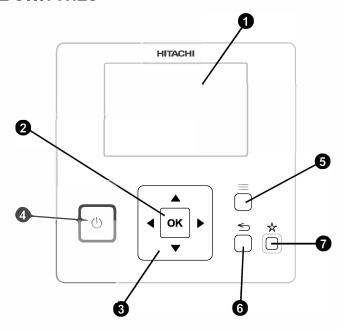# 7 UNIT CONTROLLER

The new unit controller for YUTAKI series (PC-ARFH1E) is an user-friendly remote control which ensures a strong and safe communication through H-LINK

The following information applies in the case of PC-ARFH1E software of version H-0122 and later used in combination with PCB indoor unit software of version H-0114 and later.

7.1 DEFINITION OF THE SWITCHES

❶ Liquid Crystal Display

  Screen where controller software is displayed.

❷ OK button

  To select the variables to be edited and to confirm the selected values.

❸ Arrows key

  It helps the user to move through the menus and views.

❹ Run/Stop button

  It works for all zones if none of the zones is selected or only for one zone when that zone is selected.

❺ Menu button

  It shows the different configuration options of the user controller.

❻ Return button

  To return to the previous screen.

❼ Favourite button

  When this button is pressed, the selected favourite action (ECO/Comfort, Holiday, Simple timer or DHW boost, Night Shift) is directly executed.

7.2 DESCRIPTION OF THE ICONS

7.2.1 Common icons

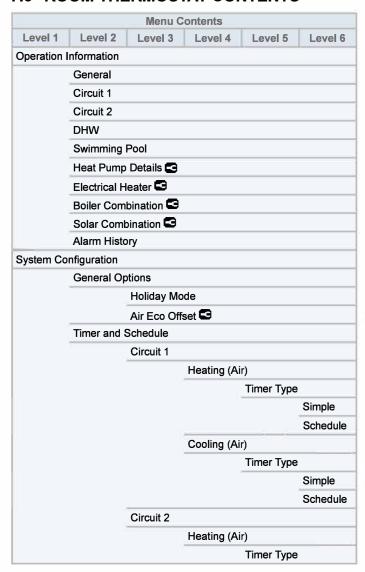| Icon	Name	Explanation	
OFF	Status for circuit 1, 2, DHW and swimming pool.	⊟	Circuit I or II is in Demand-OFF
⊟		⊟	Circuit I or II is on Thermo-OFF
		⊟	Circuit I or II is working between 0 < X ≤ 33% of the desired water outlet temperature
		⊟	Circuit I or II is working between 33 < X ≤ 66% of the desired water outlet temperature
		⊟	Circuit I or II is working between 66 < X ≤ 100% of the desired water outlet temperature
☼	Mode	☼	Heating
		❄	Cooling
		☼❄	Auto
88	Setting temperatures	Value	Displays the setting temperature of the circuit 1, circuit 2, DHW and swimming pool
		OFF	Circuit 1, Circuit 2, DHW or Swimming Pool are stopped by button or timer
⚠	Alarm	Existing alarm. This icon appears with the alarm code	
⏱	Timer	⏱	Simple timer
		📅	Weekly timer
+℃⟋	Derogation	When there is a derogation from the configured timer	
⊟	Installer mode	Informs that user controller is logged on the installer mode which has special privileges	
🔒	Menu lock	It appears when menu is blocked from a central control. When indoor communication is lost, this icon disappears	
🏠	Outdoor temperature	The ambient temperature is indicated at the right side of this button	

7.2.2 Icons for the comprehensive view

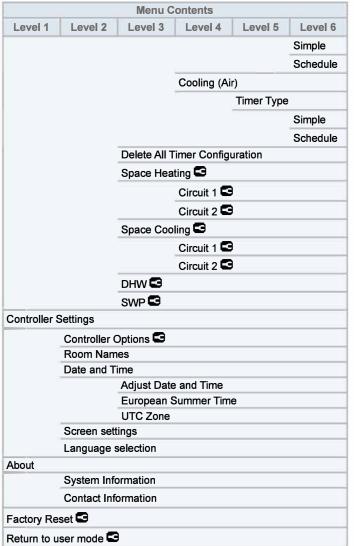| Icon	Name	Explanation		
	Pump	This icon informs about pump operation. There are three available pumps on the system. Each one is numbered, and its corresponding number is displayed below to the pump icon when it is operating		
	Heater step	Indicates which of the 3 possible heater steps is applied on space heating		
	DHW Heater	Informs about DHW Heater operation. (If it is enabled)		
	Solar	Combination with solar energy		
	Compressor		Compressor enabled (For YUTAKI S, S COMBI and M)	
			Compressors enabled. 1: R410A / 2: R-134a (For YUTAKI S80)	
	Boiler	Auxiliary boiler is working		
	Tariff	Tariff signal informs about some cost conditions of the consumption of the system		
	Defrost	Defrost function is active		
	Central/Local		-	No icon means local mode
				Central mode (Three types of control: Water, Air or Full)
	Forced OFF	When forced off Input is configured and its signal is received, all the configured items on the comprehensive view (C1, C2, DHW, and/or SWP) are shown in OFF, with this small icon below		
	Auto ON/OFF	When daily average is over auto summer switch-off temperature, circuits 1 and 2 are forced to OFF (Only if Auto ON/OFF enabled)		
TEST RUN	Test Run	Informs about the activation of the "Test Run" function		
ANTI LEG	Anti-Legionella	Activation of the Anti-Legionella operation		
	DHW boost	It activates the DHW heater for an immediate DHW operation		
	ECO mode		-	No icon means Comfort mode
				ECO/Comfort mode for circuits 1 and 2
	Night Shift	Informs about night shift operation		
	CASCADE CONTROLLER	Informs about the activation of the "CASCADE" mode.		

7.2.3 Icons for the room thermostat view

Icon	Name	Explanation		
![manual icon]	Manual/Auto mode	![manual mode icon]	Manual mode	
		![auto timer icon]	Auto mode with timer setting	
		![auto no timer icon]	Auto mode without timer setting	
![temp icon]	Setting/Room temperature	![setting temp icon]	Setting temperature	
		![room temp icon]	Room temperature	
![end timer icon]	End of timer period	The end hour of the timer period is indicated below this icon		
![end holiday icon]	End of holiday period	The end hour of the holiday period is indicated below this icon		
![house icon]	Setting temperature	This icon appears while the setting temperature is being changed, and indicates the actual temperature		
![next icon]	Next screen	When room thermostat has been configured for both circuit 1 and 2, this icon appears at the right side of the screen to indicated that there is a 2nd room thermostat view		

7.3 ROOM THERMOSTAT CONTENTS

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Operation Information					
	General				
	Circuit 1				
	Circuit 2				
	DHW				
	Swimming Pool				
	Heat Pump Details ⟳				
	Electrical Heater ⟳				
	Boiler Combination ⟳				
	Solar Combination ⟳				
	Alarm History				
System Configuration					
	General Options				
		Holiday Mode			
		Air Eco Offset ⟳			
	Timer and Schedule				
		Circuit 1			
			Heating (Air)		
				Timer Type	
					Simple
					Schedule
			Cooling (Air)		
				Timer Type	
					Simple
					Schedule
		Circuit 2			
			Heating (Air)		
				Timer Type	

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
					Simple
					Schedule
			Cooling (Air)		
				Timer Type	
					Simple
					Schedule
			Delete All Timer Configuration		
		Space Heating ⟳			
			Circuit 1 ⟳		
			Circuit 2 ⟳		
		Space Cooling ⟳			
			Circuit 1 ⟳		
			Circuit 2 ⟳		
		DHW ⟳			
		SWP ⟳			
Controller Settings					
		Controller Options ⟳			
		Room Names			
		Date and Time			
			Adjust Date and Time		
			European Summer Time		
			UTC Zone		
		Screen settings			
		Language selection			
About					
		System Information			
		Contact Information			
Factory Reset ⟳					
Return to user mode ⟳					

7.4 UNIT CONTROLLER CONTENTS

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Operation Information					
	General				
	Circuit 1				
	Circuit 2				
	DHW				
	Swimming Pool				
	Heat Pump Details 🔳				
	Electrical Heater 🔳				
	Boiler Combination 🔳				
	Solar Combination 🔳				
	Alarm History				
	Energy data				
System Configuration					
	General Options				
		Room Thermostats 🔳			
			Thermostat 1 🔳		
			Thermostat 2 🔳		
			Wireless Binding ID 1🔳		
			Wireless Binding ID 2🔳		
			Compensation Factors 🔳		
			Room Temp Demand OFF 🔳		
			Check RT address 🔳		
		Central Operation			
	Timer and Schedule				
		Circuit 1			
			Heating (Water)		
				Timer Type	
					Simple
					Schedule
			Cooling (Water)		
				Timer Type	
					Simple
					Schedule
		Circuit 2			
			Heating (Water)		
				Timer Type	
					Simple
					Schedule
			Cooling (Water)		
				Timer Type	
					Simple
		DHW			
			Timer Type		
				Simple	
				Schedule	
		Swimming Pool			
			Timer Type		
				Simple	
				Schedule	
		Delete All Timer Configuration			

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Space Heating 🔳					
	Circuit 1 🔳				
		Water Calculation Mode 🔳			
		Eco offset 🔳			
		Working limits 🔳			
	Circuit 2 🔳				
		Water Calculation Mode 🔳			
		Eco offset 🔳			
		Working limits 🔳			
		Mixing valve 🔳			
Space Cooling 🔳					
	Circuit 1 🔳				
		Water Calculation Mode 🔳			
		Eco offset 🔳			
		Working limits 🔳			
	Circuit 2 🔳				
		Water Calculation Mode 🔳			
		Eco offset 🔳			
		Working limits 🔳			
		Mixing valve 🔳			
DHW					
	DHW Heater 🔳				
	Anti Legionella				
Swimming Pool					
	Status 🔳				
	Setting Temperature				
	Offset Temperature 🔳				
Complementary Heating					
	Heating Source 🔳				
	Electrical Heater 🔳				
	Boiler Combination 🔳				
	Solar Combination				
		Status			
			Input demand 🔳		
			Total control 🔳		
Heat Pump 🔳					
	Water Pump Configuration 🔳				
	Night shift				
	Outdoor average Timer 🔳				
	Minimum ON Time 🔳				
	Minimum OFF Time 🔳				
	Seizure Protection 🔳				
		Status 🔳			
		Operation Day 🔳			
		Starting Time 🔳			
Optional Functions					
	System 🔳				
		Hydraulic Sep. Status 🔳			
		Energy Configuration 🔳			
		Smart Function 🔳			
	Space Functions				

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
				Heating Auto On/Off	
				Auto Heat/Cool	
		DHW			
				Circuit pump ⟳	
				Recirculation timer ⟳	
				DHW Boost	
		Emergency Operation			
	I/O and Sensors ⟳				
		Inputs ⟳			
		Outputs ⟳			
		Auxiliary sensors ⟳			
Controller Settings					
	Controller Options ⟳				
	Room Names				
	Date and Time				
		Adjust Date and Time			
		European Summer Time			
		UTC Zone			
	Screen settings				
	Language selection				
Commissioning ⟳					
	Air purge procedure ⟳				
		Start Air purge ⟳			
	Unit test run ⟳				
		Start test run ⟳			
	Screed drying ⟳				
		Start Screed Drying ⟳			
About					
	System Information				
	Contact Information				
Factory Reset ⟳					
Return to user mode ⟳					

7.5 UNIT + ROOM THERMOSTAT CONTROLLER CONTENTS

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Operation Information					
	General				
	Circuit 1				
	Circuit 2				
	DHW				
	Swimming Pool				
	Heat Pump Details 🔲				
	Electrical Heater 🔲				
	Boiler Combination 🔲				
	Solar Combination 🔲				
	Alarm History				
	Energy data				
System Configuration					
	General Options				
		Holiday Mode			
		Air Eco Offset 🔲			
		Room Thermostats 🔲			
			Thermostat 1 🔲		
			Thermostat 2 🔲		
			Wireless Binding ID 1🔲		
			Wireless Binding ID 2🔲		
			Compensation Factors 🔲		
			Room Temp Demand OFF 🔲		
			Check RT address 🔲		
		Central Operation			
	Timer and Schedule				
		Circuit 1			
			Heating (Air/Water)		
				Timer Type	
					Simple
					Schedule
			Cooling (Air/Water)		
				Timer Type	
					Simple
					Schedule
		Circuit 2			
			Heating (Air/Water)		
				Timer Type	
					Simple
					Schedule
			Cooling (Air/Water)		
				Timer Type	
					Simple
		DHW			
			Timer Type		
				Simple	
				Schedule	
		Swimming Pool			
			Timer Type		

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
				Simple	
				Schedule	
		Delete All Timer Configuration			
	Space Heating 🔲				
		Circuit 1 🔲			
			Water Calculation Mode 🔲		
			Eco offset 🔲		
			Working limits 🔲		
		Circuit 2 🔲			
			Water Calculation Mode 🔲		
			Eco offset 🔲		
			Working limits 🔲		
			Mixing valve 🔲		
	Space Cooling 🔲				
		Circuit 1 🔲			
			Water Calculation Mode 🔲		
			Eco offset 🔲		
			Working limits 🔲		
		Circuit 2 🔲			
			Water Calculation Mode 🔲		
			Eco offset 🔲		
			Working limits 🔲		
			Mixing valve 🔲		
	DHW				
		DHW Heater 🔲			
		Anti Legionella			
	Swimming Pool				
		Status 🔲			
		Setting Temperature			
		Offset Temperature 🔲			
	Complementary Heating				
		Heating Source 🔲			
		Electrical Heater 🔲			
		Boiler Combination 🔲			
		Solar Combination			
			Status		
				Input demand 🔲	
				Total control 🔲	
	Heat Pump 🔲				
		Water Pump Configuration 🔲			
		Night shift			
		Outdoor average Timer 🔲			
		Minimum ON Time 🔲			
		Minimum OFF Time 🔲			
		Seizure Protection 🔲			
			Status 🔲		
			Operation Day 🔲		
			Starting Time 🔲		
	Optional Functions				
		System 🔲			

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			Hydraulic Sep. Status 🔧		
			Energy Configuration 🔧		
			Smart Function 🔧		
		Space Functions			
			Heating Auto On/Off		
			Auto Heat/Cool		
		DHW			
			Circuit pump 🔧		
			Recirculation timer 🔧		
			DHW Boost		
		Emergency Operation			
	I/O and Sensors 🔧				
		Inputs 🔧			
		Outputs 🔧			
		Auxiliary sensors 🔧			
Controller Settings					
	Controller Options 🔧				
	Room Names				
	Date and Time				

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			Adjust Date and Time		
			European Summer Time		
			UTC Zone		
		Screen settings			
		Language selection			
Commissioning 🔧					
		Air purge procedure 🔧			
			Start Air purge 🔧		
		Unit test run 🔧			
			Start test run 🔧		
		Screed drying 🔧			
			Start Screed Drying 🔧		
About					
		System Information			
		Contact Information			
Factory Reset 🔧					
Return to user mode 🔧					

◆ Installer mode

Icon 🔧 means that this menu is available only for installer, a special user with higher access privileges to configure the system. In order to access the controller as Installer, "OK" and "↩" buttons must be pressed for 3 seconds.

OK	+	↩

After that, the "Enter password" message is displayed.

The login password for the Installer is:

Right ▶, Down ▼, Left ◀, Right ▶

Press "OK" to confirm the password.

If the correct access code is entered, the installer mode icon appears on the notifications bar (bottom line).

Installer mode icon	🔧

After 30 minutes of inactivity, it is necessary to repeat the log in process. To exit the Installer mode and return to the unit menu, hold down the "↩" button for 3 seconds or go to the "Return to user mode" on the main menu.
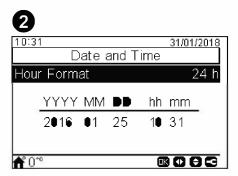
🛈 NOTE

The following chapters explain the special settings the Installer can edit. It is important to understand that the Installer can also perform all the actions available for the typical user.
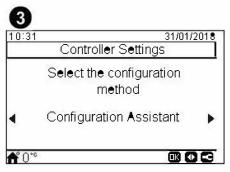
7.6 CONTROLLER CONFIGURATION

1

```
10:31                    31/01/2018
        Controller Settings
       Select the language of the
              controller

◄           English              ►

🏠 0°℃                    [OK] ◄► ⊏⊐
```

- Select the desired language using the arrow keys.

- Press OK button.

2

```
10:31                    31/01/2018
         Date and Time
Hour Format                  24 h

    YYYY MM  DD   hh  mm
    2016  01  25   10  31

🏠 0°℃                [OK] ◄► ⊕ ⊏⊐
```
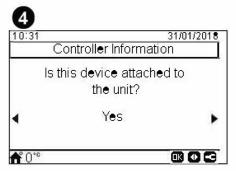
- Select the date and time using the arrow keys.

- Press OK button.

7.6.1 Configuration Assistant
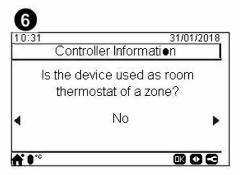
3

```
10:31                    31/01/2018
        Controller Settings
       Select the configuration
              method

       Configuration Assistant   ►
◄

🏠 0°℃                    [OK] ◄► ⊏⊐
```

- Select the configuration assistant for an easy configuration.

- Press OK button.

4

```
10:31                    31/01/2018
        Controller Information
       Is this device attached to
              the unit?

◄            Yes               ►

🏠 0°℃                    [OK] ◄► ⊏⊐
```
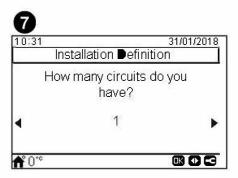
- Select Yes when the device is controlling the unit which it is attached. Jump to screen 6.

- Select No when the device is installed in a different site than the unit.
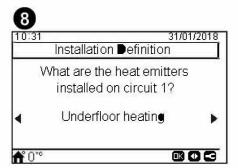
- Press OK button.

5

```
10:31                    31/01/2018
     Controller Information
     Is this device controlling
           the unit?
◄            Yes            ►
🏠 0°C              OK ◄► ⤶
```

- Select No when the device acts as Room Thermostat only. It does not control the unit.
- Press OK button.

6

```
10:31                    31/01/2018
     Controller Information
     Is the device used as room
      thermostat of a zone?
◄             No             ►
🏠 0°C              OK ◄► ⤶
```
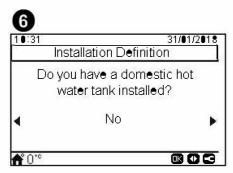
- Select No when the device is not used as a room thermostat.
- Select Yes, in zone 1/ Yes, in zone 2 / Yes, in both zones, depending on the number of circuits controlled.
- When select Yes, in both zones, jump to screen 8.
- Press OK button.

7

```
10:31                    31/01/2018
     Installation Definition
     How many circuits do you
           have?
◄             1             ►
🏠 0°C              OK ◄► ⤶
```

- Select the number of circuits (1 or 2) .
- Press OK button.

8

```
10:31                    31/01/2018
     Installation Definition
     What are the heat emitters
       installed on circuit 1?
◄      Underfloor heating      ►
🏠 0°C              OK ◄► ⤶
```

- Select the heat emitters on the circuit 1: Underfloor heating, Fan coils or Radiators.
- Repeat this step in case of circuit 2.
- Press OK button.

6

```
10:31                    31/01/2018
      Installation Definition
    Do you have a domestic hot
       water tank installed?

◄              No              ►

🏠 0°c              OK ◄► ⟲
```

- Select Yes if Domestic Hot Water tank is installed.
- Press OK button.

7

```
10:31                    31/01/2018
      Installation Definition
      Do you have a swimming
         pool installed?

◄              No              ►

🏠 0°c              OK ◄► ⟲
```

- Select Yes if Swimming Pool is installed.
- Press OK button.

8

```
10:31                    31/01/2018
      Installation Definition
       Do you have a boiler
           installed?

◄              No              ►

🏠 0°c              OK ◄► ⟲
```

- Select Yes if Boiler is installed.
- Press OK button.

9

```
10:31                    31/01/2018
      Installation Definition
    Do you have an electric backup
         heater installed?

◄              No              ►

🏠 0°c              OK ◄► ⟲
```

- Select Yes if an electrical backup heater is installed.
- Press OK button.

⑩

```
10:31                    31/01/2018
┌─────────────────────────────────┐
│      Installation Definition     │
└─────────────────────────────────┘
        Select the bivalent point of
         the complementary heating

    ◄            0 ℃            ►

  🏠 0°℃                   [OK] [◄►] [←]
```

- Select the bivalent point for boiler or electric backup heater (from -20 ºC to 20 ºC).
- Press OK button.

⑪

```
10:31                    31/01/2018
┌─────────────────────────────────┐
│         Room Thermostats         │
└─────────────────────────────────┘
         Which Thermostat do you
           have for circuit 1?

    ◄           None            ►

  🏠 0°℃                   [OK] [◄►] [←]
```
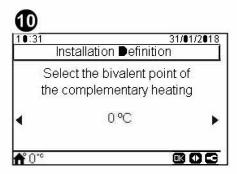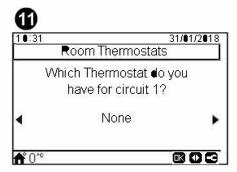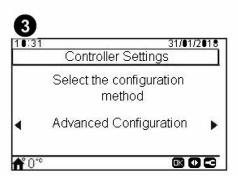
- Select the type of room thermostat installed in circuit 1 or 2 (depending on the previous setting): None, wired or wireless.
- Repeat this step in case of circuit 2.
- Press OK button.

⑫

```
10:31                    31/01/2018
┌─────────────────────────────────┐
│      Configuration Assistant     │
└─────────────────────────────────┘


             COMPLETED


  🏠 0°℃                      [OK] [←]
```

- Configuration assistant is completed.
- Press OK button to go to the main screen.

7.6.2 Advanced Configuration

3

```
1 :31                        31/01/2 18
        Controller Settings
        Select the configuration
              method

        Advanced Configuration    ▶
◀
   ° 0°°                      OK ◀▶ ⊂
```
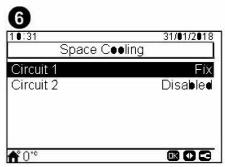
- Select the advance configuration for a complete configuration.
- Press OK button.

4

```
1 :31                        31/01/2 18
        Controller Settings
Controller Type              Unit
Favourite Action       Eco/Confort
European Summer Time    ▶isabled

             -- NEXT --

   ° 0°°                      ⊕ ◀▶ ⊂
```
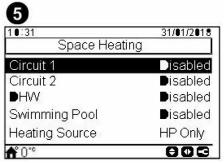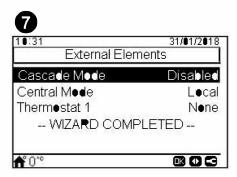
- Select the controller type:
    - Unit: the device controls the unit.
    - Room: the device acts as a room thermostat of a zone.
    - Unit + Room: the device controls the unit and acts as a room thermostat.
- Select controlled circuits by this device: Room C1, Room C2, Room C1+C2
- Select the favourite action: Eco/Confort, Timer, Night shift.
- Select Enabled or Disabled for European summer time.
- Select Next and press OK button .

5

```
1 :31                        31/01/2 18
           Space Heating
Circuit 1                ▶isabled
Circuit 2                ▶isabled
▶HW                      ▶isabled
Swimming Pool            ▶isabled
Heating Source            HP Only
   ° 0°°                      ⊕ ◀▶ ⊂
```

- Configure circuit 1 and circuit 2 OTC: Disabled, Points, Gradient, Fix.
- Enable or disable DHW and Swimming Pool.
- Select the heating source: HP only, HP + EH, HP + Boiler.
- Configure electrical heater use: Starting or Backup.
- Configure Boiler type: Parallel or Serial.
- Configure Solar Combination options: Disabled, Input Demand, Total Control. (only in case DHW is enabled).
- Enable or disable Hydraulic separator status.
- Select Next and press OK button.

