
RECOMMENDED
ECO i
ECO G
VENTILATION

PANASONIC INDUSTRIAL VRF SYSTEMS

Professional solutions for all types of projects

The new Panasonic VRF system is specifically designed for energy saving, easy installation and high efficiency performance, with a wide choice of outdoor and indoor unit models and unique features which are designed for the most demanding offices and big buildings.

Highlighted Features

ECOi VRF Systems

ECOi VRF Systems: 2-Pipe Mini ECOi 6 Series 2-Pipe ECOi 6N Series 3-Pipe ECOi MF2 6N Series. ECOi electrical VRF is specifically designed for the most demanding offices and big buildings. High efficiency system. From 8 to 20 HP in only one chassis. Extended operating range to provide heating at outdoor temperature as low as -25°C. Suitable for refurbishment projects. Example applications: Complexes. High Rise Buildings Commercial Buildings. Hotels.

ECO G VRF Systems

ECO G gas VRF is specially designed for buildings where the electricity is restricted or CO_2 emissions must be reduced. Very high primary energy efficiency ratio. Very low electrical consumption. Compatible with all ECOi indoor units and remote controls. Sanitary hot water is produced freely in summer and winter (outside temperature >7°C). Extended operating range to provide 100% continuous heating capacity even at outdoor temperature as low as -20°C. Example applications: Complexes. High Rise Buildings. Commercial Buildings. Hotels.

Ventilation VRF Systems

Increase the efficiency of an installation with the use of AHU ventilation, a wide range of air curtains and energy recovery ventilation system.

ENERGY SAVING

The Inverter range provides greater efficiency, more comfort, more precise temperature control, without highs and lows, and keeps the ambient temperature constant with lower energy consumption and a significant reduction in noise and vibration levels.

GHP technology offers the best in energy efficiency. ECO G gas VRF is specially designed for buildings where the electricity is restricted or CO2 emissions must be reduced.

High efficiency system.
Panasonic is definitely the most efficient system throughout the years.

HIGH PERFORMANCE

The ECOi system works in heating mode at outdoor temperatures down to -25°C (2-Pipe series) or -20°C (3-Pipe series and Mini ECOi).

Automatic restart function for power failure. Even when power failure occurs, preset programmed operation can be reactivated once power is resumed.

Self-diagnosing function. By using electronic control valves past warnings are stored and can be verified on the liquid crystal display. This makes it easier to diagnose malfunctions, greatly reducing service labour and therefore costs.

Automatic fan operation.
Convenient microprocessor control automatically adjusts fan speed to High, Medium or Low, corresponding to room sensor and maintains comfortable airflow throughout the room.

Air Sweep. The air sweep function moves the flap up and down in the air outlet, directing air in a "sweeping" motion around the room and providing comfort in every corner.

Built-in drain pump. Maximum head 50cm (or 75cm for U type) from the bottom of the unit.

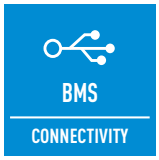
Comfortable auto-flap control. When the unit is first turned on, flap position is automatically adjusted in accordance with the cooling or heating operation. This initial flap position can be preset within a certain range, for both cooling and heating. Auto button is included for continuous movement of flap to vary airflow direction.

5 Years Warranty.
We guarantee the outdoor unit compressors for five years.

HIGH CONNECTIVITY

The new Cloud system from Panasonic allows you to have complete control of all your installations. In a simple click, all your units from several locations, receive status updates in real-time of all your installations, preventing breakdowns and optimizing costs.

Internet Control is a next generation system providing a user-friendly remote control of air conditioning or heat pump units from everywhere, using a simple Android or iOS smartphone, tablet or PC via internet.



The communication port is integrated into the indoor unit and provides easy connection to, and control of, your Panasonic heat pump to your home or building management system.

Panasonic is definitely the most efficient system throughout the years

And highly adapted to retail, hotels and offices applications

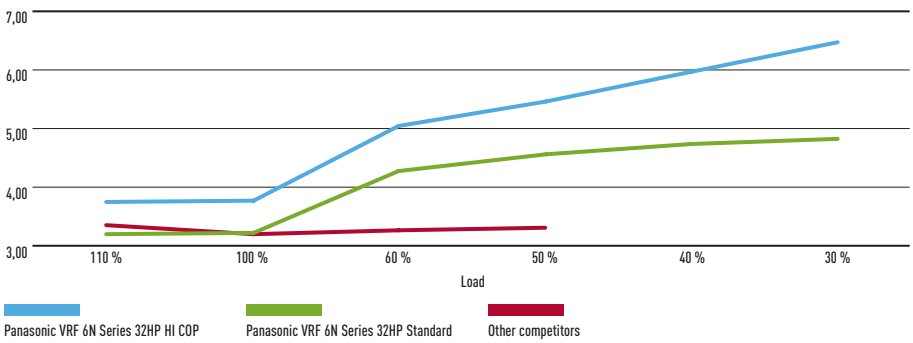
Super high efficiency at part load conditions:

Comparison with competitors: When many others do not declare performance data under 50% part load, Panasonic covers up to 30% part load with extremely high efficiency.

Load %	110 %	100 %	60 %	50 %	40 %	30 %
Other competitors	3,52	3,38	3,45	3,50		
Panasonic VRF 6N Series 32HP Standard	3,38	3,41	4,41	4,69	4,85	4,93
Panasonic VRF 6N Series 32HP HI COP	3,91	3,94	5,14	5,54	6,03	6,51

Conditions: Outdoor temperature 0°C DB, Room temperature 20°C DB.

COP comparison Panasonic vs other competitors at different load



* Conditions: Outdoor temperature 0°C DB, Room temperature 20°C DB. Data extracted by Panasonic and competitor official technical data book.

Excellent ESEER and SCOP values for 2 and 3-Pipe

Panasonic have a extremely high ESEER and SCOP values following the SBEM method (some other manufacturers may use another non official calculation method).

Mini ECOi		
Model	ESEER	SCOP
U-4LE1E5	5,77	5,43
U-4LE1E8	5,76	5,43
U-5LE1E5	5,88	5,12
U-5LE1E8	5,88	5,12
U-6LE1E5	5,20	4,86
U-6LE1E8	5,29	4,86

2-Pipe		
Model	ESEER	SCOP
U-8ME1E81	6,77	5,83
U-10ME1E81	6,40	5,33
U-12ME1E81	6,05	4,69
U-14ME1E81	6,09	5,11
U-16ME1E81	5,70	4,73
U-18ME1E81	6,08	5,09
U-20ME1E81	5,87	4,94

3-Pipe		
Model	ESEER	SCOP
U-8MF2E8	5,89	5,74
U-10MF2E8	5,96	5,40
U-12MF2E8	6,15	5,25
U-14MF2E8	5,87	5,63
U-16MF2E8	6,04	4,88

Developed by BRE, SBEM (Simplified Building Energy Model) is the basis of non-domestic building energy calculations. Based on the National calculation method (NCM), it is used to determine compliance with Part L of the Building Regulations and is also used to provide Energy Performance Certification.

Non-Domestic Building Services Compliance Guide provides information on various aspects of the calculation method, including those of Heat Pumps (Section 3), and Comfort Cooling (Section 9).

SCOP - Seasonal Coefficient of Performance				
Part Load COP	25%	50%	75%	100%
Ambient conditions	15°C	7°C	1°C	-5°C
Weighting factor	0,20 (a)	0,36 (b)	0,32 (c)	0,12 (d)

UK winter -5°C DB (outdoor temperature), 20°C WB (indoor temperature)

SEER - Seasonal Energy Efficiency Rating				
Part Load COP	25%	50%	75%	100%
Ambient conditions	20°C	25°C	30°C	35°C
Weighting factor	0,20 (a)	0,36 (b)	0,32 (c)	0,12 (d)

UK summer 21°C DB (outdoor temperature), 16°C WB (indoor temperature)

ESEER calculation corresponds with below conditions and power input of indoor units is not included.

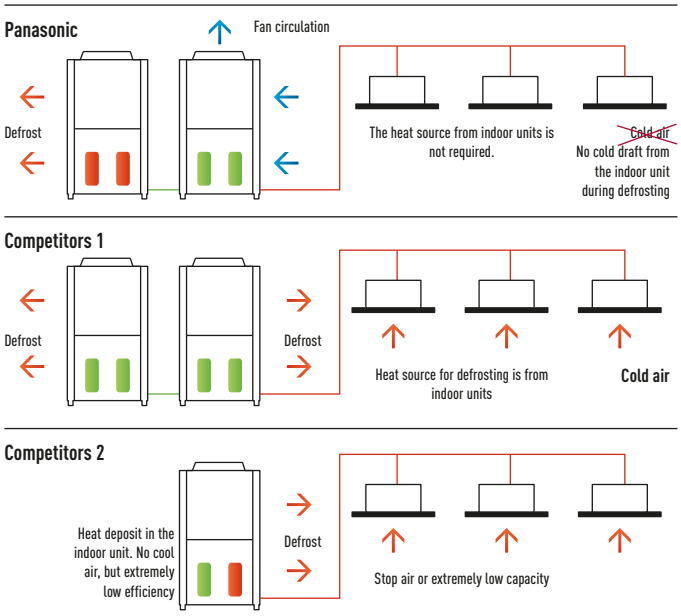
- Indoor temperature: 27°C DB / 19°C WB
- Outdoor temperature conditions

Part load ratio	25%	50%	75%	100%
Outdoor air temperature (°C DB)	20	25	30	35
Weighting coefficients	0,23	0,41	0,33	0,03

- Formula : 0,23 x $EER_{25\%}$ + 0,41 x $EER_{50\%}$ + 0,33 x $EER_{75\%}$ + 0,03 x $EER_{100\%}$.

Efficient defrost operation

Panasonic use the second unit to defrost the first unit. This makes the system more efficient during defrost and does not affect comfort.



Panasonic ECOi operates up to -25°C. This unique feature demonstrate the supremacy of Panasonic ECOi 6N Series

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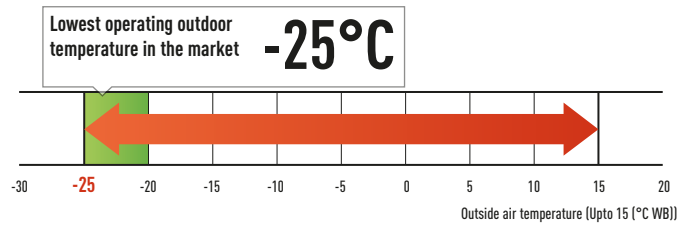
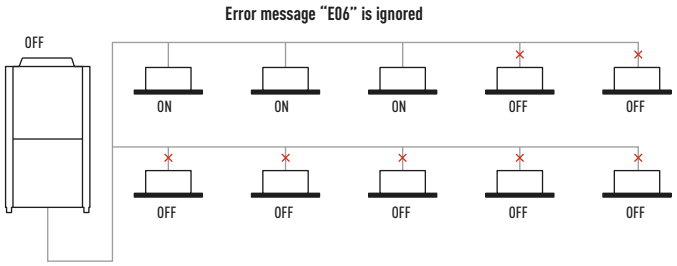
Wide temperature setting range



The system will still operate up to 25% of the connected indoor units

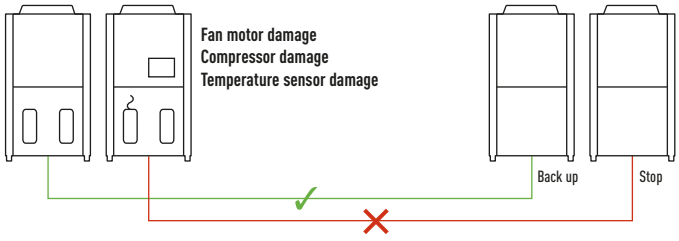
System will not stop when up to 25% of indoor units have power supply breakdown when they are ON Mode.



High safety operation in case of breakdown! Ensures heating and cooling

Automatic Back-Up operation

It is possible for the system to keep working, even if the compressors, fan motor and the temperature sensor are damaged (even when compressor fails in single unit with 2 or more compressor inside).

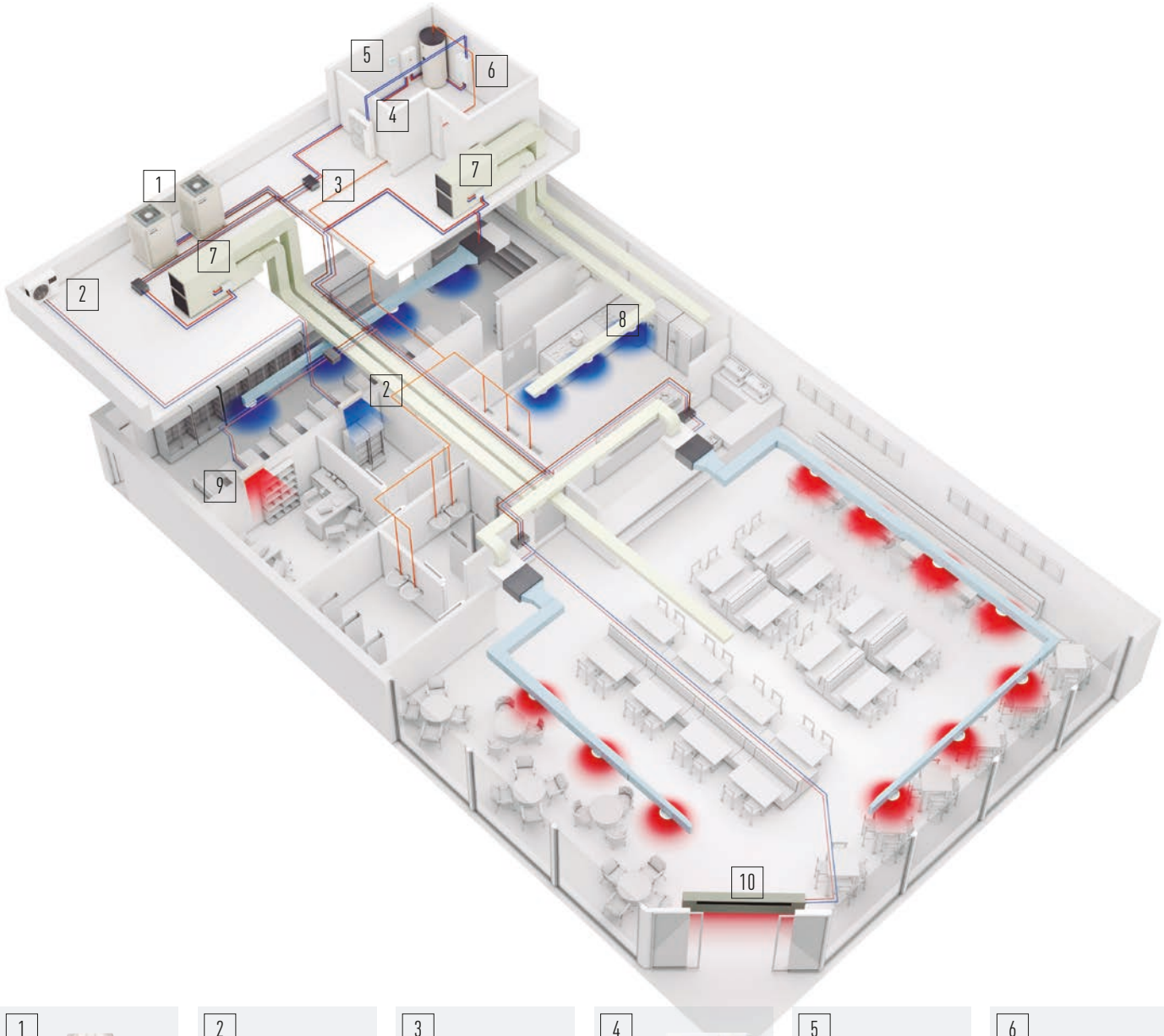


Solutions for Restaurants

Full heating, cooling and DHW solutions for Restaurants

Super high efficiency at part load conditions

Panasonic has joint the most efficient solutions for optimizing the installation of cooling, heating and DHW production. While the kitchen needs cooling, heating is needed for DHW and also for heating the public area, with the advantage of 100% fresh air that removes odours accumulation. Combining smartly all this needs with Panasonic technology, result on simple and flexible system to adapt to any restaurant requests with lower power bills. Additionally, Panasonic is the unique offering solution for areas where electric grid is limited, using ECO G, VRF units powered mainly by Gas Natural or Propane, bringing comfort and DHW anywhere.



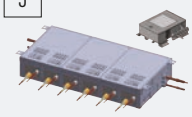
1

ECOi (Electric VRF)
ECOi electrical VRF is specifically designed for the most demanding hotels. High efficiency system. Extended operating range to provide heating at outdoor temperature as low as -25°C. Suitable for refurbishment projects.

2

PKEA outdoor unit for server room
Steady cooling, nonstop, even at -20°C and still with high efficiency. Ready for continuous operation and easy to connect 2 systems to automatically alternate and ensure server rooms are kept cool with maximum operating guaranteed.

3



3-Pipe control box kit
New Heat Recovery box to connect multiple indoor units with just one box, 4, 6 and up to 8 indoor units or groups This is good advantage specially in hotels applications, where space for connecting several boxes is limited.

4

Aquarea T-CAP
Ideal for heating, cooling and for production of big quantities of hot water at 65°C, Aquarea have a extremely quick return on investment and a low CO_2 footprint.

5

Control your way
Wide variety of controls, from simple user control to full system control via remote access functionality. Touch panel, web server, consumption control, smartphone control... everything is possible.

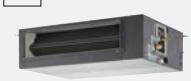
6

Hydrokit for ECOi
Water at 45°C.
Produces LT hot water it is compatible with both ECOi, heat pump and heat recovery outdoors.

7

Air Handling Unit kits for efficient ventilation
The new AHU kit is specially designed to improve the efficiency of the pre-heating or pre-cooling process of the ventilation.

8



Hide Away indoor unit for, powerful and efficient
Super silent units deliver the ideal air supply for hotel guest rooms. Units available from 1,5kW providing precise temperature control even in small rooms. Two models available: slim unit for height restricted areas (MM unit only 200mm deep), another which allows 100% fresh air (MF).

9

Wall Mounted
The K2/K1 Type wall mounted unit has a stylish smooth panel which not only looks good but is also easy to clean. The unit is also smaller, lighter and substantially quieter than previous models making it ideal for small offices and other commercial applications.

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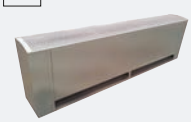
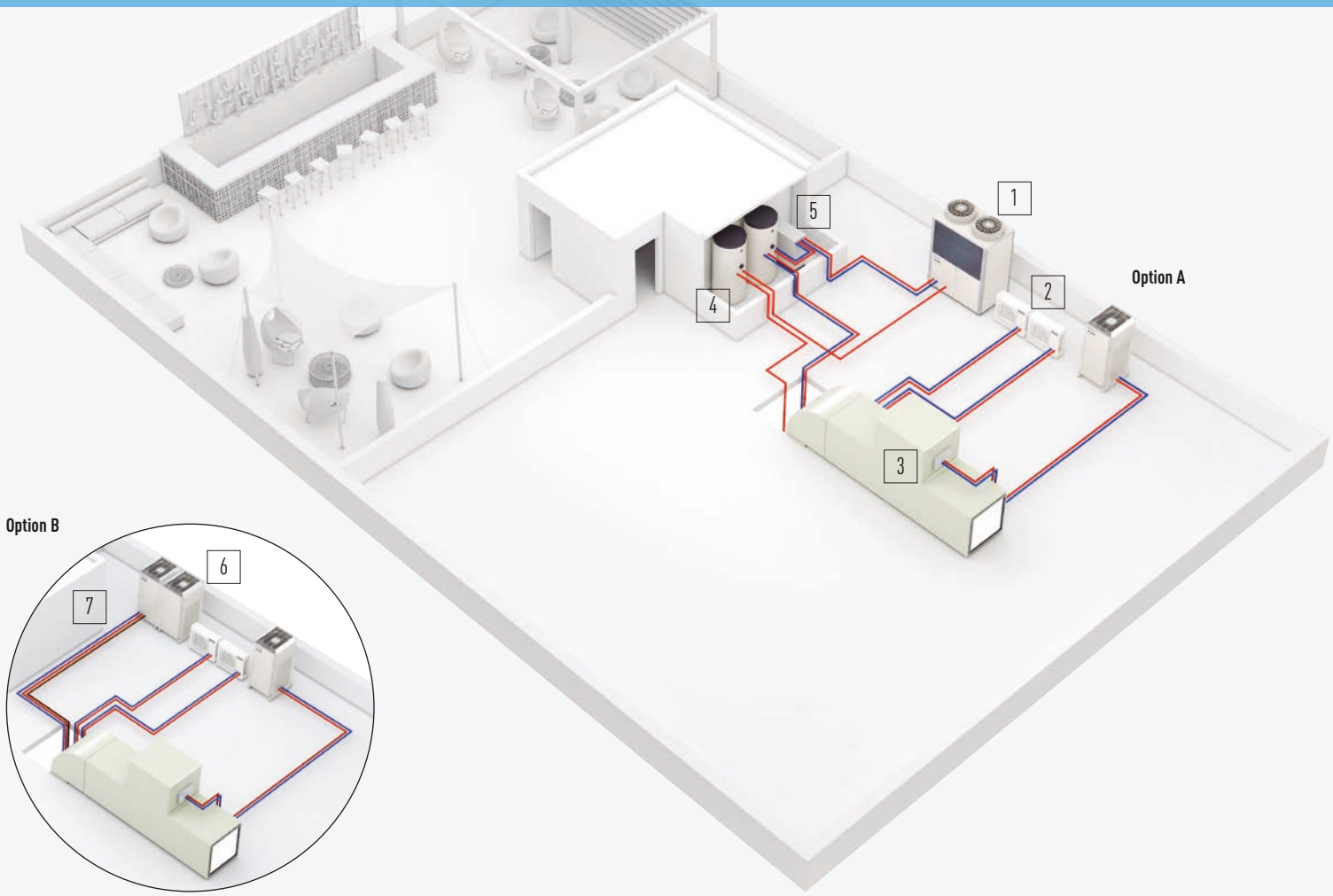


Air Curtain with DX Coil
The Panasonic range of air curtains is designed for smooth operation and efficient performance.

Protocol friendly
Great flexibility for integration into your KNX / EnOcean / Modbus / LonWorks / BACnet projects allows fully bi-directional monitoring and control of all the functioning parameters. Range of solutions to control locally or remotely the full system in bi-directional mode.

New Aquarea Smart Cloud
Starting with complete functions, CZ-TAW1 platform will incorporate more functions to convert Aquarea in the most saving system at home, making installer maintenance works simpler.



Your entire hotel with maximum savings, control and comfort

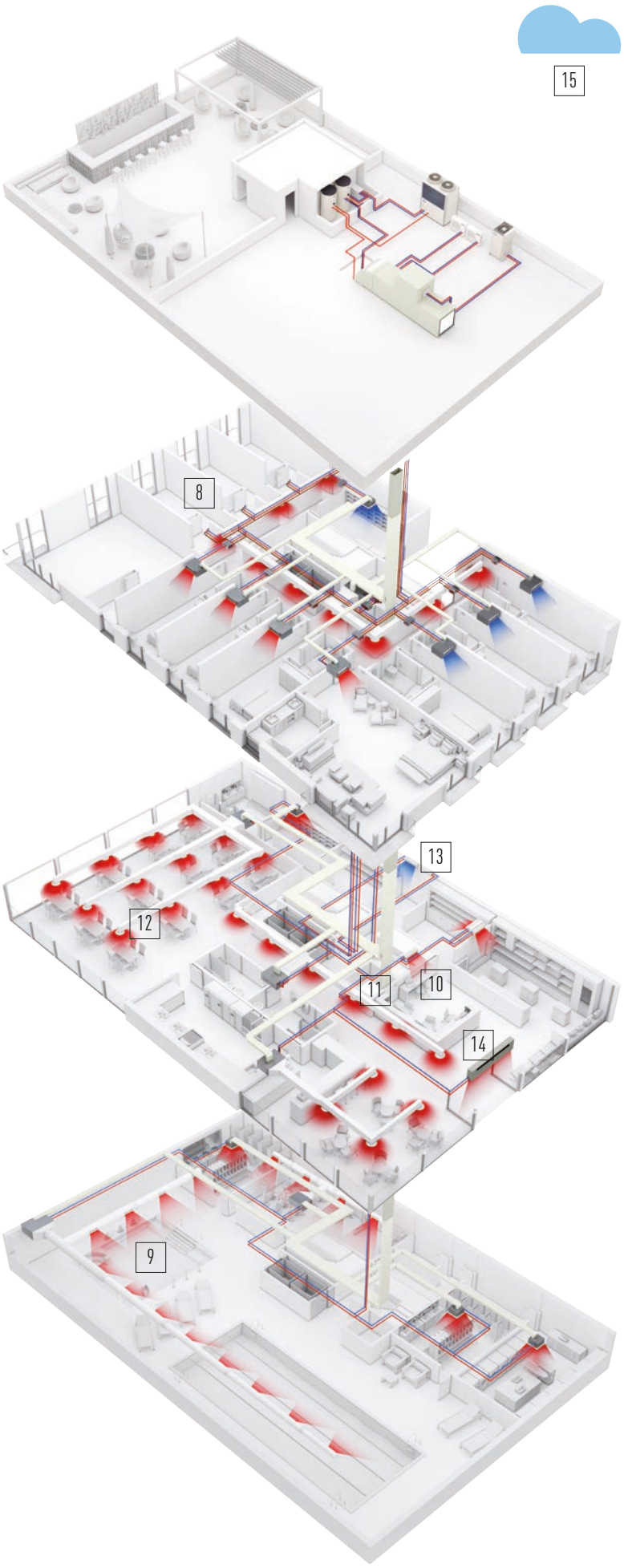
Panasonic helps your entire hotel achieve maximum savings, maximum control and maximum comfort.

Panasonic offers the widest range in HVAC, DHW and ventilation available. That enables us to offer the most suitable solution to ANY project. And this all with the peace of mind provided by a fast customer service which is available 24 hours a day, 365 days a year.
The energy savings provided by our solutions, plus the available choice between electricity and gas, will enable you to reduce your CO_2 emissions.
Panasonic solutions not only ensure a higher customer satisfaction but also the peace of mind that the wide Panasonic experience brings about in this field, plus a lower energy bill.

Different options for each need

Option A: Hybrid Solution. Gas + Electric: When large quantities of hot/cold water is needed.
- ECO G (Gas heat pump)
- Water heat exchanger
- Aquarea HT to produce hot water up to 65°C
- Air Handling Unit kit to connect the ECO G to the Air Handling Unit
- PKEA wall mounted to cool the server rooms efficiently

Option B: Full Electric Solution 2 and 3-Pipe. When flexibility is needed and electricity power availability is not an issue.
- ECOi (Electric VRF)
- Direct expansion indoor units
- Air Handling Unit (AHU) kit to connect the ECOi to the AHU
- PKEA wall mounted to cool the server rooms efficiently
- New Panasonic Pump Down System: Detect refrigerant leakage and activate Pump Down solution



1

ECO G (Gas heat pump)
ECO G gas VRF is specially designed for buildings where the electricity is restricted or CO_2 emissions must be reduced. Very high preliminary efficiency ratio. Very low electrical consumption. Sanitary hot water is produced freely in summer.

2 13

PKEA outdoor unit for server room
Steady cooling, nonstop, even at -20°C and still with high efficiency. Ready for continuous operation and easy to connect 2 systems to automatically alternate and ensure server rooms are kept cool with maximum operating guaranteed.

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Air Handling Unit kits for efficient ventilation
The new AHU kit is specially designed to improve the efficiency of the pre-heating or pre-cooling process of the ventilation.

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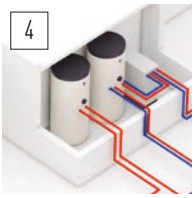

Domestic Hot Water production and buffer tanks
Panasonic has develop a wide range of efficient domestic hot water tanks and buffer tanks.

5

Hydronic units
For obtaining hot and cold water for heating and refrigeration (Aquarea Air radiators, underfloor heating, radiators...)

6

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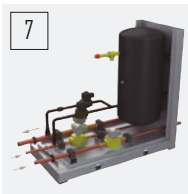
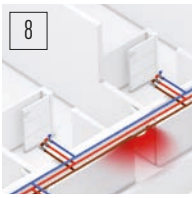


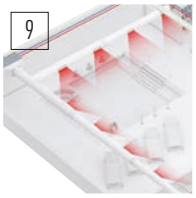
Improving security, detect refrigerant leaks early!
Panasonic's innovative Pump Down Systems help to detect refrigerant leaks that offer complete assurance and protection for end users, building occupiers and the environment.

8



Cutoff valves
When there are plans for future expansion, the installation can be built using the units sized for future expansion requirements.

9



Maximum savings on hot water production
Hot water for swimming pool, spa and laundry for free thanks to the residual heat generated by the ECO G units.

10

Protocol friendly
Great flexibility for integration into your KNX / EnOcean / Modbus / LonWorks / BACnet projects allows fully bi-directional monitoring and control of all the functioning parameters. Range of solutions to control locally or remotely the full system in bi-directional mode.

11

Control your way
Wide variety of controls, from simple user control to full system control via remote access functionality. Touch panel, web server, consumption control, smartphone control... everything is possible.

12

Wide range of indoor units
Complete range of indoor units that fits any need. All units provided with supply air temperature sensor and low operation sound level to guarantee maximum guests comfort. From 1,5kW up to 30kW.

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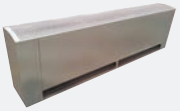


Air Curtain with DX Coil
The Panasonic range of air curtains is designed for smooth operation and efficient performance.

15

Cloud Service
Connect several hotels with a secure Cloud Service for remote and predictive maintenance. Improves operating efficiencies and reduces costs.

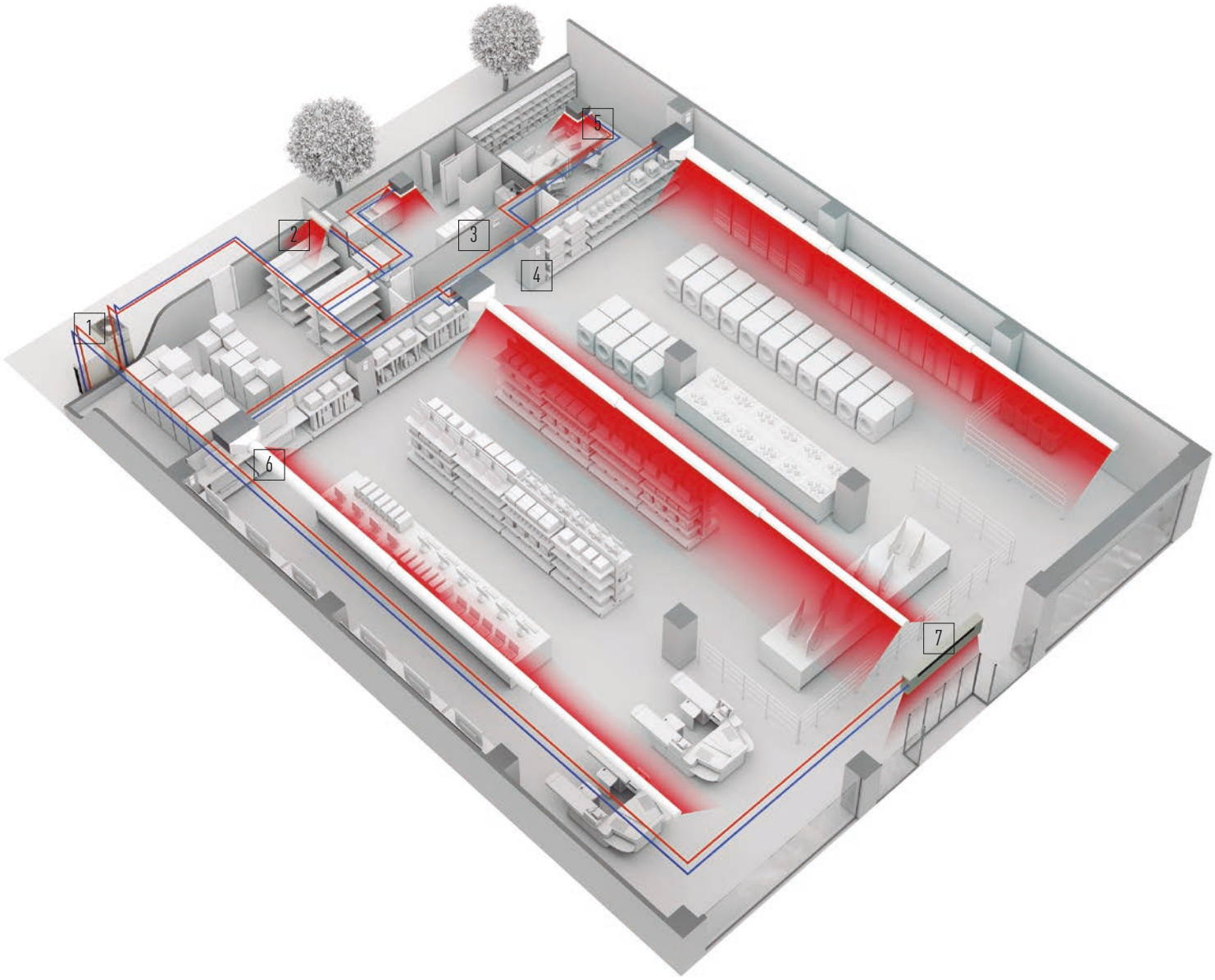
Innovative solutions for retail

Heating and cooling solutions for retail applications.

Panasonic has developed solutions for retail applications and offices applications where return on investment is a key factor! The comfort inside the shop is key for a good customer experience in the shop.
From local control or from Panasonic new cloud control system, a detail status of the heating and cooling system can be displayed, analysed and optimized in order to improve the efficiency, reduce the running time and increase the life time of the units.

8 reason why Panasonic is the best solution for your Retail:

1. Complete solution
2. Flexibility and adaptation
3. Go green retail: lowest CO_2 emissions
4. Comfort - maximum satisfaction
5. Future expansion
6. Panasonic is definitely the most efficient system over the years
7. High quality of service with Panasonic pro-partner installation team
8. The system will still operate up to 25% of the connected indoor units. System will not stop when up to 25% of indoor units have power supply breakdown when they are on mode



1

Multi energy solutions, gas or electrical
The Multi energy solution (Gas and Electric) from Panasonic to gives the best of the energy saving and on the flexibility of the installation. Panasonic solutions can be connect to direct expansion systems, water chiller installations and ventilation systems as air handling units.
A: Gas VRF. ECO G
B: Electrical VRF. ECOi
C: Electrical VRF. Mini ECOi
D: Electrical 1x1. PACi
E: Electrical A2W. Aquarea

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Econavi Sensor
The all new Econavi Sensor detects presence in the room, and quietly adapts the PACi or VRF air conditioning system in order to improve comfort and maximise energy savings.

5

Wide range of indoor units
Complete range of indoor units that fits any need. All units provided with supply air temperature sensor and low operation sound level to guarantee maximum guests comfort. From 1,5kW up to 30kW.

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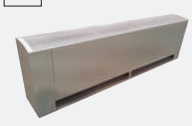

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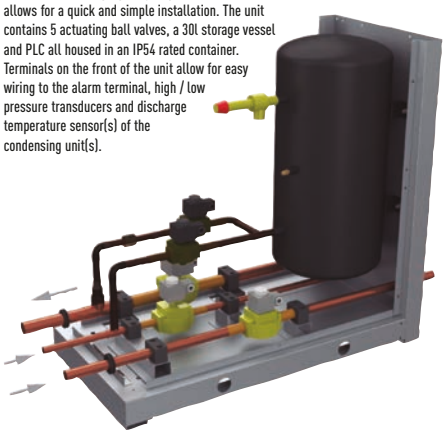
Air Handling Unit kits for efficient ventilation
The new AHU kit is specially designed to improve the efficiency of the pre-heating or pre-cooling process of the ventilation.

Energy Recovery unit for high efficiency of the system
Panasonic Energy Recovery Ventilators can reduce the outside air load because they efficiently recover the heat lost by ventilation during the heat recovery process.

Panasonic offers a purposely engineered solution which allows for a quick and simple installation. The unit contains 5 actuating ball valves, a 30l storage vessel and PLC all housed in an IP54 rated container. Terminals on the front of the unit allow for easy wiring to the alarm terminal, high / low pressure transducers and discharge temperature sensor(s) of the condensing unit(s).



Leak detection and automatic refrigerant pump down

Improving safety and the environment

Panasonic has developed an innovative solution to detect refrigerant leaks that offer complete assurance and protection for end users, building occupiers and the environment. Panasonic's Pump Down System is ideal for hotels, offices and public buildings where safety for occupants and the building owners is of utmost importance.

The system monitors refrigerant leakage continually and provides a warning before refrigerant leaks, preventing major refrigerant loss and potentially damaging the system's efficiency. The new system can improve potential refrigerant loss to approximately 90%.

As well as ensuring safe and reliable operation, Panasonic's Pump Down System contributes to a building qualifying for additional BREEAM points and enables compliance with current EN378 2008 standards, covering applications where refrigeration concentration levels exceed practical safety limits of 0,44 kg/m^3.

Panasonic has developed two detection methods that can operate simultaneously to offer complete protection for owners, building occupiers and the environment.

Pump Down system

This innovative pump down system can be connected in two ways:
- With sensor leakage
- Without sensor leakage, using only the innovative algorithme.

Basic pump down function:
- Detect the leakage
- Activate pump down process
- Collect the gas on the tank
- Close the valves to isolate the gas

Key points:
- Comply with legislation
- Protect personnel
- Protect the environment
- Save on operating costs

In-Direct Leak Detection Method: Unique PLC Algorithm to Determine Refrigerant Leakage

Pressure and temperature sensors constantly monitor the low / high pressure and discharge of the condensing unit to protect against potential leakage in areas not covered by leak detectors. If low pressure decreases and compressor discharge temperature increases at pre-defined values according to a pre-set algorithm then the unit will trigger a pump down sequence.
The new innovative algorithm is able to detect leakage of R410A based on abnormal changes in the following conditions, high pressure, low pressure and compressor discharge temperature.

Once initiated via either direct or in-direct detection, the unit will immediately close the liquid / discharge actuating ball valves close the alarm terminals on the Pump Down PCB allowing an alarm to be raised at any nominated location.
Reclaim of the refrigerant is via the suction line to the heat exchanger(s) of the outdoor unit(s), any surplus refrigerant is collected in the 30l receiver tank. Once fully pumped down the suction line is closed and the unit awaits a 'Reset' and 'Recharge' command.

Fig 1: Panasonic's Pump Down System

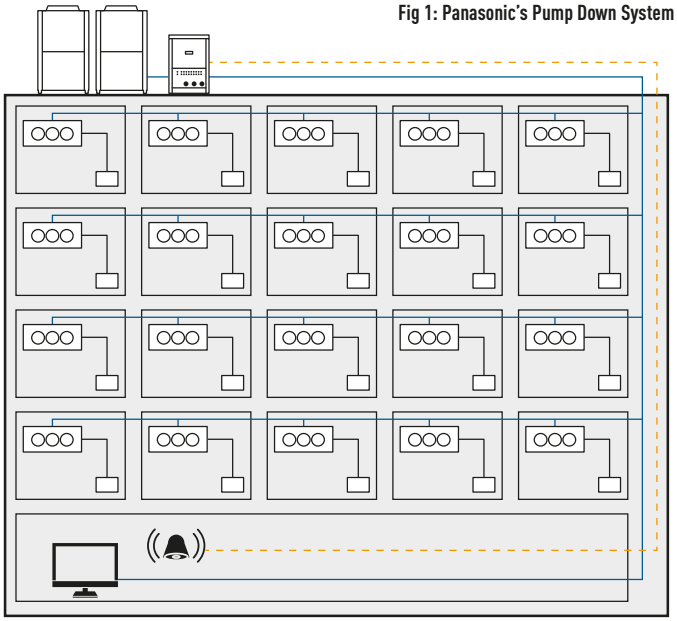
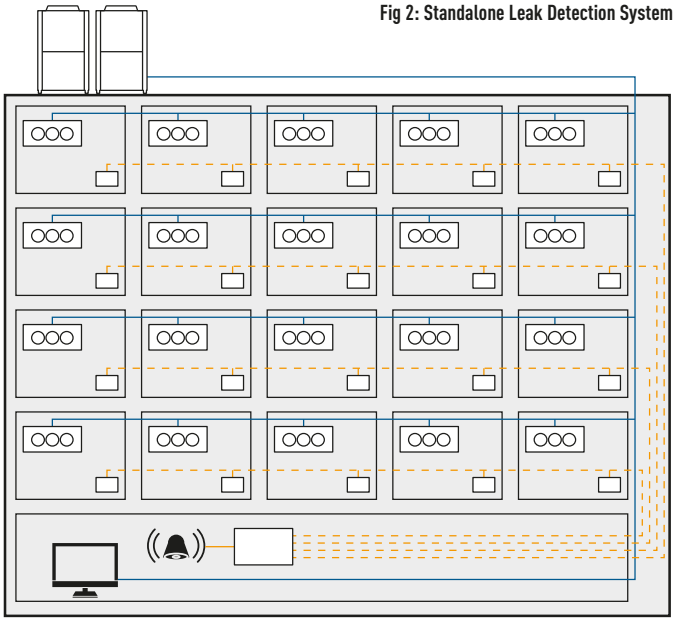


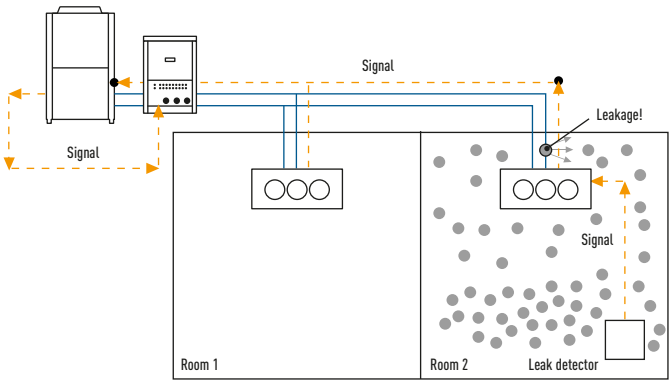
Fig 2: Standalone Leak Detection System



Due to the simplistic installation and control interfacing, shown in Fig 1, Panasonic's ECOi Pump Down System can provide dramatic reduction in capital cost and installation time when compared to a standalone leak detection system, shown in Fig 2. This option is ideal for hotels, offices and public buildings where safety of building occupiers is a must and is extremely cost effective, savings of 40% can be easily achieved.

Direct Leak Detection Method: the safest solution for small rooms

This option should be implemented in any area in non-compliance with BS EN 378:2008. The leak detector is connected directly to the indoor unit via the dedicated PAW-EXCT connector and the Pump Down System is directly connected to the outdoor unit PCB.
The Pump Down System will activate when a leak is detected in the room and initiate a refrigerant reclaim operation immediately, the refrigerant will be collected inside the outdoor units' heat exchanger and optional receiver tank for larger systems. This immediate reaction and large refrigerant storage capacity offers very high level of safety for end users, building occupiers as well as being environmentally friendly.
Due to the exclusive ECOi software the leak detection sensors are able to communicate directly via the P-link which means no additional communication panels, cabling or software is required.



Pump Down system in case of leakage

Number of outdoor units	2-Pipe without receiver	2-Pipe with receiver	3-Pipe without receiver	3-Pipe with receiver
1	✔	✔	✔	✔
2	✔	✔	✔	✔
3	✔	✔	✔	✔

ECOi System	Model code	Description
ECOi 2-Pipe	PAW-PUDME1A-1	Pump Down for 1 outdoor unit system
	PAW-PUDME1A-2	Pump Down for 2 outdoor units system
	PAW-PUDME1A-3	Pump Down for 3 outdoor units system
ECOi 3-Pipe	PAW-PUDMF2A-1	Pump Down for 1 outdoor unit system
	PAW-PUDMF2A-2	Pump Down for 2 outdoor units system
	PAW-PUDMF2A-3	Pump Down for 3 outdoor units system
ECOi 2-Pipe	PAW-PUDME1A-1R	Pump Down for 1 outdoor unit system + Receiver Kit 30l
	PAW-PUDME1A-2R	Pump Down for 2 outdoor units system + Receiver Kit 30l
	PAW-PUDME1A-3R	Pump Down for 3 outdoor units system + Receiver Kit 30l
ECOi 3-Pipe	PAW-PUDMF2A-1R	Pump Down for 1 outdoor unit system + Receiver Kit 30l
	PAW-PUDMF2A-2R	Pump Down for 2 outdoor units system + Receiver Kit 30l
	PAW-PUDMF2A-3R	Pump Down for 3 outdoor units system + Receiver Kit 30l
Accessory (common)	PAW-PUDRK30L	Receiver Kit 30l

Best efficiency ECOi series from Panasonic

Lower running and life cycle costs

Panasonic ECOi 6N systems are amongst the most efficient VRF systems on the market, offering COPs in excess of 4,0 at full load conditions. The system is also designed to make sure that we reduce the running cost of each system by using our unique road map control routine to ensure that the most efficient combination of compressors are running at any one time. Improved defrost sequencing also reduces running costs by defrosting each outdoor coil in turn when conditions allow. The range of outdoor unit modules consists of 7 models from 8 HP to 20 HP. The module sizes from 14 HP to 20 HP can be configured for HI-COP.
Standard mode offers the highest capacity while still delivering excellent efficiency, while HI-COP mode delivers exceptional efficiency and low running costs with a slight reduction in capacity.
Up to 64 indoor units can be connected up to a capacity of 200% indexed indoor unit loads, enabling the system to be used effectively on highly diversified building loads: this large connectability feature makes it an easy-to-design solution for schools, hotels, hospitals and other large buildings. Up to 1.000 m in pipe length enables the New VRF ECOi 6N series to be used in very large buildings, with maximum design flexibility. The ECOi 6N system is also easy to control. It has more than 8 types of control from standard wired remote controls to touch screen panels or web access interfaces.

DC-inverter control technology for rapid and powerful cooling & heating.

The ever-evolving Panasonic ECOi 6N series

The ECOi 6N series is designed for energy savings, easy installation, and high efficiency. Always continuing to evolve, Panasonic uses advanced technologies to meet the requirements of diverse situations and contribute to the creation of comfortable living spaces.

* At full load

Mini ECOi 6 Series

Panasonic's policy of product development continues with the expansion of the Mini ECOi 6 Series, the 2-Pipe heat pump small VRF system specifically designed for the European market.

2-Pipe ECOi 6N Series

The 2-Pipe ECOi 6N series is specifically designed for energy saving, easy installation and high efficiency performance as its main focus.

3-Pipe ECOi MF2 6N Series

ECOi 3-Pipe is one of the most advanced VRF systems available. Not only offering high-efficiency and performance for simultaneous heating and cooling, its sophisticated design makes installation and maintenance much easier.

ECOi 6N Series benefits

Ease of installation
R410A has a higher operating pressure with a lower pressure loss than previous refrigerants. This enables smaller pipe sizes to be used and allows reduced refrigerant charges.

Simple to design
Panasonic recognise that designing, selecting and preparing a professional VRF quotation can be a time consuming and costly process, especially as it is often also a speculative exercise. So we have designed proprietary software which is quick and easy to use and produces a full schematic layout of pipework and controls, as well as a full materials list and performance data.

Easy to control
A wide variety of control options are available to ensure that the ECOi 6N system provides the user with the degree of control that they desire, from simple room controllers through to state of the art BMS controls.

Simple to commission
Simple set-up procedure including automatic addressing of connected indoor units. Configuration settings can be made from an outdoor unit or via a remote controller.

Accurate capacity control
To ensure that the compressor capacity is matched to building load as accurately and efficiently as possible, Panasonic has designed its range of 2 and 3-Pipe ECOi systems to operate with DC inverter and high-efficiency fixed speed compressors. The system selects the most efficient compressor to operate by dynamically monitoring the building load and choosing the best compressor combination to run.

Easy to position
The compact design of the ECOi 6N outdoor units means that sizes 8 HP to 12 HP fit into a standard lift and are easy to handle and position when on site. The small footprint and modular appearance of the units ensure a cohesive appearance to an installation.

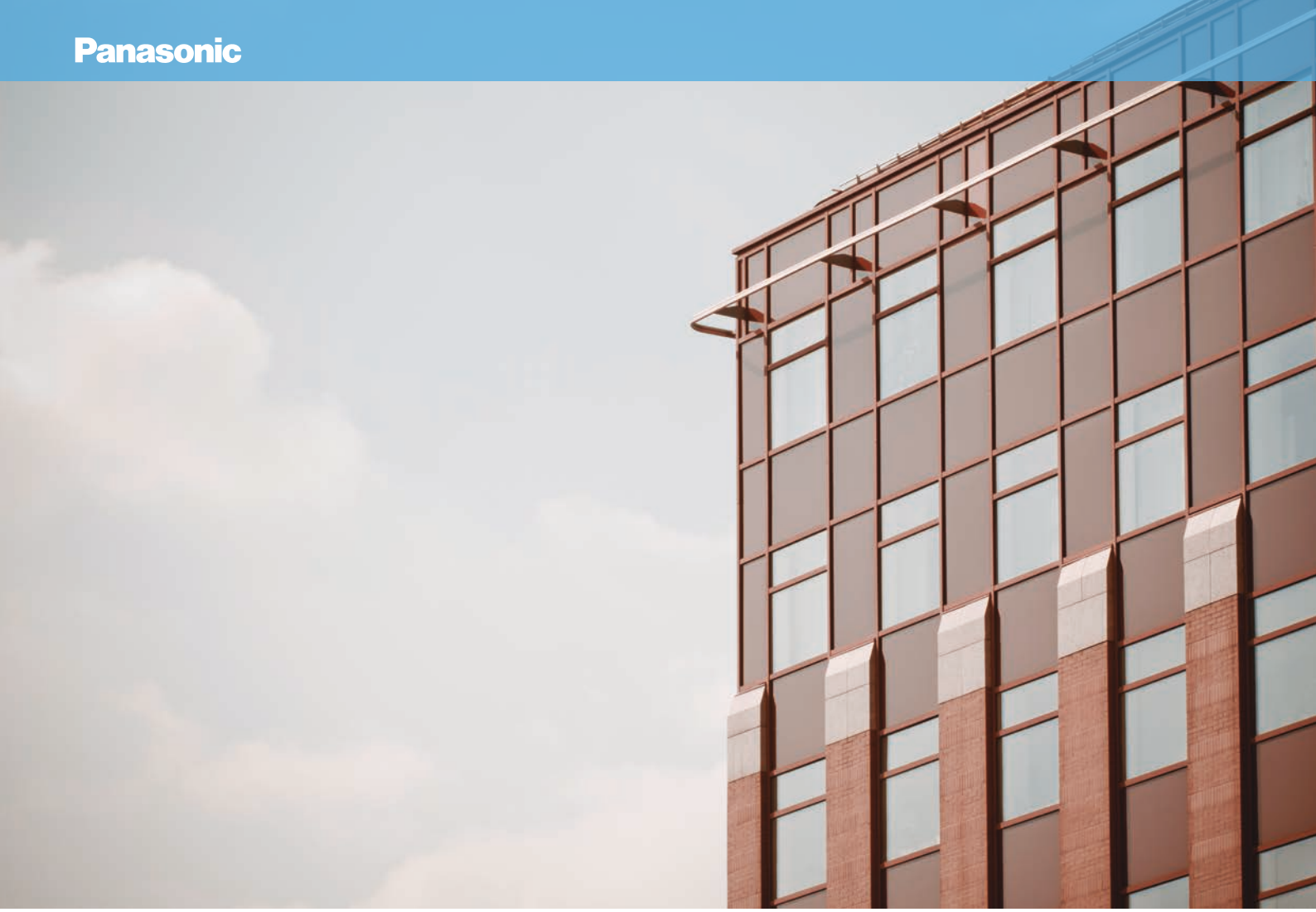
Off-coil temperature control
Panasonic ducted units offer the unique advantage of being able to offer OFF coil temperature control as standard. This allows designers to select units using an OFF coil temperature between 2°C and 22°C. This allows room environments to be cooled without subjecting its occupants to cold drafts or uncomfortable conditions. This is achieved without any extra controls or wiring to each unit.

Wide selection and connectability
With 11 indoor model styles available, ECOi 6N systems are the ideal choice for multiple small capacity indoor unit installations, with the ability to connect up to 40 indoor units to systems of 24 HP or greater for 3-Pipe ECOi MF2 6N Series.

Easy to maintain
Each system allows the use of prognostic and diagnostic controls routines, from refrigerant charge control through to complex fault code diagnostics, all designed to reduce the speed of maintenance calls and unit down time.

Lower running and life cycle costs
Panasonic ECOi 6N systems are amongst the most efficient VRF systems on the market. The system is also designed to make sure that we reduce the running cost of each system by using our unique road map control routine to ensure that the most efficient combination of compressors are running at any one time. Improved defrost sequencing also reduces running costs by defrosting each outdoor coil in turn when conditions allow.

ECOi 6N 2-Pipe with Water Heat Exchanger for chilled and hot water production
For hydronic applications.



2-Pipe Mini ECOi LE1 Series

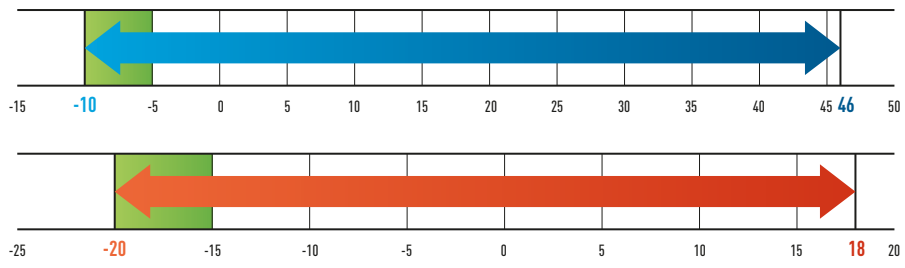
Cooling and Heating type Single Phase and Three Phase

For small-scale commercial and residential use

Panasonic 2-Pipe Mini ECOi, the 2-Pipe heat pump is specifically designed for the most demanding applications. Mini ECOi is available in 5 sizes with cooling capacities ranging from 12,1kW to 15,5kW and connectable up to 13 indoor units (applicable for 15,5kW).
An expansion from the Panasonic VRF line up, the Mini ECOi is compatible with the same indoor units and controls as the rest of the ECOi range.

Wide operating range

The operating range for heating operation is to -20°C, the cooling range is to -10°C. The remote controller temperature setting offers a range from 16°C to 30°C.



Cooling: -10 – 46°C (DB) // Heating: -20 - 18°C (WB)

Energy saving concept

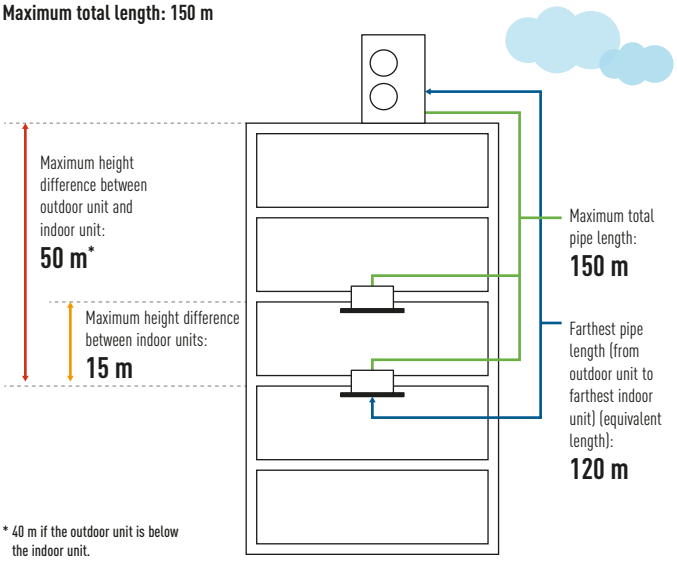
The energy saving designs for the structure of fans, fan motors, compressors and heat exchangers has resulted in high COP values, which rank as one of the top classed in the industry. In addition, use of highly efficient R410A refrigerant reduces CO_2 emission and lowers operating costs.
All Mini ECOi VRF systems are rated as EEL Category A, which confirms that they are amongst the most energy efficient systems available. Power consumption during operation is substantially less than that of lower rated units and consequently both the day to day running costs and full life cycle costs are significantly reduced.

1 Inverter compressor. Large-capacity inverter compressor has been adopted. The inverter compressor is superior in performance with improved partial-load capacity.
2 Printed Circuit Board. PCBs have been reduced to two, to improve maintenance.
3 Accumulator. Larger accumulator has been adopted to maintain compressor reliability and because of the increased refrigerant quantity, extended maximum piping length can be achieved. Furthermore, the refrigerant pressure loss was reduced, which contributes to an improved operating efficiency.
4 DC-Fan motor. Checking load and outside temperature, the DC motor is controlled for optimum air volume.
5 Newly designed Big Edgy Fan. The newly designed Fan edge has been realized to inhibit air turbulent and to increase efficiency. As Fan diameter has been sized up to 490mm, the air volume has been increased by 12% keeping low sound level.
6 Heat exchanger & copper tubes. The heat exchanger size and the copper tube sizes in the heat exchanger has been redesigned to increase efficiency.
7 Oil separator. New centrifugal separator has been adopted to improve oil separation efficiency and reduce refrigerant pressure loss.

