<table>
<thead>
<tr>
<th>VRF Systems Range Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New Hydrokit for ECOi</strong></td>
</tr>
<tr>
<td>Produces LT hot water it is compatible with both ECOi, heat pump and heat recovery outdoors.</td>
</tr>
<tr>
<td><strong>Multi port heat recovery boxes</strong></td>
</tr>
<tr>
<td>New 3 boxes with 4, 6 and 8 ports brings to Heat Recovery systems bigger flexibility in design, and lower installation costs.</td>
</tr>
<tr>
<td><strong>Pump down</strong></td>
</tr>
<tr>
<td>Safer installations with refrigerant under control, meet regulations and increase your building energy class.</td>
</tr>
<tr>
<td><strong>Hotel Remote Control</strong></td>
</tr>
<tr>
<td>Indoor unit Hotel Remote control which integrates direct connection to: Card switch, Lighting, Window contact and blinds.</td>
</tr>
<tr>
<td><strong>Professional Climate Cloud</strong></td>
</tr>
<tr>
<td>Centralised control of your business premises, from wherever 24/7. Smartly control, maintain, optimise and save.</td>
</tr>
<tr>
<td><strong>Hide Away high pressure 100% Fresh air</strong></td>
</tr>
<tr>
<td>New 8HP and 10HP ducted indoor unit with 100% fresh air.</td>
</tr>
<tr>
<td><strong>Outstanding performance</strong></td>
</tr>
<tr>
<td>Compressor with high capacity range and high performance even at extreme conditions.</td>
</tr>
<tr>
<td><strong>Advanced indoors</strong></td>
</tr>
<tr>
<td>DC fan motor, discharge temperature sensor, quiet operation, fresh air intake.</td>
</tr>
<tr>
<td><strong>ECO G</strong></td>
</tr>
<tr>
<td>Unique GHP VRF system: Wide range up to 30HP outdoor module, full indoor and controls compatibility, free hot water up to 75°C, and heat recovery range.</td>
</tr>
<tr>
<td><strong>R22 replacement</strong></td>
</tr>
<tr>
<td>R22 Renewal. All Panasonic standard units can be install on existing R22 pipings.</td>
</tr>
</tbody>
</table>
Panasonic, the Air of your Life

Panasonic Air Conditioners have been with us since 1958. In many homes they are part of the family and are, in part, responsible for the air that each member breathes. Many things happen in your home, and Panasonic makes sure that those moments have the best climate. Panasonic Air Conditioners were the first to produce Healthy Air, and also worry about being super-efficient and quiet. Which is why they have been among us for so long.

1958
First room air conditioner launched for domestic installation.

1973
Panasonic launches the first highly efficient air-to-water heat pump in Japan.

1975
Panasonic becomes the first Japanese air conditioner manufacturer in Europe.

2008
Etherea new concept of air conditioning systems: high efficiency and high performances with a great design.
History of Air Conditioning Group

Panasonic starts with a desire to create things of value. As hard work and dedication results in one innovative product after another, the fledgling company takes its first steps towards becoming the electronics giant of today.

2010
New Aquarea.
Panasonic has created Aquarea, an innovative new, low-energy system.

2011
The new Panasonic ECDi VRF solution for big buildings is the most efficient in the industry in more than 74% of combinations.

2012
New GHP units. Pansonic’s gas-driven VRF systems are ideal for projects where power restrictions apply.

Looking ahead
By creating, storing, managing and saving energy, Panasonic aims to realize a lifestyle with virtually zero CO₂ emissions throughout the entire home.

Heating and Cooling Solutions designed and produced by Panasonic since 1958. See more information on www.aircon.panasonic.eu
Reliability facts

Reliable comfort comes from reliable technologies

Today, Panasonic air conditioners have earned widespread acclaim throughout the world. A rugged design ensures that the air conditioner will continue to keep the room comfortable, and operate trouble-free for many years. Panasonic believes this is the true value of an air conditioner. And this is why we subject them to a wide range of stringent tests.

Durability. Long Time Continuous Operation Simulation.

Long-term Durability Test
The air conditioner’s main mission is to provide a level of durability that allows it to operate stably for years. In order to achieve this, we conduct an accelerated test for 10,000 hours of continuous operation. The results of this test, which is conducted under conditions that are much more severe than actual operating conditions, prove the rugged strength of Panasonic air conditioners.

Compressor Disassembly Test
After a test with 10,000 hours of continuous operation, we remove the compressor from a randomly selected outdoor unit, disassemble it, then examine the internal mechanisms and parts for possible failure. Panasonic air conditioners continue to provide their designed performance for many years even after prolonged operation under harsh conditions.

Operating Test in Harsh Conditions
In addition to normal operating conditions, an operating durability test is conducted in a high-temperature, high humidity test chamber at a temperature of 55°C. For use in cold climates, the test is also conducted in a low temperature test chamber at -20°C. This test assures that the oil inside the compressor will not freeze during use and interrupt operation.

Waterproof Test
The outdoor unit, which is subject to rain and wind, is provided with IPX4 waterproof compliance. Contact sections on printed circuit boards are also resin-potted to prevent adverse effects caused by an unlikely exposure to droplets of water.

Checking the oil inside the compressor under extremely cold conditions.

A resin-potted circuit board.
No Breaking. When Dropped onto Sides or Corners.

Shock Resistance
Panasonic simulates impacts, vibrations and other environmental conditions that air conditioners might be subjected to during transport. We promise that the quality and performance at the time of the final product inspection are unchanged when the product reaches the user’s home.

Drop Test
Even with the large impacts that may occur due to improper handling during transportation, the product packaging has been strengthened to prevent it from being damaged. In addition to conventional vertical dropping, more severe conditions in which the sides or corners hit the floor first are carefully tested to ensure that the product’s rigidity and shock-absorbing materials work to prevent problems.

Vibration Test
Preventing damage that would hinder the product’s performance due to vibration during transport is a major role of the packaging. Panasonic confirms that the product operates properly even after applying vibrations in both horizontal and vertical directions.

Warehouse Storage Test
During distribution, products may be subjected to extended warehouse storage under unfavourable conditions. To simulate these conditions, we place a weight equal to a stack of five product packages on top of the test package, and leave it in that condition in a room at a temperature of 27°C and a humidity level of 85%. Then, the product is checked for proper operation.

Silence. That Does Not Disturb You.

Comfort
Air conditioners should keep each person in the room comfortable without making their presence known. They should work totally in the background, using their strength to create and maintain a relaxing environment. We build this hidden strength into our air conditioners, and test them repeatedly from this viewpoint.

Noise Test
The operating noise of the indoor and outdoor units is measured in an echo-free chamber. The noise test verifies that the operating noise is low enough so that the product operation will not disturb daily activities including conversations and sleep.

Amenity Test
An actual air conditioner is operated in a test room that simulates an ordinary living room. Conditions such as the amount of sunlight entering the room from outside are changed while measuring a variety of parameters, such as cooling speed, cooling efficiency, and temperature and humidity differences throughout the room. This makes it possible to confirm whether the air conditioner is operating at its designed performance level under ordinary conditions.

Remote Control Dropping Test
Because the remote control is the main interface between people and the air conditioner, it is naturally subjected to frequent impacts - such as drops and bumps - when it is passed from person to person during normal operation. Panasonic drops the remote control from a height of 1.5 metres at various angles to ensure that no problems in basic performance will result from accidental dropping.

Quality. Is at the Core of All Our Manufacturing.

World Standard Quality
Over the years, Panasonic air conditioners have continued to offer the highest possible quality with the lowest environmental impact worldwide. Naturally, the fundamental production principles that are common to all Panasonic products apply to air conditioners as well. The fact that these principles actively support every product, rather than simply serving as slogans, is the result of the endless repetition of challenges and trial-and-error efforts that are conducted at our production bases all over the world.

Reliable Parts with Major Standards Approval
Panasonic air conditioners comply with all of the major standards that maintain high reliability in the countries and regions where they are marketed. To ensure this, we conduct a variety of tests to examine the quality of materials used in parts.

RoHS/REACH Compliant Parts
All parts and materials comply with RoHS/REACH, Europe’s world-leading environmental regulations. Stringent inspections of more than 100 materials are conducted to ensure that no hazardous substances are included during parts development.

Sophisticated Production Process
The air conditioner production line uses advanced, state-of-the-art factory automation technologies to produce products with higher reliability. Products are efficiently manufactured with high and uniform quality.

Eco Activities
Panasonic has set up eco ideas factories around the globe. While developing and manufacturing energy-saving products based on original environmental technologies, these factories reduce CO2 emissions from manufacturing processes and conduct regional-based environmental communications activities to contribute to both the global environment and the local communities that they serve.
Panasonic No. 1

Interbrand Ranks Panasonic No. 1 in the Electronics Sector for the “Best Global Green Brands 2014”

Interbrand, the US brand consulting company, announced on June 24, 2014, that Panasonic ranks No. 5 in its Best Global Green Brands 2014. Although a rank lower than last year, the company has come out top in the electronics sector.

2014 marks the fourth year for this global ranking of “green brands.” An Excellent Green Brand is defined as achieving a good balance between Green Perception (consumers’ image of an eco-brand) and Green Performance (a company’s environmental management practices). The top 50 companies are ranked based on these two elements.

Evaluation Points
Panasonic’s Green Performance was evaluated as being especially high, with excellent marks going to “Products and Services,” “Governance,” and “Transportation and Logistics.”

Interbrand also noted the following points in its evaluation

Energy Star Award Recognitions: Panasonic has received more Energy Star awards than any other consumer electronics manufacturer.
Achieved a Recycling Rate of 99.3%: Taking steps toward zero waste, Panasonic achieved a factory waste recycling rate of 99.3% in 2013.
Improved Water Usage: In 2013, water usage at factories per basic unit of production improved by 0.7% compared with 2012.
Econavi Function: In 2009, Panasonic launched home appliances with the Econavi function, which automatically controls power and water consumption to cut losses by using sensor and other energy efficient technologies.
Fujisawa Sustainable Smart Town Goes Into Full-Scale Operation Near Tokyo
Fujisawa SST Council, a consortium led by Panasonic Corporation spearheading the development of the Fujisawa Sustainable Smart Town (Fujisawa SST). With its core facility supporting sustainable development of the town and its community now coming into operation, the Fujisawa SST is moving from the construction stage into a new stage where the town is nurtured to grow in full-scale into an eco and smart town that puts a high priority on the residents’ lifestyles.

The Fujisawa SST Management Company is the town management company located in the SQUARE. Together with partner companies, the company provides five essential services in the town: energy, security, mobility, healthcare and community. The company will also collect and manage information pertaining to the town’s overall environment, energy, security and safety to support an eco and smart life in the town.

As a fresh development in the town, the Fujisawa SST has set a detached housing zone for non car owners for the second phase of sales. By using the town’s eco-car sharing and rent-a-car services, residents in the zone can enjoy their lifestyles without the need to own a car while reducing economic burden and making effective use of the lot. Preparations are also underway for a new base to provide environmentally-friendly logistic services to the residents.
Panasonic – leading the way in Heating and Cooling

With more than 30 years of experience, selling to more than 120 countries around the world, Panasonic is unquestionably one of the leaders in the heating and cooling sector. With a diverse network of production and R&D facilities, Panasonic delivers innovative products incorporating cutting-edge technologies that set the standard for air conditioners worldwide. Expanding globally, Panasonic provides superior international products transcending borders.

100% Panasonic: we control the process

The company is also a world leader in innovation as it has filed more than 91,539 patents to improve its customers’ lives. Moreover, Panasonic is determined to remain at the forefront of its market. In all, the company has produced more than 200 million compressors and its products are manufactured in 294 plants which are located all over the world. You can be assured of the extremely high quality of Panasonic’s heat pumps.

This wish to excel has made Panasonic the international leader in heating and turn-key air conditioning solutions. These offer maximum effectiveness, comply with the strictest environmental standards and meet the most avant-garde construction requirements of our time.
Projects & Case Studies of Panasonic Heating and Cooling Solutions

Call centre retrofit. Woodhouse Environmental Services Ltd. Bournemouth, UK. VRF

New residential building. 84 apartments. Barcelona, Spain. Aquarea

New condominium. Bergs Terasse complex. Drammen, Norway. ECOi / Aquarea

Hotel refurbishment. Hotel Claris 5*. Barcelona, Spain. ECOi

New residential building. 176 flats. Xàtiva, Spain. ECO G

French Winery. Boutiers-Saint-Trojan, France. ECO G

Le Centurie Centro Commerciale. 40,000 m² with 40 commercial spaces. Padua, Italy. ECOi

Europa-Park is the second most popular theme park resort. 300 rooms. Germany. ECOi

The National Grid’s. Call Center refurbishment. Hinkley, UK. ECO G

The exclusive Sunprime Atlantic View resort, owned by Thomas Cook. 220 rooms. Canary Islands. Spain. ECO G

Montcevis Nursing Home. Over 6100 m² and 85 rooms. Saône et Loire, France. ECO-G

Smart House. Ariake, Tokyo. HVAC and the combination of solar power generation, fuel cells and storage batteries.

Technopark of Novosibirsk Academgorodok, Novosibirsk, Russia. ECOi

Shippensburg University, Pennsylvania. ECOi

Urban residential Mosaic Panama Pacifico. Republic of Panama. Mini ECOi

Patra Jasa Bandung Hotel. Bandung, Indonesia. ECOi

To find out more: www.aircon.panasonic.eu
PRO Club

the professional website of Panasonic

Panasonic has an impressive range of support services for designers, specifiers, engineers and distributors working in the heating and cooling markets.

Panasonic PRO Club (www.panasonicproclub.com) is the online tool which makes your life easier! You just have to register and a lot of functionalities are freely available to you, where ever you are, from your computer or smart phone!

- Print catalogues with your logo and your address
- Download the latest Aquarea designer to define your system and select the good Aquarea Heat pump.
- Calculate the specs of the Aquarea Air fan coil based on the parameters of your system
- Get Documents of conformity and all other documents you may need
- Download all the service manuals, end user manuals and installation manuals
- Know what to do with error codes
- Find out about the latest news first
- Register for training

Highlighted Features
- Extensive library of resources
- Tools & Apps for end users. Check availability in your country:
  - My Home: sizing wizard for domestic and A2W range
  - My Project: Contact form to Panasonic team
  - iFinder: Lists of installers displayed by postcode
- Special offers & promotions
- Training PRO Academy
- Catalogues (Commercial documentation)
- Marketing (Images in high resolution, advertisements, deco guidelines)
- Tools (Professional software, sizing tools...)

NEW Highlighted Features
- NEW! Installers customize leaflets in PDF format with their logo & contact details
- NEW! Energy label generator. Download energy labels of any device in PDF format
- NEW! Heating calculator demand
- NEW! Noise calculator for outdoor unit
- NEW! Aquarea Radiator calculator
- NEW! Error Code Search by error code or unit ref. Compatible with smartphone and tablet computer
- NEW! Revit / CAD Images / Spec texts
- NEW! Access to Pananet, online library of technical documentation
- NEW! Download Documents of Conformity and other Certifications
- NEW! Commissioning online
Panasonic takes its responsibility to its distributors, specifiers and installers seriously and has developed a comprehensive Training Programme. The Panasonic Pro-Academy encompasses the traditional hands-on approach.

