

AIR TO WATER



“ecodan” can heat rooms and supply domestic hot water, realising greater comfort and energy saving.

“ecodan” – Economic, eco conscious next generation heating system

Both energy-saving and safe for the environment, the Mitsubishi Electric ecodan incorporates a highly efficient heat pump system that captures “the heat in the air”, a renewable energy resource. Equipped with advanced inverter control, meticulous temperature control assures comfortable heating, and its space-saving “All-in-one” indoor unit is easy to install. These energy-saving, high comfort and simple installation characteristics have drawn the ecodan heating system into the spotlight centre stage.

Excellent ecodan’s heating performance, even at low outdoor temperature!

INDOOR UNIT





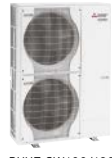



Hydro box, cylinder unit



Reversible hydro box, Reversible cylinder unit



OUTDOOR UNIT

Packaged type	Small capacity (Under 5kW)*	Medium capacity (7.5kW–14kW)*	Large capacity (≥16kW)*
ZUBADAN		 PUAH-HW112/140	
POWER INVERTER	 PUAH-W50	 PUAH-W85	 PUAH-W112
Split type	Small capacity (Under 5kW)*	Medium capacity (7.5kW–14kW)*	Large capacity (≥16kW)*
ZUBADAN New Generation		 PUAH-SHW80/112/140	 PUAH-SHW230
POWER INVERTER	 PUAH-SW50	 PUAH-SW75	 PUAH-SW100/120
Eco Inverter	 SUHZ-SW45		 PUAH-SW160/200
ATA/ATW Hybrid system	Small capacity (Under 5kW)*	Medium capacity (7.5kW–14kW)*	Large capacity (≥16kW)*
Mr.SLIM+		 PUAH-FRP71	
PUMY + ecodan		 PUMY-P112/125/140	

*Rated capacity is at conditions A2W35. (according to EN14511)

New eco-design directive

What is the ErP Directive?

The Ecodesign Directive for Energy-related Products (ErP Directive) established a framework to set mandatory standards for ErPs sold in the European Union (EU). The ErP Directive introduces new energy efficiency ratings across various product categories. It affects how products such as computers, vacuum cleaners, boilers and even windows are classified in terms of environmental performance. Labelling regulations that apply to our ATW heat pumps came into effect from September 26, 2015.

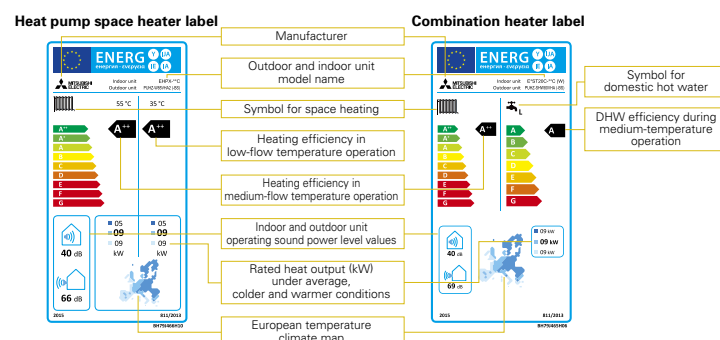
New energy label and measurements

Under directive 2009/125/EC, ATW heat pumps of up to 70kW are required to show their heating efficiency on the energy label. The purpose of the energy label is to inform customers about the energy efficiency of a heating unit. The efficiency for space heating is ranked from A++ to G. In the case of domestic hot water, it is from A to G. A package label is also required if the ecodan heat pump is installed with a controller and/or a solar system or additional heater. All ecodan units* are already rated as A++ for heating at both 55°C and 35°C and A for domestic hot water, which are the highest efficiency ranks.

*Except for our ATA/ATW hybrid system Mr. SLIM+

Product label

This label is for individual heating units, such as an ecodan heat pump. Typically, the space heater label is used for ecodan systems with a hydro box, and the combination heater label is used for ecodan systems with a cylinder unit.



These labels are delivered with all ecodan outdoor units.

What is the package label?

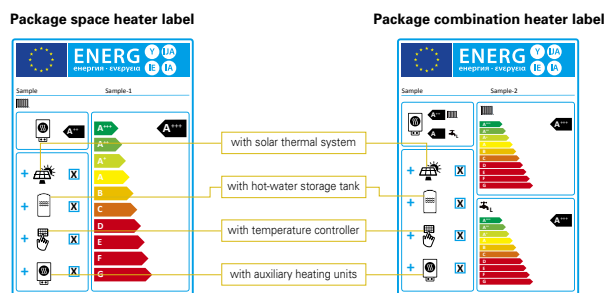
A heating system can use several energy-related products, such as a controller or solar thermal system. Therefore, a label showing the efficiency of the total heating system is required. The category range is defined from A+++ to G.

Creating the package label is the responsibility of the installers and distributors. A useful tool on the Mitsubishi Electric website is available to easily create the labels for ecodan products and controllers.

erp.mitsubishielectric.eu/erp/options

Package label

This label is for heating systems that use several energy-related products, such as a controller or a solar thermal system.



Customised package labels including ecodan heat pumps and the FTC5 controller can be created on the Mitsubishi Electric website.

Designed for Optimal Heating

ZUBADAN New Generation (Split type)

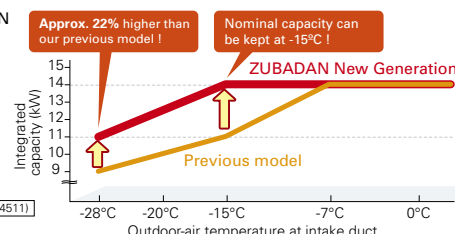
Reliable performance in low-temperature outdoor conditions

ZUBADAN New Generation provides powerful heating in cold regions where most heat pumps cannot perform very well. ZUBADAN's rated heating capacity is maintained even in outdoor temperatures as low as -15°C. That means ZUBADAN can be trusted to provide comfortable heating during severe winter months.

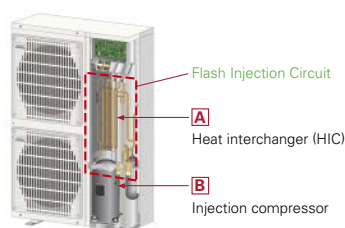


Benefits ZUBADAN New Generation

Example:
PUHZ-SHW140YHA

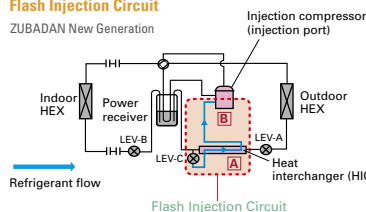


Mitsubishi Electric's Flash Injection Technology
The key to high heating performance at low outdoor temperatures



Flash Injection Circuit

ZUBADAN New Generation



The Flash Injection Circuit is an original technology. A heat exchange process at point A (heat interchanger) transforms liquid refrigerant into a two-phase, gas-liquid state and then compresses the gas-liquid refrigerant at point B (injection compressor). This circuit secures a sufficient flow rate of refrigerant for heating when outdoor temperatures are very low. Thanks to improving the heat interchanger and introducing a new injection compressor, the Flash Injection Circuit is now more powerful.

