

**Wrap Yourself in Comfort and Quiet
Eco-conscious Technologies from Japan**

**Air to Water Catalogue
2023/2024
Addendum**



Environmental Sustainability Vision 2050

Environmental Declaration

Protect the air, land, and water with our hearts and technologies to sustain a better future for all.



Environmental Sustainability Vision 2050

To solve various factors that lead to environment issues, the Mitsubishi Electric Group shall unite the wishes of each and every person, and strive to create new value for a sustainable future.

Three Environmental Action Guidelines

1

Apply diverse technologies in wide-ranging business areas to solve environmental issues

2

Challenge to develop business innovations for future generations

3

Publicize and share new values and lifestyles

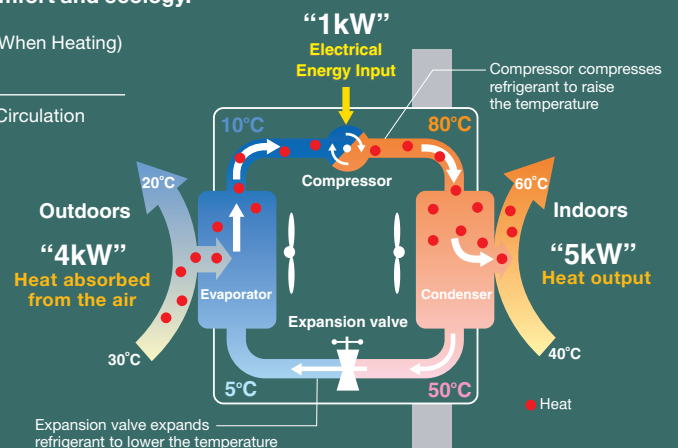
Key Initiatives

- Climate Change Measures
- Resource Circulation
- Live in Harmony with Nature
- Long-term Activities
- Innovation
- Nurturing Human Resources
- Understanding Needs
- Co-create and Disseminate New Values
- Live in Harmony with the Region

Heat pump technology inspires Mitsubishi Electric to design air conditioners that harmonize comfort and ecology.

Heat Pump Principle (When Heating)
<Case of COP 5.0>

Refrigerant and Heat Circulation



New PUZ Series

Great Line-up for Heating and Cooling

Our new flagship PUZ series offers optimized heating and cooling performance and covers both ranges, POWER INVERTER and ZUBADAN.

In addition to space heating and hot water supply, new PUZ series can easily combine with fan coils or underfloor cooling systems to provide with the best thermal comfort also in summer.

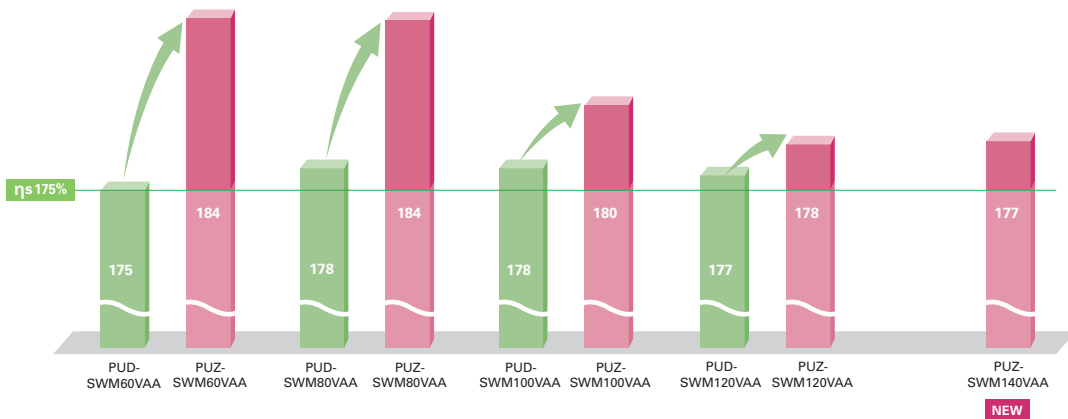


Refrigerant	Operation	Series	Power supply	60	80	100	120	140
R32	Reversible	POWER INVERTER	1Φ230V	●	●	●	●	●
			3Φ400V	-	●	●	●	●
		ZUBADAN	1Φ230V	●	●	●	●	●
			3Φ400V	-	●	●	●	●

Further Enhanced Energy Efficiency

ErP Lot 1 Compliant with Highest Seasonal Space Heating Energy Efficiency Class A+++

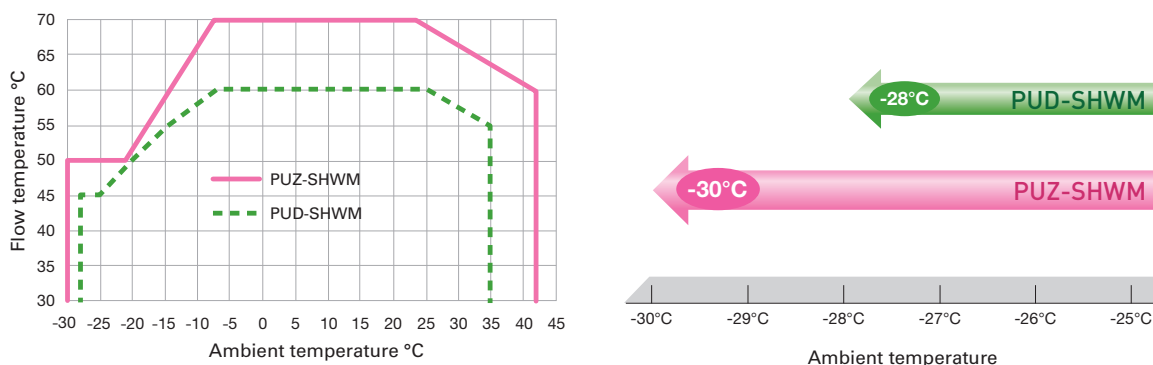
All models have achieved the "RANK A+++" for SCOP with average climate at low temperature. Thanks to further design optimization, new PUZ is achieving better performance and contributing to reduce energy consumption in a wide range.



High Performance

Extended Heating Operation Range down to -30°C and higher flow Temperature up to 70°C

Mitsubishi Electric's unique technology and compressors allow the heat pump to achieve the wider guaranteed heating operation range. max 60° flow temperature can be maintained down to ambient -13°C. Even at ambient -30°C, the flow temperature can be kept 50°C. The maximum flow temperature of 70°C can be achieved down to -7°C.



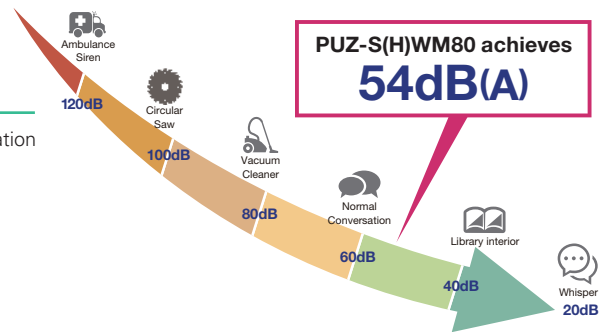
Quiet Performance

Improved noise reduction

PUZ achieves quieter operation than previous model with its double anti-vibration structure.

- New 60-80 models achieved 54dB(A) in PWL.
- New 100-140 models achieved 58dB(A) inPWL.

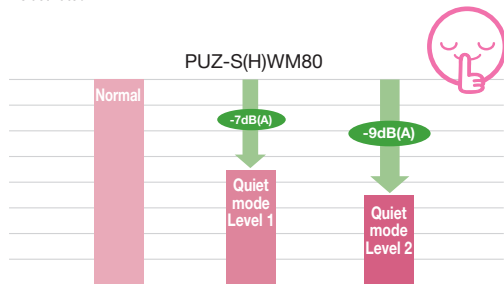
*Sound power level values are based on EN12102.



Quiet mode

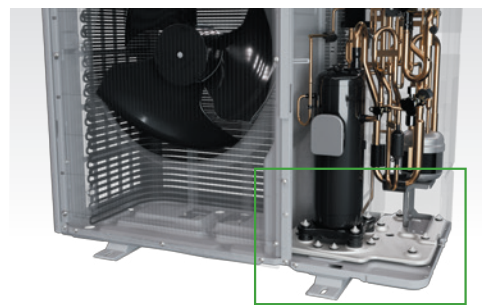
Three-stage quiet mode enables low-noise operation that can be adjusted to meet severe noise conditions.

*The cooling and heating capacity may drop when Quiet mode is activated.



Double anti-vibration structure

This double structure of an anti-vibration plate and foot rubbers reduces vibration noise to provide high quality performance while minimizing noise.



The rate of vibration transmission is greatly reduced by installing stat bolts and foot rubbers on the base and placing an anti-vibration plate on top of it.

In addition, three layers of felt around the compressor absorbs noise. With these unique sound insulation structures, the unit enables less restrictions in residential areas.

Installation

Piping length

Max piping length can achieve up to 50m* for more flexible installation.

Refrigerant amount

The necessary refrigerant amount has been reduced to 2,4kg at maximum, that's why the installation restrictions are limited.

No additional refrigerant charge (1.8kg) ➡ No indoor unit installation restrictions.

1.8~2.4kg of refrigerant ➡ Additional refrigerant charge allows up to 50m* piping length.

*For heating/cooling operation with PUZ-S(H)WM120/140, the max piping length is 30m.

Piping length and refrigerant charge amount

New PUZ achieves maximum 50m pipe length. This enables for flexible installation in any wider properties. To keep the maximum amount of refrigerant below 2.4 kg, the upper limit differs depending on heating only and reversible.

