

## INSTALLATION & OPERATION MANUAL

### YUTAKI SERIES

AND YUTAKI CASCADE CONTROLLER

#### MODELS

RWM-(2-3)R1E

RWM-(4-10)N1E

RWD-(2-3)RW1E-220S(-K)

RWD-(4-6)NW1E-220S(-K)

RWH-(4.0-6.0)(V)NF(W)E

DHWS(200/260)S-2.7H2E(-W)

RASM-(2/3)VRE

RASM-(4-6)(V)NE

RAS-(2-3)WHVRP1

RAS-(4-10)WH(V)NPE

ATW-YCC-(01-03)



Cooling & Heating



## **English**

Specifications in this manual are subject to change without notice in order that HITACHI may bring the latest innovations to their customers.

Whilst every effort is made to ensure that all specifications are correct, printing errors are beyond HITACHI's control; HITACHI cannot be held responsible for these errors.

## **Español**

Las especificaciones de este manual están sujetas a cambios sin previo aviso a fin de que HITACHI pueda ofrecer las últimas innovaciones a sus clientes.

A pesar de que se hacen todos los esfuerzos posibles para asegurarse de que las especificaciones sean correctas, los errores de impresión están fuera del control de HITACHI, a quien no se hará responsable de ellos.

## **Deutsch**

Bei den technischen Angaben in diesem Handbuch sind Änderungen vorbehalten, damit HITACHI seinen Kunden die jeweils neuesten Innovationen präsentieren kann.

Sämtliche Anstrengungen wurden unternommen, um sicherzustellen, dass alle technischen Informationen ohne Fehler veröffentlicht worden sind. Für Druckfehler kann HITACHI jedoch keine Verantwortung übernehmen, da sie außerhalb ihrer Kontrolle liegen.

## **Français**

Les caractéristiques publiées dans ce manuel peuvent être modifiées sans préavis, HITACHI souhaitant pouvoir toujours offrir à ses clients les dernières innovations.

Bien que tous les efforts sont faits pour assurer l'exactitude des caractéristiques, les erreurs d'impression sont hors du contrôle de HITACHI qui ne pourrait en être tenu responsable.

## **Italiano**

Le specifiche di questo manuale sono soggette a modifica senza preavviso affinché HITACHI possa offrire ai propri clienti le ultime novità.

Sebbene sia stata posta la massima cura nel garantire la correttezza dei dati, HITACHI non è responsabile per eventuali errori di stampa che esulano dal proprio controllo.

## **Português**

As especificações apresentadas neste manual estão sujeitas a alterações sem aviso prévio, de modo a que a HITACHI possa oferecer aos seus clientes, da forma mais expedita possível, as inovações mais recentes.

Apesar de serem feitos todos os esforços para assegurar que todas as especificações apresentadas são correctas, quaisquer erros de impressão estão fora do controlo da HITACHI, que não pode ser responsabilizada por estes erros eventuais.

## **Dansk**

Specifikationerne i denne vejledning kan ændres uden varsel, for at HITACHI kan bringe de nyeste innovationer ud til kunderne.

På trods af alle anstrengelser for at sikre at alle specifikationerne er korrekte, har HITACHI ikke kontrol over trykfejl, og HITACHI kan ikke holdes ansvarlig herfor.

## **Nederlands**

De specificaties in deze handleiding kunnen worden gewijzigd zonder verdere kennisgeving zodat HITACHI zijn klanten kan voorzien van de nieuwste innovaties.

Iedere poging wordt ondernomen om te zorgen dat alle specificaties juist zijn. Voorkomende drukfouten kunnen echter niet door HITACHI worden gecontroleerd, waardoor HITACHI niet aansprakelijk kan worden gesteld voor deze fouten.

## **Svenska**

Specifikationerna i den här handboken kan ändras utan föregående meddelande för att HITACHI ska kunna leverera de senaste innovationerna till kunderna.

Vi på HITACHI gör allt vi kan för att se till att alla specifikationer stämmer, men vi har ingen kontroll över tryckfel och kan därför inte hållas ansvariga för den typen av fel.

## **Ελληνικά**

Οι προδιαγραφές του εγχειριδίου μπορούν να αλλάξουν χωρίς προειδοποίηση, προκειμένου η HITACHI να παρέχει τις τελευταίες καινοτομίες στους πελάτες της.

Αν και έχει γίνει κάθε προσπάθεια προκειμένου να εξασφαλιστεί ότι οι προδιαγραφές είναι σωστές, η HITACHI δεν μπορεί να ελέγξει τα τυπογραφικά λάθη και, ως εκ τούτου, δεν φέρει καμία ευθύνη για αυτά τα λάθη.



## CAUTION

This product shall not be mixed with general house waste at the end of its life and it shall be retired according to the appropriated local or national regulations in a environmentally correct way.  
Due to the refrigerant, oil and other components contained in heat pump, its dismantling must be done by a professional installer according to the applicable regulations. Contact to the corresponding authorities for more information.

## PRECAUCIÓN

Este producto no se debe eliminar con la basura doméstica al final de su vida útil y se debe desechar de manera respetuosa con el medio ambiente de acuerdo con los reglamentos locales o nacionales aplicables.  
Debido al refrigerante, el aceite y otros componentes contenidos en la bomba de calor, su desmontaje debe realizarlo un instalador profesional de acuerdo con la normativa aplicable. Para obtener más información, póngase en contacto con las autoridades competentes.

## VORSICHT

Dass Ihr Produkt am Ende seiner Betriebsdauer nicht in den allgemeinen Hausmüll geworfen werden darf, sondern entsprechend den geltenden örtlichen und nationalen Bestimmungen auf umweltfreundliche Weise entsorgt werden muss.  
Aufgrund des Kältemittels, Öls und anderer Komponenten in der Wärmepumpe muss ihr Ausbau von einem professionellen Installateur entsprechend der anwendbaren Vorschriften durchgeführt werden. Für weitere Informationen setzen Sie sich bitte mit den entsprechenden Behörden in Verbindung.

## ADVERTISSEMENT

Ne doit pas être mélangé aux ordures ménagères ordinaires à la fin de sa vie utile et qu'il doit être éliminé conformément à la réglementation locale ou nationale, dans le plus strict respect de l'environnement.  
En raison du frigorigène, de l'huile et des autres composants que contient la pompe à chaleur, son démontage doit être effectué par un installateur professionnel conformément aux réglementations en vigueur.

## AVVERTENZE

Indicazioni per il corretto smaltimento del prodotto ai sensi della Direttiva Europea 2011/65/EU e D.Lgs 4 marzo 2014 n.27  
Il simbolo del cassonetto barrato riportato sull'apparecchiatura indica che il prodotto alla fine della propria vita utile deve essere raccolto separatamente dagli altri rifiuti.  
L'utente dovrà, pertanto, conferire l'apparecchiatura giunta a fine vita agli idonei centri di raccolta differenziata dei rifiuti elettronici ed elettrotecnici, oppure riconsegnarla al rivenditore al momento dell'acquisto di una nuova apparecchiatura di tipo equivalente.  
L'adeguata raccolta differenziata delle apparecchiature dismesse, per il loro avvio al riciclaggio, al trattamento ed allo smaltimento ambientalmente compatibile, contribuisce ad evitare possibili effetti negativi sull'ambiente e sulla salute e favorisce il riciclo dei materiali di cui è composta l'apparecchiatura.  
Non tentate di smontare il sistema o l'unità da soli poiché ciò potrebbe causare effetti dannosi sulla vostra salute o sull'ambiente.  
Vogliate contattare l'installatore, il rivenditore, o le autorità locali per ulteriori informazioni.  
Lo smaltimento abusivo del prodotto da parte dell'utente può comportare l'applicazione delle sanzioni amministrative di cui all'articolo 50 e seguenti del D.Lgs. n. 22/1997.

## CUIDADO

O seu produto não deve ser misturado com os desperdícios domésticos de carácter geral no final da sua duração e que deve ser eliminado de acordo com os regulamentos locais ou nacionais adequados de uma forma correcta para o meio ambiente.  
Por causa do refrigerante, do óleo e de outros componentes na bomba de calor, o desmantelamento deve ser realizado por um instalador profissional em conformidade com os regulamentos aplicáveis. Contacte as autoridades correspondentes para obter mais informações.

## ADVASEL!

At produktet ikke må smides ud sammen med almindeligt husholdningsaffald, men skal bortskaffes i overensstemmelse med de gældende lokale eller nationale regler på en miljømæssig korrekt måde.  
Da varmpumpen indeholder kølemiddel, olie samt andre komponenter, skal afmontering foretages af en fagmand i overensstemmelse med de gældende bestemmelser. Kontakt de pågældende myndigheder for at få yderligere oplysninger.

## VOORZICHTIG

Dit houdt in dat uw product niet wordt gemengd met gewoon huisvuil wanneer u het weg doet en dat het wordt gescheiden op een milieuvriendelijke manier volgens de geldige plaatselijke en landelijke reguleringen.  
Wegens de aanwezigheid van koelmiddel, olie en andere componenten in de warmtepomp moet het apparaat volgens de toepasselijke regelgeving door een professionele installateur worden gedemonteerd. Neem contact op met de betreffende overheidsdienst voor meer informatie.

## FÖRSIKTIGHET

Det innebär att produkten inte ska slängas tillsammans med vanligt hushållsavfall utan kasseras på ett miljövänligt sätt i enlighet med gällande lokal eller nationell lagstiftning.  
Eftersom varmpumpen innehåller kylmedel, oljor och andra komponenter, måste den demonteras av en behörig installatör i enlighet med gällande föreskrifter. Ta kontakt med ansvarig myndighet om du vill ha mer information.

## ΠΡΟΣΟΧΗ

Σημαίνει ότι το προϊόν δεν θα πρέπει να αναμιχθεί με τα διάφορα οικιακά απορρίμματα στο τέλος του κύκλου ζωής του και θα πρέπει να αποσυρθεί σύμφωνα με τους κατάλληλους τοπικούς ή εθνικούς κανονισμούς και με τρόπο φιλικό προς το περιβάλλον.  
Λόγω του ψυκτικού, του λαδιού και άλλων εξαρτημάτων που περιλαμβάνονται στην αντλία θέρμανσης, η αποσυναρμολόγησή του πρέπει να γίνει από εξουσιοδοτημένο επαγγελματία τεχνικό, σύμφωνα με τους ισχύοντες κανονισμούς. Για περισσότερες λεπτομέρειες, επικοινωνήστε με τις αντίστοιχες αρχές.

**MODELS CODIFICATION**

**Important note:** Please, check, according to the model name, which is your heat pump system, how it is abbreviated and referred to in this instruction manual. This Installation and Operation Manual is related to YUTAKI Units.

**CODIFICACIÓN DE MODELOS**

**Nota importante:** compruebe, de acuerdo con el nombre del modelo, el tipo de bomba de calor, su abreviatura y su referencia en el presente manual de instrucciones. Este Manual de instalación y funcionamiento está relacionado con unidades YUTAKI.

**MODELLCODES**

**Wichtiger Hinweis:** Bitte stellen Sie anhand der Modellbezeichnung den Typ der Wärmepumpe und das entsprechende, in diesem Technischen Handbuch verwendete Kürzel fest. Dieses Installations- und Betriebshandbuch bezieht sich auf die YUTAKI Geräte

**CODIFICATION DES MODÈLES**

**Note importante :** veuillez déterminer, d'après le nom du modèle, quel est votre type de pompe à chaleur et quelle est son abréviation et référence dans ce manuel d'instruction. Ce manuel d'installation et de fonctionnement concerne les unités YUTAKI.

**CODIFICAZIONE DEI MODELLI**

**Nota importante:** controllare in base al modello il tipo di pompa di calore, la descrizione e il tipo di abbreviazione utilizzati nel manuale di istruzioni. Questo Manuale di installazione e d'uso è relativo alle unità YUTAKI.

**CODIFICAÇÃO DE MODELOS**

**Nota Importante:** de acordo com o nome do modelo, verifique o tipo da sua bomba de calor e a respetiva abreviatura e menção neste manual de instruções. Este manual de instalação e de funcionamento está relacionado com unidades YUTAKI

**MODELKODIFICERING**

**Vigtig information:** Kontrollér venligst din varmepumpetype i henhold til modelnavnet, hvordan den forkortes, og hvilken reference den har i denne vejledning. Denne installations- og betjeningsvejledning gælder for YUTAKI-enheder.

**CODERING VAN DE MODELLEN**

**Belangrijke opmerking:** Controleer aan de hand van de modelnaam welk type warmtepomp u heeft, hoe de naam wordt afgekort en hoe ernaar wordt verwezen in deze instructiehandleiding. Deze installatie- en gebruikshandleiding geldt voor YUTAKI-units.

**MODELLER**

**Viktigt!** Kontrollera med modellnamnet vilken typ av värmepump du har, hur den förkortas och hur den anges i den här handboken. Denna Installations- och driftshandbok gäller för YUTAKI-enheter.

**ΚΩΔΙΚΟΠΟΙΗΣΗ ΜΟΝΤΕΛΩΝ**

**Σημαντική σημείωση:** Ελέγξτε, σύμφωνα με το όνομα μοντέλου, τον τύπο της δικής σας αντλίας θέρμανσης και με ποια σύντμηση δηλώνεται και αναφέρεται σε αυτό το εγχειρίδιο. Το παρόν εγχειρίδιο εγκατάστασης και λειτουργίας αναφέρεται στις μονάδες YUTAKI.

EN

The English version is the original one; other languages are translated from English. Should any discrepancy occur between the English and the translated versions, the English version shall prevail.

ES

La versión en inglés es la original, y las versiones en otros idiomas son traducciones de la inglesa. En caso de discrepancias entre la versión inglesa y las versiones traducidas, prevalecerá la versión inglesa.

DE

Die englische Fassung ist das Original, und die Fassungen in anderen Sprachen werden aus dem Englischen übersetzt. Sollten die englische und die übersetzten Fassungen voneinander abweichen, so hat die englische Fassung Vorrang.

FR

La version anglaise est la version originale; les autres langues sont traduites de l'anglais. En cas de divergence entre les versions anglaise et traduite, la version anglaise prévaudra.

IT

La versione inglese è l'originale e le versioni in altre lingue sono traduzioni dall'inglese. In caso di divergenze tra la versione inglese e quella tradotta, fa fede la versione inglese.

PT

A versão inglesa é a original; as versões em outras línguas são traduzidas do inglês. Em caso de divergência entre a versão em língua inglesa e as versões traduzidas, faz fé a versão em língua inglesa.

DA

Den engelske udgave er originalen, og udgaverne på andre sprog er oversat fra engelsk. Hvis der forekommer uoverensstemmelser mellem den engelske og den oversatte sprogudgave, vil den engelske udgave være gældende.

NL

De Engelse versie is de originele; andere talen zijn vertaald uit het Engels. In geval van verschillen tussen de Engelse versie en de vertaalde versies, heeft de Engelse versie voorrang.

SV

Den engelska versionen är originalet, och versionerna på andra språk är från engelska översättningar. I händelse av bristande överensstämmelse mellan den engelska och den översatta versionerna, skall den engelska versionen vara giltig.

EL

Η αγγλική έκδοση είναι το πρωτότυπο και οι εκδόσεις σε άλλες γλώσσες μεταφράζονται από τα αγγλικά. Σε περίπτωση που διαπιστωθούν διαφορές μεταξύ της αγγλικής και της μεταφρασμένης έκδοσης, η αγγλική έκδοση είναι επικρατέστερη.

EN	English	Original version
ES	Español	Versión traducida
DE	Deutsch	Übersetzte Version
FR	Français	Version traduite
IT	Italiano	Versione tradotta
PT	Português	Versão traduzida
DA	Dansk	Oversat version
NL	Nederlands	Vertaalde versie
SV	Svenska	Översatt version
EL	Ελληνικά	Μεταφρασμένη έκδοση

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# 1 GENERAL INFORMATION

## 1.1 GENERAL INFORMATION

### 1.1.1 General notes

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### 1.1.2 Introduction

Hitachi proudly announces the newest complete range of air-to-water heat pumps in its award-winning YUTAKI range.

YUTAKI units produce heating and domestic hot water like any oil or gas boiler, but transforming renewable energy from the outside air into heat. Air to water heat pumps extract the free energy present in the air, which is enough to heat a home up to a comfortable temperature, even on the coldest winter day. Every kW of electricity used to power the heat pump can yield up to more than 5 kW of energy for heating; this provides savings of up to 80% on heating expenses compared to a traditional fossil fuel boiler.

The new YUTAKI series, based on state-of-the-art technology, does not only achieve an outstanding performance in space heating but also provides domestic hot water with high efficiency. Additionally, cooling operation for summer can also be provided installing the dedicated "Cooling kit" accessory of Hitachi.

The system is simple to control; its new user controller (PC-ARFH1E / PC-ARFH2E) improves the acclaimed and successful design used with the existing LCD controller and provides a great deal of new functions like: wizard start-up configuration, auto cool/heat, improved timer, etc.

#### 1.1.2.1 Overview of YUTAKI system

The wide range of YUTAKI products is basically divided in two types of system:

- Split system
- Monobloc system

#### ◆ Split system - YUTAKI S, YUTAKI S COMBI, YUTAKI S80

It consists of one outdoor unit and one indoor unit. The outdoor unit extracts the heat present in the air, increases its refrigerant temperature and transmits it to the water circuit using the plate heat exchanger of the indoor unit where the heat is taken to radiators (fan-coils), underfloor heating components or both (2nd temperature area).

Three types of indoor unit can be used in heating split systems:

#### YUTAKI S

The indoor unit of YUTAKI S is designed for space heating, in wall-mounted installation. It is convenient for new installations with low capacity requirements (Well isolated installations, high efficiency radiators...).

## YUTAKI S COMBI

The indoor unit of YUTAKI S COMBI is conceived as a floor standing unit. It is prepared for heating operation as well as for domestic hot water production. For this purpose, it has built-in domestic hot water tank of 220L. In line with YUTAKI S units, it meets the needs of installations with low capacity requirements.

Furthermore, special YUTAKI S COMBI models have been designed with a specific solar tank for the use of solar panels.

Also, new models of YUTAKI S COMBI have been specially designed for the UK market that meet the requirements referred in the UK Building Regulations.

## YUTAKI S80

The YUTAKI S80 is a standalone indoor unit that generates hot water up to 80°C; the hottest water temperature in the domestic heating market using renewable energy.

The extra innovation in the YUTAKI S80 lies in that it has two compressors, working in a smart cascade system, with two refrigerant cycles (R-410A and R-134a). To maximize seasonal efficiency, the second refrigerant cycle is only operated as a booster, when very high water temperature is required - the rest of the time, only one cycle is used.

The YUTAKI S80 is ideal for existing properties, in particular older installations where high water supply temperatures may be required to keep the house warm – as well as for new buildings. It is designed for the replacement of boilers, offering heating and sanitary hot water all year round, without boiler back-up.

Two different models have been designed for different purposes: one model for space heating only and the other one for space heating as well as for DHW operation. For DHW operation (optional), Hitachi offers two specific YUTAKI S80 DHW tanks (DHWS200S-2.7H2E(-W) and DHWS260S-2.7H2E(-W)) which may be placed on top of the indoor unit or besides it, as an integrated unit to provide high-temperature domestic hot water enjoying the benefits of the high efficiency of the heat pump.

### ◆ Monobloc system - YUTAKI M (R410A) / YUTAKI M (R32)

YUTAKI M (R410A) / YUTAKI M (R32) is a monobloc air to water heat pump system, composed by only an special outdoor unit, which carries out the function of an air-to-water heat pump. This results in an excellent solution when installation space available is limited.

YUTAKI M (R410A) / YUTAKI M (R32) is designed to be installed outdoors, in any kind of dwelling (house, apartment, villa,...), whether in a new construction or in an existing building. Installation work is greatly simplified thanks to the lack of refrigerant piping connections.

## 1.1.2.2 Summary of operations

### Space heating

YUTAKI units are factory-supplied ready for space heating operation. Different heating installation configurations can be selected providing a comfortable atmosphere all year long even in the coldest climates:

- **Mono-valent system**

The air to water heat pump is sized to provide 100% of the heating requirements on the coldest day the year.

- **Mono-energy system**

This is the most popular configuration. The air to water heat pump is sized to provide 80% of the heating requirements on the coldest days of the year. An auxiliary electric heater is used to provide the additional heating required on cold days. This option usually results in an ideal balance between installation costs and future energy consumption, as proven by its popularity in colder climates, such as Sweden and Norway.

- **Alternating Bi-valent system**

For installations with an existing heating system by boiler, and when is needed to heat the supplied water temperature to the circuit up to high temperatures (80°C), the boiler can be configured to alternate with the air to water heat pump.

Selecting the different configuration types it is possible to adapt the system to all customer requirements, providing a wide application range from the simplest configuration to complete configuration: Radiator, heating floor or both (2nd temperature area).

**Domestic hot water production**

YUTAKI models also give the option of domestic hot water production, allowing the user to benefit from the heat pump's high efficiency and achieve domestic hot water.

This is made possible by a domestic hot water tank. In case of YUTAKI S COMBI, the domestic hot water tank is built in the indoor unit. In YUTAKI S80, a specific DHW tank is designed for combination with the indoor unit. For YUTAKI S and YUTAKI M (R410A) / YUTAKI M (R32), the Hitachi accessory "DHWT-(200/300)S-3.0H2E" can be used for the production of DHW.

An electric heater is incorporated inside the tank in order to allow an immediate heating of the domestic hot water in accordance with the user's needs.

**Space cooling**

YUTAKI units can also be operated in cooling operation. The dedicated "Cooling kit" accessory has been designed for this purpose. Combining the heating only models with these cooling kits, the reversible models become available. In this case, combination with fan-coils, refreshing floor or both (2nd temperature area) can be applied.

**Combination with solar panels**

YUTAKI system can be combined with solar panels. The solar combination enables to heat up the DHW by means of the sun. The solar combination is designed to transfer the heat from the solar panels (sun radiation) to the heat exchanger of DHW tank.

In case of YUTAKI S COMBI, a specific model with integrated tank for solar combination has been designed, as explained before.

**Swimming pool water heating operation**

For summer session period, YUTAKI system can be used to heat the water temperature of swimming pools up to a value between 24 and 33°C.

---

## 1.2 APPLIED SYMBOLS

During normal heat pump system design work or unit installation, greater attention must be paid in certain situations requiring particular care in order to avoid damage the unit, the installation or the building or property.

Situations endangering the safety of those in the surrounding area or to the unit itself are clearly indicated in this manual.

Special symbols are used to clearly identify these situations.

Pay close attention to these symbols and to the messages following them, as your safety and that of others depends on it.

### DANGER

- *The text following this symbol contains information and instructions relating directly to your safety in addition to hazards or unsafe practices which could result in severe personal injuries or death.*
- *Not taking these instructions into account could lead to serious, very serious or even fatal injuries to you and others in the proximities of the unit.*

In the texts following the danger symbol you can also find information on safety procedures during unit installation.

### CAUTION

- *The text following this symbol contains information and instructions relating directly to your safety, in addition to hazards or unsafe practices which could result in minor personal injuries or product or property damage.*
- *Not taking these instructions into account could lead to minor injuries to you and others.*
- *Not taking these instructions into account could lead to unit damage.*

In the texts following the caution symbol you can also find information on safety procedures during unit installation.

### NOTE

- *The text following this symbol contains information or instructions that may be of use or that requires a more thorough explanation.*
- *Instructions regarding inspections to be made on unit parts or systems may also be included.*

### 1.3 PRODUCT GUIDE

#### 1.3.1 Classification of the units

##### 1.3.1.1 Split system - Outdoor unit

Unit type: Outdoor unit (Split air system)

	Position-separating hyphen (fixed)		Compressor power (HP): 2, 2.5, 3, 4, 5, 6, 8, 10.		For water combination		Heat pump		V: Single phase unit (1~ 230V 50Hz) —: Three phase unit (3N~ 400V 50Hz)		N: R410A refrigerant R: R32 refrigerant		Premium series		1: series		E: Made in Europe —: Made in Japan	
RAS	-	X	W	H	(V)	(X)	P	(1)	(E)									

##### 1.3.1.2 Split system - Indoor unit

#### ◆ YUTAKI S

Unit type: YUTAKI S (Split system - Single water module (Indoor unit) - Medium/Low temperature)

	Position-separating hyphen (fixed)		Compressor power of the combined outdoor unit (HP): 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0.		N: R410A refrigerant R: R32 refrigerant		1: series		Made in Europe	
RWM	-	X.X	(X)	1	E					

#### ◆ YUTAKI S COMBI

Unit type: YUTAKI S COMBI (Split system - Dual water module (Indoor unit + Domestic hot water tank) - Medium/Low temperature)

	Position-separating hyphen (fixed)		Compressor power of the combined outdoor unit (HP): 2.0, 2.5, 3.0, 4.0, 5.0, 6.0.		N: R410A refrigerant R: R32 refrigerant		Water-to-water DHW heat exchanger		1: series		Made in Europe		Position-separating hyphen (fixed)		Tank model: 220 L		Tank material: Stainless steel		-K: Model for UK market	
RWD	-	X.X	(X)	W	1	E	-	220	S	(-K)										

## ◆ YUTAKI S80

## Indoor unit

Unit type: YUTAKI S80 (Split system - Single water module (Indoor unit) - High & Very High temperature)							
Position-separating hyphen (fixed)							
Compressor power (HP): 4.0, 5.0, 6.0.							
V: Single phase unit (1~ 230V 50Hz) —: Three phase unit (3N~ 400V 50Hz)							
R-410A refrigerant							
R-134a refrigerant							
—: Type1: Version for operation in DHW with a remote tank W: Type2: Version for operation with Hitachi DHW tank							
Made in Europe							
RWH	-	X.X	(V)	N	F	(W)	E

## Domestic hot water tank (For combination with YUTAKI S80 indoor unit standalone version)

Unit type: YUTAKI S80 domestic hot water tank							
Model: 200/260 L							
Tank material: Stainless steel							
Position-separating hyphen (fixed)							
Electric heater of 2.7 kW							
Series							
Made in Europe							
-W: Without LCD Controller (sold separately as accessory)							
DHWS	XXX	S	-	2.7H	2	E	(-W)

## 1.3.1.3 Monobloc system

## ◆ YUTAKI M (R32)

Unit type: YUTAKI M (R32) (Monobloc system - Single water module (Outdoor unit) - Low/Medium temperature)							
Position-separating hyphen (fixed)							
Compressor power (HP): 2.0, 3.0							
V: Single phase unit (1~ 230V 50Hz)							
R32 refrigerant							
Made in Europe							
RASM	-	X.X	V	R	E		

## ◆ YUTAKI M (R410A)

Unit type: YUTAKI M (R410A) (Monobloc system - Single water module (Outdoor unit) - Low/Medium temperature)							
Position-separating hyphen (fixed)							
Compressor power (HP): 4.0, 5.0, 6.0.							
V: Single phase unit (1~ 230V 50Hz) —: Three phase unit (3N~ 400V 50Hz)							
R410 refrigerant							
Made in Europe							
RASM	-	X.X	(V)	N	E		

### 1.3.1.4 Complementary system

#### ◆ YUTAKI CASCADE CONTROLLER

Air to water				
Position-separating hyphen (fixed)				
YUTAKI CASCADE CONTROLLER				
Position-separating hyphen (fixed)				
ATW	-	YCC	-	Language pack (01-03)

### 1.3.2 Product list

#### 1.3.2.1 Split system - R32 Outdoor unit

1~ 230V 50Hz
RAS-2WHVRP1
RAS-2.5WHVRP1
RAS-3WHVRP1


#### 1.3.2.2 Split system - R410A Outdoor unit

1~ 230V 50Hz	3N~ 400V 50Hz
RAS-4WHVNPE	RAS-4WHNPE
RAS-5WHVNPE	RAS-5WHNPE
RAS-6WHVNPE	RAS-6WHNPE
-	RAS-8WHNPE
-	RAS-10WHNPE
	

**1.3.2.3 Split system - Indoor unit**

**◆ YUTAKI S**

				
1~ 230V 50Hz	3N~ 400V 50Hz	1~ 230V 50Hz	3N~ 400V 50Hz	
RWM-2.0R1E	RWM-2.0R1E	-	-	-
RWM-2.5R1E	RWM-2.5R1E	-	-	-
RWM-3.0R1E	RWM-3.0R1E	-	-	-
-	-	RWM-4.0N1E	RWM-4.0N1E	-
-	-	RWM-5.0N1E	RWM-5.0N1E	-
-	-	RWM-6.0N1E	RWM-6.0N1E	-
-	-	-	-	RWM-8.0N1E
-	-	-	-	RWM-10.0N1E





** NOTE**

Icons between brackets means possible extra operations to the factory-supplied operations. For cooling operation, refer to the Cooling kit accessory for YUTAKI S units.

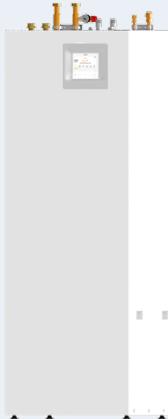
◆ YUTAKI S COMBI

**i** NOTE

Icons between brackets means possible extra operations to the factory-supplied operations. For cooling operation, refer to the Cooling kit accessory for YUTAKI S COMBI units.

**Standard model**

	
1~ 230V 50Hz	3N~ 400V 50Hz
RWD-2.0RW1E-220S	RWD-2.0RW1E-220S
RWD-2.5RW1E-220S	RWD-2.5RW1E-220S
RWD-3.0RW1E-220S	RWD-3.0RW1E-220S
RWD-4.0NW1E-220S	RWD-4.0NW1E-220S
RWD-5.0NW1E-220S	RWD-5.0NW1E-220S
RWD-6.0NW1E-220S	RWD-6.0NW1E-220S

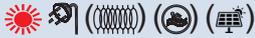


**Model for UK market**

	
1~ 230V 50Hz	3N~ 400V 50Hz
RWD-2.0RW1E-220S-K	RWD-2.0RW1E-220S-K
RWD-2.5RW1E-220S-K	RWD-2.5RW1E-220S-K
RWD-3.0RW1E-220S-K	RWD-3.0RW1E-220S-K
RWD-4.0NW1E-220S-K	RWD-4.0NW1E-220S-K
RWD-5.0NW1E-220S-K	RWD-5.0NW1E-220S-K
RWD-6.0NW1E-220S-K	RWD-6.0NW1E-220S-K



**YUTAKI S80****Indoor unit**

			
TYPE 1: Version for operation in DHW but with a remote tank (Tank cannot be plugged on top of the unit)		TYPE 2: Version for operation with Hitachi DHW tank (Tank can be plugged on top of the unit or next to it)	
1~ 230V 50Hz	3N~ 400V 50Hz	1~ 230V 50Hz	3N~ 400V 50Hz
RWH-4.0VNFE	RWH-4.0NFE	RWH-4.0VNFWE	RWH-4.0NFWE
RWH-5.0VNFE	RWH-5.0NFE	RWH-5.0VNFWE	RWH-5.0NFWE
RWH-6.0VNFE	RWH-6.0NFE	RWH-6.0VNFWE	RWH-6.0NFWE
			

**YUTAKI S80 domestic hot water tank**

	
1~ 230V 50Hz	
DHWS200S-2.7H2E(-W)	DHWS260S-2.7H2E(-W)
	

** NOTE**

- In "TYPE 1: Version for operation in DHW but with a remote tank", the required unit controller (PC-ARFH1E) has to be ordered as accessory.
- In "TYPE 2: Version for operation with Hitachi DHW tank", the domestic hot water tank of model DHWS200S-2.7H2E(-W) or DHWS260S-2.7H2E(-W) is required. The DHW tank has to be ordered separately. The unit controller (PC-ARFH1E) is factory supplied with DHWS200S-2.7H2E and DHWS260S-2.7H2E models (integrated in the front cover). The tank can be installed in 2 ways: on top of the indoor unit (integrated installation) or next to it. In this second case, the specific accessory kit installation (ATW-FWP-02, ordered as an accessory) is required.
- Icons between brackets mean possible extra operations to the factory-supplied operations.

**1.3.2.4 Monobloc system**

**◆ YUTAKI M (R32)**

	
1~ 230V 50Hz	
RASM-2VRE	
RASM-3VRE	
	

**i NOTE**

The unit controller has to be ordered as accessory (PC-ARFH1E).

**◆ YUTAKI M (R410A)**

			
1~ 230V 50Hz		3N~ 400V 50Hz	
RASM-4VNE		RASM-4NE	
RASM-5VNE		RASM-5NE	
RASM-6VNE		RASM-6NE	
			

**i NOTE**

The unit controller has to be ordered as accessory (PC-ARFH1E).

### 1.3.2.5 Complementary system

#### ◆ YUTAKI CASCADE CONTROLLER



---

## 2 GENERAL SAFETY NOTES

---

### 2.1 ADDITIONAL INFORMATION ABOUT SAFETY

#### DANGER

- **DO NOT CONNECT THE POWER SUPPLY TO THE INDOOR UNIT PRIOR TO FILLING THE SPACE HEATING CIRCUIT (AND DHW CIRCUIT IF IT WAS THE CASE) WITH WATER AND CHECKING WATER PRESSURE AND THE TOTAL ABSENCE OF ANY WATER LEAKAGE.**
- **Do not pour water over the indoor unit electrical parts. If the electrical components are in contact with water a serious electrical shock will take place.**
- **Do not touch or adjust the safety devices inside the air to water heat pump. If these devices are touched or adjusted, a serious accident can take place.**
- **Do not open the service cover or access inside the air to water heat pump without disconnecting the main power supply.**
- **In case of fire Turn OFF the main switch, put out the fire at once and contact your service contractor.**
- **It must ensure that the air to water heat pump cannot operate accidentally without water neither with air inside hydraulic system.**

#### CAUTION

- *Do not use any sprays such as insecticide, lacquer, hair spray or other flammable gases within approximately one meter from the system.*
- *If installation circuit breaker or the unit fuse is often activated, stop the system and contact your service contractor.*
- *Do not make service or inspections tasks by yourself. This work must be performed by a qualified service person.*
- *This appliance must be used only by adult and capable people, having received the technical information or instructions to handle this appliance properly and safely.*
- *Children should be supervised to ensure that they do not play with the appliance.*
- *Do not let any foreign body into the water inlet and outlet piping of the air to water heat pump.*

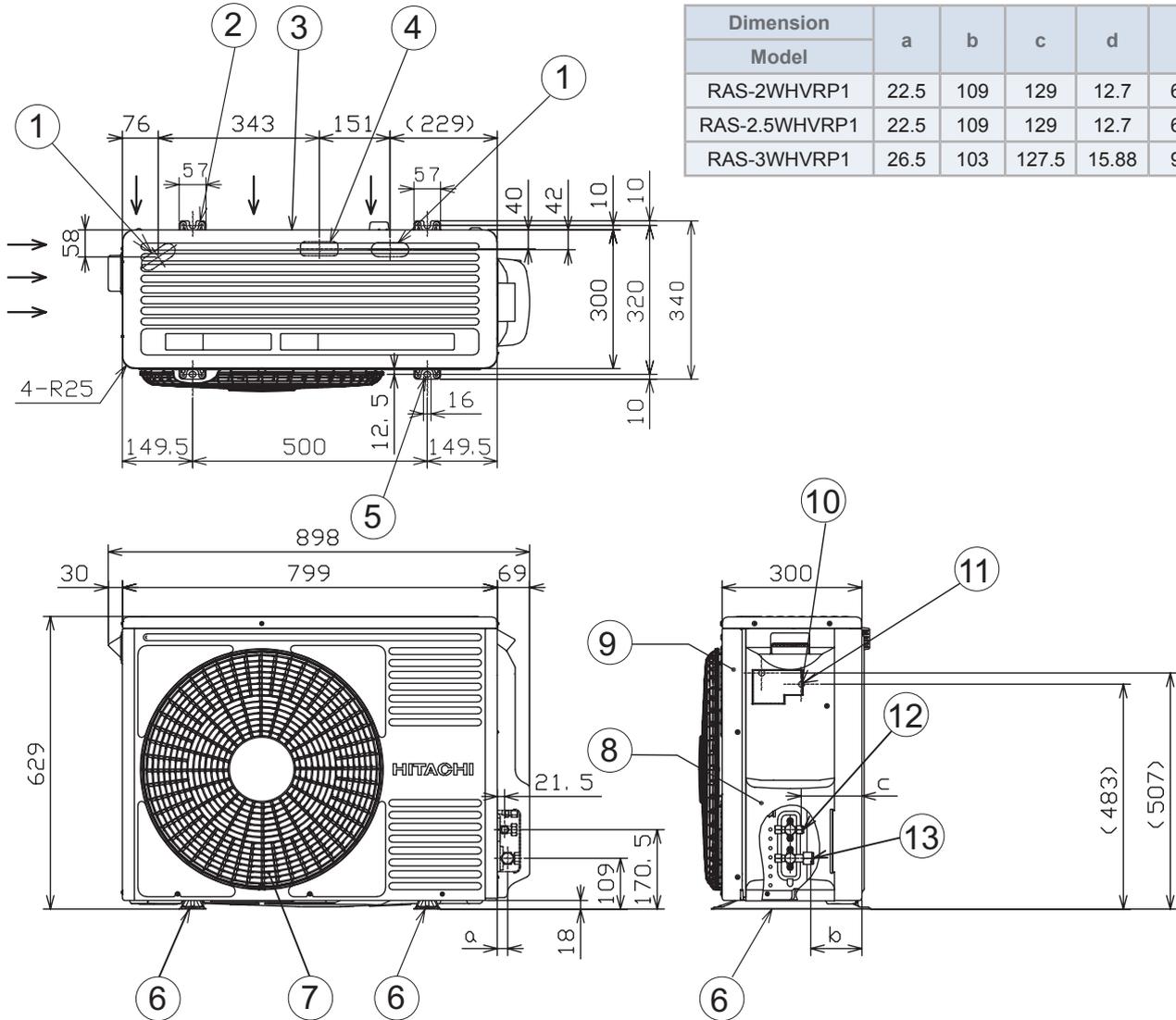
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### 2.2 IMPORTANT NOTICE

- Verify, in accordance with the manuals which appear in the outdoor and indoor units, that all the information required for the correct installation of the system is included. If this is not the case, contact your distributor.
- Hitachi pursues a policy of continuous improvement in product design and performance. The right is therefore reserved to vary specifications without notice.
- Hitachi cannot anticipate every possible circumstance that might involve a potential hazard.
- This air to water heat pump has been designed for standard water heating for human beings only. Do not use this for other purposes such as for drying clothes, heating foods or for any other heating process (except swimming pool).
- No part of this manual may be reproduced without written permission.
- If you have any questions, contact your service contractor of Hitachi.
- Check and make sure that the explanations of each part of this manual correspond to your air to water heat pump model.
- Refer to the models codification to confirm the main characteristics of your system.
- Signal words (NOTE, DANGER and CAUTION) are used to identify levels of hazard seriousness. Definitions for identifying hazard levels are provided in initial pages of this document.
- The operation modes of these units are controlled by the unit controller.
- This manual should be considered as a permanent part of the air to water heat pump. It gives a common description of and information for this air to water heat pump which you operate as well as for other models.
- Keep the water temperature of the system above the freezing temperature.

### 3 NAME OF PARTS AND DIMENSIONAL DATA

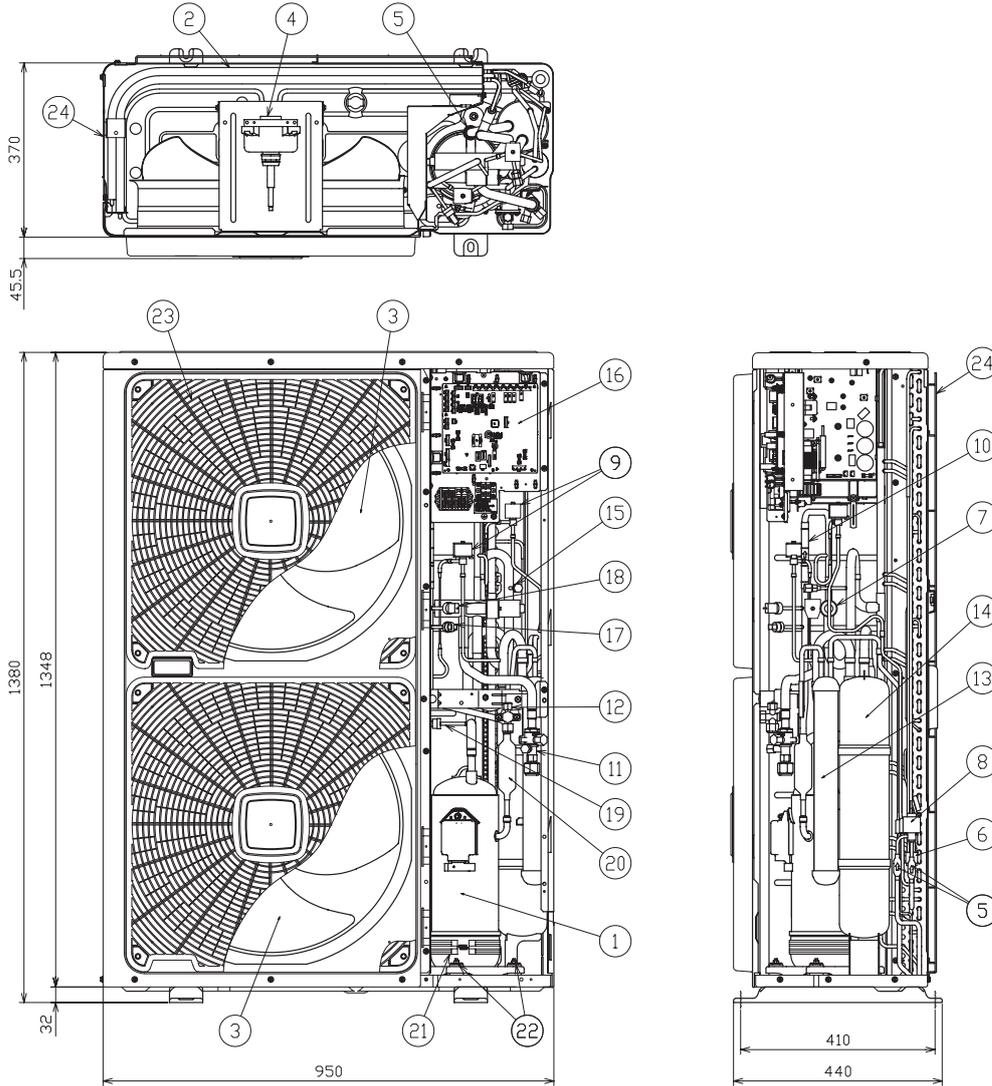
#### 3.1 RAS-2WHVRP1 / RAS-2.5WHVRP1 / RAS-3WHVRP1



N°	Description	Remarks
1	Punched drain hole	30x80 long hole
2	Attachment hole for M10 anchor bolt	2-U cut hole
3	Air suction inlet	—
4	Punched drain hole	For drain pipe
5	Attachment hole for M10 anchor bolt	2-Long hole
6	Foot part	—
7	Air discharge outlet	—
8	Pipe cover	—
9	Service cover	—
10	Terminal board for power supply and transmission Terminal screw of power supply wire (M5) Terminal screw of transmission wire (M4)	—
11	Terminal screw of earth wire (M5)	—
12	Connection of refrigerant liquid pipe	With flare nut for Øe copper pipe
13	Connection of refrigerant gas pipe	With flare nut for Ød copper pipe



3.2 RAS-(4-10)WH(V)NPE

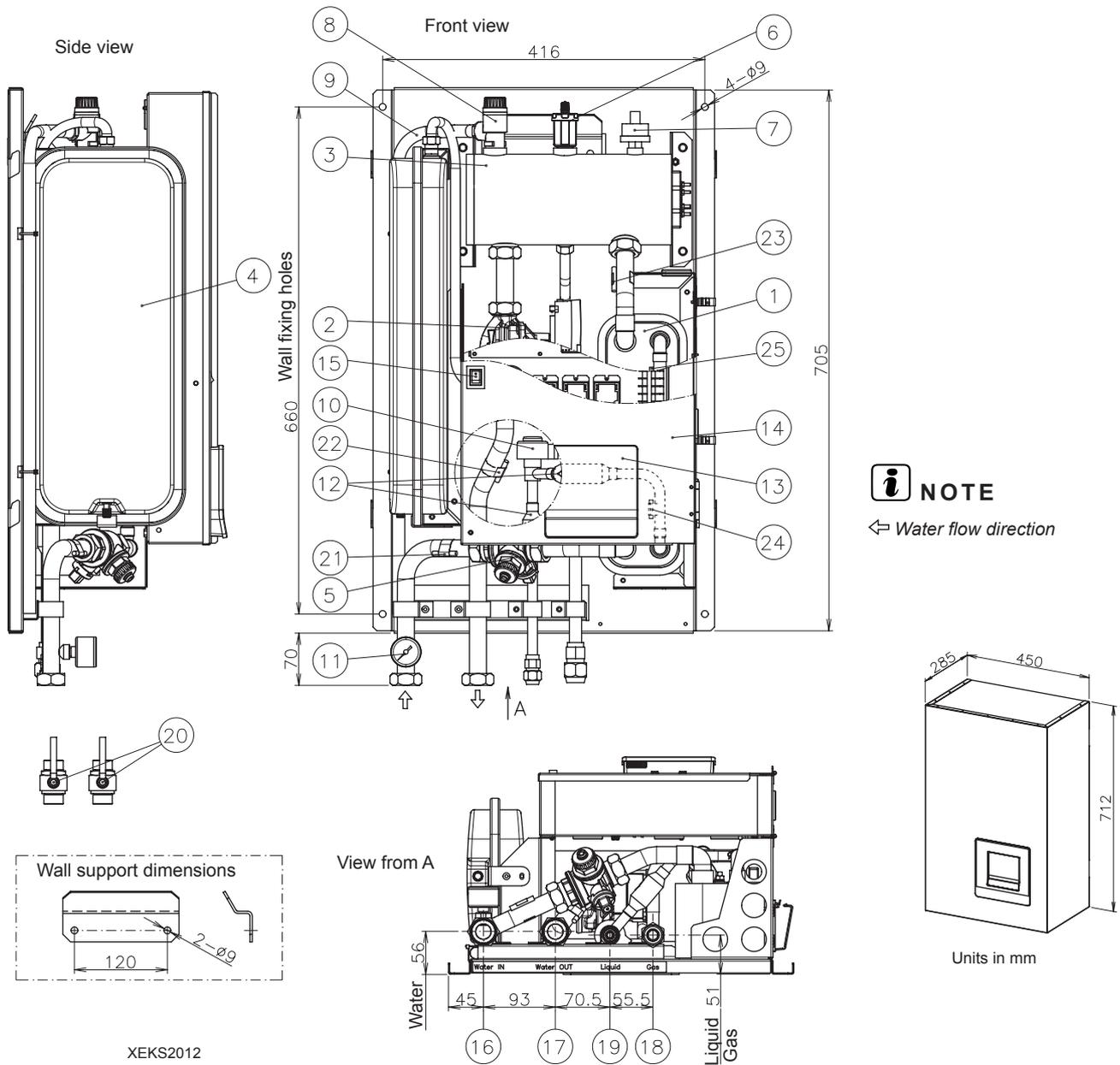


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N°	Part Name
1	Compressor
2	Heat exchanger
3	Propeller fan (2pcs.)
4	Fan motor (2pcs.)
5	Strainer
6	Distributor
7	Reversing Valve
8	Micro-computer control expansion valve
9	Solenoid valve
10	Check valve
11	Stop valve for gas line
12	Stop valve for liquid line

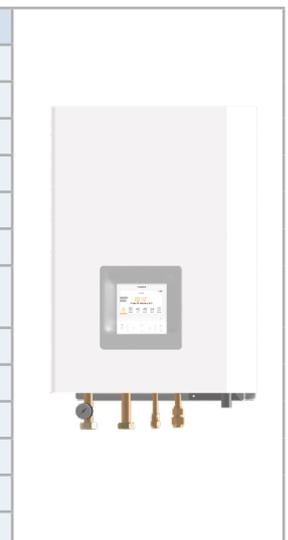
N°	Part Name
13	Receiver
14	Accumulator
15	Check joint
16	Electrical box
17	High pressure switch for protection
18	Sensor for refrigerant pressure
19	Pressure switch for control
20	Silencer
21	Crankcase heater
22	Vibration absorbing rubber (4pcs.)
23	Air outlet
24	Air inlet

3.3 RWM-(2.0-3.0)R1E

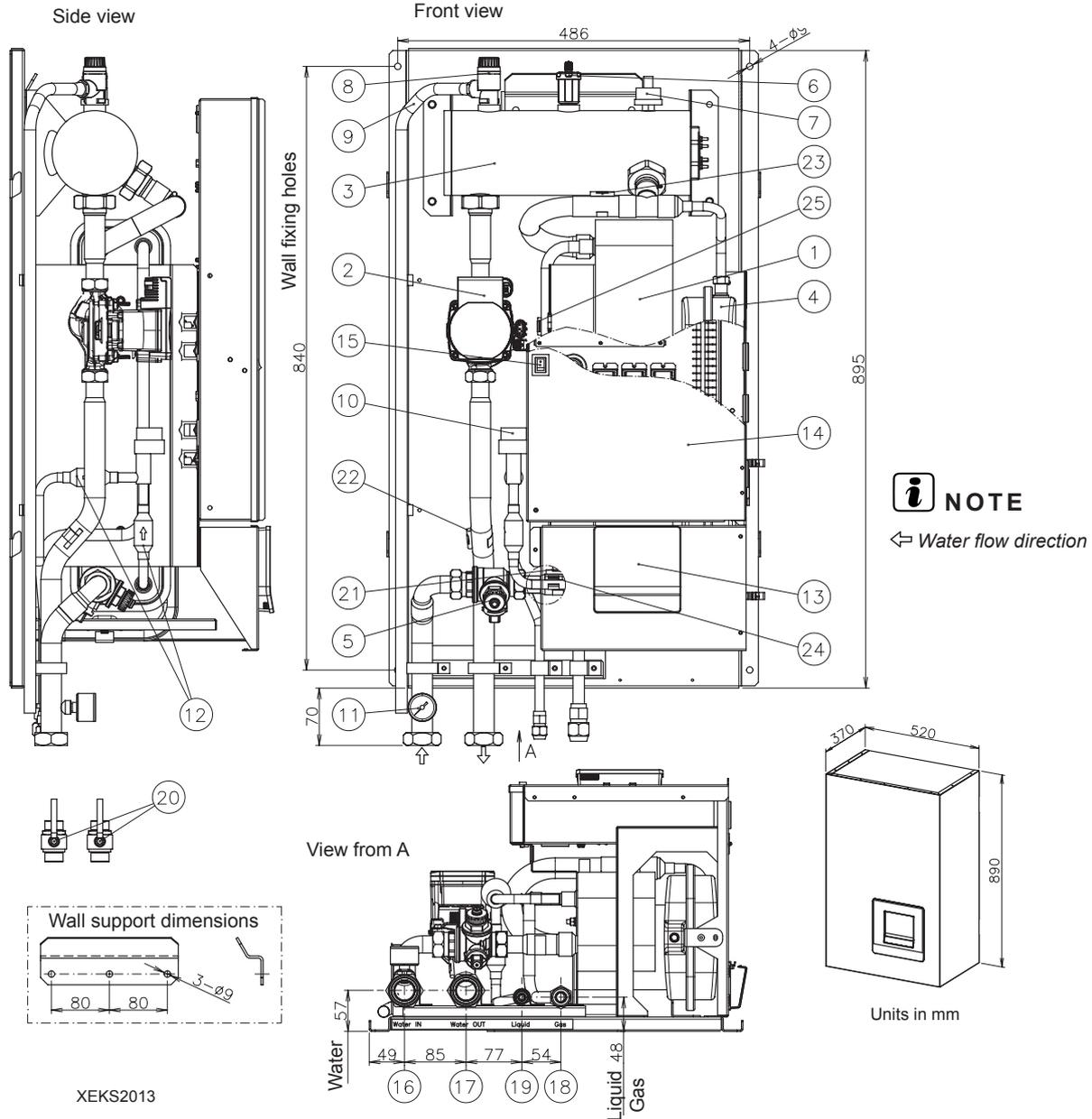


XEKS2012

N°	Part name	N°	Part name
1	Plate heat exchanger	13	Unit controller
2	Water pump	14	Electrical box
3	Electric water heater	15	Switch for DHW emergency operation
4	Expansion vessel 6L	16	Water inlet pipe connection - G 1" Female
5	Water strainer	17	Water outlet pipe connection - G 1" Female
6	Air purger	18	Refrigerant gas pipe connection - Ø15.88 (5/8")
7	Water pressure sensor	19	Refrigerant liquid pipe connection 2.0HP: Ø6.35 (1/4"); 2.5/3.0HP: Ø9.52 (3/8")
8	Safety valve	20	Shut-down valve (Factory-supplied accessory)
9	Drain pipe for safety valve	21	Thermistor (Water inlet pipe)
10	Expansion valve	22	Thermistor (Water outlet pipe)
11	Manometer	23	Thermistor (Water outlet PHEX)
12	Refrigerant strainer (x2)	24	Thermistor (Liquid refrigerant pipe)
		25	Thermistor (Gas refrigerant pipe)



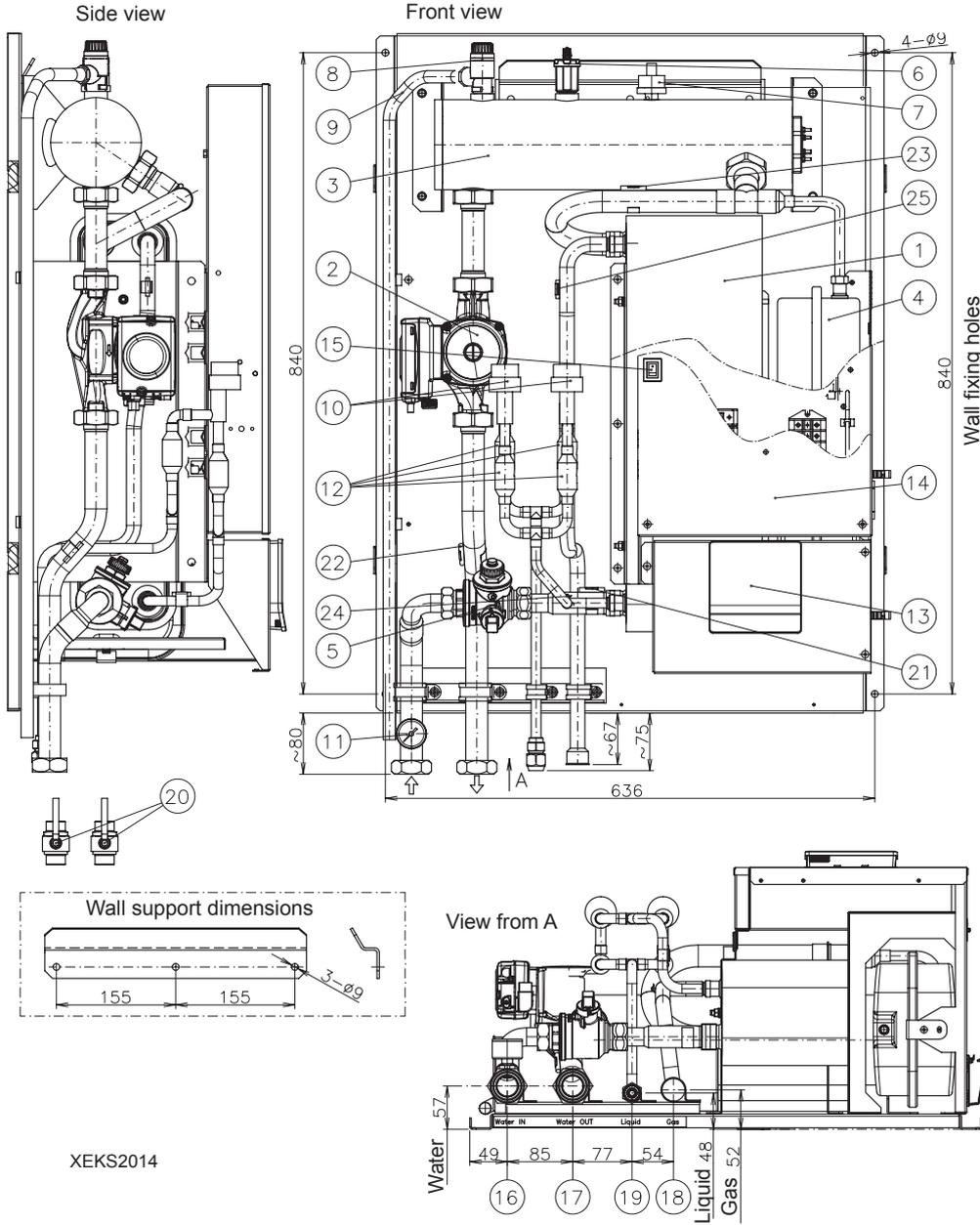
3.4 RWM-(4.0-6.0)N1E



N°	Part name	N°	Part name
1	Plate heat exchanger	13	Unit controller
2	Water pump	14	Electrical box
3	Electric water heater	15	Switch for DHW emergency operation
4	Expansion vessel 6L	16	Water inlet pipe connection - G 1 1/4" female
5	Water strainer	17	Water outlet pipe connection - G 1 1/4" female
6	Air purger	18	Refrigerant gas pipe connection - Ø 15.88 (5/8")
7	Water pressure sensor	19	Refrigerant liquid pipe connection - Ø 9.52 (3/8")
8	Safety valve	20	Shut-down valve (Factory supplied accessory)
9	Drain pipe for safety valve	21	Thermistor (Water inlet pipe)
10	Expansion valve	22	Thermistor (Water outlet pipe)
11	Manometer	23	Thermistor (Water outlet PHEX)
12	Refrigerant strainer (x2)	24	Thermistor (Liquid refrigerant pipe)
		25	Thermistor (Gas refrigerant pipe)

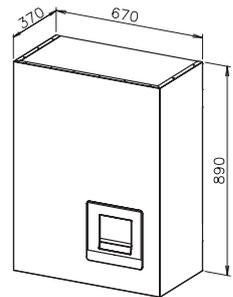


3.5 RWM-(8.0/10.0)N1E



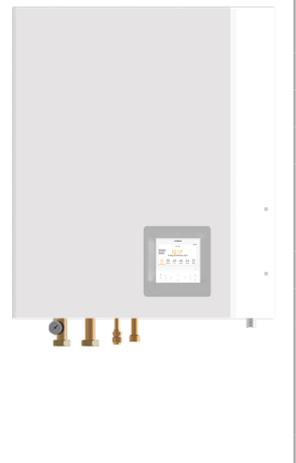
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**NOTE**  
 ← Water flow direction

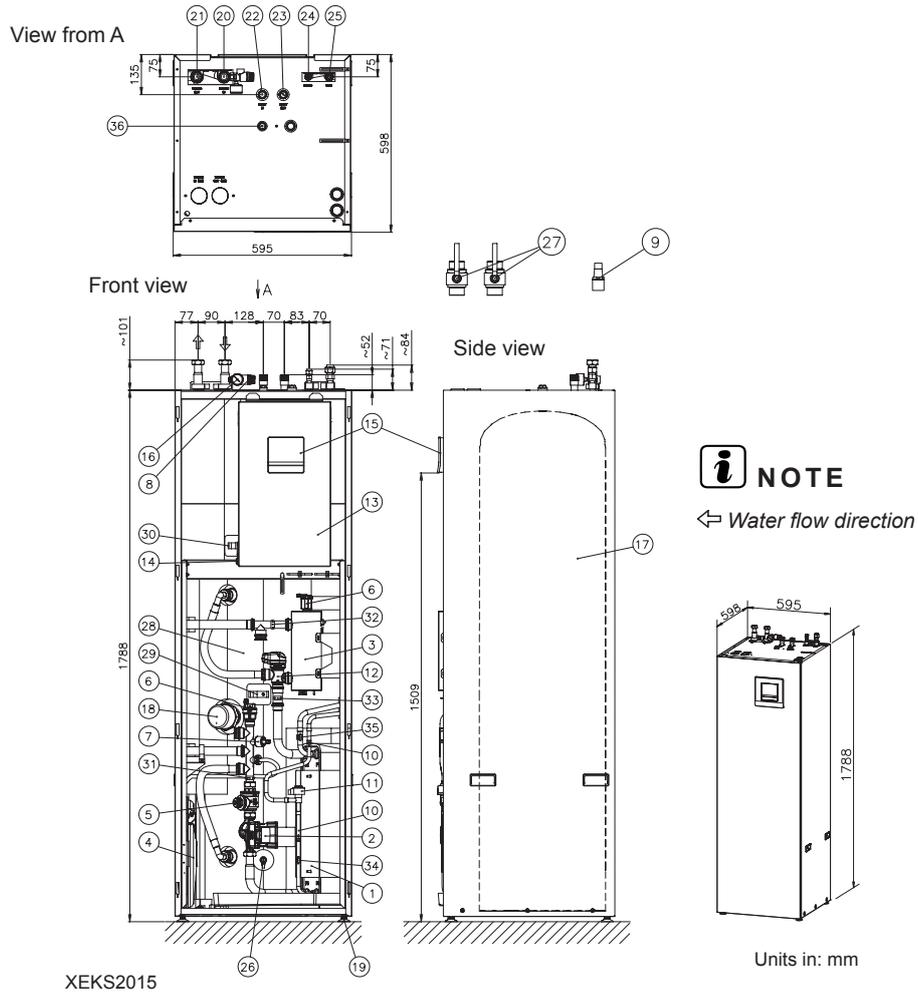


Units in mm

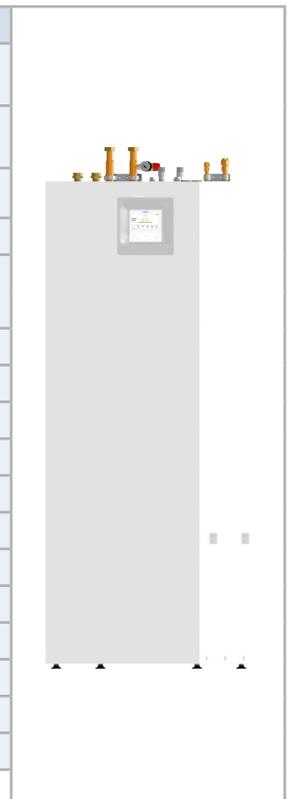
N°	Part name	N°	Part name
1	Plate heat exchanger	13	Unit controller
2	Water pump	14	Electrical box
3	Electric water heater	15	Switch for DHW emergency operation
4	Expansion vessel 10L	16	Water inlet pipe connection - G 1 1/4" Female
5	Water strainer	17	Water outlet pipe connection - G 1 1/4" Female
6	Air purger	18	Refrigerant gas pipe connection - Ø25.4 (1")
7	Water pressure sensor	19	Refrigerant liquid pipe connection 8HP: Ø9.52 (3/8") 10HP: Ø12.7 (1/2")
8	Safety valve	20	Shut-down valve (factory-supplied accessory)
9	Drain pipe for safety valve	21	Thermistor (Water inlet pipe)
10	Expansion valve (x2)	22	Thermistor (Water outlet pipe)
11	Manometer	23	Thermistor (Water outlet PHEX)
12	Refrigerant strainer (x4)	24	Thermistor (Liquid refrigerant pipe)
		25	Thermistor (Gas refrigerant pipe)



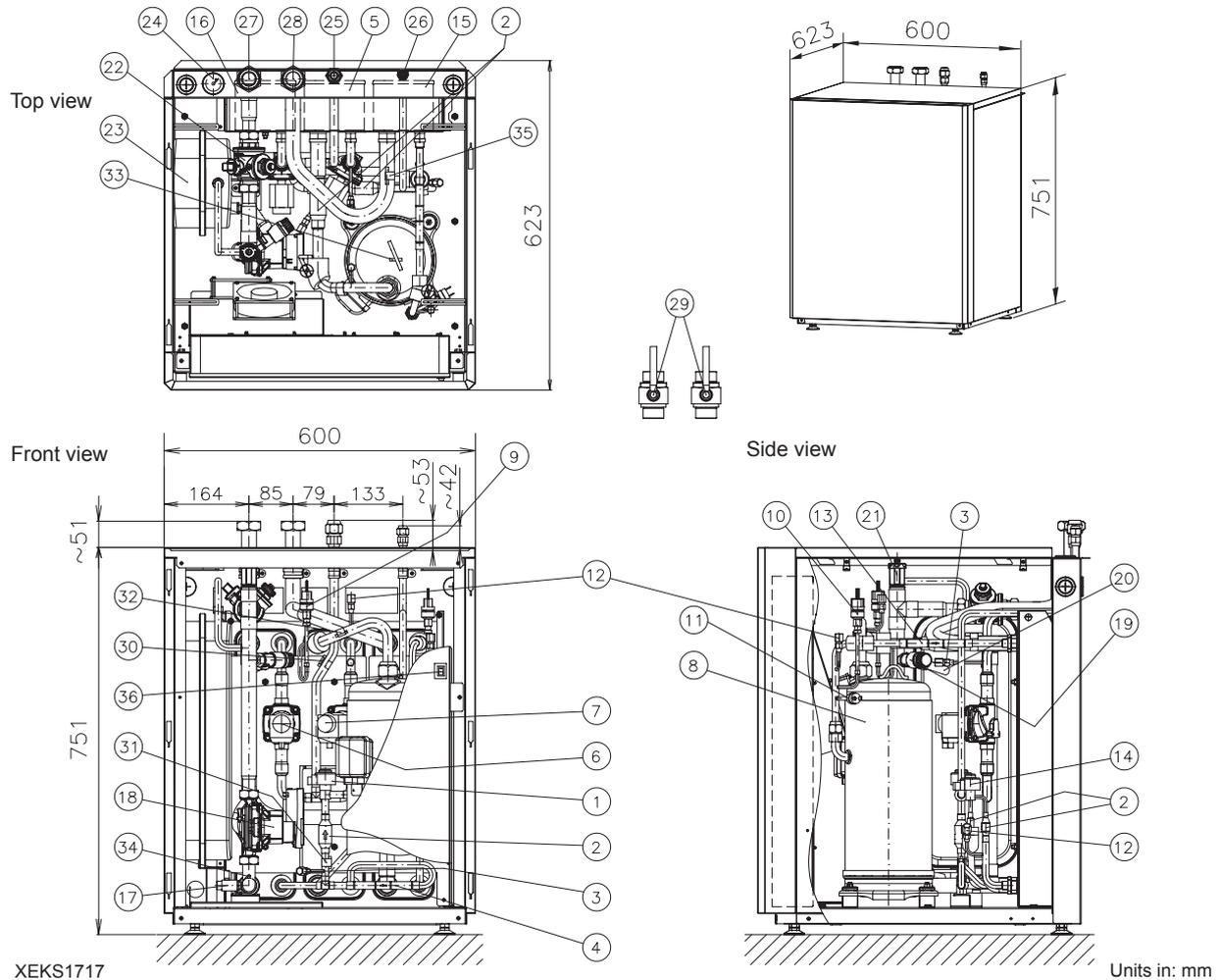
3.6 RWD-(2.0-6.0)(N/R)W1E-220S(-K)



N°	Part name	N°	Part name
1	Plate heat exchanger	20	Water inlet pipe connection 2.0-6.0HP: G 1" female
2	Water pump	21	Water outlet pipe connection 2.0-6.0HP: G 1" female
3	Electric water heater	22	DHW inlet pipe connection - G 3/4" male
4	Expansion vessel 6L	23	DHW outlet pipe connection - G 3/4" male
5	Water strainer	24	Refrigerant liquid pipe connection 2.0HP: Ø 6.35 (1/4") / 2.5~6HP: Ø9.52 (3/8")
6	Air purger (x2)		
7	Water pressure sensor	25	Refrigerant gas pipe connection - Ø15.88 (5/8")
8	Safety valve	26	Drain port (For DHW) - G 3/8"
9	Drain pipe for safety valve	27	Shutdown valve (Factory supplied accessory)
10	Refrigerant strainer (x2)	28	Tank insulation
11	Expansion valve	29	DHW thermistor 1
12	3-way valve (for space heating and DHW)	30	DHW thermistor 2
13	Electrical box	31	Water inlet thermistor
14	Switch for DHW emergency operation	32	Water outlet thermistor
15	Unit controller	33	Water outlet PHEX thermistor
16	Manometer	34	Refrigerant liquid pipe thermistor
17	DHW tank (220L)	35	Refrigerant gas pipe thermistor
18	DHW tank heater+thermostat	36	Pressure and Temperature relief valve
19	Mounting foot (x4)		



3.7 RWH-(4.0-6.0)(V)NFE

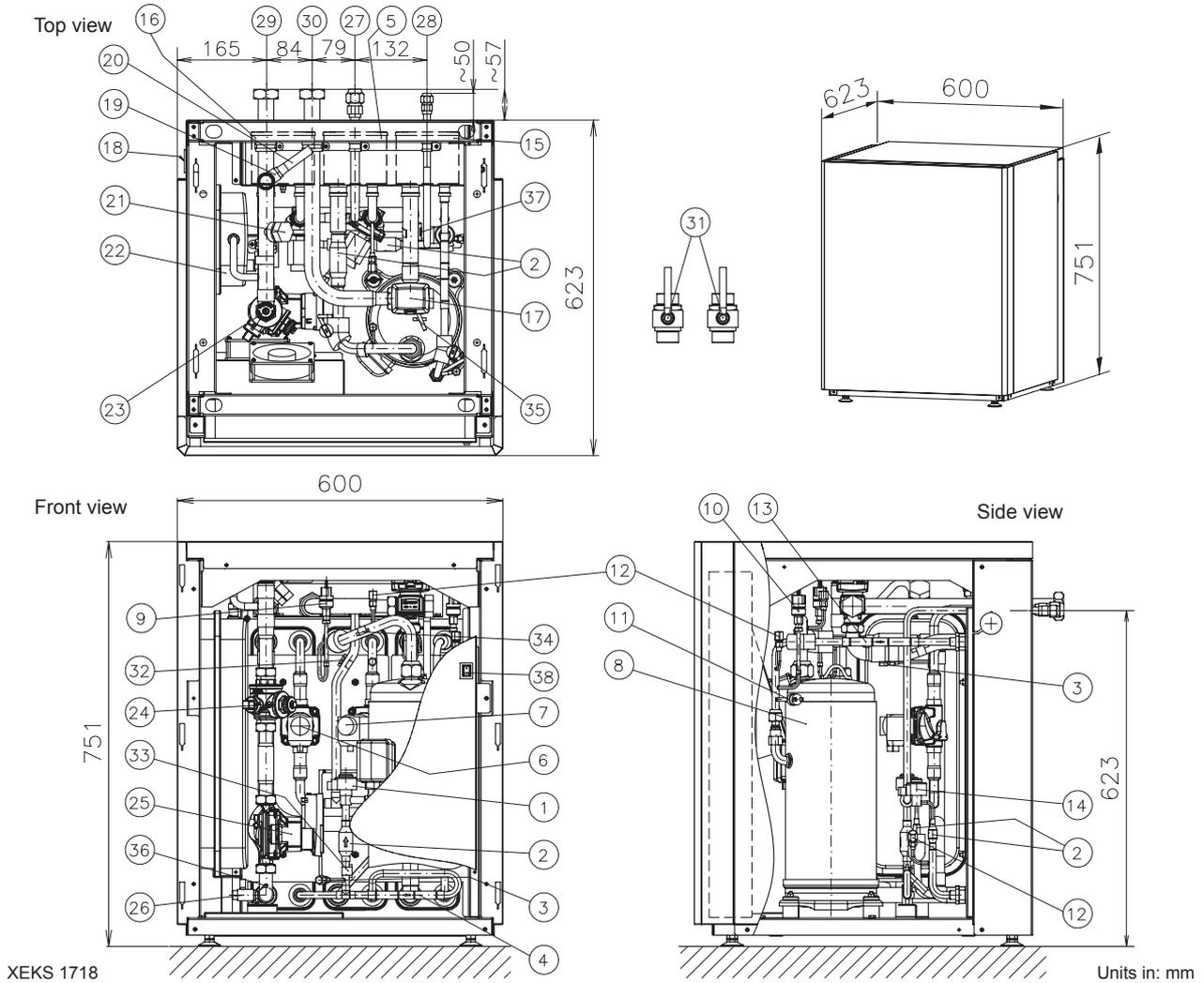


Units in: mm

N°	Part name	N°	Part name
1	Electronic expansion valve (R410A)	19	Safety valve
2	Refrigerant strainer (x2)	20	Drain pipe
3	Check joint (R410A)	21	Air purger
4	Check valve (R410A)	22	Water strainer
5	Plate heat exchanger (R410A-R134a)	23	Expansion vessel 12L
6	Solenoid valve (1 cycle)	24	Manometer
7	Solenoid valve (2 cycles)	25	Refrigerant gas pipe connection- $\varnothing$ 15.88 (5/8")
8	Compressor	26	Refrigerant liquid pipe connection - $\varnothing$ 9.52 (3/8")
9	Low pressure sensor (Ps)	27	Water inlet pipe connection - G 1 1/4" female
10	High pressure sensor (Pd)	28	Water outlet pipe connection - G 1 1/4" female
11	High pressure switch (PSH)	29	Shutdown valve (Factory supplied)
12	Check joint (R134a)	30	Refrigerant gas pipe thermistor
13	Check valve (R134a)	31	Refrigerant liquid pipe thermistor
14	Electronic expansion valve (R134a)	32	Compressor suction thermistor
15	Plate heat exchanger (R134a-H2O)	33	Compressor discharge thermistor
16	Plate heat exchanger (R410A-H2O)	34	Water inlet thermistor
17	Water pressure port	35	Water outlet thermistor
18	Water pump	36	Switch for DHW "emergency" operation



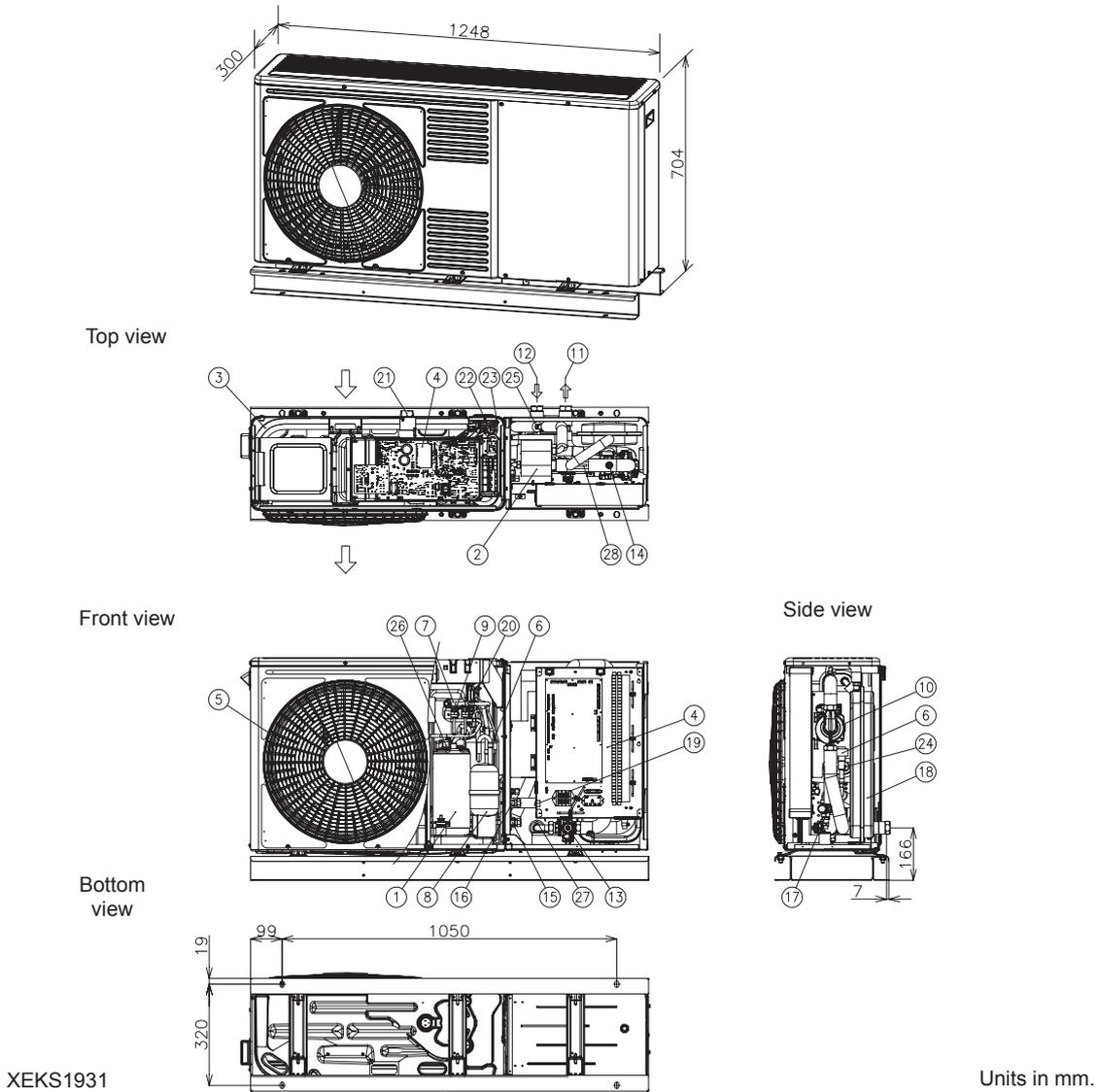
3.8 RWH-(4.0-6.0)(V)NFWE



N°	Part name	N°	Part name
1	Electronic expansion valve (R410A)	20	Drain pipe
2	Refrigerant strainer (x2)	21	Connection for DHW tank outlet
3	Check joint (R410A)	22	Expansion vessel 12L
4	Check valve (R410A)	23	Air purger
5	Plate heat exchanger (R410A-R134a)	24	Water strainer
6	Solenoid valve (1 cycle)	25	Water pump
7	Solenoid valve (2 cycles)	26	Water pressure port
8	Compressor	27	Refrigerant gas pipe connection - $\varnothing 15.88$ (5/8")
9	Low pressure sensor (Ps)	28	Refrigerant liquid pipe connection - $\varnothing 9.52$ (3/8")
10	High pressure sensor (Pd)	29	Water inlet pipe connection - G 1 1/4" female
11	High pressure switch (PSH)	30	Water outlet pipe connection - G 1 1/4" female
12	Check joint (R134a)	31	Shutdown valve (Factory supplied)
13	Check valve (R134a)	32	Refrigerant gas pipe thermistor
14	Electronic expansion valve (R134a)	33	Refrigerant liquid pipe thermistor
15	Plate heat exchanger (R134a-H2O)	34	Compressor suction thermistor
16	Plate heat exchanger (R410A-H2O)	35	Compressor discharge thermistor
17	3 way valve	36	Water inlet thermistor
18	Manometer	37	Water outlet thermistor
19	Safety valve	38	Switch for DHW "emergency" operation



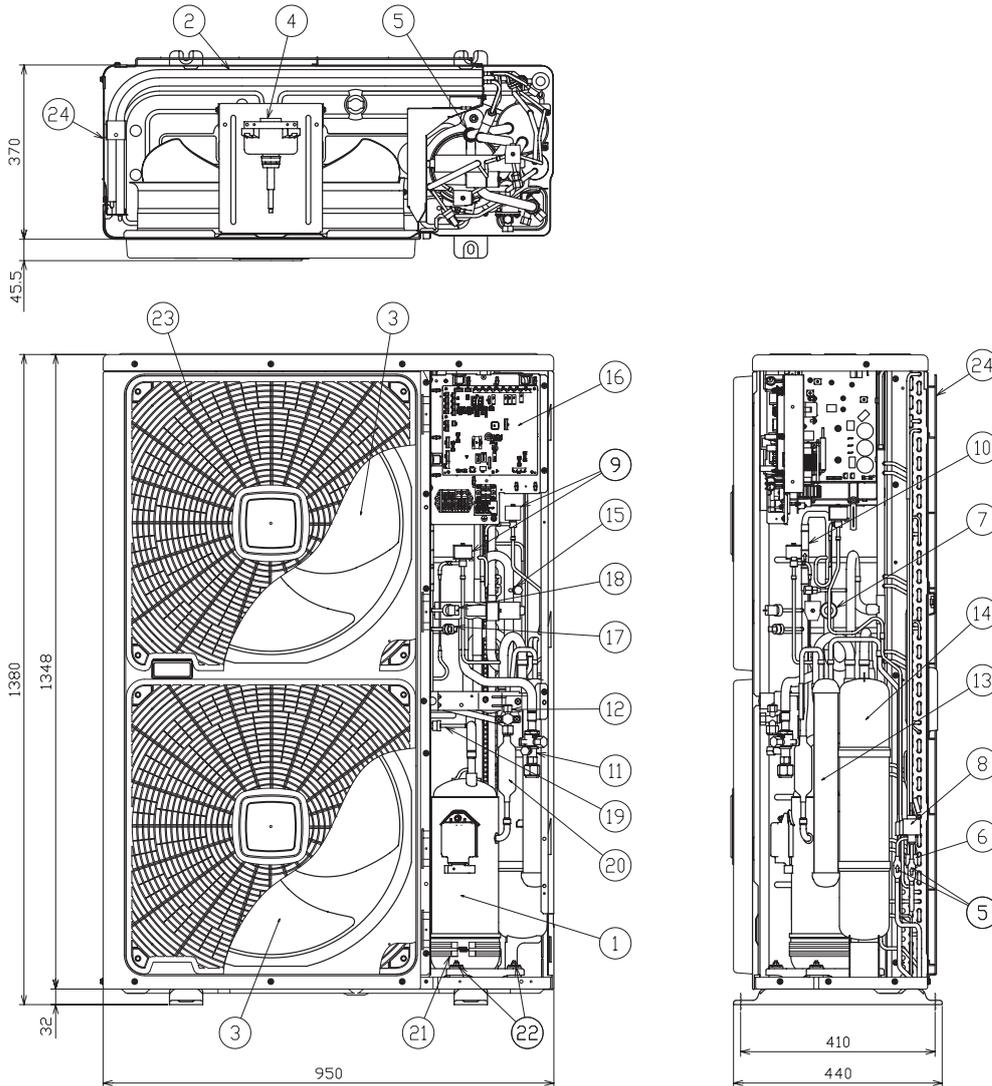
3.9 RASM-(2/3)VRE



N°	Part name	N°	Part name
1	Compressor	15	Stop valve for gas line - Ø15.88 (5/8")
2	Water side heat exchanger	16	Stop valve for liquid line - 2HP: Ø6,35(1/4") - 3HP: Ø9.52 (3/8")
3	Air side heat exchanger	17	Safety valve
4	Electrical box	18	Expansion vessel 6L
5	Fan (x1)	19	Switch for DHW "emergency" operation
6	Expansion valve (x2)	20	Pressure switch for control (Psc)
7	Reversing valve	21	Ambient thermistor
8	Accumulator	22	Liquid temperature thermistor
9	High pressure switch (HPS)	23	Liquid temperature thermistor
10	Water pump	24	Refrigerant liquid pipe thermistor
11	Water outlet - G 1"	25	Refrigerant gas pipe thermistor
12	Water inlet - G 1"	26	Compressor discharge thermistor
13	Water strainer	27	Water inlet thermistor
14	Air Purger	28	Water outlet thermistor



3.10 RASM-(4-6)(V)RE



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N°	Part Name
1	Compressor
2	Heat exchanger
3	Propeller fan (2pcs.)
4	Fan motor (2pcs.)
5	Strainer
6	Distributor
7	Reversing Valve
8	Micro-computer control expansion valve
9	Solenoid valve
10	Check valve
11	Stop valve for gas line
12	Stop valve for liquid line

N°	Part Name
13	Receiver
14	Accumulator
15	Check joint
16	Electrical box
17	High pressure switch for protection
18	Sensor for refrigerant pressure
19	Pressure switch for control
20	Silencer
21	Crankcase heater
22	Vibration absorbing rubber (4pcs.)
23	Air outlet
24	Air inlet

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## 4 ELECTRICAL DATA

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### 4.1 CONSIDERATIONS

Key words:

- U: Power supply.
- PH: Phase.
- IPT: Total input power.
- STC: Starting current: Less than maximum current.
- RNC: Running current.
- MC: Maximum current.

#### NOTE

- *Heating conditions: Inlet/outlet water temperature: 30/35 °C ; Outdoor ambient temperature (DB/WB): 7/6 °C*
- *The compressor data shown in the tables below are based on a combined capacity of 100% of the power supplied.*
- *The "Maximum current" shown in the above table is the maximum total unit running current at the following conditions:*
  - *Supply voltage: 90% of the rated voltage.*
  - *Unit capacity: 100% at maximum operating conditions.*
- *The power supply cables must be sized to cover this maximum current value.*
- *Specifications in these tables are subject to change without notice in order that Hitachi may bring the latest innovations to their customers.*
- *Please refer to the general information, cautions and notes regarding protective devices (CB, ELB) throughout the "7 Electrical and control settings" chapter.*

## 4.2 SPLIT SYSTEM - R410A OUTDOOR UNIT

### RAS-(4-10)WH(V)NP(E) in combination with YUTAKI S, YUTAKI S COMBI

Model	Power supply	Applicable voltage		Compressor and fan motors				MC (A)	Max. IPT (kW)
				Cooling		Heating			
		U max. (V)	U min. (V)	RNC (A)	IPT (KW)	RNC (A)	IPT (KW)		
RAS-4WHVNPE	1~ 230V 50Hz	253	207	9.2	2.11	9.3	2.12	30	6.93
RAS-5WHVNPE				12.6	2.87	12.7	2.90	30	6.93
RAS-6WHVNPE				16.0	3.65	15.0	3.43	30	6.93
RAS-4WHNPE	3N~ 400V 50Hz	440	360	3.4	2.11	3.4	2.12	14	8.70
RAS-5WHNPE				4.6	2.87	4.6	2.90	14	8.70
RAS-6WHNPE				5.8	3.65	5.5	3.43	16	9.95
RAS-8WHNPE				7.1	4.41	7.3	4.58	24	15.00
RAS-10WHNPE				9.8	6.15	8.8	5.51	24	15.00

### RAS-(4-6)WH(V)NP(E) in combination with YUTAKI S80

Model	Power supply	Applicable voltage		Compressor and fan motors				MC (A)	Max. IPT (kW)
				Cooling		Heating			
		U max. (V)	U min. (V)	RNC (A)	IPT (KW)	RNC (A)	IPT (KW)		
RAS-4WHVNPE	1~ 230V 50Hz	253	207	9.2	2.11	9.3	2.12	30	6.93
RAS-5WHVNPE				12.6	2.87	12.7	2.90	30	6.93
RAS-6WHVNPE				16.0	3.65	15.0	3.43	30	6.93
RAS-4WHNPE	3N~ 400V 50Hz	440	360	3.4	2.11	3.4	2.12	14	8.70
RAS-5WHNPE				4.6	2.87	4.6	2.90	14	8.70
RAS-6WHNPE				5.8	3.65	5.5	3.43	16	9.95

## 4.3 SPLIT SYSTEM - R32 OUTDOOR UNIT

### RAS-(2-3)WHVRP1 in combination with YUTAKI S, YUTAKI S COMBI

Model	Power supply	Applicable voltage		Compressor and fan motors				MC (A)	Max. IPT (kW)
				Cooling		Heating			
		U max. (V)	U min. (V)	RNC (A)	IPT (KW)	RNC (A)	IPT (KW)		
RAS-2WHVRP1	1~ 230V 50Hz	253	207	4.5	1.00	5.0	1.09	10.4	2.27
RAS-2.5WHVRP1				5.0	1.12	5.5	1.19	12.9	2.82
RAS-3WHVRP1				7.6	1.67	8.1	1.79	15.8	3.49

## 4.4 SPLIT SYSTEM - INDOOR UNIT

### 4.4.1 YUTAKI S

#### RWM-(2.0-10.0)(N/R)1E

Model	Power supply	Applicable voltage		Operation mode	RNC (A)	IPT (kW)	MC (A)	Max. IPT (kW)
		U max. (V)	U min. (V)					
RWM-2.0R1E	1~ 230V 50Hz	253	207	Without electric heater	0.5	0.06	0.63	0.06
				With electric heater	13.7	3.06	13.7	3.06
				With DHW tank heater	13.7	3.06	13.7	3.06
				With electric and DHW tank heaters	26.7	6.06	26.7	6.06
	3N~ 400V 50Hz	440	360	Without electric heater	0.5	0.06	0.6	0.06
				With electric heater	4.8	3.06	5.0	3.06
				With DHW tank heater	4.5	3.06	13.7	3.06
				With electric and DHW tank heaters	8.9	6.06	18.0	6.06
RWM-(2.5-3.0)R1E	1~ 230V 50Hz	253	207	Without electric heater	0.6	0.06	0.6	0.06
				With electric heater	13.7	3.06	13.7	3.06
				With DHW tank heater	13.7	3.06	13.7	3.06
				With electric and DHW tank heaters	26.7	6.06	26.7	6.06
	3N~ 400V 50Hz	440	360	Without electric heater	0.6	0.06	0.6	0.06
				With electric heater	4.8	3.06	5.0	3.06
				With DHW tank heater	4.5	3.06	13.7	3.06
				With electric and DHW tank heaters	8.9	6.06	18.0	6.06
RWM-(4.0-6.0)N1E	1~ 230V 50Hz	253	207	Without electric heater	0.6	0.08	0.7	0.08
				With electric heater	26.7	6.08	26.7	6.08
				With DHW tank heater	13.7	3.08	13.7	3.08
				With electric and DHW tank heaters	39.8	9.08	39.8	9.08
	3N~ 400V 50Hz	440	360	Without electric heater	0.6	0.08	0.7	0.08
				With DHW tank heater	9.1	6.08	9.3	6.08
				With DHW tank heater	4.5	3.08	13.7	3.08
				With electric and DHW tank heaters	13.3	9.08	22.4	9.08
RWM-(8.0-10.0)N1E	3N~ 400V 50Hz	440	360	Without electric heater	0.3	0.08	0.7	0.14
				With DHW tank heater	13.1	9.08	13.7	9.14
				With DHW tank heater	4.5	3.08	13.7	3.14
				With electric and DHW tank heaters	17.5	12.08	26.7	12.14

#### NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

## 4.4.2 YUTAKI S COMBI

## RWD-(2.0-6.0)(N/R)W1E-220S(-K)

Model	Power supply	Applicable voltage		Operation mode	RNC (A)	IPT (kW)	MC (A)	Max. IPT (kW)
		U max. (V)	U min. (V)					
RWD-2.0RW1E-220S(-K)	1~ 230V 50Hz	253	207	Without electric heater	0.5	0.06	0.63	0.06
				With electric heater	13.7	3.06	13.7	3.06
				With DHW tank heater	12.6	2.81	12.6	2.81
				With electric and DHW tank heaters	25.6	5.81	25.6	5.81
RWD-2.0RW1E-220S(-K)	3N~ 400V 50Hz	440	360	Without electric heater	0.5	0.06	0.63	0.06
				With electric heater	8.7	3.06	9.3	3.06
				With DHW tank heater	12.5	2.81	12.6	2.81
				With electric and DHW tank heaters	12.5	5.81	12.6	5.81
RWD-(2.5-3.0)RW1E-220S(-K)	1~ 230V 50Hz	253	207	Without electric heater	0.6	0.06	0.63	0.06
				With electric heater	13.7	3.06	13.7	3.06
				With DHW tank heater	12.6	2.81	12.6	2.81
				With electric and DHW tank heaters	25.6	5.81	25.6	5.81
RWD-(2.5-3.0)RW1E-220S(-K)	3N~ 400V 50Hz	440	360	Without electric heater	0.6	0.06	0.63	0.06
				With electric heater	8.7	3.06	9.3	3.06
				With DHW tank heater	12.5	2.81	12.6	2.81
				With electric and DHW tank heaters	12.5	5.81	12.6	5.81
RWD-(4.0-6.0)NW1E-220S(-K)	1~ 230V 50Hz	253	207	Without electric heater	0.6	0.08	0.65	0.08
				With electric heater	26.7	6.08	26.7	6.08
				With DHW tank heater	12.6	2.83	12.6	2.83
				With electric and DHW tank heaters	38.7	8.83	38.7	8.83
	3N~ 400V 50Hz	440	360	Without electric heater	0.6	0.08	0.65	0.08
				With electric heater	17.4	6.08	18.0	6.08
				With DHW tank heater	12.6	2.83	12.6	2.83
				With electric and DHW tank heaters	17.4	8.83	18.0	8.83

### 4.4.3 YUTAKI S80

#### ◆ Version for indoor unit alone

#### RWH-(4.0-6.0)(V)NFE

Model	Power supply	Applicable voltage		Operation mode	RNC (A)	IPT (kW)	MC (A)	Max. IPT (kW)
		U max. (V)	U min. (V)					
RWH-4.0VNFE	1~ 230V 50Hz	253	207	Without simultaneous operation of electric heater in DHW tank	12.1	2.73	24	5.33
				With simultaneous operation of electric heater in DHW tank	25.4	5.73	38	8.33
RWH-5.0VNFE				Without simultaneous operation of electric heater in DHW tank	12.3	2.78	28	6.23
				With simultaneous operation of electric heater in DHW tank	25.6	5.78	42	9.23
RWH-6.0VNFE				Without simultaneous operation of electric heater in DHW tank	14.3	3.23	31	6.91
				With simultaneous operation of electric heater in DHW tank	27.6	6.23	45	9.91
RWH-4.0NFE	3N~ 400V 50Hz	440	360	Without simultaneous operation of electric heater in DHW tank	5.6	2.73	10	4.68
RWH-5.0NFE				With simultaneous operation of electric heater in DHW tank	11.8	5.73	24	7.68
				Without simultaneous operation of electric heater in DHW tank	5.7	2.78	10	4.68
RWH-6.0NFE				With simultaneous operation of electric heater in DHW tank	11.9	5.78	24	7.68
				Without simultaneous operation of electric heater in DHW tank	6.7	3.23	10	4.68
				With simultaneous operation of electric heater in DHW tank	12.8	6.23	24	7.68

#### NOTE

The data corresponding to DHW tank heater is calculated in combination with the YUTAKI S80 domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

◆ **Version for combination with DHW tank**

**RWH-(4.0-6.0)(V)NFWE + DHWS(200/260)S-2.7H2E(-W)**

Model	Power supply	Applicable voltage		Operation mode	RNC (A)	IPT (kW)	MC (A)	Max. IPT (kW)
		U max. (V)	U min. (V)					
RWH-4.0VNFWE	1~ 230V 50Hz	253	207	Without simultaneous operation of electric heater in DHW tank	12.1	2.73	24	5.33
				With simultaneous operation of electric heater in DHW tank	24.3	5.48	36	7.94
RWH-5.0VNFWE				Without simultaneous operation of electric heater in DHW tank	12.3	2.78	28	6.23
				With simultaneous operation of electric heater in DHW tank	24.5	5.53	40	8.84
RWH-6.0VNFWE				Without simultaneous operation of electric heater in DHW tank	14.3	3.23	31	6.91
				With simultaneous operation of electric heater in DHW tank	26.5	5.98	43	9.52
RWH-4.0NFWE	3N~ 400V 50Hz	440	360	Without simultaneous operation of electric heater in DHW tank	5.6	2.73	10	4.68
				With simultaneous operation of electric heater in DHW tank	11.3	5.48	22	7.30
RWH-5.0NFWE				Without simultaneous operation of electric heater in DHW tank	5.7	2.78	10	4.68
				With simultaneous operation of electric heater in DHW tank	11.4	5.53	22	7.30
RWH-6.0NFWE				Without simultaneous operation of electric heater in DHW tank	6.7	3.23	10	4.68
				With simultaneous operation of electric heater in DHW tank	12.3	5.98	22	7.30

**i NOTE**

The data corresponding to DHW tank heater is calculated in combination with the YUTAKI S80 domestic hot water tank accessory "DHWS(200/260)S-2.7H2E(-W)".

