HITACHI

- EN INSTALLATION AND OPERATION MANUAL
- ES MANUAL DE INSTALACIÓN Y FUNCIONAMIENTO
- DE INSTALLATIONS- UND BETRIEBSHANDBUCH
- FR MANUEL D'INSTALLATION ET DE FONCTIONNEMENT
- (T) MANUALE D'INSTALLAZIONE E D'USO

- PT MANUAL DE INSTALAÇÃO E DE FUNCIONAMENTO
- DA INSTALLATIONS- OG BETJENINGSVEJLEDNING
- NL INSTALLATIE- EN BEDIENINGSHANDLEIDING
- SV INSTALLATION- OCH DRIFTHANDBOK
- ΕΙ ΕΓΧΕΙΡΙΔΙΟ ΕΓΚΑΤΑΣΤΑΣΗΣ ΚΑΙ ΛΕΙΤΟΥΡΓΙΑΣ

YUTAKI SERIES AND YUTAKI CASCADE CONTROLLER

R410A series R32 series













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R410A series R32 series











<u>English</u>

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ledere 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.

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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.

<u>Ελλhnika</u>

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

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





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.

A precaución

Éste 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.

A 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 règlementations 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 poichè 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.

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 varmepumpen 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.

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.

\land 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 värmepumpen 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.

<u>Μ</u> 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.

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

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1 GENERAL INFORMATION

1.1 GENERAL INFORMATION

1.1.1 General notes

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No type of modification must be made to the equipment without prior, written authorization from the manufacturer.

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) 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...).

УUTAKI 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 a built-in domestic hot water tank available in two sizes (200 or 260 L). 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.

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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.

\Lambda DANGER

- The text following this symbol contains information and instructions relating directly to your safety.
- Not taking these instructions into account could lead to serious, very serious or even fatal injuries to you and others.

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

- The text following this symbol contains information and instructions relating directly to your safety.
- 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.

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- 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-	eparating hyphen (fixed)						
		Compres	Compressor power (HP): 2, 2.5, 3, 4, 5, 6, 8, 10.					
			For water combination					
				Heat pun	пр			
					V: Single —: Three	phase uni phase un	t (1~ 230∖ it (3N~ 40	/ 50Hz) 0V 50Hz)
						N: R410/ R: R32 re	A refrigera efrigerant	nt
							Premium	n series
								E: Made in Europe —: Made in Japan
RAS	-	X	W	Н	(V)	(X)	P	(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 (fi	ixed)		
		Compres	sor power	of the com	nbined out	door unit (HP): 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0.
			R410A re	efrigerant		
				R32 refri	gerant	
					Made in	Europe
						-W: Without LCD Controller (sold separately as accessory)
RWM	-	X.X	N	(R)	E	(-W)

• 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. R-410A refrigerant R32 refrigerant Water-to-water DHW heat exchanger - : Standard model S : Model for solar combination Made in Europe Position-separating hyphen (fixed) Tank model: 200/260 L Tank material: Stainless steel -K: Model for UK market -W: Without LCD Controller (sold separately as accessory) RWD X.X Ν (R) W (X) Е XXX S (-K) (-W)

YUTAKI S80

Indoor unit

Unit type	Unit type: YUTAKI S80 (Split system - Single water module (Indoor unit) - High & Very High temperature)							
	Position-	separating	hyphen (fi	xed)				
		Compres	sor power	(HP): 4.0,	5.0, 6.0.			
			V: Single —: Three	phase uni phase uni	t (1~ 230V it (3N~ 400	50Hz))V 50Hz)		
				R-410A r	efrigerant			
					R-134a re	efrigerant		
						—: Type1 W: Type2	1: Version 2: Version 1	for operation in DHW with a remote tank 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: 20	00/260 L					
		Tank mat	erial: Stain	less steel			
			Position-	separating	hyphen (fi	xed)	
				Electric h	eater of 2.	7 kW	
					Series		
						Made in I	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	eparating hyphen (fixed)					
		Compres	Compressor power (HP): 2.0, 3.0					
			V: Single	phase uni	t (1~ 230V 50Hz)			
				R32 refriç	gerant			
					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

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1.3.1.4 Complementary system

♦ YUTAKI CASCADE CONTROLLER



1.3.2 Product list

1.3.2.1 Split system - R32 Outdoor unit

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

1.3.2.2 Split system - R410A Outdoor unit

1~ 230	1~ 230V 50Hz					
RAS-2WHVNP	-	-				
RAS-2.5WHVNP	-	-				
RAS-3WHVNP	-	-				
-	RAS-4WHVNPE	RAS-4WHNPE				
-	RAS-5WHVNPE	RAS-5WHNPE				
-	RAS-6WHVNPE	RAS-6WHNPE				
-	-	RAS-8WHNPE				
-	-	RAS-10WHNPE				

1.3.2.3 Split system - Indoor unit

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YUTAKI S

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1~ 230	V 50Hz	3N~ 400V 50Hz					
RWM-2.0NRE(-W)	-	-	-				
RWM-2.5NRE(-W)	-	-	-				
RWM-3.0NRE(-W)	-	-	-				
-	RWM-4.0NE(-W)	RWM-4.0NE(-W)	-				
-	RWM-5.0NE(-W)	RWM-5.0NE(-W)	-				
-	RWM-6.0NE(-W)	RWM-6.0NE(-W)	-				
-	-	-	RWM-8.0NE(-W)				
-	-	-	RWM-10.0NE(-W)				
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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 units.

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• 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

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1~ 230V 50Hz	3N~ 400V 50Hz					
RWD-2.0NRWE-200S(-W)	-					
RWD-2.0NRWE-260S(-W)	-					
RWD-2.5NRWE-200S(-W)	-					
RWD-2.5NRWE-260S(-W)	-					
RWD-3.0NRWE-200S(-W)	-					
RWD-3.0NRWE-260S(-W)	-					
RWD-4.0NWE-200S(-W)	RWD-4.0NWE-200S(-W)					
RWD-4.0NWE-260S(-W)	RWD-4.0NWE-260S(-W)					
RWD-5.0NWE-200S(-W)	RWD-5.0NWE-200S(-W)					
RWD-5.0NWE-260S(-W)	RWD-5.0NWE-260S(-W)					
RWD-6.0NWE-200S(-W)	RWD-6.0NWE-200S(-W)					
RWD-6.0NWE-260S(-W)	RWD-6.0NWE-260S(-W)					

Model for solar combination

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1~ 230V 50Hz	3N~ 400V 50Hz						
RWD-2.0NRWSE-260S(-W)	-						
RWD-2.5NRWSE-260S(-W)	-						
RWD-3.0NRWSE-260S(-W)	-						
RWD-4.0NWSE-260S(-W)	RWD-4.0NWSE-260S(-W)						
RWD-5.0NWSE-260S(-W)	RWD-5.0NWSE-260S(-W)						
RWD-6.0NWSE-260S(-W)	RWD-6.0NWSE-260S(-W)						

Model for UK market

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1~ 230V 50Hz	3N~ 400V 50Hz						
RWD-2.0NRWE-200(S)-K	-						
RWD-2.0NRWE-260(S)-K	-						
RWD-2.5NRWE-200(S)-K	-						
RWD-2.5NRWE-260(S)-K	-						
RWD-3.0NRWE-200(S)-K	-						
RWD-3.0NRWE-260(S)-K	-						
RWD-4.0NWE-200(S)-K	RWD-4.0NWE-200(S)-K						
RWD-4.0NWE-260(S)-K	RWD-4.0NWE-260(S)-K						
RWD-5.0NWE-200(S)-K	RWD-5.0NWE-200(S)-K						
RWD-5.0NWE-260(S)-K	RWD-5.0NWE-260(S)-K						
RWD-6.0NWE-200(S)-K	RWD-6.0NWE-200(S)-K						
RWD-6.0NWE-260(S)-K	RWD-6.0NWE-260(S)-K						

YUTAKI S80

Indoor unit

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TYPE 1: Version for operation (Tank cannot be plug	in DHW but with a remote tank ged 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

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

i 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)



i NOTE

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

• YUTAKI M (R410A)

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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

- 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.

- 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.

2.2 IMPORTANT NOTICE

- PLEASE READ THE INSTRUCTION MANUAL AND THE FILES ON THE CD-ROM CAREFULLY BEFORE STARTING TO WORK ON THE INSTALLATION OF THE AIR TO WATER HEAT PUMP SYSTEM. Failure to observe the instructions for installation, use and operation described in this documentation may result in operating failure including potentially serious faults, or even the destruction of the air to water heat pump system.
- 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 ELECTRICAL DATA

3.2.1 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.

i 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 "6 ELECTRICAL AND CONTROL SETTINGS" chapter.

3.2.2 Split system - R410A Outdoor unit

RAS-(2-10)WH(V)NP(E) in combination with YUTAKI S, YUTAKI S COMBI

Model Power sup		Applicable voltage		Co	mpressor a				
	Power supply			Coc	Cooling		Heating		Max. IPT
		U max. (V)	U min. (V)	RNC (A)	IPT (KW)	RNC (A)	IPT (KW)	(~)	(((())))
RAS-2WHVNP				5.2	1.17	3.4	0.77	14	3.14
RAS-2.5WHVNP			207	6.8	1.54	5.3	1.21	16	3.59
RAS-3WHVNP		252		9.4	2.14	7.0	1.60	18	4.05
RAS-4WHVNPE	1~ 230V 50HZ	200		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				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	3N~ 400V 50Hz	440	360	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		Co	mpressor a																
	Power supply			Cooling		Heating		MC	Max. IPT												
	U max. (V)	U min. (V)	RNC (A)	IPT (KW)	RNC (A)	IPT (KW)	(A)	(KVV)													
RAS-4WHVNPE				9.2	2.11	9.3	2.12	20	6.93												
RAS-5WHVNPE	1~ 230V 50Hz	253	207	12.6	2.87	12.7	2.90	25	6.93												
RAS-6WHVNPE																16.0	3.65	15.0	3.43	25	6.93
RAS-4WHNPE				3.4	2.11	3.4	2.12	14	8.70												
RAS-5WHNPE	3N~ 400V 50Hz	440	360	4.6	2.87	4.6	2.90	14	8.70												
RAS-6WHNPE				5.8	3.65	5.5	3.43	16	9.95												

3.2.3 Split system - R32 Outdoor unit

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

Model Power supply	Applicable voltage		Compressor and fan motors						
			Cooling		Heating		MC (A)	Max. IPT	
		U max. (V)	U min. (V)	RNC (A)	IPT (KW)	RNC (A)	IPT (KW)	(~)	(1744)
RAS-2WHVRP				4.5	1.00	5.0	1.09	10.4	2.27
RAS-2.5WHVRP	1~ 230V 50Hz	253	207	5.0	1.12	5.5	1.19	12.9	2.82
RAS-3WHVRP				7.6	1.67	8.1	1.79	15.8	3.49

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3.2.4 Split system - Indoor unit

3.2.4.1 YUTAKI S

RWM-(2.0-10.0)N(R)E(-W)

		Applicable voltage				IDT	MC	Max.
Model Power s	Power supply	U max. (V)	U min. (V)	Operation mode	(A)	(kW)	(A)	IPT (kW)
				Without electric heater	0.2	0.05	0.2	0.05
	1~ 220\/ 50Hz	253	207	With electric heater	13.3	3.05	14.6	3.05
RWW-(2.0-3.0)NRE(-W) 1~	1.4 230 8 30112	200	207	With DHW tank heater	13.3	3.05	14.6	3.05
				With electric and DHW tank heaters	26.3	6.05	28.9	6.05
1~ 230V 5			207	Without electric heater	0.3	0.08	0.3	0.08
	1~ 230V 50Hz	253		With electric heater	26.4	6.08	29.0	6.08
				With DHW tank heater	13.4	3.08	14.7	3.08
				With electric and DHW tank heaters	39.5	9.08	43.4	9.08
RVVIVI-(4.0-0.0)INE(-VV)		440	360	Without electric heater	0.3	0.08	0.3	0.08
				With electric heater	8.8	6.08	9.9	6.08
	311~ 400 0 50 HZ			With DHW tank heater	4.4	3.08	14.7	3.08
				With electric and DHW tank heaters	13.1	9.08	24.2	9.08
			360	Without electric heater	0.3	0.08	0.6	0.14
	3N~ 400\/ 50Hz	440		With electric heater	13.1	9.08	14.9	9.14
RVVIVI-(0.0/10.0)INE(-VV)	311- 400V 30HZ	440		With DHW tank heater	4.4	3.08	15.0	3.14
				With electric and DHW tank heaters	17.4	12.08	29.2	12.14

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".

