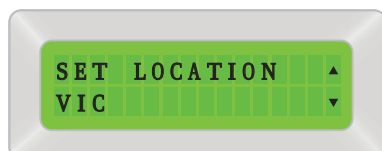


Figure 2-19: Set location

If daylight savings is applicable for the selected location, the controller can be set to auto adjust for Daylight Savings Time (DST).

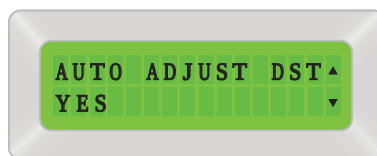


Figure 2-20: Auto-adjust DST

- This allows the controller to adjust the clock when daylight savings starts in (usually in September/October) and ends (usually in March/April).

SETUP CONT.

2.2.2 MANUALLY SET DATE/TIME

If 'No' is selected for Auto Set Clock, the date/time can be set manually.

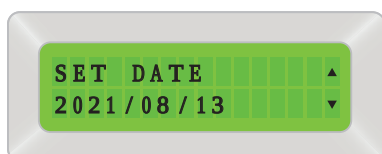


Figure 2-21: Manually set date

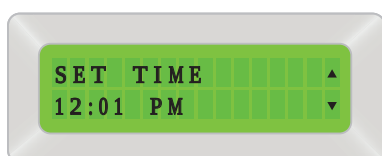


Figure 2-22: Manually set time

The input cursor will blink on the year; press the ▲ / ▼ keys to change the value and press ENTER to confirm. The cursor will then move to the month and so on to the date, hour, and minute.

2.3 WiFi

This menu allows to turning the Wi-Fi on/off as well as to view and/or change the network settings.

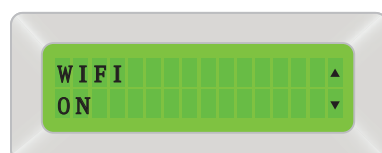


Figure 2-23: Wi-Fi on/off

- Press the ▲ / ▼ keys to choose to select ON or OFF.
- If 'OFF' is selected, the controller operates in OFFLINE mode.

2.3.1 WI-FI NETWORK INFORMATION

If 'ON' is selected, the Wi-Fi network information is displayed if currently connected.



Figure 2-24: Wi-Fi network info

- Press the Enter key to view the Wi-Fi signal strength and IP address.

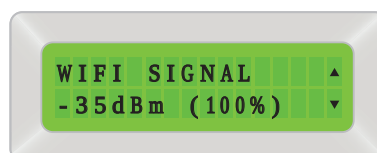


Figure 2-25: Wi-Fi network signal strength

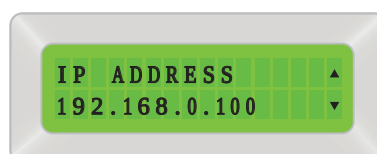


Figure 2-26: IP address info

- If not currently connected to a Wi-Fi network, the above information will be blank.
- From the Wi-Fi information screen, press the Enter key to access the next menu which allows to setup the Wi-Fi network manually.

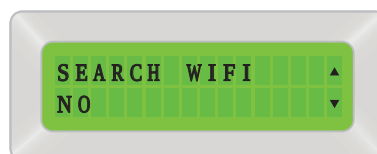


Figure 2-27: Setup Wi-Fi manually

2.3.2 MANUALLY SETUP WI-FI

To setup the Wi-Fi network using the LCD/keypad, select Yes and press the ENTER key.

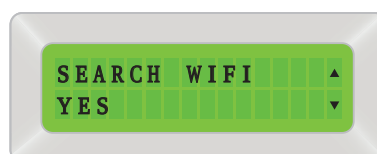


Figure 2-28: Search for Wi-Fi networks

- The controller will start to search for nearby Wi-Fi networks.

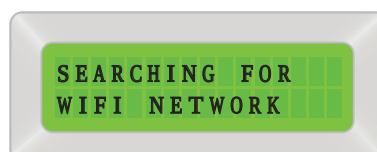


Figure 2-29: Searching for Wi-Fi networks

- The lists of Wi-Fi networks found is listed in order of signal strength (strongest to weakest) and the network security type is also displayed; press the ▲ / ▼ keys to select the network.

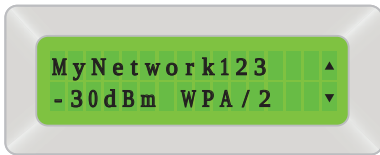


Figure 2-30: Wi-Fi networks' information

- After selecting the network, enter the Wi-Fi password; press the ▲ / ▼ keys to change the character, press the ◀ / ▶ to move the cursor and press ENTER to confirm.

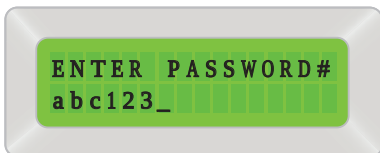


Figure 2-31: Enter Wi-Fi password

- The first line will alternate between the Wi-Fi network name and the prompt 'ENTER PASSWORD'.
- The symbol in the top right corner denotes the current type of input; press the BOOST button to change the input type as per Table 1.
- When the connection is successful, the network information is displayed as in Figure 3-8. Otherwise, the message in Figure 3-6 is displayed.

