

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












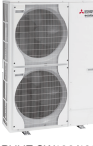




Hydro box, cylinder unit



Reversible hydro box,
Reversible cylinder unit



OUTDOOR UNIT

Packaged type	Small capacity (Under 5kW)*	Medium capacity (6.0kW–14kW)*	Large capacity (≥16kW)*
ZUBADAN		 PUAH-HW112/140	
POWER INVERTER	 PUAH-W50	 PUAH-W60/85/112AA	 PUAH-W85
		 PUAH-W112	
Split type	Small capacity (Under 5kW)*	Medium capacity (7.5kW–14kW)*	Large capacity (≥16kW)*
ZUBADAN New Generation		 PUAH-SHW80/112AA	 PUAH-SHW80/112/140
			 PUAH-SHW230
POWER INVERTER	 PUAH-SW50	 PUAH-SW75	 PUAH-SW75/100AA
		 PUAH-SW100/120	 PUAH-SW160/200
Eco Inverter	 SUH-SW45		
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

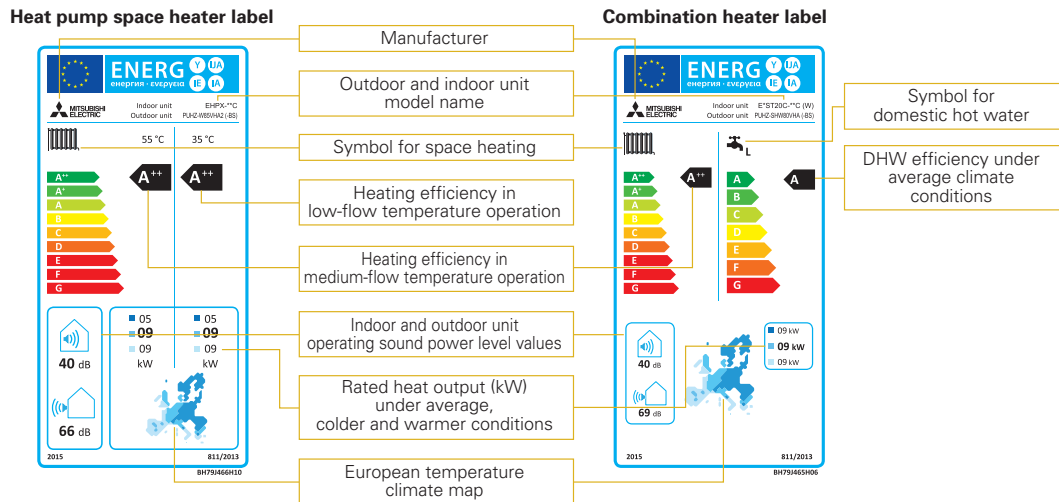
Under directive 2009/125/EC, ATW heat pumps of up to 70kW are required to show their heating efficiency on the energy label. The purpose of the energy label is to inform customers about the energy efficiency of a heating unit. The efficiency for space heating is ranked from A++ to G. In the case of domestic 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?

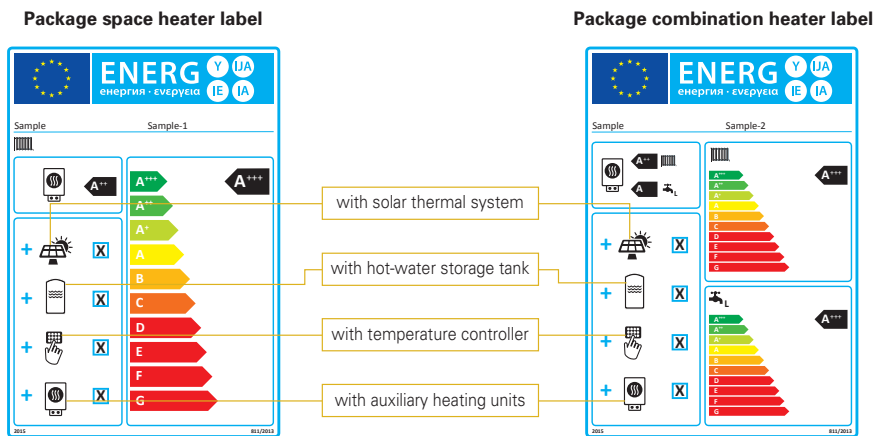
A heating system can use several energy-related products, such as a controller or solar thermal system. Therefore, a label showing the efficiency of the total heating system is required. The category range is defined from A+++ to G.

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.

<http://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)

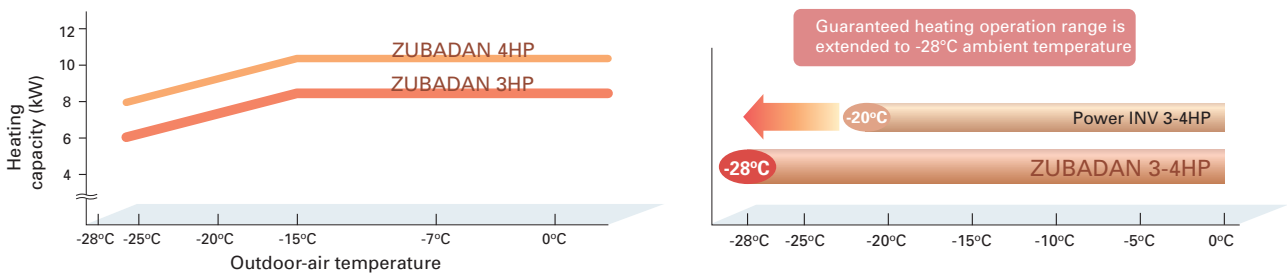
Even at the very low ambient temperatures, our ZUBADAN can provide powerful heating.



- Our unique flash injection circuit enables the nominal capacity to be maintained down to -15°C.
- The guaranteed operating range of the heating mode is extended down to -28°C.

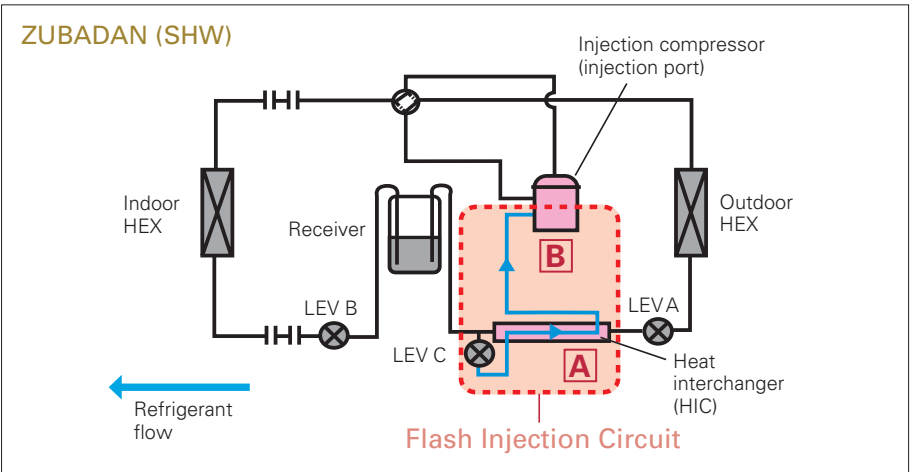
Improved Heating Performance

Mitsubishi Electric's unique "Flash Injection" circuit achieves remarkably high heating performance. This technology has resulted in an excellent heating capacity rating in outdoor temperatures as low as -15°C, and the guaranteed heating operation range of the heating mode has been extended to -28°C. Accordingly, the heat-pump units of the ZUBADAN Series are perfect for warming homes in the coldest regions.



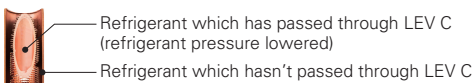
Mitsubishi Electric's Flash Injection Technology The Key to High Heating Performance at Low Outdoor Temperatures

■ Flash Injection Circuit



[A] Heat Interchanger (HIC)

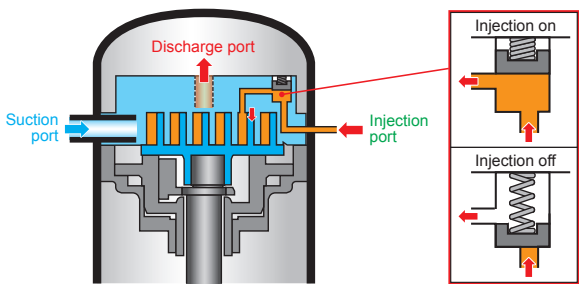
HIC cross-sectional view



- Purpose:** Transform liquid refrigerant into liquid-gas state
- Effect:** Injection circuit increases energy efficiency

The compressor is subjected to a heavy load when compressing liquid refrigerant, and the result is lower operation efficiency. The addition of HIC supports refrigerant heat exchange at two different pressure levels. The heat-exchange process transforms the injected liquid refrigerant into a gas liquid state, thereby decreasing the load on the compressor during the compression process.

[B] Injection Compressor



- Purpose:** To increase the volume of refrigerant being circulated
- Effect:** Improves heating capacity at low outdoor temperatures, and enables higher outlet temperature adjustment and higher defrost operation speed

Refrigerant passes from the HIC into the compressor through the injection port. Having two refrigerant inlets makes it possible to raise the volume of refrigerant being circulated when the outdoor temperature is low and at the start of heating operation.

Dedicated Heat Pump for Residence

PUHZ-SW75V/YAA SW100V/YAA SHW80V/YAA SHW112V/YAA
W60VAA W85V/YAA W112V/YAA

Stylish and compact

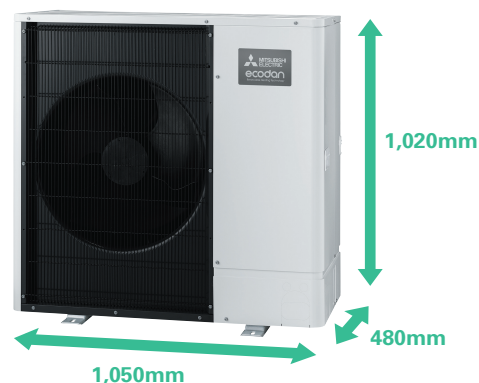
The stylish design and compact size harmonises residential application

- Simple and elegant design by rounding left and right corners of the unit.
- Concealing the fan by matching the panel and the grille in dark colour.
- Unified shape and safety by setting the fan whole backwards and matching the grille on the same level of the front panel.

NEW

GOOD
DESIGN

reddot
award 2018
winner



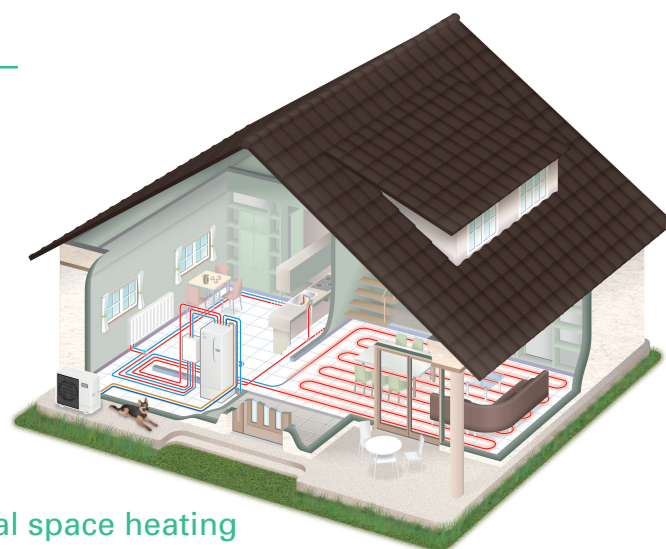
High performance

New compressor



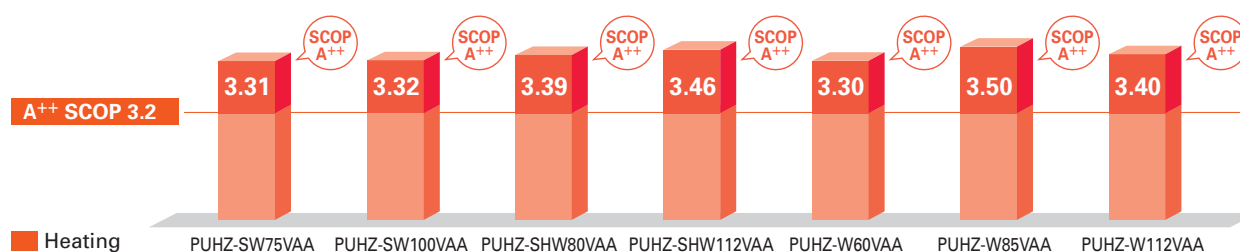
- Compact
- High performance

* for PUHZ-SW100V/YAA
PUHZ-SHW80V/YAA
PUHZ-SHW112V/YAA
PUHZ-W112V/YAA



ErP Lot 1 Compliant with highest seasonal space heating energy efficiency class A++

Powerful heating yet annually high energy efficiency, achieving rank A++.