3.2.4.2 YUTAKI S COMBI

RWD-(2.0-6.0)N(R)W(S)E-(200/260)S(-K)(-W)

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		Applicab	le voltage			IDT	MC	Max.
Model	Power supply	U max. (V)	U min. (V)	Operation mode	(A)	(kW)	(A)	IPT (kW)
				Without electric heater	0.2	0.05	0.2	0.05
RWD-(2.0-3.0)NRW(S)	1-, 220\/ 50Ц7	252	207	With electric heater	13.3	3.05	14.6	3.05
E-(200/260)S(-K)(-W)	1~ 2300 30HZ	200	207	With DHW tank heater	12.2	2.80	12.7	2.80
				With Drive tank heater With electric and DHW tank heaters Without electric heater	25.2	5.80	27.1	5.80
	1~ 230V 50Hz		207	Without electric heater	0.3	0.08	0.3	0.08
		253		With electric heater	26.4	6.08	29.0	6.08
				With DHW tank heater	12.3	2.83	12.8	2.83
RWD-(4.0-6.0)NW(S)E-				With electric and DHW tank heaters	38.4	8.83	41.5	8.83
(200/260)S(-K)(-W)				Without electric heater	0.3	0.08	0.3	0.08
	201 4001/ 5011-		360	With electric heater	8.8	6.08	9.9	6.08
	311~ 400 0 50 112	440		With DHW tank heater	4.1	2.83	12.8	2.83
				With electric and DHW tank heaters	12.7	8.83	22.4	8.83

3.2.4.3 YUTAKI S80

Version for indoor unit alone

RWH-(4.0-6.0)(V)NFE

		Applicab	le voltage	Operation mode		IDT	MC	Max.
Model	Power supply	U max. (V)	U min. (V)			(kW)	(A)	IPT (kW)
				Without simultaneous operation of electric heater in DHW tank	12.1	2.73	24	5.33
RVVH-4.0VNFE				With simultaneous operation of electric heater in DHW tank	25.4	5.73	38	8.33
	1-, 220\/ 50H-7	252	207	Without simultaneous operation of electric heater in DHW tank	12.3	2.78	28	6.23
RWH-5.0VNFE	1~ 2300 5002	200	207	With simultaneous operation of electric heater in DHW tank	25.6	5.78	42	9.23
				Without simultaneous operation of electric heater in DHW tank	14.3	3.23	31	6.91
RVVH-0.0VINFE				With simultaneous operation of electric heater in DHW tank	27.6	6.23	45	9.91
				Without simultaneous operation of electric heater in DHW tank	5.6	2.73	10	4.68
RWH-4.0NFE				With simultaneous operation of electric heater in DHW tank	11.8	5.73	24	7.68
	3N~ 400V 50Hz	440	360	Without simultaneous operation of electric heater in DHW tank	5.7	2.78	10	4.68
KVVH-5.UNFE	3IN~ 400V 50HZ	440) 360	With simultaneous operation of electric heater in DHW tank	11.9	5.78	24	7.68
RWH-6.0NFE				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

i 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)

		Applicab	le voltage			IDT	MO	Max.
Model	Power supply	U max. (V)	U min. (V)	Operation mode	(A)	(kW)	(A)	IPT (kW)
				Without simultaneous operation of electric heater in DHW tank	12.1	2.73	24	5.33
RVVN-4.0VNFVVE				With simultaneous operation of electric heater in DHW tank	24.3	5.48	36	7.94
	4 000/ 5011-	050	207	Without simultaneous operation of electric heater in DHW tank	12.3	2.78	28	6.23
RVVH-5.0VNFVVE	1~ 230V 50HZ	253		With simultaneous operation of electric heater in DHW tank	24.5	5.53	40	8.84
				Without simultaneous operation of electric heater in DHW tank	14.3	3.23	31	6.91
RVVH-0.0VNFVVE	WVH-6.UVNFWE			With simultaneous operation of electric heater in DHW tank	26.5	5.98	43	9.52
				Without simultaneous operation of electric heater in DHW tank	5.6	2.73	10	4.68
RWH-4.0NFWE				With simultaneous operation of electric heater in DHW tank	11.3	5.48	22	7.30
	2No. 400\/ 50Hz	440	260	Without simultaneous operation of electric heater in DHW tank	5.7	2.78	10	4.68
RWN-5.0NFWE	3N~ 400V 50Hz	440	360	With simultaneous operation of electric heater in DHW tank	11.4	5.53	22	7.30
				Without simultaneous operation of electric heater in DHW tank	6.7	3.23	10	4.68
RWH-6.0NFWE				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)

ı.

Madal	Description	Applicabl	e voltage	RNC	IPT	МС	Max. IPT
Model	Power supply	U max. (V)	nax. (V) U min. (V)		(kW)	(A)	(kW)
DHWS200S-2.7H2E(-W)	1-, 220\/ 50Ц-	252	207	12.0	2.75	13.2	2.75
DHWS260S-2.7H2E(-W)	1~ 230V 50HZ	200	207	12.0	2.75	13.2	2.75

ENGLI

3.2.5 Monobloc system

◆ YUTAKI M (R32)

RASM-(2-3)VRE

	Model Power supply U max. U min	cable tage		Cooling		Heating				
Model		U max.	U min.	Operation mode	operation		operation		MC (A)	Max. IPT (kW)
		(V)	(V)		RNC (A)	IPT (KW)	RNC (A)	IPT (KW)		()
DASM 2V/DE			Without DHW tank heater	4.8	1.00	5.5	1.14	10.6	2.32	
RASIVI-2VRE	1~ 230V	252	207	With DHW tank heater	4.8	1.00	18.8	3.89	23.1	5.07
50 RASM-3VRE	50Hz	200		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

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 M (R410A)

RASM-(4-6)(V)NE

		Applicable voltage			Cooling		Heating			
Model	Power supply	Power upply U max. U min.	Operation mode	operation		operation		МС (А)	Max. IPT (kW)	
		(V)	(V)		RNC (A)	IPT (KW)	RNC (A)	IPT (KW)		× ,
				Without DHW tank heater	9.7	2.20	9.6	2.18	30.8	7.01
RASIVI-4VINE				With DHW tank heater	21.7	4.95	9.6	2.18	43.3	9.88
	E 1~ 230V 2 50Hz 2	252	207	Without DHW tank heater	13.1	2.97	13.0	2.95	30.8	7.01
RASIN-SVIIL		200	207	With DHW tank heater	25.1	5.72	12.9	2.95	43.3	9.88
				Without DHW tank heater	15.4	3.50	16.4	3.72	30.8	7.01
RASIN-OVINE				With DHW tank heater	27.4	6.25	16.3	3.72	43.3	9.88
DASM ANE				Without DHW tank heater	3.6	2.20	3.6	2.18	14.3	8.77
RASIVI-4NE				With DHW tank heater	11.4	4.95	5.0	2.18	26.8	11.65
RASM-5NE 3N~ 400 50Hz	3N~ 400V	140	260	Without DHW tank heater	4.8	2.97	4.8	2.95	14.3	8.77
	50Hz	440	360	With DHW tank heater	13.2	5.72	6.8	2.95	26.8	11.65
DASM ONE				Without DHW tank heater	4.8	2.97	4.8	2.95	16.3	10.02
NASIVI-ONE				With DHW tank heater	12.8	5.72	6.6	2.95	28.8	12.90

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".

4 WORKING RANGE

4.1 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.

4.2 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 graph	nics for eac	n case		
Indoor ambient temperature					5~	30			

4.2.1 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).





4.2.2 DHW



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).







(*): Limit for 3HP

4.2.3 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).

4.2.4 Space cooling (Necessary cooling kit)



Continuous working range.

4.3 R32 TEMPERATURE WORKING RANGE

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

4.3.1 Space heating

YUTAKI (S / S COMBI)





Continuous working range.
Operation not possible.
Starting heat pump + Back-up heater.
Starting Heat Pump.
Starting only Back-up Heater operation.
Maximum setting temperature.
Minimum setting temperature.

i note

Items 6 and 6 only available if back-up heater is enabled.

YUTAKI M

(2.0/3.0)HP



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

т



4.3.2 DHW

For YUTAKI (S /S COMBI)

(2.0~3.0)HP



 Continuous working range. Starting only Back-up Heater operation. Maximum setting temperature. 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



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.

4.3.3 Swimming pool heating


4.3.4 Space cooling (Necessary cooling kit)



4.4 R410A HYDRAULIC WORKING RANGE

4.4.1 Hydraulic data

YUTAKI S

MODEL	2.0 HP	2.5 HP	3.0 HP	4.0 HP	5.0 HP	6.0 HP	8.0 HP	10.0 HP	
Minimum water flow rate (*1)	m³/h	0.5	0.6	0.6	1.0	1.1	1.2	2.0	2.2
Maximum water flow rate (*1)	m³/h	1.9	2.0	2.1	2.9	3.0	3.0	4.5	4.6
Minimum installation water volume (*2)	I	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	2.0 HP	2.5 HP	3.0 HP	4.0 HP	5.0 HP	6.0 HP	
Minimum water flow rate (*1)	m³/h	0.5	0.6	0.6	1.0	1.1	1.2
Maximum water flow rate (*1)	m³/h	1.8	1.9	1.9	2.7	2.8	2.8
Minimum installation water volume (*2)	1	28	28	28	38	46	55
Minimum allowable water pressure	MPa	0.1					
Maximum allowable water pressure	MPa	0.3					

YUTAKI \$80

	4.0 HP		5.0	HP	6.0 HP		
MODEL		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)	m³/h	1.0		1.1		1.2	
Maximum water flow rate (*1)	m³/h	2.8	2.5	3.2	2.7	3.2	2.7
Minimum installation water volume (*2)	I	40		50		50	
Minimum allowable water pressure	MPa	0.1					
Maximum allowable water pressure	MPa	0.3					

ENGLI

• YUTAKI M

MODEL	4.0 HP	5.0 HP	6.0 HP	
Minimum water flow rate (*1)	m³/h	1.0	1.1	1.2
Maximum water flow rate (*1)	m³/h	2.8	3.0	3.0
Minimum installation water volume (*2)	I	38	46	55
Minimum allowable water pressure	MPa		0.1	
Maximum allowable water pressure	MPa		0.3	

i 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.

4.5 R32 HYDRAULIC WORKING RANGE

4.5.1 Hydraulic data

YUTAKI S

MODEL	2.0 HP	2.5 HP	3.0 HP	
Minimum water flow rate (*1)	m³/h	0.5	0.6	0.6
Maximum water flow rate (*1)	m³/h	1.9	2.0	2.1
Minimum installation water volume	I	28	28	28
Minimum allowable water pressure	MPa	0.1		
Maximum allowable water pressure	MPa	a 0.3		

YUTAKI S COMBI

MODEL		2.0 HP	2.5 HP	3.0 HP
Minimum water flow rate (*1)	m³/h	0.5	0.6	0.6
Maximum water flow rate (*1)	m³/h	1.8	1.9	1.9
Minimum installation water volume	I	28	28	28
Minimum allowable water pressure	MPa	0.1		
Maximum allowable water pressure	MPa	0.3		

YUTAKI M

MODEL		2.0 HP	3.0 HP	
Minimum water flow rate (*1)	m³/h	0.5	0.6	
Maximum water flow rate (*1)	m³/h	1.9	2.1	
Minimum installation water volume	I	28 28		
Minimum allowable water pressure	MPa	0.1		
Maximum allowable water pressure	MPa	0.3		

i NOTE

(*1): Values calculated based on a ΔT (inlet/outlet): 3~8 °C

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4.5.2 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







ENGLI

• YUTAKI M (R410A)







• YUTAKI M (R32)



5.1 R32 REFRIGERANT CIRCUIT

5.1.1 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.

5.1.2 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 char	kg	1.50	1.60	1.81		
Minimum room area requireme	m²	No requirement is needed				
Minimum piping length betwee	n 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 (2/2.5 HP) 27 (3 HP)			
	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 char	kg	1.80	1.90	2.20	
Minimum room area requireme	m²	No requirement is needed Minimum area is required		n area is iired	
Minimum piping length betwee	n outdoor unit and indoor unit (Lmin)	m		3	
Maximum height difference bet	tween indoor and outdoor unit (H)				
	Outdoor unit higher than indoor unit	m		30	
	Indoor unit higher than outdoor unit	m		20	

i NOTE

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

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Minimum area requirements

In case of total refrigerant amount ≥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:





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

Outdoor unit		or unit	Refrigerant pipe		Indoor Unit			
Model	Piping	Piping Pipe Connection size		(Between Outdoor unit and Indoor unit)		Pipe Connection size		
length		Gas pipe	Liquid pipe	Gas pipe	Liquid pipe	Gas pipe	Liquid pipe	
2HP	3~50m	(X 10 7 (1/0")	(X 12 7 (1/2")	Q 6 25 (1/4")	Ø 12 7	0 6 25	Ø 15 99 (5/9") (*)	Ø 6.35 (1/4")
2.5HP	3~50m	Ø 12.7 (1/2)	0.35 (1/4)	0 12.7	0.55	9 15.66 (5/6) ()	Ø 9.52 (3/8") (*)	
	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") (*)	
3HP	27~40m	Ø 15.88 (5/8")	Ø 9.52 (3/8")	Ø 15.88	Ø 9.52	Ø 15.88 (5/8")	Ø 9.52 (3/8") (*)	

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

5.1.3.1 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.

5.1.3.2 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 _o (kg)
RASM-2VRE	1.2
RASM-3VRE	1.3

5.2 R410A REFRIGERANT CIRCUIT

5.2.1 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.



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

			Indoor unit		
Model	Pipe size		Madal	Pipe size	
	Gas pipe	Liquid pipe	woder	Gas pipe	Liquid pipe
2 HP	C 10 7 (1/0") (*)	Ø 6.35 (1/4")	2.0 HP	Ø 15.88 (5/8") (*)	Ø 6.35 (1/4")
2.5 HP	0 12.7 (1/2)()	Ø 6.35 (1/4") (*)	2.5 HP		Ø 9.52 (3/8") (*)
(3-6) 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")
8 HP		Ø 9.52 (3/8")	8 HP		Ø 9.52 (3/8")
10 HP	0 25.4 (1)	Ø 12.7 (1/2")	10 HP	0 25.4 (1)	Ø 12.7 (1/2")

i note

(*): The refrigerant gas piping size for 2/2.5 HP and the refrigerant liquid piping size of 2.5 HP are different between outdoor and indoor unit. Therefore, refrigerant pipe adapters are required to connect these units. Pipe size must be installed according to the outdoor units. These pipe adapters are factory supplied with the outdoor unit.

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

5.2.1.1 Refrigerant charge before shipment (W $_0$ (kg))

YUTAKI S/S COMBI

Outdoor unit model	W ₀ (kg)
RAS-2WHVNP	1.4
RAS-2.5WHVNP	1.5
RAS-3WHVNP	1.7
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	3.3	-
	RAS-(5/6)WH(V)NPE	3.4	-
Indoor unit	RWH-(4.0-6.0)(V)NF(W)E	-	1.9

YUTAKI M

Model	W _o (kg)
RASM-4(V)NE	2.8
RASM-(5/6)(V)NE	3.1

5.2.2 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.

A 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 ³)
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 ³)	
	2 HP	3.2	
	2.5 HP	3.5	
YUTAKI (S / S COMBI)	3 HP	3.9	
	4 HP	7.5	
	5/6 HP	7.8	
YUTAKI S	8 HP	11.4	
	10 HP	12.1	
YUTAKI S80 4-6 HP		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 ³)
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 is 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 size to the floor area.
- 3 There must be a ventilator fan connected to a gas leak detector, with a ventilator capacity of 0.4 m³/min or higher per Japanese refrigeration ton (= compressor displacement volume / (5.7 m³/h (R410A) or 14.4 m³/h (R134a)) of the air conditioning system using the refrigerant.