2.3.3 RESET WI-FI SETTINGS

To reset the Wi-Fi network settings, select Yes and press the ENTER key.



Figure 2-32: Reset Wi-Fi

Any previously configured Wi-Fi network will be erased.



Figure 2-33: Wi-Fi settings reset

2.4 ABOUT

This menu allows you to view various information about the controller per the below:

- Name
- Firmware Version
- Wi-Fi MAC Address
- App Code
- Ambient Temperature
- Certificate ID.

2.4.1 CONTROLLER NAME

The name can be setup in the App e.g., 'John's House'.

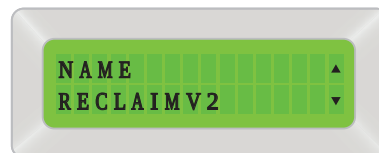


Figure 2-34: Controller name

2.4.2 FIRMWARE VERSION

The firmware version is displayed on this screen.

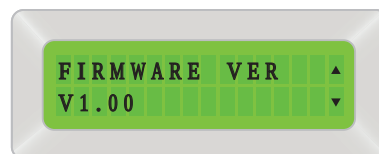


Figure 2-35: Firmware version

2.4.3 WI-FI MAC ADDRESS

The Wi-Fi MAC address is displayed on this screen.



Figure 2-36: Wi-Fi MAC address



SETUP CONT.

2.4.4 APP CODE

The App Code is the controller's unique code that can be entered in the App, for example if the QR code cannot be scanned in.

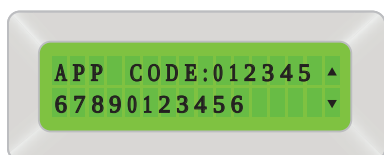


Figure 2-37: App code

2.4.5 CERTIFICATE ID

Each controller has a unique security certificate programmed in. The certificate is used for encrypted communication with the server. This option displays the ID of the certificate.

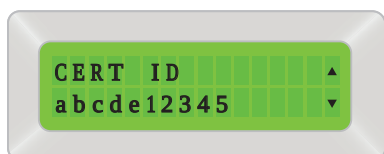


Figure 2-39: Certificate ID

2.5 OPERATIONAL PARAMETERS

The operational parameters menu allows you to view the live parameters value from the Heat Pump.

The following parameters are displayed:

- Tank Temperature
- Outlet Temperature
- Inlet Temperature
- Ambient Temperature
- Input Current
- Power Usage



3. WI-FI SETUP

After boot-up, the controller checks if any Wi-Fi network has been configured. If no Wi-Fi setup is found, the controller prompts whether to proceed with the Wi-Fi setup.

3.1 WI-FI SETUP PROMPT

If no Wi-Fi setup is found, the controller prompts whether to proceed with the Wi-Fi setup.



Figure 3-1: Setup Wi-Fi prompt

- If 'NO' is selected, Wi-Fi is turned OFF and the controller proceeds to Status Display.
 - The above prompt will not be shown on subsequent boot-up until Wi-Fi is turned back ON in the setup menu.
 - The controller will then operate in OFFLINE mode.
 - Wi-Fi can be configured at any time in the setup menu.
- If 'YES' is selected, the controller prompts for the Wi-Fi setup mode as in section 3.2.

3.2 WI-FI SETUP MODE

Wi-Fi can be setup either using the App or manually using the LCD/keypad interface. Press the ▲ / ▼ keys to select between App and Manual, and press ENTER to confirm.



Figure 3-2: Wi-Fi setup mode using App

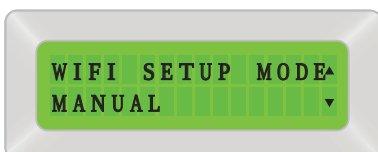


Figure 3-3: Wi-Fi setup mode using LCD/keypad

3.2.1 WI-FI SETUP USING APP

If 'APP' is selected, the controller goes into Wi-Fi Configuration Mode – the user can then use a mobile device to configure the Wi-Fi network information to the controller.



Figure 3-4: Starting Wi-Fi setup using App

The controller will display its Wi-Fi network name on the following screen – the format is 'RECLAIMV2_NNNNNN' where 'NNNNNN' is the last 4 characters of the controller's MAC address.

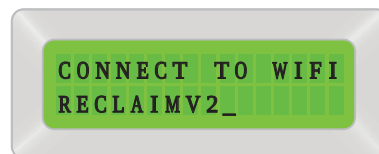


Figure 3-5: Connect to controller's access point

- If the controller does not receive the Wi-Fi network information from the App after 3 minutes, the following message is displayed.

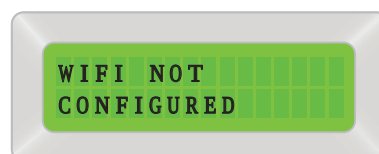


Figure 3-6: Wi-Fi setup not successful

The controller then operates in OFFLINE mode. Wi-Fi can be setup later in the setup menu.

- If an error occurs during password authentication with the Wi-Fi network, the following message is displayed.

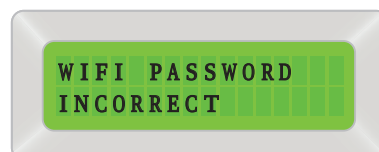


Figure 3-7: Wi-Fi password incorrect

The controller then operates in OFFLINE mode. Wi-Fi can be setup later in the setup menu.