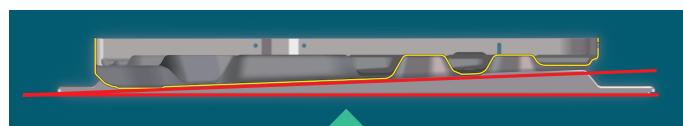


Higher reliability

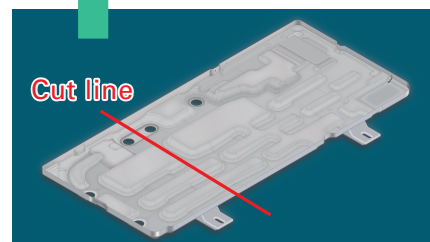
New base design

Improving drainage

- Optimising the base structure to improve drainage.
- A slope of the base achieves smooth and faster drainage.



sectional view



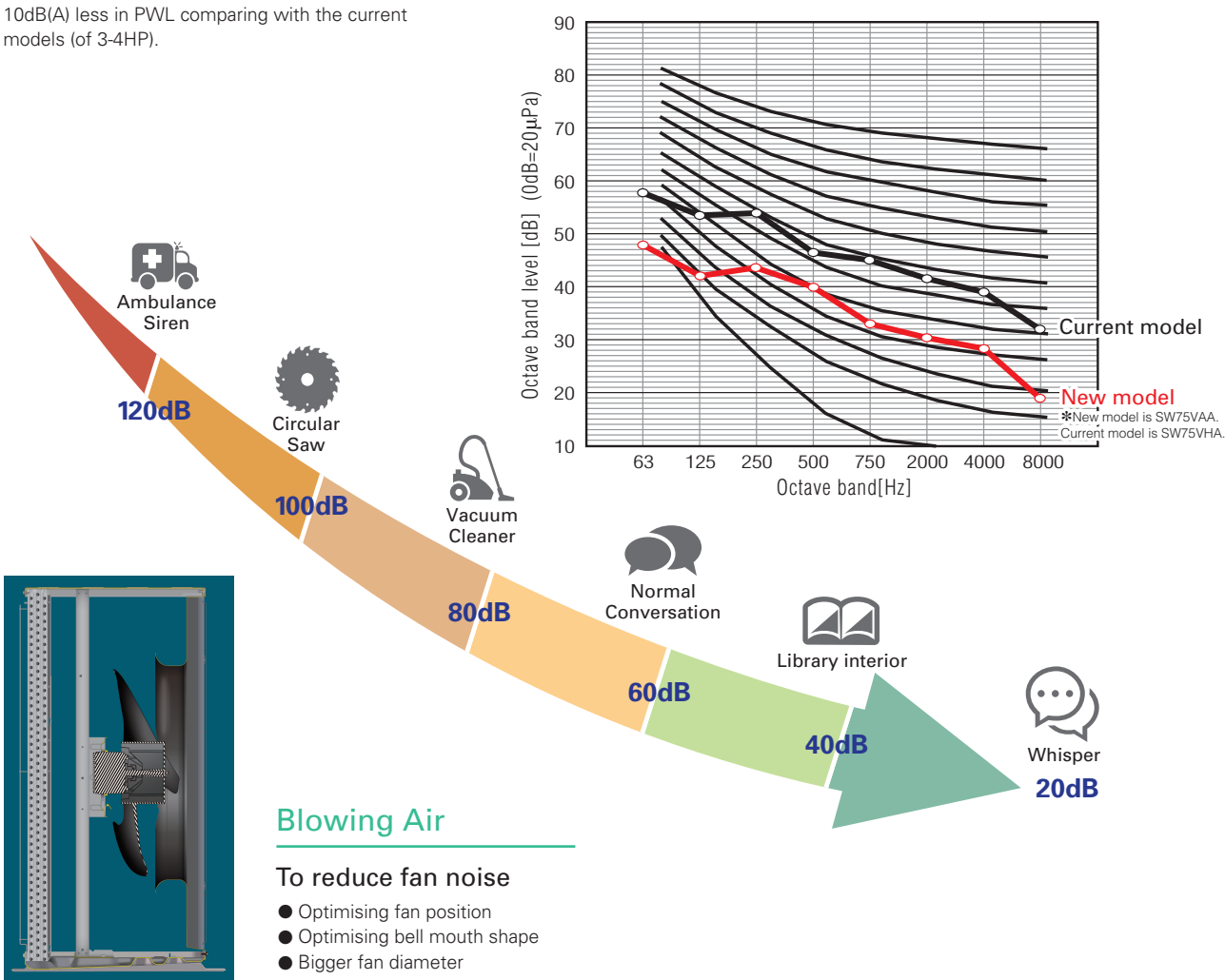
Optimizing defrost control and operation.

Optimizing outdoor unit heat exchanger to avoid ice-forming.

Compact but low noise

Noise reduction-10dB(A)

10dB(A) less in PWL comparing with the current models (of 3-4HP).



Enclosing noise

Shutting out noise from compressor

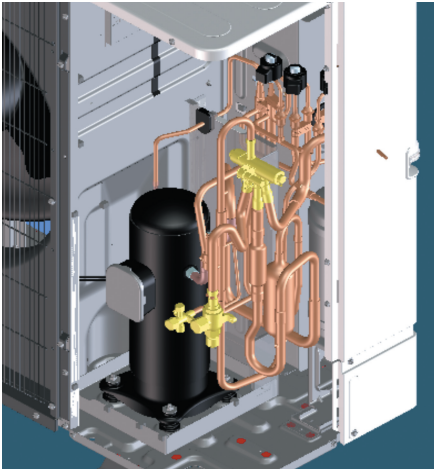
- The structure of double enclosing

Primary: enclosing a compressor (the structure is patented.)
Secondary: enclosing machine room.



Avoiding vibration and resonance

- Dedicated soft rubber mount for the compressor to avoid vibration.
- Optimising piping structure to avoid vibration and resonance.



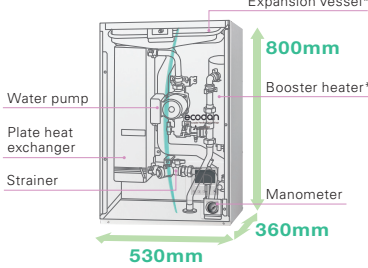
Indoor units

New all-in-one compact indoor unit

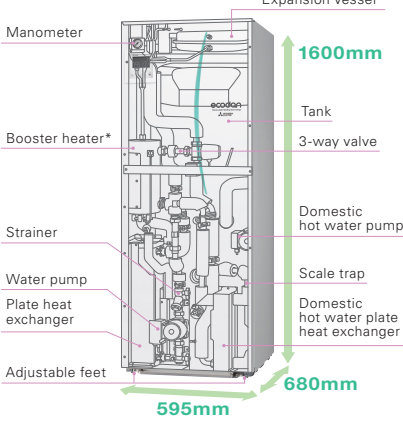
Easy to install and low maintenance

- All-in-one: Key functional components are incorporated
- Compact cylinder unit: Just 1600mm in height
- Compact hydro box: Only 530x360mm 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)



*Depending on model

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.

Line-up

ecodan's line-up has many types of indoor units to satisfy diverse customers' needs, requests and local regulations. It includes smaller capacity units, with/without booster heater, with/without an expansion vessel, etc. In addition, a reversible hydro box and a reversible cylinder unit are available.

Hydro box



Cylinder unit



Available options

- Packaged or Split type
- With/without booster heater
- With/without expansion vessel
- Cylinder unit has an integrated 200L stainless steel tank
- Hydro box is control ready for domestic hot water with a stand-alone tank (locally supplied)

Reversible models (for heating/cooling)

Perfect comfort in winter and summer time, thanks to our reversible models.

Reversible models are now available for both hydro box and cylinder units (Split type only).

The new reversible cylinder is now able to produce cold water for cooling use and can alternatively produce domestic hot water in summer time.

Reversible hydro box



Reversible cylinder unit



*Reversible cylinder requires the installation of the drain pan stand PAC-DP01-E.

High-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.

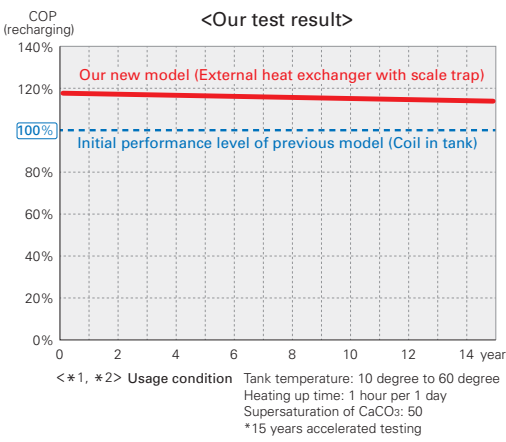
Avoid performance loss due to scale

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.



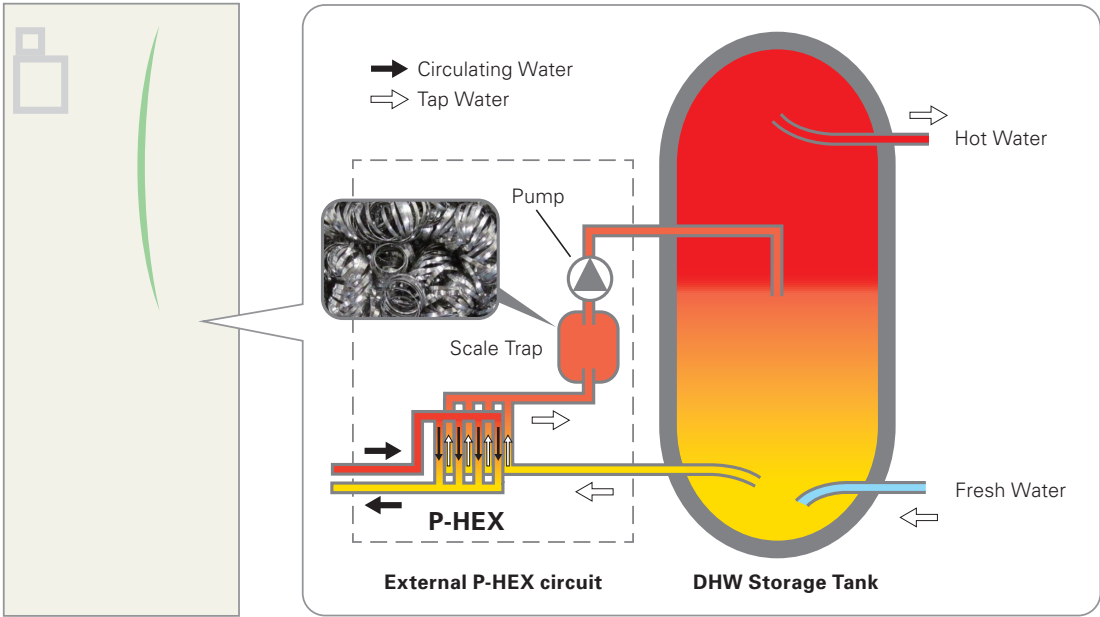
Optimised stratification for better comfort

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

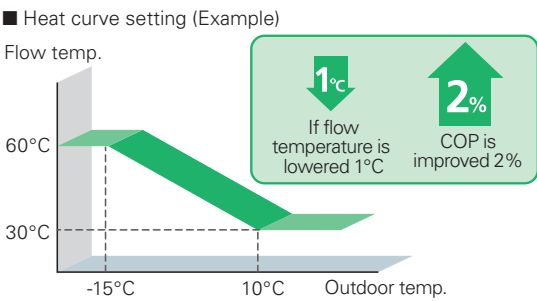
Maximise energy savings while retaining comfort at all times



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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.

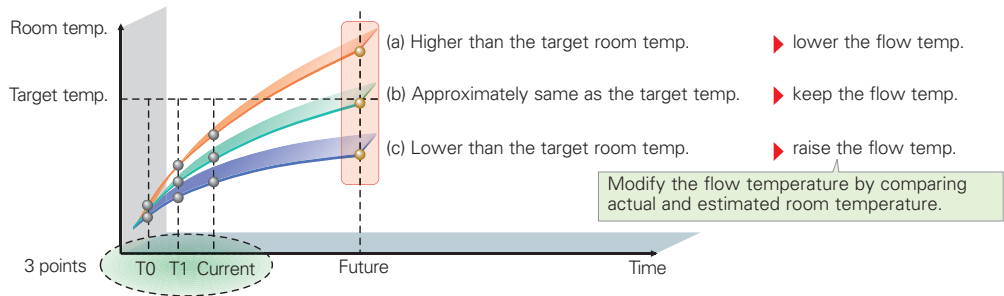
In a conventional system controller, the flow temperature is determined based on the pre-set heat curve depending on the actual outdoor temperature. However, this requires a complicated setting to achieve the optimal heat curve.



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



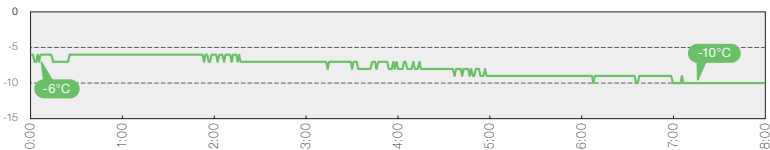
Auto Adaptation – room temperature control

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

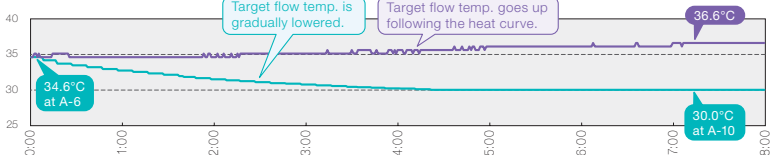


[Example]

a) Outdoor temperature is gradually decreasing...

