

## **Clay Lane Cottage**

### **January 2024 – Planning Application**

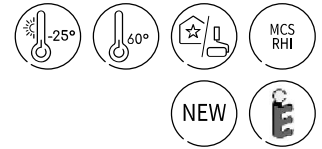
#### **Ventilation and Extract Statement**

- 1.1. The proposal incorporates an Air Source Heat Pump (ASHP) for the heat to the home. It is currently proposed to use a Hitachi Yutaki S or similar. The technical specifications and other details are submitted with the application.
- 1.2. Given the very quiet operating noise from this unit and the location of the property away from other noise sensitive uses, it is not going to cause any adverse or unacceptable impacts.

## Appendix 1 - Hitachi Yutaki S Air Source Heat Pump details

# Yutaki S

All-in-one compact system:  
cooling and heating



**NEW**

## Meets every requirement

Wide range of rated power outputs from 4.3 kW to 24.00 kW in heating mode and 4.00 kW to 17.50 kW in cooling mode. 11 to 24 kW model have a three-phase power supply.

## Smaller dimensions

Its compact design and ease of installation make it ideal for small spaces. Models from 4.30 to 8.00 kW will even fit in a kitchen cupboard.

## One of the best COPs on the market

The Yutaki S range has **one of the highest COP ratings on the market: up to 5.25.**

It achieves the maximum energy rating of A+++, which translates into less energy consumption and bigger savings.

## New remote control included as standard

An intuitive interface that can handle two zones, and features an ambiance sensor to be used as a separate modular thermostat.

## Exclusive design to work in the most extreme conditions

Its wide operating range allows the equipment to work in extreme outdoor conditions: **from -25°C to 46°C.**

## Less consumption

A water outlet temperature of up to 60°C even at -5°C outside, without the need for an additional electrical heater, for significant savings.

## Controls and remote controls (see page 22)



Wired remote control  
PC-ARFH2E  
Included



Wireless Intelligent  
Thermostat  
ATW-RTU-07

### Other

- 2-zone mixing kit - wall mounted  
ATW-2TK-07

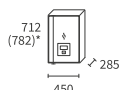
- Hi-Box  
AHP-SMB-01  
- Hi Kumo interface for Hi-Box  
ATW -TAG-02

(for more, see p.16-17)

### Indoor units

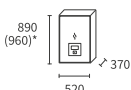
### Outdoor units

#### Yutaki S Mini



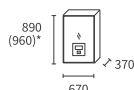
RWM-2.0R1E  
RWM-2.5R1E  
RWM-3.0R1E

#### Yutaki S Medium

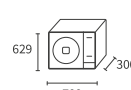


RWM-4.0N1E  
RWM-5.0N1E  
RWM-6.0N1E

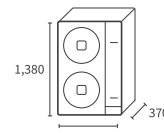
#### Yutaki S Big



RWM-8.0N1E  
RWM-10.0N1E



RAS-2WHVRP1  
RAS-2.5WHVRP1  
RAS-3WHVRP1



RAS-4WH(V)NPE  
RAS-5WH(V)NPE  
RAS-6WH(V)NPE  
RAS-8WHNPE  
RAS-10WHNPE

\* with connections.