6

```
10:31                        31/01/2018
           Space Cooling
Circuit 1                          Fix
Circuit 2                     Disabled



  0°C                        OK   
```

- Configure circuit 1 and circuit 2 options: Disabled, Points, Gradient, Fix.
- Only available for cooling mode.

7

```
10:31                        31/01/2018
          External Elements
Cascade Mode                 Disabled
Central Mode                    Local
Thermostat 1                     None
      -- WIZARD COMPLETED --

  0°C                        OK   
```

- Enable or disable Cascade Mode.
- Configure Central mode options: Full, water, air or local. Only available when Cascade Mode is disabled.
- Configure thermostat 1 or 2 (depending on previous settings): None, wired or wireless.
- Check RT address if wired is selected.
- Select Wireless binding ID (1 or 2) if wireless is selected.
- Select Wizard complete and press OK button.

8

```
10:31                        31/01/2018
       -- WIZARD COMPLETED --


      Do you want to continue?

       No              Yes


  0°C                        OK   
```

- Select Yes to complete the advance configuration.
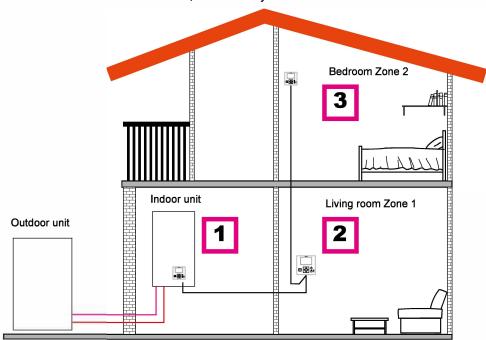- Press OK button to go to the main screen.

7.6.2.1 Examples of possible configurations

ⓘ NOTE

- *Other installation configurations are possible. These are examples only for illustration purposes.*
- *It is recommended to set firstly the Master device so as the ease the configuration of the slave devices.*
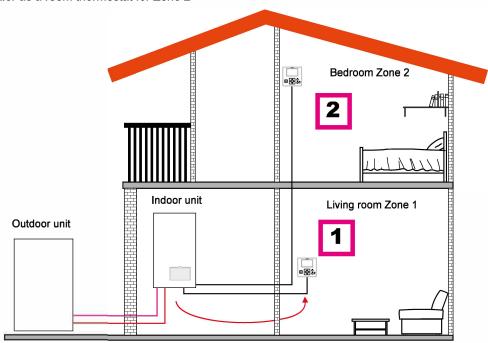
◆ Example 1

1- Master unit controller as unit configuration.

2- Slave Unit controller as a room thermostat for Zone 1, as accessory

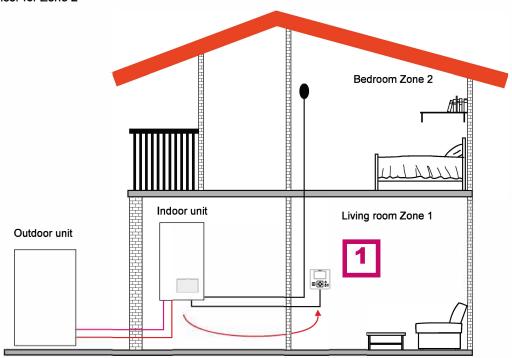3- Slave Unit controller as a room thermostat for Zone 2, as accessory

Order	FIRST	SECOND	THIRD
Type	Master	Slave	Slave
	Unit	Circuit 1	Circuit 2
Questions	Answers		
Is this device attached to the unit?	YES	-	-
Is this device used as a Room Thermostat of a zone?	NO	YES, IN ZONE 1	YES, IN ZONE 2
How many circuits do you have?	2	-	-
Which are the emitters of circuit 1?	Underfloor heating	-	-
Which are the emitters of circuit 2?	Underfloor heating	-	-
Do you have domestic hot water tank?	NO	-	-
Do you have swimming pool?	NO	-	-
Do you have boiler?	NO	-	-
Do you have electric backup heater?	NO	-	-
Which Thermostat do you have for Circuit 1?	Wired	-	-
Which Thermostat do you have for Circuit 2?	Wired	-	-
	COMPLETED	COMPLETED	COMPLETED

◆ **Example 2**

1- Move Unit controller to the living room (use as Unit controller + Room Thermostat)

2- Master unit controller moved to living room Zone 1

3- Slave Unit controller as a room thermostat for Zone 2

Order		FIRST	SECOND
Type		Master	Slave
		Unit	Circuit 2
Questions		Answers	
Is this device attached to the unit?		NO	-
Is this device controlling the unit?		YES	-
Is this device used as a Room Thermostat of a zone?		YES, IN ZONE 1	YES, IN ZONE 2
How many circuits do you have?		2	-
Which are the emitters of circuit 1?		Underfloor heating	-
Which are the emitters of circuit 2?		Underfloor heating	-
Do you have domestic hot water tank?		NO	-
Do you have swimming pool?		NO	-
Do you have boiler?		NO	-
Do you have electric backup heater?		NO	-
Which Thermostat do you have for Circuit 2?		Wired	-
		COMPLETED	COMPLETED

◆ **Example 3**

1- Move Unit controller to the living room (use as Unit controller + Room Thermostat)

2- Wired unit controller as a Room Thermostat for Zone 1
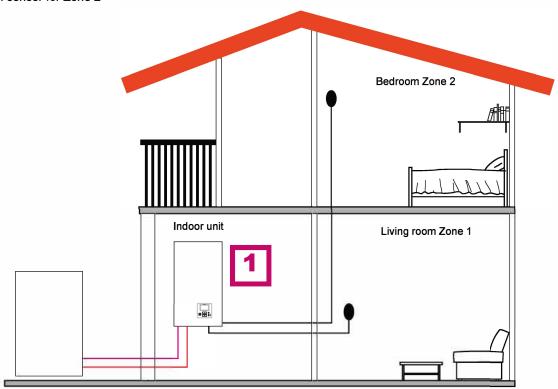
3- Wired room sensor for Zone 2

Order		FIRST
Type		Master
		Unit + Circuits
Questions		**Answers**
Is this device attached to the unit?		NO
Is this device controlling the unit?		YES
Is this device used as a Room Thermostat of a zone?		YES, IN BOTH ZONES
Which are the emitters of circuit 1?		Underfloor heating
Which are the emitters of circuit 2?		Underfloor heating
Do you have domestic hot water tank?		NO
Do you have swimming pool?		NO
Do you have boiler?		NO
Do you have electric backup heater?		NO
		COMPLETED

i N O T E

- *After finishing Configuration assistant, go to Input&Outputs&Sensor menu and select which auxiliary sensor do you want to use for ambient temperature in Zone 2.*
- *Example: Sensor 1 : C2 Ambient*

REF	Access	Description	Default Value	Selected value
		Auxiliary Sensors		
Taux1	⊂⊃	Sensor 1 (Taux1)	Two3 (if Boiler)	C2 Ambient
Taux2	⊂⊃	Sensor 2 (Taux2)	Swimming pool (if SWP existing)	-
Taux3	⊂⊃	Sensor 3 (Taux3)	Outdoor Sensor	-

◆ **Example 4**

1- PC-ARFH1E attached into the unit and used as unit controller and room thermostat for both zones.

2- Wired room sensor for Zone 1

3- Wired room sensor for Zone 2

Order		FIRST
Type		Master
		Unit + Circuits
Questions		**Answers**
Is this device attached to the unit?		YES
Is this device used as a Room Thermostat of a zone?		YES, IN BOTH ZONES
Which are the emitters of circuit 1?		Underfloor heating
Which are the emitters of circuit 2?		Underfloor heating
Do you have domestic hot water tank?		NO
Do you have swimming pool?		NO
Do you have boiler?		NO
Do you have electric backup heater?		NO
		COMPLETED

ⓘ N O T E

- *After finishing Configuration assistant, go to Input&Outputs&Sensor menu and select which auxiliary sensor do you want to use for ambient temperature in each zone.*
- *Example:*

REF	Access	Description	Default Value	Selected value
		Auxiliary Sensors		
Taux1	⊟	Sensor 1 (Taux1)	Two3 (if Boiler)	C1 Ambient
Taux2	⊟	Sensor 2 (Taux2)	Swimming pool (if SWP existing)	C2 Ambient
Taux3	⊟	Sensor 3 (Taux3)	Outdoor Sensor	-

◆ **Example 5**

1- Master unit controller as unit configuration

2- Wireless intelligent thermostat for zone 1 (ATW-RTU-07) (Receiver + Room thermostat)

3- Wireless intelligent thermostat for zone 2 (ATW-RTU-06) (Only Room thermostat)

Order		FIRST
Type		Master
		Unit + Circuits
Questions		**Answers**
Is this device attached to the unit?		YES
Is this device used as a Room Thermostat of a zone?		NO
How many circuits do you have?		2
Which are the emitters of circuit 2?		Underfloor heating
Do you have domestic hot water tank?		NO
Do you have swimming pool?		NO
Do you have boiler?		NO
Do you have electric backup heater?		NO
Which Thermostat do you have for Circuit 1?		Wireless
Which Thermostat do you have for Circuit 2?		Wireless
		COMPLETED

ℹ **NOTE**
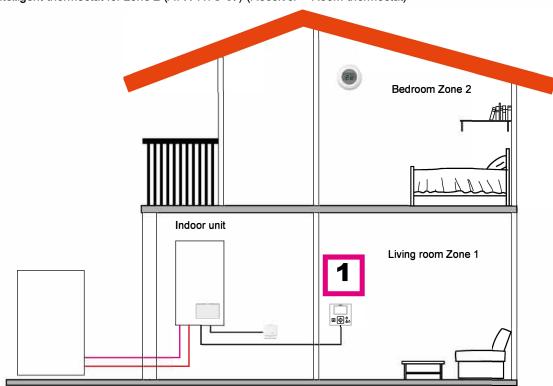
• *After finishing Configuration assistant proceed to wireless room thermostat binding procedure. (Refer to installation manual of room thermostat)*
• *If necessary, change Wireless Binding ID to the selected thermostat by using room thermostat menu in general options:*

Description	Default Value	Range	Selected value
Wireless Binding ID (for C1)	1	1 2	1
Wireless Binding ID (for C2)	2	1 2	2

◆ Mixed configurations (Wireless + Wired)

1- Move Unit controller to the living room (use as Unit controller + Room Thermostat)

2- Master unit controller moved to living room Zone

3- Wireless intelligent thermostat for zone 2 (ATW-RTU-07) (Receiver + Room thermostat)
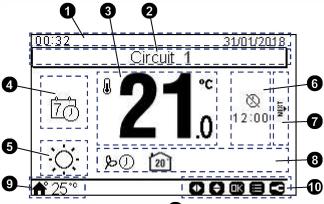
Order	FIRST
Type	Master
	Unit
Questions	**Answers**
Is this device attached to the unit?	NO
Is this device controlling the unit?	YES
Is this device installed on a controlled zone?	YES, ZONE 1
How many circuits do you have?	2
Which are the emitters of circuit 1?	Underfloor heating
Which are the emitters of circuit 2?	Underfloor heating
Do you have swimming pool?	NO
Do you have boiler?	NO
Do you have electric backup heater?	NO
Which Thermostat do you have for Circuit 2?	Wireless
	COMPLETED

7.7 MAIN SCREEN

Depending on the working mode of the user controller, the main screen is shown in a different way. When the user controller is working as a master unit controller, a comprehensive view with all the elements is shown, whereas when the user controller is working as a room thermostat (located in one of the controlled zones), the main screen appears with simplified information.

7.7.1 Room thermostat view

❶ Time and date

The current time/date information is displayed. This information can be changed on the configuration menu.

❷ Definition of the circuit

It informs about which circuit is being indicated (1 or 2).

❸ Actual/Setting room temperature

It displays the actual room temperature. The setting temperature can be adjusted using the up/down arrows keys. In this case, while the setting temperature is being modified, the icon of the actual room temperature is indicated below the setting temperature (house icon).

❹ Room thermostat mode

In this part of the screen, the room thermostat mode can be selected between Manual and Auto. If Auto is selected, two possible icons can be displayed: one if a timer period has been selected and the other one if not.

❺ Operation mode (Heating / Cooling / Auto)

The current operation mode is displayed. To configure it press OK to enter in quick actions.

❻ Next operation

In this area, the end hour of the simple timer or holiday or next schedule action is indicated below its respective icon.

❼ Next circuit

It informs that there is a room thermostat view for a second circuit and it is possible to access by pressing the right key.

❽ Icons notification

This part of the screen displays all the notification icons that offer general knowledge on the unit's situation

Some of these icons can be: ECO mode, Timer operation, throughput icon...

❾ Outdoor temperature / Alarm indication

In normal operation, the outdoor temperature is displayed besides the home icon signal.

In abnormal operation, the alarm icon is indicated with its corresponding alarm code.

❿ Available buttons / Installer mode

It indicates the buttons of the user controller which can be used in this moment.

When Installer mode is enabled, its icon appears on the right side of this view.

OK button

Pressing the OK button, the quick actions are shown:

- Timer: In this menu, simple timer or schedule timer can be selected and configured.
- Operation mode: It allows to select the unit operation between Heating, Cooling and Auto mode.
- ECO/Comfort: Selection between ECO and Comfort mode.
- Holiday: It allows to start a holiday period until the configured returning date and time.
- Status: Some working conditions can be consulted.

7.7.2 Comprehensive view

❶ Time and date

The current time/date information is displayed. This information can be changed on the configuration menu.

❷ Operation mode (Heating/Cooling/Auto)

This icon shows the unit's mode of operation status. It has to be edited by pressing the OK button, and it can be switched between Heating, Cooling and Auto mode. (If available option).

❸ Control of circuits 1 and 2

It displays the setting temperature calculated for each circuit and a throughput icon indicating the percentage of the actual temperature with respect to the setting temperature. It can also show the ECO mode and timer activation if they are enabled.

The setting temperature can be modified using the arrows keys over this view (if water calculation mode is set as fix).

Pressing the OK button, the following quick actions are shown:

- Timer: In this menu, simple timer or schedule timer can be selected and configured.
- OTC: OTC Setting temperature (User can only refer to the OTC mode and its setting temperature value)
- ECO/Comfort: Selection between ECO and Comfort mode.
- Status: Some working conditions can be consulted.

❹ DHW control

It displays the setting temperature for DHW and a throughput icon indicating the percentage of the actual temperature with respect to the setting temperature. It can also show the operation of the electrical heater of the DHW, the timer activation and the DHW boost if they are enabled.

The setting temperature can be modified using the arrows keys over this view.

Pressing the OK button, the following quick actions are shown:

- Timer: In this menu, simple timer or schedule timer can be selected and configured.

- DHW boost: It activates the DHW heater for an immediate DHW operation
- Status: Some working conditions can be consulted.

If anti-legionella operation is working, its icon appears below the setting temperature.

❺ Swimming pool control

It gives information about the swimming pool setting temperature and displays a throughput icon indicating the percentage of the actual temperature with respect to the setting temperature.

The setting temperature can be modified using the arrows keys over this view.

Pressing the OK button, the following options are shown:

- Timer: In this menu, simple timer or schedule timer can be selected and configured.
- Status: Some working conditions can be consulted.

❻ Unit status signals

This part of the screen displays all the notification icons that offer general knowledge on the unit's situation

Some of these icons can be: Defrost operation, Water pumps, Compressor/s, Boiler working, Tariff input, Night shift, Test run...

❼ Outdoor temperature / Alarm indication

In normal operation, the outdoor temperature is displayed besides the home icon signal.

In abnormal operation, the alarm icon is indicated with its corresponding alarm code.

❽ Available buttons / Installer mode

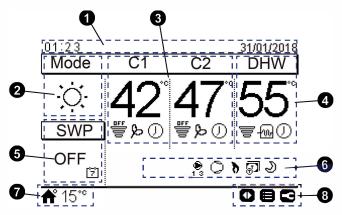It indicates the buttons of the user controller which can be used in this moment.
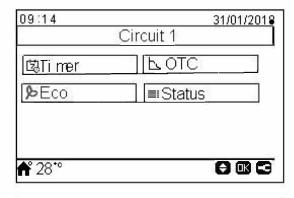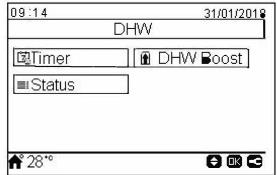
When Installer mode is enabled, its icon appears on the right side of this view.
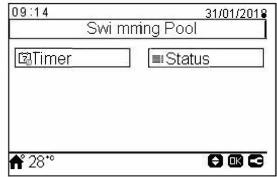
7.7.3 Quick action function

The following quick actions are shown when pressing the OK button at the selected zone in comprehensive view or room thermostat view:
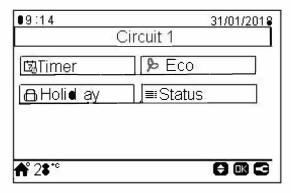
◆ **Comprehensive view quick actions**

```
┌─────────────────────────────────┐
│ 09:14                 31/01/2018 │
│   ┌───────────────────────────┐  │
│   │        Circuit 1          │  │
│   └───────────────────────────┘  │
│   ┌────────────┐ ┌────────────┐  │
│   │ 🗓Ti mer    │ │ ⌐ OTC      │  │
│   └────────────┘ └────────────┘  │
│   ┌────────────┐ ┌────────────┐  │
│   │ �’Eco      │ │ ≡Status    │  │
│   └────────────┘ └────────────┘  │
│                                  │
│  ♠° 28°c           🔼 OK ⏎       │
└─────────────────────────────────┘
```

```
┌─────────────────────────────────┐    ┌─────────────────────────────────┐
│ 09:14                 31/01/2018 │    │ 09:14                 31/01/2018 │
│   ┌───────────────────────────┐  │    │   ┌───────────────────────────┐  │
│   │          DHW              │  │    │   │     Swi mming Pool        │  │
│   └───────────────────────────┘  │    │   └───────────────────────────┘  │
│   ┌────────────┐ ┌────────────┐  │    │   ┌────────────┐ ┌────────────┐  │
│   │ 🗓Timer     │ │ 🛉 DHW Boost│  │    │   │ 🗓Timer     │ │ ≡Status    │  │
│   └────────────┘ └────────────┘  │    │   └────────────┘ └────────────┘  │
│   ┌────────────┐                 │    │                                  │
│   │ ≡Status    │                 │    │                                  │
│   └────────────┘                 │    │                                  │
│                                  │    │                                  │
│  ♠° 28°c           🔼 OK ⏎       │    │  ♠° 28°c           🔼 OK ⏎       │
└─────────────────────────────────┘    └─────────────────────────────────┘
```

◆ **Room thermostat view quick actions**
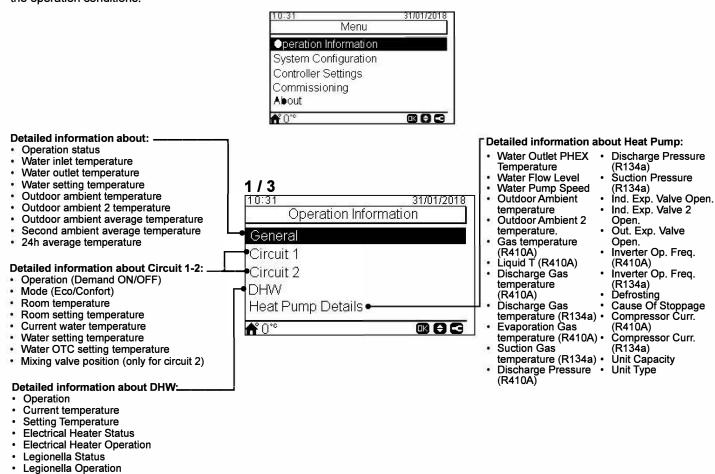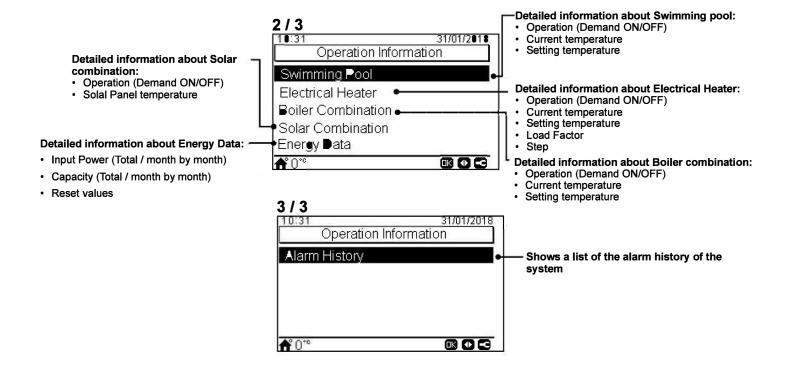
```
┌─────────────────────────────────┐
│ 09:14                 31/01/2018 │
│   ┌───────────────────────────┐  │
│   │        Circuit 1          │  │
│   └───────────────────────────┘  │
│   ┌────────────┐ ┌────────────┐  │
│   │ 🗓Timer     │ │ �’ Eco     │  │
│   └────────────┘ └────────────┘  │
│   ┌────────────┐ ┌────────────┐  │
│   │ 🔒Holid ay  │ │ ≡Status    │  │
│   └────────────┘ └────────────┘  │
│                                  │
│  ♠° 28°c           🔼 OK ⏎       │
└─────────────────────────────────┘
```

- ● **Timer:** Menu for the selection and configuration of simple timer and schedule timer.
- ⌐ **OTC:** Menu for the OTC selection. Only available for circuit 1 and circuit 2 in Comprehensive view.
- �’ **Eco / 🛋Comfort:** Activation of the Eco/Comfort Mode. Only available for circuit 1 and circuit 2.
- ≡ **Status:** Display of information related to current operation conditions
- 🛉 **DHW Boost:** Activation of the auxiliary DHW heater and Heat Pump (if operation is possible, to speed up DHW heating operation). Only available for DHW.
- 🔒 **Holiday:** Selection of a holiday period until the configured returning date and time. Only available for circuit 1 and circuit 2 in Room Thermostat view.