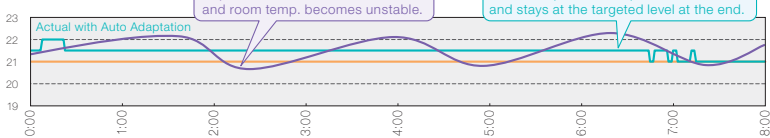


b) Target flow temperature



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.



2 zone control (for heating/cooling)

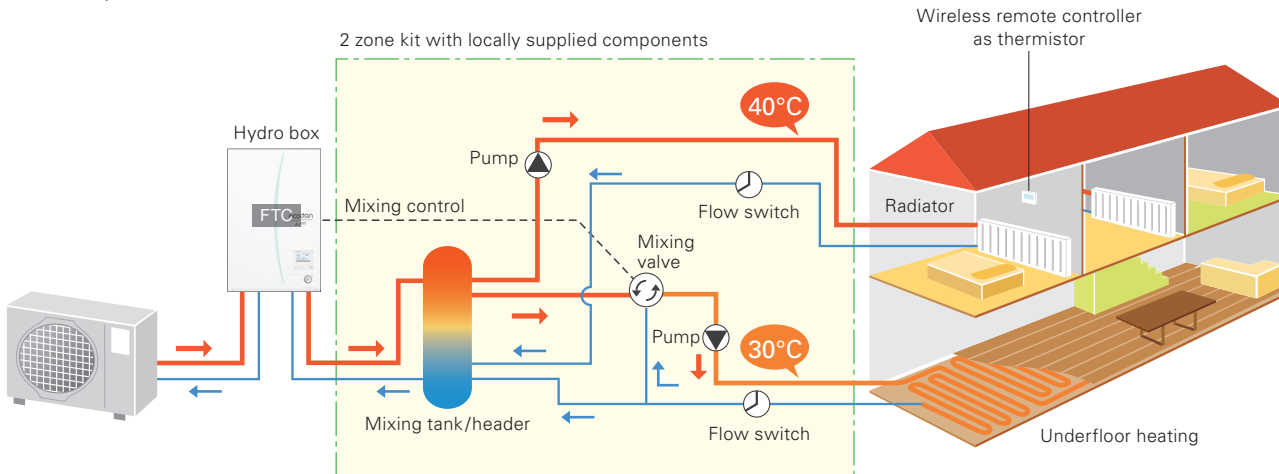
Simultaneously control two different zones



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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.

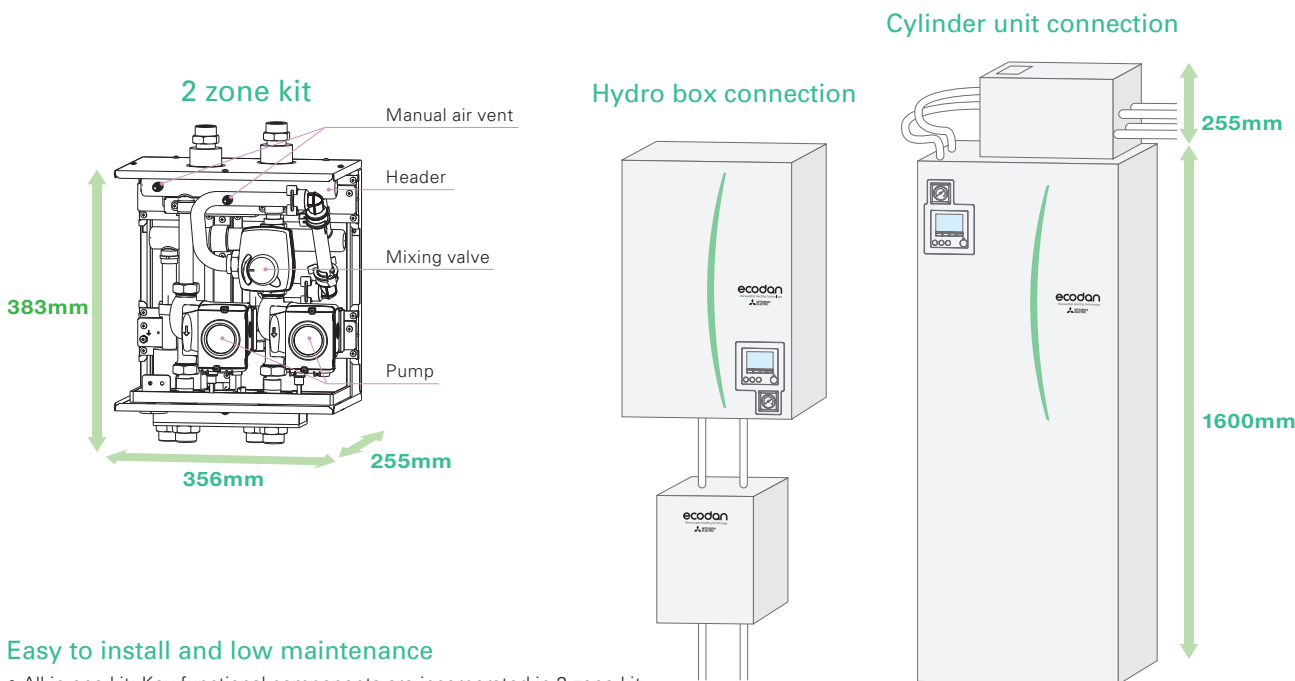
■ Two temperature zones



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

2 zone kit

With optional parts



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.

Intelligent hybrid control (boiler interlock)

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



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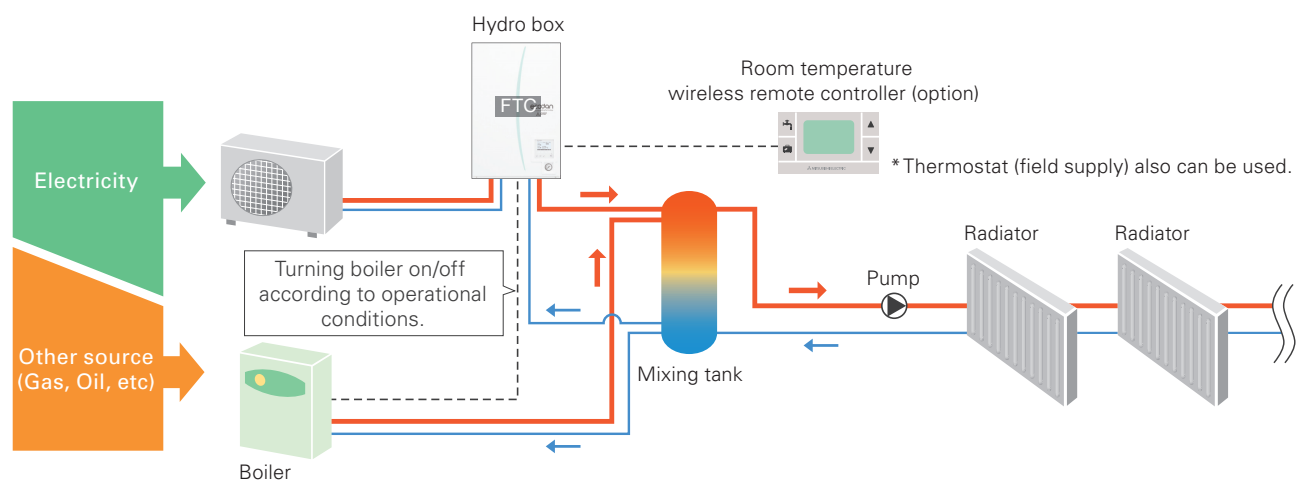
The flexibility of ecodan's intelligent control allows the system to be combined with the boiler currently in use. Additionally, this control can judge which heating source to use either ecodan or the existing boiler, based on various conditions*.

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

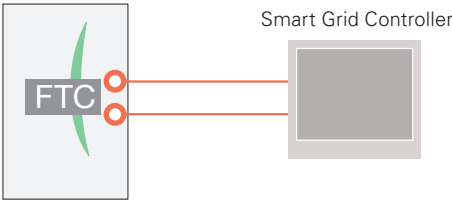
4 types of heat source switchover logic

- 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 kWh 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

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	Input 1	Input 2	Operation
1	OFF	OFF	Normal operation
2	ON	OFF	Switch ON recommendation
3	OFF	ON	Switch OFF command
4	ON	ON	Switch ON command

SG

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

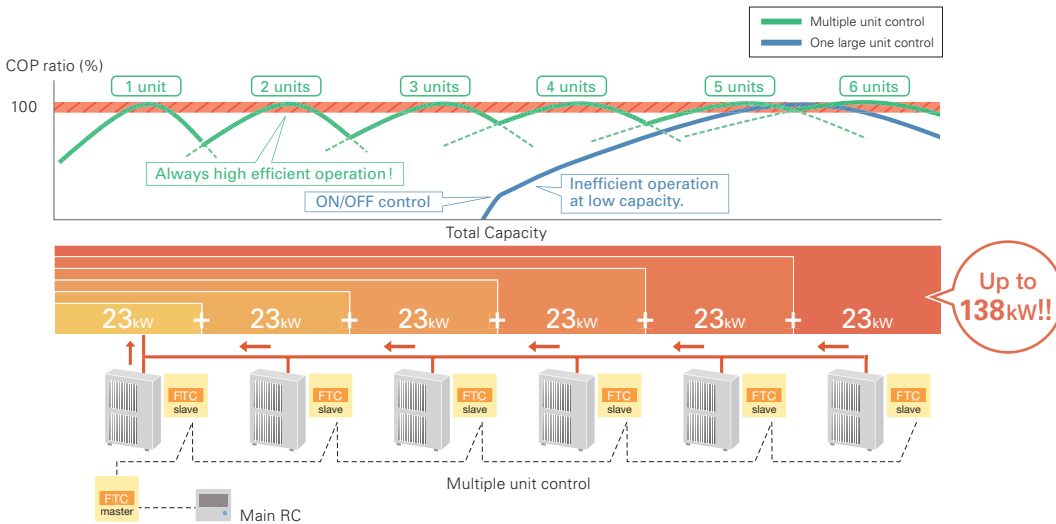
Connect up to 6 units – Automatic control of multiple units for bigger capacity and better efficiency

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

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



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.

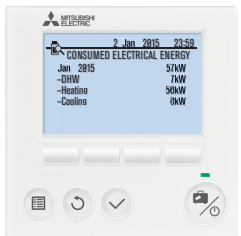
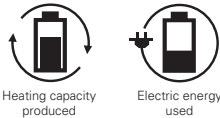
Other features

- 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.



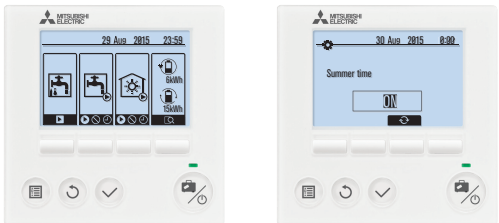
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Summer time setting

Easy adjustment for summer time

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.

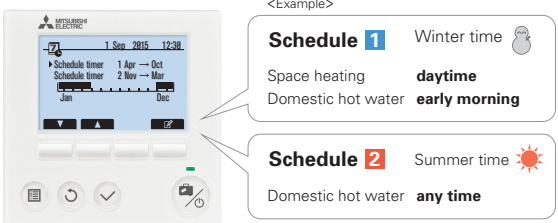


Two separate schedules

Pre-setting two different schedules for winter and summer seasons

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.



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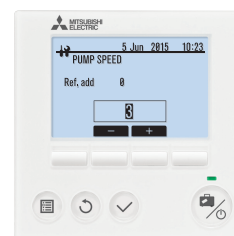
Easy commissioning

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.

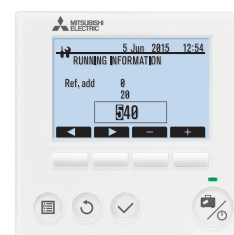
*Speed setting of pump for domestic hot water is not available through the main remote controller when the system is running.



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.

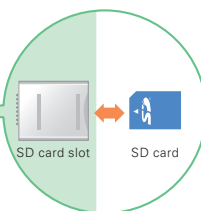
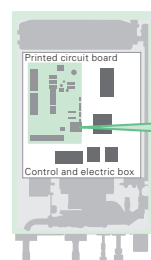
SD* card

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.