Increased piping length for Greater design flexibility

Adaptable to various building types and sizes.
Actual piping length: 120 m (equivalent piping length 140 m).
Maximum piping length: 150 m.

Maximum total length: 150 m



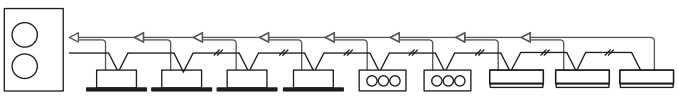
* 40 m if the outdoor unit is below the indoor unit.

Silent mode

3 dB(A) can be reduced by setting. External input signal is also available.

Up to 13 indoor units per system

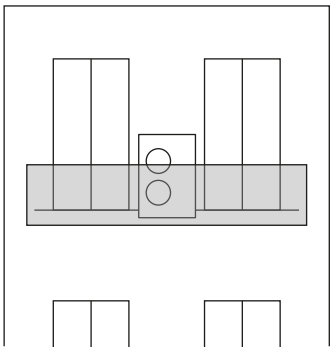
System / HP	4 HP	5 HP	6 HP	8 HP	10 HP
Connectable Indoor Unit	6	8	9		



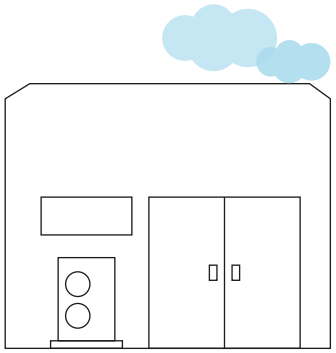
Compact & Flexibility-design

The slim and lightweight design can be installed in various small spaces.

For balconies

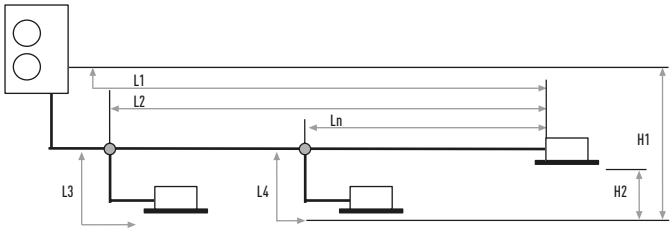


For narrow spaces



Flexible pipework

Category	Item	Description		Max length (m)
Allowable pipework length	L1	Maximum pipe run	Actual length	120
			Equivalent length	140
	L2-L3	Difference between maximum length and minimum length from the first distribution joint		40
	L3 L4 Ln	Maximum length of each distribution joint		30
	L1+L3+L4	Maximum total pipe run length		150
Allowable height difference	H1	When outdoor unit installed higher		50
		When outdoor unit installer lower		40
	H2	Maximum difference between indoor units		15



MINI ECOi

HIGH EFFICIENCY 4-6 HP

For light commercial use

Panasonic's Mini ECOi, the 2-Pipe heat pump small VRF system, is specifically designed for the most demanding applications. Offering between 12,1kW and 15,5kW cooling capacity in 3 sizes and up to 9 indoor units connected, the Mini ECOi sets standards of performance and flexibility. Utilising R410A and DC inverter technology, Panasonic offers VRF to a new and growing market.

Forming a new key part of the Panasonic VRF line up, the Mini ECOi is compatible with the same indoor units and controls as the rest of the ECOi range.

Technical focus

- Single Phase or Three Phase power supply
- One Amp start current
- DC inverter technology combined with R410A
- Diversity ratio 50-130%
- Cooling operation to -10°C
- Compact outdoor unit 1.330 x 940 x 410mm

HP			**4 HP**						**5 HP**						**6 HP**					
Model			**U-4LE1E5**			**U-4LE1E8**			**U-5LE1E5**			**U-5LE1E8**			**U-6LE1E5**			**U-6LE1E8**		
Power supply		V	220	230	240	380	400	415	220	230	240	380	400	415	220	230	240	380	400	415
			Single Phase / 50Hz			Three Phase / 50Hz			Single Phase / 50Hz			Three Phase / 50Hz			Single Phase / 50Hz			Three Phase / 50Hz		
Cooling capacity	Nominal	kW	12,1			12,1			14,0			14,0			15,5			15,5		
EER [1]	**Nominal**	**W/W**	**4,30**			**4,30**			**4,20**			**4,20**			**3,45**			**3,45**		
Running amperes		A	13,9	13,3	12,7	4,9	4,7	4,5	16,3	15,6	14,9	5,7	5,4	5,2	21,5	20,5	19,7	7,5	7,1	6,9
Power input cooling	Nominal	kW	2,81			2,81			3,33			3,33			4,49			4,49		
Heating capacity	Nominal	kW	12,5			12,5			16,0			16,0			18,0			18,0		
COP [1]	**Nominal**	**W/W**	**4,62**			**4,62**			**4,30**			**4,30**			**3,95**			**3,95**		
Running amperes		A	13,2	12,7	12,1	4,7	4,5	4,3	18,0	17,2	16,5	6,3	6,0	5,8	21,6	20,7	19,8	7,5	7,2	6,9
Power input heating	Nominal	kW	2,71			2,71			3,72			3,72			4,56			4,56		
Starting amperes		A	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Maximum amperes		A	21,0	21,0	21,0	8,5	8,5	8,5	24,5	24,5	24,5	10,0	10,0	10,0	28,0	28,0	28,0	12,0	12,0	12,0
Maximum power input		kW	4,44	4,64	4,84	5,15	5,42	5,62	5,17	5,41	5,64	6,06	6,37	6,61	5,91	6,18	6,45	7,27	7,65	7,94
Maximum number of connectable indoor units			6			6			8			8			9			9		
Air volume	Cooling / Heating	m^3/min	95			95			104			104			104			104		
Sound pressure level	Cooling (Hi / Lo)	dB(A)	50 / 47			50 / 47			51 / 48			51 / 48			52 / 49			52 / 49		
	Heating (Hi / Lo)	dB(A)	52 / 49			52 / 49			53 / 50			53 / 50			55 / 52			55 / 52		
Sound power level	Cooling (Hi)	dB	68			68			69			69			70			70		
	Heating (Hi)	dB	70			70			71			71			73			73		
Dimensions	H x W x D	mm	1.330 x 940 x 340			1.330 x 940 x 340			1.330 x 940 x 340			1.330 x 940 x 340			1.330 x 940 x 340			1.330 x 940 x 340		
Net weight		kg	104			103			104			103			104			103		
Piping connections	Liquid pipe	inch (mm)	9,52 (3/8)			9,52 (3/8)			9,52 (3/8)			9,52 (3/8)			9,52 (3/8)			9,52 (3/8)		
	Gas pipe	inch (mm)	15,88 (5/8)			15,88 (5/8)			15,88 (5/8)			15,88 (5/8)			19,05 (3/4)			19,05 (3/4)		
Refrigerant loading	R410A	kg	3,5			3,5			3,5			3,5			3,5			3,5		
Operating range	Cooling Min / Max	°C	-10 / 46			-10 / 46			-10 / 46			-10 / 46			-10 / 46			-10 / 46		
	Heating Min / Max	°C	-20 / 24 -20 / 18			-20 / 24 -20 / 18			-20 / 24 -20 / 18			-20 / 24 -20 / 18			-20 / 24 -20 / 18			-20 / 24 -20 / 18		

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb

1) EER and COP classification is at 400 V in accordance with EU directive 2002/31/EC.
Specifications subject to change without notice.
For detailed information about ErP, please visit our websites www.aircon.panasonic.eu or www.ptc.panasonic.eu

MINI ECOi
HIGH EFFICIENCY 8-10 HP

Quiet operation mode
In case of the installation at Condominium, quiet operation performance is important, especially in night time.

Increase External static pressure
When unit is installed at the narrow balcony, the fence at front side will be the obstacle. High external static pressure feature will keep the operating capacity and good advantage.

High ambient temperature performance
Until which ambient temperature, the unit can maintain the rated (100%) capacity. The temperature will be the maximum for cooling operation over 46°C.

Technical focus
- Three Phase power supply
- One Amp start current
- DC inverter technology combined with R410A
- Diversity ratio 50-130%
- Cooling operation to -10°C
- Compact outdoor unit 1.500 x 980 x 370mm

HP			**8 HP**			**10 HP**		
Model			**U-8LE1E8***			**U-10LE1E8***		
Power supply		V	380	400	415	380	400	415
			Three Phase / 50Hz			Three Phase / 50Hz		
Cooling capacity	Nominal	kW	22,4			25,0 / 28,0		
EER [1]	**Nominal**	**W/W**	**3,80**			**3,31 / 3,11**		
Running amperes		A						
Power input cooling	Nominal	kW						
Heating capacity	Nominal	kW	25,0			28,0		
COP [1]	**Nominal**	**W/W**	**4,02**			**3,93**		
Running amperes		A						
Power input heating	Nominal	kW						
Starting amperes		A						
Maximum amperes		A						
Maximum power input		kW						
Maximum number of connectable indoor units			13[2]			13[2]		
Air volume	Cooling / Heating	m^3/min						
Sound pressure level	Cooling (Hi / Lo)	dB(A)	64			64		
	Heating (Hi / Lo)	dB(A)	65			65		
Sound power level	Cooling (Hi)	dB						
	Heating (Hi)	dB						
Dimensions	H x W x D	mm	1.500 x 980 x 370			1.500 x 980 x 370		
Net weight		kg	138			138		
Piping connections	Liquid pipe	inch (mm)						
	Gas pipe	inch (mm)						
Refrigerant loading	R410A	kg						
Operating range	Cooling Min / Max	°C	-10 / +46			-10 / +46		
	Heating Min / Max	°C	-20 / +18			-20 / +18		

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb

1) EER and COP classification is at 400 V in accordance with EU directive 2002/31/EC. 2) Maximum indoor unit number with 1,5kW model shall be set additionally.
* Tentative data.
Specifications subject to change without notice.
For detailed information about ErP, please visit our websites www.aircon.panasonic.eu or www.ptc.panasonic.eu

HIGH EFFICIENCY

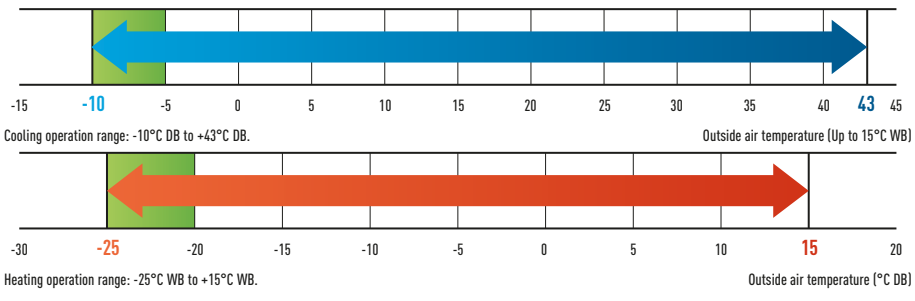
2-Pipe ECOi 6N series. High-efficiency and large-capacity VRF system

Large-capacity VRF systems using R410A with advanced technology

Newly designed next generation VRF!

Extended operating range

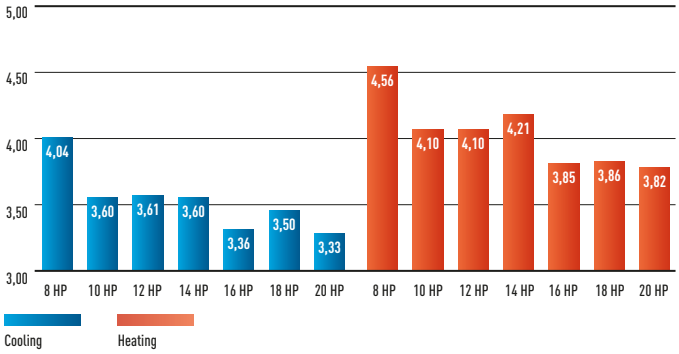
Heating operation range: Extended heating operation range enables heating even when outdoor temperature as low as -25°C. Using a wired remote control, indoor heating temperature range can be set from 16°C to 30°C.



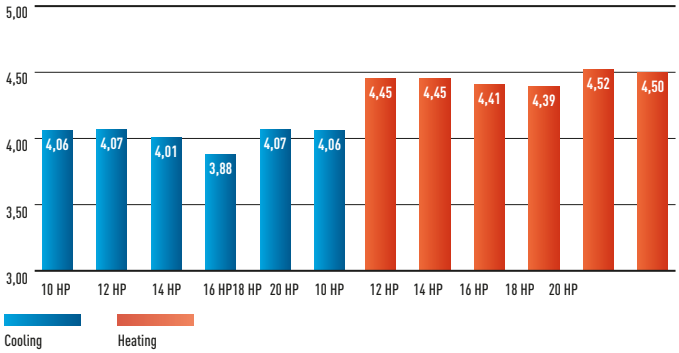
Energy savings

The operation efficiency has been improved using highly efficient R410A refrigerant, new DC inverter compressor, new DC motor and new design of heat exchanger.

Standard COP setting model

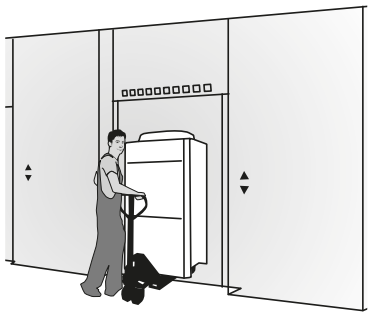


High COP setting model

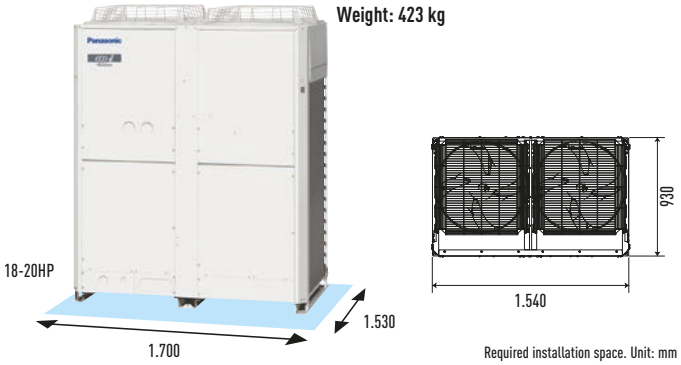


Compact design

The 8-12 HP unit is designed to fit inside a lift for easy on-site handling.



2-Pipe ECOi 6N series has reduced the installation space required by 1 chassis for sizes up to 20 HP.

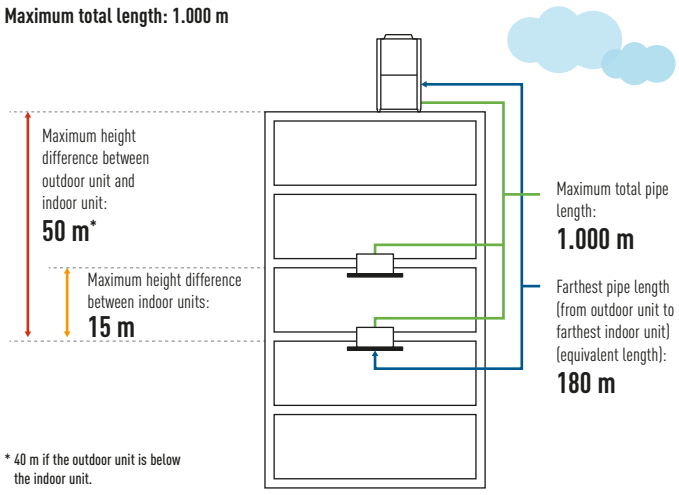


Required installation space. Unit: mm

Increased piping lengths and design flexibility

Adaptable to various building types and sizes. Actual piping length: 180 m. Maximum piping length: 1.000 m.

Maximum total length: 1.000 m

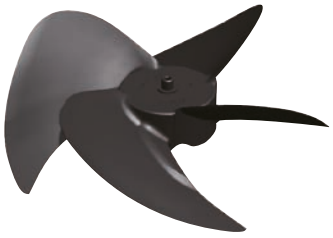


* 40 m if the outdoor unit is below the indoor unit.

Newly designed fan. Optimized airflow and noise reduction

Newly designed fan and bell-mouth reduces stress to fan by dispersing higher wind speeds. Thus, lower air resistance results in lower energy consumption.

The turbulent flow (blue part) can be suppressed and the noise can be reduced. Even though the high speed circulation is utilized, the noise level is held at the same level as normal.



Smaller hub diameter

ECOi 2-Pipe and 3-Pipe wind protection shield

PAW-WPH1	1 long side of the outdoor unit (624 x 983 x 489)
PAW-WPH2	1 long side of the outdoor units (853 x 983 x 489)
PAW-WPH3	2 long sides of the outdoor units (744 x 983 x 289) (2ER SET)

2-Pipe ECOi 6N series

Connectable indoor/outdoor unit capacity ratio up to 200%

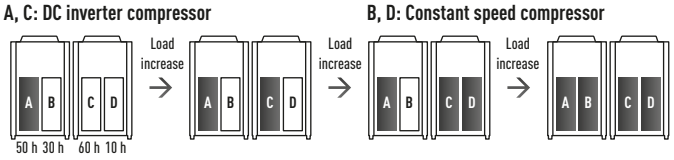
VRF systems attain maximum indoor unit connection capacity of up to 200 % of the unit's connection range, depending on the outdoor and indoor models selected. So for a reasonable investment, VRF systems provide an ideal air conditioning solution for locations where full cooling/heating are not always required.

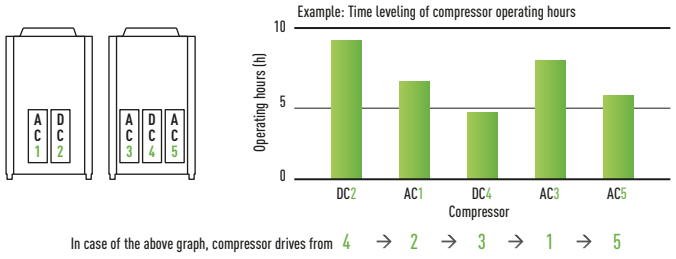
System (HP)	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
Connectable indoor units: 130%	13	16	19	23	26	29	33	36	40	43	47	50	53	56	59							64					
Connectable indoor units: 200%	20	25	30	35	40	45	50	55	60										64								

If more than 100% indoor units are operated with a high load, the units may not perform at the rated capacity. For the details, please consult with an authorized Panasonic dealer.

Extended compressor life by uniform compressor operation times

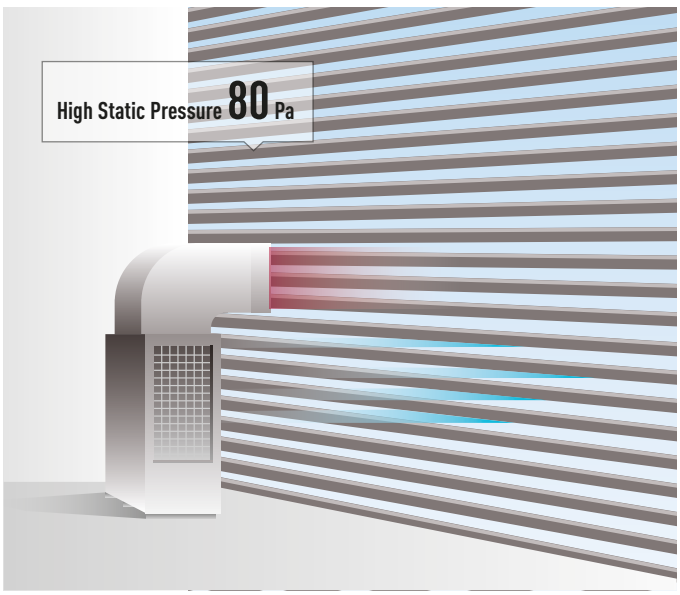
Total compressors run-time is monitored by a built-in microcomputer, which ensures that operation times of all compressors within the same refrigerant circuit are balanced. Compressors with histories showing shorter run times are selected first, ensuring equal wear and tear across all units and extended working life for the system.





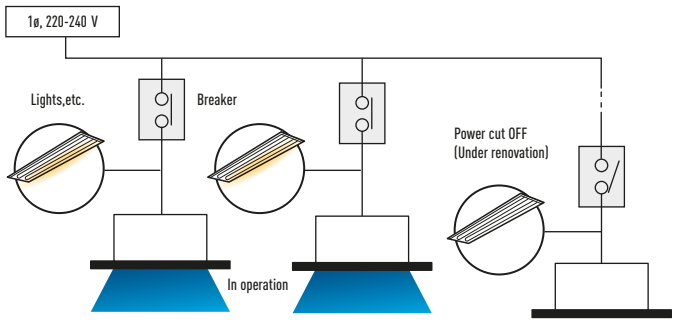
High external static pressure

Special setting at site allows all models to provide up to 80 Pa due to newly designed fan, fan motor and casing.
The flexible design requires an air discharge duct to avoid a reduction in performance due to shortcut of air circulation. This new feature allows the outdoor unit to be installed inside plant rooms on any floor of the building.



Non-stop operation during maintenance

In the event of an indoor unit malfunctioning, other indoor units can be set to continue operation even during maintenance.

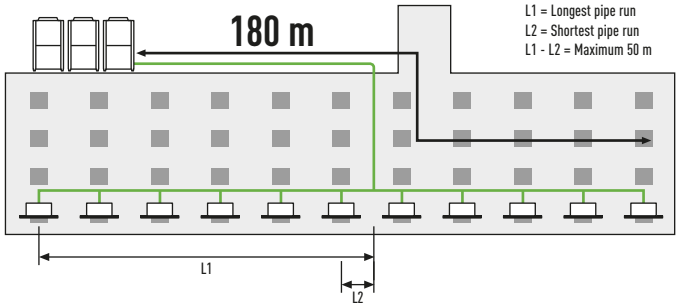


Automatic Backup operation in the case of compressor and outdoor units malfunction

Backup operation is applied in the case of emergencies. If error message is displayed, please contact your local service office. (Except for 8 and 10 HP single unit installation).

Easy to design solutions for schools, hotels, hospitals and other large buildings

Difference between maximum and minimum pipe runs after first branch can be a maximum of 50 m; larger pipe runs can be up to 180 m.



Anti-corrosion model available for all ECOi and ECO G models

For bespoke projects: for use in coastal areas and other locations where sea air can easily cause salt damage to units. The unit is treated with anti-corrosion solution to provide exceptional durability in adverse salty environments.

Note: Using this unit does not completely eliminate the possibility of rust developing. For details concerning unit installation and maintenance, please consult with an authorized dealer.

Demand control Kit information

Function of Demand control

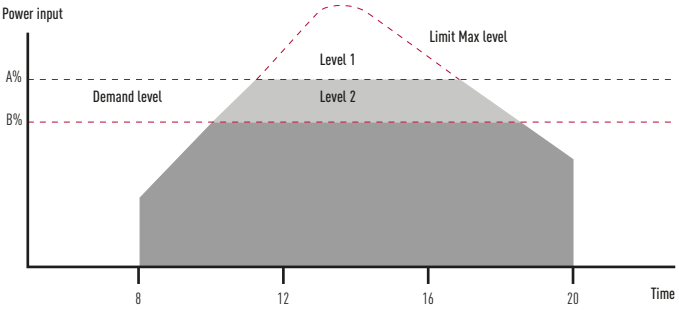
This function limits the maximum operating input at peak time.
3 levels as 100%/70%/0% is set at the factory[1].
The limit value setting for level 1 & 2 can be changed from 40% ~ 100% by 5% at the system commitioning.

1. The 3rd level is available only for CZ-CAPDC3 & CZ-CAPDC4.)

	Power input level (vs. rated condition)	
Level 1	100% (at ship)	From 40%-100% setting can be changed (by 5% step)
Level 2	70% (at ship)	
Level 3	0% (Forcible thermo-OFF)	

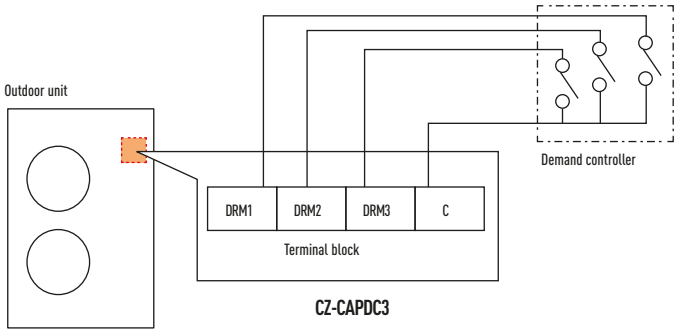
		Mini ECOi	ECOi	ECO G	PACi
CZ-CAPDC2	Seri-Para I/O unit for outdoor unit	Yes	Yes	Yes	Yes
CZ-CAPDC3	Demand Control Kit	Yes	Yes	No	Yes

Operating Image



CZ-CAPDC3 for PACi and ECOi

Optional terminal block kit for demand control to be mounted in the outdoor unit. Via this interface, the demand control signals go directly to the outdoor unit control PCB. 3 control levels are available.

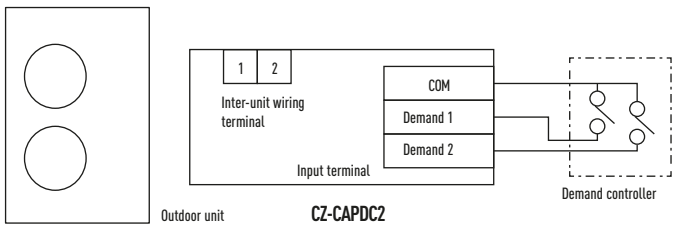


CZ-CAPDC3

* Only for 6N series ECO-i outdoor unit, "Regular Demand control" setting is available. (The system will be limited the maximum input level for all the time without any signal input.) (The setting to be done at the time of system start-up or service by maintenance remote controller.)

CZ-CAPDC2

Demand control input signals sent to this outdoor interface will be transferred to the system via inter-unit control wiring. Other controls (ex. Operation ON/OFF, Mode switch Cool/Heat) are also available. Demand level 1 & 2 are available. Up to 4 systems can be connected and controlled independently or all together by one interface.



CZ-CAPDC2

2-PIPE ECOi 6N SERIES
8-20 HP

Next generation VRF newly-redesigned!
At start up stage a unit can have Hi COP function selected - this lowers capacity but increases the COP. It's your choice.
- Top class COP= 4,56 (in case of 8 HP heating)
- Heating operation at outdoor temperatures down to –25°C
- Extended pipe runs of up to 180 m

Technical focus
- Compact casing (in case of 8-12 HP)
- Bigger capacity in one casing (in case of 18-20 HP)
- Longer maximum piping length up to 1.000 m
- Extended operating range to provide heating at outdoor temperature as low as -25°C
- Suitable for refurbishment projects (Refer to technical data book)

HP			8 HP	10 HP	12 HP	14 HP	16 HP	18 HP	20 HP
Standard model			**U-8ME1E81**	**U-10ME1E81**	**U-12ME1E81**	**U-14ME1E81**	**U-16ME1E81**	**U-18ME1E81**	**U-20ME1E81**
Power supply		V	400	400	400	400	400	400	400
			Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz
Cooling capacity		kW	22,4	28,0	33,5	40,0	45,0	50,0	56,0
EER [1]	**Nominal**	**W/W**	**4,04**	**3,60**	**3,61**	**3,60**	**3,36**	**3,50**	**3,33**
Operating current		A	8,5	12,2	14,6	17,1	20,7	22,8	26,8
Power input cooling		kW	5,54	7,78	9,29	11,1	13,4	14,3	16,8
Heating capacity		kW	25,0	31,5	37,5	45,0	50,0	56,0	63,0
COP [1]	**Nominal**	**W/W**	**4,56**	**4,10**	**4,10**	**4,21**	**3,85**	**3,86**	**3,82**
Operating current		A	8,4	12,1	14,4	16,5	20,1	23,1	26,3
Power input heating		kW	5,48	7,68	9,15	10,7	13,0	14,5	16,5
Starting current		A	1	1	1	77	81	93	101
External static pressure		Pa	80	80	80	80	80	80	80
Air volume		m^3/h	8.820	9.180	11.400	12.720	12.720	14.640	16.980
Sound pressure level	Normal mode	dB(A)	56,5	59,0	61,0	62,0	62,0	60,0	63,0
	Silent mode	dB(A)	53,5	56,0	58,0	59,0	59,0	57,0	60,0
Sound power level	Normal mode	dB	71,0	73,5	75,5	76,5	76,5	74,5	77,5
Dimensions	H x W x D	mm	1.758 x 770 x 930	1.758 x 770 x 930	1.758 x 770 x 930	1.758 x 1.000 x 930	1.758 x 1.000 x 930	1.758 x 1.540 x 930	1.758 x 1.540 x 930
Net weight		kg	234	234	281	309	309	421	421
Piping connections	Gas pipe	inch (mm)	3/4 (19,05)	7/8 (22,22)	1 (25,40)	1 (25,40)	1-1/8 (28,58)	1-1/8 (28,58)	1-1/8 (28,58)
	Liquid pipe	inch (mm)	3/8 (9,52)	3/8 (9,52)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	5/8 (15,88)	5/8 (15,88)
	Balance pipe	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
Refrigerant amount at shipment		kg	6,5	6,8	6,8	8,5	8,5	9,0	9,0
Demand control			13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)
Operating range	Cooling Min / Max	°C	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43
	Heating Min / Max	°C	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb

1) EER and COP classification is at 400 V in accordance with EU directive 2002/31/EC.
Specifications subject to change without notice.
For detailed information about ErP, please visit our websites www.aircon.panasonic.eu or www.ptc.panasonic.eu

2-PIPE ECOi 6N SERIES
HIGH COP SETTING MODEL 10-16 HP

Next generation VRF newly-redesigned!
- Heating operation at outdoor temperatures down to –25°C
- Extended pipe runs of up to 180 m

Technical focus
- Bigger capacity in one casing (in case 14-16 HP)
- Longer Max piping length up to 1.000 m
- Extended operating range to provide heating at outdoor temperature as low as -25°C
- Suitable for refurbishment projects (Refer to technical data book)

HP			10 HP	12 HP	14 HP	16 HP
High COP setting model			U-14ME1E81	U-16ME1E81	U-18ME1E81	U-20ME1E81
Power supply			400 V / Three Phase / 50 Hz	400 V / Three Phase / 50 Hz	400 V / Three Phase / 50 Hz	400 V / Three Phase / 50 Hz
Cooling capacity		kW	28,0	33,5	40,0	45,0
EER [1]	Nominal	W/W	4,06	4,07	4,01	3,88
Operating current		A	10,7	12,7	15,4	17,9
Power input cooling		kW	6,90	8,23	9,98	11,6
Heating capacity		kW	31,5	37,5	45,0	50,0
COP [1]	Nominal	W/W	4,45	4,45	4,41	4,39
Operating current		A	10,9	13,0	15,8	17,6
Power input heating		kW	7,08	8,43	10,2	11,4
Starting current		A	77	81	92	98
External static pressure		Pa	80	80	80	80
Air volume		m^3/h	12.720	12.720	14.640	16.980
Sound pressure level	Normal mode	dB(A)	62,0	62,0	60,0	63,0
	Silent mode	dB(A)	59,0	59,0	57,0	60,0
Sound power level	Normal mode	dB	76,5	76,5	74,5	77,5
Dimensions	H x W x D	mm	1.758 x 1.000 x 930	1.758 x 1.000 x 930	1.758 x 1.540 x 930	1.758 x 1.540 x 930
Net weight		kg	307	307	423	423
Piping connections	Gas pipe	inch (mm)	7/8 (22,22)	1 (25,40)	1 (25,40)	1-1/8 (28,58)
	Liquid pipe	inch (mm)	3/8 (9,52)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)
	Balance pipe	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
Demand control			13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)
Refrigerant amount at shipment		kg	8,5	8,5	9,0	9,0
Operating range	Cooling Min / Max	°C	-10 / +43	-10 / +43	-10 / +43	-10 / +43
	Heating Min / Max	°C	-25 / +15	-25 / +15	-25 / +15	-25 / +15

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb

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2-PIPE ECOi 6N SERIES
COMBINATION FROM 22 TO 60 HP

Next generation VRF newly-redesigned!
At start up stage a unit can have Hi COP function selected - this lowers the capacity and increases the COP. It's your choice.
- Wide range of system up to 60 HP
- Heating operation at outdoor temperatures down to –25°C
- Extended pipe runs of up to 180 m

Technical focus
- Increased connectable Indoor units / outdoor units capacity ratio up to 200%
- Increased maximum number of connectable indoor units up to 64 units
- Increased high external static pressure up to 80 Pa
- Extended operating range to provide heating at outdoor temperature as low as -25°C

HP			22 HP	24 HP	26 HP	28 HP	30 HP	32 HP	34 HP	36 HP
Standard model			**U-14ME1E81 U-8ME1E81**	**U-14ME1E81 U-10ME1E81**	**U-14ME1E81 U-12ME1E81**	**U-16ME1E81 U-12ME1E81**	**U-16ME1E81 U-14ME1E81**	**U-16ME1E81 U-16ME1E81**	**U-18ME1E81 U-16ME1E81**	**U-20ME1E81 U-16ME1E81**
Power supply		V	400	400	400	400	400	400	400	400
			Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz
Cooling capacity		kW	61,5	68,0	73,0	78,5	85,0	90,0	96,0	101,0
EER [1]	**Nominal**	**W/W**	**3,75**	**3,60**	**3,60**	**3,47**	**3,47**	**3,35**	**3,43**	**3,34**
Operating current		A	25,2	29,4	31,6	35,2	37,8	41,5	44,0	47,5
Power input cooling		kW	16,4	18,9	20,3	22,6	24,5	26,9	28,0	30,2
Heating capacity		kW	69,0	76,5	81,5	87,5	95,0	100,0	108,0	113,0
COP [1]	**Nominal**	**W/W**	**4,34**	**4,09**	**4,12**	**3,96**	**4,03**	**3,86**	**3,86**	**3,83**
Operating current		A	24,5	29,1	30,8	34,4	36,4	40,0	44,0	46,4
Power input heating		kW	15,9	18,7	19,8	22,1	23,6	25,9	28,0	29,5
Starting current		A	86	94	98	102	98	102	114	122
External static pressure		Pa	80	80	80	80	80	80	80	80
Air volume		m^3/h	21.540	21.900	24.120	24.120	25.440	25.440	27.360	29.700
Sound pressure level	Normal mode	dB(A)	63,0	63,5	64,5	64,5	65,0	65,0	64,0	65,5
	Silent mode	dB(A)	60,0	60,5	61,5	61,5	62,0	62,0	61,0	62,5
Sound power level	Normal mode	dB	77,5	78,0	79,0	79,0	79,5	79,5	78,5	80,0
Dimensions	H x W x D	mm	1.758 x 1.830 x 930	1.758 x 1.830 x 930	1.758 x 1.830 x 930	1.758 x 1.830 x 930	1.758 x 2.060 x 930	1.758 x 2.060 x 930	1.758 x 2.600 x 930	1.758 x 2.600 x 930
Net weight		kg	543	543	590	590	618	618	730	730
Piping connections	Gas pipe	inch (mm)	1-1/8 (28,58)	1-1/8 (28,58)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)	1-1/2 (38,10)
	Liquid pipe	inch (mm)	5/8 (15,88)	5/8 (15,88)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	Balance pipe	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
Refrigerant amount at shipment		kg	15,0	15,3	15,3	15,3	17,0	17,0	17,5	17,5
Demand control			13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)
Operating range	Cooling Min / Max	°C	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43
	Heating Min / Max	°C	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
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	38 HP	40 HP	42 HP	44 HP	46 HP	48 HP	50 HP	52 HP	54 HP	56 HP	58 HP	60 HP
	U-20ME1E81 U-18ME1E81	U-20ME1E81 U-20ME1E81	U-16ME1E81 U-14ME1E81 U-12ME1E81	U-16ME1E81 U-16ME1E81 U-12ME1E81	U-16ME1E81 U-16ME1E81 U-14ME1E81	U-16ME1E81 U-16ME1E81 U-16ME1E81	U-18ME1E81 U-16ME1E81 U-16ME1E81	U-20ME1E81 U-16ME1E81 U-16ME1E81	U-20ME1E81 U-18ME1E81 U-16ME1E81	U-20ME1E81 U-18ME1E81 U-18ME1E81	U-20ME1E81 U-20ME1E81 U-18ME1E81	U-20ME1E81 U-20ME1E81 U-20ME1E81
	400	400	400	400	400	400	400	400	400	400	400	400
	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz
	107,0	113,0	118,0	124,0	130,0	135,0	140,0	145,0	151,0	156,0	162,0	168,0
	3,44	**3,36**	**3,51**	**3,43**	**3,43**	**3,35**	**3,41**	**3,35**	**3,39**	**3,44**	**3,38**	**3,33**
	49,6	53,6	52,1	56,2	58,5	62,2	64,2	67,7	70,3	72,4	76,4	80,4
	31,1	33,6	33,6	36,2	37,9	40,3	41,1	43,3	44,5	45,4	47,9	50,4
	119,0	127,0	132,0	138,0	145,0	150,0	155,0	160,0	169,0	175,0	182,0	189,0
	3,84	**3,85**	**4,04**	**3,92**	**3,96**	**3,86**	**3,86**	**3,84**	**3,85**	**3,85**	**3,83**	**3,81**
	49,4	52,6	50,8	54,6	56,5	60,1	62,8	65,2	69,3	72,4	75,8	79,1
	31,0	33,0	32,7	35,2	36,6	38,9	40,2	41,7	43,9	45,4	47,5	49,6
	123	127	119	122	119	122	134	142	144	146	149	153
	80	80	80	80	80	80	80	80	80	80	80	80
	31.620	33.960	36.840	36.840	38.160	38.160	40.080	42.420	44.340	46.260	48.600	50.940
	65,0	66,0	66,5	66,5	67,0	67,0	66,0	67,0	66,5	66,0	67,0	68,0
	62,0	63,0	63,5	63,5	64,0	64,0	63,0	64,0	63,5	63,0	64,0	65,0
	79,5	80,5	81,0	81,0	81,5	81,5	80,5	81,5	81,0	80,5	81,5	82,5
	1.758 x 3.140 x 930	1.758 x 3.140 x 930	1.758 x 2.890 x 930	1.758 x 2.890 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.660 x 930	1.758 x 3.660 x 930	1.758 x 4.200 x 930	1.758 x 4.740 x 930	1.758 x 4.740 x 930	1.758 x 4.740 x 930
	842	842	899	899	927	927	1.039	1.039	1.151	1.263	1.263	1.263
	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)
	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
	18,0	18,0	23,8	23,8	25,5	25,5	26,0	26,0	26,5	27,0	27,0	27,0
	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)	13 steps (0-100%)
	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43
	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15

2-PIPE ECOi 6N SERIES
HIGH COP SETTING MODEL
COMBINATION FROM 18 TO 48 HP

Next generation VRF newly-redesigned!
- Wide range of systems now available to 48 HP
- Heating operation at outdoor temperatures down to –25°C
- Extended pipe runs of up to 180 m

Technical focus
- Increased connectable Indoor units / outdoor units capacity ratio up to 200%
- Increased maximum number of connectable indoor units up to 64 units
- Increased high external static pressure up to 80 Pa
- Extended operating range to provide heating at outdoor temperature as low as -25°C

HP			**18 HP**	**20 HP**	**22 HP**	**24 HP**	**26 HP**	**28 HP**	**30 HP**
High COP setting model			**U-14ME1E81 U-8ME1E81**	**U-16ME1E81 U-8ME1E81**	**U-18ME1E81 U-8ME1E81**	**U-16ME1E81 U-16ME1E81**	**U-18ME1E81 U-16ME1E81**	**U-20ME1E81 U-16ME1E81**	**U-20ME1E81 U-18ME1E81**
Power supply		V	400	400	400	400	400	400	400
			Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz
Cooling capacity		kW	50,0	56,0	61,5	68,0	73,0	78,5	85,0
EER [1]	**Nominal**	**W/W**	**4,07**	**4,06**	**3,97**	**4,07**	**4,01**	**3,96**	**3,94**
Operating current		A	18,9	21,2	23,9	25,8	28,1	30,6	33,4
Power input cooling		kW	12,3	13,8	15,5	16,7	18,2	19,8	21,6
Heating capacity		kW	56,0	63,0	69,0	76,5	81,5	87,5	95,0
COP [1]	**Nominal**	**W/W**	**4,52**	**4,50**	**4,39**	**4,45**	**4,38**	**4,42**	**4,40**
Operating current		A	19,1	21,5	24,2	26,6	28,7	30,6	33,4
Power input heating		kW	12,4	14,0	15,7	17,2	18,6	19,8	21,6
Starting current		A	86	90	101	94	105	111	114
External static pressure		Pa	80	80	80	80	80	80	80
Air volume		m^3/h	21.540	21.540	23.460	25.440	27.360	29.700	31.620
Sound pressure level	Normal mode	dB(A)	63,0	63,0	61,5	65,0	64,0	65,5	65,0
	Silent mode	dB(A)	60,0	60,0	58,5	62,0	61,0	62,5	62,0
Sound power level	Normal mode	dB	77,5	77,5	76,0	79,5	78,5	80,0	79,5
Dimensions	H x W x D	mm	1.758 x 1.830 x 930	1.758 x 1.830 x 930	1.758 x 2.370 x 930	1.758 x 2.060 x 930	1.780 x 2.600 x 930	1.780 x 2.600 x 930	1.758 x 3.140 x 930
Net weight		kg	537	537	653	614	730	730	846
Piping connections	Gas pipe	inch (mm)	1-1/8 (28,58)	1-1/8 (28,58)	1-1/8 (28,58)	1-1/8 (28,58)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)
	Liquid pipe	inch (mm)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	Balance pipe	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
Demand control			13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)
Refrigerant amount at shipment		kg	15,0	15,0	15.5	17,0	17,5	17,5	18,0
Operating range	Cooling Min / Max	°C	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43
	Heating Min / Max	°C	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb

1) EER and COP classification is at 400 V in accordance with EU directive 2002/31/EC.
Specifications subject to change without notice.
For detailed information about ErP, please visit our websites www.aircon.panasonic.eu or www.ptc.panasonic.eu

COP
4,54

	32 HP	34 HP	36 HP	38 HP	40 HP	42 HP	44 HP	46 HP	48 HP
	U-20ME1E81 U-20ME1E81	**U-18ME1E81 U-16ME1E81 U-8ME1E81**	**U-16ME1E81 U-16ME1E81 U-16ME1E81**	**U-18ME1E81 U-16ME1E81 U-16ME1E81**	**U-20ME1E81 U-16ME1E81 U-16ME1E81**	**U-20ME1E81 U-18ME1E81 U-16ME1E81**	**U-20ME1E81 U-18ME1E81 U-18ME1E81**	**U-20ME1E81 U-20ME1E81 U-18ME1E81**	**U-20ME1E81 U-20ME1E81 U-20ME1E81**
	400	400	400	400	400	400	400	400	400
	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz
	90,0	96,0	101,0	107,0	113,0	118,0	124,0	130,0	135,0
	3,88	**4,09**	**4,07**	**4,08**	**4,04**	**3,96**	**3,97**	**3,92**	**3,88**
	35,9	36,2	38,3	40,5	43,3	46,1	48,3	51,4	53,8
	23,2	23,5	24,8	26,2	28,0	29,8	31,2	33,2	34,8
	100,0	108,0	113,0	119,0	127,0	132,0	138,0	145,0	150,0
	4,41	**4,54**	**4,45**	**4,44**	**4,47**	**4,40**	**4,42**	**4,41**	**4,40**
	35,1	36,7	39,2	41,4	43,9	46,4	48,3	50,9	52,8
	22,7	23,8	25,4	26,8	28,4	30,0	31,2	32,9	34,1
	116	113	107	118	124	127	130	131	134
	80	80	80	80	80	80	80	80	80
	33.960	36.180	38.160	40.080	42.420	44.340	46.260	48.600	50.940
	66,0	64,5	66,5	66,0	67,0	66,5	66,0	67,0	67,5
	63,0	61,5	63,5	63,0	64,0	63,5	63,0	64,0	64,5
	80,5	79,0	81,0	80,5	81,5	81,0	80,5	81,5	82,0
	1.758 x 3.140 x 930	1.758 x 3.430 x 930	1.758 x 3.120 x 930	1.758 x 3.660 x 930	1.758 x 3.660 x 930	1.758 x 4.200 x 930	1.758 x 4.740 x 930	1.758 x 4.740 x 930	1.758 x 4.740 x 930
	846	960	921	1.037	1.037	1.153	1.269	1.269	1.269
	1 1/4 (31,75)	1 1/4 (31,75)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)
	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)	13 steps (0 – 100 %)
	18,0	24,0	25,5	26,0	26,0	26,5	27,0	27,0	27,0
	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43	-10 / +43
	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15	-25 / +15

HIGH EFFICIENCY

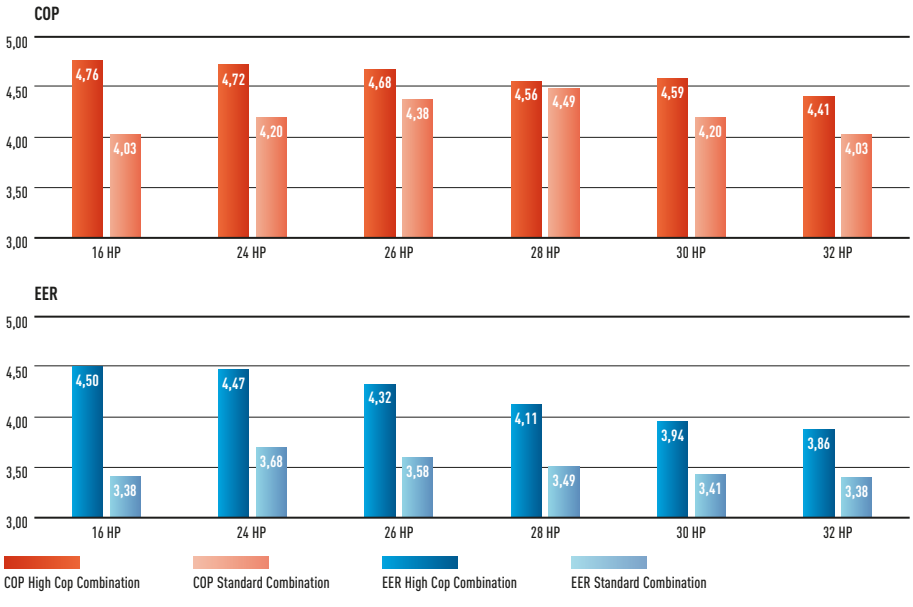
3-Pipe ECOi MF2 6N Series

Simultaneous heating and cooling VRF system

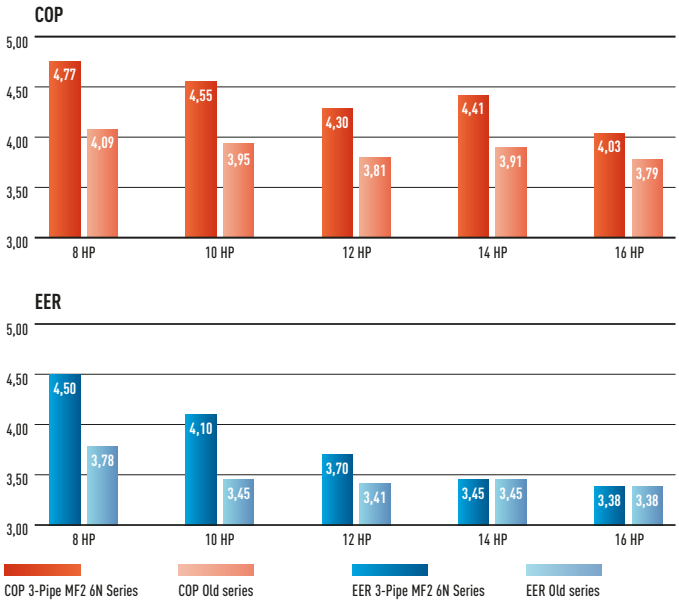
The New Panasonic 3-Pipe MF2 series offers the best solution for the most demanding customers.

- The new 3-Pipe units have only one chassis size, with a very small footprint (only 0,93 m²)
- 1 body for all sizes: 1.758 x 1.000 x 930mm, for 8, 10, 12, 14 and 16 HP
- Maximum capacity size as 48 HP by 3 unit combinations (16 HP x 3 = 48 HP)
- Up to 52 indoor units connectable
- Maximum capacity ratio of 150%

Market-leading COP (at full load), High Cop Combination



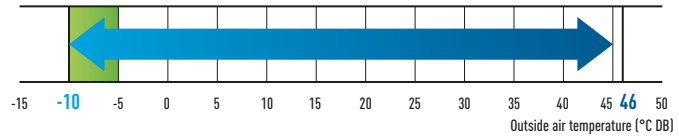
Market-leading COP (at full load), standard efficiency



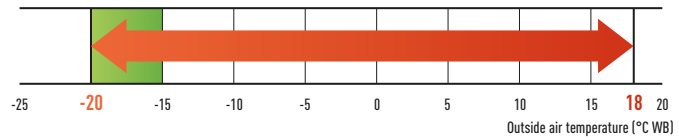
Connectable indoor/outdoor unit capacity ratio up to 150%

Extended operating range

Cooling operation range: The cooling operation range has been extended to -10°C by changing the outdoor fan to an inverter type.



Heating operation range: Stable heating operation even with an outside air temperature of -20°C. The heating operation range has been extended to -20°C by use of a compressor with a high-pressure vessel.



Large combination of outdoor units, up to 48 HP

Unit	System (HP)																			
	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
8	1					1	1	1	1					1	1	1	1				
10		1				1															
12			1				1			1				1							
14				1				1		1	2	1		1	2	1		3	2	1	
16					1				1			1	2			1	2		1	2	3

High efficiency combination

Unit	System (HP)					
	16	24	26	28	30	32
8	2	3	2	2	2	1
10			1			
12				1		2
14					1	

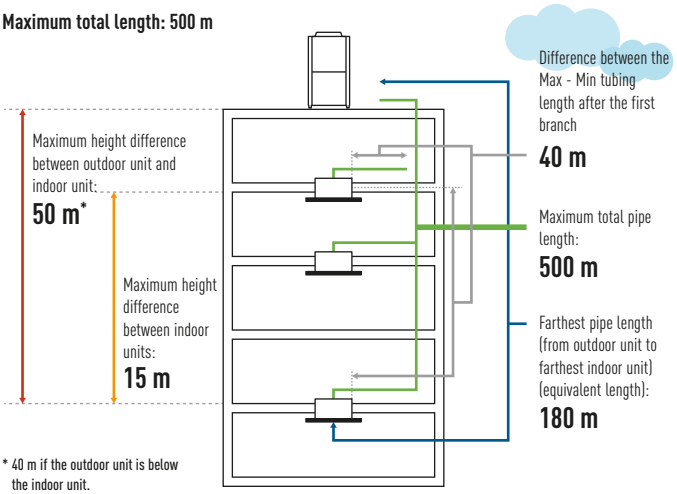
Wide temperature setting range

Wired remote control heating temperature setting range is 16 to 30°C.

Increased piping lengths and design flexibility

Adaptable to various building types and sizes. Actual piping length: 180 m. Maximum piping length: 500 m.

Maximum total length: 500 m

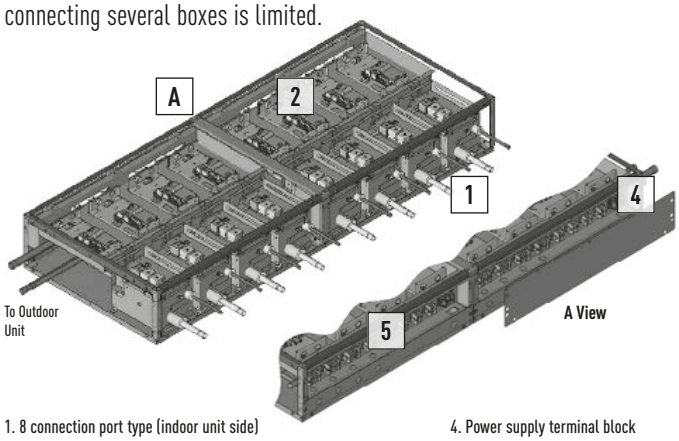


* 40 m if the outdoor unit is below the indoor unit.

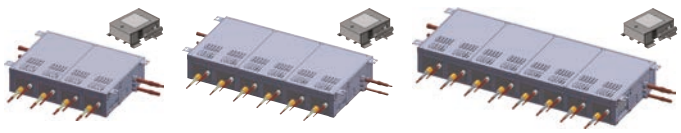
3-Pipe control box kit / Multiple connection type

New Heat Recovery box to connect multiple indoor units with just one box, 4, 6 and up to 8 indoor units or groups

This is good advantage specially in hotels applications, where space for connecting several boxes is limited.



1. 8 connection port type (indoor unit side)
2. 3-Pipe control PCB included
3. Interface relay terminal included (to be mounted on indoor unit side)
4. Power supply terminal block
5. Control line wire terminal block



CZ-P456HR3
CZ-P4160HR3
x 4 ports.

CZ-P656HR3
x 6 ports.

CZ-P856HR3
x 8 ports.

Panasonic new boxes advantages

Flexible Design

- Connection tube for main refrigerant circuit line comes on both side of the unit
- Can connect consecutive boxes, one side another
- High 200 mm high

Comfort

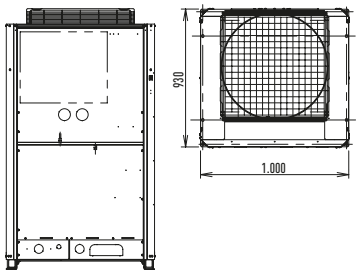
- Quick indoor changeover
- Low noise

3-Pipe ECOi MF2 6N Series

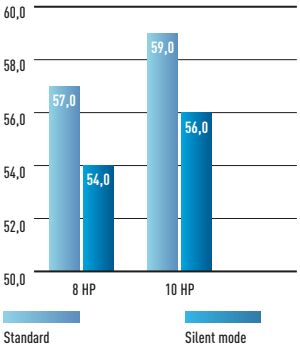
Compact design for superb space saving and low noise level

5 types of outdoor units with different capacities have been standardized to one compact casing.
Uniquely constructed with two compartments, the upper chamber contains the heat exchange, with the lower chamber stores the compressors. The benefits are two-fold - superb space saving and low noise level.

Installation space: 0,93 m²



Operating sound dB(A)



Non-stop operation during maintenance

Even when an indoor unit needs maintenance, the other indoor units can be kept operating by setting. (Not applicable for all situations)

Power suppression control for energy saving (Demand control)[1]

The 3-Pipe ECOi MF2 6N Series has a built-in demand function which uses the inverter characteristics. With this demand function, the power consumption can be set in three steps, and operation[2] at optimum performance is performed according to the setting and the power consumption. This function is useful to reduce the annual power consumption and to save electricity costs while maintaining comfort.

1 An outdoor Seri-Para I/O unit is required for demand input.
2 Setting is possible as 0% or in the range from 40 to 100% (in steps of 5%). At the time of shipping, setting has been done to the three steps of 0%, 70%, and 100%.

System limitations

Maximum number of combined outdoor units	3
Maximum HP of combined outdoor units	135kW (48 HP)
Maximum number of connectable indoor units	52
Indoor/outdoor unit capacity ratio	50 -150%

Additional refrigerant charge

Liquid piping size	6,35	9,52	12,7	15,88	19,05	22,22	25,40
Amount of refrigerant charge (g/m)	26	56	128	185	259	366	490

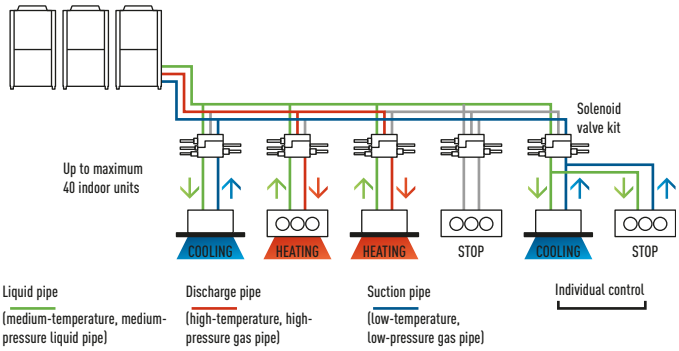
Refrigerant piping

Piping size (mm)							
O material	Outer diameter	6,35	9,52	12,70	15,88	19,05	22,22
	Wall thickness	0,80	0,80	0,80	1,00	1,00	1,15
1/2 H, H material	Outer diameter	25,40	28,58	31,75	38,10	41,28	
	Wall thickness	1,00	1,00	1,10	over 1,35	over 1,45	

Note: When pipe bending is to be performed, the bending radius shall be at least 4 times the outer diameter. Also, take sufficient care to prevent pipe collapse and damage at the time of bending.

Individual control of multiple indoor units with solenoid valve kits

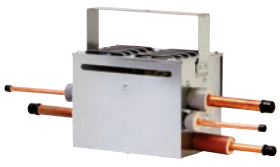
- Any design and layout can be used in a single system.
- Cooling operation is possible up to an outdoor temperature of -10°C.



Solenoid valve kit

Oil-recovery operation to gives more stable comfort air-conditioning control.