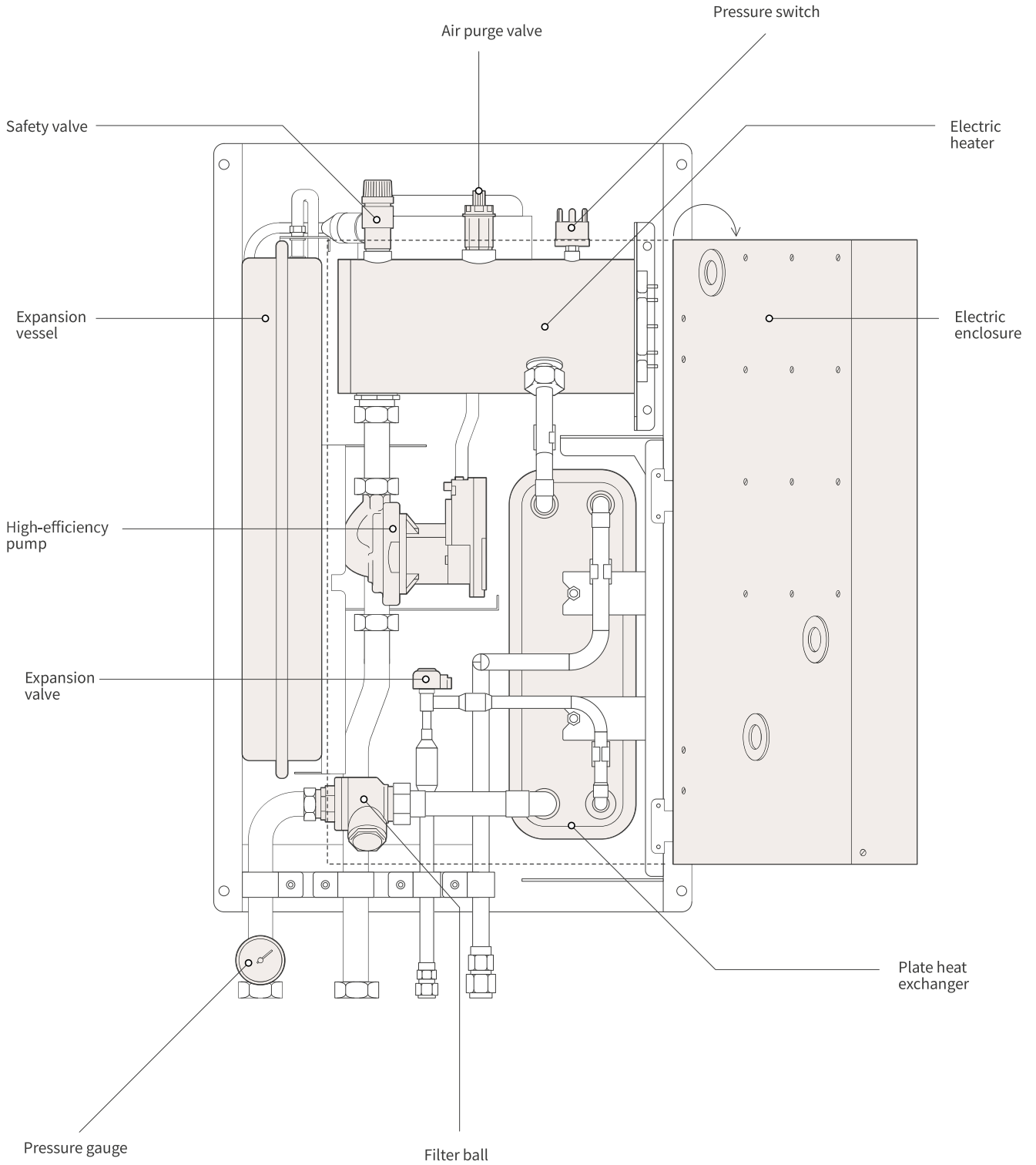
Model	R32 REFRIGERANT			R410A REFRIGERANT					
	YUTAKI S 4.3kW	YUTAKI S 6kW	YUTAKI S 8kW	YUTAKI S 11kW	YUTAKI S 14kW	YUTAKI S 16kW	YUTAKI S 20kW	YUTAKI S 24kW	
<b>Performance, heating</b>									
Min./rated/max. heating capacity (7°C outside. / 35°C water)	kW	1.85 / 4.3 / 6.5	1.85 / 6 / 8.6	2.1 / 8 / 11	4.3 / 11 / 15.2	4.8 / 14 / 16.7	5.5 / 16 / 17.8	9 / 20 / 25.5	10 / 24 / 32
Rated/max. power heating (-7°C outside / 35°C water)	kW	4.5 / 5.3	5.3 / 6.2	5.8 / 7.5	9.7 / 10.6	11.5 / 12	12 / 13	14.2 / 17.9	16.5 / 21
Rated/max. power heating (-7°C outside / 45°C water)	kW	- / 5	- / 5.8	- / 6.67	10 / 10	11 / 11.6	11.5 / 12.5	15 / 16.6	16.5 / 18.5
Rated/max. power heating (-7°C outside / 55°C water)	kW	4 / 4.2	4.7 / 5	5 / 5.5	8.7 / 9.7	9.7 / 11.2	10.5 / 12	12.5 / 14.5	15.5 / 17.3
Rated power input for heating (7°C outside / 35°C water)	kW	0.77	1.21	1.6	2.2	2.97	3.5	4.65	5.59
COP (7°C outside / 35°C water) in accordance with EN14511	-	5.25	4.8	4.6	5	4.71	4.57	4.3	4.29
SCOP average climate 35°C / 55°C in accordance with EN14825	-	4.6 / 3.4	4.5 / 3.25	4.5 / 3.2	4.8 / 3.5	4.48 / 3.43	3.9 / 3.23	3.88 / 3.13	3.6 / 2.98
Seasonal heating energy efficiency η <sub>s</sub> (35°C) Single/Three <sup>(1)</sup>	%	181	177	177	187 / 186	174 / 176	153 / 152	- / 150	- / 141
Seasonal heating energy efficiency η <sub>s</sub> (55°C) Single/Three <sup>(1)</sup>	%	133	127	125	136 / 135	133 / 133	125 / 125	- / 120	- / 116
Energy rating 35°C / 55°C	-		A+++/A++		A+++/A++		A++/A+	A+/A+	
Temperature range of water outlet (heating mode)	°C	20/60°C			20/60°C				
Max. temperature at the water outlet in thermodynamic-only mode	°C	60°C up to -5 °C outside			60°C up to -10 °C outside				
<b>Performance of Cooling model (optional)</b>									
Rated/max. power in cooling mode (35°C outside / 7°C water) (reversible)	kW	4 / 6	5.3 / 6	6.5 / 7	7.2 / 11.8	9.5 / 12.6	10.5 / 13.7	14 / 16.4	17.5 / 20.6
Rated power input in cooling mode (35°C outside / 7°C water)	kW	1.17	1.54	2.14	2.18	2.95	3.72	4.48	4.08
EER (reversible model)	-	4	3.6	3.35	3.54	3.54	3.31	3.12	2.81
Seasonal reversible energy efficiency η <sub>s</sub> (35°C) Single/Three <sup>(1)</sup>	%	186	180	179	189/189	176/176	153/153	-/152	-/142
Seasonal reversible energy efficiency η <sub>s</sub> (55°C) Single/Three <sup>(1)</sup>	%	132	128	126	136/136	133/133	127/126	-/122	-/118
<b>Indoor units</b>		RWM-2.0R1E	RWM-2.5R1E	RWM-3.0R1E	RWM-4.0N1E	RWM-5.0N1E	RWM-6.0N1E	RWM-8.0N1E	RWM-10.0N1E
Backup electrical heater as standard / 3-level	kW	3 (1+1+1)	3 (1+1+1)	3 (1+1+1)	6 (2+2+2)	6 (2+2+2)	6 (2+2+2)	9 (3+3+3)	9 (3+3+3)
Net weight	kg	35	36	37	46	48	48	60	62
Dimensions (H x L x D)	mm	712 x 450 x 285			890 x 520 x 370			890 x 670 x 370	