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

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>

Cylinder unit>			Small capacity						Medium capacity								UK model						
Model name			EHST20D-VM2C	EHST20D-VM9C	EHST20D-VM2EC	EHST20D-MHC	EHST20D-MEC	EHST20C-VM2C	EHST20C-VM6C	EHST20C-VM9C	EHST20C-TM9C	EHST20C-VM2EC	EHST20C-VM6EC	EHST20C-VM9EC	EHST20C-MEC	EHST20C-MHCW	EHST20D-MHCW						
Type			Heating only																				
			Immersion heater																				
			Expansion vessel																				
			Booster heater																				
Dimensions			HxWxD		mm		1600x595x680																
Weight (empty)			kg		103	105	97	103	96	110	111	112	112	104	105	106	103	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/Single/50		-		230/Single/50		400/Three/50		230/Three/50		230/Single/50		400/Three/50		-	
		Capacity		kW		2	9 (3/6/9)	2	-		2	6 (2/4/6)	9 (3/6/9)	9 (3/6/9)	2	6 (2/4/6)	9 (3/6/9)	-		-			
		Current		A		9	13	9	-		9	26	13	23	9	26	13	-		-			
		Breaker size		A		16	16	16	-		16	32	16	32	16	32	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																
			Ambient		°C		0~35*1																
Guaranteed operating range*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

<Hydro box>

Hydro box>			Small capacity				Medium capacity								Large capacity			
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		HxWxD	mm	800x530x360												950x600x360		
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		kW	-	-	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			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>

Reversible cylinder unit>			Small capacity		Medium capacity	
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	mm1600×595×680			
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	kW2	-	2	-
		Current	A9	-	9	-
		Breaker size	A16	-	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		°C0-35*1			
	Outdoor	Heating	°CSee outdoor unit spec table			
		Cooling	°CSee outdoor unit spec table (minimum 10°C*2)			
Target temperature range	Heating	Room temperature	°C10-30			
		Flow temperature	°C25-60			
	Cooling	Room temperature	°C-			
		Flow temperature	°C5-25			
	DHW		°C40-60			
		Legionella prevention	°C60-70			
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>

Rversible hydro box>			Small capacity	Medium capacity		Large capacity			
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		HxWxD	mm	800x530x360		950x600x360			
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			Eco Inverter	Power Inverter							
			SUHZ-SW45VA (H)*1	PUHZ-SW50VKA (-BS)	PUHZ-SW75VYAA (-BS)	PUHZ-SW100VYAA (-BS)	PUHZ-SW75VHA (-BS)	PUHZ-SW100VYHA (-BS)	PUHZ-SW120VYHA (-BS)	PUHZ-SW160YKA (-BS)	PUHZ-SW200YKA (-BS)
Dimensions	HxWxD	mm	880×840×330	630×809×300	1020×1050×480	1020×1050×480	943×950×330	1350×950×330	1350×950×330	1338×1050×330	1338×1050×330
Weight		kg	54	43	92/104	114/126	75	118/130	118/130	136	136
Power supply (V / Phase / Hz)			VA(H), VAA, VHA : 230/Single/50 YHA, YKA, YAA : 400/Three/50								
Heating (A7/W35)	Capacity	kW	4.50	5.50	8.00	11.20	8.00	11.20	16.00	22.00	25.00
	COP		5.06	4.42	4.40	4.46	4.40	4.45	4.10	4.20	4.00
	Power input	kW	0.889	1.244	1.818	2.511	1.818	2.517	3.902	5.238	6.250
Heating (A2/W35)	Capacity	kW	3.50	5.00	7.50	10.00	7.50	10.00	12.00	16.00	20.00
	COP		3.40/3.04	2.97	3.40	3.32	3.40	3.32	3.24	3.11	2.80
	Power input	kW	1.029/1.151	1.684	2.206	3.009	2.206	3.009	3.704	5.145	7.143
Cooling (A35/W7)	Capacity	kW	4.00	4.50	7.10	10.00	6.60	9.10	12.50	16.00	20.00
	EER		2.73	2.76	2.70	2.83	2.82	2.75	2.32	2.76	2.25
	Power input	kW	1.465	1.630	2.630	3.534	2.340	3.309	5.388	5.797	8.889
Cooling (A35/W18)	Capacity	kW	3.80	5.00	7.10	10.00	7.10	10.00	14.00	18.00	22.00
	EER		4.28	4.60	4.43	4.47	4.43	4.35	4.08	4.56	4.10
	Power input	kW	0.888	1.087	1.603	2.237	1.603	2.299	3.431	3.947	5.366
Sound pressure level (SPL)	Heating	dB (A)	52	46	43	47	51	54	54	62	62
Sound power level (PWL)	Heating	dB (A)	61	63	58	60	68	70	72	78	78
Operating current (max)		A	12.0	13.0	22.0/11.5	28.0/12.0	17.0	29.5/13.0	29.5/13.0	19.0	21.0
Breaker size		A	20	16	25/16	32/16	25	32/16	32/16	25	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	9.52/15.88	9.52/15.88	12.7/25.4
	Max. length	Out-In	m	30	40	40	75	40	75	80	80
	Max. height	Out-In	m	30	30	10	10	30	30	30	30
	Max. height	Out-In	m	30	30	10	10	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	-20 to +21	-20 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	-20 to +35	-20 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

Model name			ZUBADAN					
			PUHZ-SHW80VYAA (-BS)	PUHZ-SHW112VYAA (-BS)	PUHZ-SHW80VHA	PUHZ-SHW112VYHA	PUHZ-SHW140YHA	PUHZ-SHW230YKA2
Dimensions	HxWxD	mm	1020×1050×480	1020×1050×480	1350×950×330	1350×950×330	1350×950×330	1338×1050×330
Weight		kg	116/128	116/128	120	120/134	134	143
Power supply (V / Phase / Hz)			VAA, VHA : 230/Single/50 YHA, YKA, YAA : 400/Three/50					
Heating (A7/W35)	Capacity	kW	8.00	11.20	8.00	11.20	14.00	23.00
	COP		4.65	4.40	4.65	4.46	4.22	3.65
	Power input	kW	1.720	2.545	1.720	2.511	3.318	6.301
Heating (A2/W35)	Capacity	kW	8.00	11.20	8.00	11.20	14.00	23.00
	COP		3.55	3.22	3.55	3.34	2.96	2.37
	Power input	kW	2.254	3.478	2.254	3.353	4.730	9.705
Cooling (A35/W7)	Capacity	kW	7.10	10.00	7.10	10.00	12.50	20.00
	EER		3.31	2.83	3.31	2.83	2.17	2.22
	Power input	kW	2.145	3.534	2.145	3.534	5.760	9.009
Cooling (A35/W18)	Capacity	kW	7.10	10.00	7.10	10.00	12.50	20.00
	EER		4.52	4.74	4.52	4.74	4.26	3.55
	Power input	kW	1.571	2.110	1.571	2.110	2.934	5.634
Sound pressure level (SPL)	Heating	dB (A)	45	47	51	52	52	59
Sound power level (PWL)	Heating	dB (A)	59	60	69	70	70	75
Operating current (max)		A	22.0/13.0	28.0/13.0	29.5	35.0/13.0	13.0	20.0
Breaker size		A	25/16	32/16	32	40/16	16	25
Piping	Diameter	Liquid/Gas	mm	9.52/15.88	9.52/15.88	9.52/15.88	9.52/15.88	12.7/25.4
	Max. length	Out-In	m	75	75	75	75	80
	Max. height	Out-In	m	30	30	30	30	30
	Max. height	Out-In	m	30	30	30	30	30
Guaranteed operating range	Heating	°C	-28 to +21	-28 to +21	-28 to +21	-28 to +21	-28 to +21	-25 to +21
	DHW	°C	-28 to +35	-28 to +35	-28 to +35	-28 to +35	-28 to +35	-25 to +35
	Cooling*2	°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 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.

Split type	Small capacity (Under 5kW)	Medium capacity (7.5kW–14kW)	Large capacity (≥ 16kW)
		 PUHZ-SHW80/112AA  PUHZ-SHW80/112/140	 PUHZ-SHW230
	 PUHZ-SW50	 PUHZ-SW75  PUHZ-SW75/100AA  PUHZ-SW100/120	 PUHZ-SW160/200
Eco Inverter	 SUHZ-SW45		

Packaged type specifications

Indoor unit

<Cylinder unit>



Model name			EHPT20X-VM2C		EHPT20X-VM6C		EHPT20X-YM9C		EHPT20X-TM9C		EHPT20X-MHCW*2				
			Type		Heating only										
			Immersion heater		-		-		-		x				
			Expansion vessel		x		x		x		x				
			Booster heater		x		x		x		-				
Dimensions			HxWxD		mm		1600x595x680								
Weight (empty)					kg		98		99		100				
							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		kW		2		6 (2/4/6)		9 (3/6/9)		9 (3/6/9)		-	
		Current		A		9		26		13		23		-	
		Breaker size		A		16		32		16		32		-	
	Immersion heater	Power supply (V / Phase / Hz)			-			-		-		-		230/Single/50	
		Capacity		kW		-		-		-		-		3	
		Current		A		-		-		-		-		13	
		Breaker size		A		-		-		-		-		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		°C		10~30									
		Flow temperature		°C		25~60									
	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			EHPX-VM2C	EHPX-VM6C	EHPX-YM9C	
			Type	Heating only		
			Immersion heater	—	—	—
			Expansion vessel	x	x	x
Booster heater			x	x	x	
Dimensions		HxWxD	mm	800x530x360		
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	kW	2	6 (2/4/6)	9 (3/6/9)
		Current	A	9	26	13
		Breaker size	A	16	32	16
Guaranteed operating range*1	Ambient		°C	0~35*1		
	Outdoor		°C	See outdoor spec table		
Target temperature range	Heating	Room temperature	°C	10~30		
		Flow temperature	°C	25~60		
Sound pressure level (SPL)			dB (A)	28		

*1 The indoor environment must be frost-free

Outdoor unit


			Power Inverter					ZUBADAN	
Model name			PUHZ-W50VHA2(-BS)	PUHZ-W60VAA(-BS)	PUHZ-W85V/YAA(-BS)	PUHZ-W112V/YAA(-BS)	PUHZ-W85VHA2(-BS)	PUHZ-W112VHA(-BS)	PUHZ-HW112YHA2(-BS)
Dimensions	HxWxD	mm	740x950x330	1020x1050x480	1020x1050x480	1020x1050x480	943x950x330	1350x1020x330	1350x1020x330
Weight		kg	64	97	97/110	118/131	79	133	148
Power supply (V / Phase / Hz)			VAA, VHA : 230/Single/50, YAA, YHA : 400/Three/50						
Heating (A7/W35)	Capacity	kW	5.00	6.00	9.00	11.20	9.00	11.20	14.00
	COP		4.50	4.83	4.51	4.54	4.18	4.47	4.25
	Power input	kW	1.111	1.242	1.996	2.467	2.153	2.506	3.294
Heating (A2/W35)	Capacity	kW	5.00	6.00	8.50	11.20	8.50	11.20	14.00
	COP		3.50	3.64	3.36	3.34	3.17	3.34	3.11
	Power input	kW	1.429	1.648	2.530	3.353	2.681	3.353	4.502
Sound pressure level (SPL)	Heating	dB (A)	46	45	45	47	48	53	53
Sound power level (PWL)	Heating	dB (A)	61	58	58	60	66	69	67
Operating current (max)		A	13.0	13.0	22.0/11.5	28.0/13.0	23.0	29.5	13.0
Breaker size		A	16	16	25/16	32/16	25	32	16
Guaranteed operating range	Heating	°C	–15 to +21	–20 to +21	–20 to +21	–20 to +21	–20 to +21	–20 to +21	–25 to +21
	DHW	°C	–15 to +35	–20 to +35	–20 to +35	–20 to +35	–20 to +35	–20 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	–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.

Packaged type

Medium capacity
(11.2kW–14kW)







PUHZ-HW112/140


Packaged type

Small capacity
(Under 5kW)







PUHZ-W50



PUHZ-W60/85/112



PUHZ-W85



PUHZ-W112

Medium capacity
(6.0kW–11.2kW)

Optional Parts

Split type

<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		
Wireless receiver	PAR-WR51R-E		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		
	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		
	PAC-TH011TK-E	For tank temp. (5m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x		
	PAC-TH011TKL-E	For tank temp. (30m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	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		
Immersion heater	PAC-IH03V2-E	1Ph 3kW	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Wi-Fi interface	MAC-567IF-E		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Drain pan stand	PAC-DP01-E	D665mm 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			

*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-SW50YKA(-BS)	PUHZ-SW75YAA(-BS)	PUHZ-SW100YAA(-BS)	PUHZ-SW75YHA(-BS)	PUHZ-SW100YHA(-BS)	PUHZ-SW120YHA(-BS)	PUHZ-SW160YKA(-BS)	PUHZ-SW200YKA(-BS)	PUHZ-SW80YAA(-BS)	PUHZ-SW120YAA(-BS)	PUHZ-SHW80VHA	PUHZ-SHW112VYHA	PUHZ-SHW140YHA	PUHZ-SHW230YKA2		
Connector for drain hose heater signal output	PAC-SE60RA-E	-	-	x	x	x	x	x	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-SH96SG-E	-	-	-	x*1	x*1	-	-	-	x	x	x*1	x*1	-	-	-	x		
Air protection guide	PAC-SJ06AG-E	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	PAC-SH63AG-E	-	-	-	-	-	x	x	x	-	-	-	-	x	x	x	-		
	PAC-SH95AG-E	-	-	-	x*1	x*1	-	-	-	x	x	x*1	x*1	-	-	-	x		
	PAC-SJ82AT-E	-	-	x	x	-	-	-	-	-	-	x	x	-	-	-	-		
Drain socket	PAC-SG61DS-E	-	-	x	x	x	x	x	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	-	-	-	-	-	-		
	PAC-SJ83DP-E	-	-	-	x	x	-	-	-	-	-	x	x	-	-	-	-		
Control/Service tool	PAC-SK52ST	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		

*1 Attachment (PAC-SJ82AT-E) is necessary for the Air Guide.