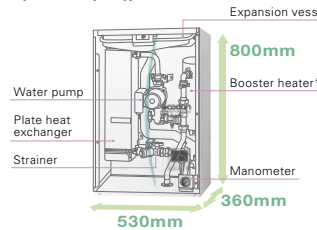
Indoor units

New all-in-one compact indoor unit

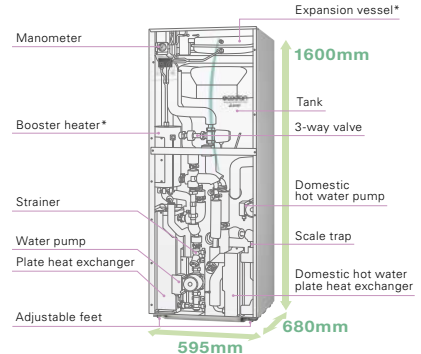
Easy to install and low maintenance

- All-in-one: Key functional components are incorporated
- Compact cylinder unit: Just 1600mm in height
- Compact hydro box: Only 530×360mm footprint
- Easy installation: Factory fitted pressure relief valve
- Easy service: Relevant parts are located at the front of the unit for easy maintenance
- Easy transport: Handles attached on front and back (cylinder unit)

Hydro box (Split type)



Cylinder unit (Split type)



Larger capacity system



Outdoor units

PUHZ-SW160/200YKA
SHW230YKA2

Indoor units

EHSE-YM9EC, EHSE-MEC, ERSE-YM9EC, ERSE-MEC

Our 8–10HP ecodan heat pumps, only available with a hydro box connection, are suitable for large houses and small businesses where a high heating load is necessary. Our latest generation of 8–10HP Power Inverter outdoor units can reach 60°C maximum flow temperature. The new 8–10HP hydro box is available in both heating only and reversible models and can be connected to a customised capacity domestic hot water tank.

AHigh-performance for domestic hot water re-charge

External plate heat exchanger – more energy savings using ecodan's unique and innovative technologies

Save energy in domestic hot water operations

Thanks to an external plate heat exchanger, ecodan offers much higher domestic hot water efficiency. Compared to our previous model, domestic hot water recharge efficiency is improved by approximately 17%*1, thereby reducing operating costs.

Avoid performance loss due to scale

A scale trap is incorporated after the plate heat exchanger to capture calcium scale particles, thus maintaining the high performance of the external plate heat exchanger. (Just a 3% reduction during 15 years*2).

Lighter weight

Compared to our previous model, the cylinder unit is up to 15kg lighter*. This is thanks to the coil incorporated in the tank which has been removed and replaced by a much lighter plate heat exchanger.

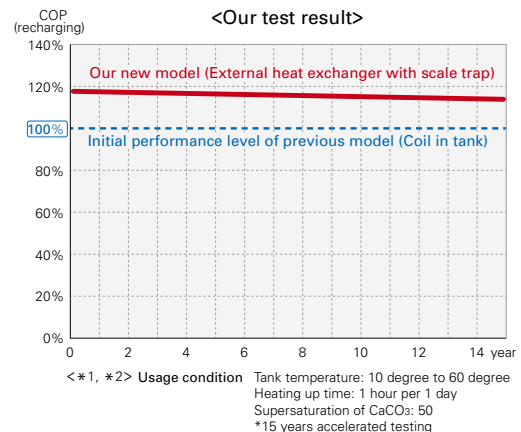
*Comparison between EHST20C-VM2C and EHST20C-VM2B.

Optimised stratification for better comfort

Thanks to the L-shaped inlet pipe from the plate heat exchanger, stratification is well maintained after re-charge.

You do not need to worry about running out of hot water the same as with a conventional coil in tank.

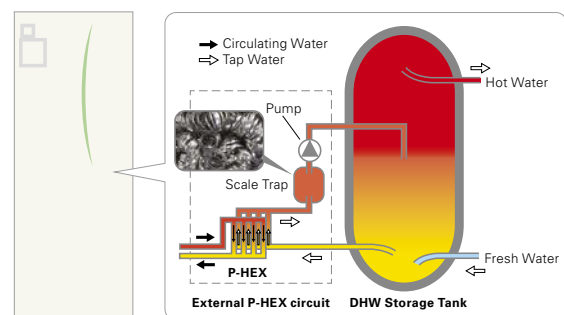
Supply water temperature can be kept high until all the hot water in the tank has been used.



The secret behind our external plate heat exchanger system

Thanks to the unique plate heat exchanger and scale trap technology, a more efficient performance is achieved. In conventional systems, there is a risk of calcium scale building up on the heat-exchange plate if it is exposed to tap water directly. Therefore, it is difficult to use plate-based heat exchangers to heat tap water. To resolve this problem, ecodan is equipped with a "scale trap" that catches homogeneous calcium nuclei in the tap water before it has a chance to grow into large scales, thereby inhibiting build-up in the external heat exchanger. ecodan can use a plate heat exchanger to heat tap water, resulting in much higher domestic hot water performance.

Notice: In the case of special localised conditions such as very hard tap water, please consult a specialist before installation.



Unique technology of ecodan

Auto Adaptation

Maximize energy savings while retaining comfort at all times

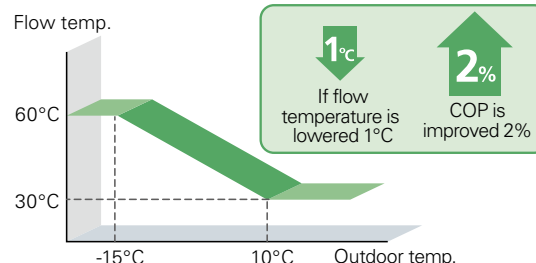


*SD logo is a trademark of SD-3C, LLC

Regarding the relation of flow temperature and unit performance, a 1°C drop in the flow temperature improves the coefficient of performance (COP) of the ATW system by 2%. This means that energy savings are dramatically affected by controlling the flow temperature in the system.

In a conventional system controller, the flow temperature is determined based on the pre-set heat curve depending on the actual outdoor temperature. However, this requires a complicated setting to achieve the optimal heat curve.

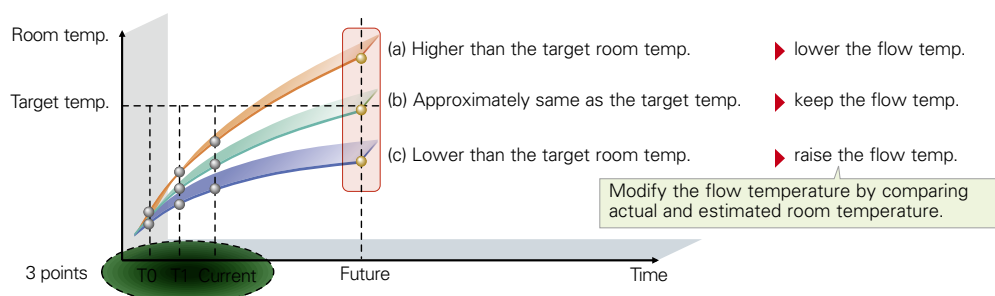
■ Heat curve setting (Example)



Mitsubishi Electric's Auto Adaptation function automatically tracks changes in the actual room temperature and outdoor temperature and adjusts the flow temperature accordingly.

Aiming to realise further comfort and energy savings, Mitsubishi Electric is proud to introduce a revolutionary new controller. Our advanced Auto Adaptation function measures the room temperature and outdoor temperature, and then calculates the required heating capacity for the room. Simply stated, the flow temperature is automatically controlled according to the required heating capacity, while optimal room temperature is maintained at all times, ensuring the appropriate heating capacity and preventing energy from being wasted. Furthermore, by estimating future changes in room temperature, the system works to prevent unnecessary increases and decreases in the flow temperature. Accordingly, Auto Adaptation maximises both comfort and energy savings without the need for complicated settings.

■ Future room temperature estimation



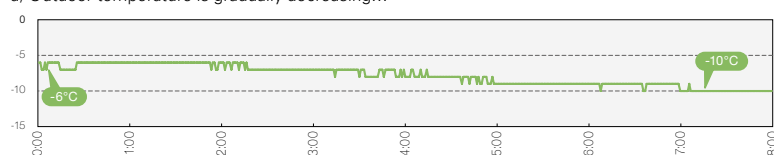
Auto Adaptation – room temperature control

1. Installation site: Southern Sweden
2. Detached house with underfloor heating
3. Data in February 2011

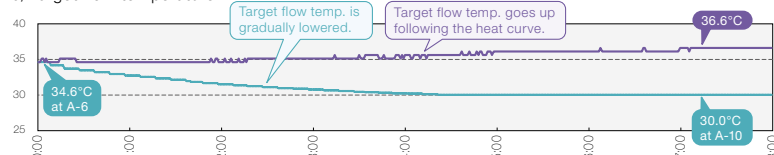


[Example]

a) Outdoor temperature is gradually decreasing...