		Piping length	Initial amount	Refrigerant amount(kg)	2~3m	~5m	~10m	~15m	~20m	~25m	~30m	~35m	~40m	~45m	~50m	
Heating only operation	PUZ-S(H)WM 60/80/100AA	2~50m	1.8kg	Total	1.8								2	2.1	2.2	
				Additional charge	No additional charge								+0.20	+0.30	+0.40	
	PUZ-S(H)WM 120/140AA	2~50m	1.8kg	Total	1.8								2	2.2	2.3	2.4
				Additional charge	No additional charge								+0.20	+0.40	+0.50	+0.60
Heating/Cooling operation	PUZ-S(H)WM 60/80/100AA	2~50m	1.8kg	Total	1.8		1.9	2	2.1	2.2	2.3	2.4				
				Additional charge	No additional charge		+0.10	+0.20	+0.30	+0.40	+0.50	+0.60				
	PUZ-S(H)WM 120/140AA	2~30m	1.8kg	Total	2.2	2.3	2.4									
				Additional charge	+0.40	+0.50	+0.60									

ZUBADAN SERIES

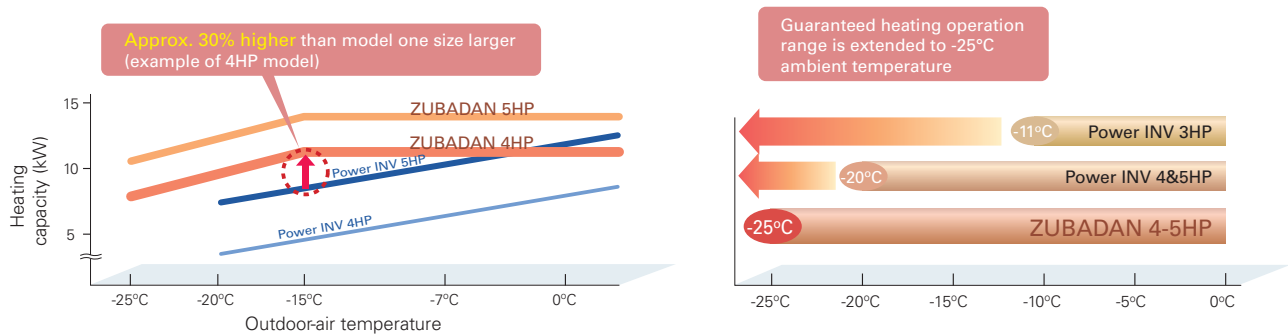
The ZUBADAN Series incorporates an original Flash Injection technology that improves the already high heating capacity of the system. This new member of the series line-up ensures comfortable heat pump-driven heating performance in cold regions.



* Units in photo are Japanese models.
European model specifications are different.

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 -25°C . Accordingly, the heat-pump units of the ZUBADAN Series are perfect for warming homes in the coldest of regions.

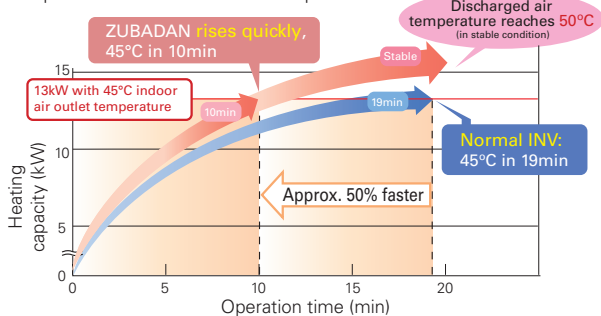


Enhanced Comfort

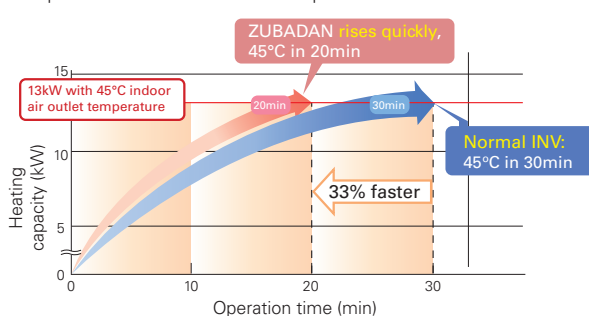
The Flash Injection circuit improves start-up and recover from the defrosting operation. A newly introduced defrost operation control also improves defrost frequency. These features enable the temperature to reach the set temperature more quickly, and contribute to maintaining it at the desired setting.

Quick Start-up

■ Operation at $+2^{\circ}\text{C}$ outdoor temperature



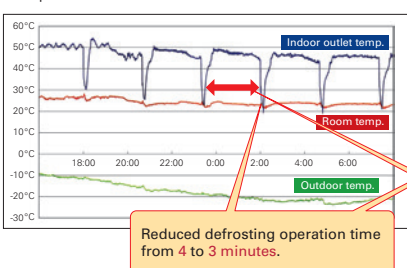
■ Operation at -20°C outdoor temperature



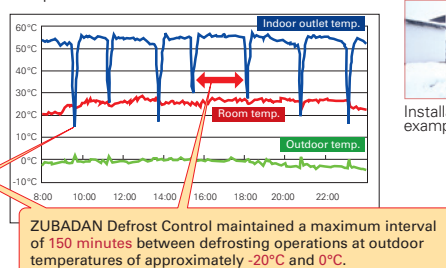
ZUBADAN Defrost Control and Faster Recovery from Defrost Operation

Field Test Results: Office building in Asahikawa, Hokkaido, Japan

■ Operation data for 25 Jan. 2005



■ Operation data for 2 Dec. 2004



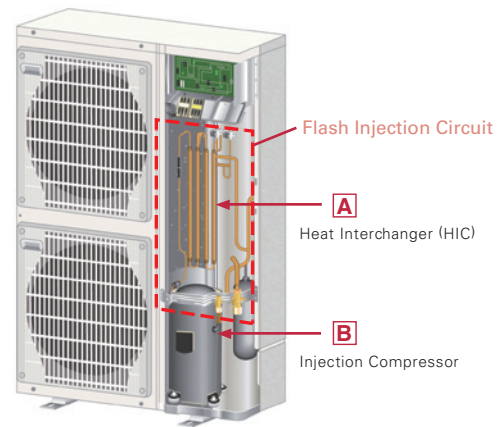
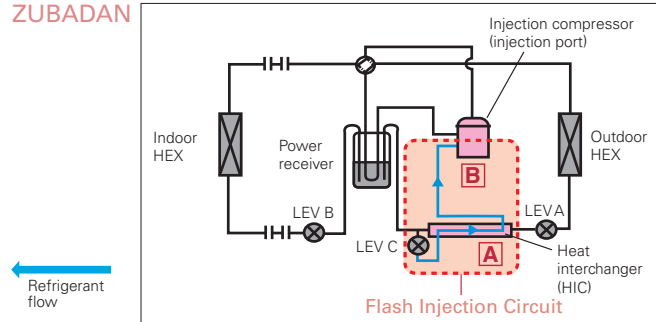
Installation example



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

Flash Injection Circuit

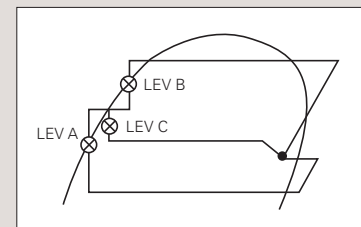
ZUBADAN



The ZUBADAN Series is equipped with Mitsubishi Electric's original Flash Injection Circuit, which is comprised of a bypass circuit and heat interchanger (HIC). The HIC transforms rerouted liquid refrigerant into a gas-liquid state to lower compression load. This process ensures excellent heating performance even when the outdoor temperature drops very low.

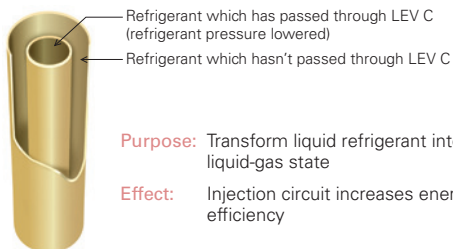
In traditional units, when the outdoor temperature is low, the volume of refrigerant circulating in the compressor decreases due to the drop in refrigerant pressure and the protection from overheating caused by high compression, thereby reducing heating capacity. The Flash Injection Circuit injects refrigerant to maintain the refrigerant circulation volume and compressor operation load, thereby maintaining heating capacity.

Mollier Chart Image Representing Flash Injection Circuit Operation



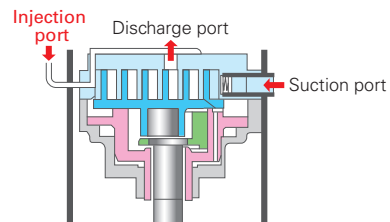
A Heat Interchanger (HIC)

HIC cross-sectional view



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 indoor-air 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.

To ensure full capacity in cold and snowy regions...

3 Important Points to Remember When Installing the Outdoor Unit



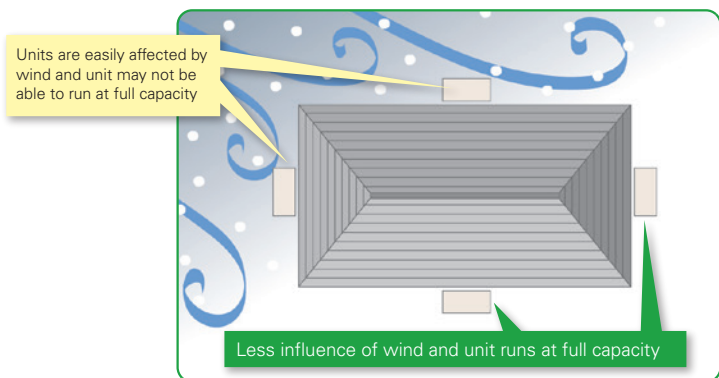
* RAC/PAC (inc. Air to Water) /MXZ

Wind and snow can significantly reduce capacity.

