



AIR SOURCE HEAT PUMPS

User Manual

Operating & owner's guide

How to run your Sunniva heat pump, what the controller is telling you, and the checks that keep it working.

FOR THE OWNER AND OPERATOR

Read this manual before installing or operating the unit. It applies to every machine in the Sunniva range — swimming pool, commercial and high-temperature series. Where a limit differs by series the text says so. Keep this manual with the unit for future reference.



Need service?

Scan to chat with the Sunniva service department on WhatsApp

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This manual carries no model number. It is common to the whole Sunniva range, so the same document serves every machine. For the ratings, dimensions, electrical data and performance of a particular unit, see that model's technical data sheet at www.sunnivaencon.com.

01 Important safety precautions

Notices, consumer safety and energy-saving guidance

Important notice

This guide provides installation and operation instructions for the heat pump. Consult the seller with any questions regarding this equipment.

ATTENTION INSTALLER

This guide contains important information about the installation, operation and safe use of this product. This information should be given to the owner and/or operator of this equipment after installation or left on or near the heat pump.

ATTENTION USER

This manual contains important information that will help you in operating and maintaining this heat pump. Please retain it for future reference.

WARNING

Before installing this product, read and follow all warning notices and instructions which are included. Failure to follow safety warnings and instructions can result in severe injury, death, or property damage.

Codes and standards

Heat pump must be installed in accordance with the local building and installation codes as per the utility or authority having jurisdiction. All local codes take precedence over national codes. In the absence of local codes, refer to the latest edition of the National Electric Code (NEC) in the local government Electric Code (CEC) for installation.

DANGER — RISK OF ELECTRICAL SHOCK OR ELECTROCUTION

The electrical supply to this product must be installed by a licensed or certified electrician in accordance with the National Electrical Code and all applicable local codes and ordinances. Improper installation will create an electrical hazard which could result in death or serious injury to pool or spa users, installers, or others due to electrical shock, and may also cause damage to property. Read and follow the specific instructions inside this guide.

WARNING

To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

Consumer information and safety

The heat pumps are designed and manufactured to provide years of safe and reliable service when installed, operated and maintained according to the information in this manual and the installation codes referred to in later sections. Throughout the manual, safety warnings and cautions are identified by a warning symbol. Be sure to read and comply with all of the warnings and cautions.

QUALIFIED PERSONNEL ONLY

Installation and service must be performed by a qualified installer or service agent, and must conform to all national, state, and local codes and/or safety regulations.

Energy saving tips

It is important to note that a heat pump will not heat water as fast as a large gas or electric water heater. If the pool water is allowed to cool significantly, it may take several days to return to the desired swimming temperature. For weekend use, it is more economical to maintain the pool water temperature at or near your desired swimming temperature. If you do not plan to use your pool for a prolonged period, then you might choose to turn the heat pump off or decrease the temperature setting of the control several degrees to minimize energy consumption.

These are the recommendations to help conserve energy and minimize the cost of operating your heat pump without sacrificing comfort.

1. A maximum water temperature of **30 °C** is recommended for swimming pool (SE-SP-XX), **55 °C** for commercial and mono block series (SE-AH-XX), and **80 °C** for the high-temperature series (SE-HT-XX).
2. It is recommended to turn off the heat pump when ambient air temperature is less than 0 °C or if on vacation for longer than a week.
3. To save energy, it is recommended that the heat pump is operated during daytime when the ambient temperature is higher.

02 How a heat pump works

Product overview and general features

Product overview

Heat pumps transfer heat from the ambient air to your water, providing the most energy efficient swimming pool and sanitary heating available. Compared to gas, oil, or electric heaters, operation cost of heat pumps is up to 60–80% less, saving your expenses in energy costs each year. Our heat pumps are not only highly efficient, but also easy and safe to operate. Our heat pumps are EN14511, AHRI and CE approved, using R410A / R407C / R134a refrigerant which is environmental-friendly and energy efficient.

General features

1. Using heat energy from ambient air and reproduces more heat energy, saving 60–80% energy compared to traditional heaters.
2. Providing heating in winter in domestic and commercial applications.
3. No potential danger of any inflammable, gas poisoning, explosion, fire, electrical shock which are associated with other heating systems.
4. A digital controller is incorporated to maintain the desired water temperature.
5. Long-life and corrosion resistant composite cabinet stands up to severe climates and pool chemicals.
6. American Copeland or Japanese Panasonic scroll compressor ensures outstanding performance, ultra energy efficiency, durability and quiet operation.
7. Self-diagnostic control panel monitors and troubleshoots heat pump operations to ensure safe and reliable operation.
8. Intelligent digital controller with friendly user interface and blue LED back light.
9. Separate isolated electrical compartment prevents internal corrosion and extends heat pump life.