3-Pipe control Solenoid valve kit



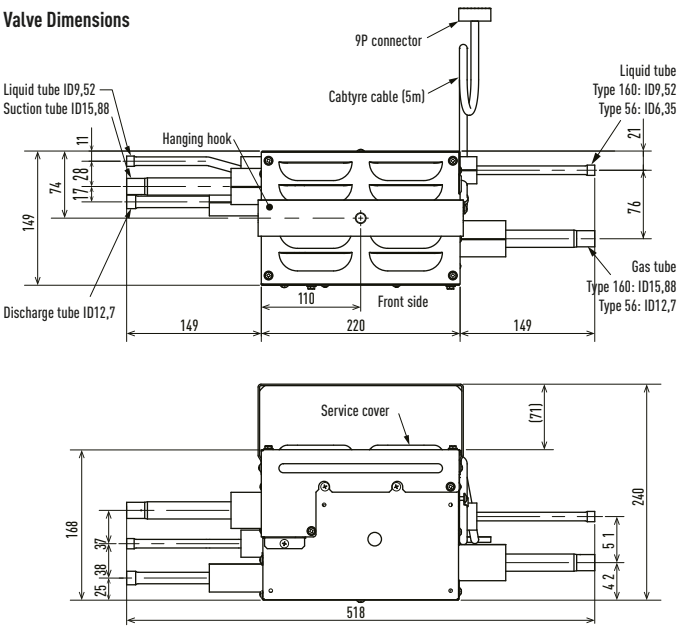
CZ-P56HR3
Up to 5,6kW
CZ-P160HR3
Up to 16,0kW

KIT-P56HR3
(CZ-P56HR3+CZ-CAPE2)
KIT-P160HR3
(CZ-P160HR3+CZ-CAPE2)

3-Pipe control PCB

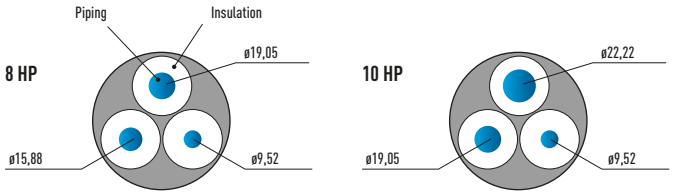
3-Pipe control PCB CZ-CAPE2*.
Must be added to the CZ-P56HR3 or CZ-P160HR3.
* For wall mounted.

Valve Dimensions



Excellent cost saving and smaller piping size

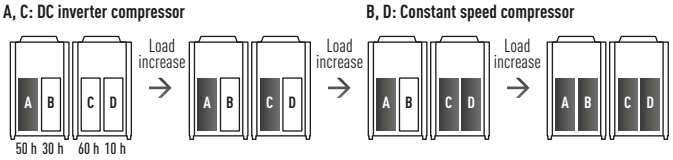
By using R410a with low pressure loss, pipe sizes for discharge, suction and liquid are all reduced.
This makes it possible to aim for reduced piping space, improved workability at the site, and reduction of the piping material costs.



3-Pipe ECOi MF2			
HP	**Suction pipe**	**Discharge pipe**	**Liquid pipe**
8	Ø 19,05	Ø 15,88	Ø 9,52
10	Ø 22,22	Ø 19,05	Ø 9,52

Extended compressor life

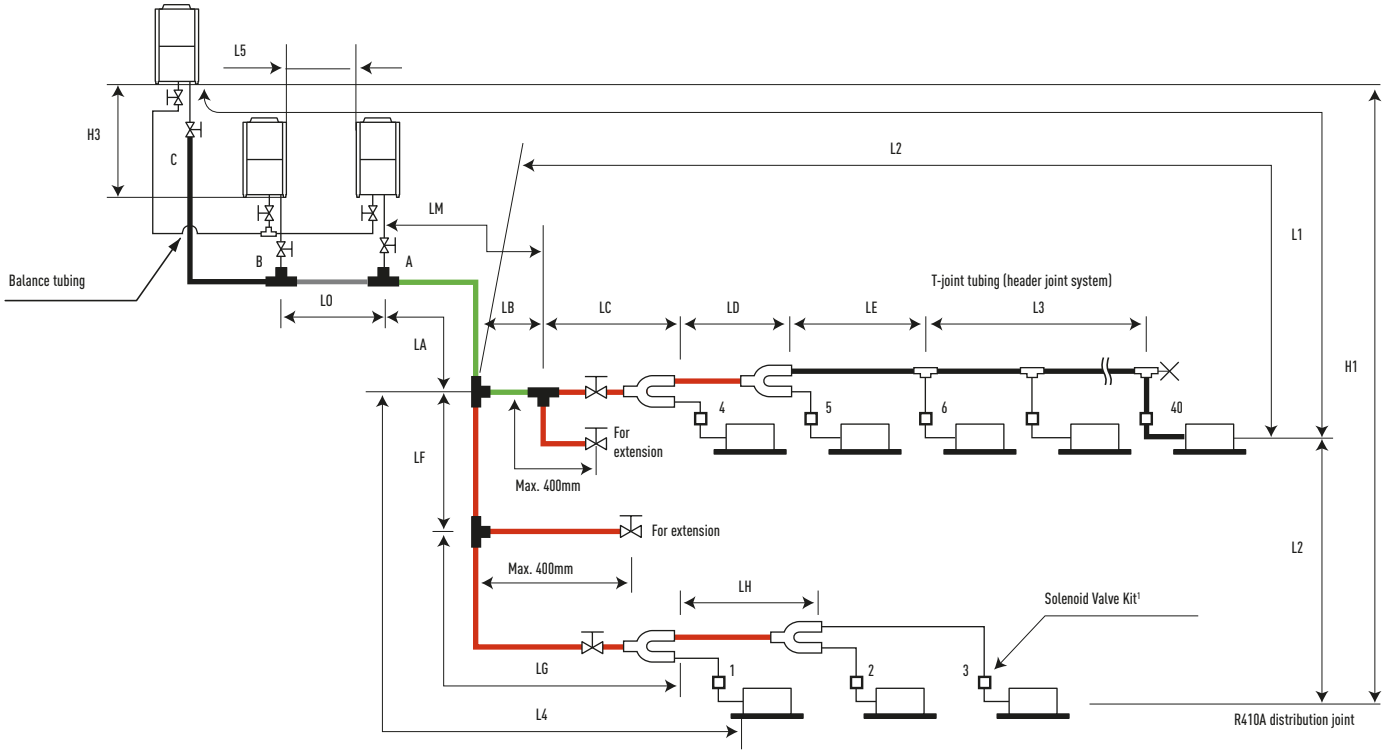
The total operation time of the compressors is monitored by a microcomputer, so that there is no imbalance for the operation times of all compressors in the same refrigerant system, and compressors with a shorter operation time are operated with preference.



ECOi 2-Pipe and 3-Pipe wind protection shield

PAW-WPH1	1 long side of the outdoor unit (624 x 983 x 489)
PAW-WPH2	1 long side of the outdoor units (853 x 983 x 489)
PAW-WPH3	2 long sides of the outdoor units (744 x 983 x 289) (2ER SET)

Piping design



Main piping length
LM = LA + LB···

Main distribution pipes LC-LH are selected according to the capacity after the distribution joint.

Size of indoor unit connection piping 1-40 is determined by the connection piping size on the indoor units.

Distribution joint (CZ, option).

Ball valve (BV, option)

T-joint (field supply)

Solidly welded shut (pinch weld)

The outdoor connection main tubing (LO portion) is determined by the total capacity of the outdoor units that are connected to the tube end.

Note: Do not use commercial T-pieces for the liquid pipes of the distribution joint.

Ranges that apply to refrigerant piping lengths and to differences in installation heights				
Items	**Marks**	**Contents**		**Length (m)**
Allowable piping length	L1	Maximum piping length	Actual piping length	≤180[1]
			Equivalent piping length	≤200
	Δ L (L2–L4)	Difference between the Maximum length and the minimum length from the No. 1 distribution		≤40
	LM	Maximum length of main piping (at Maximum diameter)		—[2]
	ℓ1, ℓ2~ℓ40	Maximum length of each distribution		≤30
	L1+ℓ1+ℓ2...ℓ39+ℓA+ℓB+LF+LG+LH	Total Maximum piping length including length of each distribution (only liquid tubing)		≤500[3]
	L5	Distance between outdoor units		≤10
Allowable elevation difference	H1	When outdoor unit is installed higher than indoor unit		≤50
		When outdoor unit is installed lower than indoor unit		≤40
	H2	Maximum difference between indoor units		≤15
	H3	Maximum difference between outdoor units		≤4
Allowable length of joint tubing	L3	T-joint tubing (field-supply); Maximum tubing length between the first T-joint and solidly welded-shut end point		≤2

L = Length, H = Height
1) If the longest tubing length (L1) exceeds 90 m (equivalent length), increase the sizes of the main tubes (LM) by 1 rank for the discharge tubes, suction tubes, and narrow tubes. (field supplied).
2) If the longest main tube length (LM) exceeds 50 m, increase the main tube size at the portion before 50 m by 1 rank for the suction tubes and discharge tubes. (field supplied).
(For the portion that exceeds 50 m, set based on the main tube sizes (LA) listed in the table on the following page).
3) 24 HP - 30 HP of high efficiency combination is 300 m.

3-PIPE ECOi MF2 6N SERIES

8-16 HP

With simultaneous heating and cooling operation heat recovery type

ECOi 3-Pipe is one of the most advanced VRF systems available. Not only offering high-efficiency and performance for simultaneous heating and cooling, but also its sophisticated installation and maintenance much easier.

- Achieves COP 4,77 as the top class in the industry (Average cooling and heating value for 8 HP outdoor unit).
- Simultaneous cooling or heating operation for up to 52 indoor units.
- Small installation space, top class in the industry.
- Rotation operation function and back-up operation function provided.

Technical focus

- Standardization of outdoor unit to one compact casing size
- Improved operation efficiency
- The constant-speed compressor adopts a high-performance internal high-pressure scroll
- Improvement of the heat exchanger
- Redesign of structural parts
- Close side-by-side installation is possible

HP			8 HP	10 HP	12 HP	14 HP	16 HP
Standard model			U-8MF2E8	U-10MF2E8	U-12MF2E8	U-14MF2E8	U-16MF2E8
Power supply		V	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415
			Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz
Cooling capacity		kW	22,4	28,0	33,5	40,0	45,0
EER [1]	Nominal	W/W	4,50	4,10	3,70	3,45	3,38
Running current	380 / 400 / 415 V	A	8,60 / 8,20 / 8,00	11,3 / 10,8 / 10,6	15,1 / 14,5 / 14,1	19,2 / 18,4 / 17,9	22,0/ 21,1 / 20,6
Power input		kW	4,98	6,83	9,05	11,00	13,00
Heating capacity		kW	25,0	31,5	37,5	45,0	50,0
COP [1]	Nominal	W/W	4,77	4,55	4,30	4,41	4,03
Running current	380 / 400 / 415 V	A	8,95 / 8,50 / 8,30	11,6 / 11,0 / 10,7	14,7 / 14,1 / 13,8	17,0 / 16,4 / 15,9	20,7 / 19,9 / 19,4
Power input		kW	5,24	6,92	8,72	10,2	12,4
Air volume		m^3/min	158	178	212	212	212
Sound pressure level	High / Low	dB(A)	57,0 / 54,0	59,0 / 56,0	61,0 / 58,0	62,0 / 59,0	62,0 / 59,0
Sound power level	Normal mode	dB	71,5 / 68,5	73,5 / 70,5	75,5 / 72,5	76,5 / 73,5	76,5 / 73,5
Dimensions	H x W x D	mm	1.758 x 1.000 x 930	1.758 x 1.000 x 930	1.758 x 1.000 x 930	1.758 x 1.000 x 930	1.758 x 1.000 x 930
Net weight		kg	269	269	314	322	322
Piping connections	Suction pipe	inch (mm)	3/4 (19,05)	7/8 (22,22)	1 (25,40)	1 (25,40)	1-1/8 (28,58)
	Discharge pipe	inch (mm)	5/8 (15,88)	3/4 (19,05)	3/4 (19,05)	7/8 (22,22)	7/8 (22,22)
	Liquid pipe	inch (mm)	3/8 (9,52)	3/8 (9,52)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)
	Balance pipe	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
Refrigerant amount at shipment		kg	8,3	8,5	8,8	9,3	9,3
Operating range	Cooling Min / Max	°C	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46
	Heating Min / Max	°C	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18
	Simultaneous operation	°C	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24

Solenoid valve kit		
KIT-P56HR3	KIT-P56HR3	3-Pipe control Solenoid valve kit (up to 5,6kW)
	CZ-P56HR3	Solenoid valve kit (up to 5,6kW)
	CZ-CAPE2	3-Pipe control PCB
KIT-P160HR3	KIT-P160HR3	3-Pipe control Solenoid valve kit (from 5,6kW to 10,6kW)
	CZ-P160HR3	Solenoid valve kit (up to 16,0kW)
	CZ-CAPE2	3-Pipe control PCB
CZ-CAPEK2		3-Pipe control PCB for wall mounted

3-Pipe control box kit	
CZ-P456HR3	4 ports 3 pipe box (up to 5,6kW)
CZ-P656HR3	6 ports 3 pipe box (up to 5,6kW)
CZ-P856HR3	8 ports 3 pipe box (up to 5,6kW)
CZ-P4160HR3	4 ports 3 pipe box (up to 16,0kW)

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb

1) EER and COP classification is at 400 V in accordance with EU directive 2002/31/EC.
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3-PIPE ECOi MF2 6N SERIES
HIGH EFFICIENCY COMBINATION 16 TO 32 HP

With simultaneous heating and cooling operation heat recovery type

ECOi 3-Pipe is one of the most advanced VRF systems available. Not only offering high-efficiency and performance for simultaneous heating and cooling, its sophisticated design makes installation and maintenance much easier.

- Achieves COP 4,76 as the top class in the industry (Average cooling and heating value for 8 HP outdoor unit).
- Simultaneous cooling or heating operation for up to 52 indoor units.
- Small installation space, top class in the industry.
- Rotation operation function and back-up operation function provided.

Technical focus

- Standardization of outdoor unit to one compact casing size
- Improved operation efficiency
- The constant-speed compressor adopts a high-performance internal high-pressure scroll
- Improvement of the heat exchanger
- Redesign of structural parts
- Close side-by-side installation is possible

HP			16 HP	24 HP	26 HP	28 HP	30 HP	32 HP
High Efficiency model			U-8MF2E8 U-8MF2E8	U-8MF2E8 U-8MF2E8 U-8MF2E8	U-8MF2E8 U-8MF2E8 U-10MF2E8	U-8MF2E8 U-8MF2E8 U-12MF2E8	U-8MF2E8 U-8MF2E8 U-14MF2E8	U-8MF2E8 U-12MF2E8 U-12MF2E8
Power supply		V	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415
			Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz
Cooling capacity		kW	45,0	68,0	73,0	78,5	85,0	90,0
EER [1]	**Nominal**	W/W	4,50	4,47	4,32	4,11	3,94	3,86
Running current	380 / 400 / 415 V	A	17,3 / 16,4 / 16,0	26,2 / 24,9 / 24,3	28,5 / 27,4 / 26,7	32,2 / 31,0 / 30,2	36,5 / 35,0 / 34,1	38,9 / 37,4 / 36,4
Power input		kW	10,0	15,2	16,9	19,1	21,6	23,3
Heating capacity		kW	50,0	76,5	81,5	87,5	95,0	100,0
COP [1]	**Nominal**	W/W	4,76	4,72	4,68	4,56	4,59	4,41
Running current	380 / 400 / 415 V	A	17,9 / 17,0 / 16,6	27,7 / 26,3 / 25,6	29,4 / 27,9 / 27,5	32,4 / 31,1 / 30,4	35,0 / 33,6 / 32,7	38,3 / 36,8 / 35,9
Power input		kW	10,5	16,2	17,4	19,2	20,7	22,7
Air volume		m^3/min	316	474	494	528	528	582
Sound pressure level	High / Low	dB(A)	60,0 / 57,0	62,0 / 59,0	62,5 / 59,5	63,5 / 60,5	64,0 / 61,0	65,0 / 62,0
Sound power level	Normal mode	dB	74,5 / 71,5	76,5 / 73,5	77,0 / 74,0	78,0 / 75,0	78,5 / 75,5	79,5 / 76,5
Dimensions (Combination)	H x W x D	mm	1.758 x 2.060 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930
Net weight		kg	538	807	807	852	860	897
Piping connections	Suction pipe	inch (mm)	1-1/8 (28,58)	1-1/8 (28,58)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)
	Discharge pipe	inch (mm)	7/8 (22,22)	1 (25,40)	1 (25,40)	1-1/8 (28,58)	1-1/8 (28,58)	1-1/8 (28,58)
	Liquid pipe	inch (mm)	1/2 (12,70)	5/8 (15,88)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	Balance pipe	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
Refrigerant amount at shipment		kg	16,6	24,9	25,1	25,4	25,9	25,9
Operating range	Cooling Min / Max	°C	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46
	Heating Min / Max	°C	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18
	Simultaneous operation	°C	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24

Solenoid valve kit		
KIT-P56HR3	KIT-P56HR3	3-Pipe control Solenoid valve kit (up to 5,6kW)
	CZ-P56HR3	Solenoid valve kit (up to 5,6kW)
	CZ-CAPE2	3-Pipe control PCB
KIT-P160HR3	KIT-P160HR3	3-Pipe control Solenoid valve kit (from 5,6kW to 10,6kW)
	CZ-P160HR3	Solenoid valve kit (up to 16,0kW)
	CZ-CAPE2	3-Pipe control PCB
CZ-CAPEK2		3-Pipe control PCB for wall mounted

3-Pipe control box kit	
CZ-P456HR3	4 ports 3 pipe box (up to 5,6kW)
CZ-P656HR3	6 ports 3 pipe box (up to 5,6kW)
CZ-P856HR3	8 ports 3 pipe box (up to 5,6kW)
CZ-P4160HR3	4 ports 3 pipe box (up to 16,0kW)

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb

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3-PIPE ECOi MF2 6N SERIES
COMBINATION FROM 18 TO 48 HP

With simultaneous heating and cooling operation heat recovery type

ECOi 3-Pipe is one of the most advanced VRF systems available. Not only offering high-efficiency and performance for simultaneous heating and cooling, its sophisticated design makes installation and maintenance much easier.

- Achieves COP 4,63 as the top class in the industry (Average cooling and heating value for 18 HP outdoor unit).
- Simultaneous cooling or heating operation for up to 52 indoor units.
- Small installation space, top class in the industry.
- Rotation operation function and back-up operation function provided.

Technical focus

- Standardization of outdoor unit to one compact casing size
- Improved operation efficiency
- The constant-speed compressor adopts a high-performance internal high-pressure scroll
- Improvement of the heat exchanger
- Redesign of structural parts
- Close side-by-side installation is possible

HP			18 HP	20 HP	22 HP	24 HP	26 HP	28 HP	30 HP
Standard model			U-8MF2E8 U-10MF2E8	U-8MF2E8 U-12MF2E8	U-8MF2E8 U-14MF2E8	U-8MF2E8 U-16MF2E8	U-12MF2E8 U-14MF2E8	U-14MF2E8 U-14MF2E8	U-14MF2E8 U-16MF2E8
Power supply		V	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415
			Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz
Cooling capacity		kW	50,4	56,0	61,5	68,0	73,0	78,5	85,0
EER [1]	Nominal	W/W	4,27	3,97	3,80	3,68	3,58	3,49	3.41
Running current	380 / 400 / 415 V	A	19,7 / 18,9 / 18,4	23,8 / 22,9 / 22,3	27,0 / 26,0 / 25,3	30,9 / 29,7 / 28,9	33,7 / 32,4 / 31,5	37,2 / 35,7 / 34,8	41,1 / 39,5 / 38,5
Power input		kW	11,8	14,1	16,2	18,5	20,4	22,5	24.90
Heating capacity		kW	56,5	63,0	69,0	76,5	81,5	87,5	95,0
COP [1]	Nominal	W/W	4,63	4,47	4,57	4,20	4,38	4,49	4,20
Running current	380 / 400 / 415 V	A	20,4 / 19,6 / 19,1	23,8 / 22,9 / 22,3	25,2 / 24,2 / 23,6	30,4 / 29,2 / 28,5	31,1 / 29,8 / 29,1	32,6 / 31,3 / 30,5	37,7 / 36,2 / 35,3
Power input		kW	12,2	14,1	15,1	18,2	18,6	19,5	22,6
Air volume		m^3/min	336	370	370	370	424	424	424
Sound pressure level	High / Low	dB(A)	61,0 / 58,0	62,5 / 59,5	63,0 / 60,0	63,0 / 60,0	64,5 / 61,5	65,0 / 62,0	65,0 / 62,0
Sound power level	Normal mode	dB	75,5 / 72,5	77,0 / 74,0	77,5 / 74,5	77,5 / 74,5	79,0 / 76,0	79,5 / 76,5	79,5 / 76,5
Dimensions	H x W x D	mm	1.758 x 2.060 x 930	1.758 x 2.060 x 930	1.758 x 2.060 x 930	1.758 x 2.060 x 930	1.758 x 2.060 x 930	1.758 x 2.060 x 930	1.758 x 2.060 x 930
Net weight		kg	538	538	591	591	636	644	644
Piping connections	Suction pipe	inch (mm)	1-1/8 (28,58)	1-1/8 (28,58)	1-1/8 (28,58)	1-1/8 (28,58)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)
	Discharge pipe	inch (mm)	7/8 (22,22)	7/8 (22,22)	1 (25,40)	1 (25,40)	1 (25,40)	1-1/8 (28,58)	1-1/8 (28,58)
	Liquid pipe	inch (mm)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	Balance pipe	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
Refrigerant amount at shipment		kg	16,8	17,1	17,6	17,6	18,1	18,6	18,6
Operating range	Cooling Min / Max	°C	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46
	Heating Min / Max	°C	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18
	Simultaneous operation	°C	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24

Solenoid valve kit		
KIT-P56HR3	KIT-P56HR3	3-Pipe control Solenoid valve kit (up to 5,6kW)
	CZ-P56HR3	Solenoid valve kit (up to 5,6kW)
	CZ-CAPE2	3-Pipe control PCB
KIT-P160HR3	KIT-P160HR3	3-Pipe control Solenoid valve kit (from 5,6kW to 10,6kW)
	CZ-P160HR3	Solenoid valve kit (up to 16,0kW)
	CZ-CAPE2	3-Pipe control PCB
CZ-CAPEK2		3-Pipe control PCB for wall mounted

3-Pipe control box kit	
CZ-P456HR3	4 ports 3 pipe box (up to 5,6kW)
CZ-P656HR3	6 ports 3 pipe box (up to 5,6kW)
CZ-P856HR3	8 ports 3 pipe box (up to 5,6kW)
CZ-P4160HR3	4 ports 3 pipe box (up to 16,0kW)

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb

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	32 HP	34 HP	36 HP	38 HP	40 HP	42 HP	44 HP	46 HP	48 HP
	U-16MF2E8 U-16MF2E8	U-8MF2E8 U-12MF2E8 U-14MF2E8	U-8MF2E8 U-14MF2E8 U-14MF2E8	U-8MF2E8 U-14MF2E8 U-16MF2E8	U-8MF2E8 U-16MF2E8 U-16MF2E8	U-14MF2E8 U-14MF2E8 U-14MF2E8	U-14MF2E8 U-14MF2E8 U-16MF2E8	U-14MF2E8 U-16MF2E8 U-16MF2E8	U-16MF2E8 U-16MF2E8 U-16MF2E8
	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415	380 / 400 / 415
	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz	Three Phase / 50 Hz
	90,0	96,0	101,0	107,0	113,0	118,0	124,0	130,0	135,0
	3.38	3,74	3,66	3,60	3,55	3,48	3,43	3,40	3,38
	43,9 / 42,2 / 41,1	42,9 / 41,2 / 39,7	46,1 / 44,3 / 43,1	49,6 / 47,6 / 46,4	53,1 / 51,0 / 49,7	56,0 / 53,8 / 52,4	59,6 / 57,3 / 55,8	63,8 / 61,3 / 59,7	65,9 / 63,3 / 61,7
	26,6	25,7	27,6	29,7	31,8	33,9	36,1	38,2	39,9
	100,0	108,0	113,0	119,0	127,0	132,0	138,0	145,0	150,0
	4,03	4,44	4,52	4,33	4,12	4,46	4,30	4,14	4,03
	41,7 / 40,1 / 39,1	41,0 / 39,4 / 38,4	41,6 / 39,9 / 38,9	46,1 / 44,3 / 43,1	52,2 / 49,6 / 47,8	49,3 / 47,3 / 46,1	53,8 / 51,6 / 50,3	58,8 / 56,5 / 55,0	62,6 / 60,1 / 58,6
	24,8	24,3	25,0	27,5	30,8	29,6	32,1	35,0	37,2
	424	582	582	582	582	636	636	636	636
	65,0 / 62,0	65,0 / 62,0	65,5 / 62,5	65,5 / 62,5	65,5 / 62,5	67,0 / 64,0	67,0 / 64,0	67,0 / 64,0	67,0 / 64,0
	79,5 / 76,5	79,5 / 76,5	80,0 / 77,0	80,0 / 77,0	80,0 / 77,0	81,5 / 78,5	81,5 / 78,5	81,5 / 78,5	81,5 / 78,5
	1.758 x 2.060 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930	1.758 x 3.120 x 930
	644	905	913	913	913	966	966	966	966
	1 1/4 (31,75)	1 1/4 (31,75)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)	1-1/2 (38,10)
	1-1/8 (28,58)	1-1/8 (28,58)	1-1/8 (28,58)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)
	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
	18,6	26,4	26,9	26,9	26,9	27,9	27,9	27,9	27,9
	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46	-10 / +46
	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18	-20 / +18
	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24	-10 / +24

Panasonic introducing the gas driven VRF

Panasonic's GHP range is extensive and covers the 2-Pipe and 3-Pipe system. Our GHP VRF range of commercial systems is leading the industry in the development of efficient and flexible systems, and is the natural choice for commercial projects, especially those where power restrictions apply. As you would expect, all our gas-driven VRF systems have the highest reliability rates in the industry and a leading customer service programme. The torque and rpm control functions of the GHP's motor are comparable with an inverter-type electric air conditioner. Thus, the GHP ensures individual, and efficient control and performance - just as you expect from an electric inverter controlled air conditioner.

Easy to position

- Up to 71kW of cooling from a current consumption of 0,1kW/h
- Single Phase power supply across the range
- The option of natural gas or LPG as its main power source
- Embedded Water Heat Exchanger to connect to domestic hot water systems 16–25 HP (2-Pipe units only)
- Option of DX or chilled water for indoor heat exchange
- Reduced CO_2 emissions

ECO G and ECO G Multi, S Series

The advanced Gas Driven VRF system offers increased efficiency and performance across the range. Now more powerful than ever before, it can connect up to 48 indoor units.
Improvements include increased part load performance, reduced gas consumption with a Miller-cycle engine and reduced electrical consumption by using DC-Fan motors.

ECO G High Power

1% this is what the new ECO G High Power is consuming versus your Electrical VRF. Your savings start now! Ideal for locations with low electricity grid, for chiller, ventilation and air conditioning application.

ECO G and ECO G Multi

The S Series 2-Pipe not only offers improved performance but also increased flexibility.

ECO G 3-Pipe

3-Pipe heat recovery system with simultaneous heating & cooling.

ECO G and ECO G Multi benefits

High-efficiency operation

All models are equipped with a high-performance air exchanger and a newly developed refrigerant heat exchanger for high efficiency operation, making them one of the most energy efficient solutions on the market.

Lowest nitrogen oxide emissions

The GHP VRF systems have the lowest nitrogen oxide emissions. In a pioneering development, the Panasonic GHP features a brand new lean-burn combustion system that utilises air fuel ratio feedback control to reduce NOx emissions to an all time low.

High performance

With its advanced heat exchanger design, this new GHP system offers improved efficiency and reduced running costs, which, coupled with improved engine management systems, have greatly improved the system COP rating.

Excellent economy

The Panasonic GHP provides quick and powerful cooling/heating and increases delivery of heat into the space by the efficient recovery of heat from the engine cooling water, which is injected into the refrigerant circuit by a highly efficient plate heat exchanger. In addition, the use of engine waste heat ensures that our gas heat pump air conditioner requires no defrost cycle, therefore providing continuous 100% heating performance in severe weather conditions with an outside air temperature as low as -20°C. During cooling mode the rejected heat from the engine is available for use with in a DHW system and can supply up to 30kW of hot water at 75°C. The DHW is also available in heating when the outside air temp is above 7°C.

Water chiller option

Our GHP system is also available with a water chiller option, which can be combined with individual outdoor units or as part of a DX chilled water mix of indoor units. The system can be operated via a BMS system or a Panasonic supplied control panel, with chilled water set points from -15°C – +15°C and heating set points 35°C – +55°C.

No defrost requirements

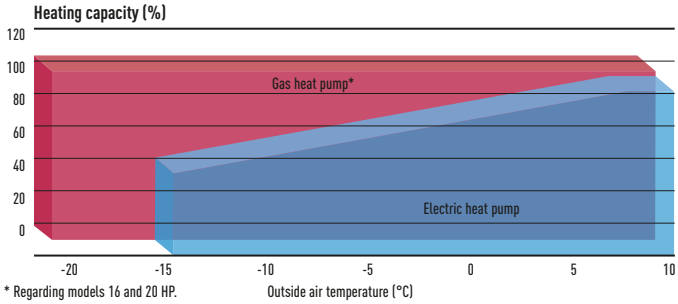
Below 4°C ambient in heating mode, the outdoor fans switch OFF, saving further running costs and CO_2 emissions.

ECO G with Water Heat Exchanger for chilled and hot water production

For hydronic applications.

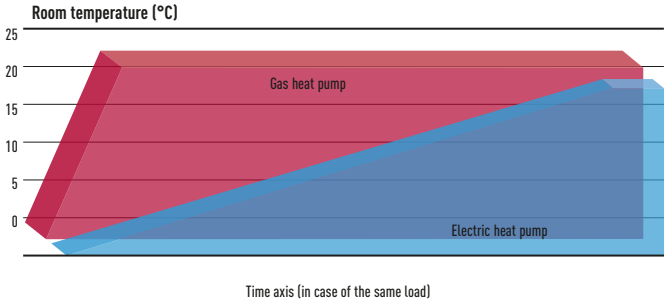
ECO G, the gas driven VRF

Comparison of heating capacity



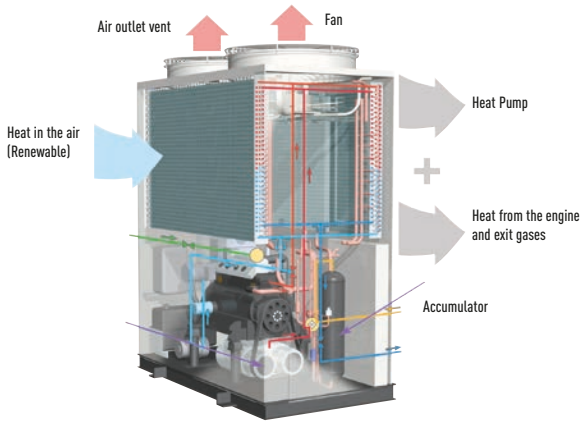
* Regarding models 16 and 20 HP.

Comparison of the start times for heating operation



The Gas Heat Pump (GHP)

Panasonic Gas Heat Pump is the natural choice for commercial projects, especially for those projects where power restrictions apply. As you would expect, all of our Gas Driven VRF systems are designed to give the highest reliability rates. The GHP engine or (internal combustion engine) varies the engine speed to match the building load functions that are comparable with an inverter type electric air conditioner.



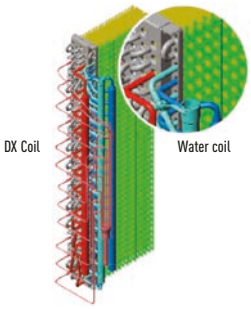
Power supply problems?

If you are short of electrical power, our gas heat pump could be the perfect solution:

- Runs on natural gas or LPG and just needs Single Phase supply
- Enables the building's electrical power supply to be used for other critical electrical demands
- Reduces capital cost to upgrade power substations to run heating and cooling systems
- Reduces power loadings within a building especially during peak periods
- Electricity supply freed up for other uses such as IT servers, commercial refrigeration, manufacturing, lighting etc.

GHP Outdoor Heat Exchanger

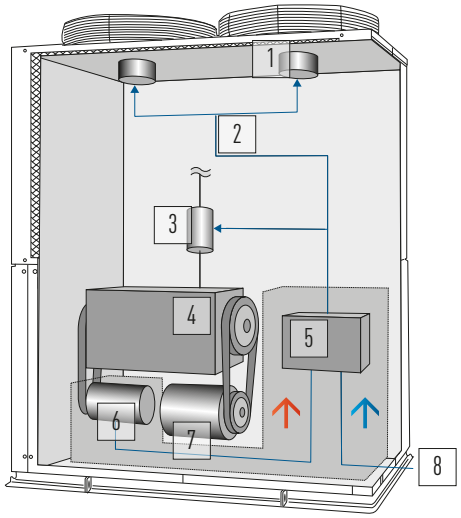
- Integrated DX and hot water coil
- No defrost required
- Faster reaction to demand for heating



ECO G High Power

2-Pipe Heat Pump System with Electrical Power Generator

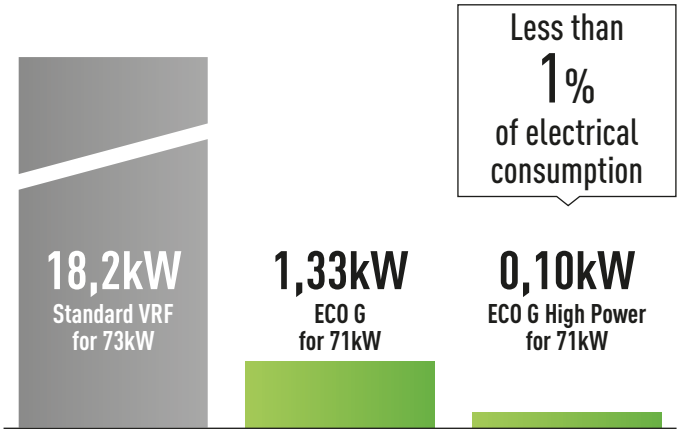
Panasonic innovates again introducing a new GHP producing his own electricity. Equipped with a small, high-performance generator. Compressor and generator are driven by gas engine. The generated electricity is used for the fan motor and cooling water pump of its own unit. The generating efficiency is more than 40%.



1. Fan motor
2. Electricity flow
3. Cooling water pump
4. Engine
5. Electric control BOX (Inverter/ Comverter)
6. Generator
7. Compressor
8. Electric supply

GHP with electrical generator. Only consumes 1% of the electricity required by standard VRF systems!

Comparison of electrical consumption on a 71kW outdoor unit



Generates electricity during heating or cooling operation

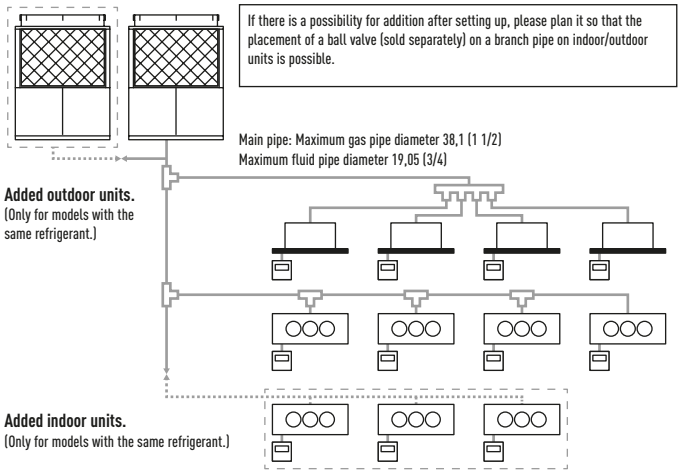
Generates electricity and air conditioning (heating or cooling) at the same time by using remaining engine power. ECO G High Power can generate 2,0 kW electricity at a generation efficiency of more than 40%.

ECO G High Power, ECO G and ECO G Multi

2-Pipe Heat Pump System.
Easy to add additional units in the future

Load can easily be increased in the future by the addition of indoor and outdoor units without having to plumb pipe shafts.

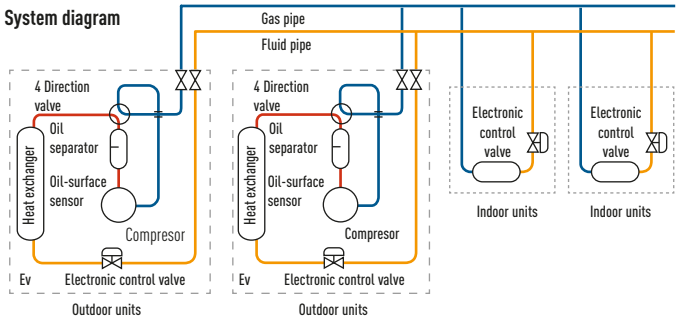
* When specifying refrigerant pipe work, please choose the size according to the horsepower after the increase of units.



Maximum possible number of outdoor units to be combined	2 units
Maximum horsepower of combined outdoor units	50 HP
Maximum possible number of indoor units to be connected	48 units[1]
Indoor/outdoor units capacity ratio	50%~130%[2]

1) When 2 outdoor units are connected. 2) Capacity of indoor units connection is: Minimum; 50% of the capacity of the smallest outdoor unit within the system, Maximum; 130%: total capacity of the system outdoor units.
Indoor units are same as multi series for buildings.

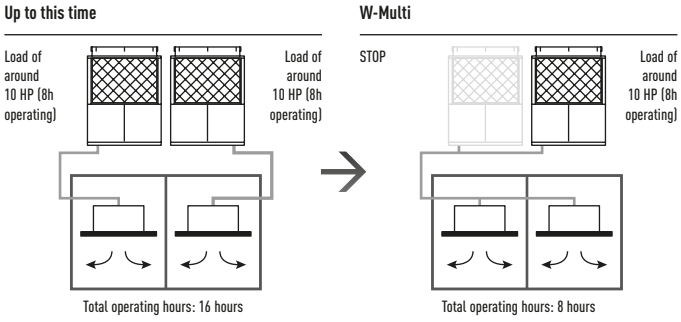
System diagram



Saving Energy

- Energy savings achieved by the appropriate capacity
- Equational program function

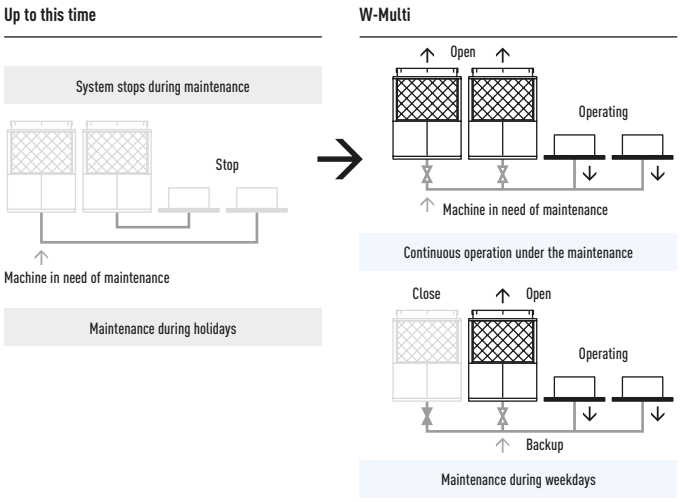
Energy savings are achieved by the appropriate load divider function, which enables efficient operation by concentrating the cooling/heating capacity to one outdoor unit and stopping the other. Compared to conventional machines with a similar COP, this function allows energy savings and thus reduces the running costs, especially in part-load seasons like spring and autumn.



Non-stop operation, even during maintenance

- System will not stop even during maintenance, due to Manual Backup Operating Function
- Maintenance is possible during weekdays because it can continue operating during maintenance
- Automatic Backup Operating Function enables continuous operation

If one outdoor unit stops the backup function will automatically start on the remaining unit and continue operating. During service intervals, the system being serviced can be isolated by a closing valve in the outdoor unit, enabling continuous operation with the still operative outdoor unit.

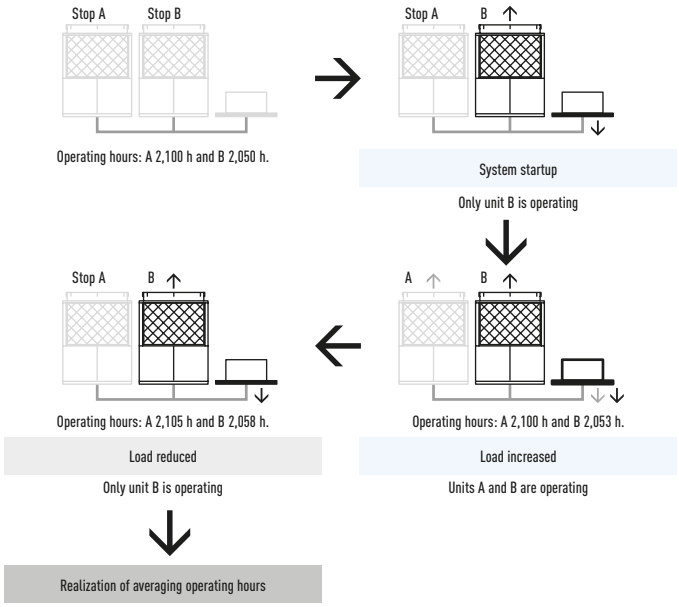


Long lifetime

- Renewal period prolonged due to rotation function

Rotation function, which is run from outdoor units with low operating time, will average the operating hours of each outdoor unit. This extends the periods between maintenance or replacement.

Example of the rotation function



ECO G, the gas driven VRF

ECO G High Power, ECO G and ECO G Multi

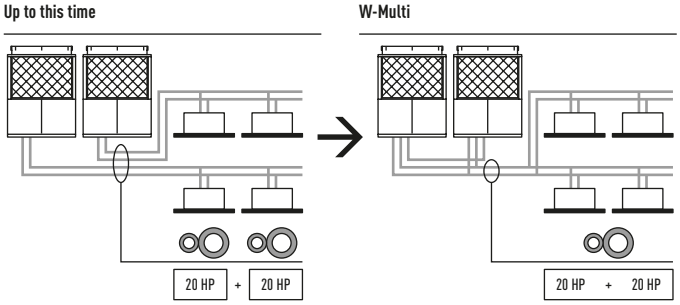
Ease of construction

- By using common header pipe work the installation cost and time is significantly reduced

By combining all pipes, which were needed for each indoor unit, into a common pipe in each system, the number of pipes are reduced by half* which leads to ease of construction. Furthermore, space of pipes within pipe shafts can be reduced by 2/3*.
Combining all pipes, which were needed for each outdoor unit, into a pipe in each system (number of pipes is reduced by half).

*System with approximately 40 HP (20 HP x 2 units).

Example of a system with approximately 40 HP

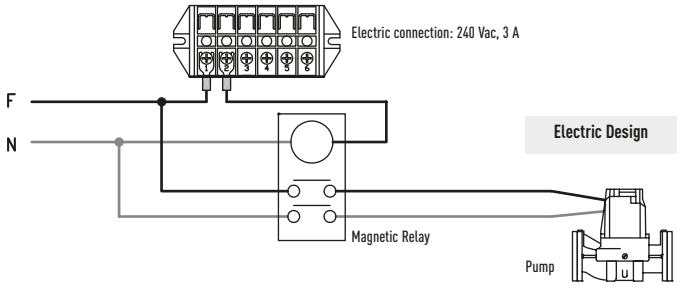


Hot Water Supply Function

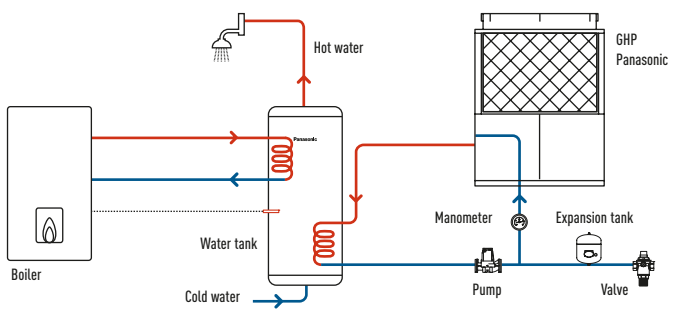
- System Advantage.

The engine waste heat, which is normally exhausted into the atmosphere, is recovered via the heat exchanger and effectively used to heat water, so the GHP Chiller acts as embedded sub system that alleviates the load on the client's main hot water system, and therefore offers 'free' hot water.

Capacity at cooling standard point		Outlet temperature 75°C	
Outdoor unit	U-16GE2E5	kW	15,00
	U-20GE2E5		20,00
	U-25GE2E5		30,00
	U-30GE2E5		30,00
Hot water piping allowable pressure		MPa	0,7
Hot water circulation rate		m³/h	3,9
Hot water tube size			Rp 3/4



Electric Design



- All the items illustrated in this drawing (except the outdoor unit) are not supplied by Panasonic.
- During start up, set temperature value of the water in the outdoor unit's parameter.

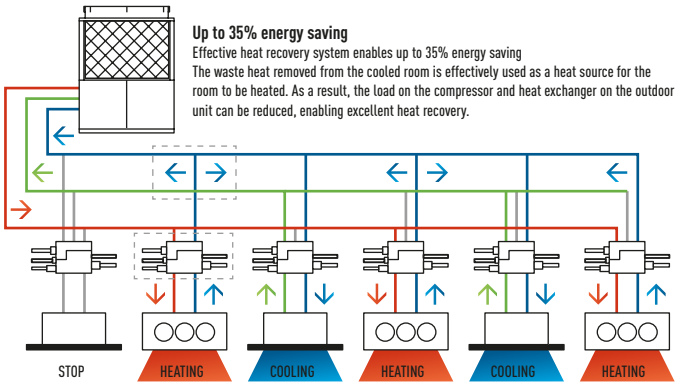
ECO G 3-Pipe

3-Pipe Heat Pump System. Excellent performance

Panasonic 3-Pipe Multi system is capable of simultaneous heating/cooling and individual operation of each indoor unit by only one outdoor unit. As a result, efficient individual air conditioning is possible in buildings having diverse room temperatures.

System example

Improved maintenance intervals. The unit only needs to be serviced every 10,000 hours. This is the best in the industry.



Solenoid valve kit

To be fitted on all 'zones' to allow simultaneous heating and cooling. Up to 36 indoor units are capable of simultaneous heating/cooling operation. Oil-recovery operation to gives more stable comfort air-conditioning control.

3-Pipe control Solenoid valve kit

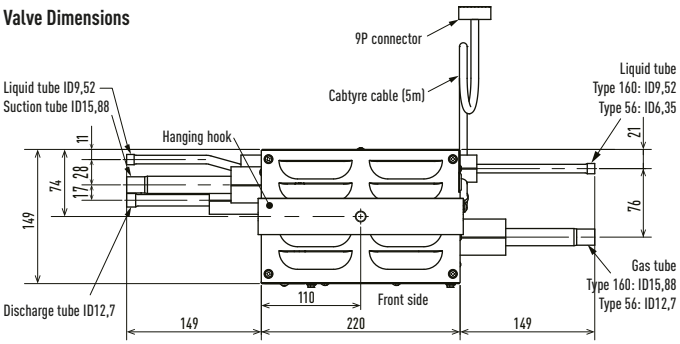
CZ-P56HR3
Up to 5,6kW
CZ-P160HR3
Up to 16,0kW

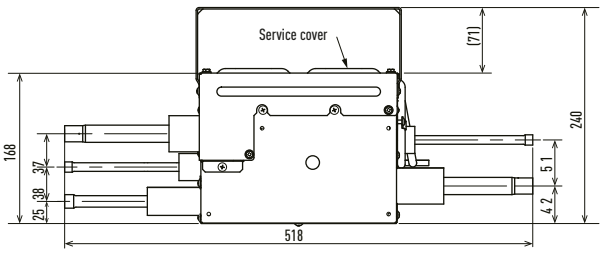
KIT-P56HR3
(CZ-P56HR3+CZ-CAPE2)
KIT-P160HR3
(CZ-P160HR3+CZ-CAPE2)

3-Pipe control PCB

3-Pipe control PCB CZ-CAPE2*.
Must be added to the CZ-P56HR3 or CZ-P160HR3.
* For wall mounted.

Valve Dimensions





ECO G HIGH POWER

The 2-Pipe Gas Driven VRF with an electrical power generator

ECO G High Power is a revolution in air conditioning design. Fitted with a permanent magnet, non-bearing type generator, it is the first VRF system that can supply heating, cooling, hot water and now also supply electrical power. Each ECO G High Power unit has a 2,0kW generator, drastically reducing the outdoor unit's electricity consumption.

Technical focus

- 2-Pipe air conditioning system providing cooling or heating
- Up to 2kW electricity generated (used on the outdoor unit)
- Very efficient generator
- Can connect to up to 24 indoor units
- IU/OU capacity ratio 50–200%
- 15 to 30kW hot water generation capacity
- Free Hot water provided when in cooling throughout temperature range and in heating when the ambient is above 7°C*
- 200 m maximum allowable piping length (L1)

* Referring to outside temperature.

HP			**16 HP**	**20 HP**	**25 HP**
Model *			**U-16GEP2E5**	**U-20GEP2E5**	**U-25GEP2E5**
Cooling capacity		kW	45,00	56,00	71,00
Hot water (cooling mode)		kW	15,0	20,0	30,0
Power Input		kW	0,1 (220–230) 0,36 (240)	0,1 (220–230) 0,36 (240)	0,1 (220–230) 0,36 (240)
EER	Nominal	W/W			
Max COP (inc hot water)					
Gas consumption		kW	31,3	41,4	63,5
Heating capacity	STD / Low temp[1]	kW	50,0 / 53,0	63,0 / 67,0	80,0 / 78,0
Power Input		kW	0,1 (220–230) 0,36 (240)	0,1 (220–230) 0,36 (240)	0,1 (220–230) 0,36 (240)
COP	Nominal	W/W			
Gas consumption	STD	kW	33,8	43,9	55,1
	Low temperature[1]	kW			
COP	Average				
Starter amperes		A	30	30	30
Sound pressure level		dB(A)	57	58	62
Dimensions	H x W x D	mm	2.273 x 1.650 x 1.000 (+80)	2.273 x 1.650 x 1.000 (+80)	2.273 x 1.650 x 1.000 (+80)
Net weight		kg	770	795	825
Pipe Connections	Gas	inch (mm)	1 1/8 (28,58)	1 1/8 (28,58)	1 1/8 (28,58)
	Liquid	inch (mm)	1/2 (12,70)	5/8 (15,88)	5/8 (15,88)
	Fuel gas		R3/4 (bolt thread)	R3/4 (bolt thread)	R3/4 (bolt thread)
	Exhaust drain port	mm	25	25	25
Indoor/outdoor capacity ratio			50-200%[2]	50-200%[2]	50-200%[2]
Number of connections indoor[2]			24	24	24

Service kits model	**Kit CZ-PSK560SP**
Outdoor unit reference	U-16GEP2E5 / U-20GEP2E5 / U-25GEP2E5
Material included	
Oil filter	1
Air cleaner element	1
Spark plug	4
V Belt (for compressor)	1
V Belt (for generator)	1
Oil absorption mats	14
Drain filter packing	1

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB. Heating (standard) Indoor 20°C DB. Heating (standard) Outdoor 7°C DB / 6°C WB. Heating (low temp.) Indoor 20°C DB / 15°C WB or less. Heating (low temp.) Outdoor 2°C DB / 1°C WB. DB: Dry Bulb; WB: Wet Bulb

* Check availability.
1) Low temp condition: outdoor temperture 2°C.
2) Indoor unit can be connected to up to 16kW model (model size 160)
Specifications subject to change without notice.

Cooling and heating capacities in the tables are determined under the test conditions of JIS B 8627.
Effective heating requires that the outdoor air intake temperature be at least -20°C DB or -21°C WB.

• Gas consumption is the total (high) calorific value standard. • Outdoor unit operating sound is measured 1 meter from the front and 1,5 meters above the floor (in an anechoic environment). Actual installations may have larger values due to ambient noise and reflections. • Specifications are subject to change without notice. • Hot water heating capacity is applicable during cooling operation. • The maximum water temperature that can be obtained is 75°C. Water heating performance and temperature vary with the air conditioning load. Because the hot water heating system uses waste heat from the engine, which runs the air conditioning, its ability to heat water is not guaranteed.

GAS POWERED ECO G

5 YEARS COMPRESSOR WARRANTY

ECO G AND ECO G MULTI

ECO G and ECO G Multi 2-Pipe for Heat Pump Applications

The S Series 2-Pipe not only offers improved performance but also increased flexibility. Now available as multi-systems, many combinations are possible, from 16 HP to 50 HP, allowing for more power and enabling accurate matching of a system building load. Additional new features include part load engine management and compressor run hour equalisation.

Technical focus

- Reduced gas consumption by Miller-cycle engine
- Reduced electrical power consumption by using DC Motors
- Lightweight design reduces weight
- Capacity ratio 50-130% (single models only)
- Quiet mode offers a further 2 dB(A) reduction
- Part load efficiencies increased
- Connectivity increased - now up to 48 indoor units
- Multi-systems with combinations from 13 HP up to 50 HP
- 10.000 run hours between engine service intervals (equivalent to one maintenance every 3,2 years*)
- 200 m maximum allowable piping length (L1)
- Extended pipe runs (total 780 m)
- Full heating capacity down to -20°C
- No defrost cycle

* Assuming 3,120 running hours per year - 12 h x 5 days x 52 weeks.

HP			16 HP	20 HP	25 HP	30 HP	32 HP	36 HP*	40 HP*	45 HP*	50 HP
Model			U-16GE2E5	U-20GE2E5	U-25GE2E5	U-30GE2E5	U-16GE2E5 U-16GE2E5	U-16GE2E5 U-20GE2E5	U-20GE2E5 U-20GE2E5	U-20GE2E5 U-25GE2E5	U-25GE2E5 U-25GE2E5
Cooling capacity		kW	45,00	56,00	71,00	85,00	90,00	101,00	112,00	127,00	142,00
Hot water (cooling mode)		kW	15,00	20,00	30,00	30,00	30,00	35,00	40,00	50,00	60,00
Power Input		kW	0,71	1,02	1,33	1,70	1,42	1,73	2,04	2,35	2,66
EER (Calorific Value)[1]	High / Low	W/W	1,48 / 1,64	1,40 / 1,55	1,15 / 1,28	1,22 / 1,35	1,48 / 1,64	1,43 / 1,59	1,40 / 1,55	1,25 / 1,39	1,15 / 1,28
Max COP (inc hot water)			1,97	1,89	1,64	1,65	1,97	1,93	1,89	1,74	1,64
Gas consumption		kW	29,70	39,10	60,40	67,9	59,40	68,80	78,20	99,50	120,80
Heating capacity	STD / Low temperature[2]	kW	50,00 / 53,00	63,00 / 67,00	80,00 / 78,00	95,00 / 90,00	100,00 / 106,00	113,00 / 120,00	126,00 / 134,00	143,00 / 145,00	160,00 / 156,00
Power Input		kW	0,60	0,64	0,83	1,45	1,20	1,24	1,28	1,47	1,66
COP (Calorific Value)[1]	High / Low	W/W	1,51 / 1,68	1,46 / 1,62	1,48 / 1,64	1,37 / 1,52	1,51 / 1,68	1,48 / 1,64	1,46 / 1,62	1,47 / 1,63	1,48 / 1,64
Gas consumption	STD	kW	32,50	42,50	53,20	68,10	65,00	75,00	85,00	95,70	106,40
	Low temperature[2]	kW	41,50	56,40	62,30	78,00	83,00	97,90	112,80	118,70	124,60
COP	Average		1,50	1,43	1,32	1,29	1,50	1,46	1,43	1,36	1,32
Starter amperes		A	30	30	30	30	30	30	30	30	30
Sound pressure level		dB(A)	57	58	62	63	60	61	61	63	65
Dimensions	Height	mm	2.273	2.273	2.273	2.273	2.273	2.273	2.273	2.273	2.273
	Width	mm	1.650	1.650	1.650	2.026	1.650+100+1.650	1.650+100+1.650	1.650+100+1.650	1.650+100+1.650	1.650+100+1.650
	Depth	mm	1.000 (+80)	1.000 (+80)	1.000 (+80)	1.000 (+80)	1.000 (+80)	1.000 (+80)	1.000 (+80)	1.000 (+80)	1.000 (+80)
Net weight		kg	755	780	810	840	755 + 775	755 + 780	780 + 780	780 + 810	810 + 810
Pipe Connections	Gas	inch (mm)	1 1/8 (28,58)	1 1/8 (28,58)	1 1/8 (28,58)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/4 (31,75)	1 1/2 (38,10)	1 1/2 (38,10)	1 1/2 (38,10)
	Liquid	inch (mm)	1/2 (12,70)	5/8 (15,88)	5/8 (15,88)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	Fuel gas		R3/4 (bolt thread)	R3/4 (bolt thread)	R3/4 (bolt thread)	R3/4 (bolt thread)	R3/4 (bolt thread)	R3/4 (bolt thread)	R3/4 (bolt thread)	R3/4 (bolt thread)	R3/4 (bolt thread)
	Exhaust drain port	mm	25 rubber hose	25 rubber hose	25 rubber hose	25 rubber hose	25 rubber hose	25 rubber hose	25 rubber hose	25 rubber hose	25 rubber hose
Indoor/outdoor capacity ratio			50-200 %	50-200 %	50-200 %	50-170 %	50-130 %	50-130 %	50-130 %	50-130 %	50-130 %
Number of connections indoor			24	24	24	32	48	48	48	48	48

Service kits model	Kit CZ-PSK560SP
Outdoor unit reference	U-16GE2E5 / U-20GE2E5 / U-25GE2E5
Material included on the kit	
Oil filter	1
Air Cleaner Element (Air Filter)	1
Spark plug	4
V Belt (for compressor)	1
V Belt (for generator)	-
Oil absorption mats	1
Drain filter packing	1

Service kits model	Kit CZ-PSK850S
Outdoor unit reference	U-30GE2E5
Material included on the kit	
Oil Filter	1
Air Cleaner Element (Air Filter)	1
Spark plug	4
V BELT (for compressor)	1
V Belt (for generator)	-
Oil Strainer	1
Drain Filter Packing	1

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB. Heating (standard) Indoor 20°C DB. Heating (standard) Outdoor 7°C DB / 6°C WB. Heating (low temp.) Indoor 20°C DB / 15°C WB or less. Heating (low temp.) Outdoor 2°C DB / 1°C WB. DB: Dry Bulb; WB: Wet Bulb

* In these combinations, GEP2E5 is able to connect to a W-multi system Specifications subject to change without notice instead of a GE2E5.
1) Referred to Natural Gas (HCV 37,78 MJ/Nm³ or 55,56 MJ/kg; LCV 34,00 MJ/Nm³ or 50,00 MJ/kg). 2) Low temperature condition: outdoor temperature 2°C.
Specifications subject to change without notice.