◆ **Domestic hot water tank**

**DHWS(200/260)S-2.7H2E(-W)**

Model	Power supply	Applicable voltage		RNC (A)	IPT (kW)	MC (A)	Max. IPT (kW)
		U max. (V)	U min. (V)				
DHWS200S-2.7H2E(-W)	1~ 230V 50Hz	253	207	12.0	2.75	13.2	2.75
DHWS260S-2.7H2E(-W)				12.0	2.75	13.2	2.75

## 4.5 MONOBLOC SYSTEM

### ◆ YUTAKI M (R32)

#### RASM-(2/3)VRE

Model	Power supply	Applicable voltage		Operation mode	Cooling operation		Heating operation		MC (A)	Max. IPT (kW)
		U max. (V)	U min. (V)		RNC (A)	IPT (KW)	RNC (A)	IPT (KW)		
RASM-2VRE	1~ 230V 50Hz	253	207	Without DHW tank heater	4.8	1.00	5.5	1.14	10.6	2.32
				With DHW tank heater	4.8	1.00	18.8	3.89	23.1	5.07
RASM-3VRE				Without DHW tank heater	9.4	1.94	8.9	1.84	16.0	3.54
				With DHW tank heater	9.4	1.94	22.2	4.59	28.5	6.29

### NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

### ◆ YUTAKI M (R410A)

#### RASM-(4-6)(V)NE

Model	Power supply	Applicable voltage		Operation mode	Cooling operation		Heating operation		MC (A)	Max. IPT (kW)
		U max. (V)	U min. (V)		RNC (A)	IPT (KW)	RNC (A)	IPT (KW)		
RASM-4VNE	1~ 230V 50Hz	253	207	Without DHW tank heater	9.7	2.20	9.6	2.18	30.8	7.01
				With DHW tank heater	21.7	4.95	9.6	2.18	43.3	9.88
RASM-5VNE				Without DHW tank heater	13.1	2.97	13.0	2.95	30.8	7.01
				With DHW tank heater	25.1	5.72	12.9	2.95	43.3	9.88
RASM-6VNE				Without DHW tank heater	15.4	3.50	16.4	3.72	30.8	7.01
				With DHW tank heater	27.4	6.25	16.3	3.72	43.3	9.88
RASM-4NE	3N~ 400V 50Hz	440	360	Without DHW tank heater	3.6	2.20	3.6	2.18	14.3	8.77
				With DHW tank heater	11.4	4.95	5.0	2.18	26.8	11.65
RASM-5NE				Without DHW tank heater	4.8	2.97	4.8	2.95	14.3	8.77
				With DHW tank heater	13.2	5.72	6.8	2.95	26.8	11.65
RASM-6NE				Without DHW tank heater	4.8	2.97	4.8	2.95	16.3	10.02
				With DHW tank heater	12.8	5.72	6.6	2.95	28.8	12.90

### NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

## 5 WORKING RANGE

### 5.1 POWER SUPPLY WORKING RANGE

◆ **Nominal power supply**

- Single phase: 1~ 230V 50Hz
- Three phase: 3N~ 400V 50Hz

◆ **Operating voltage**

Between 90 and 110% of the nominal voltage.

◆ **Voltage imbalance for nominal power supply 3N~ 400V 50Hz**

Up to 3% of each phase, measured at the main terminal of the outdoor unit.

◆ **Starting voltage**

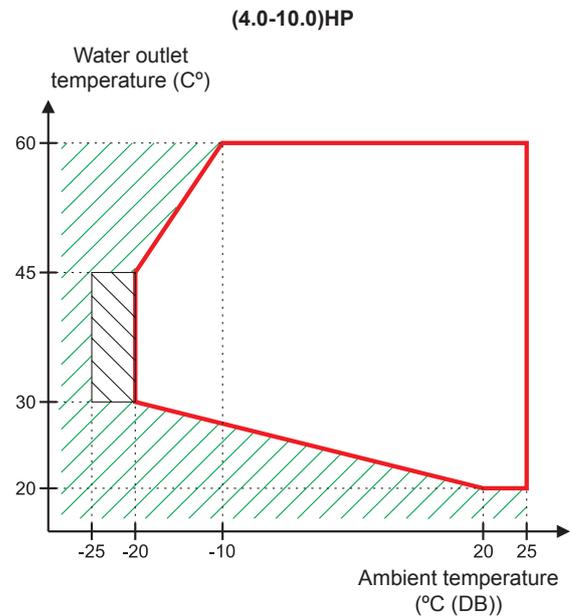
Always higher than 85% of the nominal voltage.

### 5.2 R410A TEMPERATURE WORKING RANGE

MODEL		2.0HP	2.5HP	3.0HP	4.0HP	5.0HP	6.0HP	8.0HP	10.0HP
Water temperature	°C	Refer to the graphics for each case							
Indoor ambient temperature		5~30							

#### 5.2.1 Space heating

◆ **YUTAKI (S / S COMBI)**

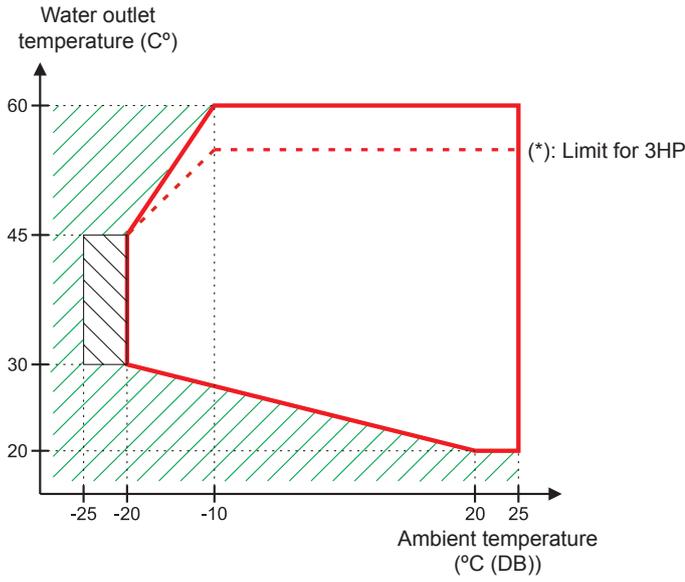


 Continuous working range.

 Outdoor unit operation is possible, but the capacity is not guaranteed. Indoor unit and back-up heater are operating.

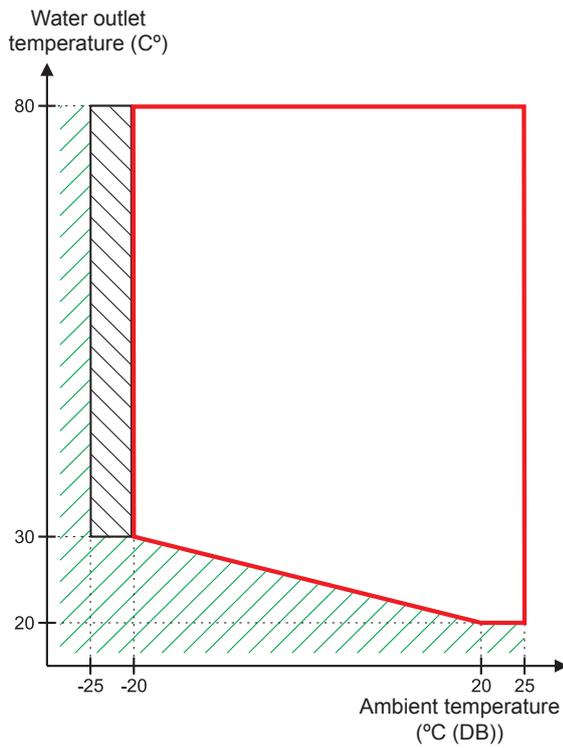
 Only back-up heater. (No outdoor unit operation).

◆ YUTAKI M



-  Continuous working range.
-  Outdoor unit operation is possible, but the capacity is not guaranteed. Indoor unit and back-up heater are operating.
-  Only back-up heater. (No outdoor unit operation).

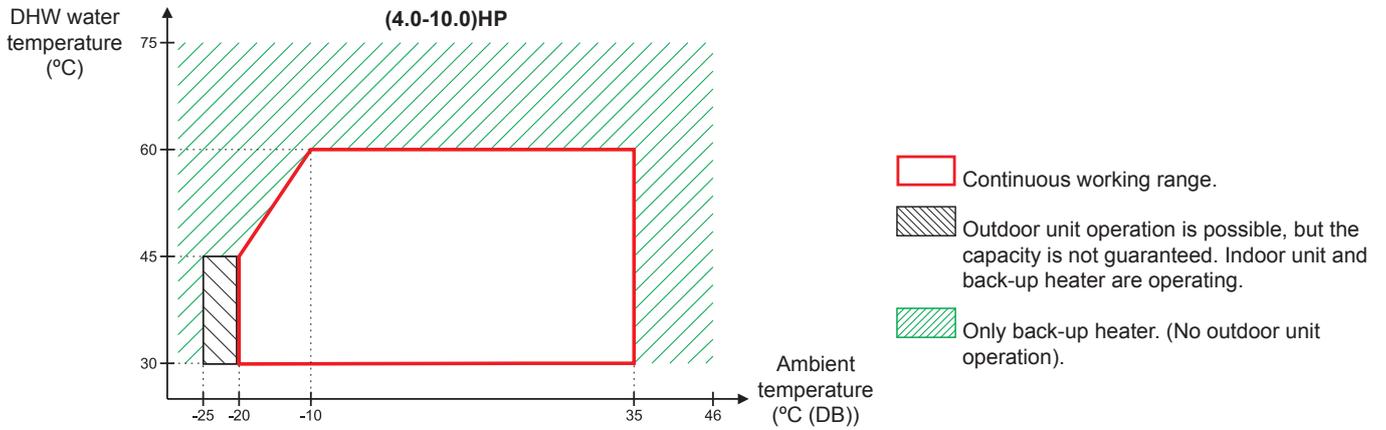
◆ YUTAKI S80



-  Continuous working range.
-  Outdoor unit operation is possible, but the capacity is not guaranteed. Indoor unit and back-up heater are operating.
-  Only back-up heater. (No outdoor unit operation).

5.2.2 DHW

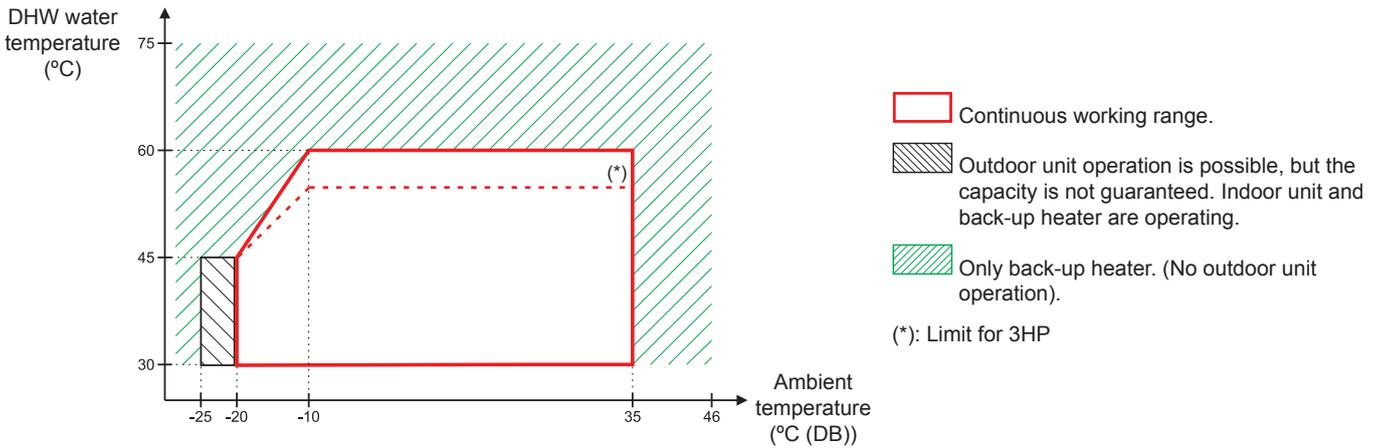
◆ For YUTAKI (S / S COMBI)



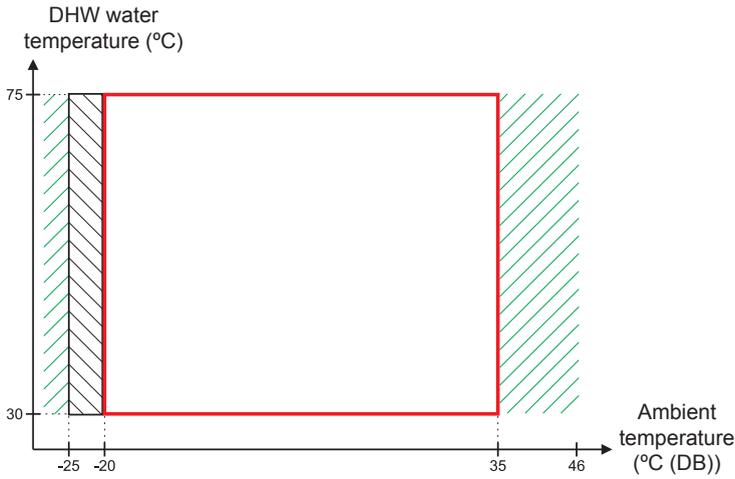
**i** NOTE

The heat pump can produce domestic hot water at 57°C as a maximum (53°C for 2.0/2.5/3.0HP) by itself, but Hitachi recommends to set the temperature of the tank by heat pump only up to 55°C (50°C for 2.0/2.5/3.0HP) and keep Thpoff default value. In case of higher setting, the tank's heater must be used to reach the setting temperature (enabled by optional function).

◆ For YUTAKI M

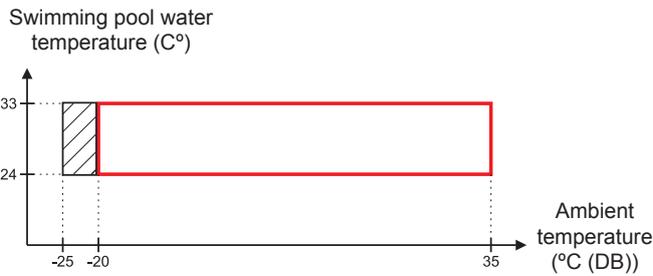


◆ For YUTAKI S80



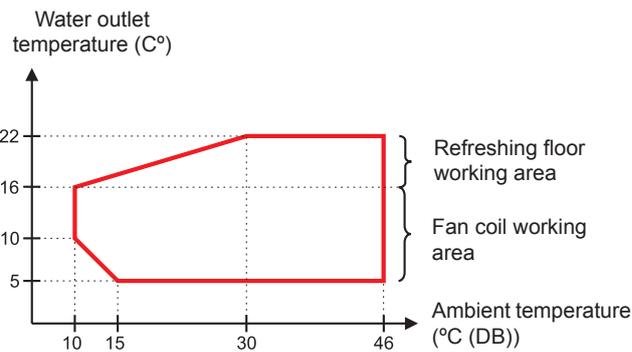
- Continuous working range.
  - Outdoor unit operation is possible, but the capacity is not guaranteed. Indoor unit and back-up heater are operating.
  - Only back-up heater. (No outdoor unit operation).
- (\*): Limit for 3HP

5.2.3 Swimming pool heating



- Continuous working range.
- Outdoor unit operation is possible, but the capacity is not guaranteed. Indoor unit and back-up heater are operating.
- Only back-up heater. (No outdoor unit operation).

5.2.4 Space cooling (Necessary cooling kit)



- Continuous working range.

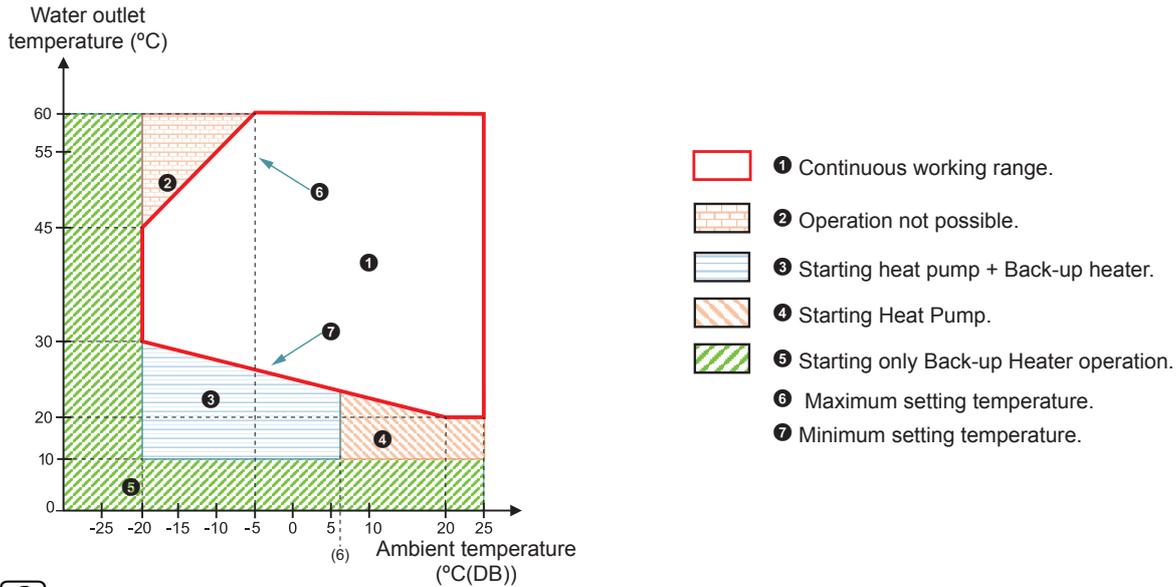
### 5.3 R32 TEMPERATURE WORKING RANGE

MODEL		2.0HP	2.5HP	3.0HP
Water temperature	°C	Refer to the graphics for each case		
Indoor ambient temperature		5~30		

#### 5.3.1 Space heating

##### ◆ YUTAKI (S / S COMBI)

(2.0~3.0)HP

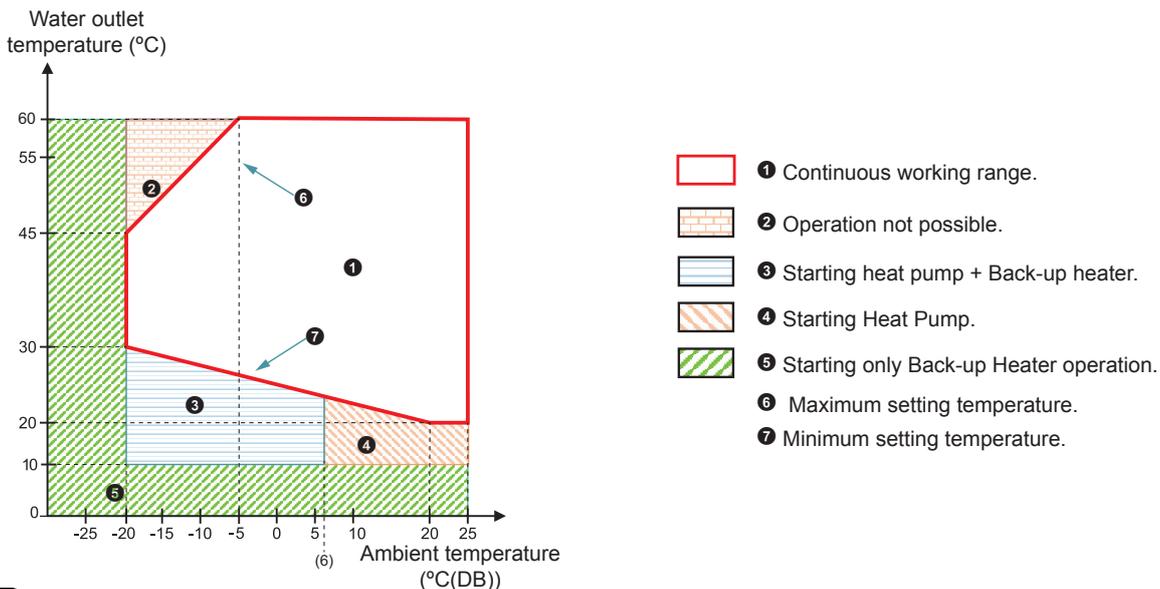


##### **i** NOTE

Items ③ and ⑤ only available if back-up heater is enabled.

##### ◆ YUTAKI M

(2.0/3.0)HP



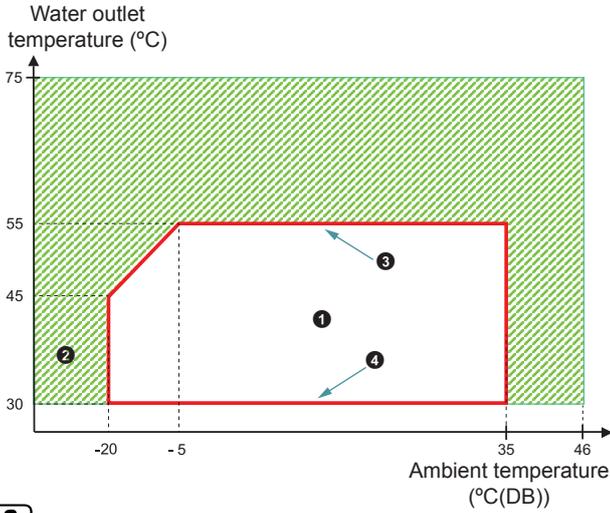
##### **i** NOTE

Items ③ and ⑤ only available if back-up heater is installed as an accessory.

**5.3.2 DHW**

**◆ For YUTAKI (S /S COMBI)**

(2.0~3.0)HP



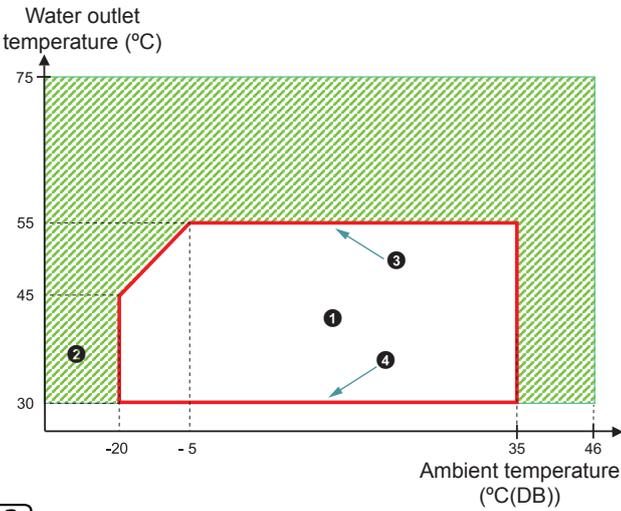
- ① Continuous working range.
- ② Starting only Back-up Heater operation.
- ③ Maximum setting temperature.
- ④ Minimum setting temperature.

**i NOTE**

In case of heating up the DHW tank with an outdoor ambient temperature lower than -5 °C and without using the DHW electrical heater, the setting temperature must not exceed the maximum value in the specified continuous working range.

**◆ For YUTAKI M**

(2.0/3.0)HP

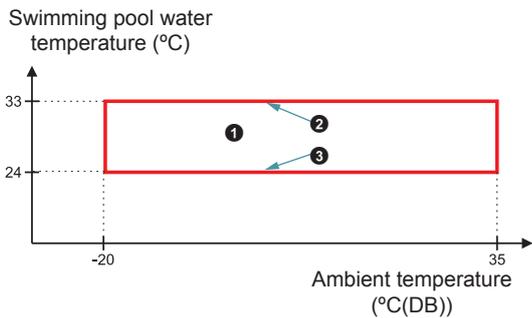


- ① Continuous working range.
- ② Starting only Back-up Heater operation.
- ③ Maximum setting temperature.
- ④ Minimum setting temperature.

**i NOTE**

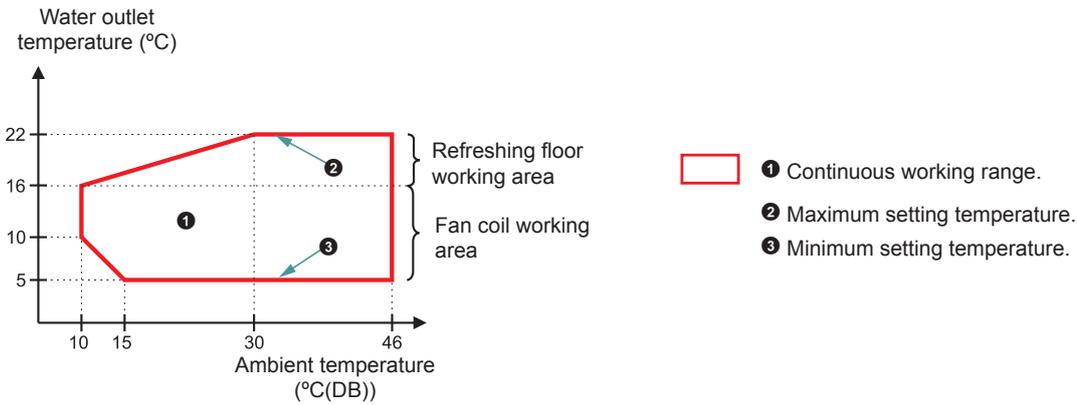
In case of heating up the DHW tank with an outdoor ambient temperature lower than -5 °C and without using the DHW electrical heater, the setting temperature must not exceed the maximum value in the specified continuous working range.

**5.3.3 Swimming pool heating**



- ① Continuous working range.
- ② Maximum setting temperature.
- ③ Minimum setting temperature.

### 5.3.4 Space cooling (Necessary cooling kit)



## 5.4 R410A HYDRAULIC WORKING RANGE

### 5.4.1 Hydraulic data

#### ◆ YUTAKI S

MODEL		2.0HP	2.5HP	3.0HP	4.0HP	5.0HP	6.0HP	8.0HP	10.0HP
Minimum water flow rate (*1)	m <sup>3</sup> /h	0.5	0.6	0.6	1.0	1.1	1.2	2.0	2.2
Maximum water flow rate (*1)	m <sup>3</sup> /h	1.9	2.0	2.1	2.9	3.0	3.0	4.5	4.6
Minimum installation water volume (*2)	l	28	28	28	38	46	55	76	79
Minimum allowable water pressure	MPa	0.1							
Maximum allowable water pressure	MPa	0.3							

#### ◆ YUTAKI S COMBI

MODEL		2.0HP	2.5HP	3.0HP	4.0HP	5.0HP	6.0HP
Minimum water flow rate (*1)	m <sup>3</sup> /h	0.5	0.6	0.6	1.0	1.1	1.2
Maximum water flow rate (*1)	m <sup>3</sup> /h	1.8	1.9	1.9	2.7	2.8	2.8
Minimum installation water volume (*2)	l	28	28	28	38	46	55
Minimum allowable water pressure	MPa	0.1					
Maximum allowable water pressure	MPa	0.3					

#### ◆ YUTAKI S80

MODEL		4.0HP		5.0HP		6.0HP	
		Version for indoor unit alone	Version for combination with DHW tank	Version for indoor unit alone	Version for combination with DHW tank	Version for indoor unit alone	Version for combination with DHW tank
Minimum water flow rate (*1)	m <sup>3</sup> /h	1.0		1.1		1.2	
Maximum water flow rate (*1)	m <sup>3</sup> /h	2.8	2.5	3.2	2.7	3.2	2.7
Minimum installation water volume (*2)	l	40		50		50	
Minimum allowable water pressure	MPa	0.1					
Maximum allowable water pressure	MPa	0.3					

## ◆ YUTAKI M

MODEL		4.0HP	5.0HP	6.0HP
Minimum water flow rate (*1)	m <sup>3</sup> /h	1.0	1.1	1.2
Maximum water flow rate (*1)	m <sup>3</sup> /h	2.8	3.0	3.0
Minimum installation water volume (*2)	l	38	46	55
Minimum allowable water pressure	MPa	0.1		
Maximum allowable water pressure	MPa	0.3		

 NOTE

- (\*1): Values calculated based on the following conditions:
  - Water inlet/outlet temperature: 30/35°C
  - Outdoor ambient temperature: (DB/WB): 7/6°C
- (\*2): Values calculated with an ON/OFF temperature differential value of 4°C.

## 5.5 R32 HYDRAULIC WORKING RANGE

## 5.5.1 Hydraulic data

## ◆ YUTAKI S

MODEL		2.0HP	2.5HP	3.0HP
Minimum water flow rate (*1)	m <sup>3</sup> /h	0.5	0.6	0.6
Maximum water flow rate (*1)	m <sup>3</sup> /h	1.9	2.0	2.1
Minimum installation water volume	l	28	28	28
Minimum allowable water pressure	MPa	0.1		
Maximum allowable water pressure	MPa	0.3		

## ◆ YUTAKI S COMBI

MODEL		2.0HP	2.5HP	3.0HP
Minimum water flow rate (*1)	m <sup>3</sup> /h	0.5	0.6	0.6
Maximum water flow rate (*1)	m <sup>3</sup> /h	1.8	1.9	1.9
Minimum installation water volume	l	28	28	28
Minimum allowable water pressure	MPa	0.1		
Maximum allowable water pressure	MPa	0.3		

## ◆ YUTAKI M

MODEL		2.0HP	3.0HP
Minimum water flow rate (*1)	m <sup>3</sup> /h	0.5	0.6
Maximum water flow rate (*1)	m <sup>3</sup> /h	1.9	2.1
Minimum installation water volume	l	28	28
Minimum allowable water pressure	MPa	0.1	
Maximum allowable water pressure	MPa	0.3	

 NOTE

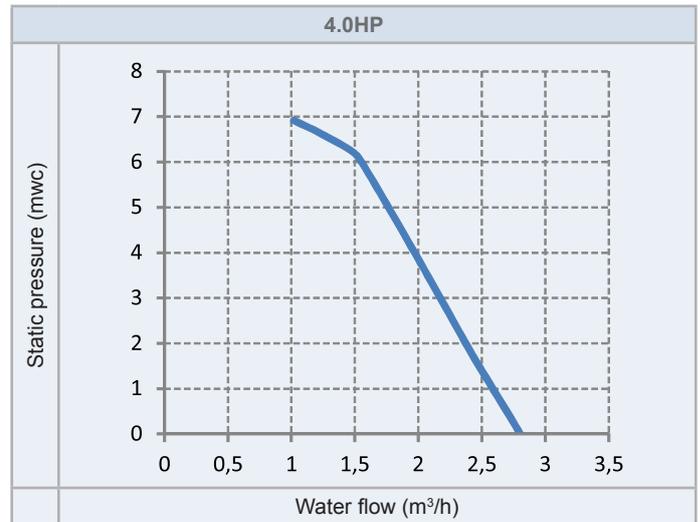
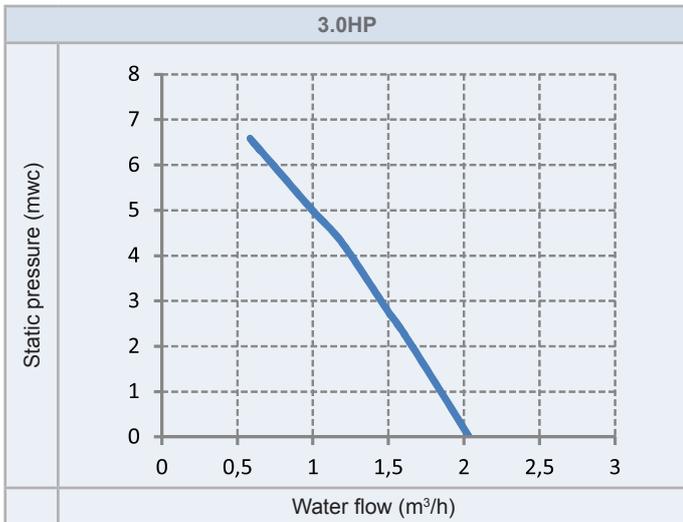
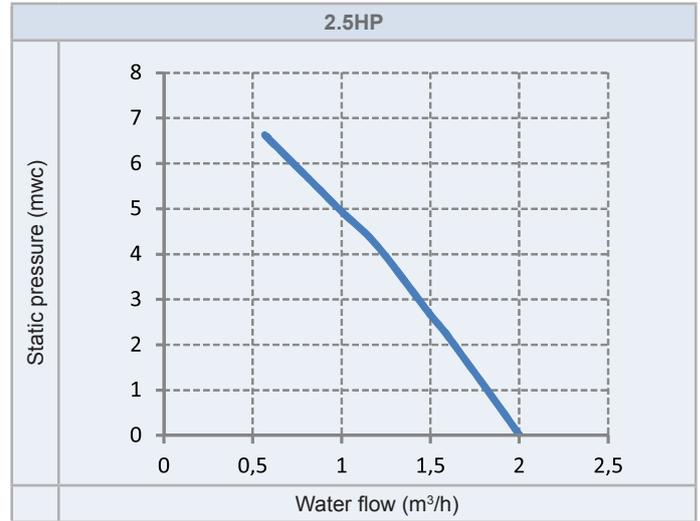
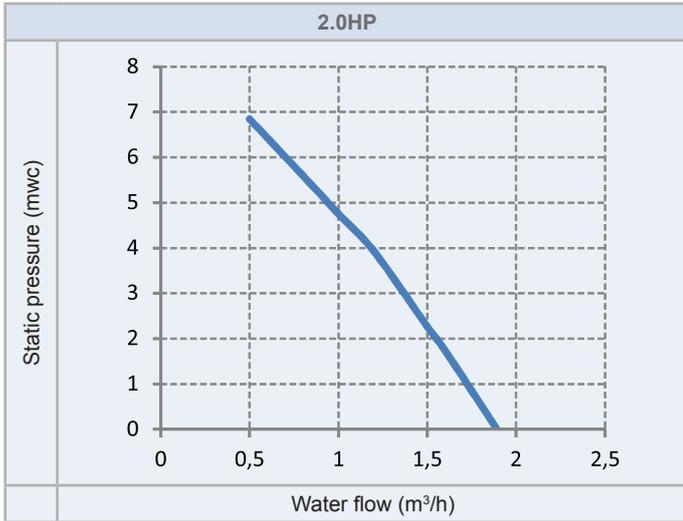
- (\*1): Values calculated based on a  $\Delta T$  (inlet/outlet): 3~8 °C

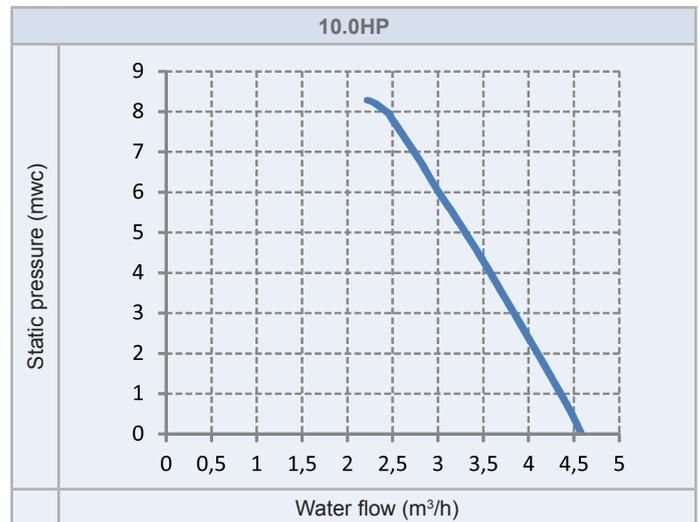
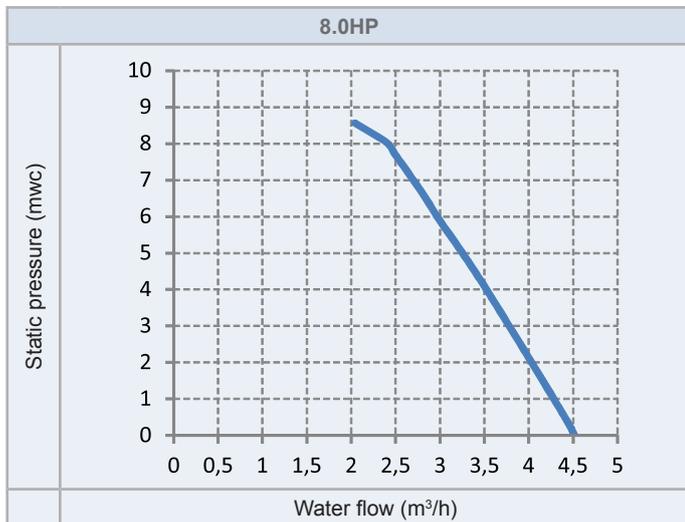
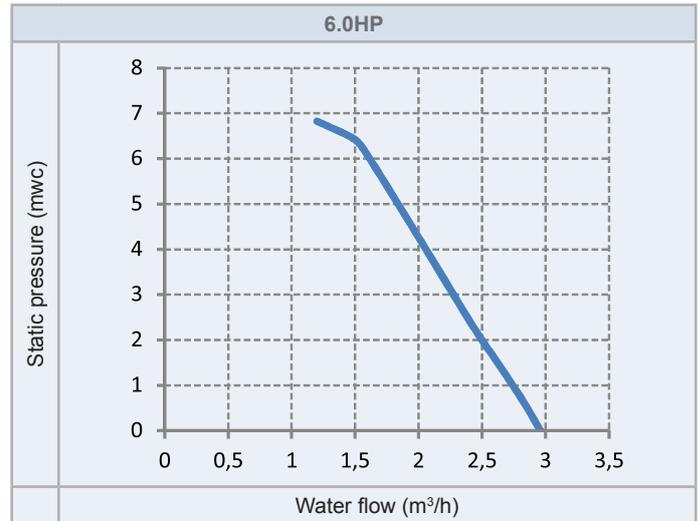
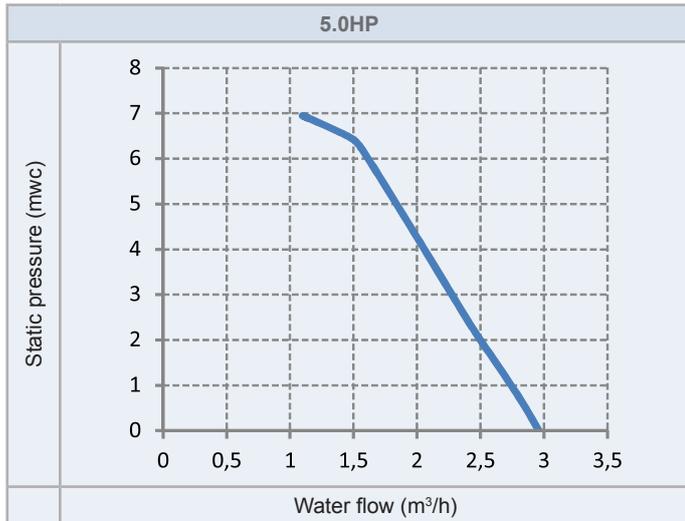
**5.5.2 Pump performance curves**

**i NOTE**

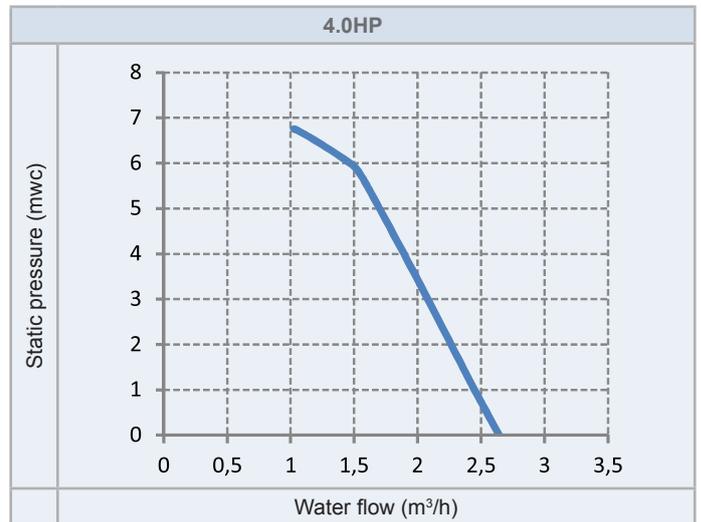
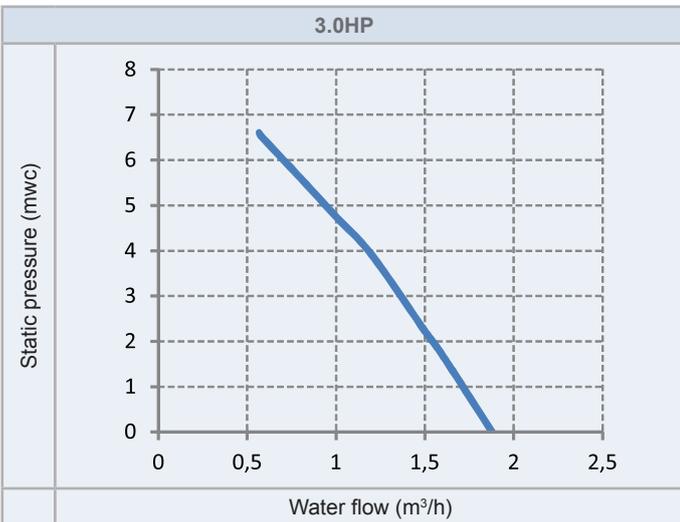
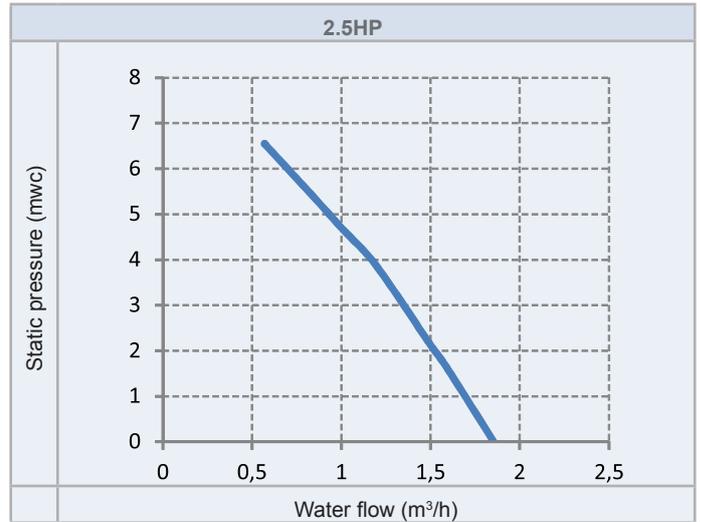
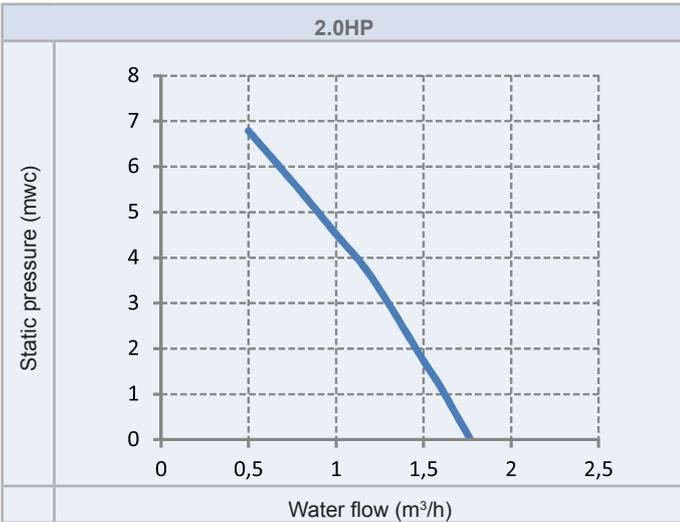
If a water flow rate is selected out of the working range of the unit, it can cause malfunction on the unit. Please, try to operate the pump within the minimum and maximum water flow of the indoor unit.

**◆ YUTAKI S**



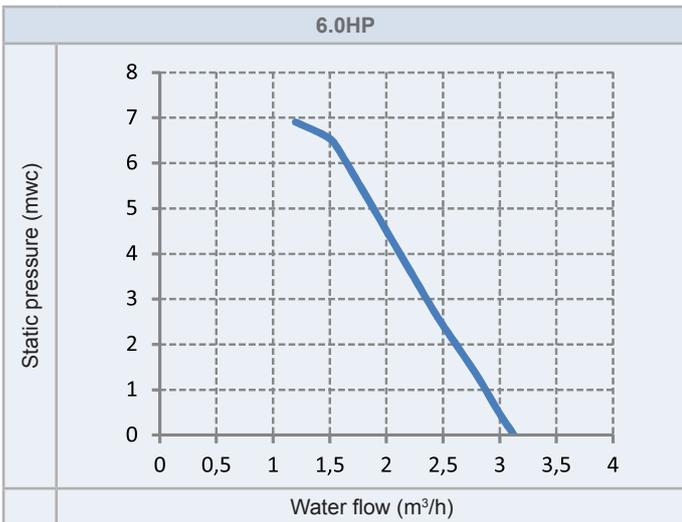
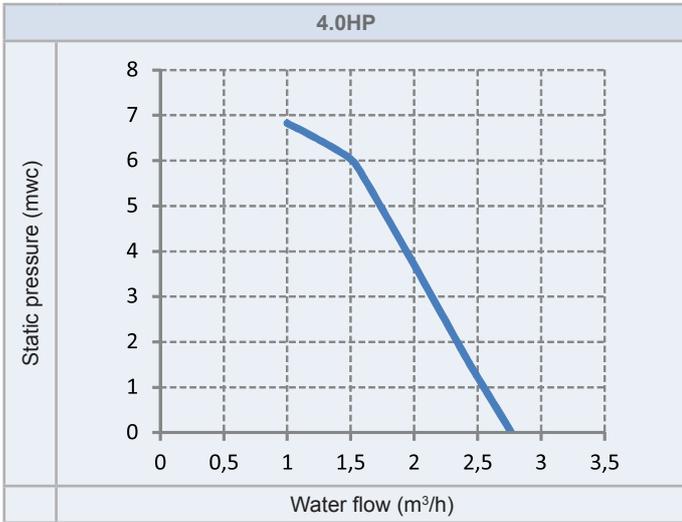


◆ YUTAKI S COMBI

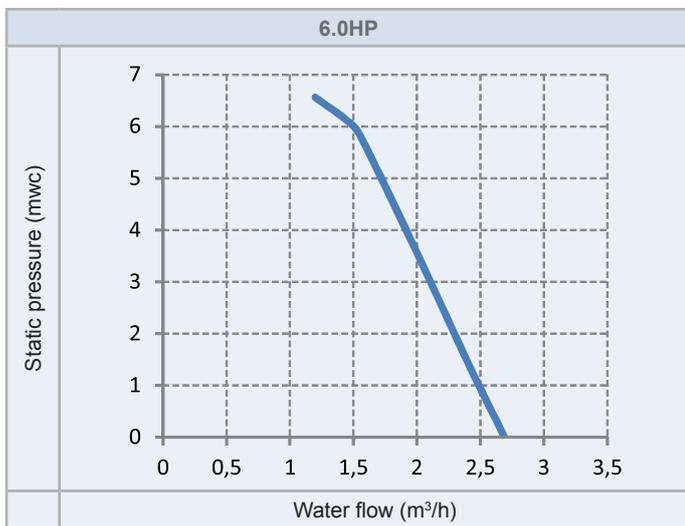
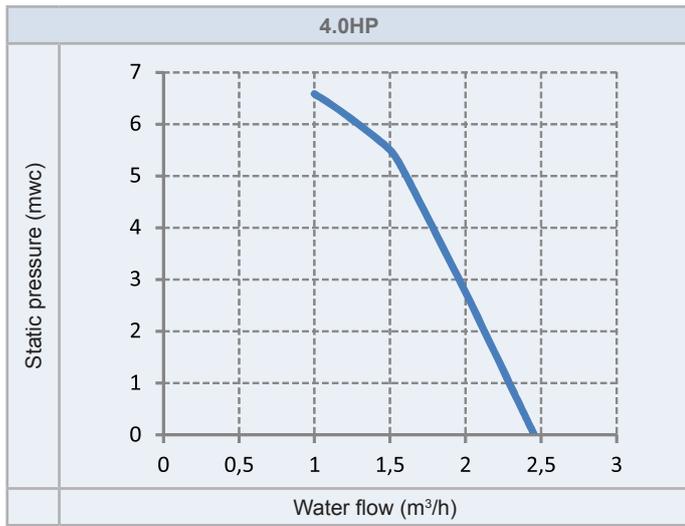


◆ YUTAKI S80

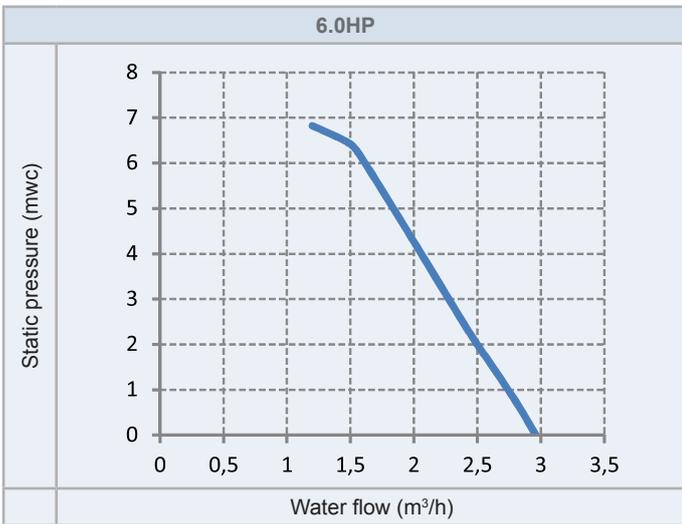
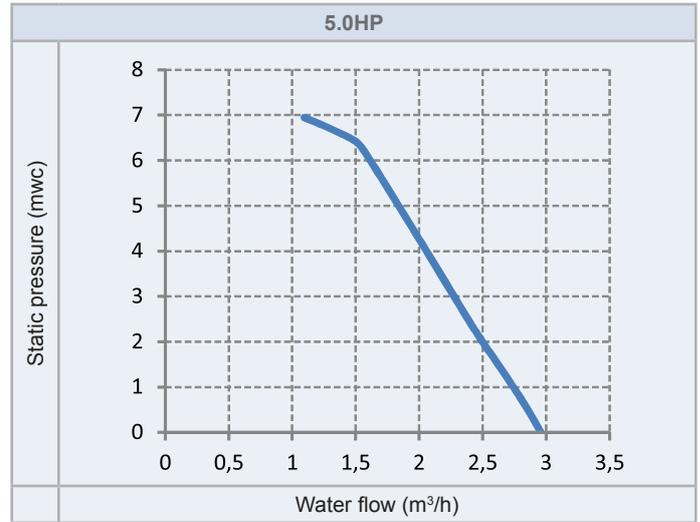
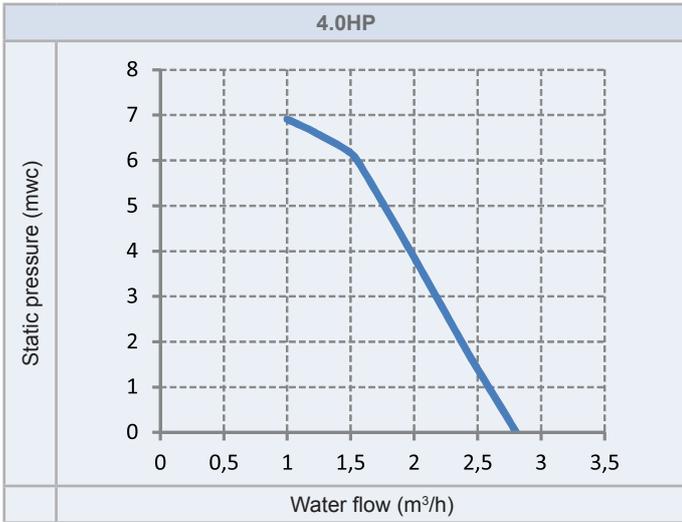
Version for indoor unit alone



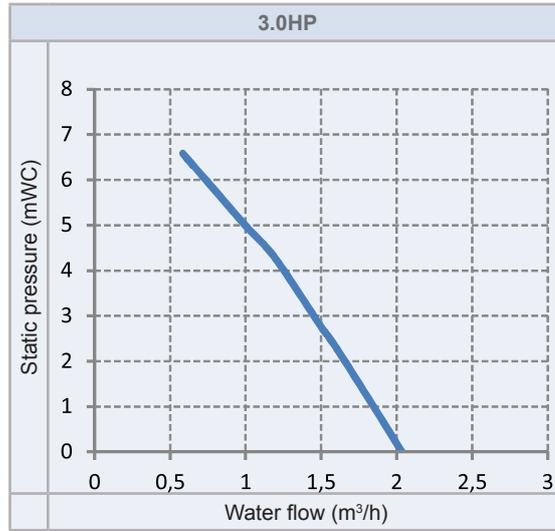
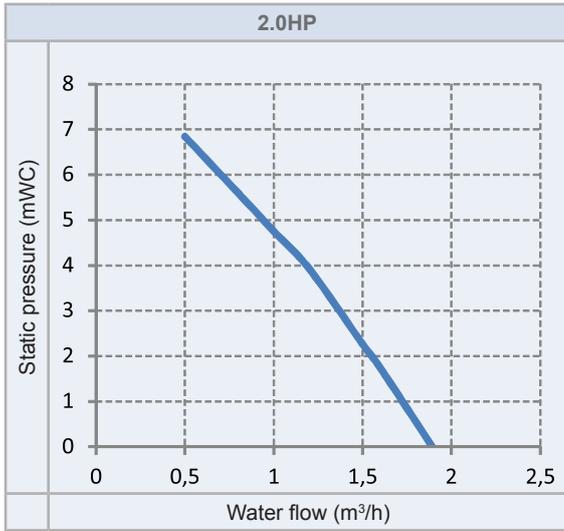
**Version for combination with DHW tank**



◆ YUTAKI M (R410A)



◆ YUTAKI M (R32)



## 6 REFRIGERANT AND WATER PIPING

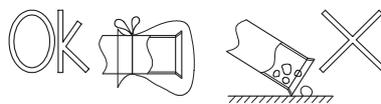
### 6.1 GENERAL NOTES BEFORE PERFORMING PIPING WORK

- Prepare locally-supplied copper pipes.
- Select the piping size with the correct thickness and correct material able to withstand sufficient pressure.
- Select clean copper pipes. Make sure that there is no dust or moisture inside the pipes. Blow the inside of the pipes with oxygen free nitrogen to remove any dust and foreign materials before connecting them.

#### **i** NOTE

A system with no moisture or oil contamination will give maximum performance and lifecycle compared to that of a poorly prepared system. Take particular care to ensure that all copper piping is clean and dry internally.

- Cap the end of the pipe when pipe is to be inserted through a wall hole.
- Do not put pipes on the ground directly without a cap or vinyl tape at the end of the pipe.



- If piping installation is not completed until next day or over a longer period of time, braze off the ends of the piping and charge with oxygen free nitrogen through a Schrader valve type access fitting to prevent moisture and particle contamination.
- It is advisable to insulate the water pipes, joints and connections in order to avoid heat loss and dew condensation on the surface of the pipes or accidental injuries due to excessive heat on piping surfaces.
- Do not use insulation material that contains NH<sub>3</sub>, as it can damage copper pipe material and become a source of future leakage.
- It is recommended to use flexible joints for the water piping inlet and outlet in order to avoid vibration transmission.
- Refrigerant circuit and Water circuit must be performed and inspected by a licensed technician and must comply with all relevant European and national regulations.
- Proper water pipe inspection should be performed after piping work to assure there is no water leakage in the space heating circuit.

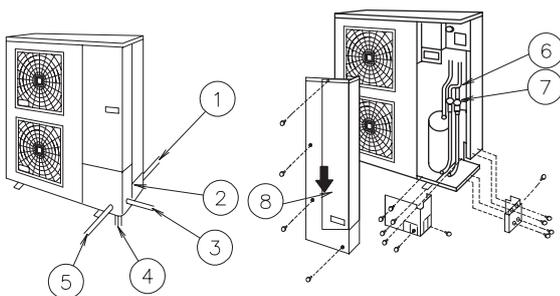
### 6.2 PIPING CONNECTION FOR OUTDOOR UNIT

#### **i** NOTE

For RAS-(8/10)WHNPE, the gas pipe accessory with a flare nut (factory-supplied silencer) shall be brazed to the field supplied gas line, and connected to the gas valve.



- 1 The pipes can be connected from 4 directions. Make holes in the piping cover or cabinet for taking out pipes. Take the piping cover away from the unit, and make holes by cutting along the guideline at the rear of the cover or punching with a driver. Remove the burr with a cutter, and place a insulation (field supplied) to protect cables and pipes.



(picture as example)

N°	Description	N°	Description
①	Rear side piping work	⑤	Front side piping work
②	Pipe Cover	⑥	Piping work
③	Right side piping work	⑦	Stop Valve
④	Bottom side piping work (Knock out hole)	⑧	Removing Direction for Service Cover

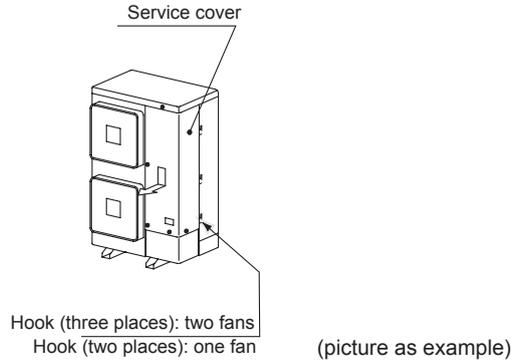
**CAUTION**

Notes to open/close the service cover:

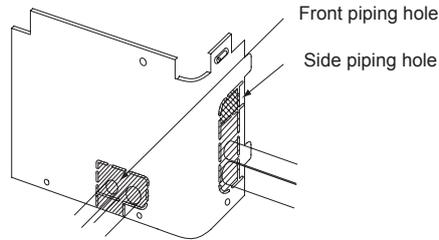
- Remove the screws following the instructions to the above figure.
- Slowly press down the cover.

**NOTE**

Hold the cover with a hand to remove screws as the cover may fall down.



a. For the front and side piping

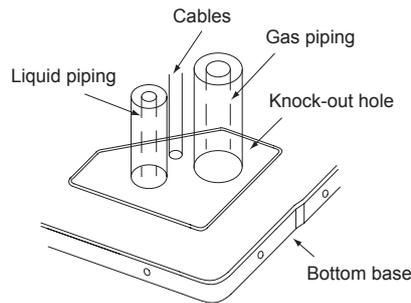


To use racking or conduit tubes, check the size and remove  part following the slit.

**NOTE**

Place insulation (field supplied) to protect cables and pipes from being damaged by plate edges.

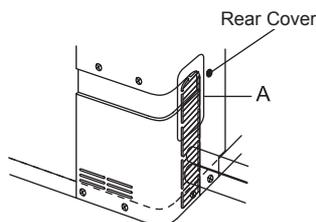
b. For the downward piping



**NOTE**

Cables shall not contact directly to the pipes.

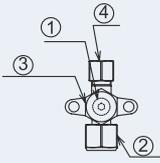
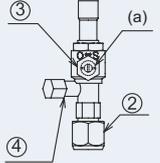
c. For the rear side piping



**NOTE**

Remove the rear pipe cover under the rear cover and remove  part following the slit.

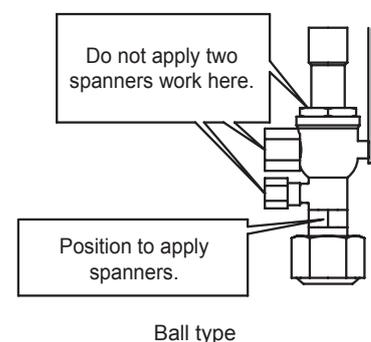
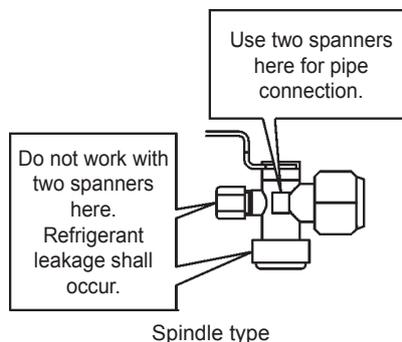
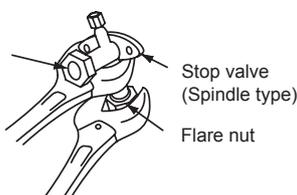
- 2 Mount the piping cover in order to avoid water entering into the unit. Seal the holes where pipes and wires are inserted, by using a insulation (field-supplied).
- 3 If the field-supplied piping is connected with stop valves directly, it is recommended use a tube bender.
- 4 Check to ensure that the stop valves are closed completely before connecting pipes.
- 5 Connect the field supplied refrigerant pipes to the indoor unit and outdoor unit. Apply the oil thinly at the seat flare nut and pipe before tightening.
- 6 After connecting the refrigerant piping, seal the open space between knockout hole and refrigerant pipes by using insulation material.
- 7 Operation of stop valve should be performed according to the figure below.

Outdoor unit stop valve	
Spindle Type	Ball Type
Liquid	Gas
	
①	Spindle valve
②	Flare nut
③	Cap
④	Check joint for service port
(a) This valve is opened or closed with rotating 90 degrees at the ball valve part. Rotate the shaft until the pin touches the stopper. Do not apply the extra force. Use a slotted screwdriver to control the shaft. Do not leave the ball valve partly open.	

Closed upon factory shipping

Tightening Torque (N·m)				
	①	②	③	④
Liquid valve	7-9	40 10HP: 60	33-42	14-18
Gas valve	9-11	80 8/10HP: 100	(4-10)HP: 20-25	

Do not apply two spanners at this position. If applied, leakage will occur.



**CAUTION**

- At the test run, fully open the spindle and ball stop valve.
- If not fully opened, the devices will be damaged.
- Do not attempt to turn service valve rod beyond its stop.
- Do not loosen the stop ring. If the stop ring is loosened, it is dangerous since the spindle will hop out.
- An excess or a shortage of refrigerant is the main cause of trouble to the units. Charge the correct refrigerant quantity according to the description of label at the inside of service cover.
- Check for refrigerant leakage in detail. If a large refrigerant leakage occurs, it will cause difficulty with breathing or harmful gases would occur if a fire was being used in the room.

### 6.2.1 Brazing work

#### CAUTION

- Use nitrogen gas for blowing during pipe brazing. If oxygen, acetylene or fluorocarbon gas is used, it will cause an explosion or poisonous gas.
- A lot of oxidation film will occur inside of tubes if no nitrogen gas blowing is performed during brazing work. This film will be flecked off after operation and will circulate in the cycle, resulting in clogged expansion valves, etc. This will cause bad influence to the compressor.
- Use a reducer valve when nitrogen gas blowing is performed during brazing. The gas pressure should be maintained within 0.03 to 0.05 MPa. If an excessively high pressure is applied to a pipe, it will cause an explosion.

### 6.2.2 Refrigerant charge

#### CAUTION

- Do not charge OXYGEN, ACETYLENE, or other flammable and poisonous gases into the refrigerant because an explosion can occur. It is recommended that oxygen free nitrogen be charged for these types of tests cycle when performing a leakage test or an airtight test. These types of gases are extremely dangerous.
- Insulate the unions and flare-nuts at the piping connection part completely.
- Insulate the liquid piping completely to avoid a decrease of performance; if not, it will cause sweating on the surface of the pipe.
- Charge refrigerant correctly. Overcharging or insufficient charging could cause a compressor failure.
- Check for refrigerant leakage in detail. If a large refrigerant leakage occurred, it would cause difficulty with breathing or harmful gases would occur if a fire were being used in the room.
- If the flare nut is tightened too hard, the flare nut may crack after a long time and cause refrigerant leakage.

### 6.2.3 Drain Piping

#### 6.2.3.1 Drain Discharging Boss

When the base of the outdoor unit is temporarily utilized as a drain receiver and the drain water in it is discharged, this drain boss is utilized to connect the drain piping.

Model	Applicable Model
DBS-26	RASM-(4-6)(V)NE RAS-(4-10)WH(V)NPE
DBS-12L	RASM-(2/3)VRE

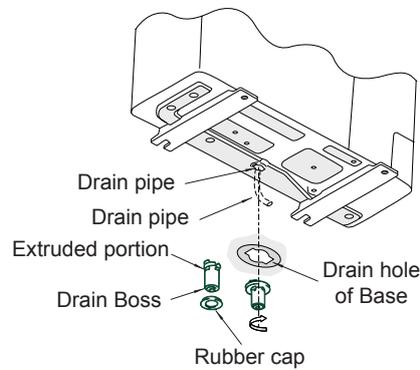
### ◆ Connecting procedure

- 1 Insert the rubber cap into the drain boss up to the extruded portions.
- 2 Insert the boss into the unit base and turn approximately 40 degree counterclockwise.
- 3 Size of the drain boss is
  - RAS-(4-10)WH(V)NP: 32 mm (O.D.)
  - RASM-(4-6)(V)NE: 32 mm (O.D.)
  - RASM-(2/3)VRE: 15 mm (O.D.)
- 4 A drain pipe should be field-supplied.

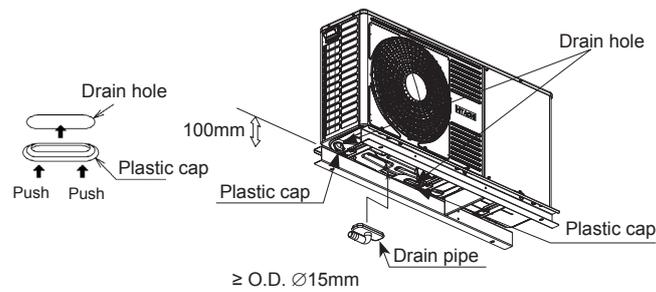
### NOTE

- Do not use this drain boss set in a cold area, because the drain water may freeze.
- This drain boss is not sufficient to collect all the drain water. If collecting drain water is completely required, provide a drain-pan that is bigger than the unit base and install it under the unit with drainage.

RAS-(4-10)WH(V)NPE  
RASM-(4-6)(V)NE



RASM-(2/3)VRE



## 6.3 R32 REFRIGERANT CIRCUIT

### 6.3.1 General notes R32 refrigerant

This appliance is filled with R32, an odourless flammable refrigerant gas with low burning velocity (A2L class pursuant to ISO 817). If the refrigerant is leaked, there is a possibility of ignition if it enters in contact with an external ignition source.

Make sure that unit installation and refrigerant piping installation comply with applicable legislation in each country. Also, in Europe, EN378 must be complied, as it is the applicable standard.

### 6.3.2 Refrigerant piping

#### ◆ Refrigerant piping length between indoor unit and outdoor unit (For YUTAKI (S/S COMBI))

The unit installation and refrigerant piping should comply with the relevant local and national regulations for the designed refrigerant.

Due to R32 refrigerant and depending on final refrigerant charge amount, a minimum floor area for installation must be considered.

- If total refrigerant charge amount <1.84kg, there are no additional minimum floor area requirements.
- If total refrigerant charge amount ≥1.84kg, there are additional minimum floor area requirements to be checked.

New YUTAKI R32 range (2~3HP) due to low refrigerant charge amount and due to low additional charge needed, unit installation can achieve up to 30m (2/2.5HP) / 27m (3HP) without any minimum floor area requirement.

			2HP	2.5HP	3HP
Factory Charge	kg		1.20	1.30	1.30
Charge-less piping length	m		10	10	10
Additional Charge needed	g/m		15	15	30
Maximum piping	m		30	30	27
Maximum total refrigerant charge	kg		1.50	1.60	1.81
Minimum room area requirement (Amin)	m <sup>2</sup>	No requirement is needed			
Minimum piping length between outdoor unit and indoor unit (Lmin)	m	3			
Maximum height difference between indoor and outdoor unit (H)					
	Outdoor unit higher than indoor unit	m	30 (2/2.5HP) 27 (3HP)		
	Indoor unit higher than outdoor unit	m	20		

In case of increasing more than 30m (2/2.5HP) / 27m (3HP) a minimum floor area requirement must be considered.

			2HP	2.5HP	3HP (*)
Factory Charge	kg		1.20	1.30	1.30
Charge-less piping length	m		10	10	10
Additional Charge needed	g/m		15	15	30
Maximum piping	m		50	50	40
Maximum total refrigerant charge	kg		1.80	1.90	2.20
Minimum room area requirement (Amin)	m <sup>2</sup>	No requirement is needed	Minimum area is required		
Minimum piping length between outdoor unit and indoor unit (Lmin)	m	3			
Maximum height difference between indoor and outdoor unit (H)					
	Outdoor unit higher than indoor unit	m	30		
	Indoor unit higher than outdoor unit	m	20		

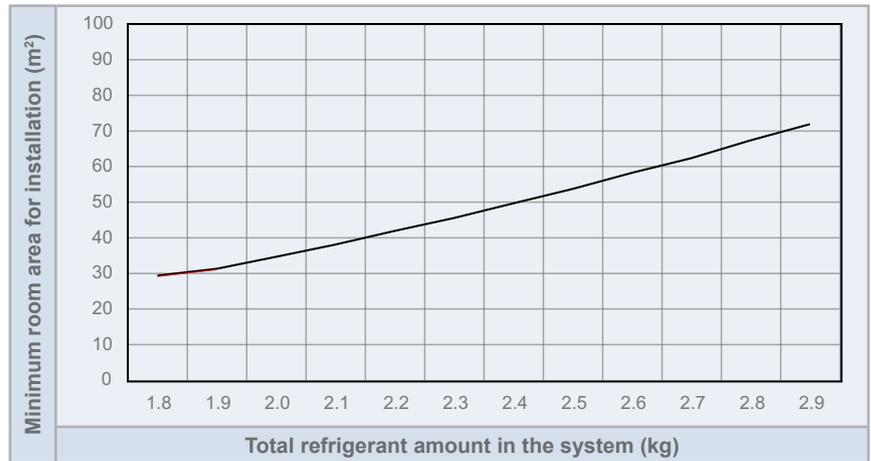
#### NOTE

(\*) In case of 3HP with piping length >27m, refrigerant piping diameter and additional charge quantity must be considered.

### ◆ Minimum area requirements

In case of total refrigerant amount  $\geq 1.84$  kg, the unit should be installed, operated and stored in a room with a floor area larger than the minimum criteria. Use following graphic and table to determine these minimum criteria:

Refrigerant Amount (kg)	Minimum Area (m <sup>2</sup> ) (H:2.2m)
1.84	28.81
1.9	30.72
2.0	34.09
2.1	37.53
2.2	41.19
2.3	45.02
2.4	49.02
2.5	53.19
2.6	57.53
2.7	62.04
2.8	66.72
2.9	71.58



### **i** NOTE

In case of not achieving the minimum floor area, contact with your dealer.

### ◆ Refrigerant piping size

Piping connection size of outdoor unit & indoor unit

Model	Piping length	Outdoor unit		Refrigerant pipe (Between Outdoor unit and Indoor unit)		Indoor Unit	
		Pipe Connection size		Pipe Connection size		Pipe Connection size	
		Gas pipe	Liquid pipe	Gas pipe	Liquid pipe	Gas pipe	Liquid pipe
2HP	3~50m	Ø 12.7 (1/2")	Ø 6.35 (1/4")	Ø 12.7	Ø 6.35	Ø 15.88 (5/8") (*)	Ø 6.35 (1/4")
2.5HP	3~50m						Ø 9.52 (3/8") (*)
3HP	3~27m	Ø 15.88 (5/8") (*)	Ø 9.52 (3/8") (*)	Ø 15.88	Ø 6.35	Ø 15.88 (5/8")	Ø 9.52 (3/8") (*)
	27~40m	Ø 15.88 (5/8")	Ø 9.52 (3/8")				Ø 9.52

### **i** NOTE

(\*): The refrigerant gas and liquid piping size for 2/2.5/3HP are different between outdoor and indoor unit, so refrigerant pipe adapters are required. These pipe adapters are factory supplied with the outdoor unit:

Model	Pipe adapter	
	Gas pipe	Liquid pipe
2HP	Ø15.88→Ø12.7	-
2.5HP	Ø15.88→Ø12.7	Ø9.52→Ø6.35
3.0HP	-	Ø9.52→Ø6.35 (x2)

### 6.3.3 Refrigerant charge

#### 6.3.3.1 Refrigerant charge amount

##### YUTAKI S/S COMBI 2-3HP

The R32 refrigerant is factory charged in the outdoor unit with a refrigerant charge amount for 10 m of piping length between outdoor and indoor unit.

##### YUTAKI M

YUTAKI M unit is a Monobloc system (closed refrigerant circuit) which has been factory charged, so additional refrigerant charge is not required.

#### 6.3.3.2 Refrigerant charge before shipment ( $W_0$ (kg))

##### YUTAKI S/S COMBI 2-3HP

Outdoor unit model	$W_0$ (kg)
RAS-2WHVRP	1.2
RAS-2.5WHVRP	1.3
RAS-3WHVRP	1.3

##### YUTAKI M (R32)

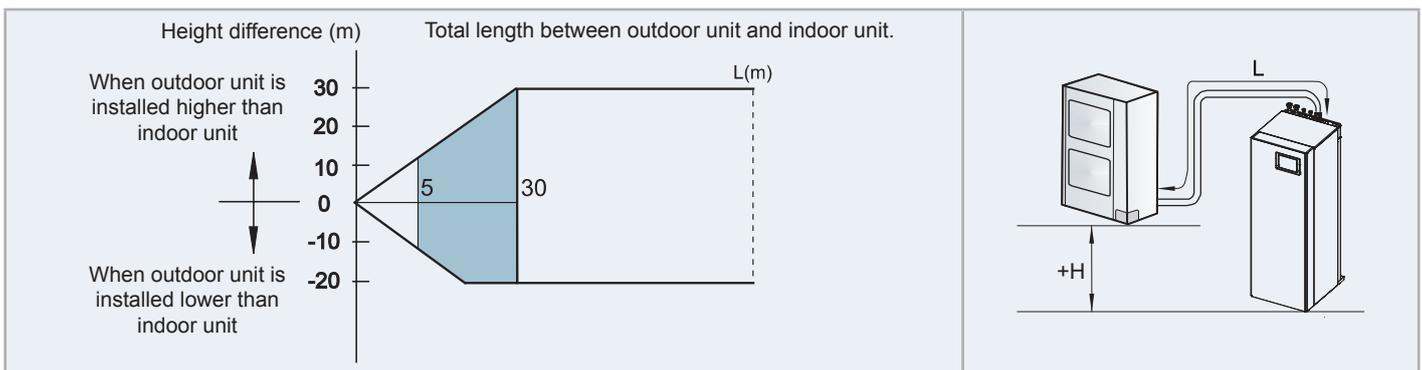
Model	$W_0$ (kg)
RASM-2VRE	1.2
RASM-3VRE	1.3

## 6.4 R410A REFRIGERANT CIRCUIT

### 6.4.1 Refrigerant piping

#### ◆ Refrigerant piping length between indoor unit and outdoor unit (For YUTAKI (S/S COMBI/S80))

The refrigerant piping length between indoor unit and outdoor unit should be designed using the following chart. Keep the design point within the area of the chart, which is showing the applicable height difference according to piping length.



		OU Model	
		4-6HP	8/10HP
Maximum piping length between outdoor unit and indoor unit ( $L_{max}$ )	Actual piping length (L)	75 m	70 m
	Equivalent piping length (X)	95 m	90 m
Minimum piping length between outdoor unit and indoor unit ( $L_{min}$ )	Actual piping length	5 m (*)	
Maximum height difference between indoor and outdoor unit (H)	Outdoor unit higher than indoor unit	30 m	
	Indoor unit higher than outdoor unit	20 m	

#### **i** NOTE

(\*): If the actual piping length between outdoor and indoor unit needs to be less than 5m, contact with your dealer.

### ◆ Refrigerant piping size

Piping connection size of outdoor unit & indoor unit

Model	Pipe size		Indoor unit		
	Gas pipe	Liquid pipe	Model	Pipe size	
				Gas pipe	Liquid pipe
(4-6)HP	Ø 15.88 (5/8")	Ø 9.52 (3/8")	(3.0-6.0)HP	Ø 15.88 (5/8")	Ø 9.52 (3/8")
8HP	Ø 25.4 (1")	Ø 9.52 (3/8")	8HP	Ø 25.4 (1")	Ø 9.52 (3/8")
10HP		Ø 12.7 (1/2")	10HP		Ø 12.7 (1/2")

#### 6.4.1.1 Refrigerant charge before shipment ( $W_0$ (kg))

##### YUTAKI S/S COMBI

Outdoor unit model	$W_0$ (kg)
RAS-4WH(V)NPE	3.3
RAS-(5/6)WH(V)NPE	3.4
RAS-8WHNPE	5.0
RAS-10WHNPE	5.3

##### YUTAKI S80

Model	$W_0$ (kg) R410A	$W_0$ (kg) R134a
Outdoor unit	RAS-4WH(V)NPE	-
	RAS-(5/6)WH(V)NPE	-
Indoor unit	RWH-(4.0-6.0)(V)NF(W)E	1.9

##### YUTAKI M

Model	$W_0$ (kg)
RASM-4(V)NE	2.8
RASM-(5/6)(V)NE	3.1

#### 6.4.2 Precautions in the event of gas refrigerant leaks

The installers and those responsible for drafting the specifications are obliged to comply with local safety codes and regulations in the case of refrigerant leakage.

#### CAUTION

- Check for refrigerant leakage in detail. If a large refrigerant leakage occurred, it would cause difficulty with breathing or harmful gases would occur if a fire were in the room.
- If the flare nut is tightened too hard, it may crack over time and cause refrigerant leakage.

#### ◆ Maximum permitted concentration of HFCs

The refrigerant R410A (charged in the outdoor unit) and the refrigerant R134a (in case of YUTAKI S80 indoor unit) are incombustible and non-toxic gases. However, if leakage occurs and gas fills a room, it may cause suffocation.

The maximum permissible concentration of HFC gas according to EN378-1 is:

Refrigerant	Maximum permissible concentration (kg/m <sup>3</sup> )
R410A	0.44
R134a	0.25

The minimum volume of a closed room where the system is installed to avoid suffocation in case of leakage is:

System combination		Minimum volume (m <sup>3</sup> )
YUTAKI S / SCOMBI	4HP	7.5
	5/6HP	7.8
YUTAKI S	8HP	11.4
	10HP	12.1
YUTAKI S80	4-6HP	7.6

The formula used for the calculation of the maximum allowed refrigerant concentration in cases of refrigerant leakage is the following:

R	R: Total quantity of refrigerant charged (kg)
— = C	V: Room volume (m <sup>3</sup> )
V	C: Refrigerant concentration

If the room volume is below the minimum value some effective measure must be taken into account after installing to prevent suffocation in case of leakage.

#### ◆ Countermeasure in the event of possible refrigerant leakage

The room must have the following features to prevent suffocation in case a refrigerant leakage occurs:

- 1 Provide a shutterless opening which will allow fresh air to circulate into the room.
- 2 Provide a doorless opening of 0.15% or more of the floor area.
- 3 There must be a ventilator fan connected to a gas leak detector, with a ventilator capacity of 0.4 m<sup>3</sup>/min or higher per Japanese refrigeration ton (= compressor displacement volume / (5.7 m<sup>3</sup>/h (R410A) or 14.4 m<sup>3</sup>/h (R134a)) of the air conditioning system using the refrigerant.

Model	Tonnes
RAS-(4-6)WH(V)NPE	2.27
RAS-8WHNPE	3.16
RAS-10WHNPE	4.11

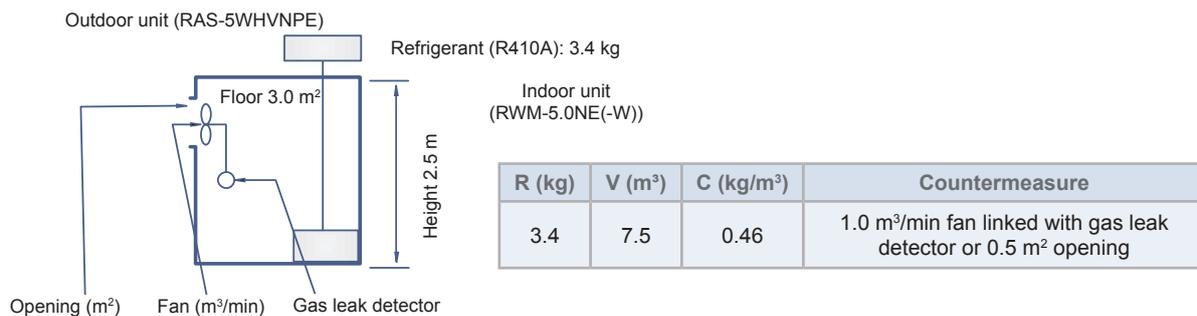
Model		Tonnes	
		R410A	R134a
Outdoor unit	RAS-(4-6)WH(V)NPE	2.27	-
Indoor unit	RWH-(4.0-6.0)(V)NF(W)E	-	1.61

#### **i** NOTE

Always take the maximum value between the R410A and R134a.

- 4 Pay special attention to the place, such as a basement, etc., where the refrigerant can stay, since refrigerant is heavier than air.

Example:



## 6.5 WATER PIPING

### 6.5.1 Water piping length

Consider the following guidelines when designing the water circuit.

Item	YUTAKI S	YUTAKI S COMBI	YUTAKI S80		YUTAKI M (R410A) / YUTAKI M (R32)
			DHW tank above the indoor unit	DHW tank beside the indoor unit	
Maximum water piping length between indoor unit and DHW tank	10 m	--	--	10 m	10 m
Maximum water piping length between indoor unit and 3-way valve	3 m	--	--	3 m	--
Maximum water piping length between 3-way valve and DHW tank	10 m	--	--	10 m	10 m

### 6.5.2 Water piping size

#### YUTAKI S

(inches)

Model	Space heating pipes connection		
	Inlet connection	Outlet connection	Shut-off valves
(2.0-3.0)HP	G 1" (female)	G 1" (female)	G 1" (male) - G 1" (male)
(4.0-10.0)HP	G 1-1/4" (female)	G 1-1/4" (female)	G 1-1/4" (male) - G 1-1/4" (male)

#### YUTAKI S COMBI

(inches)

Model	Space heating connection			DHW connection		
	Inlet connection	Outlet connection	Shut-off valves	Inlet connection	Outlet connection	Pressure and temperature relief valve (*)
(2.0-3.0)HP	G 1" (female)	G 1" (female)	G 1" (male) - G 1" (male)	G 3/4" (male)	G 3/4" (male)	Ø15 mm
(4.0-6.0)HP	G 1" (female)	G 1" (female)	G 1" (male) - G 1" (male)	G 3/4" (male)	G 3/4" (male)	Ø15 mm

(\*): Only for models for UK market

#### YUTAKI S80 indoor unit

**Type 1: Version for operation in DHW but with a remote tank (RWH-(4.0-6.0)(V)NFE)**

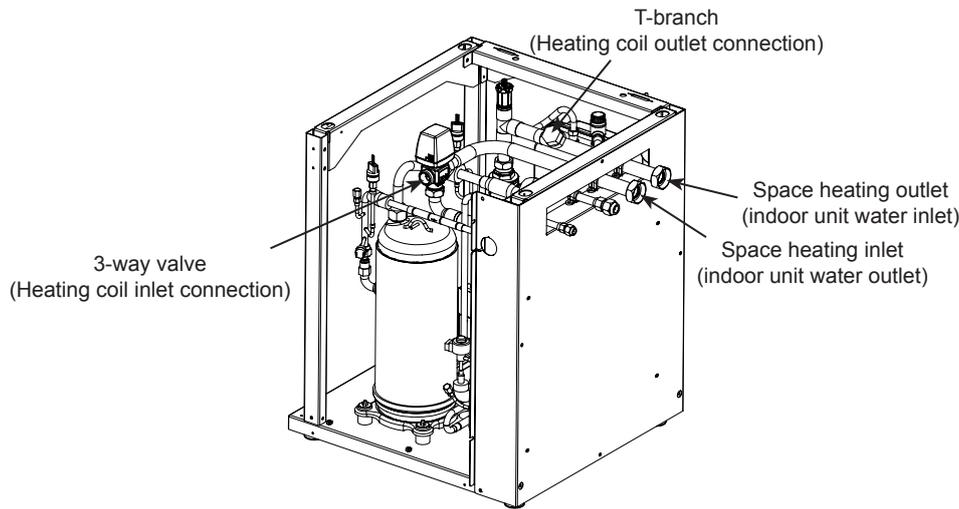
(inches)

Model	Space heating connection		
	Inlet connection	Outlet connection	Shut-off valves
(4.0-6.0)HP	G 1-1/4" (female)	G 1-1/4" (female)	G 1-1/4" (male) - G 1-1/4" (male)

**Type 2: Version for operation with an Hitachi DHW tank (RWH-(4.0-6.0)(V)NFWE)**

(inches)

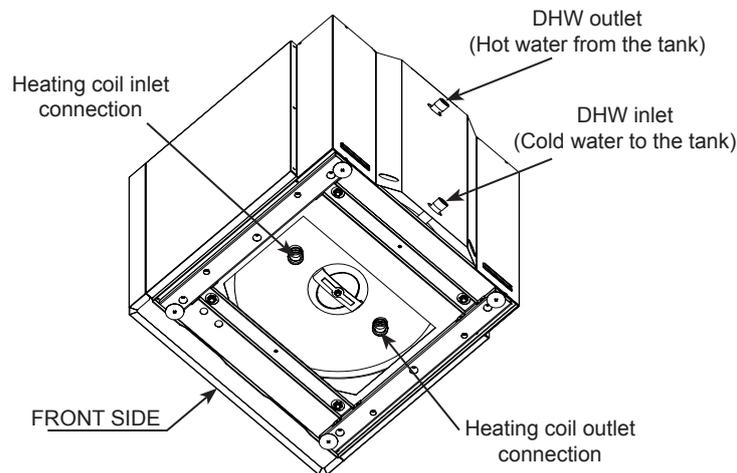
Model	Space heating connection			Heating coil connection	
	Inlet connection	Outlet connection	Shut-off valves	Inlet connection (3-way valve)	Outlet connection (T-branch)
(4.0-6.0)HP	G 1-1/4" (female)	G 1-1/4" (female)	G 1-1/4" (male) - G 1-1/4" (male)	G 1" (female)	G 1" (female)



**YUTAKI S80 Domestic hot water tank accessory (DHWS(200/260)S-2.7H2E(-W))**

(inches)

Model	Heating coil connection		DHW connection	
	Inlet connection	Outlet connection	Inlet connection	Outlet connection
DHWS(200/260)S-2.7H2E(-W)	G 1" (male)	G 1" (male)	G 3/4" (male)	G 3/4" (male)



**Heating coil pipes (Factory-supplied with the DHW tank accessory (DHWS(200/260)S-2.7H2E(-W)))**

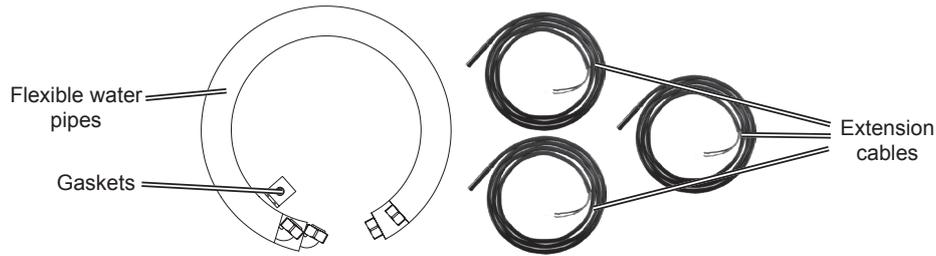
The domestic hot water tank accessory for combination with YUTAKI S80 indoor unit is factory-supplied with two flexible water pipes for the connection between the indoor unit and the heating coil of the domestic hot water tank, when the DHW tank is installed integrated above the indoor unit.

Heating coil pipes	
Item	Connection
	<p>One pipe for the connection between 3-way valve connection and heating coil inlet connection of the tank.</p> <p>The other one for the connection between T-branch connection and heating coil outlet connection of the tank.</p>

**Flexible water pipe kit (ATW-FWP-02) - For domestic hot water tank installed beside the indoor unit**

For DHW tank beside the indoor unit (both right or left side), the heating coil pipes factory-supplied with the DHW tank accessory are not required. In this case, the dedicated Hitachi flexible water pipe kit (ATW-FWP-02 accessory) is needed. This kit is provided with the following items:

- 4 flexible water pipes:
  - ♦ 2 pipes to connect to the indoor unit (3-way valve and T-branch)
  - ♦ 2 pipes to connect to the heating coil inlet/outlet connections of the DHW tank accessory (DHWS(200/260)S-2.7H2E(-W)).
- 9 gaskets (2 gaskets for each flexible water pipe end and 1 spare gasket).
- 3 extension cables (1 for the tank's electric heater, 1 for the tank's thermistor and 1 for the unit controller).



It is necessary to identify the function of each water pipe.

Heating coil pipes for the indoor unit	
Item	Connection
~500 mm	To connect to the 3-way valve heating coil inlet connection.
~400 mm	To connect to the T-branch heating coil outlet connection.

Heating coil pipes for the DHW tank accessory	
Item	Connection
<p>360 mm (1") (x2) (1")</p>	One pipe to connect to the heating coil inlet connection of the tank accessory.  The other one to connect to the heating coil outlet connection of the tank accessory.

**YUTAKI M (R32)**

(inches)

Model	Space heating pipes connection		
	Inlet connection	Outlet connection	Shut-off valves (Field-supplied)
2.0HP	G 1" (female)	G 1" (female)	G 1" (male) - G 1" (male)
3.0HP	G 1" (female)	G 1" (female)	G 1" (male) - G 1" (male)

**YUTAKI M (R410A)**

(inches)

Model	Space heating pipes connection		
	Inlet connection	Outlet connection	Shut-off valves
(4.0-6.0)HP	G 1-1/4" (female)	G 1-1/4" (female)	G 1-1/4" (male) - G 1-1/4" (male)

### 6.5.3 Water quality

#### CAUTION

- Water quality must be according to EU council directive 98/83 EC.
- Water should be subjected to filtration or to a softening treatment with chemicals before application as treated water.
- It is also necessary to analyse the quality of water by checking pH, electrical conductivity, ammonia ion content, sulphur content, and others. Should the results of the analysis be not good, the use of industrial water would be recommended.
- No antifreeze agent shall be added to the water circuit.
- To avoid deposits of scale on the heat exchangers surface it is mandatory to ensure a high water quality with low levels of CaCO<sub>3</sub>.

#### ◆ Recommendations for the DHW circuit

The following is the recommended standard water quality.

Item	DHW space	Tendency <sup>(1)</sup>	
	Water supplied <sup>(3)</sup>	Corrosion	Deposits of scales
Electrical Conductivity (mS/m) (25°C) {μS/cm} (25 °C) <sup>(2)</sup>	100~2000	●	●
Chlorine Ion (mg Cl <sup>-</sup> /l)	max 250	●	
Sulphate (mg/l)	max 250	●	
Combination of chloride and sulphate (mg/l)	max 300	●	●
Total Hardness (mg CaCO <sub>3</sub> /l)	60~150		●

#### NOTE

- (1): The mark "●" in the table means the factor concerned with the tendency of corrosion or deposits of scales.
- (2): The value shown in "{}" are for reference only according to the former unit.
- (3): Water range will be according s/UNE 112076:2004 IN.

#### 6.5.3.1 Water filling

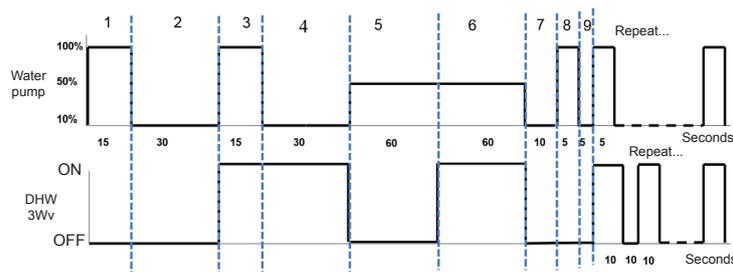
##### ◆ Space heating

- 1 Check that a water check valve (ATW-WCV-01 accessory) with a shut-off valve (field supplied) is connected to the water filling point (water inlet connection) for filling the space heating hydraulic circuit (see "6.7 Space heating and DHW").
- 2 Make sure all the valves are open (water inlet/outlet shut-off valves and the rest of valves of the space heating installation components).
- 3 Ensure that the air purgers of the indoor unit and installation are open (turn the indoor unit air purger twice at least).
- 4 Check that the drain pipes connected to the safety valve (and to the drain pan in case of installing the "Cooling kit" accessory) are correctly connected to the general draining system. The safety valve is later used as an air purging device during the water filling procedure.
- 5 Fill the space heating circuit with water until the pressure displayed on the manometer reaches approximately 1.8 bar.

#### NOTE

While the system is being filled with water, it is highly recommended to operate the safety valve manually so as to help with the air purging procedure.

- 6 Remove as much air from inside the water circuit as possible through the indoor air purger and other air vents in the installation (fan coils, radiators...).
- 7 Start the air purge procedure test. There are two modes (Manual or Automatic) which helps in case of installations with heating and DHW operation:
  - a. Manual: Start and stop the unit manually using the unit controller (Run/Stop button) and also using the DSW4 pin 2 of the PCB1 (ON: Forced to derive to DHW coil; OFF: Forced to derive to space heating).
  - b. Automatic: Select the air purge function using the user controller. When the automatic air purge function is running, the pump speed and the position of the 3-way valve (space heating or DHW) are automatically changed.



- 8 If a little quantity of air is still remaining in the water circuit, it will be removed by the automatic air purger of the indoor unit during the first hours of operation. Once the air in the installation has been removed, a reduction of water pressure in the circuit is very likely to occur. Therefore, additional water should be filled until water pressure returns to an approximate level of 1.8 bar.

### **i** NOTE

- The indoor unit is equipped with an automatic air purger (factory supplied) at the highest location of the indoor unit. Anyway, if there are higher points in the water installation, air might be trapped inside water pipes, which could cause system malfunction. In that case, additional air purgers (field supplied) should be installed to ensure no air enters into the water circuit. The air vents should be located at points which are easily accessible for servicing.
- The water pressure indicated on the indoor unit manometer may vary depending on the water temperature (the higher temperature, the higher pressure). Nevertheless, it must remain above 1 bar in order to prevent air from entering the circuit.
- Fill in the circuit with tap water. The water in the heating installation must comply with EN directive 98/83 EC. Non-sanitary controlled water is not recommended (for example, water from wells, rivers, lakes, etc.)
- The maximum water pressure is 3 bar (nominal opening pressure of the safety valve). Provide adequate reduction pressure device in the water circuit to ensure that the maximum pressure is NOT exceeded.
- For heating floor system, air should be purged by means of an external pump and an open circuit to prevent the formation of air pockets.
- Check carefully for leaks in the water circuit, connections and circuit elements.

### ◆ Domestic hot water tank

If a domestic hot water tank has been installed, perform the following operations:

#### Heating coil circuit

Fill the DHW tank heating coil from the space heating circuit filling in point. Follow the instructions explained in the “6.5.3.1 Water filling” chapter to correctly perform the operation.

### **!** CAUTION

- Check that the heating coil pipes are correctly connected between indoor unit and tank before filling the tank’s heating coil.
- Ensure the correct water quality of the indoor unit water circuit.

#### Domestic hot water tank and DHW circuit

- 1 Open the outlet water taps of the DHW installation one after each other, to expel all the air from inside the water circuit.
- 2 Open the main DHW inlet valve in order to fill the tank. If there is a shut-down valve installed in the DHW outlet, open it to allow circulation through the DHW installation.
- 3 When water begins to flow from the outlet water taps of the DHW installation, close all these taps.
- 4 Finally, close the main DHW inlet valve when the pressure reaches approximately 6 bars.

### **!** CAUTION

- Check carefully for leaks in the water circuit, connections and circuit elements.
- Check that the water pressure in the circuit is lower than 7 bars.
- A pressure and temperature relief valve should be installed at the DHW inlet connection (See “6.7.2.3 Additional hydraulic optional elements (For DHW)” section). If it is the case, manually operate its relief valve to ensure that the water flows free through the discharge pipe.
- Fill in the circuit with tap water. The water in the heating installation must comply with EN directive 98/83 EC. Non-sanitary controlled water is not recommended (for example, water from wells, rivers, lakes, etc.)

### 6.5.4 Requirements and recommendations for the hydraulic circuit

- The maximum piping length depends on the maximum pressure availability in the water outlet pipe. Please check the pump curves.
- The indoor unit is equipped with an air purger (factory supplied) at the highest location of the Indoor Unit. If this location is not the highest of the water installation, air might be trapped inside the water pipes, which could cause system malfunction. In that case additional air purgers (field supplied) should be installed to ensure no air enters the water circuit.
- For heating floor system, the air should be purged by means of an external pump and an open circuit to avoid air bags.
- When the unit is stopped during shut-off periods and the ambient temperature is very low, the water inside the pipes and the circulating pump may freeze, thus damaging the pipes and the water pump. In these cases, the installer shall ensure that the water temperature inside the pipes does not fall below the freezing point. In order to prevent this, the unit has a self-protection mechanism which should be activated (refer to the Service manual, "*Optional functions*" chapter).
- Check that the water pump of the space heating circuit works within the pump operating range and that the water flow is over the pump's minimum. If the water flow is below 12 litres/minute for 4.0-10.0HP unit (6 litres/minute for 2.0/2.5/3.0HP unit), alarm is displayed on the unit.
- An additional special water filter is highly recommended to be installed on the space heating (field installation), in order to remove possible particles remaining from brazing which cannot be removed by the indoor unit water strainer.
- When selecting a tank for DHW operation, take into consideration the following points:
  - The storage capacity of the tank has to meet with the daily consumption in order to avoid stagnation of water.
  - Fresh water must circulate inside the DHW tank water circuit at least one time per day during the first days after the installation has been performed. Additionally, flush the system with fresh water when there is no consumption of DHW during long periods of time.
  - Try to avoid long runs of water piping between the tank and the DHW installation in order to decrease possible temperature losses.
  - If the domestic cold water entry pressure is higher than the equipment's design pressure (6 bar), a pressure reducer must be fitted with a nominal value of 7 bar.
- Ensure that the installation complies with applicable legislation in terms of piping connection and materials, hygienic measures, testing and the possible required use of some specific components like thermostatic mixing valves, Differential pressure overflow valve, etc.
- The maximum water pressure is 3 bar (nominal opening pressure of the safety valve). Provide adequate reduction pressure device in the water circuit to ensure that the maximum pressure is NOT exceeded.
- Ensure that the drain pipes connected to the safety valve and to the air purger are properly driven to avoid water being in contact with unit components.
- Make sure that all field supplied components installed in the piping circuit can withstand the water pressure and the water temperature range in which the unit can operate.
- YUTAKI units are conceived for exclusive use in a closed water circuit.
- The internal air pressure of the expansion vessel tank will be adapted to the water volume of the final installation (factory supplied with 0.1 MPa of internal air pressure).
- Do not add any type of glycol to the water circuit.
- Drain taps must be provided at all low points of the installation to permit complete drainage of the circuit during servicing.