Be sure to check the information below and install the outdoor unit correctly.

1 Installation Location

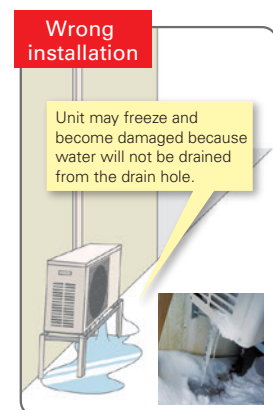
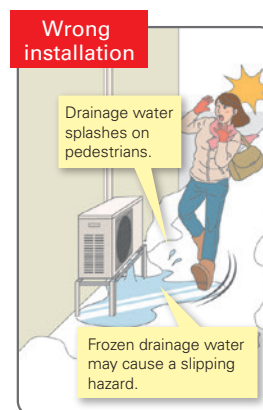
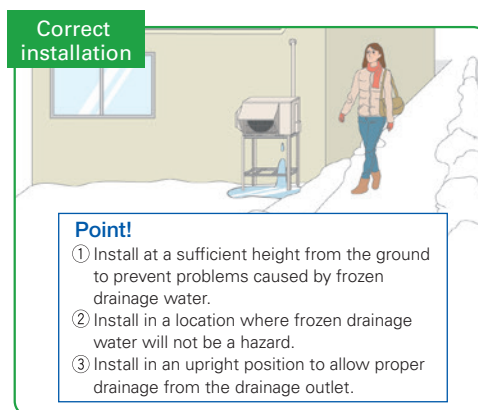
Be aware of the prevailing wind direction in winter and install the outdoor unit where it is as sheltered as possible.



2 Measures for Drainage of Water

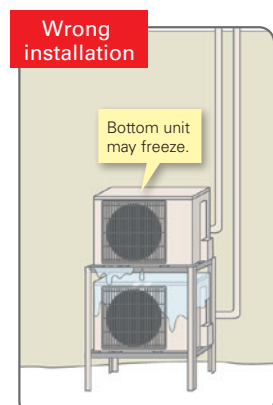
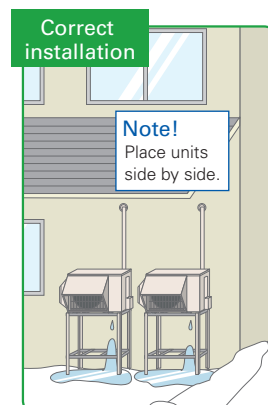
Case 1: Unit is installed close to passage (walkway)

Do not install the unit close to passage as drainage water from the unit may freeze and cause a slipping hazard.



Case 2: Multiple units are installed

Do not install units on top of one another as it may cause frozen drainage water on the bottom unit.



3

Measures for Snow

Unit is installed on the ground

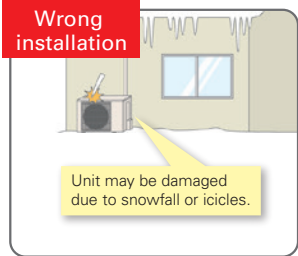
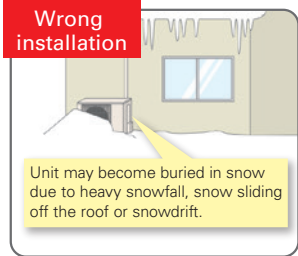
To avoid the adverse effects of snow and frozen drainage water, install the unit on a stand to ensure a sufficient height from the ground.



Point!

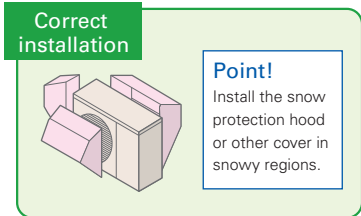
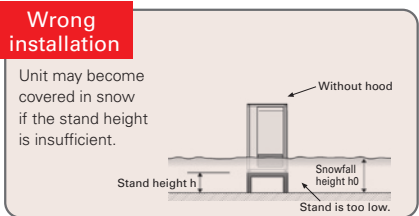
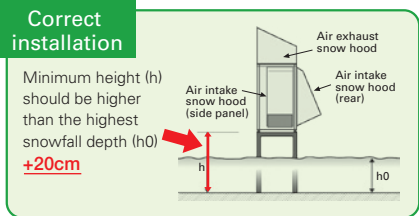
- Install at a position/height to prevent the unit being buried in snow*1 and the adverse effects of frozen drainage water.*2
- Install so as to avoid the effects of snow or snowdrift.
- Install so as to avoid the damage from falling snow or icicles.

*1 Install at a height above the highest snowfall depth.
*2 Even for correct installations, dripping drainage water may form an icicle which needs to be cleared away regularly to prevent a blocked drainage outlet.

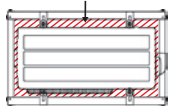


Use a stand to add sufficient height to protect the unit heat exchanger from snow and prevent icicles forming during defrost operation.

Install snow protection hood as necessary



Necessity of accessories (drain socket & centralised drain pan, stand, snow protection hood, base heater)

	Snowy region	Cold region	Remarks
	Countermeasures for snow	Countermeasures for freezing	
Drain socket, Centralised drain pan	Not used	Not used	Prevents freezing
Stand	Needed	Needed	<ol style="list-style-type: none"> Install so as to prevent the unit being buried in snow (at a height greater than the highest snowfall depth). Be sure that the stand does not obstruct drainage. Install so as to prevent damage to the unit due to frozen drainage water (icicles). <div style="text-align: right;">  <p>< Correct ></p> </div>
Snow protection hood	Needed *When the installation position is subject to snowfall.	—	<ol style="list-style-type: none"> Prevents heat exchanger from being covered in snow. Prevents snow accumulating inside the air duct.
Base heater	—	Needed	Outdoor units equipped with a heater for cold regions are those with an "H" in the model name. For the cold-climate zone, use of a unit with a heater is strongly recommended. Even for the moderate-climate zone use of a unit with a heater is recommended for regions subject to high humidity in winter.



CAUTION

About disposal of drainage water

When the unit is installed in cold or snowy regions :

Drainage water may freeze in the drain socket/hose and prevent the fan from rotating.



Do not attach a drain socket packaged as an accessory to the unit.

* In the case that fitting a drain socket is absolutely necessary, steps must be taken so that the drainage water does not freeze. For more information, please consult Mitsubishi Electric or one of its dealers/resellers.

E generation Indoor Unit

Line-up

ecodan's line-up has many types of indoor units to satisfy diverse customers' needs, requests and local regulations. It includes various size of tank up to 300L, with/without booster heater, with/without an expansion vessel, etc. In addition, reversible hydrobox and cylinder units are available.

Hydrobox Cylinder unit



New Design

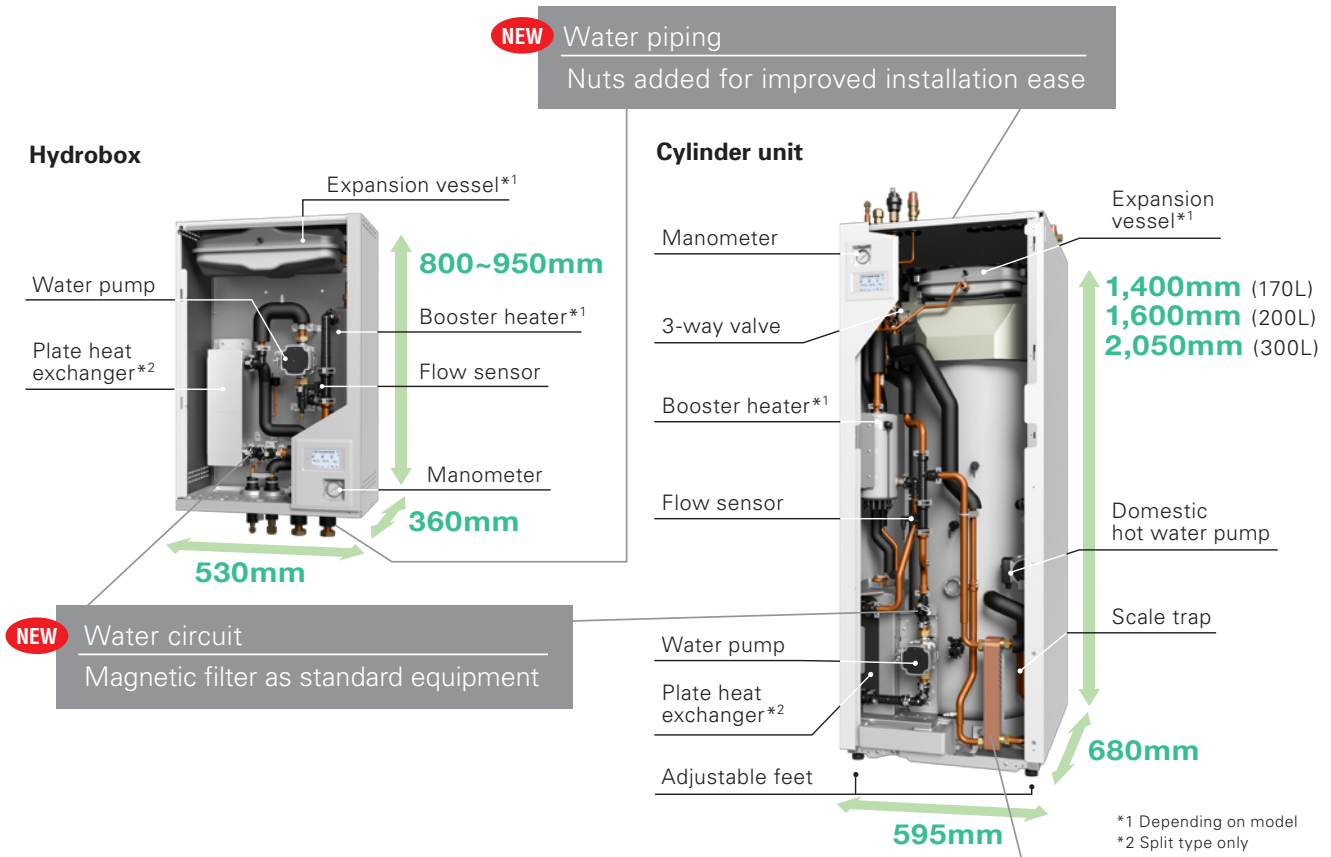
ecodan E generation is now available in a new design. This simpler and more sophisticated new logo unit blends in nicely with any interior design.