WI-FI SETUP CONT.

- When the controller successfully connects to the Wi-Fi network, the following message showing the Wi-Fi network name is displayed.



Figure 3-8: Wi-Fi connected to network

- When the controller successfully connects to the server, the following message is displayed.

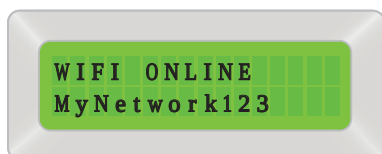


Figure 3-9: Wi-Fi connected to server

3.2.2 WI-FI SETUP USING LCD/KEYPAD

If 'MANUAL' is selected, the controller will search and list nearby Wi-Fi networks.



Figure 3-10: Searching for Wi-Fi networks

- The lists of Wi-Fi networks found is listed in order of signal strength (strongest to weakest) and the network security type is also displayed; press the ▲ / ▼ keys to select the network.

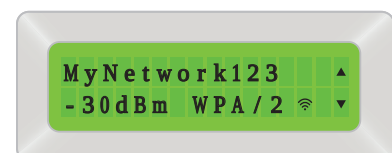


Figure 3-11: Wi-Fi networks' information

- After selecting the network, enter the Wi-Fi password using the navigation keys; press the ▲ / ▼ keys to change the character, press the ◀ / ▶ to move the cursor and press ENTER to confirm.

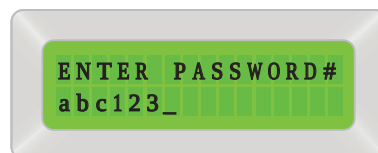


Figure 3-12: Enter Wi-Fi password

- The first line will alternate between the selected Wi-Fi network name and the prompt 'ENTER PASSWORD'.
- The symbol in the top right corner indicates the current type of input; press the BOOST button to change the input type. The options are:

DISPLAYED	INPUT TYPE
a	Lower case alphabet
A	Upper case alphabet
0	Numeric
#	Symbols

Table 2: Input key type

- When the connection is successful, the network information is displayed as in Figure 3-8. Otherwise, the message in Figure 3-6 is displayed.



3.3 WI-FI SETUP USING APP

Wi-Fi can be setup on the controller using a mobile phone or tablet as detailed below.

- Ensure that the controller is in range of the Wi-Fi network it is to be connected to.
- Ensure that the controller is in Wi-Fi configuration mode i.e., the Wi-Fi arrow is blinking. See section 2.2 and/or section 4.4 on how to reset the controller Wi-Fi settings.
- On your mobile device, go to Settings → Wi-Fi.
- In the Wi-Fi network list, look for the Wi-Fi access point 'RECLAIMV2_NNNNNN', where 'NNNNNN' is the last 6 characters of the controller's MAC address.
 - o This access point name is also displayed on the controller display during initial Wi-Fi setup.
 - o The image below shows the controller with access point name 'RECLAIMV2_352104' is waiting for connection.

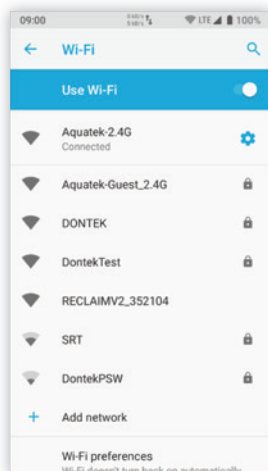


Figure 3-13: Wi-Fi network list on mobile device

- Click on the Wi-Fi network 'RECLAIM_NNNNNN' to connect the mobile device to this network.
 - o Note that the network 'RECLAIMV2_NNNNNN' is an OPEN network and requires no password to sign in.
- Once connected to the network, the mobile device will redirect to the controller Wi-Fi configuration page automatically.
 - o On some mobile devices, it may be necessary to click on a 'Sign in' prompt to open the configuration page, as shown below.

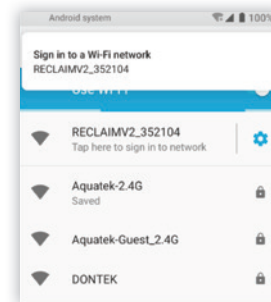


Figure 3-14: Sign in prompt for some devices

- The Wi-Fi configuration page will then open as shown below. The list of networks may be initially empty but will refresh as the controller scans for nearby Wi-Fi networks and displays them.

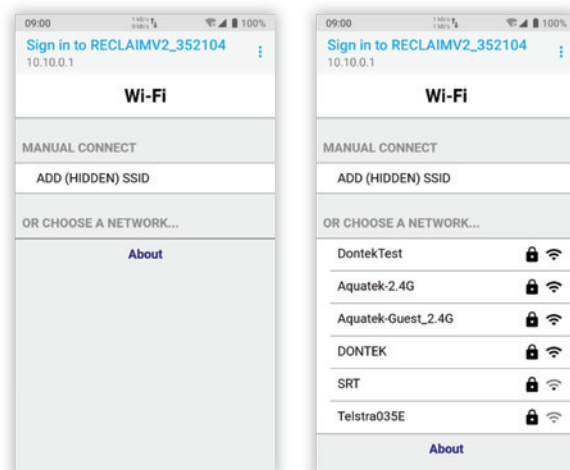


Figure 3-15: Wi-Fi configuration page

- From the list of networks, click on the network that the controller is to be connected to. This will bring on the page to enter the network's password as shown next.
 - o Click on the button 'Show Password' to make the password visible, if necessary.

