TOSHIBA

AIR TO WATER HEAT PUMP

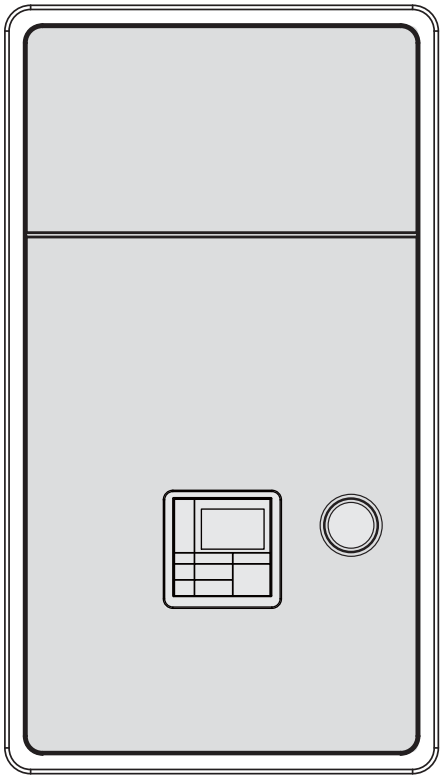
Owner's Manual

HFC
R410A

Hydro Unit

Model name:

HWS-455XWHM3-E
HWS-805XWHM3-E
HWS-805XWHT6-E
HWS-805XWHT9-E
HWS-1405XWHM3-E
HWS-1405XWHT6-E
HWS-1405XWHT9-E



English

Thank you very much for purchasing TOSHIBA Air to Water Heat Pump.
Please read this owner's manual carefully before using the system.

- Be sure to obtain the "Owner's manual" and "Installation manual" from constructor (or dealer).

Request to constructor or dealer

- Please clearly explain the contents of the Owner's manual before handing it over to the Customer.

REFRIGERANT

This Air to Water Heat Pump uses an HFC refrigerant (R410A) in order to prevent destruction of the ozone layer.

This appliance is not intended for use by person (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.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Contents

1 Safety precautions

The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.

⚠ DANGER

- **Do not attempt to install this unit yourself.**
- **This unit requires a qualified installer.**
- **Do not attempt to repair the unit yourself.**
- **This unit has no components which you can repair.**
- **Opening or removing the cover will expose you to dangerous voltages.**
- **Turning off the power supply will prevent potential electric shock.**

⚠ WARNING

This appliance is intended to be used by expert or trained users in shops, in light industry, or for commercial use by lay persons.

Installation warnings

- Be sure to ask a dealer or a store specialized in electrical work to install the Air to Water Heat Pump.
- The Air to Water Heat Pump should be installed by a suitably qualified installer, if not; this may lead to problems such as water leaks, electric shock, fire, etc.
- Ensure the correct grounding procedures are applied when installing the Air to Water Heat Pump.
- Do not connect the earth wire to gas pipes, water pipes, lightning rods or telephone earth wires.
- Should the Air to Water Heat Pump be improperly grounded, this could lead to an electric shock.
- Serious damage can occur if there is water leak. Therefore, the Hydro Unit is recommended to be installed in a room with waterproof flooring and drainage systems.
- Products and parts to be used in combination with this product must be specified products and parts that meet prescribed specifications. If unspecified products or parts are used, a failure, smoke, fire, or electric shock may be caused.

Operation warnings

- Avoid injury or damage to the outdoor unit by never inserting fingers or sticks into the air discharge or air intake of the outdoor unit, during operation the fans run at a high speed.
- Should you notice something unusual with the Air to Water Heat Pump (such as a burning smell or low heating power), immediately turn off the main switch and circuit breaker from the main power supply to stop the Air to Water Heat Pump, and contact the dealer.
- If there is a suspected problem with the operation of the Air to Water Heat Pump, continuous operation is not recommended, operational failures may lead to machine breakdown, electric shock, a fire, etc.
- Do not spill water or other liquid onto the Hydro Unit.
- If the unit is wet, it could cause an electric shock.

Warnings at movement and repair

- Do not attempt to move or repair the unit yourself.
- Due to the presence of high voltage, removal of any covers may result in an electric shock.
- Should there be any requirements for the Air to Water Heat Pump to be moved, always consult the dealer or qualified installer.

- Should the Air to Water Heat Pump be improperly installed, it may lead to electric shock or fire.
- Whenever the Air to Water Heat Pump requires repair, request assistance from the dealer.
- Should the Air to Water Heat Pump be improperly repaired, the result may lead to electric shock or fire.

⚠ CAUTION

This appliance is not intended for use by person (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.

To disconnect the appliance from the main power supply
This appliance must be connected to the main power supply using a circuit breaker or switch with a contact separation of at least 3 mm.

Installation cautions
- Be sure to connect the Air to Water Heat Pump to a dedicated power supply using the rated voltage.
  Failure to do so may cause the unit to break down or cause a fire.
- Do not install the unit in a place where there is a risk that flammable gas may leak.
- An accumulation of flammable gases around the unit may result in a fire.
- There is a risk of condensation on the panel during the cooling operation.
  Please add insulation to the condensation parts as necessary.

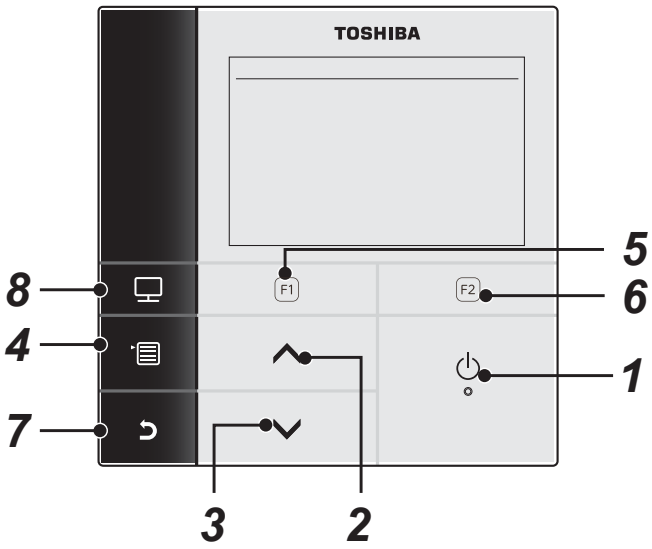
Operation cautions
- To ensure satisfactory performance, please read this manual carefully before operating the Air to Water Heat Pump system.
- Do not install the Air to Water Heat Pump in special-purpose rooms such as a ship or any kind of vehicle.
  Doing so could harm machine performance.
- When the Air to Water Heat Pump is operated together with a combustion device in the same place, pay careful attention to ventilation and let fresh air into the room.
  Poor ventilation can cause an oxygen shortage.
- When the Air to Water Heat Pump is used in a closed room, pay careful attention to the ventilation of the room.
  Poor ventilation can cause an oxygen shortage.
- Do not put a container with water, such as a vase, on the unit, should water enter the unit the result may lead to an electric shock, this would be due to deterioration in the electric insulation.
- Perform occasional checks to the concrete supports underneath the outdoor unit.
  If the base is left damaged or deteriorated, the unit may topple over which could result in possible injury.
- Check from time to time that the unit mounts are not damaged.
  If the mounts are left damaged, the unit may drop or topple over, resulting in possible injury.
- Do not wash the unit with water. This could cause an electric shock.
- Do not use alcohol, benzene, thinner, glass cleaner, polishing powder, or other solvent for cleaning the unit because they can deteriorate and damage the Air to Water Heat Pump.
- Before cleaning the unit, be sure to turn off the main switch or circuit breaker.
- Do not place anything, or step, on the unit, this could cause the unit to fall or topple over which may result in possible injury.

- To achieve maximum performance, the Air to Water Heat Pump must operate within the temperature range specified in the instructions.
  Failure to do so may cause malfunction, break down, or water to leak from the unit.
- Clear away snow before it accumulates on the outdoor unit.
  Accumulated snow can lead to malfunction and damage.
- Do not locate other electric appliances or furniture underneath the unit.
  Water may drip from the unit, which could lead to rust, unit failure and damage to property.
- Do not allow the obstruction of air flow around the outdoor unit; Do not place any items within the specified installation service space requirements.
  Obstructed air flow can lower performance and cause damage.
- Check for water leaks. In communal housing, leaking water may damage lower floors.
  Check for water leaks everyday.
- Do not touch the water pipes, refrigerant pipes, or joints. These may become extremely hot.
  Do not drink water produced by the Air to Water Heat Pump.
- After extended use, fresh water may become contaminated by the Hydro Unit, due to deterioration of pipe materials, etc.
- If fresh water contains solid matter, is discolored, turbid or smells, DO NOT DRINK IT.
- Call for equipment inspection immediately.
- Use source water that satisfies water quality standard.
- When the unit will not be used for a long period of time, ask your dealer or a qualified service shop to drain the water inside the Hydro Unit in order to prevent the water quality from changing.
- When restarting use, ask your dealer or a qualified service shop to charge the unit with water and perform a test run.
- Ask your dealer or a qualified service shop to periodically clean the strainer.
- Ask your dealer or a qualified service shop to confirm that the relief valve is operating correctly.
- Do not hit the manometer, because it is made of glass. It is breakable.

2 Names and functions of parts

■ Buttons

Fig. 2-01



1 **[ON/OFF] button**

2 **[ ] button**
On the top screen: Adjusts the temperature.
On the menu screen or other screen: Selects a menu item or ON/OFF of each function or moves a cursor, etc.

3 **[ ] button**
On the top screen: Adjusts the temperature.
On the menu screen or other screen: Selects a menu item or ON/OFF of each function or moves a cursor, etc.

4 **[MENU] button**
On the top screen: Displays the MENU screen.
On the other screen: Fixes or copies setting the parameter value.

5 **[F1] button**
On the top screen: Select the heating or cooling mode.
On the other screen: Varies its function according to the screen.

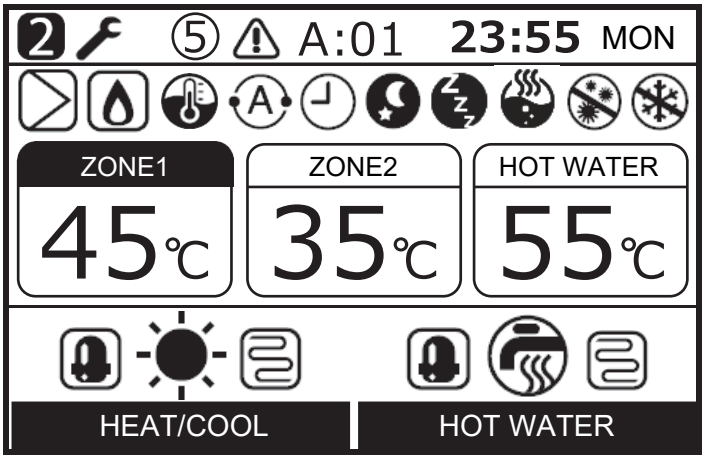
6 **[F2] button**
On the top screen: Select the hot water mode.
On the other screen: Varies its function according to the screen.