New training courses cover three levels. Design, installation, and commissioning & trouble-shooting. Training courses include:

- Domestic applications Air to Air
- Aquarea air source heat pumps
- VRF ECOi

The courses are offered on site at Panasonic’s premises across Europe as well as via the Panasonic ProClub eLearning site. The Training Centres display Panasonic’s latest product range and give delegates an opportunity to get hands-on experience with the latest controllers, indoor and outdoor units from the VRF ECOi, Etherea, GHP and Aquarea ranges.
VENTILATION
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 CO₂ 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). 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 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 Ready**

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.

**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.

**High savings**

GHP technology offers the best in energy efficiency.

**Down to -25°C in heating mode**

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 ECDi).

**Easy control by BMS**

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.

**Environmentally friendly refrigerant**

R410A. Environmentally friendly refrigerant.

**5 year compressor warranty**

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

**Practical operation**

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

**Easy maintenance**

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.

**For more comfort**

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.

**Comfort everywhere**

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.

**Perfect humidity control**

Mild dry. By intermittent control of compressor and indoor unit’s fan, “New Mild Dry” gives you comfort. It realizes efficient dehumidification according to room temperature.

**Easy to install**

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

**Further comfort**

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.

**Professional Smart Cloud**

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.
Panasonic is definitely the most efficient system throughout the years
And highly adapted to retail, hotels and offices applications

1. 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.

<table>
<thead>
<tr>
<th>Load %</th>
<th>110 %</th>
<th>100 %</th>
<th>60 %</th>
<th>50 %</th>
<th>40 %</th>
<th>30 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other competitors</td>
<td>3.52</td>
<td>3.38</td>
<td>3.45</td>
<td>3.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panasonic VRF 6N Series 32HP Standard</td>
<td>3.38</td>
<td>3.41</td>
<td>4.41</td>
<td>4.69</td>
<td>4.85</td>
<td>4.93</td>
</tr>
<tr>
<td>Panasonic VRF 6N Series 32HP HI COP</td>
<td>3.91</td>
<td>3.94</td>
<td>5.14</td>
<td>5.54</td>
<td>6.03</td>
<td>6.51</td>
</tr>
</tbody>
</table>

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

COP comparison Panasonic Vs Other competitors at different load:

Panasonic VRF 6N Series 32HP HI COP
Panasonic VRF 6N Series 32HP Standard
Other competitors

Conditions: Outdoor temperature 0°C DB, Room temperature 20°C DB. Data extracted by Panasonic and competitor official technical data book.
2. 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).

<table>
<thead>
<tr>
<th>Model</th>
<th>ESEER</th>
<th>SCOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-4LE1E5</td>
<td>5.77</td>
<td>5.43</td>
</tr>
<tr>
<td>U-4LE1E8</td>
<td>5.76</td>
<td>5.43</td>
</tr>
<tr>
<td>U-5LE1E5</td>
<td>5.88</td>
<td>5.12</td>
</tr>
<tr>
<td>U-5LE1E8</td>
<td>5.88</td>
<td>5.12</td>
</tr>
<tr>
<td>U-6LE1E5</td>
<td>5.20</td>
<td>4.86</td>
</tr>
<tr>
<td>U-6LE1E8</td>
<td>5.29</td>
<td>4.86</td>
</tr>
<tr>
<td>U-7LE1E5</td>
<td>5.88</td>
<td>5.12</td>
</tr>
<tr>
<td>U-7LE1E8</td>
<td>5.88</td>
<td>5.12</td>
</tr>
<tr>
<td>U-8ME1E81</td>
<td>6.77</td>
<td>5.83</td>
</tr>
<tr>
<td>U-8ME1E81</td>
<td>6.77</td>
<td>5.83</td>
</tr>
<tr>
<td>U-10ME1E81</td>
<td>6.40</td>
<td>5.33</td>
</tr>
<tr>
<td>U-10ME1E81</td>
<td>6.40</td>
<td>5.33</td>
</tr>
<tr>
<td>U-12ME1E81</td>
<td>6.06</td>
<td>4.99</td>
</tr>
<tr>
<td>U-12ME1E81</td>
<td>6.06</td>
<td>4.99</td>
</tr>
<tr>
<td>U-14ME1E81</td>
<td>5.70</td>
<td>4.73</td>
</tr>
<tr>
<td>U-14ME1E81</td>
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<td>4.73</td>
</tr>
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<td>U-16ME1E81</td>
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</tr>
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<td>4.49</td>
</tr>
<tr>
<td>U-18ME1E81</td>
<td>6.08</td>
<td>4.49</td>
</tr>
<tr>
<td>U-18ME1E81</td>
<td>6.08</td>
<td>4.49</td>
</tr>
<tr>
<td>U-20ME1E81</td>
<td>6.07</td>
<td>4.46</td>
</tr>
<tr>
<td>U-20ME1E81</td>
<td>6.07</td>
<td>4.46</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Part Load COP</th>
<th>Ambient conditions</th>
<th>Weighting factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>15°C</td>
<td>0.20 (a)</td>
</tr>
<tr>
<td>50%</td>
<td>7°C</td>
<td>0.36 (b)</td>
</tr>
<tr>
<td>75%</td>
<td>1°C</td>
<td>0.32 (c)</td>
</tr>
<tr>
<td>100%</td>
<td>-5°C</td>
<td>0.12 (d)</td>
</tr>
</tbody>
</table>

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

SEER - Seasonal Energy Efficiency Rating

<table>
<thead>
<tr>
<th>Part Load COP</th>
<th>Ambient conditions</th>
<th>Weighting factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>20°C</td>
<td>0.20 (a)</td>
</tr>
<tr>
<td>50%</td>
<td>25°C</td>
<td>0.36 (b)</td>
</tr>
<tr>
<td>75%</td>
<td>30°C</td>
<td>0.32 (c)</td>
</tr>
<tr>
<td>100%</td>
<td>35°C</td>
<td>0.12 (d)</td>
</tr>
</tbody>
</table>

UK summer: 25°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

<table>
<thead>
<tr>
<th>Part load ratio</th>
<th>Outdoor air temperature (°C DB)</th>
<th>Weighting coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>20</td>
<td>0.33</td>
</tr>
<tr>
<td>50%</td>
<td>25</td>
<td>0.41</td>
</tr>
<tr>
<td>75%</td>
<td>30</td>
<td>0.33</td>
</tr>
<tr>
<td>100%</td>
<td>35</td>
<td>0.63</td>
</tr>
</tbody>
</table>

\[ \text{ESEER} = 0.23 \times \text{EER}_{25\%} + 0.41 \times \text{EER}_{50\%} + 0.33 \times \text{EER}_{75\%} + 0.63 \times \text{EER}_{100\%} \]

3. 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

- Heat source from indoor units is not required.
- No cold draft from the indoor unit during defrosting.

Competitors 1

- Heat deposit in the indoor unit. No cool air, but extremely low efficiency.

Competitors 2

- Heat source for defrosting is from indoor units.

4. Panasonic ECOi operates up to -25°C. This unique feature demonstrate the supremacy of Panasonic ECOi 6N Series
Panasonic use the second unit to defrost the first unit. This makes the system more efficient during defrost and does not affect the comfort.

Wide temperature setting range.

5. 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.

6. 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).

Fan motor damage
Compressor damage
Temperature sensor damage
Back up
Stop
Your entire hotel with maximum savings, maximum control and maximum 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 CO₂ 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.

1. **Hibride Solution**
   - Gas + Electric: When high quantity of hot cold water is needed.
     - ECO G (gas heat pump)
     - Water heat exchanger
     - Aquarea HF 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

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

**Hydronic units**

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

**Domestic Hot Water production**

DHW with Aquarea or ECO 6.

**AHU Kit**

Increase the efficiency of an installation with the use of AHU ventilation, a wide range of air curtains and energy recovery ventilation system.
Additional available space
Due to the modularity applied to our systems, our customers have freed space for public use: Terraces, swimming pools, meeting rooms, parkings.

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

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 warranty maximum guests comfort. From 1.5kW up to 30kW.

Control your way
Wide variety of controls, from simply user control to remotely full system control. Touch panel, web server, consumption control, smartphone control... everything is possible.

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.

PKEA indoor unit for server room
Steady cooling, nonstop, even at -20°C and still with high efficiency. Ready for continuous operation and easily to connect 2 systems to automatically alternate and smartly keep cooling server room with maximum warranties.

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.

Air Curtain with DX Coil
The Panasonic range of air curtains is designed for smooth operation and efficient performance.
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 CO₂ 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.
The Multi energy solution (Gas and Electric) from Panasonic 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.
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/m³.

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 algorithm

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

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).

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.
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.

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.

Pump Down system in case of leakage

<table>
<thead>
<tr>
<th>Number of outdoor units</th>
<th>2-Pipe without receiver</th>
<th>2-Pipe with receiver</th>
<th>3-Pipe without receiver</th>
<th>3-Pipe with receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>2</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

ECOi System | Model code | Description
---|------------|-------------
ECOi 2 Way | 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 Way | 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 Way | 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 Way | 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

Fig 1: Panasonic’s Pump Down System
Fig 2: Standalone Leak Detection System

NEW — VRF SYSTEMS
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.
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.

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 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 rooms 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.

**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 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.

**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
Cooling and Heating type 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 3 sizes with cooling capacities ranging from 12.1 kW to 15.5 kW and connectable up to 9 indoor units (applicable for 15.5 kW). 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.
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 CO2 emission and lowers operating costs.

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

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.
2-Pipe Mini ECOi LE1 Series

Drastically reduced sound level
The pressure sound level has been reduced drastically thanks to the new DC Inverter compressor, newly designed heat exchanger and Fan.

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

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.

Lightweight
In case of 5/6 HP, the weight has been reduced from 123 kg into 104 kg.

Silent mode
3 dB can be reduced by setting. External input signal is also available.

Up to 9 indoor units per system

Compact & Flexibility-design
The slim and lightweight design can be installed in various small spaces.

For balconies

For narrow spaces

FS Multi VRF LA 1 Series
ECOi LE 1 Series

Down by 19 kg
Mini ECOi

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.

Demand control Kit information

| CZ-CAPDC2 | Semi-Para I/O unit for outdoor unit | Yes | Yes | Yes | Yes |
| CZ-CAPDC3 | Demand Control Kit | Yes | Yes | Yes | Yes |

Function of Demand control

This function limits the maximum operating input at peak time. 3 levels as 100%/70%/0% is set at the factory¹. The limit value setting for level 1 & 2 can be changed from 40% ~ 100% by 5% at the system commissioning.

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

<table>
<thead>
<tr>
<th>Power input level (vs. rated condition)</th>
<th>Level 1</th>
<th>100% (at ship)</th>
<th>From 40%-100% setting can be changed (by 5% step)</th>
<th>Level 2</th>
<th>70% (at ship)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating image</td>
<td>Power input</td>
<td>Level 1</td>
<td>Demand level</td>
<td>Limit Max level</td>
<td>Level 2</td>
</tr>
</tbody>
</table>

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-CAPDC3 for PACi and Mini 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.
# MINI ECOi
## HIGH EFFICIENCY

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 12.1 kW and 15.5 kW 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.

### 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

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<table>
<thead>
<tr>
<th>HP</th>
<th>4 HP</th>
<th>5 HP</th>
<th>6 HP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>U-4LE1E5</td>
<td>U-4LE1EB</td>
<td>U-5LE1E5</td>
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<tr>
<td><strong>Power supply</strong></td>
<td>V</td>
<td>Single Phase / 50Hz</td>
<td>Single Phase / 50Hz</td>
</tr>
<tr>
<td><strong>Cooling capacity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal kW</td>
<td>12.1</td>
<td>12.1</td>
<td>14.0</td>
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<tr>
<td>EER 1)</td>
<td>4.30</td>
<td>4.30</td>
<td>4.20</td>
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<tr>
<td>Running amperes A</td>
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<tr>
<td>Power input cooling kW</td>
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<td>Heating capacity Nominal kW</td>
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<td>12.5</td>
<td>16.0</td>
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<td>COP 1)</td>
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<td>Running amperes A</td>
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<td>Power input heating kW</td>
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<td>Maximum amperes A</td>
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<tr>
<td>Maximum power input kW</td>
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<td>Maximum number of connectable indoor units</td>
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<td>8</td>
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<td>Air volume</td>
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<td>Cooling (Hi / Lo) dB(A)</td>
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<td>Cooling (Hi) dB</td>
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<td>Dimensions</td>
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<tr>
<td>H x W x D mm</td>
<td>1.330 x 940 x 340</td>
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<tr>
<td>Net weight kg</td>
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<td>103</td>
<td>104</td>
</tr>
<tr>
<td>Piping connections</td>
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<td></td>
<td></td>
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<tr>
<td>Liquid pipe inch (mm)</td>
<td>9.52 (1/2B)</td>
<td>9.52 (1/2B)</td>
<td>9.52 (1/2B)</td>
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<tr>
<td>Gas pipe inch (mm)</td>
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<td>15.88 (1/2B)</td>
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<td>Refrigerant loading R410A kg</td>
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<td>3.5</td>
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<td>Operating range</td>
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<td>Cooling Min / Max °C</td>
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<td>-19 / 44°C DB</td>
<td>-19 / 44°C DB</td>
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<tr>
<td>Heating Min / Max °C</td>
<td>-20 / 18°C WB</td>
<td>-20 / 18°C WB</td>
<td>-20 / 18°C WB</td>
</tr>
</tbody>
</table>


DB: Dry Bulbs; WB: Wet Bulbs

1) EER and COP classification is at 400 V in accordance with EU directive 2002/31/EC.

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**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

### Flexible pipework

<table>
<thead>
<tr>
<th>Category</th>
<th>Item Description</th>
<th>Max length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable pipework length</td>
<td>L1 Maximum pipe run</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>L2-L3 Difference between maximum length and minimum length from the first distribution joint</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>L3+Ln Maximum length of each distribution joint</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>L1+L3+Ln Maximum total pipe run length</td>
<td>150</td>
</tr>
</tbody>
</table>

### Allowable height difference

- H1 When outdoor unit installed higher: 50
- H2 When outdoor unit installed lower: 40
- H3 Maximum difference between indoor units: 15

### 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
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!
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.

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.

Wide temperature setting range.

Cooling operation range: -10°C DB to +43°C DB.
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.