7.8 MENU

7.8.1 OPERATION INFORMATION

In operation information menu it is possible to find the most important setting parameters of the system besides the information of the operation conditions.

```
10:31                    31/01/2018
            Menu
●peration Information
System Configuration
Controller Settings
Commissioning
About
🏠 0°C                    OK 🔽 ⏎
```

Detailed information about:
- Operation status
- Water inlet temperature
- Water outlet temperature
- Water setting temperature
- Outdoor ambient temperature
- Outdoor ambient 2 temperature
- Outdoor ambient average temperature
- Second ambient average temperature
- 24h average temperature

Detailed information about Circuit 1-2:
- Operation (Demand ON/OFF)
- Mode (Eco/Confort)
- Room temperature
- Room setting temperature
- Current water temperature
- Water setting temperature
- Water OTC setting temperature
- Mixing valve position (only for circuit 2)

Detailed information about DHW:
- Operation
- Current temperature
- Setting Temperature
- Electrical Heater Status
- Electrical Heater Operation
- Legionella Status
- Legionella Operation

1 / 3

```
10:31                    31/01/2018
       Operation Information
General
Circuit 1
Circuit 2
DHW
Heat Pump Details
🏠 0°C                    OK 🔽 ⏎
```

Detailed information about Heat Pump:
- Water Outlet PHEX Temperature
- Water Flow Level
- Water Pump Speed
- Outdoor Ambient temperature
- Outdoor Ambient 2 temperature.
- Gas temperature (R410A)
- Liquid T (R410A)
- Discharge Gas temperature (R410A)
- Discharge Gas temperature (R134a)
- Evaporation Gas temperature (R410A)
- Suction Gas temperature (R134a)
- Discharge Pressure (R410A)
- Discharge Pressure (R134a)
- Suction Pressure (R134a)
- Ind. Exp. Valve Open.
- Ind. Exp. Valve 2 Open.
- Out. Exp. Valve Open.
- Inverter Op. Freq. (R410A)
- Inverter Op. Freq. (R134a)
- Defrosting
- Cause Of Stoppage
- Compressor Curr. (R410A)
- Compressor Curr. (R134a)
- Unit Capacity
- Unit Type

2 / 3

```
10:31                    31/01/2018
       Operation Information
Swimming Pool
Electrical Heater
Boiler Combination
Solar Combination
Energy Data
🏠 0°C                    OK ◀▶ ⏎
```

Detailed information about Solar combination:
- Operation (Demand ON/OFF)
- Solal Panel temperature

Detailed information about Energy Data:
- Input Power (Total / month by month)
- Capacity (Total / month by month)
- Reset values

Detailed information about Swimming pool:
- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature

Detailed information about Electrical Heater:
- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature
- Load Factor
- Step

Detailed information about Boiler combination:
- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature

3 / 3

```
10:31                    31/01/2018
       Operation Information
Alarm History

🏠 0°C                    OK ◀▶ ⏎
```

Shows a list of the alarm history of the system

7.8.2 SYSTEM CONFIGURATION

In system configuration menu it is possible to configure all the system settings.

```
10:31                31/01/2018
          Menu
Operation Information
System Configuration
Controller Settings
Commissioning
About
  0°c              OK
```

Water settings:
(Screen visible only for room thermostats)
• Space Heating
• Space Cooling
• DHW
• Swimming Pool

General configuration:
• Holiday Mode
• Air Eco Offset
• Room Thermostats
• Central Operation

1 / 2

```
10:31                31/01/2018
      System Configuration
General Options
Timer and schedule
Water Settings
Space Heating
DHW
  0°c              OK
```

DHW configuration:
• Status
• Mode
• Control
• Setting temperature
• HP control
• HP control setting
• Maximum setting temperature
• Differential temperature
• HP OFF differential temperature
• HP ON differential temperature
• Maximum time
• Cycle Time
• Space Priority status
• Space Priority temperature
• DHW Heater
• Anti Legionella

Timer and schedule configuration:
• Circuit 1
• Circuit 2
• DHW
• Swimming Pool
• Delete all timers configuration

Space Heating / Cooling configuration:
• Circuit 1
• Circuit 2

Swimming Pool configuration:
• Status
• Setting temperature
• Offset temperature

2 / 2

```
10:31                31/01/2018
      System Configuration
Swimming Pool
Complementary Heating
Heat Pump
Optional Functions
I/O and Sensor
  0°c              OK
```

Complementary Heating configuration:
• Heating Source (HP Only, HP+Boiler, HP+Heater, HP+Heater+Boiler)
• Electrical heater
• Boiler combination
• Solar combination

Optional functions configuration:
• System
• Space functions
• DHW
• Emergency Operation

Heat pump configuration:
• Water Pump Configuration
• Night Shift
• Outdoor Average Timer
• Minimum ON Time
• Minimum OFF Time
• Seizure Protection

I/O and Sensor configuration:
• Inputs
• Outputs
• Auxiliary sensors

7.8.2.1 General options configuration

Holiday Mode: Configure holiday come back
- Year
- Month
- Day
- Returning time
- Setting temperature
- Start/Stop Holiday Mode

Air Eco Offset for Circuit 1-2:

Configure the offset air temperature for the ECO mode.

Current air temperature setting is reduced by the indicated parameter (from 1 to 10 ºC)

Central operation:
- **Control type selection**: Local, air, water or full. Only available when Cascade Mode is disabled.
- Enable or disable **Cascade Mode**, when the system is connected to a CASCADE CONTROLLER.

Room Thermostats:

Configure the wired or wireless room thermostats:

- **Thermostat 1**: None, wired or wireless
- **Wireless Binding ID** for Thermostat 1: (1 or 2)
- **Thermostat 2**: None, wired or wireless
- **Wireless Binding** ID for Thermostat 2: (1 or 2)
- **Compensation factors** (See Compensation factors section below)
- **Room Temperature Demand OFF:** Offset value between setting temperature and thermostat temperature to switch the system to Demand OFF; this parameter refers to a positive difference in heating operation and a negative difference in cooling operation.
- **Check RT Address**: validation procedure of the wireless thermostats configuration

◆ Compensation factors for Heating / Cooling

The temperature of the water supplied by the YUTAKI unit to the circuits is determined by means of OTC (See *"Water calculation mode"*).

This control determines water temperature according to the outdoor temperature. The higher the outdoor temperature, the lower the building demand is, and in consequence the temperature of the water supplied to the circuits is lower. Conversely, the thermal demand of the building rises in the case of low outdoor temperature, and therefore the temperature of the supplied water becomes higher.

The room temperature compensation control allows to modify the water temperature determined by OTC control according to the setting room temperature and the actual room temperature.

In the case of heating, if the difference between room temperature and setting temperature is large, then water temperature is increased by the YUTAKI unit in order to achieve the desired room temperature in a faster way, thus compensating the thermal difference between setting temperature and actual temperature.

In this manner, given two identical rooms, the YUTAKI unit determines the same room temperature according to OTC control. On the other hand, for a room in which there is a wider difference between setting temperature and actual temperature, the YUTAKI unit will increase the temperature of the pumped water in order to ensure a similar heating up time until reaching the setting temperature.

Compensation has no effect if Compensation factor is 0 or when OTC is Fix, and water temperature is determined according to OTC in chapter *"Water calculation mode"* in such case.

The more the factor is increased, the more is water temperature increased by the YUTAKI unit according to the difference between setting temperature and the current temperature.

Maximum compensation factor heat + and -: Maximum difference between room temperature and setting temperature. In case that the difference between room temperature and setting temperature is higher than this value, the YUTAKI unit takes the selected value as the maximum.

7.8.2.2 Timer and schedule configuration

ⓘ NOTE

Timer settings are only valid if the corresponding zone is in ON state at the time of execution of the respective timer program.

The LCD controller must be set to the correct date and time before using the timer function.

Select the desired area to apply the timer function or delete all timers configuration:
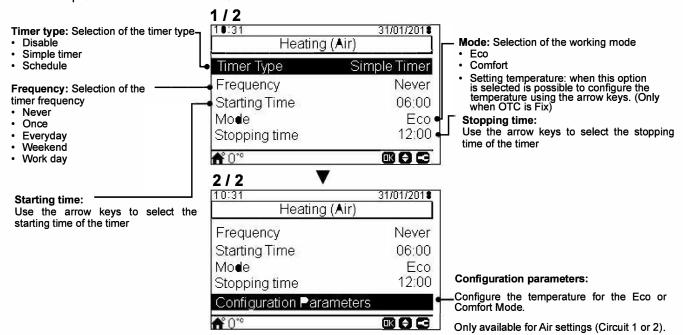
Heating/Cooling (Air): To set the timer to adjust the room temperature. Only when using room thermostats.

Heating/Cooling (Water): To set the timer to adjust the water working conditions.

The timer function allows the selection of **simple** and **scheduled** timers, as shown in the figures below:

◆ **Setting of Simple timer**

Setting of temperature or operation mode (ECO or Comfort) to be applied during operation for a defined period, after which operation returns to the previous settings. This type of timer cannot be used to modify the operation state from ON to OFF, which can be accomplished with a Schedule timer.

Timer type: Selection of the timer type
- Disable
- Simple timer
- Schedule

Frequency: Selection of the timer frequency
- Never
- Once
- Everyday
- Weekend
- Work day

Starting time:
Use the arrow keys to select the starting time of the timer

1 / 2

Mode: Selection of the working mode
- Eco
- Comfort
- Setting temperature: when this option is selected is possible to configure the temperature using the arrow keys. (Only when OTC is Fix)

Stopping time:
Use the arrow keys to select the stopping time of the timer

2 / 2

Configuration parameters:

Configure the temperature for the Eco or Comfort Mode.

Only available for Air settings (Circuit 1 or 2).

◆ Setting of Schedule timer

Setting of temperature, operation mode (ECO or Comfort) or change of operation state from ON to OFF for a defined period, after which operation returns to the previous settings. Manual operation of the unit controller has priority over schedule settings.

Timer type: Selection of the timer type
- Disable
- Simple timer
- Schedule

Timer configuration: New screen appears to configure a schedule timer. See explanation below.

Copy to circuit 2: It is possible to copy the schedule timer to circuit 2.

```
10:31                        31/01/2018
        Heating (Air)

Timer Type               Schedule
Timer Configuration
Copy to Circuit 2
Change Mode
Reset Configuration
🏠 0°                     OK ⊕ ⊠
```

Change Mode: Selection of the working mode (Only for Circuit 1 or Circuit 2). In Water mode only when circuit is Fix.
- Mode (uses Eco/Comfort configurations)
- Setting temperature.

Reset configuration: Press OK button to reset scheduled timers.

Pressing the OK button with "Timer Configuration" being selected displays the detailed schedule screen. The active schedule timers are shown in a weekly calendar.

```
13:42                        31/01/2018
              Circuit 1

          6       12      18      24
Mon  Off                51°C   Off
Tue  Off                51°C   Off
Wed  Off                51°C   Off
Thu  Off                51°C   Off
Fri  Off                51°C   Off
Sat  Off        Off
Sun  Off        Off
                        OK ◁▷ ⊕ ☰ ⊠
```
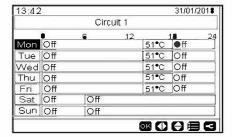
Up to five timer events can be defined for each weekday, and these can be used for turning the operation ON or OFF, to change the setting temperature or the working mode (Eco/Comfort). Pressing the OK key with one of the weekdays being selected in the weekly calendar screen displays the detailed schedule for the weekday.

```
13:42                    31/01/2018
◀          Monday            ▶

          6       12      18      24
Off                45
From      To      Status      Setting
12:00   (06:00)    On          45
 -         -        -           -
                    OK ◁▷ ⊕ ☰ ⊠
```

Timer configuration as Setting temperature

```
13:42                    31/01/2018
◀          Monday            ▶

          6       12      18      24
Off
From      To      Status      Mode
12:00   (06:00)    On          Eco
 -         -        -           -
                    OK ◁▷ ⊕ ☰ ⊠
```

Timer configuration as Mode

Pressing the "Menu" button during the edition of the timer events for a given weekday displays a menu to copy the daily pattern to other weekdays or to suppress the selected timer event.

7.8.2.3 Water settings configuration

This menu is only visible for a room thermostat if the controller is not controlling the unit.

10:31	31/01/2018
Menu	
Operation Information	
System Configuration	
Controller Settings	
Commissioning	
About	

10:31	31/01/2018
System Configuration	
General Options	
Timer and schedule	
Water Settings	
Space Heating	
DHW	

Select the desired area to apply the water settings configuration:

10:31	31/01/2018
Water Settings	
Space Heating	
Space Cooling	
DHW	
Swimming Pool	
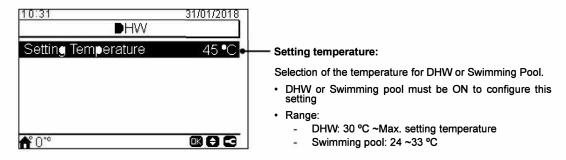
◆ **Space Heating or Space Cooling water settings**

Fixed temperature:

Selection of the temperature for Circuit 1 or Circuit 2 (heating or cooling mode).

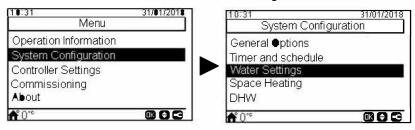• Only when water calculation mode is Fix.

• Circuit 1 or Circuit 2 must be ON to configure this setting.

Curve:

Selection of the gradient curve for Circuit 1 or Circuit 2 (only for heating mode).

• Only when water calculation mode is Gradient.

• Range: 0.2 ~ 2.2

• Circuit 1 or Circuit 2 must be ON to configure this setting.

10:31	31/01/2018
Circuit 1	
Fixed T.	45 °C
Curve	0.2
Vertex offset	1.00

Vertex offset:

To modify the curve vertex for Circuit 1 or Circuit 2 (only for heating mode).

• Only when water calculation mode is Gradient or Points.

• Range: -10 ~ 10

• Circuit 1 or Circuit 2 must be ON to configure this setting.

◆ **DHW or Swimming pool water settings**

10:31	31/01/2018
DHW	
Setting Temperature	45 °C

Setting temperature:

Selection of the temperature for DHW or Swimming Pool.

• DHW or Swimming pool must be ON to configure this setting

• Range:
  - DHW: 30 ºC ~Max. setting temperature
  - Swimming pool: 24 ~33 ºC

7.8.2.4 Space Heating / Space Cooling configuration

Control the temperature for Space Heating or Space Cooling by configuring the following parameters.

Water calculation mode:

Selection of the water set point for Circuit 1 or Circuit 2 (Space Heating or Space Cooling).

- Disabled
- Points
- Gradient (only in heating mode)
- Fix

See detailed explanation below.

Eco Offset Water setting:

Configure the offset water temperature for the ECO mode for Space Heating or Space Cooling.

By using this function, current water temperature setting is reduced by the indicated parameter.

- Range: -10 ~ 10

Working Limits:

Limit for the temperature set-point to prevent high or low temperatures at Space Heating or Space Cooling:

- Maximum supply temperature
- Minimum supply temperature

Mixing valve:

To control the second water temperature (only for circuit 2).

Values are adjusted for the use with the 2nd zone mixing kit accessory ATW-2KT-05. It is highly recommended not to change these values.

In case of using a mixing kit different from the ATW-2KT-05 configure the following parameters:

- Proportional band: 0 ~20 K (6.0 K by default).
- Integral reset factor: 0.0 ~20 % (2.5 % by default).
- Running time factor: 10 ~250 sec (140 sec by default).
- Over temperature offset protection: OFF, 3 ~10 ºC (5 ºC by default).

◆ Water calculation mode

Disabled

```
11:47                    31/01/2018
      Circuit 1
OTC Mode              Disabled
```
⬤—— The "Disabled" option sets the circuit as disabled.

```
🏠 28 °c              ◧ ⬍ ⬛
```

Points

Points is the most versatile calculation type.

Set 4 points and one vertex point, to create a line representing the function that the air to water heat pump will use to give the temperature setting according to the current ambient temperature.

Use the down arrow key to select the parameter to modify. Then modify the value using the left and right arrow keys.

```
11:47                    31/01/2018
      Circuit 1
OTC Mode                Points
```

Set point at high ambient temperature ——⬤ 44°c

Vertex offset —— [7°c]

Set point at low ambient temperature ——⬤ 20°c

Low ambient temperature ——⬤ -20 °c

High ambient temperature —— 20 °c

```
🏠 28°c              ◧ ⬍ ⬛
```

Gradient

Configure the same variables as in the "Points" view, but automatically.

User can only edit the gradient variable and it will automatically set the values for the other 4 variables on the chart.

Use the down arrow key to select the parameter to modify. Then modify the value using the left and right arrow keys.

```
11:47                    31/01/2018
      Circuit 1
OTC Mode              Gradient
```

Vertex offset —— [7°c]

Gradient curve —— Curve 04

```
 36°c
 20°c
   -20°c          20°c
🏠 28°c              ◧ ⬍ ⬛
```

Fix

```
11:47                    31/01/2018
      Circuit 1
OTC Mode                  Fix
```
⬤—— Set the circuit's temperature to a defined value, forcing the unit to maintain it.

Fixed temperature —— [40°c]

```
🏠 28°c              ◧ ⬍ ⬛
```

7.8.2.5 Domestic Hot Water (DHW) configuration

```
10:31                    31/01/2018
            Menu
Operation Information
System Configuration
Controller Settings
Commissioning
About
🏠 0°C                        OK ⊕ ⊏
```

▶

```
10:31                    31/01/2018
       System Configuration
General Options
Timer and schedule
Space Heating
DHW
Swimming Pool
🏠 0°C                        OK ⊕ ⊏
```

Status of DHW:

- Disabled
- Enabled.

Mode: Only available when DHW heater is activated (DSW4 pin 3 ON).

- **Standard:** DHW heating operation starts when the temperature of the water in the tank is low enough to start up the heat pump. DHW is heated up with the heat pump or the electrical heater (if electrical heater is enabled).

- **High Demand:** DHW heating operation starts if water temperature and setting temperature diference is larger than differential temperature. DHW can be heated up using the heater, the heat pump or a combination of both.

Control:

- **High Efficiency:** Compressor operation is adjusted to optimal efficiency for lower power consumption. Electrical heater only works when the maximum working temperature of the heat pump is achieved.

- **High Speed:** The heat pump is switched to maximum operation capacity to heat up the tank in the shortest time.

Setting temperature:

Setting for domestic hot water temperature selected by the user. The maximum value of this setting depends on the Maximum setting temperature set by the installer. (Between 30 to maximum setting temperature.)

HP Control:

To achieve the DHW setting temperature it is possible to select between two different modes of control:

- **ΔT:** The most efficient way to achieve the setting temperature. The outlet water temperature is 15º higher than the tank temperature, increasing gradually until achieve the target water outlet temperature (setting temperature).

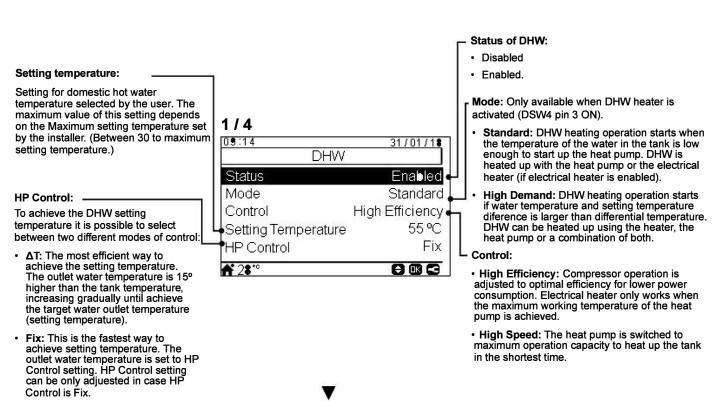- **Fix:** This is the fastest way to achieve setting temperature. The outlet water temperature is set to HP Control setting. HP Control setting can be only adjuested in case HP Control is Fix.

1 / 4

```
09:14                    31/01/18
            DHW
Status                    Enabled
Mode                      Standard
Control              High Efficiency
Setting Temperature        55 ºC
HP Control                    Fix
🏠 28°C                      ⊕ OK ⊏
```

▼

2 / 4

```
09:14                    31/01/18
            DHW
HP Control Setting         55 ºC
Maximum Setting T          55 ºC
Differential T              6 ºC
HP OFF Differential T       5 ºC
HP ON Differential T       10 ºC
🏠 28°C                      ⊕ OK ⊏
```

HP Control setting:

Selection of the DHW temperature for the Fix HP Control.

Maximum setting temperature:

Maximum value of DHW setting temperature permitted by the installer.

Differential temperature:

Value that the unit restart heating operation of the tank.

- Only available if DHW is in High demand mode.

HP OFF differential temperature:

Hysteresis for the stop of DHW heating operation with the heat pump.

HP ON differential temperature:

Hysteresis for the start of DHW heating operation with the heat pump.

▼

Maximum time:

Maximum time that DHW operation can work using heat pump mode. When the heat pump is stopped by this function, DHW is still heated by DHW heater when it is enabled, until other conditions request stoppage.

- Range: OFF, 5 ~250 min

- Only in High Speed control and Standard mode.

Cycle time:

Defines the minimum time between 2 heat pump cycles of domestic hot water.

DHW will be able to operate again after wait in Thermo off the specified cycle time.

- Range: 0 ~24 hour

- Only available in Standard mode.

```
3 / 4
┌─────────────────────────────────┐
│09:14                  31/01/18   │
│           DHW                    │
├─────────────────────────────────┤
│Maximum Time            45 min    │
│Cycle Time              1 hour    │
│Space ▶riority Status   Disabled  │
│Space ▶riority T        -5 °C     │
│DHW Heater                        │
│🏠 28°C            ⊕ OK ⊂         │
└─────────────────────────────────┘
```

Space priority status:

If space priority function is enabled, Heat Pump operation by DHW mode stops (and continue with DHW heater, if necessary).

This function is only performed if space heating or space cooling can be done. If it is not possible, operation will continue in DHW normally.

- Only available in Standard mode.

Space priority temperature:

Threshold value of outdoor ambient temperature for the activation of the space priority function.

- Range: -20~0 ºC

- Only available in Standard mode.

DHW Heater: Only available when DHW heater is activated (DSW4 pin 3 ON).

- **Waiting time**: Enable or disable waiting time for DHW heater.

- **Electrical Heater waiting time:** Waiting time for the beginning of electrical heater operation since compressor start-up.

- Only available in High Speed control.

▼

```
4 / 4
┌─────────────────────────────────┐
│09:14                  31/ 01/ 1  │
│           DHW                    │
├─────────────────────────────────┤
│Anti Legionella                   │
│                                  │
│                                  │
│                                  │
│                                  │
│🏠 28°C            ⊕ OK ⊂         │
└─────────────────────────────────┘
```

Anti Legionella:

In order to help prevent against Legionella in the DHW system, the DHW set point can be raised to a higher than normal temperature.

The Legionella protection only makes sense if there is a DHW electric heater to raise the DHW temperature to this high temperature.

See the possible configurable parameters below.

◆ **Anti Legionella function**

```
┌─────────────────────────────────┐
│12:04                  31/01/2018 │
│        Anti Legionella           │
├─────────────────────────────────┤
│Status              Enabled       │
│Operation ▶ay       Sunday        │
│Starting Time       01:00         │
│Setting Temperature 70 °C         │
│Duration            10 min        │
│🏠 28°C            ◀▶ ⊕ ⊂         │
└─────────────────────────────────┘
```

Status of anti legionella operation (enabled/disabled)

Specified day for anti legionella operation

Specified time of the day for anti legionella operation

Setting for domestic hot water temperature in anti legionella operation..

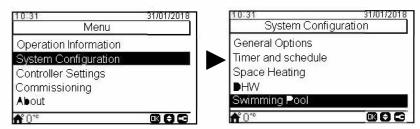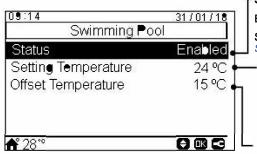Duration of shock treatment. Between 10 to 60 minutes.

7.8.2.6 Swimming Pool configuration

Status:

Enable or disable swimming pool.

Set input 3, output 1 and sensor 2. (see section *"7.8.2.10 Inputs, Outputs and Sensors configuration"*)
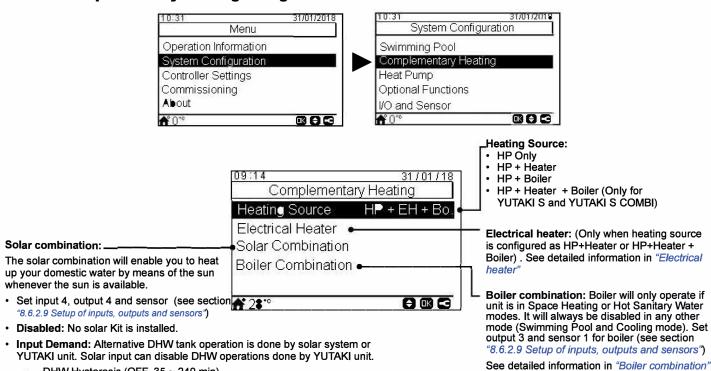
Setting temperature:

Adjustment of the swimming pool water temperature setting.