Available Indoor Units

- Packaged or Split type
- Reversible (for heating/cooling) or Heating only model
- With/without booster heater
- With/without expansion vessel
- Cylinder unit has an integrated 170L/200L/300L stainless steel tank
- Hydrobox allows control for domestic hot water with a stand-alone tank (locally supplied)

All-in-one Compact Indoor Unit

- All-in-one: Key functional components are incorporated
- Compact cylinder unit: 1,400~2,050mm in height
- Compact hydrobox: 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)



Domestic hot water plate heat exchanger

High efficiency plate heat exchanger offers better performance and allows to use the whole tank volume for DHW compared to coil in tank.

Easy Installation and Low Maintenance

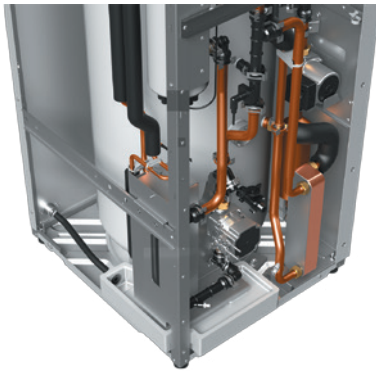
Simple Piping Arrangement NEW

All water piping is aligned at the rear side of the unit for easy connection and neat finish. In addition, NUTs are added to improve ease of installation.



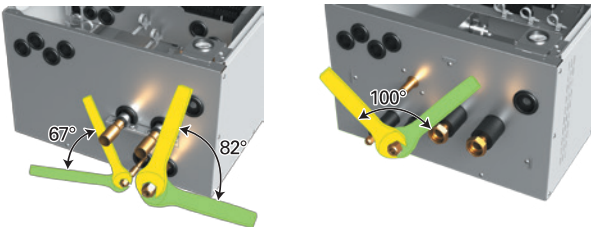
Built-in Drain Pan for Reversible Cylinder Models

Reversible models include a built-in space saving drain pan and the drain socket is positioned at the back of the unit. With use of the adjuster bolt, the outlet height can be higher than 50mm, allowing 5m drainage.



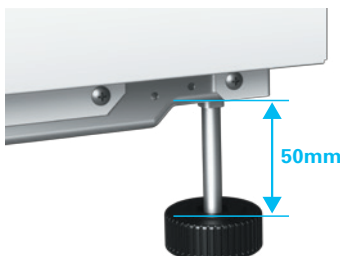
Hydrobox Piping Arrangement

Through structural innovation related to the space around the pipes, the area where the spanner can be moved has been increased, thus improving pipe work and enabling it to be completed smoothly.



Easy Adjustment

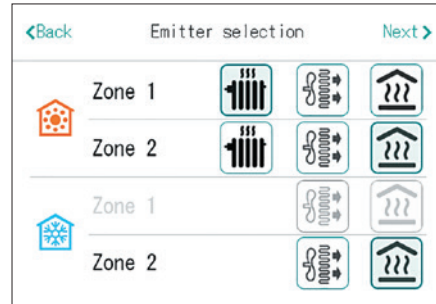
Adjust bolt capable of 50mm expansion for easy installation on uneven surfaces.



Improved Quick Start NEW

To start ecodan quickly, initial settings are narrowed down to the essential items and unnecessary settings are skipped automatically. Displaying the system configuration before commissioning helps clarify the basic Dip switch position and prevent resetting. This reduces time needed to complete commissioning.

Sample display of Emitter setting

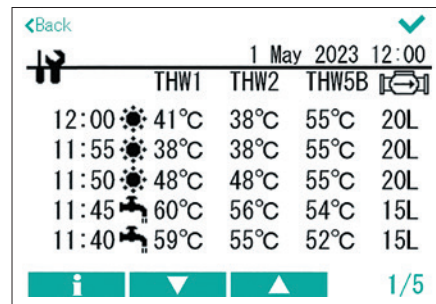


Installers can simply select emitters and use the recommended default values, preventing wrong running mode per zone.

Operation Data Monitoring

Time, operation mode, flow/return/tank temperature, can be displayed on main remote controller.

Sample display of monitoring setting



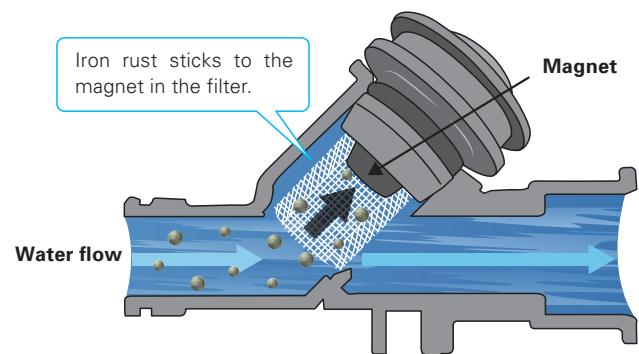
Minimum Additional Water Required

In average/warmer conditions, minimum additional water is required for outdoor unit. If there is enough water amount inside water pipe, radiator, or underfloor heating, no buffer tank is required.

*Refer to the indoor unit installation manual for specific outdoor unit models.

Clean Circuit Water NEW

Magnetic filter is newly added into the strainer. This keeps the water in the circuit clean and prevents clogging and deterioration of pumps and 3 way valves.



High Performance

High Efficiency

With additional thermistor (THW5A), η_{wh} [%] rating is improved 170L and 200L to achieve A+, the highest possible domestic hot water efficiency rank.

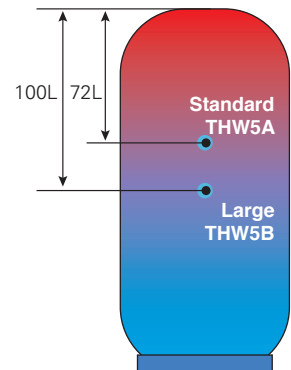
Excellent DHW efficiency



	170L	200L	300L
Declared load profile	L	L	XL
Water heating energy efficiency class	A+	A+	A/A+

Thermistor Position of Cylinder

The thermistor position is selectable allowing the unit to accommodate for different water demands in order to maximise the efficiency of the unit for any size of household or application. Using two thermistors equipped with all sizes of tanks, you can now select the DHW recharge amount from two options (Standard/Large). It helps to accommodate for different water demands in order to maximise the efficiency of the unit for any size of household or application. This mode can be selected from main remote controller.



* In case of 200L tank.

Unique Technology of ecodan

2 Zone Control (for heating/cooling) by Local Supplied Components

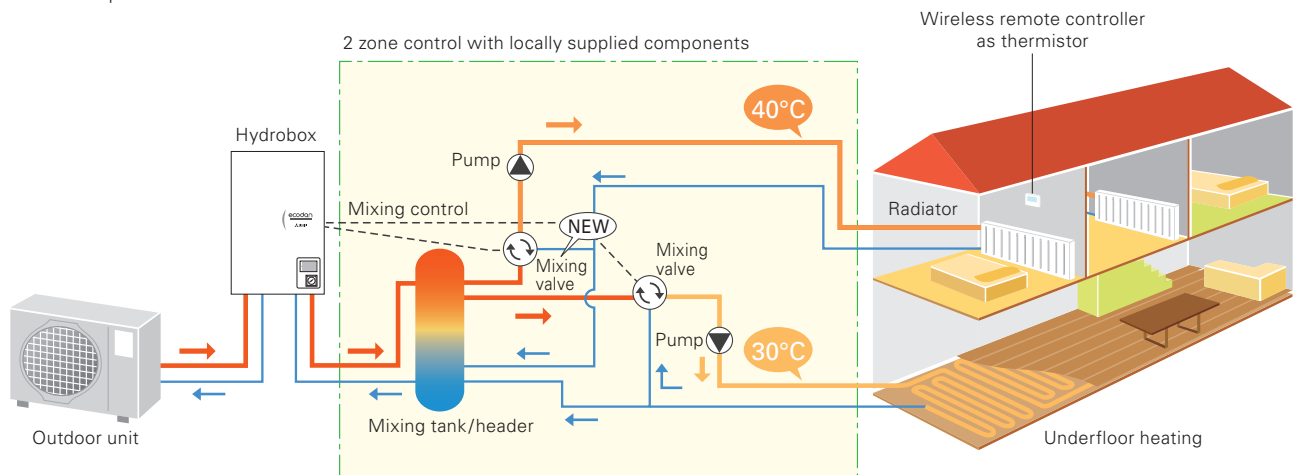
Improved Simultaneous Control of Two Different Zones



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

Using ecodan, it is possible to control two different flow temperatures, thereby managing two different heating load requirements. Now, by adding a new mixing control in zone 1 as well as zone 2, the flow temperature can be controlled in both zones, providing more flexible heating operation anywhere in the house. 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. Also, new controller monitors the temperature inside buffer tank and prioritizes using the heat inside the tank to avoid frequent on/off operation when using 2 zone control. This function allows better integration with smart grid or energy management system because the buffer tank can be heated up independently from the zones temperature requests (even for zone 1).