<table>
<thead>
<tr>
<th>System (HP)</th>
<th>Connectable indoor units: 130%</th>
<th>Connectable indoor units: 200%</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>13 16 19 23 26 29 33 36 40 43</td>
<td>47 50 53 56 59 64</td>
</tr>
<tr>
<td>10</td>
<td>16 19 23 26 29 33 36 40 43</td>
<td>47 50 53 56 59 64</td>
</tr>
<tr>
<td>12</td>
<td>19 23 26 29 33 36 40 43</td>
<td>47 50 53 56 59 64</td>
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<td>14</td>
<td>23 26 29 33 36 40 43</td>
<td>47 50 53 56 59 64</td>
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<td>16</td>
<td>26 29 33 36 40 43</td>
<td>47 50 53 56 59 64</td>
</tr>
<tr>
<td>18</td>
<td>29 33 36 40 43</td>
<td>47 50 53 56 59 64</td>
</tr>
<tr>
<td>20</td>
<td>33 36 40 43</td>
<td>47 50 53 56 59 64</td>
</tr>
<tr>
<td>22</td>
<td>36 40 43</td>
<td>47 50 53 56 59 64</td>
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<tr>
<td>24</td>
<td>40 43</td>
<td>47 50 53 56 59 64</td>
</tr>
<tr>
<td>26</td>
<td>43</td>
<td>47 50 53 56 59 64</td>
</tr>
</tbody>
</table>

Increased piping lengths and design flexibility

Adaptable to various building types and sizes. Actual piping length: 180m. Maximum piping length: 1,000 m.

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.

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.

Newly designed fan. Optimized air flow 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.

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.

ECOi 2-Pipe and 3-Pipe wind protection shield

Panasonic
### Demand control Kit information

<table>
<thead>
<tr>
<th></th>
<th>Mini ECOi</th>
<th>ECOi 6N</th>
<th>ECO G</th>
<th>PACi</th>
</tr>
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<tbody>
<tr>
<td>CZ-CAPDC2</td>
<td>Semi-Para I/O unit for outdoor unit</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>CZ-CAPDC3</td>
<td>Demand Control Kit</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### 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.

The limit value setting for level 1 & 2 can be changed from 40% - 100% by 5% at the system commissioning.

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

#### Power input level (vs. rated condition)

<table>
<thead>
<tr>
<th>Level</th>
<th>Power input level (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>100% (at ship)</td>
</tr>
<tr>
<td>Level 2</td>
<td>70% (at ship)</td>
</tr>
<tr>
<td>Level 3</td>
<td>0% (Forcible thermo-OFF)</td>
</tr>
</tbody>
</table>

#### Operating image

- **Power input**
  - Level 1
  - Level 2
  - Limit Max level

### 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-CAPDC3 for PACi and Mini 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.

---

**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.
## 2-PIPE ECOi 6N SERIES
### 8-12 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

### 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

### Standard model

<table>
<thead>
<tr>
<th>HP</th>
<th>8 HP</th>
<th>10 HP</th>
<th>12 HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
</tr>
<tr>
<td>Cooling capacity</td>
<td>kW</td>
<td>2.54</td>
<td>3.6</td>
</tr>
<tr>
<td>Operating current</td>
<td>A</td>
<td>0.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Power input cooling</td>
<td>kW</td>
<td>5.54</td>
<td>7.78</td>
</tr>
<tr>
<td>Heating capacity</td>
<td>kW</td>
<td>25.0</td>
<td>31.5</td>
</tr>
<tr>
<td>Operating current</td>
<td>A</td>
<td>0.4</td>
<td>1.2</td>
</tr>
<tr>
<td>Power input heating</td>
<td>kW</td>
<td>11.48</td>
<td>7.48</td>
</tr>
<tr>
<td>External static pressure</td>
<td>Pa</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Sound pressure level</td>
<td>Normal mode dB(A)</td>
<td>56.5</td>
<td>59.0</td>
</tr>
<tr>
<td>Sound power level</td>
<td>Normal mode dB</td>
<td>73.5</td>
<td>75.5</td>
</tr>
<tr>
<td>Dimensions</td>
<td>H x W x D mm</td>
<td>1,758 x 770 x 930</td>
<td>1,758 x 770 x 930</td>
</tr>
<tr>
<td>Net weight</td>
<td>kg</td>
<td>234</td>
<td>234</td>
</tr>
<tr>
<td>Piping connections</td>
<td>Gas pipe inch (mm)</td>
<td>3/4 (19.05)</td>
<td>7/8 (22.22)</td>
</tr>
<tr>
<td>Liquid pipe inch (mm)</td>
<td>3/8 (9.52)</td>
<td>3/8 (9.52)</td>
<td>1/2 (12.7)</td>
</tr>
<tr>
<td>Balance pipe inch (mm)</td>
<td>1/4 (6.35)</td>
<td>1/4 (6.35)</td>
<td>1/4 (6.35)</td>
</tr>
<tr>
<td>Refrigerant amount at shipment</td>
<td>kg</td>
<td>6.5</td>
<td>6.8</td>
</tr>
<tr>
<td>Demand control</td>
<td>13 steps (0 – 100 %)</td>
<td>13 steps (0 – 100 %)</td>
<td>13 steps (0 – 100 %)</td>
</tr>
<tr>
<td>Operating range</td>
<td>Cooling Min / Max °C</td>
<td>-10 / +43</td>
<td>-10 / +43</td>
</tr>
<tr>
<td>Heating Min / Max °C</td>
<td>-25 / +65</td>
<td>-25 / +65</td>
<td>-25 / +65</td>
</tr>
</tbody>
</table>

1) EER and COP classification is in accordance with EU directive 2002/31/EC.
2) Specifications subject to change without notice.

For detailed information about ErP, please visit our websites [www.aircon.panasonic.eu](http://www.aircon.panasonic.eu) or [www.ptc.panasonic.eu](http://www.ptc.panasonic.eu)
Technical focus
- Compact casing
- Longer maximum piping length up to 1,000m
- Extended operating range to provide heating at outdoor temperature as low as -25°C
- Suitable for refurbishment projects (Refer to technical data book)

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

Front view
- 894 (installation hole pitch) for electrical component box
- 730 (installation hole pitch) for tubing routing

Top view
- 794 (installation hole pitch) for terminal board
- 694 (installation hole pitch) for terminal board (for inter-outdoor-unit control wiring)

Installation holes (8-15x21 elongated holes) anchor bolts M12 or larger
Pressure outlet port (for high pressure: Ø 7.94 Scrader-type connection)
Pressure outlet port (for low pressure: Ø 7.94 Scrader-type connection)
Knock-out hole for connecting pressure gauge (optional)

NEW — VRF SYSTEMS / ECOi
2-PIPE ECOi 6N SERIES
14-16 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.

- Heating operation at outdoor temperatures down to -25°C
- Extended pipe runs of up to 180 m

### Specification Table

<table>
<thead>
<tr>
<th>HP</th>
<th>14 HP</th>
<th>16 HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard model</td>
<td>U-14ME1E81</td>
<td>U-16ME1E81</td>
</tr>
<tr>
<td>Power supply</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
</tr>
<tr>
<td>Cooling capacity kW</td>
<td>40,0</td>
<td>45,0</td>
</tr>
<tr>
<td>EER</td>
<td>Nominal W/W</td>
<td>3,46</td>
</tr>
<tr>
<td>Operating current A</td>
<td>17,1</td>
<td>20,7</td>
</tr>
<tr>
<td>Power input cooling kW</td>
<td>11,1</td>
<td>13,4</td>
</tr>
<tr>
<td>Heating capacity kW</td>
<td>45,0</td>
<td>50,0</td>
</tr>
<tr>
<td>COP</td>
<td>Nominal W/W</td>
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</tr>
<tr>
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<td>20,1</td>
</tr>
<tr>
<td>Power input heating kW</td>
<td>10,7</td>
<td>13,0</td>
</tr>
<tr>
<td>Starting current A</td>
<td>97</td>
<td>81</td>
</tr>
<tr>
<td>External static pressure Pa</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Air volume m³/h</td>
<td>12,720</td>
<td>12,720</td>
</tr>
<tr>
<td>Sound pressure level Normal mode dB(A)</td>
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<td>62,0</td>
</tr>
<tr>
<td>Silent mode dB(A)</td>
<td>69,9</td>
<td>79,9</td>
</tr>
<tr>
<td>Sound power level Normal mode dB</td>
<td>76,5</td>
<td>74,5</td>
</tr>
<tr>
<td>Dimensions H x W x D mm</td>
<td>1,758 x 1,000 x 930</td>
<td>1,758 x 1,000 x 930</td>
</tr>
<tr>
<td>Net weight kg</td>
<td>309</td>
<td>309</td>
</tr>
<tr>
<td>Piping connections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas pipe inch (mm)</td>
<td>1 (25,40)</td>
<td>1 (25,40)</td>
</tr>
<tr>
<td>Liquid pipe inch (mm)</td>
<td>1/2 (12,70)</td>
<td>1/2 (12,70)</td>
</tr>
<tr>
<td>Balance pipe inch (mm)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
</tr>
<tr>
<td>Refrigerant amount at shipment kg</td>
<td>8,5</td>
<td>8,5</td>
</tr>
<tr>
<td>Demand control</td>
<td>13 steps (0 – 100 %)</td>
<td>13 steps (0 – 100 %)</td>
</tr>
<tr>
<td>Operating range Cooling Min / Max °C</td>
<td>-10 / +43</td>
<td>-10 / +43</td>
</tr>
<tr>
<td>Heating Min / Max °C</td>
<td>-25 / +15</td>
<td>-25 / +15</td>
</tr>
</tbody>
</table>

Rating Conditions: Cooling Indoor 37°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
Technical focus

- 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)

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.
### 2-PIPE ECOi 6N SERIES

**18-20 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.

- Heating operation at outdoor temperatures down to –25°C
- Extended pipe runs of up to 180 m

---

**HP**

<table>
<thead>
<tr>
<th>HP</th>
<th>18 HP</th>
<th>20 HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard model</td>
<td>U-18ME1E81</td>
<td>U-20ME1E81</td>
</tr>
<tr>
<td>Power supply</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
</tr>
<tr>
<td>Cooling capacity</td>
<td>kW</td>
<td>kW</td>
</tr>
<tr>
<td>Nominal</td>
<td>50,0</td>
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<td>Operating current</td>
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<td>External static pressure</td>
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<td>Sound power level</td>
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<td>Dimensions</td>
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<td>kg</td>
<td>kg</td>
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<tr>
<td>Piping connections</td>
<td>Gas pipe</td>
<td>Gas pipe</td>
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<td>Inch (mm)</td>
<td>1-1/8 (28,58)</td>
<td>1-1/8 (28,58)</td>
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<tr>
<td>Liquid pipe</td>
<td>Inch (mm)</td>
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<tr>
<td>Balance pipe</td>
<td>Inch (mm)</td>
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<tr>
<td>Refrigerant amount at shipment</td>
<td>kg</td>
<td>kg</td>
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<tr>
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</tr>
<tr>
<td>°C</td>
<td>-10 / +43</td>
<td>-25 / +15</td>
</tr>
</tbody>
</table>

---

**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

<table>
<thead>
<tr>
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</tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Nominal</td>
<td>50,0</td>
<td>66,0</td>
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<tr>
<td>EER</td>
<td>3.30</td>
<td>3.30</td>
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<tr>
<td>Operating current</td>
<td>A</td>
<td>A</td>
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<tr>
<td>Power input cooling</td>
<td>kW</td>
<td>kW</td>
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<td>COP</td>
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<td>3.46</td>
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<td>A</td>
<td>A</td>
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<tr>
<td>Power input heating</td>
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<tr>
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<td>1,758 x 1.540 x 930</td>
</tr>
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<tr>
<td>Piping connections</td>
<td>Gas pipe</td>
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</tr>
<tr>
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<td>1-1/8 (28,58)</td>
<td>1-1/8 (28,58)</td>
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<tr>
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</tr>
<tr>
<td>Balance pipe</td>
<td>Inch (mm)</td>
<td>1/4 (6,35)</td>
</tr>
<tr>
<td>Refrigerant amount at shipment</td>
<td>kg</td>
<td>kg</td>
</tr>
<tr>
<td>Demand control</td>
<td>13 steps (0 – 100 %)</td>
<td>13 steps (0 – 100 %)</td>
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<tr>
<td>Operating range</td>
<td>Cooling Min / Max °C</td>
<td>Heating Min / Max °C</td>
</tr>
<tr>
<td>°C</td>
<td>-10 / +43</td>
<td>-25 / +15</td>
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</table>

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Compact design

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

Weight: 423 kg

Required installation space. Unit:mm

Technical focus

- Bigger capacity in one casing
- 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)
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

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

<table>
<thead>
<tr>
<th>HP</th>
<th>22 HP</th>
<th>24 HP</th>
<th>26 HP</th>
<th>28 HP</th>
<th>30 HP</th>
<th>32 HP</th>
<th>34 HP</th>
<th>36 HP</th>
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<tbody>
<tr>
<td>Standard model</td>
<td>U-14ME1E81</td>
<td>U-14ME1E81</td>
<td>U-14ME1E81</td>
<td>U-16ME1E81</td>
<td>U-16ME1E81</td>
<td>U-16ME1E81</td>
<td>U-18ME1E81</td>
<td>U-18ME1E81</td>
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<tr>
<td>Power supply</td>
<td>440 V / Three Phase / 50 Hz</td>
<td></td>
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<tr>
<td>Cooling capacity kW</td>
<td>61.5</td>
<td>68.0</td>
<td>73.0</td>
<td>78.5</td>
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<td>90.0</td>
<td>96.0</td>
<td>101.0</td>
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<td>EER 1)</td>
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<td>3.75</td>
<td>3.60</td>
<td>3.60</td>
<td>3.47</td>
<td>3.47</td>
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<tr>
<td>Operating current A</td>
<td>25.2</td>
<td>29.4</td>
<td>31.6</td>
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<td>37.8</td>
<td>41.5</td>
<td>44.0</td>
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<tr>
<td>Power input cooling kW</td>
<td>16.4</td>
<td>19.9</td>
<td>26.0</td>
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<td>24.5</td>
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<td>100.0</td>
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<td>COP 1)</td>
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<td>4.34</td>
<td>4.09</td>
<td>4.12</td>
<td>3.96</td>
<td>4.03</td>
<td>3.86</td>
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<td>Power input heating kW</td>
<td>15.9</td>
<td>18.7</td>
<td>19.8</td>
<td>22.1</td>
<td>23.5</td>
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<tr>
<td>Starting current A</td>
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<td>94</td>
<td>98</td>
<td>102</td>
<td>96</td>
<td>102</td>
<td>114</td>
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<td>External static pressure Pa</td>
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<td>80</td>
<td>80</td>
<td>80</td>
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<tr>
<td>Air volume m³/h</td>
<td>21,560</td>
<td>21,900</td>
<td>24,120</td>
<td>24,120</td>
<td>25,440</td>
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<td>27,360</td>
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<td>Sound pressure level</td>
<td>Normal mode dB(A)</td>
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<tr>
<td>Sound power level</td>
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<td>78.0</td>
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<td>79.0</td>
<td>79.5</td>
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<tr>
<td>Dimensions H x W x D mm</td>
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<td>1,758 x 1,830 x 930</td>
<td>1,758 x 1,830 x 930</td>
<td>1,758 x 2,060 x 930</td>
<td>1,758 x 2,060 x 930</td>
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<td>Net weight kg</td>
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<td>543</td>
<td>590</td>
<td>590</td>
<td>618</td>
<td>618</td>
<td>730</td>
<td>730</td>
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<tr>
<td>Refrigerant amount at shipment kg</td>
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<td>15.3</td>
<td>15.3</td>
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<td>17.0</td>
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<td>Operating range Cooling Min / Max °C</td>
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<td>-10 / +43</td>
<td>-10 / +43</td>
<td>-10 / +43</td>
<td>-10 / +43</td>
<td>-10 / +43</td>
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</tbody>
</table>