Cooling and heating capacities in the tables are determined under the test conditions of JIS B 8627. Effective heating requires that the outdoor air intake temperature be at least -20°C DB or -21°C WB.
• Gas consumption is the total (high) calorific value standard. • Outdoor unit operating sound is measured 1 meter from the front and 1,5 meters above the floor (in an anechoic environment). Actual installations may have larger values due to ambient noise and reflections. • Specifications are subject to change without notice. • Hot water heating capacity is applicable during cooling operation. • The maximum water temperature that can be obtained is 75°C. Water heating performance and temperature vary with the air conditioning load. Because the hot water heating system uses waste heat from the engine, which runs the air conditioning, its ability to heat water is not guaranteed.

GAS POWERED ECO G

5 YEARS COMPRESSOR WARRANTY

ECO G 3-PIPE

3-Pipe Heat Recovery System with simultaneous Heating & Cooling
The only 3-Pipe GHP system in Europe, the S Series ECO G 3-Pipe offers even more performance and outstanding features when you need simultaneous heating and cooling. Now with capacities available from 16 HP to 25 HP, Panasonic offers the greatest choice and flexibility to solve any power problem or site requirement.

Technical focus
- Simultaneous heating and cooling for total control
- Reduced gas consumption by Miller-cycle engine
- Reduced electrical power consumption by using DC Motors
- Capacity ratio 50–200%
- Quiet mode offers a further 2 dB(A) reduction
- Part load efficiencies increased
- Connectivity increased to up to 24 indoor units
- 10.000 run hours between engine service intervals (equivalent to one maintenance every 3,2 years*)
- 145 m maximum allowable piping length (L1)
- Extended pipe runs (total 780 m)
- Option of using LPG as a power supply (increases flexibility and avoids problems of potential site restrictions in the future. The purer fuel is also excellent for further reductions in CO_2 emissions)
- Full heating capacity down to -21°C
- No defrost cycle

* Assuming 3,120 running hours per year - 12 h x 5 days x 52 weeks

HP			16 HP	20 HP	25 HP
Model			**U-16GF2E5**	**U-20GF2E5**	**U-25GF2E5**
Cooling capacity		kW	45,00	56,00	71,00
Power input cooling		kW	0,71	1,02	1,33
EER (Calorific Value)[1]	High / Low	W/W	1,48 / 1,64	1,40 / 1,55	1,15 / 1,28
Cooling gas consumption		kW	29,7	39,1	60,4
Heating capacity	STD	kW	50,00	63,00	80,00
	Low temperature[2]	kW	53,00	67,00	78,00
Power input heating		kW	0,60	0,64	0,83
COP (Calorific Value)[1]	High / Low	W/W	1,51 / 1,68	1,46 / 1,62	1,48 / 1,64
Gas consumption	STD	kW	32,5	42,5	53,2
	Low temperature[2]	kW	41,5	56,4	62,3
COP	Average		1,50	1,43	1,32
Starter amperes		A	30	30	30
Operation sound		dB(A)	57	58	62
Dimensions	H x W x D	mm	2,273 x 1,650 x 1,000 (+80)	2,273 x 1,650 x 1,000 (+80)	2,273 x 1,650 x 1,000 (+80)
Net weight		kg	775	775	805
Pipe Connections	Gas	inch (mm)	1 1/8 (28,58)	1 1/8 (28,58)	1 1/8 (28,58)
	Liquid	inch (mm)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	Discharge	inch (mm)	7/8 (22,22)	1 (25,40)	1 (25,40)
	Fuel gas		R3/4	R3/4	R3/4
	Exhaust drain port	mm	25	25	25
Indoor/outdoor capacity ratio			50-200%[3]	50-200%[3]	50-200%[3]
Number of connected indoor units			24	24	24

Service kits model	Kit CZ-PSK560SP
Outdoor unit reference	U-16GF2E5 / U-20GF2E5 / U-25GF2E5
Material included on the kit	
Oil filter	1
Air Cleaner Element (Air Filter)	1
Spark plug	4
V Belt (for compressor)	1
V Belt (for generator)	-
Oil absorption mats	1
Drain filter packing	1

Solenoid valve kit		
KIT-P56HR3	KIT-P56HR3	3-Pipe control Solenoid valve kit (up to 5,6kW)
	CZ-P56HR3	Solenoid valve kit (up to 5,6kW)
	CZ-CAPE2	3-Pipe control PCB
KIT-P160HR3	KIT-P160HR3	3-Pipe control Solenoid valve kit (from 5,6kW to 10,6kW)
	CZ-P160HR3	Solenoid valve kit (up to 16,0kW)
	CZ-CAPE2	3-Pipe control PCB
CZ-CAPEK2		3-Pipe control PCB for wall mounted

3-Pipe control box kit	
CZ-P456HR3	4 ports 3 pipe box (up to 5,6kW)
CZ-P656HR3	6 ports 3 pipe box (up to 5,6kW)
CZ-P856HR3	8 ports 3 pipe box (up to 5,6kW)
CZ-P4160HR3	4 ports 3 pipe box (up to 16,0kW)

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB. Heating (standard) Indoor 20°C DB. Heating (standard) Outdoor 7°C DB / 6°C WB. Heating (low temp.) Indoor 20°C DB / 15°C WB or less. Heating (low temp.) Outdoor 2°C DB / 1°C WB. DB: Dry Bulb; WB: Wet Bulb

1) Referred to Natural Gas (HCV 37,78 MJ/Nm³ or 55,56 MJ/kg; LCV 34,00 MJ/Nm³ or 50,00 MJ/kg). 2) Low temperature condition: outdoor temperature 2°C. 3) Indoor unit can be connected to up to 16kW model (model size 60)
Specifications subject to change without notice.

Cooling and heating capacities in the tables are determined under the test conditions of JIS B 8627.
Effective heating requires that the outdoor air intake temperature be at least -20°C DB or -21°C WB.
• Gas consumption is the total (high) calorific value standard. • Outdoor unit operating sound is measured 1 meter from the front and 1,5 meters above the floor (in an anechoic environment). Actual installations may have larger values due to ambient noise and reflections. • Specifications are subject to change without notice.

GAS POWERED ECO G

5 YEARS COMPRESSOR WARRANTY

ECO G Water Heat Exchanger for hydronic applications

Connection to chilled water coils in air handling equipment

Air Handling application

When a top London restaurant opened, it needed large volumes of fresh air to ensure the optimum dining environment. GHP units connected to the cooling coils within the air handling equipment ensured the air was introduced in the right condition in both summer and winter.

Chiller replacement. Chilled water supply to fan coils

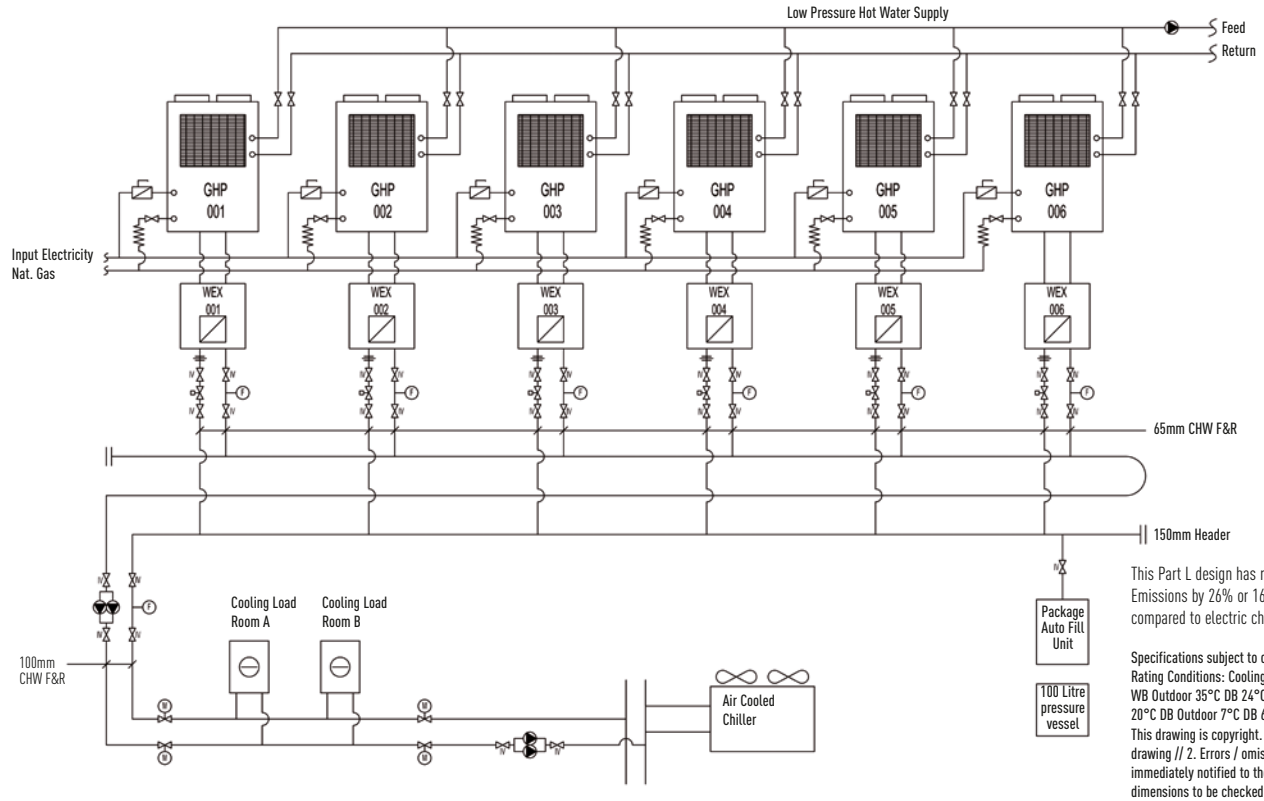
Chiller replacement

When some old chillers needed replacing at the end of their operational lifetime, GHPs with Water Heat Exchangers enabled the project to be carried out in stages whilst still utilising the existing water pipe work and fan coils. This enabled the project to be delivered on time, to a restricted budget and avoided all issues regarding refrigerant in confined spaces.

Connection to 'close control' computer equipment

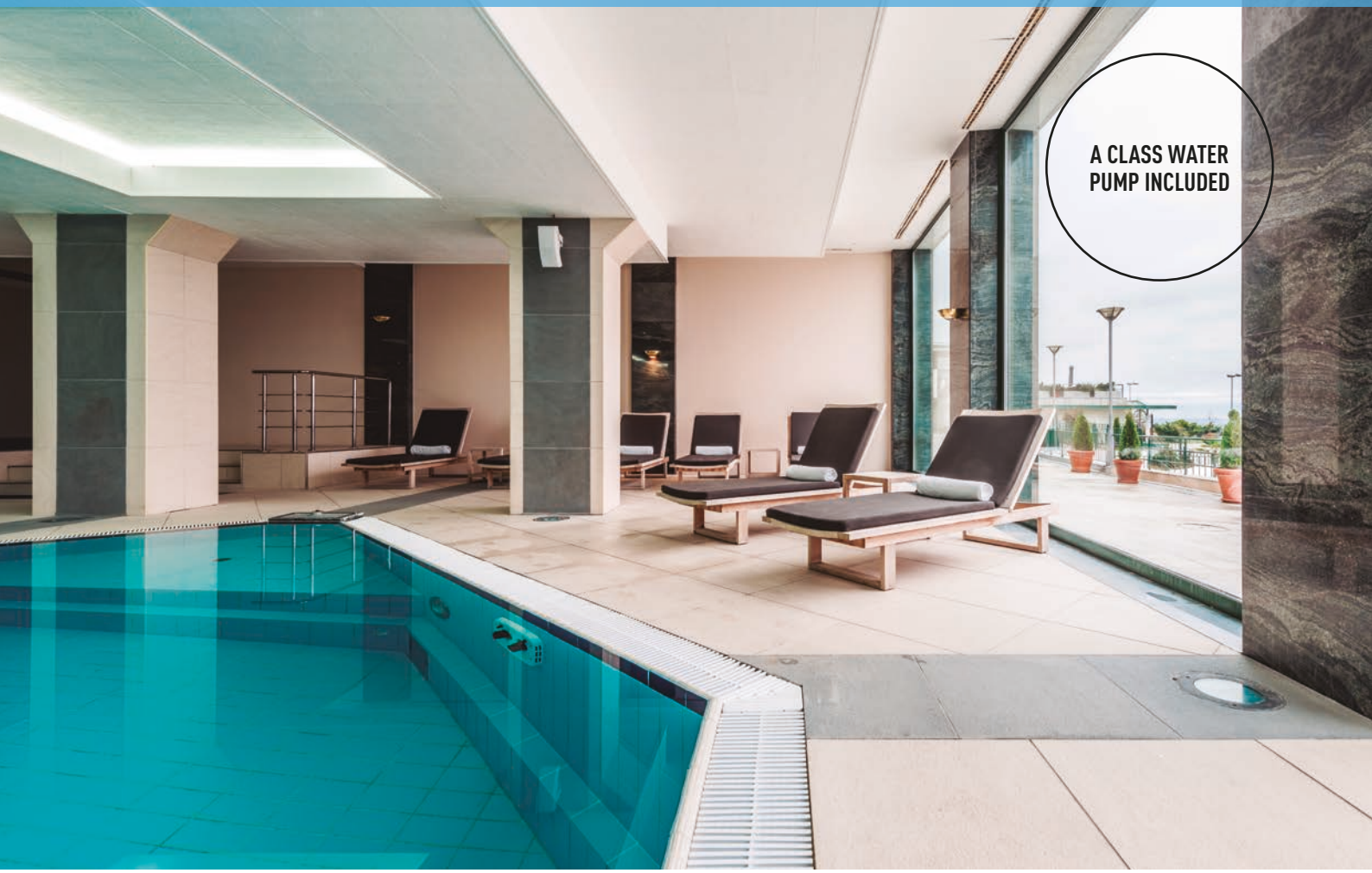
Computer room applications

When all available electrical power needed to be utilised for the IT equipment for a leading international bank, the cooling load of over 450kW had to be powered by gas. The outdoor units were connected via Water Heat Exchangers to cooling coils inside the 'close control' units thereby maintaining a conditioned environment for temperature and humidity. By utilising the hot water function over 100kW of hot water are supplied to the building and therefore the additional benefit of considerable CO_2 savings is ensured.



This Part L design has reduced CO_2 Emissions by 26% or 166 tonnes per annum compared to electric chillers.

Specifications subject to change without notice. Rating Conditions: Cooling Indoor 27°C DB 19°C WB Outdoor 35°C DB 24°C WB Heating Indoor 20°C DB Outdoor 7°C DB 6°C WB.



The Panasonic solution for chilled and hot water production!

ECOi from 28kW to 50kW

Key benefits:

- Heating, cooling and DHW
- Water connections R2"f for 28kW and R2,5"f for 50kW
- No cascade installation up to 51,3kW
- Full line-up of outdoor units which can cover up to 50kW heat demand
- Large choice of remote controls and interfaces
- 3,25 COP with water at 45°C and outdoor temperature of +7°C

GHP + WHE heating, cooling and DHW

The ECO G solution for gas boiler replacement

- No cascade installation up to 80kW
- Water connections R2,5"f
- Combined with a Water Heat Exchanger unit, the Panasonic GHP can create a flexible system, the ideal replacement for existing chiller and boiler systems in order to increase efficiency and reduce CO_2 emissions.
- Reused heat from the engine is an alternative to thermal solar energy
- No defrost cycle
- Super silent outdoor units
- No glycol needed as the hydromodule can be placed in heated part of building
- Keep existing water installation and fan coils
- Oversizing is reduced by keeping the power at a low temperature.
- No need for cooling towers
- Electrical demand spikes or possible costs derived from investments in new electrical infrastructures are lowered.

With ECOi outdoor units

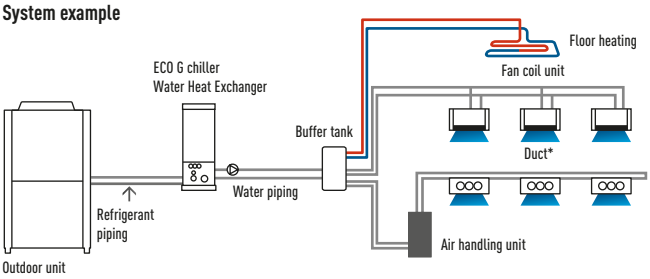
- Maximum hot water outlet temperature: 45°C
- Minimum chilled water outlet temperature: 5°C
- Outdoor temperature range in cooling mode: +5°C to +43°C
- Outdoor temperature range in heating mode: -11°C to +15°C

ECOi Water Heat Exchanger

Electrical VRF with Water Heat Exchanger

- With this easy to install Water Heat Exchanger unit, you can now cover projects up to 51kW hot water demand or 44kW on chilled application on a efficient way and cost effective.

System example

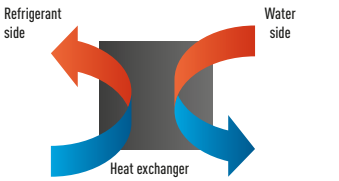


A Buffer tank of minimum 280l for 28kW and 500l for 50kW is always needed.

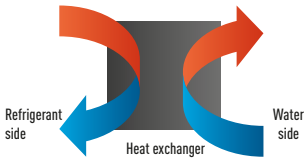
New Electrical panel with new algorithm

- Optimized heat exchanger to increase drastically the efficiency
- Liquid receiver to outperform the functionality of the WHE
- Unique 4 way valve in order always have counterflow fluid circulation in heating and cooling fluid circulation on both sides of the cross flow. This optimizes efficiency!

On cooling mode



On heating mode

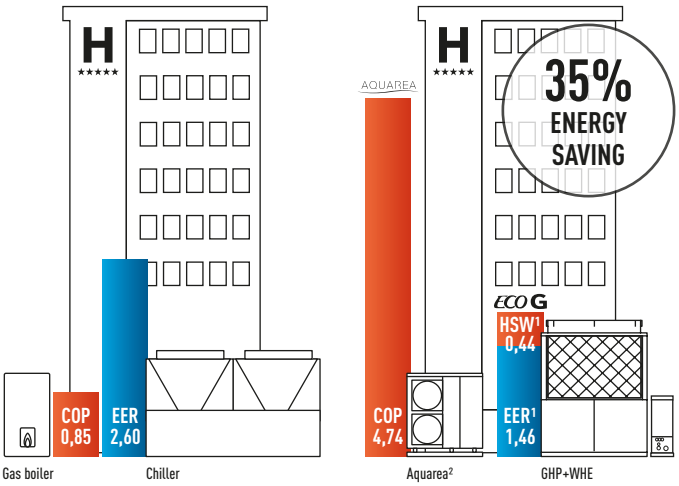


Built in A class water pump with high efficiency and capacity

WHE	Power consumption	Water flow
S-250 / S-500	9 - 130 W	4,3 / 8,6
S-710	12 - 310 W	12,2

With GHP outdoor units

Case Study, Hotel Application



1) Total COP= 1,90, calculated in primary energy (U-20GE2E8). Equivalent EER (2007/749)= 3,73.
2) Electric to support pick of consumption on domestic hot water.

Example of Hotel renewal of existing Chiller and Boiler system with Panasonic GHP and Aquarea mixed solution

GHP and Aquarea are the smart solution for renewal Chiller/Boiler applications with annual running cost savings around 13.600€.

			Load kW/h year	Power Input	Running cost €
Cooling	Chiller+Boiler	Chiller	231.653	89.097	12.474
	GHP+A2W	GHP	231.653	183.852	7.354
Heating	Chiller+Boiler	Boiler	96.749	113.823	4.553
	GHP+A2W	GHP	96.749	73.630	2.945
HSW	Chiller+Boiler	Boiler	204.213	240.251	9.610
	GHP+A2W	GHP (*)	118.225	0	0
		Aquarea	77.031	16.390	2.295
		Back up Boiler	8.957	10.538	422
Total	Chiller+Boiler		532.616	443.171	26.637
	GHP+A2W		532.616	284.409	13.015
	GHP+A2W savings			158.762	13.621

Hotel example: 2.000 m² Hotel 4*, 75 rooms, in Barcelona. Cooling load 170kWh, Heating Load 142kWh, HSW 204kWh/year. Part load calculation at 70%, and 33% of total year at heating mode. Including 10% capacity drop with Water Heat Exchanger. 3 units GHP U-20GE2E5 and Aquarea 9kW.

35% SAVINGS
BEST ECO SOLUTION

Excellent applicability when there is a thermal demand for heat, DHW and cooling, as well as additional thermal usages such as swimming pools, SPA, laundries: Hotels, sports centers, hospitals, gymnasiums, homes, shopping centers, etc.

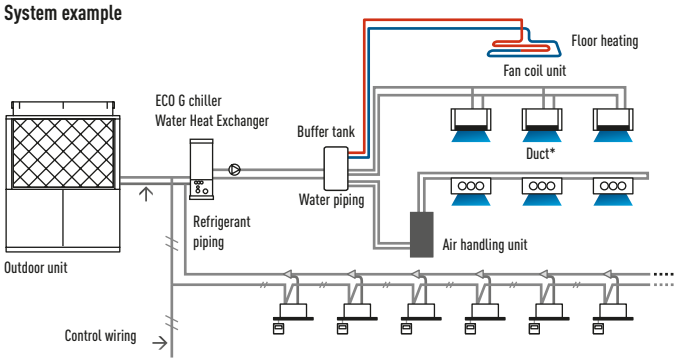
In heating mode, at very low outdoor temperature -21°C, the available power is maintained. No defrost cycle happens and stable heating comfort is guaranteed.

- Hot water outlet temperatures from 35°C to 55°C
- Chilled water outlet temperatures from -15°C to 15°C
- Outdoor temperature range in cooling mode: -10°C to +43°C
- Minimum outdoor temperature in heating mode: -21°C

ECO G Water Heat Exchanger. Mixed System Application

- The GHP Multi System can have an indoor unit plus a GHP chiller. When the two systems are operated independently, an outdoor unit with 130% capacity can be connected.

System example



Note: The mode of running of outdoor unit depends on the Water Heat Exchanger's mode. The water pump is not included in the N2 models Water Heat Exchanger. For simultaneous operation, however, the maximum capacity is 130%. Please inquire details of this system design of Panasonic. * Standard DX type indoor unit system.

ECOi 2-PIPE WITH WATER HEAT EXCHANGER
FOR CHILLED AND HOT WATER PRODUCTION

For hydronic Applications
Water Heat Exchanger for ECOi. Operation and control by timer remote control CZ-RTC4. Energy-efficient capacity control. Stainless steel plate heat exchanger with anti-freeze protection control. Change-over between heating and cooling operation.

Technical focus
- Maximum distance between outdoor unit and Water Heat Exchanger: 170 m
- Maximum hot water outlet temperature: 45°C
- Minimum chilled water outlet temperature: 5°C
- Outdoor temperature range in cooling mode: +5°C to +43°C
- Outdoor temperature range in heating mode: -11°C to +15°C (with low temperature kit -25°C)

Hydrokit with A class pump*			**PAW-250WX2E5N**	**PAW-500WX2E5N**
Hydrokit without pump			**PAW-250WX2E5N2**	**PAW-500WX2E5N2**
Nominal cooling capacity at 35°C, water outlet 7°C			25,0	50,0
Nominal heating capacity			28,0	56,0
Heating capacity at +7°C, heating water temperature at 45°C		kW	28,0	56,0
COP at +7°C with heating water temperature at 45°C			2,97	3,10
Heating Energy Efficiency class at 35°C			A+	A++
Dimensions	H x W x D	mm	1.010 x 570 x 960	1.010 x 570 x 960
Net weight		kg	120	145
Water pipe connector			Rp2 Female Thread (50A)	Rp2 Female Thread (50A)
Heating water flow (ΔT=5 K. 35°C)		m^3/h	4,3	8,6
Capacity of integrated electric heater		kW	Not equipped	Not equipped
Input power		kW	0,01 + (min. 0,05 / max. 0,13 for water pump)	0,01 + (min. 0,19 / max. 0,31 for water pump)
Maximum current		A	0,07 + (min. 0,37 / max. 0,95 for water pump)	0,07 + (min. 0,88 / max. 1,37 for water pump)
Outdoor Unit			**U-10ME1E8**	**U-20ME1E8**
Sound pressure level		dB(A)	59	63
Dimensions	H x W x D	mm	1.758 x 770 x 930	1.758 x 1.540 x 930
Net weight		kg	234	421
Piping connections	Liquid pipe	inch (mm)	3/8 (9,52)	5/8 (15,88)
	Gas pipe	inch (mm)	7/8 (22,22)	1-1/8 (28,58)
Refrigerant (R410A)		kg	6,8 *Need Additional gas amount at site	9,0 *Need Additional gas amount at site
Pipe length range / Elevation difference (in/out)		m	170 / 50 (OD above) 35 (OD below)	170 / 50 (OD above) 35 (OD below)
Pipe length for nominal capacity		m	7,5	7,5
Pipe length for additional gas / Additional gas amount (R410A)		m / g/m	0 < / Refer to manual	0 < / Refer to manual
Operation Range	Outdoor ambient	°C	-11 — +15[1]	-11 — +15[1]
	Water outlet (at-2/-7/-15)	°C	35 — 45	35 — 45

* PAW-250WX2E5N includes pump with 0-10 Volt Control by default / PAW-500WX2E5N includes pump with 0-10 Volt with optional IF.
1) With accessory low temperature kit -25 ~ +15°C.
Performance calculation in agreement with Eurovent. Sound pressure measured at 1 m from the outdoor unit and at 1,5 m height.

Timer remote controller
CZ-RTC4
Compatible with Econavi

Wired remote controller
CZ-RTC5
Compatible with Econavi

INVERTER+

5 YEARS COMPRESSOR WARRANTY

ECO G WITH WATER HEAT EXCHANGER
FOR CHILLED AND HOT WATER PRODUCTION

For hydronic applications
Water Heat Exchanger. Operation and control by timer remote control CZ-RTC4. Energy-efficient capacity control. Stainless steel plate heat exchanger with anti-freeze protection control. Change-over between heating and cooling operation.

Technical focus
- New! A class pump included (only in N model)
- Maximum distance between outdoor units and WHE: 170 m
- Possibility to mix DX and Water Heat Exchanger systems
- Hot water outlet temperatures from 35°C to 55°C
- Chilled water outlet temperatures from -15°C to +15°C
- Outdoor temperature range in cooling mode: -10°C to +43°C
- Minimum outdoor temperature in heating mode: -21°C

Hydrokit with A class pump*			**PAW-500WX2E5N**	**PAW-710WX2E5N**
Hydrokit without pump			**PAW-500WX2E5N2**	**PAW-710WX2E5N2**
Nominal Heating Capacity			60,0	80,0
Heating Capacity at +7°C, heating water temperature at 35°C		kW	62,0	82,8
COP at +7°C with heating water temperature at 35°C			1,48	1,34
Heating Capacity at +7°C, heating water temperature at 45°C		kW	60,0	76
COP at +7°C with heating water temperature at 45°C			1,26	1,26
Heating Capacity at -7°C, heating water temperature at 35°C		kW	54,5	74,6
COP at -7°C, heating water temperature at 35°C			1,09	0,77
Heating Capacity at -15°C, heating water temperature at 35°C		kW	59,2	77,4
COP at -15°C with heating water temperature at 35°C			0,75	0,76
Heating Energy Efficiency class at 35°C			A	A
Nominal Cooling Capacity			50	67
Cooling capacity at +35°C, outlet tp 7°C, inlet tp 12°C		kW	50	67
EER at +35°C, outlet tp 7°C, inlet tp 12°C			1,15	1,05
Dimensions	H x W x D	mm	1.010 x 570 x 960	1.010 x 570 x 960
Weight		kg	145	180
Water pipe connector			Rp2 Female Thread (50A)	Rp2 Female Thread (50A)
Heating water flow (ΔT=5 K. 35°C)		l/min	8,6	11,6
Capacity of integrated electric heater		kW	Not equipped	Not equipped
Input Power		kW	0,01 + (min. 0,19 / max. 0,31 for water pump)	0,01 + (min. 0,17 / max. 0,31 for water pump)
Maximum Current		A	0,07 + (min. 0,88 / max. 1,37 for water pump)	0,07 + (min. 0,85 / max. 1,37 for water pump)
Outdoor Unit			**U-20GE2E5**	**U-30GE2E5**
Sound pressure		dB(A)	58	63
Dimensions / Weight	H x W x D	mm / kg	2.273 x 1.650 x 1.000 / 780	2.273 x 2.026 x 1.000 / 840
Piping connections	Liquid pipe / Gas pipe	inch (mm)	5/8 (15,88) / 1-1/8 (28,58)	3/4 (19,05) / 1 1/4 (31,75)
Pipe length / for nominal capacity	Max.	m	7 / 170	7 / 170
Elevation difference (in/out)		m	50 (OD above) 35 (OD below)	50 (OD above) 35 (OD below)
Operation range in heating mode	Outdoor ambient	°C	-21 — 15,5	-21 — 15,5
	Water outlet (at-2/-7/-15)[2]	°C	35 — 55	35 — 55

Performance calculation in agreement with Eurovent. Sound pressure measured at 1 m from the outdoor unit and at 1,5 m height.
* PAW-500WX2E5N and PAW-710WX2E5N includes pump with 0-10 Volt with optional IF.

Timer remote controller
CZ-RTC4
Compatible with Econavi

Wired remote controller
CZ-RTC5
Compatible with Econavi

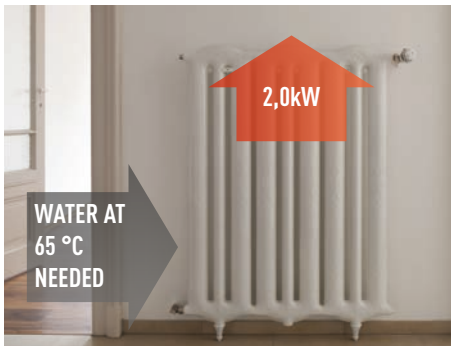
GAS POWERED ECO G

AQUAREA
AIR

Aquarea Air Radiators

New line up of Super low temperature radiators for Heat Pump application: Aquarea Air 200/700/900 with radiating effect

The slimline Panasonic Aquarea Air radiators deliver high efficiency climate control. With a depth of just under 13 cm they are at the cutting edge of the market. Blending easily into the home, Aquarea Air's elegant design and product refinements are clear to see in every detail.
The Aquarea Air's slimline profile has been achieved thanks to the innovative layout of the ventilation unit and the heat exchanger. The fan is tangential with asymmetric blades and the large surface heat exchanger enables high airflows to be achieved with low pressure loss and low noise levels.
Exceptional ventilation efficiency means the motor uses considerably less energy (low wattage). The fan speed is continuously modulated by the temperature controller with proportional integral logic, with undoubted advantages for regulating the temperature and humidity in summer mode.
All temperature curves and capacity are available on www.panasonicproclub.com



With standard cast radiators

With Aquarea Air

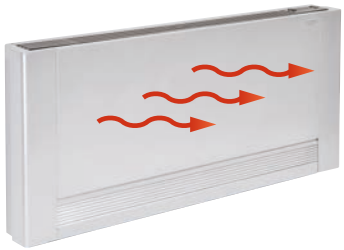
During winter, the operating principle is based on micro fans with very low power consumption and minimum noise, that send hot air coming from the heat exchanger, to the inside of the front panel of the device and therefore heat it effectively. With this principle, the terminal also provides significant power while heating, without running the main fan. Comfort temperatures are therefore maintained, without air movements and in silence. In summer mode, the airflow generated by the micro fans is stopped to avoid any dew formation on the terminal's front surface.

Technical focus

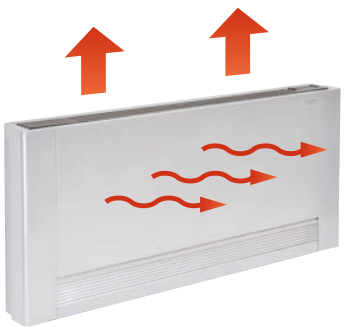
- Front panel heating with radiant effect
- High heating capacity (without main fan running)
- 4 fan speeds and capacities
- Exclusive design
- Extremely compact (only 12,9 cm deep)
- Cooling and dehumidification functions possible (drain is needed)
- 3-way valve included (no overflow valve needed on the installation if more than 3 radiators installed)
- Touch screen thermostat

Fan Coils for Heat Pump application		PAW-AAIR-200					PAW-AAIR-700					PAW-AAIR-900				
Total heating capacity	W	138	160	217	470	570	223	360	708	1.032	1.188	273	475	886	1.420	1.703
Water flow	kg/h	23,7	27,5	37,3	80,8	98,0	38,4	61,9	121,8	177,5	204,3	47,0	81,7	152,4	244,2	292,9
Water pressure drop	kPa	0,1	0,2	0,4	2,0	2,9	0,1	0,1	0,3	0,8	1,0	0,1	0,2	0,5	1,6	2,2
Air flow	m^3/h	28	37	55	113	162	44	84	155	252	320	54	110	248	367	461
	Speed	Main Fan Off	Super Min	Min	Med	Max	Main Fan Off	Super Min	Min	Med	Max	Main Fan Off	Super Min	Min	Med	Max
Maximum input power	W	2	5	7	9	13	3	9	14	18	22	3	11	16	20	24
Sound pressure level	dB(A)	17,6	18,8	24,7	33,2	39,4	18,4	19,6	25,8	34,1	40,2	18,4	22,3	26,2	34,4	42,2
Inlet water temperature	°C	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
Outlet water temperature	°C	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Inlet air temperature	°C	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Outlet air temperature	°C	34,5	32,6	38,9	32,0	30,0	34,9	32,4	33,3	31,8	30,6	34,8	32,5	30,2	31,1	30,6
Dimensions (H x W x D)	mm	579 x 735 x 129					579 x 935 x 129					579 x 1.135 x 129				
Weight	kg	17					20					23				
3-ways valve included		Yes					Yes					Yes				
Touch screen thermostat		Yes					Yes					Yes				

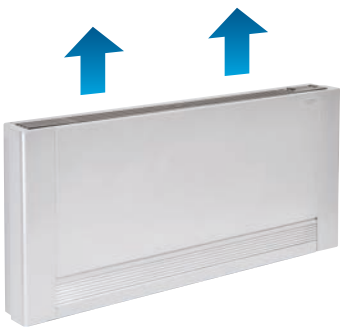
Operating on heating mode with radiator using only radiant effect

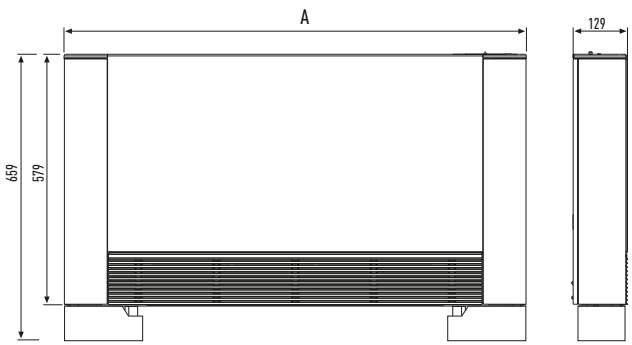


Operating on heating mode with radiant effect and fan mode

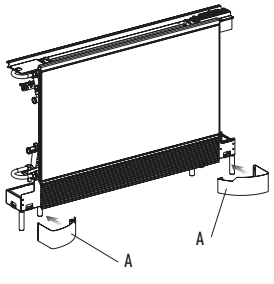


Operating on cooling mode with fan





	200	700	900
A	735	935	1.135



A	Supports cover

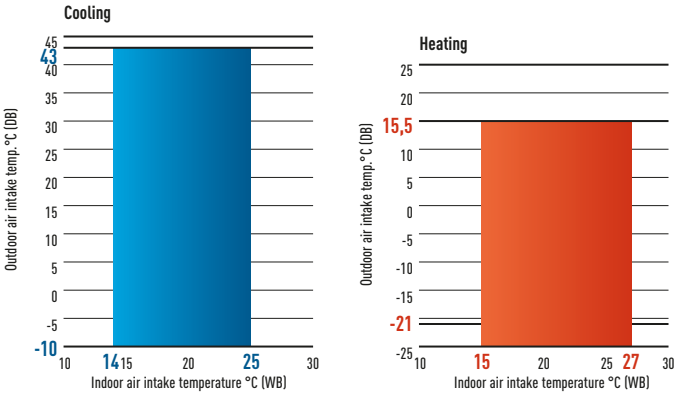
VRF Units Features

High technology features

-25°C
HEATING MODE

Wider operation
Thanks to wide operation range of Panasonic ECOi and ECO G systems with Aquarea Air fan coils is possible to cover outdoor temperatures of as -10°C DB for cooling and -21°C WB for heating.

Rated condition



AUTOMATIC RESTART

Automatic restart function for power failure
Even when power failure occurs, preset programmed operation can be reactivated once power is resumed.

SELF-DIAGNOSING

Self-diagnosing function
By using electronic control valves past warnings are stored and can be verified on the liquid crystal display. This makes it easier to diagnose malfunctions, greatly reducing service labour and therefore costs.

Refrigerant Volume "self check" procedure
ECOi 2 and 3-Pipe systems have an inbuilt self judgement mode to indicate the present system refrigerant volume. From the outdoor unit you can start the self judgement mode, after completion (approx. 30 minutes) the LED display's the results. It ensures unit efficiency, avoids refrigerant wastage and assists with F-Gas complince.

	LED 1	LED 2
Judgment mode	Blinking	Blinking
Normal	ON	ON
Insufficient gas	Blinking	OFF
Overcharge	OFF	Blinking
Judgment not possible	Blinking alternately	

Simple, convenient features (Indoor Units)

AUTOMATIC FAN

Automatic fan operation
Convenient microprocessor control automatically adjusts fan speed to High, Medium or Low, corresponding to room sensor and maintains comfortable airflow throughout the room.

AIR SWEEP

Air Sweep
The air sweep function moves the flap up and down in the air outlet, directing air in a "sweeping" motion around the room and providing comfort in every corner.

HUMIDITY CONTROL
MILD DRY

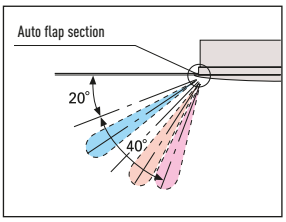
Mild Dry
By intermittent control of compressor and indoor unit's fan, "Mild Dry" gives you comfort. It realizes efficient dehumidification according to room temperature.

BUILT-IN DRAIN PUMP

Built-in drain pump
Maximum head 50 cm (or 75 cm for U type) from the bottom of the unit.

AUTO-FLAP CONTROL

Comfortable auto-flap control
When the unit is first turned on, flap position is automatically adjusted in accordance with the cooling or heating operation. This initial flap position can be preset within a certain range, for both cooling and heating. Auto button is included for continuous movement of flap to vary airflow direction.



Maintenance and inspection is a must for gas heat pump air-conditioning systems

Just like an automobile, a heat pump air-conditioning system requires periodic servicing so that it can perform efficiently.

Main maintenance and inspection items
1. Changing the engine oil
2. Checking the coolant level
3. Inspecting the engine system
4. Checking the safety protection system
5. Checking and adjusting the running conditions, collecting operating data, etc.

Since a heat pump air-conditioning system uses a gas engine as its power source, it should be periodically inspected to avoid trouble and keep it running efficiently. We recommend a maintenance contract for your Panasonic Gas Heat Pump, a great value because it not only ensures that problems will be fixed, but it helps reduce running costs and improve comfort and economical efficiency as well.

Panasonic's software

ECOi VRF Designer

Panasonic is pleased to announce the launch of its new Advanced VRF Designer software. Building on the success of the VRF Designer software, this package provides air conditioning system designers, installers and dealers with a program to design and size projects for Panasonic's VRF ranges.
Similar to the standard VRF Designer software, it is possible to create wiring diagrams, electrical power wiring and issue bills of quantities with a simple push of a button. With Panasonic's Advanced software, designers are now able to work directly from AutoCAD files, making the process extremely easy to manage and time-saving. AutoCAD drawings, print outs and scans from existing designs can be imported and altered with the system therein.

Super-efficient and built for the designers' every need, Panasonic's Advanced VRF software can create life-sized piping designs and automatic length calculation based on their imported drawings.

The Panasonic VRF Designer system software can be used for all Panasonic PACi and VRF. It also incorporates AHU and WHE.

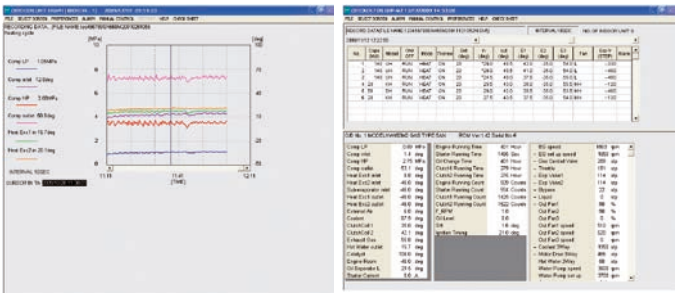
Features include:
- Easy to use system wizards.
- Auto piping and wiring features.
- Converted duties for conditions and pipework.
- Auto CAD (DXF), Excel and PDF export.
- Detailed wiring and pipework diagram.

Panasonic's Advanced VRF software with AutoCAD® compatibility makes design easier than ever
Panasonic provides bespoke software helping system designers, installers and dealers to very quickly design and size systems, create wiring diagrams and issue bills of quantities at the push of a button.

GHP Checker Software

The handy tool for optimising the running of your system:
Diagnosis for start ups, maintenance and system supervising.

Features:
- Diagnosis with a PC
- Endless recording function allows analysis diagnosis even for long term running
- The GHP checker software needs no additional communication adaptor
- The communication between the PC and GHP is done by RS232

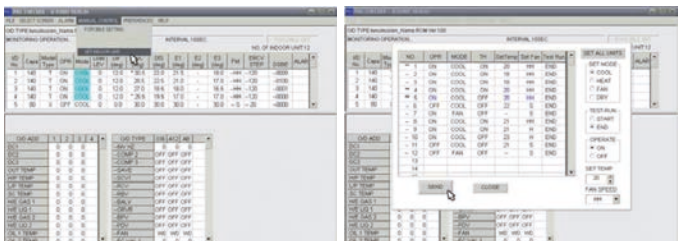


Panasonic VRF Service Checker

Panasonic will make available to installers and commissioning companies the VRF Service Checker as a communication interface to Panasonic VRF systems. This easy to manage tool checks all parameters of the system.

The VRF Service Checker allows:
- On ECOi and Mini ECOi connect anywhere on the P-Link
- Search the P-Link to validate systems that are connected
- Monitor all indoor and outdoor units simultaneously on 1 screen
- Monitor all Temperature data, Pressure data , Valve position, and alarm status on 1 screen
- Data can be viewed in Graph or number format
- Controlling the indoor unit ON/OFF, MODE, SET POINT, FAN, and TEST mode
- Switching between various systems on same communication P-Link (ECOi only)
- Monitor and record at a set interval time
- Record and review the data at a later date
- Update software as ROM flash writer


Interface Box



This Panasonic VRF Service Checker is available from your service partner.

360° air flow

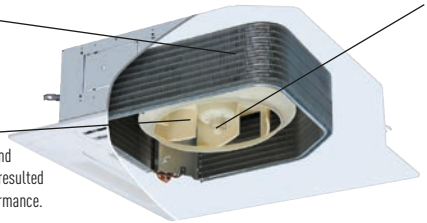
Indoor units for ECOi and ECO G

4 Way 90x90 Cassette 360° Airflow. Wide & Comfortable Airflow

This proprietary design provides a wide and very comfortable airflow. The cassette's wide-angle discharge outlets and flaps are larger in the middle, featuring a shape that was selected based on geometrics and testing of actual prototype units. Air coming out of the center of the discharge outlets travels farther. From the sides of each outlet, where the openings are larger, airflow spreads out to reach the corners of the room. Air is discharged across a wide area from the four sides of the unit. The curves on the room temperature distribution graph expand gently out through 360° in a circle centered on the indoor unit.

Higher efficiency split fin.
Improved heat-transfer coefficient due to adoption of high efficiently grooved heat exchanger tube.

High-efficient & Silent Turbo Fan.
The newly developed larger fan chassis and optimised design of the airflow path has resulted in increased air volume and quieter performance.

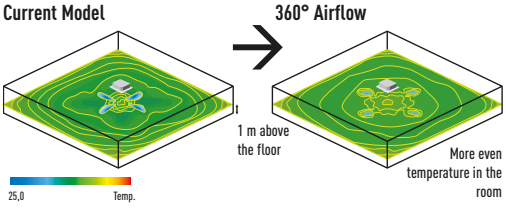


New DC-Fan motor.
Optimum airflow is achieved by a new DC-Fan motor with independent control.

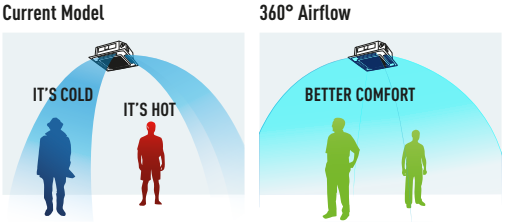
Individual flap control.
Flexible Air flow direction control by individual flap control is possible. 4 Flaps can be controlled individually by setting on wired timer remote controller. It can make more flexible Airflow control to be matched to several demands in a room.

360° Airflow for improved comfort

By redesigning the air-outlet and flap, Soft & 3D airflow circulates whole space and provides even temperature distribution in the room.

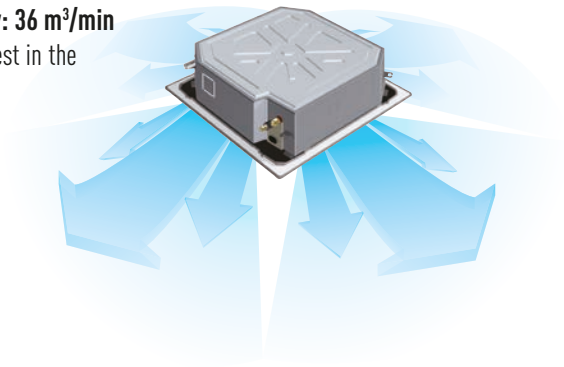


Simulated condition: Floor area: 225 m². Ceiling height: 3 m, Unit 12,5kW type.



Ample airflow: 36 m³/min

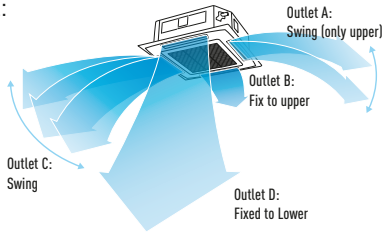
Industry's highest in the 140 PU class.



Flexible 3D airflow control

Comfort airflow control & proper energy use. Flexible Air flow direction control by individual flap control:

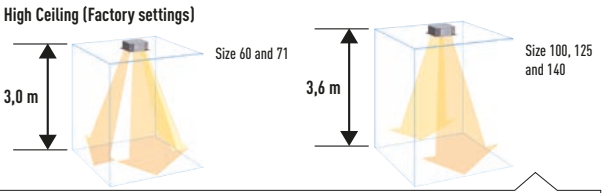
- 4 Flaps can be controlled individually (by standard wired remote controller*)
- Versatile airflow control to cover a wide variety of demands

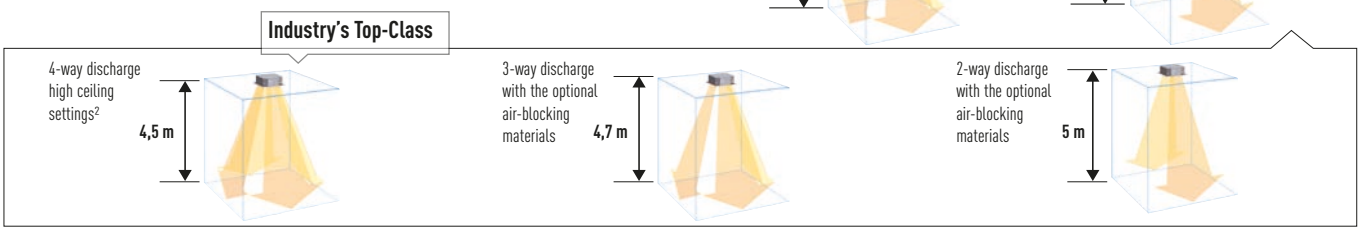


* Pre-setting is required for this function at System Test-run procedure.

High-ceiling installation (up to 5 m for 100 PU and higher models)

The units can be installed in rooms with high ceilings, where they provide ample floor-level heating in the winter. (See ceiling height guidelines below.)





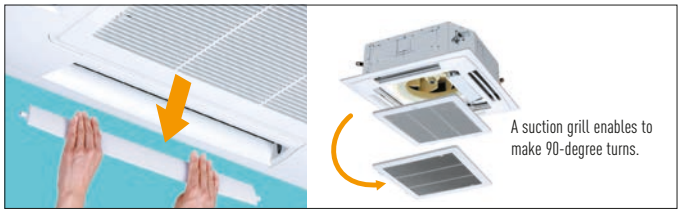
Ceiling height guidelines

Settings¹	4 - way discharge			3 - way discharge (optional air - blocking materials)	2 - way discharge (optional air - blocking materials)²
	Factory settings¹	High ceiling setting¹	High ceiling setting²		
Indoor unit: 60PU-71PU	3,0	3,3	3,6	3,8	4,2
Indoor unit: 100PU, 125PU, 140PU	3,6	3,9	4,5	4,7	5,0

1) When using the unit in a configuration other than the factory settings, it is necessary to make settings on site to increase airflow. 2) Use air-blocking materials (CZ-CFU2) to completely block two discharge outlets for 2-way airflow.

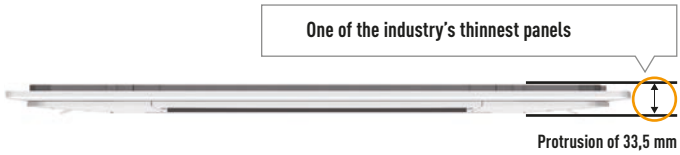
Easy maintenance and cleaning

The flap can be removed easily for washing with water.



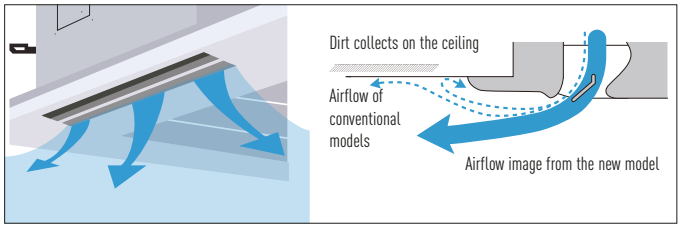
Low-profile 33,5 mm panel

The square panel integrates seamlessly with the ceiling. Discharge outlets close when the unit is stopped.



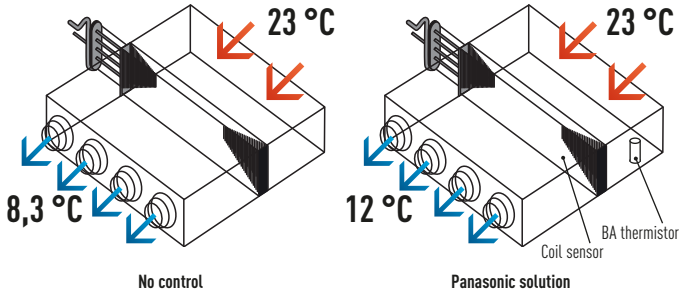
Dust Prevention

Wide direction air discharge by outlet design.
The Circle Flow Flap and re-designed air-outlet eliminate airflow along recessed parts of the ceiling which reduces contamination. If airflows only along these recessed parts, they will quickly become dirty. The new, improved air outlet design therefore greatly reduces dirt accumulation.

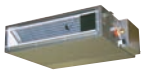
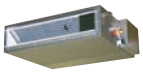
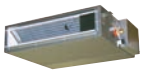
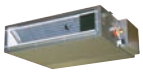


Air Discharge Temperature Control

Available in all VRF indoor units, this control provides excellent comfort. Discharge air at below 10°C is uncomfortable and can cause draughts. With Panasonic air discharge temperature control, air off temperature can be controlled between 7°C - 22°C.

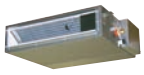


ECOi and ECO G systems indoor units range

	1,5kW	2,2kW	2,8kW	3,0kW	3,6kW	4,0kW	4,5kW
U1 Type // 4 Way 90x90 Cassette		 S-22MU1E5A	 S-28MU1E5A		 S-36MU1E5A		 S-45MU1E5A
Y2 TYPE // 4 Way 60x60 Cassette	 S-15MY2E5A	 S-22MY2E5A	 S-28MY2E5A		 S-36MY2E5A		 S-45MY2E5A
L1 Type // 2 Way Cassette		 S-22ML1E5	 S-28ML1E5		 S-36ML1E5		 S-45ML1E5
D1 Type // 1 Way Cassette			 S-28MD1E5		 S-36MD1E5		 S-45MD1E5
F2 Type // Variable Static Pressure Hide Away	 S-15MF2E5A	 S-22MF2E5A	 S-28MF2E5A		 S-36MF2E5A		 S-45MF2E5A
M1 Type // Slim Variable Static Pressure Hide Away	 S-15MM1E5A	 S-22MM1E5A	 S-28MM1E5A		 S-36MM1E5A		 S-45MM1E5A
E2 Type // High Static Pressure Hide Away							
Heat Recovery With DX Coil				 PAW-500ZDX2		 PAW-800ZDX2	 PAW-01KZDX2
T2 Type // Ceiling					 S-36MT2E5A		 S-45MT2E5A
K2/K1 Type // Wall Mounted	S-15MK2E5A	S-22MK2E5A	S-28MK2E5A		S-36MK2E5A		 S-45MK1E5A
P1 Type // Floor Standing		 S-22MP1E5	 S-28MP1E5		 S-36MP1E5		 S-45MP1E5
R1 Type // Concealed Floor Standing		S-22MR1E5	S-28MR1E5		S-36MR1E5		S-45MR1E5
Hydrokit for ECOi, water at 45°C							

Wide choice of models depending on the indoor requirements.

	16,0kW	28,0kW	56,0kW	84,0kW	112,0kW	140,0kW	168,0kW
AHU Connection Kit 16, 28 and 56kW for ECOi and ECO G	PAW-160MAH2	PAW-280MAH2	PAW-560MAH2	PAW-280MAH2 + PAW-560MAH2	PAW-560MAH2 x 2	PAW-280MAH2 + PAW-560MAH2 x 2	PAW-560MAH2 x 3

5,6kW	6,0kW	7,3kW	9,0kW	10,6kW	14,0kW	16,0kW	22,4kW	28,0kW
 S-56MU1E5A	 S-60MU1E5A	 S-73MU1E5A	 S-90MU1E5A	 S-106MU1E5A	 S-140MU1E5A	 S-160MU1E5A		
 S-56MY2E5A								
 S- 56ML1E5		 S-73ML1E5						
 S-56MD1E5		 S-73MD1E5						
 S-56MF2E5A	 S-60MF2E5A	 S-73MF2E5A	 S-90MF2E5A	 S-106MF2E5A	 S-140MF2E5A	 S-160MF2E5A		
 S-56MM1E5A								
							 S-224ME2E5	 S-280ME2E5
 S-56MT2E5A		 S-73MT2E5A		 S-106MT2E5A	 S-140MT2E5A			
 S-56MK1E5A		 S-73MK1E5A		 S-106MK1E5A				
 S-56MP1E5		 S-71MP1E5						
 S-56MR1E5		 S-71MR1E5						
			 S-80MW1E5		 S-125MW1E5			

	11,4kW	25,0kW	31,5kW	37,5kW
Air Curtain Jet-Flow with DX Coil	 PAW-10EAIRC-MJ	 PAW-15EAIRC-MJ	 PAW-20EAIRC-MJ	 PAW-25EAIRC-MJ
Air Curtain Standard with DX Coil	 PAW-10EAIRC-MS		PAW-20EAIRC-MS	

U1 TYPE
4 WAY 90x90 CASSETTE SEMI CONCEALED CASSETTE

The award winning range of U1 type cassettes are smaller, shallower and lighter than previous models and feature a 950 x 950mm panel throughout. The DC-Fan motor and air discharge louvre ensure quiet, optimum air distribution.