WI-FI SETUP CONT.

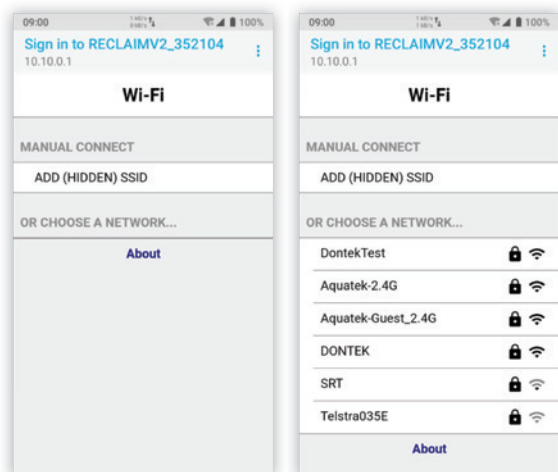


Figure 3-16: Enter Wi-Fi network password

- Next, click on the button 'Join' to connect the controller to the Wi-Fi network. The connection progress page will be displayed.

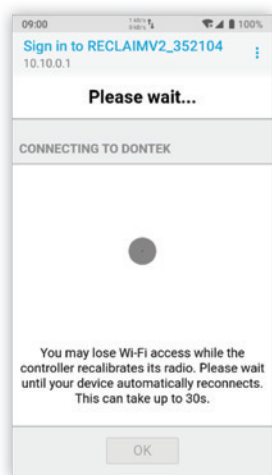


Figure 3-17: Connection in progress

- When connection is successful, the Wi-Fi configuration page will display the 'Success' message. It will then automatically close, and the mobile device will return to the Wi-Fi settings page.

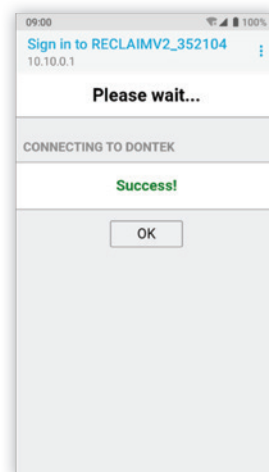


Figure 3-18: Connection successful

- If an error occurs during configuration, the message 'Connection Failed' will be displayed as shown below.
 - Click on the 'OK' button to go back to the previous page and verify that the password was entered correctly
 - If an authentication error is reported, the message 'WIFI PASSWORD INCORRECT' will be shown on the controller's display.

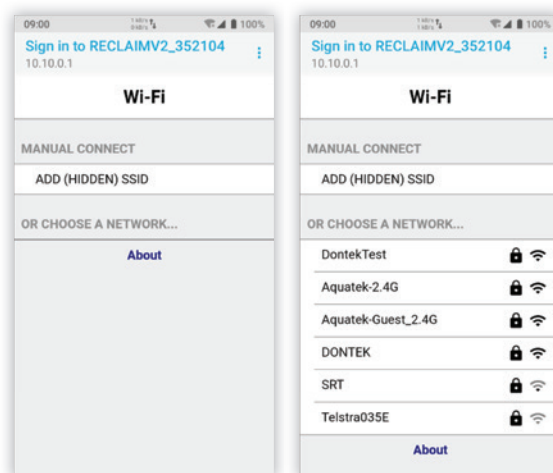


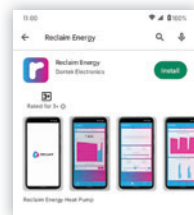
Figure 3-19: Connection failed

3.4 RECLAIM ENERGY MOBILE APP FOR APPLE & ANDROID

ANDROID APP

1. Installation

- Go to the Play Store on the Android phone and search for "Reclaim Energy".
- Install the App and wait for installation to complete.



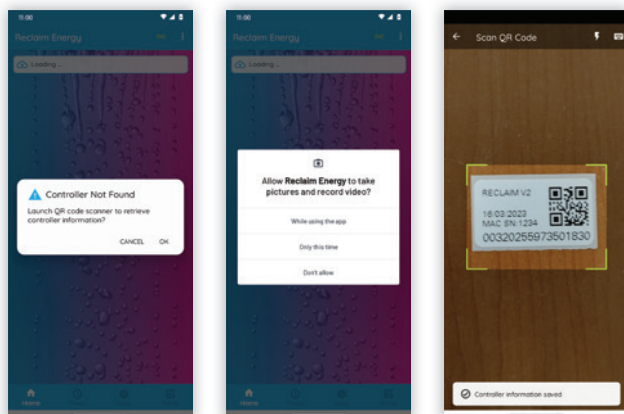
2. Launch App

- Upon launch, the App will attempt to connect to the server.
- The App will then check if a controller has already been configured.
 - If Yes, it will connect to the controller and load the controller's data.
 - If No, it will prompt to scan the QR code of the controller.