### 6.5.5 Water flow control

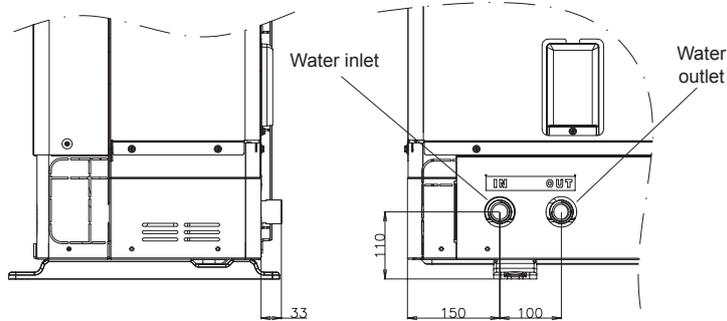
YUTAKI pumps can estimate the water flow by electronic calculation. Therefore, there is no need to install a water flow switch with the new YUTAKI pumps.

However, if a secondary pump is installed or glycol is used (in the case of YUTAKI M), it is necessary to install a water flow control, as the electronic calculation may be affected.

## 6.6 WATER PIPING CONNECTION FOR YUTAKI M

### 6.6.1 Piping Location And Connection Size

The unit is factory supplied with two unions to be connected to the water inlet/outlet pipe. Refer to the next figure detailing the location of the water pipes location, dimensions and connection sizes.



Description	Connection size
Water Inlet	Rp1"
Water Outlet	Rp1"

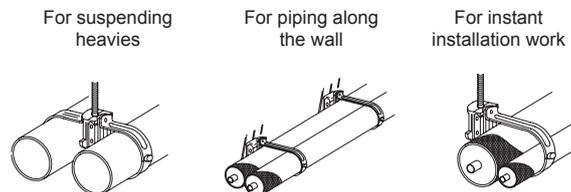
### 6.6.2 Suspension Of Water Piping

Suspend the refrigerant and water piping at certain points and prevent the refrigerant and water piping from being in direct contact with the building: walls, ceilings, etc...

If there is direct contact between pipes, abnormal sound may occur due to the vibration of the piping. Pay special attention in cases of short piping lengths.

Do not fix the refrigerant and water pipes directly with the metal fittings (refrigerant piping may expand and contract).

Some examples for suspension method are shown below.



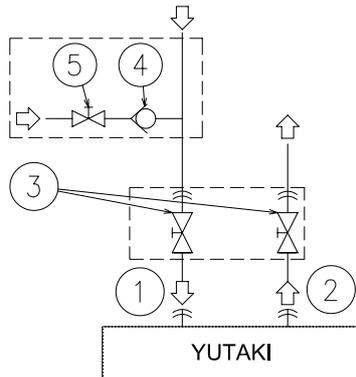
## 6.7 SPACE HEATING AND DHW

### 6.7.1 YUTAKI S AND YUTAKI M

#### DANGER

Do not connect the power supply to the indoor unit prior to filling the space heating circuit (and DHW circuit if it were the case) with water and checking water pressure and the total absence of any water leakage.

#### 6.7.1.1 Additional hydraulic necessary elements for space heating

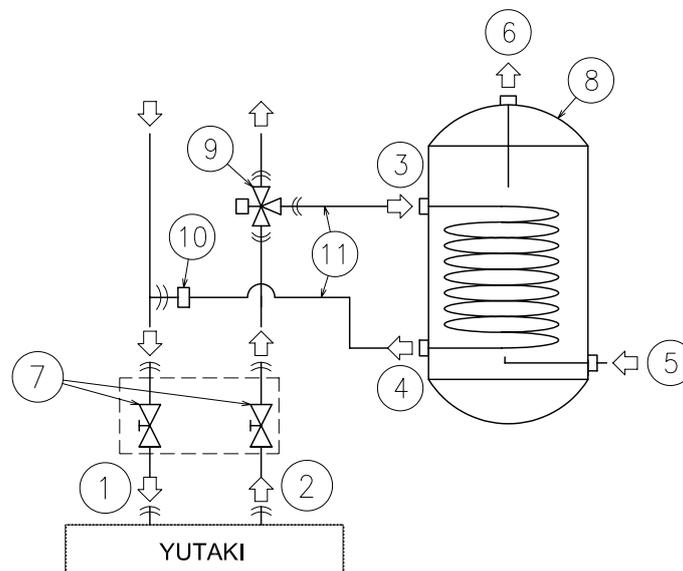


Nature	No.	Part name
Piping connections	1	Water inlet (Space heating)
	2	Water outlet (Space heating)
Factory supplied	3	Shut-off valve (factory-supplied)
Accessories	4	Water check valve (ATW-WCV-01 accessory)
Field supplied	5	Shut-off valve

The following hydraulic elements are necessary to correctly perform the space heating water circuit:

- **Two shut-off valves (factory supplied accessory) (3)** must be installed in the indoor unit. One at the water inlet connection (1) and the other at the water outlet connection (2) in order to make easier any maintenance work.
- **A water check valve (ATW-WCV-01 accessory) (4)** with 1 shut-off valve (field supplied) (5) must be connected to the water filling point when filling the indoor unit. The check valve acts as a safety device to protect the installation against back pressure, back flow and back syphon of non-potable water into drinking water supply net.

#### ◆ Additional hydraulic necessary elements for DHW

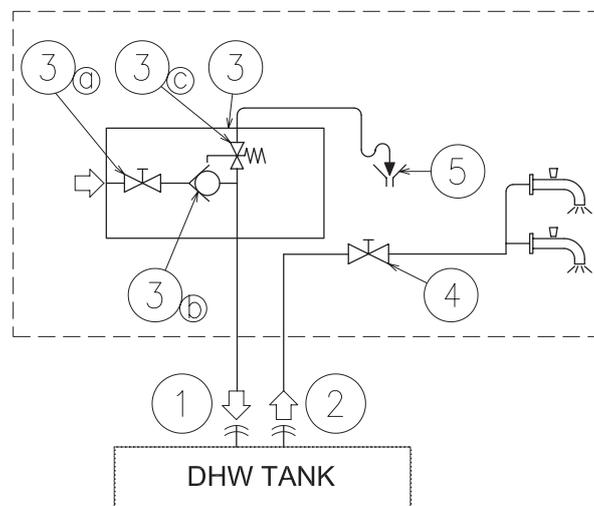


Nature	N°	Part name
Piping connections	1	Water inlet (Space heating)
	2	Water outlet (Space heating)
	3	Heating coil inlet
	4	Heating coil outlet
	5	Water inlet (DHW)
	6	Water outlet (DHW)
Factory supplied	7	Shut-off valve (factory-supplied)
Accessories	8	Domestic hot water tank (DHWT-(200/300)S-3.0H2E accessory)
	9	3-way valve (ATW-3WV-01 accessory)
Field supplied	10	T-branch
	11	Heating coil pipes

YUTAKI S is not factory-supplied ready for DHW operation, but it can be used for the production of DHW if the following elements are installed:

- **A domestic hot water tank (DHWT-(200/300)S-3.0H2E accessory) (8)** has to be installed in combination with the indoor unit.
- **A 3-way valve (ATW-3WV-01 accessory) (9)** must be connected at one point of the water outlet pipe of the installation.
- **A T-branch (field supplied) (10)** must be connected at one point of the water inlet pipe of the installation.
- **Two water pipes (field supplied) (11)**. One pipe between 3-way valve and the heating coil inlet (3) of the DHW tank, the other one between the T-branch and the heating coil outlet (4) of the DHW tank.

Additionally, the following elements are required for the DHW circuit:



Nature	N°	Part name	
Piping connections	1	Water inlet (DHW)	
	2	Water outlet (DHW)	
Field supplied	3	Pressure and temperature relief valve	
		3a	Shut-off valve
		3b	Water check valve
	3c	Pressure relief valve	
	4	Shut-off valve	
5	Draining		

- **1 Shut-off valve (field supplied):** one shut-off valve (4) must be connected after the DHW outlet connection of the DHW tank (2) in order to make easier any maintenance work.
- **A Security water valve (Field-supplied):** this accessory (3) is a pressure and temperature relief valve that must be installed as near as possible to the DHW inlet connection of the DHW tank (1). It should ensure a correct draining (5) for the discharge valve of this valve. This security water valve should provide the following:

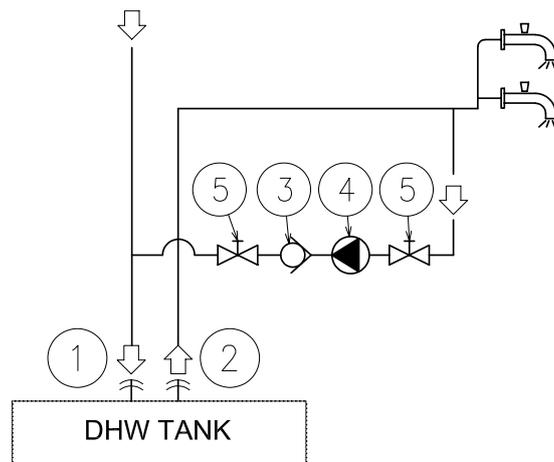
- Pressure protection
- Non-return function
- Shut-off valve
- Filling
- Draining

**i** NOTE

The discharge pipe should always be open to the atmosphere, free of frost and in continuous slope to the down side in case that water leakage exists.

### 6.7.1.2 Additional hydraulic optional elements (For DHW)

In case of a recirculation circuit for the DHW circuit:



Nature	N°	Part name
Piping connections	1	Water inlet (DHW)
	2	Water outlet (DHW)
Accessories	3	Water check valve (ATW-WCV-01 accessory)
Field supplied	4	Water pump
	5	Shut-off valve

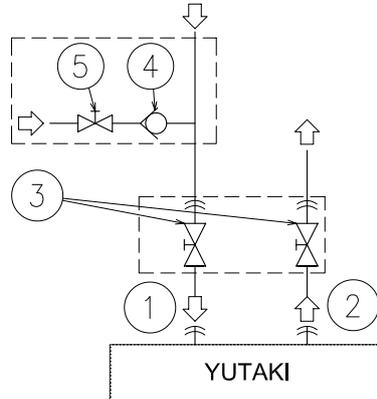
- **1 Recirculation water pump (field supplied):** this water pump (3) will help to correctly recirculate the hot water to the DHW inlet.
- **1 Water check valve (ATW-WCV-01 accessory):** this Hitachi accessory (3) is connected after the recirculation water pump (4) in order to ensure the non-return of water.
- **2 Shut-off valves (field supplied) (5):** one before the recirculation water pump (4) and other after the water check valve accessory (3).

## 6.7.2 YUTAKI S COMBI

### DANGER

*Do not connect the power supply to the indoor unit prior to filling the space heating and DHW circuit with water and checking water pressure and the total absence of any water leakage.*

### 6.7.2.1 Additional hydraulic necessary elements for space heating



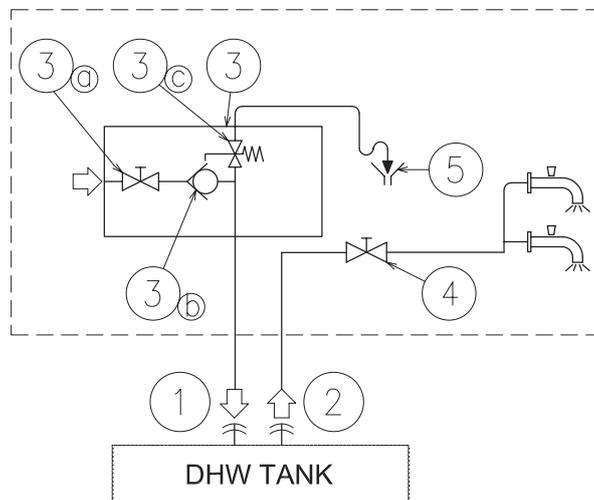
Nature	No.	Part name
Piping connections	1	Water inlet (Space heating)
	2	Water outlet (Space heating)
Factory supplied	3	Shut-off valve (factory-supplied)
Accessories	4	Water check valve (ATW-WCV-01 accessory)
Field supplied	5	Shut-off valve

The following hydraulic elements are necessary to correctly perform the space heating water circuit:

- **Two shut-down valves (factory supplied accessory) (3)** must be installed in the indoor unit. One at the water inlet connection (1) and the other at the water outlet connection (2) in order to make easier any maintenance work.
- **A water check valve (ATW-WCV-01 accessory) (4)** with 1 shut-down valve (field supplied) (5) must be connected to the water filling point when filling the indoor unit. The check valve acts as a safety device to protect the installation against back pressure, back flow and back syphon of non-potable water into drinking water supply net.

### 6.7.2.2 Additional hydraulic necessary elements for DHW

YUTAKI S COMBI is factory-supplied ready for DHW operation (Fitted with DHW tank and 3-way valve). Only the following elements are required in the DHW circuit:



Nature	N°	Part name	
Piping connections	1	Water inlet (DHW)	
	2	Water outlet (DHW)	
Field supplied	3	Pressure and temperature relief valve	
		3a	Shut-off valve
		3b	Water check valve
	3c	Pressure relief valve	
	4	Shut-off valve	
5	Draining		

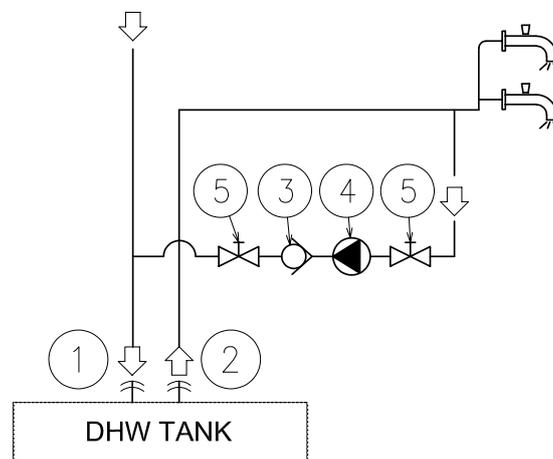
- **1 Shut-down valve (field supplied):** one shut-down valve (4) must be connected after the DHW water outlet connection of the DHW tank (2) in order to make easier any maintenance work.
- **A Security water valve (Field-supplied):** this accessory (3) is a pressure and temperature relief valve that must be installed as near as possible to the DHW water inlet connection of the DHW tank (1). It should ensure a correct draining (5) for the discharge valve of this valve. This security water valve should provide the following:
  - Pressure protection
  - Non-return function
  - Shut-down valve
  - Filling
  - Draining

**i** NOTE

The discharge pipe should always be open to the atmosphere, free of frost and in continuous slope to the down side in case that water leakage exists.

### 6.7.2.3 Additional hydraulic optional elements (For DHW)

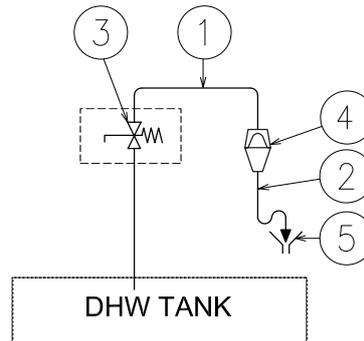
In case of a recirculation circuit for the DHW circuit:



Nature	N°	Part name
Piping connections	1	Water inlet (DHW)
	2	Water outlet (DHW)
Accessories	3	Water check valve (ATW-WCV-01 accessory)
Field supplied	4	Water pump
	5	Shut-off valve

- **1 Recirculation water pump (field supplied):** this water pump (4) will help to correctly recirculate the hot water to the DHW water inlet.
- **1 Water check valve (ATW-WCV-01 accessory):** this Hitachi accessory (3) is connected after the recirculation water pump (4) in order to ensure the non-return of water.
- **2 Shut-down valves (field supplied) (5):** one before the recirculation water pump (4) and other after the water check valve accessory (3).

### 6.7.2.4 Additional hydraulic necessary elements for DHW (only for UK market)



Nature	N°	Part name
Piping connections	1	T&P relief valve outlet pipe Ø15 (factory supplied)
	2	Tundish outlet pipe (Field supplied)
Accessories	3	Pressure and Temperature relief valve (Factory supplied)
Field supplied	4	Tundish (Field supplied)
	5	Drain (Field supplied)

The following accessories are necessary for the compliance of the YUTAKI S COMBI for UK market with the UK requirements referred in the UK Building Regulations 2000.

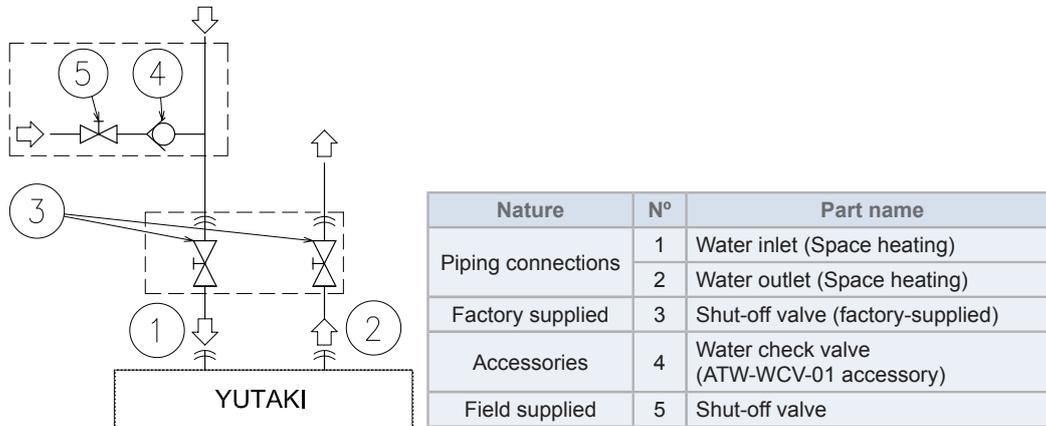
- **1 temperature and pressure relief valve (factory supplied)**, fitted at the hottest part of the DHW tank. This device protects the unit of excessive temperature (>96°C) and excessive pressure (>7 bar) in the DHW tank. Additionally, a Ø15 diameter pipe (factory supplied) is fitted to the outlet of the relief valve and drives the discharge to the tundish (4).
- **1 Tundish (4)(field supplied)**, installed in a vertical position, with no more than 600 mm of pipe between the valve outlet and the tundish.
- **1 Tundish outlet pipe (2)(field supplied)** with a vertical section at least 300 mm long below the tundish(4), before any elbows or bends in the pipework. This pipe should be made of metal or other material that has been demonstrated to be capable of safety withstanding temperatures and pressure of the water discharged, as it is referred in the UK Building Regulations.
- The discharge pipe from the tundish (2) must terminate in a safe place where is no risk to persons in the vicinity of the discharge. The discharge will consist of high water temperature and pressure.

### 6.7.3 YUTAKI S80

#### **⚠ DANGER**

*Do not connect the power supply to the indoor unit prior to filling the space heating and DHW circuit with water and checking water pressure and the total absence of any water leakage.*

#### 6.7.3.1 Additional hydraulic necessary elements for space heating

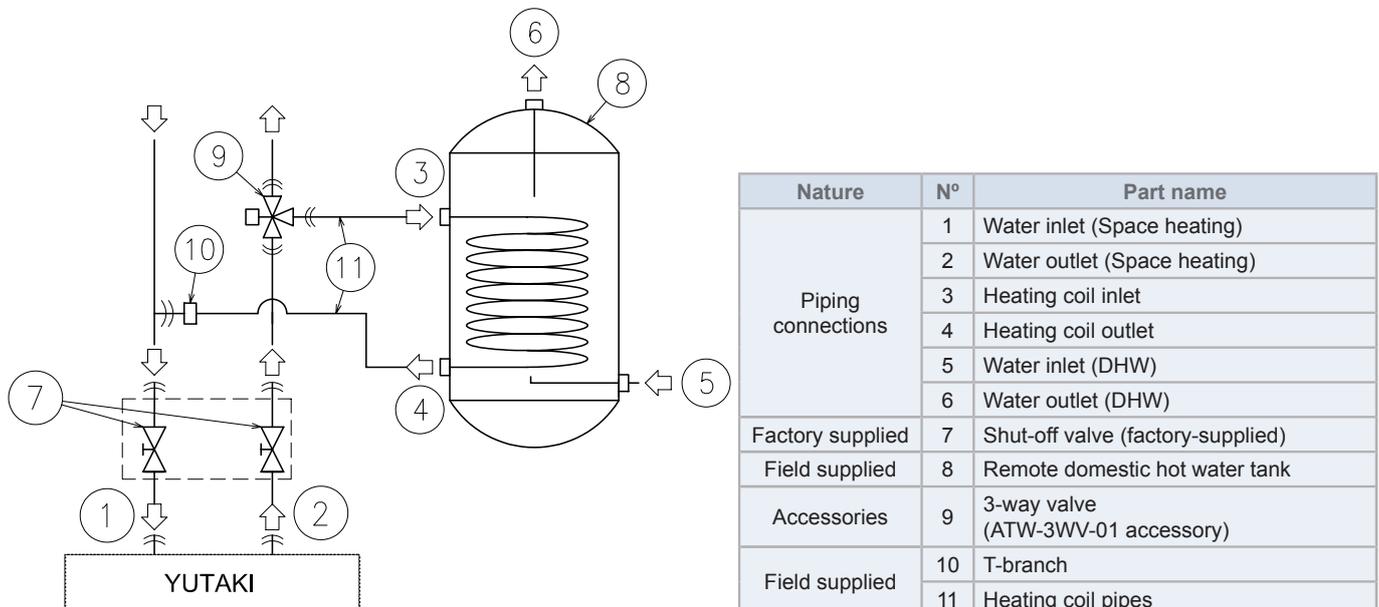


The following hydraulic elements are necessary to correctly perform the space heating water circuit:

- **Two shut-down valves (factory supplied accessory) (3)** must be installed in the indoor unit. One at the water inlet connection (1) and the other at the water outlet connection (2) in order to make easier any maintenance work.
- **A water check valve (ATW-WCV-01 accessory) (5)** with 1 shut-down valve (field supplied) (4) must be connected to the water filling point when filling the indoor unit. The check valve acts as a safety device to protect the installation against back pressure, back flow and back syphon of non-potable water into drinking water supply net.

#### 6.7.3.2 Additional hydraulic necessary elements for DHW

##### ◆ TYPE 1: Version for operation in DHW but with a remote tank

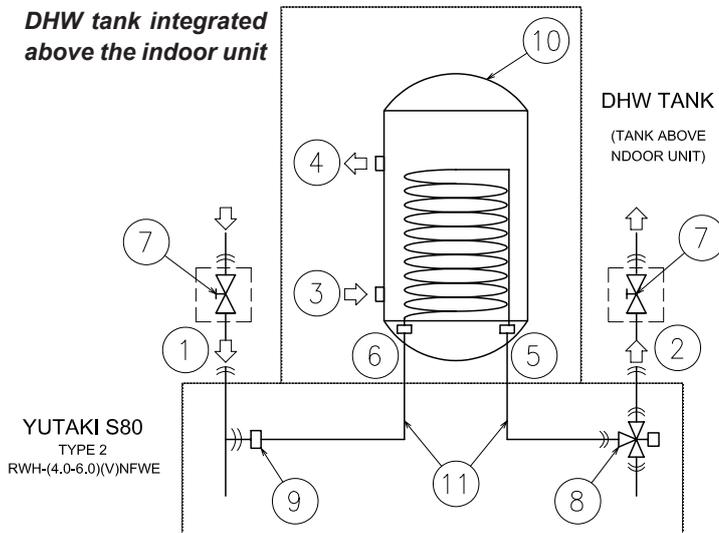


YUTAKI S80 TYPE 1 is not factory-supplied ready for DHW operation, but it can be used for the production of DHW if the following elements are installed:

- **A domestic hot water tank (Remote tank) (8)** has to be installed in combination with the indoor unit.
- **A 3-way valve (ATW-3WV-01 accessory) (9)** must be connected at one point of the water outlet pipe of the installation.
- **A T-branch (field supplied) (10)** must be connected at one point of the water inlet pipe of the installation.
- **Two water pipes (field supplied) (11)**. One pipe between 3-way valve and the heating coil inlet (3) of the DHW tank, the other one between the T-branch and the heating coil outlet (4) of the DHW tank.

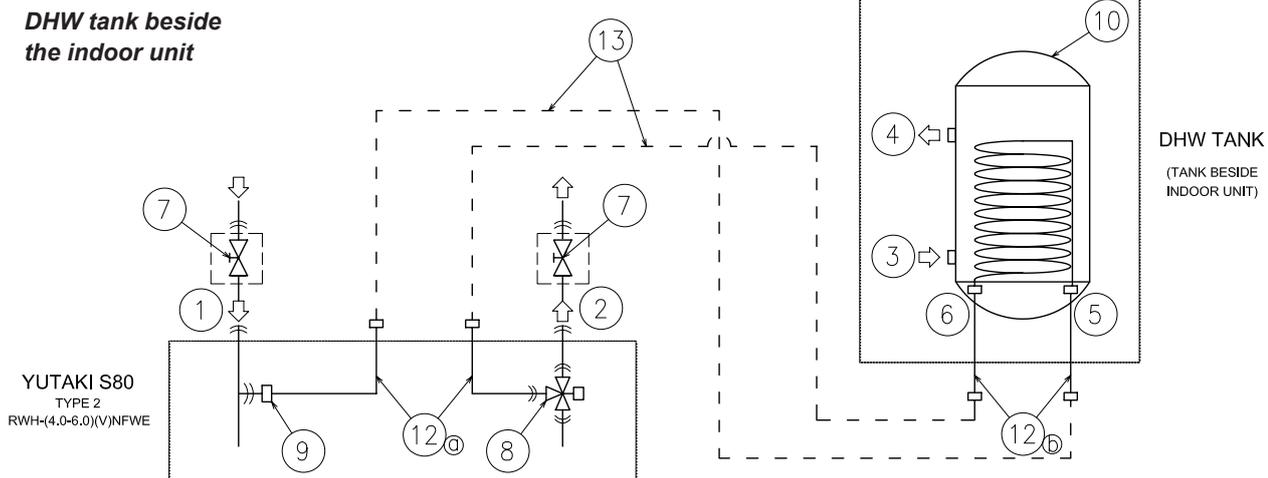
### ◆ TYPE 2: Version for operation with Hitachi DHW tank

#### DHW tank integrated above the indoor unit



Nature	N°	Part name	
Piping connections	1	Water inlet (Space heating)	
	2	Water outlet (Space heating)	
	3	Heating coil inlet	
	4	Heating coil outlet	
	5	Water inlet (DHW)	
	6	Water outlet (DHW)	
Factory supplied	7	Shut-off valve (factory-supplied)	
	8	3-way valve	
	9	T-branch	
Accessories	10	Domestic hot water tank (DHWS(200/260)S-2.7H2E accessory)	
	11	Heating coil pipes	
	12	Flexible water pipe kit (ATW-FWP-02 accessory)	
		12a	Indoor unit pipes
		12b	DHW tank pipes
Field supplied	13	Water pipes between indoor unit and DHW tank	

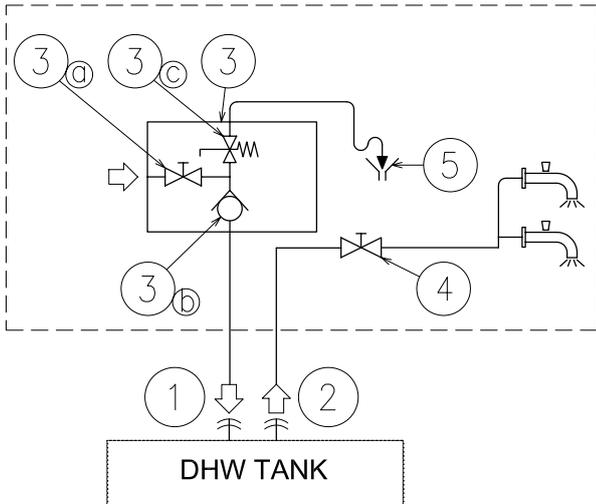
#### DHW tank beside the indoor unit



The YUTAKI S80 version for combination with DHW tank (RWH-(4.0-6.0)(V)NFWFE) needs the following elements to provide DHW operation:

- **The YUTAKI S80 domestic hot water tank (DHWS(200/260)S-2.7H2E accessory) (10)** is required in combination with YUTAKI S80 indoor unit. This tank accessory is factory-supplied with two flexible water pipes (11). Respect the following instructions depending on the DHW tank location (integrated above the indoor unit or beside it).
  - For DHW tank integrated above the indoor unit, use one of the factory-supplied pipes (11) for the connection between 3-way valve and the heating coil inlet coil of the DHW tank, and the other one for the connection between the T-branch and the heating coil outlet coil of the DHW tank accessory.
  - For DHW tank beside the indoor unit (both right or left side), the pipes factory-supplied with the DHW tank accessory (11) are not required. In this case, the dedicated Hitachi flexible water pipe kit (ATW-FWP-02 accessory) (12) is needed. This kit is provided with the following items:
    - ♦ 4 flexible water pipes (Two pipes (12a) to connect to the indoor unit (3-way (8) valve and T-branch (9)) and other two pipes (12b) to connect to the heating coil inlet/outlet connections of the DHW tank (5-6). To connect the indoor unit with the DHW tank, two additional field-supplied pipes are required (13).
    - ♦ 9 gaskets (2 gaskets for each flexible water pipe end and 1 spare gasket).
    - ♦ 3 extension cables (1 for the tank's electric heater, 1 for the tank's thermistor and 1 for the unit controller).

Additionally, the following elements are required for the DHW circuit:



Nature	N°	Part name	
Piping connections	1	Water inlet (DHW)	
	2	Water outlet (DHW)	
Field supplied	3	Pressure and temperature relief valve	
		3a	Shut-off valve
		3b	Water check valve
	3c	Pressure relief valve	
	4	Shut-off valve	
5	Draining		

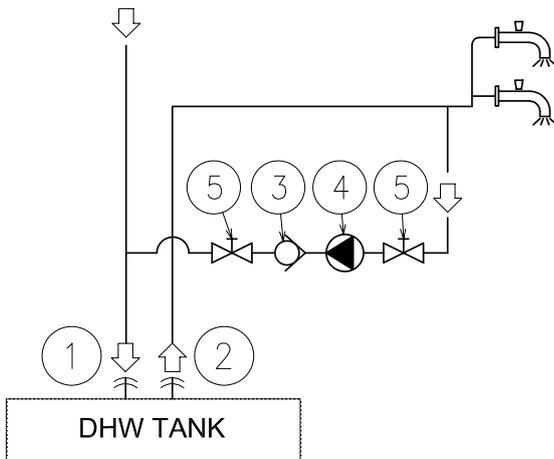
- **1 Shut-down valve (field supplied):** one shut-down valve (4) must be connected after the DHW outlet connection of the DHW tank (2) in order to make easier any maintenance work.
- **A Security water valve (Field-supplied):** this accessory (3) is a pressure and temperature relief valve that must be installed as near as possible to the DHW inlet connection of the DHW tank (1). It should ensure a correct draining (5) for the discharge valve of this valve. This security water valve should provide the following:
  - Pressure protection
  - Non-return function
  - Shut-down valve
  - Filling
  - Draining

**i NOTE**

The discharge pipe should always be open to the atmosphere, free of frost and in continuous slope to the down side in case that water leakage exists.

**6.7.3.3 Additional hydraulic optional elements (For DHW)**

In case of a recirculation circuit for the DHW circuit:



Nature	N°	Part name
Piping connections	1	Water inlet (DHW)
	2	Water outlet (DHW)
Accessories	3	Water check valve (ATW-WCV-01 accessory)
Field supplied	4	Water pump
	5	Shut-off valve

- **1 Recirculation water pump (field supplied):** this water pump (3) will help to correctly recirculate the hot water to the DHW inlet.
- **1 Water check valve (ATW-WCV-01 accessory):** this Hitachi accessory (4) is connected after the recirculation water pump (3) in order to ensure the non-return of water.
- **2 Shut-down valves (field supplied) (5):** one before the recirculation water pump (3) and other after the water check valve accessory (4).

## 7 ELECTRICAL AND CONTROL SETTINGS

### 7.1 GENERAL CHECK

- Make sure that the following conditions related to power supply installation are satisfied:
  - The power capacity of the electrical installation is large enough to support the power demand of the YUTAKI system (outdoor unit + indoor unit + DHW tank (if apply)).
  - The power supply voltage is within  $\pm 10\%$  of the rated voltage.
  - The impedance of the power supply line is low enough to avoid any voltage drop of more than 15% of the rated voltage.
- Following the Council Directive 2004/108/EC, relating to electromagnetic compatibility, the table below indicates the Maximum permitted system impedance  $Z_{max}$  at the interface point of the user's supply, in accordance with EN61000-3-11.

#### ◆ Split system - R410A Outdoor unit

Model	Power supply	$Z_{max}$ ( $\Omega$ )
RAS-4WHVNPE	1~ 230V 50Hz	0.25
RAS-5WHVNPE		0.25
RAS-6WHVNPE		0.25
RAS-4WHNPE	3N~ 400V 50Hz	-
RAS-5WHNPE		-
RAS-6WHNPE		-
RAS-8WHNPE		-
RAS-10WHNPE		-

#### ◆ Split system - R32 Outdoor unit

Model	Power supply	$Z_{max}$ ( $\Omega$ )
RAS-2WHVRP1	1~ 230V 50Hz	-
RAS-2.5WHVRP1		-
RAS-3WHVRP1		0.43

#### ◆ Split system - Indoor unit

#### YUTAKI S

Model	Power supply	Operation mode	$Z_{max}$ ( $\Omega$ )
RWM-(2.0-3.0)R1E	1~ 230V 50Hz	Without electric heater	-
		With electric heater	-
		With DHW tank heater	-
		With electric and DHW tank heaters	0.28
RWM-(2.0-3.0)R1E	3N~ 400V 50Hz	Without electric heater	-
		With electric heater	-
		With DHW tank heater	-
		With electric and DHW tank heaters	-
RWM-(4.0-6.0)N1E	1~ 230V 50Hz	Without electric heater	-
		With electric heater	0.28
		With DHW tank heater	-
		With electric and DHW tank heaters	0.19
	3N~ 400V 50Hz	Without electric heater	-
		With electric heater	-
		With DHW tank heater	-
		With electric and DHW tank heaters	-
RWM-(8.0/10.0)N1E	3N~ 400V 50Hz	Without electric heater	-
		With electric heater	-
		With DHW tank heater	-
		With electric and DHW tank heaters	-

**i** NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

**YUTAKI S COMBI**

Model	Power supply	Operation mode	Z <sub>max</sub> (Ω)
RWD-(2.0-3.0)RW1E-220S(-K)	1~ 230V 50Hz	Without electric heaters	-
		With electric heater	-
		With DHW tank heater	-
		With electric and DHW tank heaters	0.29
RWD-(2.0-3.0)RW1E-220S(-K)	3N~ 400V 50Hz	Without electric heaters	-
		With electric heater	-
		With DHW tank heater	-
		With electric and DHW tank heaters	-
RWD-(4.0-6.0)NW1E-220S(-K)	1~ 230V 50Hz	Without electric heaters	-
		With electric heater	0.28
		With DHW tank heater	-
		With electric and DHW tank heaters	0.19
	3N~ 400V 50Hz	Without electric heaters	-
		With electric heater	-
		With DHW tank heater	-
		With electric and DHW tank heaters	-

**YUTAKI S80***Indoor unit alone*

Model	Power supply	Operation mode	Z <sub>max</sub> (Ω)
RWH-4.0VNFE	1~ 230V 50Hz	Without DHW tank heater	0.31
		With DHW tank heater	0.20
RWH-5.0VNFE		Without DHW tank heater	0.27
		With DHW tank heater	0.18
RWH-6.0VNFE		Without DHW tank heater	0.24
		With DHW tank heater	0.17
RWH-4.0NFE	3N~ 400V 50Hz	Without DHW tank heater	-
		With DHW tank heater	0.38
RWH-5.0NFE		Without DHW tank heater	-
		With DHW tank heater	0.38
RWH-6.0NFE		Without DHW tank heater	-
		With DHW tank heater	0.38

**Indoor unit in combination with DHW tank**

Model	Power supply	Operation mode	$Z_{max}$ ( $\Omega$ )
RWH-4.0VNFWE	1~ 230V 50Hz	Without DHW tank heater	0.31
		With DHW tank heater	0.21
RWH-5.0VNFWE		Without DHW tank heater	0.27
		With DHW tank heater	0.19
RWH-6.0VNFWE		Without DHW tank heater	0.24
		With DHW tank heater	0.17
RWH-4.0NFWE	3N~ 400V 50Hz	Without DHW tank heater	-
		With DHW tank heater	0.41
RWH-5.0NFWE		Without DHW tank heater	-
		With DHW tank heater	0.41
RWH-6.0NFWE		Without DHW tank heater	-
		With DHW tank heater	0.41

**i NOTE**

The data corresponding to DHW tank heater is calculated in combination with the YUTAKI S80 domestic hot water tank accessory "DHWS(200/260) S-2.7H2E(-W)".

**◆ Monobloc system - R410A YUTAKI M**

Model	Power supply	Operation mode	$Z_{max}$ ( $\Omega$ )
RASM-4VNE	1~ 230V 50Hz	Without DHW tank heater	0.24
		With DHW tank heater	0.17
RASM-5VNE		Without DHW tank heater	0.24
		With DHW tank heater	0.17
RASM-6VNE		Without DHW tank heater	0.24
		With DHW tank heater	0.17
RASM-4NE	3N~ 400V 50Hz	Without DHW tank heater	-
		With DHW tank heater	0.31
RASM-5NE		Without DHW tank heater	-
		With DHW tank heater	0.31
RASM-6NE		Without DHW tank heater	-
		With DHW tank heater	0.30

**i NOTE**

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

**◆ Monobloc system - R32 YUTAKI M**

Model	Power supply	Operation mode	$Z_{max}$ ( $\Omega$ )
RASM-2VRE	1~ 230V 50Hz	-	-
		With DHW tank heater	0.30
RASM-3VRE		-	0.43
		With DHW tank heater	0.24

**i NOTE**

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

- The status of Harmonics for each model, regarding compliance with IEC 61000-3-2 and IEC 61000-3-12, is as follows:

Status regarding compliance with IEC 61000-3-2 and IEC 61000-3-12	Models				
	Split system				Monobloc system
	Outdoor unit	Indoor unit			YUTAKI M (R410A) / YUTAKI M (R32)
		YUTAKI S	YUTAKI S COMBI	YUTAKI S80	
Equipment complying with IEC 61000-3-2 (*): Professional use	RAS-2WHVRP1(*) RAS-2.5WHVRP1(*) RAS-3WHVRP1 (*) RAS-4WHNPE (*) RAS-5WHNPE (*) RAS-6WHNPE (*)	RWM-2.0R1E RWM-2.5R1E RWM-3.0R1E RWM-4.0N1E (3N~) RWM-5.0N1E (3N~) RWM-6.0N1E (3N~) RWM-8.0N1E RWM-10.0N1E	-	RWH-4.0NFE RWH-5.0NFE RWH-6.0NFE	RASM-2VRE(*) RASM-3VRE(*) RASM-4NE RASM-5NE RASM-6NE
Equipment complying with IEC 61000-3-12	RAS-4WHVNPE RAS-5WHVNPE RAS-6WHVNPE	RWM-4.0N1E (1~) RWM-5.0N1E (1~) RWM-6.0N1E (1~)	RWD-2.0RW1E-220S RWD-2.5RW1E-220S RWD-3.0RW1E-220S RWD-4.0NW1E-220S RWD-5.0NW1E-220S RWD-6.0NW1E-220S	RWH-4.0VNFE RWH-5.0VNFE RWH-6.0VNFE RWH-4.0VNFWE RWH-5.0VNFWE RWH-6.0VNFWE RWH-4.0NFWE RWH-5.0NFWE RWH-6.0NFWE	RASM-4VNE RASM-5VNE RASM-6VNE
Installation restrictions may be applied by supply authorities in relation to harmonics	RAS-8WHNPE RAS-10WHNPE	-	-	-	-

- Check to ensure that existing installation (main power switches, circuit breakers, wires, connectors and wire terminals) already complies with the national and local regulations.
- The use of the DHW tank heater is disabled as factory setting. If it is desired to enable the DHW tank heater operation during normal indoor unit operation, adjust the DSW4 pin 3 of the PCB1 to the ON position and use the adequate protections. Refer to the section [“7.2 Electrical connection”](#) for the detailed information.

## 7.2 ELECTRICAL CONNECTION

### CAUTION

- Check to ensure that the field supplied electrical components (mains power switches, circuit breakers, wires, connectors and wire terminals) have been properly selected according to the electrical data indicated on this chapter and they comply with national and local codes. If it is necessary, contact with your local authority in regards to standards, rules, regulations, etc.
- Use a dedicated power circuit for the indoor unit. Do not use a power circuit shared with the outdoor unit or any other appliance.

#### 7.2.1 Wiring size

Use wires which are not lighter than the polychloroprene sheathed flexible cord (code designation 60245 IEC 57).

##### ◆ Split system - R410A Outdoor unit

Model	Power supply	Max. current (A)	Power supply cables	Transmitting cables	Actuator cables
			EN60335-1	EN60335-1	EN60335-1
RAS-4WHVNPE	1~ 230V 50Hz	30	2 x 6.0 mm <sup>2</sup> + GND	2 x 0.75 mm <sup>2</sup> (Shielded cable)	2 x 0.75 mm <sup>2</sup> + GND
RAS-5WHVNPE		30	2 x 6.0 mm <sup>2</sup> + GND		
RAS-6WHVNPE		30	2 x 6.0 mm <sup>2</sup> + GND		
RAS-4WHNPE	3N~ 400V 50Hz	14	4 x 2.5 mm <sup>2</sup> + GND		
RAS-5WHNPE		14	4 x 2.5 mm <sup>2</sup> + GND		
RAS-6WHNPE		16	4 x 4.0 mm <sup>2</sup> + GND		
RAS-8WHNPE		24	4 x 6.0 mm <sup>2</sup> + GND		
RAS-10WHNPE		24	4 x 6.0 mm <sup>2</sup> + GND		

##### ◆ Split system - R32 Outdoor unit

Model	Power supply	Max. current (A)	Power supply cables	Transmitting cables	Actuator cables
			EN60335-1	EN60335-1	EN60335-1
RAS-2WHVRP1	1~ 230V 50Hz	10	2 x 2.5 mm <sup>2</sup> + GND	2 x 0.75 mm <sup>2</sup> (Shielded cable)	2 x 0.75 mm <sup>2</sup> + GND
RAS-2.5WHVRP1		13	2 x 2.5 mm <sup>2</sup> + GND		
RAS-3WHVRP1		16	2 x 4.0 mm <sup>2</sup> + GND		

## ◆ Split system - Indoor unit

## YUTAKI S

Model	Power supply	Operation mode	Max. current (A)	Power supply cables	Transmitting cables	Actuator cables
				EN60335-1	EN60335-1	EN60335-1
RWM-(2.0-3.0)R1E	1~ 230V 50Hz	Without electric heaters	0.6	2 x 0.75 mm <sup>2</sup> + GND	2 x 0.75 mm <sup>2</sup> (Shielded cable)	2 x 0.75 mm <sup>2</sup> + GND
		With electric heater	14	2 x 2.5 mm <sup>2</sup> + GND		
		With DHW tank heater	14	2 x 2.5 mm <sup>2</sup> + GND		
		With electric and DHW tank heaters	27	2 x 6.0 mm <sup>2</sup> + GND		
RWM-(2.0-3.0)R1E	3N~ 400V 50Hz	Without electric heaters	0.6	4 x 0.75 mm <sup>2</sup> + GND		
		With electric heater	5.0	4 x 2.5 mm <sup>2</sup> + GND		
		With DHW tank heater	14	4 x 2.5 mm <sup>2</sup> + GND		
		With electric and DHW tank heaters	18.0	4 x 6.0 mm <sup>2</sup> + GND		
RWM-(4.0-6.0)N1E	1~ 230V 50Hz	Without electric heaters	0.7	2 x 0.75 mm <sup>2</sup> + GND		
		With electric heater	27	2 x 6.0 mm <sup>2</sup> + GND		
		With DHW tank heater	14	2 x 2.5 mm <sup>2</sup> + GND		
		With electric and DHW tank heaters	40	2 x 10.0 mm <sup>2</sup> + GND		
	3N~ 400V 50Hz	Without electric heaters	0.7	4 x 0.75 mm <sup>2</sup> + GND		
		With electric heater	9	4 x 2.5 mm <sup>2</sup> + GND		
		With DHW tank heater	14	4 x 2.5 mm <sup>2</sup> + GND		
		With electric and DHW tank heaters	22	4 x 6.0 mm <sup>2</sup> + GND		
RWM-(8.0/10.0)N1E	3N~ 400V 50Hz	Without electric heaters	0.7	4 x 0.75 mm <sup>2</sup> + GND		
		With electric heater	14	4 x 4.0 mm <sup>2</sup> + GND		
		With DHW tank heater	14	4 x 4.0 mm <sup>2</sup> + GND		
		With electric and DHW tank heaters	27	4 x 10.0 mm <sup>2</sup> + GND		

## i NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

## YUTAKI S COMBI

Model	Power supply	Operation mode	Max. current (A)	Power supply cables	Transmitting cables	Actuator cables
				EN60335-1	EN60335-1	EN60335-1
RWD-(2.5-3.0)RW1E-220S(-K)	1~230V 50Hz	Without electric heaters	0.6	2 x 0.75 mm <sup>2</sup> + GND	2 x 0.75 mm <sup>2</sup> (Shielded cable)	2 x 0.75 mm <sup>2</sup> + GND
		With electric heater	13.7	2 x 2.5 mm <sup>2</sup> + GND		
		With DHW tank heater	12.6	2 x 2.5 mm <sup>2</sup> + GND		
		With electric and DHW tank heaters	25.6	2 x 6.0 mm <sup>2</sup> + GND		
RWD-(2.5-3.0)RW1E-220S(-K)	3N~400V 50Hz	Without electric heaters	0.6	4 x 0.75 mm <sup>2</sup> + GND		
		With electric heater	9.3	4 x 2.5 mm <sup>2</sup> + GND		
		With DHW tank heater	12.6	4 x 2.5 mm <sup>2</sup> + GND		
		With electric and DHW tank heaters	12.6	4 x 2.5 mm <sup>2</sup> + GND		
RWD-(4.0-6.0)NW1E-220S(-K)	1~230V 50Hz	Without electric heaters	0.7	2 x 0.75 mm <sup>2</sup> + GND		
		With electric heater	26.7	2 x 6.0 mm <sup>2</sup> + GND		
		With DHW tank heater	12.6	2 x 2.5 mm <sup>2</sup> + GND		
		With electric and DHW tank heaters	38.7	2 x 10.0 mm <sup>2</sup> + GND		
	3N~400V 50Hz	Without electric heaters	0.7	4 x 0.75 mm <sup>2</sup> + GND		
		With electric heater	18.0	4 x 6.0 mm <sup>2</sup> + GND		
		With DHW tank heater	12.6	4 x 2.5 mm <sup>2</sup> + GND		
		With electric and DHW tank heaters	18.0	4 x 6.0 mm <sup>2</sup> + GND		

**YUTAKI S80****Indoor unit alone**

Model	Power supply	Operation mode	Max. current (A)	Power supply cables	Transmitting cables	Actuator cables
				EN60335-1	EN60335-1	EN60335-1
RWH-4.0VNF	1~ 230V 50Hz	Without DHW tank heater	24	2 x 6.0 mm <sup>2</sup> + GND	2 x 0.75 mm <sup>2</sup> (Shielded cable)	2 x 0.75 mm <sup>2</sup> + GND
		With DHW tank heater	38	2 x 10.0 mm <sup>2</sup> + GND		
RWH-5.0VNF		Without DHW tank heater	28	2 x 6.0 mm <sup>2</sup> + GND		
		With DHW tank heater	42	2 x 10.0 mm <sup>2</sup> + GND		
RWH-6.0VNF		Without DHW tank heater	31	2 x 6.0 mm <sup>2</sup> + GND		
		With DHW tank heater	45	2 x 10.0 mm <sup>2</sup> + GND		
RWH-4.0NF	3N~ 400V 50Hz	Without DHW tank heater	10	4 x 2.5 mm <sup>2</sup> + GND		
		With DHW tank heater	24	4 x 4.0 mm <sup>2</sup> + GND		
RWH-5.0NF		Without DHW tank heater	10	4 x 2.5 mm <sup>2</sup> + GND		
		With DHW tank heater	24	4 x 4.0 mm <sup>2</sup> + GND		
RWH-6.0NF		Without DHW tank heater	10	4 x 2.5 mm <sup>2</sup> + GND		
		With DHW tank heater	24	4 x 4.0 mm <sup>2</sup> + GND		

**Indoor unit in combination with DHW tank**

Model	Power supply	Operation mode	Max. current (A)	Power supply cables	Transmitting cables	Actuator cables
				EN60335-1	EN60335-1	EN60335-1
RWH-4.0VNFWE	1~ 230V 50Hz	Without DHW tank heater	24	2 x 6.0 mm <sup>2</sup> + GND	2 x 0.75 mm <sup>2</sup> (Shielded cable)	2 x 0.75 mm <sup>2</sup> + GND
		With DHW tank heater	36	2 x 10.0 mm <sup>2</sup> + GND		
RWH-5.0VNFWE		Without DHW tank heater	28	2 x 6.0 mm <sup>2</sup> + GND		
		With DHW tank heater	40	2 x 10.0 mm <sup>2</sup> + GND		
RWH-6.0VNFWE		Without DHW tank heater	31	2 x 10.0 mm <sup>2</sup> + GND		
		With DHW tank heater	43	2 x 10.0 mm <sup>2</sup> + GND		
RWH-4.0NFWE	3N~ 400V 50Hz	Without DHW tank heater	10	4 x 4.0 mm <sup>2</sup> + GND		
		With DHW tank heater	22	4 x 10.0 mm <sup>2</sup> + GND		
RWH-5.0NFWE		Without DHW tank heater	10	4 x 4.0 mm <sup>2</sup> + GND		
		With DHW tank heater	22	4 x 10.0 mm <sup>2</sup> + GND		
RWH-6.0NFWE		Without DHW tank heater	10	4 x 4.0 mm <sup>2</sup> + GND		
		With DHW tank heater	22	4 x 10.0 mm <sup>2</sup> + GND		

** NOTE**

The data corresponding to DHW tank heater is calculated in combination with the YUTAKI S80 domestic hot water tank accessory "DHWS(200/260) S-2.7H2E(-W)".

## ◆ Monobloc system - R410A YUTAKI M

Model	Power supply	Operation mode	Max. current (A)	Power supply cables	Transmitting cables	Actuator cables
				EN60335-1	EN60335-1	EN60335-1
RASM-4VNE	1~ 230V 50Hz	Without DHW tank heater	31	2 x 6.0 mm <sup>2</sup> + GND	2 x 0.75 mm <sup>2</sup> (Shielded cable)	2 x 0.75 mm <sup>2</sup> + GND
		With DHW tank heater	43	2 x 10.0 mm <sup>2</sup> + GND		
RASM-5VNE		Without DHW tank heater	31	2 x 6.0 mm <sup>2</sup> + GND		
		With DHW tank heater	43	2 x 10.0 mm <sup>2</sup> + GND		
RASM-6VNE		Without DHW tank heater	31	2 x 6.0 mm <sup>2</sup> + GND		
		With DHW tank heater	43	2 x 10.0 mm <sup>2</sup> + GND		
RASM-4NE	3N~ 400V 50Hz	Without DHW tank heater	14	4 x 4.0 mm <sup>2</sup> + GND		
		With DHW tank heater	27	4 x 6.0 mm <sup>2</sup> + GND		
RASM-5NE		Without DHW tank heater	14	4 x 4.0 mm <sup>2</sup> + GND		
		With DHW tank heater	27	4 x 6.0 mm <sup>2</sup> + GND		
RASM-6NE		Without DHW tank heater	16	4 x 6.0 mm <sup>2</sup> + GND		
		With DHW tank heater	29	4 x 10.0 mm <sup>2</sup> + GND		

 NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

## ◆ Monobloc system - R32 YUTAKI M

Model	Power supply	Operation mode	Max. current (A)	Power supply cables	Transmitting cables	Actuator cables
				EN60335-1	EN60335-1	EN60335-1
RASM-2VRE	1~ 230V 50Hz	Without DHW tank heater	11	2 x 2.5 mm <sup>2</sup> + GND	2 x 0.75 mm <sup>2</sup> (Shielded cable)	2 x 0.75 mm <sup>2</sup> + GND
		With DHW tank heater	23	2 x 6.0 mm <sup>2</sup> + GND		
RASM-3VRE		Without DHW tank heater	16.0	2 x 4.0 mm <sup>2</sup> + GND		
		With DHW tank heater	29	2 x 6.0 mm <sup>2</sup> + GND		

 NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

## 7.2.2 Minimum requirements of the protection devices

### CAUTION

- Ensure specifically that there is an Earth Leakage Breaker (ELB) installed for the units (outdoor and indoor unit).
- If the installation is already equipped with an Earth Leakage Breaker (ELB), ensure that its rated current is large enough to hold the current of the units (outdoor and indoor unit).

### NOTE

- Electric fuses can be used instead of magnetic Circuit Breakers (CB). In that case, select fuses with similar rated values as the CB.
- The Earth Leakage Breaker (ELB) mentioned on this manual is also commonly known as Residual Current Device (RCD) or Residual Current Circuit Breaker (RCCB).
- The Circuit Breakers (CB) are also known as Thermal-Magnetic Circuit Breakers or just Magnetic Circuit Breakers (MCB).

#### ◆ Split system - R410A Outdoor unit

Model	Power supply	Applicable voltage		MC (A)	CB (A)	ELB (n° of poles/A/mA)
		U max. (V)	U min. (V)			
RAS-4WHVNPE	1~ 230V 50Hz	253	207	30	32	2/40/30
RAS-5WHVNPE				30	32	
RAS-6WHVNPE				30	32	
RAS-4WHNPE	3N~ 400V 50Hz	440	360	14	15	4/40/30
RAS-5WHNPE				14	15	
RAS-6WHNPE				16	20	
RAS-8WHNPE				24	25	
RAS-10WHNPE				24	25	

MC: Maximum current; CB: Circuit breaker; ELB: Earth leakage breaker

#### ◆ Split system - R32 Outdoor unit

Model	Power supply	Applicable voltage		MC (A)	CB (A)	ELB (n° of poles/A/mA)
		U max. (V)	U min. (V)			
RAS-2WHVRP1	1~ 230V 50Hz	253	207	10	16	2/40/30
RAS-2.5WHVRP1				13	16	
RAS-3WHVRP1				16	20	

MC: Maximum current; CB: Circuit breaker; ELB: Earth leakage breaker

## ◆ Split system - Indoor unit

## YUTAKI S

Model	Power supply	Applicable voltage		Operation mode	MC (A)	CB (A)	ELB (n° of poles/A/mA)
		U max. (V)	U min. (V)				
RWM-(2.0-3.0)R1E	1~ 230V 50Hz	253	207	Without electric heaters	0.6	5	2/40/30
				With electric heater	14	16	
				With DHW tank heater	14	16	
				With electric and DHW tank heaters	27	32	
RWM-(2.0-3.0)R1E	3N~ 400V 50Hz	440	360	Without electric heaters	0.6	5	4/40/30
				With electric heater	5	10	
				With DHW tank heater	14	15	
				With electric and DHW tank heaters	18	25	
RWM-(4.0-6.0)N1E	1~ 230V 50Hz	253	207	Without electric heaters	0.7	5	2/40/30
				With electric heater	27	32	
				With DHW tank heater	14	16	
				With electric and DHW tank heaters	40	50	
	3N~ 400V 50Hz	440	360	Without electric heaters	0.7	5	4/40/30
				With electric heater	9	15	
				With DHW tank heater	14	15	
				With electric and DHW tank heaters	22	25	
RWM-(8.0/10.0)N1E	3N~ 400V 50Hz	440	360	Without electric heaters	0.7	5	4/40/30
				With electric heater	14	20	
				With DHW tank heater	14	20	
				With electric and DHW tank heaters	27	30	

 NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

## YUTAKI S COMBI

Model	Power supply	Applicable voltage		Operation mode	MC (A)	CB (A)	ELB (n° of poles/A/mA)
		U max. (V)	U min. (V)				
RWD-(2.0-3.0)RW1E-220(-K)	1~ 230V 50Hz	253	207	Without electric heaters	0.6	5	2/40/30
				With electric heater	13.7	16	
				With DHW tank heater	12.6	16	
				With electric and DHW tank heaters	25.6	32	
RWD-(2.0-3.0)RW1E-220(-K)	3N~ 400V 50Hz	440	360	Without electric heaters	0.6	5	4/40/30
				With electric heater	9.3	15	
				With DHW tank heater	12.6	15	
				With electric and DHW tank heaters	12.6	15	
RWD-(4.0-6.0)NW1E-220S(-K)	1~ 230V 50Hz	253	207	Without electric heaters	0.7	5	2/40/30
				With electric heater	26.7	32	
				With DHW tank heater	12.6	16	
				With electric and DHW tank heaters	38.7	50	
	3N~ 400V 50Hz	440	360	Without electric heaters	0.7	5	4/40/30
				With electric heater	18.0	25	
				With DHW tank heater	12.6	15	
				With electric and DHW tank heaters	18.0	25	

**YUTAKI S80****Version for indoor unit alone**

Model	Power supply	Applicable voltage		Operation mode	MC (A)	CB (A)	ELB (n° of poles/A/mA)
		U max. (V)	U min. (V)				
RWH-4.0VNFEE	1~ 230V 50Hz	253	207	Without DHW tank heater	24	32	2/40/30
				With DHW tank heater	38	40	
RWH-5.0VNFEE				Without DHW tank heater	28	32	
				With DHW tank heater	42	50	
RWH-6.0VNFEE				Without DHW tank heater	31	32	
				With DHW tank heater	45	50	
RWH-4.0NFEE	3N~ 400V 50Hz	440	360	Without DHW tank heater	10	15	4/40/30
				With DHW tank heater	24	25	
RWH-5.0NFEE				Without DHW tank heater	10	15	
				With DHW tank heater	24	25	
RWH-6.0NFEE				Without DHW tank heater	10	15	
				With DHW tank heater	24	25	

**Version for combination with DHW tank**

Model	Power supply	Applicable voltage		Operation mode	MC (A)	CB (A)	ELB (n° of poles/A/mA)
		U max. (V)	U min. (V)				
RWH-4.0VNFWE	1~ 230V 50Hz	253	207	Without DHW tank heater	24	32	2/40/30
				With DHW tank heater	36	40	
RWH-5.0VNFWE				Without DHW tank heater	28	32	
				With DHW tank heater	40	50	
RWH-6.0VNFWE				Without DHW tank heater	31	32	
				With DHW tank heater	43	50	
RWH-4.0NFWE	3N~ 400V 50Hz	440	360	Without DHW tank heater	10	15	4/40/30
				With DHW tank heater	22	25	
RWH-5.0NFWE				Without DHW tank heater	10	15	
				With DHW tank heater	22	25	
RWH-6.0NFWE				Without DHW tank heater	10	15	
				With DHW tank heater	22	25	

** NOTE**

The data corresponding to DHW tank heater is calculated in combination with the YUTAKI S80 domestic hot water tank accessory "DHWS(200/260) S-2.7H2E(-W)".

### ◆ Monobloc system - R410A YUTAKI M

Model	Power supply	Applicable voltage		Operation mode	MC (A)	CB (A)	ELB (n° of poles/A/mA)
		U max. (V)	U min. (V)				
RASM-4VNE	1~ 230V 50Hz	253	207	Without DHW tank heater	31	32	2/40/30
				With DHW tank heater	43	50	2/63/30
RASM-5VNE				Without DHW tank heater	31	32	2/40/30
				With DHW tank heater	43	50	2/63/30
RASM-6VNE				Without DHW tank heater	31	32	2/40/30
				With DHW tank heater	43	50	2/63/30
RASM-4NE	3N~ 400V 50Hz	440	360	Without DHW tank heater	14	20	4/40/30
				With DHW tank heater	27	30	
RASM-5NE				Without DHW tank heater	14	20	
				With DHW tank heater	27	30	
RASM-6NE				Without DHW tank heater	16	20	
				With DHW tank heater	29	40	

#### NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

### ◆ Monobloc system - R32 YUTAKI M

Model	Power supply	Applicable voltage		Operation mode	MC (A)	CB (A)	ELB (n° of poles/A/mA)
		U max. (V)	U min. (V)				
RASM-2VRE	1~ 230V 50Hz	253	207	Without DHW tank heater	11	16	2/40/30
				With DHW tank heater	23	32	
RASM-3VRE				Without DHW tank heater	16	20	
				With DHW tank heater	29	32	

#### NOTE

The data corresponding to DHW tank heater is calculated in combination with the domestic hot water tank accessory "DHWT-(200/300)S-3.0H2E".

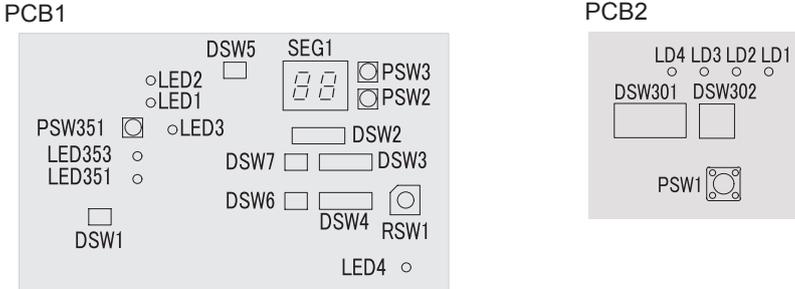
### 7.3 SETTING OF DIP SWITCHES AND RSW SWITCHES

#### 7.3.1 Outdoor unit RAS-(2-3)WHVRP1, RAS-(4-10)WH(V)NPE and RASM-(2-6)(V)(N/R)E

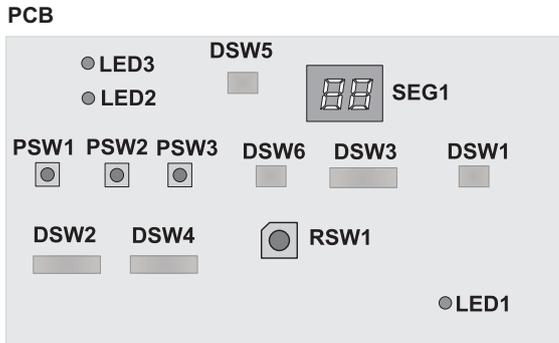
##### 7.3.1.1 Location of DIP switches and rotary switches

The PCB in the outdoor unit is operating with DIP switches and push switches. The location is as follows:

##### RAS-(2/2.5/3)WHVRP1 and RASM-(2/3)VRE



##### RAS-(4-10)WH(V)NPE and PCB1 for RASM-(4-6)(V)NE



**i** NOTE

DIP-IPM or PCB2 (depending on model) has a DSW1. When pin number 1 is set to ON position, the electrical current detections is cancelled. Pin number 1 should be to OFF position after electrical work.

##### 7.3.1.2 Function of DIP switches and rotary switches

**i** NOTE

- The mark “■” indicates the position of dips switches.
- No mark “■” indicates pin position is not affecting.
- The figures show the settings before shipment or after selection.

**⚠ DANGER**

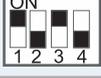
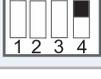
Before setting dips switches, first turn the power source off and then set the position of the dips switches. In case of setting the switches without turning the power source off, the contents of the setting are invalid.

◆ **DSW1 (Only RAS-(2/2.5/3)WHVRP1 and RASM-(2/3)VRE): No setting is required**

When set pin number 1 to ON, the electric current detection is cancelled. Pin number 1 should be set back to OFF after electrical work	
--	--

◆ **DSW1 (RAS-(4-10)WH(V)NPE and RASM-(4-6)(V)NE): For Test run**

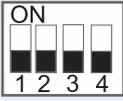
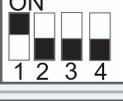
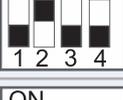
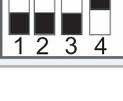
Factory setting	
-----------------	--

Test run for pump down	
Test run for heating	
Test run for cooling intermediate season (Not used)	
Test run for heating for intermediate season (Not used)	
Forced stoppage of compressor	

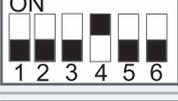
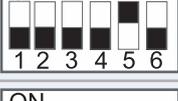
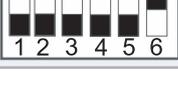
### NOTE

- This operation is reset once the compressor is in Thermo-ON mode.
- During the test run operation the units will operate continuously during 2 hours without Thermo-OFF and the 3-minute guard for compressor protection will be effective.
- Test run will start within 20 seconds after setting DSW1 pin 1 to ON position

### ◆ DSW301 (Only RAS-(2/2.5/3)WHVRP1 and RASM-(2/3)VRE): Test run mode

Setting before shipment	
Test run for pump down	
Test run for heating	
Forced stoppage of compressor	

### ◆ DSW2: Optional Function setting

Factory setting	
Control to support existing pipes or when using Ø19,05 gas pipe (soft-annealed), switch ON DSW2 pin 4 in the outdoor unit PCB (for RAS-(4-10)WH(V)NPE)	
Optional function setting mode (The optional function selection mode becomes available)	
External output setting mode (The output signals selection mode becomes available).	

### ◆ DSW3: Capacity Setting (No setting is required)

Outdoor unit Factory setting

RAS-2WHVRP1 RASM-2VRE	RAS-2.5WHVRP1	RAS-3WHVRP1 RASM-3VRE	RAS-4WHVNPE RASM-4VNE	RAS-5WHVNPE RASM-5VNE	RAS-6WHVNPE RASM-6VNE
RAS-4WHNPE RASM-4NE	RAS-5WHNPE RASM-5NE	RAS-6WHNPE RASM-6NE	RAS-8WHNPE	RAS-10WHNPE	

### ◆ DSW4 / RSW1: No setting is required (Do not change)

Setting before shipment		
-------------------------	--	--

### ◆ DSW5: End terminal resistance (No setting is required)

Setting before shipment	
-------------------------	--

### ◆ DSW6: No setting is required (Do not change)

Factory setting (for RAS-(2/2.5/3)WHVRP1 and RASM-(2/3)VRE)	
Factory setting (for RAS-(4-10)WH(V)NPE and RASM-(4-6)(V)NE)	

### ◆ DSW7: No setting is required (Only RAS-(2/2.5/3)WHVRP1 and RASM-(2/3)VRE)) (Do not change)

Factory setting	
-----------------	--

### ◆ DSW302: Piping Length Setting (Only RAS-(2/2.5/3)WHVRP1 and RASM-(2/3)VRE) (Setting is required)

Setting before shipment	
Pipe length (<5m)	
Pipe length (≥30m)	

### 7.3.1.3 LED indication

#### ◆ RAS-(2/2.5/3)WHVRP1 and RASM-(2/3)VRE

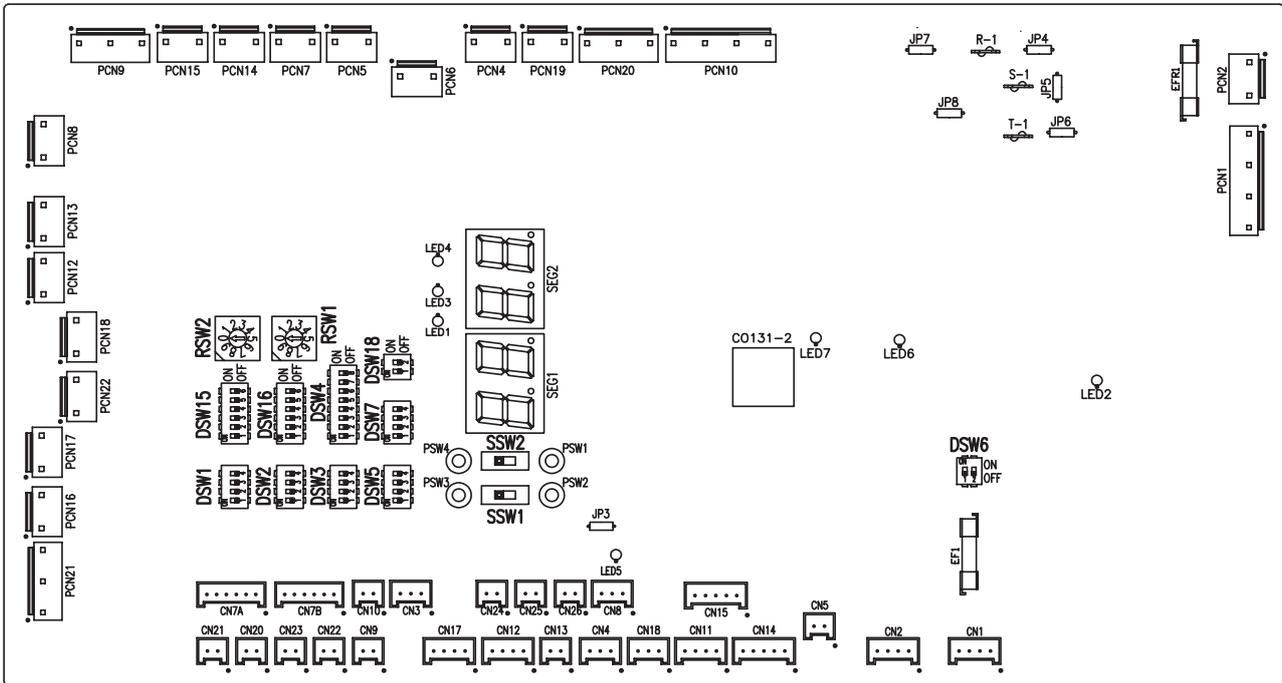
Name	Colour	Indication
<b>PCB1</b>		
LED1	Red	Power
LED2	Green	Communication with inverter
LED3	Yellow	H-LINK transmission
LED4	Yellow	Not used
LED351	Red	For inspection
LED353	Red	For inspection
<b>PCB2</b>		
LD1	Red	For inspection
LD2	Red	For inspection
LD3	Red	For inspection
LD4	Red	For inspection

#### ◆ RAS-(4-10)WH(V)NPE and RASM-(4-6)(V)NE

<b>LED Indication</b>		
LED1	Red	This LED indicates the transmission status between the indoor unit and the unit controller
LED2	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit
LED3	Green	Power source for the PCB

**7.3.2 Indoor units RWM-(2.0-10.0)(R/N)1E / RWD-(2.0-6.0)(R/N)W1E-220S(-K) and RWH-(4.0-6.0)(V)NF(W)E**

**7.3.2.1 Location of DIP switches and rotary switches**



**7.3.2.2 Function of DIP switches and rotary switches**

**i NOTE**

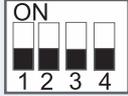
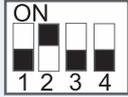
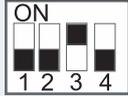
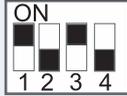
- The mark “■” indicates the dip switches positions.
- No mark “■” indicates pin position is not affected.
- The figures show the settings before shipment or after selection.
- “Not used” means that the pin must not be changed. A malfunction might occur if changed.

**⚠ CAUTION**

Before setting dip switches, first turn the power supply OFF and then set the position of dip switches. If the switches are set without turning the power supply OFF, the contents of the setting are invalid.

◆ **DSW1: Additional setting 0**

Factory setting. No setting is required.

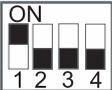
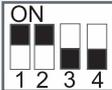
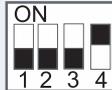
YUTAKI S (*)	
YUTAKI S COMBI (*)	
YUTAKI S80	  1~ 230V 50Hz      3N~ 400V 50Hz
YUTAKI M	

 **NOTE**

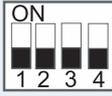
(\*): In case of installing the "Cooling kit" accessory, set the pin 4 of DSW1 to ON in order to enable the cooling operation.

◆ **DSW2: Unit capacity setting**

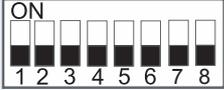
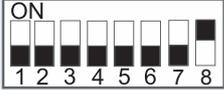
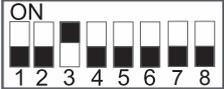
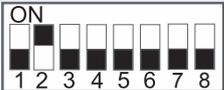
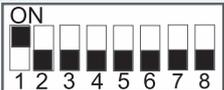
Factory setting. No setting is required.

2.0HP	2.5HP	3.0HP	4.0HP	5.0HP	6.0HP	8.0HP	10.0HP
							

◆ **DSW3: Additional setting 1**

Setting before shipment	
1-step heater for 3-phase unit	

◆ **DSW4: Additional setting 2**

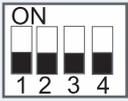
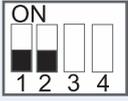
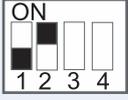
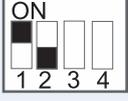
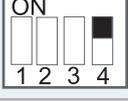
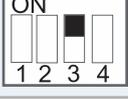
Setting before shipment Setting before shipment for YUTAKI S80: PIN 2 - ON  <b>NOTE</b> <i>YUTAKI S80: PIN 2 must be switched OFF after vacuum procedure</i>	
DHW defrost	
Heater forced OFF	
Unit and installation pipes antifreeze protection	
Standard / ECO water pump operation	
Electric heater or boiler emergency mode	
DHW tank's heater operation	
- Open SV1/2 for vacuum and R-410A refrigerant recovery function (YUTAKI S80) - DHW 3-way valve forced ON (All models)	
- Disabled R-134a compressor (YUTAKI S80) - Mirror function (YUTAKI M)	

 **CAUTION**

- Never turn all DSW4 dip switch pins ON. If this happens, the software of the unit will be removed.
- Never activate "Heater Forced OFF" and "Electric heater or boiler emergency mode" at the same time.

### ◆ DSW5: Additional setting 3

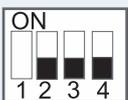
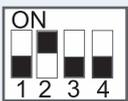
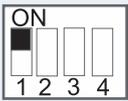
In the cases where the outdoor unit is installed into a location where its own outdoor ambient temperature sensor can not give a suitable temperature measurement to the system, it is available the 2nd outdoor ambient temperature sensor as accessory. By means of DSW1&2 setting, the preferable sensor for each circuit can be selected.

Factory setting	
Outdoor unit sensor for circuits 1 and 2	
Outdoor unit sensor for circuit 1; Auxiliary sensor for circuit 2	
Auxiliary sensor for circuit 1; Outdoor unit sensor for circuit 2	
Auxiliary sensor instead of outdoor unit sensor for both circuits	
Use the maximum temperature value between $T_{wo3}$ (boiler / heater thermistor) and $T_{wo}$ (water outlet thermistor) for water control	
4-20 mA setting temperature for RASM-(4-6)(V)NE and RWH-(4.0-6.0)(V)NF(W)E (Only manual operation)	

### ◆ DSW6: Not used

Factory setting (Do not change)	
------------------------------------	---

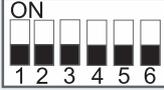
### ◆ DSW7: Additional setting 4

Factory setting	
Compatibility with ATW-RTU-04 (When cooling mode operation is needed) (Except YUTAKI S 80)	
Integrated DHW tank version (YUTAKI S80 only)	

### ◆ DSW8: Not used

Factory setting (Do not change)	
------------------------------------	---

◆ **DSW15 & RSW2 / DSW16 & RSW1: Not used**

	DSW15 / DSW16	RSW2 / RSW1
Factory setting		

**i** NOTE

Don't change this setting, otherwise malfunction will occur.

◆ **DSW18: Not used (only for YUTAKI S COMBI)**

Factory setting (Do not change)	
------------------------------------	---

◆ **SSW1: Remote/Local**

Factory setting Remote operation	Remote 
Local operation	Remote 

◆ **SSW2: Heat/Cool (when SSW1 is in local setting)**

Factory setting Heat operation	Heat 
Cooling operation (when cooling kit installed)	Heat 

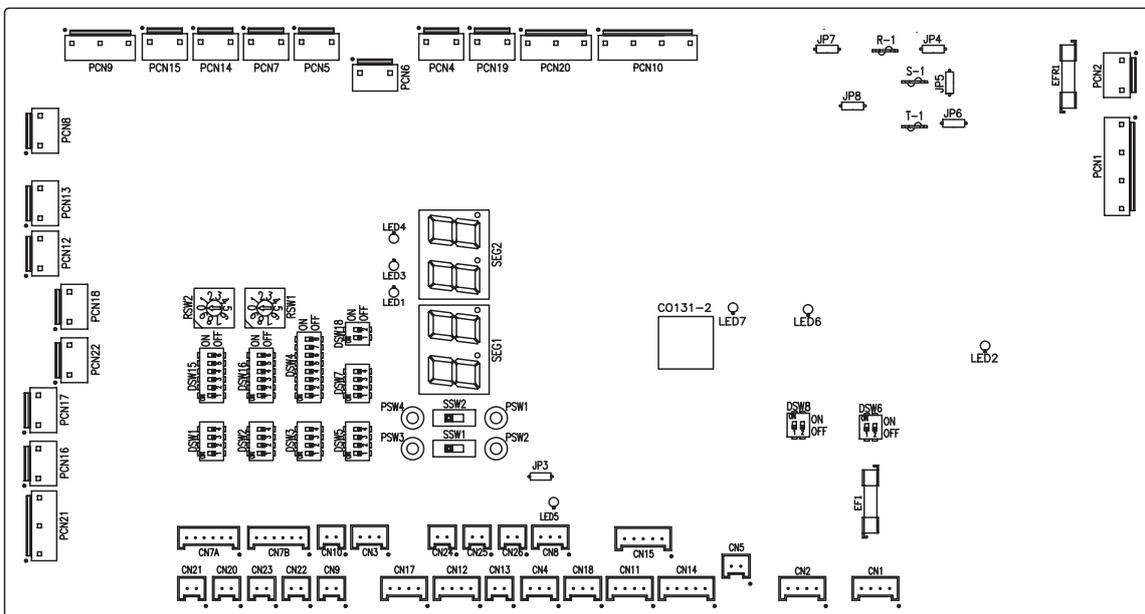
**7.3.2.3 LED indication**

Name	Colour	Indication
LED1	Green	Power indication
LED2	Red	Power indication
LED3	Red	Heat pump operation (thermo ON/OFF)
LED4	Yellow	Alarm (flickering with 1 sec interval)
LED5	Green	Not used
LED6	Yellow	H-LINK transmission
LED7	Yellow	H-LINK transmission for unit controller

7.3.3 YUTAKI CASCADE CONTROLLER ATW-YCC-(01-03)

Series	Unit model	ATW-YCC-01	ATW-YCC-02	ATW-YCC-03
YUTAKI S	RWM-(2.0-3.0)R1E	X	X	X
	RWM-(4.0-6.0)N1E	X	X	O
	RWM-(8.0/10.0)N1E	X	X	O
YUTAKI S COMBI	RWD-(2.0-3.0)RW1E-220S(-K)	X	X	X
	RWD-(4.0-6.0)NW1E-220S(-K)	X	X	O
YUTAKI M	RASM-(4-6)(V)NE	O	O	X
	RASM-(2/3)VRE	O	O	X
YUTAKI S80	RWH-(4.0-6.0)(V)NFE	O	O	X
YUTAKI S80Combi	RWH-(4.0-6.0)(V)NFWE	O	O	X

7.3.4 Location of DIP switches and rotary switches



**7.3.4.1 Function of DIP switches and rotary switches**

**i NOTE**

- The mark “■” indicates the dip switches positions.
- No mark “■” indicates pin position is not affected.
- The figures show the settings before shipment or after selection.
- “Not used” means that the pin must not be changed. A malfunction might occur if changed.

**⚠ CAUTION**

Before setting dip switches, first turn the power supply OFF and then set the position of dip switches. If the switches are set without turning the power supply OFF, the contents of the setting are invalid.

**◆ DSW1: Model setting**

Setting is required in order to match with the model of the Sub YUTAKI installed.

YUTAKI S (*)	
YUTAKI S COMBI (*)	
YUTAKI S80	 1~ 230V 50Hz 3N~ 400V 50Hz
YUTAKI M	

**i NOTE**

(\*): In case of installing the “Cooling kit” accessory, set the pin 4 of DSW1 to ON in order to enable the cooling operation.

**◆ DSW2: Unit capacity setting**

Setting is required in order to match with the model of the Sub YUTAKI installed.

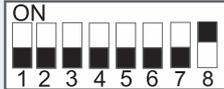
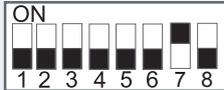
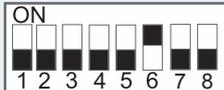
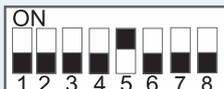
Factory setting	4.0HP	5.0HP	6.0HP	8.0HP	10.0HP

**◆ DSW3: Additional setting 1**

Setting before shipment	
1-step heater for 3-phase unit	

**◆ DSW4: Additional setting 2**

Setting before shipment	
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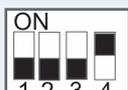
DHW defrost	
Heater forced OFF	
Unit and installation pipes antifreeze protection	
Standard / ECO water pump operation	
Electric heater or boiler emergency mode	
DHW tank's heater operation	

### CAUTION

- Never turn all DSW4 dip switch pins ON. If this happens, the software of the unit will be removed.
- Never activate "Heater Forced OFF" and "Electric heater or boiler emergency mode" at the same time.

### ◆ DSW5: Additional setting 3

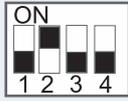
In the cases where the outdoor unit is installed into a location where its own outdoor ambient temperature sensor can not give a suitable temperature measurement to the system, it is available the 2nd outdoor ambient temperature sensor as accessory. By means of DSW1&2 setting, the preferable sensor for each circuit can be selected.

Factory setting	
Outdoor unit sensor for circuits 1 and 2.	
Outdoor unit sensor for circuit 1; Auxiliary sensor for circuit 2.	
Auxiliary sensor for circuit 1; Outdoor unit sensor for circuit 2.	
Auxiliary sensor instead of outdoor unit sensor for both circuits.	

### ◆ DSW6: Not used

Factory setting (Do not change)	
------------------------------------	---

◆ **DSW7: Additional setting 4**

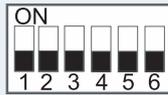
Factory setting	
Compatibility with ATW-RTU-04 (When cooling mode operation is needed)	

◆ **DSW8: Not used**

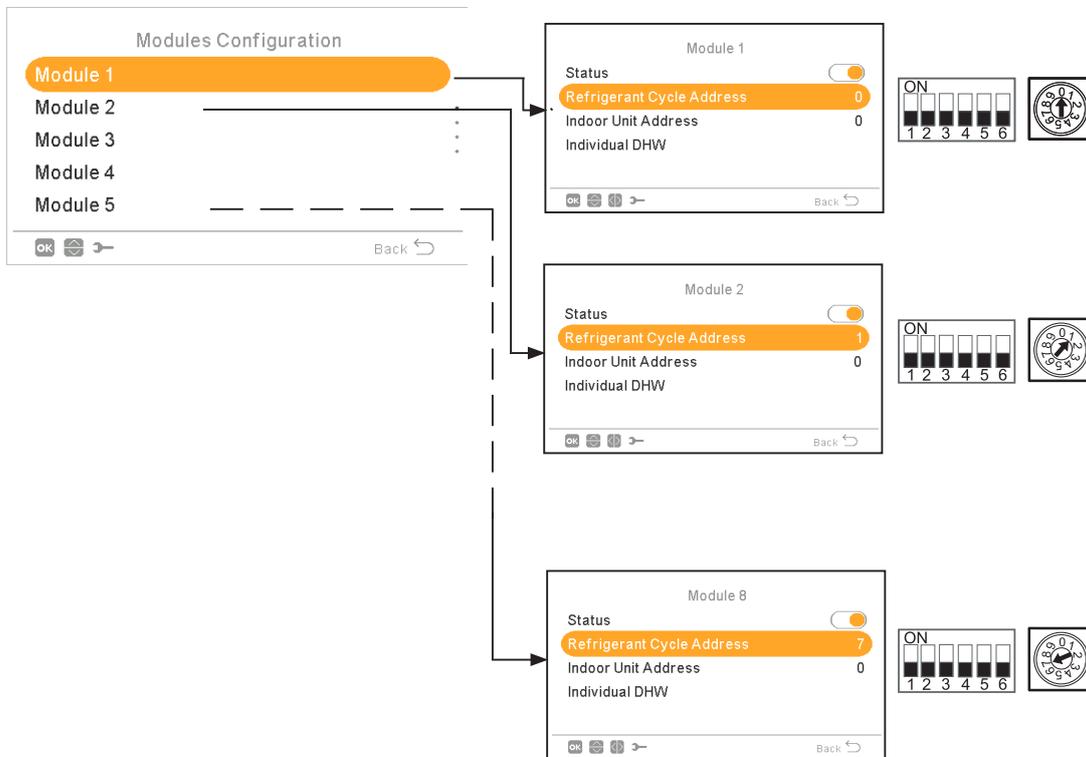
Factory setting (Do not change)	
------------------------------------	---

◆ **DSW15 & RSW2: Refrigerant cycle number setting for YUTAKI CASCADE CONTROLLER**

Set and assign to each outdoor unit a different refrigerant cycle number through DSW4 and RSW1 on the outdoor units PCB.  
Set for each unit the same refrigerant cycle than its outdoor unit (DSW15 and RSW2).

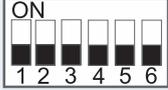
	DSW15	RSW2
Factory setting		

It is recommended to set the refrigerant cycle number from 0 and correlatively (1,2,3,...) per each module in order to match with the address number shown in the LCD remote controller. If a different rule is used for assign the refrigerant cycle number it is necessary to set the is set the same refrigerant cycle number in the LCD remote controller.



Example for ATW-YCC-03

◆ **DSW16 & RSW1: Not used**

	DSW16	RSW1
Factory setting		

**i** NOTE

Don't change this setting, otherwise malfunction will be occur.

◆ **SSW1: Remote/Local**

Factory setting	Remote 
Remote operation	Local 
Local operation	Remote 
	Local 

**i** NOTE

(\*) Don't change this setting, otherwise malfunction will be occur.

◆ **SSW2: Heat/Cool (when SSW1 is in local setting)**

Factory setting	Heat 
Heat operation	Cool 
Cooling operation (when cooling kit installed)	Heat 
	Cool 

**i** NOTE

(\*) Don't change this setting, otherwise malfunction will be occur.

**7.3.4.2 LED indication**

Name	Colour	Indication
LED1	Green	Power indication
LED2	Red	Power indication
LED3	Red	Heat pump operation (thermo ON/OFF)
LED4	Yellow	Alarm (flickering with 1 sec interval)
LED6	Yellow	H-Link transmission
LED7	Yellow	H-Link transmission for unit controller

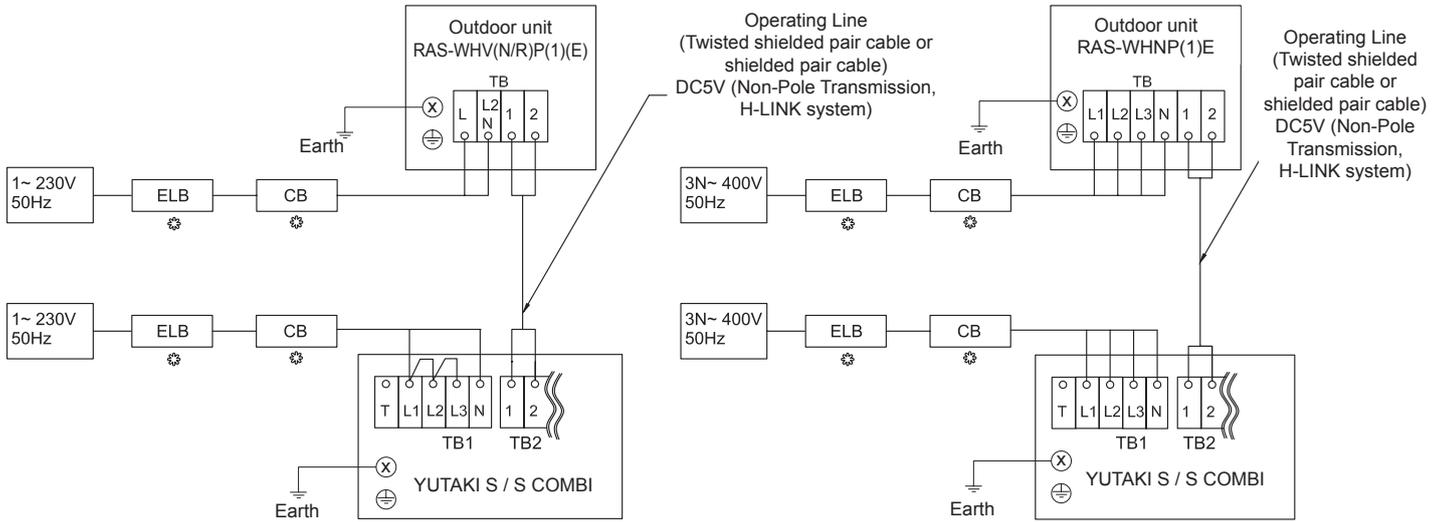
## 7.4 TERMINAL BOARD CONNECTIONS

### 7.4.1 Table board 1

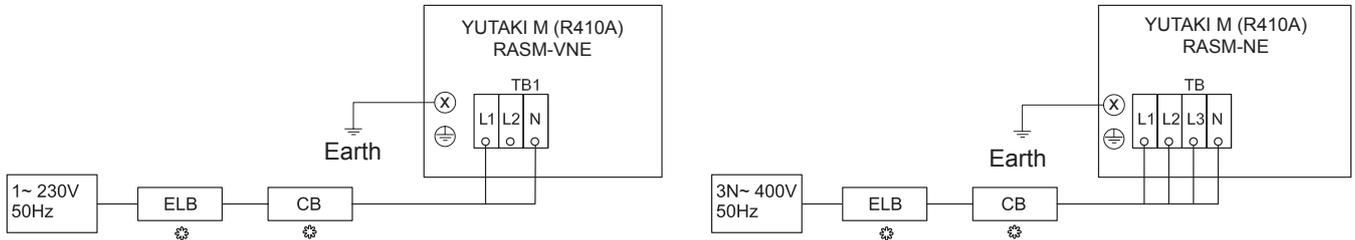
#### ◆ Main power supply

The main power supply connection is wired to the Terminal board (TB1) as follows:

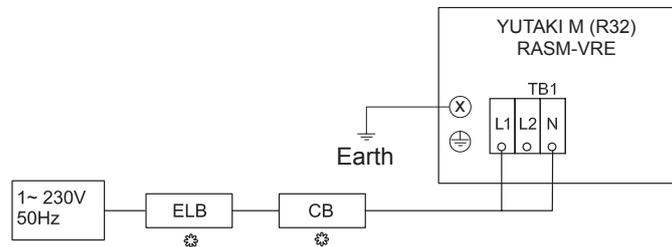
#### YUTAKI (S / S COMBI)



#### YUTAKI M - RASM-(4-6)(V)NE

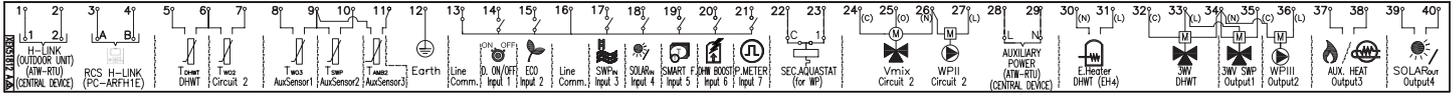


#### YUTAKI M - RASM-(2/3)VRE



## 7.4.2 Table board 2 for YUTAKI M and YUTAKI S80

### 7.4.2.1 Summary of the terminal board connections YUTAKI M - RASM-(2/3)VRE



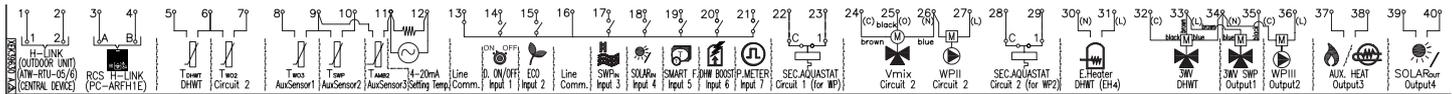
Mark	Part name	Description
<b>TERMINAL BOARD 1 (TB1)</b>		
N	1~ 230V 50Hz	Main power supply connection
L1		
L2		
L3		
<b>TERMINAL BOARD 2 (TB2)</b>		
1	H-LINK commutation	The H-LINK transmission has to be done between the indoor unit and the terminals 1-2 of either outdoor unit, ATW-RTU or any other central device.
2		
3	H-LINK communication for remote control switch	Terminals for the connection of the YUTAKI unit controller.
4		
5	DHW tank's thermistor	The DHW sensor is used to control the temperature of the domestic hot water tank.
6	Common thermistor	Common terminal for thermistor.
7	Thermistor for water outlet temperature of second cycle	The sensor is used for the second temperature control and should be positioned after the mixing valve and the circulation pump.
8	Thermistor for water outlet temperature after hydraulic separator	Water sensor for hydraulic separator, buffer tank or boiler combination.
9	Common thermistor	Common terminal for thermistors.
10	Thermistor for swimming pool water temperature	The sensor is used for the swimming pool temperature control and should be positioned inside plate heat exchanger of the swimming pool.
11	Thermistor for second ambient temperature	The sensor is used for the second ambient temperature control and it should be positioned outdoors.
12	Earth	Earth connection for the 3 way valve and water pump.
13	Common line	Terminal Line common for input 1 and input 2.
14	Input 1 (Demand ON/OFF) (*)	The air to water heat pump system has been designed to allow the connection of a remote thermostat to effectively control your home's temperature. Depending on the room temperature, the thermostat will turn the air to water heat pump system ON and OFF.
15	Input 2 (ECO mode) (*)	Available signal which allows to reduce the water setting temperature of circuit 1, circuit 2 or both.
16	Common line	Terminal Line common for inputs 3, 4, 5, 6, 7.
17	Input 3 (Swimming pool) (*)	Only for swimming pool installations: It is necessary to connect an external input to the air to water heat pump to provide signal when the water pump of swimming pool is ON.
18	Input 4 (Solar) (*)	Available input for Solar combination with Domestic Hot Water Tank.
19	Input 5 (Smart function) (*)	For the connection of an external tariff switch device to switch OFF the heat pump during peak electricity demand period. Depending on the setting, the heat pump or DHWT will be blocked when signal is open/closed.
20	Input 6 (DHW boost) (*)	Available input for an instantaneous heating of the domestic hot water of the tank.
21	Input 7 (Power meter)	The measuring of the real power consumption can be done connecting an external power meter. The number of pulses of the power meter is a variable which must be set. By this, every pulse input is added into corresponding operation mode (Heating, Cooling, DHW Operation). Two possible options: - One power meter for all installation (IU+OU). - Two separated power meters (one for IU and one for OU).
22	Aquistat security for circuit 1 (WP1)	Terminals intended for the connection of the Aquistat security accessory (ATW-AQT-01) for controlling water temperature of the circuit 1.
23		
24(C)	Mixing valve close	When a mixing system is required for a second temperature control, these outputs are necessary to control the mixing valve.
25(O)	Mixing valve open	
26(N)	N Common	
27(L)	Water Pump 2 (WP2)	When there is a second temperature application, a secondary pump is the circulating pump for the secondary heating circuit.
28	Auxiliary power	Power supply for ATW-RTU and central device
29		

Mark	Part name	Description
30(N)	Electrical Heater DHW Output	If DHW tank contains an electric heater, the air to water heat pump can activate it if the heat pump cannot achieve the required DHW temperature by itself.
31(L)		
32(C)	Common line	Common terminal for the 3-way valve for DHW tank.
33(L)	3-way valve for DHW tank	The air to water heat pump can be used to heat DHW. This output will be on when DHW is activated.
34(N)	N common	Neutral terminal common for 3-way valve of DHW tank and outputs 1 and 2.
35(L)	Output 1 (3-way valve for swimming pool) (*)	The air to water heat pump can be use to heat swimming pool. This output will be ON when swimming pool is activated.
36(L)	Output 2 (Water pump 3 (WP3)) (*)	When there is a hydraulic separator or buffer tank, additional water pump (WP3) is needed.
37	Output 3 (Auxiliary boiler or electric heater) (*)	The boiler can be used to alternate with the heat pump when the heat pump cannot achieve the required temperature by itself. A water electric heater (as accessory) can be used to provide the additional heating required on the coldest days of the year.
38		
39	Output 4 (Solar) (*)	Output for solar combination with Domestic Hot Water Tank.
40		

## NOTE

(\*): Inputs and outputs explained in the table are the factory-set options. By means of the unit controller, some other inputs and outputs functions can be configured and used. Please, refer to the Service Manual for detailed information.