Technical focus
- Compact design
- Reduced sound levels (from previous models)
- DC-Fan motor for increased efficiency
- Powerful drain pump gives 850 mm lift
- Lightweight design
- Fresh air knockout
- Branch duct connection
- Optional air-intake plenum CZ-FDU2

Air intake chamber

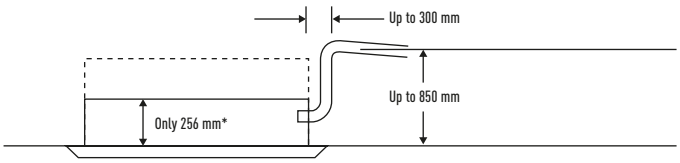

1. Air intake box CZ-BCU2 for main unit.
2. Air intake box CZ-ATU2* for Air intake plenum.

CZ-CFU2 Part to close airflow for the cassette 90x90 series U1.

* When using Air intake box (CZ-ATU2), Air intake plenum (CZ-FDU2) is required.

Lighter and Slimmer, Easier Installation
A lightweight unit at 24 kg, the unit is also very slim with a height of only 256 mm, making installation possible even in narrow ceiling voids.

A drain height of approximately 850 mm from the ceiling surface
The drain height can be increased by approximately 350 mm over the conventional value by using a high-lift drain pump, and long horizontal piping is possible.



Drain Pump of about 850 mm from the ceiling surface.
* For 6,0kW / 7,1kW


Optional Controller.
Control for hotel application
PAW-RE2C3


Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi


Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi


Optional Econavi Sensor.
CZ-CENSC1


Optional Controller.
Wireless remote controller
CZ-RWSU2N


Optional Controller.
Simplified remote controller
CZ-RE2C2


Panel
CZ-KPU21

Model			S-22MU1E5A	S-28MU1E5A	S-36MU1E5A	S-45MU1E5A	S-56MU1E5A	S-60MU1E5A	S-73MU1E5A	S-90MU1E5A	S-106MU1E5A	S-140MU1E5A	S-160MU1E5A
Power source			230 V / Single Phase / 50 Hz										
Cooling capacity		kW	2,2	2,8	3,6	4,5	5,6	6,0	7,3	9,0	10,6	14,0	16,0
Power input cooling		W	20	20	20	20	25	35	40	40	95	100	115
Operating current cooling		A	0,19	0,19	0,19	0,19	0,22	0,31	0,33	0,36	0,71	0,76	0,89
Heating capacity		kW	2,5	3,2	4,2	5,0	6,3	7,1	8,0	10,0	11,4	16,0	18,0
Power input heating		W	20	20	20	20	25	35	40	40	85	100	105
Operating current heating		A	0,17	0,17	0,17	0,17	0,20	0,30	0,32	0,34	0,65	0,73	0,80
Fan type			Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan
Air volume	Hi / Med / Lo	m³/h	840/720/660	840/720/660	840/720/660	900/780/720	960/810/720	1.260/1.020/840	1.320/1.020/840	1.380/1.140/900	1.980/1.620/1.260	2.100/1.680/1.320	2.160/1.740/1.380
Sound pressure level	Hi / Med / Lo	dB(A)	30 / 29 / 28	30 / 29 / 28	30 / 29 / 28	31 / 29 / 28	33 / 30 / 28	36 / 32 / 29	37 / 32 / 29	38 / 35 / 32	44 / 38 / 34	45 / 39 / 35	46 / 40 / 38
Dimensions	H x W x D	mm	256 (+33,5) x 840 (950) x 840 (950)								319 (+33,5) x 840 (950) x 840 (950)		
Net weight		kg	23	23	23	23	23	24	24	24	27	27	27
Pipe connections	Liquid	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)
	Gas	inch (mm)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb.

ECONAVI and INTERNET CONTROL: Optional.

Y2 TYPE

4 WAY 60x60 CASSETTE MINI SEMI CONCEALED CASSETTE

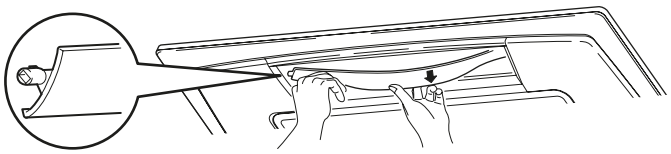
Designed to fit exactly into a 600 x 600mm ceiling grid without the need to alter the bar configuration, the Y2 is ideal for small commercial and retrofit applications. In addition, the improvements to efficiency make this one of the most advanced units in the industry.

Technical focus

- Mini cassette fits into a 600 x 600mm ceiling grid
- Fresh air knock out
- Multidirectional airflow
- Powerful drain pump gives 850mm lift
- Turbo fans and heat exchanger fins with improved design
- DC-Fan motors with variable speed, new heat exchangers, etc. ensure an efficient power consumption

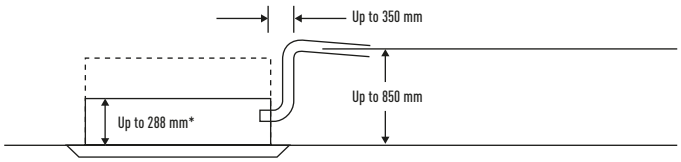
Special designed flap

The flap can be removed easily for washing with water.



A drain height of approximately 850 mm from the ceiling surface

The drain height can be increased by approximately 350mm over the conventional value by using a high-lift drain pump, and long horizontal piping is possible.



A lightweight unit at 18,4 kg the unit is also very slim with a height of only 288 mm, making installation possible even in narrow ceilings.

Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

Optional Controller.
Wireless remote controller
CZ-RWSK2

Optional Controller.
Simplified remote controller
CZ-RE2C2

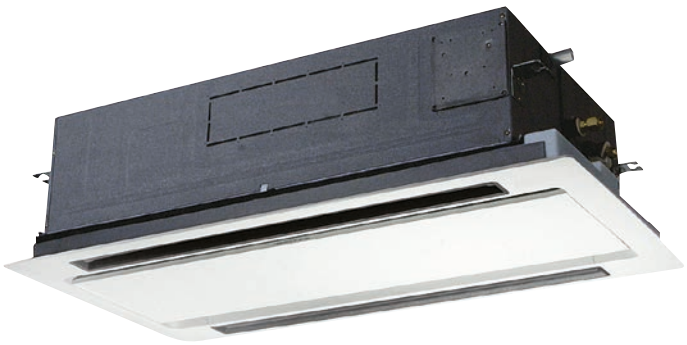
Panel
CZ-KPY3A (size 700 x 700mm)
CZ-KPY3B (size 625 x 625mm)

Model			S-15MY2E5A	S-22MY2E5A	S-28MY2E5A	S-36MY2E5A	S-45MY2E5A	S-56MY2E5A
Power source			230 V / Single Phase / 50 Hz					
Cooling capacity		kW	1,5	2,2	2,8	3,6	4,5	5,6
Power input cooling		W	35	35	35	40	40	45
Operating current cooling		A	0,30	0,30	0,30	0,30	0,32	0,35
Heating capacity		kW	1,7	2,5	3,2	4,2	5,0	6,3
Power input heating		W	30	30	30	35	35	40
Operating current heating		A	0,25	0,25	0,30	0,30	0,30	0,30
Fan type				Centrifugal fan	Centrifugal fan	Centrifugal fan	Centrifugal fan	Centrifugal fan
Air volume	Cooling	m^3/h	534 / 492 / 336	546 / 492 / 336	558 / 504 / 336	582 / 522 / 360	600 / 558 / 492	624 / 588 / 510
(Hi / Med / Lo)	Heating	m^3/h	546 / 504 / 336	558 / 504 / 336	576 / 522 / 336	594 / 546 / 360	618 / 576 / 492	666 / 588 / 522
Sound pressure level	Hi / Med / Lo	dB(A)	34 / 31 / 25	35 / 31 / 25	35 / 31 / 25	36 / 32 / 26	38 / 34 / 28	40 / 37 / 34
Dimensions	H x W x D	mm	288 x 583 x 583	288 x 583 x 583	288 x 583 x 583	288 x 583 x 583	288 x 583 x 583	288 x 583 x 583
Net weight		kg	20,4 (18 + 2,4)	20,4 (18 + 2,4)	20,4 (18 + 2,4)	20,4 (18 + 2,4)	20,4 (18 + 2,4)	20,4 (18 + 2,4)
Pipe connections	Liquid	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
	Gas	inch (mm)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25	VP-25

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb.

ECONAVI and INTERNET CONTROL: Optional.

L1 TYPE
2 WAY CASSETTE

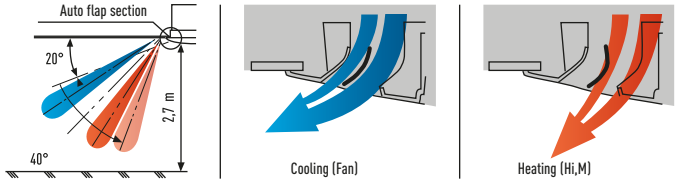


Slim, compact and lightweight units. Remarkable size and weight reductions have been achieved by improvement of the design around the fan, the weight of all models now being 30 kg.

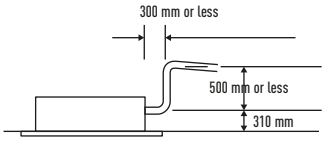
Technical focus
- Airflow and distribution is automatically altered depending on the operational mode of the unit
- Drain up is possible up to 500 mm from the drain port
- Simple maintenance

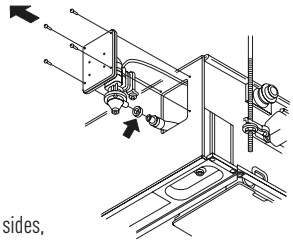
Simple maintenance
The drain pan is equipped with site wiring and can be removed. The fan case has a split construction, and the fan motor can be removed easily when the lower case is removed.

Airflow and distribution is automatically altered depending on the operational mode of the unit.



Drain up is possible up to 500 mm from the drain port.





Maintenance of the drain pump is possible from two sides, from the left side (piping side) and from the inside of the unit.

Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

Optional Controller.
Wireless remote controller
CZ-RWSL2N

Optional Controller.
Simplified remote controller
CZ-RE2C2

Panel
CZ-02KPL2
CZ-03KPL2 (for S-73ML1E5)

Model			S-22ML1E5	S-28ML1E5	S-36ML1E5	S-45ML1E5	S-56ML1E5	S-73ML1E5
Power source			230 V / Single Phase / 50 Hz					
Cooling capacity		kW	2,2	2,8	3,6	4,5	5,6	7,3
Power input cooling		W	90	92	93	97	97	145
Operating current cooling		A	0,45	0,45	0,45	0,45	0,45	0,65
Heating capacity		kW	2,5	3,2	4,2	5,0	6,3	8,0
Power input heating		W	58	60	61	65	65	109
Operating current heating		A	0,29	0,29	0,29	0,29	0,29	0,48
Fan type			Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
Air volume	Hi / Med / Lo	m^3/h	480 / 420 / 360	540 / 480 / 420	580 / 520 / 460	660 / 540 / 480	660 / 540 / 480	1.140 / 960 / 840
Sound pressure level	Hi / Med / Lo	dB(A)	30 / 27 / 24	33 / 29 / 26	34 / 31 / 28	35 / 33 / 29	35 / 33 / 29	38 / 35 / 33
Dimensions	H x W x D	mm	350(+8)x840 (1.060)x600 (680)	350(+8)x840 (1.060)x600 (680)	350(+8)x840 (1.060)x600 (680)	350(+8)x840 (1.060)x600 (680)	350(+8)x840 (1.060)x600 (680)	350(+8)x1.140 (1.360)x600 (680)
Net weight		kg	28,5 (23 + 5,5)	28,5 (23 + 5,5)	28,5 (23 + 5,5)	28,5 (23 + 5,5)	28,5 (23 + 5,5)	39 (30 + 9)
Pipe connections	Liquid	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	3/8 (9,52)
	Gas	inch (mm)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	5/8 (15,88)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25	VP-25

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb.

ECONAVI and INTERNET CONTROL: Optional.

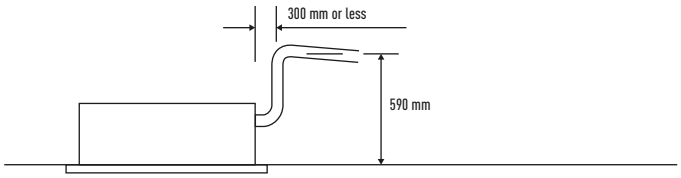
D1 TYPE
1 WAY CASSETTE

Designed for installation within the ceiling void, the D1 range of slimline 1 way blow cassettes feature powerful yet quiet fans for up to 4,2 m.

Technical focus

- Ultra-Slim
- Suitable for standard and high ceilings
- Built-in drain pump provides 590 mm lift
- Easy to install and maintain
- Hanging height can be easily adjusted
- Uses a DC-Fan motor to improve energy-efficiency

Drain height



Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

Optional Controller.
Wireless remote controller
CZ-RWSD2

Optional Controller.
Simplified remote controller
CZ-RE2C2

Panel
CZ-KPD2

Model			S-28MD1E5	S-36MD1E5	S-45MD1E5	S-56MD1E5	S-73MD1E5
Power source			230 V / Single Phase / 50 Hz				
Cooling capacity		kW	2,8	3,6	4,5	5,6	7,3
Power input cooling		W	51	51	51	60	87
Operating current cooling		A	0,39	0,39	0,39	0,46	0,70
Heating capacity		kW	3,2	4,2	5,0	6,3	8,0
Power input heating		W	40	40	40	48	76
Operating current heating		A	0,35	0,35	0,35	0,41	0,65
Fan type			Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
Air volume	Hi / Med / Lo	m^3/h	720 / 600 / 540	720 / 600 / 540	720 / 660 / 600	780 / 690 / 600	1.080 / 900 / 780
Sound pressure level	Hi / Med / Lo	dB(A)	36 / 34 / 33	36 / 34 / 33	36 / 35 / 34	38 / 36 / 34	45 / 40 / 36
Dimensions	H x W x D	mm	200 (+20)x1.000 (1.230)x710 (800)	200 (+20)x1.000 (1.230)x710 (800)	200 (+20)x1.000 (1.230)x710 (800)	200 (+20)x1.000 (1.230)x710 (800)	200 (+20)x1.000 (1.230)x710 (800)
Net weight		kg	26,5 (21 + 5,5)	26,5 (21 + 5,5)	26,5 (21 + 5,5)	26,5 (21 + 5,5)	27,5 (22 + 5,5)
Pipe connections	Liquid	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	3/8 (9,52)
	Gas	inch (mm)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	5/8 (15,88)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb.

ECONAVI and INTERNET CONTROL: Optional.

F2 TYPE
VARIABLE STATIC PRESSURE HIDE AWAY

S-15MF2E5A // S-22MF2E5A // S-28MF2E5A // S-36MF2E5A // S-45MF2E5A // S-56MF2E5A

S-60MF2E5A // S-73MF2E5A // S-90MF2E5A

S-106MF2E5A // S-140MF2E5A // S-160MF2E5A

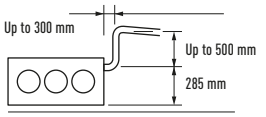
The new F2 type is designed specifically for applications requiring fixed square ducting. The internal filter is equipped as standard.

Technical focus

- Industry-leading low sound levels from 25 dB(A)
- Built-in drain pump provides 785 mm lift
- Easy to install and maintain
- Air OFF sensor avoids cold air dumping
- Configurable air temperature control

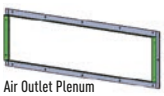
More powerful drain pump

Using a high-lift drain pump, drain piping can be elevated up to 785 mm from the base of the unit.

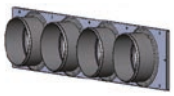


Air Outlet & Inlet Plenum

S-...MF2E5A	Diameters	Air Outlet Plenum	Diameters	Air Inlet Plenum
22, 28, 36, 45 & 56	2 x Ø 200	CZ-56DAF2	2 x Ø 200	CZ-DUMPA56MF2
60, 73 & 90	3 x Ø 200	CZ-90DAF2	2 x Ø 250	CZ-DUMPA90MF2
106, 140 & 160	4 x Ø 200	CZ-160DAF2	4 x Ø 200	CZ-DUMPA160MF2



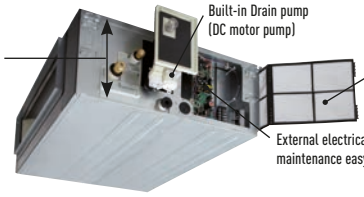
Air Outlet Plenum



Air Inlet Plenum

New Variable Static Pressure Hide Away MF2 series

Standardized height of 290mm for all models.
Height standardization enables easy and uniform installation for models with different capacities.



Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Optional Controller.
Wireless remote controller
CZ-RWSK2 + CZ-RWSC3

Optional Controller.
Simplified remote controller
CZ-RE2C2

Full range of External Static Pressure and Airflow Volumes available by special setting

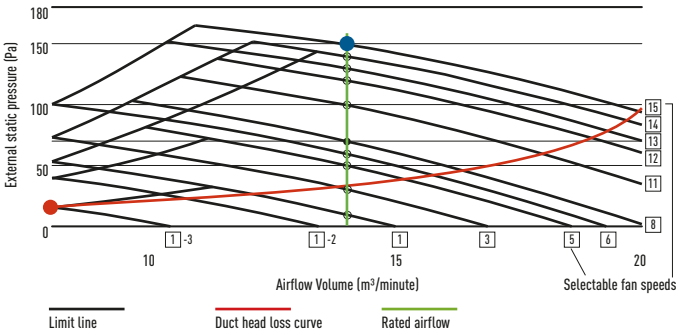
To meet all design needs thanks to DC-Fan motor it is possible to select the best fitted airflow/ static pressure curve.
The table below shows the airflow and noise data at minimum airflows curve selectable (Example S-22MF2E5A: see red dot in the diagram n.1) and noise data at maximum rated static pressure with maximum airflow curve selectable (example S-22MF2E5A blu dot in diagram n.1). Specific diagrams per each units are available in ECOi Technical Data Book.

Model		15-36	45	56	60-73	90	106	140	160
Minimum air volume - the red dot - on minimum airflow curve selectable (curve 1-3)	m³/h	480	480	600	780	960	1.140	1.200	1.320
Min Static Pressure value - the red dot - on minimum airflow curve selectable (curve 1-3)	Pa	15	15	15	10	10	20	15	15
Noise level at minimum static pressure -the red dot - on minimum airflow curve selectable (curve 1-3)	dB(A)	24	26	26	24	26	29	30	31
Noise level at maximum rated static pressure -the blue dot - on maximum airflow curve selectable (curve 15)	dB(A)	34	35	35	40	41	42	42	43

F2 Advantages

Automatic learning function for the required static pressure, to be activated easily by the standard wired timer remote controller.
Possible to increase the sensible cooling capacity by adjusting the air volume flow in order to almost completely eliminate latent losses. This is possible due to the outstanding big heat exchanger surface in combination with increasing the air volume flow by a manual selection of higher fan speed curves through the standard wired remote controller when commissioning the system together with the default active off-coil temperature control and the room load based variable evaporation temperature control.

Diagram n. 1 S-22MF2E5A



Model			S-15MF2E5A	S-22MF2E5A	S-28MF2E5A	S-36MF2E5A	S-45MF2E5A	S-56MF2E5A	S-60MF2E5A	S-73MF2E5A	S-90MF2E5A	S-106MF2E5A	S-140MF2E5A	S-160MF2E5A
Power source			230 V / Single Phase / 50 Hz											
Cooling capacity		kW	1,5	2,2	2,8	3,6	4,5	5,6	6,0	7,3	9,0	10,6	14,0	16,0
Power input cooling		W	70	70	70	70	70	100	120	120	135	195	215	225
Operating current cooling		A	0,57	0,57	0,57	0,57	0,57	0,74	0,89	0,89	0,97	1,30	1,44	1,50
Heating capacity		kW	1,7	2,5	3,2	4,2	5,0	6,3	7,1	8,0	10,0	11,4	16,0	18,0
Power input heating		W	70	70	70	70	100	100	120	120	135	200	210	225
Operating current heating		A	0,57	0,57	0,57	0,57	0,57	0,74	0,89	0,89	0,97	1,34	1,42	1,50
Fan type			Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
Air volume[1]	Hi / Med / Lo	m³/h	840/780/540	840/780/540	840/780/540	840/780/540	840/780/600	960/900/720	1.260/1.140/900	1.260/1.140/900	1.500/1.380/1.140	1.920/1.560/1.260	2.040/1.740/1.380	2.160/1.920/1.500
External static pressure		Pa	70 (10-150)	70 (10-150)	70 (10-150)	70 (10-150)	70 (10-150)	70 (10-150)	70 (10-150)	70 (10-150)	70 (10-150)	100 (10-150)	100 (10-150)	100 (10-150)
Sound power level[2]	Hi / Med / Lo	dB	55 / 51 / 44	55 / 51 / 44	55 / 51 / 44	55 / 51 / 44	56 / 54 / 47	56 / 54 / 47	57 / 54 / 48	57 / 54 / 48	59 / 56 / 50	60 / 56 / 53	61 / 57 / 54	62 / 58 / 55
Sound pressure level[2]	Hi / Med / Lo	dB(A)	33 / 29 / 22	33 / 29 / 22	33 / 29 / 22	33 / 29 / 22	34 / 32 / 25	34 / 32 / 25	35 / 32 / 26	35 / 32 / 26	37 / 34 / 28	38 / 34 / 31	39 / 35 / 32	40 / 36 / 33
Dimensions	H x W x D	mm	290x800x700	290x800x700	290x800x700	290x800x700	290x800x700	290x800x700	290x1.000x700	290x1.000x700	290x1.000x700	290x1.400x700	290x1.400x700	290x1.400x700
Net weight		kg	29	29	29	29	29	29	34	34	34	46	46	46
Pipe connections	Liquid	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)
	Gas	inch (mm)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb.

1)) Value referred to standard settings at shipment (H curve 8, M curve 5, L curve 1). 2) Sound pressure without refrigerant flow.

ECONAVI and INTERNET CONTROL: Optional.

M1 TYPE

SLIM VARIABLE STATIC PRESSURE
HIDE AWAY CONCEALED DUCT

The ultra slim M1 type is one of the leading products of its type in the industry. With a depth of only 200mm it provides greater flexibility and can be used in far more applications. In addition, its high-efficiency and extremely quiet sound levels make it very popular with many users, including hotels and small offices.

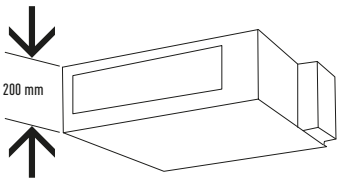
Technical focus

- Ultra-slim profile: 200 mm for all models
- DC-Fan motor greatly reduces power consumption
- Ideal for hotel application with very narrow false ceilings
- Easy maintenance and service by external electrical box
- 40 Pa static pressure enables ductwork to be fitted.
- Includes drain pump

Air Outlet & Inlet Plenum

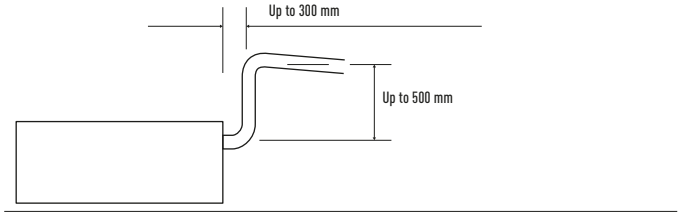
S-...MM1E5A	Diameters	Air Outlet Plenum	Diameters	Air Inlet Plenum
22 , 28 & 36	2 x Ø 200	CZ-DUMPA22MMS2	2 x Ø 200	CZ-DUMPA22MMR2
45 & 56	3 x Ø 160	CZ-DUMPA45MMS3	2 x Ø 200	CZ-DUMPA22MMR3

Ultra-slim profile for all models



Drain pump with increased power!

By adoption of a high-lift drain pump, the drain piping rise height can be increased to 785 mm from the lower surface of the body.



Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

Optional Controller.
Wireless remote controller
CZ-RWSK2 + CZ-RWSC3

Optional Controller.
Simplified remote controller
CZ-RE2C2

Model			S-15MM1E5A	S-22MM1E5A	S-28MM1E5A	S-36MM1E5A	S-45MM1E5A	S-56MM1E5A
Power source			230 V / Single Phase / 50 Hz					
Cooling capacity		kW	1,5	2,2	2,8	3,6	4,5	5,6
Power input cooling		W	36	36	40	42	49	64
Operating current cooling		A	0,26	0,26	0,30	0,31	0,37	0,48
Heating capacity		kW	1,7	2,5	3,2	4,2	5,0	6,3
Power input heating		W	26	26	30	32	39	54
Operating current heating		A	0,23	0,23	0,27	0,28	0,34	0,45
Fan type			Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
Air volume	Hi / Med / Lo	m^3/h	480 / 420 / 360	480 / 420 / 360	510 / 450 / 390	540 / 480 / 420	630 / 570 / 480	750 / 690 / 600
External static pressure		Pa	10 (30)	10 (30)	15 (30)	15 (40)	15 (40)	15 (40)
Sound pressure level	Hi / Med / Lo (1)	dB(A)	28 / 27 / 25 (30 / 29 / 27)	28 / 27 / 25 (30 / 29 / 27)	30 / 29 / 27 (32 / 31 / 29)	32 / 30 / 28 (34 / 32 / 30)	34 / 32 / 30 (36 / 34 / 32)	35 / 33 / 31 (37 / 35 / 32)
Dimensions	H x W x D	mm	200 x 750 x 640	200 x 750 x 640	200 x 750 x 640	200 x 750 x 640	200 x 750 x 640	200 x 750 x 640
Net weight		kg	19	19	19	19	19	19
Pipe connections	Liquid	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)
	Gas	inch (mm)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)
	Drain piping		VP-20	VP-20	VP-20	VP-20	VP-20	VP-20

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb.

1) With booster cable using short circuit connection.

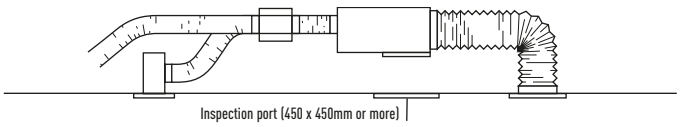
ECONAVI and INTERNET CONTROL: Optional.

E2 TYPE
HIGH STATIC PRESSURE HIDE AWAY

2 products in 1: High pressure duct and 100% Fresh air duct function.
The E2 range of ducted units offers improved design flexibility for extended duct layouts as a result of their increased external static pressures and reduces energy consumption.

Technical focus
- No need of rap valve
- 100% Fresh air duct function
- DC-Fan motor for more savings
- Complete flexibility for ductwork design
- Can be located into a weatherproof housing for external sitting
- Air OFF sensor avoids cold air dumping
- Configurable air temperature control

System example
An inspection port (450 x 450 mm or more) is required at the lower side of the indoor unit body (field supply).



100% Fresh air duct function
The New E2 duct with 100% fresh air duct function have exceptional discharge temperature.

	Discharge Range		
	Min	Max	Default
Cooling	15°C	24°C	18°C
Heating	17°C	45°C	40°C

Plenums

Air Outlet Plenum (suitable for rigid + flexible duct)		
	Number of exits with diameters	Model
S-224ME1E5A / S-280ME1E5	1 x 500mm	CZ-TREMIESPW706

Kit for 100% Fresh air function

For 2-way systems		For 3-way systems	
2x CZ-P160RVK2	Rap valve kit	2x CZ-P160HR3	3-way valve kit
2x CZ-CAPE2	3-way control PCB	2x CZ-CAPE2	3-way control PCB
CZ-P680BK2	Distribution Joint kit	CZ-P680BH2	Distribution Joint kit
1x Remote control		1x Remote control	

Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

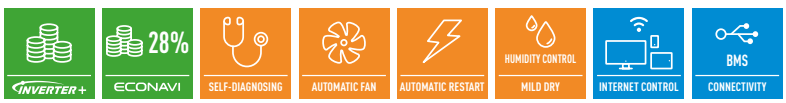
Optional Controller.
Wireless remote controller
CZ-RWSK2 + CZ-RWSC3

Optional Controller.
Simplified remote controller
CZ-RE2C2

			100% Fresh air duct function (by using Kit for 100% Fresh air)		High pressure duct	
Model			S-224ME2E5	S-280ME2E5	S-224ME2E5	S-280ME2E5
Power source			230 V / Single Phase / 50 Hz	230 V / Single Phase / 50 Hz	230 V / Single Phase / 50 Hz	230 V / Single Phase / 50 Hz
Cooling capacity		kW	22,4	28,0	22,4	28,0
Power input cooling		W	290	350	440	715
Operating current cooling		A	1,85	2,20	2,45	3,95
Heating capacity		kW	21,2	26,5	25,0	31,5
Power input heating		W	290	350	440	715
Operating current heating		A	1,85	2,20	2,45	3,95
Fan type			Sirocco DC Fan Motor	Sirocco DC Fan Motor	Sirocco DC Fan Motor	Sirocco DC Fan Motor
Air volume		m^3/h	1.700	2.100	1.700	2.100
External static pressure		Pa	200	200	140 (60 / 270)[1]	140 (72 / 270)[1]
Sound pressure level[2]	Hi / Med / Lo	dB(A)	— / — / 43	— / — / 44	45 / 43 / 41	49 / 47 / 43
Dimensions	H x W x D	mm	479 x 1.453 x 1.205	479 x 1.453 x 1.205	479 x 1.453 x 1.205	479 x 1.453 x 1.205
Net weight		kg	102	106	102	106
Pipe connections	Liquid	inch (mm)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)
	Gas	inch (mm)	3/4 (19,05)	7/8 (22,22)	3/4 (19,05)	7/8 (22,22)
	Drain piping		VP-25	VP-25	VP-25	VP-25

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
Rating Conditions for 100% Fresh air duct function: Cooling Outdoor 33°C DB / 28°C WB. Heating Outdoor 0°C DB / -2,9°C WB.
DB: Dry Bulb; WB: Wet Bulb.

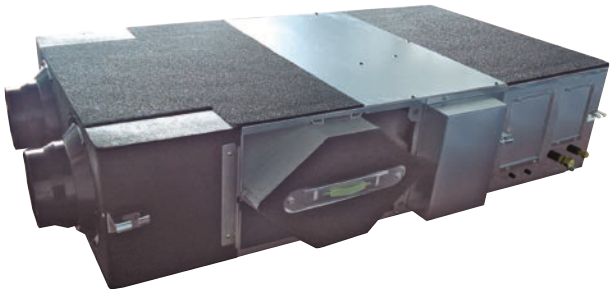
1) Available to select the setting by initial setup.
2) Values with 140 Pa setting.



ECONAVI and INTERNET CONTROL: Optional.

HEAT RECOVERY
WITH DX COIL

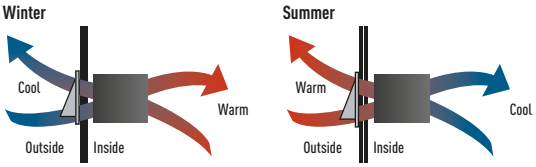
Bioxigen®
your best indoor air quality



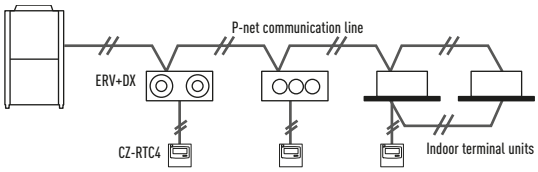
Technical focus
- Motorised heat recovery by-pass device automatically controlled by unit control to use fresh air free-cooling when convenient
- The Bioxigen® purifying system, activates when the fan runs, provides an efficient antibacterial treatment, ensuring optimum health of supplied air

General characteristics
- Galvanized steel self-supporting panels, internally and externally insulated
- Counterflow air-to-air heat recovery device, made of sheets of special paper with special sealing to keep airflows separate and only permeable to water vapor. Total heat exchange with temperature efficiency up to 77% and enthalpy efficiency up to 63%, also at high level during summer season
- G4 efficiency class filters with synthetic cleanable media, both on fresh air and return air intake
- Removable side panel to access filters and heat recovery in the event of scheduled maintenance
- Low consumption, high efficiency & low noise direct driven fans with 3-speed EC motors
- Supply section complete with DX Coil (R410A) fitted with solenoid control valve, freon filter, contact temperature sensors on liquid and gas line, NTC sensors upstream and downstream airflow
- Built-in electric box equipped with PCB to control internal fan speed and to interconnect outdoor/indoor units
- Duct connection by circular plastic collars
- CZ-RTC4 Timer remote controller (option)

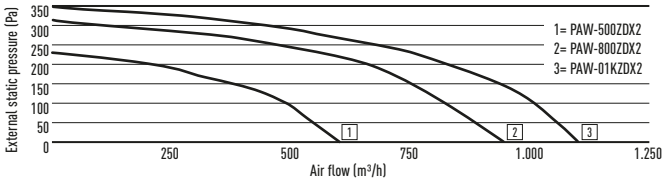
Balanced Ventilation



Interconnection to outdoor/indoor units



Characteristic curves
The following curves show the unit external static pressure at maximum fan speed for each model.



Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

Model			PAW-500ZDX2	PAW-800ZDX2	PAW-01KZDX2
Power source			230 V / Single Phase / 50 Hz	230 V / Single Phase / 50 Hz	230 V / Single Phase / 50 Hz
Air volume	Hi / Med / Lo	m³/h	500 / 500 / 360	800 / 800 / 625	1.000 / 780 / 650
External static pressure[1]	Hi / Med / Lo	Pa	85 / 45 / 21	117 / 68 / 18	104 / 69 / 17
Maximum current		A	1,1	2,3	2,5
Maximum power input		W	135	300	310
Sound pressure level[3]	Hi / Med / Lo	dB(A)	33 / 31 / 27	38 / 36 / 32	39 / 37 / 33
Pipe connections	Liquid / Gas	inch (mm)	1/4 (6,35) / 1/2 (12,70)	1/4 (6,35) / 1/2 (12,70)	1/4 (6,35) / 1/2 (12,70)
HEAT RECOVERY					
Temperature efficiency summer mode		%	62,5	59	59,5
Enthalpy efficiency summer mode		%	60	57	57,5
Saved power summer mode		kW	1,7	2,5	3,2
Temperature efficiency winter mode		%	76,5 (76,5)	73 (73)	73,5 (73,5)
Enthalpy efficiency winter mode		%	62,3 (64,1)	59 (60,8)	59,5 (61,2)
Saved power winter mode		kW	4,3 (4,8)	6,5 (7,3)	8,2 (9,0)
DX COIL					
Total cooling capacity		kW	3,7	4,9	5,6
Sensible cooling capacity		kW	2,3	3,3	3,8
Off temperature	Cooling	°C	14,4	16,2	17,0
Off relative humidity	Cooling	%	87	83	82
Total heating capacity		kW	3,9 (4,1)	5,4 (5,7)	6,3 (6,7)
Off temperature	Heating	°C	35,4 (34,6)	32,6 (31,7)	31,3 (30,3)
Off relative humidity	Heating	%	11 (11)	12 (13)	13 (14)

Nominal summer conditions: Outside air: 32°C DB, RH 50%. Ambient air: 26°C DB, RH 50%. Nominal winter conditions: Outside air: -5°C (-10°C) DB, RH 80%. Ambient air: 20°C DB, RH 50%. Cooling mode air inlet condition: 28.5°C DB, RH 50%; evaporating temp. 4°C. Heating mode air inlet condition: 13°C DB, RH 40% (11°C DB, RH 45%); condensating temperature 49°C. DB: Dry Bulb; RH: Relative Humidity.
1) Referred to the nominal airflow after filter and plate heat exchanger. 3) Referred to 1.5 meters from inlet in free field condition.

ECONAVI and INTERNET CONTROL: Optional.

T2 TYPE
CEILING

S-36MT2E5A // S-45MT2E5A // S-56MT2E5A

S-106MT2E5A // S-140MT2E5A

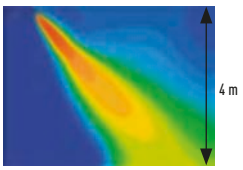
The T2 TYPE ceiling mounted units feature a DC-Fan motor for increased efficiency and reduced operating sound levels. All the units are the same height and depth for a uniform appearance in mixed installations and feature a fresh air knockout for improved air quality.

Technical focus

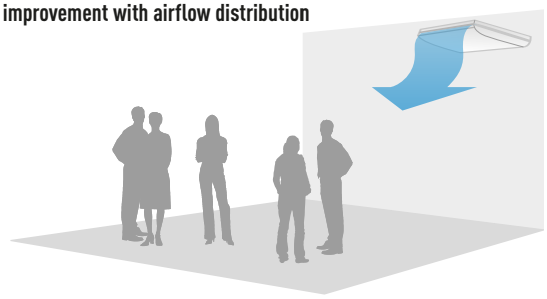
- Low sound levels
- New design, all units just 235 mm high
- Large and wide air distribution
- Easy to install and maintain
- Fresh air knockout

Further comfort improvement

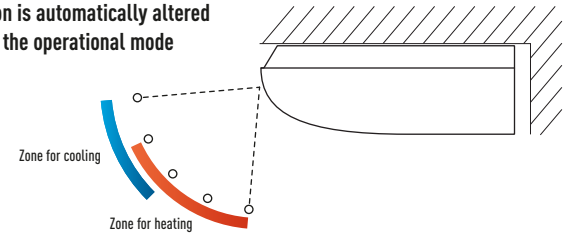
The wide air discharge opening widens the airflow to the left and the right, so that a comfortable temperature is obtained in the entire room. The unpleasant feeling caused when the airflow directly hits the human body is prevented by the "Draft prevention position", which changes the swing width, so that the degree of comfort is increased.



Further comfort improvement with airflow distribution



Air distribution is automatically altered depending on the operational mode



Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

Optional Controller.
Wireless remote controller
CZ-RWST3N

Optional Controller.
Simplified remote controller
CZ-RE2C2

Model			S-36MT2E5A	S-45MT2E5A	S-56MT2E5A	S-73MT2E5A	S-106MT2E5A	S-140MT2E5A
Power source			230 V / Single Phase / 50 Hz					
Cooling capacity		kW	3,6	4,5	5,6	7,3	10,6	14,0
Power input cooling		W	35	40	40	55	80	100
Operating current cooling		A	0,36	0,38	0,38	0,44	0,67	0,79
Heating capacity		kW	4,2	5,0	6,3	8,0	11,4	16,0
Power input heating		W	35	40	40	55	80	100
Operating current heating		A	0,36	0,38	0,38	0,44	0,67	0,79
Fan type			Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
Air volume	Hi / Med / Lo	m^3/h	840 / 720 / 630	900 / 750 / 630	900 / 750 / 630	1.260 / 1.080 / 930	1.800 / 1.500 / 1.380	1.920 / 1.680 / 1.440
Sound pressure level	LL[1] / Hi / Med / Lo	dB(A)	– / 36 / 32 / 30	– / 37 / 33 / 30	– / 37 / 33 / 30	– / 39 / 35 / 33	– / 42 / 37 / 36	– / 46 / 40 / 37
Dimensions	H x W x D	mm	235 x 960 x 690	235 x 960 x 690	235 x 960 x 690	235 x 1.275 x 690	235 x 1.590 x 690	235 x 1.590 x 690
Net weight		kg	27	27	27	33	40	40
Pipe connections	Liquid	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	3/8 (9,52)	3/8 (9,52)	3/8 (9,52)
	Gas	inch (mm)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	5/8 (15,88)	5/8 (15,88)	5/8 (15,88)
	Drain piping		VP-20	VP-20	VP-20	VP-20	VP-20	VP-20

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb.

1) Sound pressure level with fan only.

ECONAVI and INTERNET CONTROL: Optional.

K2/K1 TYPE
WALL MOUNTED

S-15MK2E5A // S-22MK2E5A // S-28MK2E5A // S-36MK2E5A

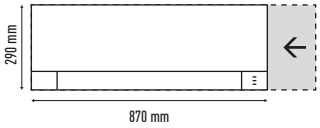
S-45MK1E5A // S-56MK1E5A // S-73MK1E5A // S-106MK1E5A

The K2/K1 Type wall mounted unit has a stylish smooth panel which not only looks good but is also easy to clean.
The unit is also smaller, lighter and substantially quieter than previous models making it ideal for small offices and other commercial applications.

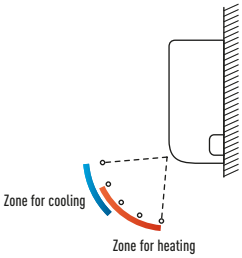
Technical focus
- Closed discharge port
- Lighter and smaller units make the installation easy
- Quiet operation
- Smooth and durable design
- Piping outlet in three directions
- Washable front panel
- Air distribution is automatically altered depending on the operational mode of the unit

Closed discharge port
When the unit is turned OFF, the flap closes completely to prevent entry of dust into the unit and to keep the equipment clean.

Lighter and smaller units make the installation easy
The width has been decreased by 17% and the units are lighter.



Air distribution is automatically altered depending on the operational mode of the unit



Quiet operation
These units are among the quietest in the industry, making them ideal for hotels and hospitals.

Smooth and durable design
The smooth cover means these units match most modern interiors. Their compact size enables them to blend in, even in small spaces.

Piping outlet in three directions
Piping outlet is possible in the three directions of rear, right, and left, making the installation work easier.

Washable front panel
The indoor unit's front panel can be easily removed and washed for trouble-free cleaning.

External valve (Optional)
CZ-P56SVK2 (model sizes 15 to 56)
CZ-P160SVK2 (model sizes 73 to 106)

Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

Optional Controller.
Wireless remote controller
CZ-RWSK2

Optional Controller.
Simplified remote controller
CZ-RE2C2

Model			S-15MK2E5A	S-22MK2E5A	S-28MK2E5	S-36MK2E5	S-45MK1E5A	S-56MK1E5A	S-73MK1E5A	S-106MK1E5A
Power source				230 V / Single Phase / 50 Hz						
Cooling capacity		kW	1,5	2,2	2,8	3,6	4,5	5,6	7,3	10,6
Power input cooling		W	25	25	25	30	20	30	57	60
Operating current cooling		A	0,20	0,21	0,23	0,25	0,26	0,35	0,58	0,62
Heating capacity		kW	1,7	2,5	3,2	4,2	5,0	6,3	8,0	11,4
Power input heating		W	25	25	25	30	20	30	57	68
Operating current heating		A	0,20	0,21	0,23	0,25	0,26	0,35	0,58	0,70
Fan type			Cross flow	Cross flow	Cross flow	Cross flow	Cross flow	Cross flow	Cross flow	Cross flow
Air volume	Hi / Med / Lo	m^3/h	474 / 444 / 390	540 / 450 / 390	570 / 498 / 390	654 / 540 / 390	720 / 630 / 510	840 / 720 / 630	1.080 / 870 / 690	1.140 / 990 / 780
		m^3/h	540 / 462 / 408	552 / 498 / 408	582 / 510 / 408	672 / 570 / 408				
Sound pressure level	LL[1] / Hi / Med / Lo	dB(A)	– / 34 / 32 / 29	– / 36 / 33 / 29	– / 37 / 34 / 29	– / 40 / 36 / 29	– / 38 / 34 / 30	– / 40 / 36 / 32	– / 47 / 44 / 40	– / 49 / 45 / 42
Dimensions	H x W x D	mm	290 x 870 x 214	290 x 870 x 214	290 x 870 x 214	290 x 870 x 214	300 x 1.065 x 230	300 x 1.065 x 230	300 x 1.065 x 230	300 x 1.065 x 230
Net weight		kg	9	9	9	9	13	13	14,5	14,5
Pipe connections	Liquid	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	3/8 (9,52)	3/8 (9,52)
	Gas	inch (mm)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	5/8 (15,88)	5/8 (15,88)
	Drain piping (O.D.)		φ 16	φ 16	φ 16	φ 16	φ 18	φ 18	φ 18	φ 18

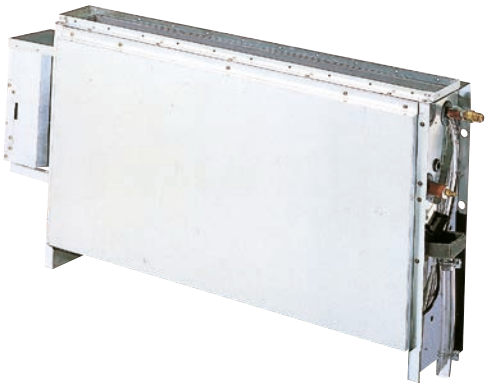
Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb.

1) Sound pressure level with fan only.

ECONAVI and INTERNET CONTROL: Optional.

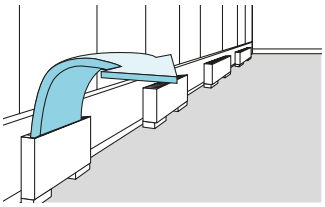
P1 TYPE
FLOOR STANDING

R1 TYPE
CONCEALED FLOOR STANDING



P1 TYPE
The compact floor standing P1 units are the ideal solution for providing perimeter air conditioning. The standard wired controller can be incorporated into the body of the unit.

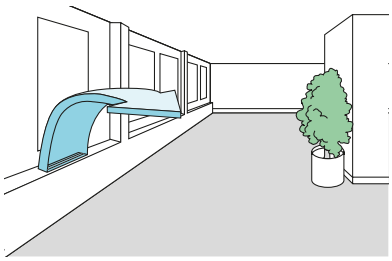
Technical focus
- Pipes can be connected to either side of the unit from the bottom or rear
- Easy to install
- Front panel opens fully for easy maintenance
- Removable air discharge grille gives flexible airflow
- Room for condensate pump
- For build-in remote control, only CZ-RTC2 is suitable

Effective perimeter handling


A remote control can be installed


R1 TYPE
At just 229 mm deep, the R1 unit can be easily concealed in perimeter areas to provide powerful and effective air conditioning.

Technical focus
- Chassis unit for discreet installation
- Complete with removable filters
- Pipes can be connected to either side of the unit from the bottom or rear
- Easy to install

Perimeter air conditioning with high interior quality


Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller
Timer remote controller
CZ-RTC2

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

Optional Controller.
Wireless remote controller
CZ-RWSK2 + CZ-RWSC3

Optional Controller.
Simplified remote controller
CZ-RE2C2

Model P1 Type			S-22MP1E5	S-28MP1E5	S-36MP1E5	S-45MP1E5	S-56MP1E5	S-71MP1E5
Model R1 Type			S-22MR1E5	S-28MR1E5	S-36MR1E5	S-45MR1E5	S-56MR1E5	S-71MR1E5
Power source			230 V / Single Phase / 50 Hz					
Cooling capacity		kW	2,2	2,8	3,6	4,5	5,6	7,1
Power input cooling		W	56	56	85	126	126	160
Operating current cooling		A	0,25	0,25	0,38	0,56	0,56	0,72
Heating capacity		kW	2,5	3,2	4,2	5,0	6,3	8,0
Power input heating		W	40	40	70	91	91	120
Operating current heating		A	0,18	0,18	0,31	0,41	0,41	0,54
Fan type			Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
Air volume	Hi / Med / Lo	m^3/h	420 / 360 / 300	420 / 360 / 300	540 / 420 / 360	720 / 540 / 480	900 / 780 / 660	1.020 / 840 / 720
Sound pressure level	Hi / Med / Lo	dB(A)	33 / 30 / 28	33 / 30 / 28	39 / 35 / 29	38 / 35 / 31	39 / 36 / 31	41 / 38 / 35
Dimensions P1 Type	H x W x D	mm	615 x 1.065 x 230	615 x 1.065 x 230	615 x 1.065 x 230	615 x 1.380 x 230	615 x 1.380 x 230	615 x 1.380 x 230
Net weight P1 Type		kg	29	29	29	39	39	39
Dimensions R1 Type	H x W x D	mm	616 x 904 x 229	616 x 904 x 229	616 x 904 x 229	616 x 1.219 x 229	616 x 1.219 x 229	616 x 1.219 x 229
Net weight R1 Type		kg	21	21	21	28	28	28
Pipe connections	Liquid	inch (mm)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	1/4 (6,35)	3/8 (9,52)
	Gas	inch (mm)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	1/2 (12,70)	5/8 (15,88)
	Drain piping		VP-20	VP-20	VP-20	VP-20	VP-20	VP-20

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB.
DB: Dry Bulb; WB: Wet Bulb.

ECONAVI and INTERNET CONTROL: Optional.

HYDROKIT FOR ECOi
WATER AT 45°C

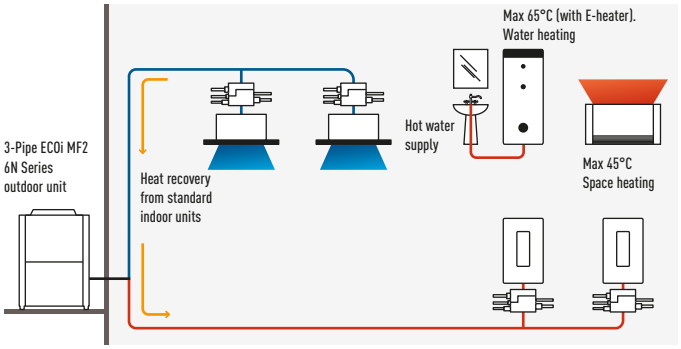
Connect the Hydrokit to your VRF system, together with other indoor units.

Technical focus
- Only with 3-Pipe ECOi MF2 6N Series outdoor units
- Remote controller CZ-RTC5 common use with DX Coil indoor units ECOi and PACi

Basic principle & advantage
Hydrokit module provides hot water by using waste heat that is recovered from standard air-conditioning indoor unit in cooling mode.
Total system performs high energy efficiency by this heat recovering operation, and it gives an advantage for the environmental-friendly assessment scheme (ex. BREEAM in UK).

Hydrokit control function / CZ-RTC5
- CZ-RTC5 is updated version from CZ-RTC3. It can be used for hydrokit and also normal indoor unit. CZ-RTC5 checks the type of connected unit and switch hydrokit or air conditioner style of display automatically
- Operating mode on hydrokit style to be set at initial setting of the system from following modes: tank mode or air conditioning mode

Overview: hydromodule in VRF system
- Multiple hydromodule connection in same circuit is available
- Each module can be set different operation mode either hot water supply mode or space heating mode (both operation modes are not able to set at 1 hydromodule)
- 3-Pipe control solenoid valve kit is necessary for each indoor unit and hydromodule



* Cold water also available.

Optional Controller.
Control for hotel application
PAW-RE2C3

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Econavi Sensor.
CZ-CENSC1

Model*				S-80MW1E5	S-125MW1E5
Power source				230 V / Single Phase / 50 Hz	230 V / Single Phase / 50 Hz
Cooling capacity			kW	8,0	12,5
Heating capacity			kW	9,0	14,0
Power input heating (hydrokit)			W	–	–
Operating current heating (hydrokit)			A	–	–
Maximum temperature			°C	~45 / ~65 [1]	~45 / ~65 [1]
Dimensions	H x W x D		mm	892 x 502 x 353	892 x 502 x 353
Net weight			kg	–	–
Water pipe connector			inch	R1 1/4	R1 1/4
Water pump (built-in)				DC motor (A class)	DC motor (A class)
Water flow rate	Cooling		l/min	22,9	35,8
	Heating		l/min	25,8	40,1
Sound pressure level			dB(A)	–	–
Pipe connections	Liquid		inch (mm)	3/8 (9,52)	3/8 (9,52)
	Gas		inch (mm)	5/8 (15,88)	5/8 (15,88)
	Drain piping			15 ~ 17 mm (inner size)	15 ~ 17 mm (inner size)
Operation range	Cooling	Ambient	°C	+10 / +43	+10 / +43
		Water	°C	+5 / +20	+5 / +20
	Heating	Ambient	°C	-20 / +32	-20 / +32
		Water	°C	+25 / +45	+25 / +45
Connectable system				3-Pipe (heat recovery type) VRF system (system capable up to 48 HP)	
Maximum Indoor ratio (connectable hydrokit module capacity ratio)				Total indoor unit + Hydrokit capacity: up to 130 % (** ~ **% vs. total outdoor unit capacity)	

Rating Conditions: Cooling Indoor 27°C DB / 19°C WB. Cooling Outdoor 35°C DB / 24°C WB. Heating Indoor 20°C DB. Heating Outdoor 7°C DB / 6°C WB. DB: Dry Bulb; WB: Wet Bulb.

1) Max 45°C by refrigerant circuit (heat pump cycle), over 45°C is provided by electric heater operation. * Tentative Data.

28% ECONAVI

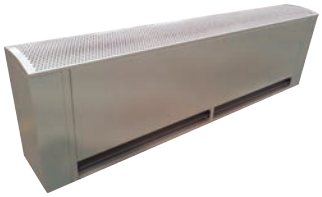
ECONAVI: Optional.

Panasonic Ventilation Solutions

For maximum savings and easy integration.

AHU connection kit 16kW, 28kW and 56kW for ECOi and GHP

Heat exchanger, Fan & Fan motor to be mounted in AHU Kit shall be provided in the field.
AHU connection Kit (field supplied) AHU Kit system. (Contents of kit: Control for PCB, expansion valve, sensors).
Application: Hotels, offices, server rooms or all large buildings where air quality control such as humidity control and fresh air and is needed.
AHU Kit combine air conditioning and fresh air in just one solution.



Air Curtain with DX Coil

Highly efficient heating effect

The combined air stream, which has a desirable low air current induction factor (mixing factor), can carry the selected initial temperature effect over long distances, and will reach the floor area while still at room temperature. This is necessary to avoid cooling down the interior spaces.

Energy Recovery Ventilator

- Counter-flow heat exchange element used for reduced noise and slimmer, more compact body shape
- All maintenance can be performed through a single inspection hole
- Straight air supply / exhaust system used for easier installation
- Each unit can be mounted in reverse position.
- Equipped with an Extra-High setting
- Can incorporate a medium performance filter (optional, installed on site)

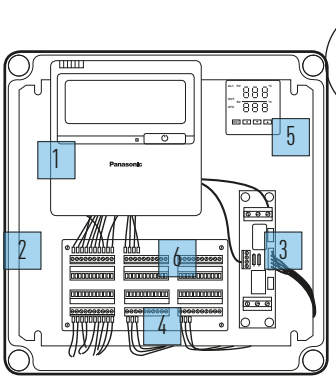
Air Handling Unit Kit

New AHU Kits connect ECOi and ECO G systems to air handling unit systems, using the same refrigerant circuit as the VRF system.
Large connectivity possibilities mean the Panasonic AHU Kit can be easily integrated.
Application: Hotels, offices, server rooms or all large buildings where air quality control such as humidity control and fresh air and is needed.

2 types of AHU Kit: Advanced and Light

Model Code	IP 65	0-10V demand control*	Outdoor temperature shift compensation. Cold draft prevention
PAW-160MAH2 / PAW-280MAH2 / PAW-560MAH2	Yes	Yes	Yes
PAW-160MAH2L / PAW-280MAH2L / PAW-560MAH2L	Yes	No	No

* With CZ-CAPBC2.



1. Remote control CZ-RTC4
2. New plastic IP 65 Box
3. PAW-T10 PCB for dry contact
4. 0-10V demand control PCB
5. Intelligent thermostat for:
   - Cold draft prevention
   - Outdoor temperature shift compensation
6. Terminal base for sensors and power supply

AHU Connection Kit


PCB, Power trans, Terminal block


Expansion valve


Thermistor x2 (Refrigerant: E1, E3)

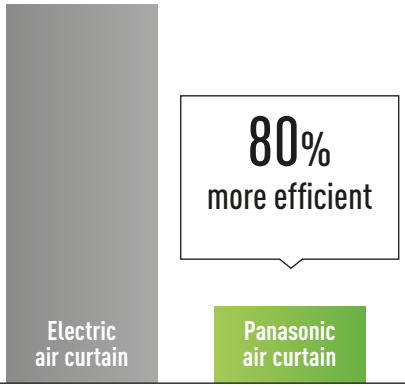

Thermistor x2 (Air: Tf, Tb)


Standard wired remote controller. Included.

Air Curtain with DX Coil

The Panasonic range of air curtains is designed for smooth operation and efficient performance. Air curtains produce a continuous stream of air blown from the top to the bottom of an open doorway and create a barrier that people and products can flow across, but air can't. Designed to improve energy efficiency, minimise heat loss from a building, and to allow retailers to keep doors open to encourage customers, our Air Curtains are suitable for connection to both VRF and PACi Systems.