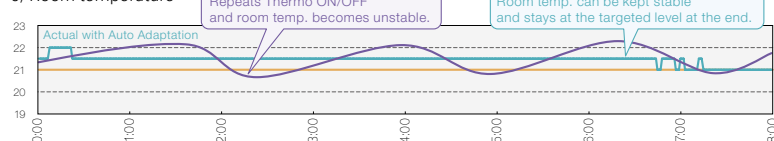


b) Target flow temperature

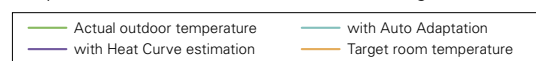


By Auto Adaptation, flow temperature can be lowered even when outdoor temp. is decreasing.

c) Room temperature



By Auto Adaptation, flow temperature can be lowered without sacrificing comfort.





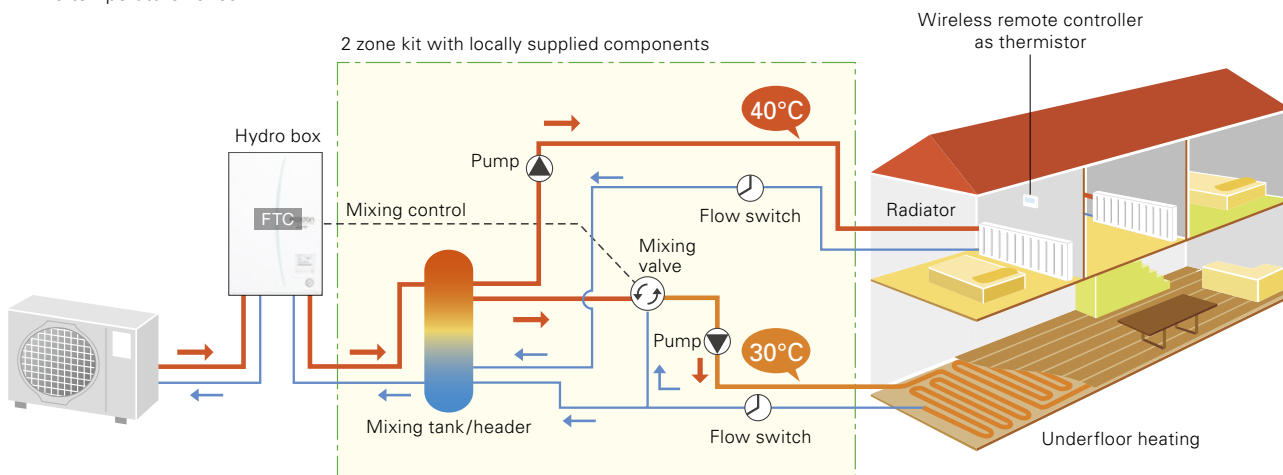
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2 zone control (for heating/cooling)

Simultaneously control two different zones

Using ecodan, it is possible to control two different flow temperatures, thereby managing two different heating load requirements. The system can adjust and maintain two flow temperatures when different temperatures are required for different rooms; for example, controlling a flow temperature of 40°C for the bedroom radiators and another flow temperature of 30°C for the living room floor heating. Another feature of this model is that 2 zone cooling control is now possible. Using these functions it is easy to maintain the most comfortable temperature in each room and to save energy too.

■ Two temperature zones



*Items such as a mixing tank, mixing valve flow switch and pumps are not included and need to be purchased locally.

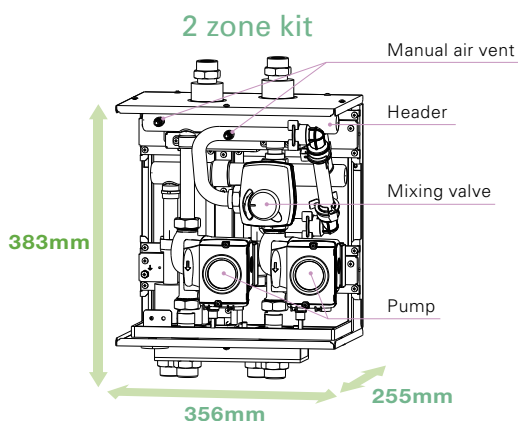


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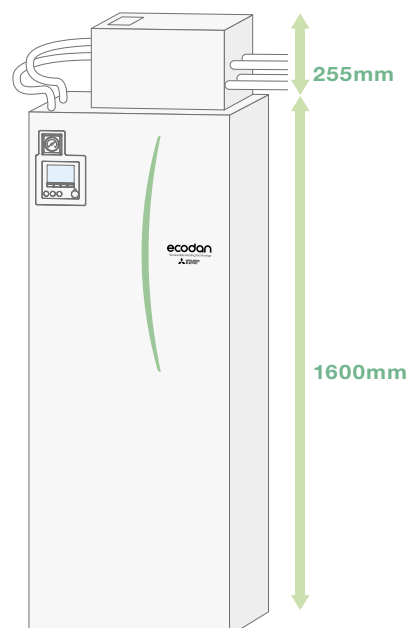
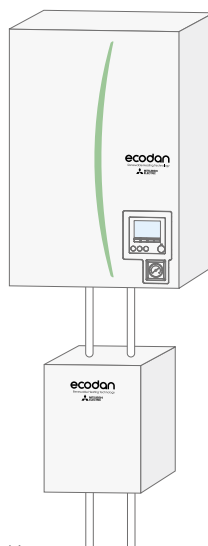
2 zone kit **NEW**

With optional parts

Cylinder unit connection



Hydro box connection



Easy to install and low maintenance

- All-in-one kit: Key functional components are incorporated in 2 zone kit.
- Easy installation: G1 screw type flexi piping to avoid brazing.
- Compact size: Just to fit on the top of cylinder unit, also wall mountable.



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Intelligent hybrid control (boiler interlock)

An existing boiler can be used for extra heating capacity in an efficient way

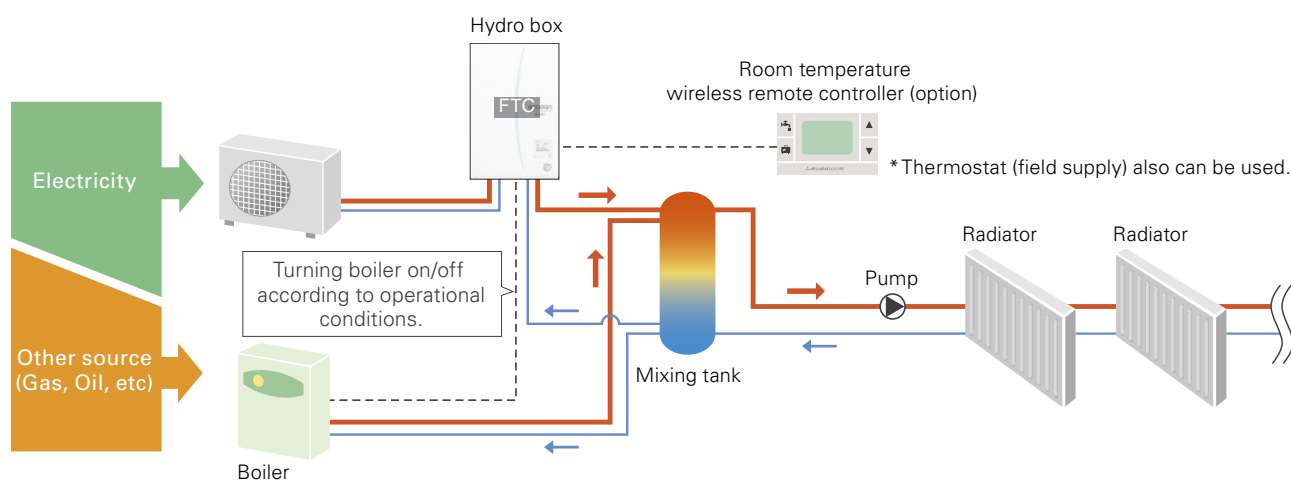
The flexibility of ecodan's intelligent control allows the system to be combined with the boiler currently in use. Additionally, this control can judge which heating source to use either ecodan or the existing boiler, based on various conditions*.