7 **[RETURN] button**
Returns to the previous screen, etc.

8 **[MODE] button**
On the top screen: Select the mode for which to change the temperature.
On the other screen: Resets the setting parameter value.

■ Meaning of Indication on the top screen

Fig. 2-02



ZONE1	Lights when floor heater or radiator is connected (when the system has floor heater or radiator).
ZONE2	Lights when controlling the second temperature (It may not light depending on the system).
HOT WATER	Lights when hot water supply system is connected (when the system has hot water supply).
ZONE1	The painted mark lights for operation mode for which temperature is to be changed.
HEAT/COOL	Lights when the compressor is acting for heating or cooling operation.
HEAT/COOL	Lights while the electric heater inside the hydro unit is energized during a heating operation.
HOT WATER	Lights while the compressor is acting for hot water supply operation.
HOT WATER	Lights while the electric cylinder heater is energized during hot water operation.
	Lights when heating is selected.
	Lights when cooling is selected.
	Lights during hot water supply is selected.
	Lights while internal pump (pump 1) or expansion pump (pump 2) is driven.
	Lights when the auxiliary boiler or external booster heater supports the heat pump operation.
/	Lights during water temperature control mode / room temperature control mode.
	Lights during Auto mode operation.
	Lights when Schedule timer or Floor drying is set to "ON".

	Lights when Night setback operation is set to "ON" and heating or cooling is selected.
	Lights while Silent mode operation is actually running.
	Lights while hot water boost is actually running.
	Lights when Anti bacteria operation is set to "ON" and hot water operation is selected.
	Lights while Frost protection operation is actually running.
	Lights when Test mode or Floor drying is set to "ON".
	Displays when the remote controller is set as Second remote controller.
	Lights when an error occurs and goes out when the error is cleared.
	Lights when an error occurs. This number is unit number.

3 How to use functions

The following explanation is based on factory setting.

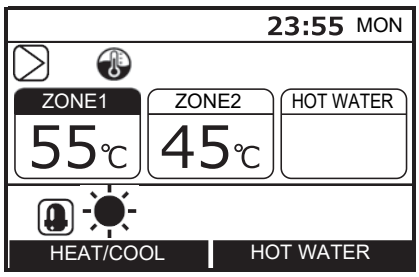
■ Heating or cooling operation

(1) Press the [⏻ ON/OFF] button to start operation.
(2) Press the [F1] button to select operation mode.
(3) The operation mode changes as follows each time the button is pressed.

→ HEAT ☀ → COOL ❄ → No indication (OFF) →

- During the heat pump operation, the mark is displayed. During the internal heater is energized, the mark is displayed.

(4) When the [⏻ ON/OFF] button is pressed, operation stop.



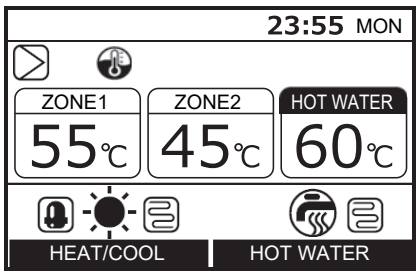
■ Hot water supply operation

(1) Press the [⏻ ON/OFF] button to start running.
(2) Press the [F2] button to select the Hot water supply operation mode.
(3) The operation mode changes as follows each time the button is pressed.

→ HOT WATER → No indication (OFF) →

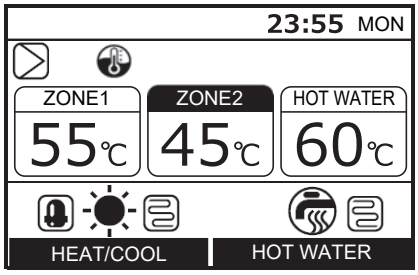
- During the heat pump operation, the mark is displayed. During the cylinder heater is energized, the mark is displayed.

(4) Press the [⏻ ON/OFF] button to stop running. When the [⏻ ON/OFF] button is pressed, all the operations, heating or cooling and hot water, stop.



■ Changing the temperature

(1) Press the [▭] button to select the mode to change the temperature.
(2) Press the [∧] / [∨] button to adjust the temperature.



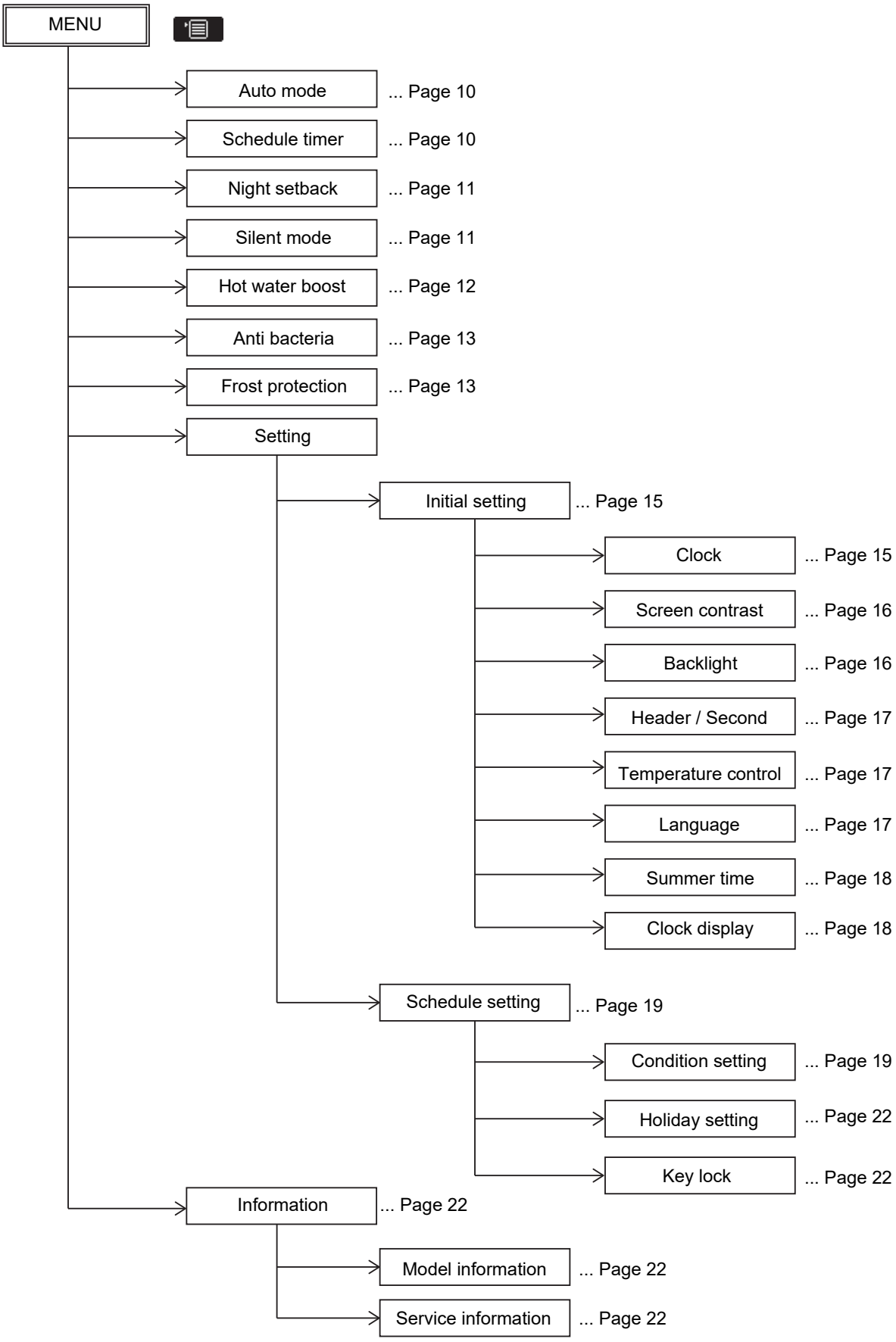
- The ZONE2 setting temperature must be equal to or lower than the ZONE1 setting temperature.
- You can choose whether to use water temperature or room temperature as set temperature.
- When room temperature control is selected with second remote controller, room temperature is used as set temperature. The mark changes to the mark.

■ Menu operation

(1) Press the [▤] button, then the menu screen is displayed.
(2) Press the [∧] / [∨] button to select an item. The selected item is highlighted.
(3) Press the [F2] button. The setting screen appears.

To undo
Press the [↩] button to return. The display returns to the previous screen.

■ Menu items


MENU
Auto mode ... Page 10
Schedule timer ... Page 10
Night setback ... Page 11
Silent mode ... Page 11
Hot water boost ... Page 12
Anti bacteria ... Page 13
Frost protection ... Page 13
Setting
Initial setting ... Page 15
Clock ... Page 15
Screen contrast ... Page 16
Backlight ... Page 16
Header / Second ... Page 17
Temperature control ... Page 17
Language ... Page 17
Summer time ... Page 18
Clock display ... Page 18
Schedule setting ... Page 19
Condition setting ... Page 19
Holiday setting ... Page 22
Key lock ... Page 22
Information ... Page 22
Model information ... Page 22
Service information ... Page 22

■ Auto mode operation

- The setting temperature can be set automatically according to the outside temperature.

(1) Press the [^] / [v] button to select "Auto mode" on the MENU screen, then press the [F2] button.

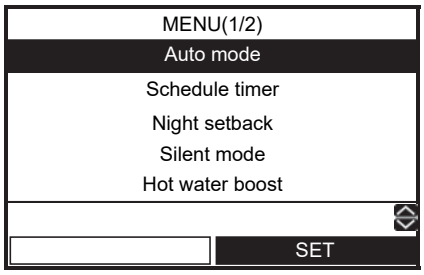
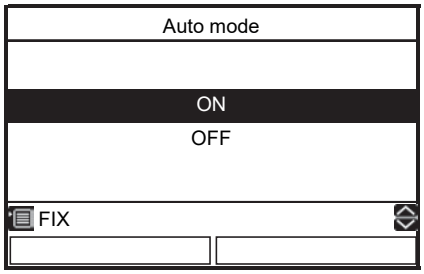
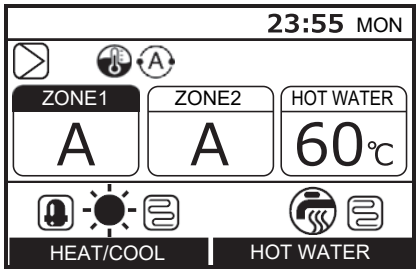


Fig.3-01

(2) Press the [^] button to select "ON" on the Auto mode screen, then press the [▤] button.



(3) Start the heating operation, then the temperature indication changes to "A" and the Ⓐ mark appears on the top screen.



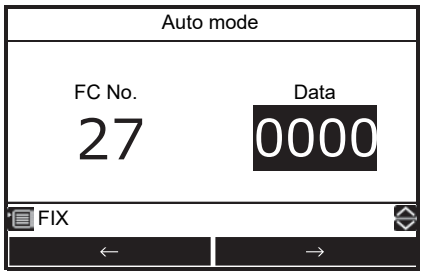
To shift the Auto curve temperature

- This function is available only for the header remote controller.
- The set temperature can be shifted in the range of ±5k of the current setting.