Package type

<Indoor unit>

Parts name	Model name	Specification	Cylinder unit					Hydro box		
			EHPT20X-VM2C	EHPT20X-VM6C	EHPT20X-TM9C	EHPT20X-TM9C	EHPT20X-MHCW	EHPX-VM2C	EHPX-VM6C	EHPX-VM9C
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
	PAC-TH011TKL-E	For tank temp. (longer)	-	-	-	-	-	x	x	x
	PAC-TH011HT-E	For boiler (flow and return temp.)	x	x	x	x	x	x	x	x
Immersion heater	PAC-IH03V2-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-W60VAA(-BS)	PUHZ-W85VYAA(-BS)	PUHZ-W112VYAA(-BS)	PUHZ-W85VHA2(-BS)	PUHZ-W112VHA (-BS)	PUHZ-HW112VHA2(-BS)	PUHZ-HW140VHA2(-BS)	PUHZ-HW140VHA2(-BS)
Connector for drain hose heater signal output	PAC-SE60RA-E	x	x	x	x	x	x	x	x	x
	PAC-SG59SG-E	x	—	—	—	x	x	x	x	x
Air discharge guide	PAC-SH96SG-E	—	x*	x*	x*	—	—	—	—	—
	PAC-SH63AG-E	x	—	—	—	x	x	x	x	x
Air protection guide	PAC-SH95AG-E	—	x*	x*	x*	—	—	—	—	—
Attachment	PAC-SJ82AT-E	—	x	x	x	—	—	—	—	—
Drain socket	PAC-SG61DS-E	x	x	x	x	x	x	—	—	—
Centralised drain pan	PAC-SG64DP-E	x	—	—	—	x	—	—	—	—
	PAC-SJ83DP-E	—	x	x	x	—	—	—	—	—
Control/Service tool	PAC-SK52ST	—	—	—	—	—	—	—	—	—

*Attachment(PAC-SJ82AT-E) is necessary for the Air Guide.

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.

Combination table

Type	Model name	Package type								Split type							
		Power Inverter						ZUBADAN		Eco Inverter	Power Inverter						
		PUHZ-W50VHA2	PUHZ-W85VHA2	PUHZ-W112VHA	PUHZ-W60VAA	PUHZ-W85VAA/YAA	PUHZ-W112VAA/YAA	PUHZ-HW112YHA2	PUHZ-HW140VHA2/YHA2		SUHZ-SW45VA(H)	PUHZ-SW50VKA	PUHZ-SW75VAA	PUHZ-SW75YAA	PUHZ-SW100VAA	PUHZ-SW100YAA	
Cylinder unit	EHST20C-VM2C														●	●	
	EHST20C-VM6C														●	●	
	EHST20C-YM9C														●	●	
	EHST20C-TM9C														●	●	
	EHST20C-VM2EC														●	●	
	EHST20C-VM6EC														●	●	
	EHST20C-YM9EC														●	●	
	EHST20C-MEC														●	●	
	EHST20C-MHCW														●	●	
	EHST20D-VM2C										●	●	●	●			
	EHST20D-MEC										●	●	●	●			
	EHST20D-MHC										●	●	●	●			
	EHST20D-MHCW										●	●	●	●			
	EHST20D-VM2EC										●	●	●	●			
	EHST20D-YM9C										●	●	●	●			
	ERST20C-MEC														●	●	
	ERST20C-VM2C														●	●	
	ERST20D-MEC										●	●	●	●			
	ERST20D-VM2C										●	●	●	●			
	EHPT20X-VM2C	●	●	●	●	●	●	●	●	●							
EHPT20X-VM6C	●	●	●	●	●	●	●	●	●								
EHPT20X-YM9C	●	●	●	●	●	●	●	●	●								
EHPT20X-TM9C	●	●	●		●	●	●	●									
EHPT20X-MHCW	●	●	●		●	●	●	●									
Hydro box	EHSC-VM2C														●	●	
	EHSC-VM2EC														●	●	
	EHSC-VM6C														●	●	
	EHSC-VM6EC														●	●	
	EHSC-YM9C														●	●	
	EHSC-YM9EC														●	●	
	EHSC-TM9C														●	●	
	EHSC-MEC														●	●	
	EHSD-VM2C										●	●	●	●			
	EHSD-YM9C										●	●	●	●			
	EHSD-MEC										●	●	●	●			
	EHSD-MC										●	●	●	●			
	ERSC-VM2C														●	●	
	ERSC-MEC														●	●	
	ERSD-VM2C										●	●	●	●			
	EHPX-VM2C	●	●	●	●	●	●	●	●								
	EHPX-VM6C	●	●	●		●	●	●	●								
	EHPX-YM9C	●	●	●	●	●	●	●	●								
	EHSE-YM9EC																
	EHSE-MEC																
ERSE-YM9EC																	
ERSE-MEC																	

Mr.SLIM+

A smart air conditioning and hot water supply system conceived from eco-conscious ideas

Mr. SLIM+ has a heat recovery function, which uses waste heat from air conditioners to heat water. Thanks to heat recovery, the Mr. SLIM+ model can achieve a COP of 7.0*, resulting in intelligent systems with amazing efficiency.

*Conditions for air-to-air cooling: Indoor 27°C (dry bulb), 19°C (wet bulb); Outdoor 35°C (dry bulb)

1 unit, 2 roles – Total comfort year-round

Air conditioning and hot water supply matching the needs of each room

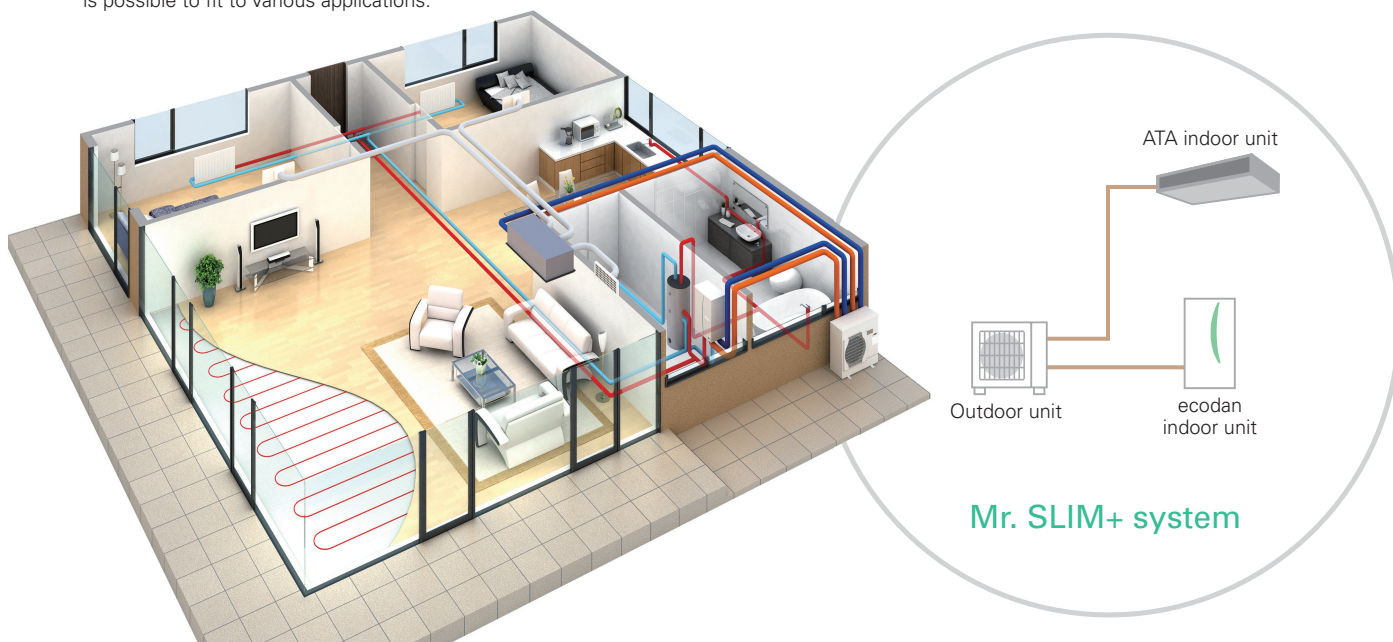
All-in-one outdoor unit (air conditioning, domestic hot water supply and hot water heating)

Mr. SLIM for Air-to-Air

Mr. SLIM+ utilises a duct system that enables the air conditioning or heating of multiple rooms, and other indoor unit type systems that it is possible to fit to various applications.

ecodan for Air-to-Water

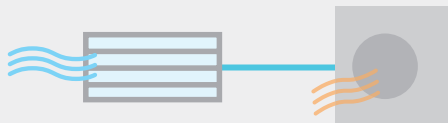
- ✓Domestic hot water (DHW) supply
- ✓Heating for multiple rooms



Various operations

Mr. SLIM / ATA (Air Cooling)

Cooling using ATA indoor unit



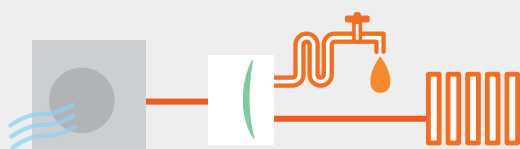
Mr. SLIM / ATA (Air Heating)

Heating using ATA indoor unit



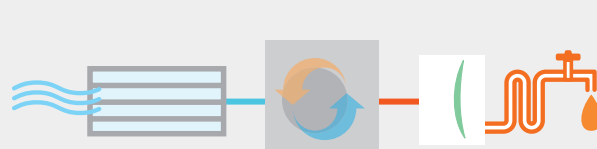
ecodan / ATW (Hot water heating + DHW)

Heating and DHW using ATW indoor unit



Mr. SLIM + ecodan / ATA (Air Cooling) + DHW

Heat recovery using both ATA and ATW indoor units



Specifications

Indoor unit				PLA-ZM71EA		PKA-M71KAL		PCA-M71KA		PSA-RP71KA		PEAD-M71JA		PEAD-M71JAL	
Outdoor unit				PUHZ-FRP71VHA2		PUHZ-FRP71VHA2		PUHZ-FRP71VHA2		PUHZ-FRP71VHA2		PUHZ-FRP71VHA2		PUHZ-FRP71VHA2	
Refrigerant				R410A											
Power supply		Outdoor (V / Phase / Hz)		230 / Single / 50											
Air-to-Air (ATA)	Cooling	Capacity	Rated	kW	7.1	7.1	7.1	7.1	7.1	7.1					
			Min-Max	kW	3.3-8.1	3.3-8.1	3.3-8.1	3.3-8.1	3.3-8.1	3.3-8.1					
		Total input	Rated	kW	1.88	1.93	1.93	2.15	2.10	2.04					
			EER		3.77	3.67	3.67	3.30	3.38	3.48					
		Design load		kW	7.1	7.1	7.1	7.1	7.1	7.1					
		Annual electricity consumption *1		kWh/a	376	386	384	409	444	427					
		SEER *3			6.6	6.4	6.4	6.0	5.5	5.8					
			Energy-efficiency class			A++	A++	A++	A+	A	A+				
		Heating (average season)	Capacity	Rated	kW	8.0	8.0	8.0	8.0	8.0	8.0				
	Min-Max			kW	3.5-10.2	3.5-10.2	3.5-10.2	3.5-10.2	3.5-10.2	3.5-10.2					
	Total input		Rated	kW	2.11	2.29	2.29	2.42	2.11	2.11					
			COP		3.80	3.50	3.50	3.30	3.79	3.79					
	Design load		kW	4.7	4.7	4.7	4.7	4.9	4.9						
	Declared capacity		at reference design temperature	kW	4.7 (−10°C)	4.7 (−10°C)	4.7 (−10°C)	4.7 (−10°C)	4.9 (−10°C)	4.9 (−10°C)					
			at bivalent temperature	kW	4.7 (−10°C)	4.7 (−10°C)	4.7 (−10°C)	4.7 (−10°C)	4.9 (−10°C)	4.9 (−10°C)					
			at operation limit temperature	kW	3.5 (−20°C)	3.5 (−20°C)	3.5 (−20°C)	3.5 (−20°C)	3.7 (−20°C)	3.7 (−20°C)					
	Back-up heating capacity		kW	0	0	0	0	0	0						
	Annual electricity consumption *1		kWh/a	1,509	1,564	1,556	1,699	1,791	1,791						
	SCOP *3			4.3	4.2	4.2	3.8	3.8	3.8						
Energy-efficiency class			A+	A+	A+	A	A	A							
Air-to-Water (ATW)	Nominal flow rate (for heating)			L/min	22.90										
	Heating *4	A7W35	Capacity	kW	8.00	8.00	8.00	8.00	8.00	8.00					
			Input	kW	1.98	1.98	1.98	1.98	1.98	1.98					
			COP		4.05	4.05	4.05	4.05	4.05	4.05					
		A2W35	Capacity	kW	7.50	7.50	7.50	7.50	7.50	7.50					
			Input	kW	2.67	2.67	2.67	2.67	2.67	2.67					
			COP		2.81	2.81	2.81	2.81	2.81	2.81					
	Heat recovery (ATA cooling & ATW) *5	W45	Capacity (ATA cooling + ATW)	kW	7.1+8.0	7.1+8.0	7.1+8.0	7.1+8.0	7.1+8.0	7.1+8.0					
			Input	kW	1.90	1.93	1.95	2.02	2.15	2.13					
			COP		7.95	7.82	7.74	7.48	7.02	7.09					
		W55	Capacity (ATA cooling + ATW)	kW	7.1+9.0	7.1+9.0	7.1+9.0	7.1+9.0	7.1+9.0	7.1+9.0					
			Input	kW	2.97	3.00	3.02	3.09	3.22	3.20					
			COP		5.42	5.37	5.33	5.21	5.00	5.03					
	ATW indoor unit				Cylinder unit or Hydro box (see previous page)										
	Outdoor unit	Dimensions	HxWxD	mm	943-950-330 (+30)										
		Weight		kg	73	73	73	73	73	73	73				
			Air volume	Cooling	m³/min	50	50	50	50	50	50	50			
		Heating		m³/min	50	50	50	50	50	50	50				
		Sound pressure level (SPL)	Cooling	dB(A)	47	47	47	47	47	47	47				
Heat recovery			dB(A)	47	47	47	47	47	47	47					
ATA Heating			dB(A)	49	49	49	49	49	49	49					
ATW Heating			dB(A)	49	49	49	49	49	49	49					
Sound power level (PWL)		Cooling	dB(A)	67	67	67	67	67	67	67					
		Heat recovery	dB(A)	67	67	67	67	67	67	67					
		ATA Heating	dB(A)	68	68	68	68	68	68	68					
		ATW Heating	dB(A)	68	68	68	68	68	68	68					
Operating current (max)			A	19.0	19.0	19.0	19.0	19.0	19.0						
Breaker size			A	25	25	25	25	25	25						
Ext.piping	Diameter	Liquid/Gas	mm	9.52/15.88	9.52/15.88	9.52/15.88	9.52/15.88	9.52/15.88	9.52/15.88						
	Max. length	Out-In	m	30 (for ATA) + 30 (for ATW)											
	Max. height	Out-In	m	20	20	20	20	20	20						
Guaranteed operating range (outdoor)		Cooling *2	°C	−15~+46	−15~+46	−15~+46	−15~+46	−15~+46	−15~+46						
		Heating	°C	−20~+21	−20~+21	−20~+21	−20~+21	−20~+21	−20~+21						
		ATW	°C	−20~+35	−20~+35	−20~+35	−20~+35	−20~+35	−20~+35						
		Heat recovery	°C	+7~+46	+7~+46	+7~+46	+7~+46	+7~+46	+7~+46						