3. Scan QR Code

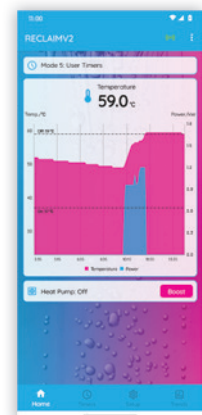
- The prompt to launch the QR code scanner is as shown below. Click 'Ok' to proceed.
- When prompted to allow the App to use the camera, select 'While using the App'.
- Locate the QR code sticker from the controller box and scan it in the App.
 - Once the controller information is saved, the App will connect to the controller and load its data.



4. Home Screen

The Home screen as shown here consists of:

- The active mode
- The current tank temperature
- The last 12 hours of temperature and power usage data.
- The heat pump status
- A button 'Boost' to activate a one-shot Boost.



5. Timers Screen

The 'Timers' screen as shown here consists of:

- The active mode and other options, which can be selected by scrolling the wheel.
- The Start Time and Run Time for the selected mode.
- The T-On and T-Off temperature for the selected mode.

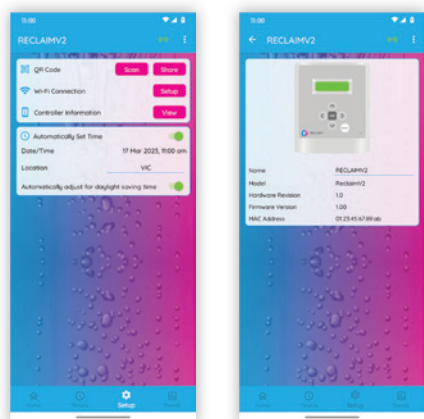


WI-FI SETUP CONT.

6. Setup Screen

The 'Setup' screen shown below consists of:

- scan a controller's QR code.
- share a controller's QR code.
- setup Wi-Fi connection on a controller.
- view the controller's information.
- setup the controller's date/time and/or location settings.



7. Trends Screen

The 'Trends' screen shown below includes:

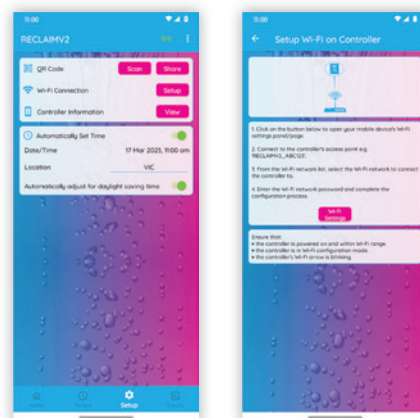
- view of historic temperature data.
- view of historic power consumption data.



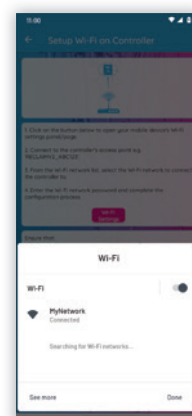
8. Wi-Fi Connection Setup

To connect the controller to the Wi-Fi network, go to the Setup screen, and click on the 'Setup' button next to 'Wi-Fi Connection'.

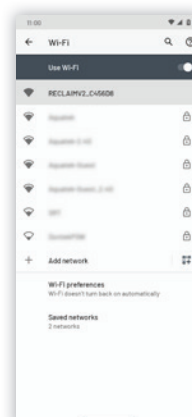
- From the Wi-Fi connection setup screen, click on the 'Wi-Fi Settings' button to open the Wi-Fi panel.



- If the controller's Wi-Fi network e.g., RECLAIMV2_ABC123 is listed, click on it to proceed.
 - If the controller's Wi-Fi network appears in the Wi-Fi panel, click on it to proceed. Otherwise, click on 'See more' to open the device Wi-Fi settings page.



- Follow the instructions on the Wi-Fi configuration screen to complete the Wi-Fi connection setup.





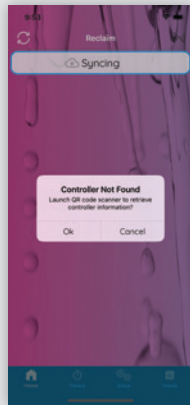
APPLE APP

1. Installation

- Go to the App Store on the iPhone and search for "Reclaim Energy".
- Install the App and wait for installation to complete.

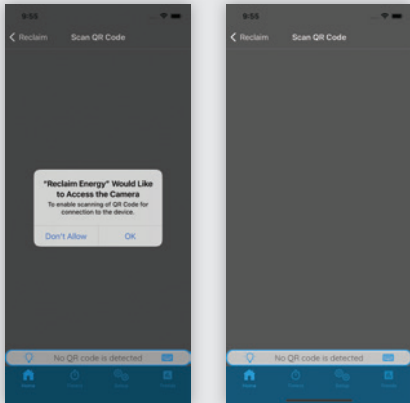
2. Launch App

- On launching the App, the following screen will be displayed. Click Ok to launch the QR Code scanner.



3. Scan QR Code

- The prompt to launch the QR code scanner is shown below. Click 'Ok' to proceed.
- When prompted to allow the App to use the camera, select 'While using the App'.



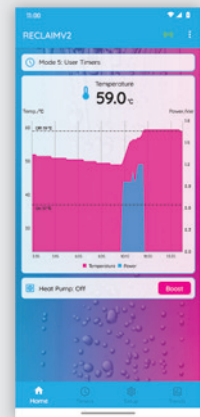
- Locate the QR code sticker from the controller box and scan it in the App.
 - Once the controller information is saved, the App will connect to the controller and load its data.