(1) Press the [F1] button for 4 seconds or longer on the Fig.3-01 screen to enter the setting mode. The function code setting screen appears.
FC No. 27: Shifted temperature
(Range: -5 ~ +5, Default: 0)

(2) Press the [F2] button to select Data value, then press the [^] / [v] button to adjust the temperature between -5K to +5 K.

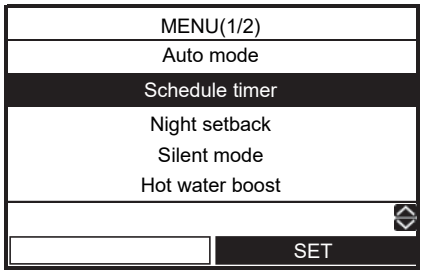
(3) Press the [▤] button. The set temperature is registered.



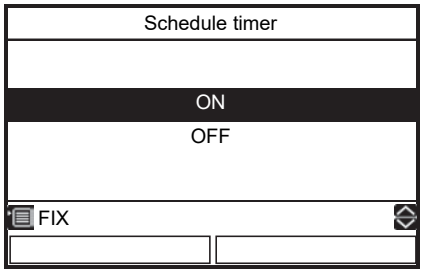
■ Schedule timer

- This function is available only for the header remote controller.
- Schedule setting makes the following modes to be flexibly set: hot water supply, heating, cooling, hot water supply and heating, hot water supply and cooling, and stop, and set temperature.
- Set the unit clock and the schedule timer setting before making the setting.

(1) Press the [^] / [v] button to select "Schedule timer" on the MENU screen, then press the [F2] button.



(2) Press the [^] button to select "ON" on the Schedule timer screen, then press the [▤] button. The ◷ mark appears on the top screen.



To set the Scheduled operation patterns

- See "Setting -Schedule setting-" (Condition setting and Holiday setting).
- When setting time comes, the set operation is started automatically.

■ Night setback

- This function is used for energy saving during specified time zone (sleeping hours, etc.).
- For night time hours (sleeping hours, etc.), this function shifts the set temperature of heating or cooling by 5k.

(1) Press the [∧] / [∨] button to select an "Night setback" on the MENU screen, then press the [F2] button.

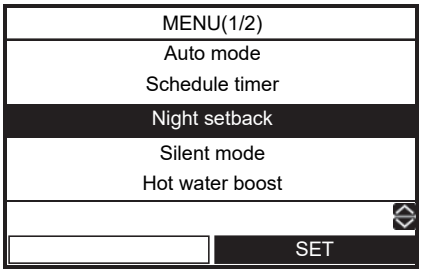
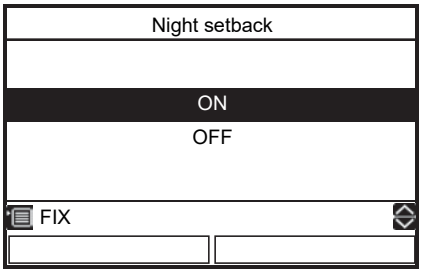


Fig.3-02

(2) Press the [∧] button to select "ON" on the Night setback screen, then press the [▣] button.



(3) Start the heating or cooling operation, then the mark appears on the top screen.

To set Night setback start and end time

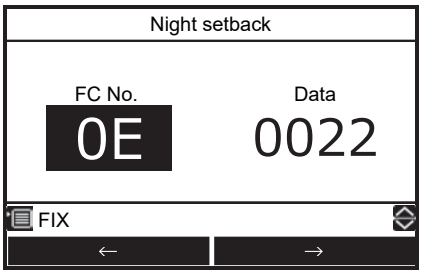
- This function is available only for the header remote controller.

(1) Press the [F1] button for 4 seconds or longer on the Fig.3-02 screen to enter the setting mode. The function code setting screen appears.

FC No. 0E: Start time (Range: 0~23, Default: 22)
0F: End time (Range: 0~23, Default: 06)

(2) Press the [F1] / [F2] button to select FC number or Data, then press the [∧] / [∨] button to set the value.
The same value cannot be set to 0E and 0F.

(3) Press the [▣] button. The set time is registered.



■ Silent mode

- This function is available only for the header remote controller.
- This setting is used to reduce noise output, from the outdoor unit, during night time for neighbours. Night time low-noise operates with lower operation frequency and fan tap than normal operation only for the set time period.

(1) Press the [∧] / [∨] button to select "Silent mode" on the MENU screen, then press the [F2] button.

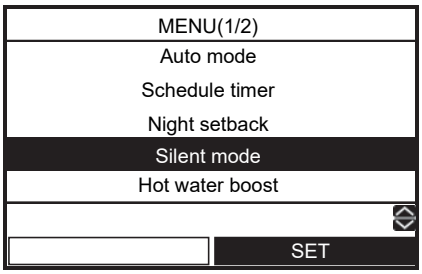
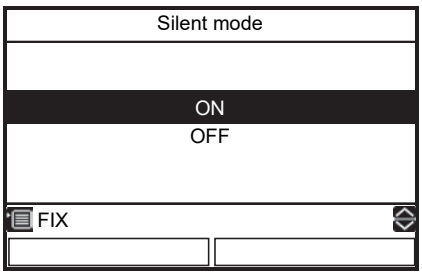


Fig.3-03

(2) Press the [∧] button to select "ON" on the Silent mode screen, then press the [▣] button.



(3) Start the heating, cooling or hot water operation. The mark appears on the top screen during the set-up time zone.

To set Silent mode start and end time

- This function is available only for the header remote controller.

(1) Press the [F1] button for 4 seconds or longer on the Fig.3-03 screen to enter the setting mode. The function code setting screen appears.
FC No. 0A: Start time (Range: 0~23, Default: 22)
0B: End time (Range: 0~23, Default: 06)

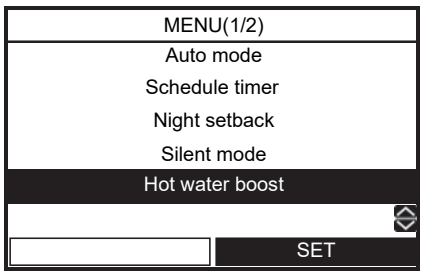
(2) Press the [F1] / [F2] button to select FC number or Data, then press the [∧] / [∨] button to set the value.
The same value cannot be set to 0A and 0B.

(3) Press the [▪] button. The set time is registered.

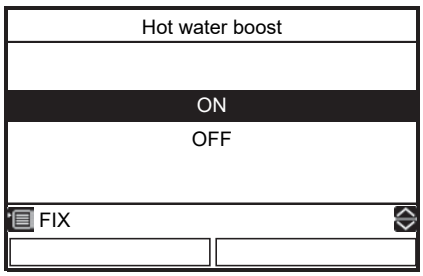
■ Hot water boost

- This function is used when temporarily giving priority to the hot water supply operation. The hot water supply operation is performed in preference to other operations with a target of the preset time (60 minutes) or the preset temperature (75°C). Use this function when hot water is not used for a long time or before using a large amount of hot water.
- The preset time and temperature settings can be changed to values with in a range of 30 to 180 minutes and 40 to 80°C. Ask the installation company to make the required changes to the settings.
- Start the hot water operation before making the setting.
It may not be able to go to the setting screen immediately after start. In that case, select "Hot water boost" again after tens of seconds.

(1) Press the [∧] / [∨] button to select "Hot water boost" on the MENU screen, then press the [F2] button.



(2) Press the [∧] button to select "ON" on the Hot water boost screen, then press the [▪] button. The mark appears on the top screen.



- When the set time period has passed or the water temperature has reached the set temperature, the hot water boost operation ends automatically.

■ Anti bacteria

- This setting regularly raises the hot water cylinder temperature to prevent bacteria from growing.
- The anti-bacteria operation is performed to maintain the temperature (75°C) for the period (30 minutes) when the preset start time (22:00) comes according to the preset cycle (7 days).
- The maintain temperature and the period can be changed, ask the installation company to make the required changes to the settings.

(1) Press the [∧] / [∨] button to select "Anti bacteria" on the MENU screen, then press the [F2] button.

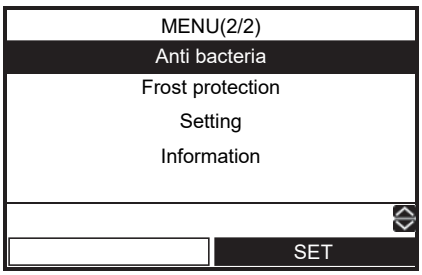
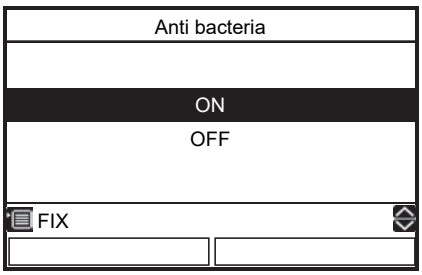


Fig.3-04

(2) Press the [∧] button to select "ON" on the Anti bacteria screen, then press the [▣] button.



(3) Start the hot water operation, then the mark appears on the top screen.

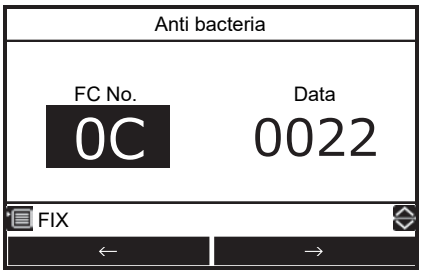
To set Anti bacteria maintain temperature and start time

- This function is available only for the header remote controller.

(1) Press the [F1] button for 4 seconds or longer on the Fig.3-04 screen to enter the setting mode. The function code setting screen appears.
FC No. 0C: Start time (Range: 0~23, Default: 22)
0D: cycle (Range: 0~10, Default: 07)

(2) Press the [F1] / [F2] button to select FC number or Data, then press the [∧] / [∨] button to set the value.

(3) Press the [▣] button. The set value is registered.



■ Frost protection

- This function performs operation with the minimum capacity (target water temperature:15°C) to prevent pipes from freezing in case the unit is not used for a long period due to absence.
- Cancel schedule timer to start frost protection operation. When frost protection is operated with schedule timer on, it may stop during its operation.
- The minimum capacity can be changed, ask the installation company to make the required changes to the settings.
- This function takes precedence over the Night setback operation that is set separately.
- Start the heating operation before making the setting.
It may not be able to go to the setting screen immediately after start. In that case, select "Frost protection" again after tens of seconds.

(1) Press the [∧] / [∨] button to select "Frost protection" on the MENU screen, then press the [F2] button.