Two temperature zones

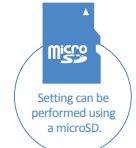


* Items such as a mixing tank, mixing valves and pumps are not included and need to be purchased locally.

2 Zone Kit (Optional)

- You can select from 3 types of pump operations, 1. Fixed speed mode, 2. Fixed pressure mode, 3. Energy saving mode, depending on your preference.
- 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.





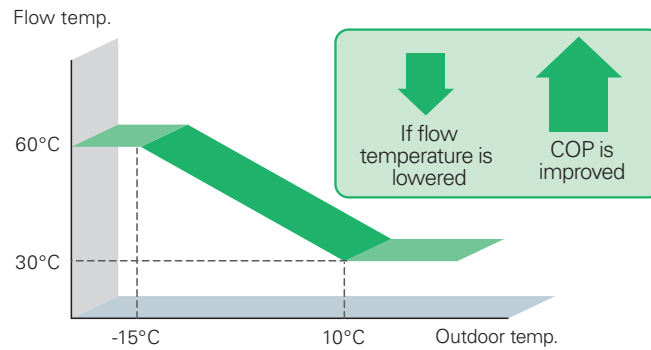
*microSD logo is a trademark of SD-3C, LLC.

Auto Adaptation for Heating

Maximise Energy Savings While Retaining Comfort at All Times

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

Weather compensation curve setting (Example)

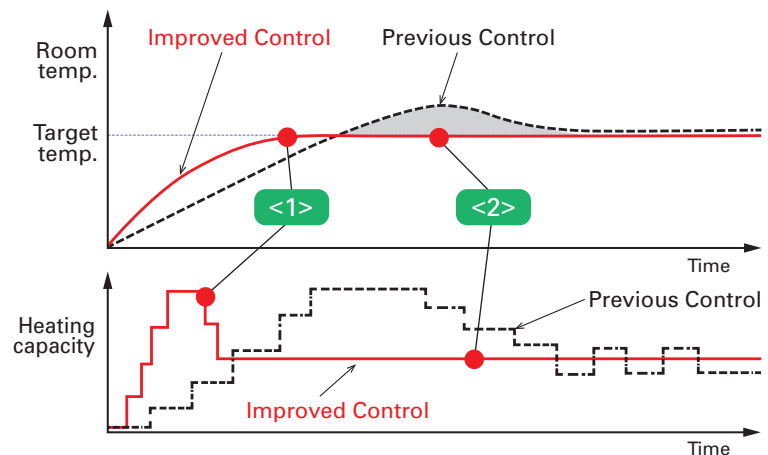


Automatically Tracks Changes in the Actual Room Temperature and Outdoor Temperature to Adjust flow Temperature Accordingly

Aiming to realise further comfort and energy savings, Mitsubishi Electric has already introduced a revolutionary controller. 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.

By introducing improved control logic in our ecodan, we achieved faster heating and more energy saving.

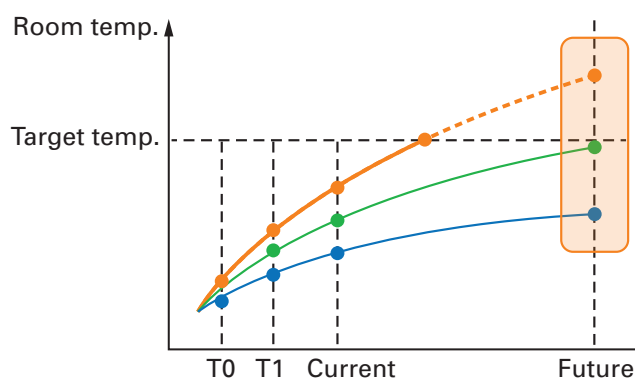


<1> Fast heating with improved accuracy by learning building heat load
 <2> Energy saving by avoiding over heating and capacity fluctuation with better control response, i.e. control interval and resolution

Auto Adaptation Improvement **NEW**

Mitsubishi Electric's New Auto Adaptation Function Provides Temperature Adjustment that Reflects User Preferences

New Auto Adaptation added manual settings for target temperature compensation based on the building's structure, allowing temperature adjustment according to preferences from Auto/Normal/Slow/Quick. For example, selecting Quick mode allows you to quickly reach the target temperature, thus your room can get warm more quickly. Once the target temperature is reached, the heating capacity is maintained at a constant level, providing energy efficient heating operation. However, in well-insulated houses with underfloor heating emitters, normal or slow mode would be preferred to optimise energy savings and avoid temperature overshoot.



The room temperature at "Future" would be...

*Without considering the flow temperature control after the target temperature is reached.

(Quick) **Higher than the target room temp.**

▶ The control works to lower the flow temp. by comparing the actual and estimated room temperature.

(Normal) **Approximately same as the target room temp.**

▶ The control works to keep the flow temp. by comparing the actual and estimated room temperature.

(Slow) **Lower than the target room temp.**

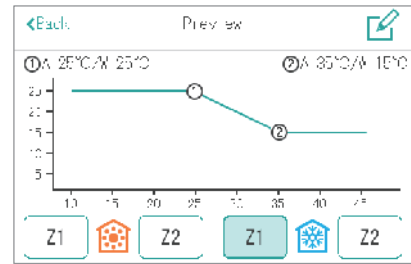
▶ The control works to raise the flow temp. by comparing the actual and estimated room temperature.

Cooling Functions NEW

Flexible Cooling Control Functions to Suit User's Lifestyle

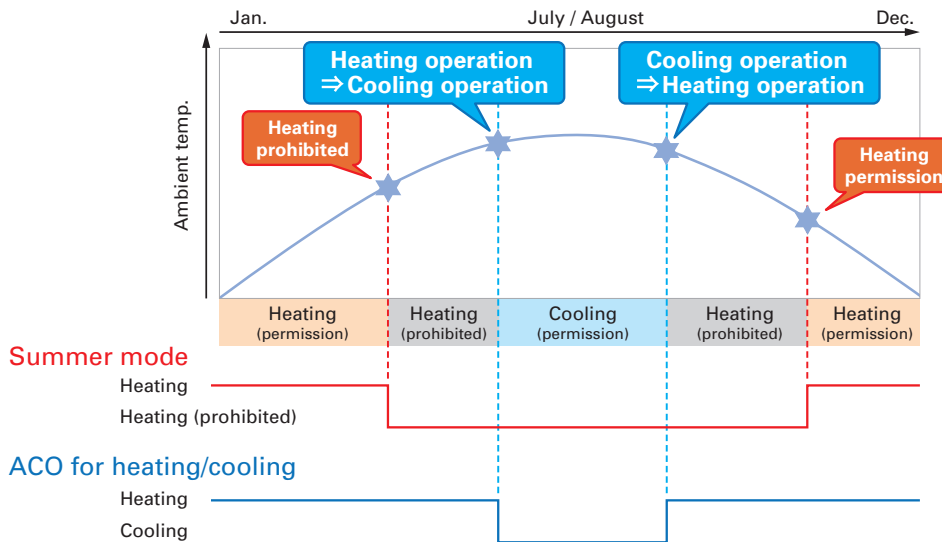
Weather compensation curve for cooling

Weather compensation curve for cooling is now available. The target water temperature is determined according to changes in ambient temperature. The new user-controlled cooling curve compensation prevents the heat pump from producing excessive flow temperatures for the primary circuit, maximizing efficiency and reducing running costs. FTC uses information from both an outdoor temperature sensor and a temperature sensor on the primary circuit supply to ensure the heat pump is not producing excessive flow temperatures if the weather conditions do not require it.



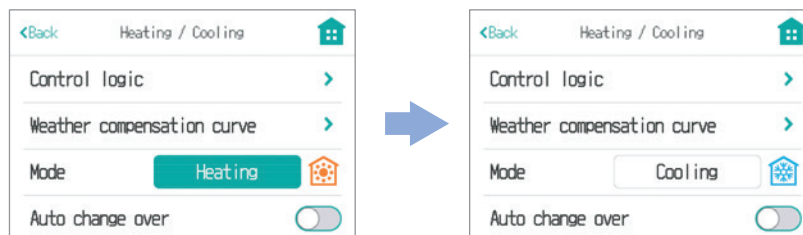
Auto Change Over (ACO)

Instead of the current manual summer/winter mode adjustment, which determines whether heating operation is permitted (or prohibited) according to the ambient temperature, new Auto Change Over is equipped to automatically switch between heating mode and cooling mode according to the ambient temperature. When the ambient temperature reaches a certain level, the operation automatically switches from heating to cooling or cooling to heating. So, there is no need for manual adjustment, providing more comfortable and stress-free room temperature control.



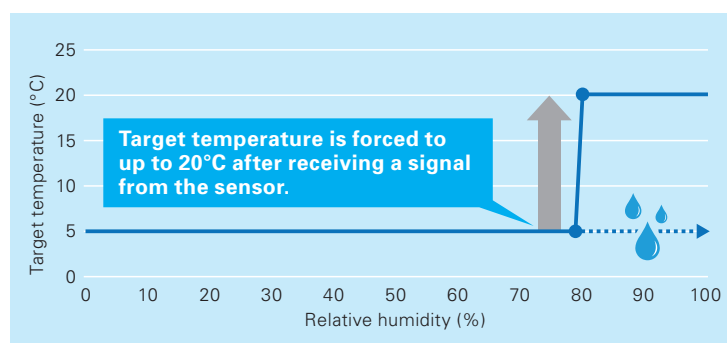
Forced cooling mode

It is now possible to switch to forced cooling mode with an external input. When input terminal IN13 receives a "cooling operation ON" signal from the external source, the operation mode is forcibly switched to cooling. Auto change over judgment is paused during this time. Local supply or your current thermostat can be used to enable cooling ON/OFF.