4. Home Screen

The Home screen consists of:

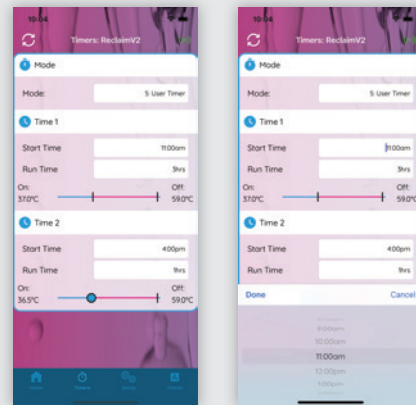
- The active mode.
- The current tank temperature.
- The last 12 hours of temperature and power usage data.
- The heat pump status.
- 'Boost' button to activate a one-shot Boost.



5. Timers Screen

The 'Timers' screen consists of:

- The active mode and other options, which can be selected by scrolling the wheel.
- The Start Time and Run Time for the selected mode.
- The T-On and T-Off temperature for the selected mode.



WI-FI SETUP CONT.

6. Setup Screen

The 'Setup' screen is shown next; it allows you to:

- scan a controller's QR code.
- share a controller's QR code.
- setup Wi-Fi connection on a controller.
- view the controller's information/
Set the custom name of the controller.
- setup the controller's date/time and/or location settings.

**7. Trends Screen**

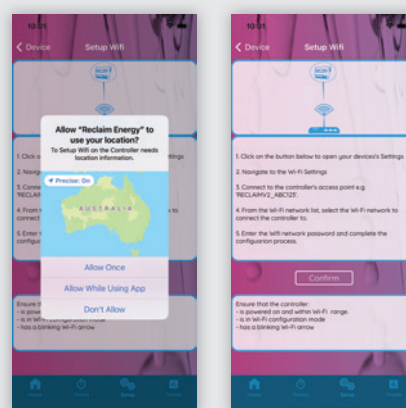
The 'Trends' screen shown next allows you:

- view of historic temperature data.
- view of historic power consumption data.

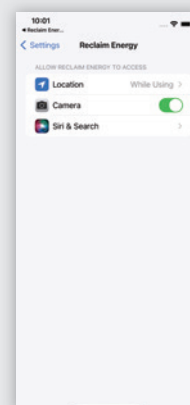
8. Wi-Fi Connection Setup

To connect the controller to the Wi-Fi network, go to the Setup screen, and click on the 'Setup' button next to 'Wi-Fi Connection'.

- From the Wi-Fi connection setup screen, click on the 'Wi-Fi Settings' button to open the Wi-Fi panel.
- Click on the 'Allow While Using App' if you are prompted.



- Click Confirm to open the iPhone Settings. From here you will need to navigate to the Wi-Fi Settings.



4 STATUS DISPLAY

The controller displays various status information when the menu is not active. This includes:

- Date/Time & location
- Heat Pump Status
- Tank Temperature
- Operation Mode
- Wi-Fi Connection Status
- Fault(s)

4.1 DATE/TIME & LOCATION

The current date and time are shown on this screen. The location is also shown when the clock settings are set to AUTO.

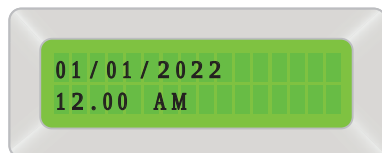


Figure 4-1: Location, date & time

4.2 HEAT PUMP STATUS & TANK TEMPERATURE

The heat pump status and the tank temperature are shown on this screen. The different possible scenarios are displayed as follows:

- If the heat pump is on, the heat pump status and temperature T-OFF are displayed as per below.

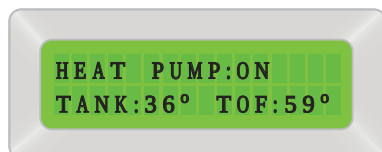


Figure 4-2: Heat pump on

- If the heat pump is off, the heat pump status and temperature T-ON are displayed as per below.

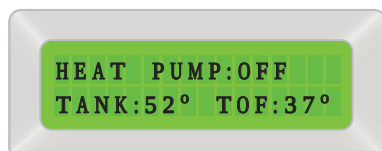


Figure 4-3: Heat pump off

- If purging is in progress, the following is displayed as per below.

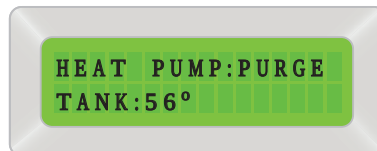


Figure 4-4: Heat pump purging

- If boost is active, the heat pump status and temperature T-OFF are displayed as per below.

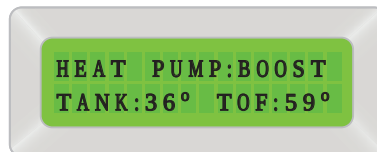


Figure 4-5: Heat pump boost on

- If the heat pump is on for Legionella check, the following is displayed.

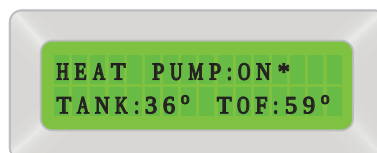


Figure 4-6: Heat pump on for Legionella

- When the heat pump is being turned ON, during the ON switch time (default 3 seconds), an upward arrow will blink next to ON.