03 Water connection precautions

Inlet, outlet, drain and tank connection rules

1. Cold water inlet connection

- At the lower level on the tank
- With NRV
- With water strainer / filter
- Supply of water from a pressure booster pump

2. Hot water inlet connection

- At the upper level on the tank
- Stop valve / ball valve is recommended

3. Drain connection

- At the bottom level on the tank
- Stop valve / ball valve is recommended

4. Supply to heat pump

- At the lower level on the tank
- Near to water inlet or return water connection
- Stop valve / ball valve is recommended

5. Return to tank from heat pump

- At the upper level on the tank
- Near to water outlet water connection
- Stop valve / ball valve is recommended

6. Return water connection from building

- At the lower level on the tank
- Near to water inlet or return water connection
- Stop valve / ball valve / gate valve is recommended

04 Operating the heat pump

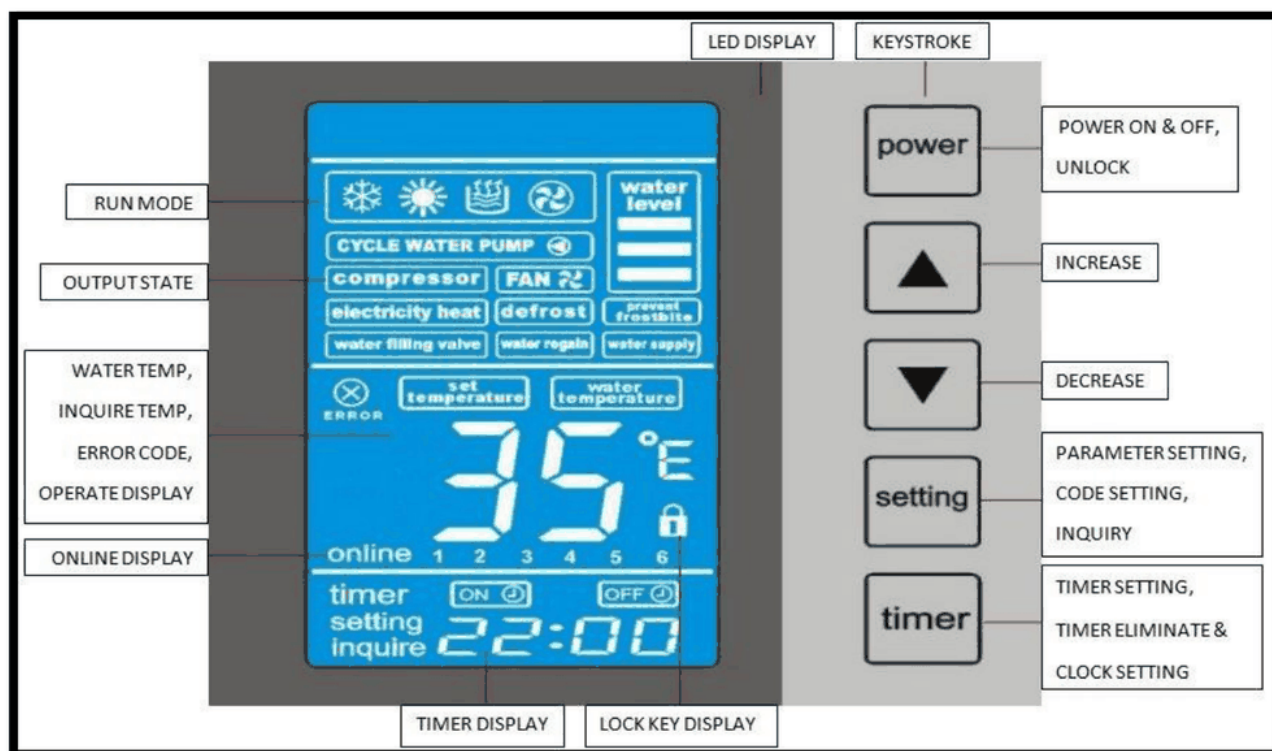
General instructions, controller panel, set-up and timers

7.1 General instructions

The control panel applies to a single system or dual systems heat pump. The operation panel features:

1. Capacitive touching keys for higher operating sensitivity and unlimited key operations.
2. Minimal electromagnetic susceptibility and interference.
3. Stylish appearance for easy viewing purposes.
4. Dust and water proof.
5. Installed on the unit for easy operation.
6. Automatic Key Lock function (AKL).

7.2 Controller panel



Operating controller — display areas and keystrokes.

Operation guide

When the power supply to the heat pump is switched on for the first time, an audible tone is heard from the controller. The LCD will be displayed in a dimming mode (no backlight). At this time the touch keys are locked (see “lock key display” symbol).

Keys explanation

Unlocking keys

Press the “power” key for 3 seconds until you hear an audible tone, then release the key. The backlight of the LCD will turn on and the keypad is unlocked with no “lock key display” symbol. The keypad will automatically lock after 60 seconds, displaying the “lock key display” symbol.

“power” key

By pressing the “power” key, the unit can be switched ON or OFF.