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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### 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**

### NEW — VRF SYSTEMS / ECOi

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<tbody>
<tr>
<td>Model</td>
<td>U-20ME1E81</td>
<td>U-18ME1E81</td>
<td>U-14ME1E81</td>
<td>U-16ME1E81</td>
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<td>U-20ME1E81</td>
<td>U-18ME1E81</td>
<td>U-16ME1E81</td>
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<td>U-20ME1E81</td>
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<tr>
<td>Voltage</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
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<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
<td>400 V / Three Phase / 50 Hz</td>
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</tbody>
</table>

### Important Notes

- **Dimensions**: 1.758 x 2.140 x 930 mm
- **Weight**: 80 kg
- **Noise Levels**: 31.620 dB(A) / 33.960 dB(A) / 36.840 dB(A) / 36.840 dB(A) / 38.160 dB(A) / 38.160 dB(A) / 38.160 dB(A) / 38.160 dB(A) / 38.160 dB(A) / 38.160 dB(A) / 38.160 dB(A) / 38.160 dB(A)
2-PIPE ECOi 6N SERIES
10-12 HP
HIGH COP SETTING MODEL

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

HP 10 HP 12 HP
High COP setting model U-14ME1E81 U-16ME1E81
Power supply 400 V / Three Phase / 50 Hz 400 V / Three Phase / 50 Hz
Cooling capacity kW 28.0 33.5
EEER Nominal W/W 4.94 4.97
Operating current A 10.7 12.7
Power input cooling kW 6.90 6.23
Heating capacity kW 31.5 37.5
 COPt Nominal W/W 4.45 4.45
Operating current A 10.9 13.0
Power input heating kW 7.08 8.42
Starting current A 17 18
External static pressure Pa 60 80
Air volume m³/h 12,720 12,720
Sound pressure level Normal mode dB(A) 62.0 62.0
Silent mode dB(A) 59.0 59.0
Sound power level Normal mode dB 76.5 76.5
Dimensions H x W x D mm 1,758 x 1,000 x 930 1,758 x 1,000 x 930
Net weight kg 307 307
Piping connections Gas pipe inch (mm) 7/8 (22.22) 1 (25.40)
Liquid pipe inch (mm) 3/8 (9.52) 1/2 (12.70)
Balance pipe inch (inch) 1/4 (3.51) 1/4 (3.51)
Demand control 13 steps (0 – 100 %) 13 steps (0 – 100 %)
Refrigerant amount at shipment kg 8.5 8.5
Operating range Cooling Min / Max °C -10 / +43 -10 / +43
Heating Min / Max °C -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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Technical focus

- 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)

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.

High Static Pressure 80 Pa
Next generation VRF newly-redesigned!

- Heating operation at outdoor temperatures down to –25°C
- Extended pipe runs of up to 180 m

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>HP 14</th>
<th>HP 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>400 V / 3 Phase / 50 Hz</td>
<td>400 V / 3 Phase / 50 Hz</td>
</tr>
<tr>
<td>Cooling capacity kW</td>
<td>40,0</td>
<td>45,0</td>
</tr>
<tr>
<td>Nominal W/W EER</td>
<td>4,91</td>
<td>3,80</td>
</tr>
<tr>
<td>Operating current A</td>
<td>15,4</td>
<td>17,9</td>
</tr>
<tr>
<td>Power input kW</td>
<td>9,99</td>
<td>11,6</td>
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<td>Heating capacity kW</td>
<td>45,0</td>
<td>50,0</td>
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<td>Nominal W/W COP</td>
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<td>4,39</td>
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<td>Operating current A</td>
<td>15,8</td>
<td>17,3</td>
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<td>Power input kW</td>
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<td>11,4</td>
</tr>
<tr>
<td>Starting current A</td>
<td>93</td>
<td>98</td>
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<tr>
<td>External static pressure Pa</td>
<td>30</td>
<td>80</td>
</tr>
<tr>
<td>Air volume m³/h</td>
<td>14,640</td>
<td>16,960</td>
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<tr>
<td>Normal mode dBA</td>
<td>60,0</td>
<td>63,0</td>
</tr>
<tr>
<td>Sound pressure level 50 Hz dB</td>
<td>74,5</td>
<td>77,5</td>
</tr>
<tr>
<td>Dimensions H x W x D mm</td>
<td>1,758 x 1,540 x 930</td>
<td>1,758 x 1,540 x 930</td>
</tr>
<tr>
<td>Net weight kg</td>
<td>423</td>
<td>423</td>
</tr>
<tr>
<td>Piping connections Gas pipe inch (mm)</td>
<td>1 (25,40)</td>
<td>1-1/8 (28,58)</td>
</tr>
<tr>
<td>Liquid pipe inch (mm)</td>
<td>1/2 (12,70)</td>
<td>1/2 (12,70)</td>
</tr>
<tr>
<td>Balance pipe inch (mm)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
</tr>
<tr>
<td>Refrigerant amount at shipment kg</td>
<td>9,0</td>
<td>9,0</td>
</tr>
<tr>
<td>Operating range Cooling Min / Max °C</td>
<td>–10 / +43</td>
<td>–10 / +43</td>
</tr>
<tr>
<td>Heating Min / Max °C</td>
<td>–25 / +15</td>
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</tbody>
</table>


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Technical focus
- Bigger capacity in one casing
- 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)

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

Weight: 423 kg

Required installation space. Unit: mm

<table>
<thead>
<tr>
<th>Front view</th>
<th>Top view</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Front view diagram" /></td>
<td><img src="image2" alt="Top view diagram" /></td>
</tr>
</tbody>
</table>

- A [894 (installation hole pitch)] The tubing is routed out from the front
- B [730 (installation hole pitch)] The tubing is routed out from 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 Scrueder-type connection)
- 3 Pressure outlet port (for low pressure: Ø 7.94 Scrueder-type connection)
- 4 Knock-out hole for connecting pressure gauge (optional)
- 5 Terminal board
- 6 Terminal board (for inter-outdoor-unit control wiring)
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

### HP

<table>
<thead>
<tr>
<th>HP</th>
<th>18 HP</th>
<th>20 HP</th>
<th>22 HP</th>
<th>24 HP</th>
<th>26 HP</th>
<th>28 HP</th>
<th>30 HP</th>
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</thead>
<tbody>
<tr>
<td>High COP setting model</td>
<td>U-14ME1E81</td>
<td>U-16ME1E81</td>
<td>U-18ME1E81</td>
<td>U-20ME1E81</td>
<td>U-20ME1E81</td>
<td>U-20ME1E81</td>
<td>U-20ME1E81</td>
</tr>
</tbody>
</table>

#### Power supply
- 400 V / Three Phase / 50 Hz

#### Cooling capacity (kW)
- Nominal: 18.5, 21.5, 24.2, 26.6, 28.9, 31.6, 34.1
- Nominal: 18.0, 21.0, 23.9, 26.6, 29.7, 32.8, 36.0

#### EER (1)
- Nominal: 4.07, 4.01, 3.96, 3.94, 3.92, 3.90, 3.88
- Nominal: 4.07, 4.01, 3.96, 3.94, 3.92, 3.90, 3.88

#### Operating current (A)
- 18.9, 21.3, 23.9, 25.5, 27.1, 28.7, 30.3
- 19.1, 21.5, 24.2, 26.6, 29.7, 32.8, 36.0

#### Power input cooling (kW)
- 12.2, 13.8, 15.5, 17.2, 18.8, 19.8, 21.5
- 12.4, 14.0, 15.7, 17.4, 18.9, 20.5, 22.1

#### Heating capacity (kW)
- 56.0, 63.0, 70.0, 77.5, 85.0, 92.5, 100.0
- 56.0, 63.0, 70.0, 77.5, 85.0, 92.5, 100.0

#### COP (1)
- Nominal: 4.52, 4.45, 4.38, 4.34, 4.31, 4.27, 4.23
- Nominal: 4.52, 4.45, 4.38, 4.34, 4.31, 4.27, 4.23

#### Operating current (A)
- 19.1, 21.5, 24.2, 26.6, 29.7, 32.8, 36.0
- 19.1, 21.5, 24.2, 26.6, 29.7, 32.8, 36.0

#### Power input heating (kW)
- 12.4, 14.0, 15.7, 17.4, 18.9, 20.5, 22.1
- 12.6, 14.2, 15.9, 17.6, 19.2, 20.8, 22.4

#### Starting current (A)
- 86, 90, 94, 105, 111, 114
- 86, 90, 94, 105, 111, 114

#### External static pressure (Pa)
- 80, 80, 80, 80, 80, 80, 80
- 80, 80, 80, 80, 80, 80, 80

#### Sound pressure level (Normal mode)
- Nominal: db(A): 63.0, 63.0, 61.5, 66.0, 64.0, 65.0, 66.0
- Nominal: db(A): 63.0, 63.0, 61.5, 66.0, 64.0, 65.0, 66.0

#### Sound power level (Normal mode)
- Nominal: db: 68.0, 60.0, 58.5, 62.0, 62.5, 62.0
- Nominal: db: 68.0, 60.0, 58.5, 62.0, 62.5, 62.0

#### Dimensions (W x D x H mm)
- 1758 x 1830 x 930, 1758 x 1830 x 930, 1758 x 2370 x 930, 1758 x 2060 x 930, 1780 x 2600 x 930, 1780 x 2600 x 930, 1758 x 3140 x 930
- 1758 x 1830 x 930, 1758 x 1830 x 930, 1758 x 2370 x 930, 1758 x 2060 x 930, 1780 x 2600 x 930, 1780 x 2600 x 930, 1758 x 3140 x 930

#### Net weight (kg)
- 537, 537, 653, 614, 738, 750, 846
- 537, 537, 653, 614, 738, 750, 846

#### Piping connections

#### 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, 18.0
- 15.0, 15.0, 15.5, 17.0, 17.5, 18.0

#### Operating range
- Cooling Min / Max °C: -10 / +43, -10 / +43, -10 / +43, -10 / +43, -10 / +43, -10 / +43, -10 / +43

**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.

**Compressor Warranty:**
- 5 years

**Environmentally friendly refrigerant:**
- R410A

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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
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: H1.758 x W1.000 x D930mm, 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%
Large combination of outdoor units, up to 48 HP

<table>
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<th>Unit</th>
<th>System (HP)</th>
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<th>10</th>
<th>12</th>
<th>14</th>
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High efficiency combination

<table>
<thead>
<tr>
<th>Unit</th>
<th>System (HP)</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>22</th>
<th>24</th>
<th>26</th>
<th>28</th>
<th>30</th>
<th>32</th>
<th>34</th>
<th>36</th>
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<tr>
<td>8</td>
<td>2</td>
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<tr>
<td>12</td>
<td>3</td>
<td>1</td>
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<td>1</td>
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<td>2</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td>2</td>
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</tr>
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</table>

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

<table>
<thead>
<tr>
<th>COP</th>
<th>3.00</th>
<th>3.50</th>
<th>4.00</th>
<th>4.50</th>
<th>5.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 HP</td>
<td>4.37</td>
<td>4.44</td>
<td>4.50</td>
<td>4.56</td>
<td>4.62</td>
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<tr>
<td>10 HP</td>
<td>3.96</td>
<td>4.02</td>
<td>4.08</td>
<td>4.14</td>
<td>4.20</td>
</tr>
<tr>
<td>12 HP</td>
<td>3.87</td>
<td>3.93</td>
<td>3.99</td>
<td>4.05</td>
<td>4.11</td>
</tr>
<tr>
<td>14 HP</td>
<td>3.81</td>
<td>3.87</td>
<td>3.93</td>
<td>3.99</td>
<td>4.05</td>
</tr>
<tr>
<td>16 HP</td>
<td>3.79</td>
<td>3.85</td>
<td>3.91</td>
<td>3.97</td>
<td>4.03</td>
</tr>
</tbody>
</table>

3-Pipe control box kit / Multiple connection type

- 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

Environmentally friendly refrigerant

R410A

5 year compressor warranty

Energy saving

Down to -20 ºC in heating mode

NEW — VRF SYSTEMS / ECOi

COP 4,77
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 operation² 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 Semi-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%.

Solenoid valve kit
Oil-recovery operation to give more stable comfort air-conditioning control.

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

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.

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)
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.

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAW-WPH1</td>
<td>1 long side of the outdoor unit (624 x 983 x 489)</td>
<td></td>
</tr>
<tr>
<td>PAW-WPH2</td>
<td>1 long side of the outdoor units (853 x 983 x 489)</td>
<td></td>
</tr>
<tr>
<td>PAW-WPH3</td>
<td>2 long sides of the outdoor units (744 x 983 x 289) (2ER SET)</td>
<td></td>
</tr>
</tbody>
</table>

### Piping design

**Ranges that apply to refrigerant piping lengths and to differences in installation heights**

<table>
<thead>
<tr>
<th>Items</th>
<th>Marks</th>
<th>Contents</th>
<th>Length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable piping length</td>
<td>L1</td>
<td>Maximum piping length</td>
<td>≤100³</td>
</tr>
<tr>
<td></td>
<td>Δ L (L2–L4)</td>
<td>Difference between the Maximum length and the minimum length from the No. 1 distribution</td>
<td>≤40</td>
</tr>
<tr>
<td></td>
<td>LM</td>
<td>Minimum length of main piping (at Maximum diameter)</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Ø 22–60</td>
<td>Maximum length of each distribution</td>
<td>≤20</td>
</tr>
<tr>
<td></td>
<td>L1+L2+…+L4+ΔA+ΔB+L+L1+L2+L3</td>
<td>Total Maximum piping length including length of each distribution (only liquid tubing)</td>
<td>≤500³</td>
</tr>
<tr>
<td></td>
<td>L5</td>
<td>Distance between outdoor units</td>
<td>≤10</td>
</tr>
<tr>
<td></td>
<td>H1</td>
<td>When outdoor unit is installed higher than indoor unit</td>
<td>≤40</td>
</tr>
<tr>
<td></td>
<td>H2</td>
<td>When outdoor unit is installed lower than indoor unit</td>
<td>≤40</td>
</tr>
<tr>
<td></td>
<td>H3</td>
<td>Maximum difference between outdoor units</td>
<td>≤4</td>
</tr>
<tr>
<td>Allowable length of joint tubing</td>
<td>L3</td>
<td>T-joint tubing (field-supply): Maximum tubing length between the first T-joint and solidly welded-shut end point</td>
<td>≤2</td>
</tr>
</tbody>
</table>

- **L** = Length, **H** = Height
- ³ 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) If the longest tubing length (L1) exceeds 300 m, increase the sizes of the main tubes (LM) by 1 rank for the discharge tubes, suction tubes, and narrow tubes. (Field supplied).
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.