Heating capacity comparison: Electrical air curtain / Panasonic air curtain



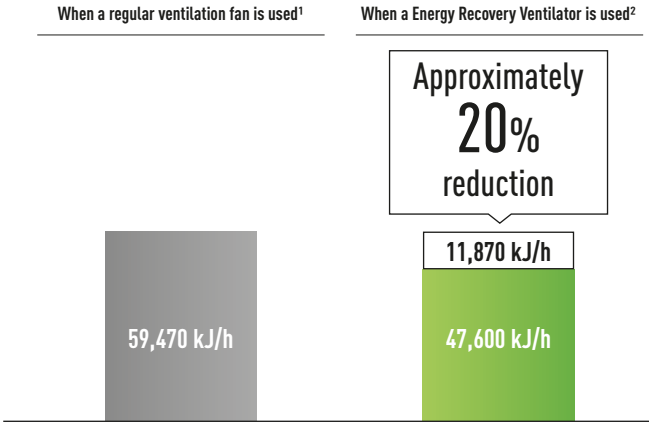
* With the U-100PE1E5 on the PAW-20PAIRC-MS. Calculation method: Taking as consideration SCOP of the Panasonic combination of 6.0. If 100 is the energy needed for a air curtain, Panasonic Air curtain will need 1/(1-6)*100=20.

Energy Recovery Ventilator

Panasonic Energy Recovery Ventilators help you with your comfort and energy-saving plan

Panasonic Energy Recovery Ventilators can reduce the outside air load because they efficiently recover the heat lost by ventilation during the heat recovery process. This results in energy-saving ventilation and lower running costs for air-conditioning and heating equipment.
Furthermore, by designing our current models with an counter-flow heat-exchange element, we achieved products with slim body shapes and quiet operation that create a comfortable and pleasant air-conditioned environment while saving energy.

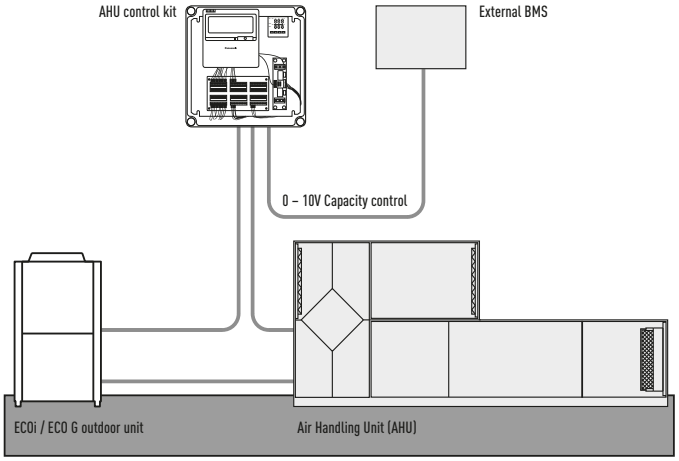
Dramatic energy savings achieved through adoption of a high-efficiency counter-flow heat-exchange element



1) Two FY-27FPK7 units. 2) One FY-500ZDY8 unit.

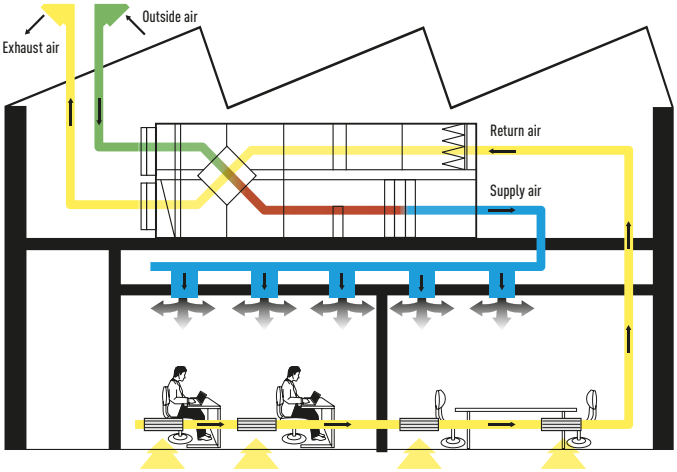
AHU connection kit 16, 28 and 56kW for ECOi and GHP

Panasonic AHU Kit, 16-56kW connected to ECOi or ECO G outdoor unit
PCB, Transformer, Solenoid Control Valve, Thermistor x 4 pcs, Terminal Base and Electrical Component Box.



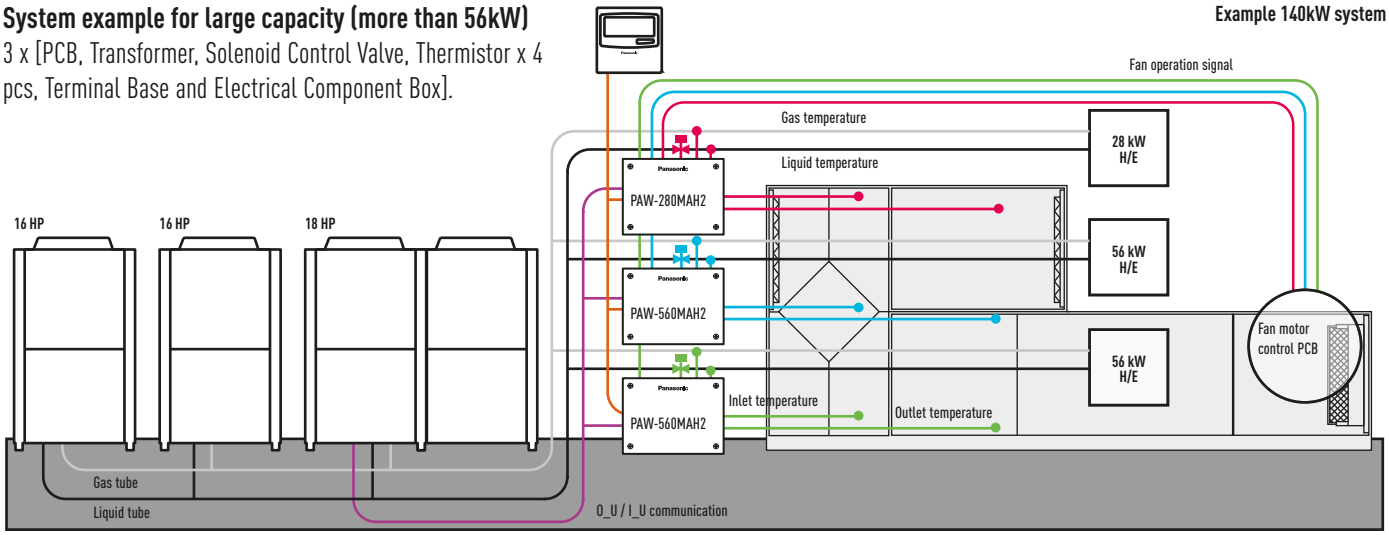
Demand control on the outdoor unit managed by external 0–10 V signal.

Main components of mechanical ventilation systems
The main components of a mechanical ventilation system are the following: Air Handling Unit (AHU), air ducts and air distribution elements.



System example for large capacity (more than 56kW)
3 x [PCB, Transformer, Solenoid Control Valve, Thermistor x 4 pcs, Terminal Base and Electrical Component Box].

Example 140kW system



Optional parts: Following functions are available by using different control accessories:

CZ-RTC4 Timer remote controller
- Operation-ON/OFF
- Mode select
- Temperature setting

* Fan operation signal can be taken from the PCB.

CZ-T10 terminal
- Input signal= Operation ON/OFF
- Remote controller prohibition
- Output signal= Operating-ON status
- Alarm output (by DC12V)

PAW-OCT, DC12 V outlet. OPTION terminal
- Output signal= Cooling/Heating/Fan status
- Defrost
- Thermostat-ON

CZ-CAPBC2 Mini seri-para I/O unit
- Demand control 40% to 120% (5% steps) by 0-10V input signal
- Temperature setting by 0-10 V or 0-140 Ω input signal
- Room (inlet air) temp outlet by 4-20 mA
- Mode select or/and ON/OFF control
- Fan operation control
- Operation status output/ Alarm output
- Thermostat ON/OFF control

PAW-T10 PCB to connect to T10 connector
- A Dry contact PCB has been developed to easily control the unit
- Input signal operation ON/OFF
- Remote control prohibition
- Output signal Operation ON status maximum 230 V 5 A (NO/NC)
- Output signal alarm status max. 230 V 5 A (NO/NC)
- Additional available contacts:
  - External humidifier control (ON/OFF) 230 VAC 3 A
  - External fan control (ON/OFF) 12V DC
  - External filter status signal potential free
  - External float switch signal potential free
  - External leakage detection sensor or TH. OFF contact potential free (possible usage for external blow out temperature control)

6N series 2-Pipe ECOi outdoor unit shall be used for AHU Connection Kit. 3 models for VRF system: 5 HP (PAW-160MAH2), 10 HP (PAW-280MAH2) and 20 HP (PAW-560MAH2).

With GHP outdoor units:

- One AHU kit may be used for one GHP unit (2-Pipe, 56kW). Multiple AHU kits cannot be used
- Mixed with standard indoor units is not allowed
- Power specifications are Single Phase 220 V to 240 V

Technical focus

- Maximum capacity: 60HP (168kW)
- Maximum piping length: 100 m (120 m equivalent)
- Elevation difference (O_U~I_U): 50 m (O_U above)
- Elevation difference (I_U~I_U): 4 m
- In/Out capacity ratio: 50~100%
  Maximum I_U number: 3 units*
- Outdoor temperature range in Heating: -20 - 15°C
- Available temperature range for the suction air at AHU Kit: Cool: 18 - 32°C / Heat: 16 - 30°C

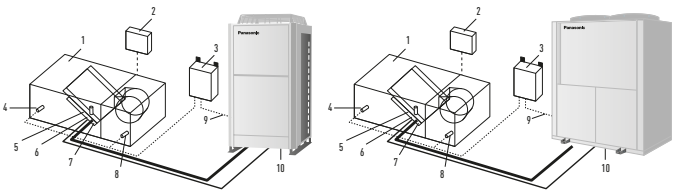
* To be simultaneous operation controlled by one remote controller sensor.

- The systems is controlled by the suction air (or room return air) temperature (same as standard indoor unit). (Selectable mode: Automatic / Cooling / Heating / Fan / Dry (but same as Cool)
- The discharge air temperature is also controlled to prevent too-low air discharge in cooling or too-high air discharge in heating (in case of VRF)
- Demand control (Forcible thermostat-OFF control by operating current)
- Defrost operation signal, Thermo-ON/OFF states output
- Drain pump control (Drain-pump and the float switch to be supplied in local)
- External target temperature setting via Indoor/Outdoor signal interface is available with CZ-CAPBC2 (Ex. 0 – 10 V)
- Demand control 40% to 120% (5% steps) by 0-10V input signal
- Connectable with P-LINK system. Special care for electrical noise may be necessary depending on the on-side system
- Fan control signal from the PCB can be used for control the air volume (High/Mid/Low and LL for Th-OFF). Need to change the fan control circuit wiring at field

Included Controller.
Timer remote controller
CZ-RTC4

System & regulations. System overview

1. AHU Kit equipment (Field supplied)
2. AHU Kit system controller (Field supplied)
3. AHU Kit controller box (with control PCB)
4. Thermistor for Discharge air
5. Electronic expansion valve
6. Thermistor for Gas pipe (E3)
7. Thermistor for Liquid pipe (E1)
8. Thermistor for Suction air
9. Inter-unit wiring
10. Outdoor unit



HP			5 HP	10 HP	20 HP	30 HP	40 HP	50 HP	60 HP
Model			PAW-160MAH2	PAW-280MAH2	PAW-560MAH2	PAW-280MAH2 + PAW-560MAH2	PAW-560MAH2 + PAW-560MAH2	PAW-560MAH2 + PAW-560MAH2 + PAW-280MAH2	PAW-560MAH2 + PAW-560MAH2 + PAW-560MAH2
Nominal cooling capacity @ 50Hz		kW	14,0	28,0	56,0	84,0	112,0	140,0	168,0
Nominal heating @ 50Hz		kW	16,0	31,5	63,0	95,0	127,0	155,0	189,0
Cooling airflow	High	m³/min	2.600	5.000	10.000	15.000	20.000	25.000	30.000
	Low	m³/min	1.140	3.500	7.000	10.500	14.000	17.500	21.000
Bypass factor			0,9 (recommended)	0,9 (recommended)	0,9 (recommended)	0,9 (recommended)	0,9 (recommended)	0,9 (recommended)	0,9 (recommended)
Dimensions of the box	H x W x D	mm	303 x 232 x 110	404 x 425 x 78	404 x 425 x 78	404 x 425 x 78	404 x 425 x 78	404 x 425 x 78	404 x 425 x 78
Weight		kg	3,2	6,3	6,3	6,3	6,3	6,3	6,3
Piping length	Min / Max	m	10 / 100	10 / 100	10 / 100	10 / 100	10 / 100	10 / 100	10 / 100
Elevation difference (in/out)	Max	m	10	10	10	10	10	10	10
Piping connections	Liquid pipe	inch (mm)	3/8 (9,52)	3/8 (9,52)	5/8 (15,88)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)	3/4 (19,05)
	Gas pipe	inch (mm)	5/8 (15,88)	7/8 (22,22)	1 1/8 (28,58)	1 1/4 (31,75)	1 1/2 (38,15)	1 1/2 (38,15)	1 1/2 (38,15)
Intake temperature of AHU Kit	Cooling (Min / Max)	°C	+18 / +32 (+13 / +23)	+18 / +32 (+13 / +23)	+18 / +32 (+13 / +23)	+18 / +32 (+13 / +23)	+18 / +32 (+13 / +23)	+18 / +32 (+13 / +23)	+18 / +32 (+13 / +23)
	Heating (Min / Max)	°C	+16 / +30	+16 / +30	+16 / +30	+16 / +30	+16 / +30	+16 / +30	+16 / +30
Ambient temperature of outdoor unit	Cooling (Min / Max)	°C	-10 / +34	-10 / +34	-10 / +34	-10 / +34	-10 / +34	-10 / +34	-10 / +34
	Heating (Min / Max)	°C	-10 / +15	-10 / +15	-10 / +15	-10 / +15	-10 / +15	-10 / +15	-10 / +15

AHU connection kit / System combination						
Capacity (HP)	Outdoor unit combination			AHU kit combination		
28kW (10 HP)	U-10ME1E81			PAW-280MAH2		
56kW (20 HP)	U-20ME1E81			PAW-560MAH2		
84kW (30 HP)	U-16ME1E81	U-14ME1E81		PAW-560MAH2	PAW-280MAH2	
112kW (40 HP)	U-20ME1E81	U-20ME1E81		PAW-560MAH2	PAW-560MAH2	
140kW (50 HP)	U-18ME1E81	U-16ME1E81	U-16ME1E81	PAW-560MAH2	PAW-560MAH2	PAW-280MAH2
168kW (60 HP)	U-20ME1E81	U-20ME1E81	U-20ME1E81	PAW-560MAH2	PAW-560MAH2	PAW-560MAH2

56kW (20 HP)	U-20GE2E5	PAW-560MAH2

Air Curtain with DX Coil, connected to the VRF or PACi Systems

Highly efficient heating effect

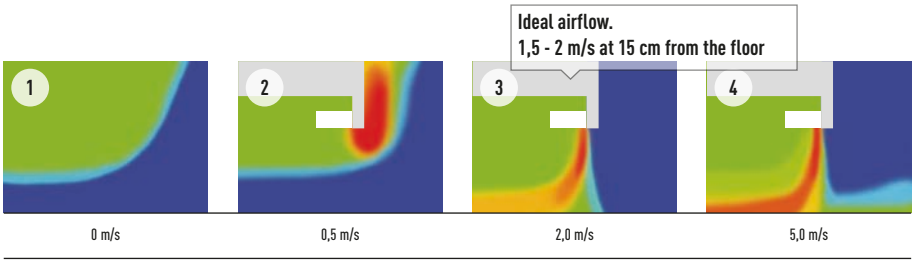
The combined air stream, which has a desirable low air current induction factor (mixing factor), can carry the selected initial temperature effect over long distances, and will reach the floor area while still at room temperature. This is necessary to avoid cooling down the interior spaces.
Available in different lengths to suit requirements between 1 and 2,5 m, both air curtains have outlet grilles that can be adjusted to five different positions. The jet flow model can be installed up to a height of 3,5 m with the standard model up to 3,0 m. The outlet grilles can be easily adjusted into five positions to suit different installations requirements and the air filter can be accessed without the need for specialist tools.

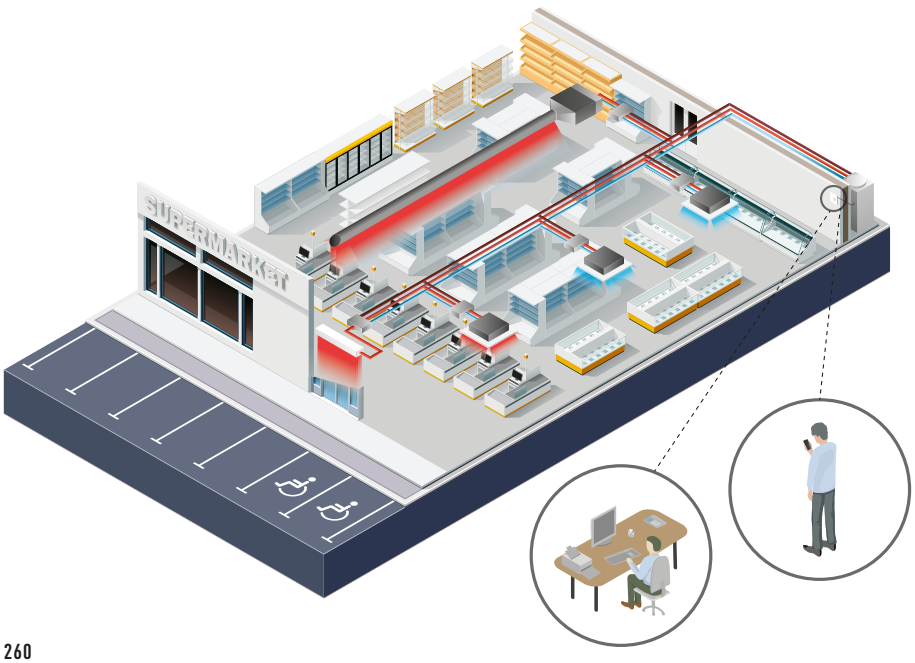
- Super-efficient with new EC fan motor (40% lower running costs compared to a standard AC fan motor)
- Easy Cleaning and Servicing
- Can be connected to either Panasonic VRF or PACi systems
- Built-in drain for cooling operation
- Standard and Jet Flow air curtains can be controlled via Panasonic's range of remote internet controls

The new standard and jet-flow models are ideal for connection to a ECOi or PACi system. With simple "plug and play" installation, both are fitted with an EC fan motor for a smooth operation and efficient performance. This new fan guarantees 40% lower running cost than with a standard AC fan motor. With air curtains often running for 12 hours a day as a minimum, this can lead to considerable savings.

Optimised airflow velocity

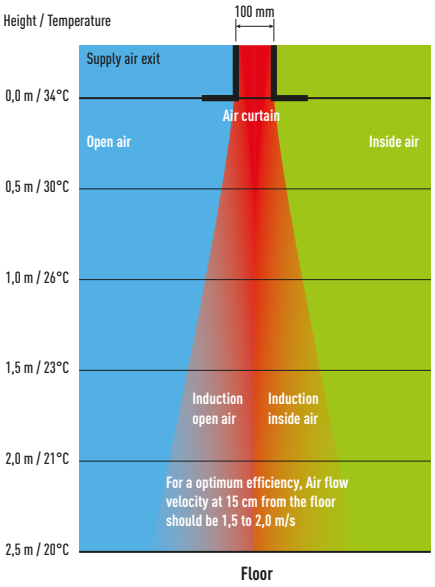
1. Energy losses, no air curtain installed
2. Too low velocity air curtain – air curtain not efficient
3. Optimum results with the Tekadoor air curtain connected to Panasonic VRF
4. Too high velocity air curtain – considerable turbulence, energy lost to the outside, air curtain not efficient





Intelligent Operation

Our air curtains combine airflow and heating / cooling technology to ensure optimum comfort and energy efficiency whilst also creating an effective barrier between indoor and outdoor environments. Design and installation is key to achieving the correct height / temperature settings to achieve optimum performance. Our air curtains are designed to answer the demands of the retail, commercial and industrial markets.



How does it work?

Stale air from the room is taken in and ejected near the door. This creates a 'roll of air' that shields the door area, mixing with the colder incoming air. It then turns away from the door, back into the room and toward the intake screen, where it is partly drawn in again. This flow of air helps to create a barrier for heat loss yet at the same time refreshes room air.

Internet Control

An app added to your tablet or smartphone or via the Internet allows you to control and manage the system remotely. There is also the option to integrate into existing BMS systems by using other Panasonic interfaces.

TEKADOOR®

High efficiency Air curtain connected to your VRF installation. EC Fan motor for a smooth operation and efficient performance. 2 types of Air flow available: Jet-Flow and Standard. 2015 Fan Standard available today. Easy Cleaning and Servicing.

Technical focus

- Save up to 40% Energy Costs by use of the integrated EC Fan Technology (Higher efficiency than conventional AC fan, soft start and longer motor duration)
- 3 Lengths of Air Curtains Jet-Flow, from 1,0 to 2,0 m and 2 lengths of Air Curtains Standard, 1,0 and 2,0 m
- Installation Height up to 3,5 m (Jet-Flow) and 3,0 m (Standard)
- Outlet Grilles can be adjusted in five positions, to suite different Indoor and installation requirements (Jet-Flow)
- Control with Panasonic Remote Control systems (optional)
- Direct integration to BMS by optional Panasonic Interfaces
- Drain included for cooling operation

Features

Comfort

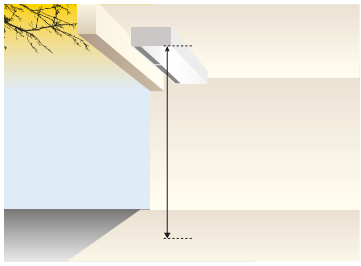
- Easy redirection of Airflow by means of manual deflector (Jet-Flow)

Ease of use

- Speed selector (high and low) on the unit itself

Easy installation and maintenance

- Easy installation
- Compact dimensions improve installation and positioning (Jet-Flow)
- Easy cleaning of grid without opening of the unit



Max installation high
Jet-Flow: 3,5 m
Standard flow: 3,0 m

HP			4 HP	6 HP	8 HP	14 HP	4 HP	8 HP
Air Curtain			PAW-10EAIRC-MJ	PAW-15EAIRC-MJ	PAW-20EAIRC-MJ	PAW-25EAIRC-MJ	PAW-10EAIRC-MS	PAW-20EAIRC-MS
Air flow type			Jet-Flow				Standard	
Airflow Length (A)		m	1,0	1,5	2,0	2,5	1,0	2,0
Air volume	High / Med / Low	m^3/h	1.800 / 1.500 / 1.200	2.700 / 2.300 / 1.900	3.600 / 3.000 / 2.500	4.500 / 3.800 / 3.100	1.800 / 1.500 / 1.200	2.700 / 2.300 / 1.900
Cooling capacity nominal[2]		kW	9,2	17,5	23,1	24,4	9,2	17,5
Heating capacity nominal		kW	11,4	25,0	31,5	31,5	11,4	31,5
Heating capacity with air in 20°C, air out 40°C		kW	11,9	17,9	23,9	29,9	11,9	17,9
Heating capacity with air in 20°C, air out 35°C		kW	8,9	13,4	17,9	22,4	8,9	13,4
Heating capacity with air in 20°C, air out 30°C		kW	5,9	8,9	11,9	14,9	5,9	8,9
Max installation height	Good condition	m	3,5	3,5	3,5	3,5	3	3
	Normal condition	m	3,1	3,1	3,1	3,1	2,7	2,7
	Bad condition	m	2,7	2,7	2,7	2,7	2,4	2,4
Refrigerant			R410A	R410A	R410A	R410A	R410A	R410A
Hot gas temperature		°C	70	70	70	70	70	70
Condensing temperature		°C	50	50	50	50	50	50
Subcooling		K	5	5	5	5	5	5
Pressure		bar	45	45	45	45	45	45
Liquid pipe / Gas pipe		inch (mm)	3/8 (9,52) / 5/8 (15,88)	3/8 (9,52) / 3/4 (19,05)	3/8 (9,52) / 7/8 (22,22)	3/8 (9,52) / 7/8 (22,22)	3/8 (9,52) / 5/8 (15,88)	3/8 (9,52) / 7/8 (22,22)
Fan			230V / 50Hz / 1 / N / PE	230V / 50Hz / 1 / N / PE	230V / 50Hz / 1 / N / PE	230V / 50Hz / 1 / N / PE	230V / 50Hz / 1 / N / PE	230V / 50Hz / 1 / N / PE
Fan type			EC	EC	EC	EC	EC	EC
Currency	High / Med / Low	A	2,1 / 0,8 / 0,3	2,8 / 1,1 / 0,4	4,2 / 1,6 / 0,6	4,9 / 1,9 / 0,7	2,1 / 0,8 / 0,3	4,2 / 1,6 / 0,6
Electrical Consumption	High / Med / Low	kW	0,44 / 0,17 / 0,06	0,59 / 0,23 / 0,08	0,89 / 0,34 / 0,12	1,03 / 0,40 / 0,14	0,44 / 0,17 / 0,06	0,89 / 0,34 / 0,12
Protecting Fuse		A	M16A	M16A	M16A	M16A	M16A	M16A
Noise		dB(A)	40 - 55	40 - 56	40 - 57	40 - 58	40 - 55	40 - 57
Dimensions	W x H x D	mm	1.210 x 260 x 590	1.710 x 260 x 590	2.210 x 260 x 590	2.710 x 260 x 590	1.210 x 260 x 490	2.210 x 260 x 490
Weight		kg	70	100	138	160	60	128

Mini ECOi with air out 40°C	U-4LE1E5/8[1]	U-6LE1E5/8[1]	–	–	U-4LE1E5/8[1]	U-6LE1E5/8[1]
Mini ECOi with air out 35°C	U-4LE1E5/8[1]	U-4LE1E5/8[1]	U-6LE1E5/8[1]	–	U-4LE1E5/8[1]	U-4LE1E5/8[1]
Mini ECOi with air out 30°C	U-4LE1E5/8[1]	U-4LE1E5/8[1]	U-4LE1E5/8[1]	U-5LE1E5/8[1]	U-4LE1E5/8[1]	U-4LE1E5/8[1]
ECOi with air out 40°C	All models	All models	All models	All models without 8HP	All models	All models
ECOi with air out 30°C or 35°C	All models	All models	All models	All models	All models	All models
GHP all temperatures	All models	All models	All models	All models	All models	All models

1) or bigger size. 2) Rated Conditions Cooling Outdoor +35°C DB Indoor +27°C DB/+19°C WB, Discharge temperature [3] 16°C.
All combinations under rated conditions: Heating Outdoor +7°C DB/+6°C WB Indoor +20°C DB. In case of lower outdoor temperatures a higher capacity outdoor unit model may be necessary.

GREEN TECH

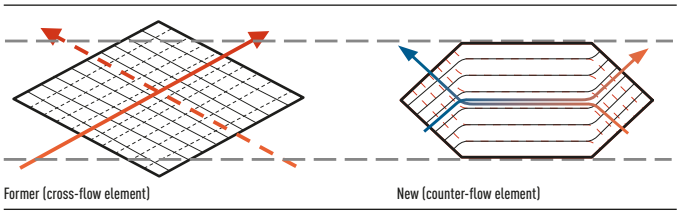
BMS CONNECTIVITY

Energy Recovery Ventilator

Suppresses indoor temperature changes while providing fresh air.

Energy efficiency and ecology
Energy consumption is dramatically reduced by using a counter-flow heat-exchange element. Air conditioning load is reduced by approximately 20%, resulting in significant energy savings.

Comparison of former and current elements
With the cross-flow element, air moves in a straight line across the element; with the counter-flow element, air flows through the element for a longer time (longer distance), so the heat-exchange effect remains unchanged even if the element is made thinner.



Heat exchange ventilation and normal ventilation
Energy-saving ventilation can be achieved through the proper use of heat-exchange ventilation and normal ventilation.

Heat exchange ventilation
When a room is cooled or heated, the exhausted cooling / heating energy is recovered by heat-exchange ventilation.

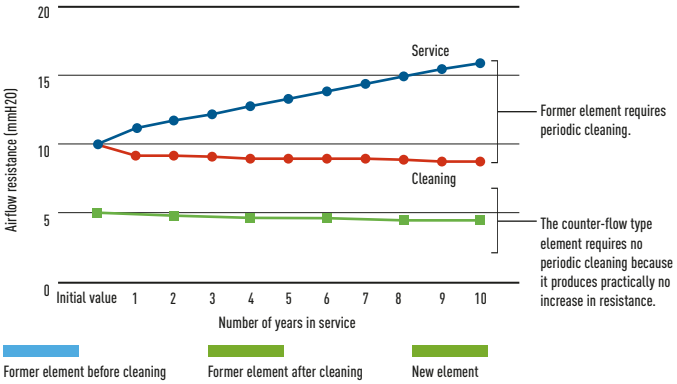
Normal ventilation
This is used in the spring and autumn, when rooms are not cooled or heated, that is, when there is little difference between the indoor and outdoor air conditions. In addition, at night during the hot season, when the outside air temperature drops the outside air is drawn inside without heat exchange, alleviating the load on the air conditioning equipment.
The heat exchanger is made up of a membrane manufactured from a special material covered in resin for optimal heat transmission. The nylon/polyester fibre filter offers high dust retention capacity. We have also redesigned the air ducts to obtain a long-lasting heat exchange system which does not need periodic cleaning.

Heat exchanger
With the cross-flow element, air moves in a straight line across the element. With the counter-flow element, airflows through the element for a longer time (longer distance), so the heat-exchange effect remains unchanged even if the element is made thinner.

More Comfort
Quiet operation
Low noise operation results in noticeably quieter units. All models with capacities below 500 m³/h run at noise levels below 32 dB (High setting) and even our largest 1.000 m³/h-capacity model runs at only 37,5 dB (High setting).

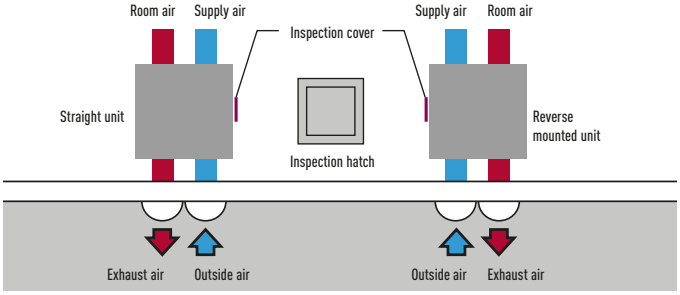
Long service life of heat-exchange element
We used a nonwoven cloth filter with a high dust collection efficiency and redesigned the air flow passages to achieve a durable heat-exchange element that requires no periodic cleaning.

Changes in airflow resistance based on number of years in service

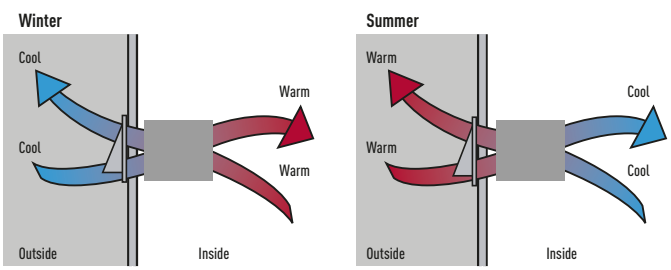


Easy Installation and Maintenance
Slim shape and easier installation
Counter-flow heat exchange element used for reduced noise and slimmer, more compact body shape.
270 mm Height: FY-250ZDY8 // FY-350ZDY8 // FY-500ZDY8
388 mm Height: FY-800ZDY8 // FY-01KZDY8A

Reverse mountable direct air supply / exhaust system
Adoption of straight air supply / exhaust system: Duct design is simplified because the air supply / exhaust ducts are straight.
Since each unit can be mounted in reverse position, only one inspection hole is needed for two units: Two units can share one inspection hole so duct work is easier and more flexible.



Balanced Ventilation



Recovers up to 77% of the heat in the outgoing air, for an ecological and energy efficient building.

Technical focus
- High energy saving, up to 20%
- Counter Cross Flow technology for better efficiency
- Long life element core
- Easy installation and 20% less thickness
- Easy connection to air conditioning units
- Super quiet units

Features
Healthy Air
- The filter guarantees healthier air

Energy efficiency and ecology
- Up to 20% energy saving in the installation
- Recovers up to 77% of the heat in the outgoing air

Comfort
- Cleaning reduced due to the revolutionary structure of the exchanger (recommended every 6 months)
- Ideal for indoor spaces without windows

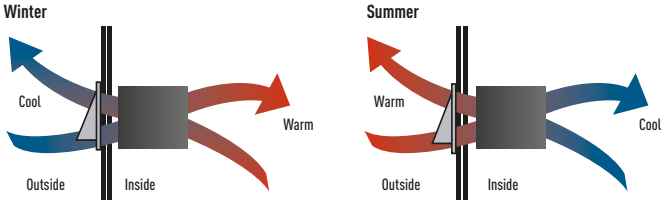
Easy Installation And Maintenance
- 6 models for easier selection
- Reduced system height (270 mm and 388 mm)
- Side opening for cleaning (inspection of filter, motor and other parts)
- Installation can be reversed to share an inspection opening between 2 machines
- Easy connection to the air conditioning unit (without additional elements)
- Installation in false ceilings
- Units operate at 220 - 240 V
- High static pressure for easier installation

Rated flow rate		**250 m³/h**			**350 m³/h**			**500 m³/h**			**800 m³/h**			**1000 m³/h**		
Models		**FY-250ZDY8**			**FY-350ZDY8**			**FY-500ZDY8**			**FY-800ZDY8**			**FY-01KZDY8A**		
																
Power Source		220 - 240 V - 50 Hz			220 - 240 V - 50 Hz			220 - 240 V - 50 Hz			220 - 240 V - 50 Hz			220 - 240 V - 50 Hz		
Heat Exchange Ventilation		**E - High**	**High**	**Low**	**E - High**	**High**	**Low**	**E - High**	**High**	**Low**	**E - High**	**High**	**Low**	**E - High**	**High**	**Low**
Input	W	112 - 128	108 - 123	87 - 96	182 - 190	178 - 185	175 - 168	263 - 289	204 - 225	165 - 185	387 - 418	360 - 378	293 - 295	437 - 464	416 - 432	301 - 311
Air Volume	m³/h	250	250	190	350	350	240	500	500	440	800	800	630	1.000	1.000	700
External Static Pressure	Pa	105	95	45	140	60	45	120	60	35	140	110	55	105	80	75
Noise	dB	30,0 - 31,5	29,5 - 30,5	23,5 - 26,5	32,5 - 33,0	30,5 - 31,0	22,5 - 25,5	36,5 - 37,5	34,5 - 35,5	31,0 - 32,5	37,0 - 37,5	36,5 - 37,0	33,5 - 34,5	37,5 - 38,5	37,0 - 37,5	33,5 - 34,5
Temp. Exchange Efficiency	%	75	75	77	75	75	78	75	75	76	75	75	76	75	75	79
Normal Ventilation		**E - High**	**High**	**Low**	**E - High**	**High**	**Low**	**E - High**	**High**	**Low**	**E - High**	**High**	**Low**	**E - High**	**High**	**Low**
Input	W	112 - 128	108 - 123	87 - 96	182 - 190	178 - 185	175 - 168	263 - 289	204 - 225	165 - 185	387 - 418	360 - 378	293 - 295	437 - 464	416 - 432	301 - 311
Air Volume	m³/h	250	250	190	350	350	240	500	500	440	800	800	630	1.000	1.000	700
External Static Pressure	Pa	105	95	45	140	60	45	120	60	35	140	110	55	105	80	75
Noise	dB	30,0 - 31,5	29,5 - 30,5	23,5 - 26,5	32,5 - 33,0	30,5 - 31,0	22,5 - 25,5	37,5 - 38,5	37,0 - 38,0	31,0 - 32,5	37,0 - 37,5	36,5 - 37,0	33,5 - 34,5	39,5 - 40,5	39,0 - 39,5	35,5 - 36,5
Temp. Exchange Efficiency	%	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dimensions (W x D x H)	mm	882 x 599 x 270			1.050 x 804 x 317			1.090 x 904 x 317			1.322 x 884 x 388			1.322 x 1.134 x 388		
Weight	kg	29			49			57			71			83		

This noise of the product is the value which was measured at the acoustic room. Actually, in the established condition, that undergo influence by the echoing of the room and so that become bigger than the display numerical value. The input, the current and the exchange efficiency are values at the time of the mentioned air volume. The noise level shall be measured 1,5 m below the centre of the unit. The temperature exchange efficiency averages that of when cooling and when heating.

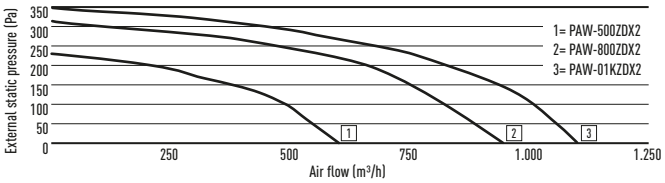
Heat Recovery with DX Coil

Balanced Ventilation

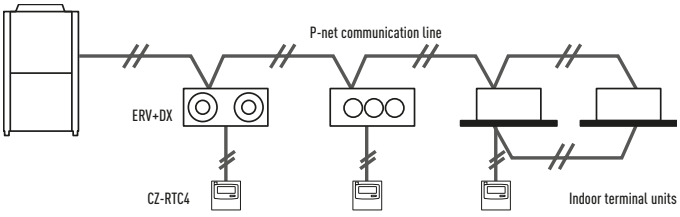


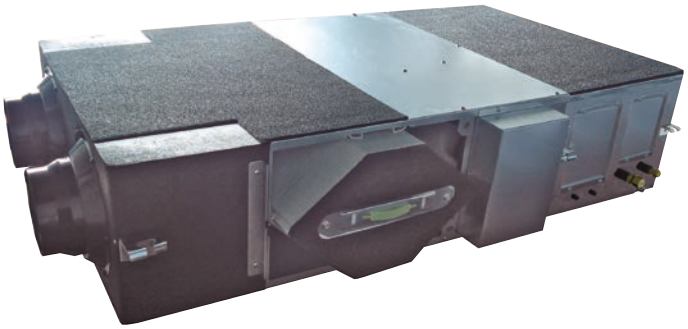
Characteristic curves

The following curves show the unit external static pressure at maximum fan speed for each model.



Interconnection to outdoor/indoor units





Bioxigen®
your best indoor air quality

Technical focus

- Motorised heat recovery by-pass device automatically controlled by unit control to use fresh air free-cooling when convenient
- The Bioxigen® purifying system, activates when the fan runs, provides an efficient antibacterial treatment, ensuring optimum health of supplied air

General characteristics

- Galvanized steel self-supporting panels, internally and externally insulated
- Counterflow air-to-air heat recovery device, made of sheets of special paper with special sealing to keep airflows separate and only permeable to water vapor. Total heat exchange with temperature efficiency up to 77% and enthalpy efficiency up to 63%, also at high level during summer season
- G4 efficiency class filters with synthetic cleanable media, both on fresh air and return air intake
- Removable side panel to access filters and heat recovery in the event of scheduled maintenance
- Low consumption, high efficiency & low noise direct driven fans with 3-speed EC motors
- Supply section complete with DX Coil (R410A) fitted with solenoid control valve, freon filter, contact temperature sensors on liquid and gas line, NTC sensors upstream and downstream airflow
- Built-in electric box equipped with PCB to control internal fan speed and to interconnect outdoor/indoor units
- Duct connection by circular plastic collars
- CZ-RTC4 Timer remote controller (option)

Optional Controller.
Wired remote controller
CZ-RTC5
Compatible with Econavi

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

Model			PAW-500ZDX2	PAW-800ZDX2	PAW-01KZDX2
Power source			230 V / Single Phase / 50 Hz	230 V / Single Phase / 50 Hz	230 V / Single Phase / 50 Hz
Air volume	Hi / Med / Lo	m³/h	500 / 500 / 360	800 / 800 / 625	1.000 / 780 / 650
External static pressure[1]	Hi / Med / Lo	Pa	85 / 45 / 21	117 / 68 / 18	104 / 69 / 17
Maximum current		A	1,1	2,3	2,5
Maximum power input		W	135	300	310
Sound pressure level[3]	Hi / Med / Lo	dB(A)	33 / 31 / 27	38 / 36 / 32	39 / 37 / 33
Pipe connections	Liquid / Gas	inch (mm)	1/4 (6,35) / 1/2 (12,70)	1/4 (6,35) / 1/2 (12,70)	1/4 (6,35) / 1/2 (12,70)
HEAT RECOVERY					
Temperature efficiency summer mode		%	62,5	59	59,5
Enthalpy efficiency summer mode		%	60	57	57,5
Saved power summer mode		kW	1,7	2,5	3,2
Temperature efficiency winter mode		%	76,5 (76,5)	73 (73)	73,5 (73,5)
Enthalpy efficiency winter mode		%	62,3 (64,1)	59 (60,8)	59,5 (61,2)
Saved power winter mode		kW	4,3 (4,8)	6,5 (7,3)	8,2 (9,0)
DX COIL					
Total cooling capacity		kW	3,7	4,9	5,6
Sensible cooling capacity		kW	2,3	3,3	3,8
Off temperature	Cooling	°C	14,4	16,2	17,0
Off relative humidity	Cooling	%	87	83	82
Total heating capacity		kW	3,9 (4,1)	5,4 (5,7)	6,3 (6,7)
Off temperature	Heating	°C	35,4 (34,6)	32,6 (31,7)	31,3 (30,3)
Off relative humidity	Heating	%	11 (11)	12 (13)	13 (14)

Nominal summer conditions: Outside air: 32°C DB, RH 50%. Ambient air: 26°C DB, RH 50%. Nominal winter conditions: Outside air: -5°C (-10°C) DB, RH 80%. Ambient air: 20°C DB, RH 50%. Cooling mode air inlet condition: 28.5°C DB, RH 50%; evaporating temp. 4°C. Heating mode air inlet condition: 13°C DB, RH 40% (11°C DB, RH 45%); condensating temperature 49°C. DB: Dry Bulb; RH: Relative Humidity.
1) Referred to the nominal airflow after filter and plate heat exchanger. 3) Referred to 1.5 meters from inlet in free field condition.

INTERNET CONTROL: Optional.

R22 → R410A

R22 RENEWAL

R22 Renewal

An important drive to further reduce the potential damage to our ozone

Unique R22 Renewal from Panasonic: Fast, easy to install and cost effective

- Panasonic refrigerant oil that doesn't react to the most common oil types used in air-conditioning systems. This make the mix of oil does not damage the units. The installations is easier
- All Panasonic ECOi units can be install in R22 pipings, no specific models are available
- Up to 33 Bar! When there is any doubt about the strength of the piping, the maximum working pressure can be reduced to 33 bar with a setting in the software of the outdoor unit

Required Parameter setting for the renewal system

Model type	Item code	Setting data	Remarks
3-Pipe VRF System	4B	Set to 0001 = Renewal system operation (Factory set = 0000)	Setting only for Master unit
2-Pipe VRF System (ME1E81 series only)	4B	Set to 0000 = Renewal system operation (Factory set = 0002)	Setting only for Master unit
Mini VRF System	4B	Set to –001 = Renewal system operation (Factory set = 0000)	

Depending on the outdoor unit type to be used for renewal installation, one additional setting has to be changed properly before starting a test-run operation of the new system. The renewal system operating condition (design pressure: 3,3MPa) will be set by this parameter change. Refer to the following table and be sure to change the parameter accordingly. A maintenance remote controller for the outdoor unit is required to change the relevant parameter. (See the maintenance remote controller's instruction manual for further details on connections and usage methods.)

Why renewal?

It is often said that legislation is ruling our lives but sometimes it is there to help save lives. R22 phase out can be described as one of these and from Jan 1st 2010 the use of Virgin (new) R22 refrigerant was banned within the European Community.

Panasonic are doing our part

We at Panasonic are also doing our part – recognising that all finances are under pressure at the moment. Panasonic have developed a clean and cost effective solution to enable this latest legislation to be introduced with as minimum an effect on businesses and cash reserves as possible.
The Panasonic renewal system allows good quality existing R22 pipe work to be re-used whilst installing new high efficiency R410A systems.
By bringing a simple solution to the problem Panasonic can renew all Split Systems and VRF systems; and depending upon certain restrictions we don't even limit the manufactures equipment we are replacing.

By installing a new high efficiency Panasonic R410A system you can benefit from around 30% running cost saving compared to the R22 system.
Yes...
1. Check the capacity of the system you wish to replace
2. Select from the Panasonic range the best system to replace it with
3. Follow the procedure detailed in the brochure and technical data

Simple...

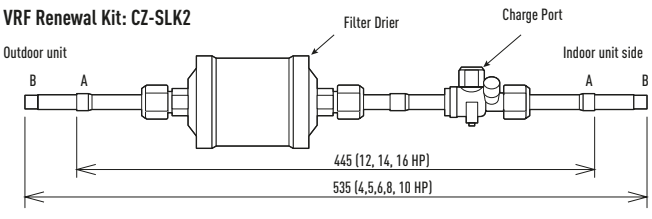
R22 - The reduction of Chlorine critical for a cleaner future.

Panasonic's Renewal system allows a completely new VRF system, indoor and outdoor units, to be installed using the existing systems pipe work.
Panasonic's advanced technology enables the system to work with previously installed pipe work by managing the working pressure within the system down to R22 (33 bar) levels, this ensures the system works safely and efficiently without loss of capacity.
The new equipment can offer increased COP/EER by using state of the art inverter compressor and heat exchanger technology.
Having contacted your Panasonic supplier regarding pipe work restrictions and gained approval to use the Panasonic Renewal System there are three main tests that have to be carried out to ensure that the system can be used effectively.
Firstly a thorough inspection of the pipe work must be carried out and any damage must be repaired.
Secondly an oil test has to be carried out to ensure that the system has not been subject to a compressor burnout during its lifetime, Lastly a VRF Renewal Kit (CZ-SLK2) has to be installed within the pipe work to ensure that the system is cleaned of any remnants of oil.

VRF Renewal Kit (CZ-SLK2) and Sight Glass

The following shows an overview of the VRF Renewal Kit (CZ-SLK2) that is required when existing tubing is reused. If the exact tube length and tube size of the existing tubing are uncertain, attach a sight glass in accordance with the figure below. It will be used for checking the amount of additional refrigerant charge.

VRF Renewal Kit: CZ-SLK2



Connecting tube dimensions (inch (mm)): A Ø 1/2 (12,7) (12, 14, 16 HP) - B Ø 3/8 (9,52) (4,5,6,8 10 HP)

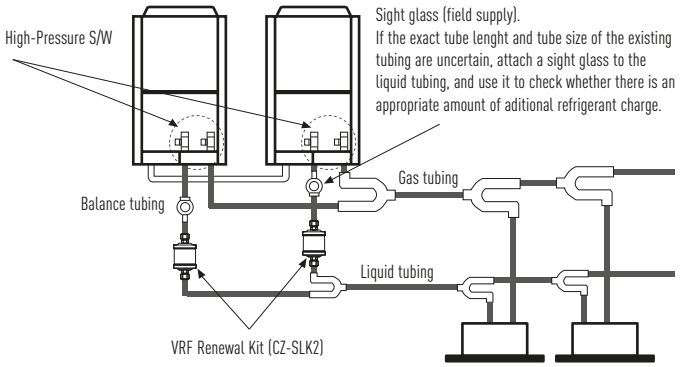
Note: If the tube size does not match that of the existing tubing, use a reducer (field supply) to adjust the tube diameter.

Sight glass (field supply)

If the exact tube length and tube size of the existing tubing are uncertain, attach a sight glass to the liquid tubing, and use it to check whether there is an appropriate amount of additional refrigerant charge.

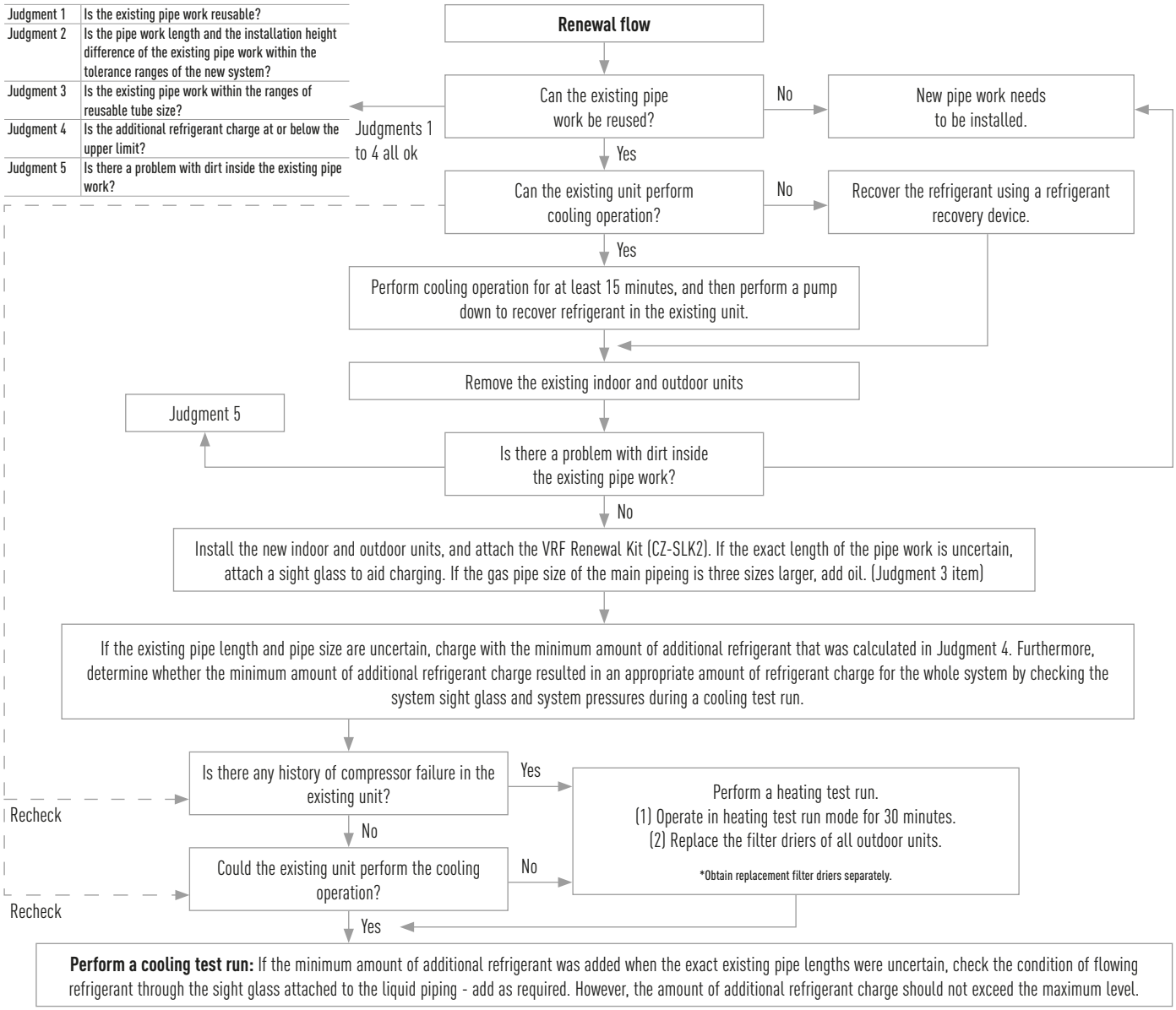
Attaching the Filter Drier Kit and sight glass

- To adjust the limited pressure level into 3,3 MPa only, special setting is necessary at site.
- A filter Drier shall be attached to the liquid tubing of each outdoor unit.
- High-Pressure switches shall be attached to both the liquid and the gas tubings of each outdoor unit.
- There is no need to remove the Filter Drier Kit after a test run is performed because normal operation continues while it is attached (High pressure switches need to be replaced by 3.3 MPa type (field supplied).
- When attaching the Filter Drier Kit, care shall be taken with reguards to the installation location and orientation of the filter drier and ball valve. If a mistake is made, the refrigerant is the system needs to be recovered when the filter drier is replaced, which will make maintenance difficult.
- Thermal insulation material (field supply: heat resistance of 80°C or higher and thickness of 10mm or greater) shall be applied to the Filter Drier Kit.
- The filter drier of the Filter Drier Kit may need to be replaced depending on the condition of the existing unit. Use a Danfoss DMB 164 as the replacement filter drier (field supply).



Procedure for VRF Renewal

Judgment 1	Is the existing pipe work reusable?
Judgment 2	Is the pipe work length and the installation height difference of the existing pipe work within the tolerance ranges of the new system?
Judgment 3	Is the existing pipe work within the ranges of reusable tube size?
Judgment 4	Is the additional refrigerant charge at or below the upper limit?
Judgment 5	Is there a problem with dirt inside the existing pipe work?



Perform a cooling test run: If the minimum amount of additional refrigerant was added when the exact existing pipe lengths were uncertain, check the condition of flowing refrigerant through the sight glass attached to the liquid piping - add as required. However, the amount of additional refrigerant charge should not exceed the maximum level.

Branches and Headers

Dimensions and Tube Sizes of Branches and Headers for 2-Pipe ECOi 6N Systems

Optional Distribution Joint Kits

See the installation instructions packaged with the distribution joint kit for the installation procedure.

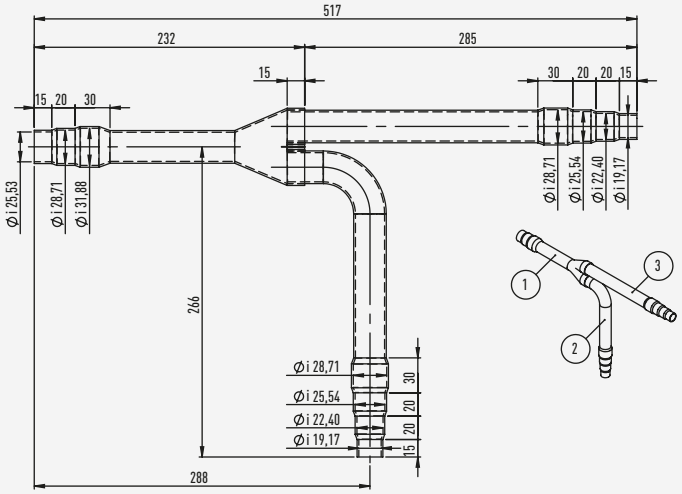
	Cooling capacity after distribution	Remarks
Outdoor unit side	68,0kW or less	CZ-P680PH2BM
	From 68,0kW to 168,0kW	CZ-P1350PH2BM

	Cooling capacity after distribution	Remarks
Indoor unit side	22,4kW or less	CZ-P224BK2BM
	From 22,4kW to 68,0kW	CZ-P680BK2BM
	From 68,0kW 168,0kW or less	CZ-P1350BK2BM

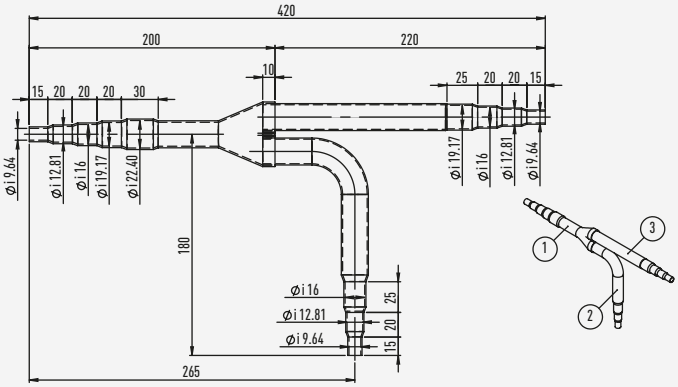
Tubing size (with thermal insulation)

CZ-P680PH2BM: For outdoor unit side (Capacity after distribution joint is 68,0kW or less).

Gas tubing



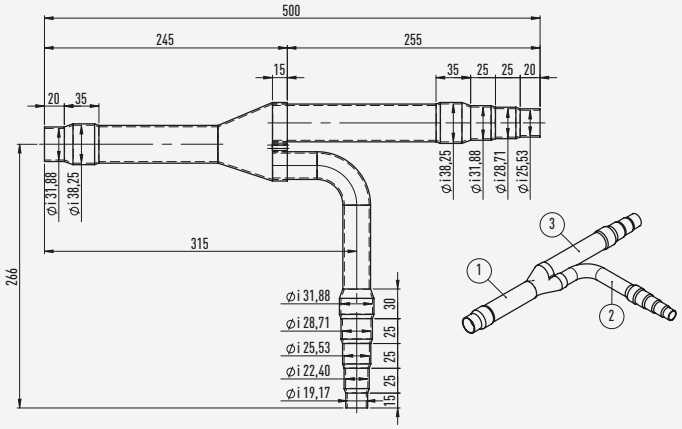
Liquid tubing



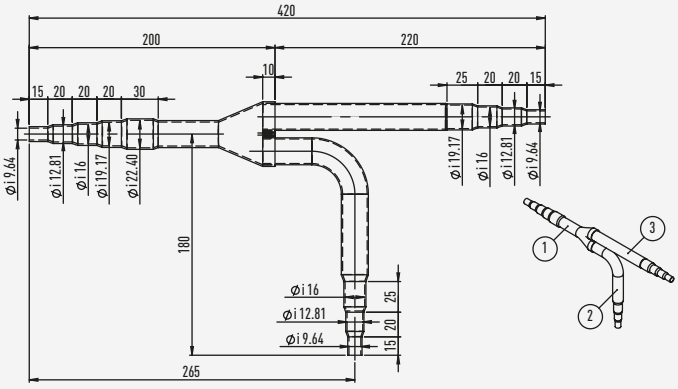
Unit:mm

CZ-P1350PH2BM: For outdoor unit side (Capacity after distribution joint is greater than 68,0kW and no more than 168,0kW).