Cooling lower limit temperature

A new function is available to prevent dew point condensation by forcibly switching the lower temperature limit with an external input. If the water temperature falls below the set value during cooling operation, dew point condensation may occur. Humidity is monitored by a dew point temperature sensor (locally supplied), and when input terminal IN15 receives a signal, the water temperature safety device is activated and the lower limit of the flow temperature is automatically changed. For example, if an external input is received from the sensor when operating at 5°C water flow temperature, the temperature is switched to the lower limit of 20°C, preventing condensation. Cooling target temperature (lower limit) can be set by yourself on remote controller setting screen.



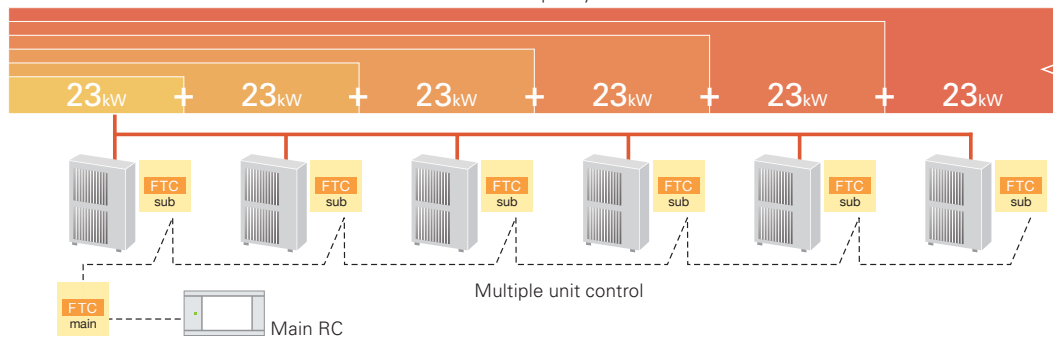
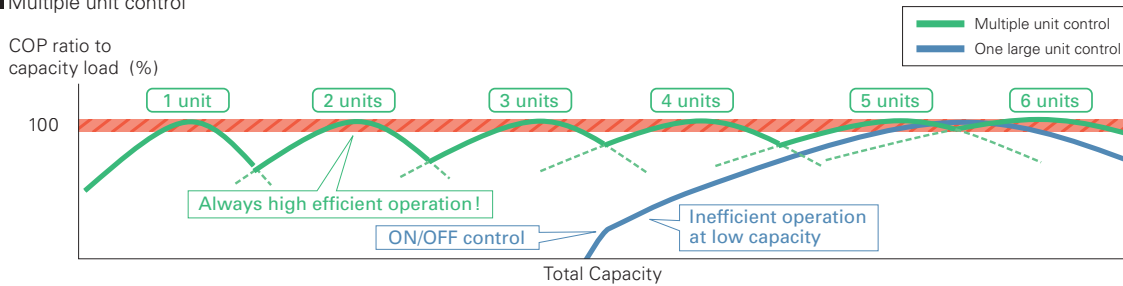
Multiple Unit Control

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



Up to 138kW!!



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

Intelligent Hybrid Control (boiler interlock)

An Existing Boiler Can Be Used for Extra Heating Capacity in an Efficient Way

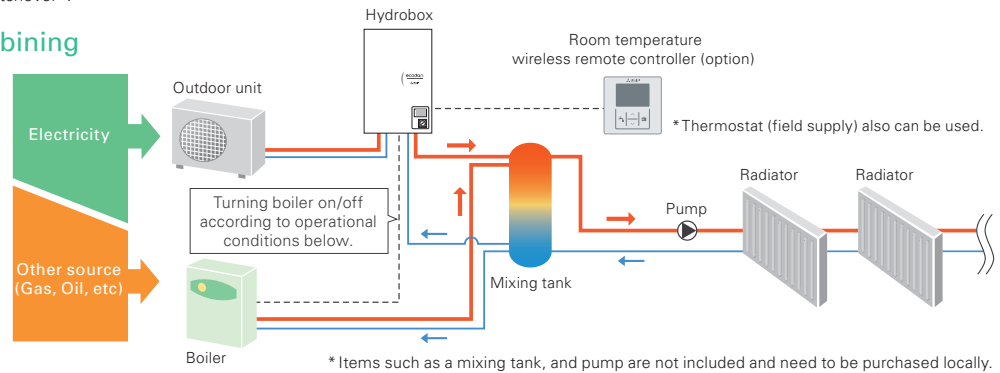
The flexibility of ecodan's intelligent control allows the system to be combined with the boiler currently in use. Additionally, this control can judge which heating source to use either ecodan or the existing boiler, based on various conditions*.

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



Heat source switchover - Choose appropriate system based on needs

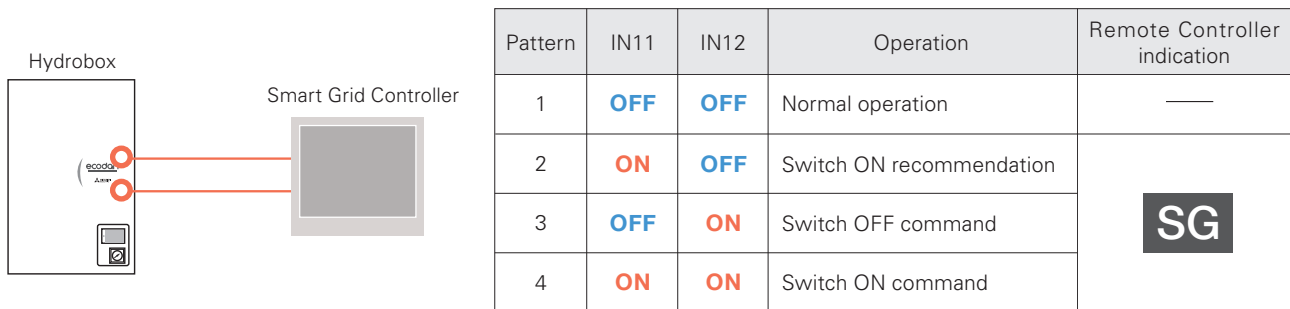
4 types of heat source switchover logic

- 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 (SG) 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.

ecodan Cylinder, Hydrobox and FTC (Flow Temperature Control) have been modified to communicate with Smart Grid Controller.



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.

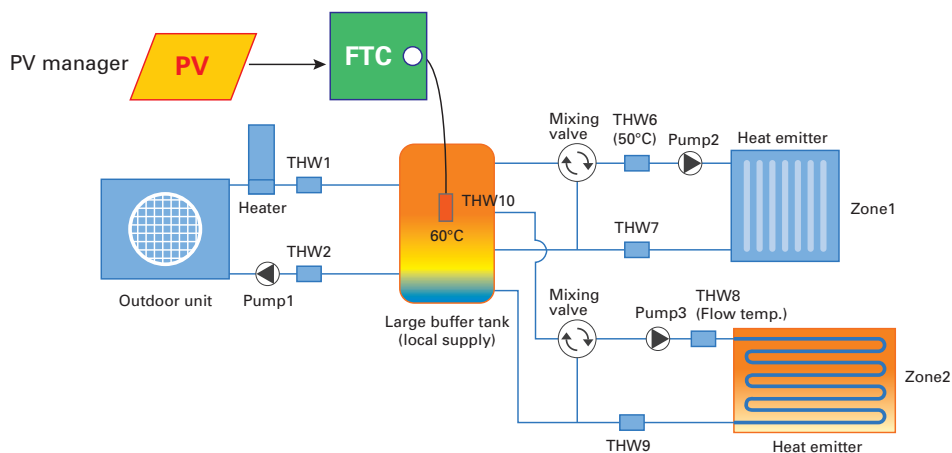
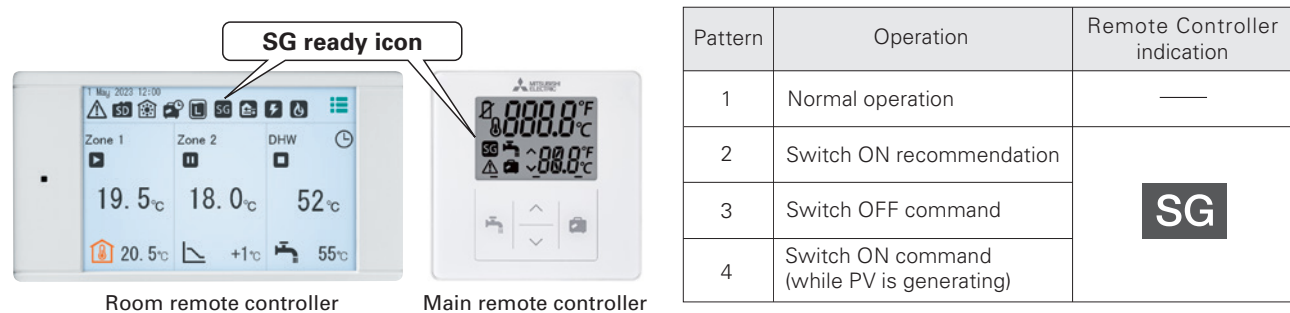
Pattern 4: Switch ON command

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

Improved Smart Grid Ready Function

SG ready icon on main remote controller indicates that SG ready is active and its setting can be easily operated with main remote controller. Improved SG ready function enables you to choose the target temperature by 1°C steps. Also, when PV manager is interlocked with ecodan and ecodan receives its signal, heat is stored as much as possible while heat pump and/or electric heater is/are operating.