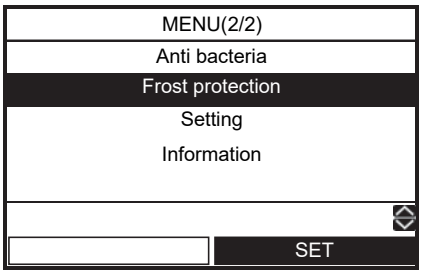
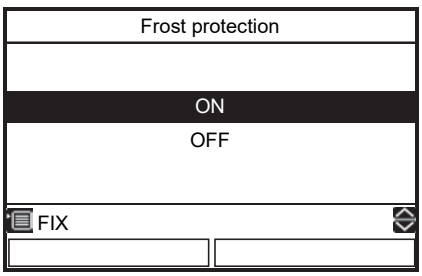
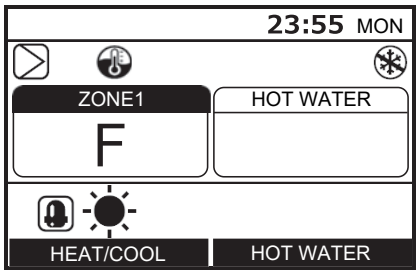


Fig.3-05

(2) Press the [∧] button to select "ON" on the Frost protection screen, then press the [▣] button.



(3) The temperature indication change to "F" and ❄ mark appears on the top screen.



- When the set period has passed, the Frost protection operation ends automatically.

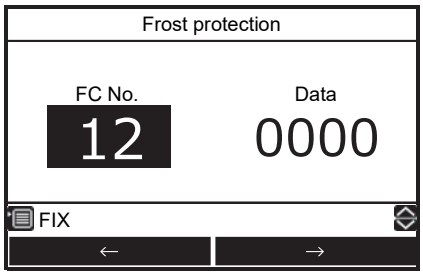
To set the end days and time for the frost protection operation

- This function is available only for the header remote controller.

(1) Press the [F1] button for 4 seconds or longer on the Fig.3-05 screen to enter the setting mode. The function code setting screen appears.
FC No. 12: End days (Range: 0~20, Default: 0)
13: End times (Range: 0~23, Default: 0)
ex)
Code No. 12: 05
13: 13 = 5 days 13 hours

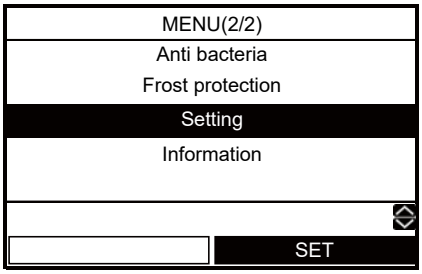
(2) Press the [F1] / [F2] button to select FC number or Data, then press the [∧] / [∨] button to set the value.

(3) Press the [▣] button. The set value is registered.

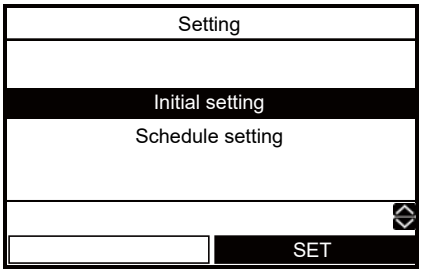


■ Setting – Initial setting –

(1) Press the [^] / [v] button to select "Setting" on the MENU screen, then press the [F2] button.



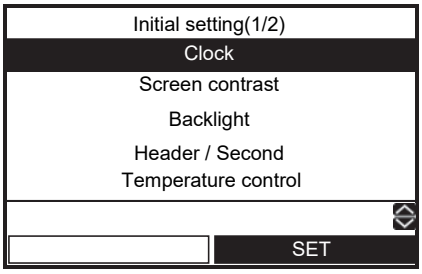
(2) Press the [^] / [v] button to select "Initial setting" on the Setting screen, then press the [F2] button.



■ Clock

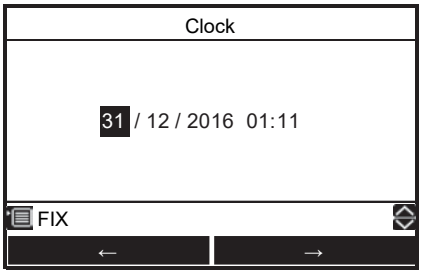
- Setting for the clock (date, month, year, time)

(1) Press the [^] / [v] button to select "Clock" on the Initial setting screen, then press the [F2] button.



(2) Press the [F1] / [F2] button to select the date, month, year, and, time.

(3) Press the [^] / [v] button to set the value, then press the [▣] button.

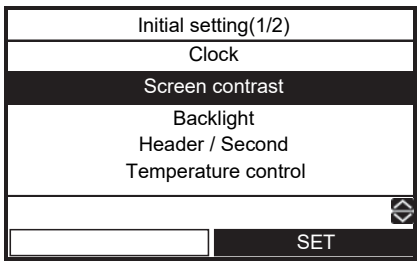


- The clock display appears on the top screen.
- The clock display blinks if the clock setting has been reset due to power failure or other cause.

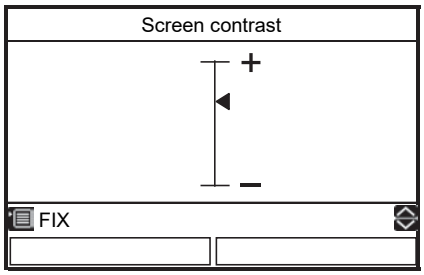
■ Screen contrast

- Contrast adjustment of the LCD

(1) Press the [^] / [v] button to select "Screen contrast" on the Initial setting screen, then press the [F2] button.



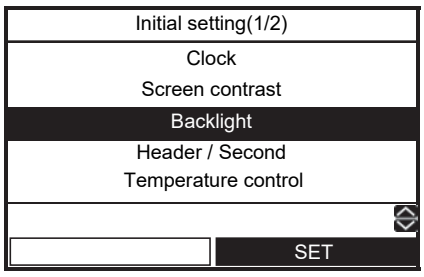
(2) Press the [^] / [v] button to adjust, then press the [▣] button.



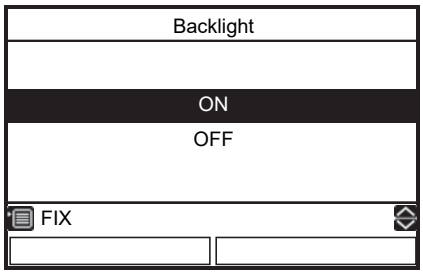
■ Backlight

- Turn on or off the backlight of the LCD

(1) Press the [^] / [v] button to select "Backlight" on the Initial setting screen, then press the [F2] button.



(2) Press the [^] / [v] button to select ON/OFF, then press the [▣] button.

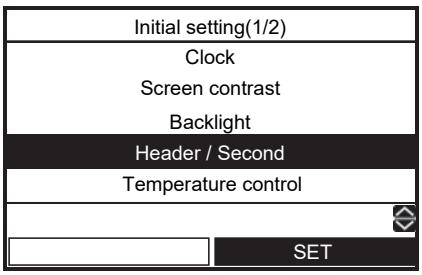


- The back light of the LCD is turned on as factory default.
- The back light is on for about 30 seconds after button operation.

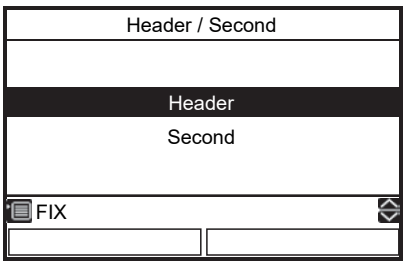
■ Header / Second

- For a dual remote controller system.
- Set one of remote controller as the header remote controller.
- Set another remote controller as the second remote controller.

(1) Press the [^] / [v] button to select "Header / Second" on the Initial setting screen, then press the [F2] button.



(2) Press the [^] / [v] button to select Header / Second, then press the [▣] button.



- Some function are not available when the remote controller is set as the "Second remote controller".
- In the dual remote controller system, the latter operation overrides the former.
- The factory default is "Header remote controller".

Disable function with second remote controller
- •Schedule timer
- •Silent mode
- •Schedule setting

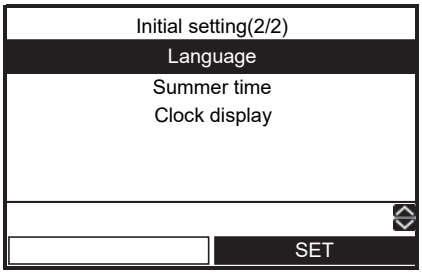
■ Temperature control

- To control room temperature instead of water temperature with this remote controller. Please check with the installer for details.

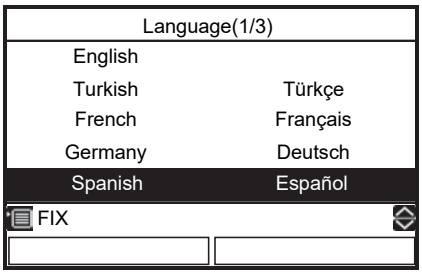
■ Language

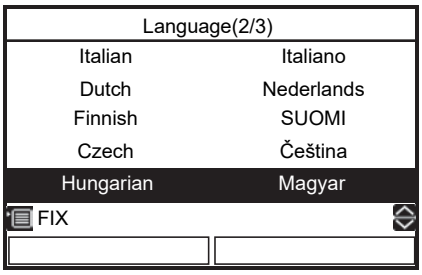
- Select a language for the screen text.

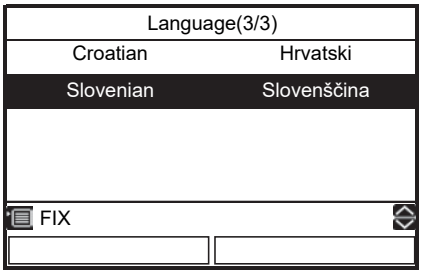
(1) Press the [^] / [v] button to select "Language" on the Initial setting screen, then press the [F2] button.



(2) Press the [^] / [v] button to select the language, then press the [▣] button.







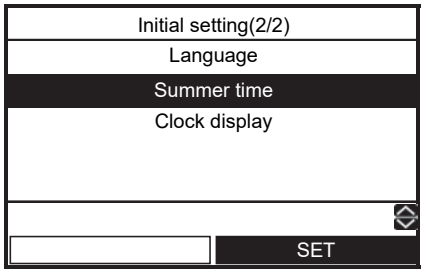
- The factory default is "English".

■ Summer time

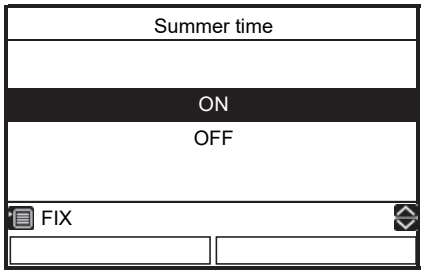
- Set summer time (Daylight saving time).
- When This function is "ON" and the time in "Start date" is reached, the setting time in the remote controller shifts by +1 hour (e.g. 1:00→2:00), and when the time in "End date" is reached, the setting time shifts -1 hour (e.g. 1:00→12:00).
- The scheduled time itself of the following functions are not changed.
  Schedule timer, Night setback, Silent mode, Anti bacteria

The operation starts according to the shifted time.
If a schedule is set within 1 hour before and after Summer time Start and End time, there may be cases that the operation is repeated or skipped on the date.