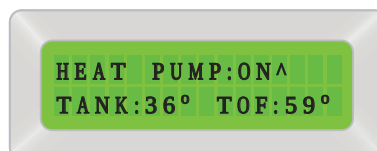


Figure 4-7: Heat pump 3 seconds ON maintain indicator

- When the heat pump is being turned OFF, during the OFF switch time (3 seconds), a downward arrow will blink next to ON.

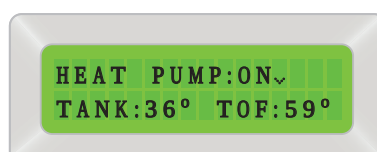


Figure 4-8: Heat pump 3 seconds ON maintain indicator

STATUS DISPLAY CONT.

4.3 OPERATION MODE

The operation mode selected is displayed, including when purging is active or when boost is active as shown below. The following screens shows some examples of the possible options.

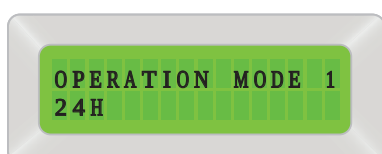


Figure 4-9: Operation mode 1 (24h)

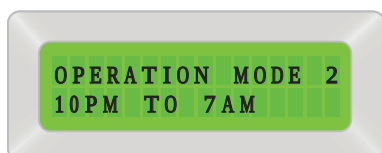


Figure 4-10: Operation mode 2 (Off-peak 1)

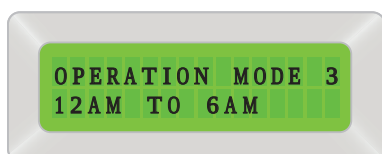


Figure 4-11: Operation mode 3 (Off-peak 2)

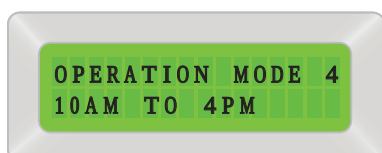


Figure 4-12: Operation mode 4 (P.V. connectivity)

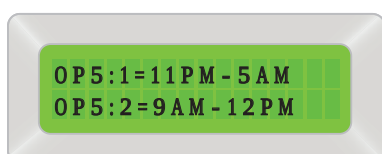


Figure 4-13: Operation mode 5 (User timers)

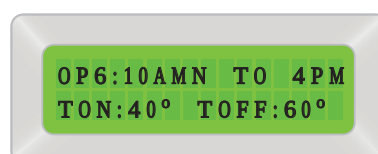


Figure 4-14: Operation mode 6 (User timers & temperature)

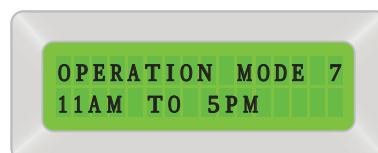


Figure 4-15: Operation mode 7 (PV default timer)

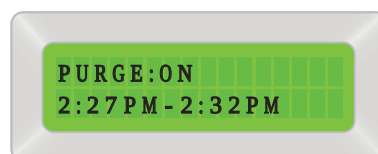


Figure 4-16: Purging active

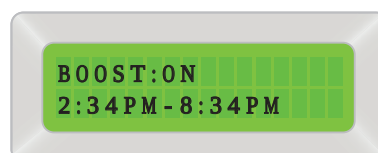


Figure 4-17: Boost on

4.4 WI-FI STATUS

The Wi-Fi connection status is displayed on this screen together with the Wi-Fi network name and the Wi-Fi signal symbol.



Figure 4-18: Wi-Fi status

DISPLAYED	SIGNAL STRENGTH (dBm)
	-50 dBm or greater
	Between -70 dBm and -49 dBm
	Between -80 dBm and -69 dBm
[blank]	Less than -80 dBm

4.5 FAULT(S)

Any faults received from the heat pump and controller are displayed for attention. When a fault has been detected:

- The fault message will be displayed on the screen until the fault is cleared.
- The LCD backlight will blink ON/OFF while the fault is active. It will be turned off when the fault is cleared.
- The FAULT indicator arrow will blink while the fault is active. It will be turned off when the fault is cleared.
- The display will not auto-scroll to other status information while the fault is active.
- The setup menu can still be accessed by pressing the ENTER key.

The following faults can be displayed:

4.5.1 HEAT PUMP

ERROR GROUP	ERROR CODE	MESSAGE DISPLAYED ON LCD
Eg-1	H9	AMBIENT TEMP SENSOR ERROR
	HC	OUTGOING TEMP SENSOR ERROR
	J3	DISCHARGE TEMP SENSOR ERROR
	J5	SUCTION TEMP SENSOR ERROR
	J6	DEFROST TEMP SENSOR ERROR
	J8	RETURN TEMP SENSOR ERROR
Eg-2	E6	COMPRESSOR START ERROR
	H6	COMPRESSOR REVOLUTION ERROR
	U0	GAS LEAKAGE DETECTED ERROR
Eg-3	E1	PCBA MAIN FAILURE
	E2	PCBA CONTROL FAILURE
	E8	INPUT OVER CURRENT ERROR
	F5	PCBA COMMS ERROR
	H8	CURRENT DETECTION ERROR
	L4	MODULE TEMP ERROR
	L5	OUTPUT OVER CURRENT
	P4	MODULE SENSOR ERROR
	U2	POWER VOLTAGE ERROR
Eg-4	EC	OUTGOING TEMP WATER ERROR
	HJ	CIRCULATION SYSTEM FAILURE
Eg-5	E9	HEATING PUMP ERROR
Eg-6	E7	FAN MOTOR ERROR
Eg-7	F3	DISCHARGE ERROR

Table 3: List of faults for Heat Pump V2

STATUS DISPLAY CONT.