Model	Tonnes
RAS-2WHVNP	0.88
RAS-2.5WHVNP	1.14
RAS-3WHVNP	1.35
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:



5.3 WATER PIPING

5.3.1 Water piping length

Consider the following guidelines when designing the water circuit.

Item	YUTAKI S	YUTAKI S COMBI	YUTAKI S80		YUTAKI M
			DHW tank above the indoor unit	DHW tank beside the indoor unit	(R410A) / YUTAKI M (R32)
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

5.3.2 Water piping size

YUTAKI S

			(inches)	
	Space heating pipes connection			
Model	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)

	Spac	e heating con	nection		DHW connect	tion	Solar con	nection (*)
Model	Inlet connection	Outlet connection	Shut-off valves	Inlet connection	Outlet connection	Pressure and temperature relief valve (**)	Inlet connection	Outlet connection
(2.0-3.0)HP	G 1" (female)	G 1" (female)	G 1" (male) - G 1" (male)	G 3/4" (female)	G 3/4" (female)	Ø15 mm	G 1/2" (female)	G 1/2" (female)
(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 3/4" (female)	G 3/4" (female)	Ø15 mm	G 1/2" (female)	G 1/2" (female)

(*): Only for models for solar combination.

(**): 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)	
	Space heating connection			
Model	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)
	Space heating connection		Heating coil connection		
Model	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			
(1") (1") (1")	One pipe for the connection between 3-way valve connection and heating coil inlet connection of the tank. The other one for the connection between T-branch connection and heating coil outlet connection of the tank.			

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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			
(1") (x2)	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)		
	Space	Space heating pipes connection			
Model	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)		

5.3.3 Water quality

- 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 CaCO₃.

Recommendations for the DHW circuit

The following is the recommended standard water quality.

ltom	DHW space	Tendency ⁽¹⁾	
item	Water supplied (3)	Corrosion	Deposits of scales
Electrical Conductivity (mS/m) (25°C) $\{\mu S/cm\}$ (25 °C) ⁽²⁾	100~2000	٢	٢
Chlorine Ion (mg Cl ⁻ /l)	max 250	۹	
Sulphate (mg/l)	max 250	٩	
Combination of chloride and sulphate (mg/l)	max 300	٢	٢
Total Hardness (mg CaCO ₃ /I)	60~150		٢

i 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.

5.3.4 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.

6.1 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} (Ω)
RAS-2WHVNP		-
RAS-2.5WHVNP		-
RAS-3WHVNP	1~ 230V 50Hz	0.42
RAS-4WHVNPE		0.25
RAS-5WHVNPE		0.25
RAS-6WHVNPE		0.25
RAS-4WHNPE		-
RAS-5WHNPE		-
RAS-6WHNPE	3N~ 400V 50Hz	-
RAS-8WHNPE		-
RAS-10WHNPE		-

Split system - R32 Outdoor unit

Model	Power supply	Z _{max} (Ω)
RAS-2WHVRP		-
RAS-2.5WHVRP	1~ 230V 50Hz	-
RAS-3WHVRP		0.43

Split system - Indoor unit

YUTAKI S

Model	Power supply	Operation mode	Ζ _{max} (Ω)
		Without electric heater	-
		With electric heater	-
RVVIVI(2.0-3.0)INRE(-VV)	1~ 2300 5002	With DHW tank heater	-
		With electric and DHW tank heaters	0.26
	1~ 230V 50Hz	Without electric heater	-
		With electric heater	0.26
		With DHW tank heater	-
		With electric and DHW tank heaters	0.17
RVVIVI-(4.0-0.0)INE(-VV)		Without electric heater	-
	201- 400\/ 5011-	With electric heater	-
	3N~ 400V 50HZ	With DHW tank heater	-
		With electric and DHW tank heaters	-

HITACHI

Model	Power supply	Operation mode	Ζ _{max} (Ω)
RWM-(8.0/10.0)NE(-W) 3N~ 400V		Without electric heater	-
	3N~ 400V 50Hz	With electric heater	-
		With DHW tank heater	-
		With electric and DHW tank heaters	0.45

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	Ζ _{max} (Ω)
		Without electric heaters	-
RWD-(2.0-3.0)		With electric heater	-
(-W)	1~ 230V 30HZ	With DHW tank heater	-
		With electric and DHW tank heaters	0.28
	1~ 230V 50Hz	Without electric heaters	-
		With electric heater	0.26
		With DHW tank heater	-
RWD-(4.0-6.0)		With electric and DHW tank heaters	0.18
NW(S)E-(200/260)S		Without electric heaters	-
	201 400\/ 5011-	With electric heater	-
	311~ 4000 5002	With DHW tank heater	-
		With electric and DHW tank heaters	-

YUTAKI S80

Indoor unit alone

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Model	Power supply	Operation mode	Z _{max} (Ω)
		Without DHW tank heater	0.31
RVVN-4.0VNFE		With DHW tank heater	0.20
		Without DHW tank heater	0.27
RWH-DUVINFE	1~ 230V 50H2	With DHW tank heater	0.18
		Without DHW tank heater	0.24
RWH-0.UVINFE		With DHW tank heater	0.17
RWH-4.0NFE		Without DHW tank heater	-
		With DHW tank heater	0.38
	201- 400\/ 5011-	Without DHW tank heater	-
RWH-5.UNFE	3IN~ 400V 50HZ	With DHW tank heater	0.38
		Without DHW tank heater	-
		With DHW tank heater	0.38

Indoor unit in combination with DHW tank

Model	Power supply	Operation mode	Ζ _{max} (Ω)
		Without DHW tank heater	0.31
RVVII-4.0VINFVVE		With DHW tank heater	0.21
	1-, 220\/ 50Ц7	Without DHW tank heater	0.27
RVVN-5.0VNFWE	1~ 230V 50HZ	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
		Without DHW tank heater	-
RVVH-5.UNEVVE		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	Ζ _{max} (Ω)
		Without DHW tank heater	0.24
RASIVI-4VINE		With DHW tank heater	0.17
		Without DHW tank heater	0.24
RASIVI-SVINE	1~ 230V 50H2	With DHW tank heater	0.17
		Without DHW tank heater	0.24
RASIM-OVINE		With DHW tank heater	0.17
RASM-4NE		Without DHW tank heater	-
		With DHW tank heater	0.31
	201 400\/ 5011-	Without DHW tank heater	-
RASIM-SINE	3IN~ 400V 50HZ	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	Ζ _{max} (Ω)
RASM-2VRE		-	-
		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:

	Models						
Status regarding	Split system						
IEC 61000-3-2 and			Indoor unit		Υυτακι Μ		
IEC 61000-3-12	Outdoor unit	YUTAKI S	YUTAKI S COMBI	YUTAKI S80	(R410A) / YUTAKI M (R32)		
Equipment complying with IEC 61000-3-2 (*): Professional use	RAS-2WHVNP RAS-2.5WHVNP RAS-3WHVNP RAS-2WHVRP(*) RAS-2.5WHVRP(*) RAS-3WHVRP (*) RAS-4WHNPE (*) RAS-5WHNPE (*) RAS-6WHNPE (*)	RWM-2.0NRE(-W) RWM-2.5NRE(-W) RWM-3.0NRE(-W) RWM-4.0NE(-W) (3N~) RWM-5.0NE(-W) (3N~) RWM-6.0NE(-W) (3N~) RWM-8.0NE(-W) RWM-10.0NE(-W)	-	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-4.0NE(-W) (1~) RWM-5.0NE(-W) (1~) RWM-6.0NE(-W) (1~)	RWD-2.0NRWE-200S(-W) RWD-2.0NRW(S)E-260S(-W) RWD-2.5NRWE-200S(-W) RWD-2.5NRW(S)E-260S(-W) RWD-3.0NRWE-200S(-W) RWD-3.0NRW(S)E-260S(-W) RWD-4.0NW(S)E-260S(-W) RWD-5.0NW(S)E-260S(-W) RWD-5.0NW(S)E-260S(-W) RWD-6.0NW(S)E-260S(-W)	RWH-4.0VNFE RWH-5.0VNFE RWH-6.0VNFE RWH-6.0VNFWE RWH-5.0VNFWE RWH-6.0VNFWE RWH-6.0NFWE 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 "6.2 *Electrical connection*" for the detailed information.

6.2 ELECTRICAL CONNECTION

- 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.

6.2.1 Wiring size

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

Split system - R410A Outdoor unit

Madal	Dowerownek	Max autrent (A)	Power supply cables	Transmitting cables	Actuator cables
woder	Power supply	wax. current (A)	EN60335-1	EN60335-1	EN60335-1
RAS-2WHVNP		14	2 x 2.5 mm ² + GND		
RAS-2.5WHVNP		16	2 x 2.5 mm ² + GND		
RAS-3WHVNP	1~ 230V 50Hz	18	2 x 4.0 mm ² + GND		
RAS-4WHVNPE		30	2 x 6.0 mm ² + GND		
RAS-5WHVNPE		30	2 x 6.0 mm ² + GND	2 x 0.75 mm ² (Shielded cable)	2 x 0.75 mm² + GND
RAS-6WHVNPE		30	2 x 6.0 mm ² + GND		
RAS-4WHNPE		14	4 x 2.5 mm ² + GND		
RAS-5WHNPE		14	4 x 2.5 mm ² + GND		
RAS-6WHNPE	3N~ 400V 50Hz	16	4 x 4.0 mm ² + GND		
RAS-8WHNPE		24	4 x 6.0 mm ² + GND		
RAS-10WHNPE		24	4 x 6.0 mm ² + GND		

Split system - R32 Outdoor unit

Model P	Power supply	Max ourrept (A)	Power supply cables	Transmitting cables	Actuator cables	
	i onoi ouppiy	Max. current (A)	EN60335-1	EN60335-1	EN60335-1	
RAS-2WHVRP		10.4	2 x 2.5 mm² + GND			
RAS-2.5WHVRP 1~ 230V 50Hz	12.9	2 x 2.5 mm² + GND	2 x 0.75 mm ² (Shielded cable)	2 x 0.75 mm ² + GND		
RAS-3WHVRP		15.8	2 x 4.0 mm² + GND			

• Split system - Indoor unit

YUTAKI S

Model	Power supply	Operation mode	Max. current	Power supply cables	Transmitting cables	Actuator cables
			(A)	EN60335-1	EN60335-1	EN60335-1
		Without electric heaters	0.2	2 x 0.75 mm ² + GND		
	1~ 230\/ 50Hz	With electric heater	14.6	2 x 2.5 mm ² + GND		
RVVIVI-(2.0-3.0)INRL(-VV)	10 2300 30112	With DHW tank heater	14.6	2 x 2.5 mm ² + GND		
		With electric and DHW tank heaters	28.9	2 x 6.0 mm ² + GND		2 x 0.75 mm² + GND
		Without electric heaters	0.3	2 x 0.75 mm ² + GND	2 x 0.75 mm² (Shielded cable)	
	1~ 230V 50Hz	With electric heater	29.0	2 x 6.0 mm ² + GND		
		With DHW tank heater	14.7	2 x 2.5 mm ² + GND		
		With electric and DHW tank heaters	43.4	2 x 10.0 mm ² + GND		
RVVIVI-(4.0-0.0)INE(-VV)	0NL 400X 50LL-	Without electric heaters	0.3	4 x 0.75mm ² + GND		
		With electric heater	9.9	4 x 2.5 mm ² + GND		
	3N~ 400V 50HZ	With DHW tank heater	14.7	4 x 2.5 mm ² + GND		
		With electric and DHW tank heaters	24.2	4 x 6.0 mm ² + GND		
		Without electric heaters	0.6	4 x 0.75 mm ² + GND	_	
	2Na: 400\/ 50Hz	With electric heater	14.9	4 x 4.0 mm ² + GND		
KVVIVI-(0.0/10.0)IN⊂(-VV)	31V 400V 30HZ	With DHW tank heater	15.0	4 x 2.5 mm ² + GND		
		With electric and DHW tank heaters	29.2	4 x 6.0 mm ² + 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".