### 7.4.2.2 Summary of the terminal board connections YUTAKI M - RASM-(4-6)(V)NE



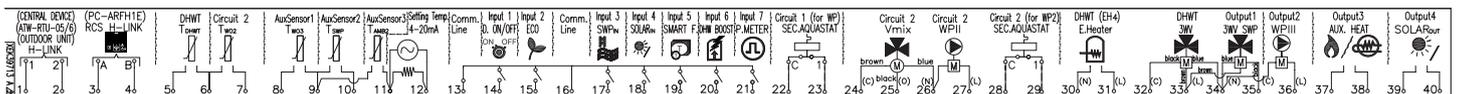
Mark	Part name	Description
<b>TERMINAL BOARD 2 (TB2)</b>		
1	H-LINK commutation	The H-LINK transmission has to be done between the unit and the terminals 1-2 of either outdoor unit, ATW-RTU-05 or any other central device.
2		
3	H-LINK communication for remote control switch	Terminals for the connection of the YUTAKI unit controller.
4		
5	DHW tank's thermistor	The DHW sensor is used to control the temperature of the domestic hot water tank.
6	Common thermistor	Common terminal for thermistor.
7	Thermistor for water outlet temperature of second cycle	The sensor is used for the second temperature control and should be positioned after the mixing valve and the circulation pump.
8	Thermistor for water outlet temperature after hydraulic separator	Water sensor for hydraulic separator, buffer tank or boiler combination.
9	Common thermistor	Common terminal for thermistors.
10	Thermistor for swimming pool water temperature	The sensor is used for the swimming pool temperature control and should be positioned inside plate heat exchanger of the swimming pool.
11	Thermistor for second ambient temperature	The sensor is used for the second ambient temperature control and it should be positioned outdoors.
11	4-20 mA application	It is possible to connect an external controller to the connector CN5 to provide a manual water temperature setting. The input current (4-20 mA) will be transformed into voltage by means of a grounded 240 Ω resistor (ATW-MAK-01 accessory) connected to these terminals. The DSW5 pin 3 must be in ON position and the SSW1 has to be in Local mode (Enabled manual operation) to enable this function.
12		
13	Common line	Terminal Line common for input 1 and input 2.
14	Input 1 (Demand ON/OFF) (*)	The air to water heat pump system has been designed to allow the connection of a remote thermostat to effectively control your home's temperature. Depending on the room temperature, the thermostat will turn the split air to water heat pump system ON and OFF.
15	Input 2 (ECO mode) (*)	Available signal which allows to reduce the water setting temperature of circuit 1, circuit 2 or both.
16	Common line	Terminal Line common for inputs 3, 4, 5, 6, 7.
17	Input 3 (Swimming pool) (*)	Only for swimming pool installations: It is necessary to connect an external input to the air to water heat pump to provide signal when the water pump of swimming pool is ON.
18	Input 4 (Solar) (*)	Available input for Solar combination with Domestic Hot Water Tank.

Mark	Part name	Description
19	Input 5 (Smart function) (*)	For the connection of an external tariff switch device to switch OFF the heat pump during peak electricity demand period. Depending on the setting, the heat pump or DHWT will be blocked when signal is open/closed.
20	Input 6 (DHW boost) (*)	Available input for an instantaneous heating of the domestic hot water of the tank.
21	Input 7 (Power meter)	The measuring of the real power consumption can be done connecting an external power meter. The number of pulses of the power meter is a variable which must be set. By this, every pulse input is added into corresponding operation mode (Heating, Cooling, DHW Operation). Two possible options: - One power meter for all installation (IU+OU). - Two separated power meters (one for IU and one for OU).
22	Aquastat security for circuit 1 (WP1)	Terminals intended for the connection of the Aquastat security accessory (ATW-AQT-01) for controlling water temperature of the circuit 1.
23		
24(C)	Mixing valve close	When a mixing system is required for a second temperature control, these outputs are necessary to control the mixing valve.
25(O)	Mixing valve open	
26(N)	N Common	
27(L)	Water Pump 2 (WP2)	When there is a second temperature application, a secondary pump is the circulating pump for the secondary heating circuit.
28	Aquastat security for circuit 2 (WP2)	Terminals intended for the connection of the Aquastat security accessory (ATW-AQT-01) for controlling water temperature of the circuit 2.
29		
30(N)	Electrical Heater DHW Output	If DHW tank contains an electric heater, the air to water heat pump can activate it if the heat pump cannot achieve the required DHW temperature by itself.
31(L)		
32(C)	Common line	Common terminal for the 3-way valve for DHW tank.
33(L)	3-way valve for DHW tank	The air to water heat pump can be used to heat DHW. This output will be on when DHW is activated.
34(N)	N common	Neutral terminal common for 3-way valve of DHW tank and outputs 1 and 2.
35(L)	Output 1 (3-way valve for swimming pool) (*)	The air to water heat pump can be use to heat swimming pool. This output will be ON when swimming pool is activated.
36(L)	Output 2 (Water pump 3 (WP3)) (*)	When there is a hydraulic separator or buffer tank, additional water pump (WP3) is needed.
37	Output 3 (Auxiliary boiler or electric heater) (*)	The boiler can be used to alternate with the heat pump when the heat pump cannot achieve the required temperature by itself.
38		A water electric heater (as accessory) can be used to provide the additional heating required on the coldest days of the year.
39	Output 4 (Solar) (*)	Output for solar combination with Domestic Hot Water Tank.
40		

**i NOTE**

(\*): Inputs and outputs explained in the table are the factory-set options. By means of the unit controller, some other inputs and outputs functions can be configured and used. Please, refer to the Service Manual for detailed information.

**7.4.2.3 Summary of the terminal board connections YUTAKI S80 - RWH-(4.0-6.0)(V)NF(W)E**



Mark	Part name	Description
<b>TERMINAL BOARD 1 (TB1)</b>		
N	1~ 230V 50Hz  3N~ 400 50Hz	Main power supply connection
L1		
L2		
L3		
<b>TERMINAL BOARD 2 (TB2)</b>		
1	H-LINK commutation	The H-LINK transmission has to be done between the indoor unit and the terminals 1-2 of either outdoor unit, ATW-RTU-05 or any other central device.
2		
3	H-LINK communication for remote control switch	Terminals for the connection of the YUTAKI unit controller.
4		

Mark	Part name	Description
5	DHW tank's thermistor	The DHW sensor is used to control the temperature of the domestic hot water tank.
6	Common thermistor	Common terminal for thermistor.
7	Thermistor for water outlet temperature of second cycle	The sensor is used for the second temperature control and should be positioned after the mixing valve and the circulation pump.
8	Thermistor for water outlet temperature after hydraulic separator	Water sensor for hydraulic separator, buffer tank or boiler combination.
9	Common thermistor	Common terminal for thermistors.
10	Thermistor for swimming pool water temperature	The sensor is used for the swimming pool temperature control and should be positioned inside plate heat exchanger of the swimming pool.
11	Thermistor for second ambient temperature	The sensor is used for the second ambient temperature control and it should be positioned outdoors.
11	4-20 mA application	It is possible to connect an external controller to the connector CN5 to provide a manual water temperature setting. The input current (4-20 mA) will be transformed into voltage by means of a grounded 240 Ω resistor (ATW-MAK-01 accessory) connected to these terminals. The DSW5 pin 3 must be in ON position and the SSW1 has to be in Local mode (Enabled manual operation) to enable this function.
12		
13	Common line	Terminal Line common for input 1 and input 2.
14	Input 1 (Demand ON/OFF) (*)	The air to water heat pump system has been designed to allow the connection of a remote thermostat to effectively control your home's temperature. Depending on the room temperature, the thermostat will turn the split air to water heat pump system ON and OFF.
15	Input 2 (ECO mode) (*)	Available signal which allows to reduce the water setting temperature of circuit 1, circuit 2 or both.
16	Common line	Terminal Line common for inputs 3, 4, 5, 6, 7.
17	Input 3 (Swimming pool) (*)	Only for swimming pool installations: It is necessary to connect an external input to the air to water heat pump to provide signal when the water pump of swimming pool is ON.
18	Input 4 (Solar) (*)	Available input for Solar combination with Domestic Hot Water Tank.
19	Input 5 (Smart function) (*)	For the connection of an external tariff switch device to switch OFF the heat pump during peak electricity demand period. Depending on the setting, the heat pump or DHWT will be blocked when signal is open/closed.
20	Input 6 (DHW boost) (*)	Available input for an instantaneous heating of the domestic hot water of the tank.
21	Input 7 (Power meter)	The measuring of the real power consumption can be done connecting an external power meter. The number of pulses of the power meter is a variable which must be set. By this, every pulse input is added into corresponding operation mode (Heating, DHW Operation). Two possible options: - One power meter for all installation (IU+OU). - Two separated power meters (one for IU and one for OU).
22	Aquastat security for circuit 1 (WP1)	Terminals intended for the connection of the Aquastat security accessory (ATW-AQT-01) for controlling water temperature of the circuit 1.
23		
24(C)	Mixing valve close	When a mixing system is required for a second temperature control, these outputs are necessary to control the mixing valve.
25(O)	Mixing valve open	
26(N)	N Common	
27(L)	Water Pump 2 (WP2)	When there is a second temperature application, a secondary pump is the circulating pump for the secondary heating circuit.
28	Aquastat security for circuit 2 (WP2)	Terminals intended for the connection of the Aquastat security accessory (ATW-AQT-01) for controlling water temperature of the circuit 2.
29		
30(N)	Electrical Heater DHW Output	If DHW tank contains an electric heater, the air to water heat pump can activate it if the heat pump cannot achieve the required DHW temperature by itself.
31(L)		
32(C)	Common line	Common terminal for the 3-way valve for DHW tank.
33(L)	3-way valve for DHW tank	The air to water heat pump can be used to heat DHW. This output will be on when DHW is activated.
34(N)	N common	Neutral terminal common for 3-way valve of DHW tank and outputs 1 and 2.
35(L)	Output 1 (3-way valve for swimming pool) (*)	The air to water heat pump can be use to heat swimming pool. This output will be ON when swimming pool is activated.
36(L)	Output 2 (Water pump 3 (WP3)) (*)	When there is a hydraulic separator or buffer tank, additional water pump (WP3) is needed.

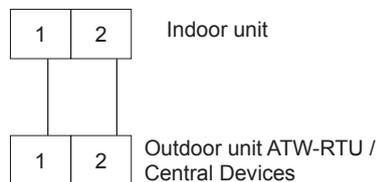
Mark	Part name	Description
37	Output 3 (Auxiliary boiler or electric heater) (*)	The boiler can be used to alternate with the heat pump when the heat pump cannot achieve the required temperature by itself.
38		A water electric heater (as accessory) can be used to provide the additional heating required on the coldest days of the year.
39	Output 4 (Solar) (*)	Output for solar combination with Domestic Hot Water Tank.
40		

**i** NOTE

(\*): Inputs and outputs explained in the table are the factory-set options. By means of the unit controller, some other inputs and outputs functions can be configured and used. Please, refer to the Service Manual for detailed information.

#### 7.4.2.4 Indoor/outdoor communication wiring (TB2) / ATW-RTU Communication / Central Devices Communication

- The transmission is wired to terminals 1-2.
- The H-LINK II wiring system requires only two transmission cables that connect the indoor unit and the outdoor unit in case of split system and also connect the indoor unit with ATW-RTU or Central devices like ATW-TAG-02, ATW-KNX-02 and ATW-MBS-02



- Use twist pair wires (0.75 mm<sup>2</sup>) for operation wiring between outdoor unit and indoor unit. The wiring must consist of 2-core wires (Do not use wire with more than 3 cores).
- Use shielded wires for intermediate wiring to protect the units from noise interference, with a length of less than 300 m and a size in compliance with local codes.
- In the event that a conduit tube for field-wiring is not used, fix rubber bushes to the panel with adhesive.

**⚠ CAUTION**

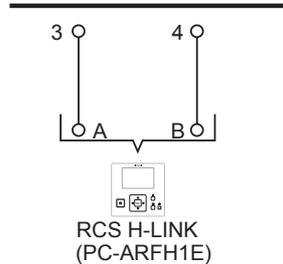
Ensure that the transmission wiring is not wrongly connected to any live part that could be damaged the PCB.

Input and output terminals give the possibility to configure the installation according to the needs of the user. The default settings and I/O terminals reach most of the options necessary for an optimal performance of the system. Additionally, the settings can be modified through the unit controller, and input/output terminals can be used, if required, to have additional options.

### 7.4.2.5 Input terminals (Default input functions)

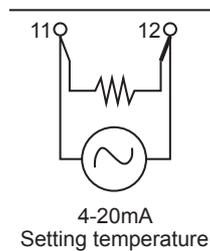
#### ◆ PC-ARFH1E connection

In those cases where the unit controller is ordered as a required accessory (YUTAKI S80 or YUTAKI M), or those cases where another PC-ARFH1E must be connected as a second thermostat, the connections between PC-ARFH1E and the indoor unit must be done in terminals 3 and 4, as it is shown in the next picture:

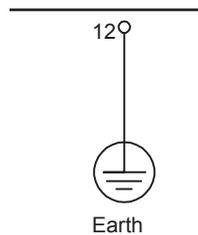


#### ◆ 4-20mA Setting Temperature (YUTAKI M (R410A))

Not available.

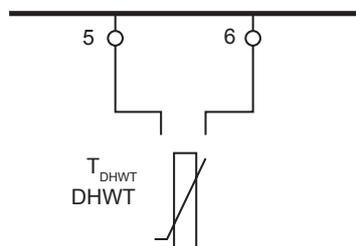


#### ◆ Earth (YUTAKI M (R32))



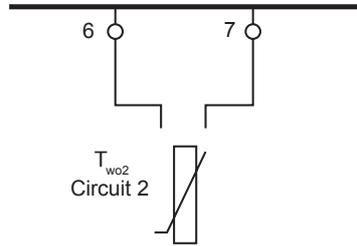
#### ◆ DHWT Thermistor (TDHWT)

For those cases in which a tank is installed as accessory, a thermistor must be installed to control the water temperature. The connection for this thermistor must be done between terminals 5 and 6 of the TB2.



### ◆ Water outlet thermistor for circuit 2 (TWO2)

When the installation is configured with a second circuit the thermistor for the water outlet temperature have to be connected between terminals 6 and 7 of the terminal board 2.



### ◆ Room thermostat communication cables

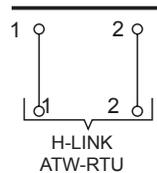
There are two different room thermostat types as accessory

#### Optional wireless intelligent room thermostat (TB2) ATW-RTU

Only for wireless room thermostat accessory: the receiver is connected to the polarity-free terminals 1 and 2.

The Wireless room thermostat and the Intelligent receiver are already configured to communicate with each other. If the Wireless room thermostat or the Intelligent receiver is replaced or an additional second temperature circuit thermostat is added, it is necessary to rebind them as explained in the manual of the Wireless intelligent room thermostat.

The Intelligent receiver is connected to the indoor unit table board as shown in the next picture:

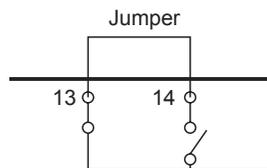


#### Optional wireless ON/OFF room thermostat ATW-RTU-04

The heat pump system has been designed to allow the connection of a remote ON/OFF thermostat to effectively control the home temperature. Depending on the room temperature, the thermostat will turn the system to ON or OFF.

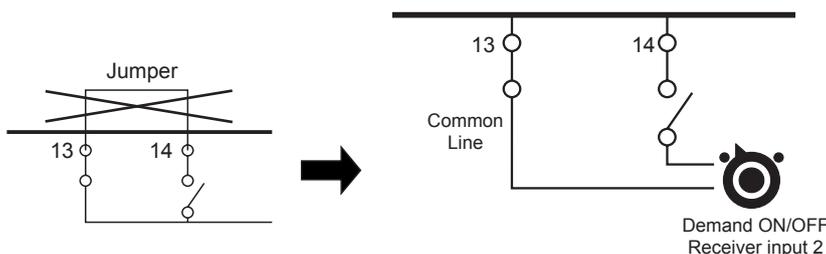
##### a. If no thermostat is installed

Terminals 13 and 14 are jumped if there is no ON/OFF receiver connected. When no remote thermostat is installed the operating condition for the unit (Thermo ON/OFF) will be controlled by the water calculation control system.



##### b. Installation of the ATW-RTU-04

In case of setting an installation with 2 circuits (circuit 1 and circuit 2) and the same demand ON/OFF is used for both of them, remove the jumper between terminals 13 and 14 of the Terminal board 2 and connect the RF receiver as shown in the following picture.



Thermostat requirements:

- Power supply: 230V AC
- Contact voltage: 230V

## NOTE

- If wireless intelligent thermostat is selected, optional ON/OFF thermostat has no effect.
- Set the configuration in the user's control. See chapter "9 Unit controller (PC-ARFH2E)" for more information.
- In case of setting an installation with 2 circuits (Circuit 1 and Circuit 2) and a different Demand ON/OFF is used for each of them, please refer to "7.4.2.5 Input terminals (Default input functions)" section in this chapter.
- For YUTAKI M R32 models: Auxiliary power supply is available for thermostats and central devices (28 and 29 terminals of TB2).

### ◆ ECO (Default for input 2)

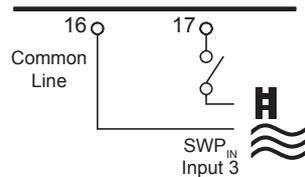
When enabled at Unit controller, both for circuit 1 and circuit 2, also for heating and cooling, this input switches the indoor unit into an ECO mode by adjusting its settings only when input is closed.

The input can come from a push button, a thermostat or any other external device with that purpose.



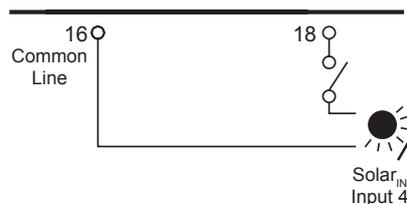
### ◆ Swimming pool (Default for input 3)

When it is necessary to control the temperature of the swimming pool water, a connection between the heat pump and the corresponding sensor must be done on terminals 16 and 17 at the Terminal board (input 4).



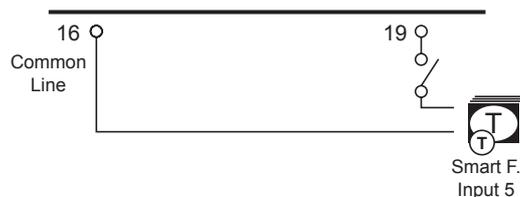
### ◆ Solar (Default for input 4)

This input comes from a solar panel sensor. The solar combination by input demand allows HSW to be heated by solar system when there is enough solar energy available. The connection of this input signal has to be done between terminals 16 and 18 at TB2.



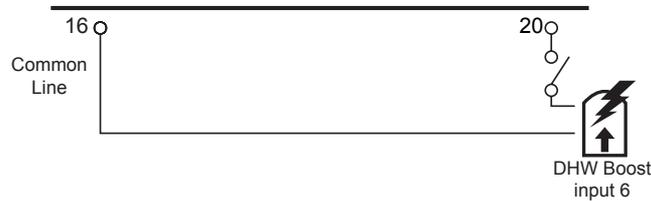
### ◆ Smart tariff (Default for input 5)

This function can be used to block or limit the heat pump. It allows an external Smart switch device to switch off or limit the heat pump during a period of peak electricity demand. Terminals 16 and 19 of the TB2.



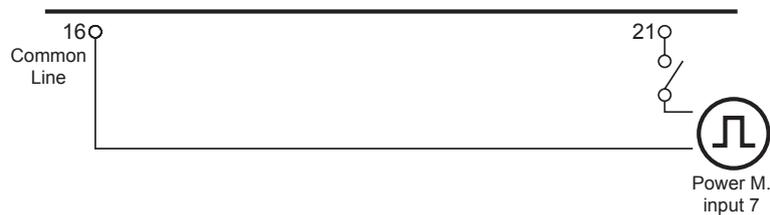
### ◆ DHW boost (Default for input 6)

This function allows a request for a one-time heating up of the domestic hot water temperature. The input can be sent by a push button, a NC contact and a NO contact. This input is switched on terminals 16 and 20 of the TB2.



### ◆ Power Meter (Default for input 7)

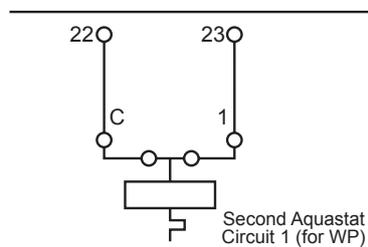
This function is used to monitor real consumption of the system by means an external power meter device connected at this input. The calculation method is done by measuring real consumption of the whole installation with one power meter device or 2 separate power meter (one for indoor unit and another one for outdoor unit).



### ◆ Aquastat for circuit 1

Aquastat is a security accessory to control in order to prevent high water temperature entering into floor system (Circuit 1). This devices must be connected to terminals 22 & 23 for circuit 1.

When this devices is activated because of the high temperature of the water, it stops the water pump in order to stop the flow of water to the heating floor.



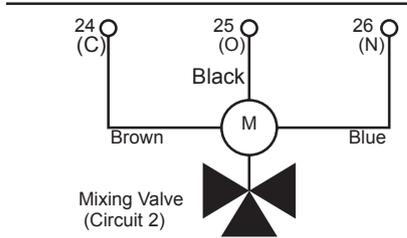
### **i** NOTE

For R410A models terminals 28 & 29 for circuit 2 are available.

## Output terminals (Default output functions)

### ◆ Mixing valve for Circuit 2

The mixing valve is controlled to maintain the second heating temperature at the second heating temperature set point. The control system decides how much to open or close the mixing valve to achieve the desired position of the valve.



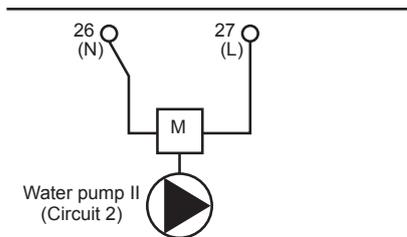
Terminal	Name	Description
24	C	Close
25	O	Open
26	N	Neutral

Valve requirements:

- Power supply: 230V AC 50Hz
- Maximum running current: 100mA

### ◆ Water pump 2 Circuit 2

In case of a second circuit installation (second temperature level) the secondary pump is the circulating pump for the second heating temperature.

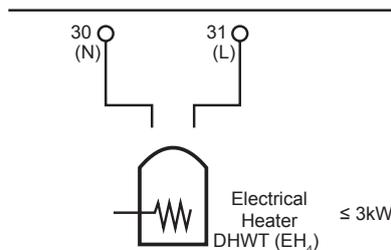


Pump requirements:

- Power supply: 230V AC 50Hz
- Maximum running current: 500mA (An auxiliary relay must be installed in case of high consumption of the water pump).

### ◆ Electrical heater DHWT output

In those cases where a DHW tank is installed with an electrical heater, the Air to Water heat pump can activate the electric heater of the tank when the heat pump cannot achieve the required DHW temperature by itself.

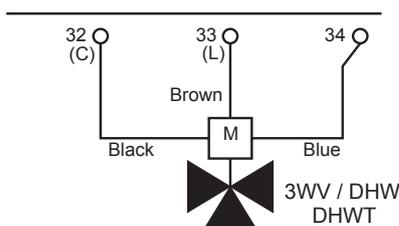


## ⚠ CAUTION

When using a DHW tank other than those from Hitachi, the maximum connectable heater load is 3 kW (connected to TB2 terminals 30-31).

### ◆ 3 Way valve for DHW tank output

YUTAKI units can be used to heat DHW. The signal is used on a 3-way motorized diverting valve and to provide control of supply water flow (water flow for space heating when there is no signal, and water flow for DHW when signal is ON)



Valve requirements:

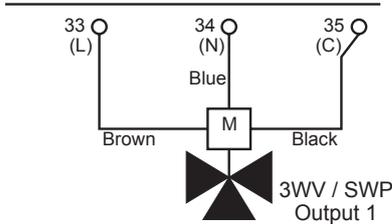
- Power supply: 230V AC 50Hz
- Maximum running current: 100mA

## Output terminals (Optional output functions)

### ◆ 3 Way valve for Swimming pool (Default for Output 1)

YUTAKI units can be used to heat the water of a swimming pool. The signal is used on a 3-way motorized diverting valve and to provide control of supply water flow for the swimming pool. This output is available when the function is enabled from the Unit controller.

Using the appropriate wiring, connect the valve cables as shown in the previous picture.

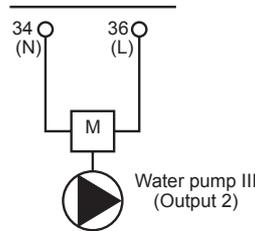


Valve requirements:

- Power supply: 230V AC 50Hz
- Maximum running current: 100mA

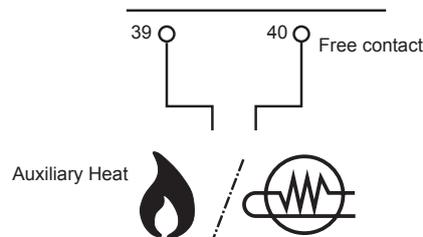
### ◆ Water pump 3 (Default for Output 2)

When the boiler is configured with the heat pump or needs an additional pump for the system, a hydraulic separator or buffer tank must be used to ensure a correct hydraulic balance



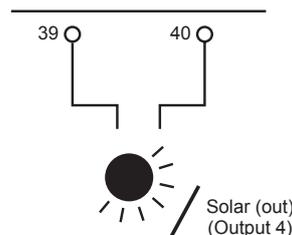
### ◆ Auxiliary boiler or heater (Default for Output 3)

The auxiliary boiler or heater (in case of YUTAKI S80 or M) can be used when the heat pump cannot achieve the require temperature by itself.



### ◆ Solar (Default for output 4)

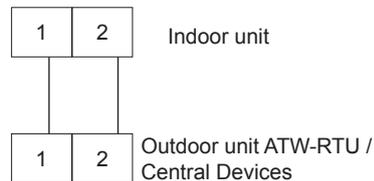
This output is used when solar mode is enabled (from Unit controller) and the temperature in the solar panel rises above the water temperature in the domestic hot water tank (DHWT). The connection between terminals 39 and 40 shall be closed in order to activate the dedicated water pump for solar panel combination.



### 7.4.3 Table board 2 for YUTAKI S and YUTAKI S COMBI

#### 7.4.3.1 Indoor/outdoor communication wiring (TB2) / ATW-RTU Communication / Central Devices Communication

- The transmission is wired to terminals 1-2.
- The H-LINK II wiring system requires only two transmission cables that connect the indoor unit and the outdoor unit in case of split system and also connect the indoor unit with ATW-RTU or Central devices like ATW-TAG-02, ATW-KNX-02 and ATW-MBS-02.



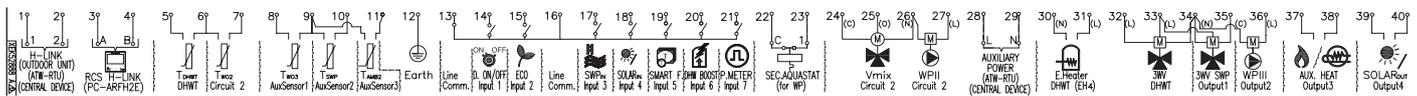
- Use twist pair wires (0.75 mm<sup>2</sup>) for operation wiring between outdoor unit and indoor unit. The wiring must consist of 2-core wires (Do not use wire with more than 3 cores).
- Use shielded wires for intermediate wiring to protect the units from noise interference, with a length of less than 300 m and a size in compliance with local codes.
- In the event that a conduit tube for field-wiring is not used, fix rubber bushes to the panel with adhesive.

#### ⚠ CAUTION

Ensure that the transmission wiring is not wrongly connected to any live part that could be damaged the PCB.

Input and output terminals give the possibility to configure the installation according to the needs of the user. The default settings and I/O terminals reach most of the options necessary for an optimal performance of the system. Additionally, the settings can be modified through the unit controller, and input/output terminals can be used, if required, to have additional options.

#### 7.4.3.2 Summary of terminal board connections YUTAKI S - RWM-(2.0-10.0)(N/R)1E



Mark	Part name	Description
<b>TERMINAL BOARD 1 (TB1)</b>		
N	1~ 230V 50Hz 3N~ 400V 50Hz	Main power supply connection
L1		
L2		
L3		
<b>TERMINAL BOARD 2 (TB2)</b>		
1	H-LINK commutation	The H-LINK transmission has to be done between the indoor unit and the terminals 1-2 of either outdoor unit, ATW-RTU or any other central device.
2		
3	H-LINK communication for remote control switch	Terminals for the connection of the YUTAKI unit controller.
4		
5	DHW tank's thermistor	The DHW sensor is used to control the temperature of the domestic hot water tank.
6	Common thermistor	Common terminal for thermistor.
7	Thermistor for water outlet temperature of second cycle	The sensor is used for the second temperature control and should be positioned after the mixing valve and the circulation pump.
8	Thermistor for water outlet temperature after hydraulic separator	Water sensor for hydraulic separator, buffer tank or boiler combination.
9	Common thermistor	Common terminal for thermistors.
10	Thermistor for swimming pool water temperature	The sensor is used for the swimming pool temperature control and should be positioned inside plate heat exchanger of the swimming pool.
11	Thermistor for second ambient temperature	The sensor is used for the second ambient temperature control and it should be positioned outdoors.
12	Earth	Earth connection for the 3 way valve and water pump
13	Common line	Terminal Line common for input 1 and input 2.

Mark	Part name	Description
14	Input 1 (Demand ON/OFF) (*)	The air to water heat pump system has been designed to allow the connection of a remote thermostat to effectively control your home's temperature. Depending on the room temperature, the thermostat will turn the split air to water heat pump system ON and OFF.
15	Input 2 (ECO mode) (*)	Available signal which allows to reduce the water setting temperature of circuit 1, circuit 2 or both.
16	Common line	Terminal Line common for inputs 3, 4, 5, 6, 7.
17	Input 3 (Swimming pool) (*)	Only for swimming pool installations: It is necessary to connect an external input to the air to water heat pump to provide signal when the water pump of swimming pool is ON.
18	Input 4 (Solar) (*)	Available input for Solar combination with Domestic Hot Water Tank.
19	Input 5 (Smart function) (*)	For the connection of an external tariff switch device to switch OFF the heat pump during peak electricity demand period. Depending on the setting, the heat pump or DHWT will be blocked when signal is open/closed.
20	Input 6 (DHW boost) (*)	Available input for an instantaneous heating of the domestic hot water of the tank.
21	Input 7 (Power meter)	The measuring of the real power consumption can be done connecting an external power meter. The number of pulses of the power meter is a variable which must be set. By this, every pulse input is added into corresponding operation mode (Heating, Cooling, DHW Operation). Two possible options: - One power meter for all installation (IU+OU). - Two separated power meters (one for IU and one for OU).
22	Aquastat security for circuit 1 (WP1)	Terminals intended for the connection of the Aquastat security accessory (ATW-AQT-01) for controlling water temperature of the circuit 1.
23		
24(C)	Mixing valve close	When a mixing system is required for a second temperature control, these outputs are necessary to control the mixing valve.
25(O)	Mixing valve open	
26(N)	N Common	
27(L)	Water Pump 2 (WP2)	When there is a second temperature application, a secondary pump is the circulating pump for the secondary heating circuit.
28	Auxiliary power	Power supply for ATW-RTU and central device
29		
30(N)	Electrical Heater DHW Output	If DHW tank contains an electric heater, the air to water heat pump can activate it if the heat pump cannot achieve the required DHW temperature by itself.
31(L)		
32(C)	Common line	Common terminal for the 3-way valve for DHW tank.
33(L)	3-way valve for DHW tank	The air to water heat pump can be used to heat DHW. This output will be on when DHW is activated.
34(N)	N common	Neutral terminal common for 3-way valve of DHW tank and outputs 1 and 2.
35(L)	Output 1 (3-way valve for swimming pool) (*)	The air to water heat pump can be use to heat swimming pool. This output will be ON when swimming pool is activated.
36(L)	Output 2 (Water pump 3 (WP3)) (*)	When there is a hydraulic separator or buffer tank, additional water pump (WP3) is needed.
37	Output 3 (Auxiliary boiler or electric heater) (*)	The boiler can be used to alternate with the heat pump when the heat pump cannot achieve the required temperature by itself.
38		A water electric heater (as accessory) can be used to provide the additional heating required on the coldest days of the year.
39	Output 4 (Solar) (*)	Output for solar combination with Domestic Hot Water Tank.
40		

 **NOTE**

(\*): Inputs and outputs explained in the table are the factory-set options. By means of the unit controller, some other inputs and outputs functions can be configured and used. Please, refer to the Service Manual for detailed information.

### 7.4.3.3 Input terminals (Default input functions)

#### ◆ Room thermostat communication cables

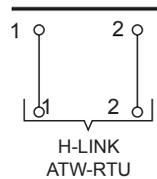
There are two different room thermostat types as accessory

#### Optional wireless intelligent room thermostat (TB2) ATW-RTU

Only for wireless room thermostat accessory: the receiver is connected to the polarity-free terminals 1 and 2.

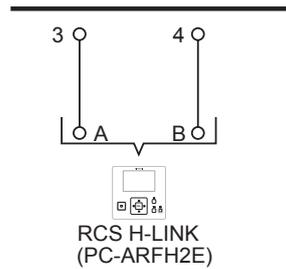
The Wireless room thermostat and the Intelligent receiver are already configured to communicate with each other. If the Wireless room thermostat or the Intelligent receiver is replaced or an additional second temperature circuit thermostat is added, it is necessary to rebind them as explained in the manual of the Wireless intelligent room thermostat.

The Intelligent receiver is connected to the indoor unit table board as shown in the next picture:



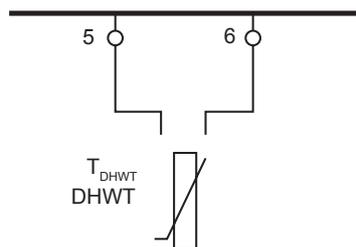
#### ◆ PC-ARFH2E connection

In cases where another PC-ARFH2E must be connected as a second thermostat, the connections between PC-ARFH2E and the indoor unit must be done in terminals 3 and 4 and the connection of the power supply in terminals 28-29, as it is shown in the next picture:



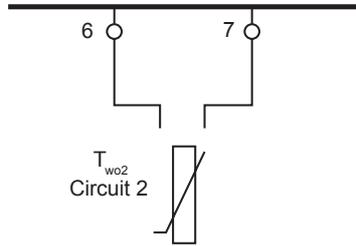
#### ◆ DHWT Thermistor (TDHWT)

For those cases in which a tank is installed as accessory, a thermistor must be installed to control the water temperature. The connection for this thermistor must be done between terminals 5 and 6 of the TB2.

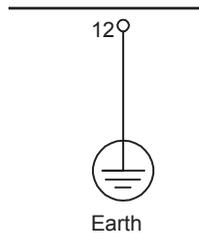


### ◆ Water outlet thermistor for circuit 2 (TWO2)

When the installation is configured with a second circuit the thermistor for the water outlet temperature have to be connected between terminals 6 and 7 of the terminal board 2.



### ◆ Earth

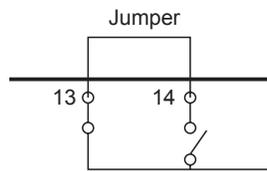


### ◆ Optional wireless ON/OFF room thermostat ATW-RTU-04

The heat pump system has been designed to allow the connection of a remote ON/OFF thermostat to effectively control the home temperature. Depending on the room temperature, the thermostat will turn the system to ON or OFF.

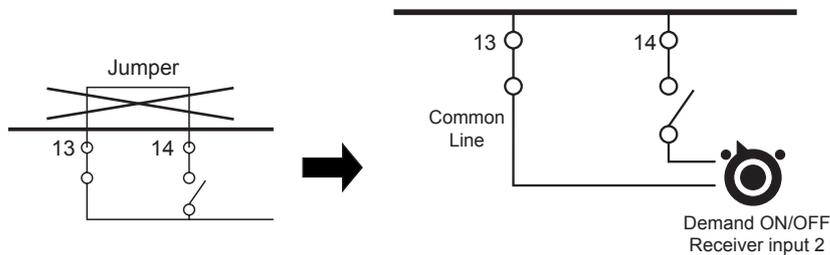
#### a. If no thermostat is installed

Terminals 13 and 14 are jumped if there is no ON/OFF receiver connected. When no remote thermostat is installed the operating condition for the unit (Thermo ON/OFF) will be controlled by the water calculation control system.



#### b. Installation of the ATW-RTU-04

In case of setting an installation with 2 circuits (circuit 1 and circuit 2) and the same demand ON/OFF is used for both of them, remove the jumper between terminals 13 and 14 of the Terminal board 2 and connect the RF receiver as shown in the following picture.



Thermostat requirements:

- Power supply: 230V AC
- Contact voltage: 230V

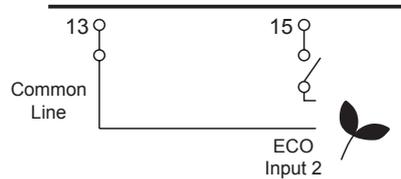
### **i** NOTE

- If wireless intelligent thermostat is selected, optional ON/OFF thermostat has no effect.
- Set the configuration in the user's control. See chapter "9 Unit controller (PC-ARFH2E)" for more information.
- In case of setting an installation with 2 circuits (Circuit 1 and Circuit 2) and a different Demand ON/OFF is used for each of them, please refer to "7.4.3.2 Summary of terminal board connections YUTAKI S - RWM-(2.0-10.0)(N/R)1E" section in this chapter.
- Auxiliary power supply is available for thermostats and central devices (28 and 29 terminals of TB2).

### ◆ ECO (Default for input 2)

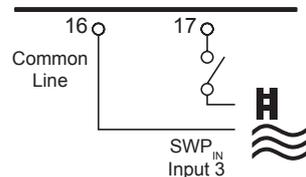
When enabled at Unit controller, both for circuit 1 and circuit 2, also for heating and cooling, this input switches the indoor unit into an ECO mode by adjusting its settings only when input is closed.

The input can come from a push button, a thermostat or any other external device with that purpose.



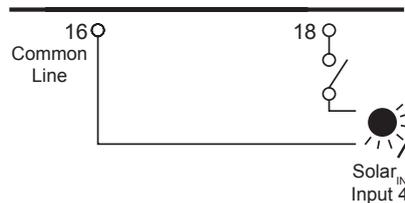
### ◆ Swimming pool (Default for input 3)

When it is necessary to control the temperature of the swimming pool water, a connection between the heat pump and the corresponding sensor must be done on terminals 16 and 17 at the Terminal board (input 4).



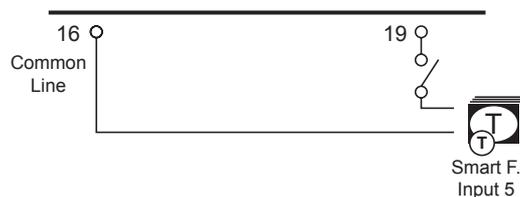
### ◆ Solar (Default for input 4)

This input comes from a solar panel sensor. The solar combination by input demand allows HSW to be heated by solar system when there is enough solar energy available. The connection of this input signal has to be done between terminals 16 and 18 at TB2.



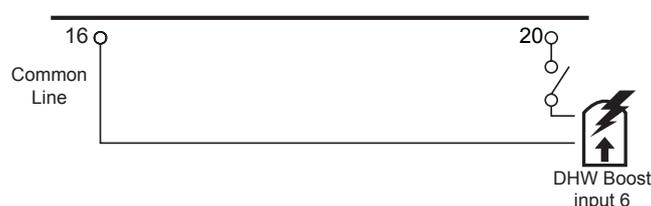
### ◆ Smart tariff (Default for input 5)

This function can be used to block or limit the heat pump. It allows an external Smart switch device to switch off or limit the heat pump during a period of peak electricity demand. Terminals 16 and 19 of the TB2.



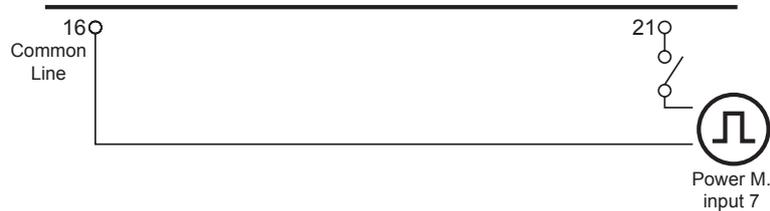
### ◆ DHW boost (Default for input 6)

This function allows a request for a one-time heating up of the domestic hot water temperature. The input can be sent by a push button, a NC contact and a NO contact. This input is switched on terminals 16 and 20 of the TB2.



### ◆ Power Meter (Default for input 7)

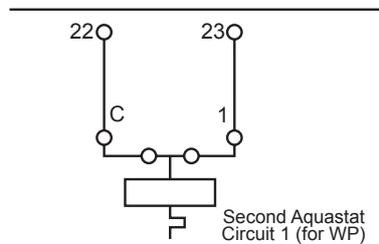
This function is used to monitor real consumption of the system by means an external power meter device connected at this input. The calculation method is done by measuring real consumption of the whole installation with one power meter device or 2 separate power meter (one for indoor unit and another one for outdoor unit).



### ◆ Aquastat for circuit 1

Aquastat is a security accessory to control in order to prevent high water temperature entering into floor system (Circuit 1). This devices must be connected to terminals 22 & 23 for circuit 1.

When this devices is activated because of the high temperature of the water, it stops the water pump in order to stop the flow of water to the heating floor.



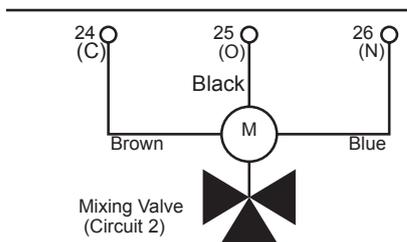
### **i** NOTE

In case of YUTAKI S COMBI UK model, Domestic Hot water tank security thermostat its connected to terminals 22&23 and this fuction is not available for circuit 1.

### Output terminals (Default output functions)

#### ◆ Mixing valve for Circuit 2

The mixing valve is controlled to maintain the second heating temperature at the second heating temperature set point. The control system decides how much to open or close the mixing valve to achieve the desired position of the valve.

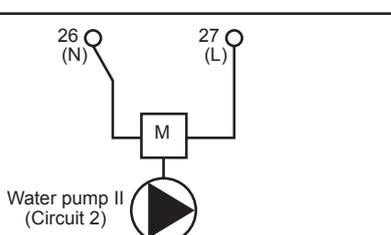


Valve requirements:

- Power supply: 230V AC 50Hz
- Maximum running current: 100mA

#### ◆ Water pump 2 Circuit 2

In case of a second circuit installation (second temperature level) the secondary pump is the circulating pump for the second heating temperature.

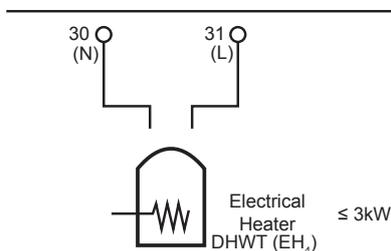


Pump requirements:

- Power supply: 230V AC 50Hz
- Maximum running current: 500mA (An auxiliary relay must be installed in case of high consumption of the water pump).

### ◆ Electrical heater DHWT output

In those cases where a DHW tank is installed with an electrical heater, the Air to Water heat pump can activate the electric heater of the tank when the heat pump cannot achieve the required DHW temperature by itself.

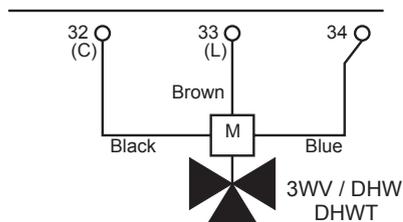


### ⚠ CAUTION

When using a DHW tank other than those from Hitachi, the maximum connectable heater load is 3 kW (connected to TB2 terminals 30-31).

### ◆ 3 Way valve for DHW tank output

YUTAKI units can be used to heat DHW. The signal is used on a 3-way motorized diverting valve and to provide control of supply water flow (water flow for space heating when there is no signal, and water flow for DHW when signal is ON)



Valve requirements:

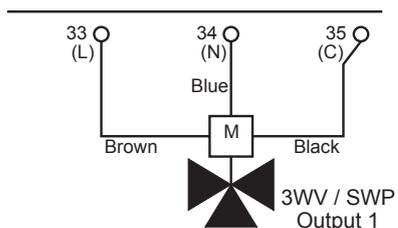
- Power supply: 230V AC 50Hz
- Maximum running current: 100mA

### Output terminals (Optional output functions)

#### ◆ 3 Way valve for Swimming pool (Default for Output 1)

YUTAKI units can be used to heat the water of a swimming pool. The signal is used on a 3-way motorized diverting valve and to provide control of supply water flow for the swimming pool. This output is available when the function is enabled from the Unit controller.

Using the appropriate wiring, connect the valve cables as shown in the previous picture.

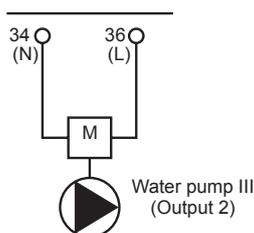


Valve requirements:

- Power supply: 230V AC 50Hz
- Maximum running current: 100mA

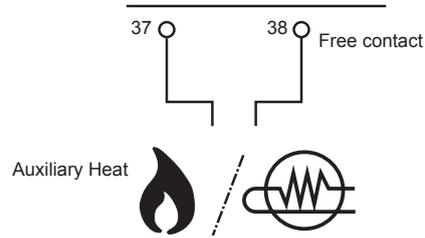
#### ◆ Water pump 3 (Default for Output 2)

When the boiler is configured with the heat pump or needs an additional pump for the system, a hydraulic separator or buffer tank must be used to ensure a correct hydraulic balance

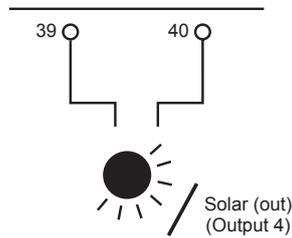


**◆ Auxiliary boiler or heater (Default for Output 3)**

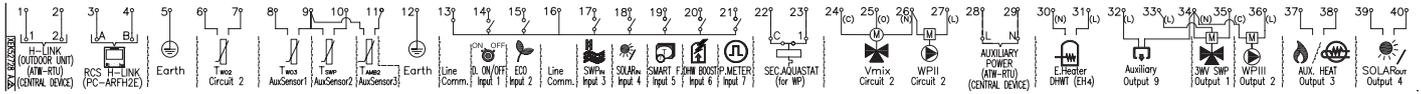
The auxiliary boiler or heater can be used when the heat pump cannot achieve the require temperature by itself.

**◆ Solar (Default for output 4)**

This output is used when solar mode is enabled (from Unit controller) and the temperature in the solar panel rises above the water temperature in the domestic hot water tank (DHWT). The connection between terminals 39 and 40 shall be closed in order to activate the dedicated water pump for solar panel combination.



### 7.4.3.4 Summary of terminal board connections YUTAKI S COMBI - RWD-(4.0-6.0)(N/R)W1E-220S(-K)



Mark	Part name	Description
<b>TERMINAL BOARD 1 (TB1)</b>		
N	1~ 230V 50Hz  3N~ 400V 50Hz	Main power supply connection
L1		
L2		
L3		
<b>TERMINAL BOARD 2 (TB2)</b>		
1	H-LINK commutation	The H-LINK transmission has to be done between the indoor unit and the terminals 1-2 of either outdoor unit, ATW-RTU or any other central device.
2		
3	H-LINK communication for remote control switch	Terminals for the connection of the YUTAKI unit controller.
4		
5	Earth	Earth connection for the 3 way valve and water pump
6	Common thermistor	Common terminal for thermistor.
7	Thermistor for water outlet temperature of second cycle	The sensor is used for the second temperature control and should be positioned after the mixing valve and the circulation pump.
8	Thermistor for water outlet temperature after hydraulic separator	Water sensor for hydraulic separator, buffer tank or boiler combination.
9	Common thermistor	Common terminal for thermistors.
10	Thermistor for swimming pool water temperature	The sensor is used for the swimming pool temperature control and should be positioned inside plate heat exchanger of the swimming pool.
11	Thermistor for second ambient temperature	The sensor is used for the second ambient temperature control and it should be positioned outdoors.
12	Earth	Earth connection for the 3 way valve and water pump
13	Common line	Terminal Line common for input 1 and input 2.
14	Input 1 (Demand ON/OFF) (*)	The air to water heat pump system has been designed to allow the connection of a remote thermostat to effectively control your home's temperature. Depending on the room temperature, the thermostat will turn the split air to water heat pump system ON and OFF.
15	Input 2 (ECO mode) (*)	Available signal which allows to reduce the water setting temperature of circuit 1, circuit 2 or both.
16	Common line	Terminal Line common for inputs 3, 4, 5, 6, 7.
17	Input 3 (Swimming pool) (*)	Only for swimming pool installations: It is necessary to connect an external input to the air to water heat pump to provide signal when the water pump of swimming pool is ON.
18	Input 4 (Solar) (*)	Available input for Solar combination with Domestic Hot Water Tank.
19	Input 5 (Smart function) (*)	For the connection of an external tariff switch device to switch OFF the heat pump during peak electricity demand period. Depending on the setting, the heat pump or DHWT will be blocked when signal is open/closed.
20	Input 6 (DHW boost) (*)	Available input for an instantaneous heating of the domestic hot water of the tank.
21	Input 7 (Power meter)	The measuring of the real power consumption can be done connecting an external power meter. The number of pulses of the power meter is a variable which must be set. By this, every pulse input is added into corresponding operation mode (Heating, Cooling, DHW Operation). Two possible options: - One power meter for all installation (IU+OU). - Two separated power meters (one for IU and one for OU).
22	Aquastat security for circuit 1 (WP1)	Terminals intended for the connection of the Aquastat security accessory (ATW-AQT-01) for controlling water temperature of the circuit 1.
23		
24(C)	Mixing valve close	When a mixing system is required for a second temperature control, these outputs are necessary to control the mixing valve.
25(O)	Mixing valve open	
26(N)	N Common	
27(L)	Water Pump 2 (WP2)	When there is a second temperature application, a secondary pump is the circulating pump for the secondary heating circuit.

Mark	Part name	Description
28	Auxiliary power	Power supply for ATW-RTU and central device
29		
30(N)	Electrical Heater DHW Output	If DHW tank contains an electric heater, the air to water heat pump can activate it if the heat pump cannot achieve the required DHW temperature by itself.
31(L)		
32	Output 9	
33(L)	L common	Power supply for valve accessories
34(N)	N common	Neutral terminal common for outputs 1 , 2 and 9.
35(L)	Output 1 (3-way valve for swimming pool) (*)	The air to water heat pump can be use to heat swimming pool. This output will be ON when swimming pool is activated.
36(L)	Output 2 (Water pump 3 (WP3)) (*)	When there is a hydraulic separator or buffer tank, additional water pump (WP3) is needed.
37	Output 3 (Auxiliary boiler or electric heater) (*)	The boiler can be used to alternate with the heat pump when the heat pump cannot achieve the required temperature by itself. A water electric heater (as accessory) can be used to provide the additional heating required on the coldest days of the year.
38		
39	Output 4 (Solar) (*)	Output for solar combination with Domestic Hot Water Tank.
40		

### NOTE

(\*): Inputs and outputs explained in the table are the factory-set options. By means of the unit controller, some other inputs and outputs functions can be configured and used. Please, refer to the Service Manual for detailed information.

#### 7.4.3.5 Input terminals (Default input functions)

##### ◆ Room thermostat communication cables

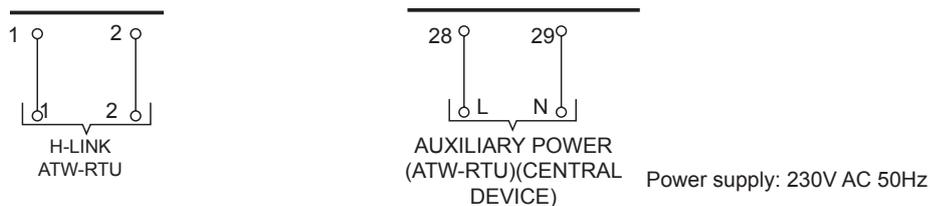
There are two different room thermostat types as accessory

##### Optional wireless intelligent room thermostat (TB2) ATW-RTU

Only for wireless room thermostat accessory: the receiver is connected to the polarity-free terminals 1 and 2.

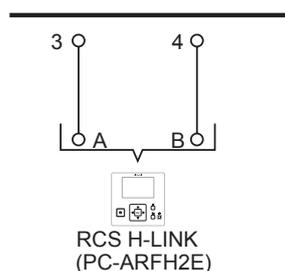
The Wireless room thermostat and the Intelligent receiver are already configured to communicate with each other. If the Wireless room thermostat or the Intelligent receiver is replaced or an additional second temperature circuit thermostat is added, it is necessary to rebind them as explained in the manual of the Wireless intelligent room thermostat.

The Intelligent receiver is connected to the indoor unit table board as shown in the next picture:



##### ◆ PC-ARFH2E connection

In cases where another PC-ARFH2E must be connected as a second thermostat, the connections between PC-ARFH2E and the indoor unit must be done in terminals 3 and 4, as it is shown in the next picture:

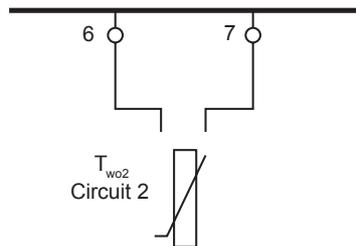


### ◆ Earth



### ◆ Water outlet thermistor for circuit 2 ( $T_{wo2}$ )

When the installation is configured with a second circuit the thermistor for the water outlet temperature have to be connected between terminals 6 and 7 of the terminal board 2.

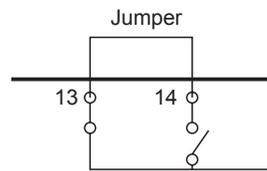


### ◆ Optional wireless ON/OFF room thermostat ATW-RTU-04

The heat pump system has been designed to allow the connection of a remote ON/OFF thermostat to effectively control the home temperature. Depending on the room temperature, the thermostat will turn the system to ON or OFF.

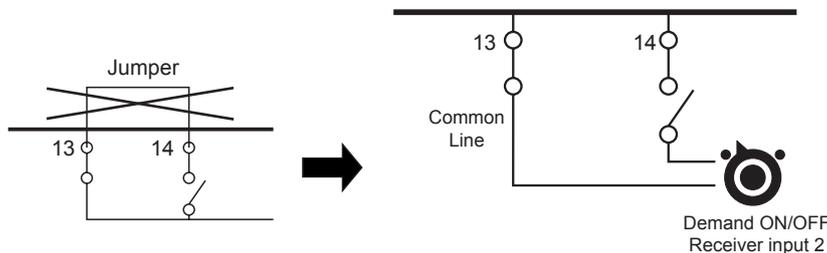
#### a. If no thermostat is installed

Terminals 13 and 14 are jumpered if there is no ON/OFF receiver connected. When no remote thermostat is installed the operating condition for the unit (Thermo ON/OFF) will be controlled by the water calculation control system.



#### b. Installation of the ATW-RTU-04

In case of setting an installation with 2 circuits (circuit 1 and circuit 2) and the same demand ON/OFF is used for both of them, remove the jumper between terminals 13 and 14 of the Terminal board 2 and connect the RF receiver as shown in the following picture.



Thermostat requirements:

- Power supply: 230V AC
- Contact voltage: 230V

### **i** NOTE

- If wireless intelligent thermostat is selected, optional ON/OFF thermostat has no effect.
- Set the configuration in the user's control. See chapter "9 Unit controller (PC-ARFH2E)" for more information.
- In case of setting an installation with 2 circuits (Circuit 1 and Circuit 2) and a different Demand ON/OFF is used for each of them, please refer to "7.4.3.2 Summary of terminal board connections YUTAKI S - RWM-(2.0-10.0)(N/R)1E" section in this chapter.
- Auxiliary power supply is available for thermostats and central devices (28 and 29 terminals of TB2).

### ◆ ECO (Default for input 2)

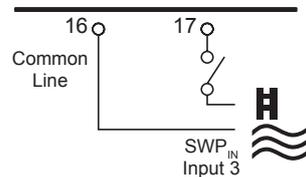
When enabled at Unit controller, both for circuit 1 and circuit 2, also for heating and cooling, this input switches the indoor unit into an ECO mode by adjusting its settings only when input is closed.

The input can come from a push button, a thermostat or any other external device with that purpose.



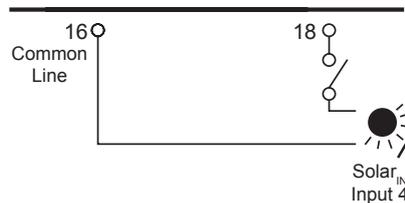
### ◆ Swimming pool (Default for input 3)

When it is necessary to control the temperature of the swimming pool water, a connection between the heat pump and the corresponding sensor must be done on terminals 16 and 17 at the Terminal board (input 4).



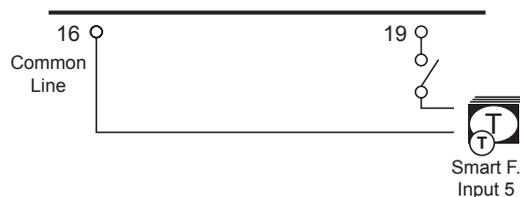
### ◆ Solar (Default for input 4)

This input comes from a solar panel sensor. The solar combination by input demand allows HSW to be heated by solar system when there is enough solar energy available. The connection of this input signal has to be done between terminals 16 and 18 at TB2.



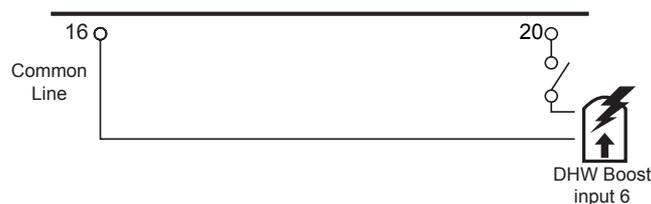
### ◆ Smart tariff (Default for input 5)

This function can be used to block or limit the heat pump. It allows an external Smart switch device to switch off or limit the heat pump during a period of peak electricity demand. Terminals 16 and 19 of the TB2.



### ◆ DHW boost (Default for input 6)

This function allows a request for a one-time heating up of the domestic hot water temperature. The input can be sent by a push button, a NC contact and a NO contact. This input is switched on terminals 16 and 20 of the TB2.



### ◆ Power Meter (Default for input 7)

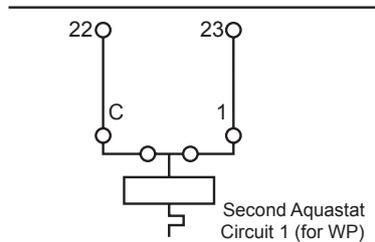
This function is used to monitor real consumption of the system by means an external power meter device connected at this input. The calculation method is done by measuring real consumption of the whole installation with one power meter device or 2 separate power meter (one for indoor unit and another one for outdoor unit).



### ◆ Aquastat for circuit 1

Aquastat is a security accessory to control in order to prevent high water temperature entering into floor system (Circuit 1). This devices must be connected to terminals 22 & 23 for circuit 1.

When this devices is activated because of the high temperature of the water, it stops the water pump in order to stop the flow of water to the heating floor.

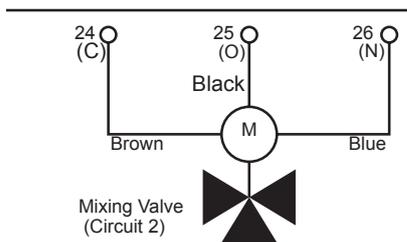


In case of YUTAKI S COMBI UK model, Domestic Hot water tank security thermostat its connected to terminals 22&23 and this funcion is not available for circuit 1.

### Output terminals (Default output functions)

#### ◆ Mixing valve for Circuit 2

The mixing valve is controlled to maintain the second heating temperature at the second heating temperature set point. The control system decides how much to open or close the mixing valve to achieve the desired position of the valve.

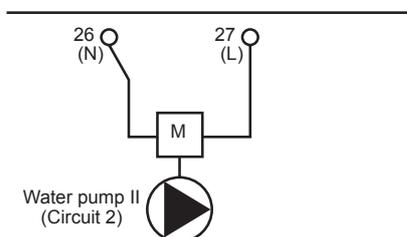


Valve requirements:

- Power supply: 230V AC 50Hz
- Maximum running current: 100mA

#### ◆ Water pump 2 Circuit 2

In case of a second circuit installation (second temperature level) the secondary pump is the circulating pump for the second heating temperature.

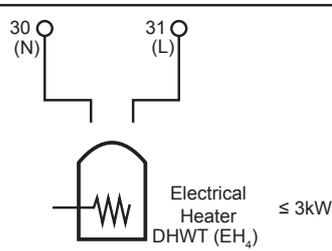


Pump requirements:

- Power supply: 230V AC 50Hz
- Maximum running current: 500mA (An auxiliary relay must be installed in case of high consumption of the water pump).

### ◆ Electrical heater DHWT output

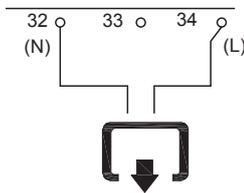
In those cases where a DHW tank is installed with an electrical heater, the Air to Water heat pump can activate the electric heater of the tank when the heat pump cannot achieve the required DHW temperature by itself.



### ⚠ CAUTION

When using a DHW tank other than those from Hitachi, the maximum connectable heater load is 3 kW (connected to TB2 terminals 30-31).

### ◆ Output 9

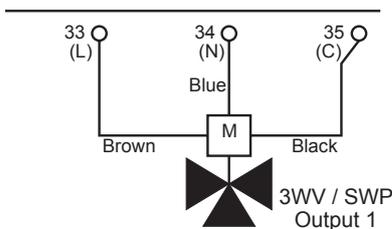


### Output terminals (Optional output functions)

#### ◆ 3 Way valve for Swimming pool (Default for Output 1)

YUTAKI units can be used to heat the water of a swimming pool. The signal is used on a 3-way motorized diverting valve and to provide control of supply water flow for the swimming pool. This output is available when the function is enabled from the Unit controller.

Using the appropriate wiring, connect the valve cables as shown in the previous picture.

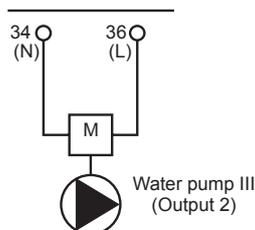


Valve requirements:

- Power supply: 230V AC 50Hz
- Maximum running current: 100mA

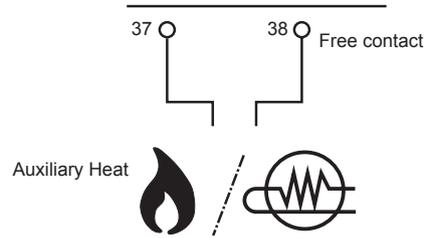
#### ◆ Water pump 3 (Default for Output 2)

When the boiler is configured with the heat pump or needs an additional pump for the system, a hydraulic separator or buffer tank must be used to ensure a correct hydraulic balance

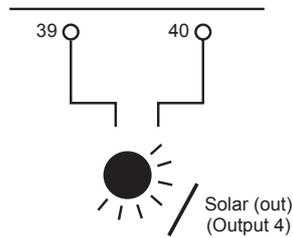


**◆ Auxiliary boiler or heater (Default for Output 3)**

The auxiliary boiler or heater can be used when the heat pump cannot achieve the require temperature by itself.

**◆ Solar (Default for output 4)**

This output is used when solar mode is enabled (from Unit controller) and the temperature in the solar panel rises above the water temperature in the domestic hot water tank (DHWT). The connection between terminals 39 and 40 shall be closed in order to activate the dedicated water pump for solar panel combination.



## 8 UNIT CONTROLLER (PC-ARFH1E)

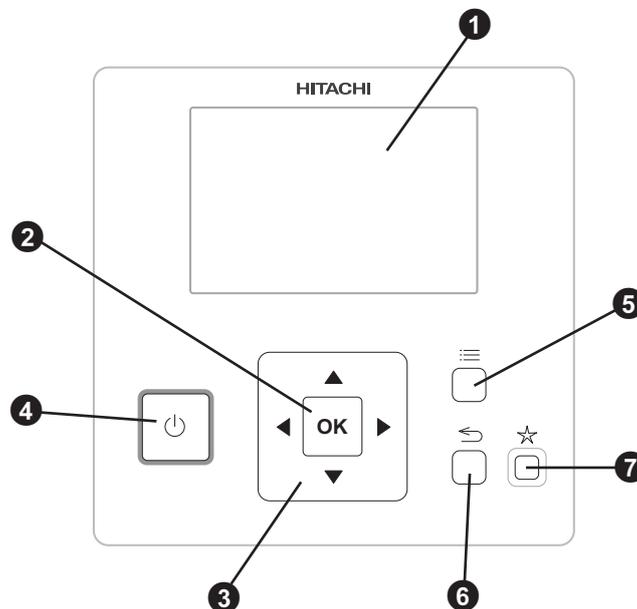
The unit controller for YUTAKI series (PC-ARFH1E) is an user-friendly remote control which ensures a strong and safe communication through H-LINK.

Available for the following unit models:

- RWM-(4.0-10.0)NE(-W)
- RWD-(4.0-6.0)NW(S)E-(200/260)S(-K)(-W)
- RASM-(3-6)(V)NE
- RASM-(2/3)VRE
- RWH-(4.0-6.0)(V)NF(W)E

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.

### 8.1 DEFINITION OF THE SWITCHES



**1** Liquid Crystal Display

Screen where controller software is displayed.

**2** OK button

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

**3** Arrows key

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

**4** 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.

**5** Menu button

It shows the different configuration options of the user controller.

**6** Return button

To return to the previous screen.

**7** Favourite button

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

## 8.2 DESCRIPTION OF THE ICONS

### 8.2.1 Common icons

Icon	Name	Explanation	
OFF			Circuit I or II is in Demand-OFF
	Status for circuit 1, 2, DHW and swimming pool.		Circuit I or II is on Thermo-OFF
			Circuit I or II is working between $0 < X \leq 33\%$ of the desired water outlet temperature
			Circuit I or II is working between $33 < X \leq 66\%$ of the desired water outlet temperature
			Circuit I or II is working between $66 < X \leq 100\%$ 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

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/R32 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	Informs about the activation of the "Test Run" function	
	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.	

**8.2.3 Icons for the room thermostat view**

Icon	Name	Explanation	
	Manual/Auto mode		Manual mode
			Auto mode with timer setting
			Auto mode without timer setting
	Setting/Room temperature		Setting temperature
			Room temperature
	End of timer period	The end hour of the timer period is indicated below this icon	
	End of holiday period	The end hour of the holiday period is indicated below this icon	
	Setting temperature	This icon appears while the setting temperature is being changed, and indicates the actual temperature	
	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	

### 8.3 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			
		Maximum Setting T. (Air)			
		Air Eco Offset			
	Timer and Schedule				
	Circuit 1				
		Heating (Air)			
			Timer Type		
				Simple	
				Schedule	
		Cooling (Air)			
			Timer Type		
				Simple	
				Schedule	
	Circuit 2				
		Heating (Air)			

Menu Contents					
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
				Timer Type	
					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				

### 8.4 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 					

### 8.5 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.



After that, the “Enter password” message is displayed.

The login password for the Installer is:



Press “OK” to confirm the password.

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

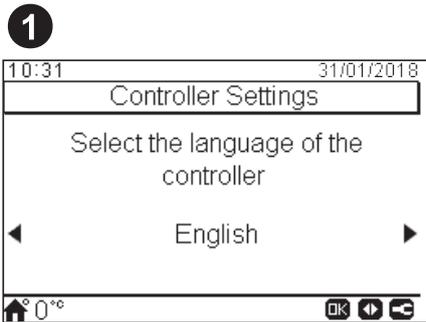


After 30 minutes of inactivity, it is necessary to repeat the log in process. To exit the Installer mode and return to the unit menu, hold down the “↵” button for 3 seconds or go to the “Return to user mode” on the main menu.

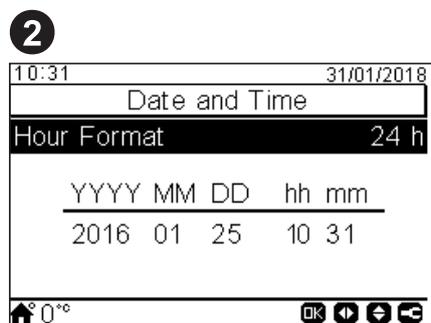
** NOTE**

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.

## 8.6 CONTROLLER CONFIGURATION

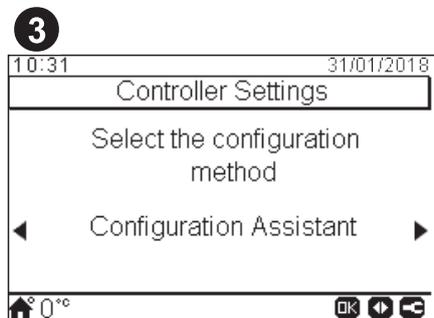


- Select the desired language using the arrow keys.
- Press OK button.

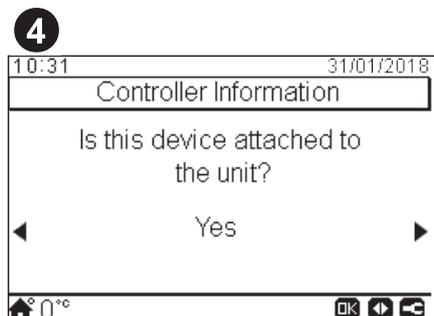


- Select the date and time using the arrow keys.
- Press OK button.

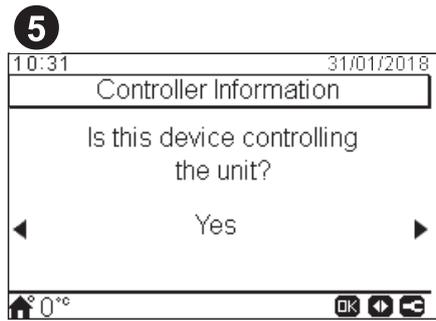
### 8.6.1 Configuration Assistant



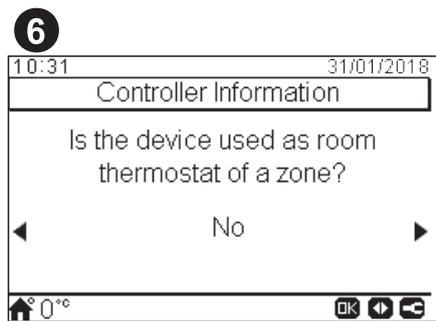
- Select the configuration assistant for an easy configuration.
- Press OK button.



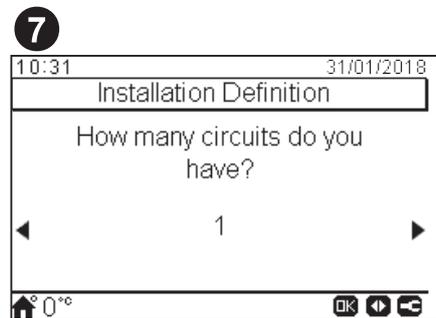
- Select Yes when the device is controlling the unit which it is attached. Jump to screen 6.
- Select No when the device is installed in a different site than the unit.
- Press OK button.



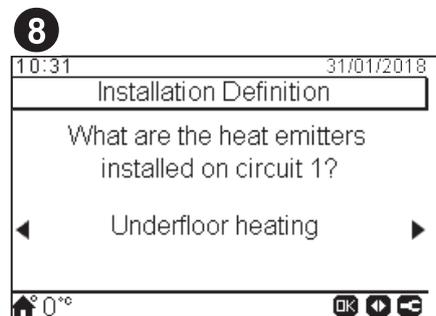
- Select No when the device acts as Room Thermostat only. It does not control the unit.
- Press OK button.



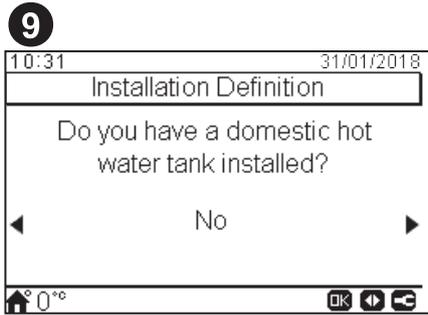
- Select No when the device is not used as a room thermostat.
- Select Yes, in zone 1 / Yes, in zone 2 / Yes, in both zones, depending on the number of circuits controlled.
- When select Yes, in both zones, jump to screen 8.
- Press OK button.



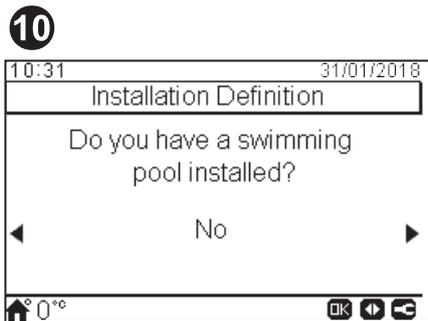
- Select the number of circuits (1 or 2) .
- Press OK button.



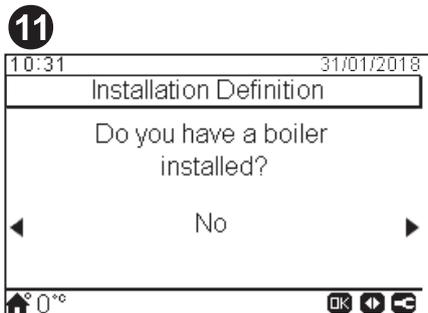
- Select the heat emitters on the circuit 1: Underfloor heating, Fan coils or Radiators.
- Repeat this step in case of circuit 2.
- Press OK button.



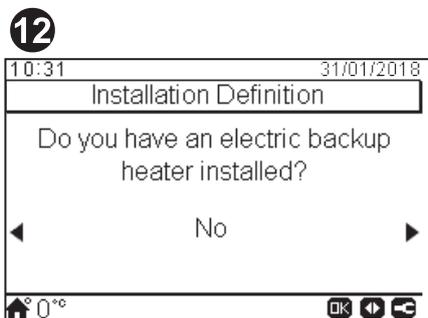
- Select Yes if Domestic Hot Water tank is installed.
- Press OK button.



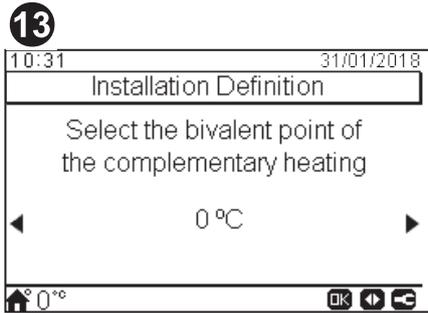
- Select Yes if Swimming Pool is installed.
- Press OK button.



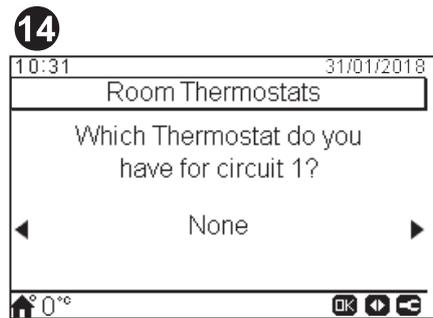
- Select Yes if Boiler is installed.
- Press OK button.



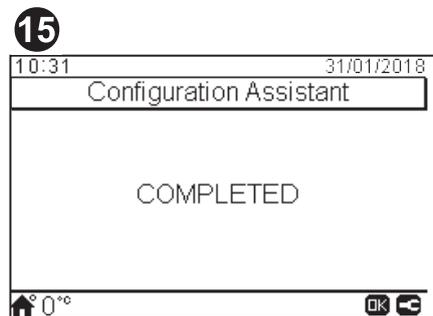
- Select Yes if an electrical backup heater is installed.
- Press OK button.



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

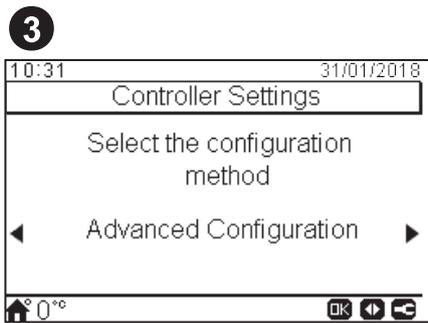


- Select the type of room thermostat installed in circuit 1 or 2 (depending on the previous setting): None, wired or wireless.
- Repeat this step in case of circuit 2.
- Press OK button.

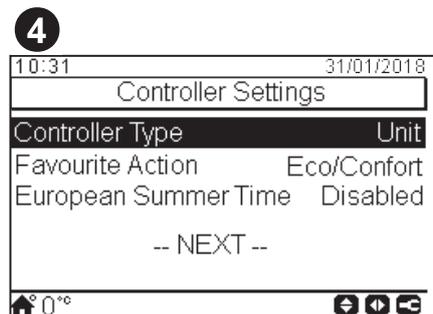


- Configuration assistant is completed.
- Press OK button to go to the main screen.

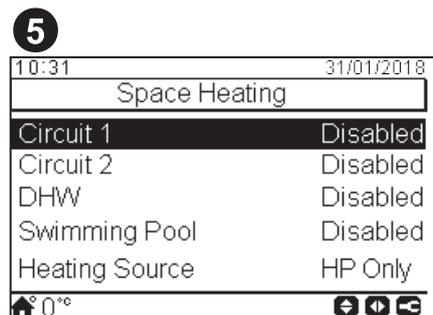
## 8.6.2 Advanced Configuration



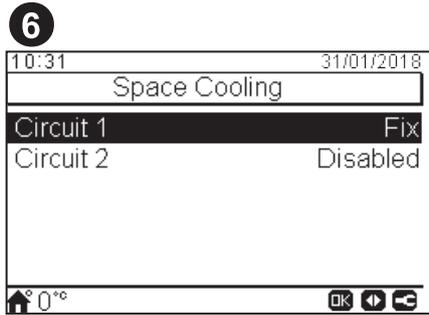
- Select the advance configuration for a complete configuration.
- Press OK button.



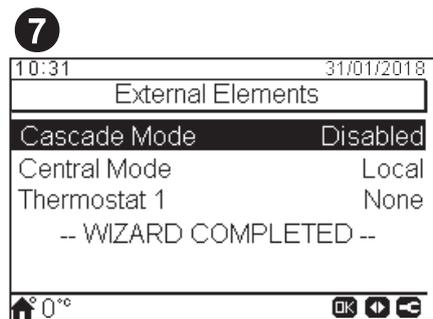
- Select the controller type:
  - Unit: the device controls the unit.
  - Room: the device acts as a room thermostat of a zone.
  - Unit + Room: the device controls the unit and acts as a room thermostat.
- Select controlled circuits by this device: Room C1, Room C2, Room C1+C2
- Select the favourite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



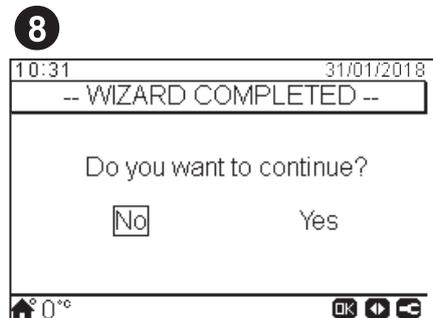
- Configure circuit 1 and circuit 2 OTC: Disabled, Points, Gradient, Fix.
- Enable or disable DHW and Swimming Pool.
- Select the heating source: HP only, HP + EH, HP + Boiler.
- Configure electrical heater use: Starting or Backup.
- Configure Boiler type: Parallel or Serial.
- Configure Solar Combination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



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



- 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.



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

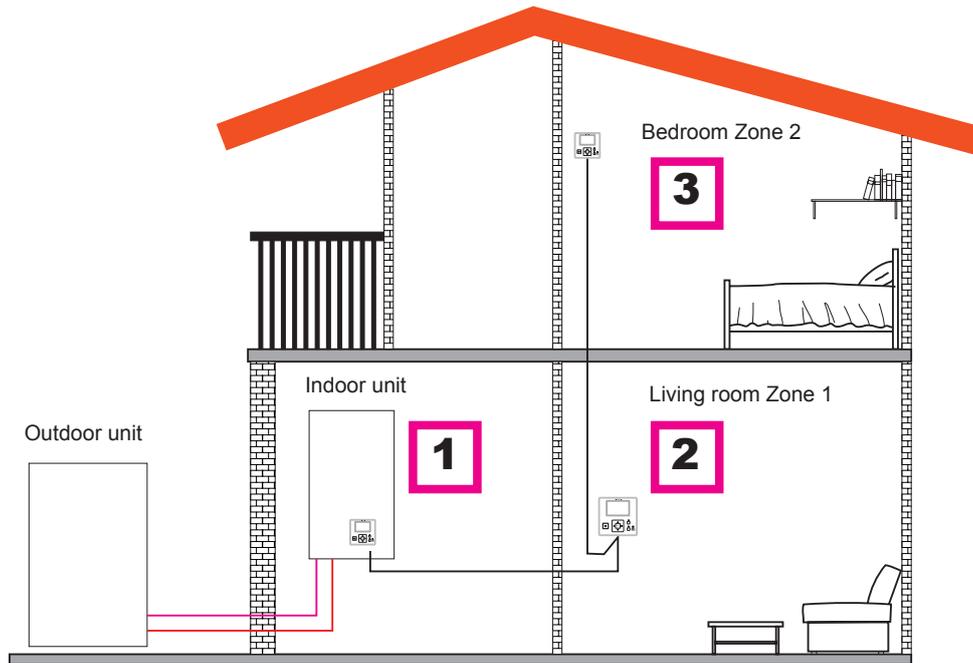
**8.6.2.1 Examples of possible configurations**

**i 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**

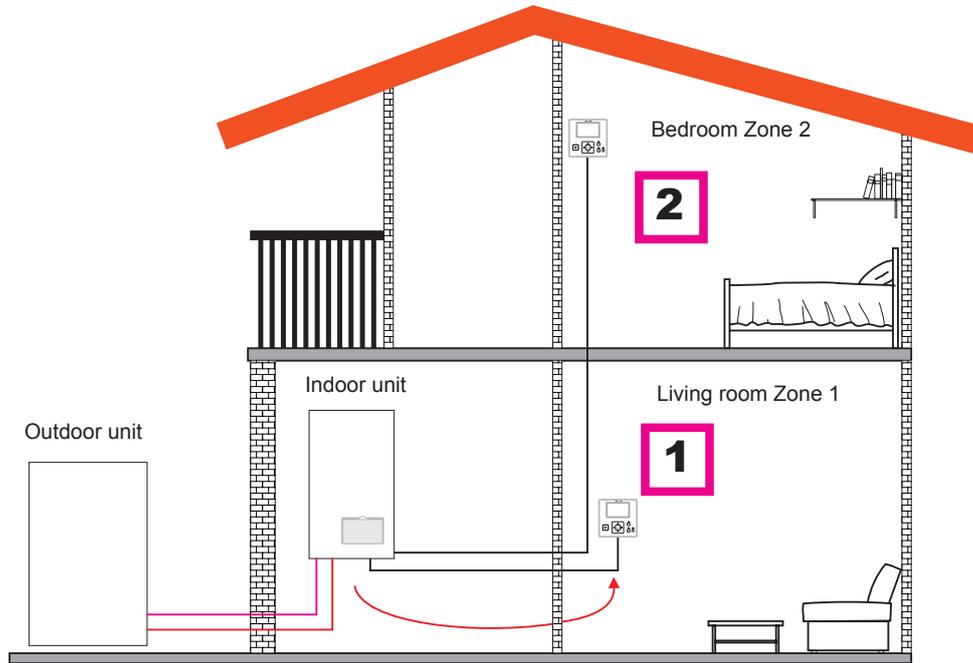
- 1 Master unit controller as unit configuration.
- 2 Slave Unit controller as a room thermostat for Zone 1, as accessory
- 3 Slave Unit controller as a room thermostat for Zone 2, as accessory



Order	FIRST	SECOND	THIRD
Type	Master Unit	Slave Circuit 1	Slave Circuit 2
<b>Questions</b>	<b>Answers</b>		
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**

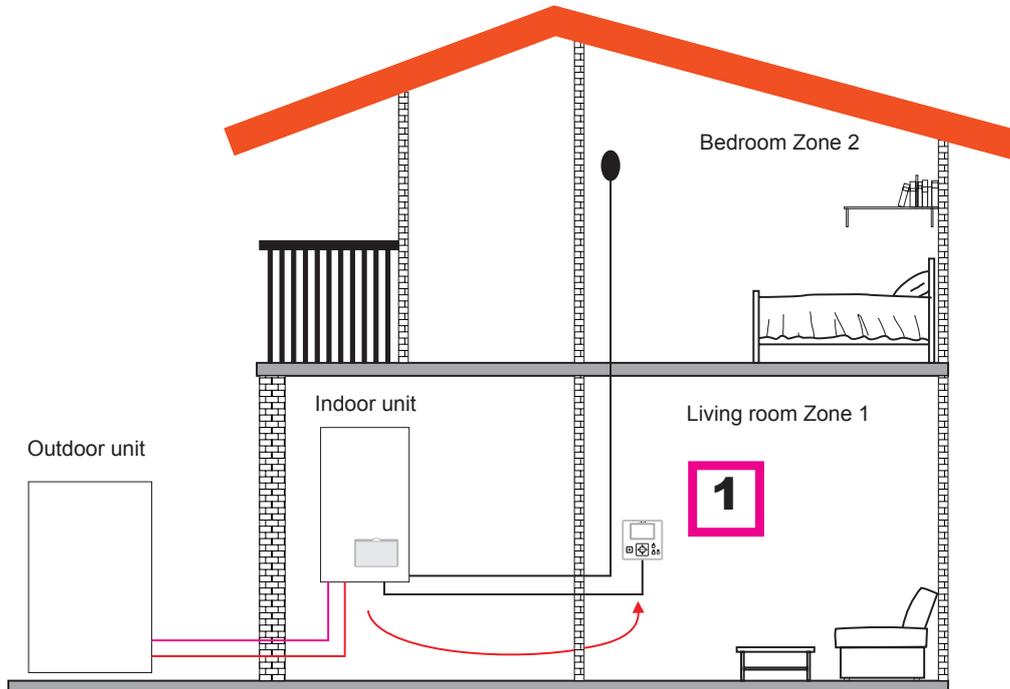
- 1 Move Unit controller to the living room (use as Unit controller + Room Thermostat)
- 2 Master unit controller moved to living room Zone 1
- 3 Slave Unit controller as a room thermostat for Zone 2



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

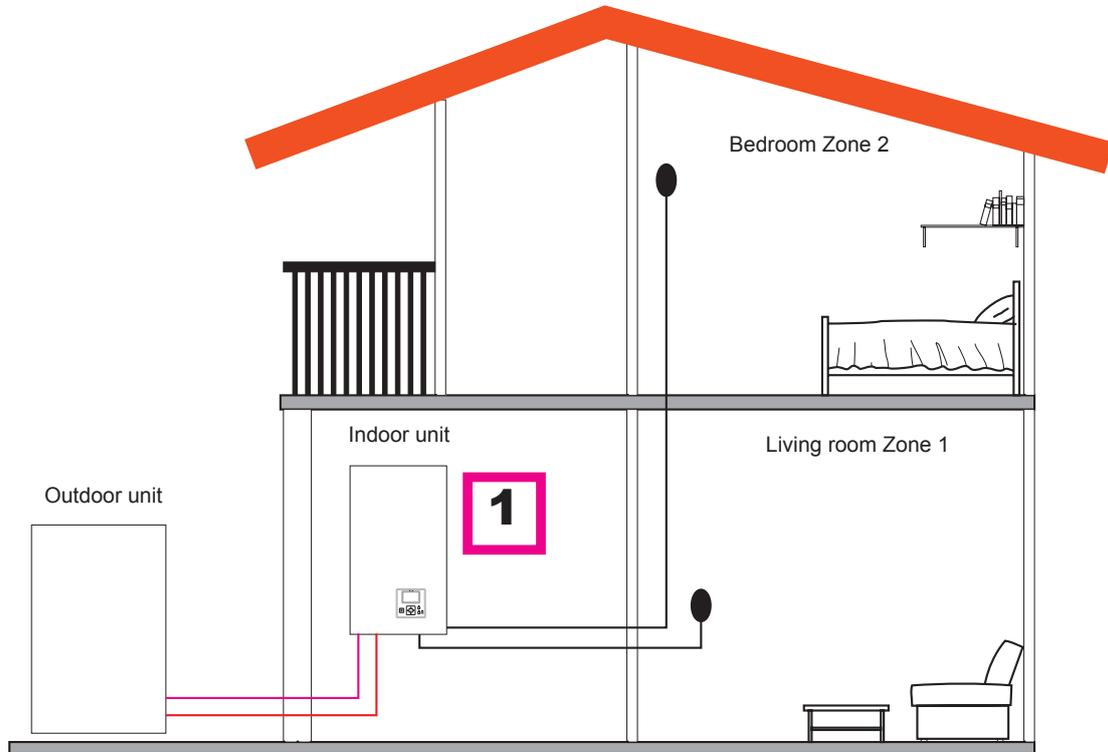
**i** **NOTE**

- 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
<b>Auxiliary Sensors</b>				
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
<b>Questions</b>	<b>Answers</b>
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

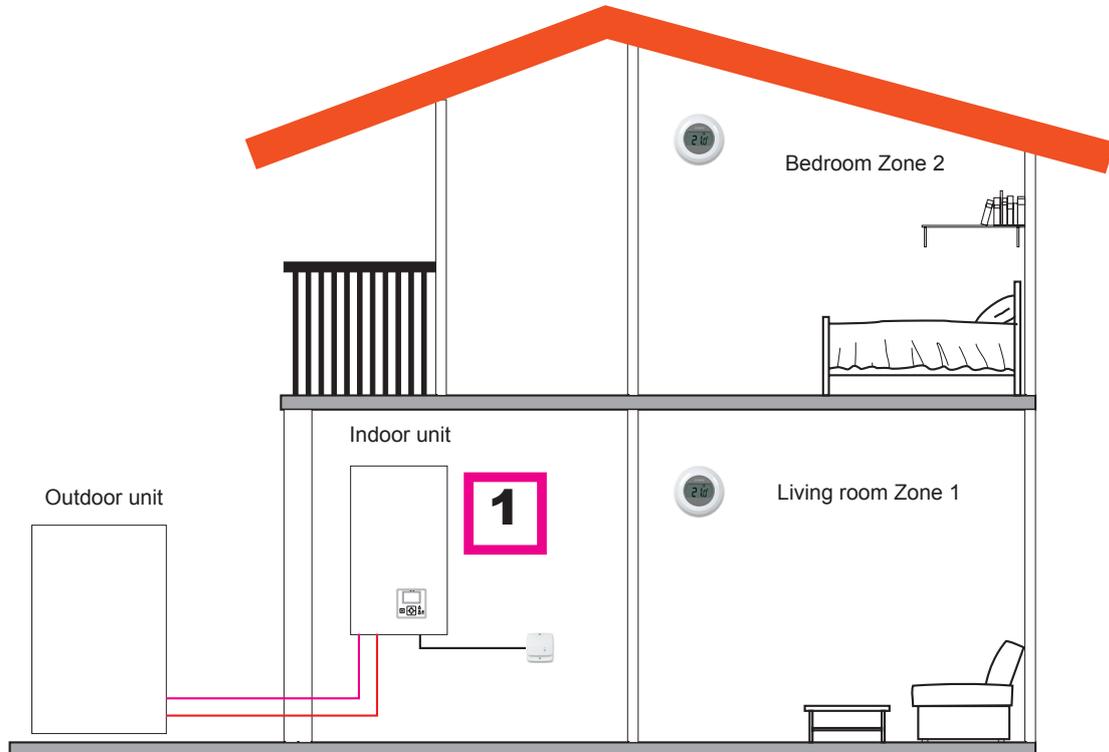
**i** **NOTE**

- 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
<b>Auxiliary Sensors</b>				
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

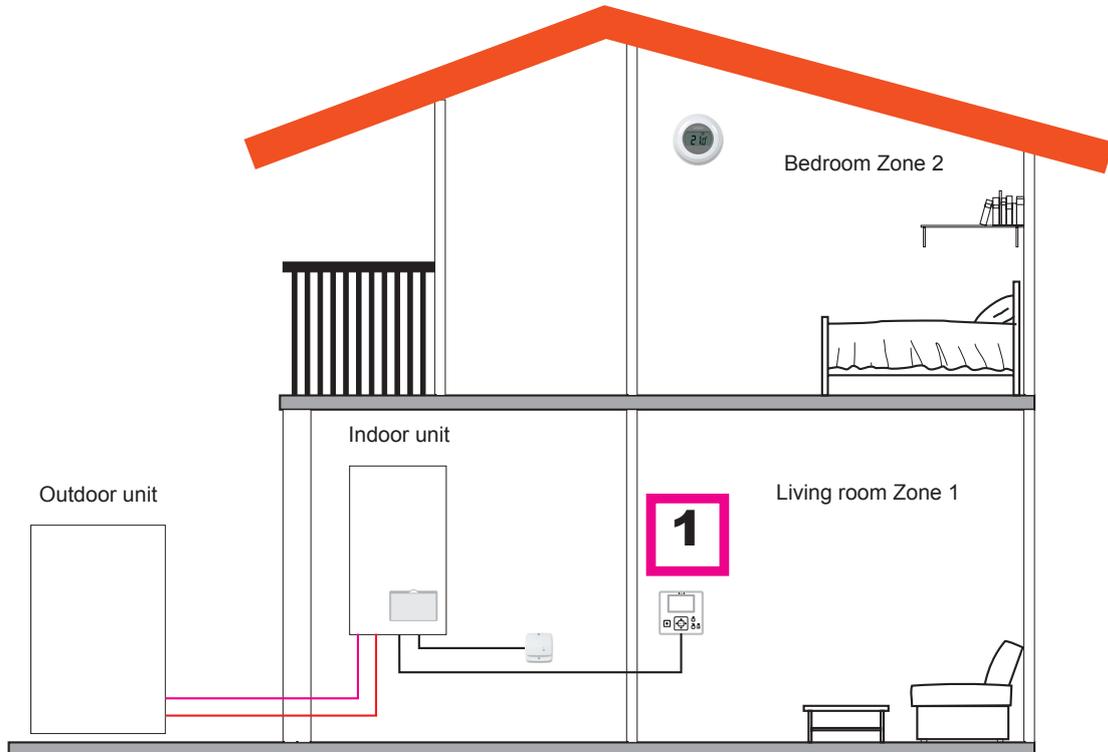
**i** **NOTE**

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

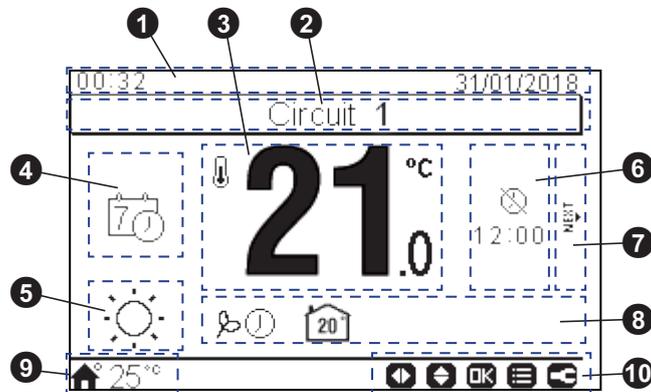


Order	FIRST
Type	Master Unit
Questions	Answers
Is this device attached to the unit?	NO
Is this device controlling the unit?	YES
Is this device installed on a controlled zone?	YES, ZONE 1
How many circuits do you have?	2
Which are the emitters of circuit 1?	Underfloor heating
Which are the emitters of 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

## 8.7 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.

### 8.7.1 Room thermostat view



#### 1 Time and date

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

#### 2 Definition of the circuit

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

#### 3 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).

#### 4 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.

#### 5 Operation mode (Heating / Cooling / Auto)

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

#### 6 Next operation

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

#### 7 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.

#### 8 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...

#### 9 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.

#### 10 Available buttons / Installer mode

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

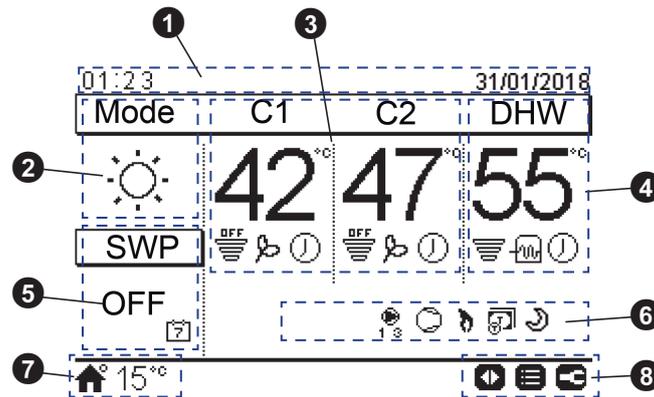
When Installer mode is enabled, its icon appears on the right side of this view.