In the event of one heating unit not working due to some unforeseen problem, the other heating system can be used as a back-up, thereby preventing the heating system operation from stopping completely.

*Please see below "Heat source switchover".

Intelligent system combining a boiler with ecodan

■ Intelligent boiler interlock system



* Items such as a mixing tank, and pump are not included and need to be purchased locally.

Heat source switchover - Choose appropriate system based on needs

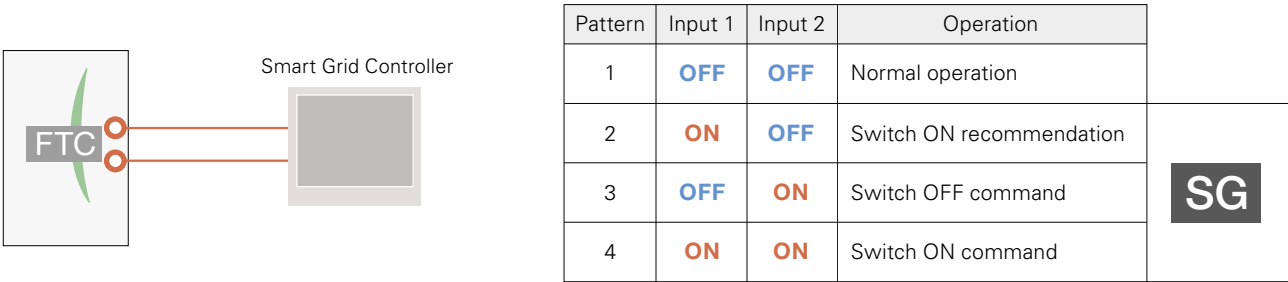
4 types of heat source switchover logic

- ① Switchover based on actual outdoor temperature
 - Heat source switchover occurs when the outdoor temperature drops below a pre-set temperature.
- ② Switchover based on running cost
 - Heat source switchover occurs by judging optimal operation based on running cost.
 - *Pre-registration of the energy price of electricity, and gas or oil per 1kWh is necessary.
- ③ Switchover based on CO₂ emission level
 - Heat source switchover occurs to minimise CO₂ emission.
 - *Pre-registration of CO₂ emission amount from electricity and gas or oil is necessary.
- ④ Switchover can also be activated via external input
 - For example, the peak cut signal from electric power company.

Smart Grid Ready function NEW

In recent years renewable energy generation has become popular. However, this rapid growing causes the problem of supply and demand gap of electricity. The aim of "SG Ready" is to make the electricity demand response more flexible by creating a uniform interface for the smart grid integration of heat pumps. Air-to-Water units need to be able to change the operation pattern when the signal is received from the Smart Grid Controller.

New ecodan Cylinder, Hydro box and FTC have been modified to communicate with Smart Grid Controller. The communication protocol is based on "SG Ready" label regulation. (Version 1.1; gültig ab 01.01.2013)



Pattern 1: Normal operation

When there is no signal from the Smart Grid Controller, DHW and Heating operate according to user settings.

Pattern 2: Switch ON recommendation

When set to the "Switch ON" recommendation, the target temperature of DHW is increased a specified amount and the heating "Thermo ON" condition range is extended.

Pattern 3: Switch OFF command

When the "Switch OFF" command is received, both DHW and Heating are turned off.

Pattern 4: Switch ON command

When the "Switch ON" command is received, the target temperature of DHW is increased to the maximum target temperature and Heating continues.

Multiple unit control

Connect up to 6 units – Automatic control of multiple units for bigger capacity and better efficiency



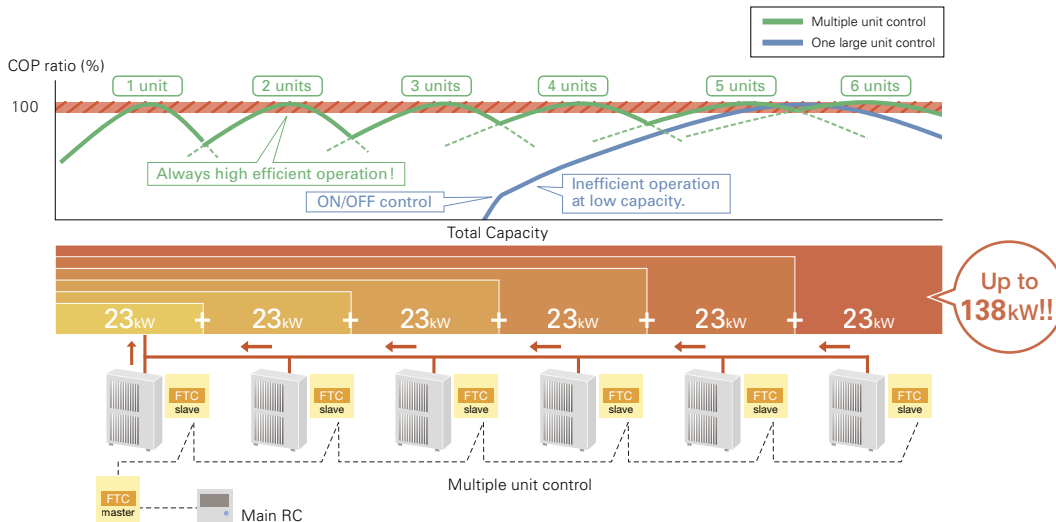
*SD logo is a trademark of SD-3C, LLC

A maximum of 6 units* can be configured according to the heating/cooling load of the building. The most efficient number of operating units is determined automatically based on heating/cooling load. This enables ecodan to provide optimal room temperature control, and thus superior comfort for room occupants. Also incorporated is a rotation function that enables each unit to run for an equal time period.

If one of the units malfunctions when using the Multiple Unit Control, another unit can be automatically operated for back-up, thereby preventing the system operation from stopping completely.

*Only same models (same capacity) can be used.

■ Multiple unit control



Remote controllers

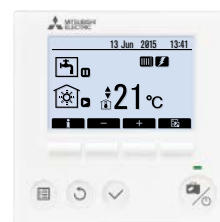
Smart user-friendly controller with stylish design

Main remote controller

- Large screen and backlight for excellent visibility, even in dark environment
- Multi-language support (supports 15 languages)
- Can be removed from main unit and installed in a remote location (up to 500m)
- Quick reading of operation data (7.5 times faster than previous model)
- Wide range of convenient functions in response to user demand

Function settings

- Energy monitoring
- Two-zone control (cooling and heating)
- Two separate schedules
- Summer time setting
- Built-in room temperature sensors
- Hybrid control (boiler interlock)
- Floor drying mode
- Weekly timer
- Holiday mode
- Legionella prevention
- Error codes



Main controller



PAR-WR51R-E (Option)
Receiver



PAR-WT50R-E (Option)
Wireless remote controller

Wireless remote controller (optional)

- Built-in room temperature sensor; easy to place in the best position to detect room temperature
- Wiring work eliminated
- Simple design that is easy to operate
- Remote control from any room without needing to choose an installation location
- Backlight and big buttons that are easy to operate
- Domestic hot water boost and cancellation
- Simplified holiday mode



*SD logo is a trademark of SD-3C, LLC

Energy monitoring

View electricity consumption and heat output on the remote controller

Every end user can now easily check the energy data of the ecodan heat pump.