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Model	Power supply	Operation mode	Max. current	Power supply cables	Transmitting cables	Actuator cables
			(A)	EN60335-1	EN60335-1	EN60335-1
		Without electric heaters	0.2	2 x 0.75 mm ² + GND		
RWD-(2.0-3.0)	1	With electric heater	14.6	2 x 2.5 mm² + GND		
(-W)	1~2300 5002	With DHW tank heater	12.7	2 x 2.5 mm ² + GND		2 x 0.75 mm² + GND
		With electric and DHW tank heaters	27.1	2 x 6.0 mm ² + GND		
	1~230V 50Hz	Without electric heaters	0.3	2 x 0.75 mm ² + GND		
		With electric heater	29.0	2 x 6.0 mm ² + GND	2 x 0.75 mm ²	
		With DHW tank heater	12.8	2 x 2.5 mm² + GND	cable)	
RWD-(4.0-6.0)		With electric and DHW tank heaters	41.5	2 x 10.0 mm ² + GND		
(-W)		Without electric heaters	0.3	4 x 0.75 mm ² + GND		
	201-4001/ 5011-	With electric heater	9.9	4 x 2.5 mm² + GND		
	3N~400V 50HZ	With DHW tank heater	12.8	4 x 2.5 mm² + GND		
		With electric and DHW tank heaters	22.4	4 x 6.0 mm ² + GND		

YUTAKI S80

Indoor unit alone

Model	Power supply	Operation mode	Max. current	Power supply cables	Transmitting cables	Actuator cables
			(A)	EN60335-1	EN60335-1	EN60335-1
		Without DHW tank heater	24	2 x 6.0 mm ² + GND		
RWH-4.0VINFE		With DHW tank heater	38	2 x 10.0 mm ² + GND		
		Without DHW tank heater	28	2 x 6.0 mm ² + GND		
RWH-3.0VNFE	1~ 230V 50H2	With DHW tank heater	42	2 x 10.0 mm ² + GND		
		Without DHW tank heater	31	2 x 6.0 mm ² + GND		
RWH-0.0VINFE		With DHW tank heater	45	2 x 10.0 mm ² + GND	2 x 0.75 mm ²	2 x 0.75 mm ²
		Without DHW tank heater	10	4 x 2.5 mm ² + GND	(Shielded cable)	+ GND
RWH-4.0NFE		With DHW tank heater	24	4 x 4.0 mm ² + GND		
	201-4001/ 5011-	Without DHW tank heater	10	4 x 2.5 mm² + GND		
RWH-DUNFE	3N~ 400V 50HZ	With DHW tank heater	24	4 x 4.0 mm ² + GND		
		Without DHW tank heater	10	4 x 2.5 mm ² + GND		
RVVII-0.UNFE		With DHW tank heater	24	4 x 4.0 mm ² + GND		

Indoor unit in combination with DHW tank

Model	Power supply	Operation mode	Max. current	Power supply cables	Transmitting cables	Actuator cables
			(A)	EN60335-1	EN60335-1	EN60335-1
		Without DHW tank heater	24	2 x 6.0 mm ² + GND		
RVVH-4.0VINEVVE		With DHW tank heater	36	2 x 10.0 mm ² + GND		
	1~ 230\/ 50Ц7	Without DHW tank heater	28	2 x 6.0 mm ² + GND		2 x 0.75 mm ² +
RWH-D.UVINFWE	14 2300 30112	With DHW tank heater	40	2 x 10.0 mm ² + GND		
		Without DHW tank heater	31	2 x 10.0 mm ² + GND		
RWH-0.0VINFWE		With DHW tank heater	43	2 x 10.0 mm ² + GND	2 x 0.75 mm ²	
		Without DHW tank heater	10	4 x 4.0 mm ² + GND	(Shleided	GND
RVVH-4.0NFVVE		With DHW tank heater	22	4 x 10.0 mm ² + GND		
	2Na. 400\/ 50Hz	Without DHW tank heater	10	4 x 4.0 mm ² + GND		
RVVH-5.0NFVVE	311~ 4000 5002	With DHW tank heater	22	4 x 10.0 mm ² + GND		
		Without DHW tank heater	10	4 x 4.0 mm ² + GND		
KWN-0.0NFWE		With DHW tank heater	22	4 x 10.0 mm ² + GND		

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	Max. current	Power supply cables	Transmitting cables	Actuator cables
			(A)	EN60335-1	EN60335-1	EN60335-1
		Without DHW tank heater	30.8	2 x 6.0 mm ² + GND		
RASIVI-4 VINE		With DHW tank heater	43.3	2 x 10.0 mm ² + GND		
RASM-5VNE 1~ 230V 50Hz		Without DHW tank heater	30.8	2 x 6.0 mm ² + GND		2 x 0.75 mm ²
	14 2300 30112	With DHW tank heater	43.3	2 x 10.0 mm ² + GND		
		Without DHW tank heater	30.8	2 x 6.0 mm ² + GND		
RASIVI-OVINE		With DHW tank heater	43.3	2 x 10.0 mm ² + GND	2 x 0.75 mm ²	
		Without DHW tank heater	14.3	4 x 4.0 mm ² + GND	cable)	+ GND
RASIVI-4INE		With DHW tank heater	26.8	4 x 6.0 mm ² + GND		
	201- 400\/ 50H-	Without DHW tank heater	14.3	4 x 4.0 mm ² + GND		
RASIM-5NE	3N~ 400V 50HZ	With DHW tank heater	26.8	4 x 6.0 mm ² + GND		
		Without DHW tank heater	16.3	4 x 6.0 mm² + GND		
NASIVI-UNE		With DHW tank heater	28.8	4 x 10.0 mm ² + 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".

Monobloc system - R32 YUTAKI M

Model	Power supply	Operation mode		Power supply cables	Transmitting cables	Actuator cables
			(A)	EN60335-1	EN60335-1	EN60335-1
	1~ 230V 50Hz	Without DHW tank heater	10.6	2 x 2.5 mm ² + GND		2 x 0.75 mm² + GND
RASIVI-2VRE		With DHW tank heater	23.1	2 x 6.0 mm ² + GND	2 x 0.75 mm ²	
RASM-3VRE		Without DHW tank heater	16.0	2 x 4.0 mm ² + GND	cable)	
		With DHW tank heater 28.5 2 x 6.0 mm² + 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".

С С

6.2.2 Minimum requirements of the protection devices

- 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).

i 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

Madal	Power supply	Applicab	le voltage	MC	СВ	ELB
woder	Power supply	U max. (V)	U min. (V)	(A)	(A)	(nº of poles/A/mA)
RAS-2WHVNP	1~ 230V 50Hz	253		14	16	
RAS-2.5WHVNP				16	16	
RAS-3WHVNP			207	18	20	2/40/20
RAS-4WHVNPE			207	30	32	
RAS-5WHVNPE				30	32	
RAS-6WHVNPE				30	32	
RAS-4WHNPE				14	15	
RAS-5WHNPE				14	15	
RAS-6WHNPE	3N~ 400V 50Hz	440	360	16	20	4/40/30
RAS-8WHNPE				24	25	
RAS-10WHNPE				24	25	

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

Split system - R32 Outdoor unit

Model	Doworoupply	Applicable voltage		MC	СВ	ELB	
	Power supply	U max. (V)	U min. (V)	(A)	(A)	(n° of poles/A/mA)	
RAS-2WHVRP	1~ 230V 50Hz	253	207	10.4	16		
RAS-2.5WHVRP				12.9	16	2/40/30	
RAS-3WHVRP				15.8	20		

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

• Split system - Indoor unit

YUTAKI S

		Applicable voltage			MC	CR	ELB	
Model	Power supply	U max. (V)	U min. (V)	Operation mode	(A)	(A)	(n° of poles/A/mA)	
				Without electric heaters	0.2	5		
	1~ 230\/ 50Hz	253	207	With electric heater	14.6	16	2/40/30	
RVVIVI-(2.0-3.0)NRE(-VV)	10 2300 30112	200	207	With DHW tank heater	14.6	16	2/40/30	
				With electric and DHW tank heaters	28.9	32		
				Without electric heaters	0.3	5		
	1~ 230V 50Hz	253	207	With electric heater	29.0	32	2/40/30	
				With DHW tank heater	14.7	16		
				With electric and DHW tank heaters	43.4	50	2/63/30	
RVVIVI-(4.0-0.0)INE(-VV)			360	Without electric heaters	0.3	5		
	201- 4001/ 5011-	110		With electric heater	9.9	15	4/40/30	
	311~ 400 0 50 12	440		With DHW tank heater	14.7	15		
				With electric and DHW tank heaters	24.2	25		
				Without electric heaters	0.6	5		
RWM-(8.0/10.0)NE(-W)	201- 4001/ 5011-	440	360	With electric heater	14.9	20	4/40/20	
	3N~ 400V 50Hz			With DHW tank heater	15.0	15	4/40/30	
				With electric and DHW tank heaters	29.2	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".

YUTAKI S COMBI

т

		Applicable voltage			MC	CP	ELD	
Model	Power supply	U max. (V)	U min. (V)	Operation mode	(A)	(A)	(nº of poles/A/mA)	
				Without electric heaters	0.2	5		
RWD-(2.0-3.0)NRW(S)	1~ 230\/ 50Hz	253	207	With electric heater	14.6	16	2/40/30	
E-(200/260)(-K)(-W)	10 2300 30112	200	207	With DHW tank heater	12.7	16	2/40/30	
				With electric and DHW tank heaters	27.1	32		
		050	207	Without electric heaters	0.3	5		
				With electric heater	29.0	32	2/40/30	
	1~ 230V 50HZ	200		With DHW tank heater	12.8	16		
RWD-(4.0-6.0)NW(S)				With electric and DHW tank heaters	41.5	50	2/63/30	
E-(200/260)S(-K)(-W)				Without electric heaters	0.3	5		
	201-4001/ 5011-	140	360	With electric heater	9.9	15	4/40/20	
	3N~ 400V 50Hz	440		With DHW tank heater	12.8	15	4/40/30	
				With electric and DHW tank heaters	22.4	25		

YUTAKI S80

Version for indoor unit alone

Madal	Dowerownhy	Applicab	le voltage	Operation mode	МС	СВ	ELB	
woder	Power supply	U max. (V)	U min. (V)	Operation mode	(A)	(A)	(n° of poles/A/mA)	
				Without DHW tank heater	24	32		
RVVH-4.0VNFE			With DHW tank heater	38	40	2/40/30		
	1~ 230\/ 50Hz	252	207	Without DHW tank heater	28	32		
RWH-5.0VNFE 1~ 230V 50H	1~ 230V 50H2	203	207	With DHW tank heater	42	50	2/63/30	
				Without DHW tank heater	31	32	2/40/30	
RVVH-0.0VINFE				With DHW tank heater	45	50	2/63/30	
				Without DHW tank heater	10	15		
				With DHW tank heater	24	25		
	3N~ 400\/ 50Hz	110	360	Without DHW tank heater	10	15	4/40/30	
RWH-5.0NFE	511 400 0 50112	440	360	With DHW tank heater	24	25	4/40/30	
				Without DHW tank heater	10	15		
				With DHW tank heater	24	25		

Version for combination with DHW tank

Model	Power oupply	Applicable voltage		Operation mode	МС	СВ	ELB		
woder	Power supply	U max. (V)	U min. (V)	Operation mode	(A)	(A)	(n° of poles/A/mA)		
				Without DHW tank heater	24	32			
RVVN-4.0VINEVVE				With DHW tank heater	36	40	2/40/30		
		050	207	Without DHW tank heater	28	32			
RWH-5.0VNFWE 1~ 230V 50Hz	1~ 230V 50HZ	253	207	With DHW tank heater	40	50	2/63/30		
	RWH-6.0VNFWE			Without DHW tank heater	31	32	2/40/30		
RVVN-0.0VINFVVE				With DHW tank heater	43	50	2/63/30		
				Without DHW tank heater	10	15	-		
				With DHW tank heater	22	25			
	2NI- 4001/ 50H-	440	260	Without DHW tank heater	10	15	4/40/20		
RWH-6.0NFWE	311 400 0 30112	440	360	With DHW tank heater	22	25	4/40/30		
				Without DHW tank heater	10	15			
				With DHW tank heater	22	25			

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

Medal	Power supply	Applicable voltage		Operation mode	МС	СВ	ELB	
woder		U max. (V)	U min. (V)	Operation mode	(A)	(A)	(nº of poles/A/mA)	
	M-4VNE			Without DHW tank heater	30.8	32	2/40/30	
				With DHW tank heater	43.3	50	2/63/30	
		252	207	Without DHW tank heater	30.8	32	2/40/30	
RASM-5VNE 1~ 230V 5	1~ 230V 30HZ	200	207	With DHW tank heater	43.3	50	2/63/30	
				Without DHW tank heater	30.8	32	2/40/30	
RASIVI-OVINE				With DHW tank heater	43.3	50	2/63/30	
				Without DHW tank heater	14.3	20		
RASIVI-4INE				With DHW tank heater	26.8	30		
	201- 4001/ 501-	440	260	Without DHW tank heater	14.3	20	4/40/30	
RASIVI-SINE	311~ 4007 50HZ	440	360	With DHW tank heater	26.8	30		
RASM-6NE				Without DHW tank heater	16.3	20		
				With DHW tank heater	28.8	40	4/63/30	

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

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Model	Power supply	Applicable voltage		Onerestion mode	МС	СВ	ELB
		U max. (V)	U min. (V)	Operation mode	(A)	(A)	(nº of poles/A/mA)
RASM-2VRE	1~ 230V 50Hz	253	207	Without DHW tank heater	10.6	16	- 2/40/30
				With DHW tank heater	23.1	32	
RASM-3VRE				Without DHW tank heater	16.0	20	
				With DHW tank heater	28.5	32	

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".

6.3.1 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 (R410A)



YUTAKI M (R32)



6.3.2 Table board 2

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 mm²) 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.

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.

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 S / YUTAKI S COMBI / 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 terminals1 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.



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 "7 UNIT CONTROLLER" 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 "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, Yutaki S R32, Yutaki S COMBI R32, terminals 28 & 29 for circuit 2 are available.

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.

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	С	Close
25	0	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.



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 UNIT CONTROLLER

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

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

7.1 DEFINITION OF THE SWITCHES



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.

6 Menu button

It shows the different configuration options of the user controller.

6 Return button

To return to the previous screen.

Favourite button

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

7.2 DESCRIPTION OF THE ICONS

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7.2.1 Common icons

lcon	Name		Explanation					
OFF			Circuit I or II is in Demand-OFF					
		ē	Circuit I or II is on Thermo-OFF					
-	Status for circuit 1, 2, DHW and swimming pool.	=	Circuit I or II is working between $0 < X \le 33\%$ of the desired water outlet temperature					
T		Ŧ	Circuit I or II is working between $33 < X \le 66\%$ of the desired water outlet temperature					
		₹	Circuit I or II is working between $66 < X \le 100\%$ of the desired water outlet temperature					
		ĬŎ.	Heating					
Ö.	Mode	₩	Cooling					
	-		Auto					
	Cotting tomporatures	Value	Displays the setting temperature of the circuit 1, circuit 2, DHW and swimming pool					
00	Setting temperatures	OFF	Circuit 1, Circuit 2, DHW or Swimming Pool are stopped by button or timer					
A	Alarm	Existing ala	rm. This icon appears with the alarm code					
	Timer	\bigcirc	Simple timer					
	Timer	Ĩ	Weekly timer					
۰¢	Derogation	When there	is a derogation from the configured timer					
0	Installer mode	Informs tha	t user controller is logged on the installer mode which has special privileges					
8	Menu lock	It appears v disappears	when menu is blocked from a central control. When indoor communication is lost, this icon					
A	Outdoor temperature	The ambier	nt temperature is indicated at the right side of this button					

7.2.2 Icons for the comprehensive view

- . -

lcon	Name		Explanation					
() 123	Pump	This icon ir There are t displayed b	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					
1-2-3	Heater step	Indicates w	ndicates which of the 3 possible heater steps is applied on space heating					
-w	DHW Heater	Informs ab	forms about DHW Heater operation. (If it is enabled)					
\$∕	Solar	Combinatio	Combination with solar energy					
0		0	Compressor enabled (For YUTAKI S, S COMBI and M)					
0 1 2	Compressor	0 1 2	Compressors enabled. 1: R410A/R32 2: R-134a (For YUTAKI S80)					
8	Boiler	Auxiliary bo	piler is working					
ଚ୍ଚା	Tariff	Tariff signa	Tariff signal informs about some cost conditions of the consumption of the system					
æ	Defrost	Defrost fun	Defrost function is active					
*	Control/Local	-	No icon means local mode					
*	Central/Local	Â	Central mode (Three types of control: Water, Air or Full)					
•	Forced OFF	When force view (C1, C	ed off Input is configured and its signal is received, all the configured items on the comprehensive C2, DHW, and/or SWP) are shown in OFF, with this small icon below					
A off	Auto ON/OFF	When daily Auto ON/O	average is over auto summer switch-off temperature, circuits 1 and 2 are forced to OFF (Only if FF enabled)					
TEST RUN	Test Run	Informs ab	out the activation of the "Test Run" function					
ANTI Leg	Anti-Legionella	Activation	of the Anti-Legionella operation					
Ĩ	DHW boost	It activates	the DHW heater for an immediate DHW operation					
65	ECO modo	-	No icon means Comfort mode					
C.Y	ECO mode	હ	ECO/Comfort mode for circuits 1 and 2					
Ð	Night Shift	Informs ab	out night shift operation					
G	CASCADE CONTROLLER	Informs ab	out the activation of the "CASCADE" mode.					