“▲” and “▼” keys

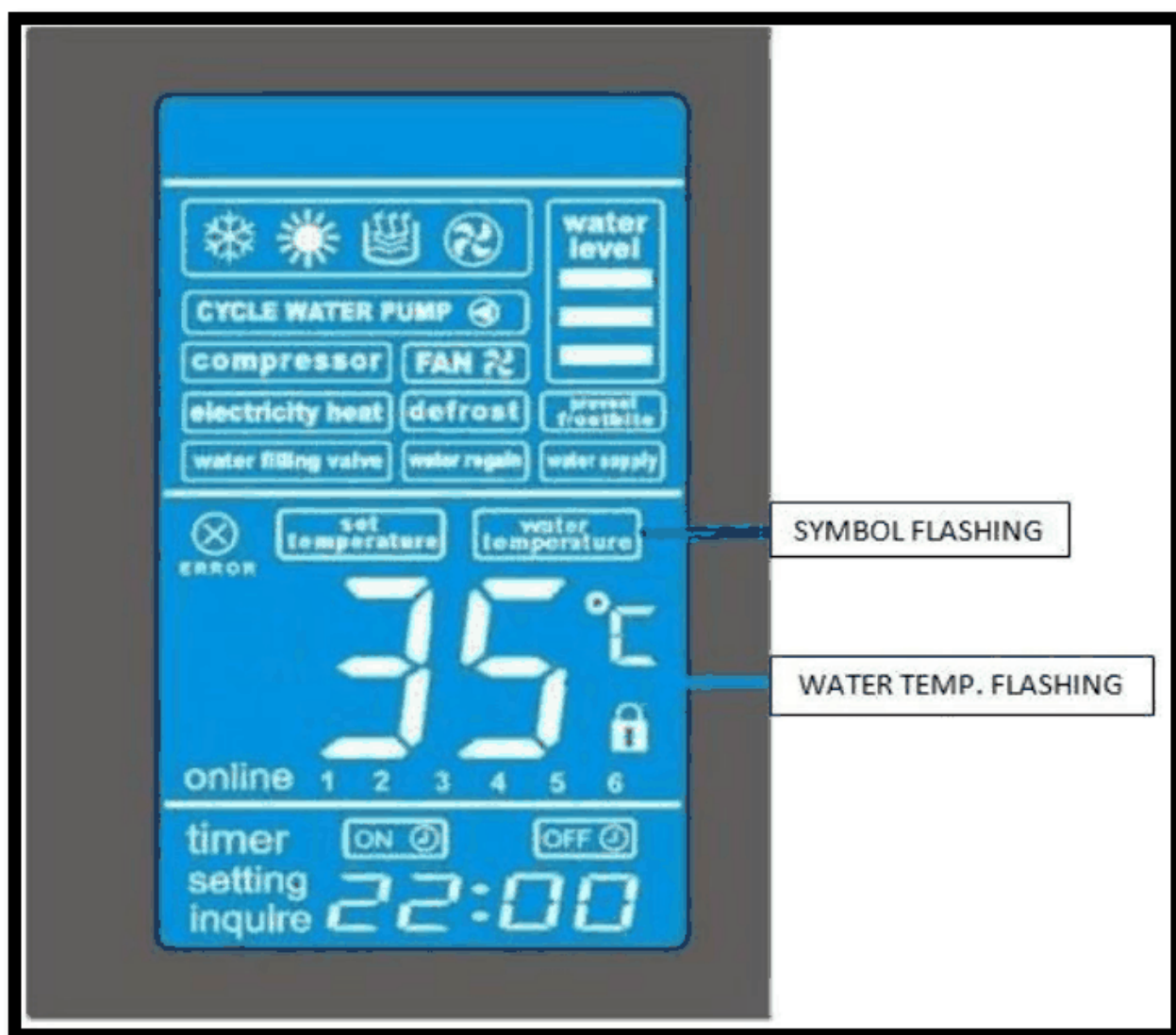
Press to increase and decrease values.

“setting” key

Press for inquiry, parameter and password setting.

“timer” key

Press for timer setting, timer eliminate and clock setting.



ON/OFF flashing and water-temperature flashing.