### 3-PIPE ECOi MF2

#### 6N SERIES

8-16 HP

### HP

#### 8 HP

- **U-8MF2E8**
- **U-10MF2E8**
- **U-12MF2E8**
- **U-14MF2E8**
- **U-16MF2E8**

**Power supply**
- 380 / 400 / 415 V - Three Phase / 50 Hz

**Cooling capacity**
- **kW** 22.4, 20.8, 19.5, 18.0, 16.4

**EER**
- **Nominal**
- **W/W** 4.50, 4.45, 4.37, 4.26, 4.03

**Running current**
- **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, 22.6 / 21.1 / 20.4

**Power input**
- **kW** 4.98, 6.83, 7.90, 11.00, 13.50

**Heating capacity**
- **kW** 35.0, 31.5, 27.4, 45.6, 56.8

**COP**
- **Nominal**
- **W/W** 4.77, 4.65, 4.30, 6.41, 4.83

**Running current**
- **A** 8.95 / 8.56 / 8.30, 11.6 / 11.0 / 10.8, 14.7 / 14.1 / 13.0, 17.6 / 16.4 / 15.9, 20.7 / 19.5 / 19.4

**Power input**
- **kW** 8.24, 6.92, 8.73, 16.7, 13.4

**Air volume**
- **m³/min** 158, 178, 212, 212, 212

**Sound pressure level**
- **High / Low** 56.9 / 52.9, 58.2 / 55.8, 59.0 / 56.8, 41.0 / 50.0, 62.6 / 59.0, 62.6 / 59.0

**Sound power level**
- **Normal mode** 66.2 / 62.5, 66.2 / 62.5, 71.5 / 68.5, 73.5 / 70.5, 75.5 / 72.5, 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

**Net weight**
- **kg** 269, 269, 314

**Piping connections**
- **Suction pipe** (inch) 3/4 (19.05), 7/8 (22.22), 1 (25.40), 1 (25.40), 1-1/8 (28.58)

- **Discharge pipe** (inch) 5/8 (15.88), 3/4 (19.05), 3/4 (19.05), 7/8 (22.22), 7/8 (22.22)

- **Liquid pipe** (inch) 3/8 (9.52), 3/8 (9.52), 1/2 (12.70), 1/2 (12.70), 1/2 (12.70)

- **Balance pipe** (inch) 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
- **Heating Min / Max °C** -20 / +18
- **Simultaneous operation °C** -10 / +24

### Solenoid valve kit

**KIT-P6HR3**
- 3-Pipe control Solenoid valve kit (up to 5,6kW)

**CZ-P6HR3**
- Solenoid valve kit (up to 5,6kW)

**CZ-CAPE2**
- 3-Pipe control PCB

**KIT-P6HR3**
- 3-Pipe control Solenoid valve kit (from 5,6kW to 10,6kW)

**CZ-P6HR3**
- 3-Pipe control PCB

**CZ-CAPE2**
- 3-Pipe control PCB for wall mounted

**3-Pipe central control box**
- 4 ports 3 pipe box (up to 5,6kW)

**CZ-P6HR3**
- 6 ports 3 pipe box (up to 5,6kW)

**CZ-P6HR3**
- 8 ports 3 pipe box (up to 5,6kW)

**CZ-P6HR3**
- 4 ports 3 pipe box (from 5,6 to 10,6kW)

**KIP-P6HR3**
- 4 ports 3 pipe box (from 5,6 to 10,6kW)

---

**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

56
Technical focus
- Standardization of O_U 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

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

Additional refrigerant charge

<table>
<thead>
<tr>
<th>Liquid piping size</th>
<th>Amount of refrigerant charge (g/m)</th>
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<tr>
<td>6.35</td>
<td>26</td>
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<tr>
<td>9.52</td>
<td>56</td>
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<tr>
<td>12.70</td>
<td>120</td>
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<td>15.88</td>
<td>185</td>
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<td>19.05</td>
<td>259</td>
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<tr>
<td>22.22</td>
<td>356</td>
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<tr>
<td>25.40</td>
<td>470</td>
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Refrigerant piping

<table>
<thead>
<tr>
<th>Piping size (mm)</th>
<th>Ø material</th>
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<th>9.52</th>
<th>12.70</th>
<th>15.88</th>
<th>19.05</th>
<th>22.22</th>
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<td>Wall thickness</td>
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<td>0.80</td>
<td>0.80</td>
<td>0.80</td>
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<td>1.00</td>
<td>1.15</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Ø material</th>
<th>6.35</th>
<th>9.52</th>
<th>12.70</th>
<th>15.88</th>
<th>19.05</th>
<th>22.22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall thickness</td>
<td>1.00</td>
<td>1.00</td>
<td>1.10</td>
<td>over 1.35</td>
<td>over 1.45</td>
<td></td>
</tr>
</tbody>
</table>

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.

Front view
- Electrical component box
- Air intake
- Air discharge

Top view
- Electrical component box
- Air intake
- Installation fixing bracket, installation side.

* Installation fixing bracket, installation side.
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.
System Example

- Panasonic makes it possible to link outdoor units together for a large capacity (48 HP)
- Since all pipes are concentrated into one pipe shaft, you can minimise pipe space and construction labour.
- If your indoor capacity load changes in the future, it's easy to add on both indoor and outdoor units using the same pipings. If the additional installation of outdoor and indoor units is expected, the size of refrigerant piping should be decided according to the total capacity after the addition.

### Technical focus

- Standardization of O_U 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
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.

### Specifications

**3-PIPE ECOi MF2 6N SERIES**

**HIGH EFFICIENCY COMBINATION 16 TO 32 HP**

- **OUTDOOR TEMPERATURE**
  - Down to -20 ºC in heating mode

- **Energy saving**
  - 5 year compressor warranty

- **Environmentally friendly refrigerant**
  - R410A

**3-PIPE ECOi**

- **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.**

**HP**

- **16 HP**
- **24 HP**
- **26 HP**
- **28 HP**
- **30 HP**
- **32 HP**

**High Efficiency model**

- **U-BMF2EB**
- **U-BMF2EB**
- **U-BMF2EB**
- **U-BMF2EB**
- **U-BMF2EB**
- **U-BMF2EB**

**Power supply**

- 380 / 400 / 415 V - Three Phase / 50 Hz
- 380 / 400 / 415 V - Three Phase / 50 Hz
- 380 / 400 / 415 V - Three Phase / 50 Hz
- 380 / 400 / 415 V - Three Phase / 50 Hz
- 380 / 400 / 415 V - Three Phase / 50 Hz
- 380 / 400 / 415 V - Three Phase / 50 Hz

**Cooling capacity**

- kW
  - 45.0
  - 68.0
  - 73.0
  - 79.5
  - 85.0
  - 90.0

**EER**

- Nominal
  - kW/W
  - 4.50
  - 4.47
  - 4.27
  - 4.17
  - 4.12
  - 3.86

**Running current**

- 380 / 400 / 415 V
  - A
  - 17.7 / 17.4 / 16.0
  - 26.2 / 24.9 / 24.3
  - 30.3 / 29.4 / 29.0
  - 32.2 / 31.8 / 31.4
  - 36.5 / 36.0 / 36.4
  - 38.3 / 37.4 / 36.4

**Power input**

- kW
  - 10.0
  - 15.2
  - 18.9
  - 19.1
  - 21.6
  - 23.3

**Heating capacity**

- kW
  - 10.0
  - 76.5
  - 81.5
  - 87.5
  - 95.0
  - 100.0

**COP**

- Nominal
  - kW/W
  - 4.76
  - 4.72
  - 4.68
  - 4.56
  - 4.39
  - 4.44

**Running current**

- 380 / 400 / 415 V
  - A
  - 17.5 / 17.0 / 16.6
  - 25.9 / 25.3 / 25.6
  - 29.4 / 27.9 / 27.5
  - 32.2 / 31.1 / 30.4
  - 35.6 / 34.3 / 32.7
  - 37.3 / 36.8 / 36.9

**Power input**

- kW
  - 10.5
  - 16.2
  - 17.4
  - 18.3
  - 20.4
  - 22.7

**Air volume**

- m³/min
  - 316
  - 474
  - 494
  - 528
  - 530
  - 582

**Sound power level**

- High / Low (DBA)
  - 60.0 / 57.0
  - 62.0 / 59.0
  - 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
  - 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)
  - 1-1/4 (31.75)
  - 1-1/4 (31.75)
  - 1-1/4 (31.75)
  - 1-1/4 (31.75)

- Discharge pipe (inch mm)
  - 1-1/8 (28.58)
  - 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)

- 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)
  - 14.6
  - 24.9
  - 26.4
  - 29.5
  - 29.5

- 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-P66HR3**
- **KIT-P66HR3**
- **KIT-P66HR3**
- **KIT-P66HR3**
- **KIT-P66HR3**
- **KIT-P66HR3**

- **3-Pipe control Solenoid valve kit (up to 5,6kW)**
- **3-Pipe control Solenoid valve kit (up to 5,6kW)**
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**3-Pipe control box kit**

- **CZ-P66HR3**
- **CZ-P66HR3**
- **CZ-P66HR3**
- **CZ-P66HR3**
- **CZ-P66HR3**
- **CZ-P66HR3**

- **4 parts 3 pipe box (up to 5,6kW)**
- **6 parts 3 pipe box (up to 5,6kW)**
- **8 parts 3 pipe box (up to 5,6kW)**
- **4 parts 3 pipe box (up to 10,6kW)**
- **4 parts 3 pipe box (up to 10,6kW)**
- **4 parts 3 pipe box (up to 10,6kW)**

*Available from December 2015.*
Technical focus

- Standardization of O_U 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

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

- **High Cop Combination**
- **Standard Combination**

Front view

- Air discharge
- Electrical component box

Top view

- Air intake

Diagram:

- A  [Installation hole pitch]: The tubing is routed out from the front
- B  [Installation hole pitch]: The tubing is routed out from the front
- C  [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)]
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 71 kW of cooling from a current consumption of 0.1 kWh
- 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 CO₂ 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 Way
3 Way 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 30 kW 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 CO2 emissions.

ECO G with Water Heat Exchanger for chilled and hot water production
For hydronic applications.
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

Production of electricity
Generates up to 2 kW depending on air conditioning load.

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%.

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

Comparison of electrical consumption on a 71 kW outdoor unit

<table>
<thead>
<tr>
<th>Standard VRF for 73 kW</th>
<th>ECO G for 77 kW</th>
<th>ECO G High Power for 71 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.2 kW</td>
<td>1.33 kW</td>
<td>0.10 kW</td>
</tr>
</tbody>
</table>

Less than 1% of electrical consumption
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.

Rotating 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

<table>
<thead>
<tr>
<th>Only unit B is operating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units A and B are operating</td>
</tr>
</tbody>
</table>

Operating hours: A 2,100 h and B 2,050 h.
Operating hours: A 2,105 h and B 2,058 h.

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

<table>
<thead>
<tr>
<th>Step A</th>
<th>Step B</th>
</tr>
</thead>
<tbody>
<tr>
<td>STOP</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>Load of around 10 HP (6h operating)</td>
</tr>
<tr>
<td>Load of around 10 HP (6h operating)</td>
<td>Load of around 10 HP (6h operating)</td>
</tr>
<tr>
<td>Operating hours: A 2,108 h and B 2,046 h.</td>
<td>Operating hours: A 2,109 h and B 2,053 h.</td>
</tr>
</tbody>
</table>

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.
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 40HP (20HP x 2 units)

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.

Excellent performance
Panasonic 3 WAY 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.

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Capacity at cooling standard point
Outdoor unit
- U-16GE2E5
- U-20GE2E5
- U-25GE2E5
- U-30GE2E5

Hot water piping allowable pressure
- MPa 0.7
- m³/h 3.9
- Rp 3/4

Liquid pipe (medium-temperature, medium-pressure liquid pipe)
Discharge pipe (high-temperature, high-pressure gas pipe)
Suction pipe (low-temperature, low-pressure gas pipe)
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.

Panasonic 3 WAY 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.

Panasonic 3 WAY 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.
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 450 kW 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 100 kW of hot water are supplied to the building and therefore the additional benefit of considerable CO₂ savings is ensured.

This Part L design has reduced CO₂ 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.
This drawing is copyright. // 1. Do not scale this drawing // 2. Errors / omissions to be immediately notified to the Engineer // 3. All dimensions to be checked on site.
**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 2.0 kW generator, drastically reducing the outdoor unit’s electricity consumption.

### Service kits model

<table>
<thead>
<tr>
<th>Model</th>
<th>Kit CZ-PKSHDSP</th>
</tr>
</thead>
</table>

**Material included**

- Oil Filter
- Air Cleaner Element
- Plug
- V BELT (for compressor)
- V Belt (for generator)
- Oil Strainer
- Drain Filter Packing

**Rating Conditions**

- Cooling Indoor 27°C DB / 19°C WB
- Heating (standard) Indoor 20°C DB / 15°C WB
- Heating (low temp.) Indoor 15°C DB / 15°C WB or less
- Heating (low temp.) Outdoor 2°C DB / 1°C WB

### Specifications

<table>
<thead>
<tr>
<th>HP</th>
<th>16 HP</th>
<th>20 HP</th>
<th>25 HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>U-16GEP2E5</td>
<td>U-20GEP2E5</td>
<td>U-25GEP2E5</td>
</tr>
<tr>
<td>Cooling capacity kW</td>
<td>45.00</td>
<td>56.00</td>
<td>71.00</td>
</tr>
<tr>
<td>Hot water (cooling mode) kW</td>
<td>15.0</td>
<td>20.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Power Input kW</td>
<td>0.1 (220–230) 0.36 (240)</td>
<td>0.1 (220–230) 0.36 (240)</td>
<td>0.1 (220–230) 0.36 (240)</td>
</tr>
<tr>
<td>EER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max COP (inc hot water)</td>
<td>43.3</td>
<td>47.4</td>
<td>43.5</td>
</tr>
<tr>
<td>Gas consumption</td>
<td>39.3</td>
<td>47.4</td>
<td>43.3</td>
</tr>
<tr>
<td>Heating capacity</td>
<td>39.0 / 53.0</td>
<td>63.0 / 79.0</td>
<td>63.0 / 79.0</td>
</tr>
<tr>
<td>Power Input kW</td>
<td>0.1 (220–230) 0.36 (240)</td>
<td>0.1 (220–230) 0.36 (240)</td>
<td>0.1 (220–230) 0.36 (240)</td>
</tr>
<tr>
<td>COP</td>
<td>Nominal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas consumption</td>
<td>39.3</td>
<td>47.4</td>
<td>43.3</td>
</tr>
<tr>
<td>COP</td>
<td>Nominal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low temperature¹</td>
<td>39.3</td>
<td>47.4</td>
<td>43.3</td>
</tr>
<tr>
<td>COP</td>
<td>Average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starter amperes</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Sound pressure level</td>
<td>58</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Dimensions H x W x D mm</td>
<td>2,273 x 1,650 x 1,000 (+80)</td>
<td>2,273 x 1,650 x 1,000 (+80)</td>
<td>2,273 x 1,650 x 1,000 (+80)</td>
</tr>
<tr>
<td>Net weight kg</td>
<td>793</td>
<td>795</td>
<td>825</td>
</tr>
<tr>
<td>Pipe Connections</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>inch (mm)</td>
<td>1 1/8 (28.58)</td>
<td>1 1/8 (28.58)</td>
</tr>
<tr>
<td>Liquid</td>
<td>inch (mm)</td>
<td>5/8 (15.88)</td>
<td>5/8 (15.88)</td>
</tr>
<tr>
<td>Exhaust drain port mm</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Indoor/outdoor capacity ratio</td>
<td>60-200%¹²</td>
<td>60-200%¹²</td>
<td>60-200%¹²</td>
</tr>
<tr>
<td>Number of connections indoor²</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

### Gas Consumption

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, its ability to heat water is not guaranteed.