- Range: 24~33 ºC

Offset temperature: The setting temperature is increased by the indicated parameter.
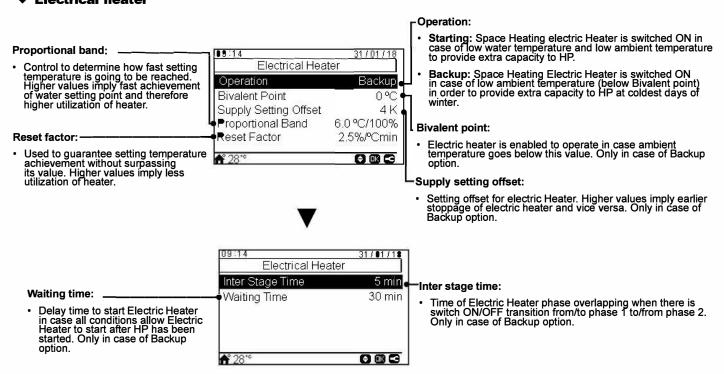
7.8.2.7 Complementary Heating configuration

10:31	31/01/2018
Menu	
Operation Information	
System Configuration	
Controller Settings	
Commissioning	
About	
🏠 0°C	OK ⊕ ⊂

10:31	31/01/2018
System Configuration	
Swimming Pool	
Complementary Heating	
Heat Pump	
Optional Functions	
I/O and Sensor	
🏠 0°C	OK ⊕ ⊂

09:14	31/01/18
Complementary Heating	
Heating Source	HP + EH + Bo.
Electrical Heater	
Solar Combination	
Boiler Combination	
🏠 28°C	⊕ OK ⊂

Heating Source:
- HP Only
- HP + Heater
- HP + Boiler
- HP + Heater + Boiler (Only for YUTAKI S and YUTAKI S COMBI)

Electrical heater: (Only when heating source is configured as HP+Heater or HP+Heater + Boiler) . See detailed information in *"Electrical heater"*

Boiler combination: Boiler will only operate if unit is in Space Heating or Hot Sanitary Water modes. It will always be disabled in any other mode (Swimming Pool and Cooling mode). Set output 3 and sensor 1 for boiler (see section *"8.6.2.9 Setup of inputs, outputs and sensors"*)

See detailed information in *"Boiler combination"*

Solar combination:

The solar combination will enable you to heat up your domestic water by means of the sun whenever the sun is available.

- Set input 4, output 4 and sensor (see section *"8.6.2.9 Setup of inputs, outputs and sensors"*)
- **Disabled:** No solar Kit is installed.
- **Input Demand:** Alternative DHW tank operation is done by solar system or YUTAKI unit. Solar input can disable DHW operations done by YUTAKI unit.
  - DHW Hysteresis (OFF, 35 ~ 240 min)
  - DHW Maximum Time (5 ~240 min)
- **Total Control**: YUTAKI units controls the solar operation for the system, based on different temperatures: DHWT is heated by either the hot water that comes from the solar panels or the hot water that comes from the heat pump, depending on the solar temperature. See detailed information in *"Solar combination - Total control"*.

◆ **Electrical heater**

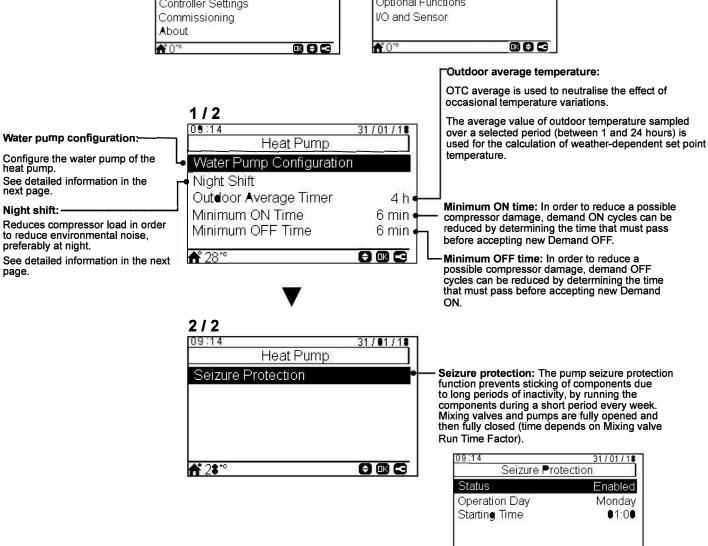**Proportional band:**

- Control to determine how fast setting temperature is going to be reached. Higher values imply fast achievement of water setting point and therefore higher utilization of heater.

Reset factor:

- Used to guarantee setting temperature achievement without surpassing its value. Higher values imply less utilization of heater.

09:14	31/01/18
Electrical Heater	
Operation	Backup
Bivalent Point	0 °C
Supply Setting Offset	4 K
Proportional Band	6.0 °C/100%
Reset Factor	2.5%/°Cmin
🏠 28°C	⊕ OK ⊂

Operation:
- **Starting:** Space Heating electric Heater is switched ON in case of low water temperature and low ambient temperature to provide extra capacity to HP.
- **Backup:** Space Heating Electric Heater is switched ON in case of low ambient temperature (below Bivalent point) in order to provide extra capacity to HP at coldest days of winter.

Bivalent point:
- Electric heater is enabled to operate in case ambient temperature goes below this value. Only in case of Backup option.

Supply setting offset:
- Setting offset for electric Heater. Higher values imply earlier stoppage of electric heater and vice versa. Only in case of Backup option.

09:14	31/01/18
Electrical Heater	
Inter Stage Time	5 min
Waiting Time	30 min
🏠 28°C	⊕ OK ⊂

Waiting time:
- Delay time to start Electric Heater in case all conditions allow Electric Heater to start after HP has been started. Only in case of Backup option.

Inter stage time:
- Time of Electric Heater phase overlapping when there is switch ON/OFF transition from/to phase 1 to/from phase 2. Only in case of Backup option.

◆ Solar combination - Total control

ΔT connection:
- Allows to specify a difference temperature between tank and Panel temperature to allow solar operation. Solar operation is allowed in case Panel temperature is "ΔT connection" ºC above tank temperature.

ΔT disconnection:
- Allows to specify a difference temperature between tank and Panel temperature to stop solar operation. Solar operation is not allowed in case Panel temperature is "ΔT connection"ºC below tank temperature

Panel antifreeze temperature:
- Minimum Solar panel temperature at which Solar Pump is switched ON in order to protect system against frost formation at pipes due to low ambient temperature.

```
09:14                    31 / 01 / 18
            Total Control
DHW Maximum Time              ●ff
▶DHW Minimum Time          5 min
DHWT Max storage T         60 ºC
ΔT Connection              10 ºC
▲T Disconnection            5 ºC
🏠 28°c                        ⊕ OK ⊡
```

```
09:14                    31 / 01 / 18
            Total Control
Panel Minimum T            15 ºC
Panel Overheat T           80 ºC
Panel antifreeze T          4 ºC


🏠 28°c                        ⊕ OK ⊡
```

DHW maximum time:
- Maximum time YUTAKI allows to heat tank by means Solar. At the end of this time Solar pump is stopped regardless temperature conditions at Solar Panel.

DHW minimum time:
- Minimum Time solar operation cannot be performed once it has been stopped due to DHW Maximum Time or due to low temperature at solar panel.

DHWT maximum storage temperature:
- Maximum DHW temperature that allows Solar operation.

Panel minimum temperature:
- Minimum temperature of the solar Panel to allow Solar operation

Panel overheat temperature:
- Maximum panel operation temperature at which Solar Pump is set to off in case Panel sensor reads a temperature above this value in order to protect system.
- In case that the solar pump is stopped due to panel overheat temperature, the YUTAKI unit sets solar overheat output to high state provided that this function has been setup as described in *"8.6.2.9 Setup of inputs, outputs and sensors"*

◆ Boiler combination

Minimum ON time:
- Time that must pass before stop boiler after being switched ON

Minimum OFF time:
- Time that must pass before start boiler after being switched OFF

```
09:14                    31 / 01 / 18
          Boiler Combination
Bivalent Point             -5 ºC
Combination mode         Parallel
Supply Setting ●ffset       4 ºC
Minimum ●N Time            2 min
Minimum ●FF Time           5 min
🏠 28°c                        ⊕ OK ⊡
```

```
09:14                    31 / 01 / 18
          Boiler Combination
Waiting Time              30 min
DHW by Boiler           ▶isabled
Wait Time for ▶HW        45 min


🏠 28°c                        ⊕ OK ⊡
```

Wait time for DHW:
- Delay time to start Boiler for DHW in case all conditions allow Boiler to start after HP has been started for DHW.

Bivalent point:
- Boiler is allowed to operate in case ambient temperature is below this value

Combination mode:
- Serial: Boiler operates in series with the heat-pump. The boiler provides additional peak load capacity and works together with the HP
- Parallel: Boiler operates in parallel with the heat pump. The boiler provides the full heating requirements. In case Boiler is ON, HP is not allowed to operate

Supply setting offset:
- Setting offset for Boiler. Higher values imply earlier stoppage of Boiler and vice versa.

Waiting time:
- Delay time to start Boiler in case all conditions allow Boiler to start after HP has been started for Space Heating

DHW by boiler:
- Control to allow heat DHW by means Boiler

7.8.2.8 Heat Pump configuration

Outdoor average temperature:

OTC average is used to neutralise the effect of occasional temperature variations.

The average value of outdoor temperature sampled over a selected period (between 1 and 24 hours) is used for the calculation of weather-dependent set point temperature.

Water pump configuration:

Configure the water pump of the heat pump.
See detailed information in the next page.

Night shift:

Reduces compressor load in order to reduce environmental noise, preferably at night.

See detailed information in the next page.

1 / 2

Minimum ON time: In order to reduce a possible compressor damage, demand ON cycles can be reduced by determining the time that must pass before accepting new Demand OFF.

Minimum OFF time: In order to reduce a possible compressor damage, demand OFF cycles can be reduced by determining the time that must pass before accepting new Demand ON.

2 / 2

Seizure protection: The pump seizure protection function prevents sticking of components due to long periods of inactivity, by running the components during a short period every week. Mixing valves and pumps are fully opened and then fully closed (time depends on Mixing valve Run Time Factor).

◆ Water pump configuration

Swimming pool speed:

Selection of the % for the pump speed when using Swimming pool.

Minimum OFF Time:

Minimum time of the water pump OFF.

• Only when Economic mode is active (DSW)

1 / 2

```
09:14                    31 / 01 / 18
     Water Pump Configuration
 Operation Mode              Fix
 Space Speed               100 %
▶DHW Speed                 100 %
 SWP Speed                 100 %
 Minimum OFF Time          40 min
🏠 28°℃                      🔼 🆗 ⏎
```

Operation mode:

• **ΔT:** To control the pump speed to guarantee the ΔT between Two and Twi.

• **Fix:** The water pump works at the specified speed % at the space speed menu.

Space speed:

Selection of the % for the pump speed when fix mode is selected.

DHW speed:

Selection of the % for the pump speed when using DHW.

Stop conditions:

• **Standard**

• **Thermo OFF:** The water pump stops after Thermo OFF. (DSW5 pin 4 ON).

2 / 2

```
09:14                    31 / 01 / 18
     Water Pump Configuration
 Minimum ON Time          10 min
 Overrun Time             10 min
 Stop Conditions         Standard

🏠 28°℃                      🔼 🆗 ⏎
```

Minimum ON Time:

Minimum time of the water pump ON.

• Only when Economic mode is active (DSW)

Overrun Time:

Added operation time of water pump after Demand OFF.

◆ Night Shift

```
09:14                    31 / 01 / 18
         Night Shift
 Capacity                  75 %
 Timer                   Enabled
 Starting Time            20:00
 Stopping Time            08:00


🏠 28°℃                      🔼 🆗 ⏎
```

— Ratio of reduction in heat pump capacity

— Status of activation of Night Shift (reduction of compressor load in order to reduce operation noise during the night hours).

— Starting time of Nigh Shift operation

— Ending time of Night Shift operation

7.8.2.9 Optional functions configuration

This menu allows to configure the optional functions for system, space heating or space cooling, DHW and Emergency operation.

```
10:31                    31/01/2018
            Menu
● peration Information
System Configuration
Controller Settings
Commissioning
About
🏠 0°c                    OK ⊕ ⊂⊃
```

```
10:31                    31/01/2018
        System Configuration
Complementary Heating
Heat Pump
● ptional Functions
I/O and Sensor
🏠 0°c                    OK ⊕ ⊂⊃
```

```
10:31                    31/01/2018
        Optional Functions
System
Space Functions
DHW
Emergency Operation

🏠 0°c                    OK ⊕ ⊂⊃
```

System:

Configure the optional functions for the system. See detailed information below.

Space functions:

Configure the optional functions for the space heating or space cooling. See detailed information below.

DHW:

Configure the optional functions for the DHW. See detailed information below.

Emergency operation:

Enable or disable emergency operation for space heating or DHW. See detailed information below.

◆ System optional functions

```
10:31                    31/01/2018
            System
Hydraulic Sep. Status    Enabled
Energy Configuration
Smart Function

🏠 0°c                    OK ⊕ ⊂⊃
```

Smart function:

To block or limit the heat pump or increase demand due to electricity availability. See detailed information below.

Hydraulic separator status:

Enable if there is a Hydraulic separator or a buffer tank installed. Check that WP3 is set in output 2 (see section *"7.8.2.10 Inputs, Outputs and Sensors configuration"*)

Energy configuration:

Setup of power consumption readings. See detailed information below.

Energy configuration

```
09:14                    31/01/18
        Energy Configuration
Status                   Enabled
Power Meter 1     ● .1 pulse/kWh
Power Meter 2     ● .1 pulse/kWh
Capacity Configuration   Enabled
🏠 28°c                   ⊕ OK
```

Status:

Enable or disable energy configuration options

Power meter 1 or 2:

• The power meter does a real measuring of the power consumption.

• If the power meter is enabled, it is possible to see the information collected through the Operation information - Energy data menu.

• If "power meter" is disabled the YUTAKI software does an estimate consumption of the system.

• In case of using power meter 1 or 2 input must be configured at the Inputs menu (see section *"7.8.2.10 Inputs, Outputs and Sensors configuration"*)

Capacity configuration:

Due to usage of water temperature inlet and outlet + water flow level, an estimation of capacity can be checked through the Operation information - Energy data menu.

Smart Function

Status:

Enable or disable smart function.

Trigger type:

• Closed: Action when input is closed
• Open: Action when input is open

Start boiler:

Permission to use the boiler in case that the system has been blocked due to HP Block.

Start DHW Heater:

Permission to use the DHW heater in case that the system has been blocked due to HP Block..

1 / 2

```
09:14                    31/01/18
          Smart Function
Status                    Enabled
Smart Action             HP Block
Trigger Type             Open (NO)
Start Boiler             Disabled
Start DHW Heater         Disabled
🏠 28°C                        🔼 OK
```

Smart Action:

Check that Smart Act/SG1 is set in input 5 (see section *"7.8.2.10 Inputs, Outputs and Sensors configuration"*)

• **HP Block:** Heat Pump is forbidden in any condition (Space Heating, Cooling, DHW) when signal is active.

• **HP Limited (A):** Limitation of power consumption up to a limit of "x" amperes (to be set up in Limitation of amperage).

• **SG Ready:** The SG Grid is awarded to heat pump series. This control technology integrates the system in a smart grid by using two digital inputs establishing an unidirectional connection Service Manual for detailed information. It is necessary to configure an input for SG2.

• **DHW Block:** DHW Operation is forbidden when signal is active.

• **DHW only:** Heat pump operation for any condition except DHW is forbidden when signal is active. DHW operation is allowed normally.

2 / 2 ▼

```
09:14                    31/01/18
          Smart Function
Limitation by Ampere         50 A
🏠 28°C                        🔼 OK
```

Limitation by ampere:

Configure the ampere consumption limitation. Only visible when smart action is set as HP Limited (A).

◆ **Space optional functions**

Auto Heat/Cool:

Only available in units capable of heating and cooling operation, and when cooling operation is enabled.

Allows to set automatic switch over to heating and cooling operation using the same daily average outdoor temperature of the previous day as in Heating auto ON/OFF.

• **Status:** Enable or disable auto heat/cool.

• **Switch to Heat temperature:** operation switches to heating in case that the measured outdoor temperature value is lower than the threshold for switching to heating.

• **Switch to Cool temperature:** Operation switches to cooling in case that the measured outdoor temperature value is higher than the threshold for switching to cooling.

```
10:31                   31/01/2018
          Space Functions
Heating Auto On/Off
Auto Heat/Cool
🏠 0°C                   OK 🔼 ⟲
```

Heating Auto On/Off:

To stop automatically stop heating operation when the daily average outdoor temperature of the previous day is higher than the defined Switch-OFF temperature

• **Status:** Enable or disable heating auto on/off function.

• **Switch Off temperature:** System is stopped in case that the outdoor temperature is higher than the Switch-OFF temperature.

• **Switch On differential:** Differential temperature between average outdoor temperature of the previous day and the Switch Off temperature.

◆ DHW optional functions

Circuit Pump: By using this output, user can heat all the water inside DHW piping system. Output must be configured at the I/O and sensors menu. (see section *"7.8.2.10 Inputs, Outputs and Sensors configuration"*)

- Disabled.
- Demand: Enable DHW recirculation.
- Anti Legionella: Allows DHW recirculation while anti legionella is active.
- Timer: A timer can be programmed in order to start or stop the water recirculation.

DHW Boost:

To force a one-time heating of the DHW tank up to the temperature set as DHW Boost temperature.

This feature is useful to cover exceptional demand of DHW.

- **Trigger type:** Push (favourite button), Open (NC) or Closed (NO). Set input 6 for DHW Boost (for trigger type open/closed). (see section *"7.8.2.10 Inputs, Outputs and Sensors configuration"*)
- **Boost setting:** DHW temperature setting for the Boost function.

Recirculation timer:

- Frequency: Allows to select when timer is applied (Everyday, weekend, workday)
- Starting Time: When the water pump circulation starts.
- Stopping Time: When the water pump circulation stops.
- Operation: In case of ON, means that water pump is always ON between "Starting Time" and "Stopping Time". In case it is set to Timer, Recirculation pump is ON during "ON Time" after being OFF during "OFF Time" within Starting Time and Stopping Time.
- ON Time: On time period of Recirculation pump.
- OFF Time: Off time period of Recirculation pump.

```
10:31                31/01/2018
         DHW
Circuit Pump           Timer
Recirculation Timer
DHW Boost

🏠 0°c              OK ⬍ ⟷
```

◆ Emergency Operation

Mode:

Selection of the emergency operation mode:

- **Manual:** Emergency operation is active when is manually enabled (by DSW4 pin 4 ON). The emergency mode uses the heater (space heating or DHW) to provide the required heating.
- **Automatic:** Emergency mode operates when there is an event of outdoor unit failure and Demand ON of space heating (enabled) or DHW (enabled).

Space Heating:

Enable or disable emergency operation for space heating.
Only available in case "Heating source" on *"7.8.2.7 Complementary Heating configuration"* contains "Electrical heater option"

DHW:

Enable or disable emergency operation for DHW. Only available when electrical heater for DHW is enabled (by DSW).

```
10:31                31/01/2018
     Emergency Operation
Space Heating       Disabled
DHW                 Disabled
Mode                 Manual

🏠 0°c              OK ⬍ ⟷
```

7.8.2.10 Inputs, Outputs and Sensors configuration

Auxiliary sensors:
There are 7 available auxiliary sensors to set.

Inputs:
The system allows to set 7 inputs depending on the operations and preferences of the installation

Outputs:
There are 8 available outputs to set. There are conditions of setting depending on the installation.

◆ **List of available inputs:**

- **Disabled**

- **Demand ON/OFF** (by default in input 1): Consider both Circuit 1 and Circuit 2 in Demand ON when the signal is ON.

- **Demand ON/OFF C1:** Consider Circuit 1 in Demand ON when the signal is ON.

- **Demand ON/OFF C2:** Consider Circuit 2 in Demand ON when the signal is ON.

- **Power Meter 2:** To count any pulse received from the power meter 2 and sent to central control energy consumption calculation.

- **ECO C1 + C2:** Switch both Circuit 1 and Circuit 2 to ECO mode when input is closed.

- **ECO C1** (by default in input 2, if there is circuit 1 in the installation): Switch Circuit 1 to ECO mode when input is closed.

- **ECO C2:** Switch Circuit 2 to ECO mode when input is closed.

- **Forced Off:** Forbid DHW, space heating and space cooling.

- **Smart Act / SG1** (Fixed in input 5 if smart action is enabled): To active Smart Function.

- **Swimming Pool** (Fixed in input 3 if swimming pool is enabled): Consider Swimming pool in Demand ON when the signal is ON.

- **Solar** (Fixed in input 4 if solar is enabled): To let YUTAKI know that external Solar management system is ready to provide Solar energy.

- **Operation:** To switch between space cooling and space heating.

- **DHW Boost** (Fixed in input 6 if is DHW Boost is enabled): If it is set to open (NC), boost signal ON if circuit is open. If it is set to close (NO), boost signal ON if circuit is closed.

- **Power Meter 1** (Fixed in input 7 if Power Meter 1 is enabled): To count any pulse received from the power meter 1 and sent to central control energy consumption calculation.

- **Forced Heating:** Force mode heating when input is closed

- **Forced Cooling:** Force mode cooling when input is closed.

- **SG2:** To active the different estates of Sm Grid Ready.

◆ **List of available outputs:**

• **Disabled**

• **SWP 3WV:** (Fixed in output 1 if swimming pool is enabled): Signal control of the 3-way valve of the swimming pool.

• **Water pump 3:** (Fixed in output 2 if hydraulic separator or buffer tank is installed): Signal control of the water pump for hydraulic separator or buffer tank.

• **Boiler:** (Fixed in input 3 if boiler is enabled): Signal control of the boiler.

• **Solar Pump:** (Fixed in input 4 if solar pump is enabled): Signal control of the solar pump.

• **Alarm:** (By default in output 5):Signal is active if there is an alarm.

• **Operation:** (By default in output 6): Signal active in case Thermo ON in any condition.

• **Cooling:** (By default in output 7): Signal active when space cooling is operating.

• **Dem-ON C1:** (By default in output 8): Signal active when there is Demand in circuit 1.

• **Heating:** Signal active when space heating is operating.

• **DHW:** Signal active when DHW is operating.

• **Solar overheat:** Signal is active when solar overheat (only when solar combination status is total control)

• **Defrost:** Signal active when outdoor unit is defrosting.

• **DHW Re-circulation:** Signal active depending on option selected at chapter Circuit pump.

• **Heater relay 1:** Signal control of the Space heating heater 1 (Only for YUTAKI S80 or YUTAKI M (R410A) units)

• **Heater relay 2:** Signal control of the Space heating heater 2 (Only for YUTAKI S80 or YUTAKI M (R410A) units)

◆ **List of available sensors:**

• **Disabled**

• **Two3:** (Fixed in sensor 1 if boiler is installed): Use this sensor to monitor water temperature when boiler is used.

• **Swimming Pool:** (Fixed in sensor 2 if swimming pool is installed): Use this sensor when swimming pool is used in order to monitor swimming pool temperature.

• **Solar panel sensor:** Use this sensor when Total control is configured to monitor Solar Panel temperature.

• **C1 + C2 Ambient:** Use this sensor when auxiliary ambient temperature sensor is used for C1 and C2.

• **C1 Ambient:** Use this sensor when auxiliary ambient temperature sensor is used for C1.

• **C2 Ambient:** Use this sensor when auxiliary ambient temperature sensor is used for C2.

• **Outdoor sensor (NTC):** (By default sensor 3) To connect to the controller an auxiliary outside temperature sensor in case the heat pump is located in a position not suitable for this measurement.

7.8.3 COMMISSIONING
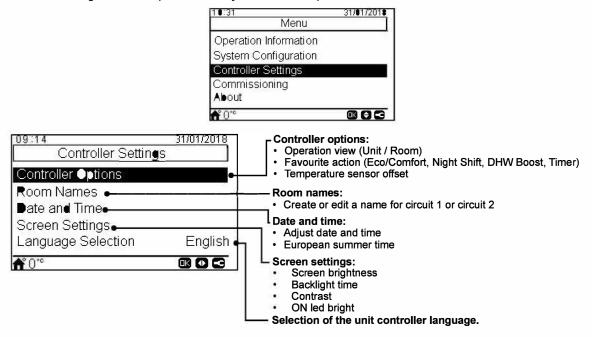
Under the commissioning menu it is possible to adjust the several parameters:

7.8.4 CONTROLLER SETTINGS

Under the controller settings menu it is possible to adjust the several parameters:

Controller options:
- Operation view (Unit / Room)
- Favourite action (Eco/Comfort, Night Shift, DHW Boost, Timer)
- Temperature sensor offset

Room names:
- Create or edit a name for circuit 1 or circuit 2

Date and time:
- Adjust date and time
- European summer time

Screen settings:
- Screen brightness
- Backlight time
- Contrast
- ON led bright

Selection of the unit controller language.