Gas tubing



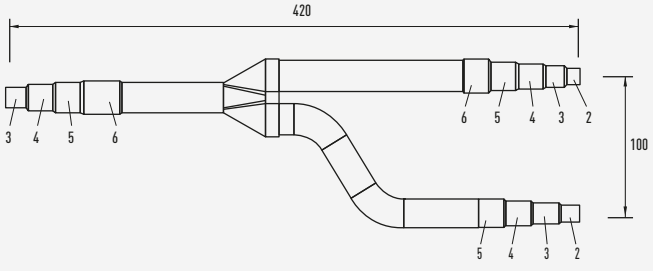
Liquid tubing



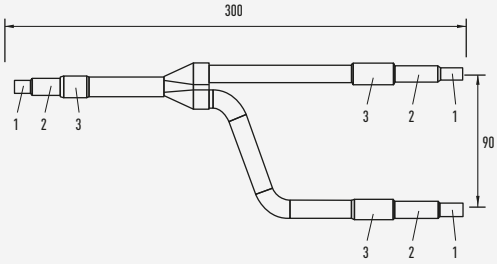
Unit:mm

CZ-P224BK2BM: For indoor unit side (Capacity after distribution joint is 22,4kW or less).

Gas tubing



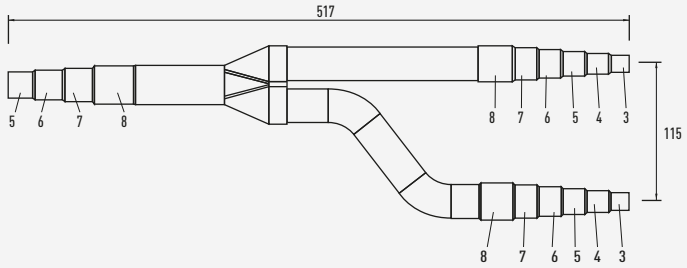
Liquid tubing



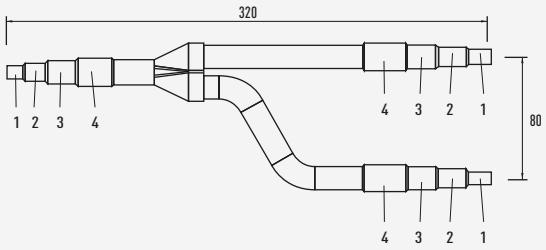
Unit:mm

CZ-P680BK2BM: For indoor unit side (Capacity after distribution joint is greater than 22,4kW and no more than 68,0kW).

Gas tubing



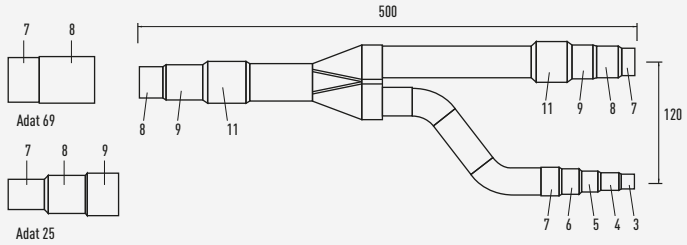
Liquid tubing



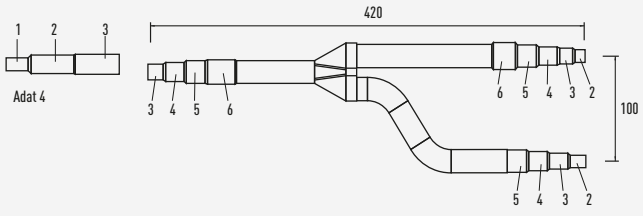
Unit:mm

CZ-P1350BK2BM: For indoor unit side (Capacity after distribution joint is greater than 68,0kW and no more than 168,0kW).

Gas tubing



Liquid tubing

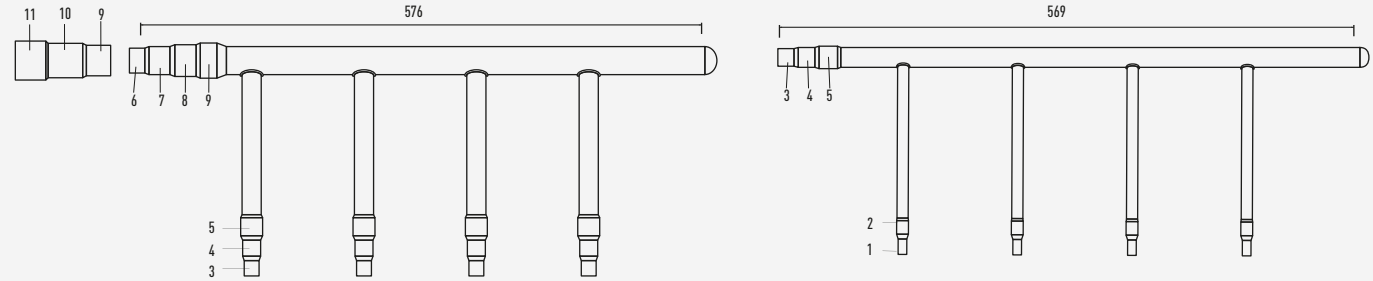


Unit:mm

Diameters		Diameters		Diameters	
1	6,35 mm 1/4"	6	22,40 mm 7/8"	11	38,10 mm 1"1/2
2	9,52 mm 3/8"	7	25,40 mm 1"	12	41,28 mm 1"5/8
3	12,70 mm 1/2"	8	28,57 mm 1" 1/8	13	44,45 mm 1"3/4
4	15,88 mm 5/8"	9	31,75 mm 1" 1/4	14	50,80 mm 2"
5	19,05 mm 3/4"	10	34,92 mm 1"3/8		

Header pipe set for ECOi 6N 2-Pipe system

CZ-P4HP4C2BM: Header pipe models for 2-Pipe systems.



Diameters		Diameters		Diameters	
1	6,35 mm 1/4"	5	19,05 mm 3/4"	9	31,75 mm 1" 1/4
2	9,52 mm 3/8"	6	22,40 mm 7/8"	10	34,92 mm 1"3/8
3	12,70 mm 1/2"	7	25,40 mm 1"	11	38,10 mm 1"1/2
4	15,88 mm 5/8"	8	28,57 mm 1" 1/8		

Branches and Headers

Dimensions and Tube Sizes of Branches and Headers for 3-Pipe ECOi 6N Systems (MF2)

Optional Distribution Joint Kits

See the installation instructions packaged with the distribution joint kit for the installation procedure.

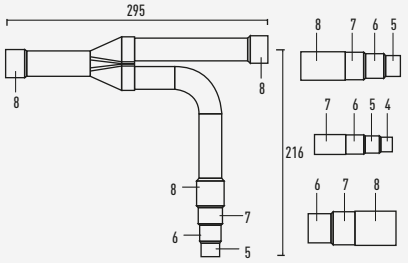
	Capacity after distribution joint	Remarks
For outdoor unit	68,0kW or less	CZ-P680PJ2BM
	Greater than 68,0kW and no more than 135,0kW	CZ-P1350PJ2BM

	Capacity after distribution joint	Remarks
For indoor unit	22,4kW or less	CZ-P224BH2BM
	Greater than 22,4kW and no more than 68,0kW	CZ-P680BH2BM
	Greater than 68,0kW and no more than 135,0kW	CZ-P1350BH2BM

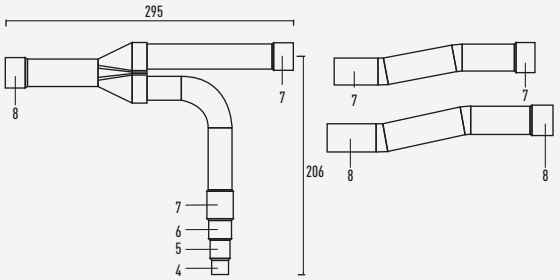
Tubing size (with thermal insulation)

CZ-P680PJ2BM: For outdoor unit side (Capacity after distribution joint is 68,0kW or less).

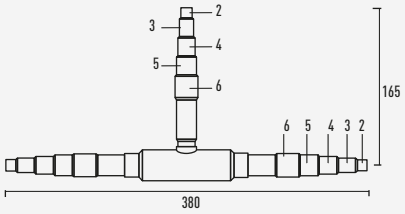
Gas tubing



Discharge tubing



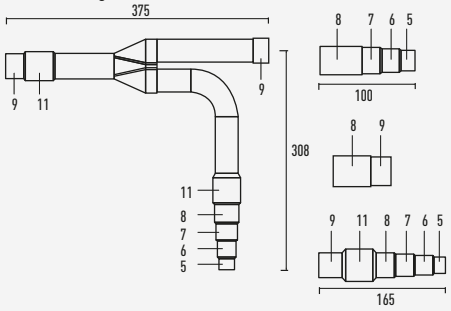
Liquid tubing



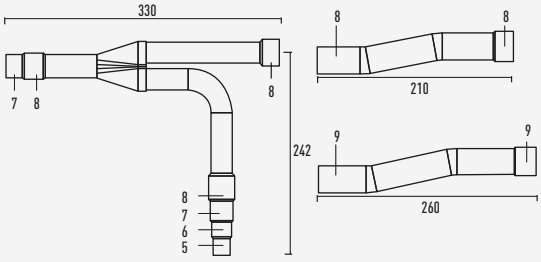
Unit:mm

CZ-P1350PJ2BM: For outdoor unit side (Capacity after distribution joint is greater than 68,0kW and no more than 135,0kW).

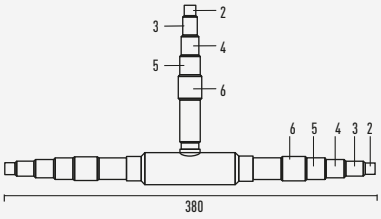
Suction tubing



Discharge tubing



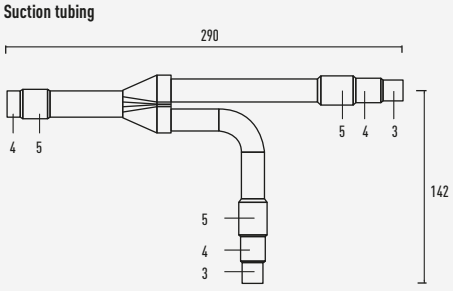
Liquid tubing



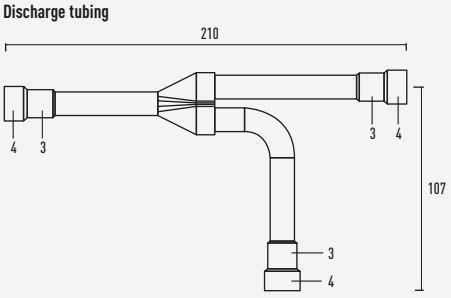
Unit:mm

CZ-P224BH2BM: For outdoor unit side (Capacity after distribution joint is 22,4kW or less).

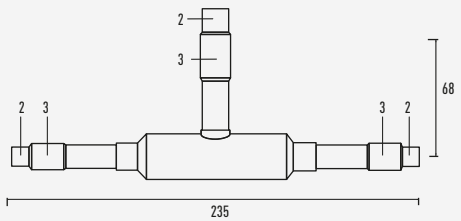
Suction tubing



Discharge tubing

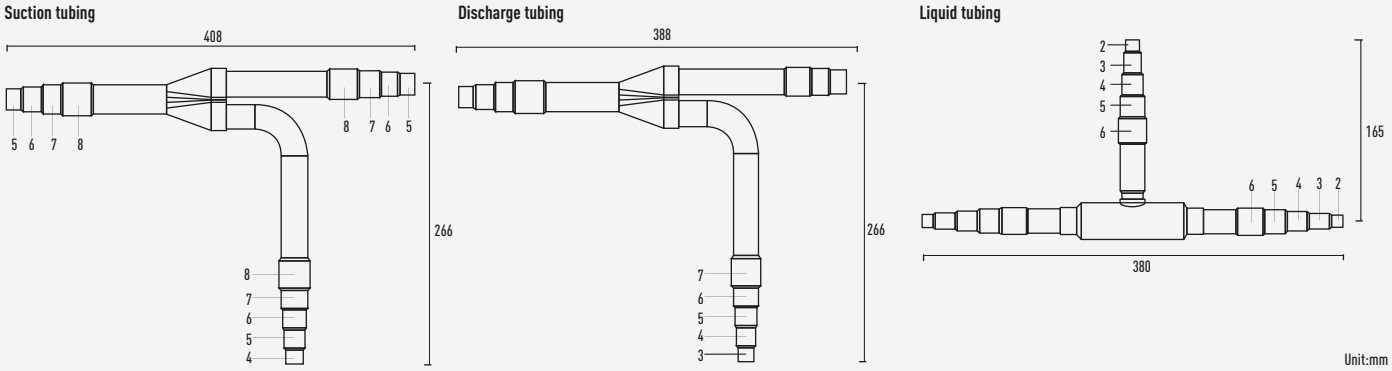


Liquid tubing

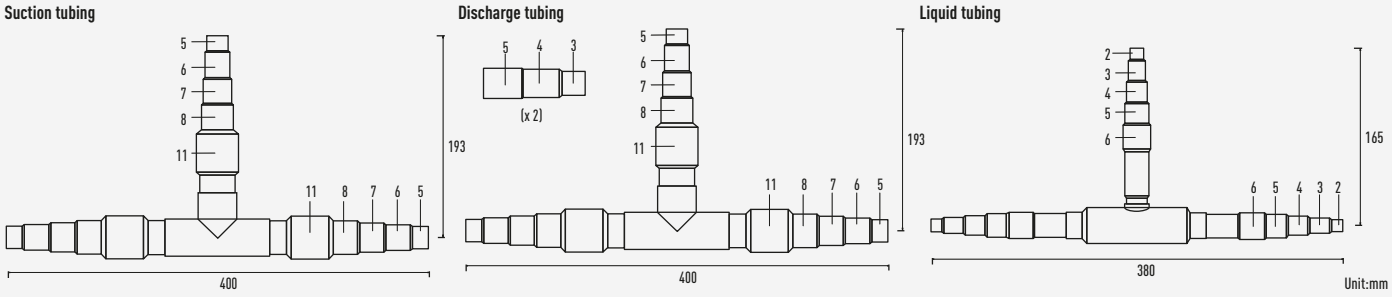


Unit:mm

CZ-P680BH2BM: For outdoor unit side (Capacity after distribution joint is greater than 22,4kW and no more than 68,0kW).



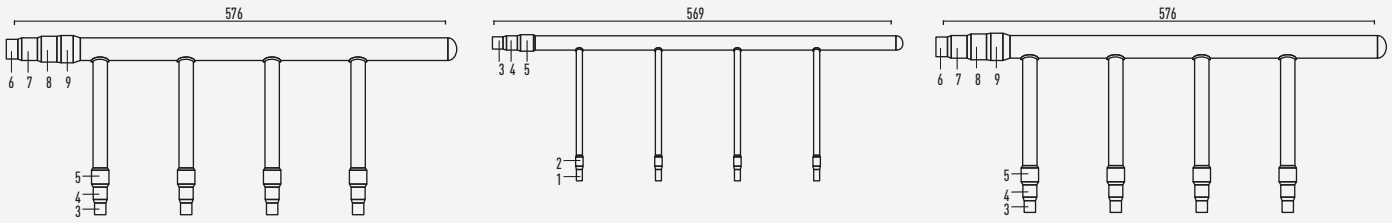
CZ-P1350BH2BM: For outdoor unit side (Capacity after distribution joint is greater than 68,0kW and no more than 135,0kW).



Diameters		Diameters		Diameters	
1	6,35 mm 1/4"	6	22,40 mm 7/8"	11	38,10 mm 1"1/2
2	9,52 mm 3/8"	7	25,40 mm 1"	12	41,28 mm 1"5/8
3	12,70 mm 1/2"	8	28,57 mm 1" 1/8	13	44,45 mm 1"3/4
4	15,88 mm 5/8"	9	31,75 mm 1" 1/4	14	50,80 mm 2"
5	19,05 mm 3/4"	10	34,92 mm 1"3/8		

Header pipe set for ECOi 6N 3-Pipe system

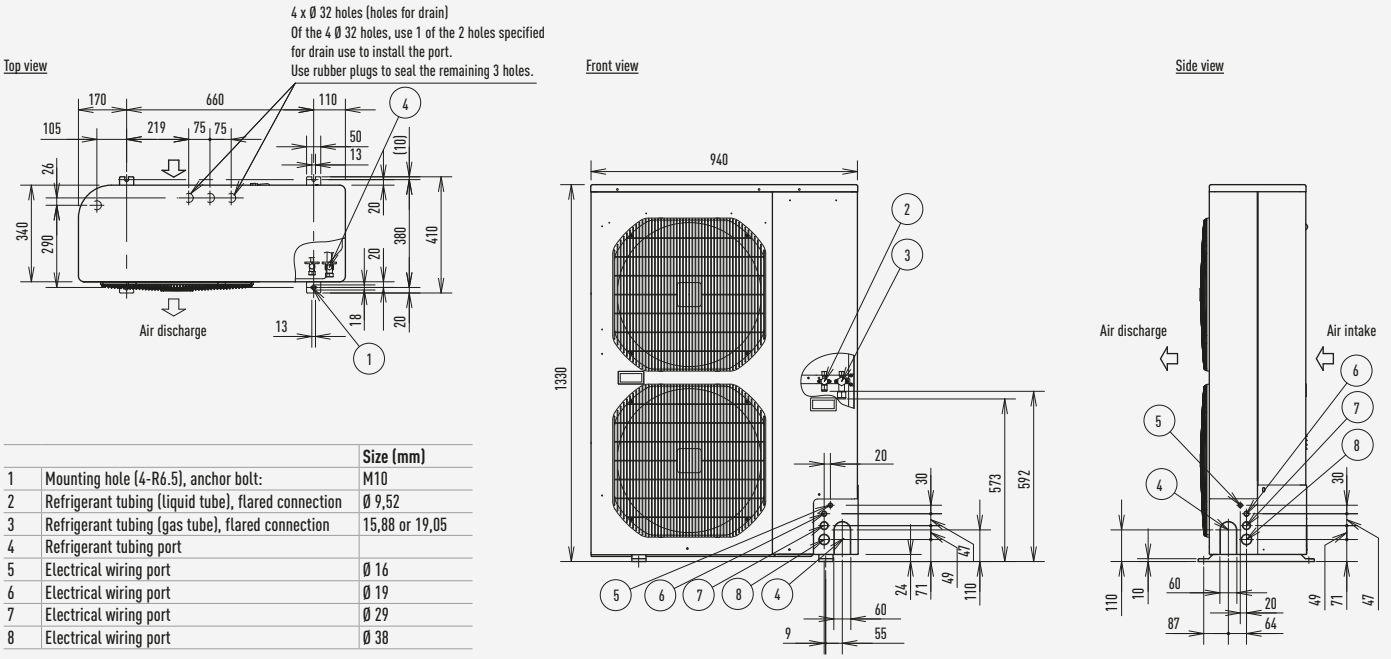
CZ-P4HP3C2BM: Header pipe model for 3-Pipe systems.



Diameters		Diameters		Diameters	
1	6,35 mm 1/4"	5	19,05 mm 3/4"	9	31,75 mm 1" 1/4
2	9,52 mm 3/8"	6	22,40 mm 7/8"	10	34,92 mm 1"3/8
3	12,70 mm 1/2"	7	25,40 mm 1"	11	38,10 mm 1"1/2
4	15,88 mm 5/8"	8	28,57 mm 1" 1/8		

ECOi and ECO G outdoor units dimensions

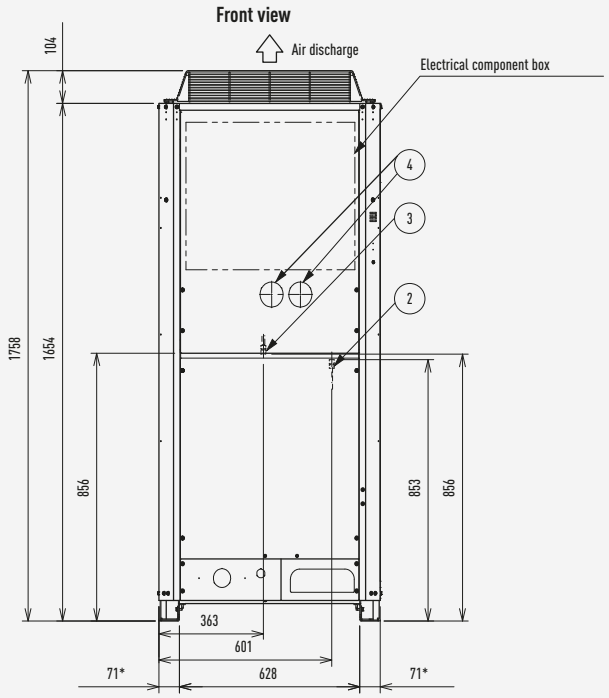
Mini ECOi High efficiency 4-6 HP



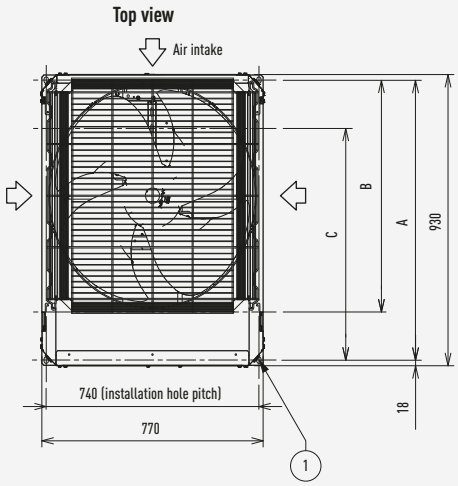
		Size (mm)
1	Mounting hole (4-R6.5), anchor bolt:	M10
2	Refrigerant tubing (liquid tube), flared connection	Ø 9,52
3	Refrigerant tubing (gas tube), flared connection	15,88 or 19,05
4	Refrigerant tubing port	
5	Electrical wiring port	Ø 16
6	Electrical wiring port	Ø 19
7	Electrical wiring port	Ø 29
8	Electrical wiring port	Ø 38

Mini ECOi High efficiency 8-10 HP

2-Pipe ECOi 6N Series 8-12 HP

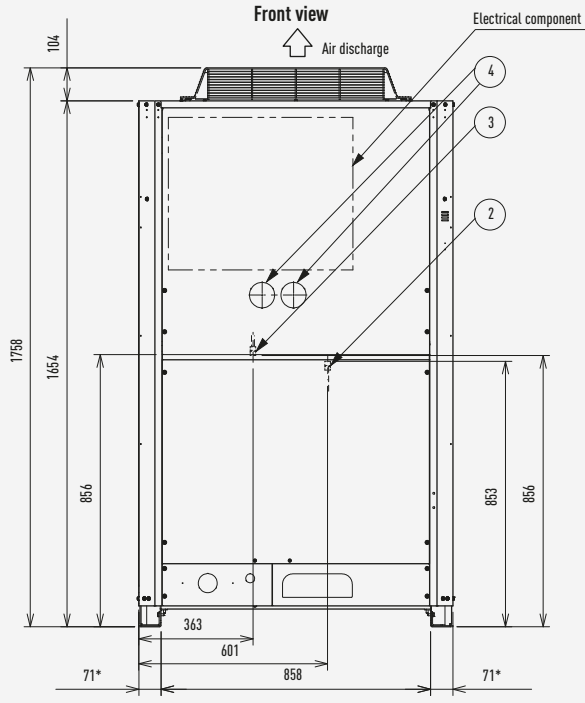


* Installation fixing bracket, installation side.

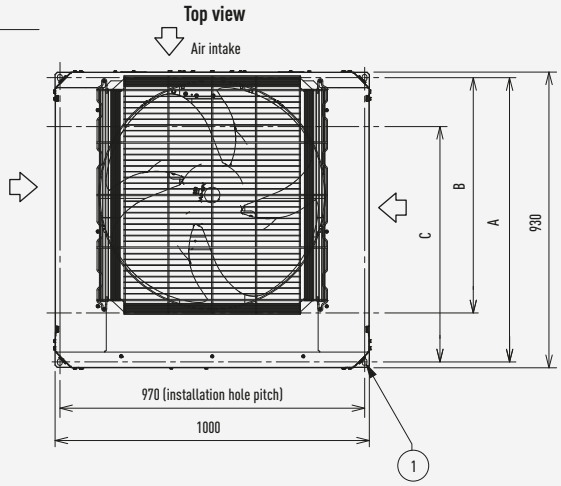


A	894 (installation hole pitch). The tubing is routed out frpm the front
B	730 (installation hole pitch). The tubing is routed out frpm the front
C	730 (installation hole pitch)
1	Installation holes (8-15x21 elongated holes) anchor bolts M12 or larger
2	Pressure outlet port (for high pressure: Ø 7.94 Scrader-type connection)
3	Pressure outlet port (for low pressure: Ø 7.94 Scrader-type connection)
4	Knock-out hole for connecting pressure gauge (optional)
5	Terminal board
6	Terminal board (for inter-outdoor-unit control wiring)

2-Pipe ECOi 6N Series 14-16 HP



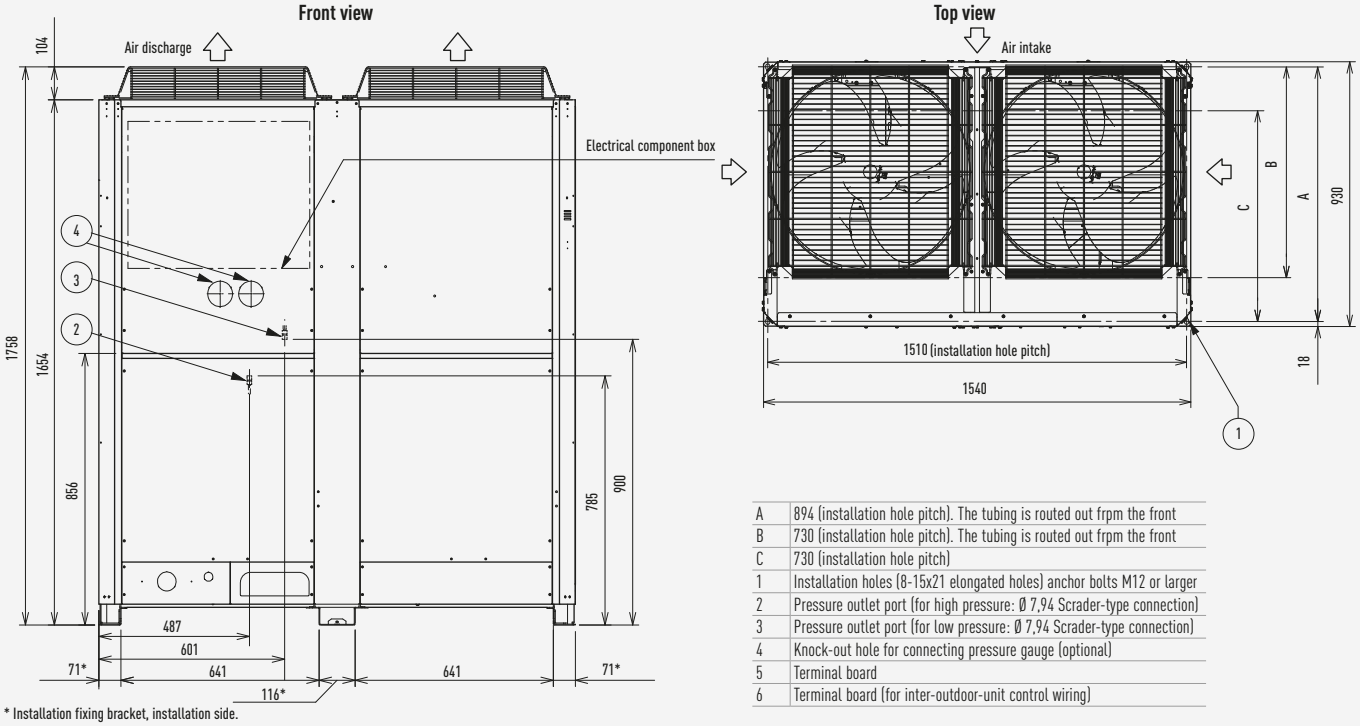
* Installation fixing bracket, installation side.



A	894 (installation hole pitch). The tubing is routed out frpm the front
B	730 (installation hole pitch). The tubing is routed out frpm the front
C	730 (installation hole pitch)
1	Installation holes (8-15x21 elongated holes) anchor bolts M12 or larger
2	Pressure outlet port (for high pressure: Ø 7.94 Scrader-type connection)
3	Pressure outlet port (for low pressure: Ø 7.94 Scrader-type connection)
4	Knock-out hole for connecting pressure gauge (optional)
5	Terminal board
6	Terminal board (for inter-outdoor-unit control wiring)

ECOi and ECO G outdoor units dimensions

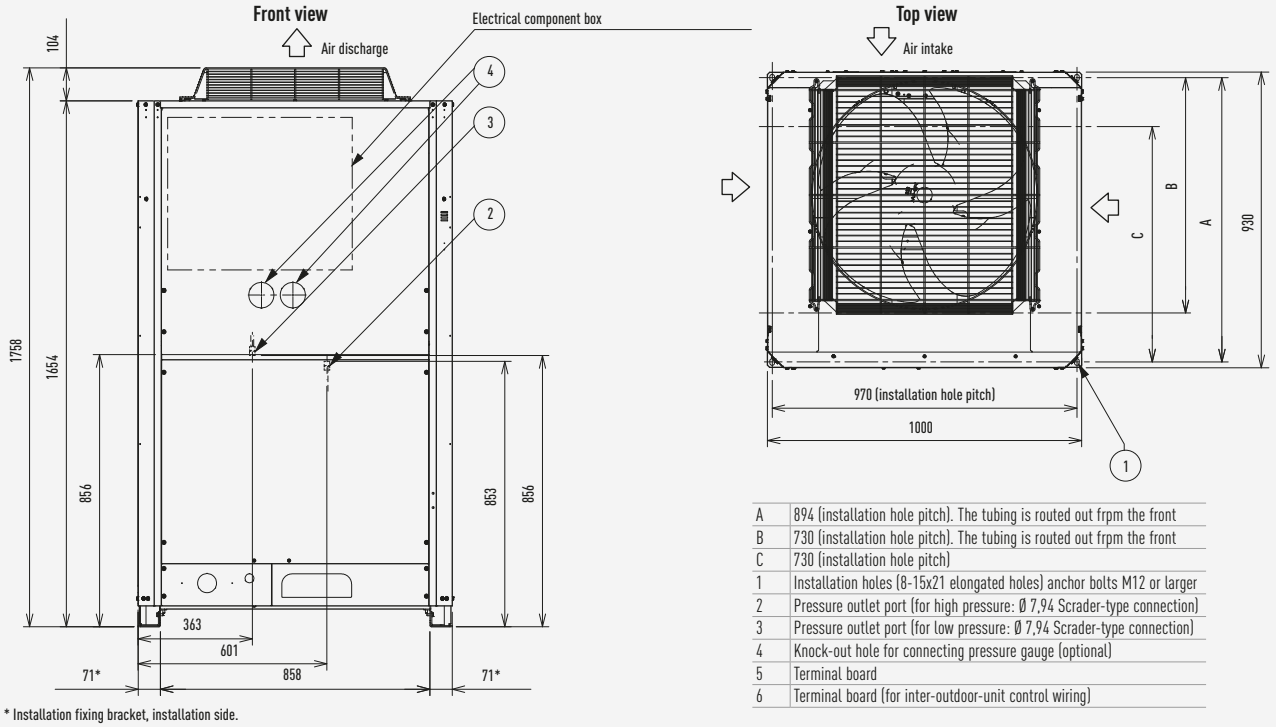
2-Pipe ECOi 6N Series 18-20 HP



* Installation fixing bracket, installation side.

A	894 (installation hole pitch). The tubing is routed out frpm the front
B	730 (installation hole pitch). The tubing is routed out frpm the front
C	730 (installation hole pitch)
1	Installation holes (8-15x21 elongated holes) anchor bolts M12 or larger
2	Pressure outlet port (for high pressure: Ø 7,94 Scrader-type connection)
3	Pressure outlet port (for low pressure: Ø 7,94 Scrader-type connection)
4	Knock-out hole for connecting pressure gauge (optional)
5	Terminal board
6	Terminal board (for inter-outdoor-unit control wiring)

3-Pipe ECOi MF2 6N Series 8-16 HP

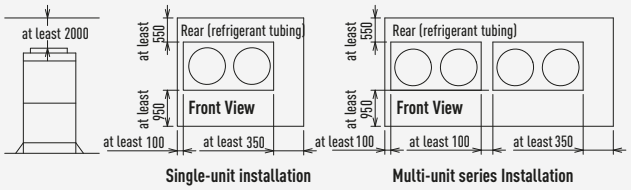


* Installation fixing bracket, installation side.

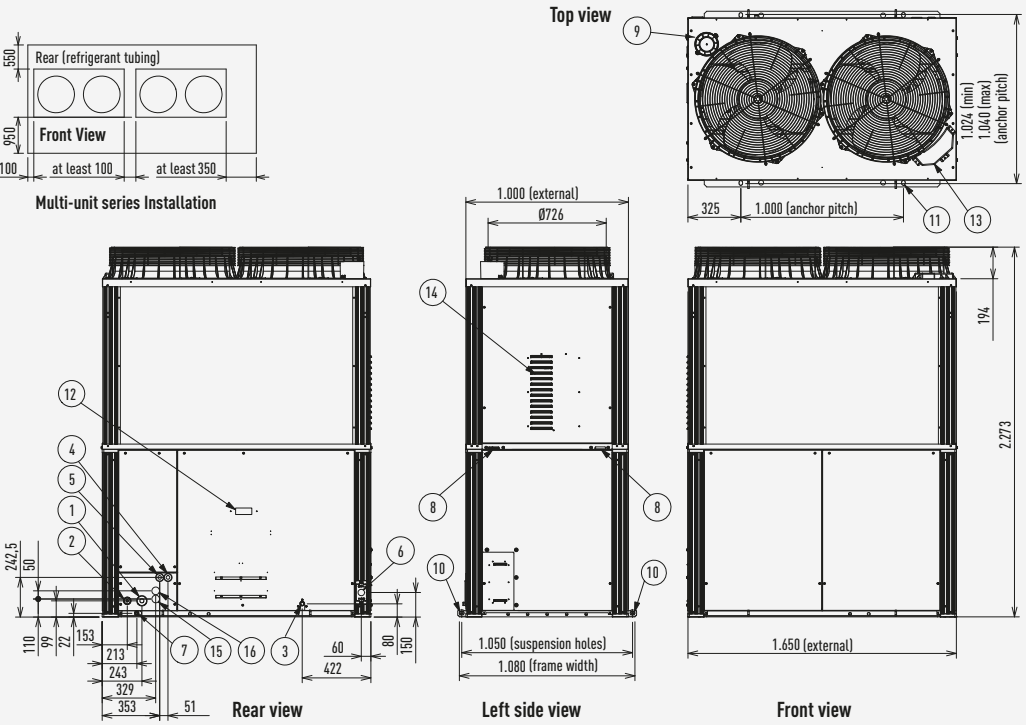
A	894 (installation hole pitch). The tubing is routed out frpm the front
B	730 (installation hole pitch). The tubing is routed out frpm the front
C	730 (installation hole pitch)
1	Installation holes (8-15x21 elongated holes) anchor bolts M12 or larger
2	Pressure outlet port (for high pressure: Ø 7,94 Scrader-type connection)
3	Pressure outlet port (for low pressure: Ø 7,94 Scrader-type connection)
4	Knock-out hole for connecting pressure gauge (optional)
5	Terminal board
6	Terminal board (for inter-outdoor-unit control wiring)

ECO G High Power

Service clearances for installation



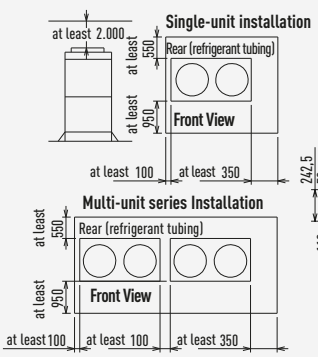
	kW	45,0	56,0-71,0
1	Suction refrigerant pipe	Ø 28,58	
2	Liquid refrigerant pipe	Ø 12,7	Ø 15,88
3	Exhaust gas drain port	HOSE OD Ø 25 (accessory)	
4	Electrical power supply port	Ø 28	
5	Inter-unit cable port	Ø 28	
6	Fuel gas port	R3/4	
7	Condensation drain opening	Ø 20	
8	Rain and condensation outlet		
9	Engine exhaust outlet		
10	Suspension holes 4-Ø 20x30		
11	Anchor holes 4-Ø 22x30		
12	Segmented display		
13	Coolant intake (top)		
14	Vent		
15	Hot water inlet	Rp 3/4	
16	Hot water outlet	Rp 3/4	



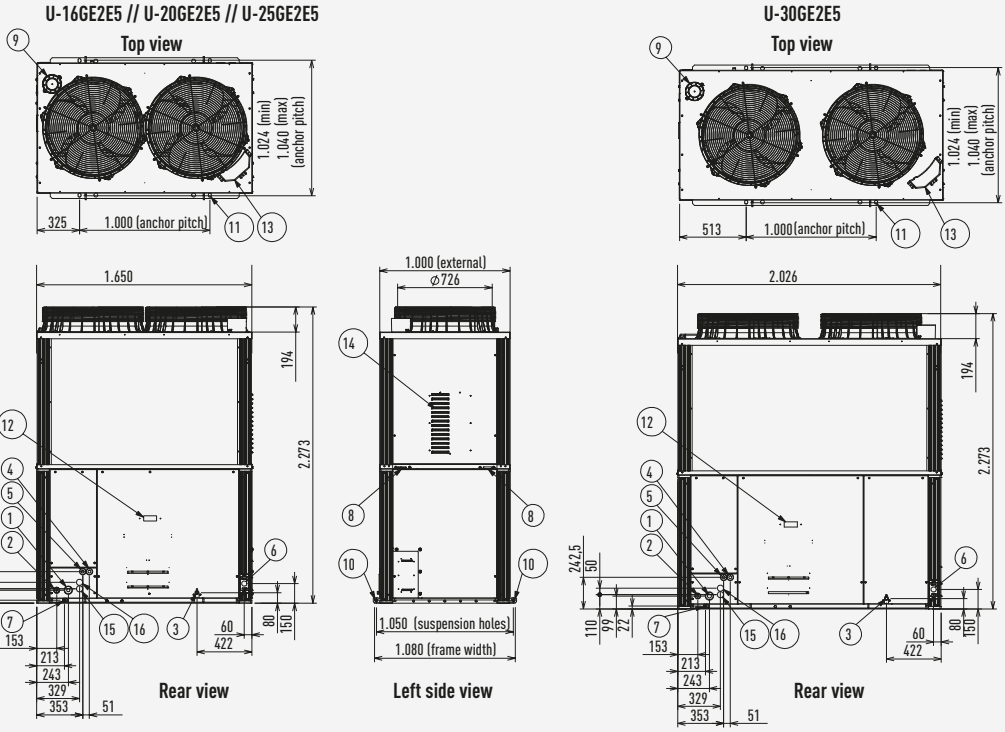
ECO G and ECO G Multi

	kW	45	56 - 71	85
1	Gas refrigerant pipe	Ø 28,58		Ø 31,75
2	Liquid refrigerant pipe	Ø 12,7	Ø 15,88	Ø 19,05
3	Exhaust gas drain port	HOSE OD Ø 25 (accessory)		
4	Electrical power supply port	Ø 28		
5	Inter-unit cable port	Ø 28		
6	Fuel gas port	R3/4		
7	Condensation drain opening	Ø 20		
8	Rain and condensation outlet			
9	Engine exhaust outlet			
10	Suspension holes 4-Ø 20x30			
11	Anchor holes 4-Ø 22x30			
12	Segmented display			
13	Coolant intake (top)			
14	Vent			
15	Hot water intake	Rp3/4		
16	Hot water outlet	Rp3/4		

Service clearances for installation



U-16GE2E5 // U-20GE2E5 // U-25GE2E5

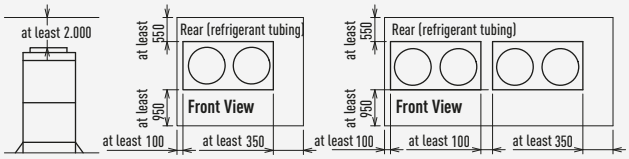


U-30GE2E5

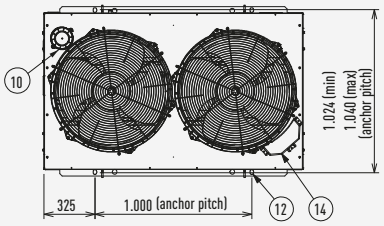
ECOi and ECO G outdoor units dimensions

ECO G 3-Pipe

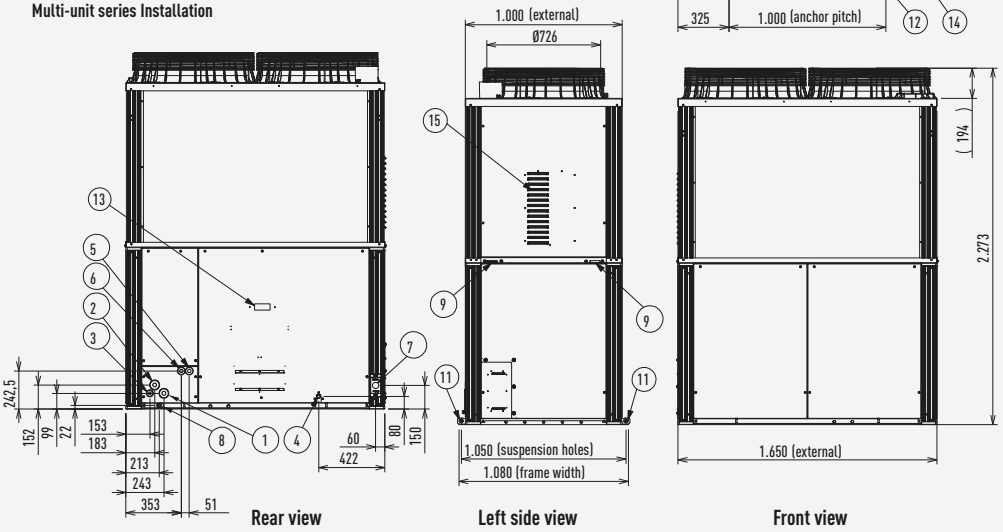
Service clearances for installation



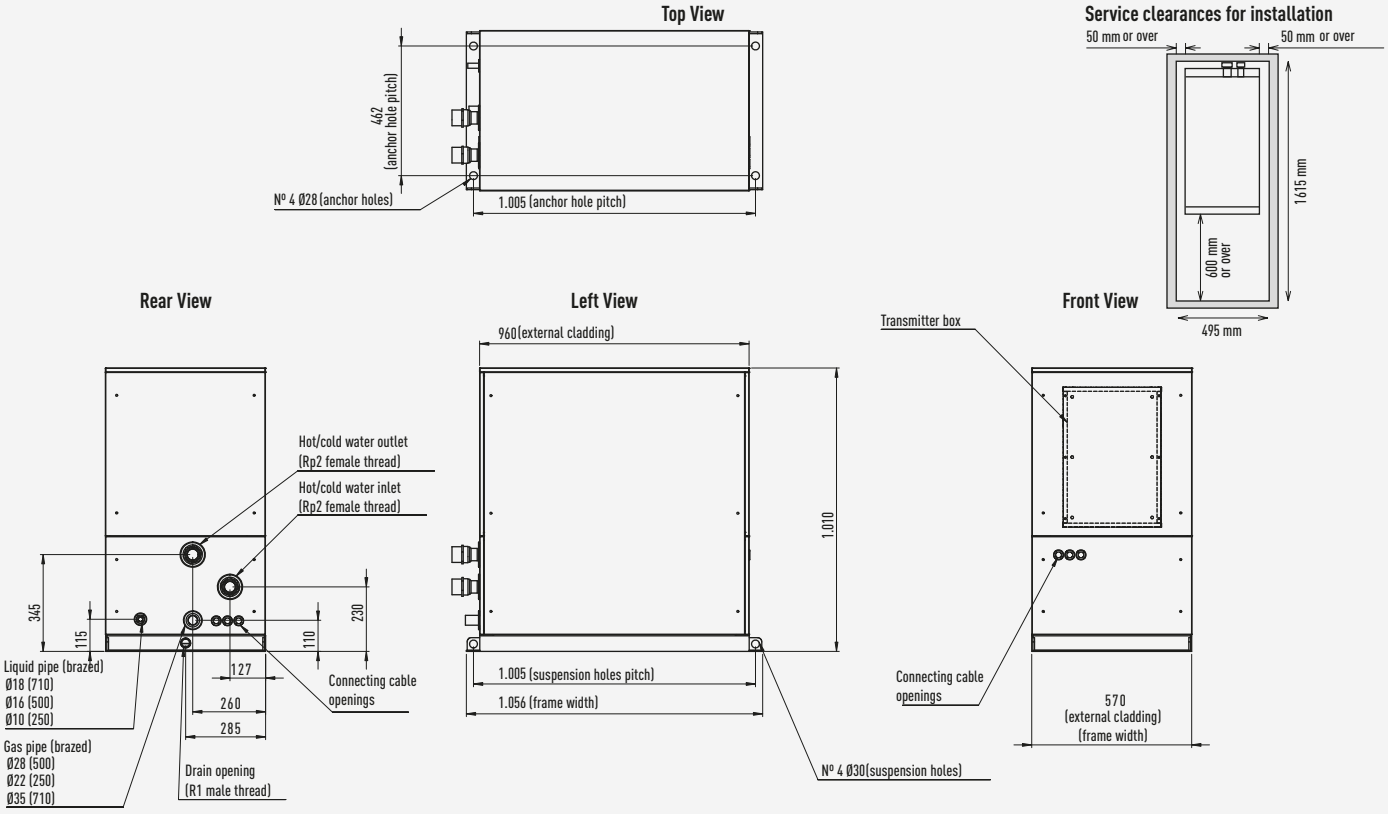
Top view



	kW	45,0	56,0-71,0
1	Suction refrigerant pipe	Ø 28,58	
2	Discharge refrigerant pipe	Ø 22,22	Ø 25,4
3	Liquid refrigerant pipe	19,05	
4	Exhaust gas drain port	HOSE OD Ø 25 (accessory)	
5	Electrical power supply port	Ø 28	
6	Inter-unit cable port	Ø 28	
7	Fuel gas port	R3/4	
8	Condensation drain opening	Ø 20	
9	Rain and condensation outlet		
10	Engine exhaust outlet		
11	Suspension holes 4-Ø 20x30		
12	Anchor holes 4-Ø 22x30		
13	Segmented display		
14	Coolant intake (top)		
15	Vent		



Water Heat Exchanger for chilled and hot water production



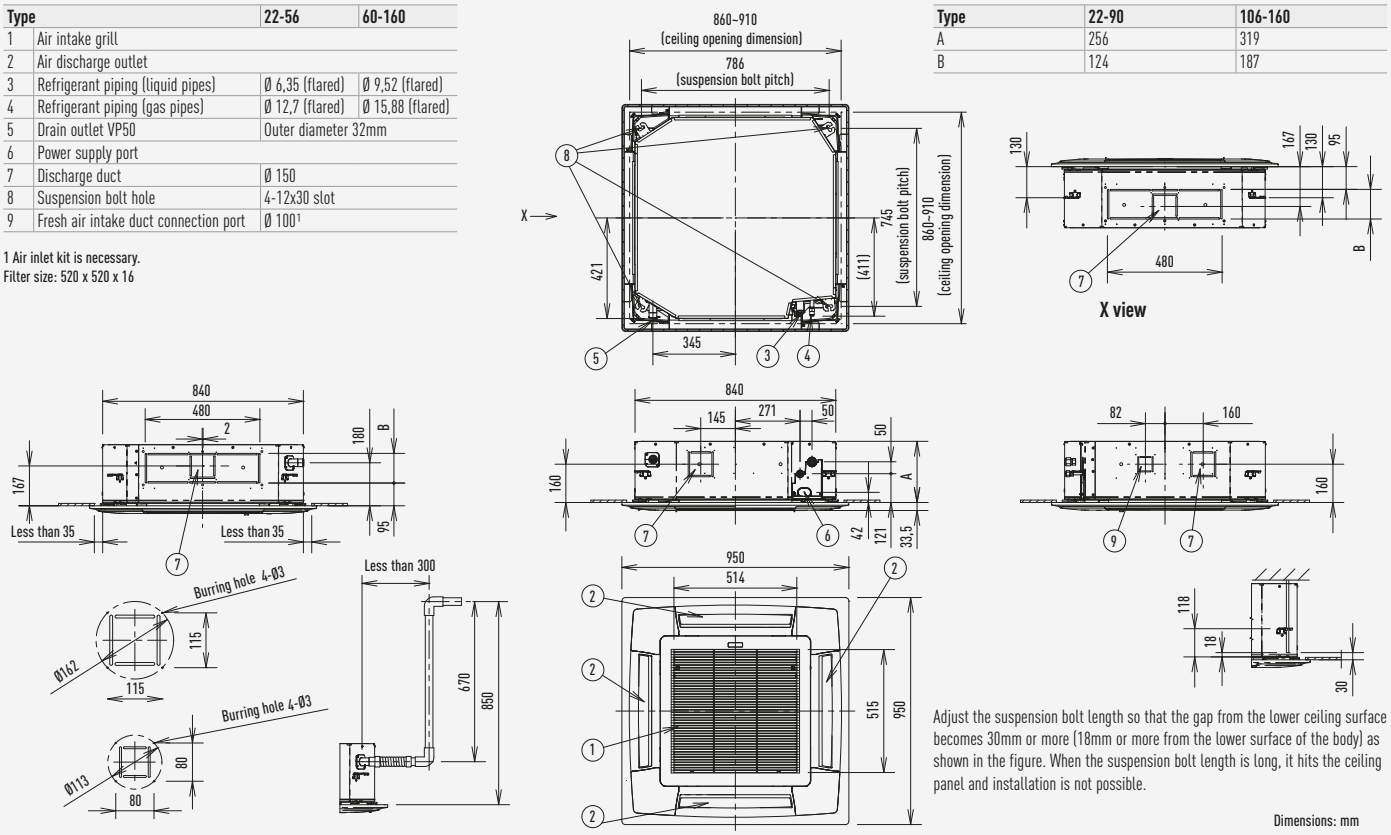
ECOi and ECO G indoor units dimensions

U1 Type // 4 Way 90x90 Cassette

Type		22-56	60-160
1	Air intake grill		
2	Air discharge outlet		
3	Refrigerant piping (liquid pipes)	Ø 6,35 (flared)	Ø 9,52 (flared)
4	Refrigerant piping (gas pipes)	Ø 12,7 (flared)	Ø 15,88 (flared)
5	Drain outlet VP50	Outer diameter 32mm	
6	Power supply port		
7	Discharge duct	Ø 150	
8	Suspension bolt hole	4-12x30 slot	
9	Fresh air intake duct connection port	Ø 100[1]	

1 Air inlet kit is necessary.
Filter size: 520 x 520 x 16

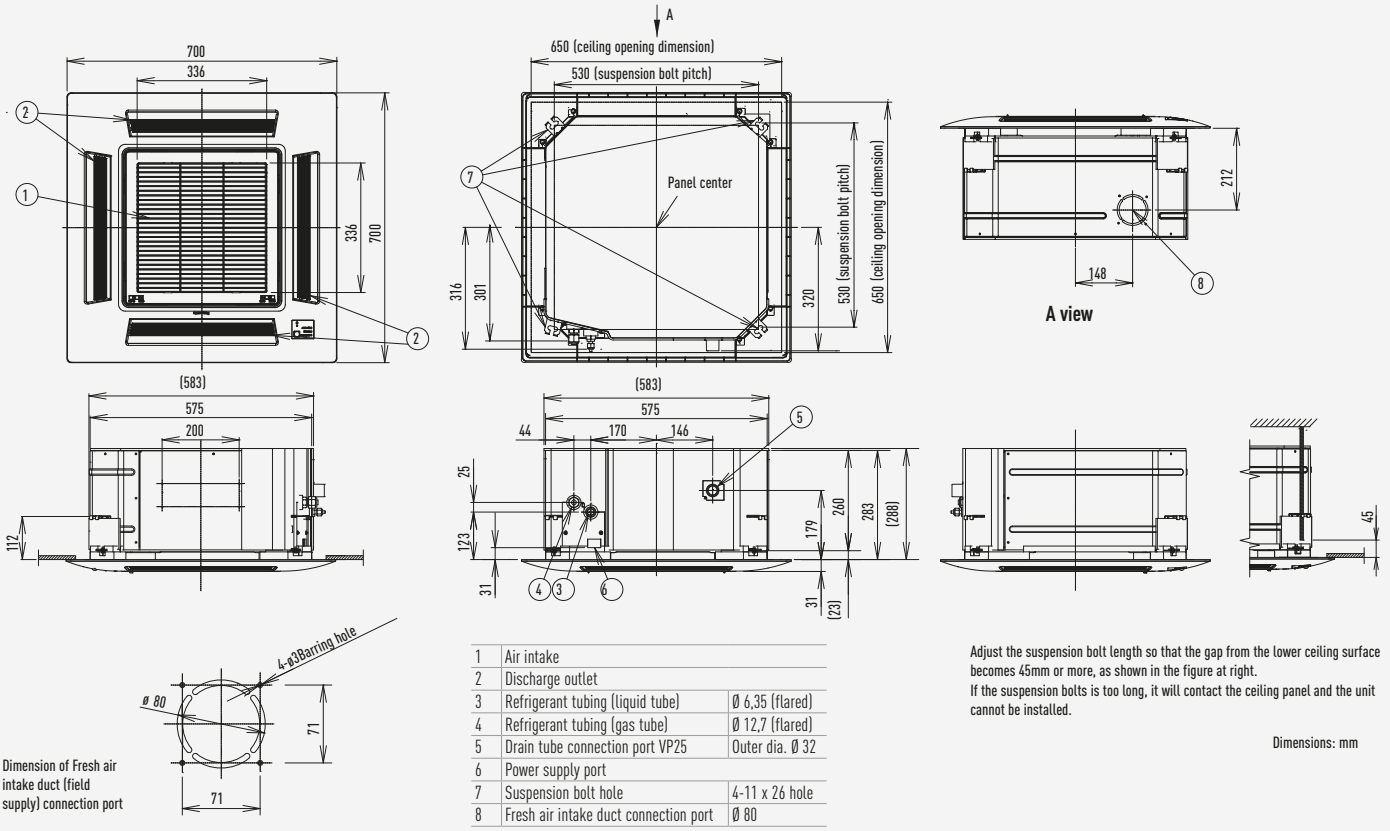
Type	22-90	106-160
A	256	319
B	124	187



Adjust the suspension bolt length so that the gap from the lower ceiling surface becomes 30mm or more (18mm or more from the lower surface of the body) as shown in the figure. When the suspension bolt length is long, it hits the ceiling panel and installation is not possible.