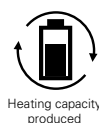
Other features

- Daily, monthly and yearly data are stored and can be displayed using the main remote controller.
- External power meter and heat meter can be connected for accurate measurement.
- SD card is also available for storing data.

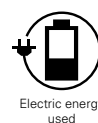
*Using pre-set values on the main remote controller, estimated energy consumption/output can be shown without external power and a heat meter.

Depending on operating condition and system configuration, there is some possibility to show different data from the reality.

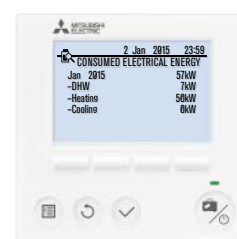
*This function is available depending on the version of the outdoor unit model.



Heating capacity produced



Electric energy used



Summer time setting

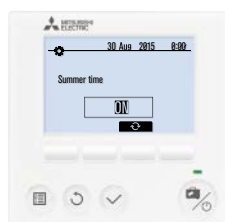
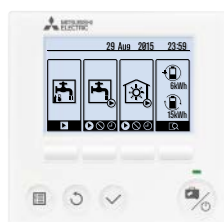
Easy adjustment for summer time



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Just switch the summer time mode 'on' using the main remote controller and the clock in the main remote controller is adjusted to summer time hours.

This function can release the end user from clock setting tasks.



Two separate schedules

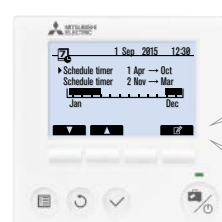
Pre-setting two different schedules for winter and summer seasons



*SD logo is a trademark of SD-3C, LLC

Two different schedule settings are available for use via the main remote controller.

These schedules can be pre-set and changed depending on the season. For example, from November to March, space heating and domestic hot water are used; however, during warm months such as from April to October, only domestic hot water is used.



<Example>

- | Schedule | Season | Heating Mode | Domestic Hot Water |
|------------|-------------|--------------------|--------------------------|
| Schedule 1 | Winter time | Space heating | daytime
early morning |
| Schedule 2 | Summer time | Domestic hot water | any time |

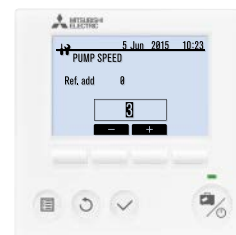
Easy commissioning

Pump for primary water circuit* speed setting possible using ecodan's main remote controller

Even when the system is running, pump output can be set to one of five different settings using the main remote controller.

The person commissioning the system can adjust this speed much more easily.

*Speed setting of pump for domestic hot water is not available through the main remote controller when the system is running.

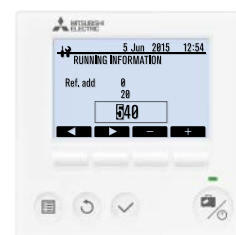


Flow sensor newly incorporated

The flow sensor is key for monitoring energy output and can also be used to detect flow error as well.

– Flow rate can be checked on the main remote controller.

– Flow rate can also be shown as graphs using the SD card tool.



Run indoor unit* without outdoor unit

During installation or situations such as an outdoor unit malfunction, the indoor unit can be operated using a heater.

While using this mode, flow and tank temperature are selectable.

Fixing and maintenance of the outdoor unit can be done without stopping heating and domestic hot water operation*.

*Models with electric heater only.

*When the indoor unit operation stops, please check all settings after the outdoor unit is connected.



*SD logo is a trademark of SD-3C, LLC

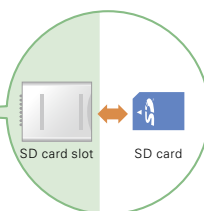
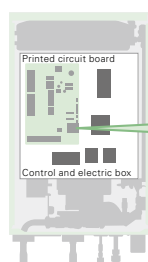
SD* card

For easier settings and data logging

The initial setting for ecodan is now simpler than ever before. The special software enables the required initial settings to be saved to an SD card using a personal computer. The system set-up is as easy as moving the SD card from the computer to the SD card slot in the indoor unit. Compared to the previous procedure of inputting settings using the main controller at the installation site, a remarkable reduction in set-up time has been achieved. Thus, it is ideal for busy installers.

*SD card function is only used at the time of installation.

Hydro box operation panel



Settings can be performed easily and the logging of operation data saved to an SD card can be confirmed via a personal computer.



Items that can be pre-set

Simply copying pre-set data to an SD card, the same settings can input into another unit using the SD card.

- Initial settings (time display, contact number, etc.)
- Heating settings
 - Auto adaptation
 - Heat curve
 - Two different temperature zones (heating and cooling)
- Interlocked boiler operation settings
- Holiday mode settings
- Schedule timer settings (two separate schedules)
- Domestic hot water settings
- Legionella prevention settings

All items that are set by the main controller can be set via a personal computer.

Data that can be stored

Operation data up to a month long can be stored on a single SD card

- Consumed electrical energy
- Delivered energy
- Flow rate
- Operation time
- Defrost time
- Actual temperature
 - Room temperature
 - Flow temperature
 - Return temperature
 - Domestic hot water temperature
 - Outdoor temperature
- Error record
- Input signal
- Etc.

Split type specifications

Indoor unit

<Cylinder unit>



Model name			EHST20C-VM2C	EHST20C-VM6C	EHST20C-VM9C	EHST20C-TM9C	EHST20C-VM2EC	EHST20C-VM6EC	EHST20C-VM9EC	EHST20C-MEC	EHST20C-VM2C	EHST20C-VM9C	EHST20D-VM2EC	EHST20D-MHC	EHST20D-MEC	EHST20C-MHCW*2	EHST20D-MHCW*2						
	Type		Heating only																				
	Immersion heater		-	-	-	-	-	-	-	-	-	-	-	-	x	-	x	x					
	Expansion vessel		x	x	x	x	-	-	-	-	-	x	x	-	x	-	x	x					
	Booster heater		x	x	x	x	x	x	x	x	-	x	x	x	-	-	-	-					
Dimensions		HxWxD	mm		1600×595×680																		
Weight (empty)			kg		110	111	112	112	104	105	106	103	103	105	97	103	96	110	103				
Power supply (V/Phase/Hz)			230/Single/50																				
Heater	Booster heater	Power supply (V/Phase/Hz)		230/Single/50			400/Three/50			230/Three/50			230/Single/50			400/Three/50			230/Single/50			-	
		Capacity	kW		2	6 (2/4/6)	9 (3/6/9)	9 (3/6/9)	2	6 (2/4/6)	9 (3/6/9)	-	2	9 (3/6/9)	2	-			-				
		Current	A		9	26	13	23	9	26	13	-	9	13	9	-			-				
		Breaker size	A		16	32	16	32	16	32	16	-	16	16	16	-			-				
	Immersion heater	Power supply (V/Phase/Hz)		-											230/Single/50		-		230/Single/50				
		Capacity	kW		-											3		-		3			
		Current	A		-											13		-		13			
		Breaker size	A		-											16		-		16			
Domestic hot water tank	Volume / Material		L / -		200 / Stainless steel																		
	Guaranteed operating range*1	Ambient	°C		0~35*1																		
Outdoor		Heating	°C		See outdoor unit spec table																		
		Cooling	°C		-																		
Target temperature range	Heating	Room temperature	°C		10~30																		
		Flow temperature	°C		25~60																		
	Cooling	Room temperature	°C		-																		
		Flow temperature	°C		-																		
	DHW	°C		40~60																			
	Legionella prevention	°C		60~70																			
Sound pressure level (SPL)			dB (A)		28																		