7.3 Controller setup

1. Temperature setting

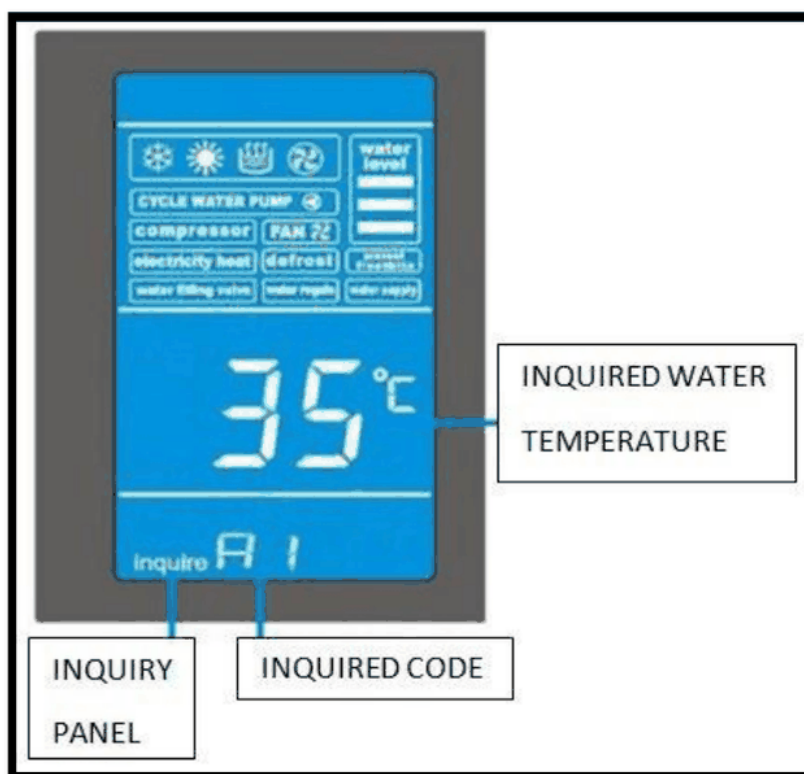
Make sure the keypad is unlocked. Press the “▲” key, “temperature setting” symbol is flashing and the set temperature is displayed. Press the “▲” key again, the displayed temperature will increase. Press the “▼” key, “temperature setting” symbol is flashing and the set temperature is displayed. Press the “▼” key again, the displayed temperature will decrease. The range of water temperature can be set from 20 °C to 45 °C (default = 27 °C).

NOTE — RECOMMENDED MAXIMUM SETTING BY SERIES

For Commercial (SE-AH-XX) use, it is recommended that the maximum setting temperature be 60 °C. For a Swimming pool (SE-SP-XX) use, it is recommended that the maximum setting temperature be 45 °C. For a High Temperature (SE-HT-XX) use, it is recommended that the maximum setting temperature be 80 °C.

2. System status display values

Make sure keypad is unlocked. Press the “setting” key and enter into inquiry panel with the “inquire” symbol on display.



Inquiry panel, inquired code and inquired water temperature.

For a single heat pump system, the inquiry codes are from A1 to A9 and for a dual heat pump system, the inquiry codes are from A1 to A9 for System A and b1 to b9 for System B. By pressing the “setting” key sequentially, the desired inquiry code will be selected and the value displayed. To exit the inquiry panel, press the “setting” key once after the last inquiry code (Er) is reached. Details are shown as follows:

SYSTEM A	READING	SYSTEM B	READING
A1	Coil pipe temp. (1)	B1	Coil pipe temp. (2)
A2	Compressor suction temp. (1)	B2	Compressor suction temp. (2)
A3	Compressor discharging temp. (1)	B3	Compressor discharging temp. (2)
A4	Ambient temp.	B4	Ambient temp.
A5	Water outlet temp.	B5	Water outlet temp.
A6	Spare	B6	Spare
A7	00	B7	00
A8	Compressor current (1)	B8	Compressor current (2)
A9	Electrical expansion valve opening degree (1)	B9	Electrical expansion valve opening degree (2)
Er	Error code		

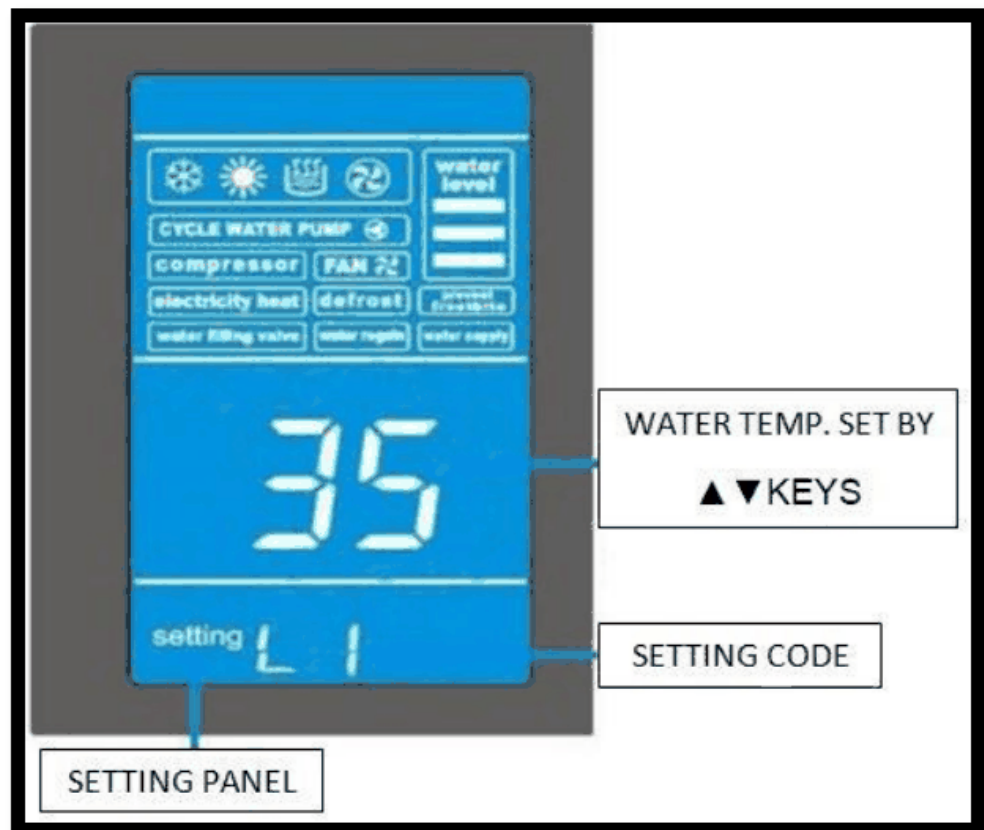
Inquiry codes.