### 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.

## 8.7.2 Comprehensive view



### 1 Time and date

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

### 2 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).

### 3 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.

### 4 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.

### 5 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.

### 6 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...

### 7 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.

### 8 Available buttons / Installer mode

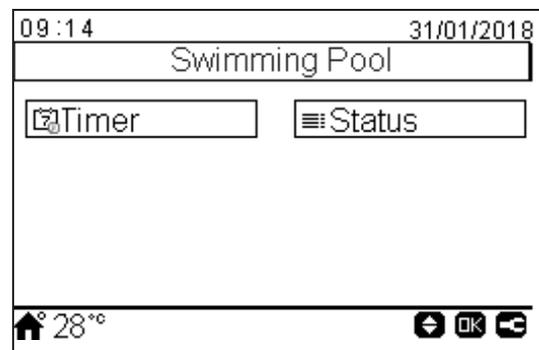
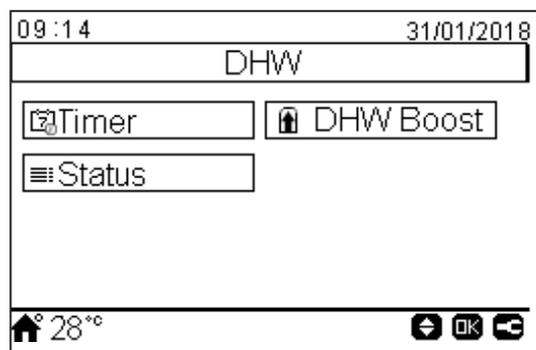
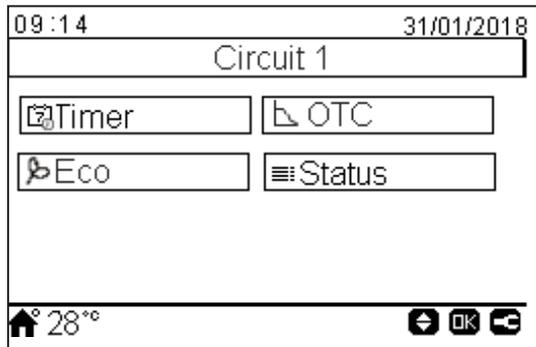
It indicates the buttons of the user controller which can be used in this moment.

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

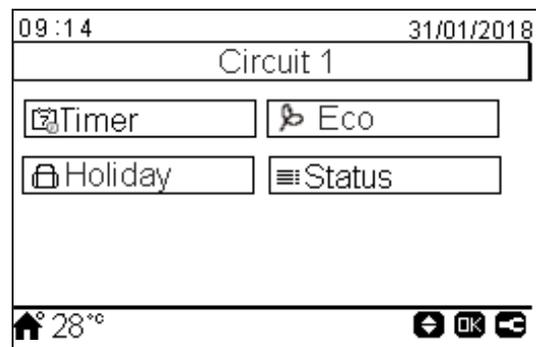
### 8.7.3 Quick action function

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



#### ◆ Room thermostat view quick actions

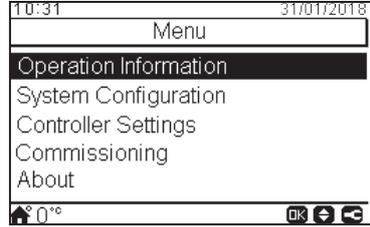


- **Timer:** Menu for the selection and configuration of simple timer and schedule timer.
- **OTC:** Menu for the OTC selection. Only available for circuit 1 and circuit 2 in Comprehensive view.
- **Eco** / **Comfort:** Activation of the Eco/Comfort Mode. Only available for circuit 1 and circuit 2.
- **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.

## 8.8 MENU

### 8.8.1 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.



**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

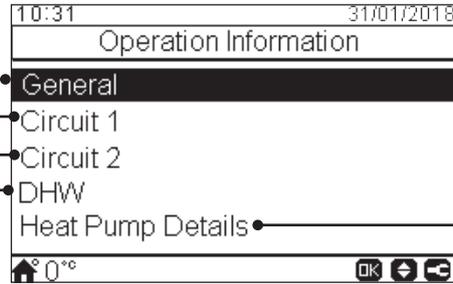
**Detailed information about Circuit 1-2:**

- 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

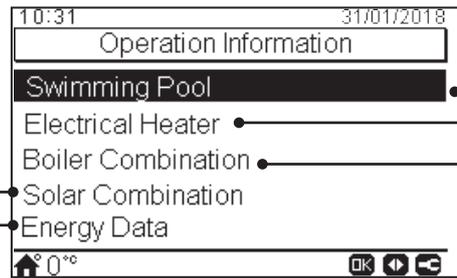
1 / 3



**Detailed information about Heat Pump:**

- Water Outlet PHEX Temperature
- Two3
- Water Flow Level
- Water Pump Speed
- Outdoor Ambient temperature
- Outdoor Ambient 2 temperature.
- Gas temperature
- Liquid T
- Discharge Gas temperature
- Discharge Gas temperature (R134a)
- Evaporation Gas temperature
- Suction Gas temperature (R134a)
- Discharge Pressure (R134a)
- Discharge Pressure (R134a)
- Suction Pressure (R134a)
- Ind. Exp. Valve Open.
- Ind. Exp. Valve 2 Open.
- Out. Exp. Valve Open.
- Inverter Op. Freq. (R134a)
- Inverter Op. Freq. (R134a)
- Defrosting
- Cause Of Stoppage
- Compressor Curr. (R134a)
- Compressor Curr. (R134a)
- Unit Capacity
- Unit Type

2 / 3



**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

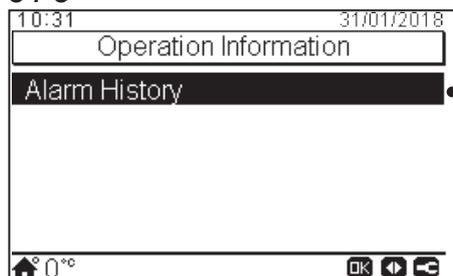
**Detailed information about Electrical Heater:**

- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature
- Load Factor
- Step

**Detailed information about Boiler combination:**

- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature

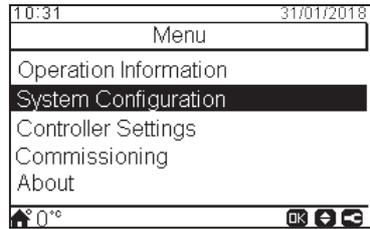
3 / 3



Shows a list of the alarm history of the system

### 8.8.2 System configuration

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



**General configuration:**

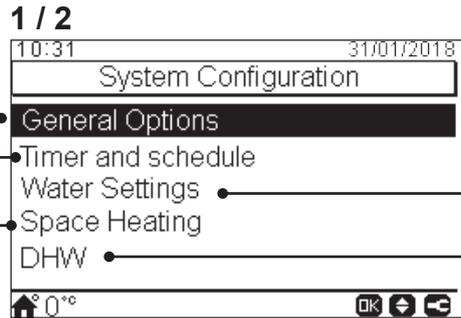
- Holiday Mode
- Air Eco Offset
- Room Thermostats
- Central Operation

**Timer and schedule configuration:**

- Circuit 1
- Circuit 2
- DHW
- Swimming Pool
- Delete all timers configuration

**Space Heating / Cooling configuration:**

- Circuit 1
- Circuit 2



**Water settings:**

(Screen visible only for room thermostats)

- Space Heating
- Space Cooling
- DHW
- Swimming Pool

**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

**Swimming Pool configuration:**

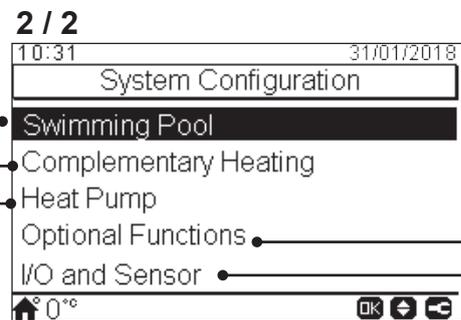
- Status
- Setting temperature
- Offset temperature

**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



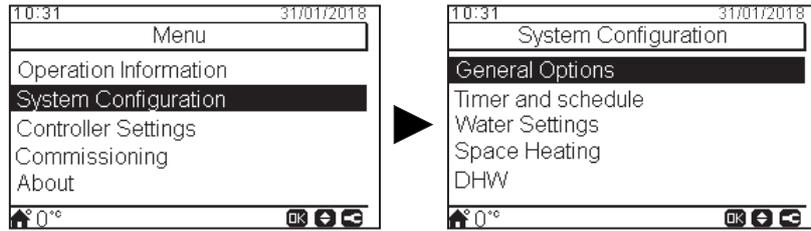
**Optional functions configuration:**

- System
- Space functions
- DHW
- Emergency Operation

**I/O and Sensor configuration:**

- Inputs
- Outputs
- Auxiliary sensors

### 8.8.2.1 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:

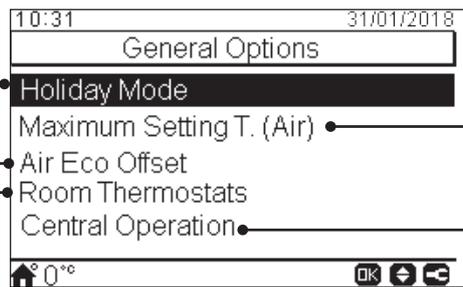
Configure the offset air temperature for the ECO mode.

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

#### 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



#### Maximum Setting T. (Air):

- Circuit 1
- Circuit 2

#### 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.

### ◆ 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.

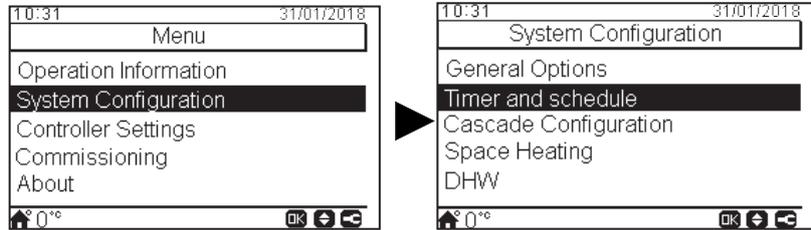
**Maximum compensation factor heat + and -:** Maximum difference between room temperature and setting temperature. In case that the difference between room temperature and setting temperature is higher than this value, the YUTAKI unit takes the selected value as the maximum.

**8.8.2.2 Timer and schedule configuration**

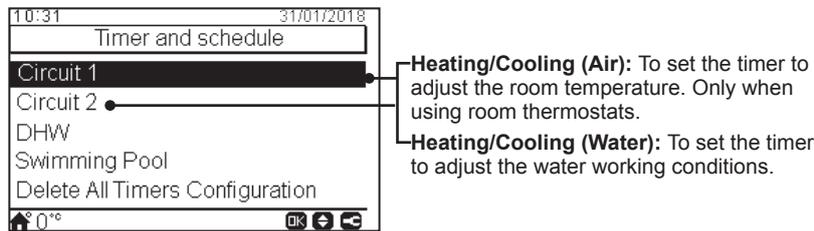
**i NOTE**

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

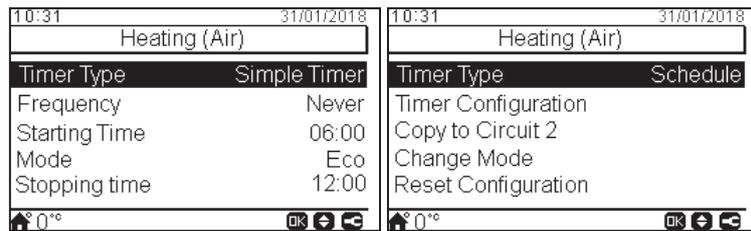
The LCD controller must be set to the correct date and time before using the timer function.



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



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**

**2 / 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

**Configuration parameters:** Configure the temperature for the Eco or Comfort Mode.  
Only available for Air settings (Circuit 1 or 2).

◆ **Setting of Schedule timer**

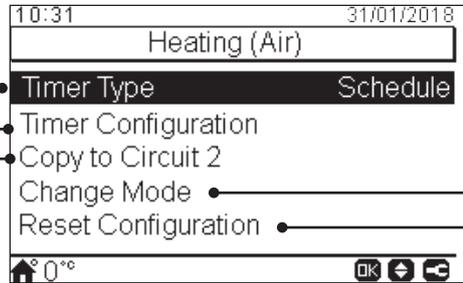
Setting of temperature, operation mode (ECO or Comfort) or change of operation state from ON to OFF for a defined period, after which operation returns to the previous settings. Manual operation of the unit controller has priority over schedule settings.

**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.

	0	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			

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.

From	To	Status	Setting
<12:00>	( 06:00 )	<On>	45
-	-	-	-

Timer configuration as Setting temperature

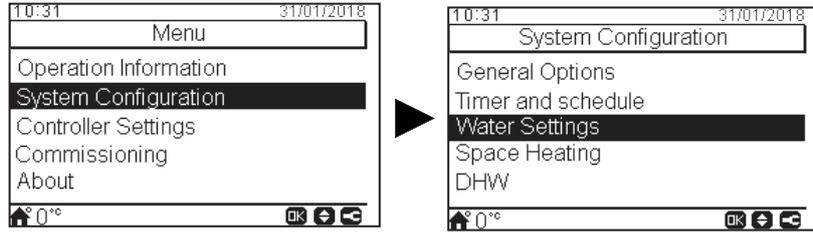
From	To	Status	Mode
<12:00>	( 06:00 )	<On>	<Eco>
-	-	-	-

Timer configuration as Mode

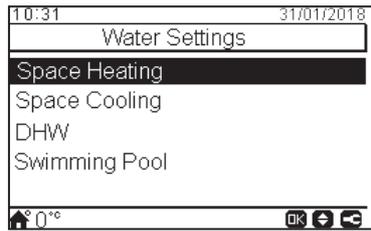
Pressing the "Menu" button during the edition of the timer events for a given weekday displays a menu to copy the daily pattern to other weekdays or to suppress the selected timer event.

### 8.8.2.3 Water settings configuration

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



Select the desired area to apply the water settings configuration:



#### ◆ Space Heating or Space Cooling water settings

**Fixed temperature:**

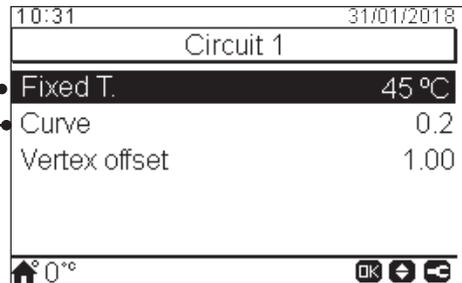
Selection of the temperature for Circuit 1 or Circuit 2 (heating or cooling mode).

- 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.

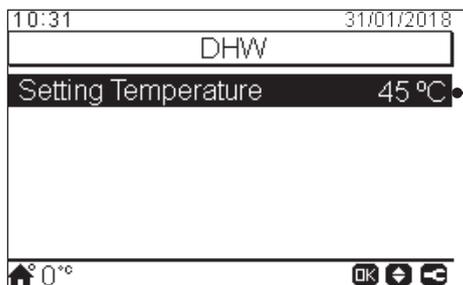


**Vertex offset:**

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



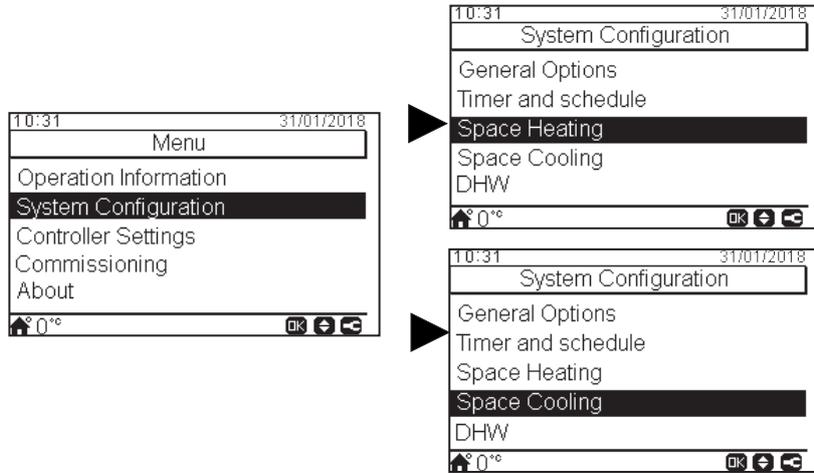
**Setting temperature:**

Selection of the temperature for DHW or Swimming Pool.

- DHW or Swimming pool must be ON to configure this setting
- Range:
  - DHW: 30 °C ~Max. setting temperature
  - Swimming pool: 24 ~33 °C

### 8.8.2.4 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

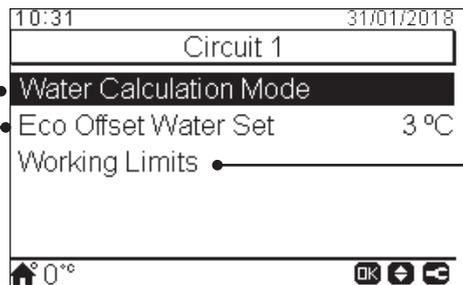
See detailed explanation below.

**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.

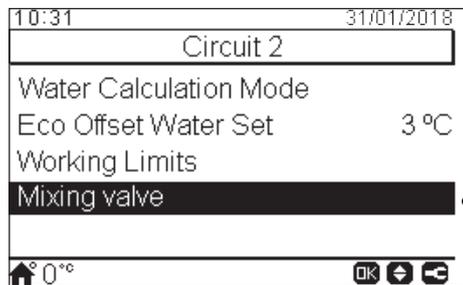
- Range: -10 ~ 10



**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).

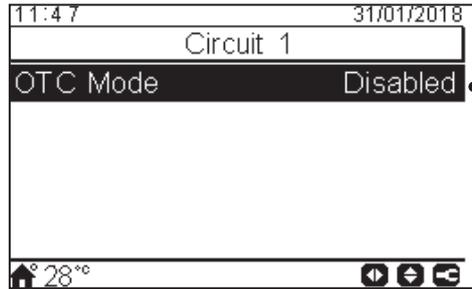
Values are adjusted for the use with the 2nd zone mixing kit accessory ATW-2KT-05. It is highly recommended not to change these values.

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 °C (5 °C by default).

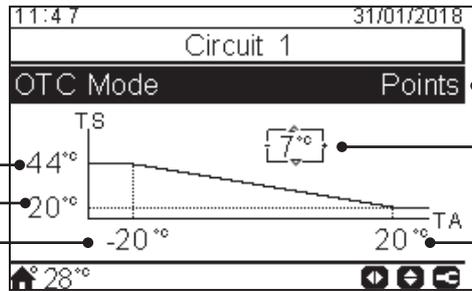
◆ **Water calculation mode**

**Disabled**



The "Disabled" option sets the circuit as disabled.

**Points**



Set point at high ambient temperature

Set point at low ambient temperature

Low ambient temperature

Points is the most versatile calculation type.

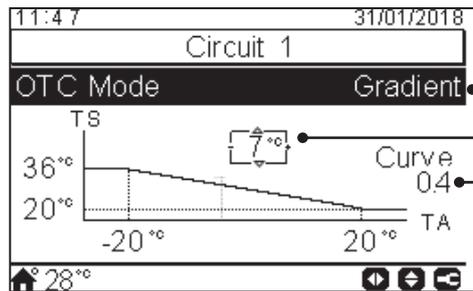
Set 4 points and one vertex point, to create a line representing the function that the air to water heat pump will use to give the temperature setting according to the current ambient temperature.

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

Vertex offset

High ambient temperature

**Gradient**



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

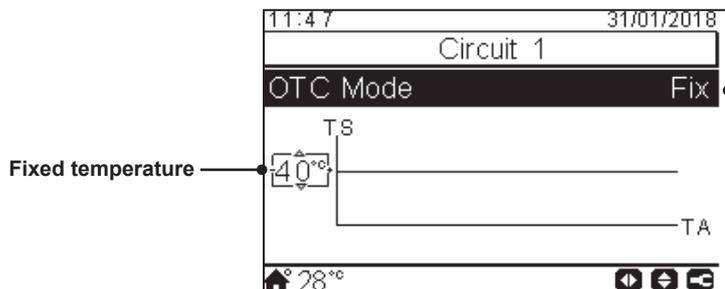
User can only edit the gradient variable and it will automatically set the values for the other 4 variables on the chart.

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

Vertex offset

Gradient curve

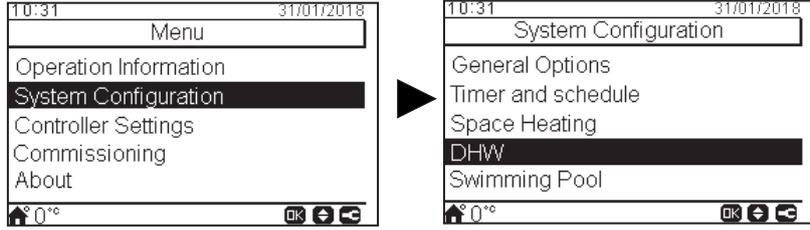
**Fix**



Fixed temperature

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

8.8.2.5 Domestic Hot Water (DHW) configuration



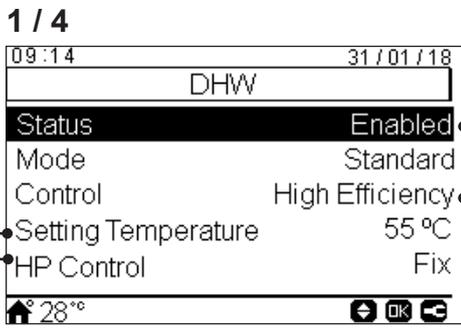
**Setting temperature:**

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 15° 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 adjusted in case HP Control is Fix.



**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 difference 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.

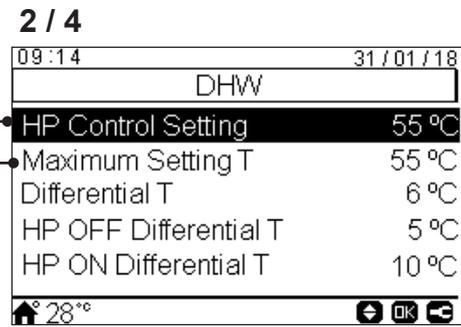


**HP Control setting:**

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.

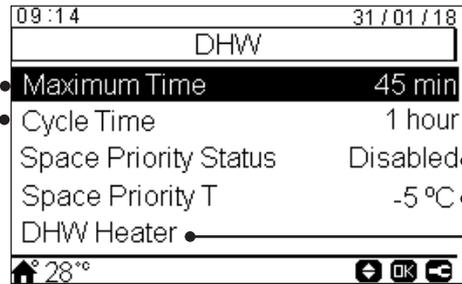
**Cycle time:**

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



**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:**

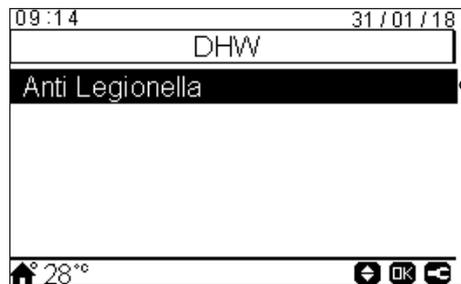
Threshold value of outdoor ambient temperature for the activation of the space priority function.

- Range: -20~0 °C
- 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



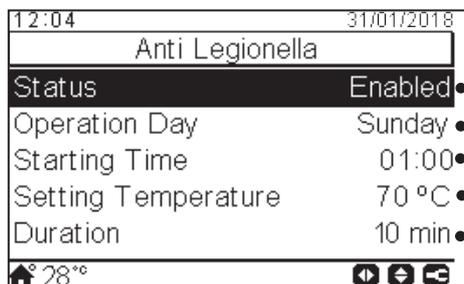
**Anti Legionella:**

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.

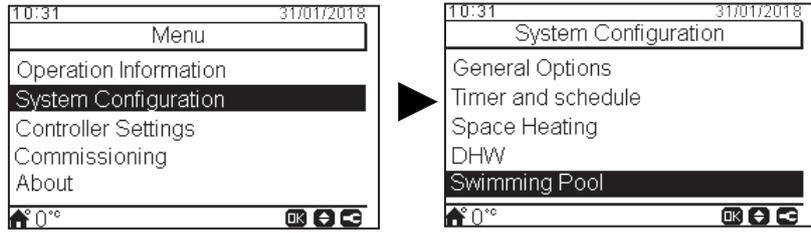
See the possible configurable parameters below.

◆ **Anti Legionella function**



- 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.

### 8.8.2.6 Swimming Pool configuration



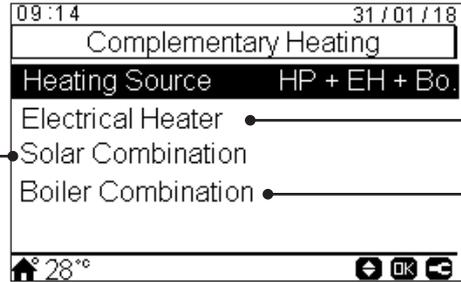
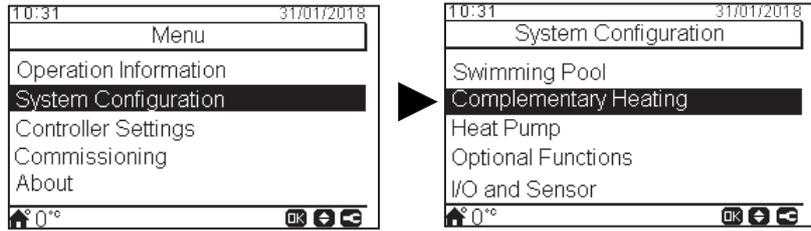
09:14	31/01/18
Swimming Pool	
Status	Enabled
Setting Temperature	24 °C
Offset Temperature	15 °C
° 28°	

**Status:**  
 Enable or disable swimming pool.  
 Set input 3, output 1 and sensor 2. (see section "8.8.2.10 Inputs, Outputs and Sensors configuration")

**Setting temperature:**  
 Adjustment of the swimming pool water temperature setting.  
 • Range: 24~33 °C

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

**8.8.2.7 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 *“10.6.2.9 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 *“10.6.2.9 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”*.

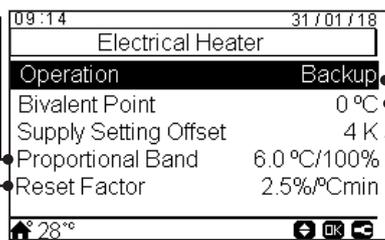
**◆ Electrical heater**

**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.



**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:**

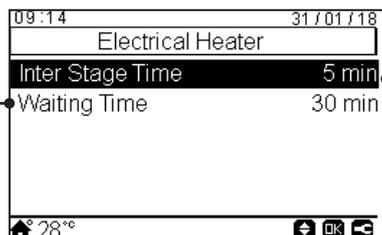
- Electric heater is enabled to operate in case ambient temperature goes below this value. Only in case of Backup option.

**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.

**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" °C 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" °C 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 °C
ΔT Connection	10 °C
ΔT Disconnection	5 °C
28 °C	

09:14	31/01/18
Total Control	
Panel Minimum T	15 °C
Panel Overheat T	80 °C
Panel antifreeze T	4 °C
28 °C	

**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 "10.6.2.9 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 °C
Combination mode	Parallel
Supply Setting Offset	4 °C
Minimum ON Time	2 min
Minimum OFF Time	5 min
28 °C	

09:14	31/01/18
Boiler Combination	
Waiting Time	30 min
DHW by Boiler	Disabled
Wait Time for DHW	45 min
28 °C	

**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

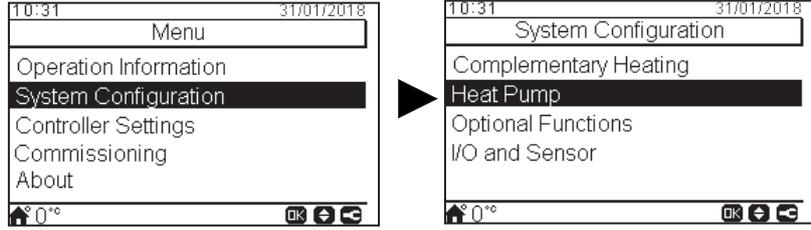
**DHW by boiler:**

- Control to allow heat DHW by means Boiler

**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.

8.8.2.8 Heat Pump configuration

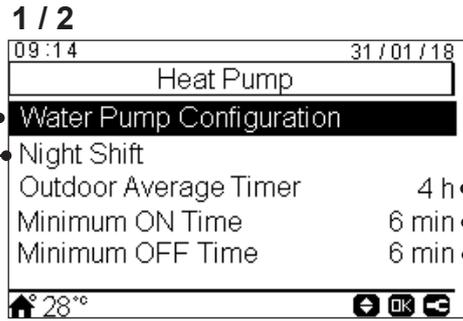


**Water pump configuration:**

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.

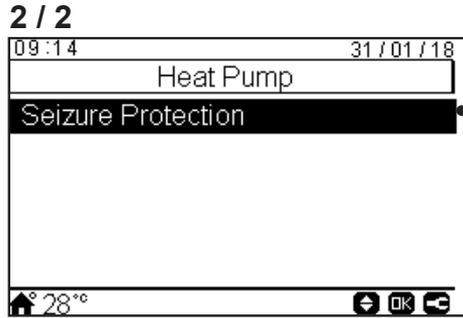


**Outdoor average temperature:**

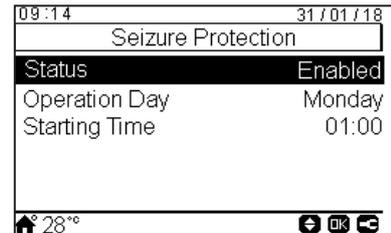
OTC average is used to neutralise the effect of occasional temperature variations.  
The average value of outdoor temperature sampled over a selected period (between 1 and 24 hours) is used for the calculation of weather-dependent set point temperature.

**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).

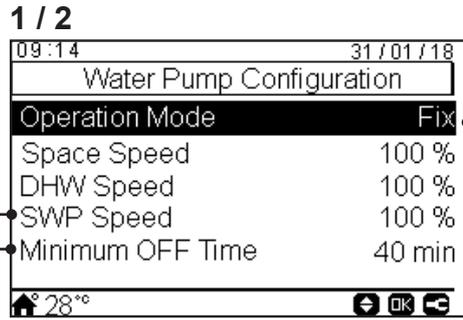


◆ **Water pump configuration**

**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)

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

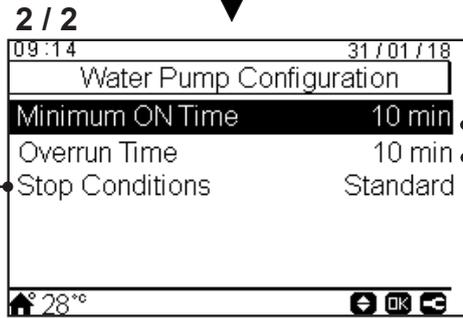


**Operation mode:**

- **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.

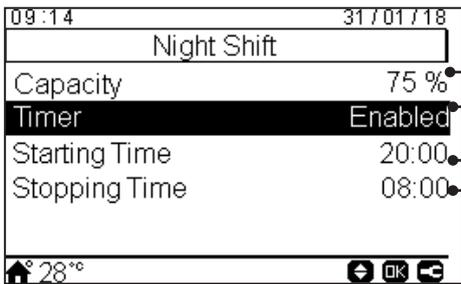
**DHW speed:**  
Selection of the % for the pump speed when using DHW.



**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**



Ratio of reduction in heat pump capacity

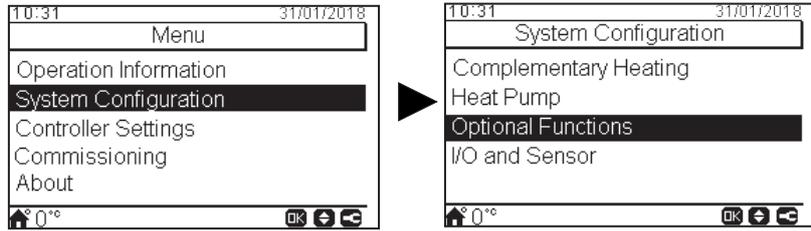
Status of activation of Night Shift (reduction of compressor load in order to reduce operation noise during the night hours).

Starting time of Nigh Shift operation

Ending time of Night Shift operation

### 8.8.2.9 Optional functions configuration

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



**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.

**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 "8.8.2.10 Inputs, Outputs and Sensors configuration")

**Energy configuration:**  
Setup of power consumption readings. See detailed information below.

#### Energy 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.

**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 "8.8.2.10 Inputs, Outputs and Sensors configuration")

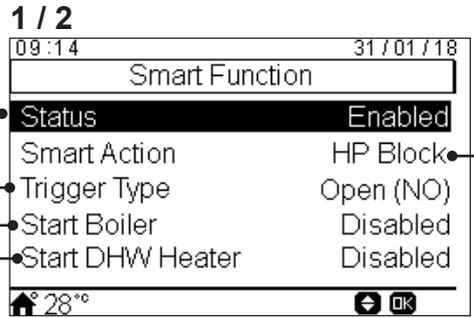
**Smart Function**

**Status:** \_\_\_\_\_  
 Enable or disable smart function.

**Trigger type:** \_\_\_\_\_  
 • Closed: Action when input is closed  
 • Open: Action when input is open

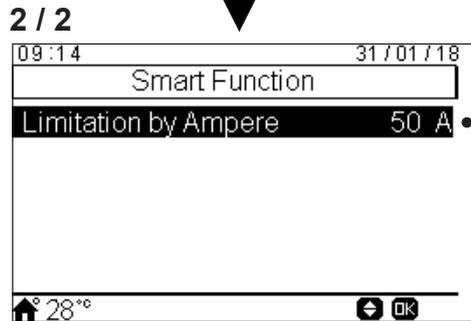
**Start boiler:** \_\_\_\_\_  
 Permission to use the boiler in case that the system has been blocked due to HP Block.

**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 "8.8.2.10 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.



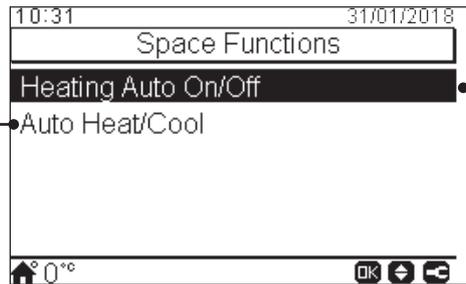
**Limitation by ampere:**  
 Configure the ampere consumption limitation. Only visible when smart action is set as HP Limited (A).

◆ **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.



**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.

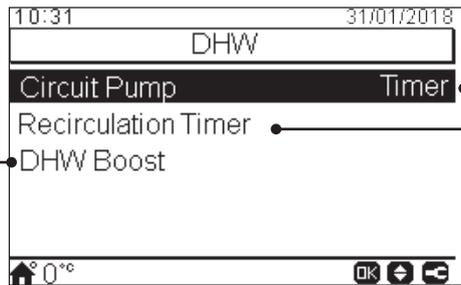
◆ **DHW optional functions**

**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 "8.8.2.10 Inputs, Outputs and Sensors configuration")
- **Boost setting:** DHW temperature setting for the Boost function.



**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 "8.8.2.10 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.

**Recirculation timer:**

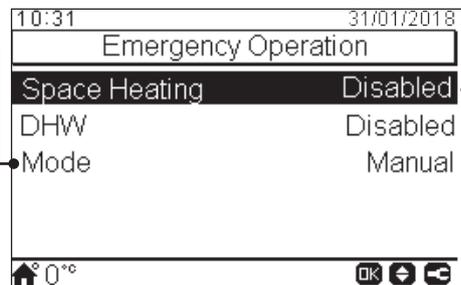
- Frequency: Allows to select when timer is applied (Everyday, weekend, workday)
- Starting Time: When the water pump circulation starts.
- Stopping Time: When the water pump circulation stops.
- Operation: In case of ON, means that water pump is always ON between "Starting Time" and "Stopping Time". 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).



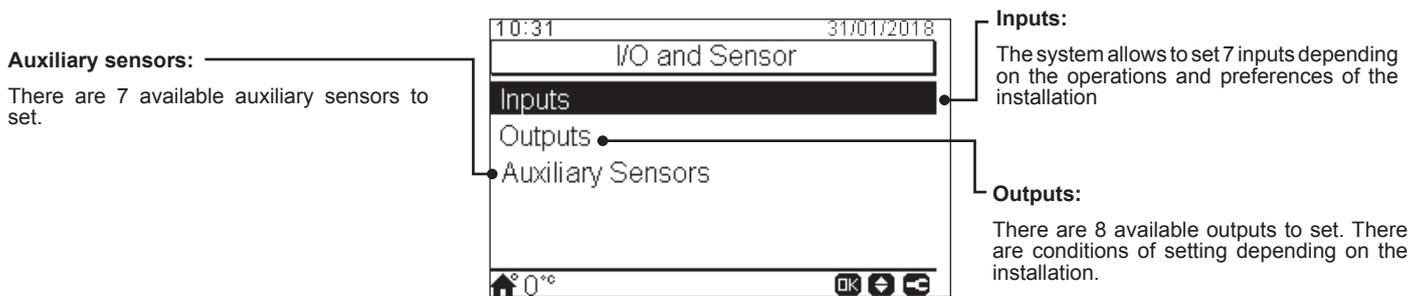
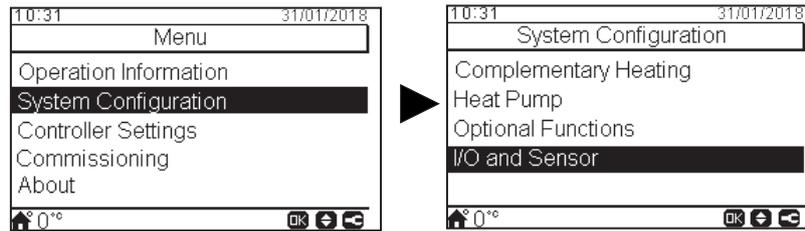
**Space Heating:**

Enable or disable emergency operation for space heating. Only available in case "Heating source" on "8.8.2.7 Complementary Heating configuration" contains "Electrical heater or boiler" option

**DHW:**

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

### 8.8.2.10 Inputs, Outputs and Sensors configuration



#### ◆ 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:

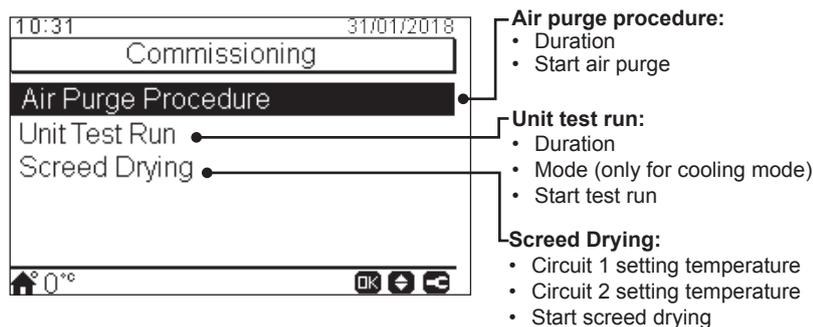
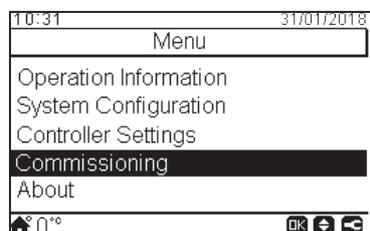
- **Disabled**
- **SWP 3WV:** (Fixed in output 1 if swimming pool is enabled): Signal control of the 3-way valve of the swimming pool.
- **Water pump 3:** (Fixed in output 2 if hydraulic separator or buffer tank is installed): Signal control of the water pump for hydraulic separator or buffer tank.
- **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 units)
- **Heater relay 2:** Signal control of the Space heating heater 2 (Only for YUTAKI S80 or YUTAKI M 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.

## 8.8.3 Commissioning

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



### 8.8.4 Controller settings

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

The screenshot shows the 'Controller Settings' menu with the following items: Controller Options, Room Names, Date and Time, Screen Settings, and Language Selection (set to English). Callouts point to these items with the following descriptions:

- 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.**

### 8.8.5 About

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

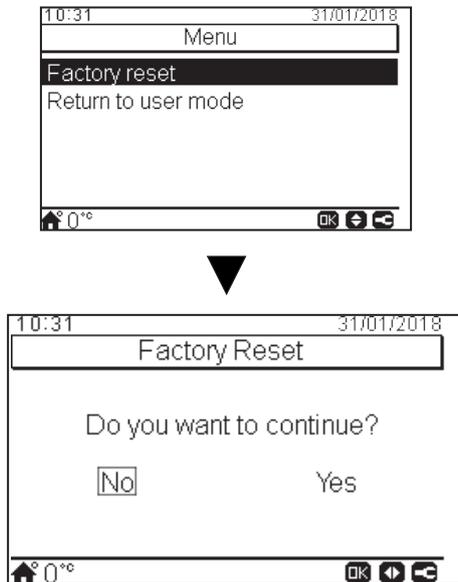
The screenshots show the 'About' menu with 'System Information' and 'Contact Information' highlighted. Callouts provide the following information:

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

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

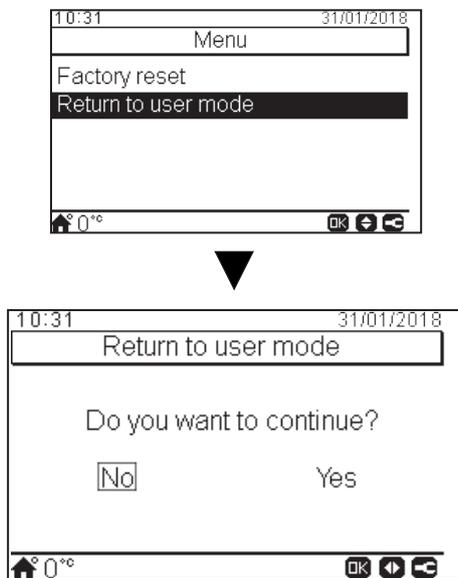
### 8.8.6 Factory reset

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



### 8.8.7 Return to User Mode

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



## 9 UNIT CONTROLLER (PC-ARFH2E)

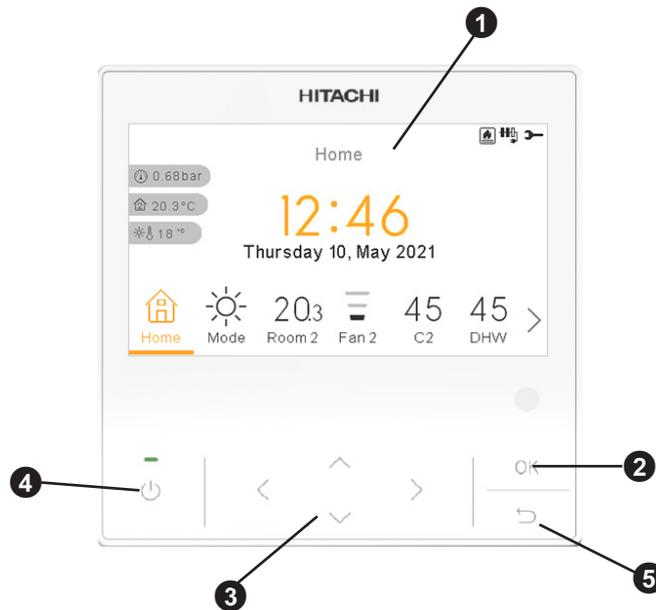
The new unit controller for YUTAKI series (PC-ARFH2E) is an user-friendly remote control which ensures a strong and safe communication through H-LINK.

Available for the following unit models:

- RWM-(2.0-3.0)R1E
- RWD-(2.0-3.0)RW1E-220S(-K)

The following information applies in the case of PC-ARFH2E software of version H-0122 and later used in combination with PCB indoor unit software of version H-0114 and later.

### 9.1 DEFINITION OF THE SWITCHES



**1** Liquid Crystal Display

Screen where controller software is displayed.

**2** OK button

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

**3** Arrows key

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

**4** 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.

**5** Return button

To return to the previous screen.

## 9.2 DESCRIPTION OF THE ICONS

Icon	Name	Explanation	
	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 $0 < X \leq 33\%$ of the desired water outlet temperature
			Circuit I or II is working between $33 < X \leq 66\%$ of the desired water outlet temperature
			Circuit I or II is working between $66 < X \leq 100\%$ of the desired water outlet temperature
	Mode		Heating
			Cooling
			Auto
	Setting temperatures	Value	Displays the setting temperature of the circuit 1, circuit 2, DHW and swimming pool
		<b>OFF</b>	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	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	
	Holiday	When some of the zones are set as holiday, it has it's own holiday icon on their icons zone. The holiday icon is also shown on the home screen.	
	Ambient temperature	The ambient temperature of Circuit 1 or 2 is indicated at the right side of this button	
			
	Outdoor temperature	The outdoor temperature is indicated at the right side of this button	
	Water pressure	The water pressure is indicated at the right side of this button	
	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.	
			
			

Icon	Name	Explanation	
	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)
			Compressors enabled. 1: R410A/R32 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		Central mode icon is shown after some central order has been received and for the next 60 seconds.
			Central error
	Forced OFF	When forced off Input is configured and its signal is received, all the configured items (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	Informs about the activation of the "Test Run" function	
	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.	
		CASCADE CONTROLLER in alarm state	
	Fan stopped by Demand OFF	Informs about the stoppage of fan 1 or 2 by Demand OFF	

### 9.3 UNIT CONTROLLER CONTENTS

Menu Contents				
Level 1	Level 2	Level 3	Level 4	Level 5
Operation Information				
	Live view			
	Recent Status Register			
	General			
	Circuit 1			
	Circuit 2			
	Hot Water Tank			
	Swimming Pool			
	Heat Pump Details			
	Electrical Heater			
	Boiler Combination			
	Solar Combination			
	Alarm History			
	Communication Status			
Energy data				
Timer and schedule				
	Room 1 / Room 2			
	Heating / Cooling (air)			
	Timer status			
			Enabled	
			Deactivated	
	Timer configuration			
	Copy to Circuit 1 / 2			
	Reset configuration			
	Launch timer assistant			
	Circuit 1 / Circuit 2			
	Heating / Cooling (water)			
	Timer status			
			Enabled	
			Deactivated	
	Timer configuration			
	Copy to Circuit 1 / 2			
	Reset configuration			
	DHW			
	Timer status			
			Enabled	
			Deactivated	
	Timer configuration			
	Reset configuration			
	Swimming Pool			
	Timer status			
			Enabled	
			Deactivated	
	Timer configuration			
	Reset configuration			
	Override Configuration			

Menu Contents				
Level 1	Level 2	Level 3	Level 4	Level 5
	Type			
			Until next action	
			Specific time	
			Forever	
	Override duration			
	Delete all timers configuration			
System Configuration				
	Room Thermostats			
	Setting temperature range (air)			
	Air Eco Offset			
	Thermostat Configuration			
	Check RT address			
	Compensation Factors			
	Room Temp Demand OFF			
	Water settings			
	Space Heating / Space Cooling			
	Circuit 1/ Circuit 2			
	DHW			
	SWP			
	Space Heating / Cooling			
	Circuit 1 / 2			
	Water Calculation Mode			
	Eco offset			
	Working limits			
	Mixing valve (only circuit 2)			
	Hot Water Tank			
	Mode			
	Economic			
	Standard			
	Space Priority Status			
	Antilegionella			
	Smart Configuration			
	Swimming Pool			
	Status			
	Enabled			
	Deactivated			
	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
		Water Pump Configuration		
		Outdoor average Timer		
		Minimum ON Time		
		Minimum OFF Time		
		Seizure Protection		
		Status		
		Operation Day		
		Starting Time		
	Fan Coils			
		Controlled Fan Zones		
		Delay ON Time		
		Demand OFF Actions		
	Optional Functions			
		Hydraulic Sep. Status		
		Energy Configuration		
		Smart Function		
		Heating Auto On/Off		
		Auto Heat/Cool		
		Hot Water Tank		
		Circuit pump		
		Recirculation timer		
		DHW Boost		
		Emergency Operation		
	I/O and Sensors			
		Inputs		
		Standard outputs		
		Outputs		
		Auxiliary sensors		
	Holiday mode			
		Affected zones		
		Start Holiday Mode		
Controller Settings				
	Room Configuration			
		Room Names		
		Live view icons		
	Date and Time			
		European Summer Time		
		Hour Format		
	Screen settings			
	Language selection			
Installer Access				
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				
Lock the controller				
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, go to “Installer access” menu.

After that, the “Enter password” message is displayed.

The login password for the Installer is:



Press “OK” to confirm the password.

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



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, 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.*

## 9.4 CONTROLLER CONFIGURATION

1



Language selection

English ✓

Español

Français

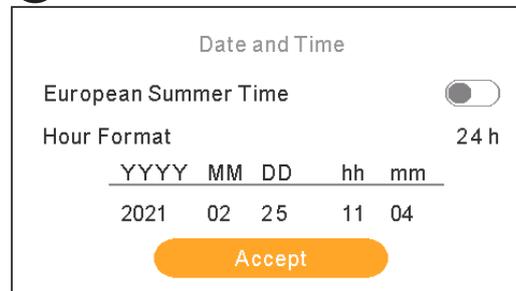
Italiano

Deutsch

OK  Back 

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

2



Date and Time

European Summer Time

Hour Format 24 h

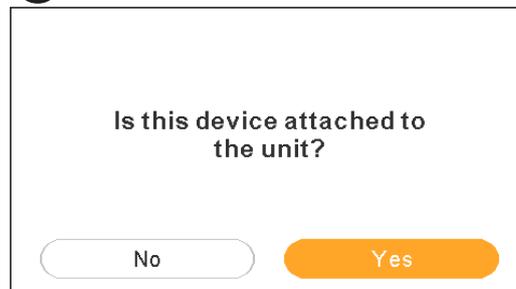
YYYY MM DD hh mm

2021 02 25 11 04

Accept

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

3

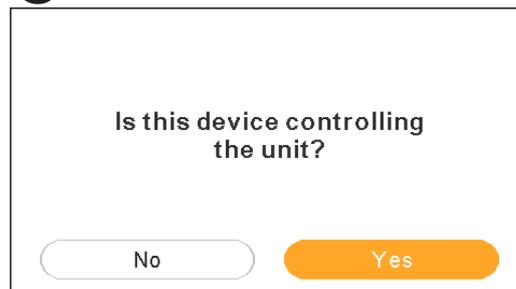


Is this device attached to the unit?

No Yes

- 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.

4



Is this device controlling the unit?

No Yes

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

**5**

Is this device used as room thermostat of a zone?

No

Yes, in zone 1

Yes, in zone 2

Yes, in both zones

- 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.

**6**

How many circuits do you have?

< 2 >

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

**7**

What are the heat emitters installed on circuit 1?

Underfloor Heating

Fan Coils

Radiators

- 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.

**8**

Do you have a domestic hot water tank installed?

No  Yes

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

**9**

Do you have a swimming pool installed?

No  Yes

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

**10**

Do you have a boiler installed?

No

Yes, connected in parallel

Yes, connected in serial

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

**11**

Do you have an electric backup heater installed?

No  Yes

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

12

Select the bivalent point of the complementary heating:

< 0 °C >

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

13

Do you want to control the fan coil of circuit 1 through the outputs?

No Yes

- Select Yes if fan coil can be controlled through the outputs.
- Press OK button.

14

Which Thermostat do you have for circuit 1?

None  
Wired  
Wireless

- 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.

15



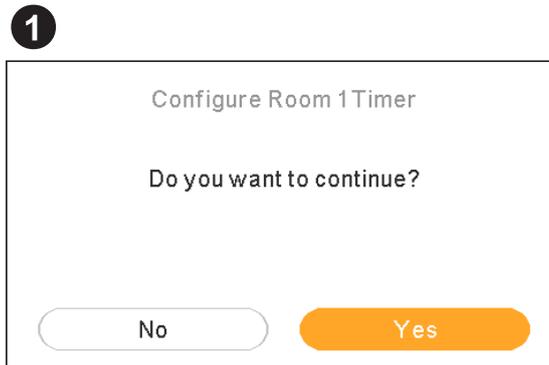
Your unit has been configured

Accept

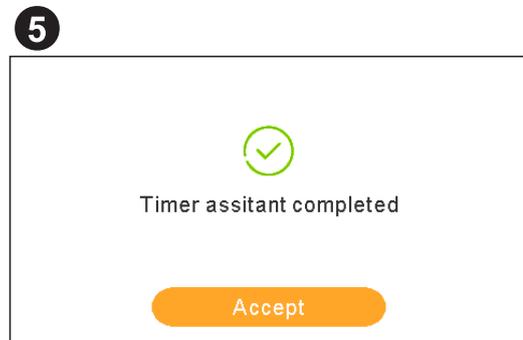
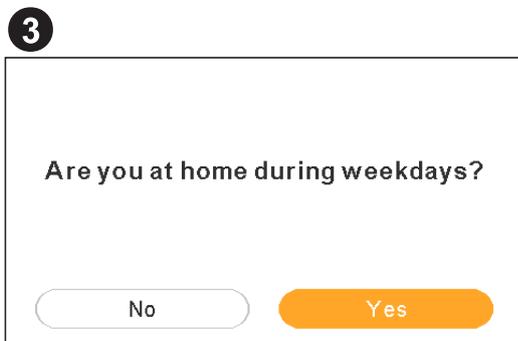
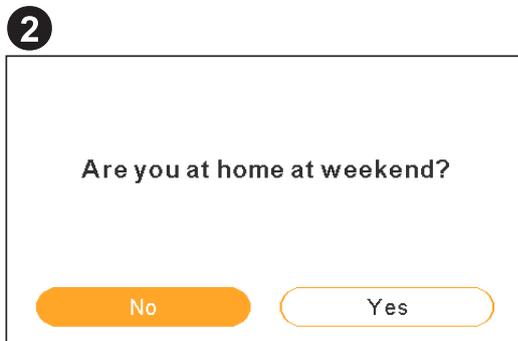
- Configuration assistant is completed.
- Press OK button to go to the main screen.

### 9.4.1 Timer Assitant for Room Thermostat

In case that the device is selected as a room thermostat of a zone, a timer assitant is displayed after the initial wizard.



- Select Yes to launch the timer assistant for Room Thermostat 1.
- Press OK button.



- If stay at home at weekend / weekdays the following patterns are applied:
  - Heating: 6:30h =20°C / 22:30h =18°C
  - Cooling 6:30h =23°C / 22:30h =25°C
- If sensitive to cold is marked as Yes, an offset of +1°C is applied for heating.

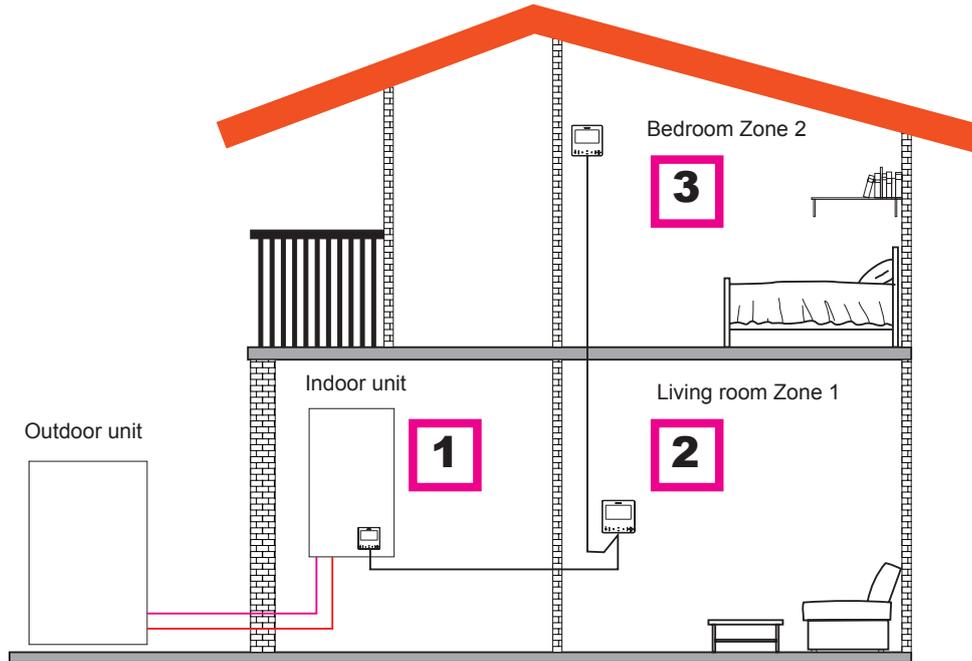
**9.4.2 Examples of possible configurations**

**i NOTE**

- Other installation configurations are possible. These are examples only for illustration purposes.
- It is recommended to set firstly the Main device so as the ease the configuration of the Sub devices.

**◆ Example 1**

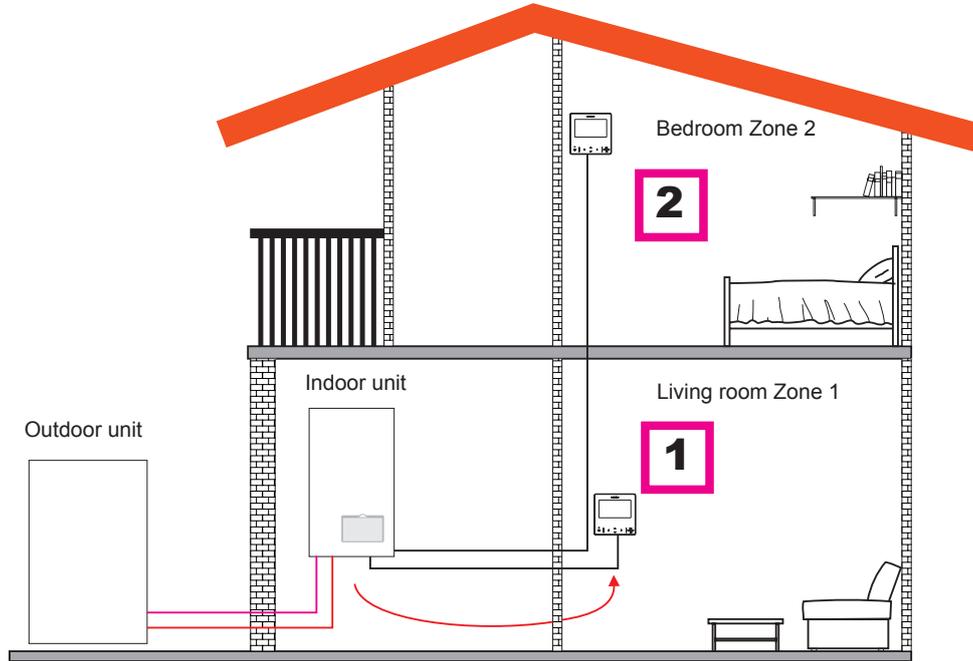
- 1 Main unit controller as unit configuration.
- 2 Sub Unit controller as a room thermostat for Zone 1, as accessory
- 3 Sub Unit controller as a room thermostat for Zone 2, as accessory



Order	FIRST	SECOND	THIRD
Type	Main Unit	Sub Circuit 1	Sub Circuit 2
<b>Questions</b>	<b>Answers</b>		
Is this device attached to the unit?	YES	-	-
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 heat emitters of circuit 1?	Underfloor heating	-	-
Which are the heat emitters of circuit 2?	Underfloor heating	-	-
Which are the cool emitters of circuit 1?	-	-	-
Which are the cool emitters of circuit 2?	-	-	-
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	-	-
Select the bivalent point	-	-	-
Which Thermostat do you have for Circuit 1?	Wired	-	-
Which Thermostat do you have for Circuit 2?	Wired	-	-
	COMPLETED	COMPLETED	COMPLETED

◆ **Example 2**

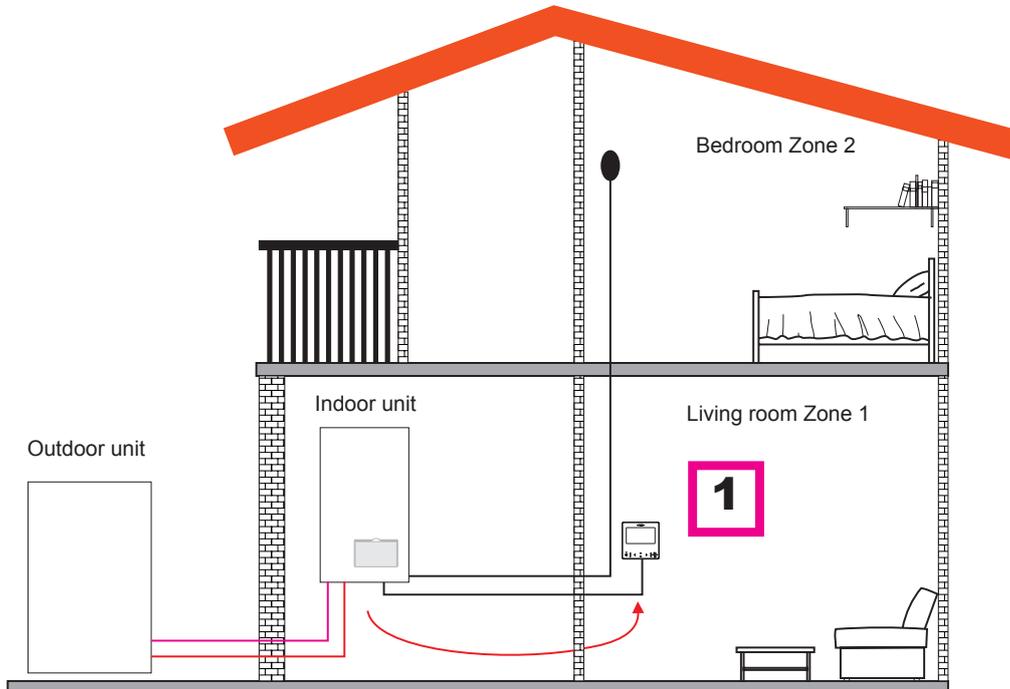
- 1 Move Unit controller to the living room (use as Unit controller + Room Thermostat)
- 2 Main unit controller moved to living room Zone 1
- 3 Sub Unit controller as a room thermostat for Zone 2



Order	FIRST	SECOND
Type	Main Unit	Sub Circuit 2
<b>Questions</b>	<b>Answers</b>	
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 heat emitters of circuit 1?	Underfloor heating	-
Which are the heat emitters of circuit 2?	Underfloor heating	-
Which are the cool emitters of circuit 1?	-	-
Which are the cool emitters of circuit 2?	-	-
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	Main Unit + Circuits
<b>Questions</b>	<b>Answers</b>
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 heat emitters of circuit 1?	Underfloor heating
Which are the heat emitters of circuit 2?	Underfloor heating
Which are the cool emitters of circuit 1?	-
Which are the cool emitters of circuit 2?	-
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

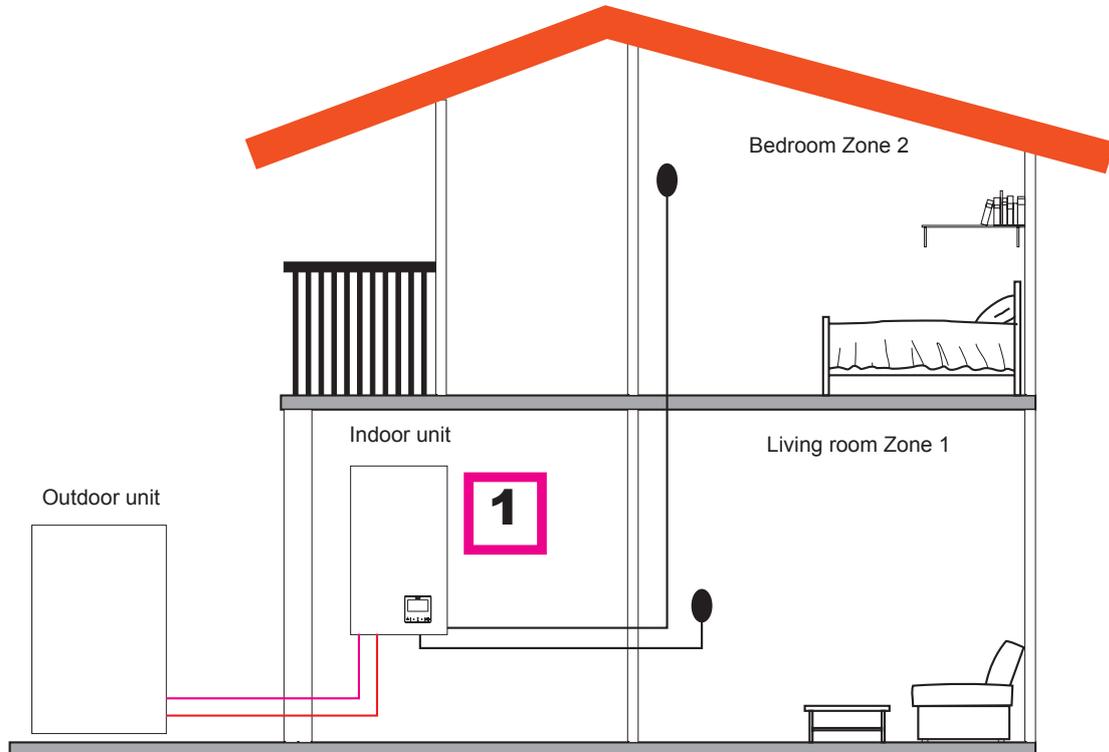
**i** **NOTE**

- 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
<b>Auxiliary Sensors</b>				
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-ARFH2E 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	Main Unit + Circuits
<b>Questions</b>	<b>Answers</b>
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 heat emitters of circuit 1?	Underfloor heating
Which are the heat emitters of circuit 2?	Underfloor heating
Which are the cool emitters of circuit 1?	-
Which are the cool emitters of circuit 2?	-
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

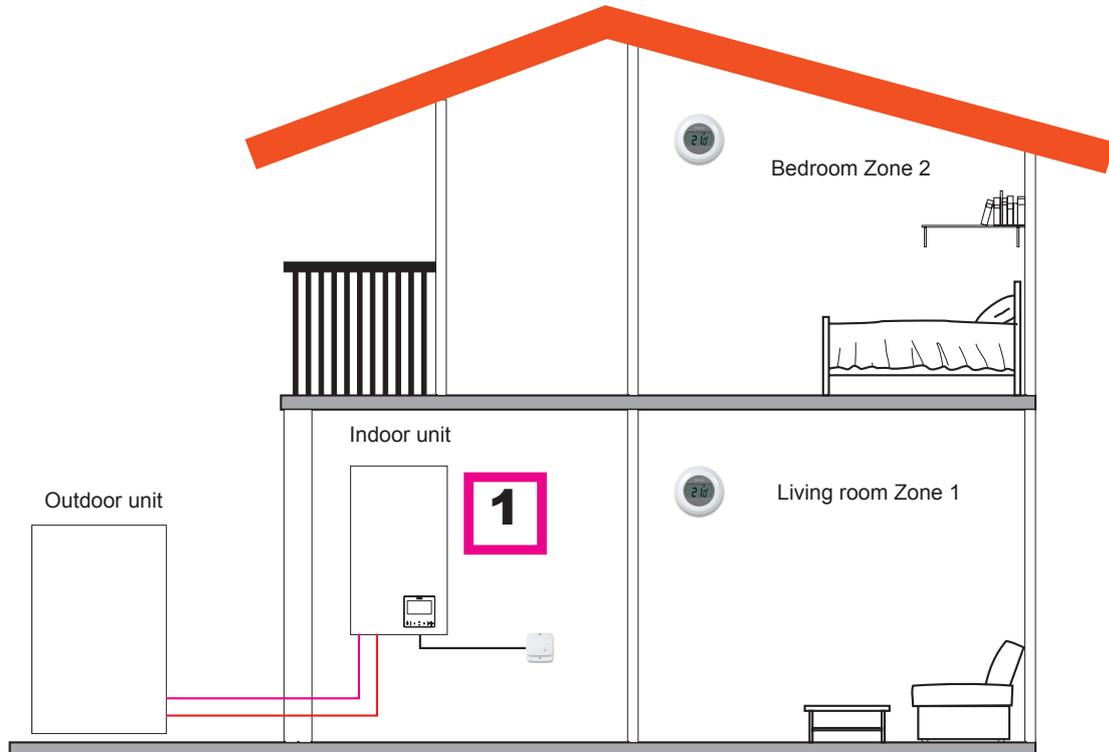
**i** **NOTE**

- 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
<b>Auxiliary Sensors</b>				
Taux1	<input checked="" type="checkbox"/>	Sensor 1 (Taux1)	Two3 (if Boiler)	C1 Ambient
Taux2	<input checked="" type="checkbox"/>	Sensor 2 (Taux2)	Swimming pool (if SWP existing)	C2 Ambient
Taux3	<input checked="" type="checkbox"/>	Sensor 3 (Taux3)	Outdoor Sensor	-

◆ **Example 5**

- 1 Main 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	Main 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 heat 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

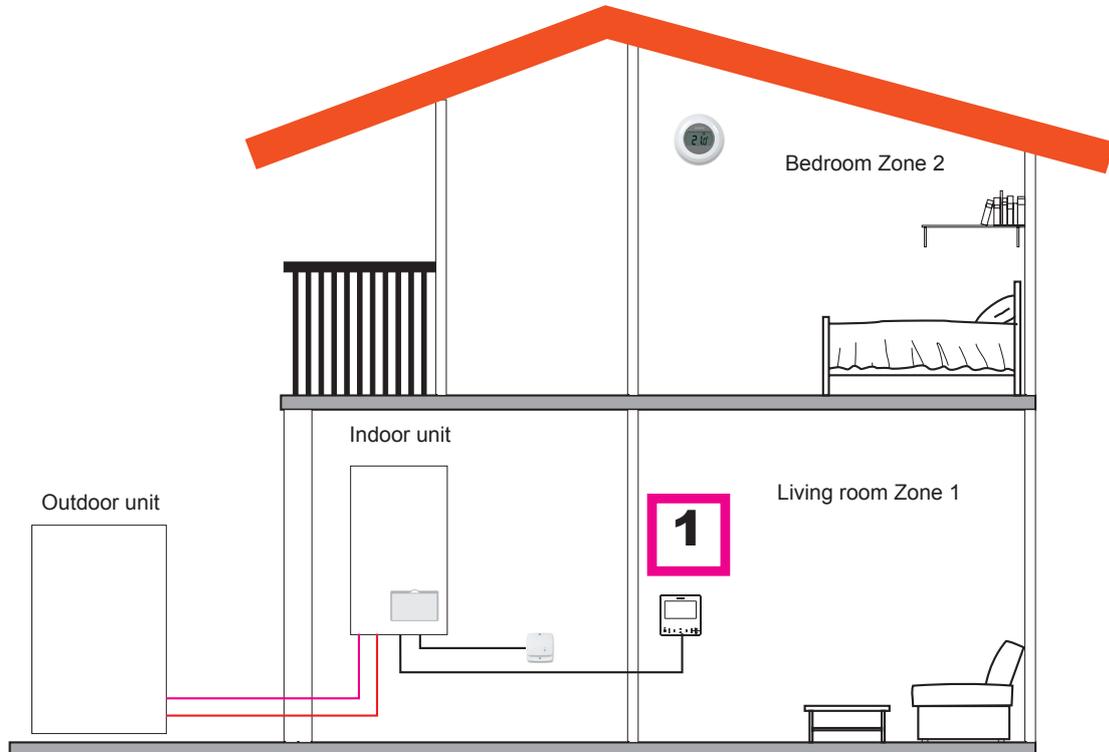
**i** **NOTE**

- 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

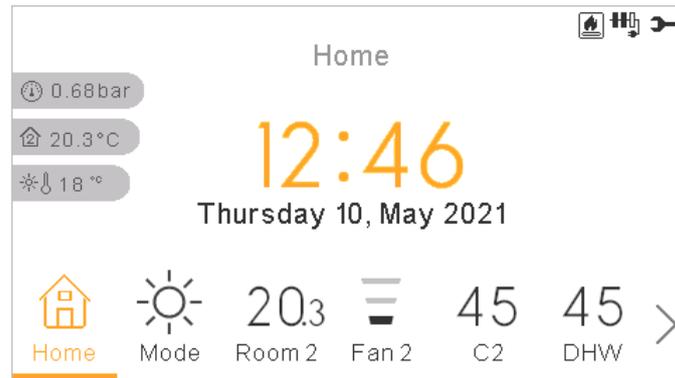
◆ **Mixed configurations (Wireless + Wired)**

- 1 Move Unit controller to the living room (use as Unit controller + Room Thermostat)
- 2 Main unit controller moved to living room Zone 1
- 3 Wireless intelligent thermostat for zone 2 (ATW-RTU-07) (Receiver + Room thermostat)



Order	FIRST
Type	Main 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 heat emitters of circuit 1?	Underfloor heating
Which are the heat emitters of circuit 2?	Underfloor heating
Which are the cool emitters of circuit 1?	-
Which are the cool emitters of circuit 2?	-
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

## 9.5 MAIN VIEW



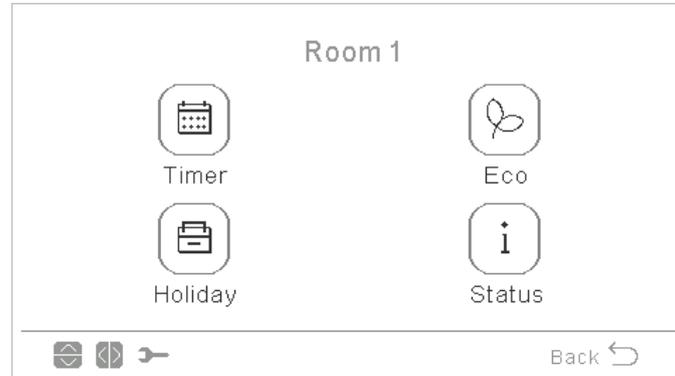
Main view of the device is composed by a bottom tab widget to move around the different views:

- Home
- Mode
- Room 1 (if space is small it shows R1)
- Room 2 (if space is small it shows R2)
- Circuit 1 (if space is small it shows C1)
- Circuit 2 (if space is small it shows C2)
- Fan 1 (if space is small it shows F1)
- Fan 2 (if space is small it shows F2)
- DHW
- SWP
- Menu

### 9.5.1 Quick actions function

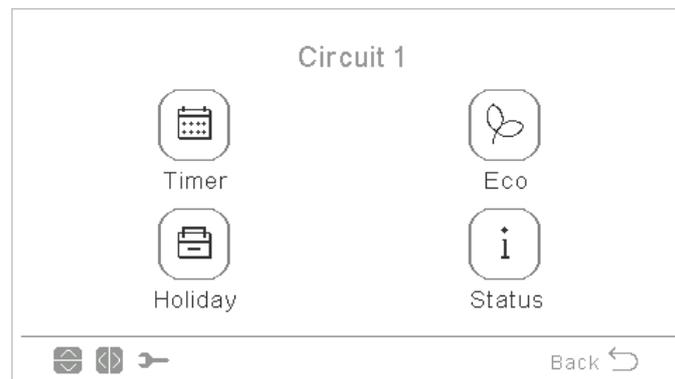
The following quick actions are shown when pressing the OK button at the selected zone in comprehensive view or room thermostat view:

#### ◆ Room 1/2

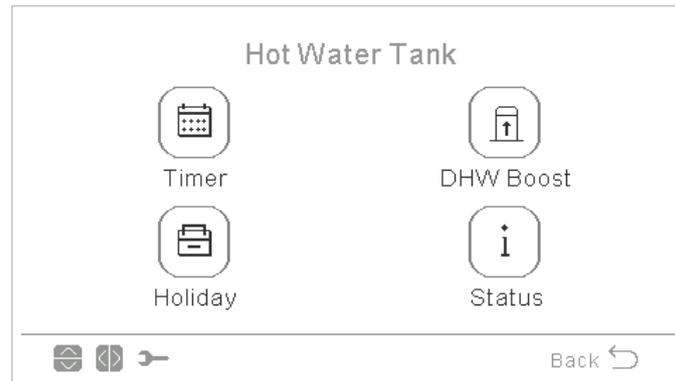


- Timer
- ECO
- Holiday (If Zone is enabled)
- Status

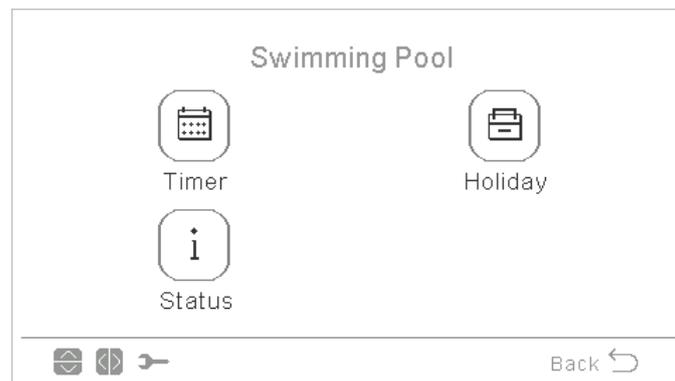
#### ◆ Circuit 1/2



- Timer
- ECO
- Holiday (If Zone is enabled)
- Status

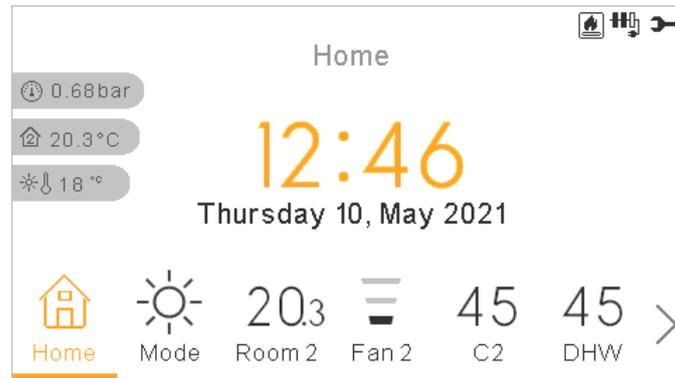
**◆ Domestic Hot Water Tank (DHW)**

- Timer
- Boost (If DHW is ON and Boost is available. It can also be cancelled from quick actions).
- Holiday (If Zone is enabled)
- Status

**◆ Swimming Pool (SWP)**

- Timer
- Holiday (If Zone is enabled)
- Status

## 9.6 HOME VIEW

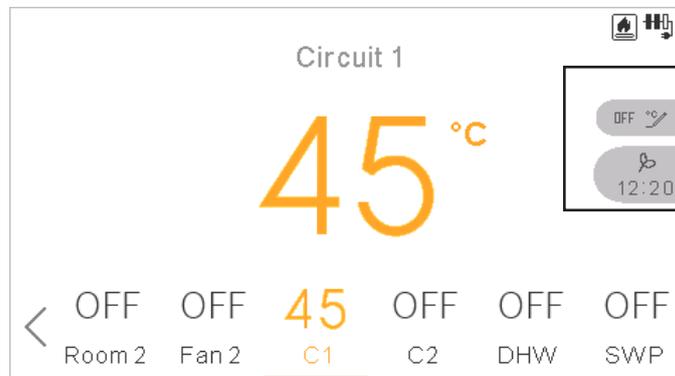


Home view shows on the middle the date and time

On the left side it shows:

- Inside temperature (home icon):
  - If LCD works as Room 1, it took it from the controller sensor or auxiliary sensor
  - If LCD works as Room 2, it took it from the controller sensor or auxiliary sensor
  - If LCD works as Room 1+2, it took it from the controller sensor or auxiliary sensor, or the average of the ones used per each zones.
  - If LCD works as main LCD or water control but not room, it will took them from the configured Rooms, if no one is configured, that temperature will not be displayed.
- Outside temperature (thermometer icon).
- Water pressure indicator

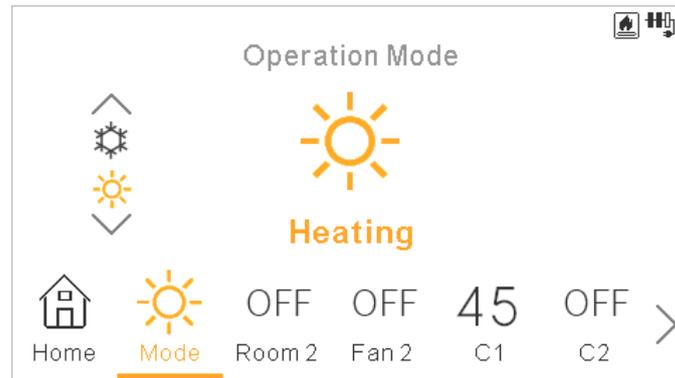
### 9.6.1 Next schedule indication



The indication of next schedule shows by priority:

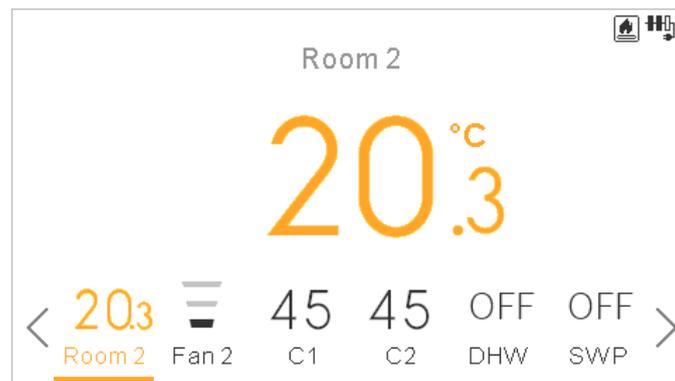
- Date of returning of absent mode
- Next schedule action:
  - If no derogation has been made, shows next schedule action
  - If derogation has been made it checks the configured override type:
    - ♦ If override type is Next action, it shows next schedule action.
    - ♦ If override type is Forever, does not show any information
    - ♦ If override type is Specific time, it shows "Pending" text and the remaining minutes.

## 9.7 MODE VIEW



- Mode view shows the selected mode.
- In case of being a heating and cooling unit, it lets also to change the mode by using the top/bottom arrows, and it shows the mode spinner on the left side.
- If it has been enabled the auto mode, it is also available here.

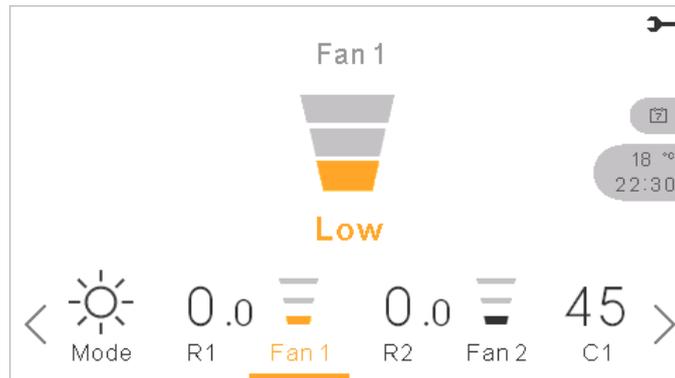
## 9.8 ROOM 1/2 VIEW



Room thermostats view displays:

- Ambient Temperature of the room. This temperature is got from controller or external sensor.
- When editing it shows the setting temperature
- On right side it has zone notifications for:
  - Next timer action
  - Eco and timer icons

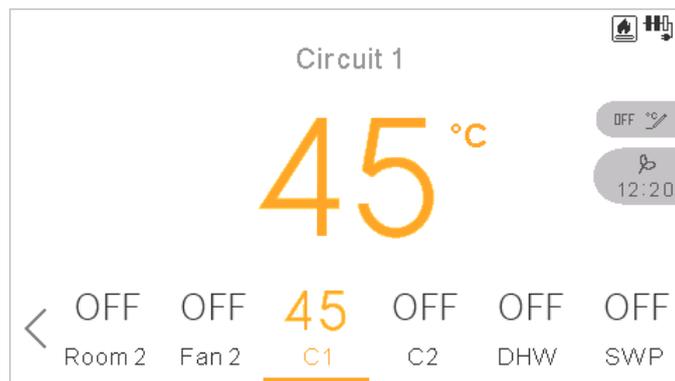
## 9.9 FAN COILS 1/2 VIEW



Room 1 or 2 could control Fan Coils. Once configured to control them on the menu, the bottom bar includes the option to manage those fan coils:

- Fan speeds: Low, Medium, High and Auto
- Each fan has its independent on/off

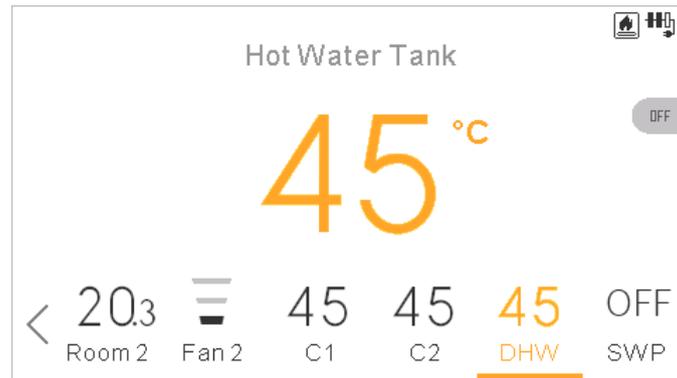
## 9.10 CIRCUIT 1/2 VIEW



Circuit 1 or 2 view displays:

- Water setting feedback
- When editing it shows the setting temperature
- On right side it has zone notifications for:
  - Next timer action
  - Eco, throughput, summer switch-off, forced off and timer icons

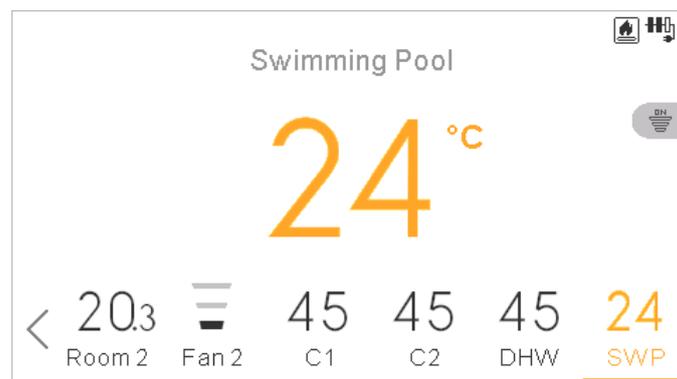
## 9.11 DHW VIEW



DHW view displays:

- Water setting feedback
- When editing it shows the setting temperature
- On right side it has zone notifications for:
  - Next timer action
  - Boost, throughput, operating in comfort and timer icons
- During boost, setting changed is the boost setting

## 9.12 SWP VIEW



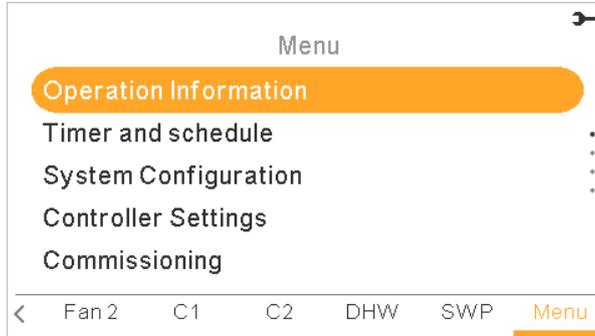
SWP view displays:

- Water setting feedback
- When editing it shows the setting temperature
- On right side it has zone notifications for:
  - Next timer action
  - Throughput and timer icons

## 9.13 MENU

### 9.13.1 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.



**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/Comfort)
- Room temperature
- Room setting temperature
- Fan setting speed
- Fan real speed
- Fan stopped by D-OFF
- Current water temperature
- Water setting temperature
- Water OTC setting temperature
- Mixing valve position (only for circuit 2)

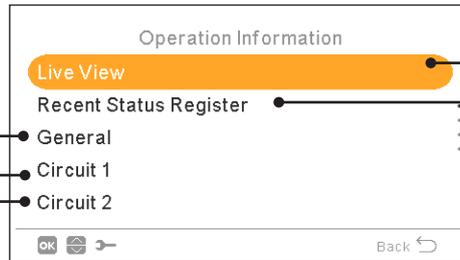
**Detailed information about DHW:**

- Operation
- Current temperature (Only for YUTAKI S)
- Top Sensor (Only for YUTAKI S COMBI)
- Bottom sensor (Only for YUTAKI S COMBI)
- Setting Temperature
- Electrical Heater Status
- Electrical Heater Operation
- Legionella Status
- Legionella Operation

**Detailed information about Swimming pool:**

- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature

1 / 4



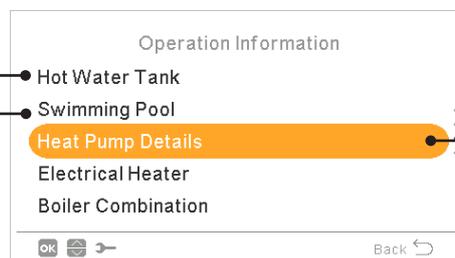
**Summary of system status information:**

- Refrigerant Cycle
- Water Generation
- Circuit 1
- Circuit 2
- Hot Water Tank
- Swimming Pool

**Recent Status Register:**

- Table of the main variables of the system registered by steps of 5 minutes during 120min

2 / 4



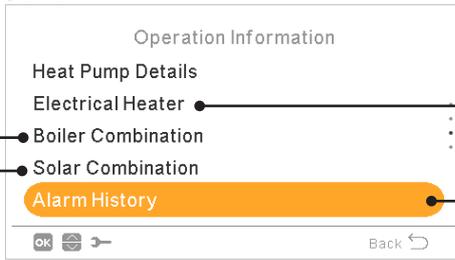
**Detailed information about Heat Pump:**

- Water Outlet PHEX Temperature
- Two3
- Water Flow Level
- Water Pump Speed
- Water Pressure
- Outdoor Ambient temperature
- Outdoor Ambient 2 temperature
- Gas temperature
- Liquid temperature
- Discharge Gas temperature
- Evaporation Gas temperature
- Suction Gas temperature
- Discharge Pressure
- Suction Pressure
- Ind. Exp. Valve Open
- Ind. Exp. Valve 2 Open
- Out. Exp. Valve Open
- Injection Expansion Valve
- Inverter Op. Freq.
- Defrosting
- Cause Of Stoppage
- Compressor Curr.
- Unit Capacity
- Unit Type

3 / 4

Detailed information about Boiler combination:

- 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:

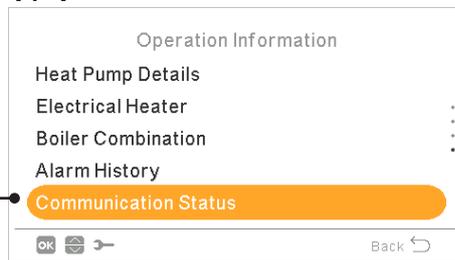
- Operation (Demand ON/OFF)
- Solar Panel temperature

Shows a list of the alarm history of the system

4 / 4

Detailed information about Communication status:

- H-Link
- H-Link Central
- RCS Central
- Cascade Controller

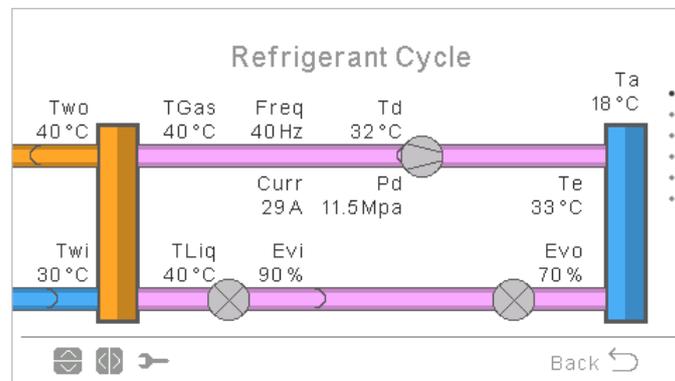


### 9.13.1.1 Live view

Live view is a summary of system status information shown on operation information.

It has the following screens:

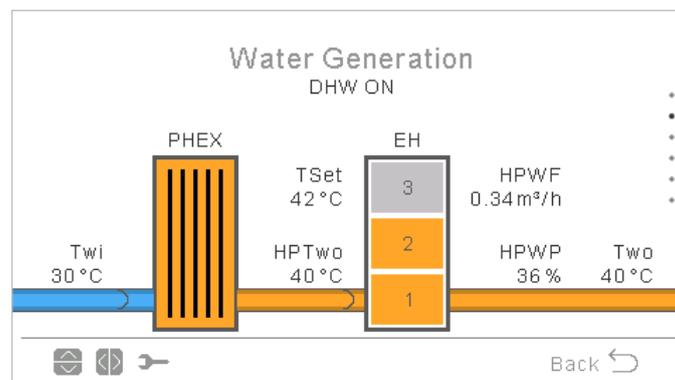
#### ◆ Refrigerant Cycle



Considerations:

- Arrows move in anti-clock direction in Heating mode. When Cooling arrows move in clock direction.
- Pipes between exchangers are pink if operating or gray if unit is in thermo off.
- $T_{wo}$  pipe is orange when heating and blue when cooling.
- $T_{wi}$  pipe is orange when cooling and blue when heating.
- Defrost indication is only shown when defrosting.
- $T_{wo}$  value is  $T_{woHP}$  when using a YUTAKI S COMBI or YUTAKI S, otherwise it is normal  $T_{wo}$ .

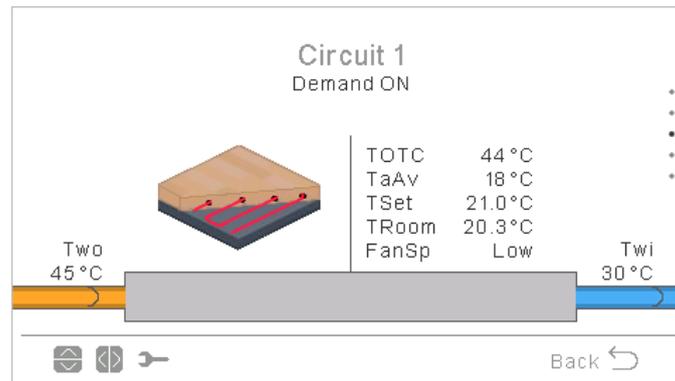
#### ◆ Water generation



Considerations:

- When operation status is COOL ON, inlet pipe is orange, outdoor pipe is blue.
- When operation status is HEAT ON, SWP ON or DHW ON, inlet pipe is blue, outdoor pipe is orange, otherwise pipe is in gray.
- $T_{wo}$  value is  $T_{woHP}$  when using a YUTAKI S COMBI or YUTAKI S, otherwise it is normal  $T_{wo}$ .
- Pump 1 icon is shown when it is operating.
- Heater indication is shown always except:
  - Cooling Operation
  - Heater is disabled by DSW
- If maximum heater step is disabled, the disabled steps are shown as disabled.

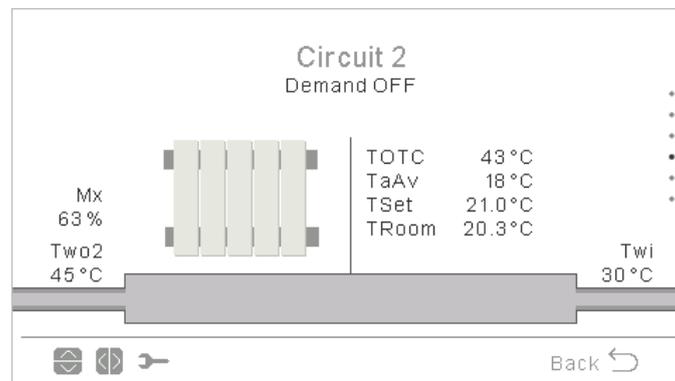
### ◆ Circuit 1



#### Considerations:

- When demand on, inlet pipe is in orange, outlet in blue.
- When cooling, inlet pipe is in blue, outlet in orange. If thermo off, it is shown in gray.
- $T_{wo}$  shows value of  $T_{wo3}$  in case there is buffer tank and  $T_{wo3}$  sensor is used.
- Water pump 3 is shown when it is switched ON since there is buffer tank. Otherwise, water pump 1 is showed whenever it is switched ON.
- Fan speed only shown when fan configured.
- $T_{room}$  &  $T_{set}$  are only shown when available on operation information (exist wired or wireless thermostat for C1).
- The icon shown is defined on “Room icon” parameter under “controller settings”.

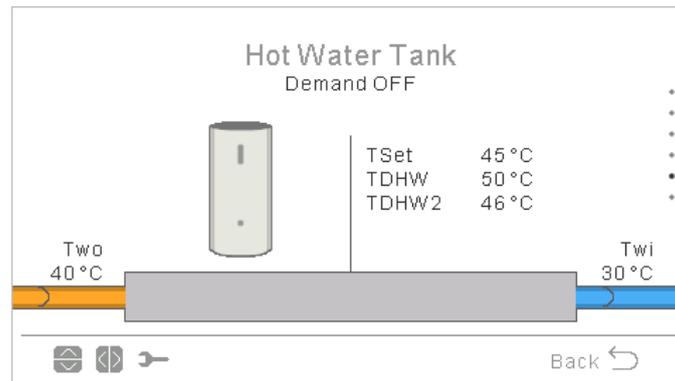
### ◆ Circuit 2



#### Considerations:

- When demand on, inlet pipe is in orange, outlet in blue.
- When cooling, inlet pipe is in blue, outlet in orange. If thermo off, it is shown in gray.
- Water pump 2 is shown if used.
- Fan speed only shown when fan configured.
- $T_{room}$  &  $T_{set}$  are only shown when available on operation information (exist wired or wireless thermostat for C1).
- The icon shown is defined on “Room icon” parameter under “Controller settings”.