ENGLI

7.2.3 Icons for the room thermostat view

1 -

lcon	Name		Explanation							
		E)	Manual mode							
Manual/Auto mode	ΪŌ	Auto mode with timer setting								
	Î	Auto mode without timer setting								
۵+	[]+ Setting/Room		Setting/Room		Setting temperature					
•	temperature		Room temperature							
\otimes	End of timer period	The end ho	ur of the timer period is indicated below this icon							
Ø	End of holiday period	The end ho	ur of the holiday period is indicated below this icon							
	Setting temperature	This icon a	ppears while the setting temperature is being changed, and indicates the actual temperature							
NEXT	Next screen	When room screen to in	thermostat has been configured for both circuit 1 and 2, this icon appears at the right side of the indicated that there is a 2nd room thermostat view							

7.3 ROOM THERMOSTAT CONTENTS

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		Menu C	ontents					Menu (Contents		
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Operation	Information		,,							Timer Type	
	General										Simple
	Circuit 1										Schedule
	Circuit 2								Cooling (Ai	r)	
	DHW									Timer Type	
	Swimming I	Pool									Simple
	Heat Pump	Details 💽									Schedule
	Electrical H	eater 🖸						Delete All	Timer Config	uration	
	Boiler Coml	bination 뎍						Space Hea	ating 📼		
	Solar Comb	ination 🖸							Circuit 1 💶)	
	Alarm Histo	ory							Circuit 2 💽)	
System Co	onfiguration	-						Space Coo	oling 🖻		
	General Op	tions							Circuit 1)	
		Holiday Mo	de						Circuit 2 💽)	
		Maximum S	Setting T. (Air	·). 🖬				DHW 🖸			
		Air Eco Off	set 🖸	,				SWP 🖸			
	Timer and S	Schedule				Controller S	Settings				
		Circuit 1					Controller (Options 💽			
			Heating (Air	-)			Room Nam	ies			
				Timer Type				Adjust Dat	e and Time		
					Simple			European	Summer Tim	е	
					Schedule			UTC Zone			
			Cooling (Air	.)			Screen set	tings			
				Timer Type			Language	selection			
					Simple	About	Custom Inf				
					Schedule		System Inte	ormation			
		Circuit 2						onnation			
			Heating (Air	~)		Factory Re	set 🗳				
				,		Return to u	ser mode 🗳				

7.4 UNIT CONTROLLER CONTENTS

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		Menu (Contents]		Menu C	ontents		
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Operation	Information						Space Hea	iting 🖸			
	General							Circuit 1 💶)		
	Circuit 1								Water Calc	ulation Mode	• •
	Circuit 2								Eco offset	3	
									Working lim	nite 🖬	
	DHW				1						
	Swimming F	Pool									-
	Heat Pump	Details 💽							Water Calc	ulation Mode	U
	Electrical He	eater 🖸							Eco offset	3	
	Boiler Comb	oination 🖸							Working lim	nits 💶	
	Solar Comb	ination 🖸							Mixing valv	e 🗳	
	Alarm Histo	rv					Space Coo	oling 🗳			
	Energy data	, 1						Circuit 1	9		
System Co		•							Water Calc	ulation Mode	9
Oystem Oc	Conorol On	tiono							Eco offset	3	
	General Op	tions							Working lim	nits 🖬	
		Room The	rmostats 💶	_				Circuit 2			
			Thermostat 1	6				Oncolt 2	Water Cale	ulation Mada	
			Thermostat 2	2 63							•
			Wireless Bin	ding ID 1)				Eco onset		
			Wireless Bin	ding ID 2)				Working lim		
			Compensatio	on Factors	9				Mixing valv	e 🗳	
			Room Temp	Demand O	FF 🖬		DHW		_		
			Check RT ad	dress 🖬				DHW Heat	er 🖼		
		Central Or					Cu vine ne in e	Anti Legion	ella		
	Timor and S	Schodulo					Swimming				
	Timer and S							Status	anaratura		
		Circuit 1									
			Heating (Wat	ter)			Complomo	Offset Tem	perature 🗳		
			_	Fimer Type	1		Compleme		y 		
					Simple			Heating So			
					Schedule			Electrical H			
			Cooling (Wat	er)				Boiler Com	bination 🗳		
				Fimer Type				Solar Com	Statua		
			_		Simple				Status		
					Schedule						na 😅
		Circuit 2						_		Iotal contro	
		Sil Sult Z	Heating ()Ma	tor)			Heat Pump				
			- icauity (Wa	Timer Ture				Water Pum	p Configurat	ion 🕒	
			_	ппегтуре	Cimela			Night shift		_	
					Simple			Outdoor av	erage Timer	8	
					Schedule			Minimum C	N Time 💶		
			Cooling (Wat	er)				Minimum C	OFF Time 🖸		
			_	Timer Type				Seizure Pro	otection 뎍		
					Simple				Status 🖸		
		DHW							Operation D	Day 🖪	
			Timer Type						Starting Tin	ne 🖬	
				Simple			Optional Fu	unctions	U		
		Ou dimension	Paal	Schedule				System 🖬			
		Swimming	Timor Tuno						Hydraulic S	Sep. Status	Э
			ппегтуре	Simple					Energy Cor	nfiguration	Э
				Schedule					Smart Func	tion 🖪	
		Delete All	Timer Confiaur	ation				Space Fun	ctions		
			J								

		Menu C	ontents		
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			Heating Aut	o On/Off	
			Auto Heat/0	Cool	
		DHW			
			Circuit pum	pE3	
			Recirculatio	on timer 🕶	
			DHW Boost	t	
		Emergency	Operation		
	I/O and Ser	nsors 🖻			
		Inputs 🖸			
		Outputs 🖸			
		Auxiliary se	ensors 🖻		
Controller S	Settings				
	Controller (Options 🖸			
	Room Nam	ies			
	Date and T	ime			
		Adjust Date	e and Time		
		European S	Summer Time	9	
		UTC Zone			
	Screen set	tings	1		
	Language	selection			
Commissio	ning 💶				
	Air purge p	rocedure 🖼			
		Start Air pu	rge 🗳		
	Unit test ru	n 🖸	1		
		Start test ru	in 🖬		
	Screed dry	ing 🚭			
		Start Scree	d Drying 🖬		
About					
	System Info	ormation			
	Contact Inf	ormation			
Factory Re	set 🖻				
Return to u	ser mode 🗲)			

1 -

- . -

7.5 UNIT + ROOM THERMOSTAT CONTROLLER CONTENTS

	Menu	Contents				Menu C	ontents		
Level 1	Level 2 Level 3	Level 4 Level 5	Level 6	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Operation	Information							Simple	
	General							Schedule	
	Circuit 1						imer Configu	iration	
	Circuit 2				Space Heat				
	DHW						Watan Cala	ulation Made	•
	Swimming Pool						Vvater Calci		
	Heat Pump Details						ECO OTISET		
	Electrical Heater							iits 🖬	
	Boiler Combination	1					Watan Cala	ulation Made	•
	Solar Combination								
	Alarm History						Working lim	vito 🖪	
	Energy data						Mixing volv		
System Co	onfiguration				Space Cool	ling 🖪	winking varve		
	General Options				Space Cool	Circuit 1	4		
	Holiday M	ode					Water Calci	ulation Mode	8
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	Room The	ermostats 🖻					Working lim	nits 🖬	
		Thermostat 1 🖻				Circuit 2	3		
		Thermostat 2 🖻					Water Calc	ulation Mode	3
		Wireless Binding ID 1	Э				Eco offset	3	
		Wireless Binding ID 2	Э				Working lim	nits 🖸	
		Compensation Factors	8				Mixing valve	e 🖸	
		Room Temp Demand C	FF 🖸		DHW				
		Check RT address 🖸				DHW Heate	er 🖸		
	Central O	peration				Anti Legion	ella		
	Timer and Schedule				Swimming				
	Circuit 1					Status Setting Terr	nerature		
		Heating (Air/Water)				Offset Tem			
		Timer Type	•		Complemen	ntary Heating]		
			Simple			Heating So	urce 🖸		
			Schedule			Electrical H	eater 🖻		
		Cooling (Air/Water)				Boiler Com	bination 뎍		
		Timer Type	;			Solar Comb	oination		
			Simple				Status		
			Schedule					Input demai	
	Circuit 2					_		Iotal contro	
		Heating (Air/Water)			Heat Pump		0 6 1	_	
		Timer Type	•			Night shift	p Configurat	ion 🖵	
			Simple			Outdoor av	erade Timer	8	
			Schedule			Minimum O		_	
		Cooling (Air/Water)				Minimum O	FF Time		
		Timer Type	•			Seizure Pro	tection 🖬		
			Simple				Status 🖸		
	DHW	Timer Type					Operation E	Day 🖸	
		Simple					Starting Tim	ne 🖸	
		Schedule			Optional Fu	inctions			
	Swimming	Pool				System 뎍			
		Timer Type							

Menu Contents								Menu C	ontents		1
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			Hydraulic S	on Status	3			Adjust Date	and Time		
			Tiyuraulic 3			- 1		Furonean	Summer Time		
			Energy Cor	ifiguration 🗳	3					•	
			Smart Func	tion 🖸			Coroon oot				
		Space Fun	ctions			1	Screen set	ungs			
		· ·	Heating Aut	o On/Off		i	Language	selection			
Auto Heat/Cool					Commissio	ning 🖸					
		DHW				-	Air purge p	rocedure 🖸			
			Circuit pum	p E		1		Start Air pu	rge 🖸		
			Recirculatio	n timer			Unit test ru	n 🖸			
			DHW Boost	İ		1		Start test ru	in 🖸		
		Emergency	Operation				Screed dry	ing 🖸			
	I/O and Ser	nsors 🖸						Start Scree	d Drying 🖸		
		Inputs 뎍				About			, ,		
		Outputs 🖻					System Info	ormation			
		Auxiliary se	ensors 🖻				Contact Inf	ormation			
Controller S	Settings					Factory Re	set 🖸				
	Controller C	Options 🖸				Return to u	iser mode 🗹)			
	Room Nam	ies						_			
	Date and T	ime				1					

Installer mode

Icon Common 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 "S" buttons must be pressed for 3 seconds.

0K + 🕤

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

The login password for the Installer is:

Pight Down 🐨 Left 🖉 Pight

Press "OK" to confirm the password.

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

Installer mode icon	6

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 "5" button for 3 seconds or go to the "Return to user mode" on the main menu.



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.



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



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

7.6.1 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.

8	24/04/2010
10.31	Installation Definition
	Do you have a boiler installed?
•	No
≜° 0°°	

- 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.

7.6.2 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 .

5	
10:31	31/01/2018
Space Heating	
Circuit 1	Disabled
Circuit 2	Disabled
DHW	Disabled
Swimming Pool	Disabled
Heating Source	HP Only
♠ ° 0*°	

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



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

10:31	31/01/2018
External Element	S
Cascade Mode	Disabled
Central Mode	Local
Thermostat 1	None
WIZARD COMPLE	

- 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.

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

- 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
Two	Master	Slave
Туре	Unit	Circuit 2
Questions	Answ	rers
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

- 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
Time	Master
Туре	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
Auxiliary Sensors				
Taux1	6	Sensor 1 (Taux1)	Two3 (if Boiler)	C2 Ambient
Taux2	6	Sensor 2 (Taux2)	Swimming pool (if SWP existing)	-
Taux3	6	Sensor 3 (Taux3)	Outdoor Sensor	-

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

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
Auxiliary Sensors				
Taux1	6	Sensor 1 (Taux1)	Two3 (if Boiler)	C1 Ambient
Taux2	6	Sensor 2 (Taux2)	Swimming pool (if SWP existing)	C2 Ambient
Taux3	G	Sensor 3 (Taux3)	Outdoor Sensor	-

- 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
-	Master
Type	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

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

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

Mixed configurations (Wireless + Wired)

- 1- Move Unit controller to the living room (use as Unit controller + Room Thermostat)
- 2- Master unit controller moved to living room Zone
- 3- Wireless intelligent thermostat for zone 2 (ATW-RTU-07) (Receiver + Room thermostat)



Order	FIRST
Trac	Master
Туре	Unit
Questions	Answers
Is this device attached to the unit?	NO
Is this device controlling the unit?	YES
Is this device installed on a controlled zone?	YES, ZONE 1
How many circuits do you have?	2
Which are the emitters of circuit 1?	Underfloor heating
Which are the emitters of circuit 2?	Underfloor heating
Do you have swimming pool?	NO
Do you have boiler?	NO
Do you have electric backup heater?	NO
Which Thermostat do you have for Circuit 2?	Wireless
	COMPLETED

7.7 MAIN SCREEN

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

7.7.1 Room thermostat view



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.