4.5.2 TANK TEMPERATURE SENSOR

ERROR GROUP	MESSAGE DISPLAYED ON LCD
Eg-8	TANK SENSOR NOT DETECTED
Eg-9	TANK SENSOR FAULT
Eg-10	TANK SENSOR LOOSE
Eg-11	TANK LIMIT NOT REACHED

Table 4: List of faults for Temperature Sensor

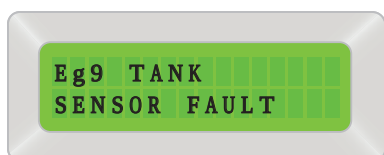


Figure 4-19: Tank sensor fault

4.5.4 WI-FI

ERROR GROUP	MESSAGE DISPLAYED ON LCD
Eg-20	WIFI NOT CONFIGURED
Eg-21	WIFI NOT CONNECTED
Eg-22	Eg-22 NO SERVER CONNECTION
Eg-23	Eg-23 WIFI PASS WORD INCORRECT

Table 6: List of faults for Wi-Fi

4.5.3 MODBUS

ERROR GROUP	MESSAGE DISPLAYED ON LCD
Eg-12	HEAT PUMP MODBUS ERROR

Table 5: List of faults for Modbus

6 HOW TO EXTEND THE MODBUS CABLE

Purchase Modbus Cable from Reclaim Energy.

Replace the Modbus Cable by following the instructions below:

1. Switch off the mains power and disconnect the Reclaim Controller and Heat Pump.
2. Disconnect the ring terminals of the existing Modbus cable from the Modbus Port of the Heat Pump.
3. Use a Pozidriv screwdriver to undo the four controller casing screws from the back and remove the front casing.
4. Use a Flathead screwdriver to unscrew the existing Modbus cable from terminal block J5.
5. Remove cable tie from the rubber grommet.
6. Remove the existing Modbus cable from the controller by pulling gently.
7. Push the un-insulated ferrules of the new Modbus cable through the rubber grommet, place them in terminal block J5 (RED wire to "A", WHITE wire to "B", and BLACK wire to "GND"), and tighten the screws.
8. Place a cable tie around the rubber grommet.
9. Put the front casing back on and tighten the casing screws.
10. Connect the ring terminals of the new Modbus cable to the Modbus Port of the Heat Pump following the colour code (RED to RED, WHITE to WHITE, and BLACK to BLACK).
11. Reconnect the Reclaim Controller and Heat Pump, and switch on the mains power.

5 HOW TO EXTEND THE TEMPERATURE CABLE

Purchase Temperature Sensor Cable from Reclaim Energy.

Replace the Temperature Sensor Cable by following the instructions below:

1. Switch off the mains power and disconnect the Reclaim Controller.
2. Use a Pozidriv screwdriver to undo the four controller casing screws from the back and remove the front casing.
3. Use a Flathead screwdriver to unscrew the existing sensor from terminal block J4.
4. Remove cable tie from the rubber grommet.
5. Remove the standard sensor from the controller by pulling gently.
6. Push the un-insulated ferrules of the new sensor through the rubber grommet, place them in terminal block J4 (no polarity), and tighten the screws.
7. Place a cable tie around the rubber grommet.
8. Put the front casing back on and tighten the casing screws.
9. Reconnect the controller and switch on the power.
10. Check that the sensor is reading correctly.

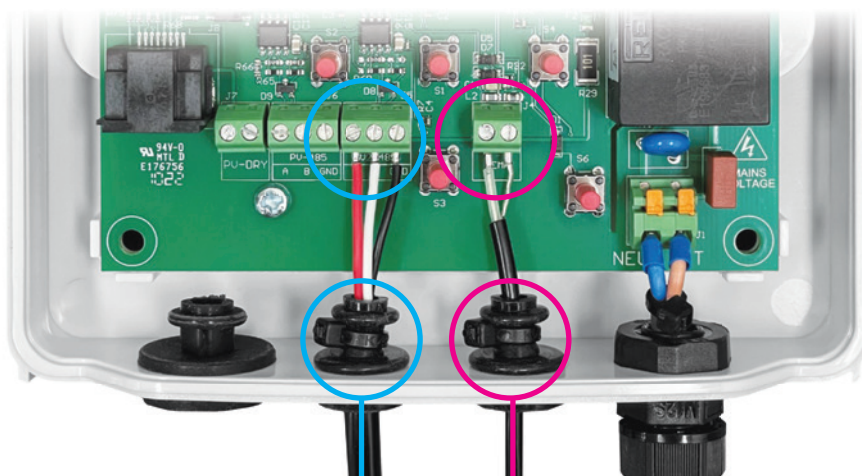


Figure 5. Modbus Connection

Figure 6. Temperature Connection



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