7.8.5 ABOUT

In this section of the LCD controller it is possible to find the following information:

System information:
- Unit type
- Unit capacity
- Controller firmware
- Indoor PCB firmware
- Language package

Contact information:

It is possible and recommendable to fill this information providing a contact phone to the user.
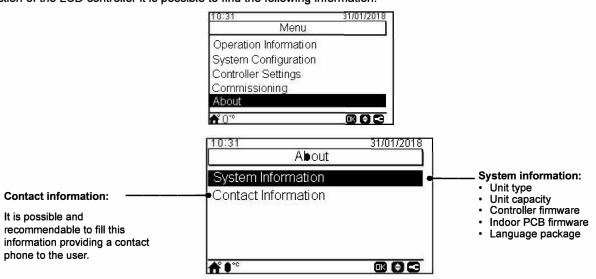
7.8.6 FACTORY RESET

This function is only visible for the installer. It asks for removing all the settings and returns to the factory setting configuration.

7.8.7 RETURN TO USER MODE
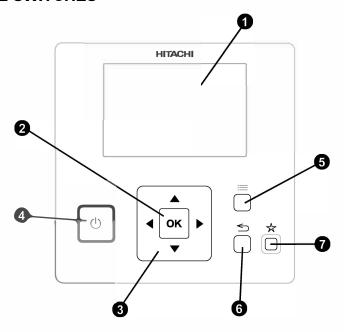
This function allows to getting out of the "Installer mode".

8 YUTAKI CASCADE CONTROLLER

The new YUTAKI CASCADE CONTROLLER for YUTAKI series (PC-ARFH1E) is an user-friendly remote control which ensures a strong and safe communication through H-LINK.

8.1 DEFINITION OF THE SWITCHES

❶ Liquid Crystal Display

Screen where controller software is displayed.

❷ OK button

To select the variables to be edited and to confirm the selected values.

❸ Arrows key

It helps the user to move through the menus and views.

❹ Run/Stop button

It works for all zones if none of the zones is selected or only for one zone when that zone is selected.

❺ Menu button

It shows the different configuration options of the user controller.

❻ Return button

To return to the previous screen.

❼ Favourite button

When this button is pressed, the selected favourite action (ECO/Comfort, Simple timer or DHW boost) is directly executed.

8.2 DESCRIPTION OF THE ICONS

8.2.1 Common icons

Icon	Name		Explanation
OFF	Status for circuit 1, 2, DHW and swimming pool.		Circuit I or II is in Demand-OFF
			Circuit I or II is on Thermo-OFF
			Circuit I or II is working between 0 < X ≤ 33% of the desired water outlet temperature
			Circuit I or II is working between 33 < X ≤ 66% of the desired water outlet temperature
			Circuit I or II is working between 66 < X ≤ 100% of the desired water outlet temperature
	Mode		Heating
			Cooling
			Auto
88	Setting temperatures	Value	Displays the setting temperature of the circuit 1, circuit 2, DHW and swimming pool
		OFF	Circuit 1, Circuit 2, DHW or Swimming Pool are stopped by button or timer
⚠	Alarm		Existing alarm. This icon appears with the alarm code
	Timer		Simple timer
			Weekly timer
	Derogation		When there is a derogation from the configured timer
	Installer mode		Informs that user controller is logged on the installer mode which has special privileges
	Menu lock		It appears when menu is blocked from a central control. When indoor communication is lost, this icon disappears
	Outdoor temperature		The ambient temperature is indicated at the right side of this button

8.2.2 Icons for the comprehensive view
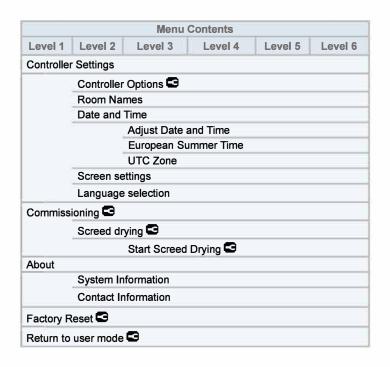
	Explanation
ep	This icon informs about pump operation. There are three available pumps on the system. Each one is numbered, and its corresponding number is displayed below to the pump icon when it is operating
ep	Indicates which of the 3 possible heater steps is applied on space heating
ter	Informs about DHW Heater operation. (If it is enabled)
	Combination with solar energy
	Auxiliary boiler is working
	Tariff signal informs about some cost conditions of the consumption of the system
ull	-	No icon means local mode
		Full mode
FF	When forced off Input is configured and its signal is received, all the configured items on the comprehensive view (C1, C2, DHW, and/or SWP) are shown in OFF, with this small icon below
OFF	When daily average is over auto summer switch-off temperature, circuits 1 and 2 are forced to OFF (Only if Auto ON/OFF enabled)
ella	Activation of the Anti-Legionella operation
st	It activates the DHW heater for an immediate DHW operation
de	-	No icon means Comfort mode
		ECO/Comfort mode for circuits 1 and 2

8.3 CONTENTS

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Operation Information					
	General				
	Modules information				
	Circuit 1				
	Circuit 2				
	DHW				
	Swimming Pool				
	Electrical Heater 🔁				
	Boiler Combination 🔁				
	Solar Combination 🔁				
	Alarm History				
System Configuration					
	General Options				
		Holiday Mode			
		Air Eco Offset 🔁			
		Room Thermostats 🔁			
			Thermostat 1 🔁		
			Thermostat 2 🔁		
			Wireless Binding ID 1🔁		
			Wireless Binding ID 2🔁		
			Compensation Factors 🔁		
			Room Temp Demand OFF 🔁		
			Check RT address 🔁		
		Central Operation			
	Timer and Schedule				
		Circuit 1			
			Heating (Air / Water)		
				Timer Type	
					Simple
					Schedule
			Cooling (Air / Water)		
				Timer Type	
					Simple
					Schedule
		Circuit 2			
			Heating (Air / Water)		
				Timer Type	
					Simple
					Schedule
			Cooling (Air / Water)		
				Timer Type	
					Simple
					Schedule
		DHW			
			Timer Type		
				Simple	
				Schedule	
		Swimming Pool			
			Timer Type		

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
				Simple	
				Schedule	
		Delete All Timer Configuration			
	Water settings 🔁				
		Space Heating 🔁			
			Circuit 1 🔁		
			Circuit 2 🔁		
		Space Cooling 🔁			
			Circuit 1 🔁		
			Circuit 2 🔁		
		DHW 🔁			
		SWP 🔁			
	Cascade configuration🔁				
		Modules configuration🔁			
	Space Heating 🔁				
		Circuit 1 🔁			
			Water Calculation Mode 🔁		
			Eco offset 🔁		
			Working limits 🔁		
		Circuit 2 🔁			
			Water Calculation Mode 🔁		
			Eco offset 🔁		
			Working limits 🔁		
			Mixing valve 🔁		
	Space Cooling 🔁				
		Circuit 1 🔁			
			Water Calculation Mode 🔁		
			Eco offset 🔁		
			Working limits 🔁		
		Circuit 2 🔁			
			Water Calculation Mode 🔁		
			Eco offset 🔁		
			Working limits 🔁		
			Mixing valve 🔁		
	DHW				
		DHW Heater 🔁			
		Anti Legionella			
	Swimming Pool				
		Status 🔁			
		Setting Temperature			
		Offset Temperature 🔁			
	Complementary Heating				
		Heating Source 🔁			
		Electrical Heater 🔁			
		Boiler Combination 🔁			
		Solar Combination			
			Status		
				Input demand 🔁	
				Total control 🔁	
	Heat Pump 🔁				

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		Water Pump Configuration ⟳			
		Outdoor average Timer ⟳			
		Minimum ON Time ⟳			
		Minimum OFF Time ⟳			
		Seizure Protection ⟳			
			Status ⟳		
			Operation Day ⟳		
			Starting Time ⟳		
	Optional Functions				
		System ⟳			
			Smart Function ⟳		
		Space Functions			
			Heating Auto On/Off		
			Auto Heat/Cool		
		DHW			
			Circuit pump ⟳		
			Recirculation timer ⟳		
			DHW Boost		
		Emergency Operation			
	I/O and Sensors ⟳				
		Inputs ⟳			
		Outputs ⟳			
		Auxiliary sensors ⟳			

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Controller Settings					
	Controller Options ▣				
	Room Names				
	Date and Time				
		Adjust Date and Time			
		European Summer Time			
		UTC Zone			
	Screen settings				
	Language selection				
Commissioning ▣					
	Screed drying ▣				
		Start Screed Drying ▣			
About					
	System Information				
	Contact Information				
Factory Reset ▣					
Return to user mode ▣					

◆ **Installer mode**

Icon ▣ means that this menu is available only for installer, a special user with higher access privileges to configure the system. In order to access the controller as Installer, "OK" and "↰" buttons must be pressed for 3 seconds.

OK	+	↰

After that, the "Enter password" message is displayed.

The login password for the Installer is:

Right ▶, Down ▼, Left ◀, Right ▶

Press "OK" to confirm the password.

If the correct access code is entered, the installer mode icon appears on the notifications bar (bottom line).

Installer mode icon	▣

After 30 minutes of inactivity, it is necessary to repeat the log in process. To exit the Installer mode and return to the unit menu, hold down the "↰" button for 3 seconds or go to the "Return to user mode" on the main menu.

ⓘ NOTE

The following chapters explain the special settings the Installer can edit. It is important to understand that the Installer can also perform all the actions available for the typical user.

8.4 CASCADE CONTROLLER CONFIGURATION
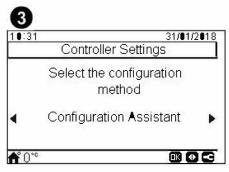
①

```
10:31                    31/01/2018
        Controller Settings

      Select the language of the
             controller

◄             English              ►

🏠 0°ᶜ                     OK ◄► ⊏⊐
```

- Select the desired language using the arrow keys.
- Press OK button.

②

```
10:31                    31/01/2018
         Date and Time
Hour Format                   24 h

     YYYY MM  DD    hh  mm
     2016  01  25   10  31

🏠 0°ᶜ                  OK ◄► ↕ ⊏⊐
```

- Select the date and time using the arrow keys.
- Press OK button.

8.4.1 Configuration Assistant

③

```
10:31                    31/01/2018
        Controller Settings

      Select the configuration
             method

◄      Configuration Assistant     ►

🏠 0°ᶜ                     OK ◄► ⊏⊐
```

- Select the configuration assistant for an easy configuration.
- Press OK button.

④

```
10:31                    31/01/2018
        Installation Definition

     How many circuits do you
             have?

◄               1                  ►

🏠 0°ᶜ                     OK ◄► ⊏⊐
```

- Select the number of circuits (1 or 2) .
- Press OK button.

❺

```
10:31                    31/01/2018
┌─────────────────────────────┐
│      Installation Definition │
│                              │
│   What are the heat emitters │
│    installed on circuit 1?   │
│                              │
│ ◄     Underfloor heating   ► │
│                              │
│ 🏠 0°C            [OK][◄►][⮐] │
└─────────────────────────────┘
```

- Select the heat emitters on the circuit 1: Underfloor heating, Fan coils or Radiators.
- Repeat this step in case of circuit 2.
- Press OK button.

❻

```
10:31                    31/01/2018
┌─────────────────────────────┐
│      Installation Definition │
│                              │
│   Do you have a domestic hot │
│     water tank installed?    │
│                              │
│ ◄            No            ► │
│                              │
│ 🏠 0°C            [OK][◄►][⮐] │
└─────────────────────────────┘
```

- Select Yes if Domestic Hot Water tank is installed.
- Press OK button.

❼

```
10:31                    31/01/2018
┌─────────────────────────────┐
│      Installation Definition │
│                              │
│     Do you have a swimming   │
│        pool installed?       │
│                              │
│ ◄            No            ► │
│                              │
│ 🏠 0°C            [OK][◄►][⮐] │
└─────────────────────────────┘
```

- Select Yes if Swimming Pool is installed.
- Press OK button.

❽

```
10:31                    31/01/2018
┌─────────────────────────────┐
│      Installation Definition │
│                              │
│     Do you have a boiler     │
│         installed?           │
│                              │
│ ◄            No            ► │
│                              │
│ 🏠 0°C            [OK][◄►][⮐] │
└─────────────────────────────┘
```

- Select Yes if Boiler is installed.
- Press OK button.

❾

```
10:31                    31/01/2018
         Installation Definition

       Do you have an electric backup
            heater installed?

◀                 No                 ▶

🏠 0°C                        OK ◀▶ ⏏
```
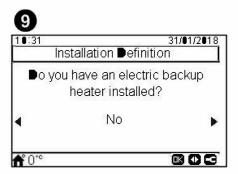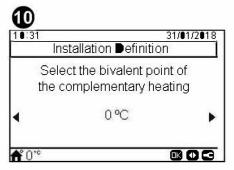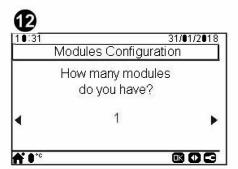
- Select Yes if an electrical backup heater is installed.
- This screen appears only when no boiler is installed.
- Press OK button.

❿

```
10:31                    31/01/2018
         Installation Definition

        Select the bivalent point of
          the complementary heating

◀                0 °C                ▶

🏠 0°C                        OK ◀▶ ⏏
```

- Select the bivalent point for boiler or electric backup heater (from -20 ºC to 20 ºC).
- Press OK button.

⓫

```
10:31                    31/01/2018
           Room Thermostats

         Which Thermostat do you
            have for circuit 1?

◀                None                ▶

🏠 0°C                        OK ◀▶ ⏏
```

- Select the type of room thermostat installed in circuit 1: None, wired or wireless.
- Repeat this step in case of circuit 2.
- Press OK button.

⓬

```
10:31                    31/01/2018
          Modules Configuration

            How many modules
             do you have?

◀                 1                  ▶

🏠 0°C                        OK ◀▶ ⏏
```
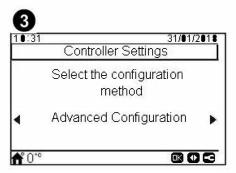
- Select the number of modules installed (from 1 to 8)
- Select OK button.

- Configuration assistant is completed.
- Press OK button to go to the main screen.
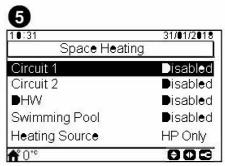
8.4.2 Advanced Configuration
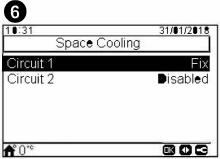
- Select the advance configuration for a complete configuration.
- Press OK button.
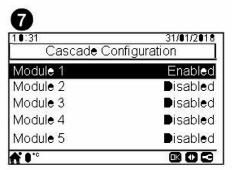
- Select the favourite action: Eco/Comfort, Timer, DHW Boost.
- Select Enabled or Disabled for European summer time.
- Select Next and press OK button .
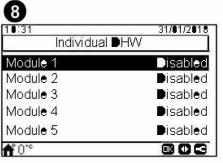
⑤

```
10:31                    31/01/2018
        Space Heating
Circuit 1              Disabled
Circuit 2              Disabled
▶HW                    Disabled
Swimming Pool          Disabled
Heating Source         HP Only
🏠 0°C                  ⬆⬇ ◀▶ ⬅
```

- Configure circuit 1 and circuit 2 OTC: Disabled, Points, Gradient, Fix.
- Enable or disable DHW and Swimming Pool.
- Select the heating source: HP only, HP + EH, HP + Boiler.
- Configure electrical heater use: Disabled or Backup.
- Configure Boiler type: Parallel or Serial.
- Configure Solar Combination options: Disabled, Input Demand, Total Control. (only in case DHW is enabled).
- Enable or disable Hydraulic separator status.
- Select Next and press OK button.

⑥

```
10:31                    31/01/2018
        Space Cooling
Circuit 1                  Fix
Circuit 2              Disabled



🏠 0°C                  OK ◀▶ ⬅
```

- Configure circuit 1 and circuit 2 options: Disabled, Points, Gradient, Fix.
- Only available for cooling mode.

⑦

```
10:31                    31/01/2018
      Cascade Configuration
Module 1               Enabled
Module 2               Disabled
Module 3               Disabled
Module 4               Disabled
Module 5               Disabled
🏠 0°C                  OK ◀▶ ⬅
```
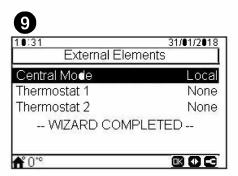
- Enable or disable the desired modules (module 1 is enabled by default)
- Select Next and press OK button.

⑧

```
10:31                    31/01/2018
        Individual ▶HW
Module 1               Disabled
Module 2               Disabled
Module 3               Disabled
Module 4               Disabled
Module 5               Disabled
🏠 0°C                  OK ◀▶ ⬅
```
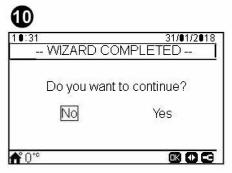
- Enable or disable the individual DHW for each module.
- Select Next and press OK button.

9

```
10:31                          31/01/2018
          External Elements
Central Mode              Local
Thermostat 1               None
Thermostat 2               None
        -- WIZARD COMPLETED --

🏠 0°C                         OK ◀▶ ⊏
```
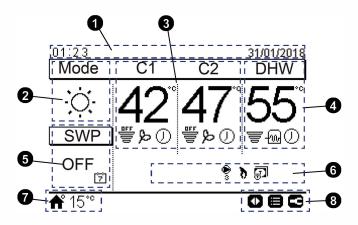
- Configure Central mode options: Local or Full.
- Configure thermostat (1 or 2): None, wired or wireless.
- Check RT address if wired is selected.
- Select Wireless binding ID (1 or 2) if wireless is selected.
- Select Wizard complete and press OK button.

10

```
10:31                          31/01/2018
        -- WIZARD COMPLETED --

       Do you want to continue?

          No            Yes

🏠 0°C                         OK ◀▶ ⊏
```

- Select Yes to complete the advance configuration.
- Press OK button to go to the main screen.

8.5 MAIN SCREEN

❶ Time and date

The current time/date information is displayed. This information can be changed on the configuration menu.

❷ Operation mode (Heating/Cooling/Auto)

This icon shows the unit's mode of operation status. It has to be edited by pressing the OK button, and it can be switched between Heating, Cooling and Auto mode. (If available option).

❸ Control of circuits 1 and 2

It displays the setting temperature calculated for each circuit and a throughput icon indicating the percentage of the actual temperature with respect to the setting temperature. It can also show the ECO mode and timer activation if they are enabled.

The setting temperature can be modified using the arrows keys over this view (if water calculation mode is set as fix).

Pressing the OK button, the following quick actions are shown:

- Timer: In this menu, simple timer or schedule timer can be selected and configured.

- OTC: OTC Setting temperature (User can only refer to the OTC mode and its setting temperature value)

- ECO/Comfort: Selection between ECO and Comfort mode.

- Status: Some working conditions can be consulted.

❹ DHW control

It displays the setting temperature for DHW and a throughput icon indicating the percentage of the actual temperature with respect to the setting temperature. It can also show the operation of the electrical heater of the DHW, the timer activation and the DHW boost if they are enabled.

The setting temperature can be modified using the arrows keys over this view.

Pressing the OK button, the following quick actions are shown:

- Timer: In this menu, simple timer or schedule timer can be selected and configured.

- DHW boost: It activates the DHW heater for an immediate DHW operation

- Status: Some working conditions can be consulted.

If anti-legionella operation is working, its icon appears below the setting temperature.

❺ Swimming pool control

It gives information about the swimming pool setting temperature and displays a throughput icon indicating the percentage of the actual temperature with respect to the setting temperature.

The setting temperature can be modified using the arrows keys over this view.

Pressing the OK button, the following options are shown:

- Timer: In this menu, simple timer or schedule timer can be selected and configured.

- Status: Some working conditions can be consulted.

❻ Unit status signals

This part of the screen displays all the notification icons that offer general knowledge on the unit's situation

Some of these icons can be: Defrost operation, Water pumps, Boiler working, Tariff input...

❼ Outdoor temperature / Alarm indication

In normal operation, the outdoor temperature is displayed besides the home icon signal.

In abnormal operation, the alarm icon is indicated with its corresponding alarm code.

❽ Available buttons / Installer mode

It indicates the buttons of the user controller which can be used in this moment.

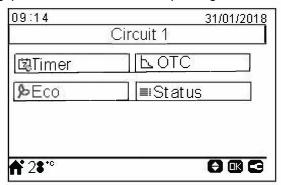When Installer mode is enabled, its icon appears on the right side of this view.
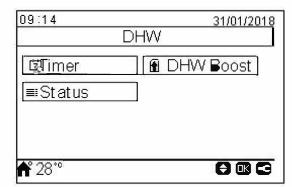
OK button
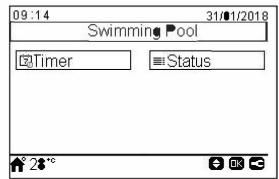
Pressing the OK button, the quick actions are shown:

- Timer: In this menu, simple timer or schedule timer can be selected and configured.

- Operation mode: It allows to select the unit operation between Heating, Cooling and Auto mode.

- ECO/Comfort: Selection between ECO and Comfort mode.

- Status: Some working conditions can be consulted.