O Available buttons / Installer mode

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

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

OK button

Pressing the OK button, the quick actions are shown:

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

7.7.2 Comprehensive view



Time and date

2

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

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...



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.



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.

ENGL

7.7.3 Quick action function

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

Comprehensive view quick actions

≣≣Status	
09:14 31/01/20 DHW	09:14 31/01/2018 Swimming Pool Swimming Pool
≜ 28*° 🕄 🗷 🕄	6
BaTimer LOTC I≫Eco ≣≣Status	
09:14 31/01/20 Circuit 1	

Room thermostat view quick actions

09:14	Circuit 1	31/01/2018
闧Timer	Eco	
⊢ Holiday	≣Status	
≜° 28*°		6 0 6

- DTimer: Menu for the selection and configuration of simple timer and schedule timer.
- CONTC: Menu for the OTC selection. Only available for circuit 1 and circuit 2 in Comprehensive view.
- **PEco / Comfort:** Activation of the Eco/Comfort Mode. Only available for circuit 1 and circuit 2.
- \equiv 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.
- DHoliday: Selection of a holiday period until the configured returning date and time. Only available for circuit 1 and circuit 2 in Room Thermostat view.

7.8 MENU

7.8.1 OPERATION INFORMATION

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



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7.8.2 SYSTEM CONFIGURATION

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



- Minimum OFF Time
- Seizure Protection

HITACHI

7.8.2.1 General options 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)
- Compensation factors (See Compensation factors section below)
- Room Temperature Demand OFF: Offset value between setting temperature and thermostat temperature to switch the system to Demand OFF; this parameter refers to a positive difference in heating operation and a negative difference in cooling operation.
- Check RT Address: validation procedure of the wireless thermostats configuration

Compensation factors for Heating / Cooling

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

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

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

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

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

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

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

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

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i NOTE

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

10:31 31/01/2018 10:3 31/01/2018 System Configuration Menu General Options Operation Information Timer and schedule System Configuration Cascade Configuration Controller Settings Space Heating Commissioning DHW About **f**°0°° **6°**0°°

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:

10:31 Heating (Ai	31/01/2018 ir)	10:31 Heating (Air)	31/01/2018
Timer Type	Simple Timer	Timer Type	Schedule
Frequency	Never	Timer Configuration	
Starting Time	06:00	Copy to Circuit 2	
Mode	Eco	Change Mode	
Stopping time	12:00	Reset Configuration	
Å °0°°		♣ ° 0°°	

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	1 / 2 10:31 Heating (Air) Timer Type Sirr	31/01/2018 ple Timer	 Mode: Selection of the working mode Eco Comfort Setting the protocol the protocol
Frequency: Selection of the timer frequency • Never • Once • Everyday • Weekend • Work day	Frequency Starting Time Mode Stopping time ▲0°°	Never 06:00 Eco ● 12:00 ●	 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
Starting time: Use the arrow keys to select the starting time of the timer	2/2 10:31 Heating (Air) Frequency Starting Time Mode Stopping time Configuration Parameters ▲ 0.00	31/01/2018 Never 06:00 Eco 12:00	Configuration parameters: —Configure the temperature for the Eco or Comfort Mode.

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	10:31 Heating (Air)	31/01/2018	
Schedule	Timer Type	Schedule	Change Mode: Selec
Timer configuration: New screen appears to configure a schedule timer. See explanation below	Timer Configuration ●Copy to Circuit 2 Change Mode ●		only when circuit is Fib Mode (uses Eco/Co Setting temperature
Copy to circuit 2: It is possible to copy the schedule timer	Reset Configuration ←		Reset configuration: Press OK button to res

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)

Press OK button to reset scheduled timers.

· Setting temperature.

to circuit 2.

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

13:42	-				31/01/	2018
		Circu	uit 1			
	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				
			(ок 🚺	€≣	

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

13:42			31/01/2018
•	Mo	nday	
0	6	12 18	24
ΙΟπ		458	
From	То	Status	Setting
⊲ <u>12:00</u> ⊳	(06:00)	⊲ <u>Con</u> ⊳	45
-	-	-	-
		OK 🚺	C=3

Timer configuration as Setting temperature

13:42			31/01/2018
◀	Mo	nday	
0	6 .	12 18	24
From	То	Status	Mode
⊲ <u>12:00</u> ⊳	(06:00)	⊲ <u>On</u> ⊳	⊲ Eto ⊳
-	-	-	-

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.

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7.8.2.3 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



DHW or Swimming pool water settings

10:31 31/01/2018 DHW	
Setting Temperature 45 °C •	Setting temperature:
	Selection of the temperature for DHW or Swimming Pool.
	 DHW or Swimming pool must be ON to configure this setting
↑ 0°° ® ⊖ ⊂	 Range: DHW: 30 °C ~Max. setting temperature Swimming pool: 24 ~33 °C

7.8.2.4 Space Heating / Space Cooling configuration

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



Water calculation mode:

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

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

See detailed explanation below.

Eco Offset Water setting:

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

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

• Range: -10 ~ 10

10:31 31/01/2018 Circuit 1 Water Calculation Mode 3°C Eco Offset Water Set WorkingLimits 🔸 **₼°** 0°°

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

10:31	31/01/2018
Circuit 2	
Water Calculation Mode	
Eco Offset Water Set	3 ⁰C
Working Limits	
Mixing valve	
♣° ∩°°	

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

Points

Gradient



Fix
7.8.2.5 Domestic Hot Water (DHW) configuration





12.04	01/01/2010	
Anti Legionella		
Status	Enabled	Status of anti legionella operation (enabled/disabled)
Operation Dav	Sunday	Specified day for anti legionella operation
Starting Time	01:00	Specified time of the day for anti legionella operation
Setting Temperature	70°C•	Setting for domestic hot water temperature in anti legionella operation
Duration	10 min•	Duration of shock treatment. Between 10 to 60 minutes.
f 28°°		

7.8.2.6 Swimming Pool configuration

- 1 -

10:31	31/01/2018 Menu	10:31 System C	31/01/2018 Configuration]
Operation Info System Config Controller Sett	rmation guration	General Option: Timer and scher Space Heating	s dule	
Commissionin About ⋒ °0*°	ug 💽 🖨 🗲	DHW Swimming Pool ™ 0°°	r ()	
09:14 Swimming Pool Status Setting Temperature Offset Temperature	Status Set inp Sensors 24 °C 15 °C Adjusi tempe	e or disable swimming po but 3, output 1 and senso s configuration") ang temperature: tment of the swimming po erature setting.	ol. r 2. (see section "7.8.2 ool water	2.10 Inputs, Outputs and
€ 28*°	• Rar	nge: 24~33 °C t temperature: The settin sed by the indicated para	ng temperature is ameter.	

ENGL

7.8.2.7 Complementary Heating configuration



• **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

		Coperation:
Proportional band:	09:14 31/01/18 Flectrical Heater	 Starting: Space Heating electric Heater is switched ON in case of low water temperature and low ambient temperature to provide extra capacity to HP.
 Control to determine now fast setting temperature is going to be reached. Higher values imply fast achievement of water setting point and therefore higher utilization of heater. 	Operation Backup Bivalent Point 0 °C Supply Setting Offset 4 K Proportional Band 6 0 °C/100%	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.
Reset factor:	Reset Factor 2.5%/°Cmin	
Used to guarantee setting temperature achievement without surpassing its use User subscription in the set of the s		 Electric heater is enabled to operate in case ambient temperature goes below this value. Only in case of Backup option.
utilization of heater.		Supply setting offset:
	▼	 Setting offset for electric Heater. Higher values imply earlier stoppage of electric heater and vice versa. Only in case of Backup option.
	09:14 31/01/18 Electrical Heater 5 min	● Inter stage time:
waiting time:	-•Waiting Time 30 min	• Time of Electric Heater phase overlapping when there is
 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. 	♠* 28** 🕞 ☞ 🕞	switch ON/OFF transition from/to phase 1 to/from phase 2. Only in case of Backup option.

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Solar combination - Total control



7.8.2.8 Heat Pump configuration



Water pump configuration



Night Shift

09:14 Night Shift Capacity Timer Starting Time Stopping Time	31701718 75 % Enabled 20:00 08:00	 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
▲ 28°°	♦ 0K -C	

7.8.2.9 Optional functions configuration

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



System optional functions

	10:31 System	31/01/2018	Г Hydraulic separator status:
	Hydraulic Sep. Status Energy Configuration	Enabled	Enable if there is a Hydraulic separator or a buffer tank installed. Check that WP3 is set in output 2 (see section "7.8.2.10 Inputs,
Smart function:	Smart Function		Outputs and Sensors configuration")
To block or limit the heat pump or increase demand due to electricity			L Energy configuration:
availability. See detailed information below.	♣ °0*°		Setup of power consumption readings. See detailed information below.

Energy configuration

			с ²	Status:
	09:14 Energy Config	31/01/18 juration		Enable or disable energy configuration options
	Status	Enabled -	יז 📙	Power meter 1 or 2:
	Power Meter 1	0.1 pulse/kWh •	h ŀ	 The power meter does a real measuring of the power consumption.
	Power Meter 2	0.1 pulse/kWh	Ľ,	If the power meter is enabled, it is possible
Capacity configuration: ———————	Capacity Configurati	on Enabled		to see the information collected through the Operation information - Energy data menu.
Due to usage of water temperature inlet and outlet			•	If "power meter" is disabled the YUTAKI
be checked through the Operation information -	♠° 28°°	€ ®		the system.
Ellergy uala menu.				In appa of uping nower motor 1 or 2 input

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

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Smart Function

- . -

Smart Function			
Status:			
Enable or disable smart function.		,	_Smart Action:
	1/2	31 (01 (18)	Check that Smart Act/SG1 is set in input 5 (see
Trigger type:	Smart Function		configuration")
Closed: Action when input is closed	Status	Enabled	• HP Block: Heat Pump is forbidden in any condition (Space Heating Cooling DHW) when
Open: Action when input is open	Smart Action	HP Block	signal is active.
Start boiler:	Trigger Type Chart Dailar	Open (NO)	 HP Limited (A): Limitation of power consumption up to a limit of "x" amperes (to be set up in limitation of amperage)
Permission to use the boiler in case that the system has been blocked due to HP Block.	•Start Boller •Start DHW Heater	Disabled	 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
Start DHW Heater: ————	n 28 °		Service Manual for detailed information. It is necessary to configure an input for SG2.
Permission to use the DHW heater in case that the system has been			• DHW Block: DHW Operation is forbidden when signal is active.
blocked due to HP Block			• DHW only: Heat pump operation for any condition except DHW is forbidden when signal is active. DHW operation is allowed normally.
	2 / 2 D9:14 Smart Function Limitation by Ampere	31701718 1 50 A∙	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	10:31 Space Fund	31/01/201	Heating Auto On/Off: To stop automatically stop heating operation when the daily average outdoor temperature
heating and cooling operation using the same daily average outdoor temperature of the previous day as in Heating auto ON/	Heating Auto On/Off		 of the previous day is higher than the defined Switch-OFF temperature Status: Enable or disable heating auto on/
Status: Enable or disable auto heat/ cool.			 off function. Switch Off temperature: System is stopped in case that the outdoor temperature is
• 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.	* 0°°		 Switch On differential: Differential temperature between average outdoor temperature of the previous day and the Switch Off temperature.
• 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.			

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 "7.8.2.10 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 "7.8.2.10 Inputs, Outputs and Sensors configuration")

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

- 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

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 Denated ON of space heating (enabled) or DHW (enabled).

1	10:31 Emergency O	31/01/2018 peration
	Space Heating	Disabled •
	DHW	Disabled •
L	Mode	Manual
	Å °0°°	

Space Heating:

Enable or disable emergency operation

for space heating. Only available in case "Heating source" on "7.8.2.7 Complementary Heating configuration" contains "Electrical heater or boiler" option

-DHW:

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

7.8.2.10 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.

7.8.3 COMMISSIONING

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

	10:31 Menu	31/01/2018
	Operation Information System Configuration Controller Settings Commissioning About	
10:31 Commis Air Purge Proce Unit Test Run ← Screed Drying ←	31/01/2018 ssioning dure	Air purge procedure: Duration Start air purge Unit test run: Duration Mode (only for cooling mode) Start test run
≜° 0°°		Screed Drying: • Circuit 1 setting temperature • Circuit 2 setting temperature • Start screed drying

7.8.4 CONTROLLER SETTINGS

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



7.8.5 ABOUT

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



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

10:31 31/01/2018 Menu	
Factory reset	
Return to user mode	
10:31 31/01/20	18
Factory Reset	
Do you want to continue?	
No Yes	
A° 0°° IB D (3

7.8.7 RETURN TO USER MODE

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

10:31	31/01/2018
Me	enu
Factory reset	
Return to user me	ode
f 0°°	
•	
	V
10:31	31/01/2018
Return to i	user mode
Do you war	t to continue?
No	Yes
f 0°°	

8 YUTAKI CASCADE CONTROLLER

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

8.1 DEFINITION OF THE SWITCHES



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.

6 Menu button

It shows the different configuration options of the user controller.

6 Return button

To return to the previous screen.