Dimensions: mm

Y2 Type // 4 Way 60x60 Cassette



Dimension of Fresh air intake duct (field supply) connection port

1	Air intake	
2	Discharge outlet	
3	Refrigerant tubing (liquid tube)	Ø 6,35 (flared)
4	Refrigerant tubing (gas tube)	Ø 12,7 (flared)
5	Drain tube connection port VP25	Outer dia. Ø 32
6	Power supply port	
7	Suspension bolt hole	4-11 x 26 hole
8	Fresh air intake duct connection port	Ø 80

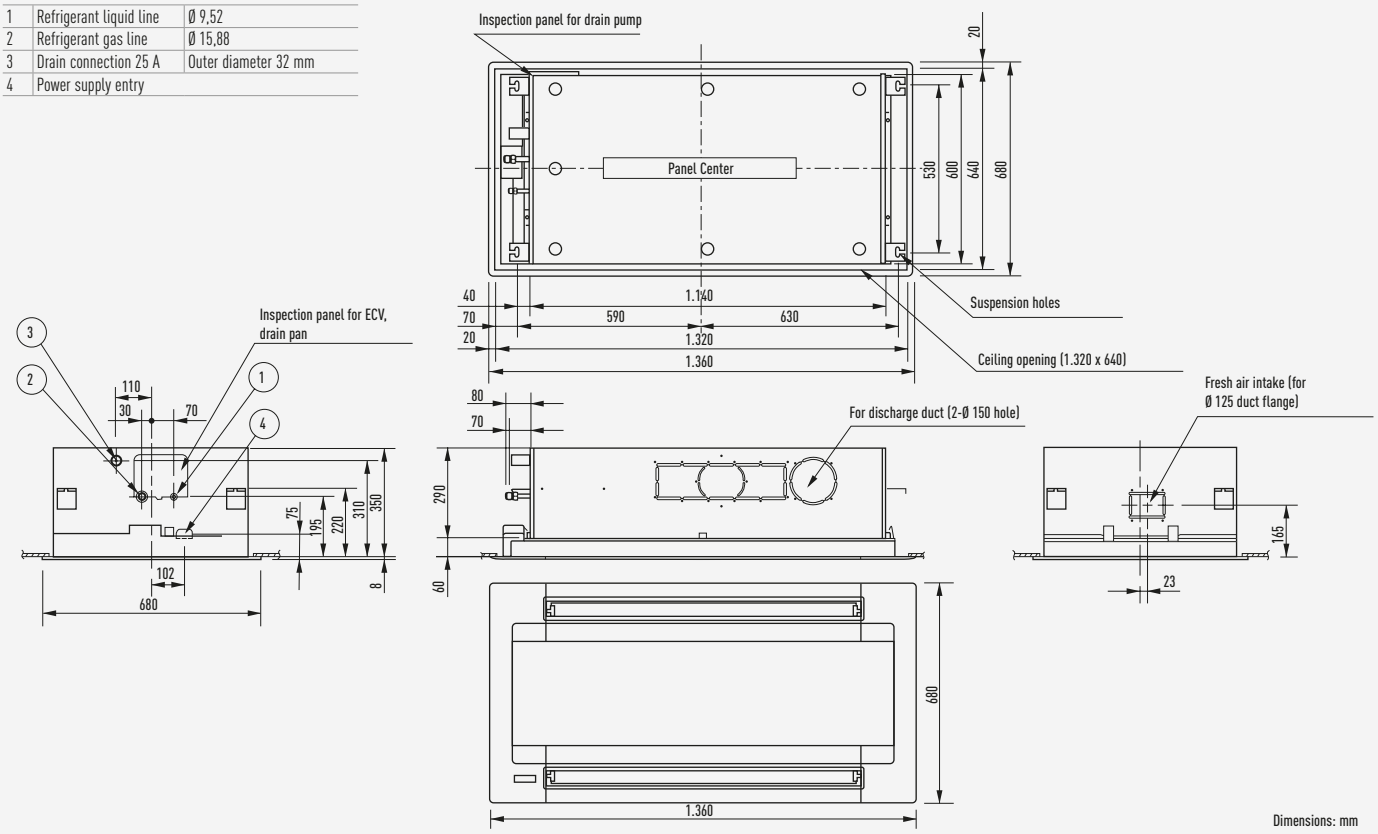
Adjust the suspension bolt length so that the gap from the lower ceiling surface becomes 45mm or more, as shown in the figure at right.
If the suspension bolts is too long, it will contact the ceiling panel and the unit cannot be installed.

Dimensions: mm

ECOi and ECO G indoor units dimensions

L1 Type // 2 Way Cassette

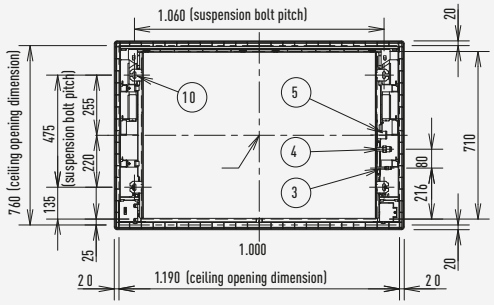
1	Refrigerant liquid line	Ø 9,52
2	Refrigerant gas line	Ø 15,88
3	Drain connection 25 A	Outer diameter 32 mm
4	Power supply entry	

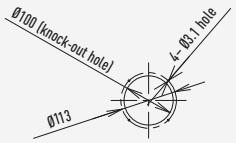


Dimensions: mm

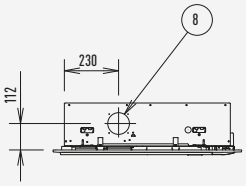
D1 Type // 1 Way Cassette

		28-56	73
1	Air intake grille		
2	Discharge outlet		
3	Refrigerant piping (liquid pipes)	Ø 6,35 (flared)	Ø 9,52 (flared)
4	Refrigerant piping (gas pipes)	Ø 12,7 (flared)	Ø 15,88 (flared)
5	Drain connection VP25	Outer diameter32	
6	Power supply entry		
7	Discharge duct connection port (for descending ceiling)		
8	Fresh air intake duct connection port	Ø 100	
9	Installation port for wireless remote controller receiver		
10	Suspension bolt hole	4-12 30 hole	

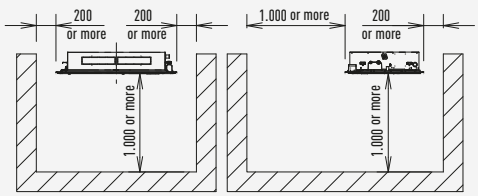


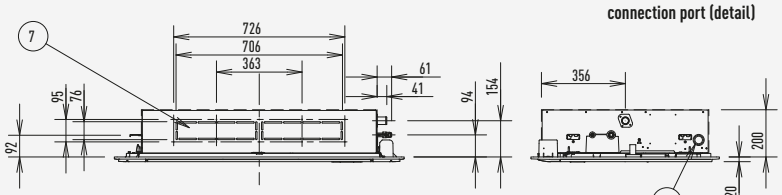


Fresh air intake duct connection port (detail)

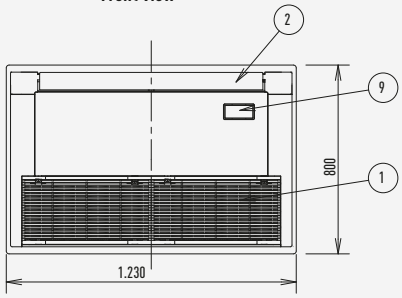


Required space for installation





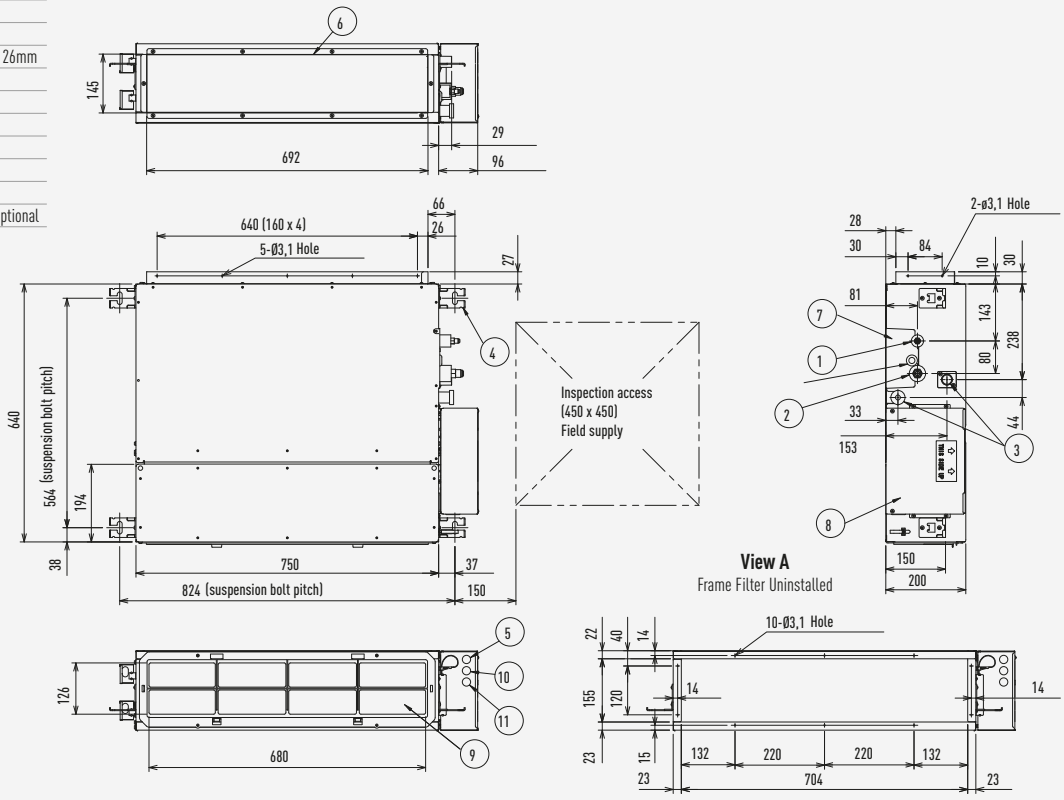
Front view



Dimensions: mm

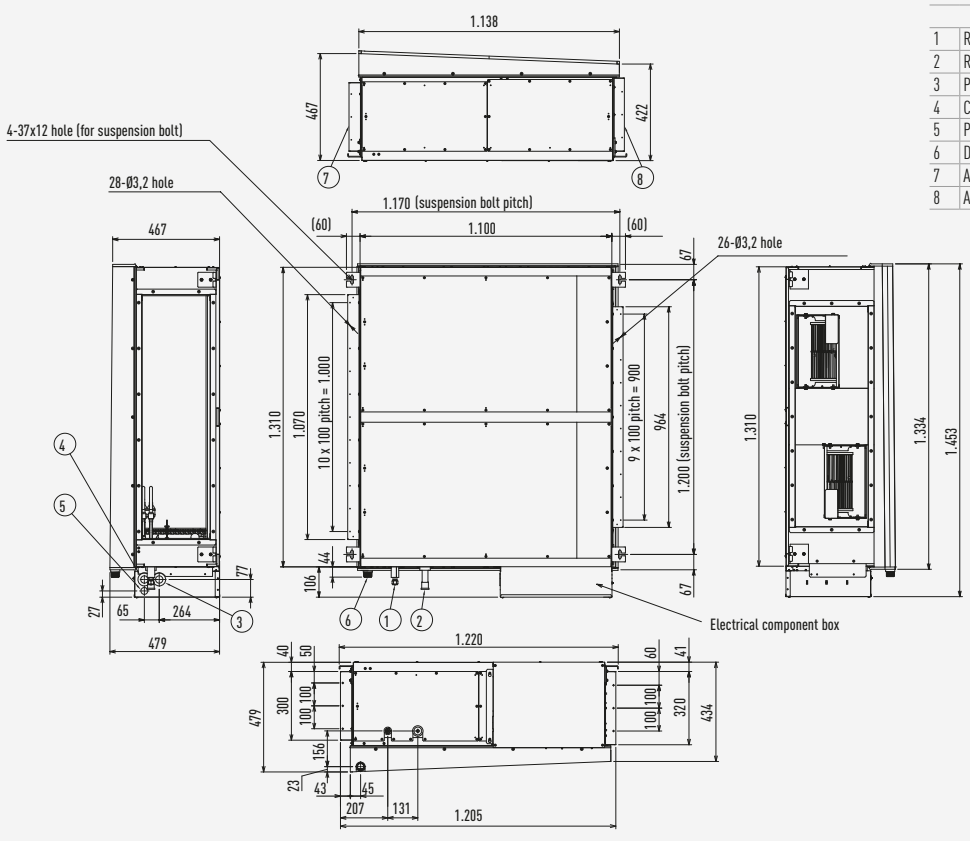
M1 Type // Slim Variable Static Pressure Hide Away

1	Refrigerant tubing joint (narrow tube)	
2	Refrigerant tubing joint (wide tube)	
3	Upper and bottom drain port	Outer diameter 26mm
4	Suspension lug	
5	Power supply outlet	2- Ø 30
6	Flange for air intake duct	
7	PL cover	
8	Electrical component box	
9	Frame filter	
10	Signal output board	ACC-SG-AGB: optional



Dimensions: mm

E2 Type // High Static Pressure Hide Away



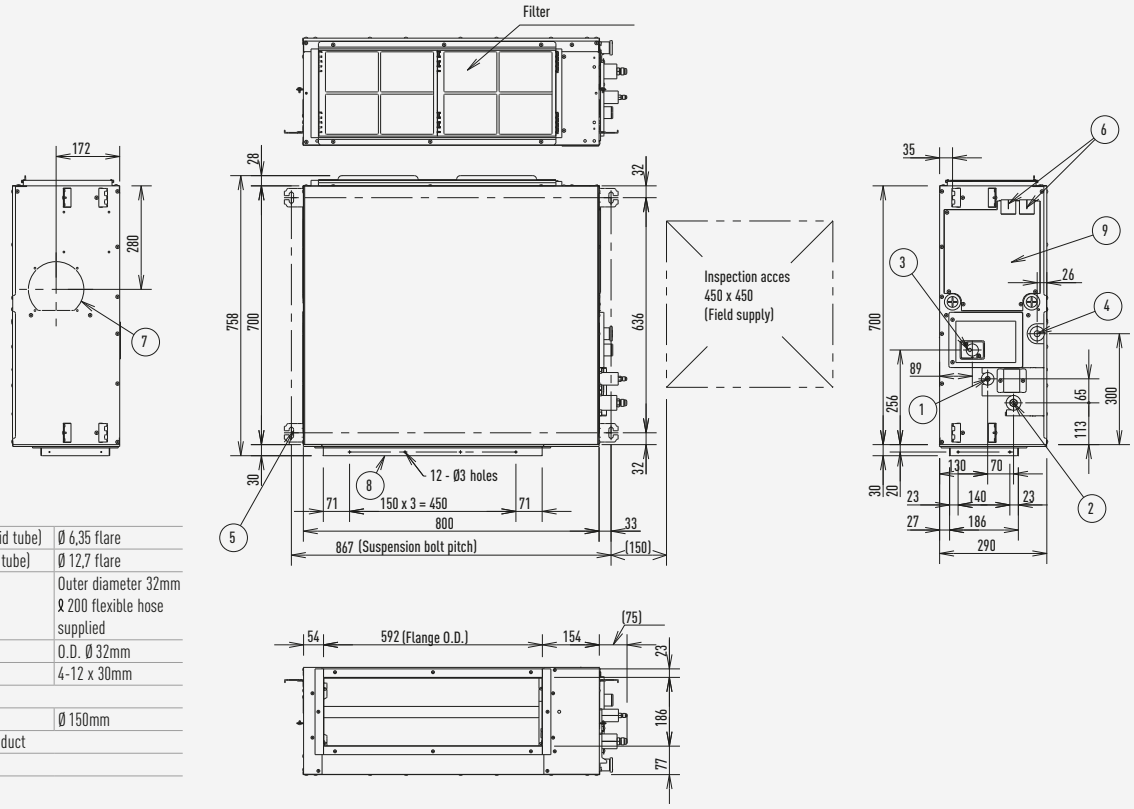
		224	280
1	Refrigerant liquid tubing (Flare)	Ø 9,52	
2	Refrigerant gas tubing (Brazing)	Ø 19,05	Ø 22,22
3	Power supply port		
4	Communication wiring port		
5	Port for optional wiring part		
6	Drain port 25A		
7	Air intake duct connecting side flange		
8	Air discharge duct connecting side flange		

Dimensions: mm

ECOi and ECO G indoor units dimensions

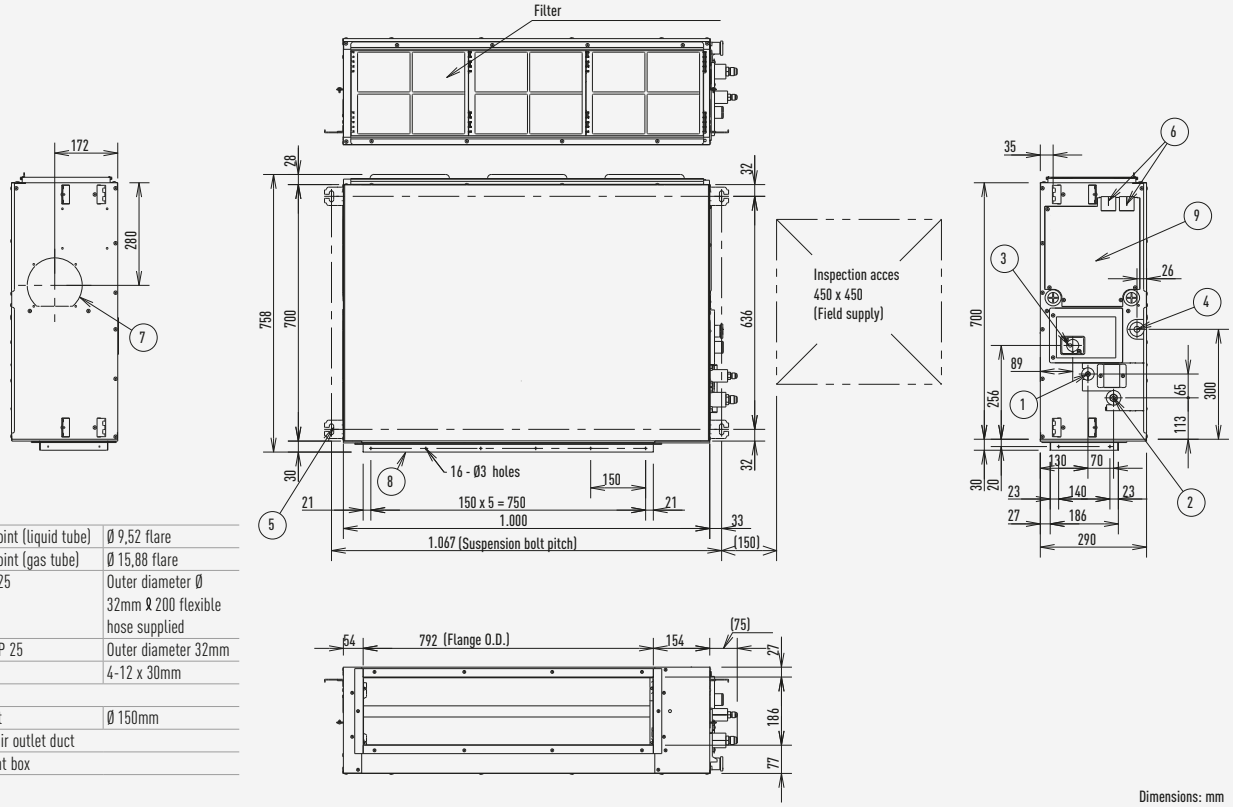
F2 Type // Variable Static Pressure Hide Away

S-15MF2E5A // S-22MF2E5A // S-28MF2E5A // S-36MF2E5A // S-45MF2E5A // S-56MF2E5A



1	Refrigerant tubing joint (liquid tube)	Ø 6,35 flare
2	Refrigerant tubing joint (gas tube)	Ø 12,7 flare
3	Upper drain port VP25	Outer diameter 32mm ℓ 200 flexible hose supplied
4	Bottom drain port VP 25	O.D. Ø 32mm
5	Suspension lug	4-12 x 30mm
6	Power supply outlet	
7	Fresh air intake port	Ø 150mm
8	Flange for flexible air outlet duct	
9	Electrical component box	

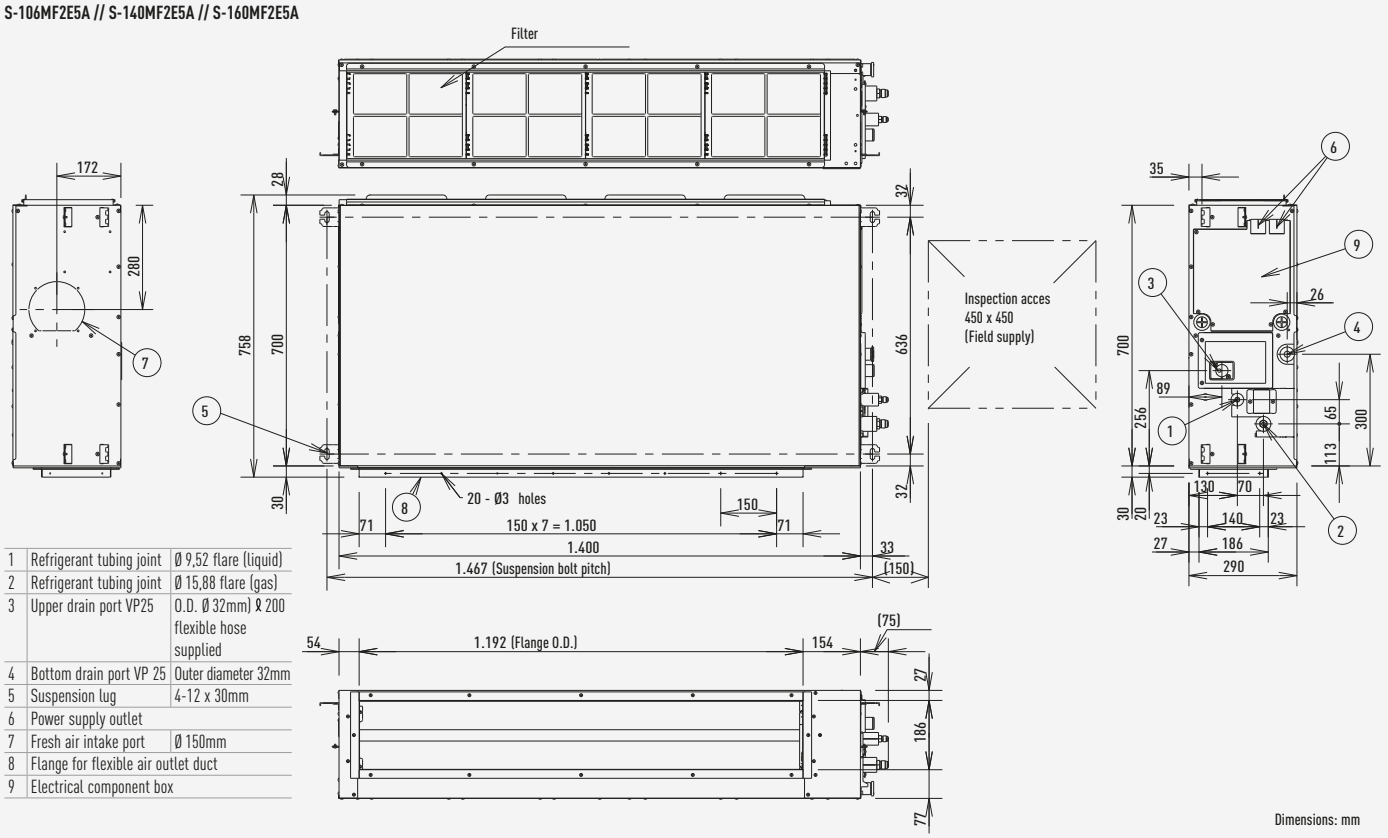
S-60MF2E5A // S-73MF2E5A // S-90MF2E5A



1	Refrigerant tubing joint (liquid tube)	Ø 9,52 flare
2	Refrigerant tubing joint (gas tube)	Ø 15,88 flare
3	Upper drain port VP25	Outer diameter Ø 32mm ℓ 200 flexible hose supplied
4	Bottom drain port VP 25	Outer diameter 32mm
5	Suspension lug	4-12 x 30mm
6	Power supply outlet	
7	Fresh air intake port	Ø 150mm
8	Flange for flexible air outlet duct	
9	Electrical component box	

Dimensions: mm

S-106MF2E5A // S-140MF2E5A // S-160MF2E5A

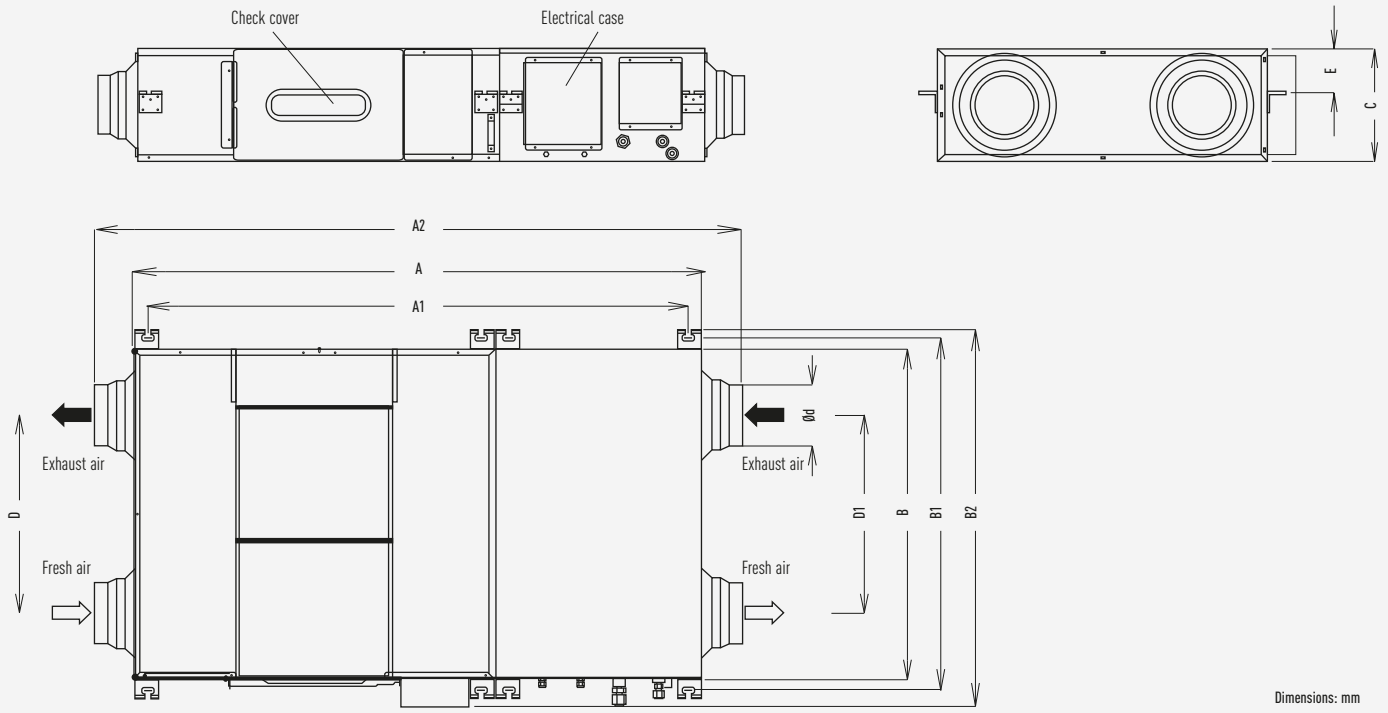


1	Refrigerant tubing joint	Ø 9,52 flare (liquid)
2	Refrigerant tubing joint	Ø 15,88 flare (gas)
3	Upper drain port VP25	O.D. Ø 32mm) ℓ 200 flexible hose supplied
4	Bottom drain port VP 25	Outer diameter 32mm
5	Suspension lug	4-12 x 30mm
6	Power supply outlet	
7	Fresh air intake port	Ø 150mm
8	Flange for flexible air outlet duct	
9	Electrical component box	

Dimensions: mm

Heat Recovery with DX Coil

	A	A1	A2	B	B1	B2	C	D	D1	Ø d	E
PAW-500ZDX2	1.470	1.410	1.630	997	1.053	1.112	312	728	497	200	38
PAW-800ZDX2	1.822	1.752	1.986	882	936	994	390	431	431	250	169
PAW-01KZDX2	1.822	1.752	1.986	1.132	1.186	1.244	390	681	532	250	169



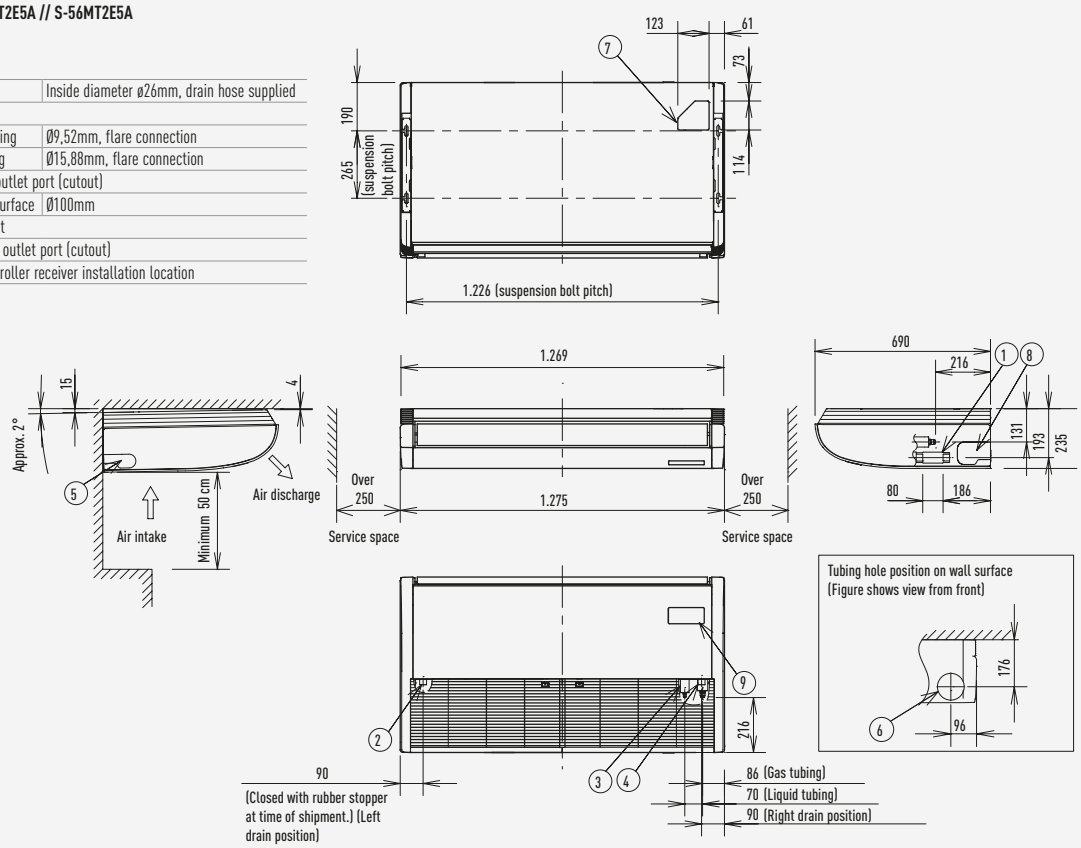
Dimensions: mm

ECOi and ECO G indoor units dimensions

T2 Type // Ceiling

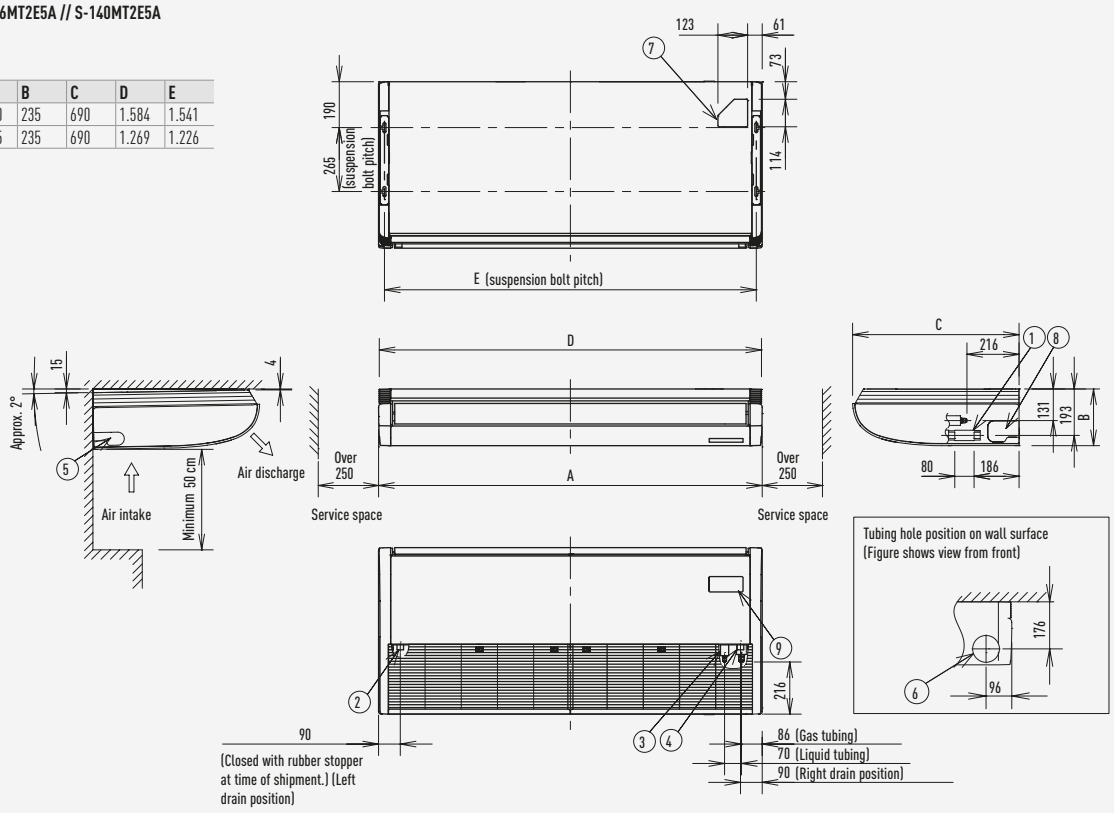
S-36MT2E5A // S-45MT2E5A // S-56MT2E5A

1	Drain port VP20	Inside diameter ø26mm, drain hose supplied
2	Left drain position	
3	Refrigerant liquid tubing	Ø9,52mm, flare connection
4	Refrigerant gas tubing	Ø15,88mm, flare connection
5	Left side drain hose outlet port (cutout)	
6	Tubing hole on wall surface	Ø100mm
7	Upper side tubing port	
8	Right side drain hose outlet port (cutout)	
9	Wireless remote controller receiver installation location	



S-73MT2E5A // S-106MT2E5A // S-140MT2E5A

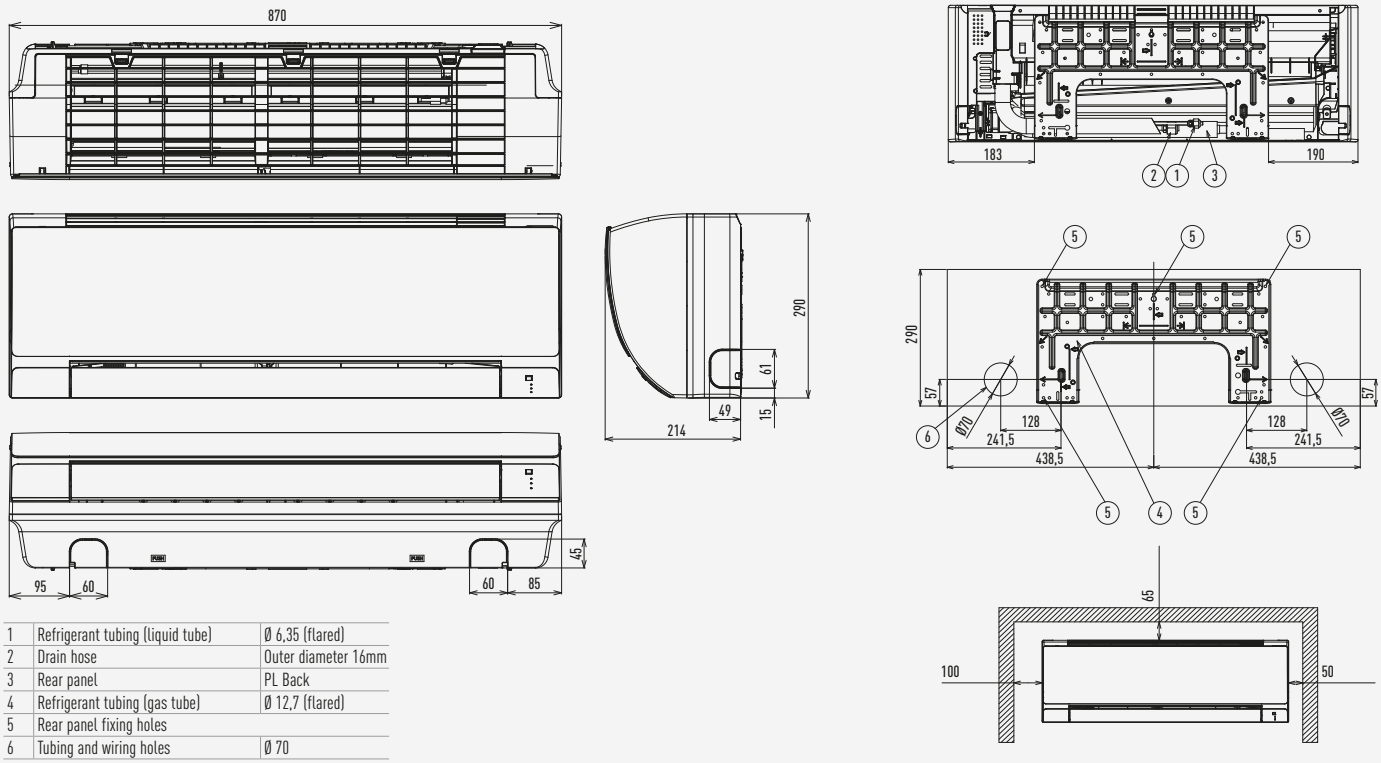
	A	B	C	D	E
106-140 type	1.590	235	690	1.584	1.541
140 type	1.275	235	690	1.269	1.226



Dimensions: mm

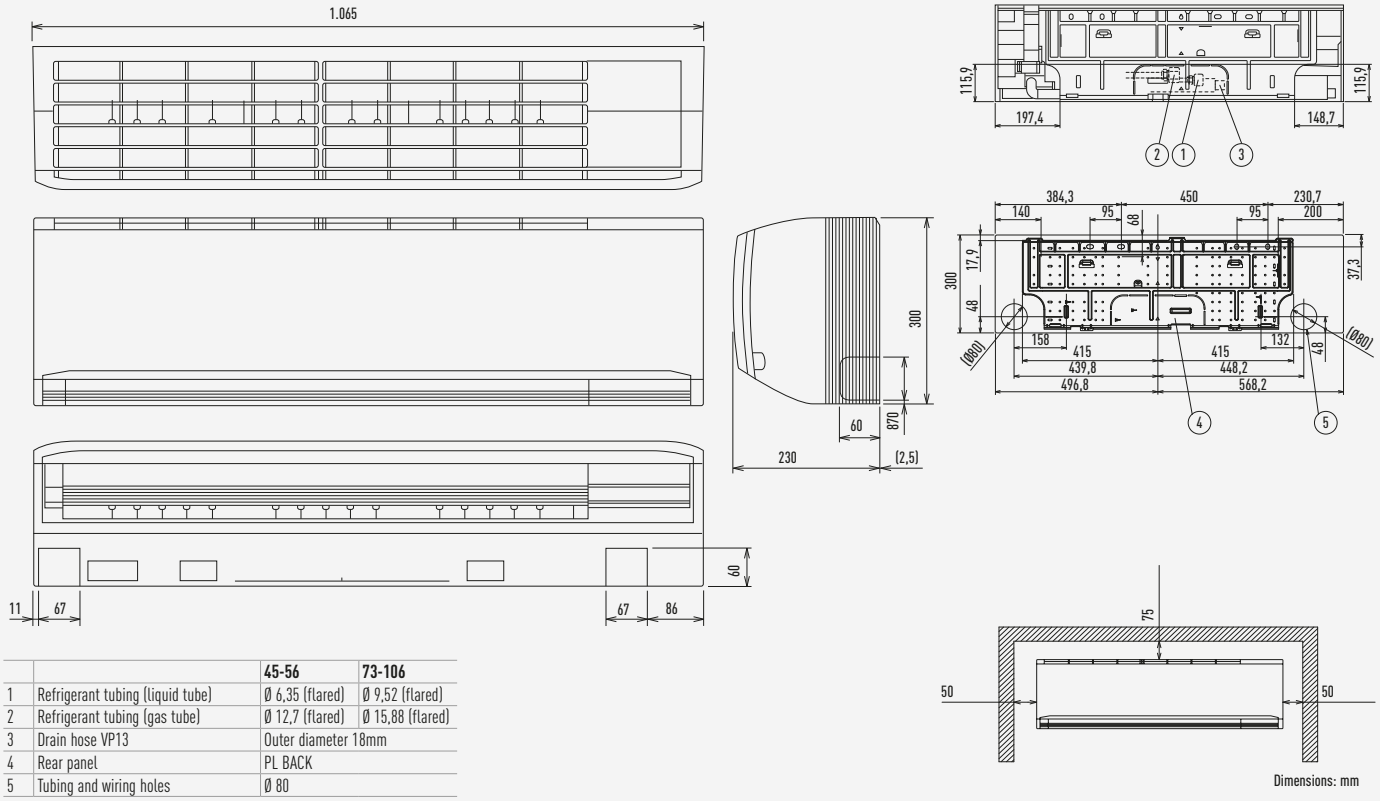
K2/K1 Type // Wall Mounted

S-15MK2E5A / S-22MK2E5A / S-28MK2E5A / S-36MK2E5A



1	Refrigerant tubing (liquid tube)	Ø 6,35 (flared)
2	Drain hose	Outer diameter 16mm
3	Rear panel	PL Back
4	Refrigerant tubing (gas tube)	Ø 12,7 (flared)
5	Rear panel fixing holes	
6	Tubing and wiring holes	Ø 70

S-45MK1E5A / S-56MK1EA5 / S-73MK1E5A / S-106MK1E5A



		45-56	73-106
1	Refrigerant tubing (liquid tube)	Ø 6,35 (flared)	Ø 9,52 (flared)
2	Refrigerant tubing (gas tube)	Ø 12,7 (flared)	Ø 15,88 (flared)
3	Drain hose VP13	Outer diameter 18mm	
4	Rear panel	PL BACK	
5	Tubing and wiring holes	Ø 80	

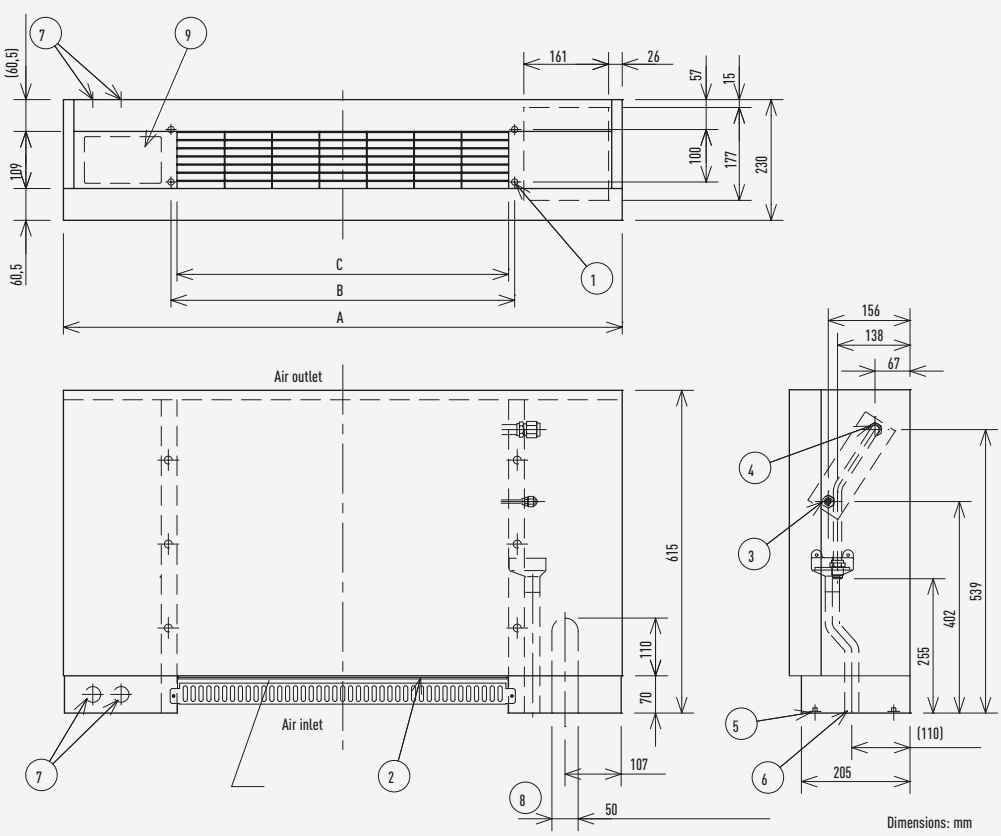
Dimensions: mm

ECOi and ECO G indoor units dimensions

P1 Type // Floor Standing

1	4-Ø 12 hole (For fastening the indoor unit to the floor with screws.)
2	Air filter
3	Refrigerant connection outlet (liquid tube)
4	Refrigerant connection outlet (gas tube)
5	Level adjusting bolt
6	Drain outlet (20 A)
7	Power cord outlet (downward, rear)
8	Refrigerant tubing outlet (downward, rear)
9	Location for mounting the remote controller (Remote controller can be attached within the room.)

	A	B	C	Liquid pipes	Gas pipes
22-36	1065	665	632	Ø 6,35	Ø 12,7
45	1380	980	947		
56					
71				Ø 9,52	Ø 15,88

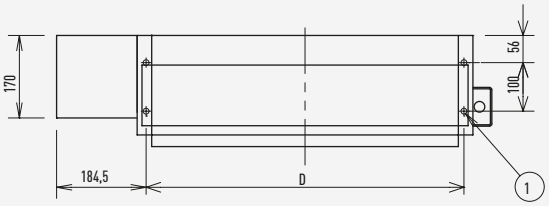


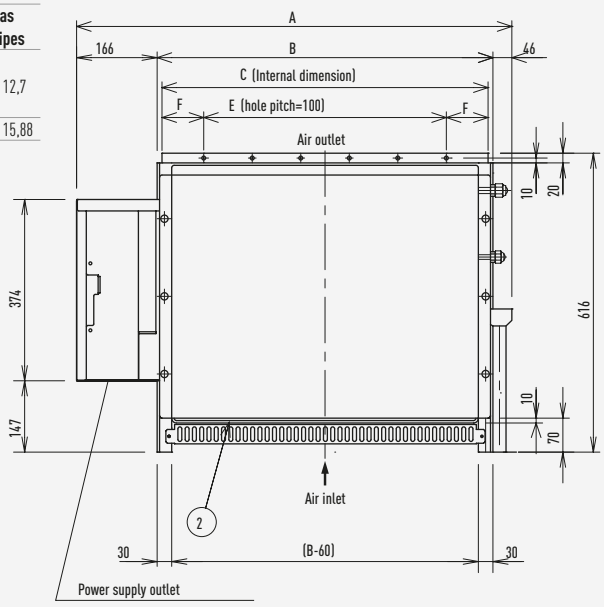
Dimensions: mm

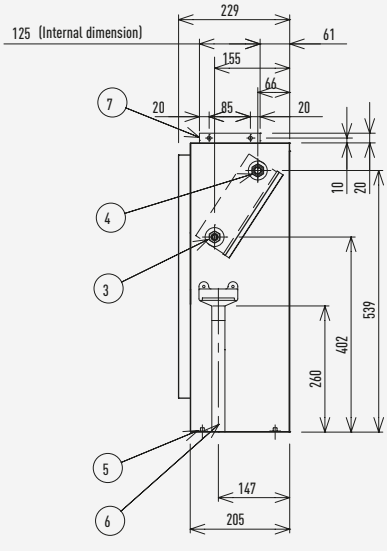
R1 Type // Concealed Floor Standing

1	4-ø12 hole (For fastening the indoor unit to the floor with screws.)
2	Air filter
3	Refrigerant connection outlet (liquid tube)
4	Refrigerant connection outlet (gas tube)
5	Level adjusting bolt
6	Drain outlet (20 A)
7	Flange for the air-outlet duct

	A	B	C	D	E	F	Liquid pipes	Gas pipes
22-36	904	692	672	665	500	86	Ø 6,35	Ø 12,7
45	1,219	1,007	1,002	980	900	51		
56								
71							Ø 9,52	Ø 15,88

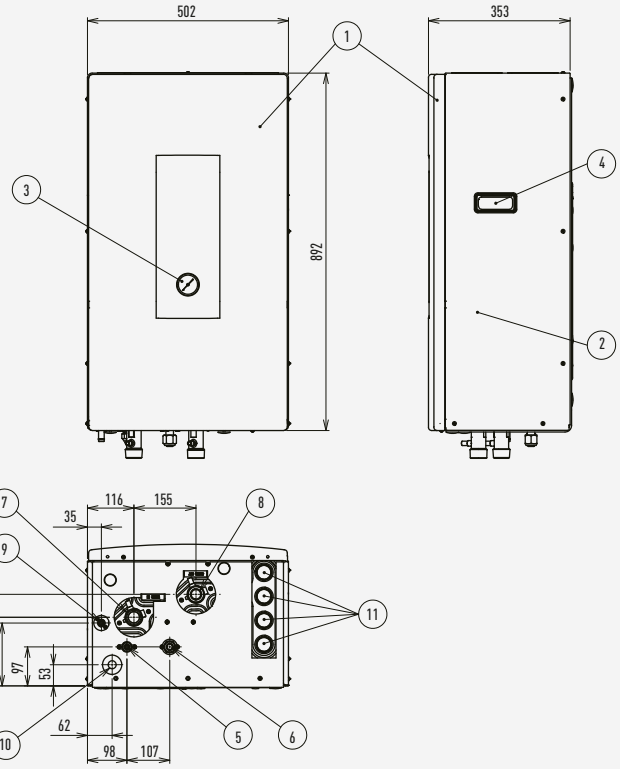


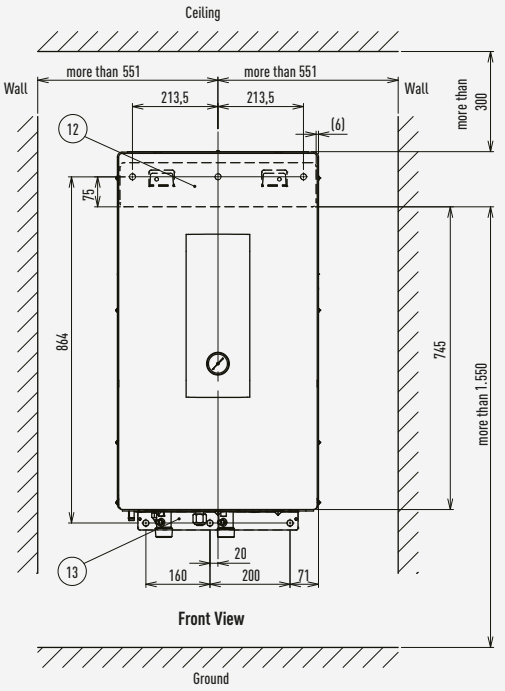




Dimensions: mm

Hydrokit for ECOi water at 45°C



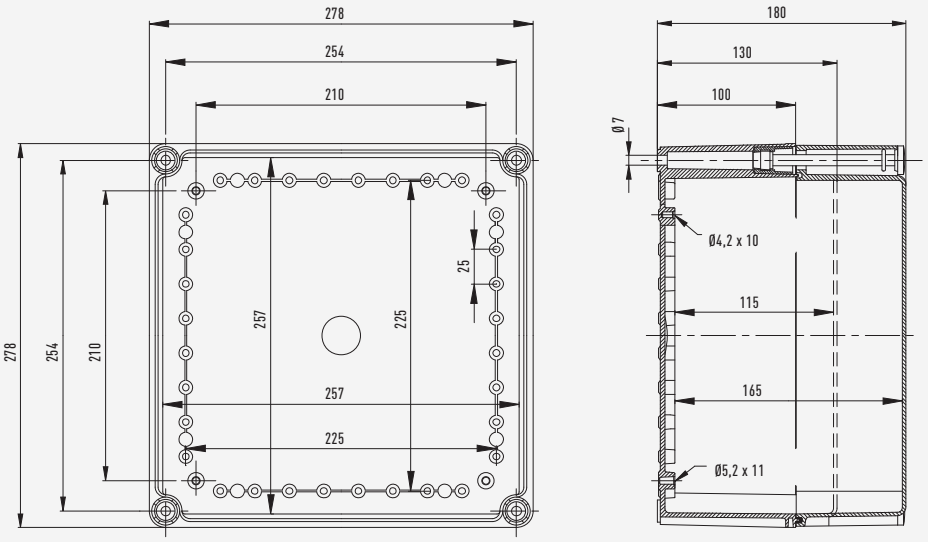


Dimensions: mm

1	Cabinet front plate
2	Cabinet
3	Pressure gauge
4	Handle (both side)
5	Refrigerant tubing (liquid tube) Ø 9,52 (flared)
6	Refrigerant tubing (gas tube) Ø 15,88 (flared)
7	Water tubing (inlet) use Rp 1 1/4" nut
8	Water tubing (outlet) use Rp 1 1/4" nut
9	Drain hose connection port (outer diameter 15 mm)
10	Attachment hole for drain elbow (accessory)
11	Bushing (cable port)
12	Installation plate (accessory)
13	Installation plate (accessory)

Ventilation dimensions

AHU Connection Kit



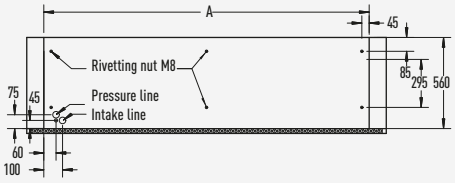
Front View (transparent cover removed)

Side View

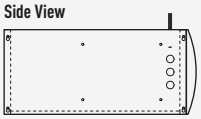
Air Curtain with DX Coil

Jet-Flow dimensions

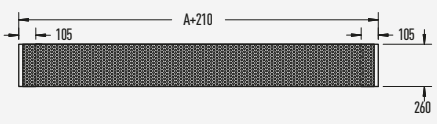
Top View



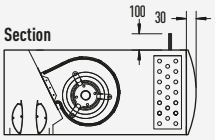
Side View



Front View



Section

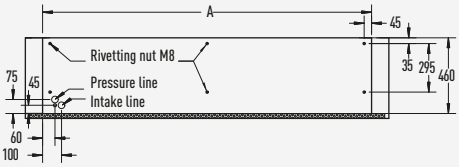


Bottom View

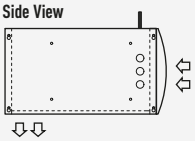
	A
PAW-10PAIRC-MJ	1.000
PAW-15PAIRC-MJ	1.500
PAW-20PAIRC-MJ	2.000
PAW-25EAIRC-MJ	2.500

Standard dimensions

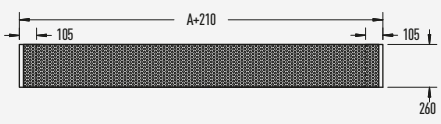
Top View



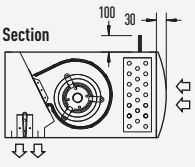
Side View



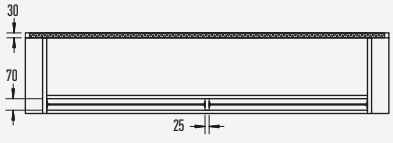
Front View



Section

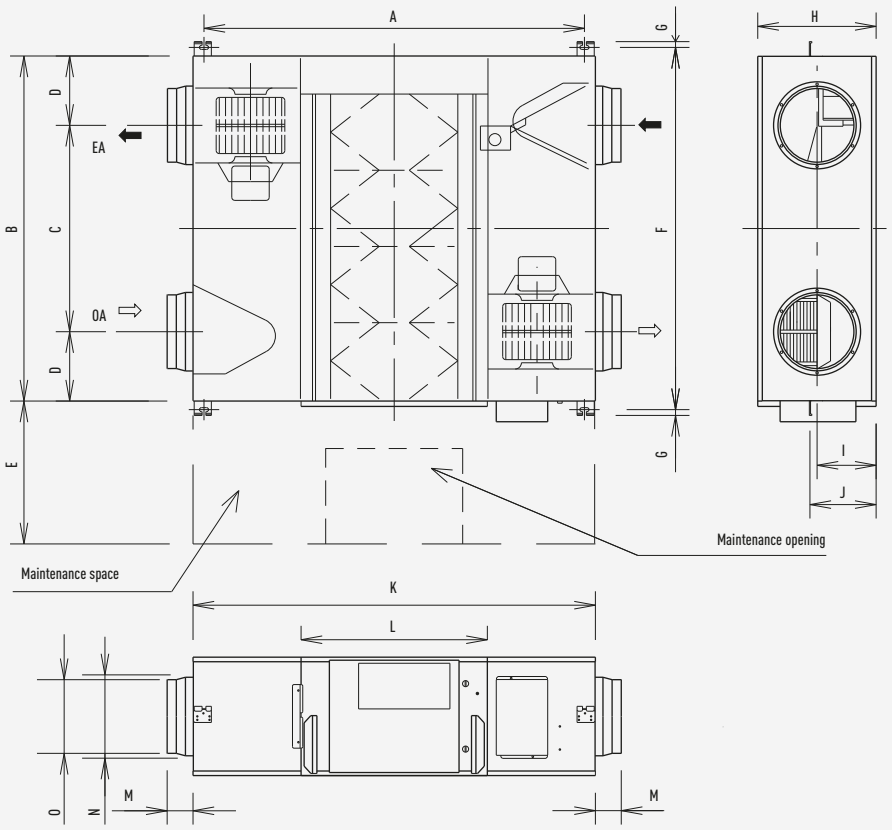


Bottom View



	A
PAW-10PAIRC-MS	1.000
PAW-20PAIRC-MS	2.000

Energy Recovery Ventilation System



	FY-250ZDY8	FY-350ZDY8	FY-500ZDY8	FY-800ZDY8	FY-01KZDY8A
A	810	810	890	1.250	1.250
B	599	804	904	884	1.134
C	315	480	500	428	678
D	142	162	202	228	228
E	600	600	600	600	600
F	655	860	960	940	1.190
G	19	19	19	19	19
H	270	317	317	288	388
I	135	145	145	194	194
J	159	159	159	218	218
K	882	882	962	1.322	1.322
L	414	414	414	612	612
M	95	95	107	85	85
N	219	219	246	258	258
O	144	144	194	242	242