8.5.1 Quick action function

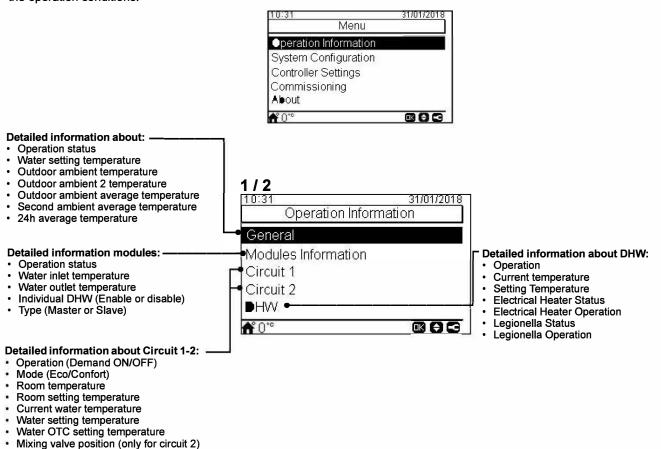The following quick actions are shown when pressing the OK button at the selected zone:

```
09:14                    31/01/2018
           Circuit 1

  Timer           OTC

  Eco            Status



  28°C              OK
```

```
09:14              31/01/2018       09:14              31/01/2018
        DHW                              Swimming Pool

  Timer        DHW Boost         Timer           Status

  Status



  28°C            OK              28°C              OK
```

- ● **Timer:** Menu for the selection and configuration of simple timer and schedule timer.
- ◣ **OTC:** Menu for the OTC selection. Only available for circuit 1 and circuit 2 in Comprehensive view.
- ✈ **Eco /** 🛋 **Comfort:** Activation of the Eco/Comfort Mode. Only available for circuit 1 and circuit 2.
- ☰ **Status:** Display of information related to current operation conditions
- ▊ **DHW Boost:** Activation of the auxiliary DHW heater and Heat Pump (if operation is possible, to speed up DHW heating operation). Only available for DHW.
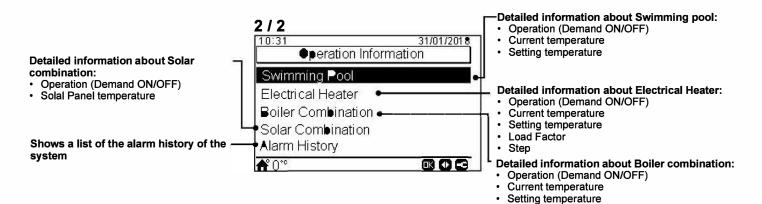
8.6 MENU

8.6.1 OPERATION INFORMATION

In operation information menu it is possible to find the most important setting parameters of the system besides the information of the operation conditions.
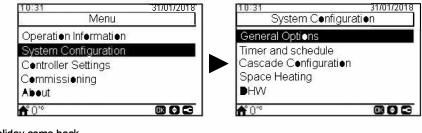
```
10:31                    31/01/2018
              Menu
●peration Information
System Configuration
Controller Settings
Commissioning
About
♠ 0°c              OK ● ⟲
```

Detailed information about:
- Operation status
- Water setting temperature
- Outdoor ambient temperature
- Outdoor ambient 2 temperature
- Outdoor ambient average temperature
- Second ambient average temperature
- 24h average temperature

1 / 2
```
10:31                    31/01/2018
        Operation Information
General
Modules Information
Circuit 1
Circuit 2
●HW
♠ 0°c              OK ● ⟲
```

Detailed information modules:
- Operation status
- Water inlet temperature
- Water outlet temperature
- Individual DHW (Enable or disable)
- Type (Master or Slave)

Detailed information about DHW:
- Operation
- Current temperature
- Setting Temperature
- Electrical Heater Status
- Electrical Heater Operation
- Legionella Status
- Legionella Operation

Detailed information about Circuit 1-2:
- Operation (Demand ON/OFF)
- Mode (Eco/Confort)
- Room temperature
- Room setting temperature
- Current water temperature
- Water setting temperature
- Water OTC setting temperature
- Mixing valve position (only for circuit 2)

2 / 2
```
10:31                    31/01/2018
        ●peration Information
Swimming Pool
Electrical Heater
●oiler Combination
Solar Combination
Alarm History
♠ 0°c              OK ◀▶ ⟲
```

Detailed information about Swimming pool:
- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature

Detailed information about Electrical Heater:
- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature
- Load Factor
- Step

Detailed information about Solar combination:
- Operation (Demand ON/OFF)
- Solal Panel temperature

Detailed information about Boiler combination:
- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature

Shows a list of the alarm history of the system

8.6.2 SYSTEM CONFIGURATION

In system configuration menu it is possible to configure all the system settings.

General configuration:
- Holiday Mode
- Air Eco Offset
- Room Thermostats
- Central Operation

Timer and schedule configuration:
- Circuit 1
- Circuit 2
- DHW
- Swimming Pool
- Delete all timers configuration

DHW configuration:
- Status
- Mode
- Control
- Setting temperature
- HP control
- HP control setting
- Maximum setting temperature
- Differential temperature
- HP OFF differential temperature
- HP ON differential temperature
- Maximum time
- Cycle Time
- Space Priority status
- Space Priority temperature
- DHW Heater
- Anti Legionella

1 / 2

Cascade configuration:
- Supply setting offset
- Modules configuration

Space Heating / Cooling configuration:
- Circuit 1
- Circuit 2

2 / 2

Complementary Heating configuration:
- Heating Source (HP Only, HP+Boiler, HP+Heater, HP+Heater+Boiler)
- Electrical heater
- Boiler combination
- Solar combination

Heat pump configuration:
- Water Pump Configuration
- Night Shift
- Outdoor Average Timer
- Minimum ON Time
- Minimum OFF Time
- Seizure Protection

Swimming Pool configuration:
- Status
- Setting temperature
- Offset temperature

Optional functions configuration:
- System
- Space functions
- DHW
- Emergency Operation

I/O and Sensor configuration:
- Inputs
- Outputs
- Auxiliary sensors

8.6.2.1 General options configuration

Holiday Mode: Configure holiday come back
- Year
- Month
- Day
- Returning time
- Setting temperature
- Start/Stop Holiday Mode

Air Eco Offset for Circuit 1-2:

Configure the offset air temperature for the ECO mode.

Current air temperature setting is reduced by the indicated parameter (from 1 to 10 ºC)

Central operation:
- **Control type selection**: Local or full.

Room Thermostats:

Configure the wired or wireless room thermostats:

- **Thermostat 1**: None, wired or wireless
- **Wireless Binding ID** for Thermostat 1: (1 or 2)
- **Thermostat 2**: None, wired or wireless
- **Wireless Binding** ID for Thermostat 2: (1 or 2)
- **Compensation factors** (See Compensation factors section below)
- **Room Temperature Demand OFF:** Offset value between setting temperature and thermostat temperature to switch the system to Demand OFF; this parameter refers to a positive difference in heating operation and a negative difference in cooling operation.
- **Check RT Address**: validation procedure of the wireless thermostats configuration

◆ Compensation factors for Heating / Cooling

The temperature of the water supplied by the YUTAKI unit to the circuits is determined by means of OTC (See *"Water calculation mode"*).

This control determines water temperature according to the outdoor temperature. The higher the outdoor temperature, the lower the building demand is, and in consequence the temperature of the water supplied to the circuits is lower. Conversely, the thermal demand of the building rises in the case of low outdoor temperature, and therefore the temperature of the supplied water becomes higher.

The room temperature compensation control allows to modify the water temperature determined by OTC control according to the setting room temperature and the actual room temperature.

In the case of heating, if the difference between room temperature and setting temperature is large, then water temperature is increased by the YUTAKI unit in order to achieve the desired room temperature in a faster way, thus compensating the thermal difference between setting temperature and actual temperature.

In this manner, given two identical rooms, the YUTAKI unit determines the same room temperature according to OTC control. On the other hand, for a room in which there is a wider difference between setting temperature and actual temperature, the YUTAKI unit will increase the temperature of the pumped water in order to ensure a similar heating up time until reaching the setting temperature.

Compensation has no effect if Compensation factor is 0 or when OTC is Fix, and water temperature is determined according to OTC in chapter *"Water calculation mode"* in such case.

The more the factor is increased, the more is water temperature increased by the YUTAKI unit according to the difference between setting temperature and the current temperature.
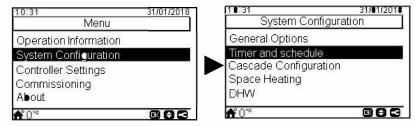
Maximum compensation factor heat + and -: Maximum difference between room temperature and setting temperature. In case that the difference between room temperature and setting temperature is higher than this value, the YUTAKI unit takes the selected value as the maximum.

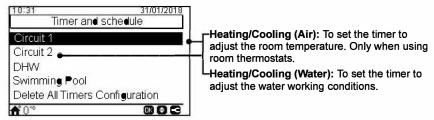## 8.6.2.2 Timer and schedule configuration

ℹ NOTE

Timer settings are only valid if the corresponding zone is in ON state at the time of execution of the respective timer program.
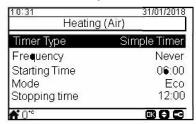
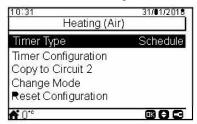The LCD controller must be set to the correct date and time before using the timer function.

10:31	31/01/2018
Menu	
Operation Information	
System Configuration	
Controller Settings	
Commissioning	
About	

10:31	31/01/2018
System Configuration	
General Options	
Timer and schedule	
Cascade Configuration	
Space Heating	
DHW	

Select the desired area to apply the timer function or delete all timers configuration:

10:31	31/01/2018
Timer and schedule	
Circuit 1	
Circuit 2	
DHW	
Swimming Pool	
Delete All Timers Configuration	

Heating/Cooling (Air): To set the timer to adjust the room temperature. Only when using room thermostats.

Heating/Cooling (Water): To set the timer to adjust the water working conditions.

The timer function allows the selection of **simple** and **scheduled** timers, as shown in the figures below:

10:31	31/01/2018
Heating (Air)	
Timer Type	Simple Timer
Frequency	Never
Starting Time	06:00
Mode	Eco
Stopping time	12:00

10:31	31/01/2018
Heating (Air)	
Timer Type	Schedule
Timer Configuration	
Copy to Circuit 2	
Change Mode	
Reset Configuration	

◆ Setting of Simple timer

Setting of temperature or operation mode (ECO or Comfort) to be applied during operation for a defined period, after which operation returns to the previous settings. This type of timer cannot be used to modify the operation state from ON to OFF, which can be accomplished with a Schedule timer.

1 / 2

Timer type: Selection of the timer type
- Disable
- Simple timer
- Schedule

Frequency: Selection of the timer frequency
- Never
- Once
- Everyday
- Weekend
- Work day

Starting time: Use the arrow keys to select the starting time of the timer

10:31	31/01/2018
Heating (Air)	
Timer Type	Simple Timer
Frequency	Never
Starting Time	06:00
Mode	Eco
Stopping time	12:00

Mode: Selection of the working mode
- Eco
- Comfort
- Setting temperature: when this option is selected is possible to configure the temperature using the arrow keys. (Only when OTC is Fix)

Stopping time: Use the arrow keys to select the stopping time of the timer

2 / 2

10:31	31/01/2018
Heating (Air)	
Frequency	Never
Starting Time	06:00
Mode	Eco
Stopping time	12:00
Configuration Parameters	

Configuration parameters:

Configure the temperature for the Eco or Comfort Mode.

Only available for Air settings (Circuit 1 or 2).
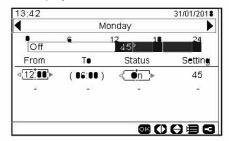
◆ Setting of Schedule timer

Setting of temperature, operation mode (ECO or Comfort) or change of operation state from ON to OFF for a defined period, after which operation returns to the previous settings. Manual operation of the unit controller has priority over schedule settings.
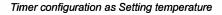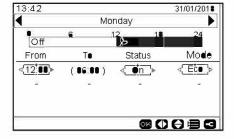
Timer type: Selection of the timer type
- Disable
- Simple timer
- Schedule

Timer configuration: New screen appears to configure a schedule timer. See explanation below.

Copy to circuit 2:
It is possible to copy the schedule timer to circuit 2.

Change Mode: Selection of the working mode (Only for Circuit 1 or Circuit 2).In Water mode only when circuit is Fix.
- Mode (uses Eco/Comfort configurations)
- Setting temperature.

Reset configuration:
Press OK button to reset scheduled timers.

Pressing the OK button with "Timer Configuration" being selected displays the detailed schedule screen. The active schedule timers are shown in a weekly calendar.

Up to five timer events can be defined for each weekday, and these can be used for turning the operation ON or OFF, to change the setting temperature or the working mode (Eco/Comfort). Pressing the OK key with one of the weekdays being selected in the weekly calendar screen displays the detailed schedule for the weekday.

Timer configuration as Setting temperature
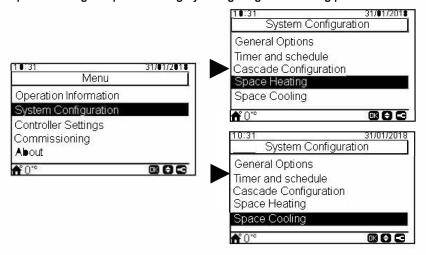
Timer configuration as Mode

Pressing the "Menu" button during the edition of the timer events for a given weekday displays a menu to copy the daily pattern to other weekdays or to suppress the selected timer event.

◆ **CASCADE configuration**

10:31	31/01/2018
Menu	
Operation Information	
System Configuration	
Controller Settings	
Commissioning	
About	
0°C	OK ⊕ ⊂

▶

10:31	31/01/2018
System Configuration	
General Options	
Timer and schedule	
Cascade Configuration	
Space Heating	
DHW	
0°C	OK ⊕ ⊂

10:31	31/01/2018
Cascade Configuration	
Supply Setting Offset	3 ºC
Modules Configuration	
0°C	OK ⊕ ⊂

Supply setting offset

- To set YUTAKI Slave Units to work at a setting temperature higher than setting temperature determined by YUTAKI CASCADE CONTROLLER

- 3 ºC by default (from 0 to 15 ºC)

Modules configuration:

- Configure the status, refrigerant cycle address, indoor unit address and individual DHW for each module.

▼

10:31	31/01/2018
Modules Configuration	
Module 1	
Module 2	
Module 3	
Module 4	
Module 5	
0°C	OK ⊕ ⊂

▼

10:31	31/01/2018
Module 1	
Status	Enabled
Refrigerant Cycle Address	0
Indoor Unit Address	0
Individual DHW	
0°C	OK ⊕ ⊂

Module status:

- Enable or disable the module.

Refrigerant cycle address:

- Set the refrigerant cycle address for each module, making sure that the setting is common with that of the outdoor (DSW4-RSW1) and indoor (DSW15 – RSW2) units which are part of the module.

Indoor unit address:

- It must be always set to 0 (factory default)

Individual DHW:

- Configure the status and type of individual DHW for the selected module.

▼

10:31	31/01/2018
Individual DHW	
Status	Enabled
Type	Master
0°C	OK ⊕ ⊂

Individual DHW status:

- Enable or disable the individual DHW for the selected module.

Individual DHW type:

- Select Master or Slave depending on the installation of the DHW system.

- When Slave type is selected, choose the master module number.

8.6.2.3 Space Heating / Space Cooling configuration

Control the temperature for Space Heating or Space Cooling by configuring the following parameters.

Water calculation mode:

Selection of the water set point for Circuit 1 or Circuit 2 (Space Heating or Space Cooling).

- Disabled
- Points
- Gradient (only in heating mode)
- Fix

See detailed explanation below.

Eco Offset Water setting:

Configure the offset water temperature for the ECO mode for Space Heating or Space Cooling.

By using this function, current water temperature setting is reduced by the indicated parameter.

- Range: -10 ~ 10

Working Limits:

Limit for the temperature set-point to prevent high or low temperatures at Space Heating or Space Cooling:

- Maximum supply temperature
- Minimum supply temperature

Mixing valve:

To control the second water temperature (only for circuit 2).

Values are adjusted for the use with the 2nd zone mixing kit accessory ATW-2KT-05. It is highly recommended not to change these values.

In case of using a mixing kit different from the ATW-2KT-05 configure the following parameters:

- Proportional band: 0 ~20 K (6.0 K by default).
- Integral reset factor: 0.0 ~20 % (2.5 % by default).
- Running time factor: 10 ~250 sec (140 sec by default).
- Over temperature offset protection: OFF, 3 ~10 ºC (5 ºC by default).

◆ **Water calculation mode**

Disabled

```
11:47                    31/01/2018
        Circuit 1
OTC Mode            Disabled
 


 28°c          ◀▶ ⬍ ⟳
```

● The "Disabled" option sets the circuit as disabled.

Points

Points is the most versatile calculation type.

Set 4 points and one vertex point, to create a line representing the function that the air to water heat pump will use to give the temperature setting according to the current ambient temperature.

Use the down arrow key to select the parameter to modify. Then modify the value using the left and right arrow keys.

```
11:47                    31/01/2018
        Circuit 1
OTC Mode            Points
    TS
           ┌7°c┐
44°c ─────┐
20°c      └──────────
                      TA
    -20°c          20°c
 28°c          ◀▶ ⬍ ⟳
```

Set point at high ambient temperature ── 44°c
Set point at low ambient temperature ── 20°c
Low ambient temperature ── -20°c

Vertex offset

High ambient temperature ── 20°c

Gradient

Configure the same variables as in the "Points" view, but automatically.

User can only edit the gradient variable and it will automatically set the values for the other 4 variables on the chart.

Use the down arrow key to select the parameter to modify. Then modify the value using the left and right arrow keys.

```
11:47                    31/01/2018
        Circuit 1
OTC Mode            Gradient
    TS
           ┌7°c┐
36°c ─────┐      Curve
20°c      └──────  04
                      TA
    -20°c          20°c
 28°c          ◀▶ ⬍ ⟳
```

Vertex offset
Gradient curve

Fix

```
11:47                    31/01/2018
        Circuit 1
OTC Mode            Fix
    TS
 ┌4°c┐
 └────────────
                      TA
 28°c          ◀▶ ⬍ ⟳
```

● Set the circuit's temperature to a defined value, forcing the unit to maintain it.

Fixed temperature ── 4°c

8.6.2.4 Domestic Hot Water (DHW) configuration

```
10:31              31/01/2018
         Menu
Operation Information
System Configuration
Controller Settings
Commissioning
About
🏠 0°°              OK ⬇ ⫷
```

```
10:31              31/01/2018
      System Configuration
General Options
Timer and schedule
Cascade Configuration
Space Heating
DHW
🏠 0°°              OK ⬇ ⫷
```

Status of DHW:
- Disabled
- Enabled.

Mode: Only available when DHW heater is activated (DSW4 pin 3 ON).

- **Standard:** DHW heating operation starts when the temperature of the water in the tank is low enough to start up the heat pump. DHW is heated up with the heat pump or the electrical heater (if electrical heater is enabled).

- **High Demand:** DHW heating operation starts if water temperature and setting temperature diference is larger than differential temperature. DHW can be heated up using the heater, the heat pump or a combination of both.

Control:

- **High Efficiency:** Compressor operation is adjusted to optimal efficiency for lower power consumption. Electrical heater only works when the maximum working temperature of the heat pump is achieved.

- **High Speed:** The heat pump is switched to maximum operation capacity to heat up the tank in the shortest time.

Setting temperature:

Setting for domestic hot water temperature selected by the user. The maximum value of this setting depends on the Maximum setting temperature set by the installer. (Between 30 to maximum setting temperature.)

HP Control:

To achieve the DHW setting temperature it is possible to select between two different modes of control:

- **ΔT:** The most efficient way to achieve the setting temperature. The outlet water temperature is 15º higher than the tank temperature, increasing gradually until achieve the target water outlet temperature (setting temperature).

- **Fix:** This is the fastest way to achieve setting temperature. The outlet water temperature is set to HP Control setting. HP Control setting can be only adjuested in case HP Control is Fix.

1 / 4
```
09:14              31/01/18
         DHW
Status            Enabled
Mode              Standard
Control      High Efficiency
Setting Temperature   55 ºC
HP Control           Fix
🏠 28°°            ⬇ OK ⫷
```

2 / 4
```
09:14              31/01/18
         DHW
HP Control Setting    55 ºC
Maximum Setting T     55 ºC
Differential T         6 ºC
HP OFF Differential T  5 ºC
HP ON Differential T  10 ºC
🏠 28°°            ⬇ OK ⫷
```

HP Control setting:

Selection of the DHW temperature for the Fix HP Control.

Maximum setting temperature:

Maximum value of DHW setting temperature permitted by the installer.

Differential temperature:

Value that the unit restart heating operation of the tank.

- Only available if DHW is in High demand mode.

HP OFF differential temperature:

Hysteresis for the stop of DHW heating operation with the heat pump.

HP ON differential temperature:

Hysteresis for the start of DHW heating operation with the heat pump.

Maximum time:

Maximum time that DHW operation can work using heat pump mode. When the heat pump is stopped by this function, DHW is still heated by DHW heater when it is enabled, until other conditions request stoppage.

- Range: OFF, 5 ~250 min

- Only in High Speed control and Standard mode.

Cycle time:

Defines the minimum time between 2 heat pump cycles of domestic hot water.

DHW will be able to operate again after wait in Thermo off the specified cycle time.

- Range: 0 ~24 hour

- Only available in Standard mode.

3 / 4

09:14	31 / 01 / 18
DHW	
Maximum Time	45 min
Cycle Time	1 hour
Space Priority Status	Disabled
Space Priority T	-5 °C
DHW Heater	
28°C	

Space priority status:

If space priority function is enabled, Heat Pump operation by DHW mode stops (and continue with DHW heater, if necessary).

This function is only performed if space heating or space cooling can be done. If it is not possible, operation will continue in DHW normally.

- Only available in Standard mode.

Space priority temperature:

Threshold value of outdoor ambient temperature for the activation of the space priority function.

- Range: -20~0 ºC

- Only available in Standard mode.

DHW Heater: Only available when DHW heater is activated (DSW4 pin 3 ON).

- **Waiting time**: Enable or disable waiting time for DHW heater.

- **Electrical Heater waiting time:** Waiting time for the beginning of electrical heater operation since compressor start-up.

- Only available in High Speed control.

4 / 4

09:14	31 / 01 / 18
DHW	
Anti Legionella	
28°C	

Anti Legionella:

In order to help prevent against Legionella in the DHW system, the DHW set point can be raised to a higher than normal temperature.

The Legionella protection only makes sense if there is a DHW electric heater to raise the DHW temperature to this high temperature.

See the possible configurable parameters below.

◆ **Anti Legionella function**

12:04	31/01/2018
Anti Legionella	
Status	Enabled
Operation Day	Sunday
Starting Time	01:00
Setting Temperature	70 °C
Duration	10 min
28°C	

Status of anti legionella operation (enabled/disabled)

Specified day for anti legionella operation

Specified time of the day for anti legionella operation

Setting for domestic hot water temperature in anti legionella operation..

Duration of shock treatment. Between 10 to 60 minutes.

8.6.2.5 Swimming Pool configuration

| 10:31   31/01/2018 |
| Menu |
| ●peration Information |
| **System Configuration** |
| Controller Settings |
| Commissioning |
| About |
| 🏠 0°°   OK 🔁 ⊂⊃ |

▶

| 10:31   31/01/2018 |
| System Configuration |
| **Swimming Pool** |
| Complementary Heating |
| Heat Pump |
| ●ptional Functions |
| I/O and Sensor |
| 🏠 0°°   OK 🔁 ⊂⊃ |

| 09:14   31 / 01 / 18 |
| Swimming Pool |
| Status   Enabled |
| Setting Temperature   24 ºC |
| Offset Temperature   15 ºC |
| |
| 🏠 28°°   🔁 OK ⊂⊃ |

Status:

Enable or disable swimming pool.

Set input 3, output 1 and sensor 2. (see section *"8.6.2.9 Setup of inputs, outputs and sensors"*)

Setting temperature:

Adjustment of the swimming pool water temperature setting.

• Range: 24~33 ºC

Offset temperature: The setting temperature is increased by the indicated parameter.

8.6.2.6 Complementary Heating configuration

Heating Source:
- HP Only
- HP + Heater
- HP + Boiler
- HP + Heater + Boiler (Only for YUTAKI S and YUTAKI S COMBI)

Electrical heater: (Only when heating source is configured as HP+Heater or HP+Heater + Boiler). See detailed information in *"Electrical heater"*

Boiler combination: Boiler will only operate if unit is in Space Heating or Hot Sanitary Water modes. It will always be disabled in any other mode (Swimming Pool and Cooling mode). Set output 3 and sensor 1 for boiler (see section *"8.6.2.9 Setup of inputs, outputs and sensors"*)

See detailed information in *"Boiler combination"*

Solar combination:

The solar combination will enable you to heat up your domestic water by means of the sun whenever the sun is available.

- Set input 4, output 4 and sensor (see section *"8.6.2.9 Setup of inputs, outputs and sensors"*)
- **Disabled:** No solar Kit is installed.
- **Input Demand:** Alternative DHW tank operation is done by solar system or YUTAKI unit. Solar input can disable DHW operations done by YUTAKI unit.
  - DHW Hysteresis (OFF, 35 ~ 240 min)
  - DHW Maximum Time (5 ~240 min)
- **Total Control**: YUTAKI units controls the solar operation for the system, based on different temperatures: DHWT is heated by either the hot water that comes from the solar panels or the hot water that comes from the heat pump, depending on the solar temperature. See detailed information in *"Solar combination - Total control"*.

◆ Electrical heater

Operation:
- **Starting:** Space Heating electric Heater is switched ON in case of low water temperature and low ambient temperature to provide extra capacity to HP.
- **Backup:** Space Heating Electric Heater is switched ON in case of low ambient temperature (below Bivalent point) in order to provide extra capacity to HP at coldest days of winter.

Proportional band:
- Control to determine how fast setting temperature is going to be reached. Higher values imply fast achievement of water setting point and therefore higher utilization of heater.