3. Parameter setting

DO NOT CHANGE THESE SETTINGS

These settings are pre-set according to the manufacturer's specification for safe heat pump operations. Do not change these settings as it will influence the safe operation of the heat pump.

Press the “setting” key for more than 3 seconds, until an audible tone is heard and enter into the setting panel with the “setting” symbol on display.



Setting panel, setting code and water temperature set by keys.

By pressing the “setting” key sequentially, the desired setting code will be selected. The value of each setting can be adjusted by pressing the “▲” and “▼” keys. To exit the setting panel, press the “setting” key once after the last setting code (P6) is reached. Details are shown as follows:

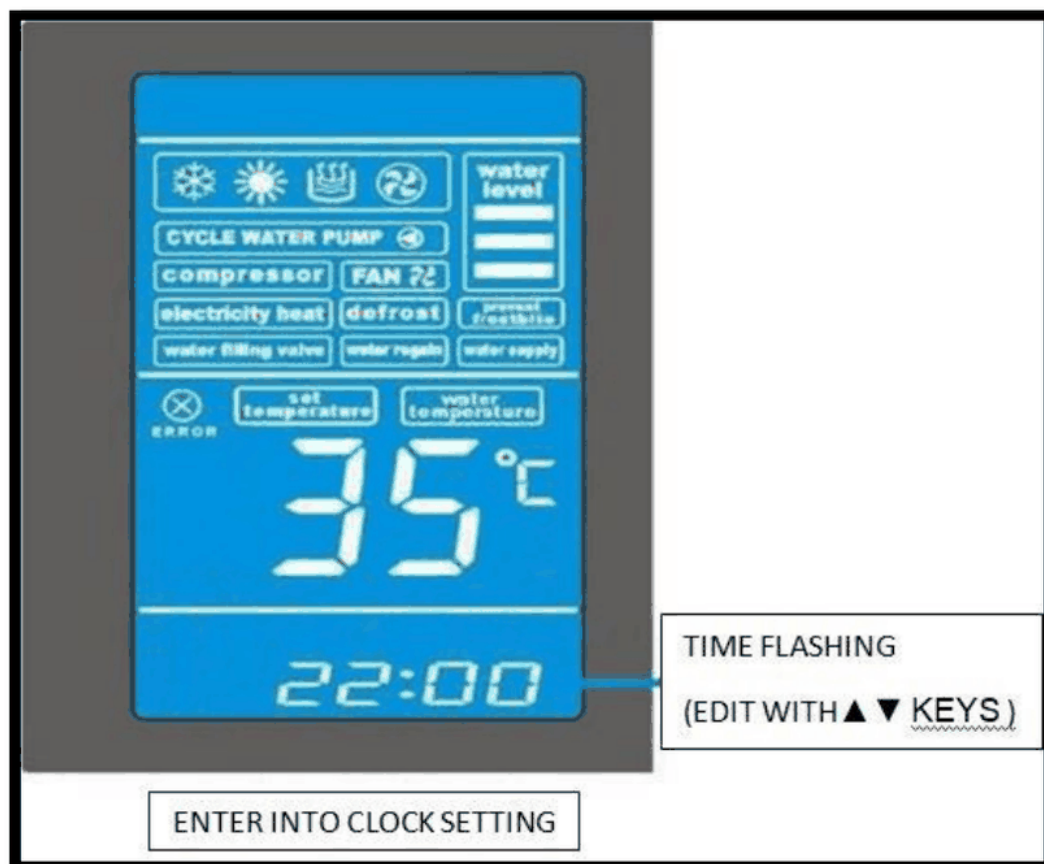
CODE	PARAMETER	RANGE AND DEFAULT
L1	Setting is used to compensate/calibrate for the difference between displayed water temperature and the actual measured swimming pool/spa water temperature (use a good quality thermometer).	0–15 °C, default 0 °C
L2	Minimum outlet water temperature deviation. This value setting is set to indicate to the compressor when to re-start until the desired temperature is reached. For example, set pool/spa temp. = 27 °C, L2 = 3 °C, the compressor will stop at 27 °C and re-start at 24 °C.	3–18 °C, default 3 °C
L3	Outlet water temperature setting — <i>not applicable</i> .	35–99 °C, default 45 °C
L4	Desired swimming pool/spa water temperature limit.	30–60 °C, default 45 °C
L5	Allowed electric heating ambient temperature, where 0 °C means no electric heating.	0–35 °C, default 0 °C
L6	Return water temperature — <i>not applicable</i> .	30–65 °C, default 45 °C
L7	Allowed water supplement temperature — <i>not applicable</i> .	20–60 °C