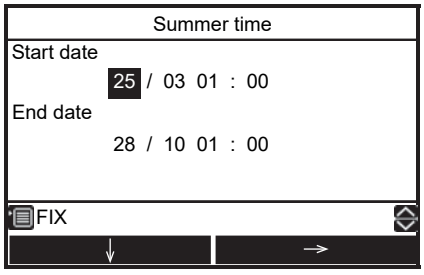
(1) Press the [^] / [v] button to select "Summer time" on the Initial setting screen, then press the [F2] button.



(2) Press the [^] / [v] button to select "ON" on the Summer time screen, then press the [▤] button.



(3) Press the [F1] / [F2] button to change the start date and the end date, then Press the [^] / [v] button to set the day, month, time.

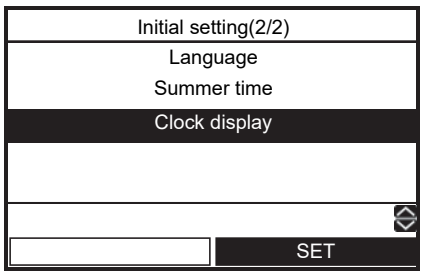


(4) Press the [▤] button.

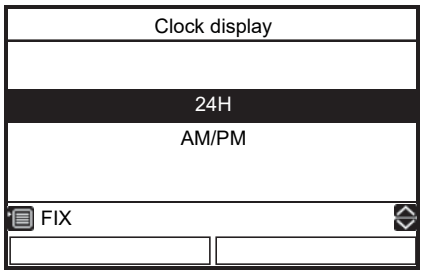
■ Clock display

- Select the clock display "12-hour clock " or "24-hour clock" on the top screen.
- Even if you select the "12-hour clock", the clock displays other than the top screen is "24-hour clock"

(1) Press the [^] / [v] button to select "Clock display" on the Initial setting screen, then press the [F2] button.



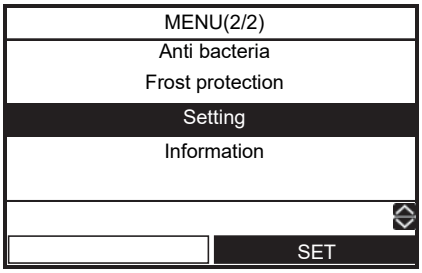
(2) Press the [^] / [v] button to select "24H" / "AM/PM" on the Clock display screen, then press the [▤] button.
24H: 24-hour clock
AM/PM: 12-hour clock



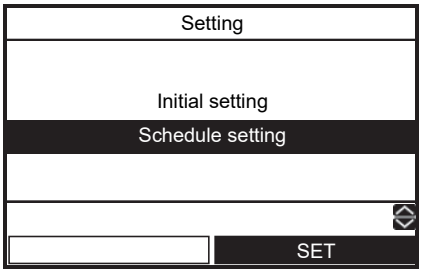
■ Setting – Schedule setting –

- This function is available only for the header remote controller.

(1) Press the [^] / [v] button to select "Setting" on the MENU screen, then press the [F2] button.



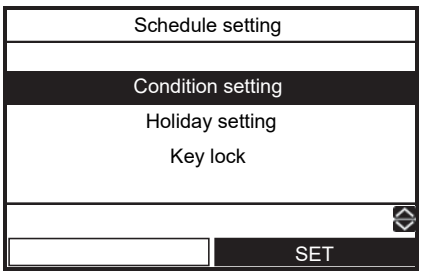
(2) Press the [^] / [v] button to select "Schedule setting" on the setting screen, then press the [F2] button.



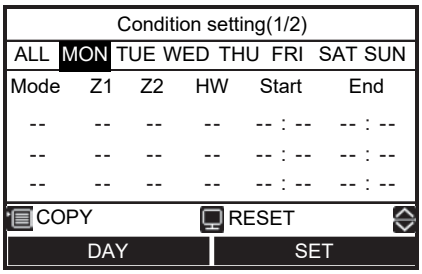
■ Condition setting

- Up to 6 different running patterns per day can be programmed.

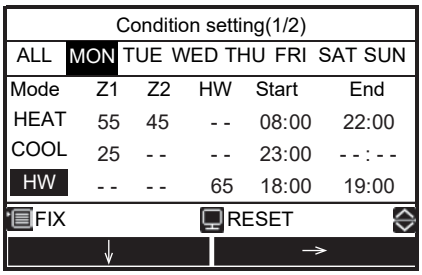
(1) Press the [^] / [v] button to select "Condition setting" on the Schedule setting screen, then press the [F2] button.



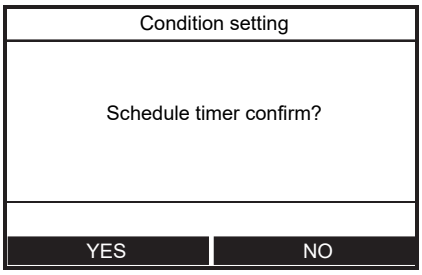
(2) Press the [F1] button to select the day, then press the [F2] button to input running pattern.



(3) Press [F1] / [F2] button to select the change item, then press the [^] / [v] button.



(4) Press the [▪] button.



(5) Press the [F1] button to Fix.

Mode : Operation mode (HEAT, COOL, HW (Hot water))
Z1 : ZONE1 setting temperature
Z2 : ZONE2 setting temperature
HW : Hot water supply operation setting temperature
Start : Operation start time (0:00 ~ 23:59)
End : Operation end time (0:00 ~ 24:00, -- : --)

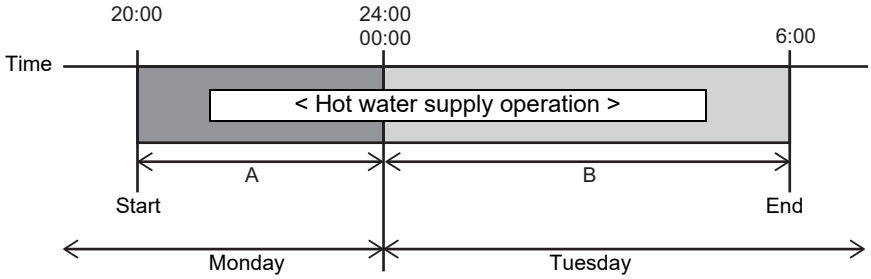
- "-- : --" means the operation continues.

If End time is set earlier than Start time, an error is displayed.

Easy method of setting up ranging over a day in Schedule operation

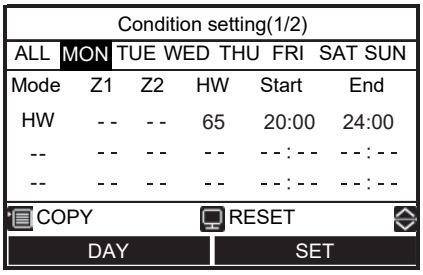
There are two methods.
①If "24:00" is set to "End" and "00:00" is set to "Start" next day, the previous operation status will be continued. And set the time you want to stop to "End".
②If "--" is set to "End", the previous operation status will be continued next day. And set the time you want to stop to "End". Any "Start" time is sufficient if it is earlier than "End" time.

For example) * In the case of the setting method ①
How to set up Hot water supply operation from 20:00 of Monday night to 6:00 of Tuesday morning.

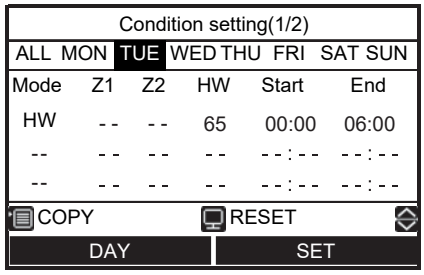


①-1 When a day of the week is specified.
Set individually about Monday and Tuesday.

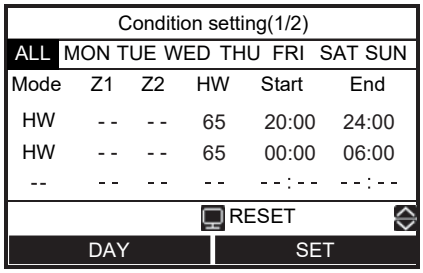
A



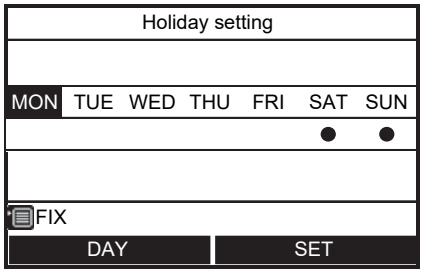
B



①-2 When use the ALL setting.
If you want to set up two or more days, you can set up easily using the function.
Set about ALL, then it will be similarly set up from Monday to Sunday.

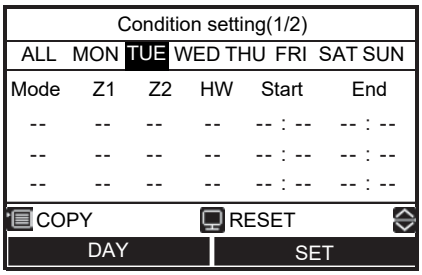


If there are some days you don't want to do Schedule operation, do Holiday setting after that.

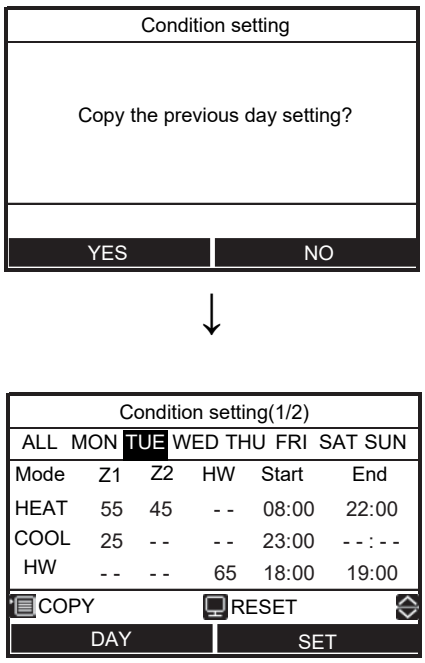


To copy the settings of the previous day

(1) Press the [F1] button to select the day, then press the [▣] button to copy the settings of the previous day.



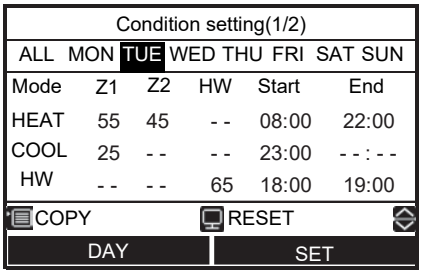
(2) Press the [F1] button, then the contents of the setting is displayed.