*1 Energy consumption based on standard test results. Actual energy consumption will depend on how the appliance is used and where it is located.

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

*3 SEER/SCOP values are measured based on EN14825.

*4 Air-to-Water values are measured based on EN14511 (Circulation pump input is not included.).

*5 Conditions for Air-to-Air cooling: Indoor 27°C (dry bulb) /19°C (wet bulb); Outdoor 35°C (dry bulb).

PUMY+ecodan

Air-to-Air and Air-to-Water hybrid multi split system

1 unit, 2 roles – Total comfort year-round

Air conditioning and hot water supply matching the needs of each room

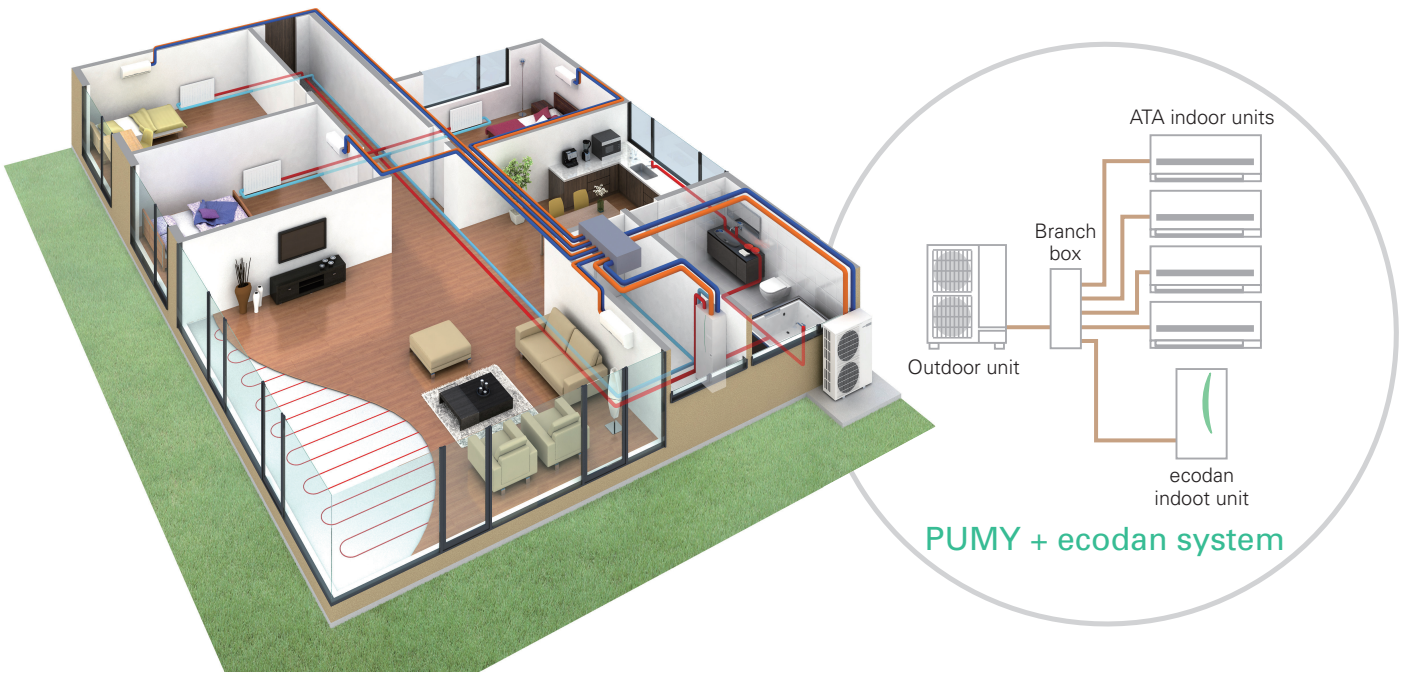
All-in-one outdoor unit (air conditioning, domestic hot water supply and hot water heating)

PUMY for Air-to-Air

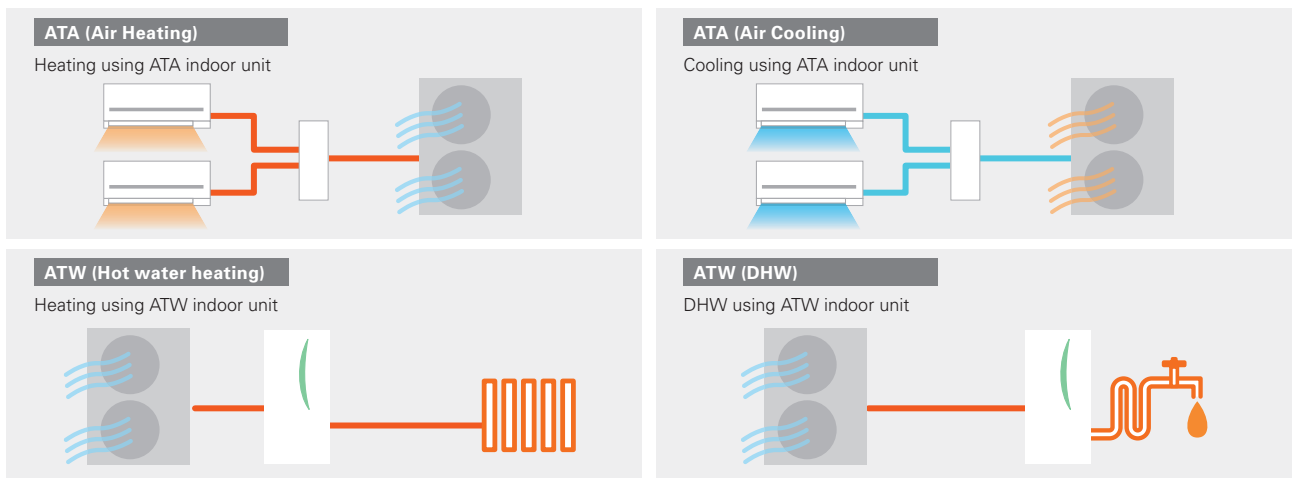
PUMY utilises various indoor units, enabling the air conditioning or heating of multiple rooms, and controls each unit individually.

ecodan for Air-to-Water

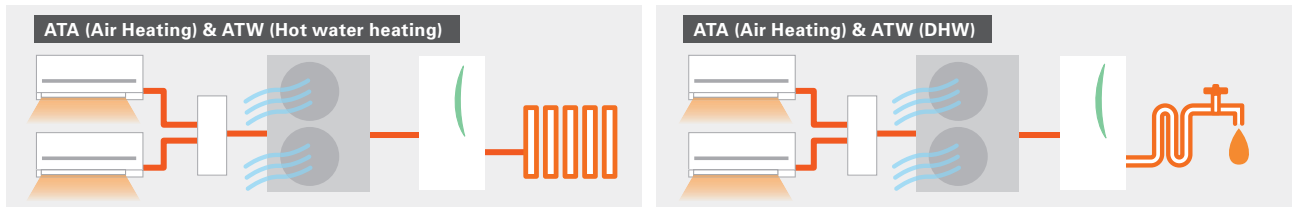
- ✓Domestic hot water (DHW) supply
- ✓Heating for multiple rooms



Main operation patterns



Optional operation patterns* (simultaneous)

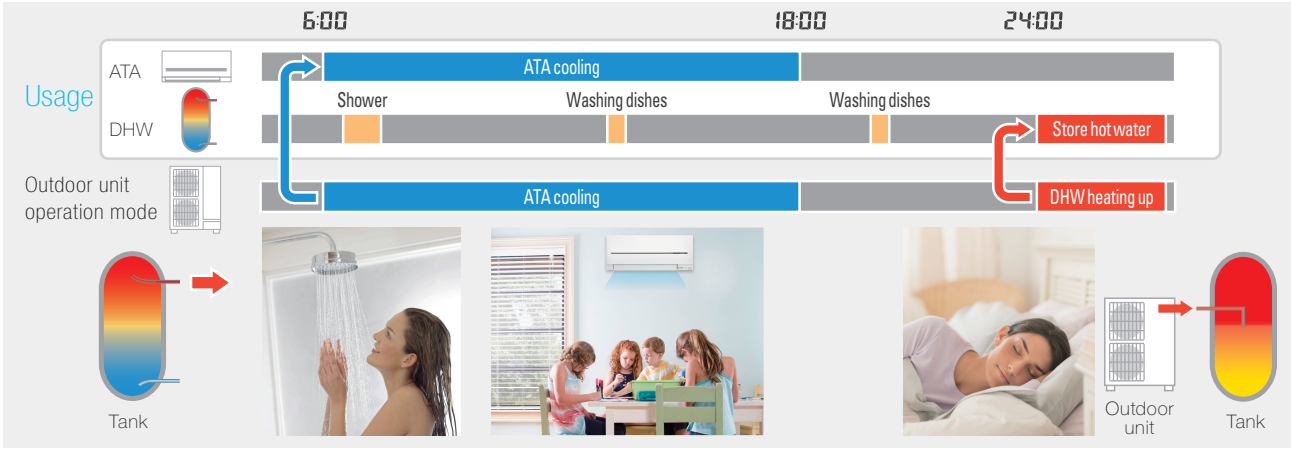


*When using optional simultaneous operation, there are some restrictions, such as connectable indoor units, operation range and DHW flow temp.

Usage pattern All-in-one system solution

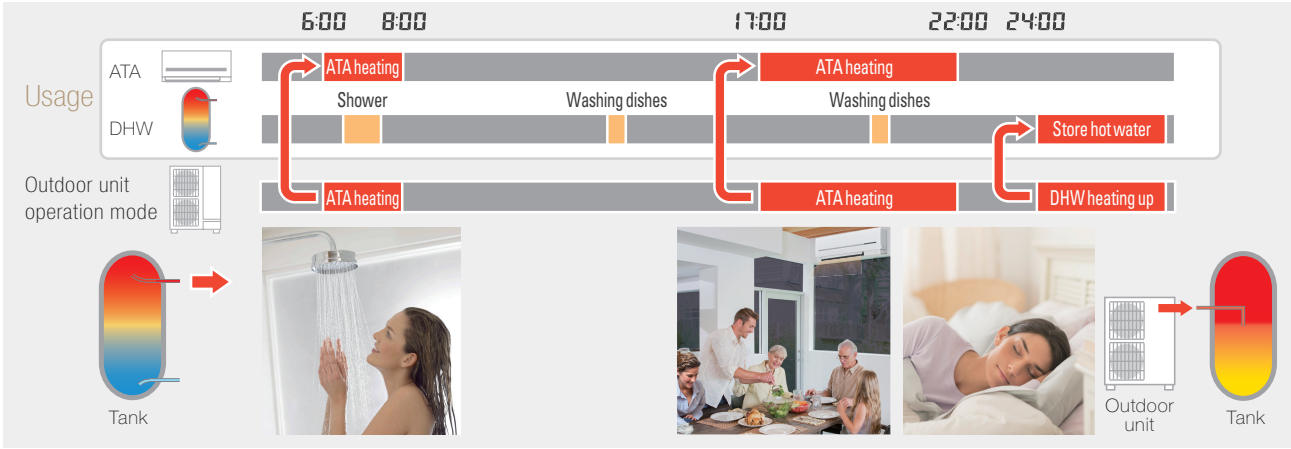
Summer 2-in-1 operation

In summer ATA cooling and DHW are utilised. Keep your room comfortable with ATA cooling during high temperature daytime. Heat pump operates to heat up water stored in the DHW tank when ATA is not operated. The hot water can be utilised for shower and washing dishes during daytime.