CODE	PARAMETER	RANGE AND DEFAULT
L8	Compressor current, where 0 means no current inspection.	0–33 A, default 0
L9	Evaporator coil temp. for fan motor stops — <i>not applicable</i> .	10–45 °C, default 45 °C
H1	Defrosting period.	20–99 minutes, default 35 minutes
H2	Defrosting start temperature.	0 to –15 °C, default –1 °C
H3	Defrosting time.	5–20 minutes, default 10 minutes
H4	Defrosting exiting temperature.	1–40 °C, default 15 °C
P1	Electronic expansion valve regulation cycle.	20–180 seconds, default 60 seconds
P2	Degree of superheat.	–8 to 15 °C, default 0 °C
P3	Allowed discharge temperature.	70–135 °C, default 92 °C
P4	Expansion valve opening as the four-way valve is defrosting.	6–55°, default 32°
P5	Expansion valve minimum opening.	6–30°, default 15°
P6	Superheat compensation.	0–12, default 4

Parameter settings. Factory-set — do not alter.

4. Clock setting

Press the “timer” key for more than 8 seconds until an audible tone is heard and the “timer” symbol disappears. The hour value is flashing and can be adjusted by pressing the “▲” and “▼” keys. Press the “timer” key for minute adjustment and repeat as previous. Press the “timer” key to exit.



Entering clock setting; the time flashes while editable.