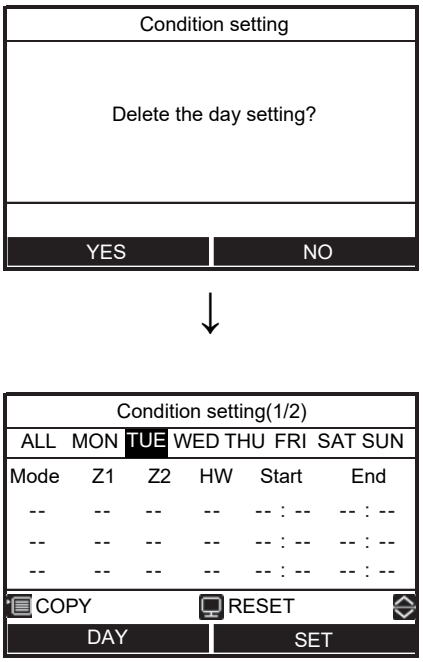
- If the [▣] button is pressed in the state where "MON" is selected, the contents of the setting of "SUN" is copied.

To reset the settings for each day.

(1) Press the [F1] button to select the day, then press the [▣] button to reset the settings of the day.



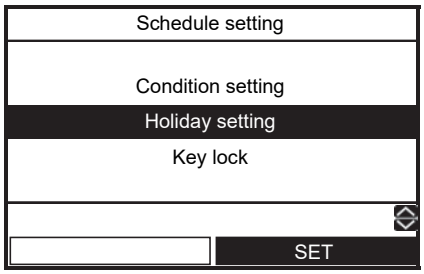
(2) Press the [F1] button, then the contents of the setting is cleared.



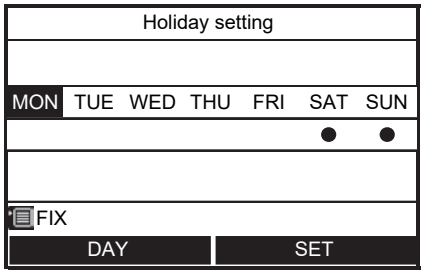
■ Holiday setting

- Set the days of the week when the schedule timer not used.

(1) Press the [^] / [v] button to select "Holiday setting" on the Schedule setting screen, then press the [F2] button.



(2) Press the [F1] button to select the day, then press the [F2] button to set.
●: Schedule timer is not used.

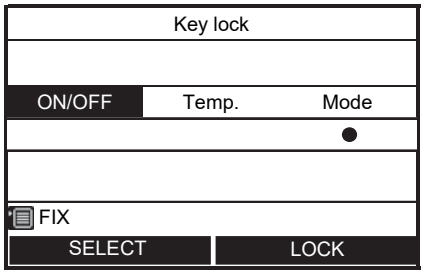


(3) Press the [▣] button to Fix.

■ Key lock

- Select whether to LOCK / UNLOCK [ON/OFF], [Temperature], [mode] during schedule timer.

(1) Press the [^] / [v] button to select "Key lock" on the Schedule setting screen, then press the [F2] button.
(2) Press the [F1] button to select object, then press the [F2] button to select LOCK or UNLOCK.
●: LOCK

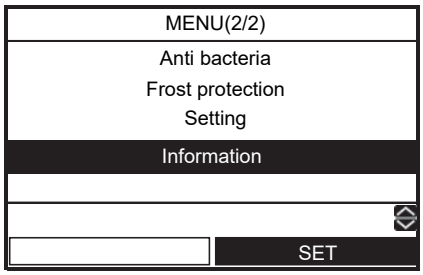


(3) Press the [▣] button to Fix.

- When "LOCK" is selected, the key cannot be used during Key lock and schedule timer.
- The factory default is "UNLOCK".

■ Information

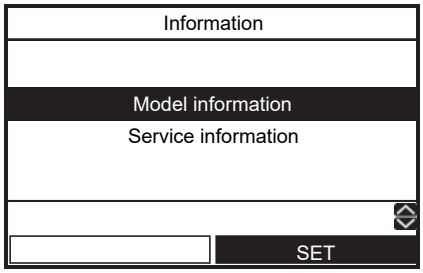
(1) Press the [^] / [v] button to select "Information" on the MENU screen, then press the [F2] button.



■ Model Information

- Shows the model names and serial numbers.

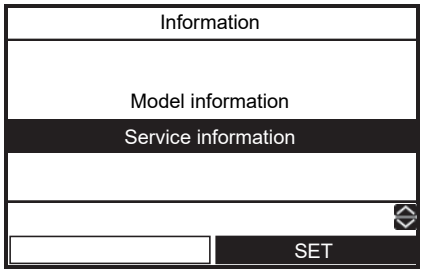
(1) Press the [^] / [v] button to select "Model information" on the Information screen, then press the [F2] button.



■ Service information

- Shows the contact number for service.

(1) Press the [^] / [v] button to select "Service information" on the Information screen, then press the [F2] button.



4 User maintenance

Periodic maintenance (once a year) is necessary for this product. Consult the installation company.
If a problem occurs, contact the installation company or dealer.

5 Air to Water Heat Pump operations and performance

3 minutes protection function

3 minutes protection function prevents the air to water heat pump from starting for initial 3 minutes after the main power switch/circuit breaker is turned on for re-starting the air to water heat pump.

Power failure

Power failure during operation will stop the unit completely.

- To restart the operation, we should mention Auto restart function.

Heating characteristics

Defrosting operation

If the outdoor unit is frosted during the heating or hot water supply operation, defrosting starts automatically (for approximately 2 to 10 minutes) to maintain the heating capacity.

- During the defrosting operation, the defrosted water will be drained from the bottom plate of the outdoor unit.

Heating capacity

In the heating operation, the heat is absorbed from the outside and brought into the room. This way of heating is called heat pump system. When the outside temperature is too low, it is recommended to use another heating apparatus in combination with the air to water heat pump.

Attention to snowfall and freeze on the outdoor unit

- In snowy areas, the air intake and air discharge of the outdoor unit are often covered with snow or frozen up. If snow or freeze on the outdoor unit is left as it is, it may cause machine failure or poor warming.
- In cold areas, pay attention to the drain hose so that it perfectly drains water without water remaining inside for freeze prevention. If water freezes in the drain hose or inside the outdoor unit, it may cause machine failure or poor warming.

Air to water heat pump operating conditions

For proper performance, operate the air to water heat pump under the following temperature conditions:

Cooling operation	Outdoor temperature	: 10°C to 43°C
	Room temperature	: 18°C to 32°C (Dry bulb temp.)
Hot water	Outdoor temperature	: -20°C to 43°C (Heater operation in more than 35°C)
	Room temperature	: 5°C to 32°C
Heating operation	Outdoor temperature	: -20°C to 25°C
	Room temperature	: 5°C to 32°C

If air to water heat pump is used outside of the above conditions, safety protection may work.

■ General Specifications

Outdoor Unit

Single Phase model

Outdoor unit			HWS-455H-E	HWS-805H-E	HWS-1105H-E	HWS-1405H-E
Power supply			220-230 V ~ 50 Hz			
Type			INVERTER			
Function			Heating & Cooling			
Heating	Capacity	(kW)	4.5	7.51	10.52	13.15
	Input	(kW)	0.92	1.68	2.15	2.92
	COP	(W/W)	4.90	4.46	4.88	4.50
Cooling	Capacity	(kW)	4.5	6.0	10.0	11.0
	Input	(kW)	1.46	1.94	3.26	3.81
	EER	(W/W)	3.08	3.10	3.07	2.89
Refrigerant			R410A			
Dimension	HxWxD	(mm)	630x800x300	890x900x320	1,340x900x320	

3 Phase model

Outdoor unit						with Cord heater		
			HWS-1105H8-E	HWS-1405H8-E	HWS-1605H8-E	HWS-1105H8R-E	HWS-1405H8R-E	HWS-1605H8R-E
Power supply			380-400 V 3N~ 50 Hz					
Type			INVERTER					
Function			Heating & Cooling					
Heating	Capacity	(kW)	10.52	13.15	14.91	10.52	13.15	14.91
	Input	(kW)	2.19	2.96	3.47	2.19	2.96	3.47
	COP		4.80	4.44	4.30	4.80	4.44	4.30
Cooling	Capacity	(kW)	10.0	11.0	13.0	10.0	11.0	13.0
	Input	(kW)	3.26	3.81	4.80	3.26	3.81	4.80
	EER		3.07	2.89	2.71	3.07	2.89	2.71
Refrigerant			R410A					
Dimension	HxWxD	(mm)	1,340x900x320					
Cord heater		(W)	–			75		

Hydro Unit (4.5 kW model)

Hydro Unit			HWS-455XWHM3-E
Back up heater capacity		(kW)	3.0
Power supply	for back up heater		220-230 V ~ 50 Hz
	for hot water cylinder heater (option)		220-230 V ~ 50 Hz
Leaving water temperature	Heating	(°C)	20-55
	Cooling	(°C)	7-25

Hydro Unit (8 kW model)

Hydro Unit			HWS-805XWHM3-E	HWS-805XWHT6-E	HWS-805XWHT9-E
Back up heater capacity		(kW)	3.0	6.0	9.0
Power supply	for back up heater		220-230 V~ 50 Hz	380-400 V 3N~ 50 Hz	380-400 V 3N~ 50 Hz
	for hot water cylinder heater (option)		220-230 V~ 50 Hz		
Leaving water temperature	Heating	(°C)	20-55		
	Cooling	(°C)	7-25		

Hydro Unit (11 kW, 14 kW, 16 kW model)

Hydro Unit			HWS-1405XWHM3-E	HWS-1405XWHT6-E	HWS-1405XWHT9-E
Back up heater capacity		(kW)	3.0	6.0	9.0
Power supply	for back up heater		220-230 V~ 50 Hz	380-400 V 3N~ 50 Hz	380-400 V 3N~ 50 Hz
	for hot water cylinder heater (option)		220-230 V~ 50 Hz		
Leaving water temperature	Heating	(°C)	20-55		
	Cooling	(°C)	7-25		

Hot water cylinder (option)

Hot water cylinder (option)		HWS-1501CSHM3-E HWS-1501CSHM3-UK	HWS-2101CSHM3-E HWS-2101CSHM3-UK	HWS-3001CSHM3-E HWS-3001CSHM3-UK
Power supply		220-230 V~ 50 Hz		
Water volume	(liter)	150	210	300
Max water temperature	(°C)	75		
Electric heater	(kW)	2.7		
Height	(mm)	1,090	1,474	2,040
Diameter	(mm)	550		
Material		Stainless steel		

6 Troubleshooting

If a problem occurs, contact the installation company or dealer.

Problem Check	Action
Nothing is displayed on the remote controller.	• Check whether power is supplied. • Is the circuit breaker switch turned on?
Time indication is blinking.	• Date/time setting is not made. • Set date and time.
An error code is displayed on the remote controller.	• Contact the installation company.
Room is not cooled or heated.	• Is scheduled operation set? • Check whether scheduled operation is set.
	• Is night setback operation set? • Check the setting on the remote controller.
	• Is the air to water heat pump operating in Auto mode? • In Auto mode, the target value is set automatically according to the outdoor unit temperature. • The Auto mode can be adjusted. Contact the installation company.
Hot water is not supplied.	• Is the main water supply cock closed? • Check valves.
	• Are you using too much hot water? • If hot water exceeding the storage capacity is used, water at a temperature lower than the set hot water temperature is supplied.