Sound power	dB(A)	37			39			47	
Remote control		Included			Included			Included	
<b>Hydraulic features</b>									
Expansion vessel	L	6			6			10	
Water flow (min / rated / max)	m <sup>3</sup> /h	0.5/0.77/1.9	0.6/1.03/2	0.6/1.29/2.1	1/1.89/2.9	1.1/2.41/3	1.2/2.75/3	2/3.44/4.5	2.2/4.13/4.6
Hydraulic heating connections (male/male valves supplied)	inches	1"			1" 1/4			1" 1/4	
Min. system water capacity	L	28			38	46	55	76	79
<b>Electrical features</b>									
Power supply	-	230V / 1Ph / 50Hz			230V / 1Ph / 50Hz or 400V / 3Ph / 50Hz			400V / 3Ph / 50Hz	
SINGLE PHASE 230V	Fuse size with backup heater	A	16		32			-	
	Cable width (mm <sup>2</sup> ) / max. length (m) <sup>(2)</sup>	-	3 x 2.5 / 14		3 x 6 / 28			-	
	Fuse size with backup heater + immersion / Yutaki S Optional	A	32		50			-	
	Cable width (mm <sup>2</sup> ) / max. length (m) <sup>(2)</sup>	-	3 x 6 / 28		3 x 10 / 30			-	
THREE PHASE 400V	Fuse size with backup heater	-	-	-	16			16	
	Cable width (mm <sup>2</sup> ) / max. length (m) <sup>(2)</sup>	-	-	-	5 x 2.5 / 20			5 x 5 / 20	
	Fuse size with backup heater + immersion / Yutaki S Optional	-	-	-	32			32	
	Cable width (mm <sup>2</sup> ) / max. length (m) <sup>(2)</sup>	-	-	-	5 x 6 / 20			5 x 10 / 20	
<b>Premium outdoor units</b>		RAS-2WHVRP1	RAS-2.5WHVRP1	RAS-3WHVRP1	RAS-4WH(V)NPE	RAS-5WH(V)NPE	RAS-6WH(V)NPE	RAS-8WHNPE	RAS-10WHNPE
Sound pressure level at 1m / Sound power	dB(A)	46 / 61	47 / 63	54 / 69	49 / 64	50 / 65	50 / 67	59 / 73	60 / 74
Air flow rate	m <sup>3</sup> /h	2526			4800			7620	
Dimensions (H x L x D)	mm	629 x 799 x 300			1380 x 950 x 370				
Net weight	kg	45			103			137	
Operating ranges in Cooling / Heating / DHW mode	°C	+10~+46DB // -20~+25DB // -20~+35			+10~+46DB // -25~+25DB // -25~+35				
<b>Refrigeration characteristics</b>									
Diameter of refrigerant pipes (Liq - Gas)	inches	1/4" - 1/2"		1/4" - 5/8" 3 to 27m* 3/8" 5/8" 27 to 50m*	3/8" 5/8"			3/8" 1"	1/2" 1"
Min./max. length / max. level difference	m	3 - 50 / 20			5 - 75 / 20			5 - 70 / 20	
Initial pre-charged refrigerant / Additional load	kg / g / m	1.2 for 10m / 15	1.3 for 10m / 15	1.3 for 10m / 32	3.3 for 15m / 60	3.4 for 15m / 60		5 for 15m / 65	5.3 for 15m / 120
Refrigerant	-	R32			R410A				
Compressor	-	SCROLL		ROTARY	SCROLL				
<b>Electrical features</b>									
Power supply	-	230V / 1Ph / 50Hz			230V / 1Ph / 50Hz or 400V / 3Ph / 50Hz			400V / 3Ph / 50Hz	
SINGLE PHASE 230V	Fuse size	A	16	16	32			-	
	Cable width (mm <sup>2</sup> ) / max. length (m) <sup>(2)</sup>	-	3 x 2.5 / 28	3 x 2.5 / 24	3 x 10 / 30			-	
THREE PHASE 400V	Fuse size	A	-	-	16			25	
	Cable width (mm <sup>2</sup> ) / max. length (m) <sup>(2)</sup>	-	-	-	5 x 4 / 16			5 x 6 / 26	
Int./Ext. connection (shielded)	mm <sup>2</sup>	2 x 0.75			2 x 0.75				