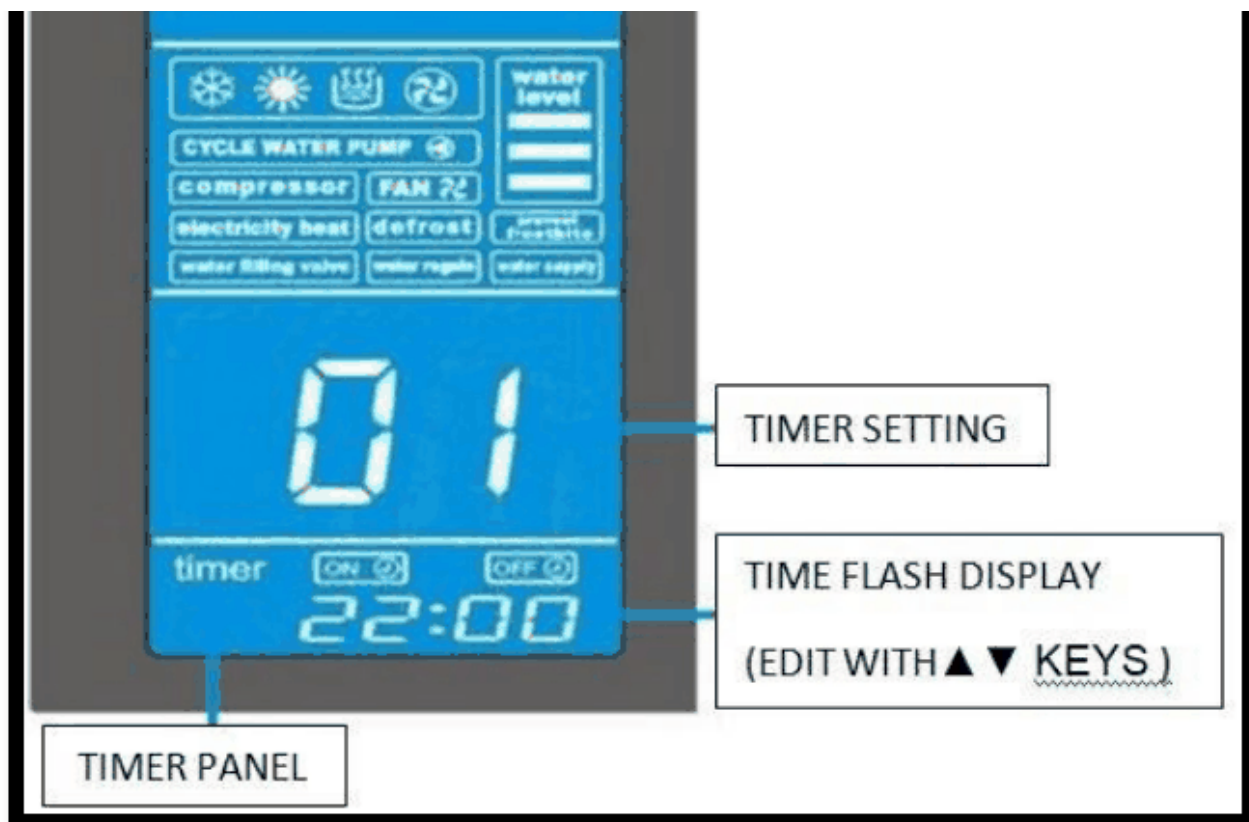
5. Timer setting

The heat pump consists of two separate timing functions. Timer 01 and 02 are used to set the ON/OFF times of the heat pump within a 24 hour period. Timer 03 and 04 are used to set the ON/OFF times of an external water pump within a 24 hour period (Timer 03 and 04 — not applicable).

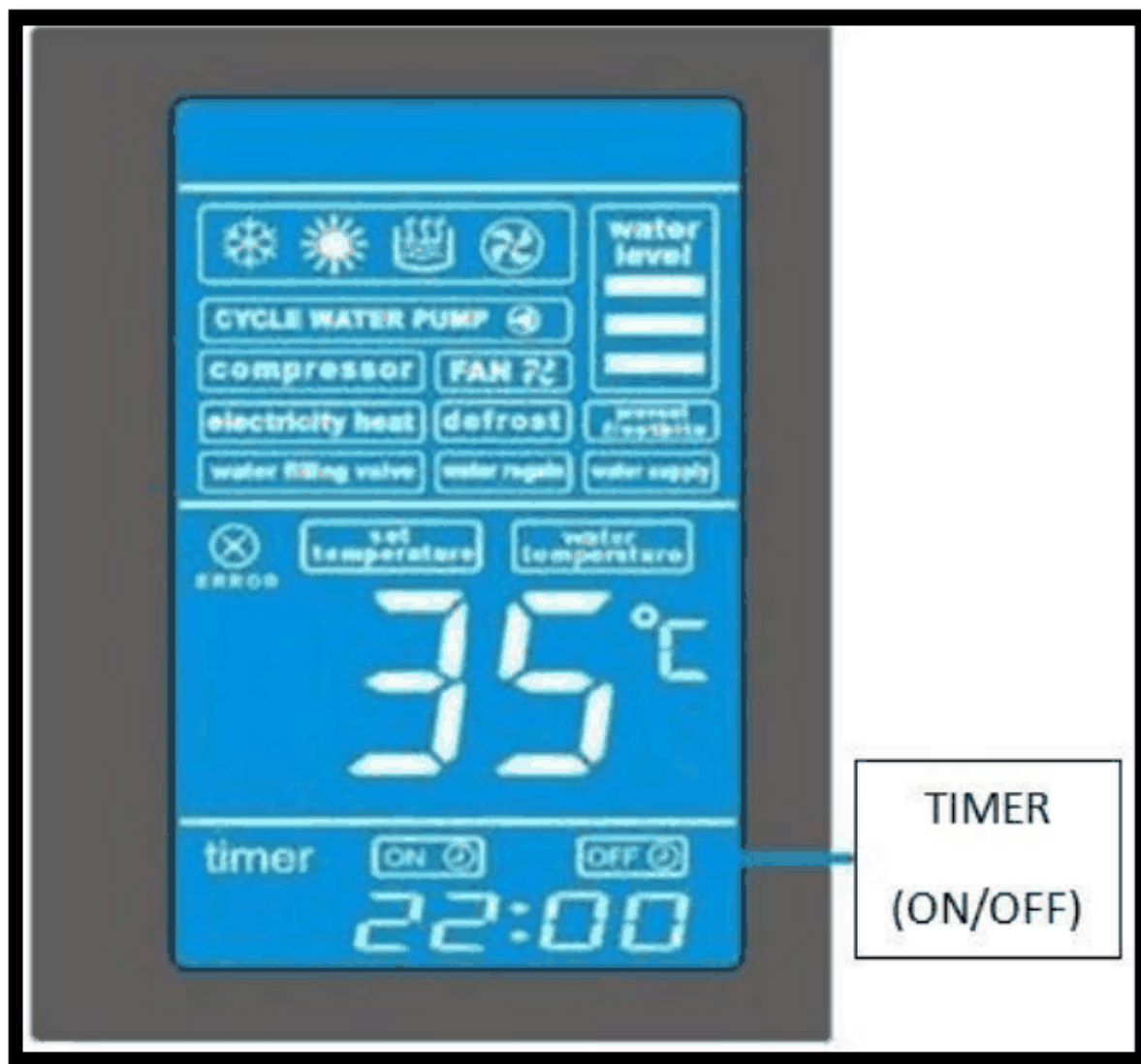
Heat pump ON/OFF timers: **01** — ON/OFF timing; **02** — ON/OFF timing.