---

¹ Low temp condition: outdoor temperature 2°C.
² Indoor unit can be connected to up to 16 kW model (model size 160)
³ Specifications subject to change without notice.
⁴ Gas consumption is the total (high) calorific value standard.
⁵ Outdoor unit operating sound is measured 1 meter from the front and 1.5 meters above the floor (in an anechoic environment).
⁶ Actual installations may have larger values due to ambient noise and reflections.
⁷ Specifications are subject to change without notice.
⁸ Hot water heating capacity is applicable during cooling operation.
⁹ The maximum water temperature that can be obtained is 75°C.
¹⁰ Water heating performance and temperature vary with the air conditioning load.
¹¹ Because the hot water heating system uses waste heat from the engine, its ability to heat water is not guaranteed.
NEW — VRF SYSTEMS / ECO G

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%.

Technical focus

- 2-Pipe air conditioning system providing cooling or heating
- Up to 2 kW 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 30 kW 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.

Service clearances for installation

<table>
<thead>
<tr>
<th>kW</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-unit installation</td>
<td>Multi-unit series Installation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45.0</td>
<td>56.0-71.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>1 Suction refrigerant pipe</td>
<td>Ø 28.58</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>2 Liquid refrigerant pipe</td>
<td>Ø 12.7 Ø 15.88</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>3 Exhaust gas drain port</td>
<td>R3/4 00 Ø 24 (accessory)</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>4 Electrical power supply port</td>
<td>Ø 20</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>5 Inter-unit cable port</td>
<td>Ø 20</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>6 Fuel gas port</td>
<td>R3/4</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>7 Condensation drain opening</td>
<td>Ø 20</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>8 Rain and condensation outlet</td>
<td>Ø 20</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>9 Engine exhaust outlet</td>
<td>Ø 20</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>10 Suspension holes + Ø 20x30</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Anchor holes + Ø 22x30</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Segmented display</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Coolant intake (top)</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Vent</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Hot water inlet</td>
<td>Rp 3/4</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>16 Hot water outlet</td>
<td>Rp 3/4</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

130 W Electricity Consumption

100 950 550 350 100 100 350 950 550
ECO G AND ECO G MULTI

2-Pipe Heat Pump System

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.

---

**HP**

- **Model**
  - U-16GE2E5
  - U-20GE2E5
  - U-25GE2E5
  - U-30GE2E5
  - U-35GE2E5
  - U-16GE2E5
  - U-20GE2E5
  - U-25GE2E5
  - U-30GE2E5
  - U-35GE2E5
  - U-16GE2E5
  - U-20GE2E5
  - U-25GE2E5
  - U-30GE2E5

- **Cooling capacity**
  - kW
    - U-16GE2E5: 45.00
    - U-20GE2E5: 56.00
    - U-25GE2E5: 71.00
    - U-30GE2E5: 85.00
    - U-35GE2E5: 95.00
    - U-16GE2E5: 45.00
    - U-20GE2E5: 56.00
    - U-25GE2E5: 71.00
    - U-30GE2E5: 85.00
    - U-35GE2E5: 95.00

- **Hot water (coating mode)**
  - kW
    - U-16GE2E5: 15.00
    - U-20GE2E5: 28.00
    - U-25GE2E5: 36.00
    - U-30GE2E5: 36.00
    - U-35GE2E5: 35.00
    - U-16GE2E5: 15.00
    - U-20GE2E5: 28.00
    - U-25GE2E5: 36.00
    - U-30GE2E5: 36.00
    - U-35GE2E5: 35.00

- **Power Input**
  - kW
    - U-16GE2E5: 0.71
    - U-20GE2E5: 1.04
    - U-25GE2E5: 1.33
    - U-30GE2E5: 1.70
    - U-35GE2E5: 1.42

- **EER (Cylindrical Value)**
  - High / Low
    - kW
      - U-16GE2E5: 1.48 / 1.44
      - U-20GE2E5: 1.48 / 1.44
      - U-25GE2E5: 1.48 / 1.44

- **Max COP**
  - (Exc hot water)
    - U-16GE2E5: 1.97
    - U-20GE2E5: 1.97
    - U-25GE2E5: 1.97

- **Gas consumption**
  - kW
    - U-16GE2E5: 9.90
    - U-20GE2E5: 12.90
    - U-25GE2E5: 14.90

- **Heating capacity**
  - kW
    - STD / Low temperature
      - U-16GE2E5: 50.00 / 53.00
      - U-20GE2E5: 83.00 / 78.00
      - U-25GE2E5: 113.00 / 120.00

- **Power Input**
  - kW
    - U-16GE2E5: 0.60
    - U-20GE2E5: 0.83
    - U-25GE2E5: 1.45

- **COP (Cylindrical Value)**
  - High / Low
    - kW
      - U-16GE2E5: 1.57 / 1.68
      - U-20GE2E5: 1.46 / 1.67
      - U-25GE2E5: 1.37 / 1.52

- **Gas consumption**
  - kW
    - STD
      - U-16GE2E5: 35.50
      - U-20GE2E5: 47.50
      - U-25GE2E5: 61.50

- **Low temperature**
  - kW
    - U-16GE2E5: 41.50
    - U-20GE2E5: 54.60
    - U-25GE2E5: 62.30

- **COP**
  - Average
    - U-16GE2E5: 1.50
    - U-20GE2E5: 1.65
    - U-25GE2E5: 2.02

- **Starter amperes**
  - A
    - U-16GE2E5: 30
    - U-20GE2E5: 30
    - U-25GE2E5: 30

- **Sound pressure level**
  - dB(A)
    - U-16GE2E5: 57
    - U-20GE2E5: 58
    - U-25GE2E5: 62

- **Dimensions**
  - mm
    - Height: 2,273
    - Width: 2,273
    - Depth: 63

- **Net weight**
  - kg
    - U-16GE2E5: 705
    - U-20GE2E5: 780
    - U-25GE2E5: 810

- **Pipe Connections**
  - Gas (inch mm)
    - U-16GE2E5: 1 1/8 (28,58)
    - U-20GE2E5: 1 1/2 (38,10)

- **Liquid (inch mm)**
  - U-16GE2E5: 3/4 (19,05)
  - U-20GE2E5: 3/4 (19,05)

- **Exhaust drain port mm**
  - 25 rubber hose

- **Indoor/outdoor capacity ratio**
  - 50-200 %

- **Number of connections indoor**
  - 24
  - 24

---

**Rating Conditions**

- Cooling Indoor: 37°C DB / 19°C WB.
- Heating: Standard Indoor 20°C DB / 7°C WB.
- Low temperature condition: Indoor 20°C DB / 15°C WB or less.
- Heating (low temp.) Outdoor 2°C DB / 1°C WB.
- Indoor 20°C DB / 15°C WB or less.
- Heating (low temp.) Outdoor 2°C DB / 1°C WB.

- Fuel gas: R3/4 (bolt thread)
- Exhaust drain port: 25 rubber hose
- Indoor/outdoor capacity ratio: 50-200 %
- Number of connections indoor: 24

---

**ECO G AND ECO G MULTI**

**2-Pipe Heat Pump System**

**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

Sample installation

Service clearances for installation

- Single-unit installation
- Multi-unit series installation
### ECO G 3 WAY

3 Way Heat Recovery System with Simultaneous Heating & Cooling

The only 3 Way GHP system in Europe, the S Series ECO G 3 Way 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.

| Solenoid valve kit | GHP Service kits model name | 5-Pipe control box kit
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>KT-P66HR3</td>
<td>Kit CZ-P56560SP</td>
<td>Kit CZ-P56560HR3</td>
</tr>
<tr>
<td>KT-P64HR3</td>
<td>3-Pipe control Solenoid valve kit (up to 5.6kW)</td>
<td>A parts 3 pipe box (up to 5.6kW)</td>
</tr>
<tr>
<td>KT-P63HR3</td>
<td>3-Pipe control PCB</td>
<td>A parts 3 pipe box (up to 5.6kW)</td>
</tr>
<tr>
<td>EZ-P66HR3</td>
<td>3-Pipe control Solenoid valve kit (from 5.6kW to 10.6kW)</td>
<td>A parts 3 pipe box (up to 5.6kW)</td>
</tr>
<tr>
<td>EZ-P64HR3</td>
<td>3-Pipe control PCB</td>
<td>A parts 3 pipe box (from 5.6 to 10.6kW)</td>
</tr>
<tr>
<td>EZ-P63HR3</td>
<td>3-Pipe control PCB for wall mounted</td>
<td>A parts 3 pipe box (from 5.6 to 10.6kW)</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>HP</th>
<th>16 HP</th>
<th>20 HP</th>
<th>25 HP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>U-16GF2E5</td>
<td>U-20GF2E5</td>
<td>U-25GF2E5</td>
</tr>
<tr>
<td><strong>Cooling capacity</strong></td>
<td>kW</td>
<td>45.00</td>
<td>56.00</td>
</tr>
<tr>
<td><strong>Power input cooling</strong></td>
<td>kW</td>
<td>0.71</td>
<td>1.02</td>
</tr>
<tr>
<td><strong>EER (Calorific Value)</strong></td>
<td>High / Low</td>
<td>kW/W</td>
<td>1.48 / 1.36</td>
</tr>
<tr>
<td><strong>Cooling gas consumption</strong></td>
<td>kW</td>
<td>29.7</td>
<td>39.1</td>
</tr>
<tr>
<td><strong>Heating capacity</strong></td>
<td>STD</td>
<td>kW</td>
<td>50.00</td>
</tr>
<tr>
<td><strong>Power input heating</strong></td>
<td>kW</td>
<td>0.60</td>
<td>0.84</td>
</tr>
<tr>
<td><strong>COP (Calorific Value)</strong></td>
<td>High / Low</td>
<td>kW/W</td>
<td>1.51 / 1.42</td>
</tr>
<tr>
<td><strong>Gas consumption</strong></td>
<td>STD</td>
<td>kW</td>
<td>22.5</td>
</tr>
<tr>
<td><strong>COP Average</strong></td>
<td></td>
<td></td>
<td>1.50</td>
</tr>
<tr>
<td><strong>Starter amperes</strong></td>
<td>A</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td><strong>Operation sound</strong></td>
<td>(DBA)</td>
<td>67</td>
<td>68</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>H x W x D (mm)</td>
<td>2,273 x 1,650 x 1,000 (+80)</td>
<td>2,273 x 1,650 x 1,000 (+80)</td>
</tr>
<tr>
<td><strong>Net weight</strong></td>
<td>kg</td>
<td>775</td>
<td>775</td>
</tr>
<tr>
<td><strong>Pipe Connections</strong></td>
<td>Gas (inch)</td>
<td>1 1/8 (28,58)</td>
<td>1 1/8 (28,58)</td>
</tr>
<tr>
<td></td>
<td>Liquid (inch)</td>
<td>3/4 (19,05)</td>
<td>3/4 (19,05)</td>
</tr>
<tr>
<td></td>
<td>Discharge</td>
<td>7/8 (22,22)</td>
<td>1 (25,40)</td>
</tr>
<tr>
<td><strong>Fuel gas</strong></td>
<td>Fuel</td>
<td>R3/4</td>
<td>R3/4</td>
</tr>
<tr>
<td></td>
<td>Exhaust drain port</td>
<td>mm</td>
<td>25</td>
</tr>
<tr>
<td><strong>Indoor/outdoor capacity ratio</strong></td>
<td>60-280%</td>
<td>50-240%</td>
<td>50-200%</td>
</tr>
<tr>
<td><strong>Number of connected indoor units</strong></td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

**Rating Conditions:**
- Cooling Indoor: 37°C DB / 19°C WB
- Heating (Standard): Indoor 20°C DB / 1°C WB
- Heating (Low temp.): Indoor 20°C DB / 15°C WB or less
- Heating (low temp.): Indoor 2°C DB / 1°C WB

**Environmental friendly refrigerant:**
- R410A

**Solenoid valve kit properties:**
- 3-Way Heat Recovery System with Simultaneous Heating & Cooling
- ECO G 3 WAY

**Additional specifications:**
- 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.

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Technical focus

- Simultaneous heating and cooling for total control
- Reduced gas consumption by Miller-cycle engine
- Reduced electrical power consumption by using DC Motors
- Part load efficiencies increased
- Connectability increased to up to 24 indoor units
- 145 m maximum allowable piping length, L1
- Capacity ratio 50–200%
- Extended pipe runs (total 780 m)
- Quiet mode offers a further 2 dB(A) reduction
- Full heating capacity down to -21°C
- 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 CO₂ emissions)
- No defrost cycle

- 10,000 run hours between engine service intervals (equivalent to one maintenance every 3.2 years*)

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

Additional parts

3-Pipe control Solenoid valve kit
CZ-P56HR3: Up to 5.6 kW
CZ-P160HR3: From 5.7 to 16 kW
Kit-P56HR3: (CZ-P56HR3+Z-CAPE2)
Kit-P160HR3: (CZ-P160HR3+Z-CAPE2)

* For wall mounted.

3-Pipe control PCB CZ-CAPE2*. Must be added to the CZ-P56HR3 OR CZ-P160HR3.

For conference rooms and other locations where low noise is required, pay attention to the installation location and install in a corridor etc.

Service clearances for installation

<table>
<thead>
<tr>
<th>kW</th>
<th>45.0</th>
<th>56.0–71.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Section refrigerant pipe</td>
<td>Ø 28.58</td>
</tr>
<tr>
<td>2</td>
<td>Discharge refrigerant pipe</td>
<td>Ø 22.22</td>
</tr>
<tr>
<td>3</td>
<td>Liquid refrigerant pipe</td>
<td>Ø 19.05</td>
</tr>
<tr>
<td>4</td>
<td>Exhaust gas drain port</td>
<td>Ø 19 (accessory)</td>
</tr>
<tr>
<td>5</td>
<td>Electrical power supply port</td>
<td>Ø 25</td>
</tr>
<tr>
<td>6</td>
<td>Inter-unit cable port</td>
<td>Ø 25</td>
</tr>
<tr>
<td>7</td>
<td>Fuel gas port</td>
<td>Ø 22</td>
</tr>
<tr>
<td>8</td>
<td>Condensation drain opening</td>
<td>Ø 20 (accessory)</td>
</tr>
<tr>
<td>9</td>
<td>Rain and condensation outlet</td>
<td>Ø 20</td>
</tr>
<tr>
<td>10</td>
<td>Engine exhaust outlet</td>
<td>Ø 51</td>
</tr>
<tr>
<td>11</td>
<td>Suspension holes 4–Ø 30x30</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Neckler holes 4–Ø 25x25</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Segmented display</td>
<td>Ø 15</td>
</tr>
<tr>
<td>14</td>
<td>Coolant intake (top)</td>
<td>Ø 15</td>
</tr>
<tr>
<td>15</td>
<td>Post</td>
<td>Ø 15</td>
</tr>
</tbody>
</table>

Rear view

Left side view

Front view

Top view

1080 (horizontal)

1080 (horizontal)

1600 (external)

1600 (external)

1000 (vertical)

1000 (vertical)

1000 (vertical)

1000 (vertical)
The Panasonic solution for chilled and hot water production!