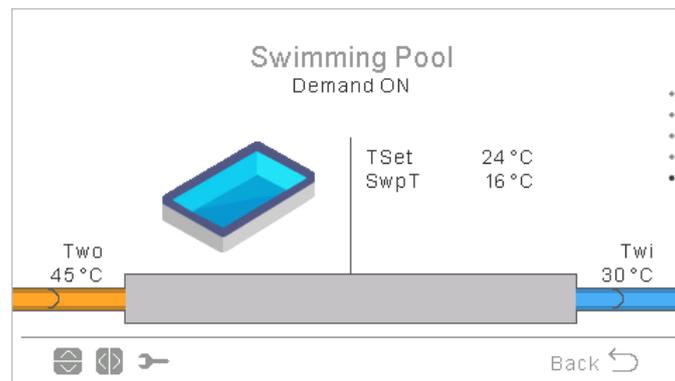
### ◆ Hot Water Tank



#### Considerations:

- When Operation status is DHW ON: inlet pipe has orange color inside and arrows moving. Outlet pipe is blue with arrows too.
- When not working on DHW ON pipes are shown in light grey.
- When antilegionella is enabled a text is shown, indicating if it is being execute or not.
- $T_{wo}$  is  $T_{whp}$  when using a YUTAKI S COMBI, otherwise:
  - If buffer tank is located after DHW use  $T_{wo}$ , if buffer tank is located before DHW use  $T_{wo3}$
  - Otherwise use  $T_{wo}$
- Second sensor temperature shown only for YUTAKI S COMBI.

### ◆ Swimming Pool

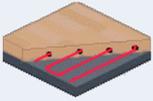


#### Considerations:

- When demand off: inlet and outlet pipes are gray.
- When demand on:  $T_{wo}$  water is orange (hot) and  $T_{wi}$  water is blue (cold).

◆ Room icons for synoptic view

Circuit 1 and 2 can be displayed with the following icons:

Icon	Name
	Fan Coils
	Radiant floor
	Radiators

9.13.1.2 Recent Status Register

Recent Status Register is an historical data that displays the main variables during the last hours.

Recent Status Register				
🕒	OPST	HPTi	HPTo	TwoHP
10:25	☀️	30 °C	45 °C	40 °C
10:20	❄️	30 °C	45 °C	40 °C
10:15	🌊	30 °C	45 °C	40 °C
10:10	🔧	30 °C	45 °C	40 °C
10:05	🔧	30 °C	45 °C	40 °C

⏪ ⏩ 🔑 Back ↩️

Considerations:

- Moving to left/right variables shown change.
- Moving up/down we scroll through the registered time.
- DHWT2: Only shown for YUTAKI S COMBI, when not show "- -".
- DHWT1 and DHWT2 shown as "- -" when no tank is configured.

Icon	Meaning
✕	Off
❄️	Cool D-OFF
❄️	Cool T-OFF
❄️	Cool ON
🔥	Heat D-OFF
🔥	Heat T-OFF

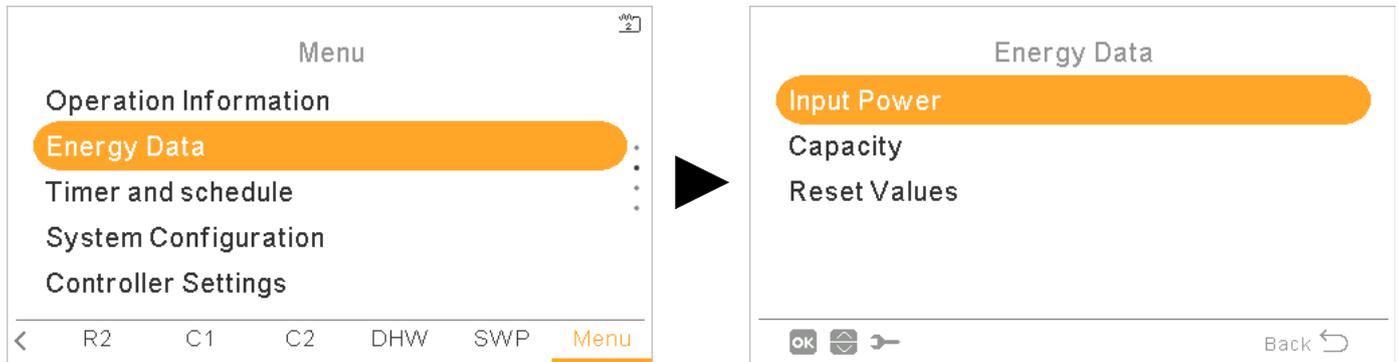
Icon	Meaning
☀️	Heat ON
🔧	DHW OFF
🔧	DHW ON
🌊	SWP OFF
❄️	SWP ON
⚠️	Alarm

### 9.13.2 Energy data

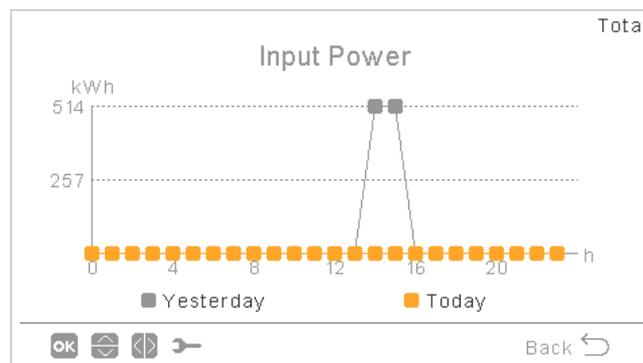
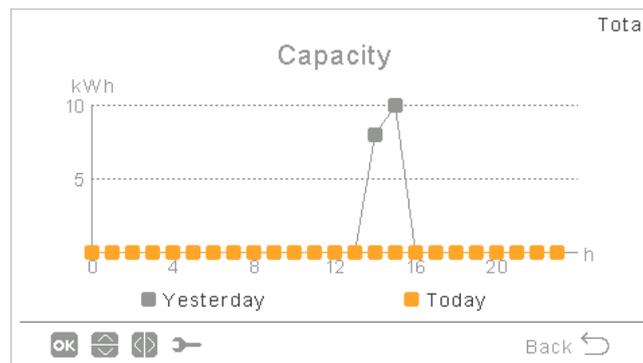
In energy data menu it is possible to check the input power or capacity for space heating / cooling, DHW, SWP or total input power / capacity.

In case no external pulse power meter is used, YUTAKI unit performs an estimation of the consumption taking into consideration, compressor, tank heaters, space heating heaters, compressor crankcase heater, WP1 and electronics. As an estimation, this value may differ from real consumption measured by means an external power meter.

When power meter is used, YUTAKI considers consumption read from pulse power meter



Main view is a chart comparing total input power or total capacity depending on the menu.



- By pressing right/left, it can be changed between zones:
  - Total
  - Space Heating
  - Space Cooling
  - DHW
  - Swimming Pool
- By pressing up/down, the comparison method can be changed:
  - Today vs yesterday
  - This week vs past week
  - This year vs past year

- Pressing OK the chart view changes for a table view of the data:

Input Power			Total
Period	Past Week	Current Week	kWh
Wed	0		0
Thu	0		1026
Fri	0		3
Sat	0		0
Sun	0		0

Navigation icons: OK, Home, Left, Right, Back. A 'Back' button with a return arrow is also present at the bottom right.

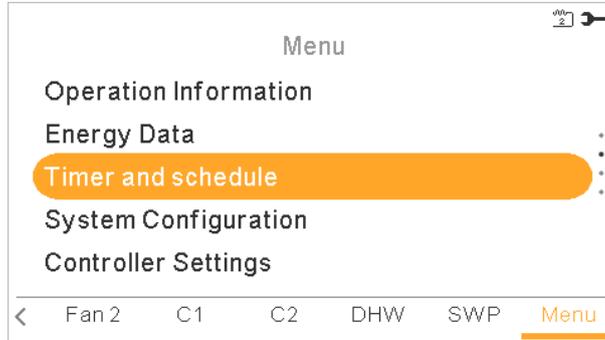
- By pressing right/left, it can be changed between zones:
  - Total
  - Space Heating
  - Space Cooling
  - DHW
  - Swimming Pool
- By pressing up/down, the different periods are shown.
- By pressing OK or back we return to the chart view, keeping the zone and comparison selected.

9.13.3 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.

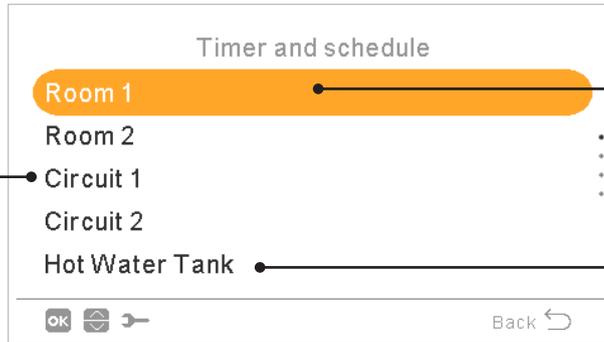
The LCD controller must be set to the correct date and time before using the timer function.



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

1 / 2

**Heating/Cooling (Water):** To set the timer to adjust the water working conditions for Circuit 1/2.



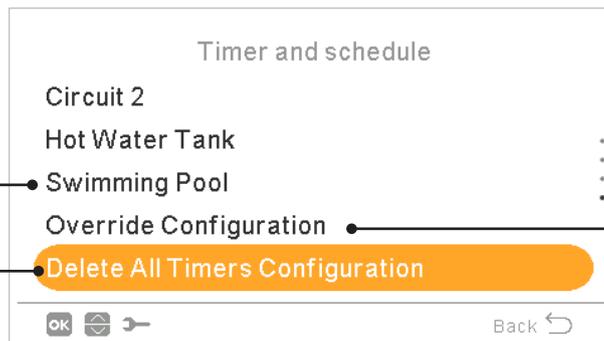
**Heating/Cooling (Air):** To set the timer to adjust the room temperature for Room 1/2. Only when using room thermostats.  
Is possible to launch a timer assistant.

To set the timer to adjust the hot water tank temperature.

2 / 2

To set the timer to adjust the swimming pool temperature.

Press OK button to reset scheduled timers.



To set the **Override type**:

- Until next action
- Specific time
- Forever

When a timer is being switched on, if that zone is stopped, it will request to switch on the zone or not.



### 9.13.3.1 Setting of timer for Room Thermostats

Setting of temperature 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 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.

**Timer status:**

- Disable
- Enable

**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.

Day	0	6	12	18	24
Mon	18 °C	18 °C	18 °C	21 °C	21 °C
Tue	18 °C	18 °C	18 °C	21 °C	21 °C
Wed	18 °C	18 °C	18 °C	21 °C	21 °C
Thu	18 °C	18 °C	18 °C	21 °C	21 °C
Fri	18 °C	18 °C	18 °C	21 °C	21 °C
Sat	18 °C	21 °C	21 °C	21 °C	21 °C
Sun	18 °C	21 °C	21 °C	21 °C	21 °C

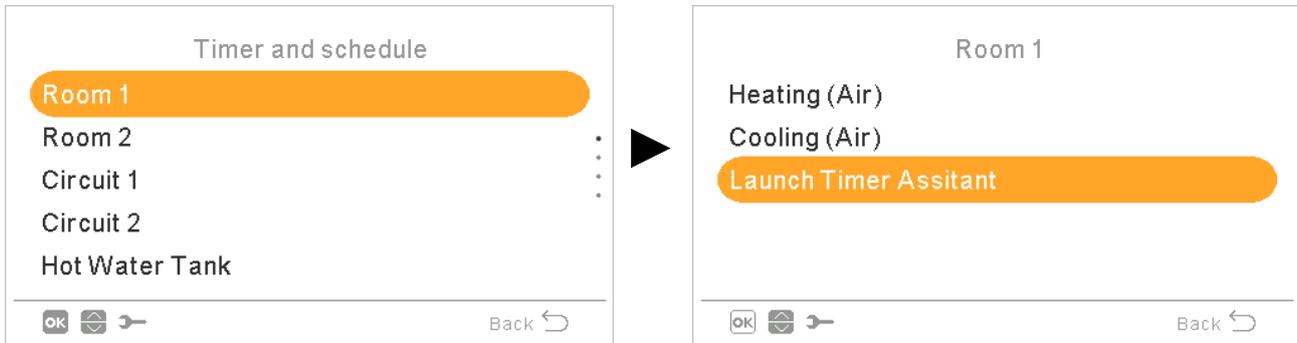
Up to six timer events can be defined for each weekday, and these can be used for turning the operation ON or OFF or to change the setting temperature. Pressing the OK key with one of the weekdays being selected in the weekly calendar displays the detailed schedule for the weekday.

From	To	Status	Setting
06:00	06:20	On	25
06:20	( 06:00 )	Off	-
-	-	-	-

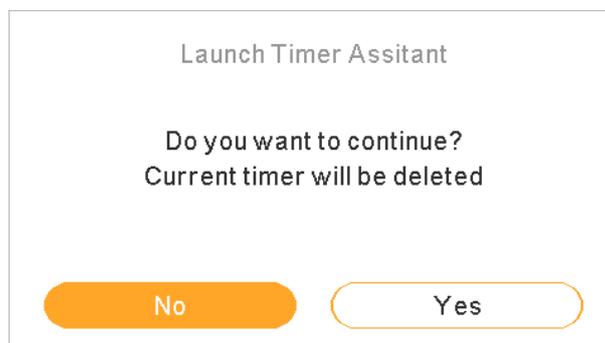
Pressing the “Gear” button during the edition of the timer events for a given weekday displays a menu to copy the daily pattern to other weekdays or to suppress the selected timer event.

### ◆ Setting with Timer assistant

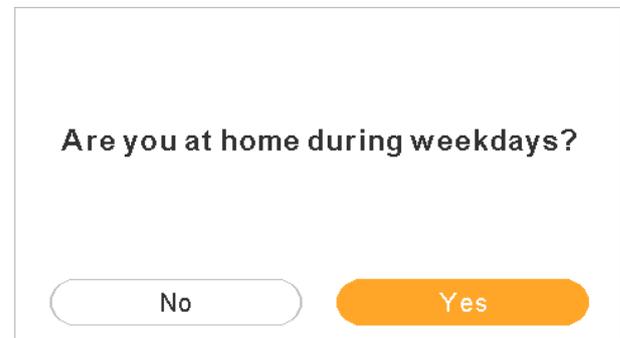
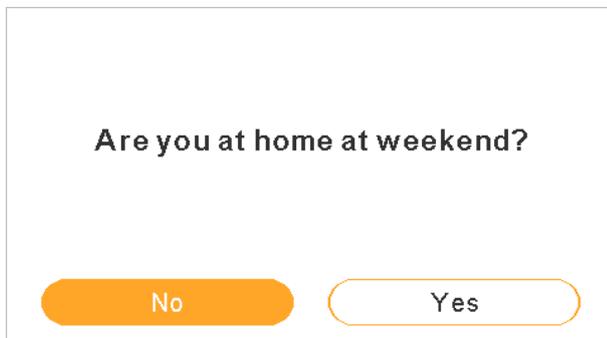
It is possible to set the timer for Room thermostats with a timer assistant.



When launching the timer assistant the current timer will be deleted.

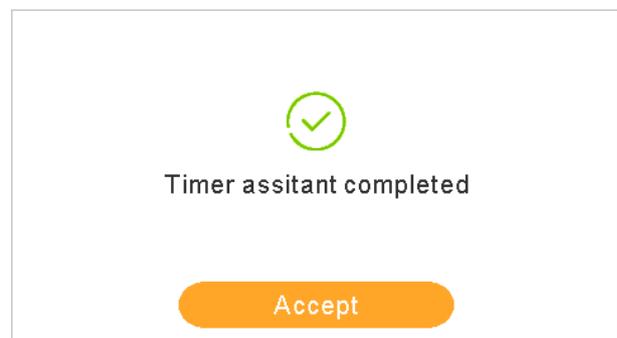
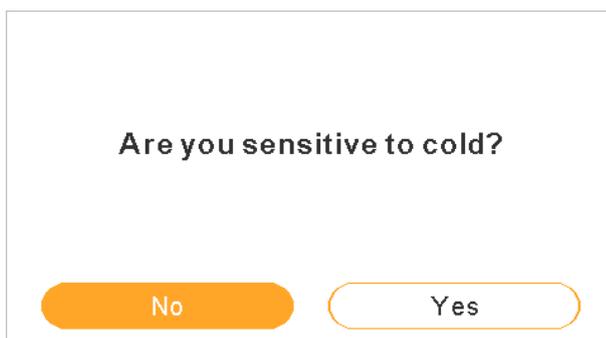


Timer assistant asks if user stays at home during weekend and weekdays



- If stay at home at weekend / weekdays the following patterns are applied:
  - Heating: 6:30h =20°C / 22:30h =18°C
  - Cooling 6:30h =23°C / 22:30h =25°C

Timer assistant asks if user is sensitive to cold.



- If sensitive to cold is marked as Yes, an offset of 1°C is applied for heating.

**9.13.3.2 Setting of timer for Circuit 1/2**

To change the 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.

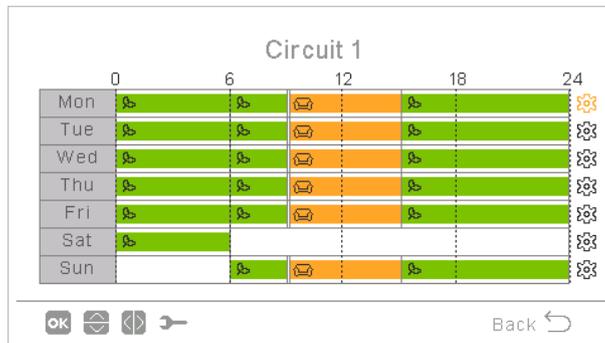
**Timer configuration:**  
New screen appears to configure a schedule timer. See explanation below.

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

**Timer status:**  
Disable  
Enable

**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 six timer events can be defined for each weekday, and these can be used for turning the operation ON or OFF or operation mode (ECO or Comfort). Pressing the OK key with one of the weekdays being selected in the weekly calendar displays the detailed schedule for the weekday.

From	To	Status	Setting
06:00	06:20	On	25
06:20	( 06:00 )	Off	-
-	-	-	-

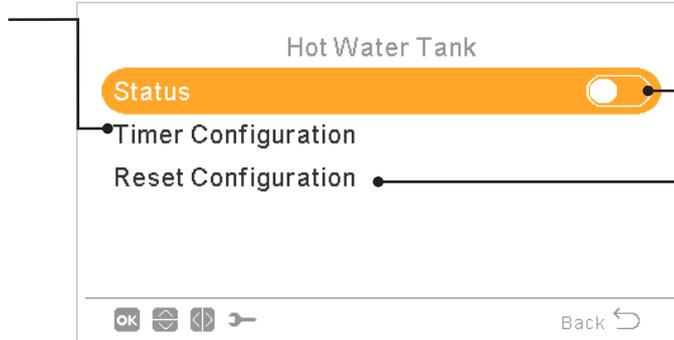
Pressing the “Gear” button during the edition of the timer events for a given weekday displays a menu to copy the daily pattern to other weekdays or to suppress the selected timer event.

### 9.13.3.3 Setting of timer for Hot water tank or Swimming Pool

Setting the temperature 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 configuration:**

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



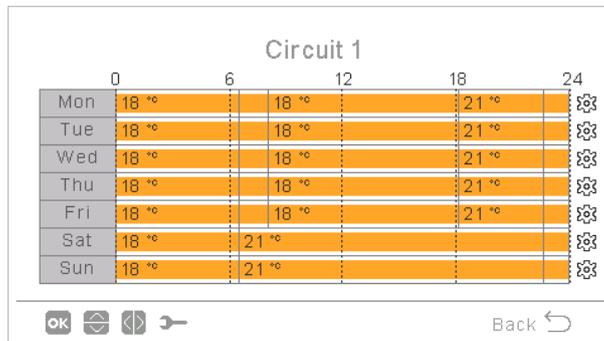
**Timer status:**

Disable  
Enable

**Reset configuration:**

Press OK button to reset scheduled timers.

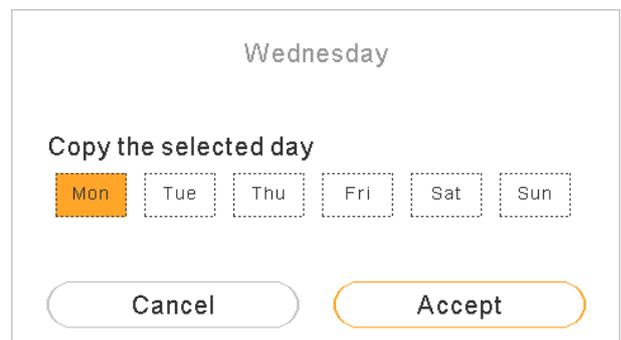
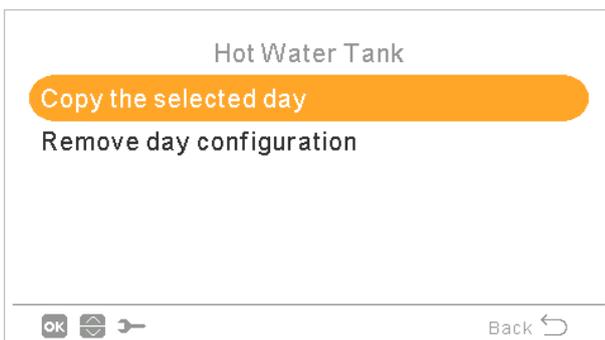
Pressing the OK button with "Timer Configuration" being selected displays the detailed schedule screen. The active schedule timers are shown in a weekly calendar.



Up to six timer events can be defined for each weekday, and these can be used for turning the operation ON or OFF or to change the setting temperature. Pressing the OK key with one of the weekdays being selected in the weekly calendar displays the detailed schedule for the weekday.

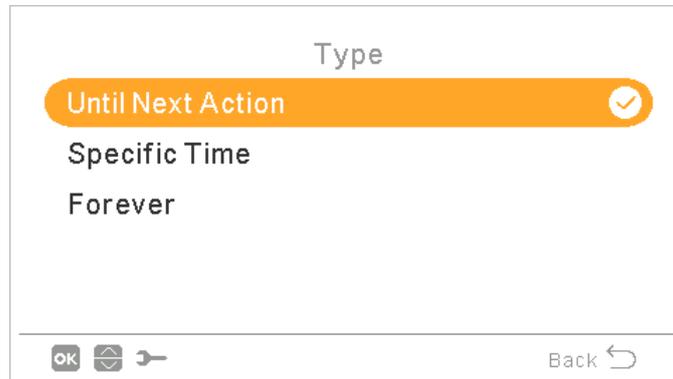


Pressing the "Gear" button during the edition of the timer events for a given weekday displays a menu to copy the daily pattern to other weekdays or to suppress the selected timer event.



### 9.13.3.4 Override Configuration

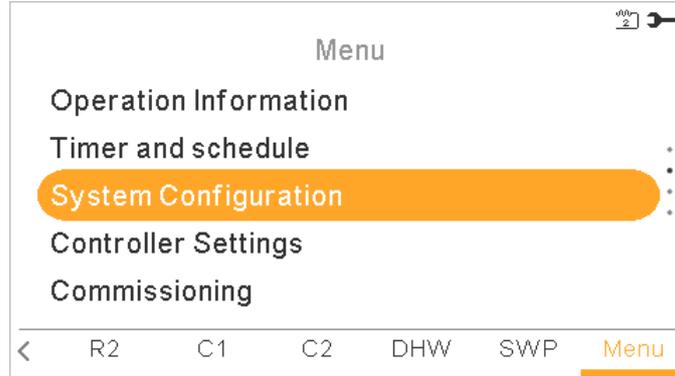
When a different configuration from the defined by the timer of a zone is done, it is possible to override the timer configuration during a specific time.



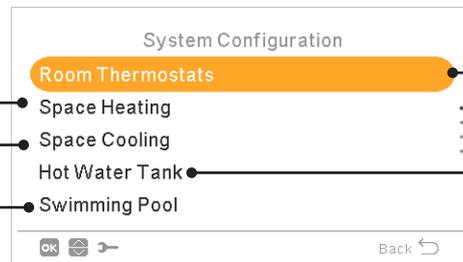
- Until next action: derogation remains until next action of the timer.
- Specific Time: derogation status remains for the specified minutes.
- Forever: Derogation status is never released.

### 9.13.4 System configuration

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



1 / 3



**Space Heating / Cooling configuration:**

- Water calculation mode
- Eco offset water setting
- Working limits
- Mixing valve (for circuit2)

**Swimming Pool configuration:**

- Status
- Setting temperature
- Offset temperature

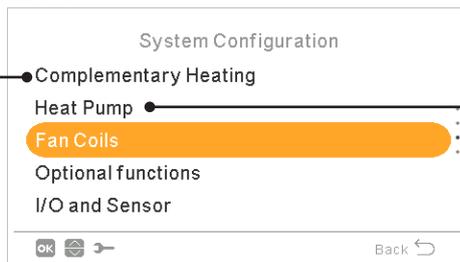
**Room thermostats configuration:**

- (Screen visible only for room thermostats)
- Setting temperature range (air)
  - Air Eco Offset
  - Thermostat configuration
  - Compensation factors
  - Room temperature demand OFF

**DHW configuration:**

- Status
- Mode
- 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
- Smart configuration
- Anti Legionella

2 / 3



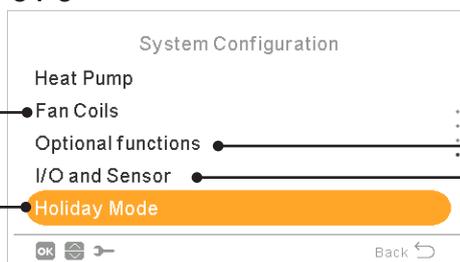
**Complementary Heating configuration:**

- 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

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**Fan coils configuration:**

- Controlled fan zones
- Delay on time
- Demand OFF actions

**Holiday mode:**

- Year
- Month
- Day
- Returning time
- Affected zones
- Start/stop holiday mode

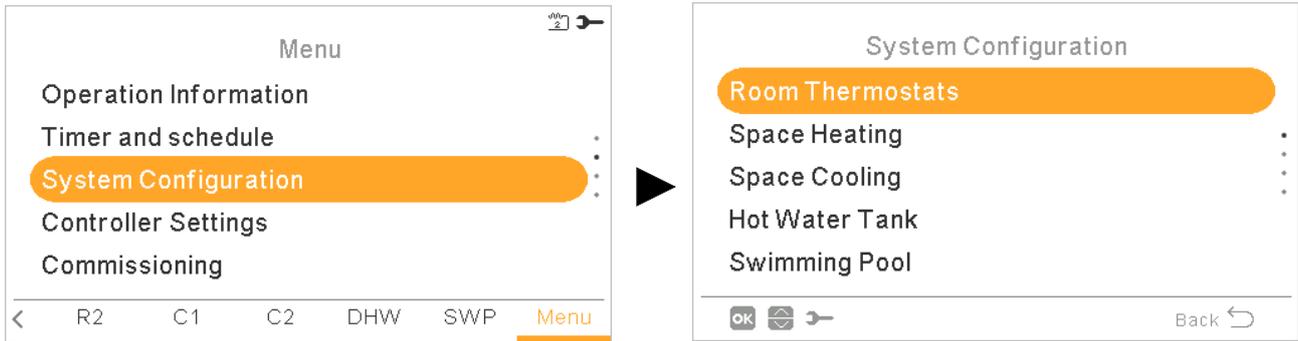
**Optional functions configuration:**

- Hydraulic separator
- Energy configuration
- Smart function
- Heating auto on/off
- Auto heat/cool
- Hot water tank
- Emergency operation

**I/O and Sensor configuration:**

- Inputs
- Standard outputs
- Optional outputs
- Auxiliary sensors

9.13.4.1 Room thermostats configuration

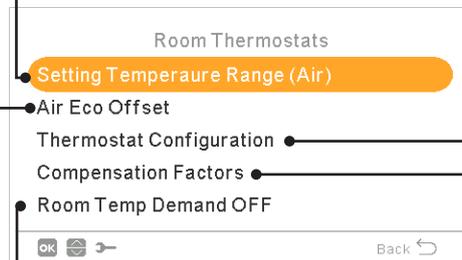


**Maximum / Minimum temperature for heating and cooling:** Configure for Circuit 1/2:

- Heating maximum temperature
- Heating minimum temperature
- Cooling maximum temperature
- Cooling minimum temperature

**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 °C)

**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.



**Thermostat configuration:** 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)
- **Check RT Address:** validation procedure of the wireless thermostats configuration

**Compensation factors** (See Compensation factors section below)

◆ 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.

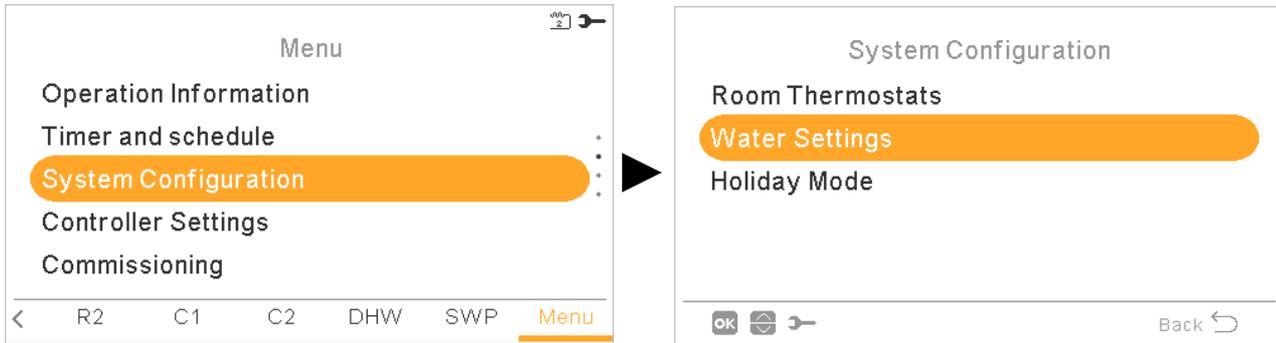
Compensation has no effect if Compensation factor is 0 or when OTC is Fix, and water temperature is determined according to OTC in chapter *“Water calculation mode”* in such case.

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.

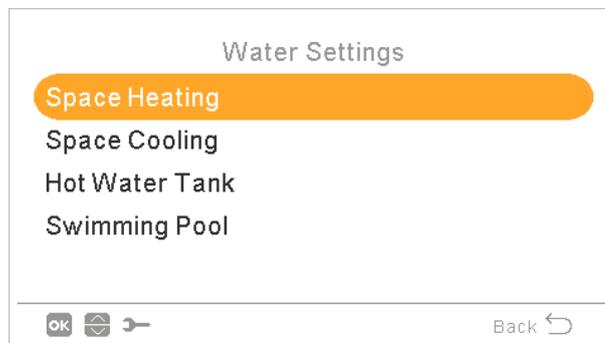
**Maximum compensation factor heat + and -:** Maximum difference between room temperature and setting temperature. In case that the difference between room temperature and setting temperature is higher than this value, the YUTAKI unit takes the selected value as the maximum.

### 9.13.4.2 Water settings configuration

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



Select the desired area to apply the water settings configuration:

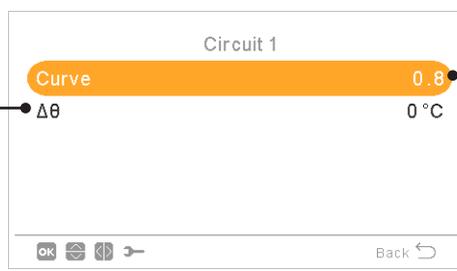


#### ◆ Space Heating or Space Cooling water settings

**Δθ (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 (setting in Main device).
- Range: -10 ~ 10
- Circuit 1 or Circuit 2 must be ON to configure this setting.



**Curve:**

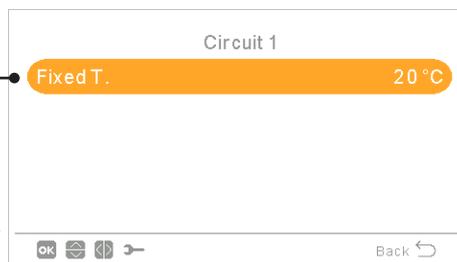
Selection of the gradient curve for Circuit 1 or Circuit 2 (only for heating mode).

- Only when water calculation mode is Gradient (setting in Main device).
- Range: 0.2 ~ 2.2
- Circuit 1 or Circuit 2 must be ON to configure this setting.

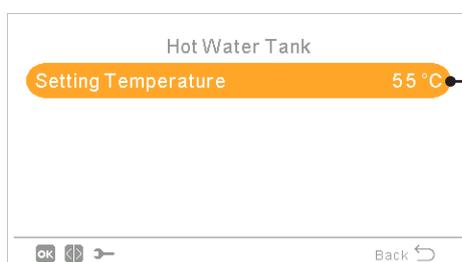
**Fixed temperature:**

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

- Only when water calculation mode is Fix (setting in Main device).
- Circuit 1 or Circuit 2 must be ON to configure this setting.



#### ◆ Hot Water Tank or Swimming pool water settings



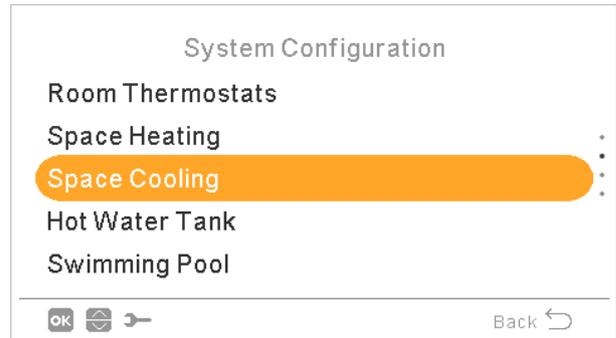
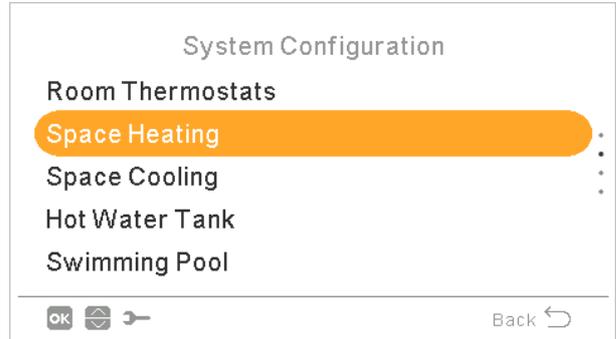
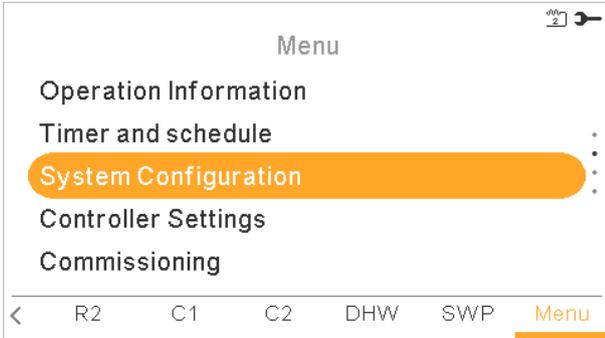
**Setting temperature:**

Selection of the temperature for DHW or Swimming Pool.

- Hot water tank or Swimming pool must be ON to configure this setting
- Range:
  - DHW: 30 °C ~Max. setting temperature
  - Swimming pool: 24 ~33 °C

**9.13.4.3 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).

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

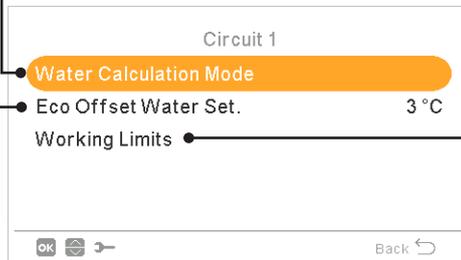
See detailed explanation below.

**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.

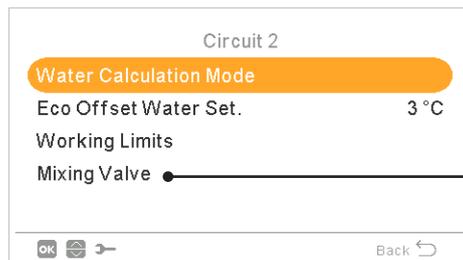
- Range: 0 ~ 10



**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).

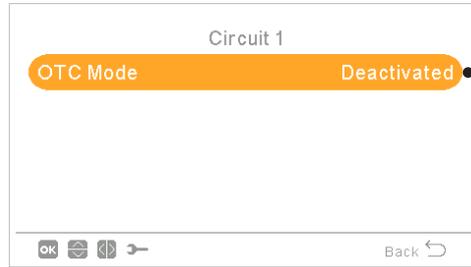
Values are adjusted for the use with the 2nd zone mixing kit accessory ATW-2KT-05. It is highly recommended not to change these values.

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 °C (5 °C by default).

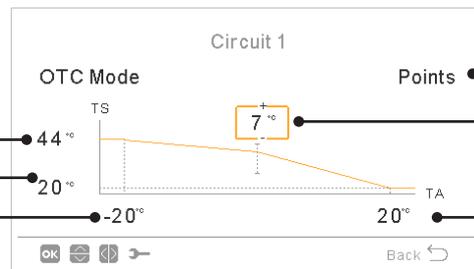
◆ Water calculation mode

Deactivated



The "Deactivated" 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.

Set point at high ambient temperature

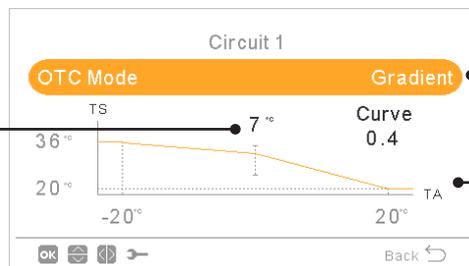
Set point at low ambient temperature

Low ambient temperature

Vertex offset

High ambient temperature

Gradient



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

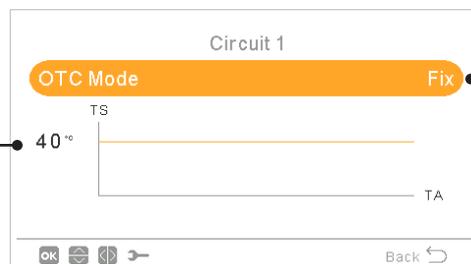
User can only edit the gradient variable and it will automatically set the values for the other 4 variables on the chart.

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

Vertex offset

Gradient curve

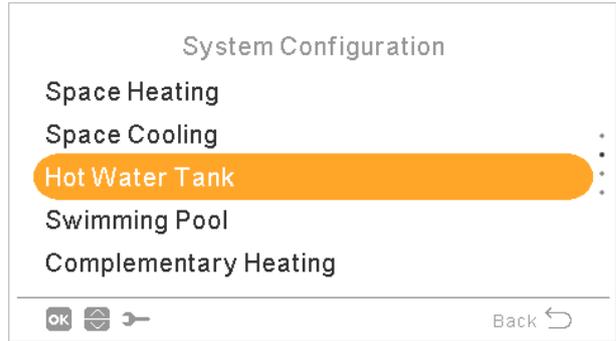
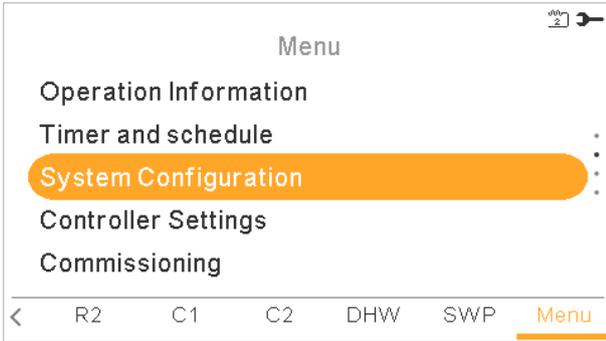
Fix



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

Fixed temperature

9.13.4.4 Hot Water Tank configuration



**Setting temperature:**

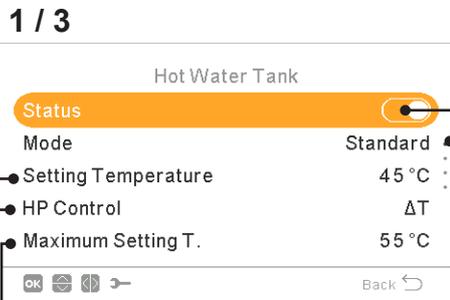
Setting for domestic hot water temperature selected by the user. The maximum value of this setting depends on the Maximum setting temperature set by the installer. (Between 30 to maximum setting temperature.)

**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 15° 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 adjusted in case HP Control is Fix.

**Maximum setting temperature:**

Maximum value of DHW setting temperature permitted by the installer.



**Status of Hot Water Tank:**

- Deactivated
- Enabled (by default for YUTAKI S COMBI).

**Mode:**

- 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).
- Economic (Only for YUTAKI S COMBI):** DHW heating operation starts under same conditions as Standard Mode with the difference that water temperature measurement is done at higher tank position. Due to this fact number of DHW operations decrease and its duration becomes longer which becomes more efficiency.
- High Demand:** DHW heating operation starts if water temperature and setting temperature difference is larger than differential temperature. DHW can be heated up using the heater, the heat pump or a combination of both. Only available when Hot Water Tank heater is activated (DSW4 pin 3 ON).

**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.

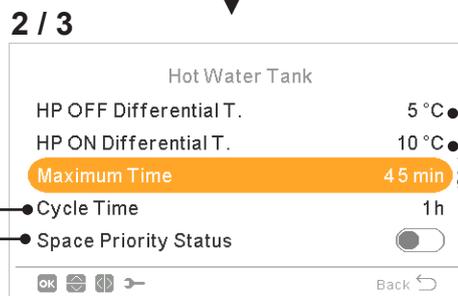
- Range: 0 ~24 hour
- Not available in High demand mode.

**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.

- Not available 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
- Not available in High demand mode.

**DHW Heater:**

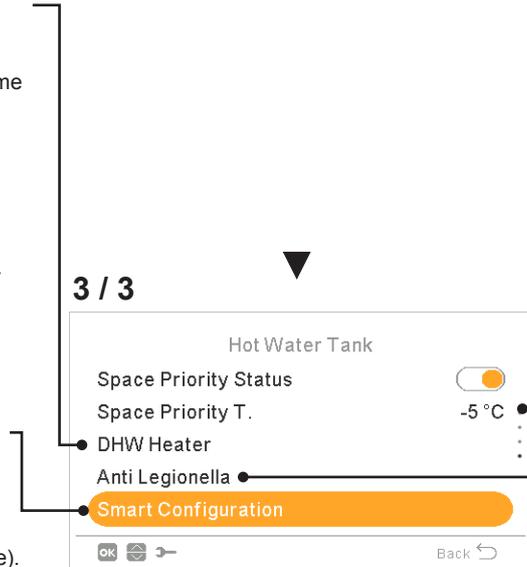
Only available when DHW heater is activated (DSW4 pin 3 ON).

- **Waiting time:** Enable or disable waiting time for DHW heater.
- **Electrical Heater waiting time:** To select the delay time since the moment HP has started in order to start the electric heater. In case Waiting time is set to 0 (default), electric heater is never started due to waiting time. In case waiting time has a value different than 0, it means that heater will be switched ON after configured minutes since the moment HP has been switched ON.

**Smart Configuration:**

Option to allow the tank to be heated to an intermediate temperature of comfort in conditions of water consumption in order to avoid heating to the traditional setting temperature (Only available in Economic mode).

- **Comfort setting:** Intermediate target temperature of tank heating under water consumption conditions
- **Comfort cycles:** Number of operations allowed to heat water to the comfort temperature.



**Space priority temperature:**

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

- Range: -20~0°C
- Not available in High demand mode.

**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**

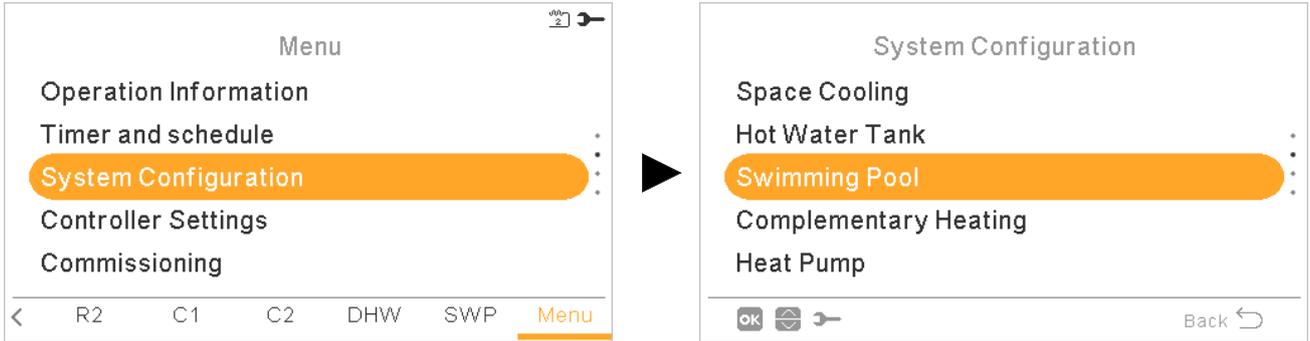


- Status of anti legionella operation (enabled/deactivated)
- Specified day for anti legionella operation
- Specified time of the day for anti legionella operation
- Setting for domestic hot water temperature in anti legionella operation..
- Duration of shock treatment. Between 10 to 60 minutes.

**i NOTE**

*In case anti legionella treatment has not been possible to achieve within a time lapse of 6 hours since the moment it has been triggered, anti legionella treatment is released and normal operation can be resumed.*

**9.13.4.5 Swimming Pool configuration**



Swimming Pool

**Status**

Setting Temperature 24 °C

Offset Temperature 15 °C

Back ↩

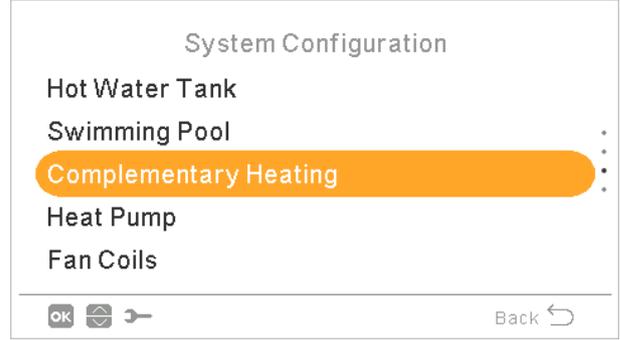
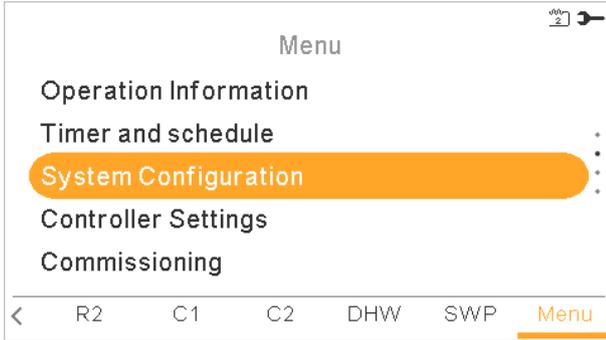
**Status:**  
 Enable or disable swimming pool.  
 Set input 3, output 1 and sensor 2. (See section [“9.13.4.10 Inputs, Outputs and Sensors configuration”](#))

**Setting temperature:**  
 Adjustment of the swimming pool water temperature setting.

- Range: 24~33 °C

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

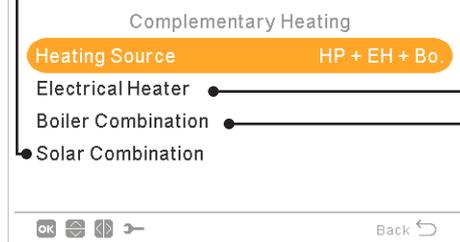
9.13.4.6 Complementary Heating configuration



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 "9.13.4.10 Inputs, Outputs and Sensors configuration").
- **Deactivated:** 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".



Heating Source:

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

**Electrical heater:** 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 Deactivated in any other mode (Swimming Pool and Cooling mode). Set output 3 and sensor 1 for boiler (see section "9.13.4.10 Inputs, Outputs and Sensors configuration").

See detailed information in "Boiler combination".

◆ 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:

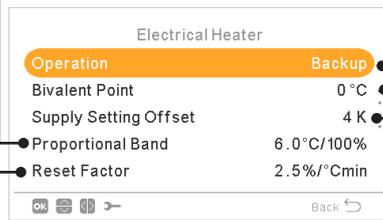
- Used to guarantee setting temperature achievement without surpassing its value. Higher values imply less utilization of heater.

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.

Maximum heater step:

- (Only in case of Backup option).
- To limit the maximum heater step it can be switched ON regardless of the real Heater demand.



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:

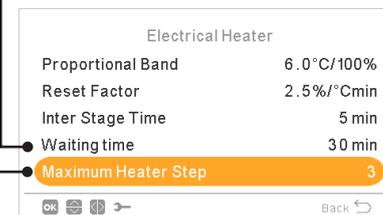
- Electric heater is enabled to operate in case ambient temperature goes below this value. Only in case of Backup option.

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.

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" °C 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" °C 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.

Total Control	
DHW Maximum Time	60 min
DHW Minimum Time	5 min
DHW Max storage T.	60 °C
ΔT Connection	10 °C
ΔT Disconnection	5 °C

**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.

Total Control	
ΔT Connection	10 °C
ΔT Disconnection	5 °C
Panel Minimum T.	15 °C
Panel Overheat T.	80 °C
Panel antifreeze T.	4 °C

**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 "9.13.4.10 Inputs, Outputs and Sensors configuration"

◆ 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

Boiler Combination	
Bivalent Point	-5 °C
Combination mode	Parallel
Supply Setting Offset	4 °C
Minimum ON Time	2 min
Minimum OFF Time	5 min

**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.

**Wait time for DHW (Only for YUTAKI S):**

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

Boiler Combination	
Minimum ON Time	2 min
Minimum OFF Time	5 min
Waiting time	30 min
DHW by Boiler	<input checked="" type="checkbox"/>
Wait Time for DHW	45 min

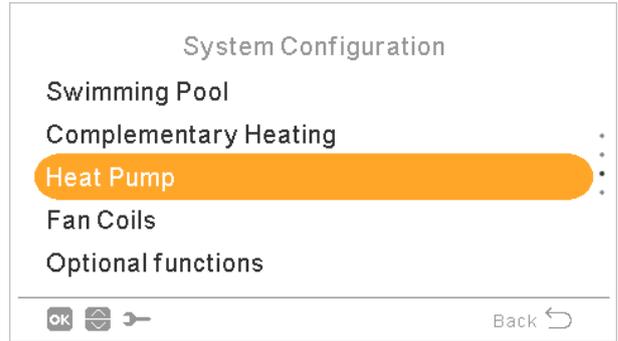
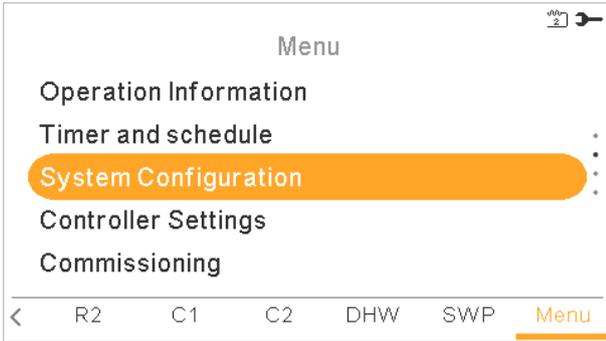
**Waiting time:**

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

**DHW by boiler (Only for YUTAKI S):**

- Control to allow heat DHW by means Boiler.

9.13.4.7 Heat Pump configuration



**Water pump configuration:**

Configure the water pump of the heat pump.

See detailed information in the next page.

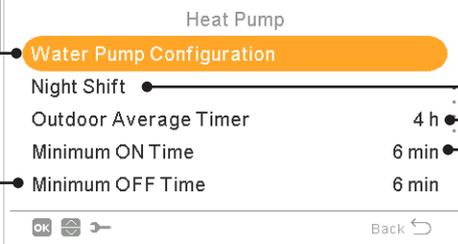
**Minimum OFF time:**

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.

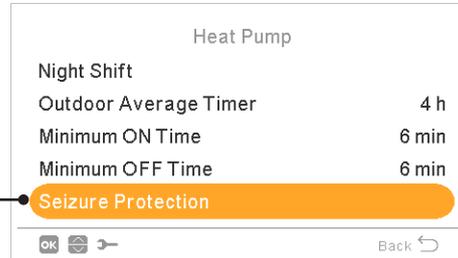
**Seizure protection:**

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).

1 / 2



2 / 2



**Night shift:**

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

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.

**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.

◆ **Water pump configuration**

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

**Overrun Time:**  
Added operation time of water pump after Demand OFF.

**Stop conditions:**

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

**Pump Setup:**  
This option allows user to select hydraulic configuration of the system when hydraulic separator is used.

- **Standard:** WP2 is connected after WP3 by means an hydraulic separator or directly by means Hitachi mixing kit accessory. Whenever WP2 is switched ON, WP3 is also switched ON in order to transfer heat to C2.
- **Parallel:** WP2 is directly connected to the buffer tank in parallel with WP3. Operation of WP3 is independent of the operation of WP2. When this configuration is used, Hitachi mixing kit accessory cannot be used.

Option available only when there is Hydraulic separator configured.

**1 / 2**

Water Pump Configuration

**Operation Mode** Fix

Space Speed 100 %

DHW Speed 60 %

SWP Speed 100 %

Overrun Time 10 min

Back ↩

**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.

▼

**2 / 2**

Water Pump Configuration

Stop Conditions Thermo OFF

Minimum OFF Time 40 min

Minimum ON Time 10 min

Pump Setup Standard

**Pumps during DHW**

Back ↩

**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)

**Pumps during DHW:**  
This option allows to stop Water Pumps during DHW operation. Water pumps that are allowed to stop are the ones that are not directly involved to DHW heating-up procedure. This is WP2 and WP3 depending on the hydraulic configuration.

◆ **Night Shift**

Night Shift

**Capacity** 75 % Ratio of reduction in heat pump capacity

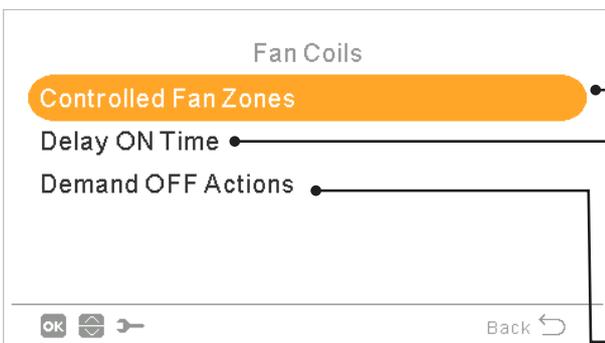
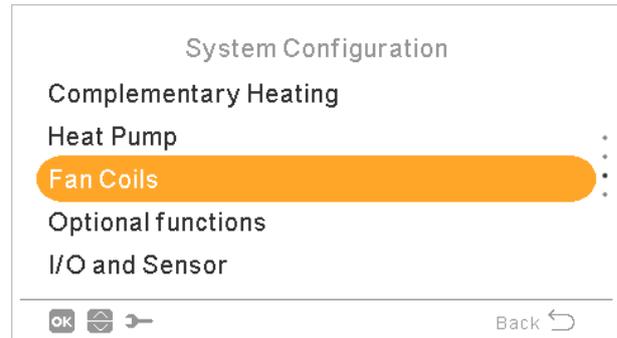
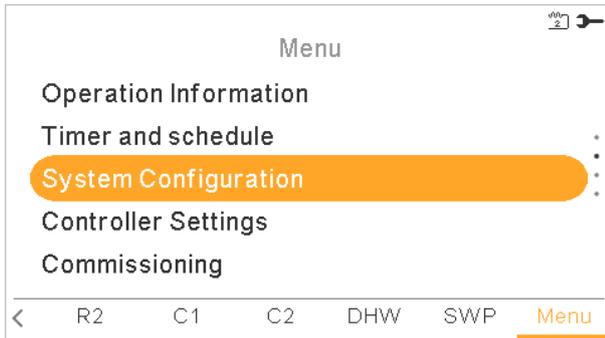
**Timer**  Status of activation of Night Shift (reduction of compressor load in order to reduce operation noise during the night hours).

**Starting Time** 20:00 Starting time of Nigh Shift operation

**Stopping time** 08:00 Ending time of Night Shift operation

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### 9.13.4.8 Fan coils



#### Controlled fan zones:

Fan coil usage assignment in function of Mode and Room:

- Deactivated
- Heating
- Cooling
- Heating & Cooling

#### Delay ON time:

Delay time to start Fan operation for Fan 1 or Fan 2 only in heating operation. Purpose of this control is to make sure water temperature at fan coil is hot enough before fan is started in order to ensure user comfort.

#### Demand OFF Actions:

The purpose of this control is to enhance user comfort by allowing to stop fan or keep it in operation when Demand OFF conditions by room temperature are fulfilled.

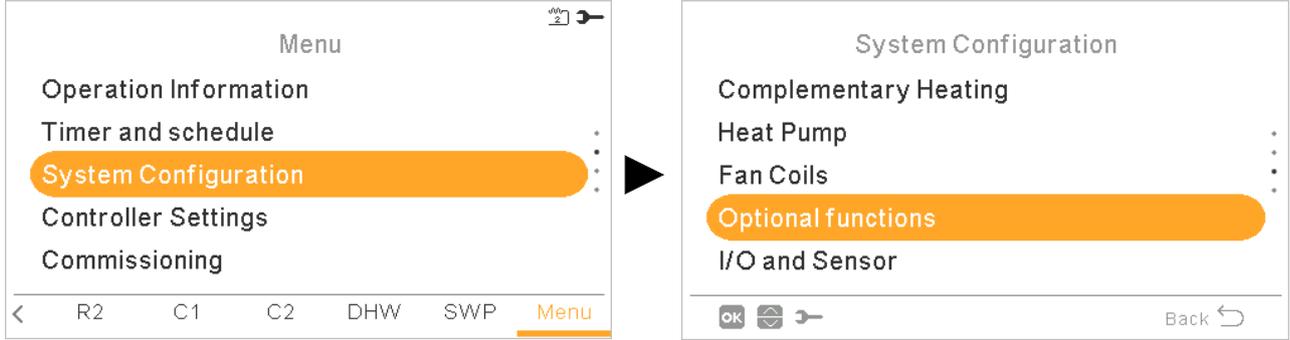
The best user comfort is typically achieved by stopping the fan in heating applications and keeping it in operation for cooling operations.

Configure the Demand OFF action for Heating or Cooling operation in Room 1 or Room 2.

- Nothing
- Stop fan

### 9.13.4.9 Optional functions configuration

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



**Hydraulic separator:**  
Enable or disable a Hydraulic separator or a buffer tank. See detailed information below.

**Smart function:**  
To block or limit the heat pump or increase demand due to electricity availability. See detailed information on Smart function chapter.

**1 / 2**

Optional functions

Hydraulic Separator

Energy Configuration

Smart Function

Heating Auto On/Off

Auto Heat/Cool

Back ↩

**2 / 2**

Optional functions

Smart Function

Heating Auto On/Off

Auto Heat/Cool

Hot Water Tank

Emergency Operation

Back ↩

**Energy configuration:**  
Setup of power consumption readings. See detailed information below.

**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. See detailed information below.

**Auto Heat/Cool:**  
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.

**Hot water tank:**  
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.

#### ◆ Hydraulic separator

**DHW Tank position:**

This selection option is not available for YUTAKI S COMBI since DHW tank is located before buffer tank in any case.

**Pre:** DHW tank and the 3 way valve are located between Heater Plate exchanger and buffer tank.

**Post:** DHW tank and the 3 way valve are located after buffer tank.



**Hydraulic separator status:**

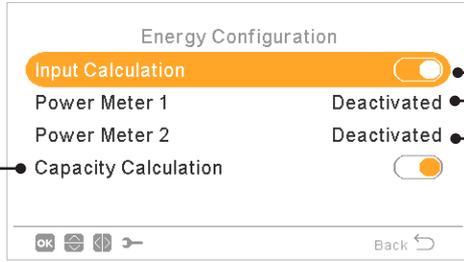
Enable if there is a Hydraulic separator or a buffer tank installed. Check that WP3 is set in output 2 (see section "9.13.4.10 Inputs, Outputs and Sensors configuration").

◆ Energy 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.

Due to the estimation, values may differ from real ones.



Input calculation:

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 Deactivated 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 "9.13.4.10 Inputs, Outputs and Sensors configuration").

◆ Smart Function

Status:

Enable or disable smart function.

Trigger type:

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

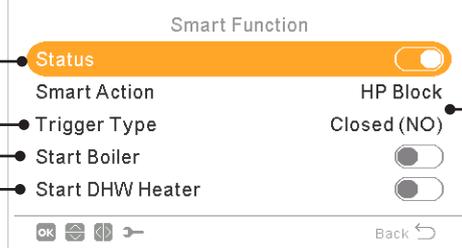
Start boiler:

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 / 3

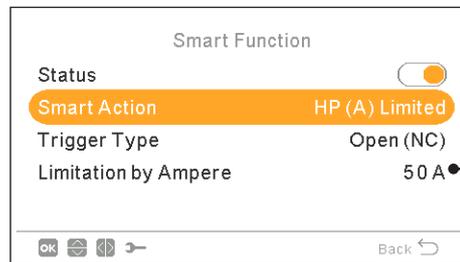


Smart Action:

Check that Smart Act/SG1 is set in input 5 (see section "9.13.4.10 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. See 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 / 3



Limitation by ampere:

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

3 / 3



SG Heating offset:

To adjust Space Heating setting temperature increase when SG ready is in Low price mode.

SG DHW offset:

To adjust DHW setting temperature increase when SG ready is in Low price mode.

SG Cooling offset:

To adjust Space Cooling setting temperature decrease when SG ready is in Low price mode.

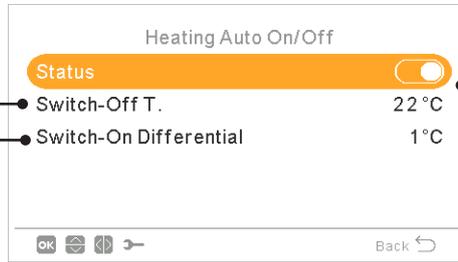
◆ Heating Auto On / Off

Switch-Off Temperature:

- 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.



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.

◆ Auto Heat/Cool

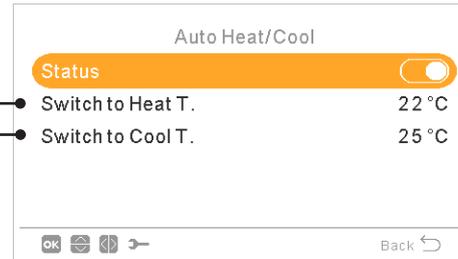
Only available in units capable of heating and cooling operation, and when cooling operation is enabled.

Status:

- Enable or disable auto heat/cool.

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.



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.

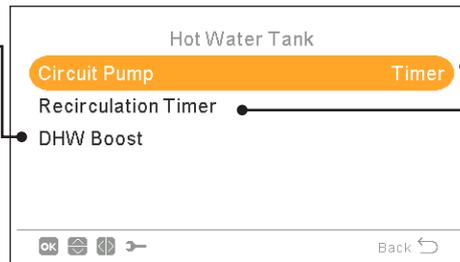
◆ Hot water tank optional functions

**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 "9.13.4.10 Inputs, Outputs and Sensors configuration")
- **Boost setting:** DHW temperature setting for the Boost function.



**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 "9.13.4.10 Inputs, Outputs and Sensors configuration").

- Deactivated.
- 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:**

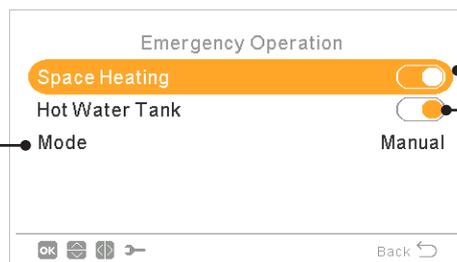
- Frequency: Allows to select when timer is applied (Everyday, weekend, workday).
- Starting Time: When the water pump circulation starts.
- Stopping Time: When the water pump circulation stops.
- Operation: In case of ON, means that water pump is always ON between "Starting Time" and "Stopping Time". 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).



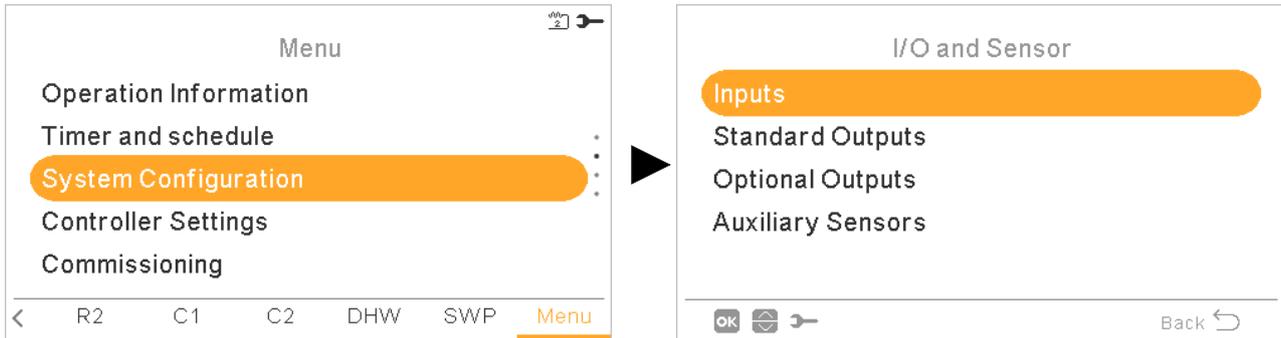
**Space Heating:**

Enable or disable emergency operation for space heating. Only available in case "Heating source" on "9.13.4.6 Complementary Heating configuration" contains "Electrical heater or boiler" option.

**Hot water tank:**

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

### 9.13.4.10 Inputs, Outputs and Sensors configuration



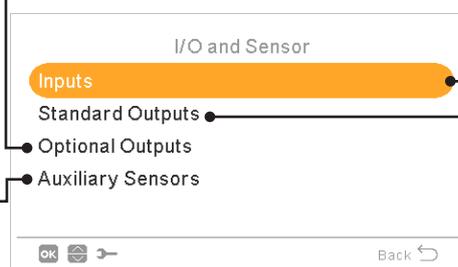
#### Optional outputs:

There 4 additional available outputs to set. These 4 additional outputs are not wired to the YUTAKI terminal board.

In order to use them it is required accessory (field supplied). Its configuration follow same constrains as Standard outputs.

#### 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.

#### Standard Outputs:

There are 4 available outputs to set already wired to the terminal board. There are conditions of setting depending on the installation.

#### ◆ List of available inputs:

- **Deactivated**
- **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.
- **Drain pump**: System forbids operation and alarm 85 is triggered in case signal is closed for more than 30 seconds. Purpose of this input is to be used in conjunction with Water float switch (field supplied) located at drain pan.

**◆ List of available outputs:**

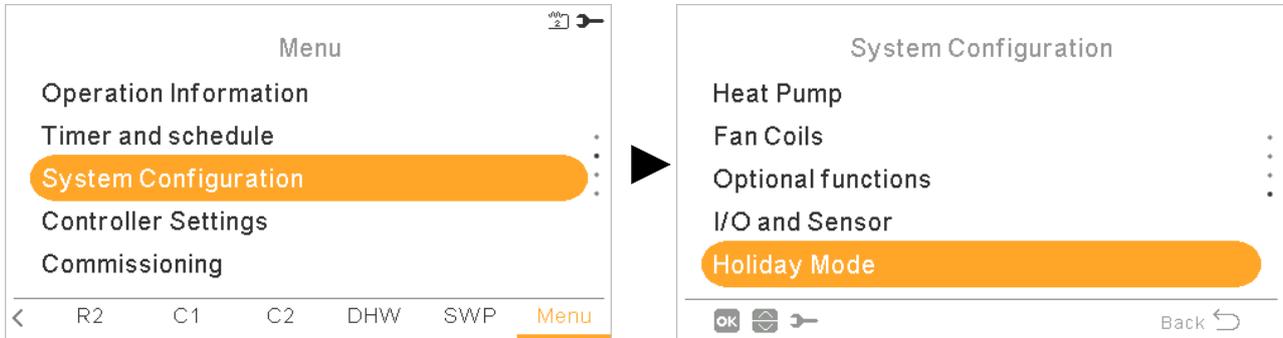
- **Deactivated**
- **SWP 3WV:** (Fixed in output 1 if swimming pool is enabled): Signal control of the 3-way valve of the swimming pool.
- **Water pump 3:** (Fixed in output 2 if hydraulic separator or buffer tank is installed): Signal control of the water pump for hydraulic separator or buffer tank.
- **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.
- **Fan 1 Low:** Signal is active when fan coil speed selected for Circuit 1 is set to Low.
- **Fan 1 Medium:** Signal is active when fan coil speed selected for Circuit 1 is set to Medium.
- **Fan 1 High:** Signal is active when fan coil speed selected for Circuit 1 is set to High.
- **Fan 2 Low:** Signal is active when fan coil speed selected for Circuit 2 is set to Low
- **Fan 2 Medium:** Signal is active when fan coil speed selected for Circuit 2 is set to Medium.
- **Fan 2 High:** Signal is active when fan coil speed selected for Circuit 2 is set to High.
- **Constant Heating:** Signal is active in case operation mode of LCD controller is set to Heating.
- **Constant Cooling:** Signal is active in case operation mode of LCD controller is set to Cooling.

**◆ List of available sensors:**

- **Deactivated**
- **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.

### 9.13.5 Holiday mode

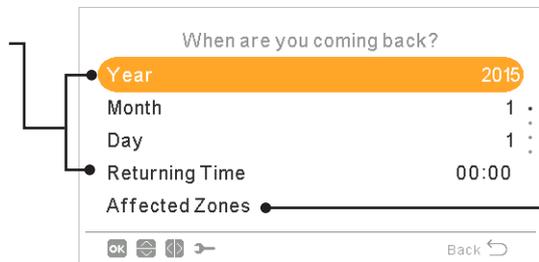
This menu allows to configure the date, time and the temperature conditions for the holiday come back.



1 / 2

**Holiday Mode:**

- Configure holiday come back
- Year
- Month
- Day
- Returning time



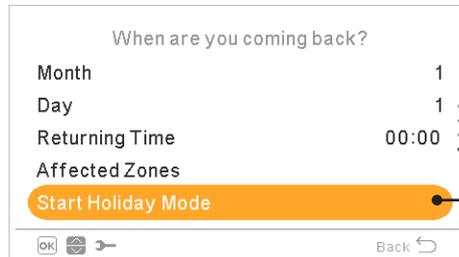
**Affected zones:**

Enable (switch off) or disable (switch on) the zones during the holiday period.

- Circuit 1 / 2
- Room 1 / 2
- Room 1 / 2 Setting temperature
- Hot water tank
- Swimming pool



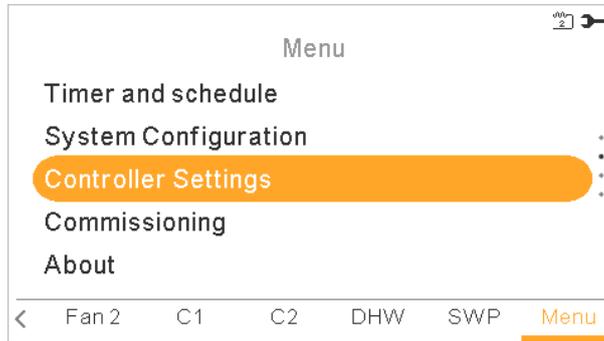
2 / 2



Start / Stop holiday mode

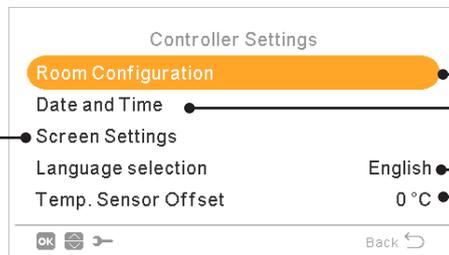
### 9.13.6 Controller settings

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



**Screen settings:**

- Display theme (light / dark / auto)
- Backlight time
- Backlight bright
- Contrast
- Brightness
- ON LED light
- Beep on touch volume



**Room Configuration:**

- Room names: create or edit a name for circuit 1 or circuit 2.
- Synoptic view icons: selection of the icon shown in Live view menu for cooling / heating emitters.

**Date and time:**

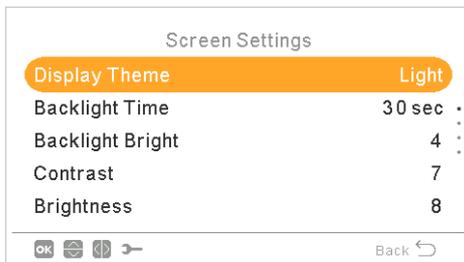
- Adjust date and time
- European summer time

**Selection of the unit controller language.**

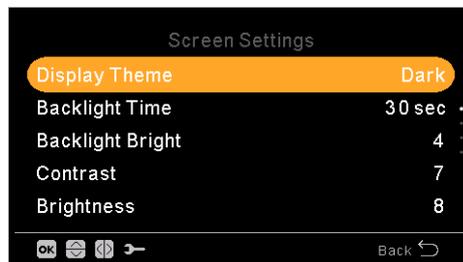
**Temp. sensor offset:**

To apply an offset to the room temperature read by the in build sensor of the controller in order to match real room temperature.

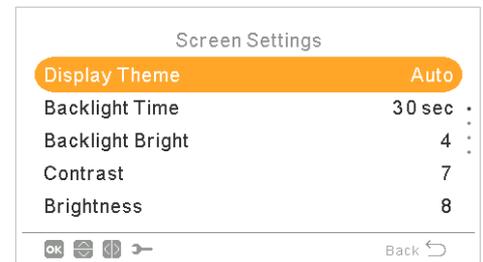
#### ◆ Display theme



Light



Dark



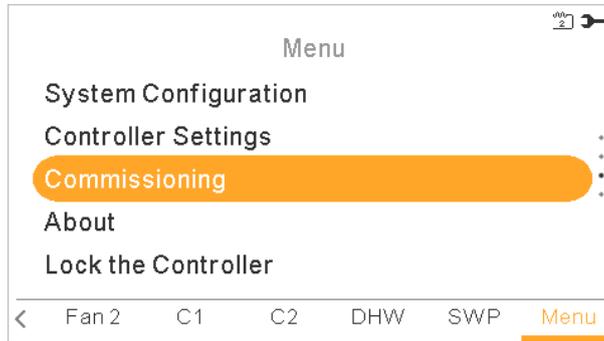
Auto

When Dark theme is selected, background is changed to black, text and icons to white.

When Auto theme is selected, it changes automatically between light (at 8:00 am) and dark (at 20:00 pm)

### 9.13.7 Commissioning

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

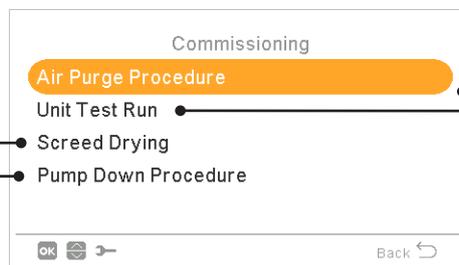


**Screed Drying:**

- Circuit 1 setting temperature
- Circuit 2 setting temperature
- Start screed drying

**Pump down procedure:**

- Duration
- Start pump down



**Air purge procedure:**

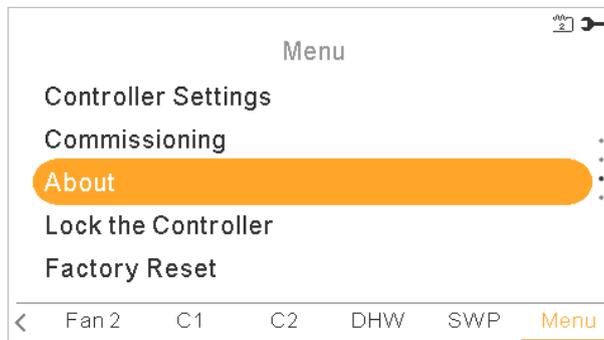
- Duration
- Start air purge

**Unit test run:**

- Duration
- Mode (not available for heating only)
- Start test run

### 9.13.8 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.

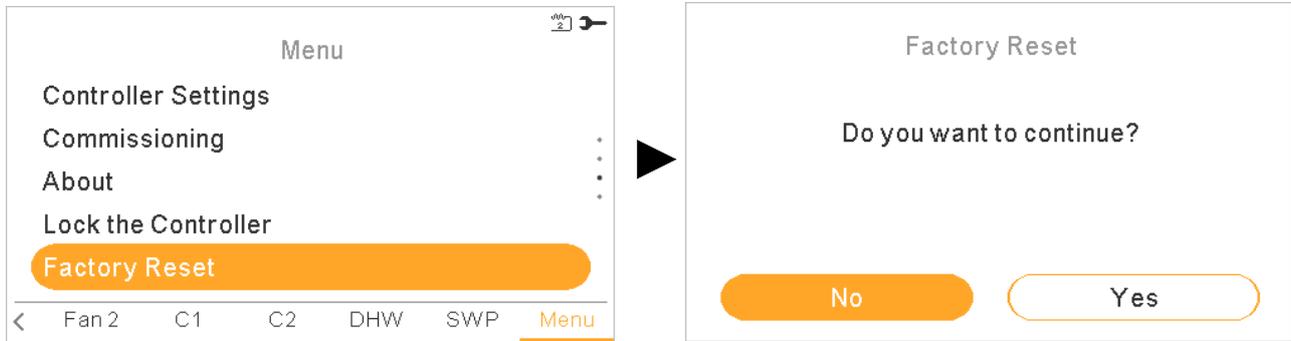


**System information:**

- Unit type
- Unit capacity
- Serial number
- Controller firmware
- Indoor PCB firmware
- Language package
- Refrigerant

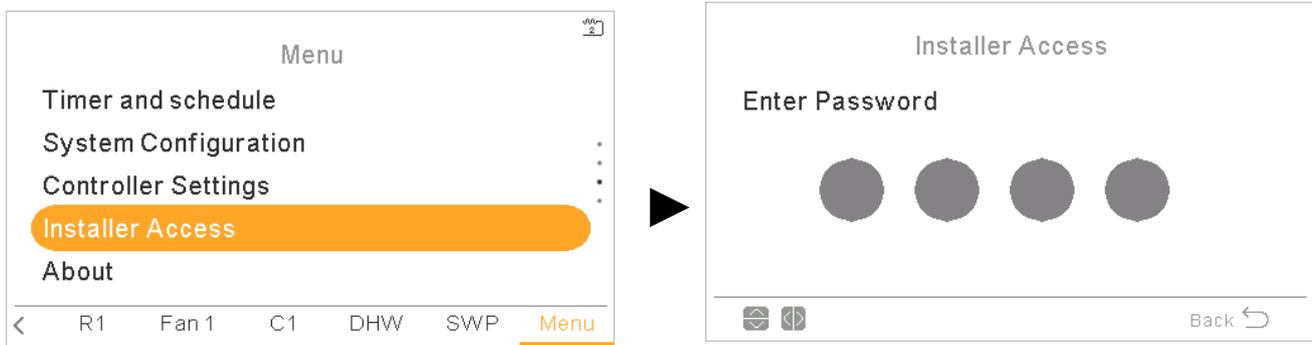
### 9.13.9 Factory reset

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



### 9.13.10 Installer access

Menu to enable the access to configure the system.



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).

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, go to the "Return to user mode" on the main menu.

### 9.13.11 Return to user mode

This function allows to getting out of the “Installer mode”.

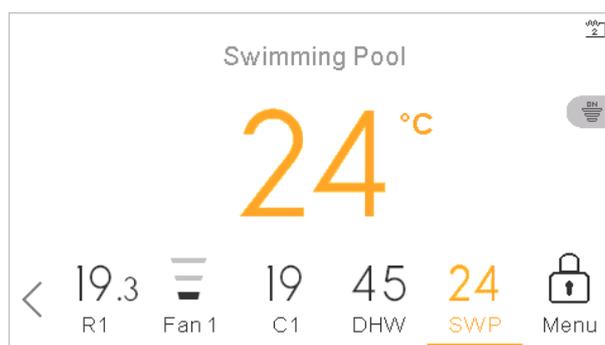


### 9.13.12 Lock the controller

This function is only visible for the installer and allows to lock the menu in case of exhibition. This action can also be launched from central.



When the controller is locked the lock icon  appears instead of the icon menu.



The password requested to unblock the controller is: Right , Down , Left , Right 

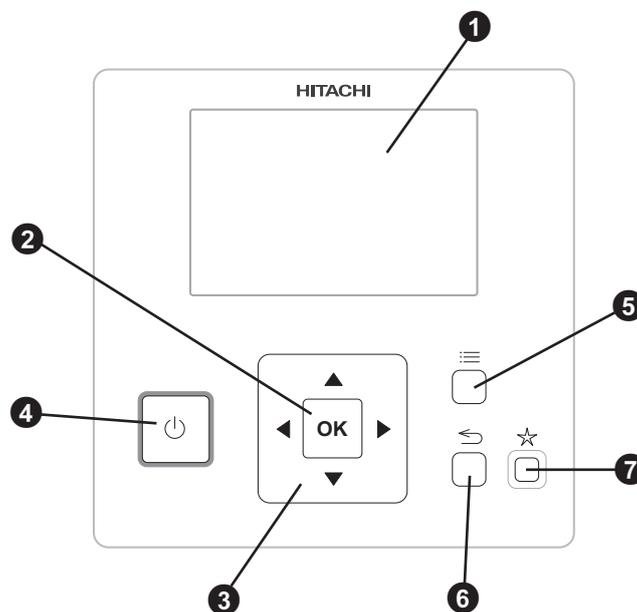
## 10 YUTAKI CASCADE CONTROLLER ATW-YCC-(01-02)

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

Available for the following unit models:

- RWM-(4.0-10.0)NE(-W)
- RWD-(4.0-6.0)NW(S)E-(200/260)S(-K)(-W)
- RASM-(3-6)(V)NE
- RASM-(2/3)VRE
- RWH-(4.0-6.0)(V)NF(W)E

### 10.1 DEFINITION OF THE SWITCHES



**1** Liquid Crystal Display

Screen where controller software is displayed.

**2** OK button

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

**3** Arrows key

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

**4** 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.

**5** Menu button

It shows the different configuration options of the user controller.

**6** Return button

To return to the previous screen.

**7** Favourite button

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

## 10.2 DESCRIPTION OF THE ICONS

### 10.2.1 Common icons

Icon	Name	Explanation	
OFF			Circuit I or II is in Demand-OFF
	Status for circuit 1, 2, DHW and swimming pool.		Circuit I or II is on Thermo-OFF
			Circuit I or II is working between $0 < X \leq 33\%$ of the desired water outlet temperature
			Circuit I or II is working between $33 < X \leq 66\%$ of the desired water outlet temperature
			Circuit I or II is working between $66 < X \leq 100\%$ 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	

### 10.2.2 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	
	Boiler	Auxiliary boiler is working	
	Tariff	Tariff signal informs about some cost conditions of the consumption of the system	
	Local / Full	-	No icon means local mode
			Full mode
	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)	
	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

### 10.3 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.



After that, the “Enter password” message is displayed.

The login password for the Installer is:



Press “OK” to confirm the password.

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

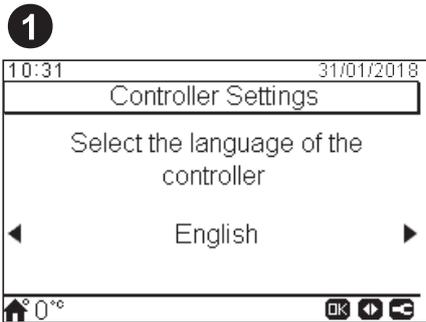


After 30 minutes of inactivity, it is necessary to repeat the log in process. To exit the Installer mode and return to the unit menu, hold down the “↶” button for 3 seconds or go to the “Return to user mode” on the main menu.

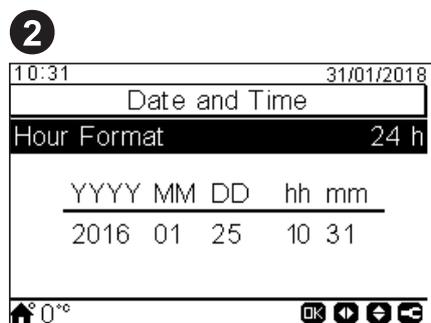
 **NOTE**

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.

## 10.4 CASCADE CONTROLLER CONFIGURATION

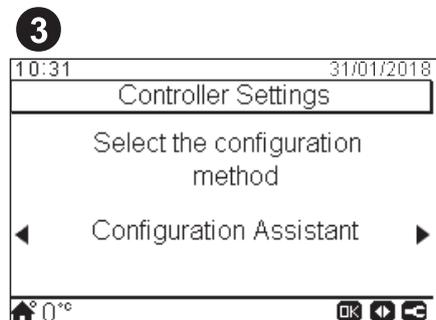


- Select the desired language using the arrow keys.
- Press OK button.

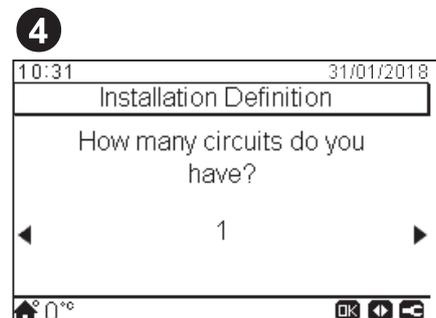


- Select the date and time using the arrow keys.
- Press OK button.

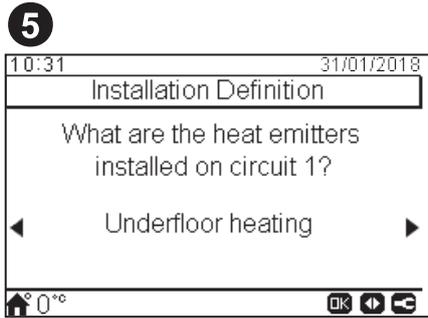
### 10.4.1 Configuration Assistant



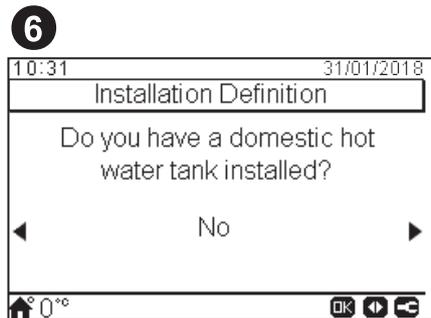
- Select the configuration assistant for an easy configuration.
- Press OK button.



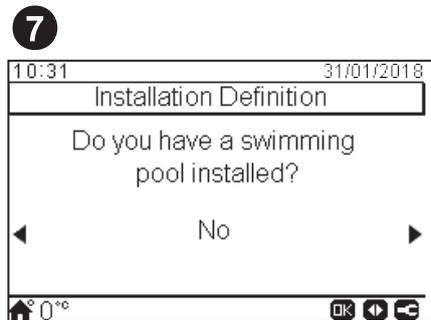
- Select the number of circuits (1 or 2) .
- Press OK button.



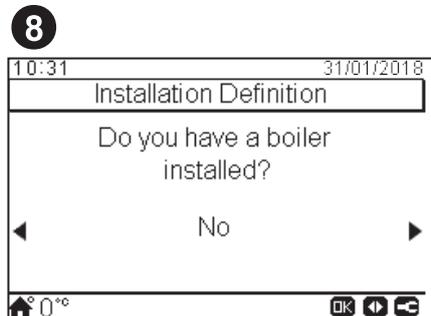
- Select the heat emitters on the circuit 1: Underfloor heating, Fan coils or Radiators.
- Repeat this step in case of circuit 2.
- Press OK button.



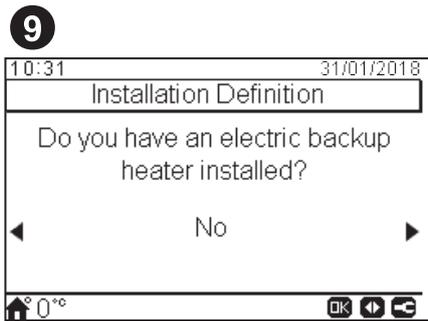
- Select Yes if Domestic Hot Water tank is installed.
- Press OK button.



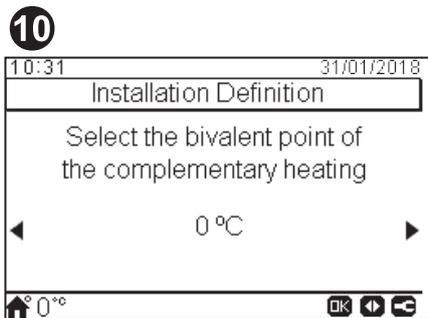
- Select Yes if Swimming Pool is installed.
- Press OK button.



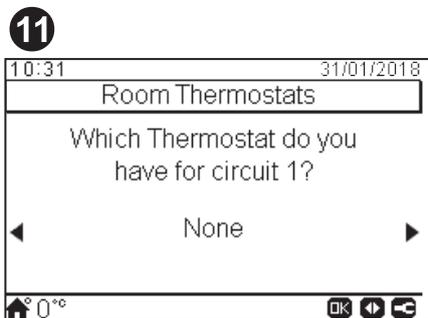
- Select Yes if Boiler is installed.
- Press OK button.



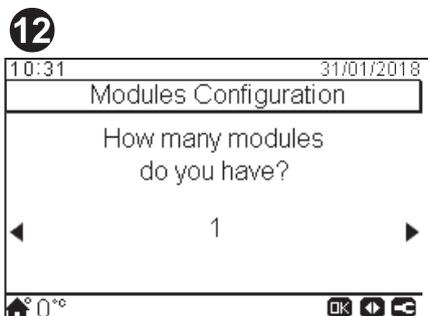
- Select Yes if an electrical backup heater is installed.
- This screen appears only when no boiler is installed.
- Press OK button.



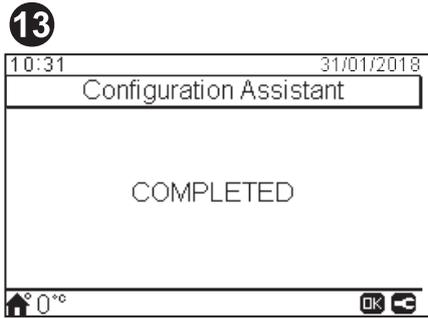
- Select the bivalent point for boiler or electric backup heater (from -20 °C to 20 °C).
- Press OK button.



- 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.

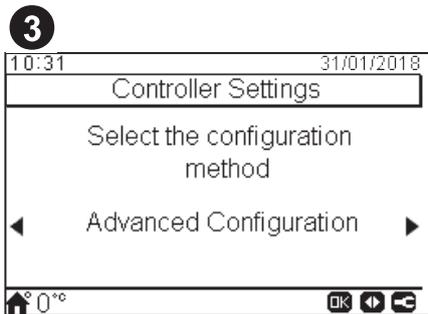


- Select the number of modules installed (from 1 to 8)
- Select OK button.



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

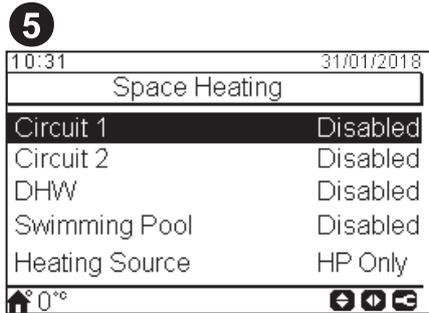
#### 10.4.2 Advanced Configuration



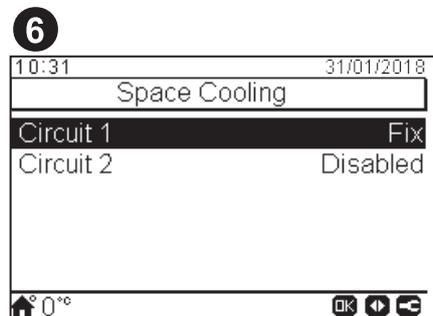
- Select the advance configuration for a complete configuration.
- Press OK button.



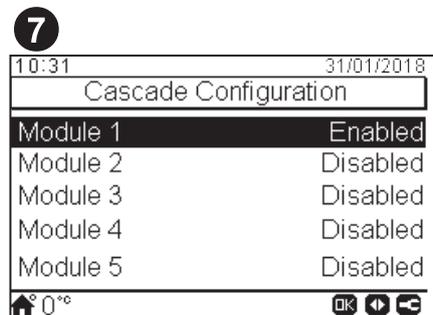
- Select the favourite action: Eco/Comfort, Timer, DHW Boost.
- Select Enabled or Disabled for European summer time.
- Select Next and press OK button .



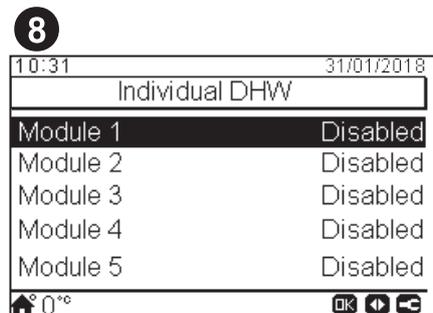
- Configure circuit 1 and circuit 2 OTC: Disabled, Points, Gradient, Fix.
- Enable or disable DHW and Swimming Pool.
- Select the heating source: HP only, HP + EH, HP + Boiler.
- Configure electrical heater use: Disabled or Backup.
- Configure Boiler type: Parallel or Serial.
- Configure Solar Combination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



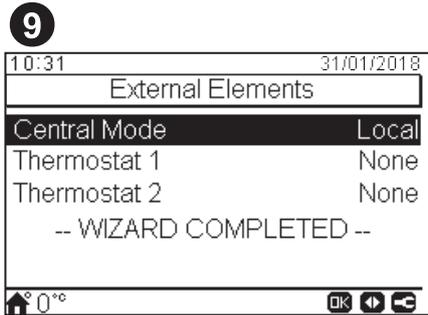
- Configure circuit 1 and circuit 2 options: Disabled, Points, Gradient, Fix.
- Only available for cooling mode.



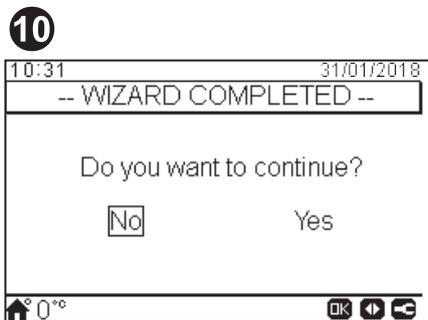
- Enable or disable the desired modules (module 1 is enabled by default)
- Select Next and press OK button.



- Enable or disable the individual DHW for each module.
- Select Next and press OK button.

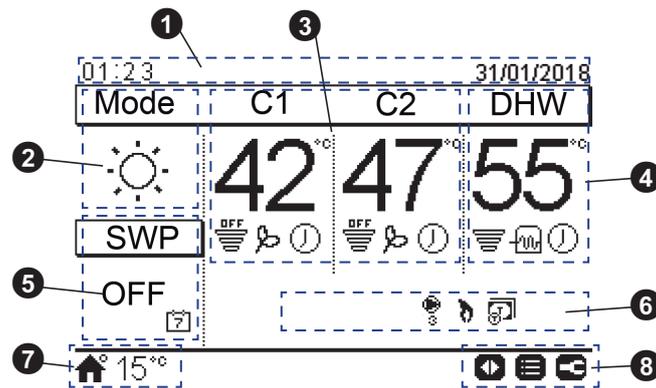


- Configure Central mode options: Local or Full.
- Configure thermostat (1 or 2): None, wired or wireless.
- Check RT address if wired is selected.
- Select Wireless binding ID (1 or 2) if wireless is selected.
- Select Wizard complete and press OK button.



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

## 10.5 MAIN SCREEN



### 1 Time and date

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

### 2 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).

### 3 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.

### 4 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.

### 5 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.

### 6 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...

### 7 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.

### 8 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.

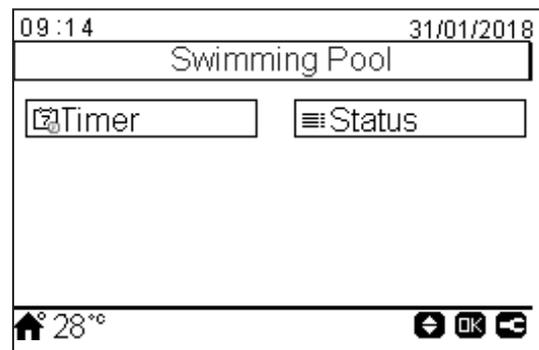
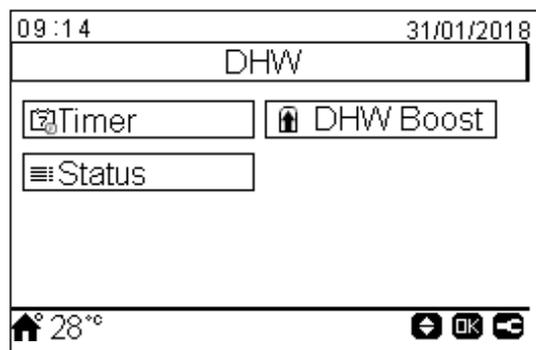
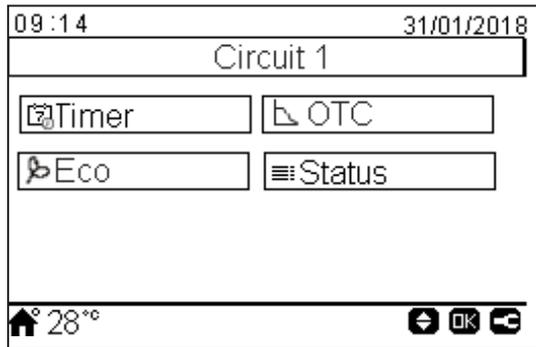
### OK button

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.