<sup>(1)</sup> Non-regulated seasonal energy efficiency, Keymark-certified. <sup>(2)</sup> Data given for reference purposes only. Compliant with the applicable electrical standards.

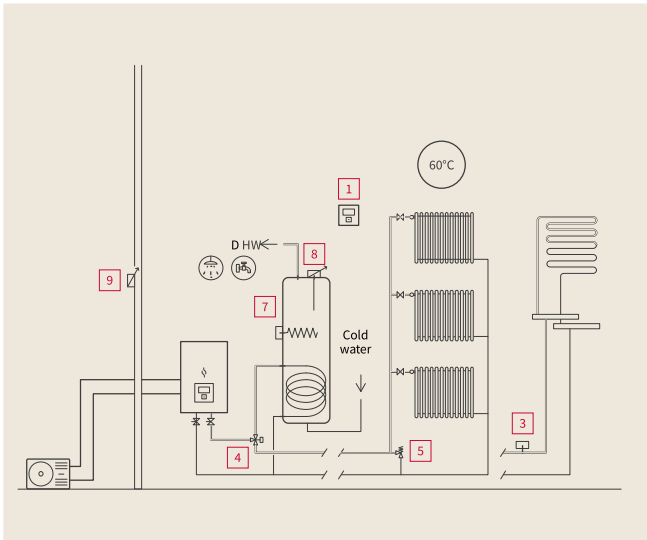
(V) = single. \* 2/2.5/3HP R32 models have different diameters for the cooling gas pipes, cooler connection groups, and indoor units. For that reason, use the adapters provided with the outdoor unit. Refer to the table page 7.