If you have any questions, contact the installation company.

7 Technical parameters

Technical parameters for heat pump space heater

Climate condition : average climate

Models	Outdoor unit				HWS-455H-E		HWS-805H-E	
	Indoor unit				HWS-455XWHM3-E		HWS-805XWHM3-E HWS-805XWHT6-E HWS-805XWHT9-E	
	Hot water cylinder				-		-	
Air-to-water heat pump					yes		yes	
Water-to-water heat pump					no		no	
Brine-to-water heat pump					no		no	
Low-temperature heat pump					no		no	
Equipped with a supplementary heater					yes		yes	
Heat pump combination heater					no		no	
Parameters for low-temperature application/ medium-temperature application					low	medium	low	medium
			Symbol	**unit**	**Value**			
Item	Rated heat output (*)		P_{rated}	kW	5	5	6	5
	Seasonal space heating energy efficiency		η_s	%	167	125	161	127
	Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj	Tj = - 7 °C	Pdh	kW	4.3	4.2	5.3	4.9
		Tj = +2 °C	Pdh	kW	2.7	3.1	4.3	3.1
		Tj = + 7 °C	Pdh	kW	1.5	1.5	2.1	2.0
		Tj = + 12 °C	Pdh	kW	1.6	1.5	1.4	1.4
		Tj = bivalent temperature	Pdh	kW	4.3	4.2	5.3	4.9
		Tj = operation limit temperature	Pdh	kW	4.3	4.2	5.3	4.9
		Tj = - 15 °C (if TOL < - 20 °C)	Pdh	kW	-	-	-	-
	Bivalent temperature		T_{biv}	°C	-7	-7	-7	-7
	Cycling interval capacity for heating		P_{cych}	kW	-	-	-	-
	Degradation co-efficient (**)		C_{dh}	-	0.7	0.7	0.6	0.7
	Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	COPd	-	3.12	2.16	2.82	2.06
		Tj = +2 °C	COPd	-	4.68	3.36	4.28	3.36
		Tj = + 7 °C	COPd	-	5.42	4.31	5.98	4.41
		Tj = + 12 °C	COPd	-	7.57	5.91	7.23	5.86
		Tj = bivalent temperature	COPd	-	3.12	2.16	2.82	2.06
		Tj = operation limit temperature	COPd	-	3.12	2.16	2.82	2.06
		Tj = - 15°C (if TOL < - 20°C)	COPd	-	-	-	-	-
	Operation limit temperature		TOL	°C	-7	-7	-7	-7
	Cycling interval efficiency		P_{cych}	-	-	-	-	-
	Heating water operating limit temperature		WTOL	°C	55	55	55	55
Power consumption in modes other than active mode	Off mode		P_{OFF}	kW	0.017	0.017	0.017	0.017
	Thermostat-off mode		P_{TO}	kW	0.080	0.080	0.080	0.080
	Standby mode		P_{SB}	kW	0.017	0.017	0.017	0.017
	Crankcase heater mode		P_{CK}	kW	0.014	0.014	0.014	0.014
Supplementary heater	Rated heat output (*)		P_{sup}	kW	5	5	6	5
	Type of energy input				electric		electric	
Other items	Capacity control				variable		variable	
	Sound power level, indoors/outdoors		L_{WA}	dB	41/65	41/65	41/65	41/65
	Rated air flow rate, outdoors		-	m^3/h	2570	2570	3140	3140
For heat pump combination heater	Declared load profile		-	-	-		-	
	Daily electricity consumption		Q_{elec}	kWh	-		-	
	Water heating energy efficiency		η_{wh}	%	-		-	
Contact details	TOSHIBA CARRIER CORPORATION 336,Tadehara, Fuji-shi, Shizuoka-ken,416-8521 Japan							

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0.9.

Technical parameters for heat pump space heater

Climate condition : average climate

Models	Outdoor unit				HWS-1105H-E		HWS-1405H-E	
	Indoor unit				HWS-1405XWHM3-E HWS-1405XWHT6-E HWS-1405XWHT9-E			
	Hot water cylinder				-		-	
Air-to-water heat pump					yes		yes	
Water-to-water heat pump					no		no	
Brine-to-water heat pump					no		no	
Low-temperature heat pump					no		no	
Equipped with a supplementary heater					yes		yes	
Heat pump combination heater					no		no	
Parameters for low-temperature application/ medium-temperature application					low	medium	low	medium

			Symbol	unit	Value			
Item	Rated heat output (*)		P_{rated}	kW	10	9	10	9
	Seasonal space heating energy efficiency		η_s	%	163	130	159	129
	Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	Pdh	kW	8.5	8.2	9.2	8.0
		Tj = +2 °C	Pdh	kW	4.8	4.9	5.1	4.8
		Tj = + 7 °C	Pdh	kW	3.2	3.2	3.4	3.2
		Tj = + 12 °C	Pdh	kW	2.7	2.7	2.7	2.7
		Tj = bivalent temperature	Pdh	kW	8.5	8.2	9.2	8.0
		Tj = operation limit temperature	Pdh	kW	8.5	8.2	9.2	8.0
		Tj = - 15 °C (if TOL < - 20 °C)	Pdh	kW	-	-	-	-
	Bivalent temperature		T_{biv}	°C	-7	-7	-7	-7
	Cycling interval capacity for heating		P_{cych}	kW	-	-	-	-
	Degradation co-efficient (**)		C_{dh}	-	0.7	0.8	0.7	0.7
	Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	COPd	-	2.86	2.12	2.68	2.07
		Tj = +2 °C	COPd	-	4.61	3.56	4.43	3.48
		Tj = + 7 °C	COPd	-	5.34	4.34	5.39	4.34
		Tj = + 12 °C	COPd	-	6.37	5.54	6.37	5.93
		Tj = bivalent temperature	COPd	-	2.86	2.12	2.68	2.07
		Tj = operation limit temperature	COPd	-	2.86	2.12	2.68	2.07
		Tj = - 15 °C (if TOL < - 20 °C)	COPd	-	-	-	-	-
	Operation limit temperature		TOL	°C	-7	-7	-7	-7
	Cycling interval efficiency		P_{cych}	-	-	-	-	-
	Heating water operating limit temperature		WTOL	°C	55	55	55	55
Power consumption in modes other than active mode	Off mode		P_{OFF}	kW	0.017	0.017	0.017	0.017
	Thermostat-off mode		P_{TO}	kW	0.120	0.120	0.120	0.120
	Standby mode		P_{SB}	kW	0.017	0.017	0.017	0.017
	Crankcase heater mode		P_{CK}	kW	0.014	0.014	0.014	0.014
Supplementary heater	Rated heat output (*)		P_{sup}	kW	10	9	10	9
	Type of energy input				electric		electric	
Other items	Capacity control				variable		variable	
	Sound power level, indoors/outdoors		L_{WA}	dB	43/66	43/66	43/68	43/68
	Rated air flow rate, outdoors		-	m^3/h	5310	5310	5590	5590
For heat pump combination heater	Declared load profile		-	-	-		-	
	Daily electricity consumption		Q_{elec}	kWh	-		-	
	Water heating energy efficiency		η_{wh}	%	-		-	
Contact details	TOSHIBA CARRIER CORPORATION 336,Tadehara, Fuji-shi, Shizuoka-ken,416-8521 Japan							

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0.9.

Technical parameters for heat pump space heater

Climate condition : average climate

Models	Outdoor unit				HWS-1105H8(R)-E		HWS-1405H8(R)-E		HWS-1605H8(R)-E	
	Indoor unit				HWS-1405XWHM3-E HWS-1405XWHT6-E HWS-1405XWHT9-E					
	Hot water cylinder				-		-		-	
Air-to-water heat pump					yes		yes		yes	
Water-to-water heat pump					no		no		no	
Brine-to-water heat pump					no		no		no	
Low-temperature heat pump					no		no		no	
Equipped with a supplementary heater					yes		yes		yes	
Heat pump combination heater					no		no		no	
Parameters for low-temperature application/ medium-temperature application					low	medium	low	medium	low	medium
			Symbol	**Unit**	**Value**					
Item	Rated heat output (*)		P_{rated}	kW	10	9	10	9	10	10
	Seasonal space heating energy efficiency		η_s	%	161	130	157	129	159	130
	Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	Pdh	kW	8.6	7.8	8.8	8.2	9.0	8.7
		Tj = +2 °C	Pdh	kW	6.0	4.7	6.0	5.1	6.0	5.5
		Tj = + 7 °C	Pdh	kW	3.4	3.2	3.5	3.2	3.7	3.3
		Tj = + 12 °C	Pdh	kW	2.8	2.8	2.8	2.7	2.8	2.8
		Tj = bivalent temperature	Pdh	kW	8.6	7.8	8.8	8.2	9.0	8.7
		Tj = operation limit temperature	Pdh	kW	8.6	7.8	8.8	8.2	9.0	8.7
		Tj = - 15 °C (if TOL < - 20 °C)	Pdh	kW	-	-	-	-	-	-
	Bivalent temperature		T_{biv}	°C	-7	-7	-7	-7	-7	-7
	Cycling interval capacity for heating		P_{cych}	kW	-	-	-	-	-	-
	Degradation co-efficient (**)		C_{dh}	-	0.7	0.8	0.7	0.8	0.7	0.8
	Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	COPd	-	2.90	2.09	2.76	1.96	2.65	2.01
		Tj = +2 °C	COPd	-	4.48	3.59	4.34	3.56	4.26	3.54
		Tj = + 7 °C	COPd	-	5.44	4.29	5.35	4.38	5.95	4.38
		Tj = + 12 °C	COPd	-	6.34	5.50	6.35	5.56	6.07	5.67
		Tj = bivalent temperature	COPd	-	2.90	2.09	2.76	1.96	2.65	2.01
		Tj = operation limit temperature	COPd	-	2.90	2.09	2.76	1.96	2.65	2.01
		Tj = - 15 °C (if TOL < - 20 °C)	COPd	-	-	-	-	-	-	-
	Operation limit temperature		TOL	°C	-7	-7	-7	-7	-7	-7
	Cycling interval efficiency		P_{cych}	-	-	-	-	-	-	-
	Heating water operating limit temperature		WTOL	°C	55	55	55	55	55	55
Power consumption in modes other than active mode	Off mode		P_{OFF}	kW	0.017	0.017	0.017	0.017	0.017	0.017
	Thermostat-off mode		P_{TO}	kW	0.120	0.120	0.120	0.120	0.120	0.120
	Standby mode		P_{SB}	kW	0.017	0.017	0.017	0.017	0.017	0.017
	Crankcase heater mode		P_{CK}	kW	0.014	0.014	0.014	0.014	0.014	0.014
Supplementary heater	Rated heat output (*)		P_{sup}	kW	10	9	10	9	10	10
	Type of energy input				electric		electric		electric	
Other items	Capacity control				variable		variable		variable	
	Sound power level, indoors/outdoors		L_{WA}	dB	43/66	43/66	43/68	43/68	43/69	43/69
	Rated air flow rate, outdoors		-	m^3/h	5310	5310	5590	5590	5860	5860
For heat pump combination heater	Declared load profile		-	-	-		-		-	
	Daily electricity consumption		Q_{elec}	kWh	-		-		-	
	Water heating energy efficiency		η_{wh}	%	-		-		-	
Contact details	TOSHIBA CARRIER CORPORATION 336,Tadehara, Fuji-shi, Shizuoka-ken,416-8521 Japan									

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0.9.