### 10.5.1 Quick action function

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

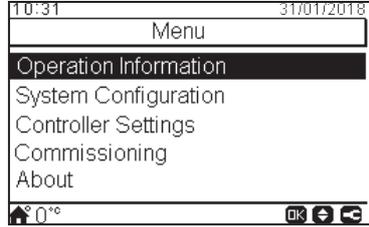


-  **Timer:** Menu for the selection and configuration of simple timer and schedule timer.
-  **OTC:** Menu for the OTC selection. Only available for circuit 1 and circuit 2 in Comprehensive view.
-  **Eco** /  **Comfort:** Activation of the Eco/Comfort Mode. Only available for circuit 1 and circuit 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.

## 10.6 MENU

### 10.6.1 Operation information

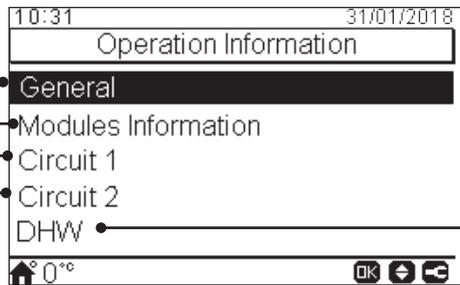
In operation information menu it is possible to find the most important setting parameters of the system besides the information of the operation conditions.



**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



**Detailed information modules:**

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

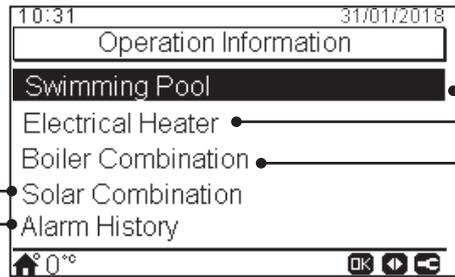
**Detailed information about DHW:**

- 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



**Detailed information about Solar combination:**

- Operation (Demand ON/OFF)
- Solar Panel temperature

**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

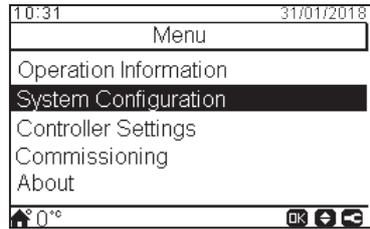
Shows a list of the alarm history of the system

**Detailed information about Boiler combination:**

- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature

### 10.6.2 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

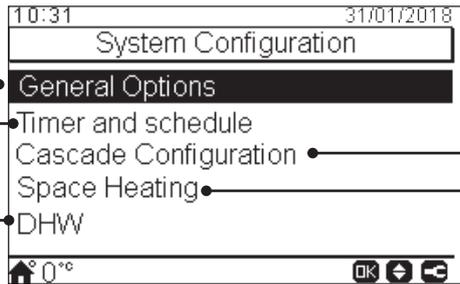
**Timer and schedule configuration:**

- 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

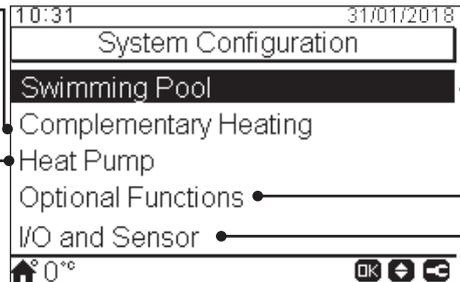
2 / 2

**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

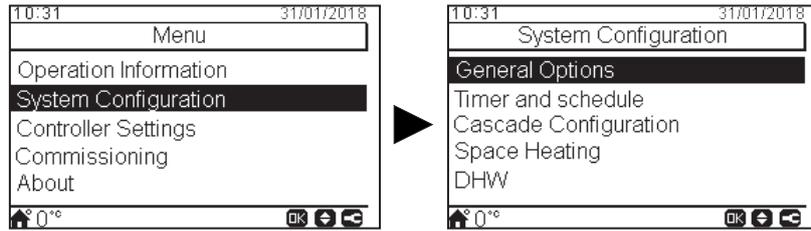
**Optional functions configuration:**

- System
- Space functions
- DHW
- Emergency Operation

**I/O and Sensor configuration:**

- Inputs
- Outputs
- Auxiliary sensors

### 10.6.2.1 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 °C)

#### 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

#### Central operation:

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

### ◆ 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.

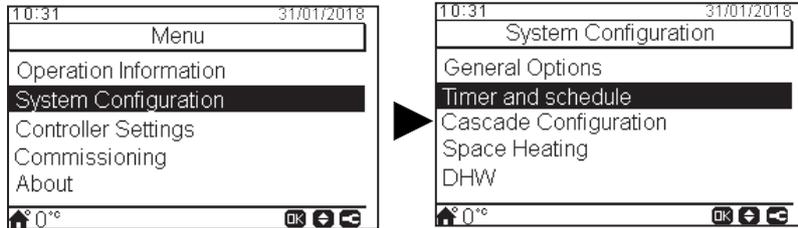
**Maximum compensation factor heat + and -:** Maximum difference between room temperature and setting temperature. In case that the difference between room temperature and setting temperature is higher than this value, the YUTAKI unit takes the selected value as the maximum.

**10.6.2.2 Timer and schedule configuration**

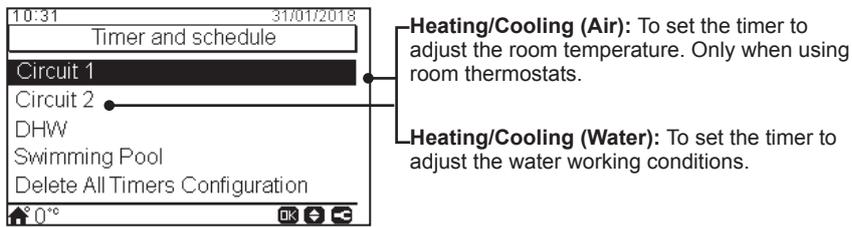
**i NOTE**

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.



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



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

**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

**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.

Day	Status	Temperature
Mon	Off	51°C
Tue	Off	51°C
Wed	Off	51°C
Thu	Off	51°C
Fri	Off	51°C
Sat	Off	Off
Sun	Off	Off

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.

From	To	Status	Setting
12:00	( 06:00 )	On	45

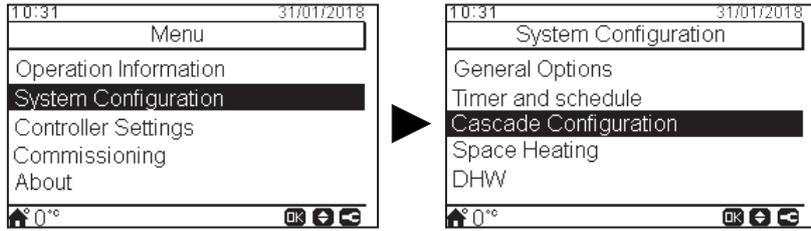
Timer configuration as Setting temperature

From	To	Status	Mode
12:00	( 06:00 )	On	Eco

Timer configuration as Mode

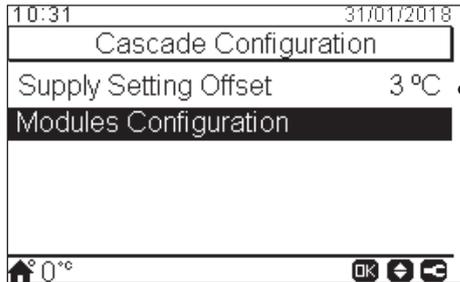
Pressing the “Menu” button during the edition of the timer events for a given weekday displays a menu to copy the daily pattern to other weekdays or to suppress the selected timer event.

◆ **CASCADE configuration**



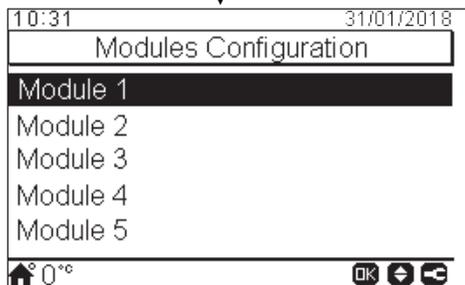
**Modules configuration:**

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



**Supply setting offset**

- To set YUTAKI Slave Units to work at a setting temperature higher than setting temperature determined by YUTAKI CASCADE CONTROLLER
- 3 °C by default (from 0 to 15 °C)



**Module status:**

- Enable or disable the module.

**Refrigerant cycle address:**

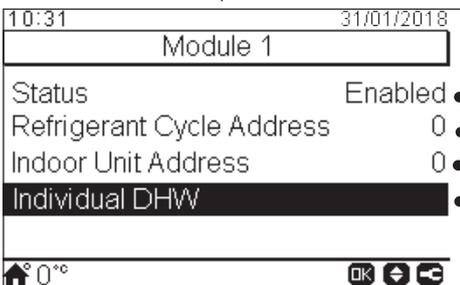
- Set the refrigerant cycle address for each module, making sure that the setting is common with that of the outdoor (DSW4-RSW1) and indoor (DSW15 – RSW2) units which are part of the module.

**Indoor unit address:**

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

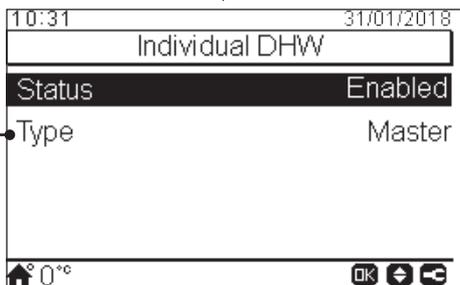
**Individual DHW:**

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



**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.

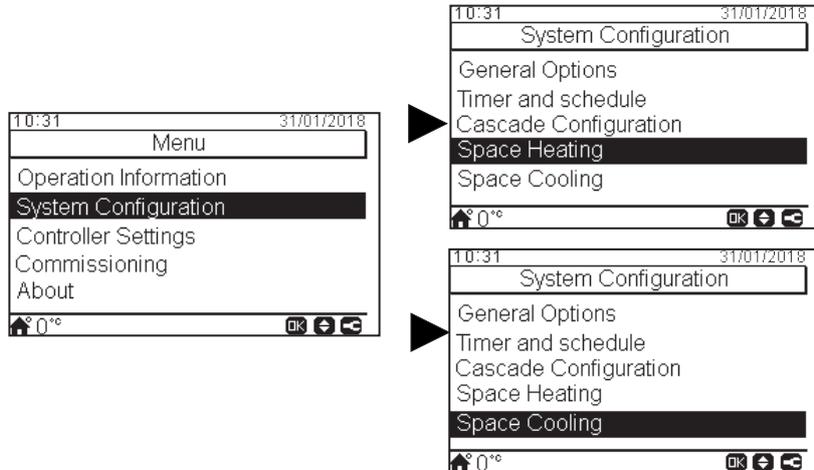


**Individual DHW status:**

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

### 10.6.2.3 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

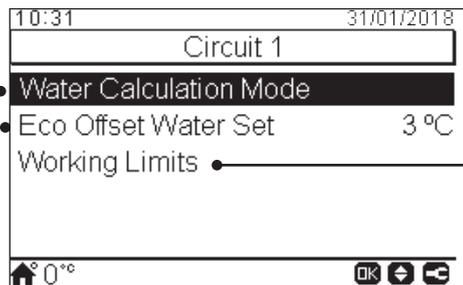
See detailed explanation below.

**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.

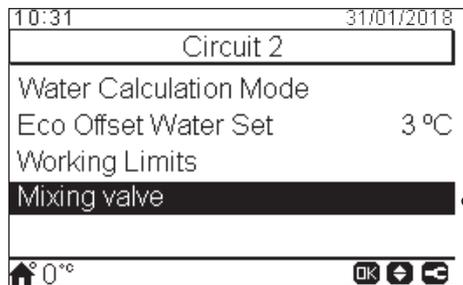
- Range: -10 ~ 10



**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).

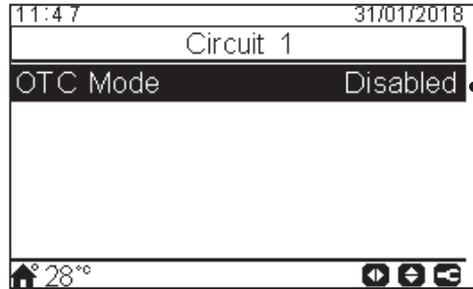
Values are adjusted for the use with the 2nd zone mixing kit accessory ATW-2KT-05. It is highly recommended not to change these values.

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 °C (5 °C by default).

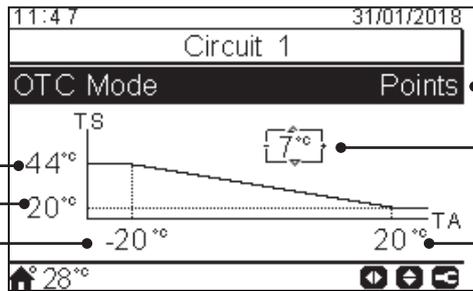
◆ Water calculation mode

**Disabled**



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.

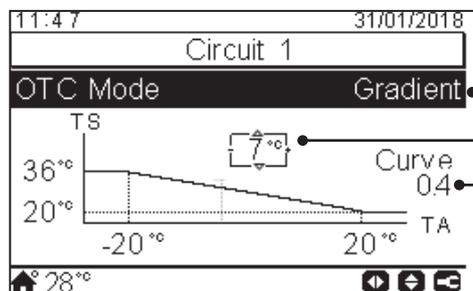
Use the down arrow key to select the parameter to modify. Then modify the value using the left and right arrow keys.

Set point at high ambient temperature — 44°C  
 Set point at low ambient temperature — 20°C  
 Low ambient temperature — -20°C

Vertex offset — 7°C

High ambient temperature — 20°C

**Gradient**



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

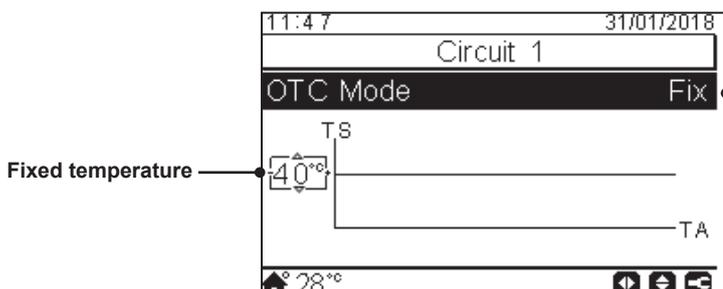
User can only edit the gradient variable and it will automatically set the values for the other 4 variables on the chart.

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

Vertex offset — 7°C

Gradient curve — 0.4

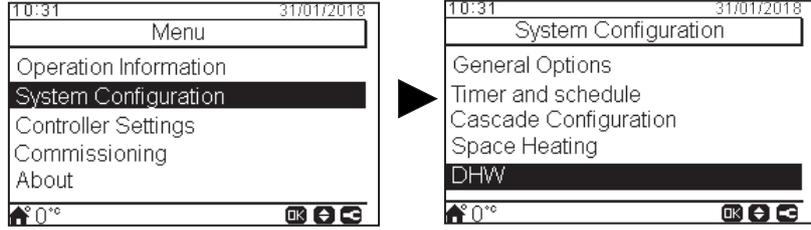
**Fix**



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

Fixed temperature — 40°C

10.6.2.4 Domestic Hot Water (DHW) configuration



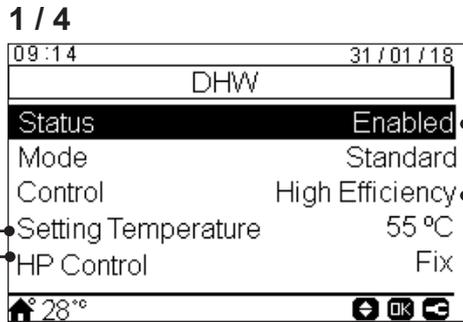
**Setting temperature:**

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 15° 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 adjusted in case HP Control is Fix.



**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 difference 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.

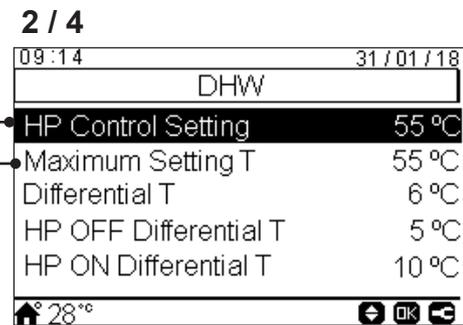


**HP Control setting:**

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.

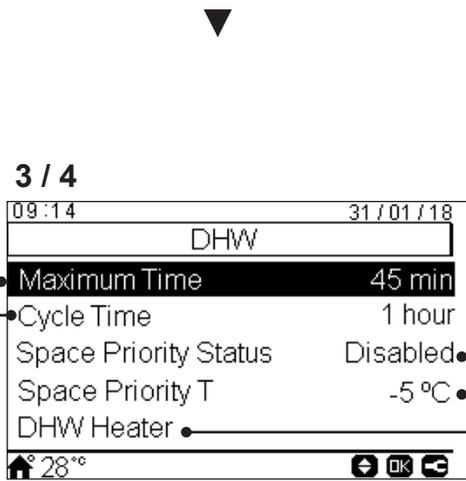
- Range: OFF, 5 ~250 min
- Only in High Speed control and Standard mode.

**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.



**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:**

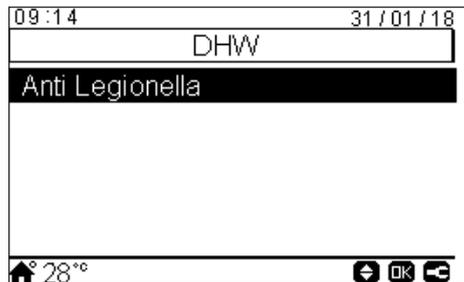
Threshold value of outdoor ambient temperature for the activation of the space priority function.

- Range: -20~0 °C
- 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**



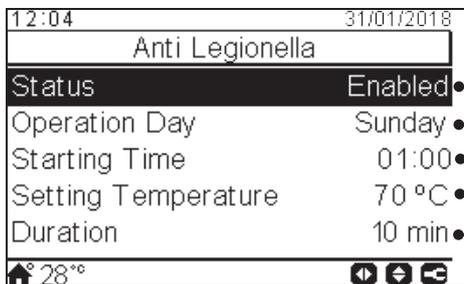
**Anti Legionella:**

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.

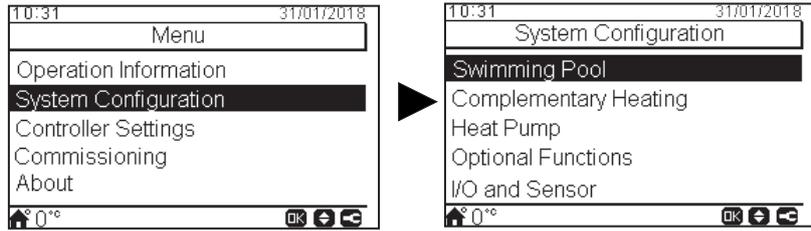
See the possible configurable parameters below.

**◆ Anti Legionella function**



- 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.

### 10.6.2.5 Swimming Pool configuration



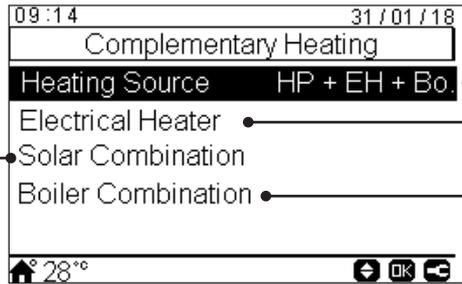
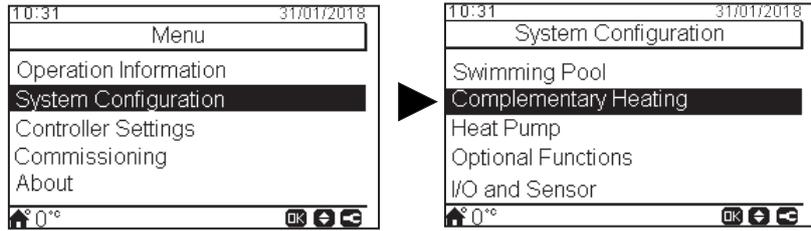
09:14	31/01/18	Swimming Pool
Status	Enabled	
Setting Temperature	24 °C	
Offset Temperature	15 °C	

**Status:**  
 Enable or disable swimming pool.  
 Set input 3, output 1 and sensor 2. (see section ["10.6.2.9 Setup of inputs, outputs and sensors"](#))

**Setting temperature:**  
 Adjustment of the swimming pool water temperature setting.  
 • Range: 24~33 °C

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

### 10.6.2.6 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 *"10.6.2.9 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 *"10.6.2.9 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"*.

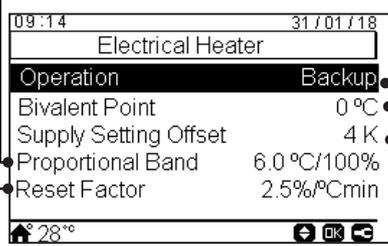
#### ◆ Electrical heater

**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.



**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:**

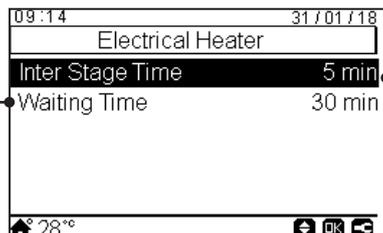
- Electric heater is enabled to operate in case ambient temperature goes below this value. Only in case of Backup option.

**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.

**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" °C 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" °C 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 °C
ΔT Connection	10 °C
ΔT Disconnection	5 °C
28°	

09:14	31/01/18
Total Control	
Panel Minimum T	15 °C
Panel Overheat T	80 °C
Panel antifreeze T	4 °C
28°	

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 "10.6.2.9 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 °C
Combination mode	Parallel
Supply Setting Offset	4 °C
Minimum ON Time	2 min
Minimum OFF Time	5 min
28°	

09:14	31/01/18
Boiler Combination	
Waiting Time	30 min
DHW by Boiler	Disabled
Wait Time for DHW	45 min
28°	

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

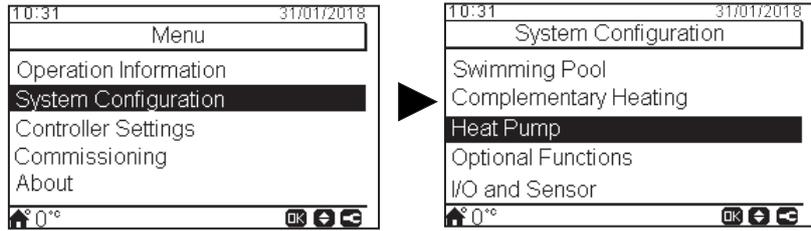
DHW by boiler:

- Control to allow heat DHW by means Boiler

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.

**10.6.2.7 Heat Pump configuration**



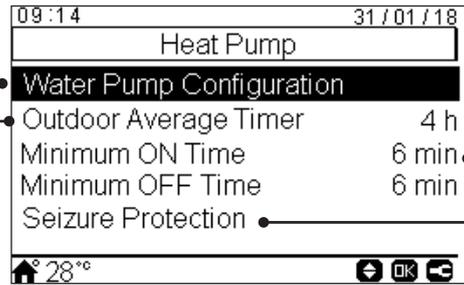
**Water pump configuration:**

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.

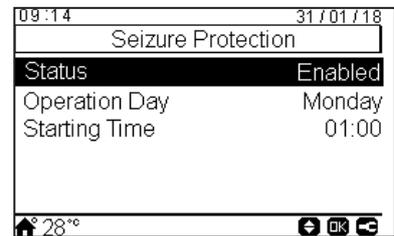
The average value of outdoor temperature sampled over a selected period (between 1 and 24 hours) is used for the calculation of weather-dependent set point temperature.



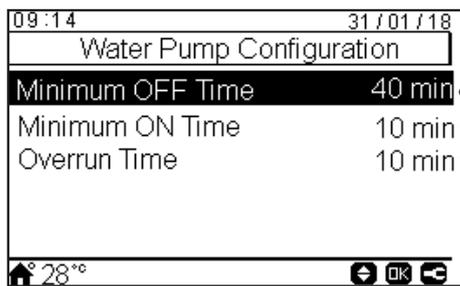
**Minimum ON time:** In order to reduce a possible compressor damage, demand ON cycles can be reduced by determining the time that must pass before accepting new Demand OFF.

**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).



**◆ Water pump configuration**



**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.

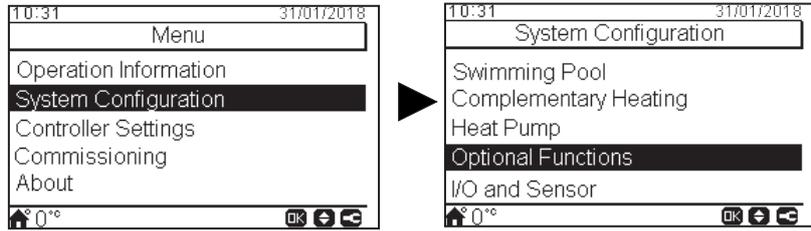
- Only when Economic mode is active (DSW)

**Overrun Time:**

Added operation time of water pump after Demand OFF.

### 10.6.2.8 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 "10.6.2.9 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 a 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.

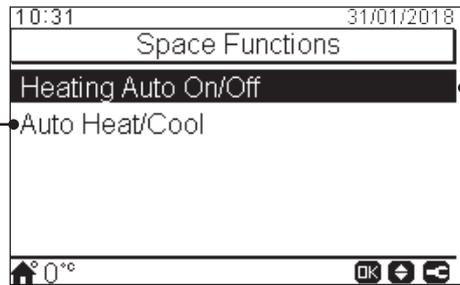
## ◆ Space optional functions

### 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.



### 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.

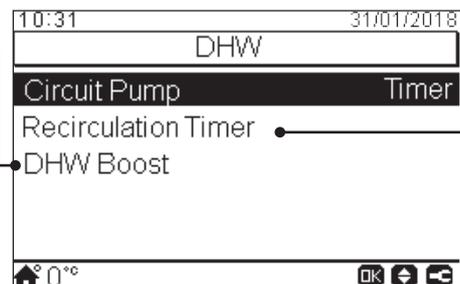
## ◆ DHW optional functions

### 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 ["10.6.2.9 Setup of inputs, outputs and sensors"](#))
- **Boost setting:** DHW temperature setting for the Boost function.



**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 ["10.6.2.9 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.

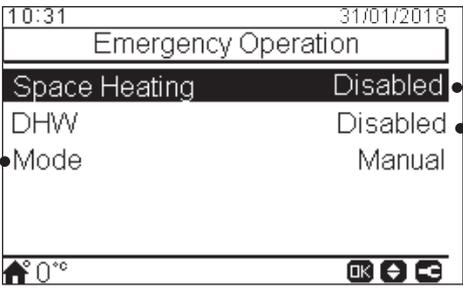
### Recirculation timer:

- **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:

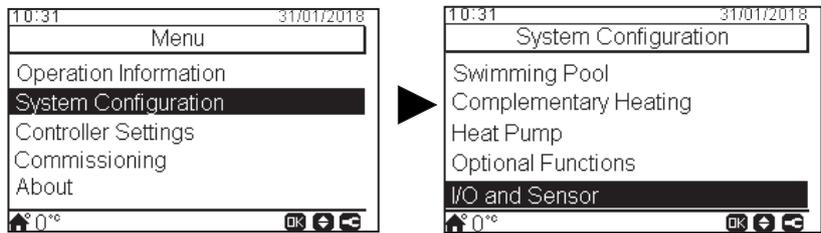
- **Manual:** Emergency operation is active when is manually enabled (by DSW4 pin 4 ON). The emergency mode uses the heater (space heating or DHW) to provide the required heating.
- **Automatic:** Emergency mode operates when there is an event of outdoor unit failure and Demand ON of space heating (enabled)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



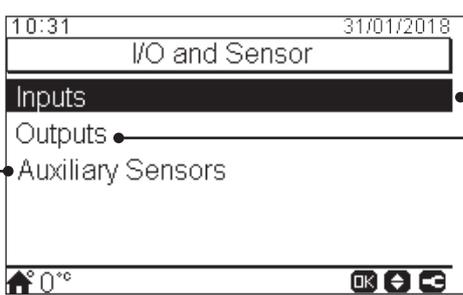
**Space Heating:**  
 Enable or disable emergency operation for space heating. Only available in case "Heating source" on "10.6.2.6 Complementary Heating configuration" contains "Electrical heater option"

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

**10.6.2.9 Setup of inputs, outputs and sensors**



**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.
- **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 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:

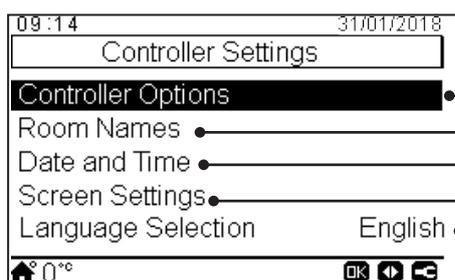
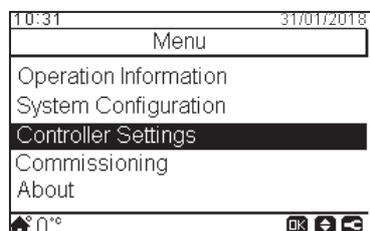
- **Disabled**
- **SWP 3WV:** (Fixed in output 1 if swimming pool is enabled): Signal control of the 3-way valve of the swimming pool.
- **Water pump 3:** (Fixed in output 2 if hydraulic separator or buffer tank is installed): Signal control of the water pump for hydraulic separator or buffer tank.
- **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 units)
- **Heater relay 2:** Signal control of the Space heating heater 2 (Only for YUTAKI S80 or YUTAKI M 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.

## 10.6.3 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

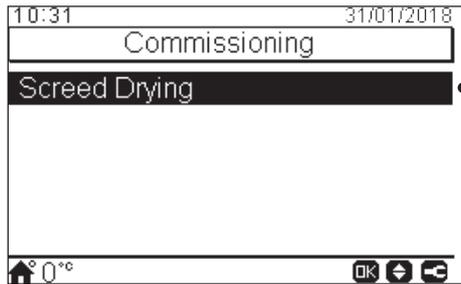
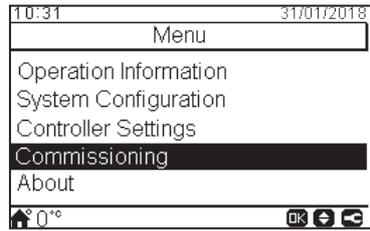
#### Screen settings:

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

#### Selection of the unit controller language.

### 10.6.4 Commissioning

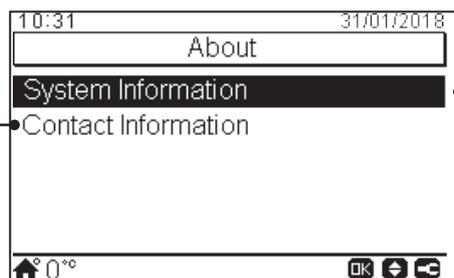
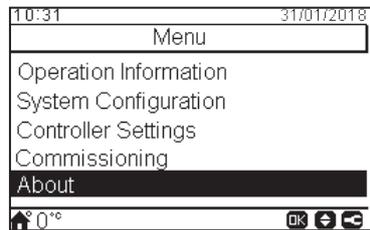
Under the commissioning menu it is possible to adjust the several parameters:



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

### 10.6.5 About

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

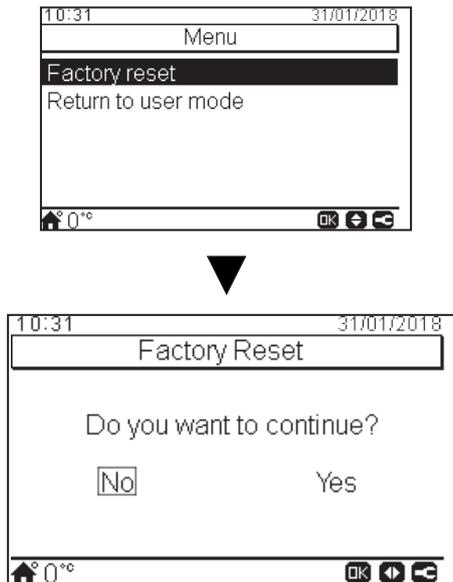


**Contact information:**  
It is possible and recommendable to fill this information providing a contact phone to the user.

- System information:**
- Type
  - Modules type
  - System capacity
  - Controller firmware
  - Indoor PCB firmware
  - Language package

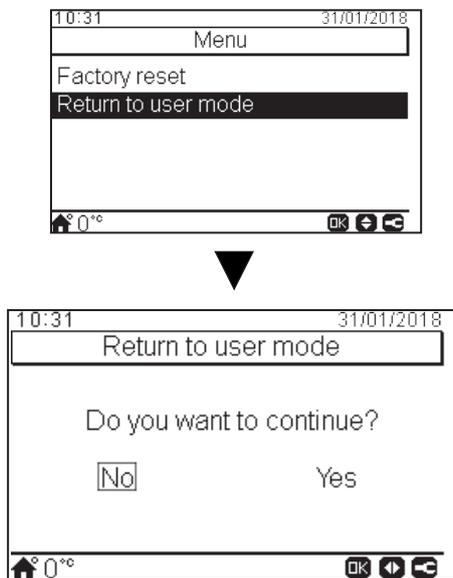
### 10.6.6 Factory reset

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



### 10.6.7 Return to user mode

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



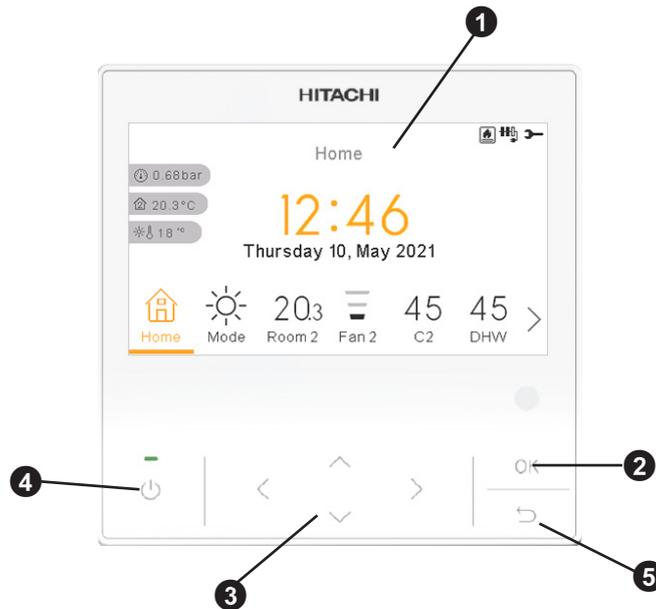
## 11 YUTAKI CASCADE CONTROLLER ATW-YCC-03

The new YUTAKI CASCADE CONTROLLER for YUTAKI series (PC-ARFH2E) is an user-friendly remote control which ensures a strong and safe communication through H-LINK.

Available for the following unit models:

- RWM-(2.0-3.0)N1E
- RWD-(2.0-3.0)RW1E-220S(-K)

### 11.1 DEFINITION OF THE SWITCHES



**1** Liquid Crystal Display

Screen where controller software is displayed.

**2** OK button

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

**3** Arrows key

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

**4** 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.

**5** Return button

To return to the previous screen.

## 11.2 DESCRIPTION OF THE ICONS

Icon	Name	Explanation	
	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 $0 < X \leq 33\%$ of the desired water outlet temperature
			Circuit I or II is working between $33 < X \leq 66\%$ of the desired water outlet temperature
			Circuit I or II is working between $66 < X \leq 100\%$ of the desired water outlet temperature
	Mode		Heating
			Cooling
			Auto
	Setting temperatures	Value	Displays the setting temperature of the circuit 1, circuit 2, DHW and swimming pool
		<b>OFF</b>	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	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	
	Holiday	When some of the zones are set as holiday, it has it's own holiday icon on their icons zone. The holiday icon is also shown on the home screen.	
	Ambient temperature	The ambient temperature of Circuit 1 or 2 is indicated at the right side of this button	
			
	Outdoor temperature	The outdoor temperature is indicated at the right side of this button	
	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	
			
			

Icon	Name	Explanation	
	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)
			Compressors enabled. 1: R410A/R32 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		Central mode icon is shown after some central order has been received and for the next 60 seconds.
			Central error
	Forced OFF	When forced off Input is configured and its signal is received, all the configured items (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	Informs about the activation of the "Test Run" function	
	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.	
		CASCADE CONTROLLER in alarm state	
	Fan stopped by Demand OFF	Informs about the stoppage of fan 1 or 2 by Demand OFF	

### 11.3 CASCADE CONTROLLER CONTENTS

Menu Contents				
Level 1	Level 2	Level 3	Level 4	Level 5
Operation Information				
	General			
	Modules information			
	Circuit 1			
	Circuit 2			
	Hot Water Tank			
	Swimming Pool			
	Electrical Heater			
	Boiler Combination			
	Solar Combination			
	Alarm History			
	Communication Status			
Timer and schedule				
	Room 1 / Room 2			
	Heating / Cooling (air)			
		Timer status		
			Enabled	
			Deactivated	
		Timer configuration		
		Copy to Circuit 1 / 2		
		Reset configuration		
	Launch timer assistant			
	Circuit 1 / Circuit 2			
	Heating / Cooling (water)			
		Timer status		
			Enabled	
			Deactivated	
		Timer configuration		
		Copy to Circuit 1 / 2		
		Reset configuration		
	DHW			
		Timer status		
			Enabled	
			Deactivated	
		Timer configuration		
		Reset configuration		
	Swimming Pool			
		Timer status		
			Enabled	
			Deactivated	
		Timer configuration		
		Reset configuration		
	Override Configuration			
		Type		
			Until next action	
			Specific time	
			Forever	
		Override duration		
	Delete all timers configuration			

Menu Contents				
Level 1	Level 2	Level 3	Level 4	Level 5
System Configuration				
	Room Thermostats			
		Setting temperature range (air)		
		Air Eco Offset		
		Thermostat Configuration		
			Check RT address	
		Compensation Factors		
		Room Temp Demand OFF		
	Water settings			
		Space Heating / Space Cooling		
			Circuit 1/ Circuit 2	
		DHW		
		SWP		
	Cascade configuration			
		Supply setting offset		
		Modules configuration		
			Module 1	
				Status
				Refrig. cycle address
				Indoor unit address
				Individual DHW
	Space Heating / Cooling			
		Circuit 1 / 2		
			Water Calculation Mode	
			Eco offset	
			Working limits	
			Mixing valve (only circuit 2)	
	Hot Water Tank			
		Mode		
			Economic	
			Standard	
		Space Priority Status		
		Antilegionella		
		Smart Configuration		
	Swimming Pool			
		Status		
			Enabled	
			Deactivated	
		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
		Water Pump Configuration		
		Outdoor average Timer		
		Minimum ON Time		
		Minimum OFF Time		
		Seizure Protection		
			Status	
			Operation Day	
			Starting Time	
	Fan Coils			
		Controlled Fan Zones		
		Delay ON Time		
		Demand OFF Actions		
	Optional Functions			
		Hydraulic Sep. Status		
		Smart Function		
		Heating Auto On/Off		
		Auto Heat/Cool		
		Hot Water Tank		
			Circuit pump	
			Recirculation timer	
			DHW Boost	
		Emergency Operation		
	I/O and Sensors			
		Inputs		
		Standard outputs		
		Outputs		
		Auxiliary sensors		
	Holiday mode			
		Affected zones		
		Start Holiday Mode		
	Controller Settings			
		Room Configuration		
			Room Names	
		Date and Time		
			European Summer Time	
			Hour Format	
		Screen settings		
		Language selection		
	Installer Access			
	Commissioning			
		Screed drying		
			Start Screed Drying	
	About			
		System Information		
		Contact Information		
	Factory Reset			
	Lock the controller			
	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, go to “Installer access” menu.

After that, the “Enter password” message is displayed.

The login password for the Installer is:



Press “OK” to confirm the password.

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



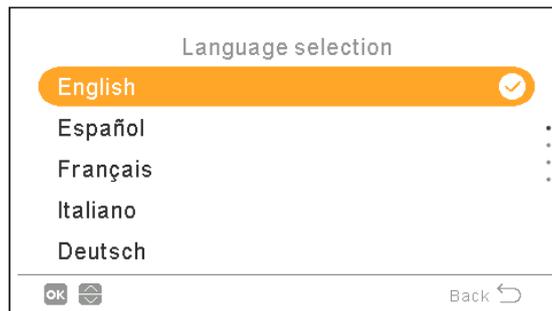
After 30 minutes of inactivity, it is necessary to repeat the log in process. To exit the Installer mode and return to the unit menu, go to the “Return to user mode” on the main menu.

### 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.*

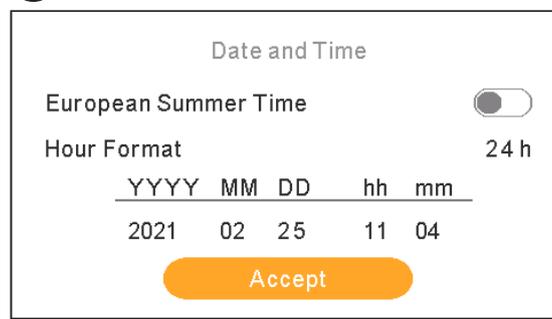
## 11.4 CASCADE CONTROLLER CONFIGURATION

1



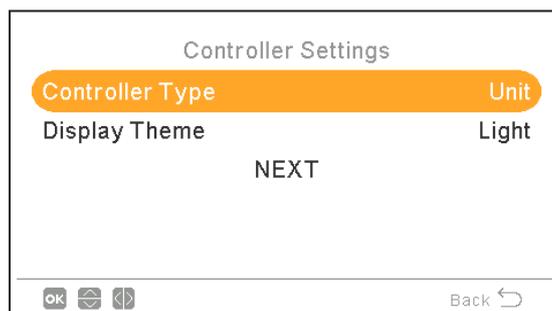
- Select the desired language using the arrow keys.
- Press OK button.

2

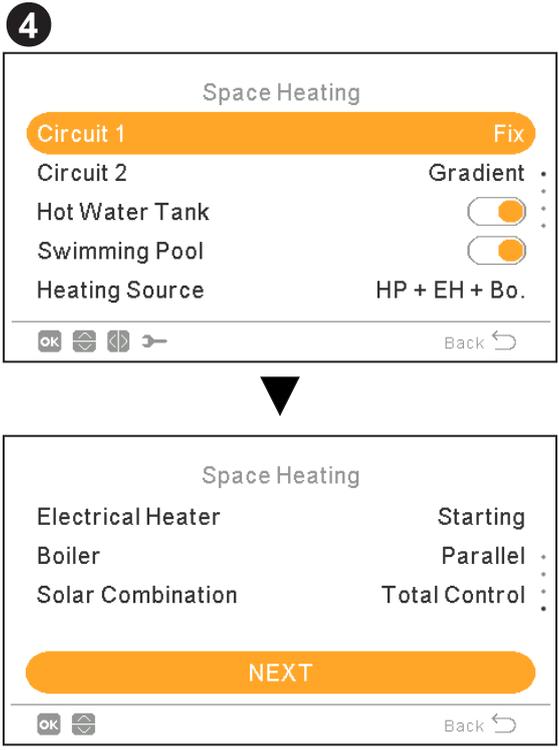


- Select the date and time using the arrow keys.
- Select Enabled or Deactivated for European summer time.
- Press OK button.

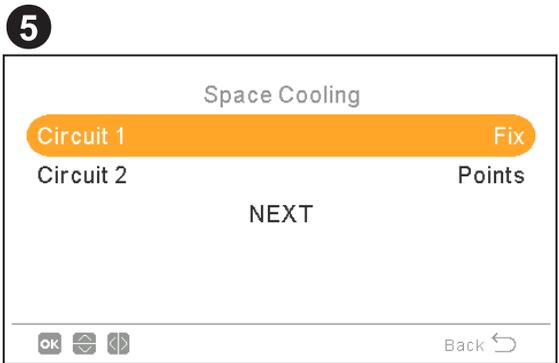
3



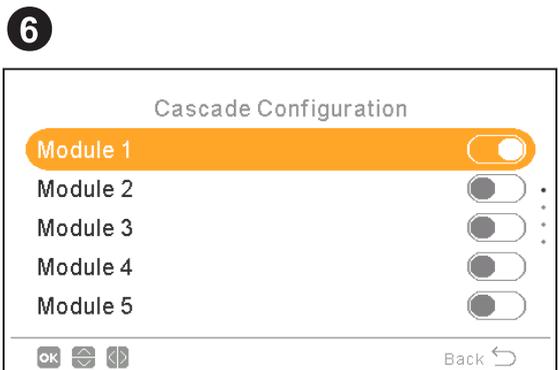
- Select the controller type:
  - Unit: the device controls the unit.
  - Room: the device acts as a room thermostat of a zone.
  - Unit + Room: the device controls the unit and acts as a room thermostat.
- Select the display theme:
  - Light: normal view.
  - Dark: black background with white icons.
  - Auto: changes automatically to light at 08:00 am and turns to dark at 20:00 pm.



- Configure circuit 1 and circuit 2 OTC: Deactivated, 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: Deactivated, Input Demand, Total Control. (only in case DHW is enabled).
- Select Next and press OK button.

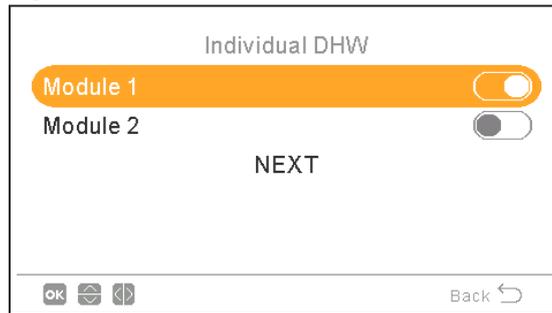


- Configure circuit 1 and circuit 2 options (Only available for cooling mode): Deactivated, Points, Gradient, Fix.
- Select Next and press OK button.



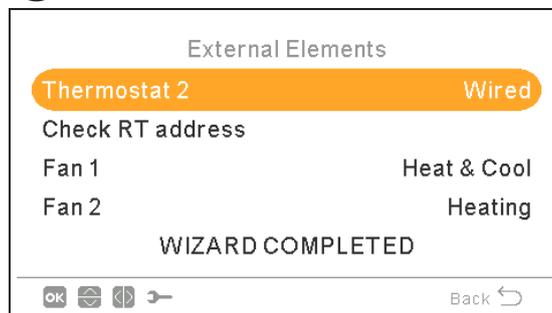
- Enable or disable the desired modules (module 1 is enabled by default)
- Select Next and press OK button.

7



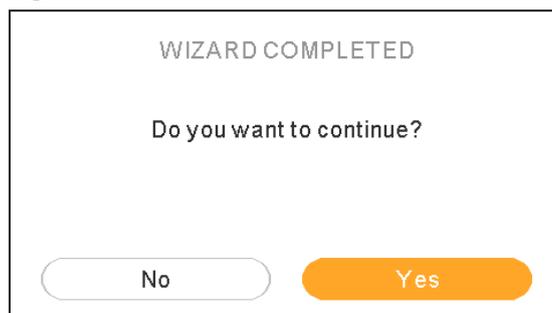
- Enable or disable the individual DHW for each module.
- Select Next and press OK button.

8



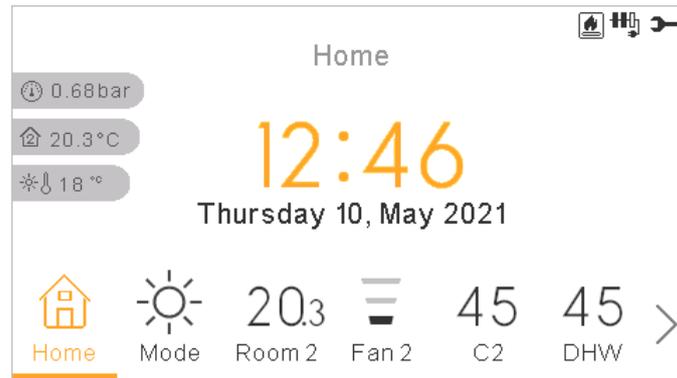
- Configure thermostat (1 or 2): None, wired or wireless.
- Check RT address if wired is selected.
- Select Wireless binding ID (1 or 2) if wireless is selected.
- Configure Fan coils: Deactivated, cooling, heating or heat & cool if wired is selected.
- Select Wizard complete and press OK button.

9



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

## 11.5 MAIN VIEW



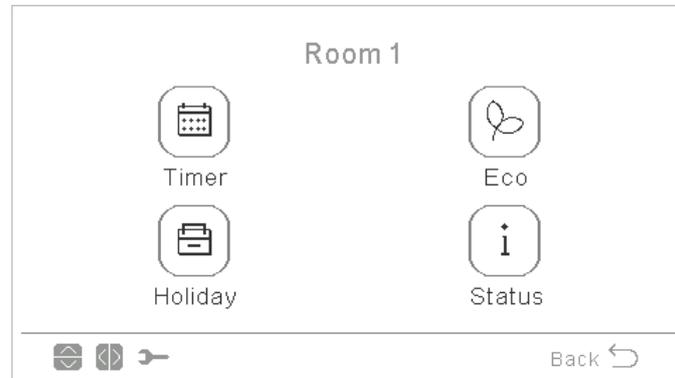
Main view of the device is composed by a bottom tab widget to move around the different views:

- Home
- Mode
- Room 1 (if space is small it shows R1)
- Room 2 (if space is small it shows R2)
- Circuit 1 (if space is small it shows C1)
- Circuit 2 (if space is small it shows C2)
- Fan 1 (if space is small it shows F1)
- Fan 2 (if space is small it shows F2)
- DHW
- SWP
- Menu

### 11.5.1 Quick actions function

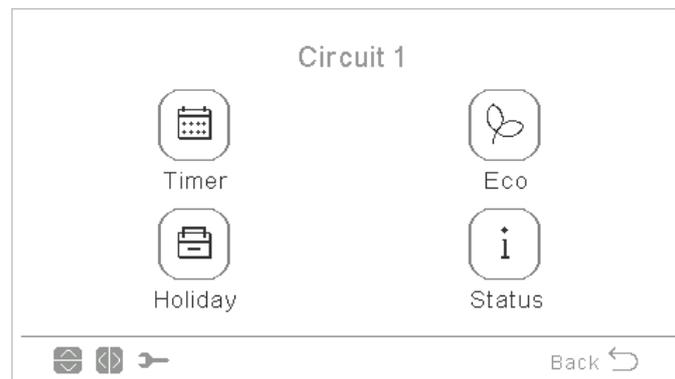
The following quick actions are shown when pressing the OK button at the selected zone in comprehensive view or room thermostat view:

#### ◆ Room 1/2

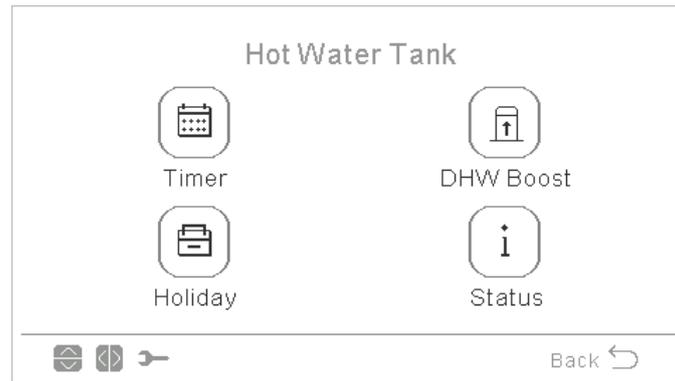


- Timer
- ECO
- Holiday (If Zone is enabled)
- Status

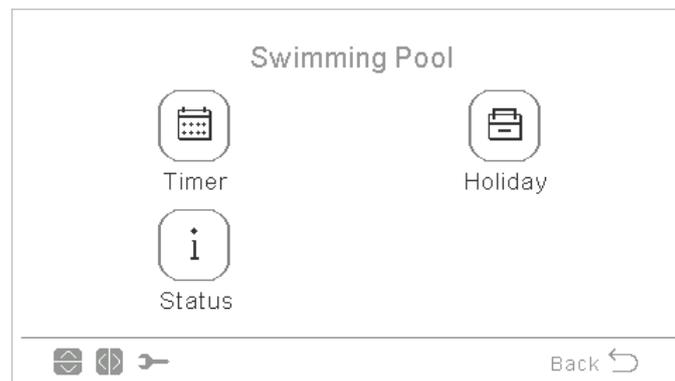
#### ◆ Circuit 1/2



- Timer
- ECO
- Holiday (If Zone is enabled)
- Status

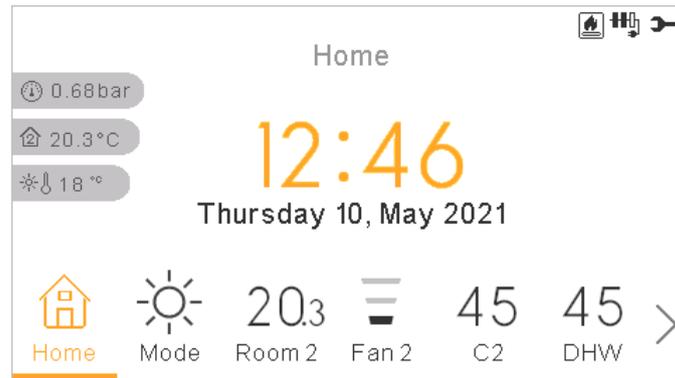
**◆ Domestic Hot Water Tank (DHW)**

- Timer
- Boost (If DHW is ON and Boost is available. It can also be cancelled from quick actions).
- Holiday (If Zone is enabled)
- Status

**◆ Swimming Pool (SWP)**

- Timer
- Holiday (If Zone is enabled)
- Status

## 11.6 HOME VIEW

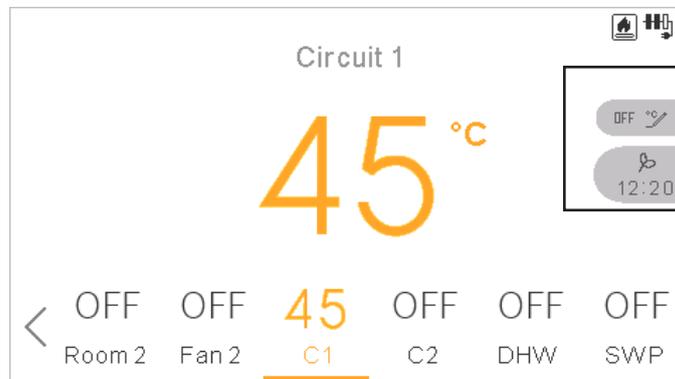


Home view shows on the middle the date and time

On the left side it shows:

- Inside temperature (home icon):
  - If LCD works as Room 1, it took it from the controller sensor or auxiliary sensor
  - If LCD works as Room 2, it took it from the controller sensor or auxiliary sensor
  - If LCD works as Room 1+2, it took it from the controller sensor or auxiliary sensor, or the average of the ones used per each zones.
  - If LCD works as main LCD or water control but not room, it will took them from the configured Rooms, if no one is configured, that temperature will not be displayed.
- Outside temperature (thermometer icon).
- Water pressure indicator

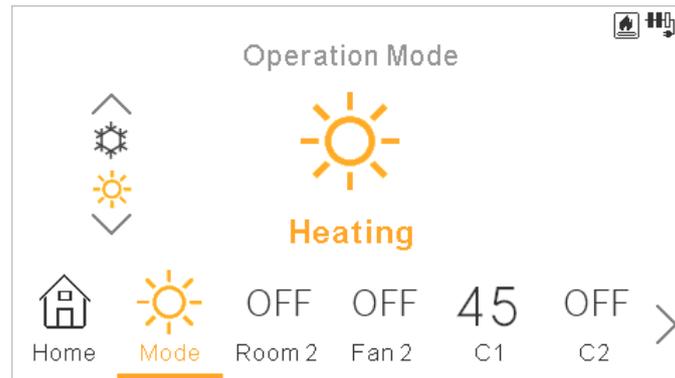
### 11.6.1 Next schedule indication



The indication of next schedule shows by priority:

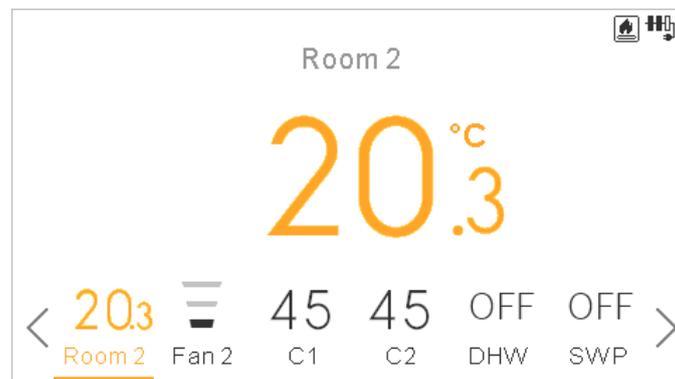
- Date of returning of absent mode
- Next schedule action:
  - If no derogation has been made, shows next schedule action
  - If derogation has been made it checks the configured override type:
    - ♦ If override type is Next action, it shows next schedule action.
    - ♦ If override type is Forever, does not show any information
    - ♦ If override type is Specific time, it shows “Pending” text and the remaining minutes.

## 11.7 MODE VIEW



- Mode view shows the selected mode.
- In case of being a heating and cooling unit, it lets also to change the mode by using the top/bottom arrows, and it shows the mode spinner on the left side.
- If it has been enabled the auto mode, it is also available here.

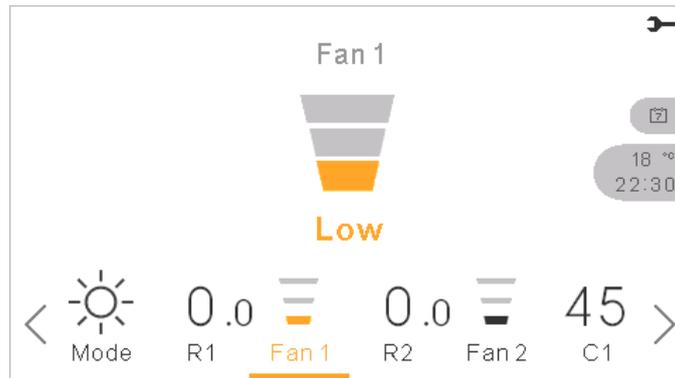
## 11.8 ROOM 1/2 VIEW



Room thermostats view displays:

- Ambient Temperature of the room. This temperature is got from controller or external sensor.
- When editing it shows the setting temperature
- On right side it has zone notifications for:
  - Next timer action
  - Eco and timer icons

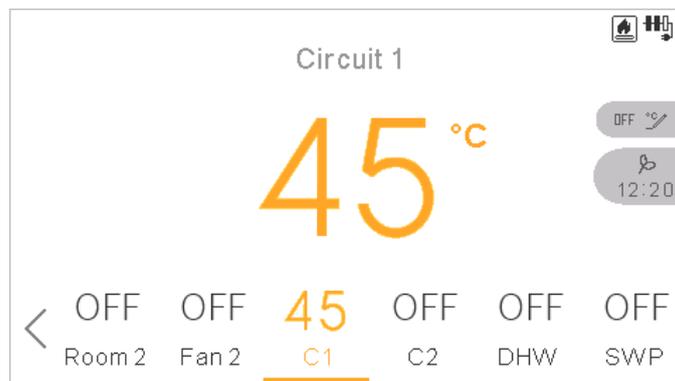
## 11.9 FAN COILS 1/2 VIEW



Room 1 or 2 could control Fan Coils. Once configured to control them on the menu, the bottom bar includes the option to manage those fan coils:

- Fan speeds: Low, Medium, High and Auto
- Each fan has its independent on/off

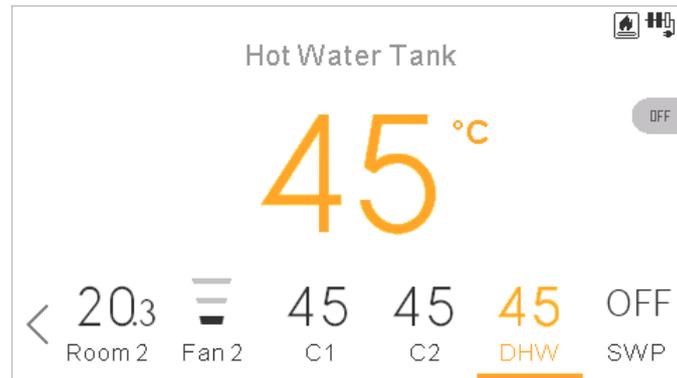
## 11.10 CIRCUIT 1/2 VIEW



Circuit 1 or 2 view displays:

- Water setting feedback
- When editing it shows the setting temperature
- On right side it has zone notifications for:
  - Next timer action
  - Eco, throughput, summer switch-off, forced off and timer icons

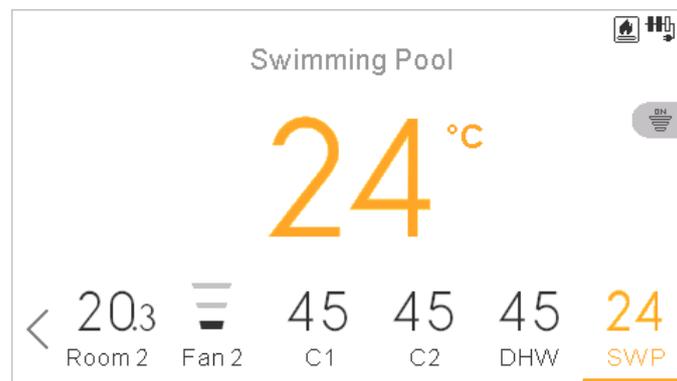
## 11.11 DHW VIEW



DHW view displays:

- Water setting feedback
- When editing it shows the setting temperature
- On right side it has zone notifications for:
  - Next timer action
  - Boost, throughput, operating in comfort and timer icons
- During boost, setting changed is the boost setting

## 11.12 SWP VIEW



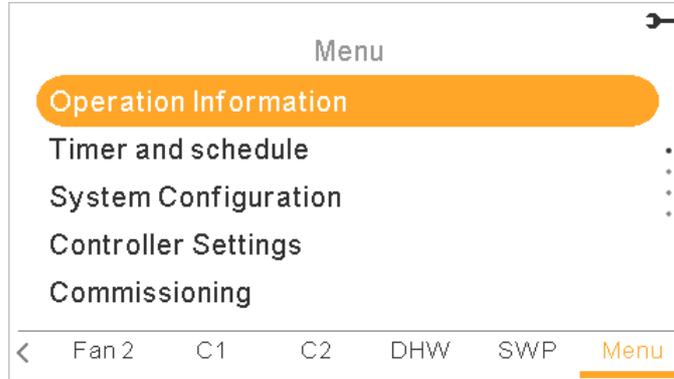
SWP view displays:

- Water setting feedback
- When editing if shows the setting temperature
- On right side it has zone notifications for:
  - Next timer action
  - Throughput and timer icons

## 11.13 MENU

### 11.13.1 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.



**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

**Detailed information about Circuit 1-2:**

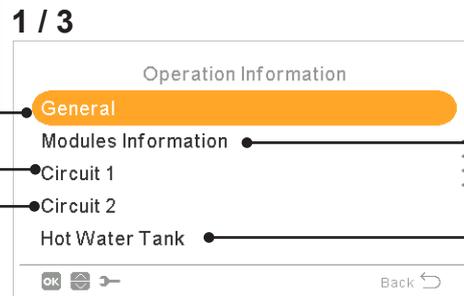
- Operation (Demand ON/OFF)
- Mode (Eco/Comfort)
- Room temperature
- Room setting temperature
- Fan setting speed
- Fan real speed
- Fan stopped by D-OFF
- Current water temperature
- Water setting temperature
- Water OTC setting temperature
- Mixing valve position (only for circuit 2)

**Detailed information modules:**

- Operation status
- Water inlet temperature
- Water outlet temperature
- Individual DHW (Enable or disable)
- Type (Main or Sub)

**Detailed information about DHW:**

- Operation
- Current temperature (Only for YUTAKI S)
- Top Sensor (Only for YUTAKI S COMBI)
- Bottom sensor (Only for YUTAKI S COMBI)
- Setting Temperature
- Electrical Heater Status
- Electrical Heater Operation
- Legionella Status
- Legionella Operation



**Detailed information about Swimming pool:**

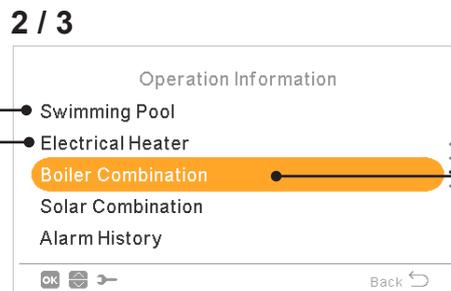
- Operation (Demand ON/OFF)
- Current temperature
- Setting temperature

**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**

**Detailed information about Solar combination:**

- Operation (Demand ON/OFF)
- Solar Panel temperature

**Shows a list of the alarm history of the system**

**Detailed information about Communication status:**

- H-Link
- H-Link Central
- RCS Central
- Cascade Controller

**11.13.2 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.

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

**1 / 2**

**Heating/Cooling (Water):**

To set the timer to adjust the water working conditions for Circuit 1/2.

**Heating/Cooling (Air):**

To set the timer to adjust the room temperature for Room 1/2. Only when using room thermostats.

Is possible to launch a timer assistant.

To set the timer to adjust the hot water tank temperature.

**2 / 2**

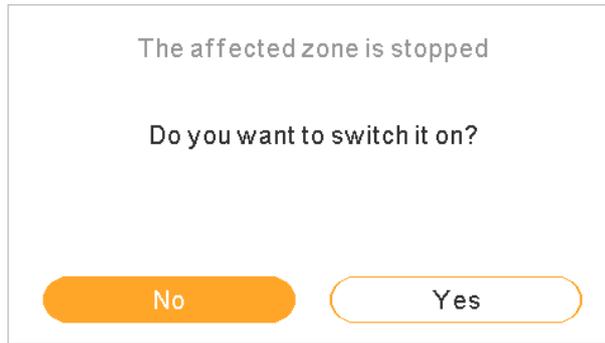
To set the timer to adjust the swimming pool temperature.

Press OK button to reset scheduled timers.

To set the Override type:

- Until next action
- Specific time
- Forever

When a timer is being switched on, if that zone is stopped, it will request to switch on the zone or not.



**11.13.2.1 Setting of timer for Room Thermostats**

Setting of temperature 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 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.

**Timer status:**

- Disable
- Enable

**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.

**Circuit 1**

	0	6	12	18	24
Mon	18 °C	18 °C	18 °C	21 °C	⊗
Tue	18 °C	18 °C	18 °C	21 °C	⊗
Wed	18 °C	18 °C	18 °C	21 °C	⊗
Thu	18 °C	18 °C	18 °C	21 °C	⊗
Fri	18 °C	18 °C	18 °C	21 °C	⊗
Sat	18 °C	21 °C	21 °C	21 °C	⊗
Sun	18 °C	21 °C	21 °C	21 °C	⊗

Bottom navigation: OK, directional arrows, key icon, Back

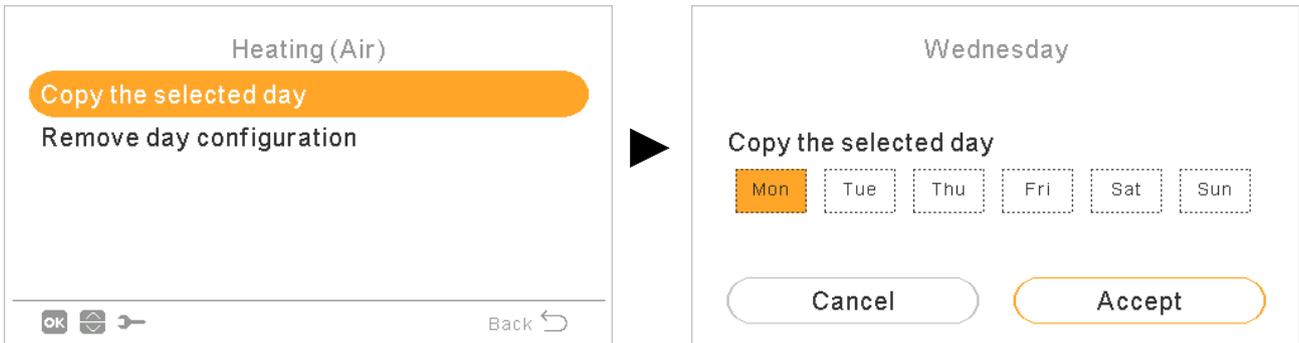
Up to six timer events can be defined for each weekday, and these can be used for turning the operation ON or OFF or to change the setting temperature. Pressing the OK key with one of the weekdays being selected in the weekly calendar screen displays the detailed schedule for the weekday.

**Monday**

From	To	Status	Setting
06:00	06:20	On	25
06:20	( 06:00 )	Off	-
-	-	-	-

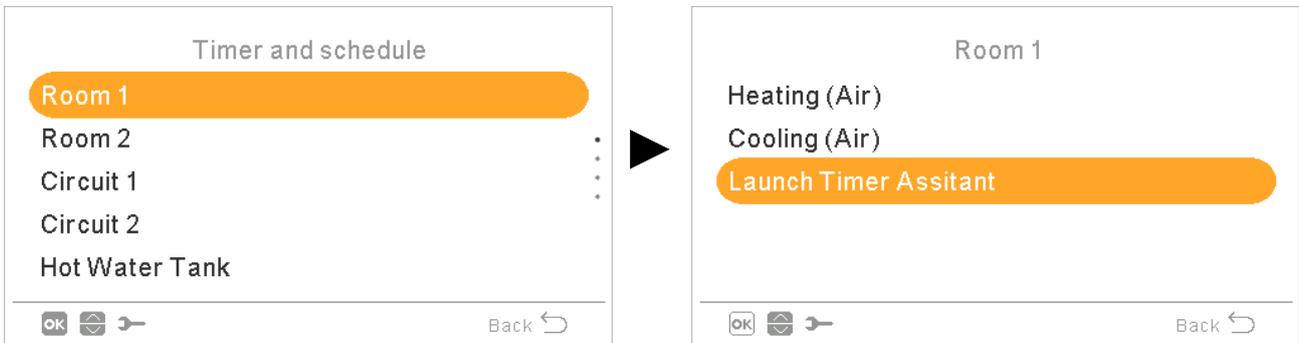
Bottom navigation: OK, directional arrows, key icon, Back

Pressing the “Gear” 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.

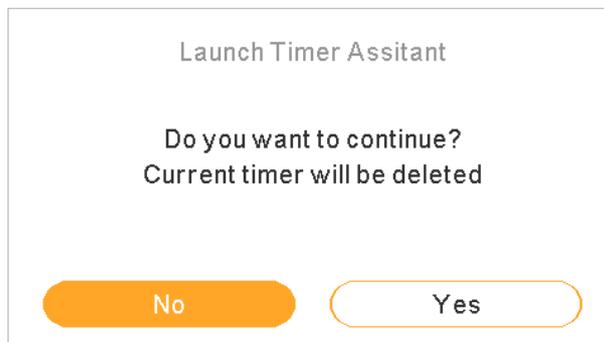


◆ **Setting with Timer assistant**

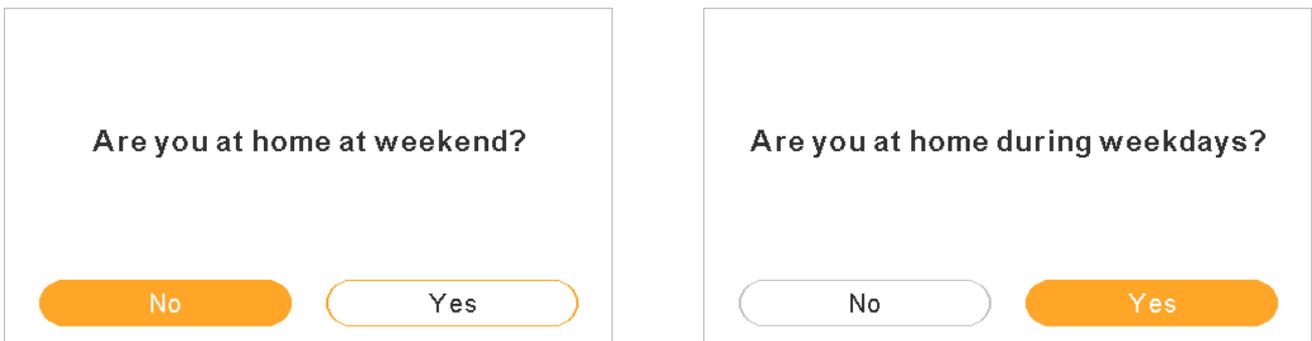
It is possible to set the timer for Room thermostats with a timer assistant.



When launching the timer assistant the current timer will be deleted.

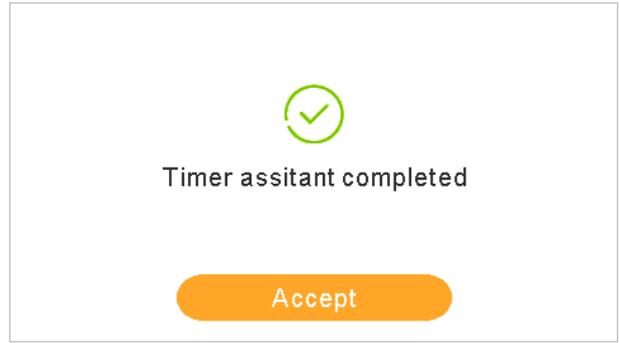
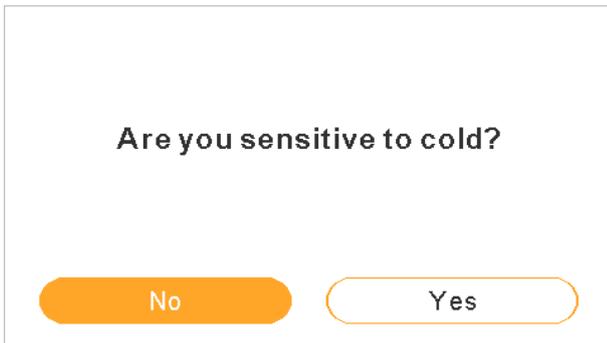


Timer assistant asks if user stays at home during weekend and weekdays



- If stay at home at weekend / weekdays the following patterns are applied:
  - Heating: 6:30h =20°C / 22:30h =18°C
  - Cooling 6:30h =23°C / 22:30h =25°C

Timer assistant asks if user is sensitive to cold.



- If sensitive to cold is marked as Yes, an offset of 1°C is applied for heating.

### 11.13.2.2 Setting of timer for Circuit 1/2

To change the 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 configuration:**  
New screen appears to configure a schedule timer. See explanation below.

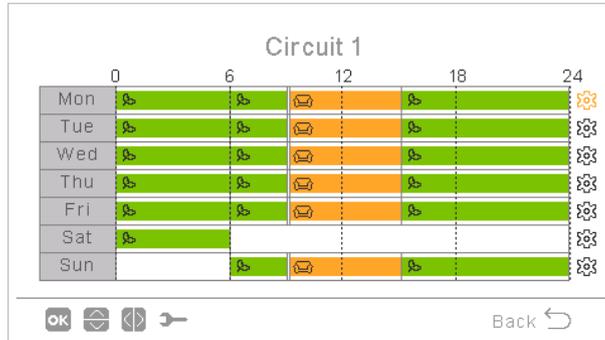
**Copy to circuit 2:**  
It is possible to copy the schedule timer to circuit 2.

**Timer status:**

- Disable
- Enable

**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 six timer events can be defined for each weekday, and these can be used for turning the operation ON or OFF or operation mode (ECO or Comfort). Pressing the OK key with one of the weekdays being selected in the weekly calendar displays the detailed schedule for the weekday.

From	To	Status	Setting
06:00	06:20	On	25
06:20	( 06:00 )	Off	-
-	-	-	-

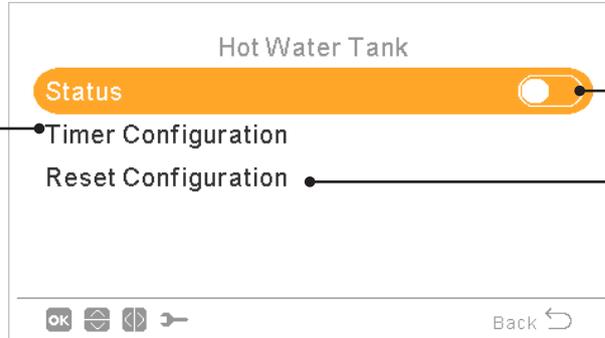
Pressing the “Gear” button during the edition of the timer events for a given weekday displays a menu to copy the daily pattern to other weekdays or to suppress the selected timer event.

### 11.13.2.3 Setting of timer for Hot water tank or Swimming Pool

Setting the temperature 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 configuration:**

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



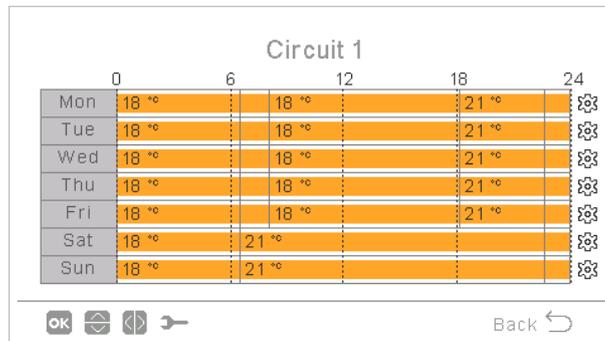
**Timer status:**

- Disable
- Enable

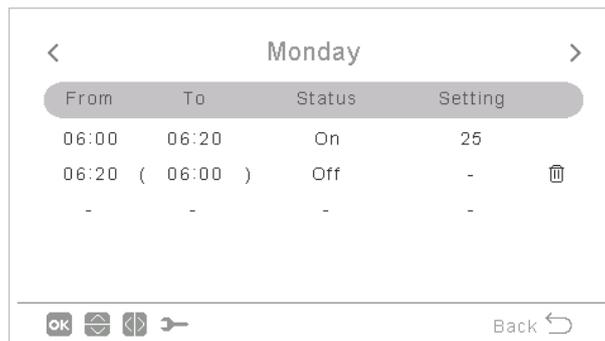
**Reset configuration:**

Press OK button to reset scheduled timers.

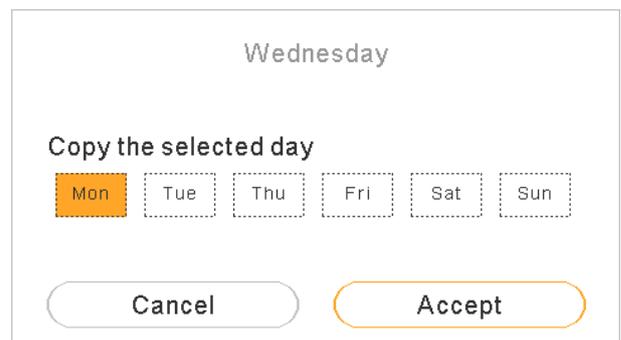
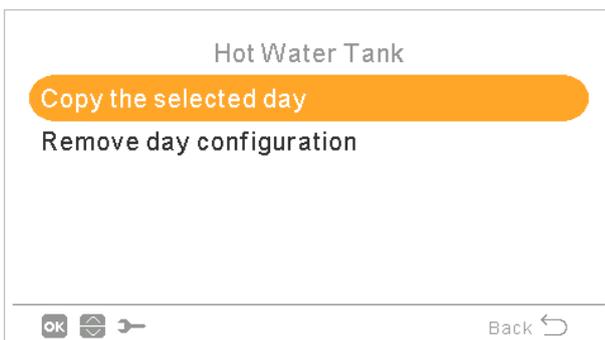
Pressing the OK button with "Timer Configuration" being selected displays the detailed schedule screen. The active schedule timers are shown in a weekly calendar.



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

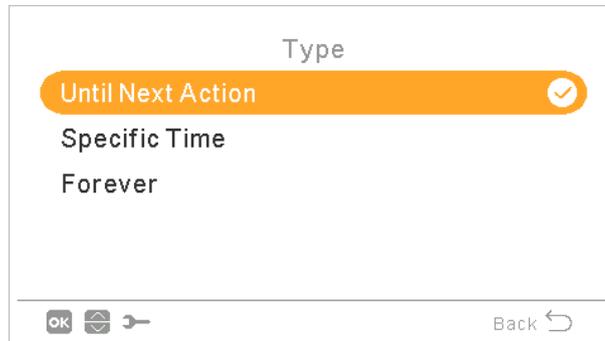


Pressing the "Gear" button during the edition of the timer events for a given weekday displays a menu to copy the daily pattern to other weekdays or to suppress the selected timer event.



### 11.13.2.4 Override Configuration

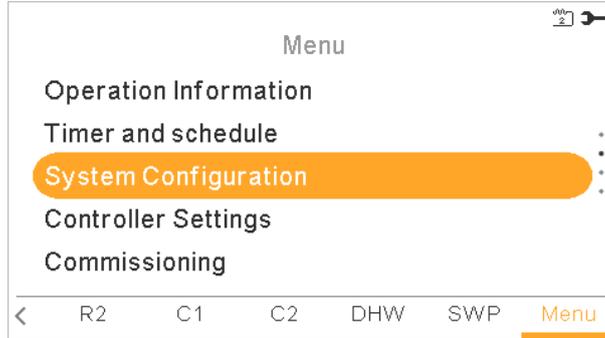
When a different configuration from the defined by the timer of a zone is done, it is possible to override the timer configuration during a specific time.



- Until next action: derogation remains until next action of the timer.
- Specific Time: derogation status remains for the specified minutes.
- Forever: Derogation status is never released.

### 11.13.3 System configuration

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



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**System Configuration**

**Room Thermostats** (highlighted in orange)

- Cascade Configuration
- Space Heating
- Space Cooling
- Hot Water Tank

**Cascade configuration:**

- Supply setting offset
- Modules configuration

**Space Heating / Cooling configuration:**

- Water calculation mode
- Eco offset water setting
- Working limits
- Mixing valve (for circuit2)

**Room thermostats configuration:**  
(Screen visible only for room thermostats)

- Setting temperature range (air)
- Air Eco Offset
- Thermostat configuration
- Compensation factors
- Room temperature demand OFF

**DHW configuration:**

- Status
- Mode
- 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
- Smart configuration
- Anti Legionella

**2 / 3**

**System Configuration**

**Heat Pump** (highlighted in orange)

- Swimming Pool
- Complementary Heating
- Fan Coils
- Optional functions

**Swimming Pool configuration:**

- Status
- Setting temperature
- Offset temperature

**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

**3 / 3**

**System Configuration**

**Holiday Mode** (highlighted in orange)

- Heat Pump
- Fan Coils
- Optional functions
- I/O and Sensor

**Fan coils configuration:**

- Controlled fan zones
- Delay on time
- Demand OFF actions

**Holiday mode:**

- Year
- Month
- Day
- Returning time
- Affected zones
- Start/stop holiday mode

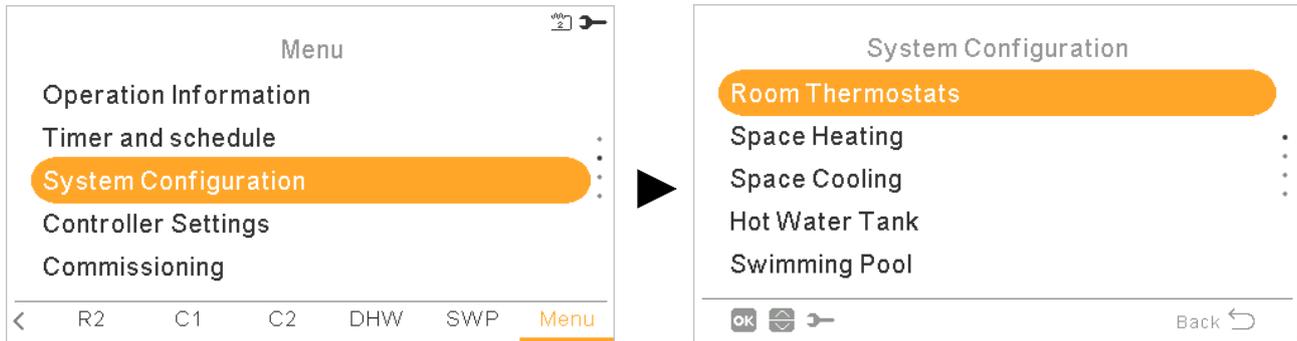
**Optional functions configuration:**

- Hydraulic separator
- Energy configuration
- Smart function
- Heating auto on/off
- Auto heat/cool
- Hot water tank
- Emergency operation

**I/O and Sensor configuration:**

- Inputs
- Standard outputs
- Optional outputs
- Auxiliary sensors

### 11.13.3.1 Room thermostats configuration



#### Maximum / Minimum temperature for heating and cooling: Configure for Circuit 1/2:

- Heating maximum temperature
- Heating minimum temperature
- Cooling maximum temperature
- Cooling minimum temperature

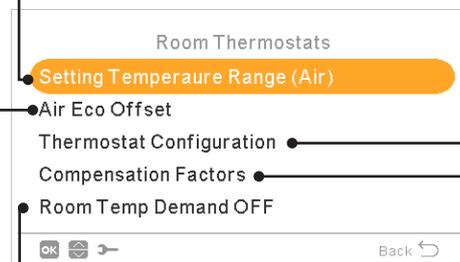
#### Air Eco Offset for Circuit 1-2:

Configure the offset air temperature for the ECO mode.

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

#### 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.



#### Thermostat configuration:

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)
- **Check RT Address:** validation procedure of the wireless thermostats configuration

#### Compensation factors

(See Compensation factors section below)

### ◆ 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.

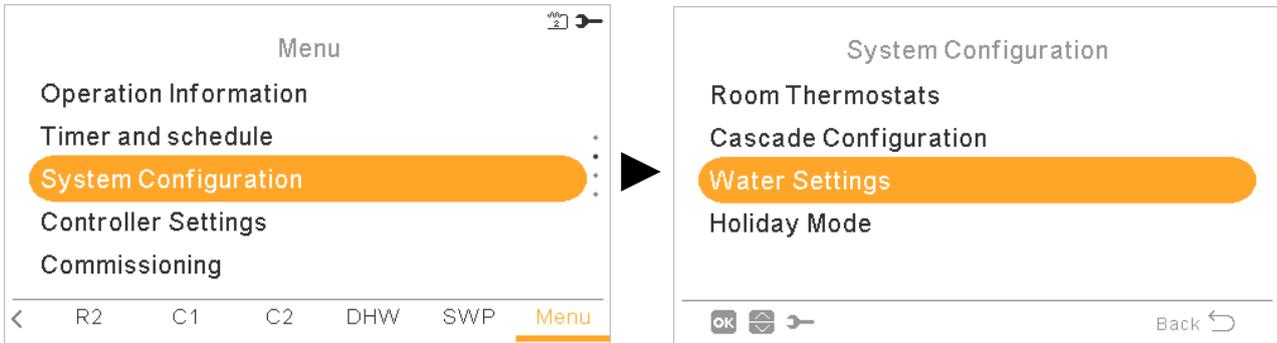
Compensation has no effect if Compensation factor is 0 or when OTC is Fix, and water temperature is determined according to OTC in chapter "[Water calculation mode](#)" in such case.

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.

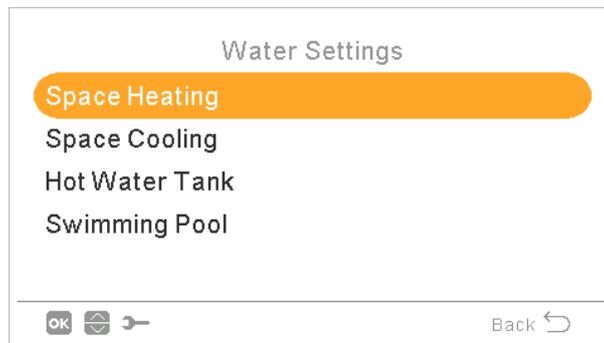
**Maximum compensation factor heat + and -:** Maximum difference between room temperature and setting temperature. In case that the difference between room temperature and setting temperature is higher than this value, the YUTAKI unit takes the selected value as the maximum.

### 11.13.3.2 Water settings configuration

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



Select the desired area to apply the water settings configuration:

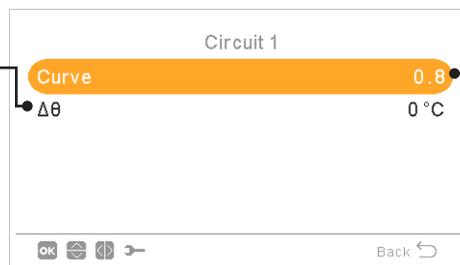


#### ◆ Space Heating or Space Cooling water settings

**Δθ (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 (setting in Main device).
- Range: -10 ~ 10
- Circuit 1 or Circuit 2 must be ON to configure this setting.



**Curve:**

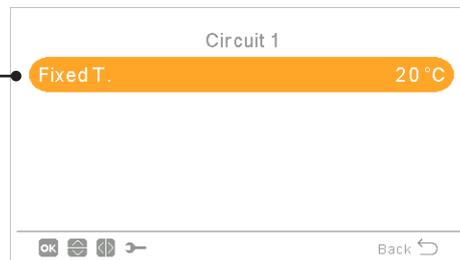
Selection of the gradient curve for Circuit 1 or Circuit 2 (only for heating mode).

- Only when water calculation mode is Gradient (setting in Main device).
- Range: 0.2 ~ 2.2
- Circuit 1 or Circuit 2 must be ON to configure this setting.

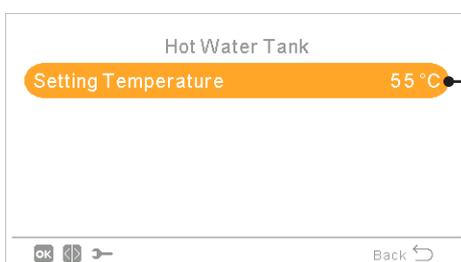
**Fixed temperature:**

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

- Only when water calculation mode is Fix (setting in Main device).
- Circuit 1 or Circuit 2 must be ON to configure this setting.



#### ◆ Hot Water Tank or Swimming pool water settings

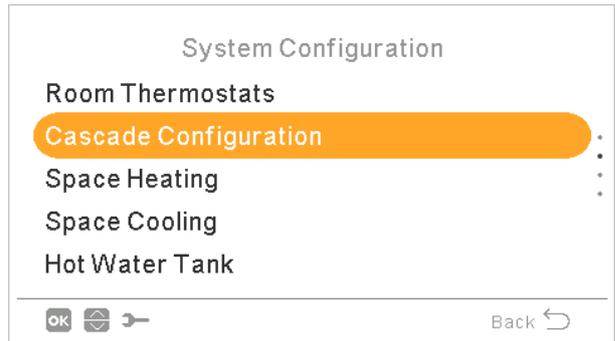
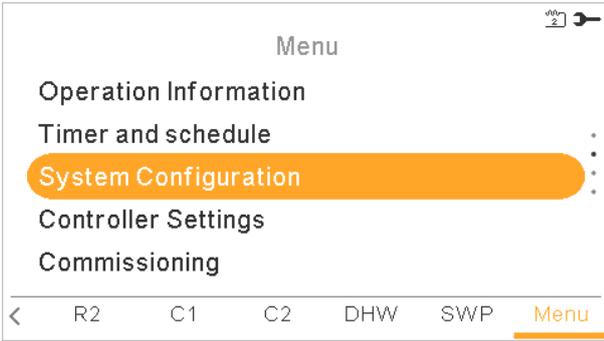


**Setting temperature:**

Selection of the temperature for DHW or Swimming Pool.

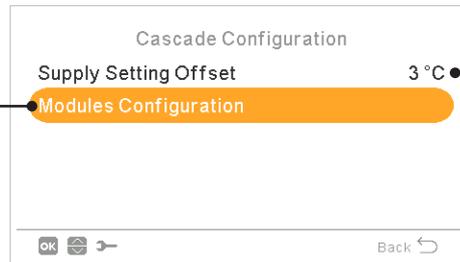
- Hot water tank or Swimming pool must be ON to configure this setting.
- Range:
  - DHW: 30°C ~ Max. setting temperature
  - Swimming pool: 24 ~33°C

11.13.3.3 Cascade configuration



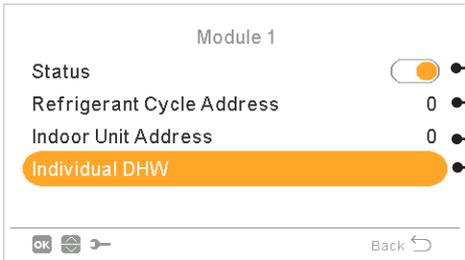
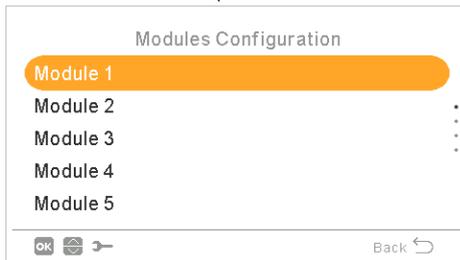
Modules configuration:

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



Supply setting offset

- To set YUTAKI Sub Units to work at a setting temperature higher than setting temperature determined by YUTAKI CASCADE CONTROLLER
- 3 °C by default (from 0 to 15 °C)



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:

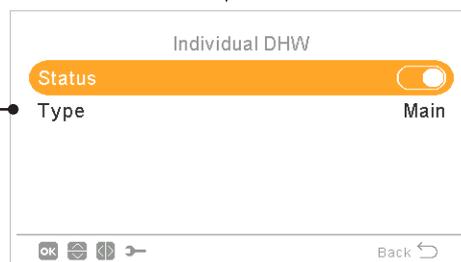
- It must be always set to 0 (factory default)

Individual DHW:

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

Individual DHW type:

- Select Main or Secondary depending on the installation of the DHW system.
- When Secondary type is selected, choose the Main module number.

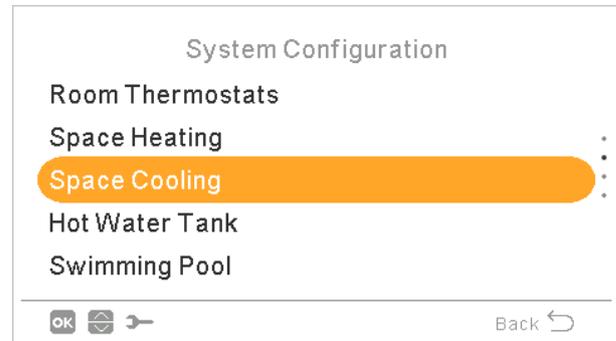
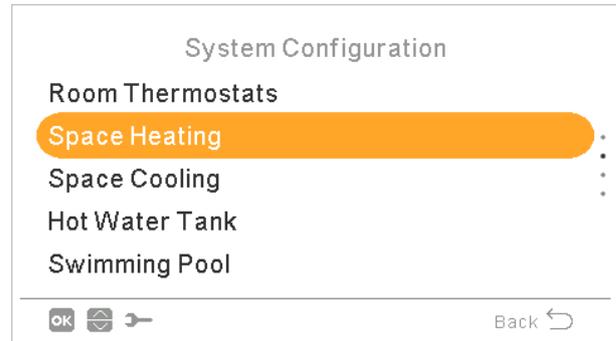
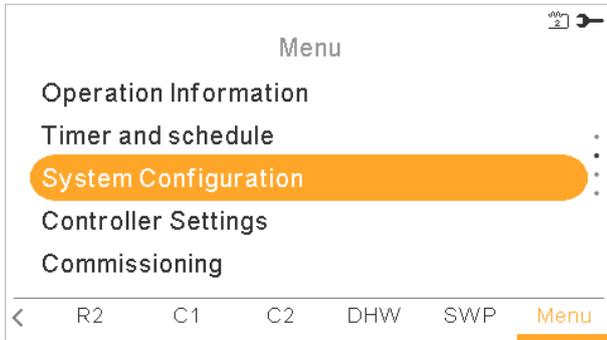


Individual DHW status:

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

### 11.13.3.4 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).

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

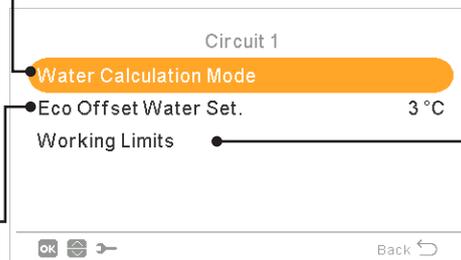
See detailed explanation below.

**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.

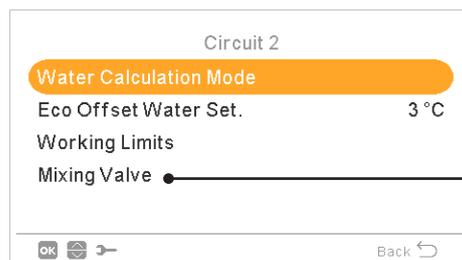
- Range: 0 ~ 10



**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).

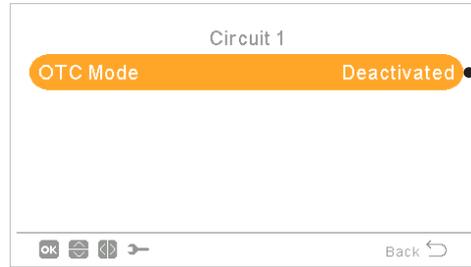
Values are adjusted for the use with the 2nd zone mixing kit accessory ATW-2KT-05. It is highly recommended not to change these values.