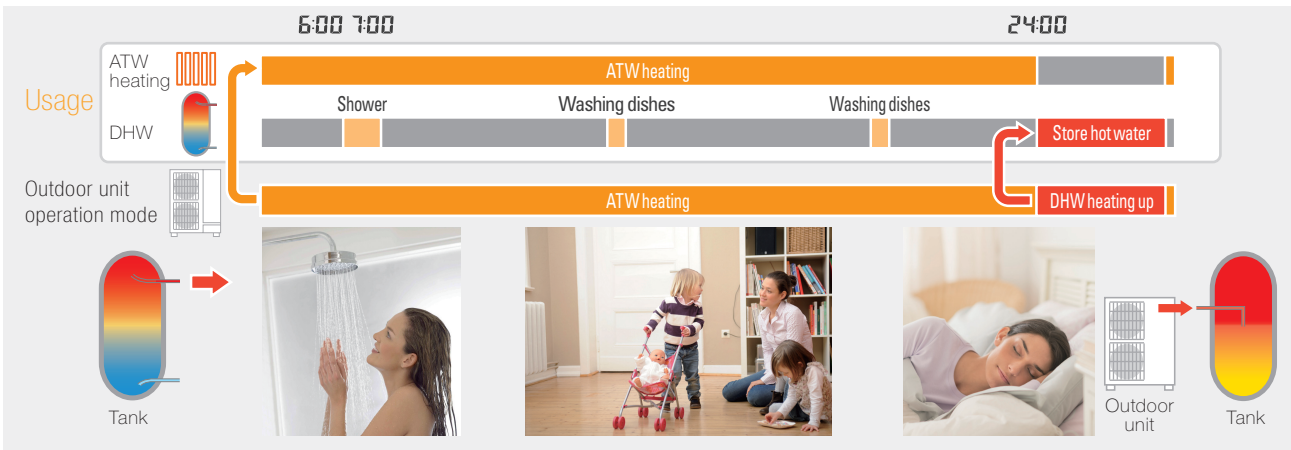
Spring & Autumn 2-in-1 operation

In spring and autumn, ATA heating and DHW are utilised. ATA heating can warm up each room quickly during the low temperature morning and evening. Heat pump operates to heat up water stored in the DHW tank when ATA is not operated. The hot water can be utilised for shower and washing dishes during daytime.



Winter ecodan

In winter ATW heating and DHW are utilised. ATW heating warms home all the day in severe cold weather. ATW heating stops temporarily only when the heat pump operates to heat up water stored in the DHW tank.



PUMY+ecodan

Model name				PUMY- P112VKM4(-BS)	PUMY- P125VKM4(-BS)	PUMY- P140VKM4(-BS)	PUMY- P112YKM(E)4(-BS)	PUMY- P125YKM(E)4(-BS)	PUMY- P140YKM(E)4(-BS)		
Power supply				1-phase 220 - 230 - 240V, 50Hz			3-phase 380 - 400 - 415V, 50Hz				
Air-to-Air (ATA)	Cooling (nominal)*1	Capacity	kW	12.5	14.0	15.5	12.5	14.0	15.5		
		Power input	kW	2.79	3.46	4.52	2.79	3.46	4.52		
		EER		4.48	4.05	3.43	4.48	4.05	3.43		
	Temp. range of cooling	Indoor temp.	W.B.	15 - 24°C							
		Outdoor temp.*2	D.B.	-5 - 52°C							
	Heating (nominal)*1	Capacity	kW	14.0	16.0	18.0	14.0	16.0	18.0		
		Power input	kW	3.04	3.74	4.47	3.04	3.74	4.47		
		COP		4.61	4.28	4.03	4.61	4.28	4.03		
	Temp. range of heating	Indoor temp.	W.B.	15 - 27°C							
		Outdoor temp.	D.B.	-20 - 15°C							
Air-to-Water (ATW)	Nominal flow rate (for heating)			L/min			35.8				
	Heating*3	A7W35	Capacity	kW			12.5				
			Power input	kW			3.06				
			COP				4.08				
		A2W35	Capacity	kW			10.0				
			Power input	kW			3.50				
			COP				2.86				
	Guaranteed operating range	ATW	Heating	D.B.			-20 - +21°C				
			DHW	D.B.			-20 - +35°C				
		ATA + ATW	ATA heating + DHW	D.B.			7 - +21°C				
			ATA heating + ATW heating *4	D.B.			-10 - +21°C				
	Maximum Outlet water temp.			°C			55				
Outdoor unit	Indoor unit connectable	ATA only	Total capacity		50 to 130% of outdoor unit capacity						
			Model/ Quantity	Branch box system	15-100/8	15-100/8	15-100/8	15-100/8	15-100/8	15-100/8	
		ATA + ATW individual operation	Total capacity	Mixed system*12	15-140*5/10	15-140*5/10*6	15-140*5/10*6	15-140*5/10	15-140*5/10*6	15-140*5/10*6	
				ATA : Max 130% of outdoor unit capacity + ATW (EHST20C or EHSC) *7							
			Model/Quantity (including ATW)	Branch box system	15-100/8	15-100/8	15-100/8	15-100/8	15-100/8	15-100/8	
				Mixed system*12	15-140*5/10	15-140*5/10*6	15-140*5/10*6	15-140*5/10	15-140*5/10*6	15-140*5/10*6	
		ATA + ATW simultaneous operation	Total capacity	Max 100% of outdoor unit capacity : ATA + ATW (EHST20C or EHSC) *7							
				Model/Quantity	ATA*12	15/1*8	15-25/2*9	15-42*11/3*10	15/1*8	15-25/2*9	15-42*11/3*10
			Model/Quantity	ATW (EHST20C or EHSC) / 1							
				Sound pressure level (measured in anechoic room)			dB<A>	49 / 51	50 / 52	51 / 53	49 / 51
		Sound power level (measured in anechoic room)			dB<A>	69 / 71	70 / 72	71 / 73	69 / 71	70 / 72	71 / 73
		Refrigerant piping diameter			Liquid pipe	mm					
				Gas pipe	mm						
	Fan	Type × Quantity		Propeller fan × 2							
		Airflow rate	m³/min	110							
			L/s	1,883							
			cfm	3,884							
		Compressor	Motor output		kW						
			0.074 + 0.074								
	Type × Quantity		Scroll hermetic compressor × 1								
	Starting method			Inverter							
	Motor output			kW							
				2.9							
				3.5							
			3.9								
			2.9								
			3.5								
			3.9								
External dimensions (H × W × D)			mm								
Weight			kg								
			122								
			1,338 × 1,050 × 330 (+40)								
			YKM: 125 / YKME: 136								

*1

	Indoor	Outdoor	Piping length	Level difference
Cooling	27°C DB / 19°C WB	35°C DB	7.5m	0m
Heating	20°C DB	7°C DB / 6°C WB	7.5m	0m

*2 10 to 52°C D.B.: When connecting PKFY-P15/20/25VBM, PFFY-P20/25/32VKM, PFFY-P20/25/32VLE(R)M, PEFY-P*VMA3 or M, S and P series indoor unit.

*3 In the case of ATW single connection. Input to circulation pump is not included.

*4 In the case of simultaneous operation of ATA heating and ATW heating, target flow temperature range is restricted to 45-55°C and when the ambient temp is under 7°C, the flow temp is lowered.

*5 Up to P100 when connecting via branch box.

*6 Up to 11 units when connecting via 2 branch boxes.

*7 Only one ecodan unit can be connected.

*8 Exceptionally, one MSZ-SF15VA or MSZ-AP15VF can be connected.

*9 Exceptionally, two MSZ-SF15VA or MSZ-AP15VF can be connected.

*10 Exceptionally, three MSZ-SF15VA or MSZ-AP15VF can be connected.

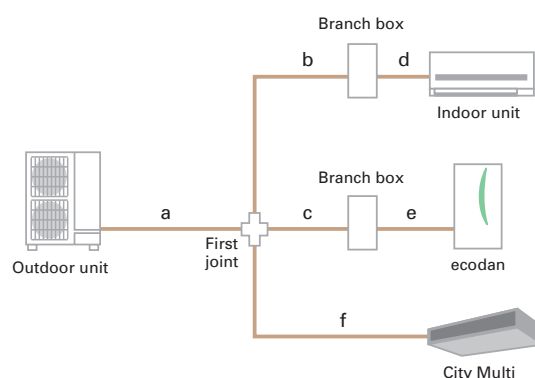
*11 In the case of City Multi connection, maximum is P32.

*12 PKFY and PFFY series are not connectable.

Piping specifications

Total piping length	m	150*	a+b+c+d+e+f
Farthest piping length	m	80	a+b+d or a+c+e
		85	a+f
Total piping length between outdoor unit and branch box	m	55	a+b+c
Total piping length between branch boxes and indoor units	m	95	d+e
Farthest piping length from the first joint	m	30	b or c or f
Farthest piping length after branch box	m	25	d or e
Height difference (Outdoor upside / Outdoor downside)	m	50 / 40	

*When an ecodan is connected, the maximum piping length is 150m.



PUMY+ ecodan compatibility table

ATW branch box connection compatibility table

Series	Type	Model name	Compatibility	Type	Model name	Compatibility	Type	Model name	Compatibility
ATW	Cylinder unit	EHST20C-VM2/6C	●	Hydro box	EHSC-VM2(E)C	●	Branch box	PAC-MK53BC	●
		EHST20C-YM9C	●		EHSC-VM6(E)C	●		PAC-MK33BC	●
		EHST20C-TM9C	●		EHSC-YM9(E)C	●		PAC-MK53BCB	●
		EHST20C-VM2/6EC	●		EHSC-TM9C	●		PAC-MK33BCB	●
		EHST20C-YM9EC	●	*Please be sure to use brine water.					
		EHST20C-MHCW	●*						

Branch box connection compatibility table

Series	Type	Model name	Compatibility										
			15	18	20	22	25	35	42	50	60	71	100
M series	Wall-mounted	MSZ-LN•VG					●	●					
		MSZ-AP•VF/VG	●		●		●	●	●	●			
		MSZ-FH•VE2					●	●		●			
		MSZ-EF•VE3		●		●	●	●	●	●			
		MSZ-SF•VA	●		●								
		MSZ-SF•VE3					●	●	●	●			
		MSZ-GF•VE2									●	●	
	Floor-standing	MFZ-KJ•VE 2					●	●		●			
S series	1-way cassette	MLZ-KP•VF					●	●		●			
							●	●		●			
P series	Ceiling-concealed	SEZ-M•DA(L)					●	●		●	●	●	
	2x2 cassette	SLZ-M•FA	●				●	●		●			
	Ceiling-suspended	PCA-M•KA						●		●	●	●	●
	4-way cassette	PLA-M•EA						●		●	●	●	●
	Ceiling-concealed	PEAD-M•JA(L)								●	●	●	●

LEV kit connection compatibility table

Series	I/U type	Model name	Compatibility									
			15	18	20	22	25	35	42	50	60	71
M series	Wall-mounted	MSZ-LN•VG					●	●				
		MSZ-AP•VF/VG	●		●		●	●	●	●		
		MSZ-FH•VE2					●	●		●		
		MSZ-EF•VE3		●		●	●	●	●	●		
		MSZ-SF•VA	●		●							
		MSZ-SF•VE3					●	●	●	●		
	Floor-standing	MFZ-KJ•VE 2					●	●		●		

Connectable indoor unit capacity

For individual operation ATA+ATW (no simultaneous operation) ATA: Max 130% of outdoor unit capacity + ATW (EHST20C or EHSC)

Outdoor capacity 12.5kW				
ATW indoor unit (Cylinder or Hydro box) 11.2kW		Connectable ATA indoor unit total capacity: Max.16.2kW (130%)		
Outdoor capacity 14.0kW				
ATW indoor unit (Cylinder or Hydro box) 11.2kW		Connectable ATA indoor unit total capacity: Max.18.2kW (130%)		
Outdoor capacity 15.5kW				
ATW indoor unit (Cylinder or Hydro box) 11.2kW		Connectable ATA indoor unit total capacity: Max.20.2kW (130%)		

For simultaneous operation of ATA+ATW Max 100% of outdoor unit capacity: ATA + ATW (EHST20C or EHSC)

Outdoor capacity 12.5kW				
ATW indoor unit (Cylinder or Hydro box) 11.2kW		ATA capacity Max. 1.3kW	*Exceptionally, one MSZ-SF15VA or MSZ-AP15VF can be connected.	
Outdoor capacity 14.0kW				
ATW indoor unit (Cylinder or Hydro box) 11.2kW		ATA capacity Max. 2.8kW	*Exceptionally, two units of MSZ-SF15VA or MSZ-AP15VF can be connected.	
Outdoor capacity 15.5kW				
ATW indoor unit (Cylinder or Hydro box) 11.2kW		ATA capacity Max. 4.3kW	*Exceptionally, three units of MSZ-SF15VA or MSZ-AP15VF can be connected.	