Heat storage in large buffer tank will be made available well when peak cut signal is on. As long as a mixing valve keeps its control, temperature is maintained.



Main Remote Controller NEW

Simple User-friendly Controller with New Design

- New design for simple and intuitive operation
- Color display and touch screen for excellent visibility
- Multi-language support (supports 24 languages)
- Wide range of convenient functions in response to user demand

Function settings

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



Display All Necessary Information from the Home Screen

New main remote controller shows all information at a glance on the home screen so that users do not need to spend time looking for the information they want.

2 zone display on 1 screen

New incrementation 0.5°C that gives you more accurate information and comfort.

Actual temperature
Target temperature

Schedule is **ON**

DHW production: **ON / OFF**

Recognizable icons & colors

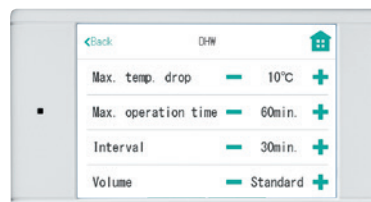
- Heat pump status with direct expression icons
- Control logic with color indication

Running Defrost Quiet mode with level Emergency heating Heating Cooling Not running

Improved Usability for Intuitive Operation

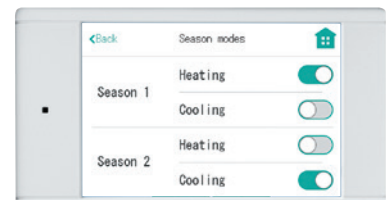
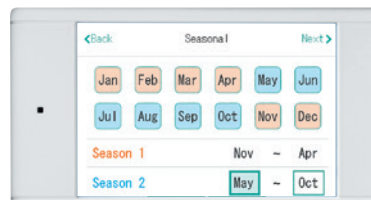
- Multiple settings all at once

New main remote controller combines the related 4 settings in one screen to avoid back and forth navigation. This contributes to time savings and comfort as it eliminates the need to confirm in each setting.



- Simplified schedule setting

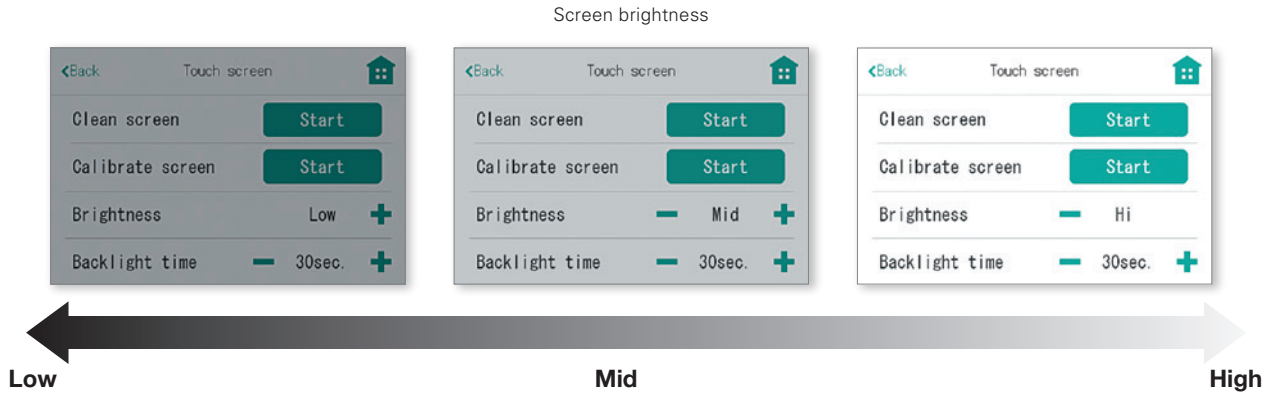
An intuitive schedule setting screen is now adopted, removing the previous complex setting. The timeline is easily cognizable and permission or prohibition of heating and cooling for 2 seasons can be set at once.



Customisation to Provide More User Comfort

- Adjustable backlight brightness in 3 levels

Main remote controller may be removed from the indoor unit and used in a room where it is ordinarily in view of users. The brightness of the screen can now be adjusted in 3 levels to suit the user's preference so as not to disturb their daily life. The screen can be set to turn off when not using the remote controller, or the backlight can be dimmed so that the display is always visible.



- Choice of LED

This LED is intended to instantly alert the user to errors. The LED flashes during unit start-up or system errors such as malfunction of the outdoor unit. Previously, the LED was constantly on in operation, but to increase comfort, this new remote controller has a setting to switch off the LED in operation. Regardless of the setting, however, the LED flashes to inform users immediately in case of system errors.



microSD NEW

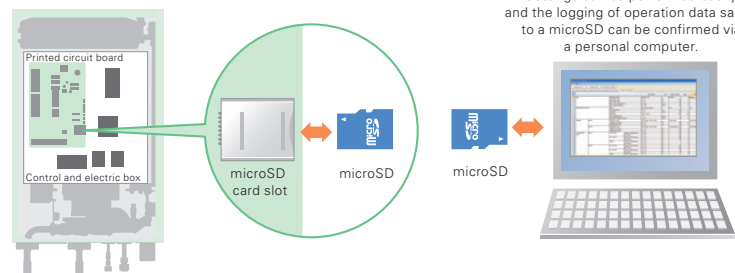
For Easier Settings and Data Logging



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

The initial setting for ecodan is now simpler than ever before. The special software enables the required initial settings to be saved to a microSD using a personal computer. The system set-up is as easy as moving the microSD from the computer to the microSD 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. A microSD is already inserted in the unit.

Hydrobox operation panel



Items that can be pre-set

Simply copying pre-set data to a microSD, the same settings can input into another unit using the microSD.

- Initial settings (time display, contact number, etc.)
- Heating settings
 - Auto adaptation
 - Weather compensation curve
 - Two different temperature zones (heating and cooling)
- Interlocked boiler operation settings
- Holiday mode settings
- Schedule timer settings
- 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 microSD.

- 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

Wireless Remote Controller (Optional) NEW

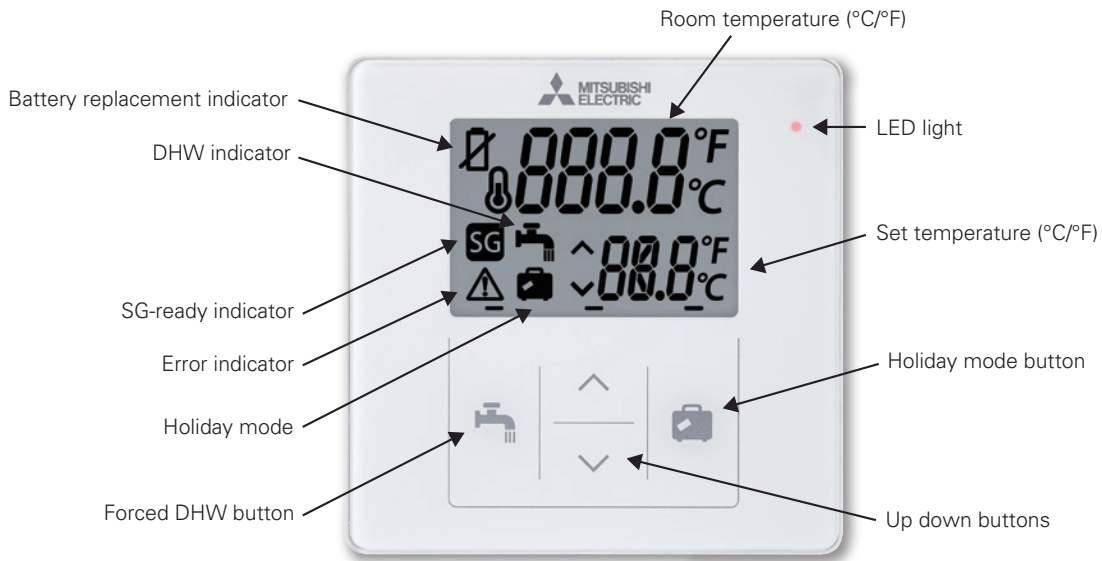
Smart User-friendly Controller with Stylish Design



- Remote control from any room with flexible installation location
- Built-in room temperature sensor; easy to place at various positions to detect the room temperature
- New sleek designed flat panel and touch buttons for intuitive operation
- Easy-to-read LCD screen and big buttons for better usability
- No cabling required thanks to wireless connectivity
- Domestic hot water boost and cancellation function
- Holiday mode settings for up to 72 hours on hourly basis for energy saving with simple operation
- Room temperature is controlled according to the temperature monitored in a selected room
- Up to 8 wireless remote controllers connectable
- Floor-to-floor wireless transmission such as from basement to floor level

New Screen Display with Touch Buttons

- SG-ready icon added
- Each icon unified with the design of the main remote controller
- An LED light is added to notify users instantly if an error or malfunction occurs



Flexible Installation

You can choose to mount it on the wall or place it on a stand. The stand design is renewed as well as the functionality.



Wall-mounted*



Standing

* The included screws are installed in this image.

System Error LED Display

A red LED for error indication is added to notify users of abnormal conditions such as backup heater operation or low battery level.



Mode	Flash
Failed*	3 times per 1 minute
Back up heater operation	
Low battery	1 time per 3 minutes

* When any malfunction occurs in indoor unit, outdoor unit, remote controller or receiver.