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

- Proportional band: 0~20K (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°C (5 °C by default).

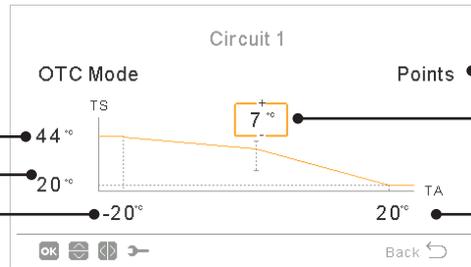
◆ Water calculation mode

Deactivated



The "Deactivated" 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.

Set point at high ambient temperature

44 °C

Vertex offset

7 °C

Set point at low ambient temperature

20 °C

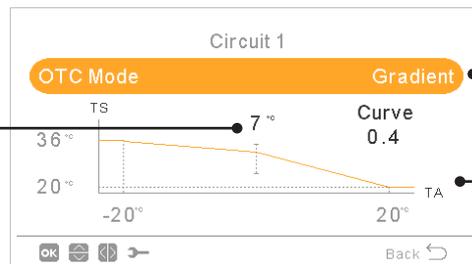
High ambient temperature

Low ambient temperature

-20 °C

Back

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.

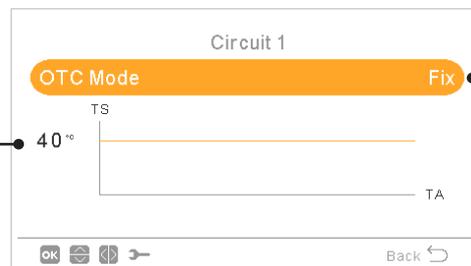
Vertex offset

7 °C

Gradient curve

Back

Fix



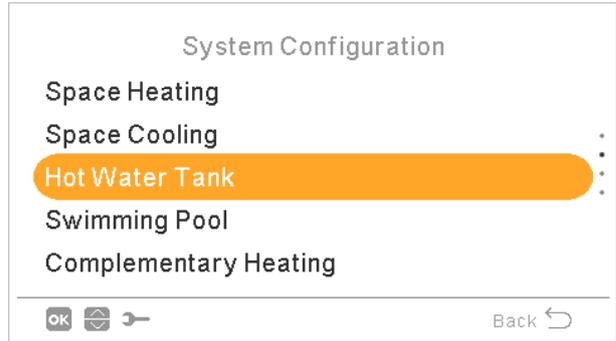
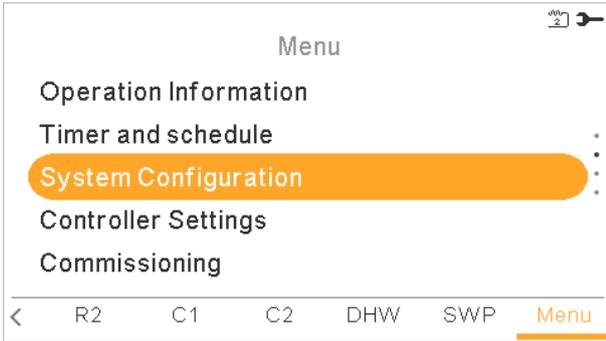
Fixed temperature

40 °C

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

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11.13.3.5 Hot Water Tank configuration



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:

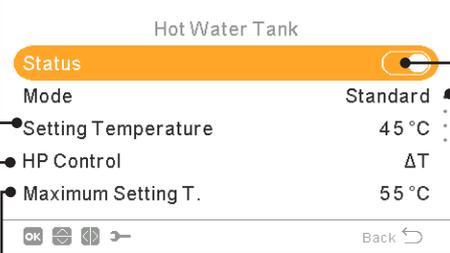
To achieve the DHW setting temperature it is possible to select between two different modes of control:

- **ΔT:** The most efficient way to achieve the setting temperature. The outlet water temperature is 15° 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 adjusted in case HP Control is Fix.

Maximum setting temperature:

Maximum value of DHW setting temperature permitted by the installer.

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Status of Hot Water Tank:

- Deactivated
- Enabled (by default for YUTAKI S COMBI).

Mode:

- **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).
- **Economic (Only for YUTAKI S COMBI):** DHW heating operation starts under same conditions as Standard Mode with the difference that water temperature measurement is done at higher tank position. Due to this fact number of DHW operations decrease and its duration becomes longer which becomes more efficiency.
- **High Demand:** DHW heating operation starts if water temperature and setting temperature difference is larger than differential temperature. DHW can be heated up using the heater, the heat pump or a combination of both. Only available when Hot Water Tank heater is activated (DSW4 pin 3 ON).

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
- Not available in High demand mode.

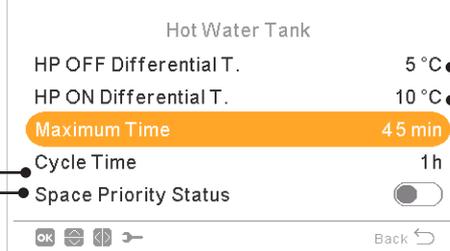
Space priority status:

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.

- Not available in High demand mode.

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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.

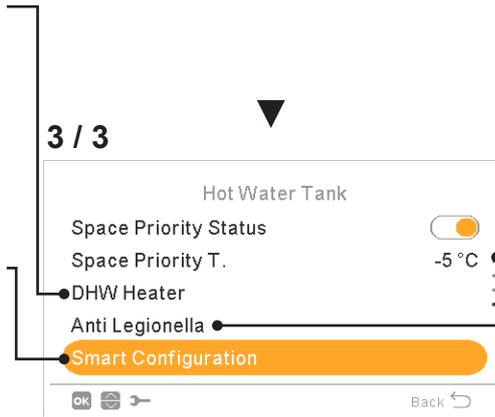
- Range: OFF, 5 ~250 min
- Not available in High demand mode.

**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.

**Smart Configuration:** Option to allow the tank to be heated to an intermediate temperature of comfort in conditions of water consumption in order to avoid heating to the traditional setting temperature (Only available in Economic mode).

- **Comfort setting:** Intermediate target temperature of tank heating under water consumption conditions.
- **Comfort cycles:** Number of operations allowed to heat water to the comfort temperature.



**Space priority temperature:**

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

- Range: -20~0°C
- Not available in High demand mode.

**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**

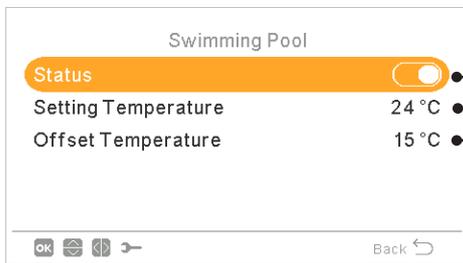
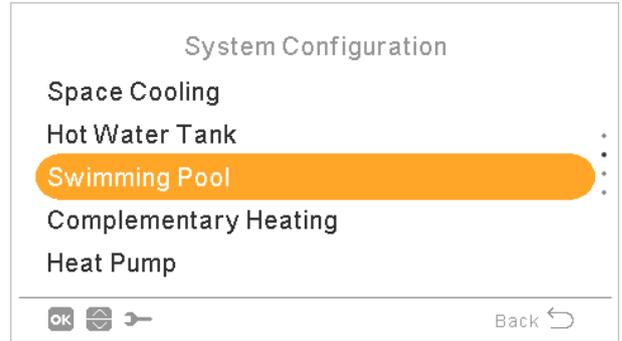
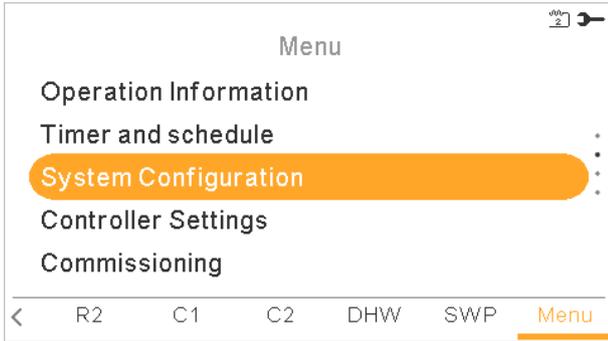


- Status of anti legionella operation (enabled/deactivated)
- Specified day for anti legionella operation
- Specified time of the day for anti legionella operation
- Setting for domestic hot water temperature in anti legionella operation.
- Duration of shock treatment. Between 10 to 60 minutes.

**i NOTE**

*In case anti legionella treatment has not been possible to achieve within a time lapse of 6 hours since the moment it has been triggered, anti legionella treatment is released and normal operation can be resumed.*

**11.13.3.6 Swimming Pool configuration**



**Status:**

Enable or disable swimming pool.

Set input 3, output 1 and sensor 2. (see section ["11.13.3.11 Inputs, Outputs and Sensors configuration"](#))

**Setting temperature:**

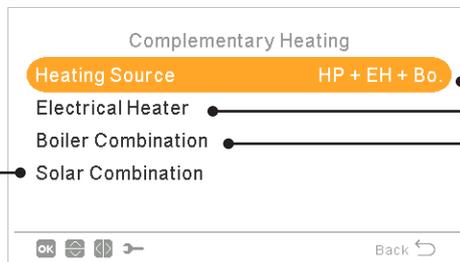
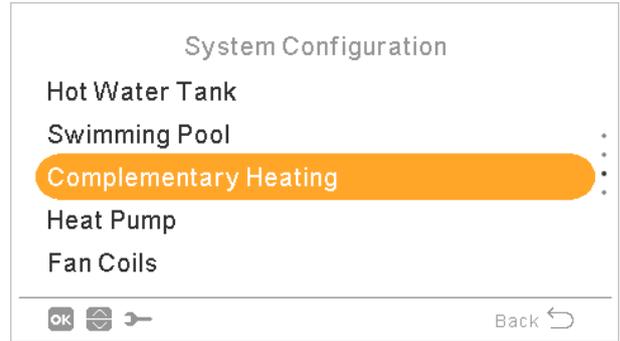
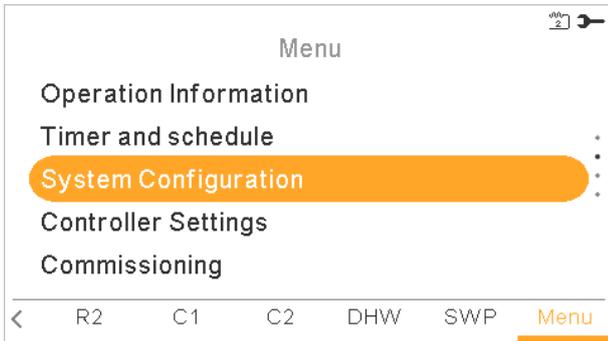
Adjustment of the swimming pool water temperature setting.

- Range: 24~33 °C

**Offset temperature:**

The setting temperature is increased by the indicated parameter.

11.13.3.7 Complementary Heating configuration



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

**Electrical heater:**  
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 Deactivated in any other mode (Swimming Pool and Cooling mode). Set output 3 and sensor 1 for boiler (see section *"11.13.3.11 Inputs, Outputs and Sensors configuration"*)

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 *"11.13.3.11 Inputs, Outputs and Sensors configuration"*).
- **Deactivated:** 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:**

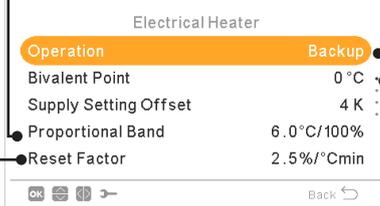
- Used to guarantee setting temperature achievement without surpassing its value. Higher values imply less utilization of heater.

**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.

**Maximum heater step:**

- Only in case of Backup option.



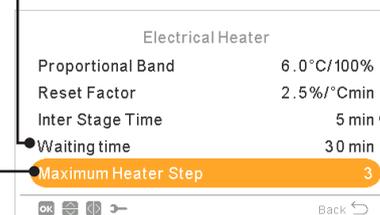
- Operation:**
- **Starting:** Space Heating electric Heater is switched ON in case of low water temperature and low ambient temperature to provide extra capacity to HP.
  - **Backup:** Space Heating Electric Heater is switched ON in case of low ambient temperature (below Bivalent point) in order to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



**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" °C 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 disconnection" °C below tank temperature

Total Control	
DHW Maximum Time	60 min
DHW Minimum Time	5 min
DHW Max storage T.	60 °C
ΔT Connection	10 °C
ΔT Disconnection	5 °C

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 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.

Total Control	
ΔT Connection	10 °C
ΔT Disconnection	5 °C
Panel Minimum T.	15 °C
Panel Overheat T.	80 °C
Panel antifreeze T.	4 °C

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 "11.13.3.11 Inputs, Outputs and Sensors configuration".

◆ 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

Boiler Combination	
Bivalent Point	-5 °C
Combination mode	Parallel
Supply Setting Offset	4 °C
Minimum ON Time	2 min
Minimum OFF Time	5 min

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.

Wait time for DHW (Only for YUTAKI S):

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

Boiler Combination	
Minimum ON Time	2 min
Minimum OFF Time	5 min
Waiting time	30 min
DHW by Boiler	<input checked="" type="checkbox"/>
Wait Time for DHW	45 min

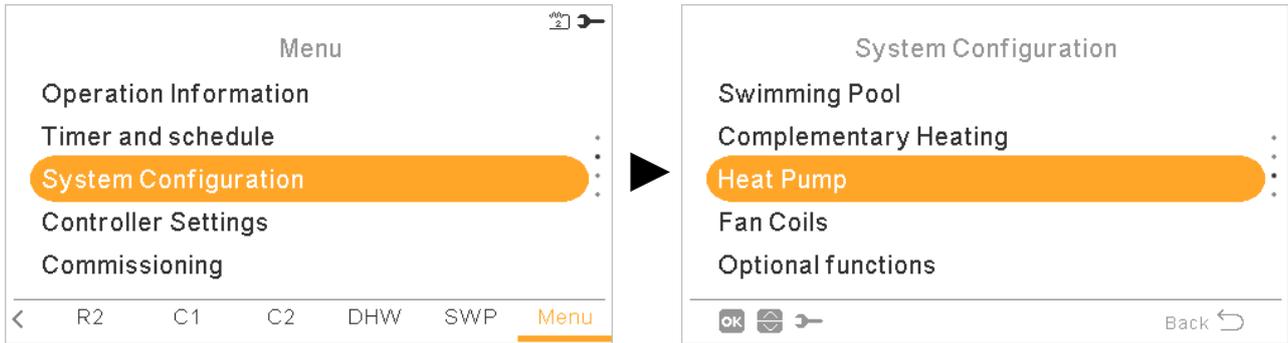
Waiting time:

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

DHW by boiler (Only for YUTAKI S):

- Control to allow heat DHW by means Boiler

### 11.13.3.8 Heat Pump configuration



**Water pump configuration:**

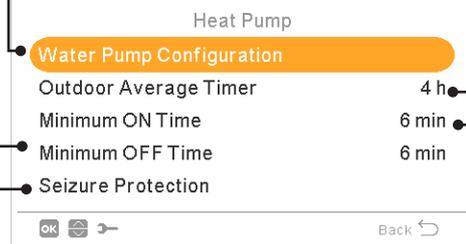
Configure the water pump of the heat pump.  
See detailed information in the next page.

**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).



**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.

**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.

◆ Water pump configuration

**1 / 2**

**Overrun Time:** Added operation time of water pump after Demand OFF.

**Minimum OFF Time:** Minimum time of the water pump OFF.

- Only when Economic mode is active (DSW)

Water Pump Configuration	
Pumps during DHW	Yes
Overrun Time	10 min
Stop Conditions	Thermo OFF
Minimum OFF Time	40 min
Minimum ON Time	10 min

**Pumps during DHW:** This option allows to stop Water Pumps during DHW operation. Water pumps that are allowed to stop are the ones that are not directly involved to DHW heating-up procedure. This is WP2 and WP3 depending on the hydraulic configuration.

**Stop conditions:**

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

**2 / 2**

**Pump Setup:** This option allows user to select hydraulic configuration of the system.

- Standard:** WP2 is connected after WP3 by means an hydraulic separator or directly by means Hitachi mixing kit accessory. Whenever WP2 is switched ON, WP3 is also switched ON in order to transfer heat to C2
- Parallel:** WP2 is directly connected to the buffer tank in parallel with WP3. Operation of WP3 is independent of the operation of WP2. When this configuration is used, Hitachi mixing kit accessory cannot be used.

Water Pump Configuration	
Overrun Time	10 min
Stop Conditions	Thermo OFF
Minimum OFF Time	40 min
Minimum ON Time	10 min
Pump Setup	Parallel

**Minimum ON Time:** Minimum time of the water pump ON.

- Only when Economic mode is active (DSW)

11.13.3.9 Fan coils

Menu	System Configuration
Operation Information	Complementary Heating
Timer and schedule	Heat Pump
<b>System Configuration</b>	<b>Fan Coils</b>
Controller Settings	Optional functions
Commissioning	I/O and Sensor

Navigation: R2, C1, C2, DHW, SWP, Menu

Fan Coils	
<b>Controlled Fan Zones</b>	<b>Controlled fan zones:</b> Fan coil usage assignment in function of Mode and Room.
Delay ON Time	<b>Delay ON time:</b> Delay time to start Fan operation for Fan 1 or Fan 2 only in heating operation. Purpose of this control is to make sure water temperature at fan coil is hot enough before fan is started in order to ensure user comfort.
Demand OFF Actions	<b>Demand OFF Actions:</b> Configure the Demand OFF action for Heating or Cooling operation in Room 1 or Room 2.

**Controlled fan zones:**

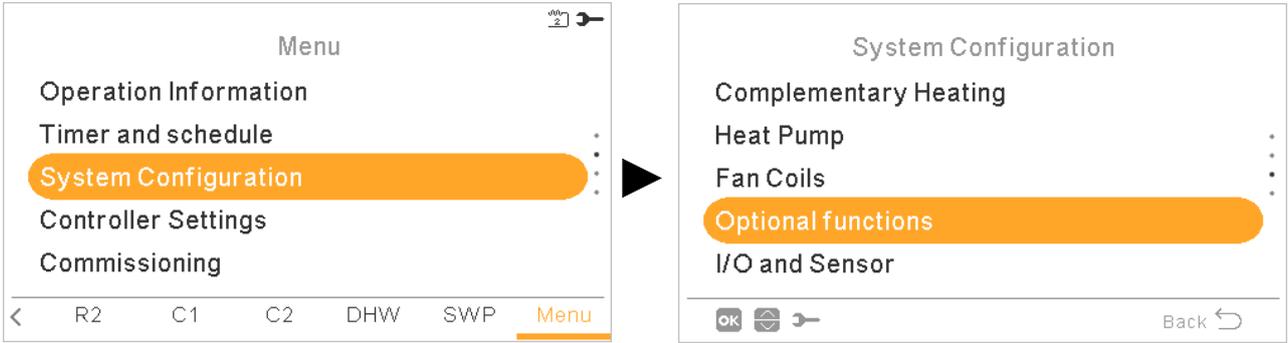
- Deactivated
- Heating
- Cooling
- Heating & Cooling

**Demand OFF Actions:**

- Nothing
- Stop fan

### 11.13.3.10 Optional functions configuration

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



**Smart function:**

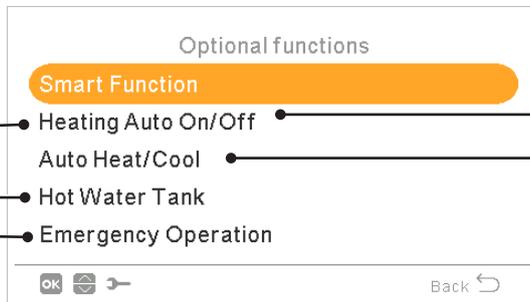
To block or limit the heat pump or increase demand due to electricity availability. See detailed information below.

**Hot water tank:**

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.



**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. See detailed information below.

**Auto Heat/Cool:**

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.

◆ **Smart Function**

**Status:**

Enable or disable smart function.

**Trigger type:**

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

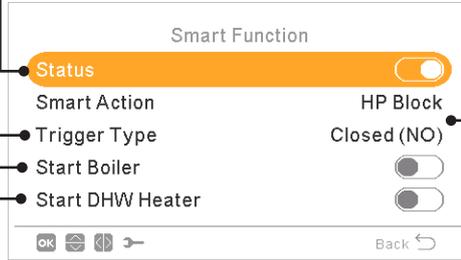
**Start boiler:**

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 / 3



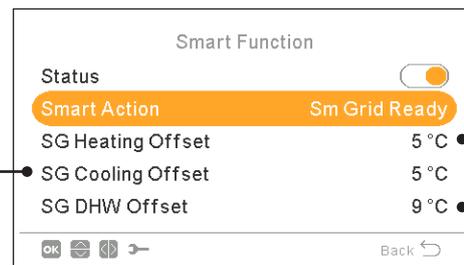
**Smart Action:**

Check that Smart Act/SG1 is set in input 5 (see section "11.13.3.11 Inputs, Outputs and Sensors configuration").

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



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**SG Cooling offset:**

To adjust Space Cooling setting temperature decrease when SG ready is in Low price mode

**SG Heating offset:**

To adjust Space Heating setting temperature increase when SG ready is in Low price mode

**SG DHW offset:**

To adjust DHW setting temperature increase when SG ready is in Low price mode

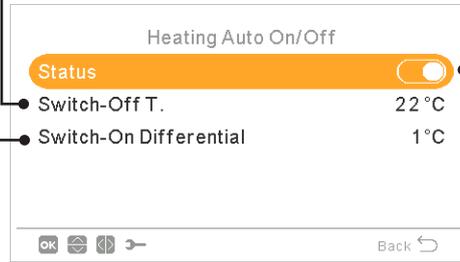
◆ Heating Auto On / Off

Switch-Off Temperature:

- 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.



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.

◆ Auto Heat/Cool

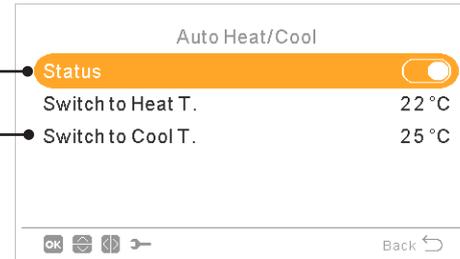
Only available in units capable of heating and cooling operation, and when cooling operation is enabled.

Status:

- Enable or disable auto heat/cool.

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.



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.

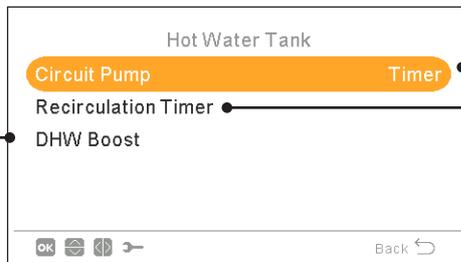
◆ Hot water tank optional functions

**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 “11.13.3.11 Inputs, Outputs and Sensors configuration”)
- **Boost setting:** DHW temperature setting for the Boost function.



**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 “11.13.3.11 Inputs, Outputs and Sensors configuration”)

- Deactivated.
- 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:**

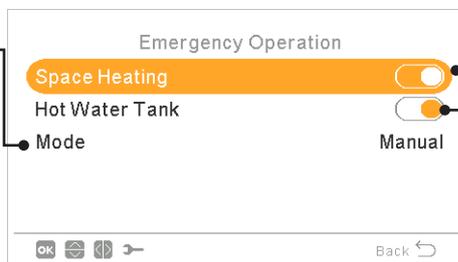
- Frequency: Allows to select when timer is applied (Everyday, weekend, workday)
- Starting Time: When the water pump circulation starts.
- Stopping Time: When the water pump circulation stops.
- Operation: In case of ON, means that water pump is always ON between “Starting Time” and “Stopping Time”. 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).



**Space Heating:**

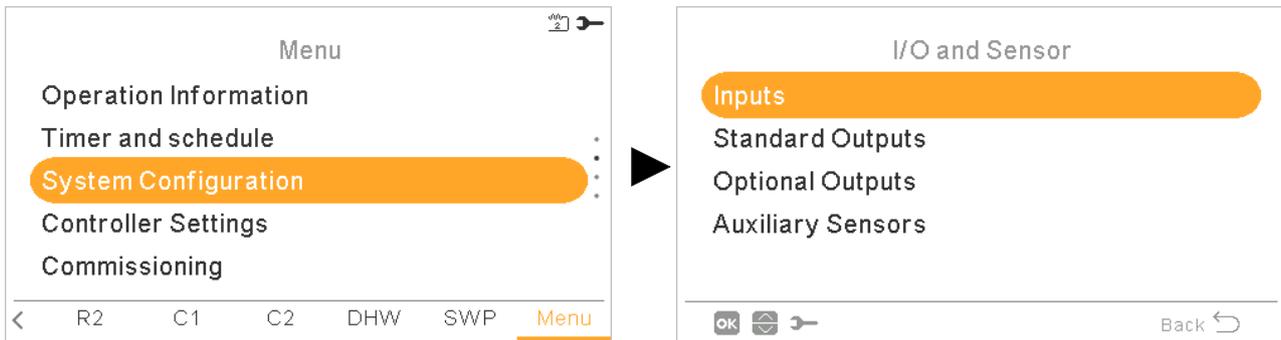
Enable or disable emergency operation for space heating.

Only available in case “Heating source” on “11.13.3.7 Complementary Heating configuration” contains “Electrical heater or boiler” option.

**Hot water tank:**

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

### 11.13.3.11 Inputs, Outputs and Sensors configuration



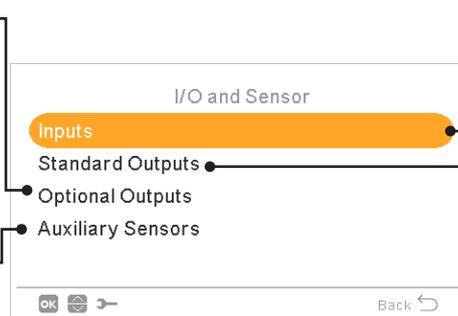
#### Optional outputs:

There 4 additional available outputs to set. These 4 additional outputs are not wired to the YUTAKI terminal board.

In order to use them it is required accessory (field supplied). Its configuration follow same constrains as Standard outputs.

#### 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

#### Standard Outputs:

There are 4 available outputs to set already wired to the terminal board. There are conditions of setting depending on the installation

#### ◆ List of available inputs:

- **Deactivated**
- **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.
- **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.
- **Drain pump**: System forbids operation and alarm 85 is triggered in case signal is closed for more than 30 seconds. Purpose of this input is to be used in conjunction of Water float switch (field supplied) located at drain pan.

**◆ List of available outputs:**

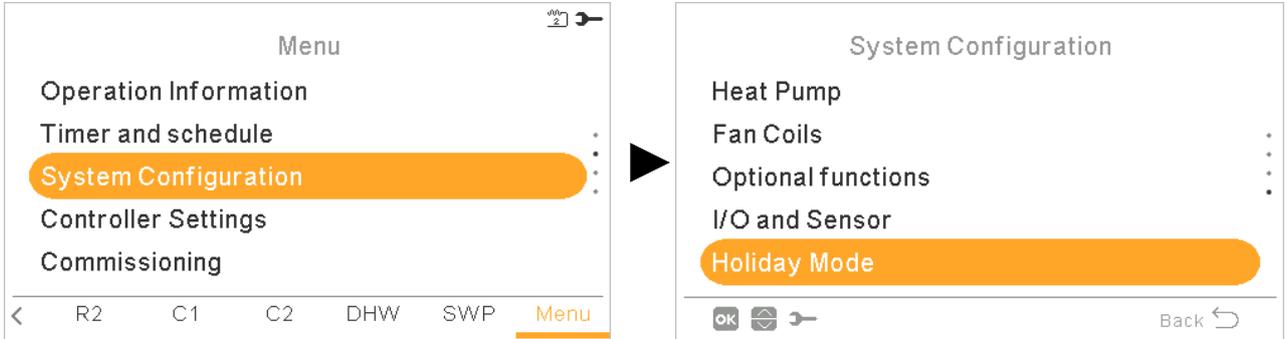
- **Deactivated**
- **SWP 3WV:** (Fixed in output 1 if swimming pool is enabled): Signal control of the 3-way valve of the swimming pool.
- **Water pump 3:** (Fixed in output 2 if buffer tank is installed): Signal control of the water pump for buffer tank.
- **Boiler:** (Fixed in input 3 if boiler is 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.
- **Fan 1 Low:** Signal is active when fan coil speed selected for Circuit 1 is set to Low.
- **Fan 1 Medium:** Signal is active when fan coil speed selected for Circuit 1 is set to Medium.
- **Fan 1 High:** Signal is active when fan coil speed selected for Circuit 1 is set to High.
- **Fan 2 Low:** Signal is active when fan coil speed selected for Circuit 2 is set to Low
- **Fan 2 Medium:** Signal is active when fan coil speed selected for Circuit 2 is set to Medium.
- **Fan 2 High:** Signal is active when fan coil speed selected for Circuit 2 is set to High.
- **Constant Heating:** Signal is active in case operation mode of LCD controller is set to Heating.
- **Constant Cooling:** Signal is active in case operation mode of LCD controller is set to Cooling.

**◆ List of available sensors:**

- **Deactivated**
- **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.

### 11.13.4 Holiday mode

This menu allows to configure the date, time and the temperature conditions for the holiday come back.

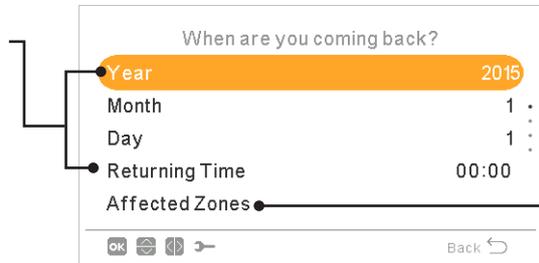


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**Holiday Mode:**

Configure holiday come back

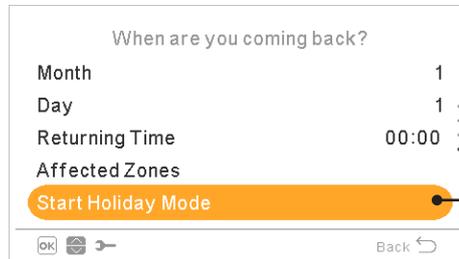
- Year
- Month
- Day
- Returning time



**Affected zones:**

- Enable (switch off) or disable (switch on) the zones during the holiday period.
- Circuit 1 / 2
- Room 1 / 2
- Room 1 / 2 Setting temperature
- Hot water tank
- Swimming pool

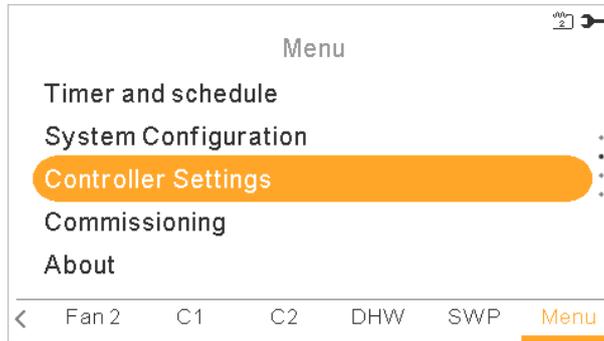
2 / 2



Start / Stop holiday mode

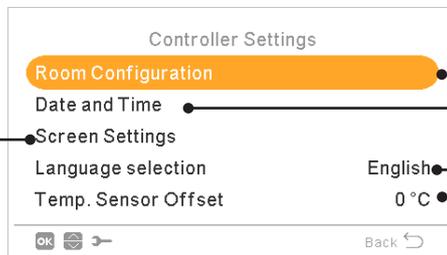
### 11.13.5 Controller settings

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



**Screen settings:**

- Display theme (light / dark / auto)
- Backlight time
- Backlight bright
- Contrast
- Brightness
- ON LED bright
- Beep on touch volume



**Room Configuration:**

- Room names: create or edit a name for circuit 1 or circuit 2
- Synoptic view icons: selection of the icon shown in Live view menu for cooling / heating emitters.

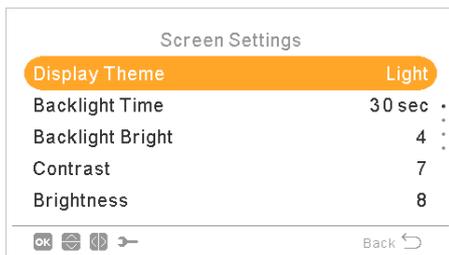
**Date and time:**

- Adjust date and time
- European summer time

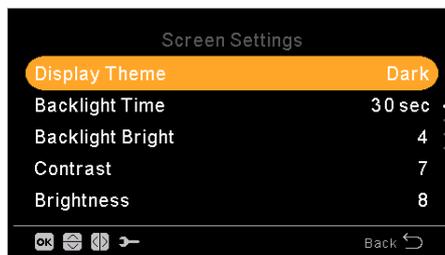
**Selection of the unit controller language**

**Temp. sensor offset**

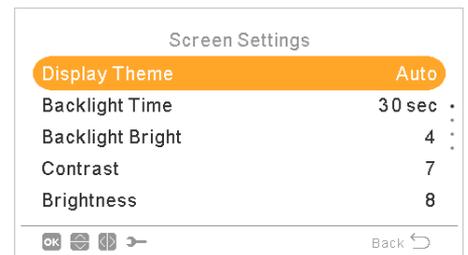
### ◆ Display theme



Light



Dark



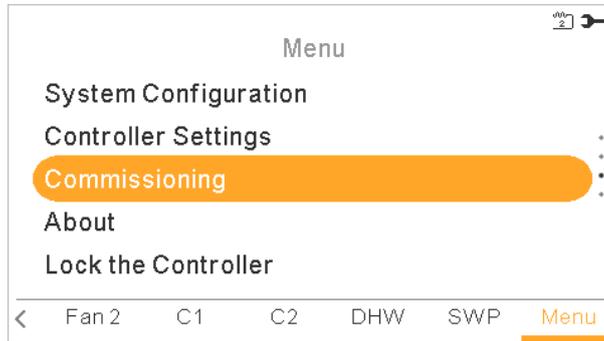
Auto

When Dark theme is selected, background is changed to black, text and icons to white.

When Auto theme is selected, it changes automatically between light (at 8:00 am) and dark (at 20:00 pm).

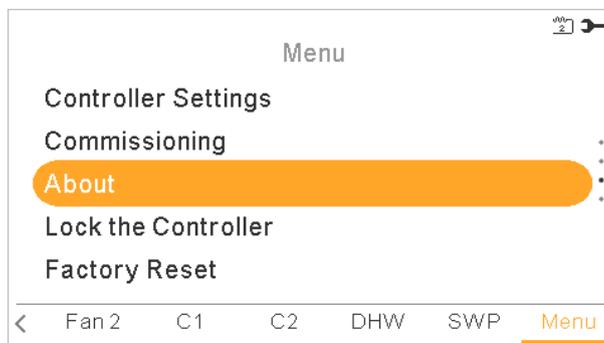
### 11.13.6 Commissioning

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



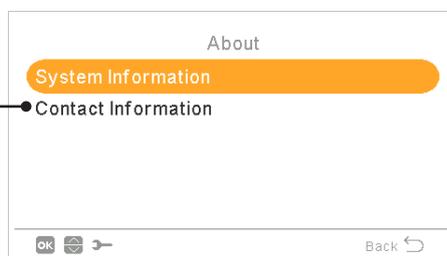
### 11.13.7 About

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.

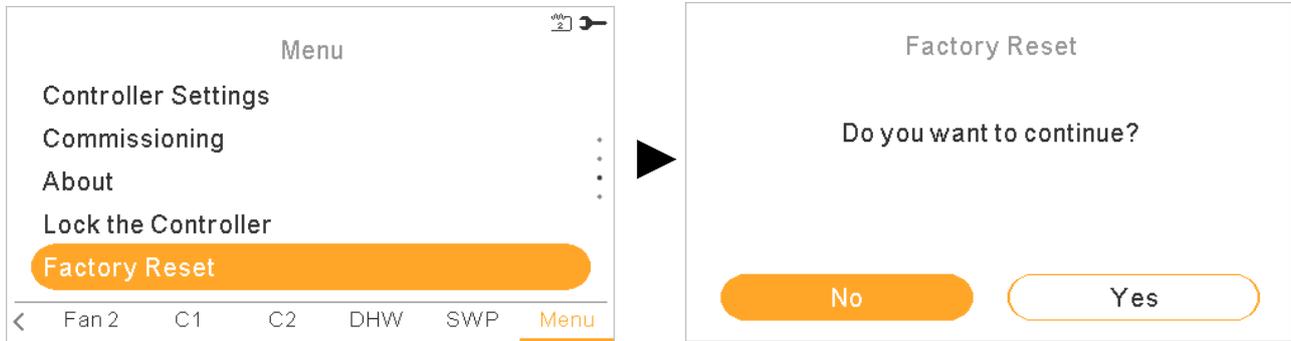


**System information:**

- Type
- Modules type
- System capacity
- Serial number
- Controller firmware
- Indoor PCB firmware
- Language package
- Refrigerant

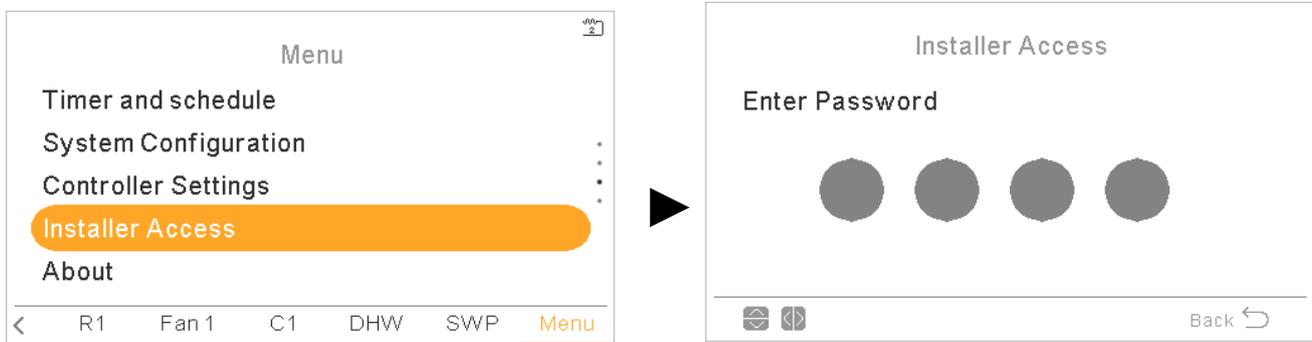
### 11.13.8 Factory reset

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



### 11.13.9 Installer access

Menu to enable the access to configure the system.



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).

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, go to the "Return to user mode" on the main menu.

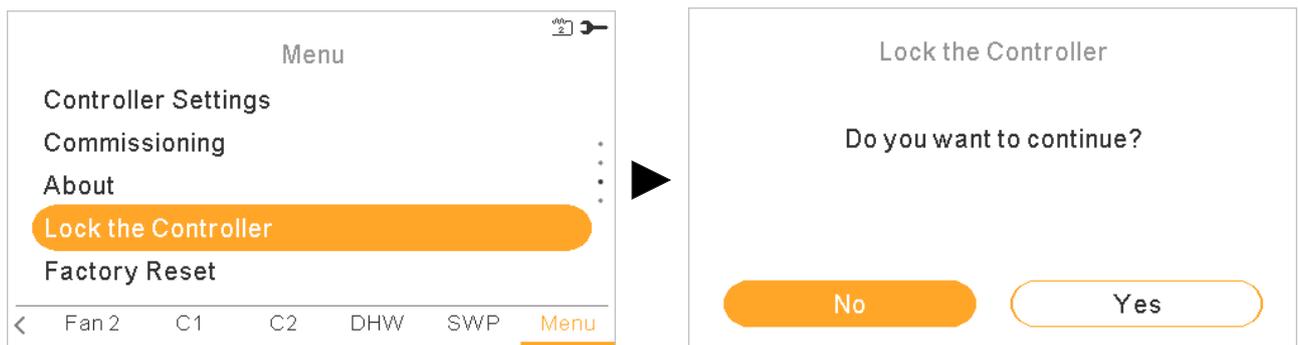
### 11.13.10 Return to user mode

This function allows to getting out of the “Installer mode”.

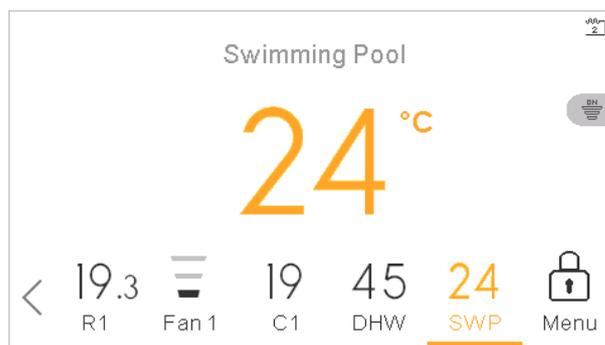


### 11.13.11 Lock the controller

This function is only visible for the installer and allows to lock the menu in case of exhibition. This action can also be launched from central.



When the controller is locked the lock icon  appears instead of the menu icon.



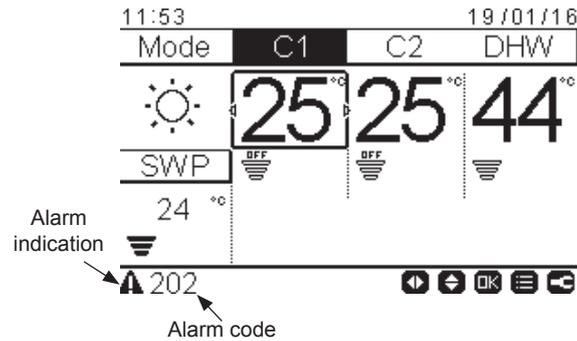
The password requested to unblock the controller is: Right , Down , Left , Right 

## 12 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.

### 12.1 ALARM CODE INDICATION ON REMOTE CONTROL SWITCH (PC-ARFH1E)



#### 12.1.1 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."  <b>NOTE</b> 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 °C continued for 10 minutes, Td ≥ 140 °C 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

### 12.1.2 Alarms for YUTAKI CASCADE CONTROLLER ATW-YCC-(01/02)

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

### 12.1.3 Alarms for Outdoor units

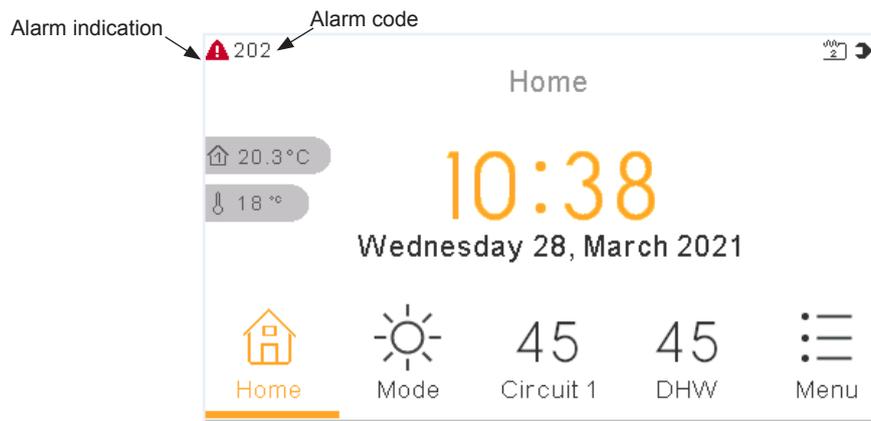
Code number	Category	Type of abnormality	Main cause
2	Outdoor unit	Activation of protection device (high pressure cut)	Activation of PSH, locked motor, abnormal operation in the power supply phase. Failure of fan motor, drain discharge, PCB, relay, float switch activated. (Pipe clogging, excessive refrigerant, inert 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.

#### 12.1.4 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

## 12.2 ALARM CODE INDICATION ON REMOTE CONTROL SWITCH (PC-ARFH2E)



### 12.2.1 Alarms for Indoor units

Alarm Code	Retry Stop Code	YUTAKI S	YUTAKI S COMBI	Origin	Detail of Abnormality	Main Factors
3	-	o	o	Communication	Transmission Alarm (Not outdoor unit detected)	Loose, disconnected, broken or short-circuited connector
10	-	-	o	Indoor	2nd DHW thermistor anomaly	Loose, disconnected, broken or short-circuited connector
11	-	o	o	Indoor	Water inlet thermistor abnormally (THMwi)	Loose, disconnected, broken or short-circuited connector
12	-	o	o	Indoor	Water outlet thermistor abnormally (THMwo)	Loose, disconnected, broken or short-circuited connector
13	-	o	o	Indoor	Indoor Liquid Pipe Temp Thermistor Abnormality (THMI)	Loose, disconnected, broken or short-circuited connector
14	-	o	o	Indoor	Indoor Gas Pipe Temperature Thermistor Abnormality (THMg)	Loose, disconnected, broken or short-circuited connector
15	-	(o)	(o)	Indoor	Water Circuit 2 thermistor abnormally (THMwo2)	Loose, disconnected, broken or short-circuited connector
16	-	(o)	(o)	Indoor	Water DHW thermistor abnormally (THMdhwt)	Loose, disconnected, broken or short-circuited connector
17	-	(o)	(o)	Indoor	Auxiliary sensor 2 thermistor abnormally (THMaux2)	Loose, disconnected, broken or short-circuited connector
18	-	(o)	(o)	Indoor	Auxiliary sensor 1 thermistor abnormally (THMaux1)	Loose, disconnected, broken or short-circuited connector
19	-	o	o	Indoor	Water Plate HEX pipe thermistor abnormally (THMwohp)	Loose, disconnected, broken or short-circuited connector
25	-	(o)	(o)	Indoor	Auxiliary sensor 3 thermistor abnormally (THMaux3)	Loose, disconnected, broken or short-circuited connector
26	-	o	o	Indoor	Water pressure sensor (WPS) abnormality	Loose, disconnected, broken or short-circuited connector
40	-	o	o	Indoor	Incorrect LCD setting	Current LCD configuration does not allow proper operation
61	-	(o)	(o)	Communication	Triggered in case no YCC messages have been received for more than 180 seconds since last message was received. In case this alarm appears, software stops Indoor and Outdoor operations until communication is restored.	YCC stops sending messages to slave unit since YCC has been powered OFF or disconnected from the H-Link Line or H-Link line has been damaged
70	P70	o	o	Indoor	Hydraulic alarm flow & Water Pump malfunction	Water flow is not detected in the hydraulic cycle or Pump defective
72		o	o	Indoor	Thermostat Heater Alarm	High temperature is detected in Electric Heater
73		o	o	Indoor	Mixing over-temperature limit protection for Mixed circuit.	Circuit 2 supply temperature > Target temperature + offset

Alarm Code	Retry Stop Code	YUTAKI S	YUTAKI S COMBI	Origin	Detail of Abnormality	Main Factors
74	P74	o	o	Indoor	Unit over-temperature limit protection	Two > Tmax +5K
76	-	o	o	Indoor	Freeze Protection Stop by indoor liquid temperature thermistor	
77	-	o	o	Indoor-LCD	Receiver Communication failure	No Opentherm/Hlink communication for a continuous period of 10 minutes.
78		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	Indoor -outdoor	Unit Capacity setting Error	There is no concordance between indoor outdoor unit capacity
80	-	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	Indoor	"Momentary Power interruption" or "Low voltage detected"	
83	-	o	o	Indoor	Low water pressure	Water pressure of the system is below 0.5 bar
84	-	o	o	Indoor	High water pressure	Water pressure of the system has increased above 3.7 bar
85	-	o	o	Indoor	Float Switch Alarm	Float switch detects high level of water at drain pane. Malfunction of the drain pump.
						It is required to configure "Float switch" Accessory as input signal
100	-	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."  <b>NOTE</b> <i>This alarm is shown in the outdoor unit with alarm code "EE".</i>

### 12.2.2 Alarms for YUTAKI CASCADE CONTROLLER ATW-YCC-03

Alarm Code	Retry Stop Code	Origin	Detail of Abnormality	Main Factors
03	-	Communication	Lost communication with all Sub 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	-	Sub unit	All Sub units are in alarm state or there is no communication. Alarm release, when issue disappears	Sub 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)	
208	-	Cascade Controller	Module with Repeated H-LINK address	Wrong slave address configuration
209	-	Cascade Controller	Sub DHW configured on unexisting module	Wrong configuration of the YCC controller. There is at least one Sub unit configured as Sub DHW tank without any DHW Main unit
21X	-	Sub 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.	Sub unit alarm

### 12.2.3 Alarms for Outdoor units

Alarm Code	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, inert 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.
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.
57	Outdoor	Activating the protection of the fan motor	
5B	Outdoor fan	Activation of over current protection	

Alarm Code	Category	Type of abnormality	Main cause
5C	Outdoor fan	Abnormality in current detection circuit	
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.

### 12.2.4 Alarms for LCD

Alarm Code	Retry Stop Code	YUTAKI S/SC	Origin	Detail of Abnormality	Main Factors
202	-	(o)	LCD	Wrong settings of PC-ARFH2E	
203	-	(o)	LCD	Sub PC-ARFH2E stops answering to Main PC-ARFH2E	Loose, disconnected, broken or short-circuited connector
204	-	(o)	LCD	Indoor unit stops answering to Main PC-ARFH2E	Loose, disconnected, broken or short-circuited connector

## 13 MAINTENANCE

### 13.1 REMOVING THE COVERS

If it is necessary to access to the indoor unit components, please follow these operations.

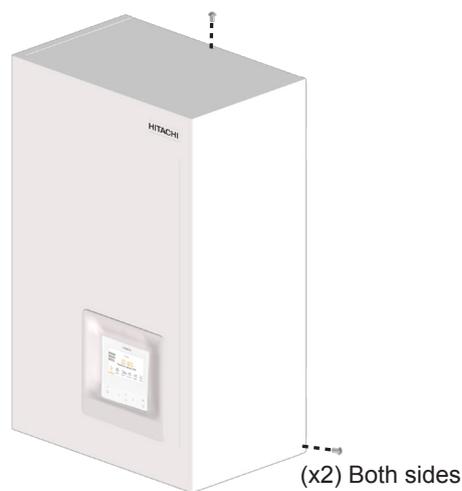
#### 13.1.1 YUTAKI S

##### 13.1.1.1 Removing the indoor unit service cover

###### NOTE

*The indoor unit service cover needs to be removed for any task inside the indoor unit.*

- 1 Remove the screws which fix the service cover.



- 2 Slide the service cover slightly upward and remove it pulling to back.



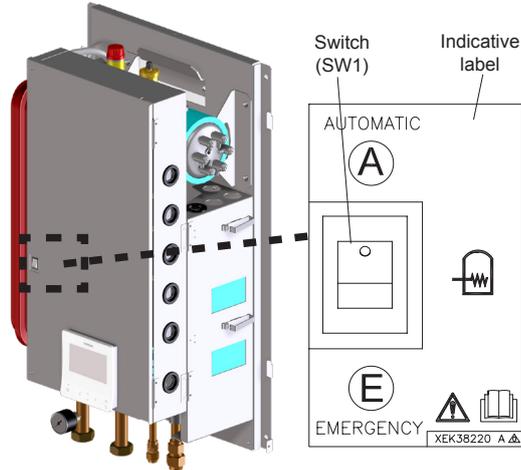
###### CAUTION

- Pay attention of no falling off the service cover.
- Take care when removing service cover; the parts inside the unit could be hot.

### 13.1.1.2 Removing indoor unit electrical box

**⚠ DANGER**

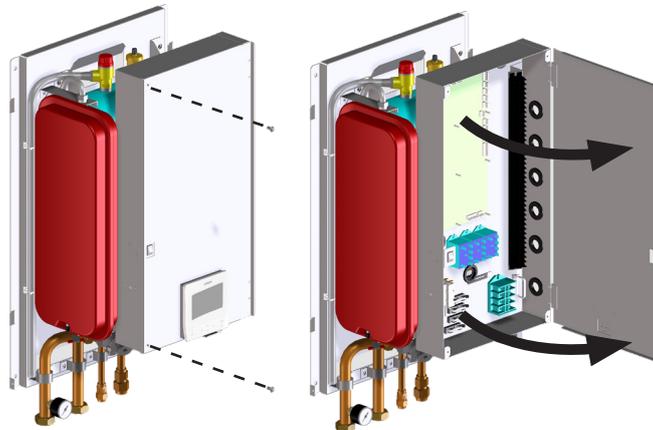
- *Disconnect the unit from the power supply before touching any of the parts in order to avoid an electrical shock.*
- *Do not touch the switch for DHW tank heater operation when handling the electrical box. Keep the position of this switch in factory setting position ("Automatic" operation).*



◆ **Remove the electrical box cover**

**RWM-(2.0-3.0)R1E**

- 1 Remove the indoor unit service cover as explained above.
- 2 Unscrew the 2 front screws of the electrical box cover and then, rotate it.

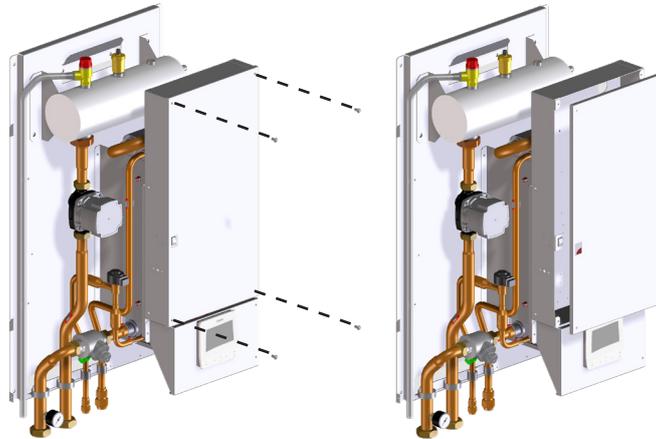


**⚠ CAUTION**

*Take care with the electrical box components in order to avoid damaging it.*

**RWM-(4.0-10.0)N1E**

- 1 Remove the indoor unit service cover as explained above.
- 2 Unscrew the 4 front screws of the electrical box cover and then, remove it.

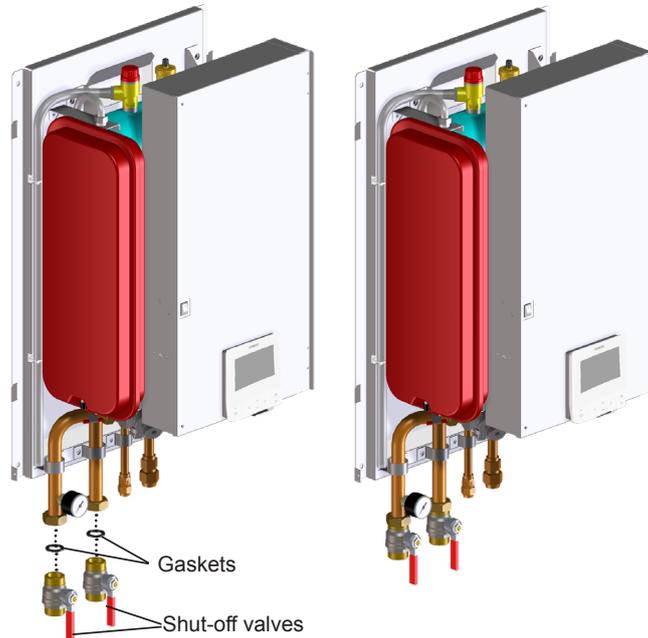


**⚠ CAUTION**

Take care with the electrical box components in order to avoid damaging it.

**13.1.1.3 Space heating pipes connection**

The unit is factory supplied with two shut-off valves which have to be connected to the water inlet / outlet connections. With these shut-off valves it is very practical to connect the indoor unit to the heating system by using the factory supplied gaskets just below the valves (G 1" connection for 2.0-3.0HP; G 1-1/4" connection for 4.0-10.0HP). Then, the space heating installation can be carried out.



**13.1.1.4 Drain pipes connection**

For a correct drainage, connect the drain pipe for the safety valve to the general draining system.

**i NOTE**

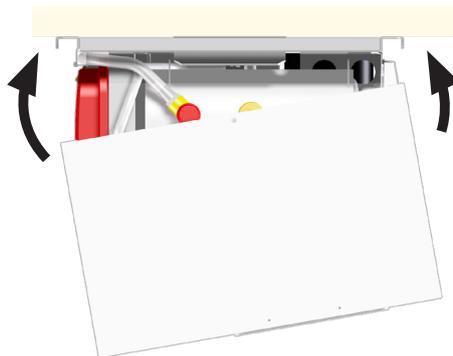
- The safety valve is activated when water pressure reaches 3 bars.
- Drain taps must be provided at all low points of the installation to permit complete drainage of the circuit during servicing.

### 13.1.1.5 Cover assembly

- 1 Place the indoor unit service cover at the same level of the wall mounted unit by taking it from the bottom side (one person can perform this operation, during this operation it is possible to rest the cover on the electrical box).



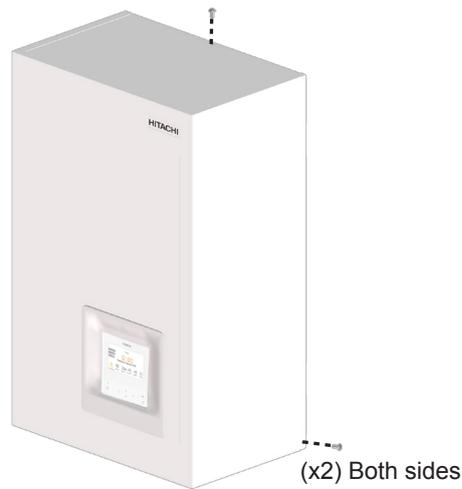
- 2 Place the holes on the right side of the indoor unit cover over the back plate hooks (x2 locations). When the right side is centred, repeat the operation on the left side. Put the holes on the left side of the indoor unit cover into the back plate frame hooks (x2 locations).



- 3 Once the 4 hooks are placed into their corresponding cover holes, adjust the cover to the end of the hooks.



- 4 Fix the indoor unit service cover using the screw which had been previously removed during the unpacking procedure.



### 13.1.2 YUTAKI S COMBI

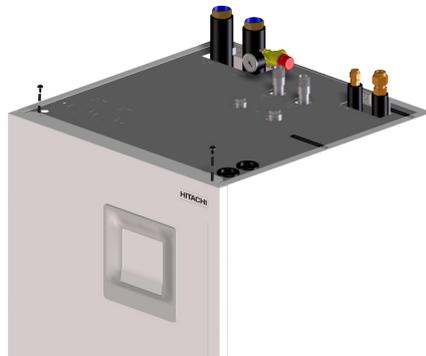
#### 13.1.2.1 Removing the indoor unit covers

**i** NOTE

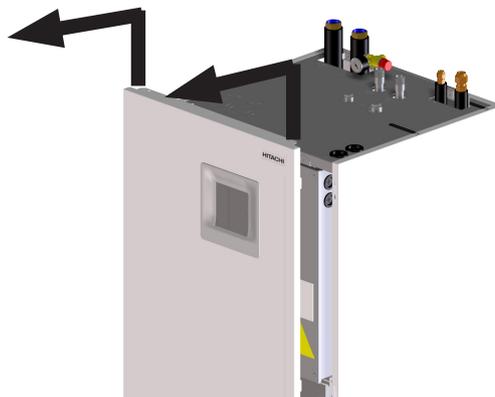
- Front cover needs to be removed for any task inside the indoor unit.
- Back, left and right covers do not need to be removed.

◆ **Removing the indoor unit front cover**

- 1 Remove the 2 screws of the indoor unit front cover.



- 2 Slide the service cover slightly upward and remove it pulling to back.



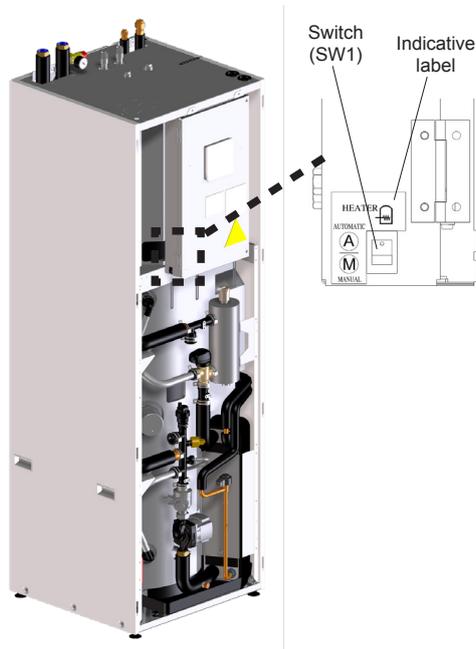
**⚠ CAUTION**

- Pay attention of no falling off the service cover.
- Take care when removing service cover; the parts inside the unit could be hot.

### 13.1.2.2 Removing indoor unit electrical box

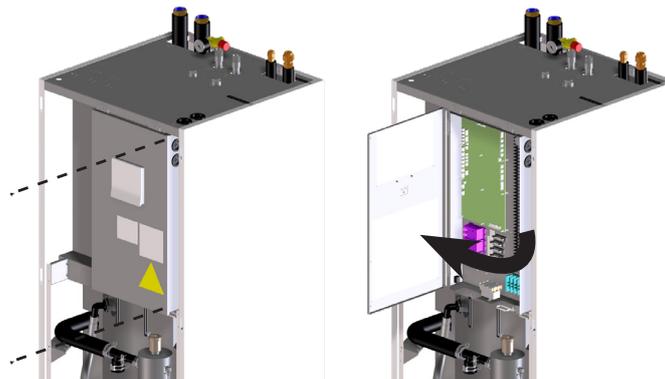
**⚠ DANGER**

- *Disconnect the unit from the power supply before touching any of the parts in order to avoid an electrical shock.*
- *Do not touch the switch for DHW tank heater operation when handling the electrical box. Keep the position of this switch in factory setting position ("Automatic" operation).*



**◆ Open the electrical box cover**

- 1 Remove the indoor unit front cover.
- 2 Unscrew the 2 front screws of the electrical box cover and then, open it.

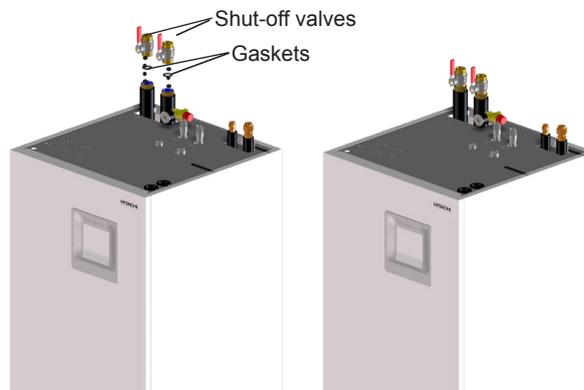


**⚠ CAUTION**

*Take care with the electrical box components in order to avoid damaging it.*

### 13.1.2.3 Space heating pipes connection

The unit is factory supplied with two shut-down valves to be connected to the water inlet/outlet pipe. With these shut-down valves it is very practical to connect the indoor unit to the heating system by using the factory supplied gaskets just below the valves (2-3HP: G 1"; 4-6HP: G 1-1/4"). Then, the space heating installation can be carried out.



### 13.1.2.4 DHW pipes connection

The connection between the DHW installation and the DHW connections of the indoor unit must be done taking into account the following considerations:

- 1 Install a pressure and temperature relief valve at the DHW inlet connection (as close as possible to the tank) to provide the following functions.
  - Pressure protection
  - Non-return function
  - Shut-down valve
  - Filling
  - Draining

If not, a specific device for each function should be installed.

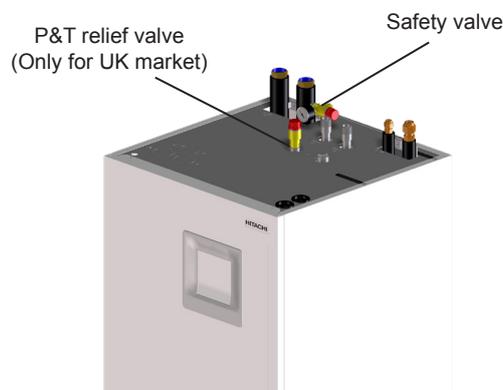
- 2 Install also a shut-down valve (field supplied) in the DHW outlet connection, in order to make easier any maintenance work.

**i** NOTE

For more details, refer to the section "14.2.3 Hydraulic circuit checking (space heating and DHW)".

### 13.1.2.5 Drain pipes connection

For a correct drainage, connect the drain pipe for the safety valve (located at the top rear side of the unit) to the general draining system.



**i** NOTE

- The safety valve is activated when water pressure reaches 3 bars.
- Drain taps must be provided at all low points of the installation to permit complete drainage of the circuit during servicing.
- P&T relief valve is activated when water pressure reaches 7 bar and/or water temperature reaches 96°C
- Discharge pipe must be made of metal or any other material capable to withstand the high pressure and high temperature from the P&T relief valve.
- For a correct installation and workpipe of the discharge pipe on UK market models, refer to UK Building Requirements

### 13.1.3 Test and check

Finally, test and check the following items:

- Water leakage
- Refrigerant leakage
- Electrical connection
- ...

#### NOTE

Please refer to the chapters of "6.3.3 Refrigerant charge", "6.5.3.1 Water filling" and "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." in this document and refer the Outdoor unit Installation and Operation manual for the specific details about refrigerant charge tasks.

#### DANGER

Do not connect the power supply to the indoor unit prior to filling the space heating circuit (and DHW circuit if it were the case) with water and checking water pressure and the total absence of any water leakage.

### 13.1.4 YUTAKI S80

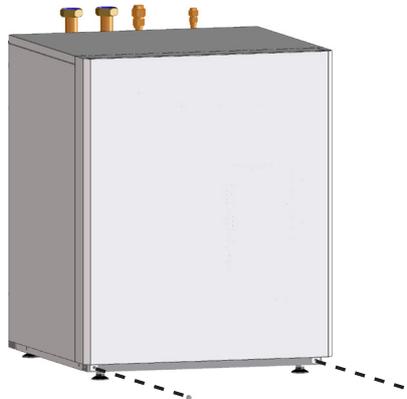
#### 13.1.4.1 Removing the indoor unit covers

#### NOTE

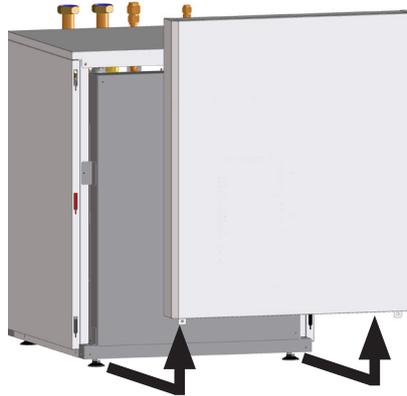
- The pictures shown correspond to the YUTAKI S80 TYPE 1, but the procedure for removing covers is exactly the same for the TYPE 2 except in case of lateral covers.
- Front cover needs to be removed for any task inside the indoor unit.
- Back cover does not need to be removed.

#### ◆ Removing the indoor unit front cover

- 1 Unscrew the 2 fixing screws at the lower side.



- 2 Pull the indoor unit front cover forward and then remove it.



◆ **Removing the indoor unit upper cover**

- 1 Remove the indoor unit front cover.
- 2 Unscrew the 2 upper fixing screws.



- 3 Pull the indoor unit upper cover forward and then remove it.



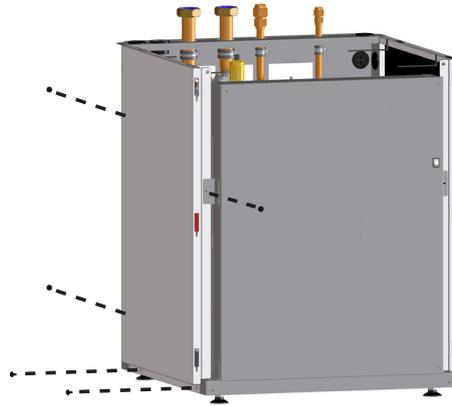
◆ **Removing the indoor unit lateral cover**



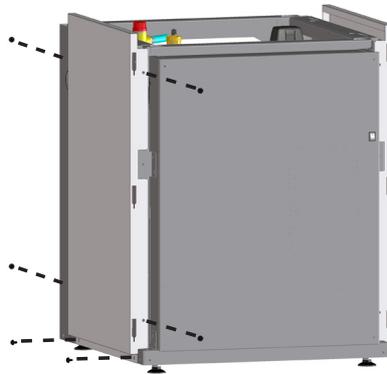
*Pictures refer to the left side cover, but the removal procedure is exactly the same for the right side cover.*

- 1 Remove the indoor unit front cover.
- 2 Remove the indoor unit upper cover.
- 3 Unscrew the screws which fix the cover to the indoor unit.

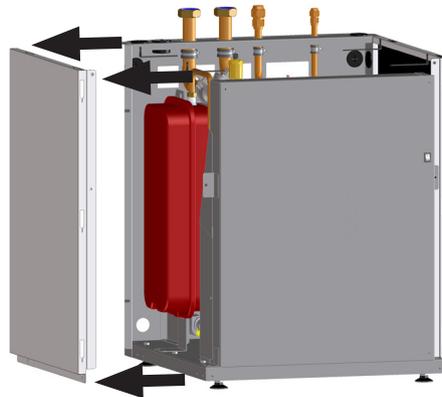
**TYPE 1 (5 screws)**



**TYPE 2 (6 screws)**



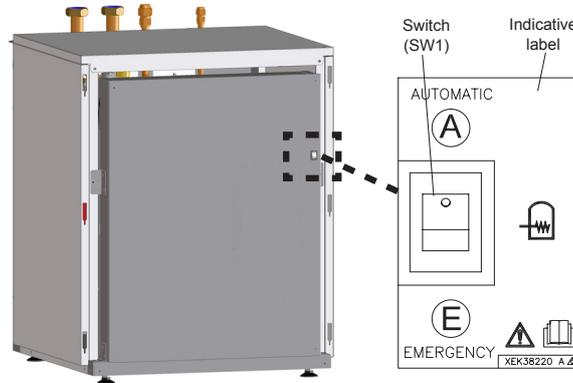
4 Remove the indoor unit lateral cover.



### 13.1.4.2 Removing indoor unit electrical box

**⚠ DANGER**

- *Disconnect the unit from the power supply before touching any of the parts in order to avoid an electrical shock.*
- *Do not touch the switch for DHW tank heater operation when handling the electrical box. Keep the position of this switch in factory setting position ("Automatic" operation).*



**◆ Removing the electrical box**

If there is a need of accessing to the indoor unit internal parts from the front, follow these steps:

- 1 Remove the indoor unit front cover.
- 2 Unscrew the 2 front screws and the 2 lower screws which fixes the electrical box to the unit structure.



- 3 Take out the electrical box from the indoor unit until it has passed the edge. Choose one of the following steps:
  - a. Electrical box can be rotated 90° approximately, making easy the indoor unit component's accessibility, without the necessity to remove all the electrical box.



- b. If it is needed, the electrical box can be completely extracted by disconnecting all the necessary wiring. Please, refer to the "Servicing" chapter of the "Service Manual" for the specific instructions.

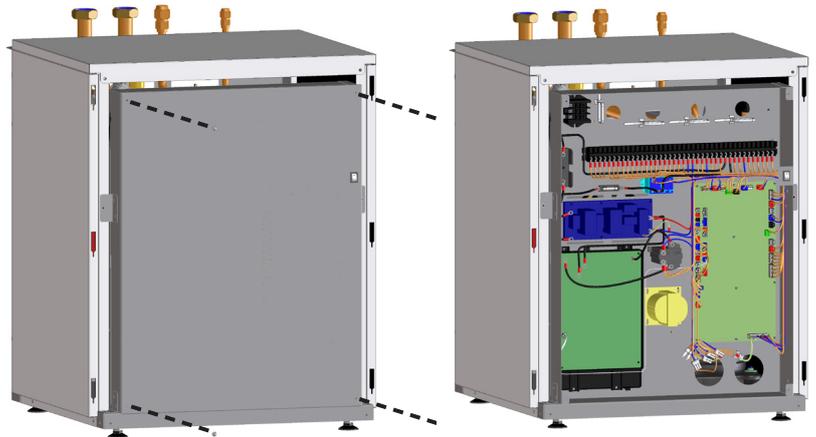
**⚠ CAUTION**

*Take care with the electrical box components in order to avoid damaging it.*

◆ **Removing the electrical box cover**

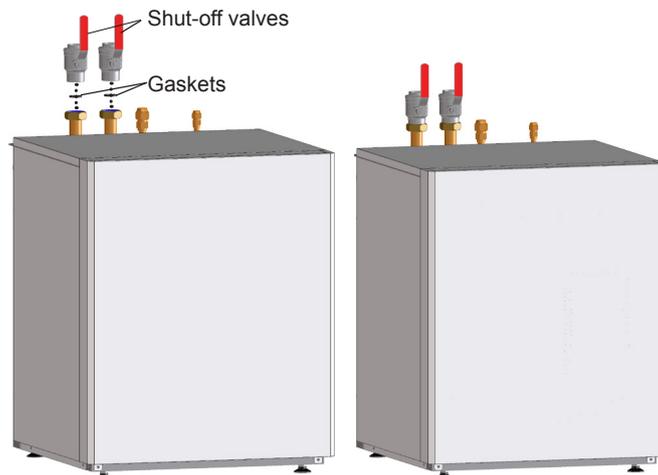
In order to access to the electrical components, follow these steps:

- 1 Remove the indoor unit front cover.
- 2 Unscrew the 2 front screws and the 2 lower screws which fixes the electrical box to the unit structure.



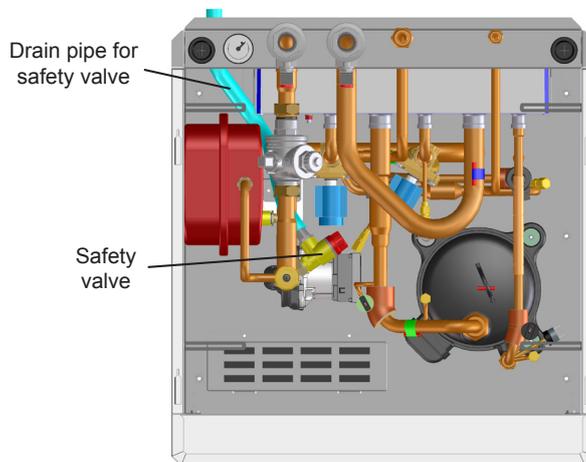
**13.1.5 Space heating pipes connection**

The unit is factory supplied with two shutdown valves which have to be connected to the water inlet / outlet connections. With these shut-off valves it is very practical to connect the indoor unit to the heating system by using the factory supplied gaskets just below the valves (G 1-1/4" connection). Then, the space heating installation can be carried out.



**13.1.6 Drain pipes connection**

For a correct drainage, connect the drain pipe for the safety valve to the general draining system.



**i NOTE**

- The safety valve is activated when water pressure reaches 3 bars.
- Drain taps must be provided at all low points of the installation to permit complete drainage of the circuit during servicing.

### 13.1.7 Test and check

Finally, test and check the following items:

- Water leakage
- Refrigerant leakage
- Electrical connection
- ...

#### NOTE

Please refer to the chapters of “6.3.3 Refrigerant charge”, “6.5.3.1 Water filling” and “14 Commissioning” in this document and refer the Outdoor unit Installation and Operation manual for the specific details about refrigerant charge tasks.

#### DANGER

**Do not connect the power supply to the indoor unit prior to filling the space heating circuit (and DHW circuit if it were the case) with water and checking water pressure and the total absence of any water leakage.**

---

## 13.2 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.

#### NOTE

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

### 13.2.1 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 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 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 compressor)

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

### 13.2.2 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 (m<sup>3</sup>/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 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).

#### 4 Ground wire

- Ground line: Check for the continuity to earth.

#### 5 YUTAKI S80 - 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 refrigerant pressure using the check joints of the outdoor unit.

**6 YUTAKI S80 - 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.

**7 YUTAKI S80 - 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.

**8 YUTAKI S80 - 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.

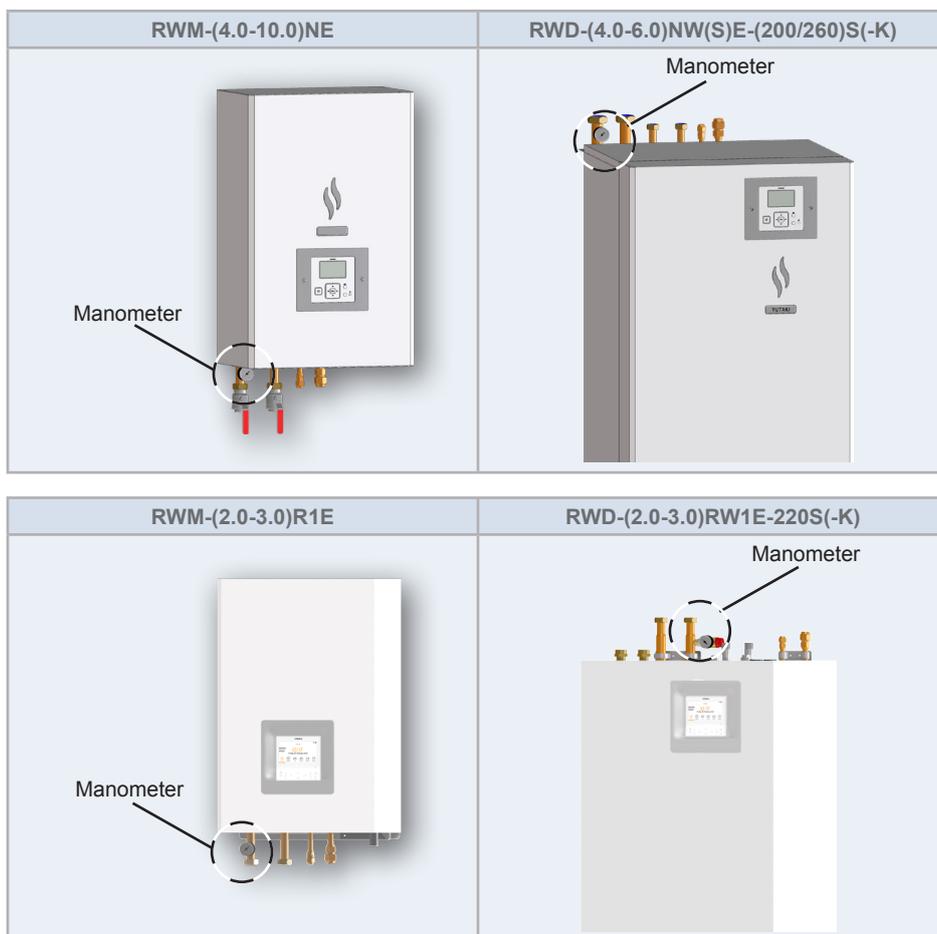
**9 YUTAKI S80 - Oil heater (Crankcase heater of the compressor)**

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

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:

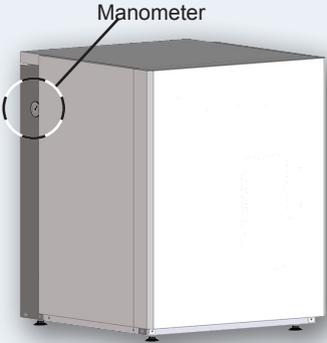
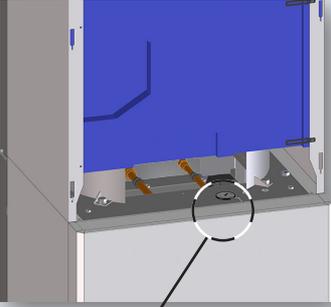
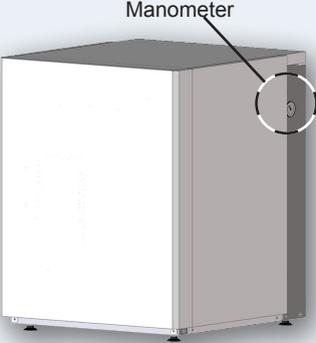


**YUTAKI M**

For the YUTAKI M 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 S80 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
 <p>Manometer</p> <p><b>i</b> NOTE</p> <p><i>This is the factory supplied location of the manometer</i></p>	 <p>Manometer</p> <p><b>i</b> NOTE</p> <p><i>This configuration requires removing the front panel, both for mounting and to display the gauge.</i></p>	 <p>Manometer</p> <p><b>i</b> NOTE</p> <p><i>Installer can change the location of the manometer gauge</i></p>

**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.

**10** 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.

**11** 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.**

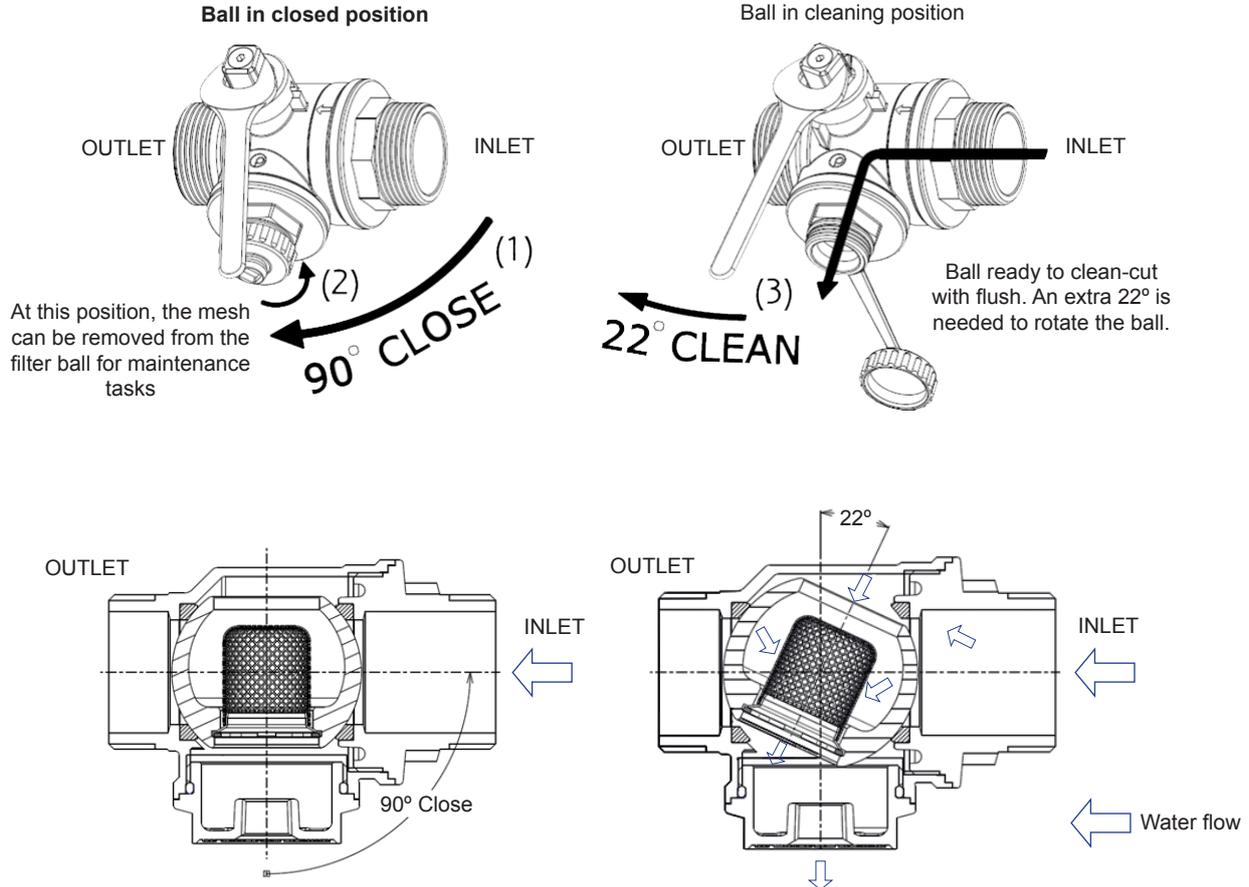
For a safe operation using the inspection hatch, proceed as it is explained in the manual of the specific unit.

Additional hydraulic elements are necessary in the DHW circuit. Refer to chapter [“6 Refrigerant and water piping”](#).

**12 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 90° 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 22° 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.



**i 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.

**13 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.

**14 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.

**15** 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.

**16** 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.

**17** 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.

**18** 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.

**19** 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.

**20** 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**

**i** **NOTE**

*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**

- 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 and collect the water into a bucket.
- 4 Once all the water has been drained, close again the drain port for indoor unit water.

**⚠ CAUTION**

*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.*

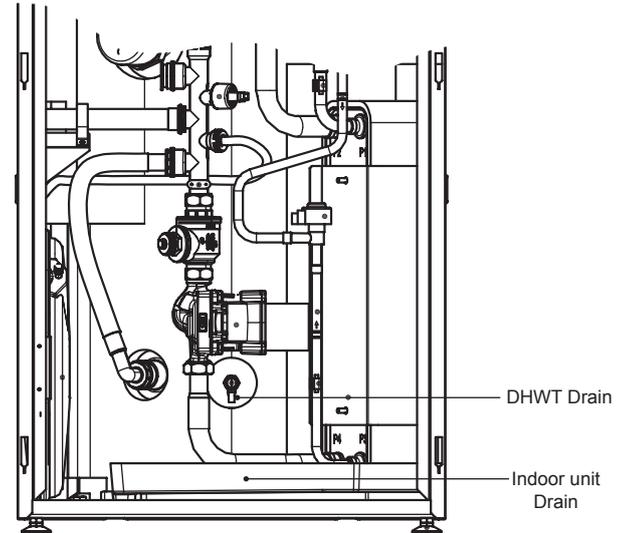
**Draining of the DHW circuit**

- 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 Open the shut-off valve of the DHW outlet to allow draining without creating a vacuum. Ensure that valve at the highest level of the DHW system is also opened.
- 4 Connect a drain hose to the drain port for DHW and lead the other end to the general draining.
- 5 Open manually the drain port for DHW and wait a long time until all the water has been removed.

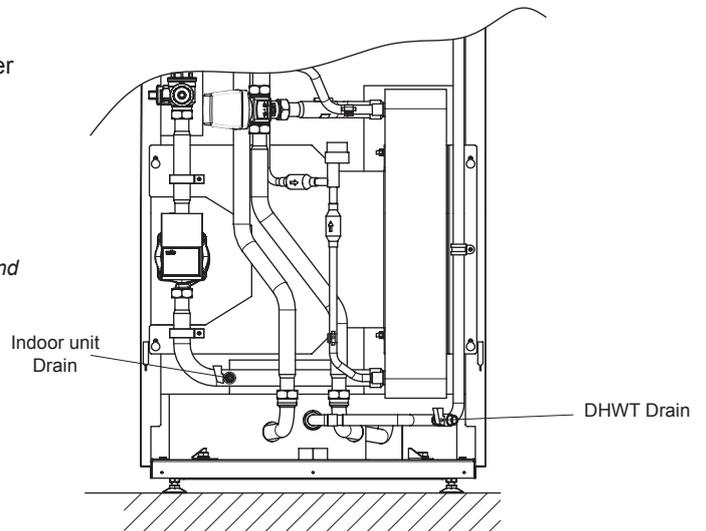
**⚠ CAUTION**

*When draining the DHW from its drain port, the leaved water could be hot and could keep in pressure. Perform the draining procedure carefully.*

RWD-(2.0-3.0)RW1E-220S(-K)



RWD-(4.0-6.0)NW1E-220S(-K)



**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.

 **CAUTION**

*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.

## 14 COMMISSIONING

### 14.1 BEFORE OPERATION

#### CAUTION

- Supply electrical power to the system for approximately 12 hours before start-up after a long shut-off. Do not start the system immediately after power supply, it may cause compressor failure because the compressor is not well-heated.
- When the system is started after a shut-off longer than approximately 3 months, it is recommended that the system be checked by your service contractor.
- Turn OFF the main switch when the system is to be stopped for a long period of time: as the oil heater is always energized even when the compressor is not working, there will be electricity consumption unless the main switch is turned OFF.

### 14.2 PRELIMINARY CHECK

When installation is complete, perform commissioning according to the following procedure, and hand over the system to the customer. Perform the commissioning of the units methodically, and check that the electrical wiring and the piping are correctly connected.

Indoor and outdoor units must be configured by the installer to get the perfect setting and the unit working.

#### NOTE

For the commissioning of the outdoor unit please refer to the outdoor unit installation and operation manual.

#### 14.2.1 Checking the unit

- Check external appearance of the unit to look for any damage due to transportation or installation.
- Check that all the covers are totally closed.
- Check that the recommended service space is respected (see [Service space](#) chapter in the Indoor unit Instruction manual and the outdoor unit Installation and operation manual).
- Check that the unit has been correctly installed onto the wall.

#### 14.2.2 Electrical checking

#### CAUTION

Do not operate the system until all the check points have been cleared:

- Check to ensure that the electrical resistance is more than 1 MΩ, by measuring the resistance between ground and electrical parts terminal. If not, do not operate the system until the electrical leakage is found and repaired. Do not impress the voltage on the terminals for transmission and sensors.
- Check to ensure that the switch on the main power source has been ON for more than 12 hours, in order to give the oil heater time to warm the compressor.
- In three-phase unit check phase sequence connection on terminal board.
- Check the power supply voltage ( $\pm 10\%$  of the rated voltage).
- Check that field-supplied electrical components (main switches, breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical specifications given in this document, and check that the components comply with national and local standards.
- Do not touch any electrical components for more than three minutes after turning OFF the main switch.
- Check the dip switch settings of the indoor unit and the outdoor unit are connected as shown in the corresponding chapter.
- Check to ensure the electrical wiring of the indoor unit and the outdoor unit are connected as shown in the chapter.
- Check to ensure the external wiring is correctly fixed. To avoid problems with vibrations, noises and cut out wires with the plates.

#### 14.2.3 Hydraulic circuit checking (space heating and DHW)

- Check that the circuit has been properly flushed and filled with water and that the installation has been drained: the pressure of the heating circuit must be 1.8 bar.
- Check for any leakage in water cycle. Pay special attention to the water piping connections.
- Make sure the system's internal water volume is correct.
- Check that the hydraulic circuit's valves are fully open.
- Check to see that electrical heater is completely filled with water by operating pressure of safety valve.
- Check to see that additional water pumps (WP2 or/and WP3) are correctly connected to terminal board.

## CAUTION

- Operating the system with closed valves will damage the unit.
- Check to see that air purge valve is open and that the hydraulic circuit is air purged. The installer is responsible of completely air purging the installation.
- Check that the water pump of the space heating circuit works within the pump operating range and that the water flow is over the pump's minimum. If the water flow is under 12 litres/minute for 4.0-10.0HP (6 litres/minute for 2.0/2.5/3.0HP unit) (with flow switch tolerance), alarm will be displayed on the unit.
- Remember that water connection must be accordance with local regulations.
- Water quality must comply with EU directive 98/83 EC.
- Electrical heater operation when not completely filled with water will damage the heater.

### 14.2.4 Checking the refrigerant circuit

- Check to ensure that the stop valves on the gas and liquid lines are fully open.
- Check that the size of the piping and the refrigerant charge comply with the applicable recommendations.
- Check the inside of the unit for refrigerant leakage. If there is a refrigerant leak, call your dealer.
- Check outdoor unit commissioning procedure manual.

## 14.3 COMMISSIONING PROCEDURE

This procedure is valid regardless of what options are on the module.

- When installation is complete and all necessary settings (Dip-switches in PCBs and user controller configuration) have been carried out, close the electrical box and place the cabinet as shown in the manual.
- Make the start-up wizard configuration in the user controller.
- Make a test run as shown in item [“14.4 Test run / air purge”](#).
- After test run is completed, start the entire unit or the selected circuit by pressing the OK button.

### ◆ Initial start-up at low outdoor ambient temperatures

During commissioning and when water temperature is very low, it is important for the water to be heated gradually. Additional optional function can be used for starting at low water temperature conditions: Screed drying function:

- The screed function is used exclusively for the process of drying a newly applied screed to the floor heating system. The process is based on EN-1264 par 4.
- When user activates screed function, the water set point follows a predetermined schedule:

- 1 Water set point is kept constant at 25°C for 3 days.
- 2 Water set-point is set to the maximum Heating supply temperature (but always limited to  $\leq 55^{\circ}\text{C}$ ) for 4 days.

## CAUTION

- Heating at lower water temperatures (approximately 10°C to 15°C) and lower outdoor ambient temperatures (<10°C) can be damaging to the heat pump when defrosting.
- As a result, Heating up to 15°C when outdoor temperature is lower than 10°C is performed by the Electrical Heater.

## NOTE

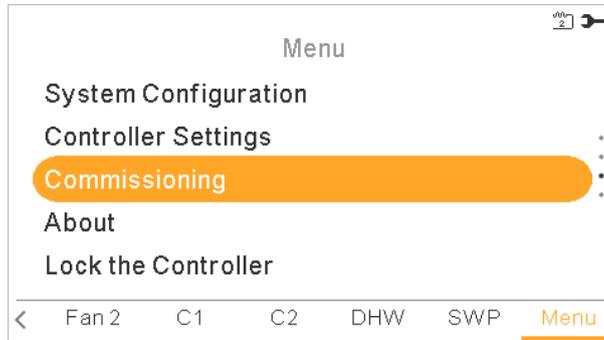
In case of Heater Forced OFF (by optional dip switch setting) these condition is not performed and heating is performed by Heat Pump. Hitachi is not responsible for its operation.

## CAUTION

It is recommended start the unit (first power ON) with heater forced OFF and compressor forced OFF (See [“6.7.2.3 Additional hydraulic optional elements \(For DHW\)”](#)). In order to circulate water by water pump and remove possible air into the heater (Check heater completely filled).

### 14.4 TEST RUN / AIR PURGE

Test run is a working mode used when commissioning the installation. Some settings are made to let the installer an easy job. Air purge function drives the pump in a way for evacuating air bubbles in the installation.

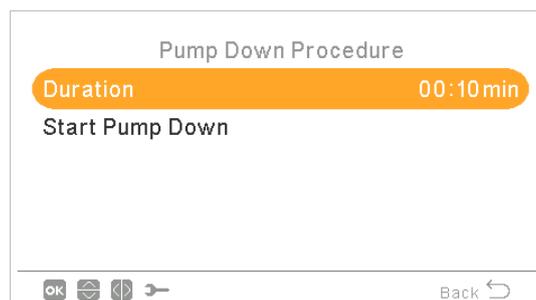
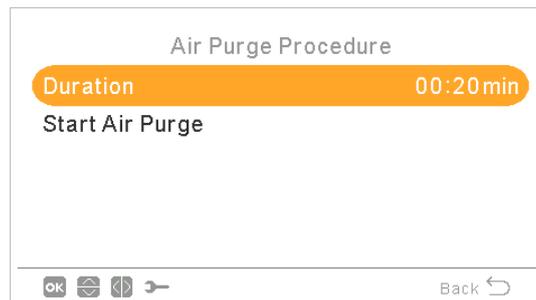
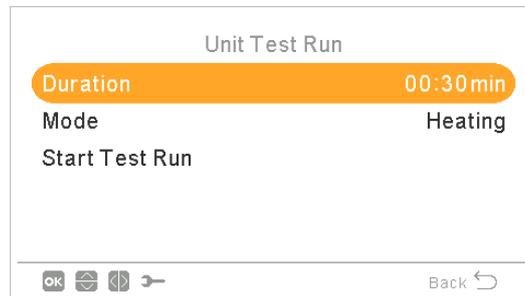


Example for PC-ARFH2E

This menu shows the following test to be launched:

- Unit Test Run
- Air Purge
- Screed Drying
- Pump down procedure

After “Test Run”, “Air Purge” or “Pump down procedure” option is selected, the YUTAKI user controller asks for the duration of the test.

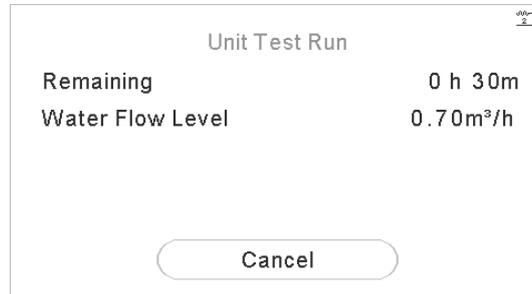


Example for PC-ARFH2E

In case of test run, user can also select the mode of the test (cooling or heating).

When user confirms the test run or the air purge, the YUTAKI user controller sends the order to the indoor.

During the execution of this test, the following screen is shown:



- When the test starts, the user controller will exit from the installer mode.
- User can cancel the test run regardless of the time left for test finishing.
- The Test Run icon is shown in the notifications zone, but the notification of this test run is taken from H-LINK.

When test run has finished, an information message is displayed in the screen, and pressing accept, the user returns to the global view.

#### NOTE

- *When commissioning and installing the unit, it is very important to use the "Air purge" function to remove all the air in the water circuit. When the air purge function is running, the water pump starts the automatic air venting routine which consists of regulating the speed and open/close configured 3-way valve to help to evacuate air from the system.*
- *For Outdoor test run, refer to Outdoor Unit Installation Manual.*
- *If there is a Heater or a Boiler installed, disable the operation before running the test run.*





Cooling & Heating

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