# Internal design

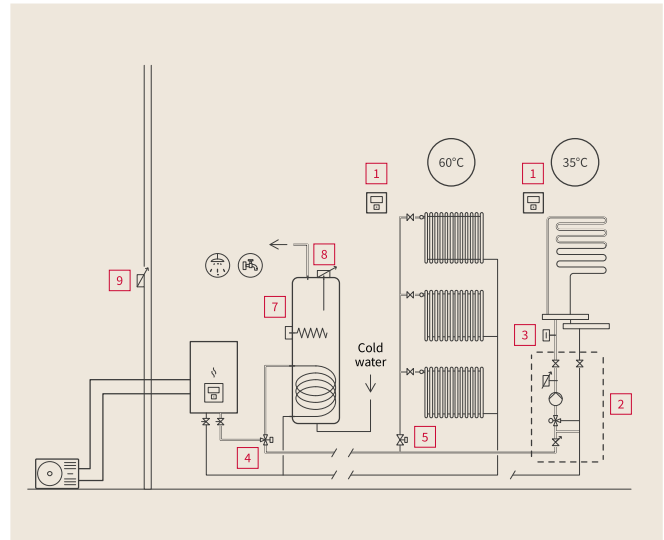
Yutaki S



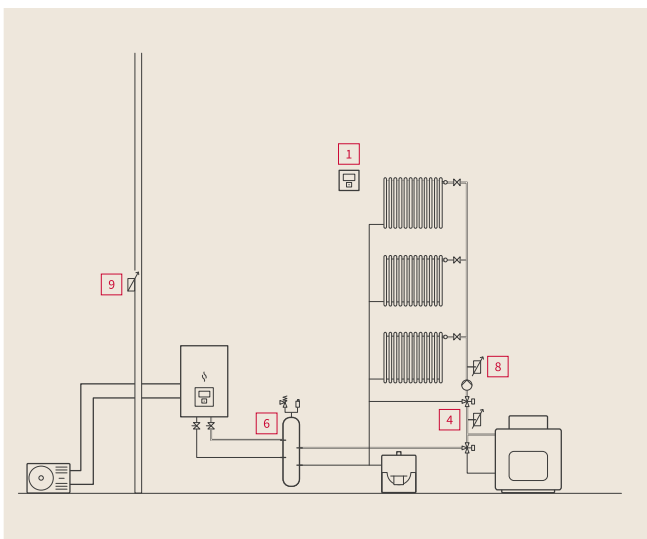
# Yutaki S hydraulic setups



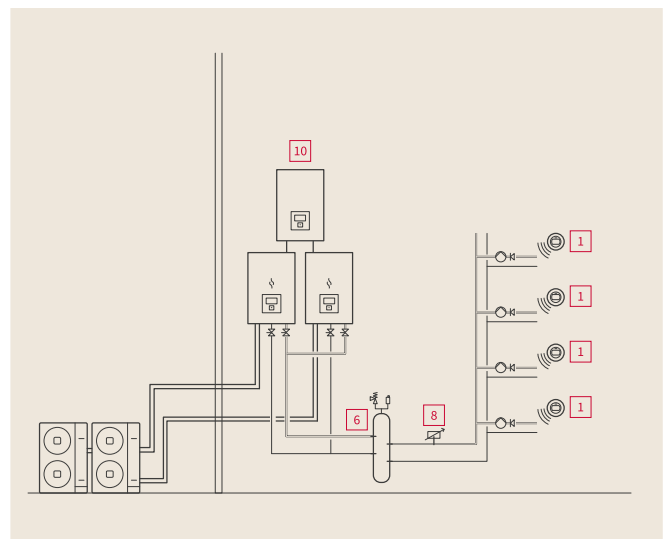
1 zone of radiators or underfloor heating with or without DHW



2 zones with radiator circuits and underfloor heating with or without DHW



Bivalent system with Boiler: 1 radiator circuit



Cascade: separate centralised heating application

# Yutaki S hydraulic controls and accessories



## Wired remote control

PC-ARFH2E  
Included.