Technical parameters for heat pump combination heater

Climate condition : average climate

Models	Outdoor unit				HWS-455H-E			HWS-805H-E		
	Indoor unit				HWS-455XWHM3-E			HWS-805XWHM3-E HWS-805XWHT6-E HWS-805XWHT9-E		
	Hot water cylinder (HWS-***1CSHM3-E) *** ⇒				150	210	300	150	210	300
Air-to-water heat pump					yes			yes		
Water-to-water heat pump					no			no		
Brine-to-water heat pump					no			no		
Low-temperature heat pump					no			no		
Equipped with a supplementary heater					yes			yes		
Heat pump combination heater					yes			yes		
Parameters for low-temperature application/ medium-temperature application					medium			medium		
			Symbol	**Unit**	**Value**					
Item	Rated heat output (*)		P_{rated}	kW	5			5		
	Seasonal space heating energy efficiency		η_s	%	125			127		
	Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	Pdh	kW	4.2			4.9		
		Tj = +2 °C	Pdh	kW	3.1			3.1		
		Tj = + 7 °C	Pdh	kW	1.5			2.0		
		Tj = + 12 °C	Pdh	kW	1.5			1.4		
		Tj = bivalent temperature	Pdh	kW	4.2			4.9		
		Tj = operation limit temperature	Pdh	kW	4.2			4.9		
		Tj = - 15 °C (if TOL < - 20 °C)	Pdh	kW	-			-		
	Bivalent temperature		T_{biv}	°C	-7			-7		
	Cycling interval capacity for heating		P_{cych}	kW	-			-		
	Degradation co-efficient (**)		C_{dh}	-	0.7			0.7		
	Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	COPd	-	2.16			2.06		
		Tj = +2 °C	COPd	-	3.36			3.36		
		Tj = + 7 °C	COPd	-	4.31			4.41		
		Tj = + 12 °C	COPd	-	5.91			5.86		
		Tj = bivalent temperature	COPd	-	2.16			2.06		
		Tj = operation limit temperature	COPd	-	2.16			2.06		
		Tj = - 15 °C (if TOL < - 20 °C)	COPd	-	-			-		
	Operation limit temperature		TOL	°C	-7			-7		
	Cycling interval efficiency		P_{cych}	-	-			-		
	Heating water operating limit temperature		WTOL	°C	55			55		
Power consumption in modes other than active mode	Off mode		P_{OFF}	kW	0.017			0.017		
	Thermostat-off mode		P_{TO}	kW	0.080			0.080		
	Standby mode		P_{SB}	kW	0.017			0.017		
	Crankcase heater mode		P_{CK}	kW	0.014			0.014		
Supplementary heater	Rated heat output (*)		P_{sup}	kW	5			5		
	Type of energy input				electric			electric		
Other items	Capacity control				variable			variable		
	Sound power level, indoors/ outdoors		L_{WA}	dB	41/65			41/65		
	Rated air flow rate, outdoors		-	m^3/h	2570			3140		
For heat pump combination heater	Declared load profile		-	-	L	L	XL	L	L	XL
	Daily electricity consumption		Q_{elec}	kWh	7.298	7.29	10.562	7.613	7.605	11.016
	Water heating energy efficiency		η_{wh}	%	68	68	75	65	65	72
Contact details	TOSHIBA CARRIER CORPORATION 336,Tadehara, Fuji-shi, Shizuoka-ken,416-8521 Japan									

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0.9.

Technical parameters for heat pump combination heater

Climate condition : average climate

Models	Outdoor unit				HWS-1105H-E			HWS-1405H-E		
	Indoor unit				HWS-1405XWHM3-E HWS-1405XWHT6-E HWS-1405XWHT9-E					
	Hot water cylinder (HWS-***1CSHM3-E) *** ⇒				150	210	300	150	210	300
Air-to-water heat pump					yes			yes		
Water-to-water heat pump					no			no		
Brine-to-water heat pump					no			no		
Low-temperature heat pump					no			no		
Equipped with a supplementary heater					yes			yes		
Heat pump combination heater					yes			yes		
Parameters for low-temperature application/ medium-temperature application					medium			medium		
			Symbol	**Unit**	**Value**					
Item	Rated heat output (*)		P_{rated}	kW	9			9		
	Seasonal space heating energy efficiency		η_s	%	130			129		
	Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	Pdh	kW	8.2			8.0		
		Tj = +2 °C	Pdh	kW	4.9			4.8		
		Tj = + 7 °C	Pdh	kW	3.2			3.2		
		Tj = + 12 °C	Pdh	kW	2.7			2.7		
		Tj = bivalent temperature	Pdh	kW	8.2			8.0		
		Tj = operation limit temperature	Pdh	kW	8.2			8.0		
		Tj = - 15 °C (if TOL < - 20 °C)	Pdh	kW	-			-		
	Bivalent temperature		T_{biv}	°C	-7			-7		
	Cycling interval capacity for heating		P_{cych}	kW	-			-		
	Degradation co-efficient (**)		C_{dh}	-	0.8			0.7		
	Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	COPd	-	2.12			2.07		
		Tj = +2 °C	COPd	-	3.56			3.48		
		Tj = + 7 °C	COPd	-	4.34			4.34		
		Tj = + 12 °C	COPd	-	5.54			5.93		
		Tj = bivalent temperature	COPd	-	2.12			2.07		
		Tj = operation limit temperature	COPd	-	2.12			2.07		
		Tj = - 15 °C (if TOL < - 20 °C)	COPd	-	-			-		
	Operation limit temperature		TOL	°C	-7			-7		
	Cycling interval efficiency		P_{cych}	-	-			-		
	Heating water operating limit temperature		WTOL	°C	55			55		
Power consumption in modes other than active mode	Off mode		P_{OFF}	kW	0.017			0.017		
	Thermostat-off mode		P_{TO}	kW	0.120			0.120		
	Standby mode		P_{SB}	kW	0.017			0.017		
	Crankcase heater mode		P_{CK}	kW	0.014			0.014		
Supplementary heater	Rated heat output (*)		P_{sup}	kW	9			9		
	Type of energy input				electric			electric		
Other items	Capacity control				variable			variable		
	Sound power level, indoors/outdoors		L_{WA}	dB	43/66			43/68		
	Rated air flow rate, outdoors		-	m^3/h	5310			5590		
For heat pump combination heater	Declared load profile		-	-	L	L	XL	L	L	XL
	Daily electricity consumption		Q_{elec}	kWh	7.324	7.310	10.590	7.359	7.345	10.642
	Water heating energy efficiency		η_{wh}	%	67	68	75	67	68	75
Contact details	TOSHIBA CARRIER CORPORATION 336,Tadehara, Fuji-shi, Shizuoka-ken,416-8521 Japan									

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0.9.

Technical parameters for heat pump combination heater

Climate condition : average climate

Models	Outdoor unit				HWS-1105H8(R)-E			HWS-1405H8(R)-E			HWS-1605H8(R)-E		
	Indoor unit				HWS-1405XWHM3-E HWS-1405XWHT6-E HWS-1405XWHT9-E								
	Hot water cylinder (HWS-***1CSHM3-E) *** ⇒				150	210	300	150	210	300	150	210	300
Air-to-water heat pump					yes			yes			yes		
Water-to-water heat pump					no			no			no		
Brine-to-water heat pump					no			no			no		
Low-temperature heat pump					no			no			no		
Equipped with a supplementary heater					yes			yes			yes		
Heat pump combination heater					yes			yes			yes		
Parameters for low-temperature application/ medium-temperature application					medium			medium			medium		
			Symbol	**unit**	**Value**								
Item	Rated heat output (*)		P_{rated}	kW	9			9			10		
	Seasonal space heating energy efficiency		η_s	%	130			129			130		
	Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	Pdh	kW	7.8			8.2			8.7		
		Tj = +2 °C	Pdh	kW	4.7			5.1			5.5		
		Tj = + 7 °C	Pdh	kW	3.2			3.2			3.3		
		Tj = + 12 °C	Pdh	kW	2.8			2.7			2.8		
		Tj = bivalent temperature	Pdh	kW	7.8			8.2			8.7		
		Tj = operation limit temperature	Pdh	kW	7.8			8.2			8.7		
		Tj = - 15 °C (if TOL < - 20 °C)	Pdh	kW	-			-			-		
	Bivalent temperature		T_{biv}	°C	-7			-7			-7		
	Cycling interval capacity for heating		P_{cych}	kW	-			-			-		
	Degradation co-efficient (**)		C_{dh}	-	0.8			0.8			0.8		
	Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature Tj	Tj = - 7 °C	COPd	-	2.09			1.96			2.01		
		Tj = +2 °C	COPd	-	3.59			3.56			3.54		
		Tj = + 7 °C	COPd	-	4.29			4.38			4.38		
		Tj = + 12 °C	COPd	-	5.5			5.56			5.67		
		Tj = bivalent temperature	COPd	-	2.09			1.96			2.01		
		Tj = operation limit temperature	COPd	-	2.09			1.96			2.01		
		Tj = - 15 °C (if TOL < - 20 °C)	COPd	-	-			-			-		
	Operation limit temperature		TOL	°C	-7			-7			-7		
	Cycling interval efficiency		P_{cych}	-	-			-			-		
	Heating water operating limit temperature		WTOL	°C	55			55			55		
Power consumption in modes other than active mode	Off mode		P_{OFF}	kW	0.017			0.017			0.017		
	Thermostat-off mode		P_{TO}	kW	0.120			0.120			0.120		
	Standby mode		P_{SB}	kW	0.017			0.017			0.017		
	Crankcase heater mode		P_{CK}	kW	0.014			0.014			0.014		
Supplementary heater	Rated heat output (*)		P_{sup}	kW	9			9			10		
	Type of energy input				electric			electric			electric		
Other items	Capacity control				variable			variable			variable		
	Sound power level, indoors/ outdoors		L_{WA}	dB	43/66			43/68			43/69		
	Rated air flow rate, outdoors		-	m^3/h	5310			5590			5860		
For heat pump combination heater	Declared load profile		-	-	L	L	XL	L	L	XL	L	L	XL
	Daily electricity consumption		Q_{elec}	kWh	7.255	7.241	10.488	7.383	7.369	10.677	7.520	7.506	10.880
	Water heating energy efficiency		η_{wh}	%	68	69	76	67	67	75	66	66	73
Contact details	TOSHIBA CARRIER CORPORATION 336,Tadehara, Fuji-shi, Shizuoka-ken,416-8521 Japan												

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0.9.