*1 The indoor environment must be frost-free *2 UK model

<Hydro box>

Model name			EHSD-MEC	EHSD-MC	EHSD-VM2C	EHSD-VM9C	EHSC-MEC	EHSC-VM2C	EHSC-VM2EC	EHSC-VM6C	EHSC-VM6EC	EHSC-VM9C	EHSC-VM9EC	EHSC-TM9C	EHSE-MEC	EHSE-VM9EC	
	Type		Heating only														
	Immersion heater		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Expansion vessel		-	x	x	x	-	x	-	x	-	x	-	x	-	-	
	Booster heater		-	-	x	x	-	x	x	x	x	x	x	x	-	x	
Dimensions	H×W×D	mm	800×530×360														950×600×360
Weight (empty)		kg	38	43	44	45	42	48	43	49	44	49	44	49	60	62	
Power supply (V/Phase/Hz)			230/Single/50														
Heater	Booster heater	Power supply (V/Phase/Hz)	-	-	230/Single/50	400/Three/50	-	230/Single/50						400/Three/50	230/Three/50	-	400/Three/50
		Capacity	-	-	2	9 (3/6/9)	-	2	2	6 (2/4/6)	6 (2/4/6)	9 (3/6/9)	9 (3/6/9)	9 (3/6/9)	-	9 (3/6/9)	
		Current	A	-	-	9	13	-	9	9	26	26	13	13	23	-	13
		Breaker size	A	-	-	16	16	-	16	16	32	32	16	16	32	-	16
Guaranteed operating range*1	Ambient	°C	0-35*1														
	Outdoor	Heating	°C See outdoor unit spec table														
		Cooling	°C -														
Target temperature range	Heating	Room temperature	°C 10-30														
		Flow temperature	°C 25-60														
	Cooling	Room temperature	°C -														
		Flow temperature	°C -														
Sound pressure level (SPL)			dB (A) 28													30	

*1 The indoor environment must be frost-free

<Reversible cylinder unit>

Model name			ERST20D-VM2C	ERST20D-MEC	ERST20C-VM2C	ERST20C-MEC
	Type		Heating and cooling			
	Immersion heater		–	–	–	–
	Expansion vessel		x	–	x	–
	Booster heater		x	–	x	–
Dimensions	HxWxD	mm	1600x595x680			
Weight (empty)		kg	103	96	110	103
Power supply (V/Phase/Hz)			230/Single/50			
Heater	Booster heater	Power supply (V/Phase/Hz)	230/Single/50	–	230/Single/50	–
		Capacity	kW 2	–	2	–
		Current	A 9	–	9	–
		Breaker size	A 16	–	16	–
	Immersion heater	Power supply (V/Phase/Hz)	–	–	–	–
		Capacity	kW –	–	–	–
		Current	A –	–	–	–
		Breaker size	A –	–	–	–
Domestic hot water tank	Volume / Material	L / –	200 / Stainless steel			
Guaranteed operating range*1	Ambient	°C	0~35*1			
	Outdoor	Heating	°C See outdoor unit spec table			
		Cooling	°C See outdoor unit spec table (minimum 10°C*2)			
Target temperature range	Heating	Room temperature	°C 10~30			
		Flow temperature	°C 25~60			
	Cooling	Room temperature	°C –			
		Flow temperature	°C 5~25			
	DHW	°C	40~60			
	Legionella prevention	°C	60~70			
Sound pressure level (SPL)			dB (A) 28			

*1 The indoor environment must be frost-free

*2 If you use our system in cooling mode at the low ambient temperature (10°C or below), there are some risks of plate heat exchanger breaking by frozen water.

<Reversible hydro box>

Model name			ERSD-VM2C	ERSC-MEC	ERSC-VM2C	ERSE-MEC	ERSE-VM9EC	
			Type	Heating and cooling				
			Immersion heater	—	—	—	—	—
			Expansion vessel	x	—	x	—	—
			Booster heater	x	—	x	—	x
Dimensions		H×W×D	800×530×360			950×600×360		
Weight (empty)		kg	45	43	49	61	63	
Power supply (V/Phase/Hz)			230/Single/50					
Heater	Booster heater	Power supply (V/Phase/Hz)	230/Single/50	—	230/Single/50	—	400/Three/50	
		Capacity	kW	2	—	2	—	9 (3/6/9)
		Current	A	9	—	9	—	13
		Breaker size	A	16	—	16	—	16
Guaranteed operating range*1	Ambient	°C	0~35*1					
	Outdoor	Heating	°C				See outdoor unit spec table	
		Cooling	°C				See outdoor unit spec table (minimum 10°C*2)	
Target temperature range	Heating	Room temperature	°C				10~30	
		Flow temperature	°C				25~60	
	Cooling	Room temperature	°C				—	
		Flow temperature	°C				5~25	
Sound pressure level (SPL)			dB (A)			28	30	

*1 The environment must be frost-free

*2 If you use our system in cooling mode at the low ambient temperature (10°C or below), there are some risks of plate heat exchanger breaking by frozen water.

Outdoor unit

Model name			SUHZ-SW45VA (H)*1	PUHZ-SW50VKA (-BS)	PUHZ-SW75VHA (-BS)	PUHZ-SW100VYHA (-BS)	PUHZ-SW120VYHA (-BS)	PUHZ-SW160YKA (-BS)	PUHZ-SW200YKA (-BS)	PUHZ-SHW80VHA	PUHZ-SHW112V/YHA	PUHZ-SHW140VHA	PUHZ-SHW230YKA2
Dimensions	H×W×D	mm	880×840×330	630×809×300	943×950×330	1350×950×330	1350×950×330	1338×1050×330	1338×1050×330	1350×950×330	1350×950×330	1350×950×330	1338×1050×330
Product weight (empty)		kg	54	43	75	118/130	118/130	136	136	120	120/134	134	149
Power supply (V / Phase / Hz)			VHA : 230/Single/50 YHA, YKA : 400/Three/50										
Heating (A7/W35)	Capacity	kW	4.50	5.50	8.00	11.20	16.00	22.00	25.00	8.00	11.20	14.00	23.00
	COP		5.06	4.42	4.40	4.45	4.10	4.20	4.00	4.65	4.46	4.22	3.65
	Power input	kW	0.889	1.244	1.818	2.517	3.902	5.238	6.250	1.720	2.511	3.318	6.301
Heating (A2/W35)	Capacity	kW	3.50	5.00	7.50	10.00	12.00	16.00	20.00	8.00	11.20	14.00	23.00
	COP		3.40/3.04	2.97	3.40	3.32	3.24	3.11	2.80	3.55	3.34	2.96	2.37
	Power input	kW	1.029/1.151	1.684	2.206	3.009	3.704	5.145	7.143	2.254	3.353	4.730	9.705
Cooling (A35/W7)	Capacity	kW	4.00	4.50	6.60	9.10	12.50	16.00	20.00	7.10	10.00	12.50	20.00
	EER		2.73	2.76	2.82	2.75	2.32	2.76	2.25	3.31	2.83	2.17	2.22
	Power input	kW	1.465	1.630	2.340	3.309	5.388	5.797	8.889	2.145	3.534	5.760	9.009
Cooling (A35/W18)	Capacity	kW	3.80	5.00	7.10	10.00	14.00	18.00	22.00	7.10	10.00	12.50	20.00
	EER		4.28	4.60	4.43	4.35	4.08	4.56	4.10	4.52	4.74	4.26	3.55
	Power input	kW	0.888	1.087	1.603	2.299	3.431	3.947	5.366	1.571	2.110	2.934	5.634
Sound pressure level (SPL)	Heating	dB (A)	52	46	51	54	54	62	62	51	52	52	59
Sound power level (PWL)	Heating	dB (A)	61	63	68	70	72	78	78	69	70	70	75
Operating current (max)		A	12.0	13.0	17.0	29.5/13.0	29.5/13.0	19.0	21.0	29.5	35.0/13.0	13.0	26.0
Breaker size		A	20	16	25	32/16	32/16	25	32	32	40/16	16	32
Piping	Diameter	Liquid/Gas	mm	6.35/12.7	6.35/12.7	9.52/15.88	9.52/15.88	9.52/15.88	12.7/25.4	12.7/25.4	9.52/15.88	9.52/15.88	12.7/25.4
	Max. length	Out-In	m	30	40	40	75	75	80	80	75	75	80
	Max. height	Out-In	m	30	30	30	30	30	30	30	30	30	30
Guaranteed operating range	Heating	°C	-15 to +24	-15 to +21	-20 to +21	-20 to +21	-20 to +21	-20 to +21	-20 to +21	-28 to +21	-28 to +21	-28 to +21	-25 to +21
	DHW	°C	-15 to +35	-15 to +35	-20 to +35	-20 to +35	-20 to +35	-20 to +35	-20 to +35	-28 to +35	-28 to +35	-28 to +35	-25 to +35
	Cooling*2	°C	-10 to +46	-15 to +46	-15 to +46	-15 to +46	-15 to +46	-15 to +46	-15 to +46	-15 to +46	-15 to +46	-15 to +46	-15 to +46