Favourite button

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

8.2 DESCRIPTION OF THE ICONS

- . -

8.2.1 Common icons

lcon	Name		Explanation			
OFF			Circuit I or II is in Demand-OFF			
		ē	Circuit I or II is on Thermo-OFF			
	Status for circuit 1, 2, DHW and swimming pool.	=	Circuit I or II is working between $0 < X \le 33\%$ of the desired water outlet temperature			
e		Ŧ	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			
		Ŏ.	Heating			
Ö.	Mode	*	Cooling			
		۲	Auto			
00	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			
A	Alarm	Existing ala	rm. This icon appears with the alarm code			
0	Timor	\bigcirc	Simple timer			
	Timer	Í	Weekly timer			
Ŷ	Derogation	When there is a derogation from the configured timer				
G	Installer mode	Informs that user controller is logged on the installer mode which has special privileges				
8	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

_ _ _

lcon	Name		Explanation		
2 3	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			
1-2-3	Heater step	Indicates w	hich of the 3 possible heater steps is applied on space heating		
-00-	DHW Heater	Informs abo	but DHW Heater operation. (If it is enabled)		
<u>\$</u>	Solar	Combinatio	n with solar energy		
ð	Boiler	Auxiliary bo	biler is working		
51	Tariff	Tariff signal informs about some cost conditions of the consumption of the system			
*	Local / Full	-	No icon means local mode		
÷.		Â	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			
(A) OFF	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 LEG	Anti-Legionella	Activation of the Anti-Legionella operation			
Ĩ	DHW boost	It activates the DHW heater for an immediate DHW operation			
6	ECO mode	-	No icon means Comfort mode		
q	ECO mode	ઝ	ECO/Comfort mode for circuits 1 and 2		

- . -

8.3 CONTENTS

		Menu	Contents					Menu	Contents		
Level 1	Level 2 L	_evel 3	Level 4	Level 5	Level 6	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Operatior	n Information									Simple	
	General							Doloto All Ti	mor Configura	Schedule	
	Modules infor	mation					Water ee			uon	
	Circuit 1						Water se	Space Heat	ing 🖪		
	Circuit 2							Space fieat			
	DHW										
	Swimming Po	ool						0			
	Electrical Hea	ater 🖸						Space Cooli			
	Boiler Combir	nation 뎍									
	Solar Combin	nation 뎍									
	Alarm History	/									
System C	Configuration						Cascade		6		
	General Optio	ons					Ouscaue	Modules cor	figuration		
	Но	liday Mod	е				Snace He				
	Air	Eco Offse	et 🖸				opaceria				
	Ro	om Therm	nostats 🖻						Water Calcu	lation Mode	6
			Thermostat 1	6							
			Thermostat 2	6					Working limi	ts 🖸	
			Wireless Bind	ling ID 1				Circuit 2 🖬	Working initi		
			Wireless Bind	ling ID 2					Water Calcu	lation Mode	6
			Compensatio	n Factors	3				Fco offset		
			Room Temp [Demand OF	-F 🖸				Working limi	- ts 🖸	
			Check RT ad	dress 🖸					Mixing valve	6	
	Ce	entral Oper	ration				Space Co	ooling 🖸			
	Timer and Sc	hedule						Circuit 1]		
	Cir	rcuit 1							Water Calcu	lation Mode	6
			Heating (Air /	Water)					Eco offset	3	
				Timer Type	е				Working limi	ts 🖸	
					Simple			Circuit 2 🗳]		
					Schedule				Water Calcu	lation Mode	6
			Cooling (Air /	Water)					Eco offset	9	
				Timer Type	е				Working limi	ts 🖬	
					Simple				Mixing valve	6	
					Schedule		DHW		_		
	Cir	rcuit 2						DHW Heate	r 🖸		
			Heating (Air /	Water)			Swimmin	Anti Legione	ella		
				Timer Type	е		3001111111	Status 🖪			
					Simple			Setting Tem	perature		
					Schedule			Offset Temp	erature 🖸		
			Cooling (Air /	Water)			Complem	nentary Heatir	ng		
				Timer Type	е			Heating Sou	irce 🖻		
					Simple			Electrical He	eater 🖸		
					Schedule			Boiler Comb	pination 🕒		
	DH	łW						Solar Comb	ination		
			Timer Type						Status		
				Simple						Input dem	and 🗳
				Schedule			List D			Iotal contr	ol 🖬
	Sw	vimming P	ool				Heat Pun	np 🗳			
			Timer Type								

Menu Contents					Menu Contents						
Level 1 Level 2 Level 3 Level 4 Level 5 Level 6						Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Water Pump Configuration 🖻					Controller Settings						
		Outdoor ave	rage Timer 🖸				Controlle	r Options 🖸			
		Minimum ON	I Time 🚭				Room Na	mes			
		Minimum OF	F Time 🖸				Date and	Time			
		Seizure Prot	ection 🖪					Adjust Date	and Time		
		00120101100	Status 🖪					European S	ummer Time		
				-				UTC Zone			
			Operation Da	ay L S			Screen se	ettings			
			Starting Time	: C 9			Language	e selection			
	Optional	Functions				Commissioning 🗳					
	System 🖸				Screed drying						
			Smart Functi	on 🖬				Start Screed	I Drying 🕒		
	Space Functions				About			, ,			
	Heating Auto On/Off						System Ir	nformation			
			Auto Heat/Co	bol			Contact I	nformation			
		DHW		_		Eactory F	Pasat 🖪				
	Circuit pump				Tactory		-				
	Recirculation timer			Return to	user mode	9 69					
			DHW Boost								
	Emergency Operation										
	I/O and Sensors										
	Inputs 🖻										
	Outputs 🗳										
	Auxiliary sensors										

Installer mode

Icon C 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 "S" buttons must be pressed for 3 seconds.



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

The login password for the Installer is:

Right 🍉, Down 🔍, Left ┥, Right	

Press "OK" to confirm the password.

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

Installer mode icon	6	
---------------------	---	--

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 "S" button for 3 seconds or go to the "Return to user mode" on the main menu.

i 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.



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



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

8.4.1 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.

7	24/04/2040
10.31	Installation Definition
	Do you have a swimming pool installed?
•	No 🕨
f *0*'	

- 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.

10:31	21/01/2010
10.31	Room Thermostats
V	Vhich Thermostat do you have for circuit 1?
•	None 🕨
≜ °0°°	

- 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.

8.4.2 Advanced Configuration



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



- Select the favourite action: Eco/Comfort, Timer, DHW Boost.
- Select Enabled or Disabled for European summer time.
- Select Next and press OK button .

5	
10:31	31/01/2018
Space Heatin	ng
Circuit 1	Disabled
Circuit 2	Disabled
DHW	Disabled
Swimming Pool	Disabled
Heating Source	HP Only
f °0°°	

- Configure circuit 1 and circuit 2 OTC: Disabled, Points, Gradient, Fix.
- Enable or disable DHW and Swimming Pool.
- Select the heating source: HP only, HP + EH, HP + Boiler.
- Configure electrical heater use: 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.

7	
10:31	31/01/2018
Cascade C	onfiguration
Module 1	Enabled
Module 2	Disabled
Module 3	Disabled
Module 4	Disabled
Module 5	Disabled
f 0°°	

- Enable or disable the desired modules (module 1 is enabled by default)
- Select Next and press OK button.

8	
10:31	31/01/2018
Individual DHW	
Module 1	Disabled
Module 2	Disabled
Module 3	Disabled
Module 4	Disabled
Module 5	Disabled
♠° 0*°	

- Enable or disable the individual DHW for each module.
- Select Next and press OK button.

9	
10:31	31/01/2018
External El	ements
Central Mode	Local
Thermostat 1	None
Thermostat 2	None
WIZARD COM	MPLETED
A° 0*°	

- 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.

8.5 MAIN SCREEN



Time and date

2

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

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).

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.



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...



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.

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 guick actions are shown:

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

8.5.1 Quick action function

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



- **O**Timer: Menu for the selection and configuration of simple timer and schedule timer.
- COTC: 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.
- **Extatus:** Display of information related to current operation conditions
- **Î** DHW Boost: Activation of the auxiliary DHW heater and Heat Pump (if operation is possible, to speed up DHW heating operation). Only available for DHW.

8.6.1 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.



- Setting temperature
- Setting temperature

8.6.2 SYSTEM CONFIGURATION

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



8.6.2.1 General options configuration



Room Thermostats:-

Configure the wired or wireless room thermostats:

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

Compensation factors for Heating / Cooling

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

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

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

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

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

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

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

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

8.6.2.2 Timer and schedule configuration

i NOTE

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

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



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

10:31 31/01/2018	٦.	
Timer and schedule		
Circuit 1		L-He
Circuit 2	L	ac
DHW		
Swimming Pool		-H(
Delete All Timers Configuration		ac
n° 0° 🗰 🖬 🕞 😋		

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

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

10:31 Heating	31/01/2018 (Air)	10:31 Heating (Air)
Timer Type	Simple Timer	Timer Type
Frequency	Never	Timer Configuration
Starting Time	06:00	Copy to Circuit 2
Mode	Eco	Change Mode
Stopping time	12:00	Reset Configuration
°0°°		₼ °0°°

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	1 / 2 10:31 Heating (Air) Timer Type Sir	31/01/2018 nple Timer	Mode: Selection of the working mode Eco Comfort Setting tumperatures when this ention
Frequency: Selection of the timer frequency • Never • Once • Everyday • Weekend • Work day	Frequency Starting Time Mode Stopping time ▲0*°	Never 06:00 Eco● 12:00●	 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
Starting time: Use the arrow keys to select the starting time of the timer	2 / 2 10:31 Heating (Air) Frequency Starting Time Mode Stopping time Configuration Parameters № 0*°	31/01/2018 Never 06:00 Eco 12:00	Configuration parameters: —Configure the temperature for the Eco or Comfort Mode. Only available for Air settings (Circuit 1 or 2).

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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	10:31 Heating (Air) Timer Type	31/01/2018 Schedule	Change Mode: Selec (Only for Circuit 1 or C
Timer configuration: New screen appears to configure a schedule timer. See	Timer Configuration Copy to Circuit 2 Change Mode		only when circuit is Fix • Mode (uses Eco/Co • Setting temperature
Copy to circuit 2: It is possible to copy the schedule timer	Reset Configuration ←		Reset configuration: Press OK button to res

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)

Press OK button to reset scheduled timers.

· Setting temperature.

to circuit 2.

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

13:42	2				31/01/	2018
		Circu	uit 1			
	Q	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				
			(or 🕥	€≣	

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

13:42			31/01/2018
◀	Mo	nday	
0 IOff	6	12 18 45°	24
From	То	Status	Setting
⊲ <u>12:00</u> ⊳	(06:00)	⊲ <u>On</u> ⊳	45
-	-	-	-
		-	088
1		ок 💽	

Timer configuration as Setting temperature

13:42			31/01/2018
◀	Mo	nday	
0	6	12 18	24
Off		ø	
From	То	Status	Mode
< <u>12:00</u> ⊳	(06:00)	⊲ <u>On</u> ⊳	⊲ <u>Eto</u> ⊳
-	-	-	-
) () 🗐 🖸

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.

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CASCADE configuration



8.6.2.3 Space Heating / Space Cooling configuration

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

		10:31 System Configuration	31/01/2018)n
10:31 31 Menu Operation Information System Configuration Controller Settings	70172018	General Options Timer and schedule Cascade Configuration Space Heating Space Cooling ♣0™	
Commissioning		10:31 System Configuratio	<u>31/01/2018</u> n
▲ 0*°	883	General Options Timer and schedule Cascade Configuration Space Heating Space Cooling	

Ű0°°

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

10:31 31/01/2018 Circuit 1 Water Calculation Mode 3°C Eco Offset Water Set WorkingLimits 🔸 **₼°** 0°°

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

10:31	31/01/2018
Circuit 2	
Water Calculation Mode	
Eco Offset Water Set	3 °C
Working Limits	
Mixing valve	
♣° ∩°°	

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).

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Water calculation mode

Disabled

Points

Gradient



Fix

8.6.2.4 Domestic Hot Water (DHW) configuration


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//acao	Enabloa				
No such i such Disease		Specified day for anti legionella operation			

ff 28°°		
Duration	10 min∙	Duration of shock treatment. Between 10 to 60 minutes.
Setting Temperature	70°C∙	Setting for domestic hot water temperature in anti legionella operation.
	01.00	
Starting Time	01:00	Specified time of the day for anti legionella operation
Operation Day	Sunday 🕈	
		Specified day for anti-logionalla aparation

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1 -

10:31 Menu Operation Information System Configuration Controller Settings Commissioning About ₩0°°	31/01/2018 10:31 31/01/2018 System Configuration Swimming Pool Complementary Heating Heat Pump Optional Functions I/O and Sensor IVO and Sensor IVO and Sensor
09:1431/01/18Swimming PoolStatusEnabledSetting Temperature24 °COffset Temperature15 °C	Status: Enable or disable swimming pool. Set input 3, output 1 and sensor 2. (see section "8.6.2.9 Setup of inputs, outputs and sensors") Setting temperature: Adjustment of the swimming pool water temperature setting. • Range: 24~33 °C
♠* 28** 😝 💽 😋	Offset temperature: The setting temperature is increased by the indicated parameter.

8.6.2.6 Complementary Heating configuration



 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

		Coperation:
Proportional band: Control to determine how fast setting	Electrical Heater	 Starting: Space Heating electric Heater is switched ON in case of low water temperature and low ambient temperature to provide extra capacity to HP.
temperature is going to be reached. Higher values imply fast achievement of water setting point and therefore higher utilization of heater.	Operation Backup Bivalent Point 0 °C Supply Setting Offset 4 K	 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.
Depart factory	Proportional Band 5.0 °C/100% Depart Factor	L Bivalent point:
 Used to guarantee setting temperature achievement without surpassing its value. Higher values imply less utilization of heater. 	●Reset Factor 2.5%/Cmin	 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 ontion 	09:14 31/01/18 Electrical Heater Inter Stage Time 5 min Waiting Time 30 min	 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.
		1

Solar combination - Total control



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8.6.2.7 Heat Pump configuration





Minimum time of the water pump OFF.

Only when Economic mode is active (DSW)

Minimum ON Time:

Minimum time of the water pump ON.

Only when Economic mode is active (DSW)

Overrun Time:

Added operation time of water pump after Demand OFF.

8.6.2.8 Optional functions configuration

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



System optional functions

	10:31 System	31/01/2018
Smart function:	Smart Function	
To block or limit the heat pump or increase demand due to electricity availability. See detailed information below.		
	♠° 0°°	

Smart Function



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

Smart Action:

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

- **HP Block:** Heat Pump is forbidden in any condition (Space Heating, Cooling, DHW) when signal is active.
- **HP Limited (A):** Limitation of power consumption up to a limit of "x" amperes (to be set up in Limitation of amperage).
- SG Ready: The SG Grid is awarded to heat pump series. This control technology integrates the system in a smart grid by using two digital inputs establishing an unidirectional connection. It is necessary to configure an input for SG2.
- **DHW Block:** DHW Operation is forbidden when signal is active.
- **DHW only:** Heat pump operation for any condition except DHW is forbidden when signal is active. DHW operation is allowed normally.