## Front panel

Use if moving the remote control in the environment.  
ATW-FCP-01



## Wired temperature sensor

ATW-ITS-01



## On / Off wireless thermostat

ATW-RTU-04



## Intelligent wireless thermostat

Circuit 1.  
ATW-RTU-07



## Intelligent wireless thermostat

Circuit 2.  
ATW-RTU-06



## Auxiliary output box

4 ports available: operation, alarm, cooling, heat-OFF.

ATW-AOS-02



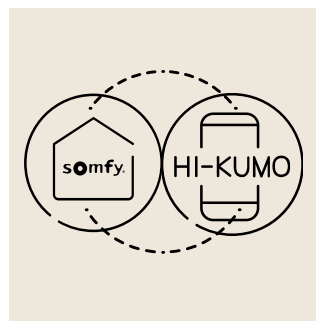
## Hi-Box: Hi Kumo and Hi Kumo PRO home automation boxes

AHP-SMB-01  
(for more, see p.16-17)



## Somfy® home-automation box

1811527



## Somfy® / Hi Kumo interface

Communication interface.  
Integrates into Somfy® or Hi Kumo environment.  
ATW-TAG-02



## KNX® communication interface

Communication interface.  
KNX® environment integration.  
ATW-KNX-02



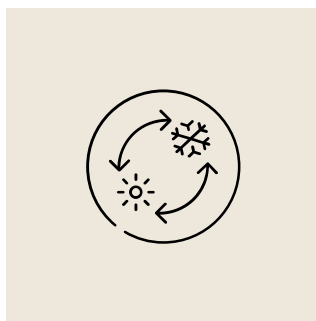
## Modbus communication interface

Communication interface.  
Modbus® environment integration.  
ATW-MBS-02



### Usage meter (RT2012)

Schneider® brand.  
Not sold by Hitachi.



### Reversible kit

Equipment required to run in cooling mode.

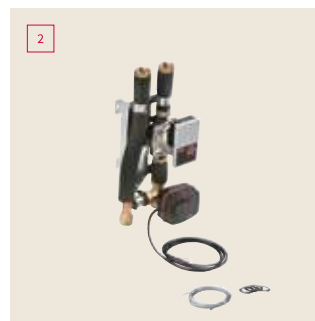
ATW-CKS-01 (Yutaki S Mini 2 / 2.5 / 3 HP)  
ATW-CKS-02 (Yutaki S Medium 4 / 5 / 6 HP)  
ATW-CKS-03 (Yutaki S Power 8 / 10 HP)



### Cascade controller

Manage a cascade up to 8 Yutaki models from the same range and with the same power output (single/three-phase).

ATW-YCC-03



### 2-zone mixing kit - wall mounted

This accessory is essential if you want to maintain 2 distinct temperature settings.

ATW-2TK-07



### Aquistat, floor-mounted

This accessory is essential for floor-mounted heaters (DTU 65-14).

ATW-AQT-01



### 3-way directional inversion valve

DHW and swimming pool applications.

ATW-3WW-01



### Differential pressure valve

This accessory ensures a constant flow through the heat pump condenser.

ATW-DPOV-01



### Hydraulic separator for heat pump

This accessory hydraulically separates the transmitter and boiler network from that of the heat pump.

ATW-HSK-01



### DHW storage tank

Stainless steel tank.

A range of tanks and buffer vessels are available. Tanks from 150l to 300l and buffer vessels from 60l.



### Universal water temperature sensor

DHW, hydraulic decoupling, Circuit 2, swimming pool, solar (required if the tank is not a Hitachi DHWT).

ATW-WTS-02Y



### 2nd outdoor temperature sensor

ATW-2OS-02