Note: based on EN 14511 (Input to circulation pump is not included.) It may differ according to the system configuration.

*1 SUHZ-SW45VAH incorporates base heater.

*2 Optional air protection guide is required where ambient temperature is lower than -5°C.

Optional parts

<Indoor unit>

Parts name	Model name	Specification	Cylinder unit															Hydro box		
			EHST20C-VM2C	EHST20C-VM6C	EHST20C-VM9C	EHST20C-TM9C	EHST20C-VM2EC	EHST20C-VM6EC	EHST20C-VM9EC	EHST20C-MEC	EHST20C-VM2C	EHST20C-VM9C	EHST20C-VM2EC	EHST20C-MEC	EHST20C-MHC	EHST20C-MHCW	EHST20C-MHCW	ERST models	E#SD or E#SC models	E#SE models
Wireless remote controller	PAR-WT50R-E		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Wireless receiver	PAR-WR51R-E		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Thermistors	PAC-SE41TS-E	For room temp.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	PAC-TH011-E	For buffer and zone (flow and return temp.)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	PAC-TH011TK-E	For tank temp. (5m)	x	x	x	x	x	-	-	-	-	-	-	-	-	-	-	-	x	x
	PAC-TH011TKL-E	For tank temp. (30m)	x	x	x	x	x	-	-	-	-	-	-	-	-	-	-	-	x	x
	PAC-TH011HT-E	For boiler (flow and return temp.)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Immersion heater	PAC-I03V2-E	1Ph 3kW	x	x	x	x	x	x	x	x	x	x	x	x	-	-	-	x	-	-
EHPT accessories for UK	PAC-WK01UK-E		-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	-	-	-
Joint pipe	PAC-SG73RJ-E	For PUHZ-SW200YKA/SHW230YKA2 (-BS) ø9.52→ø12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
Wi-Fi interface	MAC-567IF-E		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Drain pan stand	PAC-DP01-E	D685mm H270mm W595mm N/W: 14.5kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x*1	-	-
2 zone kit	PAC-TZ01-E		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	-

*1 PAC-DP01-E is necessary when you use ERST units. If you use ERST units without this parts, drain will be flowed from the base of units, in cooling mode.

<Outdoor unit>

Parts name	Model name	Eco Inverter	Power Inverter							ZUBADAN			
		SUHZ-SW45VA (H)	PUHZ-SW50VKA (-BS)	PUHZ-SW75VHA (-BS)	PUHZ-SW100VYHA (-BS)	PUHZ-SW120VYHA (-BS)	PUHZ-SW160YKA (-BS)	PUHZ-SW200YKA (-BS)	PUHZ-SHW80VHA	PUHZ-SHW112V/YHA	PUHZ-SHW140YHA	PUHZ-SHW230YKA2	
Connector for drain hose heater signal output	PAC-SE60RA-E	—	—	x	x	x	x	x	x	x	x	x	
	PAC-SE61RA-E	—	x	—	—	—	—	—	—	—	—	—	
Air discharge guide	MAC-886SG-E	x	—	—	—	—	—	—	—	—	—	—	
	PAC-SJ07SG-E	—	x	—	—	—	—	—	—	—	—	—	
	PAC-SG59SG-E	—	—	x	x	x	—	—	x	x	x	—	
	PAC-SG96SG-E	—	—	—	—	—	x	x	—	—	—	x	
Air protection guide	PAC-SJ06AG-E	—	x	—	—	—	—	—	—	—	—	—	
	PAC-SH63AG-E	—	—	x	x	x	—	—	x	x	x	—	
	PAC-SH95AG-E	—	—	—	—	—	x	x	—	—	—	x	
Drain socket	PAC-SG61DS-E	—	—	x	x	x	x	x	—	—	—	—	
	PAC-SJ08DS-E	—	x	—	—	—	—	—	—	—	—	—	
Centralised drain pan	PAC-SG63DP-E	—	x	—	—	—	—	—	—	—	—	—	
	PAC-SG64DP-E	—	—	x	x	x	—	—	—	—	—	—	
	PAC-SH97DP-E	—	—	—	—	—	x	x	—	—	—	—	
Control/Service tool	PAC-SK52ST	—	x	x	x	x	x	x	x	x	x	x	

Packaged type specifications

Indoor unit

<Cylinder unit>



Model name			EHPT20X-VM2C	EHPT20X-VM6C	EHPT20X-VM9C	EHPT20X-TM9C	EHPT20X-MHCW*2
	Type		Heating only				
	Immersion heater		–	–	–	–	x
	Expansion vessel		x	x	x	x	x
	Booster heater		x	x	x	x	–
Dimensions	HxWxD	mm	1600x595x680				
Weight (empty)		kg	98	99	100	100	98
Power supply (V / Phase / Hz)			230/Single/50				
Heater	Booster heater	Power supply (V / Phase / Hz)	230/Single/50		400/Three/50	230/Three/50	–
		Capacity	2	6 (2/4/6)	9 (3/6/9)	9 (3/6/9)	–
		Current	9	26	13	23	–
		Breaker size	16	32	16	32	–
	Immersion heater	Power supply (V / Phase / Hz)	–	–	–	–	230/Single/50
		Capacity	–	–	–	–	3
		Current	–	–	–	–	13
		Breaker size	–	–	–	–	16
Domestic hot water tank	Volume / Material	L / –	200 / Stainless steel				
Guaranteed operating range*1	Ambient	°C	0~35*1				
	Outdoor	°C	See outdoor spec table				
Target temperature range	Heating	Room temperature	10~30				
		Flow temperature	25~60				
	DHW		40~60				
	Legionella prevention		60~70				
Sound pressure level (SPL)		dB (A)	28				

*1 The indoor environment must be frost-free *2 UK model

<Hydro box>

Model name			EHPX-VM2C	EHPX-VM6C	EHPX-VM9C
	Type		Heating only		
	Immersion heater		–	–	–
	Expansion vessel		×	×	×
	Booster heater		×	×	×
Dimensions		HxWxD	mm800×530×360		
Weight (empty)		kg	37	38	38
Power supply (V /Phase /Hz)			230/Single/50		
Heater	Booster heater	Power supply (V /Phase /Hz)	230/Single/50	230/Single/50	400/Three/50
		Capacity	kW2	6 (2/4/6)	9 (3/6/9)
		Current	A9	26	13
		Breaker size	A16	32	16
Guaranteed operating range*1	Ambient	°C	0~35*1		
	Outdoor	°C	See outdoor spec table		
Target temperature range	Heating	Room temperature	°C10~30		
		Flow temperature	°C25~60		
Sound pressure level (SPL)		dB (A)	28		