Split Type Specifications

				Power Inverter				ZUBADAN			
Model name				PUZ-SWM80V/YAA	PUZ-SWM100V/YAA	PUZ-SWM120V/YAA	PUZ-SWM140V/YAA	PUZ-SHWM80V/YAA	PUZ-SHWM100V/YAA	PUZ-SHWM120V/YAA	PUZ-SHWM140V/YAA
Refrigerant mm				R32*1							
Dimensions		HxWxD	kg	1040x1050x480							
Weight				104.5/113.5	105.5/113.5	112/124.5	113.5/124.5	106/115	106.5/115	113.5/125.5	114.5/126
Power supply (V / Phase / Hz)			kW	VAA: 230 / 1-ph / 50, YAA: 400 / 3-ph / 50							
Heating	A7W35*2	Nominal		6.00	8.00	10.00	12.00	6.00	8.00	10.00	12.00
		COP		5,02	5,02	4,87	4,85	5,05	5,05	4,90	4,85
	A2W35*2	Nominal		8.00	10.00	12,1	14.00	8.00	10.00	12,1	14.00
		COP		3,70	3,47	3,27	3,21	3,8	3,55	3,35	3,30
Average climate water outlet 35°C*3		Class		A+++	A+++	A+++	A+++	A+++	A+++	A+++	A+++
		ηs		184%/184%	181%/180%	179%/179%	178%/177%	188%/187%	186%/186%	182%/182%	185%/185%
Average climate water outlet 55°C*3		Class		A++	A++	A++	A++	A++	A++	A++	A++
		ηs		130%/130%	134%/134%	133%/132%	136%/135%	134%/133%	138%/138%	138%/138%	142%/142%
DHW 200(L) Load Profile (Average climate)*4		Class		A+	A+	A+	A+	A+	A+	A+	A+
		ηwh		137%	137%	137%	131%	137%	137%	137%	137%
Max outlet water temperature			°C	68				70*8			
Cooling	A35W7*2	Nominal	kW	7.10	9.00	11.0	12.50	7.10	9.00	11.0	12.50
		EER		3,30	3,00	2,86	2,62	3,30	3,00	2,86	2,62
	A35W18*2	Nominal	kW	8.00	10.00	12.00	14.00	8.00	10.00	12.00	14.00
		EER		4,95	4,50	4,50	3,75	4,95	4,50	4,50	3,75
PWL (Heating)*5			dB(A)	54	58	58	58	54	58	58	58
Max operating current			A	17 / 8	22 / 9	28 / 12	28 / 12	19 / 8	27 / 9	28 / 12	35 / 12
Breaker size			A	20/16	25/16	32/16	32/16	25/16	30/16	32/16	40/16
Piping	Diameter	Gas	mm	ø12.7 (15.88)*6				ø12.7 (15.88)*6			
		Liquid	mm	6.35				6.35			
	Length	Out-In	m	50	50	30*7	30*7	50	50	30*7	30*7
		Height	Out-In	m	30				30		
Guaranteed operation range	Cooling	°C		10°C~52°C				10°C~52°C			
	Heating	°C		-25°C~24°C				-30°C~24°C			
	DHW	°C		-25°C~42°C				-30°C~42°C			

*1 Refrigerant leakage contribute to climate change. Refrigerant with lower global warming potential (GWP) would contribute less to global warming than a refrigerant with higher GWP, if leaked to the atmosphere. This appliance contains a refrigerant fluid with a GWP equal to 550. This means that if 1 kg of this refrigerant fluid would be leaked to the atmosphere, the impact on global warming would be 550 times higher than 1 kg of CO2, over a period of 100 years. Never try to interfere with the refrigerant circuit yourself or disassemble the product yourself and always ask a professional. The GWP of R32 is 675 in the IPCC 4th Assessment Report.

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

*3 ηs values are measured based on EN14825.

*4 ηwh values are measured based on EN16147.

*5 Sound power levels are measured based on EN12102.

*6 A diameter of 15.88 is necessary for cooling operation. Please refer to our installation manual for details.

*7 Maximum piping length can be up to 50m for heating only operation.

*8 With Delta T = 10°C

Split Model Specification

<Cylinder unit>

Model name			ERST20F- VM2E	ERST20F- YM9E	ERST30F- VM2EE	ERST30F- YM9EE	
Type			Heating and cooling				
Expansion vessel			3	3	-	-	
Booster heater			3	3	3	3	
Dimensions	H×W×D	mm	1600 × 595 × 680		2050 × 595 × 680		
Weight (empty)		kg	94	98	109	112	
Control board power supply (Phase / V / Hz)			~N, 230 V, 50 Hz				
Heater	Booster heater	Power supply (Phase / V / Hz)	~N, 230 V, 50 Hz	3~, 400V, 50 Hz	~N, 230 V, 50 Hz	3~, 400V, 50 Hz	
		Capacity	kW	2	3+6	2	3+6
		Current	A	9	13	9	13
		Breaker	A	16	16	16	16
Domestic hot water tank	Volume	L	200		300		
Guaranteed operating range *1	Indoor unit ambient		0~35 (≤80%RH)				
	Outdoor	Heating	See outdoor unit spec table.				
		Cooling	See outdoor unit spec table.*2				
Target temperature range	Heating	Room temperature	10~30				
		Flow temperature *4	20~70				
	Cooling	Room temperature	--				
		Flow temperature	5~25				
DHW tank performance	Max. hot water temperature		70				
	Water heating energy efficiency class		Depending on outdoor unit.				
Sound power level (PWL)			dB(A) 41				

*1 The environment must be frost-free.

*2 During cooling operation at low outdoor temperature (10°C or lower), frozen water may cause damage on plate heat exchanger.

*3 For the model without booster heater and immersion heater, the maximum allowable hot water temperature is 3°C lower than maximum outlet water of outdoor unit.
For the maximum outlet water of outdoor unit, refer to outdoor unit data book.

*4 Max temperature is depending on the connected outdoor unit.

<Hydrobox>

Model name			ERSF-VM2E	ERSF-YM9E	
Type			Heating and cooling		
Expansion vessel			✓	✓	
Booster heater			✓	✓	
Dimensions	H×W×D	mm	800 × 530 × 360		
Weight (empty)		kg	29	31	
Control board power supply (Phase / V / Hz)			~N, 230, 50 Hz		
Heater	Booster heater	Power supply (Phase / V / Hz)	~N, 230, 50 Hz	3~, 400, 50 Hz	
		Capacity	kW	2	3+6
		Current	A	9	13
		Breaker	A	16	16
Guaranteed operating range *1	Indoor unit ambient		0~35°C (≤80%RH)		
	Outdoor	Heating	See outdoor unit spec table.		
		Cooling	See outdoor unit spec table.*2		
Target temperature range	Heating	Room temperature	10~30		
		Flow temperature *3	20~75		
	Cooling	Room temperature	-		
		Flow temperature	-		
Sound power level (PWL)			dB(A) 41		

*1 The environment must be frost-free.

*2 During cooling operation at low outdoor temperature (10°C or lower), frozen water may cause damage on plate heat exchanger.

*3 Max temperature is depending on the connected outdoor unit."

Optional Parts (for Split model)

Parts name	Model name	Cylinder	Hydrobox	Remarks
Wireless remote controller	PAR-WT60R-E	✓	✓	
Wireless receiver	PAR-WR61R-E	✓	✓	
Thermistors	PAC-SE41TS-E	✓	✓	For room temp.
	PAC-TH011-E	✓	✓	For buffer and zone (flow and return temp.)
	PAC-TH011TK2-E	---	✓	For tank temp. (5 m)
	PAC-TH011TKL2-E	---	✓	For tank temp. (30 m)
	PAC-TH012HT-E	✓	✓	For boiler and buffer(5 m)
	PAC-TH012HTL-E	✓	✓	For boiler and buffer(30 m)
Immersion heater	PAC-IH01V2-E	✓	---	1Ph 1kW
	PAC-IH03V2-E	✓	---	1Ph 3kW
Wi-Fi interface	MAC-587IF-E	✓	✓	
2 zone kit	PAC-TZ02-E2	✓	✓	

Combination Table

Split indoor/outdoor unit Combination

Split indoor/outdoor unit Combination		Power Inverter				ZUBADAN			
		PUZ-SMM80V/YAA	PUZ-SMM100V/YAA	PUZ-SMM120V/YAA	PUZ-SMM140V/YAA	PUZ-SHMM80V/YAA	PUZ-SHMM100V/YAA	PUZ-SHMM120V/YAA	PUZ-SHMM140V/YAA
Reversible Cylinder	ERST20F-VM2E	●	●	●	●	●	●	●	●
	ERST20F-YM9E	●	●	●	●	●	●	●	●
	ERST30F-VM2EE	●	●	●	●	●	●	●	●
	ERST30F-YM9EE	●	●	●	●	●	●	●	●
Reversible Hydrobox	ERSF-VM2E	●	●	●	●	●	●	●	●
	ERSF-YM9E	●	●	●	●	●	●	●	●

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.



 **NOTICE**

Our air-conditioning equipments and heat pumps contain a fluorinated greenhouse gas, R410A (GWP: 2088) or R32 (GWP: 675). *These GWP values are based on Regulation (EU) No.517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP: 1975), R32 (GWP: 550)

 **CAUTION**

Do not install indoor units in areas (e.g. mobile phone base stations) where the emission of VOCs such as phthalate compounds and formaldehyde is known to be high as this may result in a chemical reaction.

 **WARNING**

When installing or relocating or servicing our air-conditioning equipment, use only the specified refrigerant (R410A or R32) to charge the refrigerant lines.

Do not mix it with any other refrigerant and do not allow air to remain in the lines.

If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant lines, and may result in an explosion and other hazards.

The use of any refrigerant other than that specified for the system will cause mechanical failure, system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
<https://www.mitsubishielectric.com/>