Reset factor:
- Used to guarantee setting temperature achievement without surpassing its value. Higher values imply less utilization of heater.

Bivalent point:
- Electric heater is enabled to operate in case ambient temperature goes below this value. Only in case of Backup option.

Supply setting offset:
- Setting offset for electric Heater. Higher values imply earlier stoppage of electric heater and vice versa. Only in case of Backup option.

Waiting time:
- Delay time to start Electric Heater in case all conditions allow Electric Heater to start after HP has been started. Only in case of Backup option.

Inter stage time:
- Time of Electric Heater phase overlapping when there is switch ON/OFF transition from/to phase 1 to/from phase 2. Only in case of Backup option.

◆ Solar combination - Total control

ΔT connection:

- Allows to specify a difference temperature between tank and Panel temperature to allow solar operation. Solar operation is allowed in case Panel temperature is "ΔT connection" ºC above tank temperature.

ΔT disconnection:

- Allows to specify a difference temperature between tank and Panel temperature to stop solar operation. Solar operation is not allowed in case Panel temperature is "ΔT connection"ºC below tank temperature

Panel antifreeze temperature:

- Minimum Solar panel temperature at which Solar Pump is switched ON in order to protect system against frost formation at pipes due to low ambient temperature.

```
09:14                    31/01/18
          Total Control
DHW Maximum Time              Off
DHW Minimum Time          5 min
DHWT Max storage T        60 ºC
ΔT Connection             10 ºC
ΔT Disconnection           5 ºC
 28ºc                     ↕ OK ⊂
```

▼

```
09:14                    31/01/18
          Total Control
Panel Minimum T           15 ºC
Panel Overheat T          80 ºC
Panel antifreeze T         4 ºC


 28ºc                     ↕ OK ⊂
```

DHW maximum time:

- Maximum time YUTAKI allows to heat tank by means Solar. At the end of this time Solar pump is stopped regardless temperature conditions at Solar Panel.

DHW minimum time:

- Minimum Time solar operation cannot be performed once it has been stopped due to DHW Maximum Time or due to low temperature at solar panel.

DHWT maximum storage temperature:

- Maximum DHW temperature that allows Solar operation.

Panel minimum temperature:

- Minimum temperature of the solar Panel to allow Solar operation

Panel overheat temperature:

- Maximum panel operation temperature at which Solar Pump is set to off in case Panel sensor reads a temperature above this value in order to protect system.

- In case Solar pump is stopped due to Panel Overheat temperature, YUTAKI unit sets Solar overheat output to high state in case of configured in *"8.6.2.9 Setup of inputs, outputs and sensors"*

◆ Boiler combination

Minimum ON time:

- Time that must pass before stop boiler after being switched ON

Minimum OFF time:

- Time that must pass before start boiler after being switched OFF

```
09:14                    31/01/18
        Boiler Combination
Bivalent Point            -5 ºC
Combination mode        Parallel
Supply Setting Offset      4 ºC
Minimum ON Time           2 min
Minimum OFF Time          5 min
 28ºc                     ↕ OK ⊂
```

▼

```
09:14                    31/01/18
        Boiler Combination
Waiting Time             30 min
DHW by Boiler           Disabled
Wait Time for DHW        45 min


 28ºc                     ↕ OK ⊂
```

Wait time for DHW:

- Delay time to start Boiler for DHW in case all conditions allow Boiler to start after HP has been started for DHW.

Bivalent point:

- Boiler is allowed to operate in case ambient temperature is below this value

Combination mode:

- Serial: Boiler operates in series with the heat-pump. The boiler provides additional peak load capacity and works together with the HP

- Parallel: Boiler operates in parallel with the heat pump. The boiler provides the full heating requirements. In case Boiler is ON, HP is not allowed to operate

Supply setting offset:

- Setting offset for Boiler. Higher values imply earlier stoppage of Boiler and vice versa.

Waiting time:

- Delay time to start Boiler in case all conditions allow Boiler to start after HP has been started for Space Heating

DHW by boiler:

- Control to allow heat DHW by means Boiler

8.6.2.7 Heat Pump configuration

10:31	31/01/2018
Menu	
Operation Information	
System Configuration	
Controller Settings	
Commissioning	
About	
🏠 0°c	OK 🔄 ⟲

10:31	31/01/2018
System Configuration	
Swimming Pool	
Complementary Heating	
Heat Pump	
Optional Functions	
I/O and Sensor	
🏠 0°c	OK 🔄 ⟲

Water pump configuration:

Configure the water pump of the heat pump.

See detailed information in the next page.

Outdoor average temperature:

OTC average is used to neutralise the effect of occasional temperature variations.

The average value of outdoor temperature sampled over a selected period (between 1 and 24 hours) is used for the calculation of weather-dependent set point temperature.

09:14	31/01/18
Heat Pump	
Water Pump Configuration	
Outdoor Average Timer	4 h
Minimum ON Time	6 min
Minimum OFF Time	6 min
Seizure Protection	
🏠 28°c	🔄 OK ⟲

Minimum ON time: In order to reduce a possible compressor damage, demand ON cycles can be reduced by determining the time that must pass before accepting new Demand OFF.

Minimum OFF time: In order to reduce a possible compressor damage, demand OFF cycles can be reduced by determining the time that must pass before accepting new Demand ON.

Seizure protection: The pump seizure protection function prevents sticking of components due to long periods of inactivity, by running the components during a short period every week. Mixing valves and pumps are fully opened and then fully closed (time depends on Mixing valve Run Time Factor).

▼

09:14	31/01/18
Seizure Protection	
Status	Enabled
Operation Day	Monday
Starting Time	01:00
🏠 28°c	🔄 OK ⟲

◆ **Water pump configuration**

09:14	31/01/18
Water Pump Configuration	
Minimum OFF Time	40 min
Minimum ON Time	10 min
Overrun Time	10 min
🏠 28°c	🔄 OK ⟲

Minimum OFF Time:

Minimum time of the water pump OFF.

• Only when Economic mode is active (DSW)

Minimum ON Time:

Minimum time of the water pump ON.

• Only when Economic mode is active (DSW)

Overrun Time:

Added operation time of water pump after Demand OFF.

8.6.2.8 Optional functions configuration

This menu allows to configure the optional functions for system, space heating or space cooling, DHW and Emergency operation.

System:

Configure the optional functions for the system. See detailed information below.

Space functions:

Configure the optional functions for the space heating or space cooling. See detailed information below.

DHW:

Configure the optional functions for the DHW. See detailed information below.

Emergency operation:

Enable or disable emergency operation for space heating or DHW. See detailed information below.

◆ **System optional functions**

Smart function:

To block or limit the heat pump or increase demand due to electricity availability. See detailed information below.

Smart Function

Status:

Enable or disable smart function.

Trigger type:

• Closed: Action when input is closed
• Open: Action when input is open

Start boiler:

Permission to use the boiler in case that the system has been blocked due to HP Block.

Start DHW Heater:

Permission to use the DHW heater in case that the system has been blocked due to HP Block..

Smart Action:

Check that Smart Act/SG1 is set in input 5 (see section *"8.6.2.9 Setup of inputs, outputs and sensors"*)

• **HP Block:** Heat Pump is forbidden in any condition (Space Heating, Cooling, DHW) when signal is active.

• **HP Limited (A):** Limitation of power consumption up to a limit of "x" amperes (to be set up in Limitation of amperage).

• **SG Ready:** The SG Grid is awarded to heat pump series. This control technology integrates the system in a smart grid by using two digital inputs establishing an unidirectional connection. It is necessary to configure an input for SG2.

• **DHW Block:** DHW Operation is forbidden when signal is active.

• **DHW only:** Heat pump operation for any condition except DHW is forbidden when signal is active. DHW operation is allowed normally.

◆ Space optional functions

Auto Heat/Cool:

Only available in units capable of heating and cooling operation, and when cooling operation is enabled.

Allows to set automatic switch over to heating and cooling operation using the same daily average outdoor temperature of the previous day as in Heating auto ON/OFF.

- **Status:** Enable or disable auto heat/cool.

- **Switch to Heat temperature:** operation switches to heating in case that the measured outdoor temperature value is lower than the threshold for switching to heating.

- **Switch to Cool temperature:** Operation switches to cooling in case that the measured outdoor temperature value is higher than the threshold for switching to cooling.

```
10:31                    31/01/201█
          Space Functions
Heating Auto ●n/●ff
▶Auto Heat/Cool

🏠 0°C                          OK ⬍ ⏎
```

Heating Auto On/Off:

To stop automatically stop heating operation when the daily average outdoor temperature of the previous day is higher than the defined Switch-OFF temperature

- **Status:** Enable or disable heating auto on/off function.

- **Switch Off temperature:** System is stopped in case that the outdoor temperature is higher than the Switch-OFF temperature.

- **Switch On differential:** Differential temperature between average outdoor temperature of the previous day and the Switch Off temperature.

◆ DHW optional functions

DHW Boost:

To force a one-time heating of the DHW tank up to the temperature set as DHW Boost temperature.

This feature is useful to cover exceptional demand of DHW.

- **Trigger type:** Push (favourite button), Open (NC) or Closed (NO). Set input 6 for DHW Boost (for trigger type open/closed). (see section *"8.6.2.9 Setup of inputs, outputs and sensors"*)

- **Boost setting:** DHW temperature setting for the Boost function.
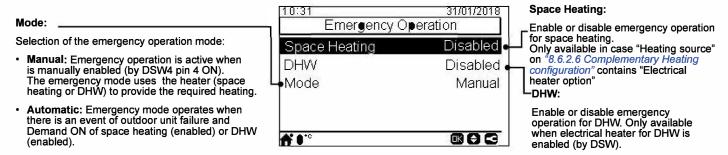
```
10:31                    31/01/201█
               DHW
Circuit Pump            Timer
Recirculation Timer
▶DHW Boost

🏠 0°C                          OK ⬍ ⏎
```

Circuit Pump: By using this output, user can heat all the water inside DHW piping system. Output must be configured at the I/O and sensors menu. (see section *"8.6.2.9 Setup of inputs, outputs and sensors"*)

- Disabled.

- Demand: Enable DHW recirculation.

- Anti Legionella: Allows DHW recirculation while anti legionella is active.

- Timer: A timer can be programmed in order to start or stop the water recirculation.

Recirculation timer:

- Frequency: Allows to select when timer is applied (Everyday, weekend, workday)

- Starting Time: When the water pump circulation starts.

- Stopping Time: When the water pump circulation stops.

- Operation: In case of ON, means that water pump is always ON between "Starting Time" and "Stopping Time". In case it is set to Timer, Recirculation pump is ON during "ON Time" after being OFF during "OFF Time" within Starting Time and Stopping Time.

- ON Time: On time period of Recirculation pump.

- OFF Time: Off time period of Recirculation pump.

◆ **Emergency Operation**

Mode:

Selection of the emergency operation mode:

- **Manual:** Emergency operation is active when is manually enabled (by DSW4 pin 4 ON). The emergency mode uses the heater (space heating or DHW) to provide the required heating.

- **Automatic:** Emergency mode operates when there is an event of outdoor unit failure and Demand ON of space heating (enabled) or DHW (enabled).

```
10:31                    31/01/2018
      Emergency Operation
Space Heating         Disabled
DHW                   Disabled
Mode                    Manual

🏠 0°C              OK ⊕ ⊂
```

Space Heating:

Enable or disable emergency operation for space heating. Only available in case "Heating source" on *"8.6.2.6 Complementary Heating configuration"* contains "Electrical heater option"

DHW:

Enable or disable emergency operation for DHW. Only available when electrical heater for DHW is enabled (by DSW).

8.6.2.9 Setup of inputs, outputs and sensors

```
10:31                    31/01/2018
            Menu
Operation Information
System Configuration
Controller Settings
Commissioning
About

🏠 0°C              OK ⊕ ⊂
```
▶
```
10:31                    31/01/2018
      System Configuration
Swimming Pool
Complementary Heating
Heat Pump
Optional Functions
I/O and Sensor

🏠 0°C              OK ⊕ ⊂
```

Auxiliary sensors:

There are 7 available auxiliary sensors to set.

```
10:31                    31/01/2018
         I/O and Sensor
Inputs
Outputs
Auxiliary Sensors

🏠 0°C              OK ⊕ ⊂
```

Inputs:

The system allows to set 7 inputs depending on the operations and preferences of the installation

Outputs:

There are 8 available outputs to set. There are conditions of setting depending on the installation.

◆ **List of available inputs:**

- **Disabled**

- **Demand ON/OFF** (by default in input 1): Consider both Circuit 1 and Circuit 2 in Demand ON when the signal is ON.

- **Demand ON/OFF C1:** Consider Circuit 1 in Demand ON when the signal is ON.

- **Demand ON/OFF C2:** Consider Circuit 2 in Demand ON when the signal is ON.

- **ECO C1 + C2:** Switch both Circuit 1 and Circuit 2 to ECO mode when input is closed.

- **ECO C1** (by default in input 2, if there is circuit 1 in the installation): Switch Circuit 1 to ECO mode when input is closed.

- **ECO C2:** Switch Circuit 2 to ECO mode when input is closed.

- **Forced Off:** Forbid DHW, space heating and space cooling.

- **Smart Act / SG1** (Fixed in input 5 if smart action is enabled): To active Smart Function.

- **Swimming Pool** (Fixed in input 3 if swimming pool is enabled): Consider Swimming pool in Demand ON when the signal is ON.

- **Solar** (Fixed in input 4 if solar is enabled): To let YUTAKI know that external Solar management system is ready to provide Solar energy.

- **Operation:** To switch between space cooling and space heating.

- **DHW Boost** (Fixed in input 6 if is DHW Boost is enabled): If it is set to open (NC), boost signal ON if circuit is open. If it is set to close (NO), boost signal ON if circuit is closed.

- **Forced Heating:** Force mode heating when input is closed

- **Forced Cooling:** Force mode cooling when input is closed.

- **SG2:** To active the different estates of Sm Grid Ready.

◆ List of available outputs:

- **Disabled**
- **SWP 3WV:** (Fixed in output 1 if swimming pool is enabled): Signal control of the 3-way valve of the swimming pool.
- **Water pump 3:** (Fixed in output 2 if hydraulic separator or buffer tank is installed): Signal control of the water pump for hydraulic separator or buffer tank.
- **Boiler:** (Fixed in input 3 if boiler is enabled): Signal control of the boiler.
- **Solar Pump:** (Fixed in input 4 if solar pump is enabled): Signal control of the solar pump.
- **Alarm:** (By default in output 5):Signal is active if there is an alarm.
- **Operation:** (By default in output 6): Signal active in case Thermo ON in any condition.
- **Cooling:** (By default in output 7): Signal active when space cooling is operating.
- **Dem-ON C1:** (By default in output 8): Signal active when there is Demand in circuit 1.
- **Heating:** Signal active when space heating is operating.
- **DHW:** Signal active when DHW is operating.
- **Solar overheat:** Signal is active when solar overheat (only when solar combination status is total control)
- **Defrost:** Signal active when outdoor unit is defrosting.
- **DHW Re-circulation:** Signal active depending on option selected at chapter Circuit pump.
- **Heater relay 1:** Signal control of the Space heating heater 1 (Only for YUTAKI S80 or YUTAKI M (R410A) units)
- **Heater relay 2:** Signal control of the Space heating heater 2 (Only for YUTAKI S80 or YUTAKI M (R410A) units)

◆ List of available sensors:

- **Disabled**
- **Two3:** (Fixed in sensor 1 if boiler is installed): Use this sensor to monitor water temperature when boiler is used.
- **Swimming Pool:** (Fixed in sensor 2 if swimming pool is installed): Use this sensor when swimming pool is used in order to monitor swimming pool temperature.
- **Solar panel sensor:** Use this sensor when Total control is configured to monitor Solar Panel temperature.
- **C1 + C2 Ambient:** Use this sensor when auxiliary ambient temperature sensor is used for C1 and C2.
- **C1 Ambient:** Use this sensor when auxiliary ambient temperature sensor is used for C1.
- **C2 Ambient:** Use this sensor when auxiliary ambient temperature sensor is used for C2.
- **Outdoor sensor (NTC):** (By default sensor 3) To connect to the controller an auxiliary outside temperature sensor in case the heat pump is located in a position not suitable for this measurement.

8.6.3 CONTROLLER SETTINGS
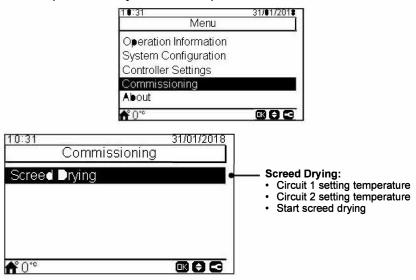
Under the controller settings menu it is possible to adjust the several parameters:

Controller options:
- Favourite action (Eco/Comfort, DHW Boost, Timer)

Room names:
- Create or edit a name for circuit 1 or circuit 2

Date and time:
- Adjust date and time
- European summer time

Screen settings:
- Screen brightness
- Backlight time
- Contrast
- ON led bright

Selection of the unit controller language.

8.6.4 COMMISSIONING

Under the commissioning menu it is possible to adjust the several parameters:

Screed Drying:
- Circuit 1 setting temperature
- Circuit 2 setting temperature
- Start screed drying

8.6.5 ABOUT

In this section of the LCD controller it is possible to find the following information:

Contact information:

It is possible and recommendable to fill this information providing a contact phone to the user.

System information:
- Type
- Modules type
- System capacity
- Controller firmware
- Indoor PCB firmware
- Language package
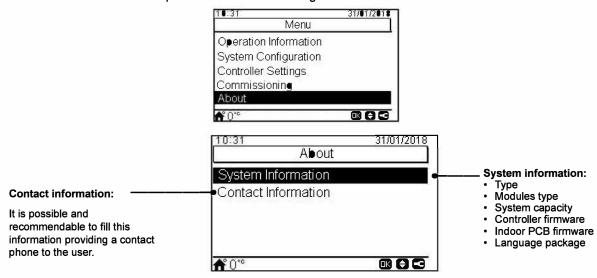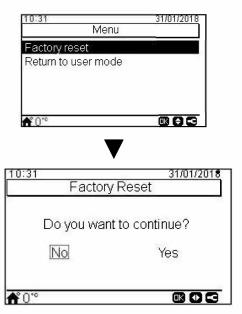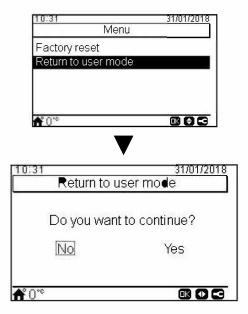
8.6.6 FACTORY RESET

This function is only visible for the installer. It asks for removing all the settings and returns to the factory setting configuration.

8.6.7 RETURN TO USER MODE

This function allows to getting out of the "Installer mode".

HITACHI
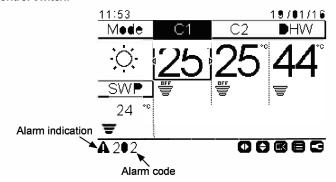
9 TROUBLESHOOTING

ⓘ NOTE

- *(o): Option configurable from Unit controller. This alarm will be displayed if the system has been configured.*
- *o: Default. This alarm will be displayed in the Unit controller.*
- *–: No applicable.*

Alarm code indication on remote control switch:

Alarm indication

Alarm code

◆ Alarms for Indoor units:

Alarm Code	Retry Stop Code	YUTAKI S/SC	YUTAKI S80	YUTAKI M	Origin	Detail of Abnormality	Main Factors
3	-	o	o	o	Communication	Transmission Alarm (Not outdoor unit detected)	Loose, disconnected, broken or short-circuited connector
11	-	o	o	o	Indoor	Water inlet thermistor abnormally (THMwi)	Loose, disconnected, broken or short-circuited connector
12	-	o	o	o	Indoor	Water outlet thermistor abnormally (THMwo)	Loose, disconnected, broken or short-circuited connector
13	–	o	o	o	Indoor	Indoor Liquid Pipe Temp Thermistor Abnormality (THMI)	Loose, disconnected, broken or short-circuited connector
14	–	o	o	o	Indoor	Indoor Gas Pipe Temperature Thermistor Abnormality (THMg)	Loose, disconnected, broken or short-circuited connector
15	-	(o)	(o)	(o)	Indoor	Water Circuit 2 thermistor abnormally (THMwo2)	Loose, disconnected, broken or short-circuited connector
16	-	(o)	(o)	(o)	Indoor	Water DHW thermistor abnormally (THMdhwt)	Loose, disconnected, broken or short-circuited connector
17	-	(o)	(o)	(o)	Indoor	Auxiliary sensor 2 thermistor abnormally (THMaux2)	Loose, disconnected, broken or short-circuited connector
18	-	(o)	(o)	(o)	Indoor	Auxiliary sensor 1 thermistor abnormally (THMaux1)	Loose, disconnected, broken or short-circuited connector
19	-	o	-	-	Indoor	Water Plate HEX pipe thermistor abnormally (THMwohp)	Loose, disconnected, broken or short-circuited connector
19		-	o	-	Indoor	Suction R134a pipe thermistor abnormally (THMs)	Loose, disconnected, broken or short-circuited connector
23		-	o	-	Indoor	Discharge R134a pipe thermistor abnormally (THMd)	Loose, disconnected, broken or short-circuited connector
25	-	(o)	(o)	(o)	Indoor	Auxiliary sensor 3 thermistor abnormally (THMaux3)	Loose, disconnected, broken or short-circuited connector
40	-	o	o	o	Indoor	Incorrect LCD setting	Current LCD configuration does not allow proper operation

Alarm Code	Retry Stop Code	YUTAKI S/SC	YUTAKI S80	YUTAKI M	Origin	Detail of Abnormality	Main Factors
61	-	(o)	(o)	(o)	Indoor	No Cascade Messages. Triggered in case unit is configured to work against cascade control and: - No messages have been received for 180 seconds. - No messages have been received from beginning of operation. In case this alarm appears, software stops Indoor and Outdoor operations until communication is restored.	Loose, disconnected, broken or short-circuited connector
62	-	(o)	(o)	(o)	Indoor	Central mismatch. Triggered in case YUTAKI CASCADE CONTROLLER is configured and they are received central messages or central control is configured and they are received messages form YUTAKI CASCADE CONTROLLER. In case this alarm appears, software stops Indoor and Outdoor operations until system is properly configured	Loose, disconnected, broken or short-circuited connector
63	-	(o)	(o)	(o)	Communication	Transmission error between Central and indoor communication	Indoor fuse meltdown, Indoor/central connection wiring (breaking, wiring error, etc.)
70	P70	o	o	o	Indoor	Hydraulic alarm flow & Water Pump malfunction	Water flow is not detected in the hydraulic cycle or Pump defective
83	P83	o	o	o	Indoor	Hydraulic alarm pressure	Water pressure is not detected in the hydraulic cycle
72		o	-	-	Indoor	Thermostat Heater Alarm	High temperature is detected in Electric Heater
73		o	o	o	Indoor	Mixing over-temperature limit protection for Mixed circuit.	Circuit 2 supply temperature > Target temperature + offset
74	P74	o	o	o	Indoor	Unit over-temperature limit protection	Two > Tmax +5K
75	-	o	o	o	Indoor	Freeze Protection by Cold water inlet, outlet temperature detection	
76	-	o	o	o	Indoor	Freeze Protection Stop by indoor liquid temperature thermistor	
77	-	o	o	o	Indoor-LCD	Receiver Communication failure	No Opentherm/Hlink communication for a continuous period of 10 minutes.
78		o	o	o	Indoor-LCD	RF Communication failure	There is no communication for 1 hour with on or two RF receives which are bound to the RF-Bridge.
79	-	o	o	o	Indoor -outdoor	Unit Capacity setting Error	There is no concordance between indoor outdoor unit capacity
80	-	o	o	o	Indoor	LCD H-link RCS transmission error	No H-link communication for a continuous period of 1 minute between Indoor and LCD User control by connection wiring (breaking, wiring error, etc.)
					LCD	(If no H-LINK RCS has no power)	
81		o	o	o	Indoor	"Momentary Power interruption" or "Low voltage detected"	