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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.

DHW optional functions





· 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.

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

Circuit Pump: By using this output,

· 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.

DHW Boost:

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

This feature is useful to cover exceptional demand of DHW.

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

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

Space Heating:

Emergency Operation

10:31 31/01/2018 Mode: Emergency Operation Enable or disable emergency operation for space heating. Selection of the emergency operation mode: Space Heating Disabled Only available in case "Heating source" Manual: Emergency operation is active when on "8.6.2.6 Complementary Heating DHW Disabled *configuration*" contains "Electrical heater option" is manually enabled (by DSW4 pin 4 ON). The emergency mode uses the heater (space Mode Manual heating or DHW) to provide the required heating. -DHW: Automatic: Emergency mode operates when Enable or disable emergency there is an event of outdoor unit failure and operation for DHW. Only available Demand ON of space heating (enabled) or DHW when electrical heater for DHW is **≜°**0°° (enabled). enabled (by DSW).

8.6.2.9 Setup of inputs, outputs and sensors



٠ 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. ٠
- 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 ٠ 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. ٠
- 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.

8.6.3 CONTROLLER SETTINGS

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

	10:31 31/01/2018 Menu Operation Information System Configuration Controller Settings Commissioning About
09:14 31/0 Controller Settings Controller Options Room Names ← Date and Time Screen Settings Language Selection E	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.

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8.6.4 COMMISSIONING

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



8.6.5 ABOUT

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



8.6.6 FACTORY RESET

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



8.6.7 RETURN TO USER MODE

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

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Factory reset	
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10:31	31/01/2018
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9 TROUBLESHOOTING

i NOTE

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

Alarm code indication on remote control switch:



Alarms for Indoor units:

Alarm Code	Retry Stop Code	YUTAKI S/SC	YUTAKI S80	YUTAKI M	Origin	Detail of Abnormality	Main Factors
3	-	о	0	0	Communication	Transmission Alarm (Not outdoor unit detected)	Loose, disconnected, broken or short-circuited connector
11	-	о	ο	ο	Indoor	Water inlet thermistor abnormally (THMwi)	Loose, disconnected, broken or short-circuited connector
12	-	о	ο	ο	Indoor	Water outlet thermistor abnormally (THMwo)	Loose, disconnected, broken or short-circuited connector
13	-	o	ο	о	Indoor	Indoor Liquid Pipe Temp Thermistor Abnormality (THMI)	Loose, disconnected, broken or short-circuited connector
14	-	о	0	0	Indoor	Indoor Gas Pipe Temperature Thermistor Abnormality (THMg)	Loose, disconnected, broken or short-circuited connector
15	-	(0)	(0)	(0)	Indoor	Water Circuit 2 thermistor abnormally (THMwo2)	Loose, disconnected, broken or short-circuited connector
16	-	(0)	(0)	(0)	Indoor	Water DHW thermistor abnormally (THMdhwt)	Loose, disconnected, broken or short-circuited connector
17	-	(0)	(0)	(0)	Indoor	Auxiliary sensor 2 thermistor abnormally (THMaux2)	Loose, disconnected, broken or short-circuited connector
18	-	(0)	(0)	(0)	Indoor	Auxiliary sensor 1 thermistor abnormally (THMaux1)	Loose, disconnected, broken or short-circuited connector
19	-	0	-	-	Indoor	Water Plate HEX pipe thermistor abnormally (THMwohp)	Loose, disconnected, broken or short-circuited connector
19		-	0	-	Indoor	Suction R134a pipe thermistor abnormally (THMs)	Loose, disconnected, broken or short-circuited connector
23		-	0	-	Indoor	Discharge R134a pipe thermistor abnormally (THMd)	Loose, disconnected, broken or short-circuited connector
25	-	(0)	(0)	(0)	Indoor	Auxiliary sensor 3 thermistor abnormally (THMaux3)	Loose, disconnected, broken or short-circuited connector
40	-	0	0	0	Indoor	Incorrect LCD setting	Current LCD configuration does not allow proper operation

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Alarm Code	Retry Stop Code	YUTAKI S/SC	YUTAKI S80	YUTAKI M	Origin	Detail of Abnormality	Main Factors
						No Cascade Messages.	
						Triggered in case unit is configured to work against cascade control and:	
61	-	(0)	(0)	(0)	Indoor	- No messages have been received for 180 seconds.	Loose, disconnected, broken or
						- No messages have been received from beginning of operation.	snort-circuited connector
						In case this alarm appears, software stops Indoor and Outdoor operations until communication is restored.	
						Central mismatch.	
62	-	(0)	(0)	(0)	Indoor	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.	Loose, disconnected, broken or short-circuited connector
						In case this alarm appears, software stops Indoor and Outdoor operations until system is properly configured	
63	-	(0)	(0)	(0)	Communication	Transmission error between Central and indoor communication	Indoor fuse meltdown, Indoor/ central connection wiring (breaking, wiring error, etc.)
70	P70	0	0	о	Indoor	Hydraulic alarm flow & Water Pump malfunction	Water flow is not detected in the hydraulic cycle or Pump defective
83	P83	o	0	o	Indoor	Hydraulic alarm pressure	Water pressure is not detected in the hydraulic cycle
72		0	-	-	Indoor	Thermostat Heater Alarm	High temperature is detected in Electric Heater
73		0	0	0	Indoor	Mixing over-temperature limit protection for Mixed circuit.	Circuit 2 supply temperature > Target temperature + offset
74	P74	o	0	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	0	o	Indoor	Freeze Protection Stop by indoor liquid temperature thermistor	
77	-	0	0	0	Indoor-LCD	Receiver Communication failure	No Opentherm/Hlink communication for a continuous period of 10 minutes.
78		0	0	0	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	-	0	0	0	Indoor -outdoor	Unit Capacity setting Error	There is no concordance between indoor outdoor unit capacity
					Indoor	LCD H-link RCS transmission error	No H-link communication for a
80	-	0	0	0	LCD	(If no H-LINK RCS has no power)	between Indoor and LCD User control by connection wiring (breaking, wiring error, etc.)
81		0	0	0	Indoor	"Momentary Power interruption" or "Low voltage detected"	

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Alarm Code	Retry Stop Code	YUTAKI S/SC	YUTAKI S80	YUTAKI M	Origin	Detail of Abnormality	Main Factors
100	-	O	O	0	Indoor-LCD	Compressor protection	"Compressor failure. This alarm code appears when the following alarms 02, 07, 08, 45, 47 occur three times within 6 hours." NOTE This alarm is shown in the outdoor
101			-		Indoor	Activation of high processors quitch	unit with alarm code "EE".
102	P12	-	0	-	Indoor	Activation of protection control for excessively high pressure	Stop after P12 retry due to discharge pressure Pd \geq 2.78 MPa continued for 10 seconds.
104	P06	-	0	-	Indoor	Activation of low control	Stop after P06 retry due to Ps ≤ 0.15 MPa continued for 90 seconds
104	P06	-	0	-	Indoor	Activation of low control	Immediate stop with Ps ≤ 0.1 MPa
105	P11	-	ο	-	Indoor	Excessively low pressure difference	Stop after P11 retry due to pressure ratio ε < 1.8 continued for 3 minutes.
106		-	ο	-	Indoor	Excessively high discharge gas temperature	Td \geq 120 °C continued for 10 minutes, Td \geq 140 °C continued for 5 seconds
129		-	о	-	Indoor	Failure of discharge gas pressure sensor	Loose, disconnected, broken or short-circuited connector
130		-	0	-	Indoor	Failure of suction gas pressure sensor	Loose, disconnected, broken or short-circuited connector
132		-	ο	-	Indoor	Transmission error between Inverter PCB and Main PCB	Described in inverter abnormal stop control
134		-	0	-	Indoor	Abnormality of Power Supply Phase	Reverse/Open Phase
135		-	0	-	Indoor	Incorrect PCB Setting	Wrong DSW setting in the case of Co041
151		-	ο	-	Indoor	Excessively low voltage or excessively high voltage for the inverter	Described in inverter abnormal stop control
152		-	о	-	Indoor	Abnormal operation of the current sensor	Described in inverter abnormal stop control
153		-	0	-	Indoor	Activation of protection for inverter instantaneous over current	Described in inverter abnormal stop control
154		-	0	-	Indoor	Transistor module protection activation	Described in inverter abnormal stop control
155		-	0	-	Indoor	Increase in the inverter fin temperature or abnormality	Described in inverter abnormal stop control
156		-	0	-	Indoor	Inverter non operation	Described in inverter abnormal stop control
157		-	0	-	Indoor	Inverter Communication abnormality	Described in inverter abnormal stop control

♦ Alarms for YUTAKI CASCADE CONTROLLER

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

♦ Alarms for Outdoor units

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Code number	Category	Type of abnormality	Main cause
			Activation of PSH, locked motor, abnormal operation in the power supply phase.
2	2 Outdoor unit	Activation of protection device (high pressure cut)	Failure of fan motor, drain discharge, PCB, relay, float switch activated.
			(Pipe clogging, excessive refrigerant, innert gas mixing, fan motor locking at cooling operation)
3	Transmission	Abnormal transmission between outdoor and indoor units	Incorrect wiring. Loose terminals, Failure of PCB. Tripping of fuse. Power supply OFF.
4	Tansmission	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	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		Thermistor for discharge gas temperature (THM9)				
21	Outdoorwrit	High pressure sensor	Incorrect wiring, disconnected wiring, broken cable, short circuit.			
22	sensor	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		Activation of the safety device from excessively high discharge pressure	Overload (obstruction of HEX, short circuit) mixture of inert gas, Excessive Refrigerant.			
47	Protection device	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		Abnormal operation of the current sensor	Incorrect wiring of current sensor. Failure of control PCB or Inverter PCB.			
53	Inverter	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	raumber setting	Incorrect setting of indoor unit number for H-LINK type	The number of indoor units connected to the H-LINK II of one system is 17 or higher.			

♦ Alarms for LCD

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Alarm Code	Retry Stop Code	YUTAKI S/SC	YUTAKI S80	YUTAKI M	Origin	Detail of Abnormality	Main Factors
202		(0)	(0)	(0)	LCD	Wrong settings of PC-ARFH1E	
203		(0)	(0)	(0)	LCD	Slave PC-ARFH1E stops answering to Master PC-ARFH1E	Loose, disconnected, broken or short-circuited connector
204		(0)	(0)	(0)	LCD	Indoor unit stops answering to Master PC-ARFH1E	Loose, disconnected, broken or short-circuited connector
205		(0)	(0)	(0)	LCD	Central Alarm, no Central message	Loose, disconnected, broken or short-circuited connector

10 MAINTENANCE

10.1 MAINTENANCE WORK

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

i NOTE

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

10.1.1 General maintenance procedure for the outdoor unit

- 1 Fan and fan motor
 - Lubrication: All the fan motors are pre-lubricated and sealed at factory. Therefore no lubrication maintenance is required.
 - · Sound and vibration: Check for abnormal sounds and vibrations.
 - · Rotation: Check the clockwise rotation and the rotating speed.
 - Insulation: Check the electrical insulation resistance.
- 2 Heat exchanger
 - Clog: Inspect the heat exchanger at regular intervals and remove any accumulated dirt and any accumulated dust from the heat exchanger. Other obstacles must be removed such as the growing grass and the pieces of paper which might restrict the airflow.
- 3 Refrigerant piping connection
 - Leakage: Check for the refrigerant leakage at the piping connection between the outdoor and the indoor unit.
 - · Pressure: On split system, check the 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.

10.1.2 General maintenance procedure for the indoor unit

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

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

- 1 Cabinet
 - Stain: Check for any stain and remove it cleaning if it is the case.
 - Fixing screw: Check for any loosened screw or any lost screw. Tighten the loosened screws and replace the lost screws.
 - Insulation material: Check for any peeled thermal insulator on the indoor part of the covers. Repair the thermal insulator.
- 2 Water piping connection
 - Leakage: Check there are no water leakages neither in the inlet and outlet water connections (space heating and DHW if used), nor in the main water circuit nor the tank connections. Check all the joints, connections and circuit elements.



- If leakage is detected in the inlet/outlet water connections, repair it and remember to replace the gaskets.
- Pay special attention to the water pipe connection placed over the electrical box.
- 3 Water flow and pressure:
 - Water flow:
 - Space heating: Check the water flow (m³/h) through the unit controller in the "Heat Pump Details" of the "Operation Information" menu.
 - DHW (if used): Check whether the water circulation is correct along all the DHW circuit.
 - Pressure checking:
 - Space heating: Check the water pressure using the manometer in the indoor unit (In YUTAKI M 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:



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



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.

\land danger

Be careful when using this inspection hatch. There are high temperature and high pressure inside the tank. Before open it wait a reasonable time for the water to cool.

For a safe operation using the inspection hatch, proceed as it is explained in the manual of the specific unit.

Additional hydraulic elements are necessary in the DHW circuit. Refer to chapter "5 REFRIGERANT AND WATER PIPING".

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.

- 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.

i 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 (27)

- 1 Switch OFF the main power supply of the indoor unit.
- 2 Close the 2 shut-off valves (factory-supplied) installed at the space heating connections (Water inlet and outlet connections).
- **3** Open manually the drain port for indoor unit water (27) and collect the water into a bucket.
- 4 Once all the water has been drained, close again the drain port for indoor unit water.

When draining the indoor unit water from its drain port, the leaved water could be hot and could keep in pressure. Perform the draining procedure carefully.

Draining of the DHW circuit (28)

- 1 Switch OFF the main power supply of the indoor unit.
- 2 Close the main DHW inlet valve (water inlet shut-off valve) in order to avoid the tank filling.
- 3 Close the shut-off valve of the DHW outlet.
- 4 Connect a drain hose to the drain port for DHW (28) and lead the other end to the general draining.
- **5** Open manually the drain port for DHW (28) and wait a long time until all the water has been removed.

A 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.

Draining operation for YUTAKI \$80

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.

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.

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