From 28 kW to 80 kW

Key benefits:
- No cascade installation up to 80 kW with GHP outdoor unit and 51.3 kW with ECOi
- Full line-up of outdoor units which can cover up to 80 kW heat demand
- Large choice of remote controls and interfaces
- 3.25 COP with water at 45°C and outdoor temperature of +7°C

- A CLASS PUMP INCLUDED
- 4 WAY VALVE INCLUDED
- OPTIMIZED HEAT EXCHANGER
- 1.010 x 570 x 960 (H x W x D)
- WATER CONNECTIONS R2"F
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 51 kW hot water demand or 44 kW on chilled application on an efficient way and cost effective.

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!

Built in A class water pump with high efficiency and capacity

<table>
<thead>
<tr>
<th>WHE</th>
<th>Power consumption</th>
<th>Water flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-250</td>
<td>9 - 130W</td>
<td>4,3 / 8,6</td>
</tr>
<tr>
<td>S-510</td>
<td>12 - 310W</td>
<td>12,2</td>
</tr>
</tbody>
</table>
For hydronic Applications

Water Heat Exchanger for GHP and ECOi, dimensions reduced by 46 %. 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.

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

**For hydronic Applications**

Water Heat Exchanger for GHP and ECOi, dimensions reduced by 46 %. 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.

<table>
<thead>
<tr>
<th>Water Heat Exchanger*</th>
<th>PAW-250WX2E5</th>
<th>PAW-500WX2E5</th>
<th>PAW-710WX2E5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal cooling capacity at 35 °C, water outlet 7 °C</td>
<td>25,0</td>
<td>50,0</td>
<td>67,0</td>
</tr>
<tr>
<td>Nominal heating capacity</td>
<td>28,0</td>
<td>56,0</td>
<td>75,0</td>
</tr>
<tr>
<td>Heating capacity at +7 °C, heating water temperature at 45 °C</td>
<td>kW</td>
<td>28,0</td>
<td>54,0</td>
</tr>
<tr>
<td>COP at +7°C with heating water temperature at 45°C</td>
<td>3.26</td>
<td>3.10</td>
<td>3.32</td>
</tr>
<tr>
<td>Dimensions</td>
<td>mm</td>
<td>1,010 x 570 x 960</td>
<td>1,010 x 570 x 960</td>
</tr>
<tr>
<td>Net weight</td>
<td>kg</td>
<td>120</td>
<td>145</td>
</tr>
<tr>
<td>Water pipe connector</td>
<td></td>
<td>Rp2 Female Thread (50A)</td>
<td>Rp2 Female Thread (50A)</td>
</tr>
<tr>
<td>A-Class pump</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Heating water flow (AT=5 K, 35°C)</td>
<td>m³/h</td>
<td>4.3</td>
<td>6.6</td>
</tr>
<tr>
<td>Capacity of integrated electric heater</td>
<td>kW</td>
<td>Not equipped</td>
<td>Not equipped</td>
</tr>
<tr>
<td>Input power</td>
<td>kW</td>
<td>0.01 + (min. 0.05 / max. 0.15 for water pump)</td>
<td>0.01 + (min. 0.15 / max. 0.31 for water pump)</td>
</tr>
<tr>
<td>Maximum current</td>
<td>A</td>
<td>0.07 + (min. 0.37 / max. 0.75 for water pump)</td>
<td>0.07 + (min. 0.86 / max. 1.37 for water pump)</td>
</tr>
</tbody>
</table>

#### Outdoor unit

**U-10ME1E81**

- Sound pressure level dB(A): 59
- Sound pressure level dB: 73.5
- Dimensions | mm | 1,758 x 770 x 930 | 1,758 x 770 x 930 |
- Net weight kg: 283
- Piping connections
  - Liquid pipe: 1/2 (12.70)
  - Gas pipe: 3/8 (9.52)
- Refrigerant (R410A) kg: 6.3
- Pipe length range m: 170
- Pipe length for nominal capacity m: 7.5
- Pipe length for additional gas m: 0
- Additional charge (R410A) g/m: Refer to manual
- Elevation difference (in/out) m: 50 (50 above) 35 (50 below)

#### Operation Range

- Outdoor ambient °C: -11 to +21
- Water outlet (AT=27/-7/-15) °C: 35 to 45

---

**For hydronic Applications**

Water Heat Exchanger for GHP and ECOi, dimensions reduced by 46 %. 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.

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

**For hydronic Applications**

Water Heat Exchanger for GHP and ECOi, dimensions reduced by 46 %. 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.

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Nominal cooling capacity at 35 °C, water outlet 7 °C</td>
<td>25,0</td>
<td>50,0</td>
<td>67,0</td>
</tr>
<tr>
<td>Nominal heating capacity</td>
<td>28,0</td>
<td>56,0</td>
<td>75,0</td>
</tr>
<tr>
<td>Heating capacity at +7 °C, heating water temperature at 45 °C</td>
<td>kW</td>
<td>28,0</td>
<td>54,0</td>
</tr>
<tr>
<td>COP at +7°C with heating water temperature at 45°C</td>
<td>3.26</td>
<td>3.10</td>
<td>3.32</td>
</tr>
<tr>
<td>Dimensions</td>
<td>mm</td>
<td>1,010 x 570 x 960</td>
<td>1,010 x 570 x 960</td>
</tr>
<tr>
<td>Net weight</td>
<td>kg</td>
<td>120</td>
<td>145</td>
</tr>
<tr>
<td>Water pipe connector</td>
<td></td>
<td>Rp2 Female Thread (50A)</td>
<td>Rp2 Female Thread (50A)</td>
</tr>
<tr>
<td>A-Class pump</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Heating water flow (AT=5 K, 35°C)</td>
<td>m³/h</td>
<td>4.3</td>
<td>6.6</td>
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<tr>
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<td>kW</td>
<td>Not equipped</td>
<td>Not equipped</td>
</tr>
<tr>
<td>Input power</td>
<td>kW</td>
<td>0.01 + (min. 0.05 / max. 0.15 for water pump)</td>
<td>0.01 + (min. 0.15 / max. 0.31 for water pump)</td>
</tr>
<tr>
<td>Maximum current</td>
<td>A</td>
<td>0.07 + (min. 0.37 / max. 0.75 for water pump)</td>
<td>0.07 + (min. 0.86 / max. 1.37 for water pump)</td>
</tr>
</tbody>
</table>

#### Outdoor unit

**U-10ME1E81**

- Sound pressure level dB(A): 59
- Sound pressure level dB: 73.5
- Dimensions | mm | 1,758 x 770 x 930 | 1,758 x 770 x 930 |
- Net weight kg: 283
- Piping connections
  - Liquid pipe: 1/2 (12.70)
  - Gas pipe: 3/8 (9.52)
- Refrigerant (R410A) kg: 6.3
- Pipe length range m: 170
- Pipe length for nominal capacity m: 7.5
- Pipe length for additional gas m: 0
- Additional charge (R410A) g/m: Refer to manual
- Elevation difference (in/out) m: 50 (50 above) 35 (50 below)

#### Operation Range

- Outdoor ambient °C: -11 to +21
- Water outlet (AT=27/-7/-15) °C: 35 to 45
**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: 7°C
- Outdoor temperature range in cooling mode: -5°C to +43°C
- Outdoor temperature range in heating mode: -20°C to +15°C

**Slim & Light design**
Due to the unit’s internal redesign, the width and weight are drastically reduced.

**Installation space 45% reduction**

---

**Top View**

**Rear View**

**Left View**

**Front View**

---

**NEW — VRF SYSTEMS / ECOi**
The ECO G solution for gas boiler replacement

- 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 CO₂ 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.

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.
High savings
Environmentally friendly refrigerant
R410A

With GHP outdoor units:
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

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€.

<table>
<thead>
<tr>
<th></th>
<th>Load kW/h year</th>
<th>Power Input</th>
<th>Running cost €</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling</td>
<td>Chiller+Boiler</td>
<td>231,853</td>
<td>81,397</td>
</tr>
<tr>
<td>GHP=22kW</td>
<td>GHP</td>
<td>231,853</td>
<td>183,852</td>
</tr>
<tr>
<td>Heating</td>
<td>Chiller+Boiler</td>
<td>96,749</td>
<td>113,823</td>
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<tr>
<td>GHP=22kW</td>
<td>GHP</td>
<td>96,749</td>
<td>73,630</td>
</tr>
<tr>
<td>HSW</td>
<td>Chiller+Boiler</td>
<td>204,111</td>
<td>248,266</td>
</tr>
<tr>
<td>GHP=24kW</td>
<td>GHP</td>
<td>158,762</td>
<td>0</td>
</tr>
<tr>
<td>Aquarea</td>
<td>77,831</td>
<td>14,390</td>
<td>2,295</td>
</tr>
<tr>
<td>Back up Boiler</td>
<td>8,957</td>
<td>18,530</td>
<td>427</td>
</tr>
<tr>
<td>Total</td>
<td>Chiller+Boiler</td>
<td>522,816</td>
<td>441,791</td>
</tr>
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<td>GHP=22kW</td>
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Note: The mode of running of outdoor unit depends on the Water Heat Exchanger's mode. The water pump is not included in the Water Heat Exchanger unit. For simultaneous operation, however, the maximum capacity is 130%. Please inquire details of this system design of Panasonic. * Standard DK type indoor unit system.

** Electric to support pack of consumption on domestic hot water. ** COP including HSW [U-20663E8]. EER and COP calculated in primary energy.

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

For hydronic applications

Water Heat Exchanger, dimensions reduced by 45% (250 W x 2 and 500 W x 2). 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.

### Water Heat Exchanger*  

<table>
<thead>
<tr>
<th></th>
<th>PAW-250WX2E5</th>
<th>PAW-500WX2E5</th>
<th>PAW-710WX2E5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Heating Capacity</td>
<td>30</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Heating Capacity at +7°C, heating water temperature at 35°C</td>
<td>42</td>
<td>82.8</td>
<td></td>
</tr>
<tr>
<td>COP at +7°C with heating water temperature at 35°C</td>
<td>1.49</td>
<td>1.34</td>
<td></td>
</tr>
<tr>
<td>Heating Capacity at +7°C, heating water temperature at 45°C</td>
<td>60</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>COP at +7°C with heating water temperature at 45°C</td>
<td>1.30</td>
<td>1.17</td>
<td></td>
</tr>
<tr>
<td>Heating Capacity at -7°C, heating water temperature at 35°C</td>
<td>97.2</td>
<td>74.6</td>
<td></td>
</tr>
<tr>
<td>COP at -7°C, heating water temperature at 35°C</td>
<td>0.76</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>Heating Capacity at -15°C, heating water temperature at 35°C</td>
<td>97.2</td>
<td>77.4</td>
<td></td>
</tr>
<tr>
<td>COP at -15°C with heating water temperature at 35°C</td>
<td>0.75</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>Nominal Cooling Capacity</td>
<td>25</td>
<td>50</td>
<td>71</td>
</tr>
<tr>
<td>Cooling capacity at +35°C, outlet tp 7°C, inlet tp 12°C</td>
<td>50</td>
<td>50</td>
<td>71</td>
</tr>
<tr>
<td>EEER at +30°C, outlet tp 7°C, inlet tp 12°C</td>
<td>1.15</td>
<td>1.05</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>H x W x D (mm)</td>
<td>1,010 x 570 x 960</td>
<td>1,010 x 570 x 960</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>120</td>
<td>145</td>
</tr>
<tr>
<td>Water pipe connector</td>
<td>Rp2 Female Thread (50A)</td>
<td>Rp2 Female Thread (50A)</td>
<td>Rp2 Female Thread (50A)</td>
</tr>
<tr>
<td>Pump</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Heating water flow (ΔT=5 K, 35°C)</td>
<td>l/min</td>
<td>4.3</td>
<td>6.6</td>
</tr>
<tr>
<td>Capacity of integrated electric heater</td>
<td>kW</td>
<td>Not equipped</td>
<td>Not equipped</td>
</tr>
<tr>
<td>Input Power</td>
<td>kW</td>
<td>0.01 + (min. 0.05 / max. 0.13 for water pump)</td>
<td>0.01 + (min. 0.05 / max. 0.13 for water pump)</td>
</tr>
<tr>
<td>Water outlet (at-2/-7/-15)²</td>
<td>°C</td>
<td>35 — 55</td>
<td>35 — 55</td>
</tr>
<tr>
<td>Outdoor unit</td>
<td>-</td>
<td>0-20662E5</td>
<td>0-30662E5</td>
</tr>
<tr>
<td>Sound pressure</td>
<td>dB(A)</td>
<td>58</td>
<td>63</td>
</tr>
<tr>
<td>Sound power level</td>
<td>dB</td>
<td>83</td>
<td>86</td>
</tr>
<tr>
<td>Dimensions</td>
<td>H x W x D (mm)</td>
<td>2,273 x 1,050 x 1,000</td>
<td>2,273 x 2,026 x 1,000</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>780</td>
<td>840</td>
</tr>
<tr>
<td>Refrigerant (R410A)</td>
<td>kg</td>
<td>11,5 (Need additional charge at site)</td>
<td>11,5 (Need additional charge at site)</td>
</tr>
<tr>
<td>Pipe length range</td>
<td>m</td>
<td>170</td>
<td>170</td>
</tr>
<tr>
<td>Pipe length for nominal capacity</td>
<td>m</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Power</td>
<td>kW</td>
<td>0.01 + (min. 0.05 / max. 0.13 for water pump)</td>
<td>0.01 + (min. 0.05 / max. 0.13 for water pump)</td>
</tr>
<tr>
<td>Additional charge (R410a)</td>
<td>g/m</td>
<td>Refer to Manual</td>
<td>Refer to Manual</td>
</tr>
<tr>
<td>Elevation difference (in/out)</td>
<td>m</td>
<td>50 (00 above) 35 (00 below)</td>
<td>50 (00 above) 35 (00 below)</td>
</tr>
<tr>
<td>Operation range</td>
<td>Outdoor ambient °C</td>
<td>-21 — 15.5</td>
<td>-21 — 15.5</td>
</tr>
<tr>
<td>Water outlet (at-2/-7/-15)² °C</td>
<td>35 — 55</td>
<td>35 — 55</td>
<td>35 — 55</td>
</tr>
</tbody>
</table>

* Only with indoors combination. Can not be used as 1 to 1.