Alarm Code	Retry Stop Code	YUTAKI S/SC	YUTAKI S80	YUTAKI M	Origin	Detail of Abnormality	Main Factors
100	-	o	o	o	Indoor-LCD	Compressor protection	"Compressor failure. This alarm code appears when the following alarms 02, 07, 08, 45, 47 occur three times within 6 hours." ⓘ **NOTE** This alarm is shown in the outdoor unit with alarm code "EE".
101		-	o	-	Indoor	Activation of high pressure switch	
102	P12	-	o	-	Indoor	Activation of protection control for excessively high pressure	Stop after P12 retry due to discharge pressure Pd ≥ 2.78 MPa continued for 10 seconds.
104	P06	-	o	-	Indoor	Activation of low control	Stop after P06 retry due to Ps ≤ 0.15 MPa continued for 90 seconds
104	P06	-	o	-	Indoor	Activation of low control	Immediate stop with Ps ≤ 0.1 MPa
105	P11	-	o	-	Indoor	Excessively low pressure difference	Stop after P11 retry due to pressure ratio ε < 1.8 continued for 3 minutes.
106		-	o	-	Indoor	Excessively high discharge gas temperature	Td ≥ 120 ºC continued for 10 minutes, Td ≥ 140 ºC continued for 5 seconds
129		-	o	-	Indoor	Failure of discharge gas pressure sensor	Loose, disconnected, broken or short-circuited connector
130		-	o	-	Indoor	Failure of suction gas pressure sensor	Loose, disconnected, broken or short-circuited connector
132		-	o	-	Indoor	Transmission error between Inverter PCB and Main PCB	Described in inverter abnormal stop control
134		-	o	-	Indoor	Abnormality of Power Supply Phase	Reverse/Open Phase
135		-	o	-	Indoor	Incorrect PCB Setting	Wrong DSW setting in the case of Co041
151		-	o	-	Indoor	Excessively low voltage or excessively high voltage for the inverter	Described in inverter abnormal stop control
152		-	o	-	Indoor	Abnormal operation of the current sensor	Described in inverter abnormal stop control
153		-	o	-	Indoor	Activation of protection for inverter instantaneous over current	Described in inverter abnormal stop control
154		-	o	-	Indoor	Transistor module protection activation	Described in inverter abnormal stop control
155		-	o	-	Indoor	Increase in the inverter fin temperature or abnormality	Described in inverter abnormal stop control
156		-	o	-	Indoor	Inverter non operation	Described in inverter abnormal stop control
157		-	o	-	Indoor	Inverter Communication abnormality	Described in inverter abnormal stop control

◆ **Alarms for YUTAKI CASCADE CONTROLLER**

Alarm Code	Retry Stop Code	Origin	Detail of Abnormality	Main Factors
03	-	Communication	Lost communication with all slave YUTAKI Units	Loose, disconnected, broken or short-circuited connector
15	-	Indoor	Water Circuit 2 thermistor abnormally (THMwo2)	Loose, disconnected, broken or short-circuited connector
16	-	Indoor	Water DHW thermistor abnormally (THMdhwt)	Loose, disconnected, broken or short-circuited connector
17	-	Indoor	Auxiliary sensor 2 thermistor abnormally (THMaux2)	Loose, disconnected, broken or short-circuited connector
18	-	Indoor	Auxiliary sensor 1 thermistor abnormally (THMaux1)	Loose, disconnected, broken or short-circuited connector
25	-	Indoor	Auxiliary sensor 3 thermistor abnormally (THMaux3)	Loose, disconnected, broken or short-circuited connector
40	-	Indoor	Incorrect LCD setting	Current LCD configuration does not allow proper operation
60	-	Slave unit	All slave units are in alarm state or there is no communication. Alarm release, when issue disappears	Slave unit alarm
73		Indoor	Mixing over-temperature limit protection for Mixed circuit.	Circuit 2 supply temperature > Target temperature + offset
74	P74	Indoor	Unit over-temperature limit protection	Two > Tmax +5K
75	-	Indoor	Freeze Protection by Cold water inlet, outlet temperature detection	
77	-	Indoor-LCD	Receiver Communication failure	No Opentherm/Hlink communication for a continuous period of 10 minutes.
78		Indoor-LCD	RF Communication failure	There is no communication for 1 hour with on or two RF receives which are bound to the RF-Bridge.
80	-	Indoor	LCD H-link RCS transmission error	No H-link communication for a continuous period of 1 minute between Indoor and LCD User control by connection wiring (breaking, wiring error, etc.)
		LCD	(If no H-LINK RCS has no power)	
21X	-	Slave unit	Module X is in alarm state. X stands for the module number. A module is determined to be in alarm state in case that module is in alarm or YUTAKI CASCADE CONTROLLER lost communication with specific module.	Slave unit alarm

◆ **Alarms for Outdoor units**

Code number	Category	Type of abnormality	Main cause
2	Outdoor unit	Activation of protection device (high pressure cut)	Activation of PSH, locked motor, abnormal operation in the power supply phase. Failure of fan motor, drain discharge, PCB, relay, float switch activated. (Pipe clogging, excessive refrigerant, innert gas mixing, fan motor locking at cooling operation)
3	Transmission	Abnormal transmission between outdoor and indoor units	Incorrect wiring. Loose terminals, Failure of PCB. Tripping of fuse. Power supply OFF.
4		Abnormal transmission between inverter PCB and RASC unit PCB	Transmission failure between inverter PCBs. (Loose Connector, Wire Breaking, Blowout of Fuse).
5	Power supply	Reception of abnormal operation code for detection of power source phase	Power source with abnormal wave pattern. Main power supply phase is reversely connected or one phase is not connected.
6	Voltage	Excessively low voltage or excessively high voltage for the inverter	Voltage drop in power supply. Incorrect wiring or insufficient capacity of power supply wiring.

Code number	Category	Type of abnormality	Main cause
7	Cycle	Decrease in discharge gas superheat	Excessive Refrigerant Charge, Failure of Thermistor, Incorrect Wiring, Incorrect Piping Connection, Expansion Valve Locking at Opened Position (Disconnected Connector).
8		Excessively high discharge gas temperature at the top of compressor	Insufficient refrigerant charge, refrigerant leakage. Expansion valve closed or clogged.
19	Fan motor	Activation of the protection device for the indoor fan motor	Failure of fan motor.
20	Outdoor unit sensor	Thermistor for discharge gas temperature (THM9)	Incorrect wiring, disconnected wiring, broken cable, short circuit.
21		High pressure sensor	
22		Thermistor for outdoor ambient temperature (THM7)	
24		Thermistor for evaporating temperature (THM8)	Incorrect Wiring, Disconnected Wiring, Wire Breaking, Short Circuit, Fan Motor Locking at Heating Operation.
31	System	Incorrect capacity setting or combined capacity between outdoor and indoor units	Incorrect Capacity Code Setting, Excessive or Insufficient Indoor Unit Total Capacity Code.
35		Incorrect indoor unit number setting	Duplication of indoor unit number, number of indoor units over specifications.
36		Incorrect of Indoor Unit Combination.	
38		Abnormality of picking up circuit for protection (Outdoor unit)	Failure of indoor unit PCB, incorrect wiring, connection to PCB in indoor unit.
45	Protection device	Activation of the safety device from excessively high discharge pressure	Overload (obstruction of HEX, short circuit) mixture of inert gas, Excessive Refrigerant.
47		Activation of the safety device from excessively low suction pressure (protection from vacuum operation)	Shortage or leakage of refrigerant, piping clogging, expansion valve close-locked, fan motor locked.
48		Activation of overcurrent protection	Overload, overcurrent. Failure of Inverter PCB, heat exchanger clogged, locked compressor. EVI/EVO failure.
51	Inverter	Abnormal operation of the current sensor	Incorrect wiring of current sensor. Failure of control PCB or Inverter PCB.
53		Inverter fin temperature increase	Inverter module (IPM, DIP-IPM) and Inverter PCB abnormality. Failure of compressor, clogging of heat exchanger.
54		Abnormality of inverter fin temperature	Heat Exchanger Clogging. Fan Motor Failure.
55		Abnormality of inverter module	Failure of DIP-IPM, IPM or Inverter PCB.
EE	Compressor	Compressor protection	"Compressor failure. This alarm code appears when the following alarms 02, 07, 08, 45, 47 occur three times within 6 hours."
b0	Indoor unit model setting	Incorrect setting of unit model	No setting of unit capacity or incorrect setting of unit capacity.
b1	Number setting	Incorrect setting address or refrigerant cycle	Over 64 indoor units setting by number or indoor unit address.
b5		Incorrect setting of indoor unit number for H-LINK type	The number of indoor units connected to the H-LINK II of one system is 17 or higher.

◆ Alarms for LCD

Alarm Code	Retry Stop Code	YUTAKI S/SC	YUTAKI S80	YUTAKI M	Origin	Detail of Abnormality	Main Factors
202		(o)	(o)	(o)	LCD	Wrong settings of PC-ARFH1E	
203		(o)	(o)	(o)	LCD	Slave PC-ARFH1E stops answering to Master PC-ARFH1E	Loose, disconnected, broken or short-circuited connector
204		(o)	(o)	(o)	LCD	Indoor unit stops answering to Master PC-ARFH1E	Loose, disconnected, broken or short-circuited connector
205		(o)	(o)	(o)	LCD	Central Alarm, no Central message	Loose, disconnected, broken or short-circuited connector

10 MAINTENANCE

10.1 MAINTENANCE WORK

⚠ **CAUTION**

- *All inspections and checks have to be carried out by a licensed technician and never by the user itself.*
- *Before any inspection and check the unit main power supply has to be switched OFF.*
- *Wait a minimum off 10 minutes from all power supply have been turned OFF.*
- *Take care with the crankcase heater. It could operate even when compressor is OFF.*
- *Take care with the electrical box components. Some of them could remain hot after switching OFF the unit.*

ℹ **NOTE**

All these maintenance operations must be done with appropriate materials and following this manual.

10.1.1 General maintenance procedure for the outdoor unit

1 Fan and fan motor

- Lubrication: All the fan motors are pre-lubricated and sealed at factory. Therefore no lubrication maintenance is required.
- Sound and vibration: Check for abnormal sounds and vibrations.
- Rotation: Check the clockwise rotation and the rotating speed.
- Insulation: Check the electrical insulation resistance.

2 Heat exchanger

- Clog: Inspect the heat exchanger at regular intervals and remove any accumulated dirt and any accumulated dust from the heat exchanger. Other obstacles must be removed such as the growing grass and the pieces of paper which might restrict the airflow.

3 Refrigerant piping connection

- Leakage: Check for the refrigerant leakage at the piping connection between the outdoor and the indoor unit.
- Pressure: On split system, check the R-410A refrigerant pressure using the check joints of the outdoor unit.

4 Cabinet

- Stain: Check for any stain and remove it cleaning if it is the case.
- Fixing screw: Check for any loosened screw or any lost screw. Fix the loosened screws and the lost screws.
- Insulation material: Check for any peeled thermal insulator on the cabinet. Repair the thermal insulator.

5 Electrical equipment

- Activation: Check for an abnormal activation of the magnetic contactor, the auxiliary relay, the PCB and others.
- Line condition: Pay attention to the working voltage, the working amperage and the working phase balance. Check for any faulty contact that is caused by the loosened terminal connections, the oxidized contacts, the foreign matter and other items. Check the electrical insulation resistance.

6 Control device and protection device

- Setting: Do not readjust the setting in the field unless the setting is maintained at a point that is different from the point listed in the Technical Documentation.

7 R410A compressor

- Sound and vibration: Check for abnormal sounds and vibrations.
- Activation: Check that the voltage drop of the power supply line is within 15% at the start and within 2% during the operation.

8 Reverse valve

- Activation: Check for any abnormal activation sound.

9 Strainer

- Clog: Check that there is no temperature difference between both ends.

10 Ground wire

- Ground line: Check for the continuity to earth.

11 Oil heater (Crankcase heater of the R-410A compressor)

- Activation: The oil heater should be activated at least twelve hours before the start-up by turning ON the main switch.

10.1.2 General maintenance procedure for the indoor unit

To ensure good operation and reliability of the indoor unit, main parts and field wiring have to be checked periodically.

The following checks have to be done by qualified technicians at least once a year:

1 Cabinet

- Stain: Check for any stain and remove it cleaning if it is the case.
- Fixing screw: Check for any loosened screw or any lost screw. Tighten the loosened screws and replace the lost screws.
- Insulation material: Check for any peeled thermal insulator on the indoor part of the covers. Repair the thermal insulator.

2 Water piping connection

- Leakage: Check there are no water leakages neither in the inlet and outlet water connections (space heating and DHW if used), nor in the main water circuit nor the tank connections. Check all the joints, connections and circuit elements.

ⓘ NOTE

- *If leakage is detected in the inlet/outlet water connections, repair it and remember to replace the gaskets.*
- *Pay special attention to the water pipe connection placed over the electrical box.*
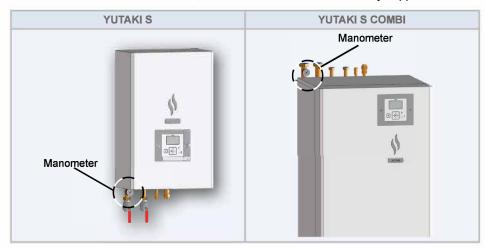
3 Water flow and pressure:

- Water flow:

    - Space heating: Check the water flow (m³/h) through the unit controller in the "Heat Pump Details" of the "Operation Information" menu.

    - DHW (if used): Check whether the water circulation is correct along all the DHW circuit.

- Pressure checking:

    - Space heating: Check the water pressure using the manometer in the indoor unit (In YUTAKI M (R410A) units, this manometer is field supplied). This value shall be between 1.5 and 2.0 bars approximately (1.8 bars is a proper value).

The manometer is placed at different positions according to each unit model

YUTAKI S / S COMBI

In YUTAKI S and S COMBI models, the manometer is installed factory supplied as it is shown:

YUTAKI S	YUTAKI S COMBI
Manometer	Manometer
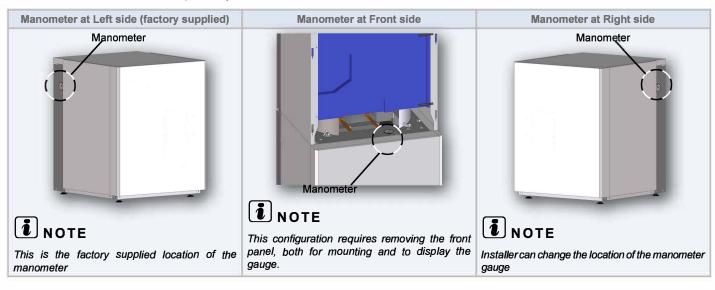
YUTAKI M (R410A)

For the YUTAKI M (R410A) series it is highly recommended to install, field supplied, a manometer gauge attached to the water inlet pipe and after the shut-off valve.

YUTAKI S80 Type 2

YUTAKI S 80 has special configurations for the position of the manometer. While it is factory supplied in only one position (left side), it can be moved by the installer to the right side or to the front of the unit. For example, in case of a wall at the left side or at both sides of the YUTAKI S80 unit, respectively.

Manometer at Left side (factory supplied)	Manometer at Front side	Manometer at Right side
Manometer	Manometer	Manometer
ℹ NOTE *This is the factory supplied location of the manometer*	**ℹ NOTE** *This configuration requires removing the front panel, both for mounting and to display the gauge.*	**ℹ NOTE** *Installer can change the location of the manometer gauge*

ℹ NOTE

The water pressure must remain above 1 bar in order to prevent air from entering the circuit, and below 3.0 bars (safety valve opening value).

- DHW (if used): Check there is no loss of pressure and ensure that DHW pressure is not higher than 6 bars. Connect a gauge to the DHW drain port for this purpose.

4 Security water valve for DHW (if used):

- Operation: Check the correct operation of the security water valve (pressure and temperature relief valve) at the DHW inlet connection. Remember that this element must ensure that the following functions are provided: Pressure protection, non-return function, shut-off valve, filling and draining.

5 DHWTank inspection hatch

The DHW tank has an inspection hatch at the bottom. This hatch allows the inspection of the interior of the tank.

⚠ DANGER

Be careful when using this inspection hatch. There are high temperature and high pressure inside the tank. Before open it wait a reasonable time for the water to cool.
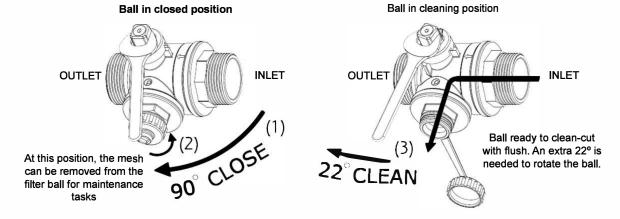
For a safe operation using the inspection hatch, proceed as it is explained in the manual of the specific unit.
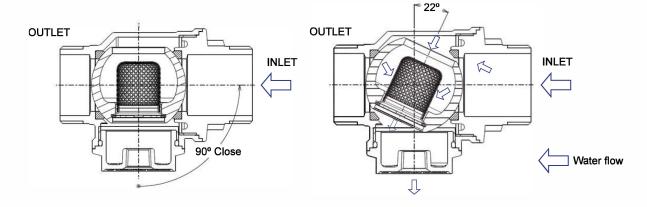
Additional hydraulic elements are necessary in the DHW circuit. Refer to chapter *"5 REFRIGERANT AND WATER PIPING"*.

6 Filter +:

The Filter + valve is an on-off ball valve containing an interchangeable cylindrical filter which is easy to inspect and remove for normal maintenance operations. Normally, Filter + ball valve it is used as a shut-off valve by turning the handle 90º clockwise (1).

Filter+ ball valve makes the maintenance operations easier. Once the valve is in closed position, open the draining port tap(2) and, by turning the handle up to 22º clockwise, the water from the inlet is guided behind the filter and runs in opposite direction through the draining port(3). The water circuit can be cleaned even under full pressure, avoiding the need to drain the unit prior the cleaning process. After cleaning, simply close the draining port tap(2), and open the valve again.

Ball in closed position

OUTLET   INLET

(2) (1)

90° CLOSE

At this position, the mesh can be removed from the filter ball for maintenance tasks

Ball in cleaning position

OUTLET   INLET

(3)

22° CLEAN

Ball ready to clean-cut with flush. An extra 22º is needed to rotate the ball.

OUTLET

INLET

90º Close

OUTLET

22º

INLET

Water flow

ⓘ NOTE

The draining port must be connected to the sewage system by means of a hose or a pipe.

⚠ CAUTION

- *Take care when draining the unit. Ensure the connection of the hose or drain pipe in order to avoid water leakage on any electrical component.*
- *The expelled water could be hot and could keep in pressure. Take care with this draining.*

7 Safety valve

- Operation: Check the correct operation of the indoor unit safety valve (pressure relief valve) on the space heating circuit. Open it manually and some water should be expelled by its connected drain pipe.

8 Air purger:

- Excessive air: Check the correct operation of the indoor unit air purger. Turn it twice at least, since there may be air in the water circuit, which needs to be expelled by this air purger.

9 Water pump:

- Pump performance curves: Check as explained in point 3 that water flow and pressure is in accordance with the Pump performance curves.
- Electrical connection: Check the correct connection of the electrical wiring of the water pump. If moisture is detected in the pump surface, revise the water pipes, since a water leakage could have been occurred.

10 Fixing points tightening:

- Check the fixing points of the indoor unit. Check the indoor unit wall support. The indoor unit has to be always in a vertical position.

11 Refrigerant piping connection

- Leakage: Check for the refrigerant leakage at the refrigerant piping connections in the indoor unit. Check the different connections of the plate heat exchanger.

12 Electrical equipment

- Activation: Check for an abnormal activation of the magnetic contactor, the relay, the PCBs and others.
- Line condition: Pay attention to the working voltage, the working amperage and the working phase balance. Check for any faulty contact that is caused by the loosened terminal connections, the oxidized contacts, the foreign matter and other items. Check the electrical insulation resistance.

13 Control device and protection device

- Setting: Do not readjust the setting in the field unless the setting is maintained at a point that is different from the point listed in the Service Manual.

14 Ground wire

- Ground line: Check for the continuity to earth in the main electrical components.

◆ **Descaling (S/S COMBI)**

Water quality and set temperature can affect the scale production and it can deposit on the surface of the plate heat exchanger, restricting the heat exchange and the good operation of the unit.

🛈 **NOTE**

Descaling should be necessary periodically at certain intervals depending on the supplied water quality.

Check the scale level when proceeding maintenance to ensure reliability of the unit.

If necessary, proceed with descaling:

1 Switch OFF the main power supply of the indoor unit.

2 Empty the indoor unit water as explained in "Draining" procedure.

3 Proceed with descaling of the plate heat exchangers.

4 Ensure that the water quality remains compliant with the EU council directive 98/83 EC.

◆ Draining

ℹ️ N O T E

Draining operation is unique for each model. Refer to the service manual of the specific unit for drain operation procedure.

Draining operation for YUTAKI S

YUTAKI S models have no drain port factory supplied. It must be considered the installation of a drain port after the shut-off valve (factory supplied) and before the water inlet of the unit when proceeding to the installation of the unit.

Draining operation for YUTAKI S COMBI

Draining of the indoor unit (27)

1   Switch OFF the main power supply of the indoor unit.

2   Close the 2 shut-off valves (factory-supplied) installed at the space heating connections (Water inlet and outlet connections).

3   Open manually the drain port for indoor unit water (27) and collect the water into a bucket.

4   Once all the water has been drained, close again the drain port for indoor unit water.
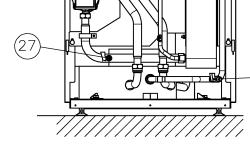
⚠️ C A U T I O N

When draining the indoor unit water from its drain port, the leaved water could be hot and could keep in pressure. Perform the draining procedure carefully.

Draining of the DHW circuit (28)

1   Switch OFF the main power supply of the indoor unit.

2   Close the main DHW inlet valve (water inlet shut-off valve) in order to avoid the tank filling.

3   Close the shut-off valve of the DHW outlet.

4   Connect a drain hose to the drain port for DHW (28) and lead the other end to the general draining.

5   Open manually the drain port for DHW (28) and wait a long time until all the water has been removed.

⚠️ C A U T I O N

When draining the DHW from its drain port, the leaved water could be hot and could keep in pressure. Perform the draining procedure carefully.

Draining operation for YUTAKI S80

To drain the indoor unit follow the next procedure:

1   Switch OFF the main power supply of the indoor unit.

2   Close the 2 shut-off valves (factory-supplied) installed at the space heating connections (Water inlet and outlet connections).

3   Connect a drain pipe to the drain port of the shut-off valves and lead it to the general draining system.

4   Open manually the drain port of the shut-off valves and collect the water into a bucket.

5   Once all the water has been drained, close again the drain port of the shut-off valves and open the main shut-off valve to restart the normal operation.

⚠️ C A U T I O N

When draining the indoor unit water from its drain port, the leaved water could be hot and could keep in pressure. Perform the draining procedure carefully.

Draining operation for YUTAKI M

YUTAKI M has no drain port factory supplied. It is highly recommended to install a drain port valve attached to the water outlet of the YUTAKI M unit in order to ease the operation of draining. When the drain port is installed the draining procedure for the YUTAKI M follows the next steps:

1 Switch OFF the main power of the unit.

2 Close the shut-off valve installed at the water inlet connection (field supplied).

3 Connect a pipe or a drain hose to the drain port (field supplied) placed in the water outlet pipe of the unit.

4 Open manually the drain port of the shut-off valve (field supplied), and collect the water into a bucket (or to a sewage system)

5 Once all the water has been drained, and all maintenance operations have been finished, close again the drain port and open again the valve of the water inlet pipe to restart the normal operation of the unit.