Press the “timer” key and enter timer 01 ON time. Set the ON time as in the Clock Setting section. Press the “timer” key again to set timer 01 OFF time. Set the OFF time as in the Clock Setting section. Repeat the sequence until all timer settings are completed.

If, however, a timer is not used, set ON and OFF times to 00:00. The timer setting can be randomly selected. For example, Timer 01 ON, Timer 02 OFF, Timer 03 OFF and Timer 04 OFF.



Timer panel and timer setting.



Controller display after all timer settings are complete.

To cancel the timer feature, press the “timer” key for more than 3 seconds until an audible tone is heard, then release a key, the timer is now canceled.

05 Controller error codes

What each code on the display means

The following common error codes for the heat pump units will be displayed on the controller panel.

CODE	ERROR TYPE	CODE	ERROR TYPE
01 E	Phase rotation	17 E	Coil pipe sensor 2 faulty
02 E	Absent phase	18 E	Compressor discharge temperature sensor 1 broken
03 E	Water flow switch	19 E	Compressor discharge temperature sensor 2 broken
05 E	Compressor high pressure and/or faulty switch 1	21 E	Ambient temperature sensor broken
06 E	Compressor low pressure and/or faulty switch 1	22 E	Return water sensor broken
07 E	Compressor high pressure and/or faulty switch 2	25 E	Faulty water level switch and/or water level low
08 E	Compressor low pressure and/or faulty switch 2	27 E	Faulty water outlet temperature sensor
09 E	Controller communication	28 E	Faulty compressor suction temperature sensor (K60)
11 E	PCB communication error	29 E	Faulty compressor suction temperature sensor 1
12 E	Compressor high discharge temperature 1	30 E	Faulty compressor suction temperature sensor 2
13 E	Compressor high discharge temperature 2	31 E	Faulty water pressure switch
15 E	Faulty inlet swimming pool temperature sensor	35 E	Compressor 1 over current
16 E	Coil pipe sensor 1 faulty	36 E	Compressor 2 over current

06 Inspection and owner checks

Periodic inspection and the checks the owner should make

8.2 Inspection and service

Heat pumps are designed and built to provide long life performance when installed and operated properly under normal conditions. Periodic inspections are important to keep your heat pump running safely and efficiently.

8.3 Owner inspection

We recommend that inspections on heat pumps are done frequently, especially after abnormal weather conditions. The following basic guidelines are suggested for your inspection:

1. Make sure the front of the unit is accessible for future service.
2. Keep the top and surrounding areas of the heat pump clear of all debris.
3. Keep all plants and shrubs trimmed and away from the heat pump especially the area above the fan.
4. Keep lawn sprinklers from spraying on the heat pump to prevent corrosion and damage.
5. Ensure that the ground wire is always properly connected.
6. The swimming pool filter must be maintained regularly to ensure clean and healthy water to protect the heat pump from damage.
7. Keep inspecting power and electrical components' wiring to make sure their normal operation.
8. All the safety protection devices have been set up; please refrain from changing these settings. If any changes are needed, please contact the authorized installer/agent.
9. If the heat pump is installed under the roof without a gutter, ensure that all measures are taken to prevent excessive water from flooding the unit.
10. Do not use this heat pump if any electrical part has been in contact with water. Contact an authorized installer/agent.
11. If the increase in power consumption is not due to colder weather, please consult with the local authorized installer/agent.
12. Please turn off the heat pump and disconnect it from the mains power supply, when not in use for a prolonged time. In winter, please discharge the water into the heat pump before turning it off.

07 Troubleshooting

Safety rules before investigating a fault

Use the following troubleshooting information to resolve issues/problems with your heat pump.

WARNING — RISK OF ELECTRICAL SHOCK OR ELECTROCUTION

Ensure that all high voltage circuits are disconnected before commencing heat pump installation. Contact with these circuits could result in death or serious injury to users, installers or others, due to electrical shock and may also cause property damage. Do not open any part of the heat pump as this may result in electrocution.

1. Keep your hands and hair clear of the fan blades to avoid injury.
2. If you are not familiar with your pool filtering system and heater: (a) do not attempt to adjust or service the unit without consulting your authorized installer/agent; (b) please read the complete installation and/or user's guide before attempting to operate the service or adjust the heater or pool filtering system.

IMPORTANT

Turn off the main power supply to the heat pump before attempting service or repair.

08 Service and support

How to reach the Sunniva service department

Scan the code below with a phone camera to start a WhatsApp chat with the Sunniva service department. Have the machine's model number and any error code showing on the controller ready — it gives the service department the fastest route to helping you.



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