MELCloud (Wi-Fi interface) for ecodan

MELCloud for fast, easy remote control and monitoring of your ecodan

MELCloud is a new Cloud-based solution for controlling ecodan either locally or remotely by computer, tablet or smartphone via the Internet. Setting up and remotely operating your ecodan heating system via MELCloud is simple and straight forward. All you need is wireless computer connectivity in your home or the building where the ecodan is installed and an Internet connection on your mobile or fixed terminal. To set up the system, the router and the ecodan WiFi interface must be paired, and this is done simply and quickly using the WPS button found on all mainstream routers.

You can control and check ecodan via MELCloud from virtually anywhere an Internet connection is available. That means, thanks to MELCloud, you can use ecodan much more easily and conveniently.



Key control and monitoring features

- 1 Turn system on/off
- 2 See status of each of your heating zones & adjust set points
- 3 See the status of your hot water cylinder & boost remotely
- 4 Live weather feed from ecodan location
 - Holiday mode - Set system parameters while away
 - Schedule timer - Set 7 day weekly schedule
 - Frost protection - Set system to run at minimum temperature
 - Error status
- 5 Check energy usage report* *Additional metering hardware is required.



All A++ line-up!!

*except for ATA & ATW hybrid system, Mr.SLIM+

except for ATA & ATW hybrid system, Mr.SLIM+		For medium-temperature application								For low-temperature application							
Outdoor unit	Indoor unit	Seasonal space heating energy efficiency class	Water heating energy efficiency class	Rated heat output under average climate conditions		Seasonal space heating energy efficiency under average climate conditions	Water heating energy efficiency under average climate conditions	Sound power level LWA indoor	Sound power level LWA outdoor	Seasonal space heating energy efficiency class	Water heating energy efficiency class	Rated heat output under average climate conditions		Seasonal space heating energy efficiency under average climate conditions	Water heating energy efficiency under average climate conditions	Sound power level LWA indoor	Sound power level LWA outdoor
				kW	%							kW	%				
SUHZ-SW45VA(-H)	EHST20D-****	A++	A	4.6	126	109	40	61		A++	A	5.0	170	109	40	61	
	ERST20D-****	A++	A	4.6	128	109	40	61		A++	A	5.0	174	109	40	61	
	EHSD-****	A++	-	4.6	126	-	40	61		A++	-	5.0	170	-	40	61	
	ERSD-****	A++	-	4.6	128	-	40	61		A++	-	5.0	174	-	40	61	
PUHZ-SW50VKA(-BS)	EHST20D-****	A++	A	4.3	125	98	40	63		A++	A	4.5	163	98	40	63	
	ERST20D-****	A++	A	4.3	128	98	40	63		A++	A	4.5	167	98	40	63	
	EHSD-****	A++	-	4.3	125	-	40	63		A++	-	4.5	163	-	40	63	
	ERSD-****	A++	-	4.3	128	-	40	63		A++	-	4.5	167	-	40	63	
PUHZ-SW75VAA/YAA(-BS)	EHST20D-****	A++	A	7.1	129/128	104	40	58		A++	A	7.2	162/160	104	40	58	
	ERST20D-****	A++	A	7.1	132/132	104	40	58		A++	A	7.2	166/165	104	40	58	
	EHSD-****	A++	-	7.1	129/128	-	40	58		A++	-	7.2	162/160	-	40	58	
	ERSD-****	A++	-	7.1	132/132	-	40	58		A++	-	7.2	166/165	-	40	58	
PUHZ-SW100VAA/YAA(-BS)	EHST20C-****	A++	A	10.0	130/129	103	40	60		A++	A	7.2	167/165	103	40	60	
	ERST20C-****	A++	A	10.0	132/132	103	40	60		A++	A	7.2	170/169	103	40	60	
	EHSC-****	A++	-	10.0	130/129	-	40	60		A++	-	7.2	167/165	-	40	60	
	ERSC-****	A++	-	10.0	132/130	-	40	60		A++	-	7.2	170/169	-	40	60	
PUHZ-SW75VHA(-BS)	EHST20D-****	A++	A	7.1	127	100	40	68		A++	A	7.2	164	100	40	68	
	ERST20D-****	A++	A	7.1	129	100	40	68		A++	A	7.2	166	100	40	68	
	EHSD-****	A++	-	7.1	127	-	40	68		A++	-	7.2	164	-	40	68	
	ERSD-****	A++	-	7.1	129	-	40	68		A++	-	7.2	166	-	40	68	
PUHZ-SW75VHA(-BS)	EHST20C-****	A++	A	7.1	127	103	40	68		A++	A	7.2	165	103	40	68	
	ERST20C-****	A++	A	7.1	129	103	40	68		A++	A	7.2	167	103	40	68	
	EHSC-****	A++	-	7.1	127	-	40	68		A++	-	7.2	165	-	40	68	
	ERSC-****	A++	-	7.1	129	-	40	68		A++	-	7.2	167	-	40	68	
PUHZ-SW100VHA/YHA(-BS)	EHST20C-****	A++	A	10.0	125/125	103	40	70		A++	A	10.4	164/163	103	40	70	
	ERST20C-****	A++	A	10.0	127/127	103	40	70		A++	A	10.4	166/166	103	40	70	
	EHSC-****	A++	-	10.0	125/125	-	40	70		A++	-	10.4	164/163	-	40	70	
	ERSC-****	A++	-	10.0	127/127	-	40	70		A++	-	10.4	166/166	-	40	70	
PUHZ-SW120VHA/YHA(-BS)	EHST20C-****	A++	A	12.0	125/125	99	40	72		A++	A	12.9	162/162	99	40	72	
	ERST20C-****	A++	A	12.0	127/127	99	40	72		A++	A	12.9	164/164	99	40	72	
	EHSC-****	A++	-	12.0	125/125	-	40	72		A++	-	12.9	162/162	-	40	72	
	ERSC-****	A++	-	12.0	127/127	-	40	72		A++	-	12.9	164/164	-	40	72	
PUHZ-SW160YKA(-BS)	EHSE-****	A++	-	13.5	125	-	45	78		A++	-	15.3	161	-	45	78	
	ERSE-****	A++	-	13.5	126	-	45	78		A++	-	15.3	163	-	45	78	
PUHZ-SW200YKA(-BS)	EHSE-****	A++	-	15.5	128	-	45	78		A++	-	17.3	162	-	45	78	
	ERSE-****	A++	-	15.5	129	-	45	78		A++	-	17.3	164	-	45	78	
PUHZ-SHW80VAA/YAA(-BS)	EHST20C-****	A++	A	9.0	133/132	103	40	59		A++	A	9.6	169/167	103	40	59	
	ERST20C-****	A++	A	9.0	135/134	103	40	59		A++	A	9.6	172/172	103	40	59	
	EHSC-****	A++	-	9.0	133/132	-	40	59		A++	-	9.6	169/167	-	40	59	
	ERSC-****	A++	-	9.0	135/134	-	40	59		A++	-	9.6	172/172	-	40	59	
PUHZ-SHW112VAA/YAA(-BS)	EHST20C-****	A++	A	12.7	135/135	103	40	60		A++	A	13.9	171/169	103	40	60	
	ERST20C-****	A++	A	12.7	137/137	103	40	60		A++	A	13.9	173/173	103	40	60	
	EHSC-****	A++	-	12.7	135/135	-	40	60		A++	-	13.9	171/169	-	40	60	
	ERSC-****	A++	-	12.7	137/137	-	40	60		A++	-	13.9	173/173	-	40	60	
PUHZ-SHW80VHA(-BS)	EHST20C-****	A++	A	9.0	131	103	40	69		A++	A	9.6	171	103	40	69	
	ERST20C-****	A++	A	9.0	133	103	40	69		A++	A	9.6	174	103	40	69	
	EHSC-****	A++	-	9.0	131	-	40	69		A++	-	9.6	171	-	40	69	
	ERSC-****	A++	-	9.0	133	-	40	69		A++	-	9.6	174	-	40	69	
PUHZ-SHW112VHA/YHA(-BS)	EHST20C-****	A++	A	12.7	128/128	103	40	70		A++	A	13.9	167/167	103	40	70	
	ERST20C-****	A++	A	12.7	130/130	103	40	70		A++	A	13.9	169/169	103	40	70	
	EHSC-****	A++	-	12.7	128/128	-	40	70		A++	-	13.9	167/167	-	40	70	
	ERSC-****	A++	-	12.7	130/130	-	40	70		A++	-	13.9	169/169	-	40	70	
PUHZ-SHW140YHA(-BS)	EHST20C-****	A++	A	15.8	127	103	40	70		A++	A	17.0	164	103	40	70	
	ERST20C-****	A++	A	15.8	128	103	40	70		A++	A	17.0	165	103	40	70	
	EHSC-****	A++	-	15.8	127	-	40	70		A++	-	17.0	164	-	40	70	
	ERSC-****	A++	-	15.8	128	-	40	70		A++	-	17.0	165	-	40	70	
PUHZ-SHW230YKA2	EHSE-****	A++	-	23.0	127	-	45	75		A++	-	25.0	164	-	45	75	
	ERSE-****	A++	-	23.0	128	-	45	75		A++	-	25.0	165	-	45	75	
PUHZ-W50VHA2(-BS)	EHPT20X-****	A++	A	5.0	127	99	40	61		A++	A	5.0	162	99	40	61	
	EHPX-****	A++	-	5.0	127	-	40	61		A++	-	5.0	162	-	40	61	
PUHZ-W85VHA2(-BS)	EHPT20X-****	A++	A	8.5	128	97	40	66		A++	A	8.5	162	97	40	66	
	EHPX-****	A++	-	8.5	128	-	40	66		A++	-	8.5	162	-	40	66	
PUHZ-W112VHA(-BS)	EHPT20X-****	A++	A	10.0	125	100	40	69		A++	A	10.0	164	100	40	69	
	EHPX-****	A++	-	10.0	125	-	40	69		A++	-	10.0	164	-	40	69	
PUHZ-W60VAA(-BS)	EHPT20X-****	A++	A	6.0	129	104	40	58		A++	A	6.0	182	104	40	58	
	EHPX-****	A++	-	6.0	129	-	40	58		A++	-	6.0	182	-	40	58	
PUHZ-W85VAA/YAA(-BS)	EHPT20X-****	A++	A	8.5	137/136	104	40	58		A++	A	8.5	171/169	104	40	58	
	EHPX-****	A++	-	8.5	137/136	-	40	58		A++	-	8.5	171/169	-	40	58	
PUHZ-W112VAA/YAA(-BS)	EHPT20X-****	A++	A	10.0	133/132	100	40	60		A++	A	10.0	170/169	100	40	60	
	EHPX-****	A++	-	10.0	133/132	-	40	60		A++	-	10.0	170/169	-	40	60	
PUHZ-HW112YHA2(-BS)	EHPT20X-****	A++	A	12.7	127	100	40	67		A++	A	12.7	155	100	40	67	
	EHPX-****	A++	-	12.7	127	-	40	67		A++	-	12.7	155	-	40	67	
PUHZ-HW140VHA2/YHA2(-BS)	EHPT20X-****	A++	A	15.8	126/126	96	40	67		A++	A	15.8	157/157	96	40	67	
	EHPX-****	A++	-	15.8	126/126	-	40	67		A++	-	15.8	157/157	-	40	67	
PUHZ-FRP71VHA2 ATA&ATW hybrid system, Mr.SLIM+	EHST20C-****	A+	A	7.5	123	98	40	68		A++	A	7.5	163	98	40	68	
	EHSC-****	A+	-	7.5	123	-	40	68		A++	-	7.5	163	-	40	68	
	EHST20C-****	A+	A	11.2	121/121	75	40	69		A++	A	11.2	168/168	75	40	69	
	EHSC-****	A+	-	11.2	121/121	-	40	69		A++	-	11.2	168/168	-	40	69	
PUMY-P125VKM3/YKM(E)4-BS	EHST20C-****	A+	A	11.2	121/121	75	40	69		A++	A	11.2	168/168	75	40	69	
	EHSC-****	A+	-	11.2	121/121	-	40	69		A++	-	11.2	168/168	-	40	69	
PUMY-P140VKM3/YKM(E)4-BS	EHST20C-****	A+	A	11.2	121/121	75	40	69		A++	A	11.2	168/168	75	40	69	
	EHSC-****	A+	-	11.2	121/121	-	40	69		A++	-	11.2	168/168	-	40	69	

* Based on COMMISSION DELEGATED REGULATION (EU) No 811/2013, average climate conditions