*1 The indoor environment must be frost-free

Outdoor unit

Model name			PUHZ-W50VHA2 (-BS)	PUHZ-W85VHA2 (-BS)	PUHZ-W112VHA (-BS)	PUHZ-HW112YHA2 (-BS)	PUHZ-HW140VHA2 (-BS)	PUHZ-HW140YHA2 (-BS)
Dimensions	HxWxD	mm	740x950x330	943x950x330	1350x1020x330	1350x1020x330	1350x1020x330	1350x1020x330
Product weight (empty)		kg	64	79	133	148	134	148
Power supply (V / Phase / Hz)			230/Single/50	230/Single/50	230/Single/50	400/Three/50	230/Single/50	400/Three/50
Heating (A7/W35)	Capacity	kW	5.00	9.00	11.20	11.20	14.00	14.00
	COP		4.50	4.18	4.47	4.42	4.25	4.25
	Power input	kW	1.111	2.153	2.506	2.534	3.294	3.294
Heating (A2/W35)	Capacity	kW	5.00	8.50	11.20	11.20	14.00	14.00
	COP		3.50	3.17	3.34	3.11	3.11	3.11
	Power input	kW	1.429	2.681	3.353	3.601	4.502	4.502
Sound pressure level (SPL)	Heating	dB (A)	46	48	53	53	53	53
Sound power level (PWL)	Heating	dB (A)	61	66	69	67	67	67
Operating current (max)		A	13.0	23.0	29.5	13.0	35.0	13.0
Breaker size		A	16	25	32	16	40	16
Guaranteed operating range	Heating	°C	–15 to +21	–20 to +21	–20 to +21	–25 to +21	–25 to +21	–25 to +21
	DHW	°C	–15 to +35	–20 to +35	–20 to +35	–25 to +35	–25 to +35	–25 to +35
	Cooling*1	°C	–15 to +46	–15 to +46	–15 to +46	–15 to +46	–15 to +46	–15 to +46

Note: based on EN 14511 (Input to circulation pump is included.) It may differ according to the system configuration.

*1 Optional air protection guide is required where ambient temperature is lower than –5°C.

Optional parts

<Indoor unit>

Parts name	Model name	Specification	Cylinder unit					Hydro box		
			EHPT20X-VM2C	EHPT20X-VM6C	EHPT20X-YM9C	EHPT20X-TM9C	EHPT20X-MHCW	EHPX-VM2C	EHPX-VM6C	EHPX-YM9C
Wireless remote controller	PAR-WT50R-E		x	x	x	x	x	x	x	x
Wireless receiver	PAR-WR51R-E		x	x	x	x	x	x	x	x
Thermistors	PAC-SE41TS-E	For room temp.	x	x	x	x	x	x	x	x
	PAC-TH011-E	For buffer and zone (flow and return temp.)	x	x	x	x	x	x	x	x
	PAC-TH011TK-E	For tank temp.	x	x	x	x	x	x	x	x
	PAC-TH011TKL-E	For tank temp. (longer)	x	x	x	x	x	x	x	x
	PAC-TH011HT-E	For boiler (flow and return temp.)	x	x	x	x	x	x	x	x
Immersion heater	PAC-I03V2-E	1Ph 3kW	x	x	x	x	-	-	-	-
EHPT accessories for UK	PAC-WK01UK-E		-	-	-	-	x	-	-	-
Wi-Fi interface	MAC-567IF-E		x	x	x	x	x	x	x	x
2 zone kit	PAC-TZ01-E		x	x	x	x	x	x	x	x

<Outdoor unit>

Parts name	Model name	Power Inverter			ZUBADAN		
		PUHZ-W50VHA2(-BS)	PUHZ-W85VHA2(-BS)	PUHZ-W112VHA (-BS)	PUHZ-HW112YHA2(-BS)	PUHZ-HW140VHA2(-BS)	PUHZ-HW140YHA2(-BS)
Connector for drain hose heater signal output	PAC-SE60RA-E	x	x	x	x	x	x
Air discharge guide	PAC-SG59SG-E	x	x	x	x	x	x
Air protection guide	PAC-SH63AG-E	x	x	x	x	x	x
Drain socket	PAC-SG61DS-E	x	x	x	-	-	-
Centralised drain pan	PAC-SG64DP-E	x	x	-	-	-	-
Control/Service tool	PAC-SK52ST	-	-	-	-	-	-

Refrigerant amount

	Model name	Refrigerant		Pre-charged quantity		Max added quantity	
		R410A	GWP	Weight (kg)	CO2 equivalent (t)	Weight (kg)	CO2 equivalent (t)
ATW Packaged	PUHZ-W50VHA2(-BS)	R410A	2088	1.7	3.55	-	
	PUHZ-W85VHA2(-BS)	R410A	2088	2.4	5.02	-	
	PUHZ-W112VHA(-BS)	R410A	2088	4.0	8.36	-	
	PUHZ-HW112YHA2(-BS)	R410A	2088	4.0	8.36	-	
	PUHZ-HW140VHA2(-BS)	R410A	2088	4.3	8.98	-	
	PUHZ-HW140YHA2(-BS)	R410A	2088	4.3	8.98	-	
ATW Split	SUHZ-SW45VA(H)	R410A	2088	1.3	2.72	0.35	0.72
	PUHZ-SW50VKA(-BS)	R410A	2088	1.4	2.93	0.6	1.26
	PUHZ-SW75VHA(-BS)	R410A	2088	3.2	6.69	1.4	2.93
	PUHZ-SW100VHA(-BS)	R410A	2088	4.6	9.61	2.9	6.06
	PUHZ-SW100YHA(-BS)	R410A	2088	4.6	9.61	2.9	6.06
	PUHZ-SW120VHA(-BS)	R410A	2088	4.6	9.61	2.9	6.06
	PUHZ-SW120YHA(-BS)	R410A	2088	4.6	9.61	2.9	6.06
	PUHZ-SW160YKA(-BS)	R410A	2088	7.1	14.83	4.0	8.36
	PUHZ-SW200YKA(-BS)	R410A	2088	7.7	16.08	5.2	10.86
	PUHZ-SHW80VHA	R410A	2088	5.5	11.49	2.4	5.02
	PUHZ-SHW112VHA	R410A	2088	5.5	11.49	2.4	5.02
	PUHZ-SHW112YHA	R410A	2088	5.5	11.49	2.4	5.02
	PUHZ-SHW140YHA	R410A	2088	5.5	11.49	2.4	5.02
	PUHZ-SHW230YKA2	R410A	2088	7.7	16.08	5.2	10.86
	PUHZ-FRP71VHA	R410A	2088	3.8	7.94	1.8	3.76
Mr. SLIM+	PUHZ-FRP71VHA	R410A	2088	3.8	7.94	1.8	3.76
PUMY + ecodan	PUMY-P112V/YKM(E)3(-BS)	R410A	2088	4.8	10.03	13.8	28.82
	PUMY-P125V/YKM(E)3(-BS)	R410A	2088	4.8	10.03	13.8	28.82
	PUMY-P140V/YKM(E)3(-BS)	R410A	2088	4.8	10.03	13.8	28.82

Interface/Flow temperature controller

Parts name	Model name	Description
Capacity step control interface	PAC-IF011B-E	1 PC Board w/ Case
Flow temperature controllers	PAC-IF032B-E	1 PC Board w/ Case
System controllers	PAC-IF061B-E	1 PC Board w/ Case
	PAC-IF062B-E	1 PC Board w/ Case
	PAC-IF063B-E	1 PC Board w/ Case
	PAC-SIF051B-E	1 PC Board w/ Case

Note: SUHZ CANNOT be connected to these IFs.