** Performance calculation in agreement with Eurovent.

** Sound pressure measured at 1 m from the outdoor unit and at 1.5 m height.

*DB: Dry Bulb; WB: Wet Bulb

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 / 4 °C WB.

DB: Dry Bulb; WB: Wet Bulb

Performance calculation in agreement with Eurovent.

* Sound pressure measured at 1 m from the outdoor unit and at 1.5 m height.

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NEW — VRF SYSTEMS / ECO G

Technical focus
- **New!** A class pump included
- Maximum distance between O_U 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

Slim & Light design
Due to the unit’s internal redesign, the width and weight are drastically reduced.

Installation space **45% reduction**

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Installation space **45% reduction**
**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
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 12.9cm 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

During winter, the operating principle is based on micro fans of 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 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.

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
Simple, convenient features (Indoor Units)

**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.

**Mild dry**
By intermittent control of compressor and indoor unit’s fan, “New Mild Dry” gives you comfort. It realizes efficient dehumidification according to room temperature.

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.

---

**High technology features**

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

**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.

**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.

**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 ECOi 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 ECOi 6N and FS Multi VRF.

**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

This Panasonic VRF Service Checker is available from your service partner.
Indoor units for ECOi and ECO G

Wide choice of models depending on the indoor requirements.
4 Way 90x90 Cassette
Wide & Comfortable Airflow
This proprietary design has wide-angle discharge outlets and flaps that are wider in the middle, featuring a shape based on a combination of geometrics and the testing of 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.

Flexible 3D air-flow control
Comfort air flow control & proper energy use. Flexible Air flow direction control by individual flap control:
- 4 Flaps can be controlled individually (by standard wired remote controller*).
- It can make more flexible Air-flow control to be matched to several demands can be accommodated in one space.

New 360º Air Flow for better comfort
By redesigning the air-outlet and flap, Soft & 3D air flow circulates whole space and provides even temperature distribution in the room.

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Unitary Capacity kW</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U1 Type</strong> // 4 Way 90x90 Cassette</td>
<td>1,5 kW, 2,2 kW, 2,8 kW, 3,0 kW, 3,6 kW, 4,0 kW, 4,5 kW</td>
<td>S-22MU1E5A, S-28MU1E5A, S-36MU1E5A, S-45MU1E5A</td>
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<tr>
<td><strong>Y2 TYPE</strong> // 4 Way 60x60 Cassette</td>
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<td>S-15MY2E5, S-21MY2E5A, S-28MY2E5A, S-36MY2E5A, S-45MY2E5A</td>
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<td><strong>L1 Type</strong> // 2 Way Cassette</td>
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<td><strong>F2 Type</strong> // Variable Static Pressure Hide Away</td>
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<td><strong>M1 Type</strong> // Slim Variable Static Pressure Hide Away</td>
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<td><strong>Heat Recovery With DX Coil</strong></td>
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<td>PAW-500ZDX2, PAW-800ZDX2, PAW-100ZDX2</td>
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<td><strong>T2 Type</strong> // Ceiling</td>
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<td><strong>K2/K1 Type</strong> // Wall Mounted</td>
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<td><strong>P1 Type</strong> // Floor Standing</td>
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<td><strong>R1 Type</strong> // Concealed Floor Standing</td>
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<td><strong>Hydrokit for ECOi, water at 45°C</strong></td>
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Wide choice of models depending on the indoor requirements.

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<tr>
<th>AHU Connection Kit 16, 28 and 56 kW for ECOi and ECO G</th>
<th>16,0 kW</th>
<th>28,0 kW</th>
<th>56,0 kW</th>
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<th>112,0 kW</th>
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<td>PAW-560MAH2</td>
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**Air Curtain Jet-Flow with DX Coil**
- 11,4 kW: PAW-10EJAR-ES
- 25,0 kW: PAW-15EJAR-ES
- 31,5 kW: PAW-20EJAR-ES
- 37,5 kW: PAW-25EJAR-ES

**Air Curtain Standard with DX Coil**
- 25,0 kW: PAW-15EJAR-ES
- 31,5 kW: PAW-20EJAR-ES
- 37,5 kW: PAW-25EJAR-ES
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 850mm lift
- Lightweight design
- Fresh air knockout
- Branch duct connection

- Optional air-intake plenum CZ-FD02

A drain height of approx. 850mm 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.

Air intake chamber
1. Air intake box CZ-BCU2 for main unit.
2. Air intake box CZ-ATU2* for Air intake plenum.
CZ-CU2 Part to close air flow for the cassette
90x90 series U1.
* When using air intake box (CZ-ATU2), Air intake plenum CZ-FD02 is required.

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<thead>
<tr>
<th>Model</th>
<th>5-22MUTE5A</th>
<th>5-28MUTE5A</th>
<th>5-36MUTE5A</th>
<th>5-45MUTE5A</th>
<th>5-56MUTE5A</th>
<th>5-60MUTE5A</th>
<th>5-73MUTE5A</th>
<th>5-90MUTE5A</th>
<th>5-106MUTE5A</th>
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<td>230 V / Single Phase / 50 Hz</td>
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<tr>
<td>Air volume</td>
<td>Hi / Med / Lo</td>
<td>m³/h</td>
<td>840 / 720 / 640</td>
<td>840 / 720 / 640</td>
<td>840 / 720 / 640</td>
<td>900 / 870 / 720</td>
<td>1,060 / 1,010 / 960</td>
<td>1,330 / 1,230 / 1,140</td>
<td>1,680 / 1,590 / 1,500</td>
<td>2,000 / 1,860 / 1,730</td>
<td>2,300 / 2,130 / 2,000</td>
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<tr>
<td>Sound pressure level</td>
<td>Hi / Med / Lo</td>
<td>dB(A)</td>
<td>30 / 29 / 28</td>
<td>30 / 29 / 28</td>
<td>30 / 29 / 28</td>
<td>31 / 29 / 28</td>
<td>33 / 30 / 28</td>
<td>36 / 32 / 29</td>
<td>37 / 32 / 29</td>
<td>44 / 38 / 34</td>
<td>45 / 39 / 35</td>
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</tbody>
</table>

- **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.
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 air flow
- 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 approx. 850mm 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 288mm, making installation possible even in narrow ceilings.**
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 500mm 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 500mm 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.

### L1 TYPE
#### 2 WAY CASSETTE

<table>
<thead>
<tr>
<th>Panel</th>
<th>Optional Controller</th>
<th>Optional Controller</th>
<th>Optional Controller</th>
<th>Optional Controller</th>
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</thead>
<tbody>
<tr>
<td>CZ-02P1L2</td>
<td>Wired remote controller</td>
<td>Timer remote controller</td>
<td>Wireless remote controller</td>
<td>Simplified remote controller</td>
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<td>CZ-03P1L2 (for S-TML1E5)</td>
<td>CZ-RTC5</td>
<td>CZ-RW5L2</td>
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#### Specifications

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<td>350(+8)x840 (1,060)x600 (680)</td>
<td>350(+8)x840 (1,060)x600 (680)</td>
<td>350(+8)x840 (1,060)x600 (680)</td>
<td>350(+8)x840 (1,060)x600 (680)</td>
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</tr>
<tr>
<td>Net weight kg</td>
<td>28.5 (23 + 5.5)</td>
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<tr>
<td>Pipe connections</td>
<td>Liquid inch (mm)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gas inch (mm)</td>
<td>1/2 (12,7)</td>
<td>1/2 (12,7)</td>
<td>1/2 (12,7)</td>
<td>1/2 (12,7)</td>
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<td></td>
<td>Drain piping</td>
<td>VP-25</td>
<td>VP-25</td>
<td>VP-25</td>
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</tr>
</tbody>
</table>

DB: Dry Bulb, WB: Wet Bulb.
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 590mm lift
- Easy to install and maintain
- Hanging height can be easily adjusted
- Uses a DC fan motor to improve energy-efficiency

### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>S-28MD1E5</th>
<th>S-36MD1E5</th>
<th>S-45MD1E5</th>
<th>S-56MD1E5</th>
<th>S-73MD1E5</th>
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<tbody>
<tr>
<td><strong>Power source</strong></td>
<td>230 V / Single Phase / 50 Hz</td>
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<td></td>
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<tr>
<td><strong>Cooling capacity</strong></td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
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<tr>
<td>Power input cooling</td>
<td>W</td>
<td>W</td>
<td>W</td>
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<tr>
<td>Operating current cooling</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
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<tr>
<td>Heating capacity</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
</tr>
<tr>
<td>Power input heating</td>
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<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Operating current heating</td>
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<td>Sirocco fan</td>
<td>Sirocco fan</td>
<td>Sirocco fan</td>
<td>Sirocco fan</td>
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<tr>
<td><strong>Air volume</strong></td>
<td>Hi / Med / Lo m³/h</td>
<td>Hi / Med / Lo m³/h</td>
<td>Hi / Med / Lo m³/h</td>
<td>Hi / Med / Lo m³/h</td>
<td>Hi / Med / Lo m³/h</td>
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<td><strong>Sound pressure level</strong></td>
<td>dB(A)</td>
<td>dB(A)</td>
<td>dB(A)</td>
<td>dB(A)</td>
<td>dB(A)</td>
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<td><strong>Dimensions</strong></td>
<td>H x W x D mm</td>
<td>H x W x D mm</td>
<td>H x W x D mm</td>
<td>H x W x D mm</td>
<td>H x W x D mm</td>
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<tr>
<td><strong>Net weight</strong></td>
<td>kg</td>
<td>kg</td>
<td>kg</td>
<td>kg</td>
<td>kg</td>
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<tr>
<td><strong>Pipe connections</strong></td>
<td>Liquid inch [mm]</td>
<td>Liquid inch [mm]</td>
<td>Liquid inch [mm]</td>
<td>Liquid inch [mm]</td>
<td>Liquid inch [mm]</td>
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<tr>
<td>Gas inch [mm]</td>
<td>H/2 (12,7)</td>
<td>H/2 (12,7)</td>
<td>H/2 (12,7)</td>
<td>H/2 (12,7)</td>
<td>H/2 (12,7)</td>
</tr>
</tbody>
</table>

**Rating Conditions:**
- Cooling Indoor: 27°C DB / 19°C WB
- Heating Indoor: 20°C DB
- Cooling Outdoor: 35°C DB / 24°C WB
- Heating Outdoor: 7°C DB / 6°C WB

**Optional Controllers:**
- Panel CZ-KPD2
- Wired remote controller CZ-RT5
- Timer remote controller CZ-RTC4
- Wireless remote controller CZ-RR5D2
- Simplified remote controller CZ-RE2C2

**Energy saving:** Environmentally friendly refrigerant R410A

**Internet Control Ready:**
- Self-diagnoses
- Automatic fan
- Automatic defrost
- Automatic reset
- Air sweep
- Multi-head pump

**Connectivity:**
- Ready for more comfort
- Pratical operation
- Comfort operation
- Easy to install
- Easy control by BMS
F2 TYPE

VARIABLE STATIC PRESSURE HIDE AWAY

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 785mm 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 785mm from the base of the unit.

Air Outlet & Inlet Plenum

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: blue dot in dot in diagram n.1]. Specific diagrams per each units are available in ECOi Technical Data Book.

### Model

<table>
<thead>
<tr>
<th>Power source</th>
<th>230 V / Single Phase / 50 Hz</th>
<th>230 V / Single Phase / 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling capacity kW</td>
<td>1.5, 2.2, 2.8, 3.6, 4.5, 6.6, 7.3, 9.0, 10.6, 13.4, 16.0, 19.4, 22.9, 26.3, 30.7</td>
<td></td>
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<tr>
<td>Power input heating W</td>
<td>70, 90, 100, 120, 135, 195, 210, 225</td>
<td></td>
</tr>
<tr>
<td>Heating capacity kW</td>
<td>1.7, 2.6, 3.2, 4.2, 5.8, 6.3, 7.1, 8.0, 11.4, 16.0, 20.1</td>
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</tr>
<tr>
<td>Power input cooling W</td>
<td>70, 90, 100, 120, 135, 195, 210, 225</td>
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<tr>
<td>Operating current heating A</td>
<td>0.57, 0.57, 0.57, 0.57, 0.57, 0.74, 0.89, 0.89, 0.97, 1.30, 1.44, 1.50</td>
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<tr>
<td>Power input cooling W</td>
<td>70, 90, 100, 120, 135, 195, 210, 225</td>
<td></td>
</tr>
<tr>
<td>Operating current heating A</td>
<td>0.57, 0.57, 0.57, 0.57, 0.57, 0.74, 0.89, 0.89, 0.97, 1.34, 1.42, 1.50</td>
<td></td>
</tr>
</tbody>
</table>

### F2 Advantages

Automatic learning function for the required static pressure, to be activated easily by the standard wired 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

<table>
<thead>
<tr>
<th>Airflow Volume (m³/minute)</th>
<th>Selectable fan speeds</th>
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<tr>
<td>480</td>
<td>600</td>
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<tr>
<td>780</td>
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<td>17400</td>
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<tr>
<td>19260</td>
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</table>

### Air Inlet & Outlet Plenum

- Built-in filter
- Built-in in filter

### Diagram n. 1 S-22MF2E5A

<table>
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<tbody>
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</tbody>
</table>

### Technical focus

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

Options

- Internet Control
- Energy saving
- Environmentally friendly refrigerant
- Easy maintenance
- Automatic fan
- Perfect humidity control
- Practical operation
- Automatic reset
- Easy to install
- Built-in drain pump
- Easy to control by BHC
- Connectivity
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: 200mm 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

Ultra-slim profile for all models

200mm

Drain pump with increased power!
By adoption of a high-lift drain pump, the drain piping rise height can be increased to 795mm from the lower surface of the body.

Air Outlet & Inlet Plenum

<table>
<thead>
<tr>
<th>S-...MM1E5A</th>
<th>Diameters</th>
<th>Air Outlet Plenum</th>
<th>Diameters</th>
<th>Air Inlet Plenum</th>
</tr>
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<tbody>
<tr>
<td>22, 28, 36</td>
<td>2 x Ø 130</td>
<td>CZ-DUMPA22MMH2</td>
<td>2 x Ø 160</td>
<td>CZ-DUMPA22MMH2</td>
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<td>45 &amp; 56</td>
<td>1 x Ø 160</td>
<td>CZ-DUMPA45MMH2</td>
<td>2 x Ø 130</td>
<td>CZ-DUMPA22MMH2</td>
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</table>

Optional Controller
- Wired remote controller CZ-RTC5
- Timer remote controller CZ-RTC4
- Wireless remote controller CZ-RWSK2 + CZ-RWSC3
- Simplified remote controller CZ-RE2C2
- Wired remote controller CZ-RTC5

Model | S-15MM1E5A | S-22MM1E5A | S-28MM1E5A | S-36MM1E5A | S-45MM1E5A | S-56MM1E5A |
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<td>Power source</td>
<td>230 V / Single Phase / 50 Hz</td>
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<tr>
<td>Power input cooling W</td>
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<td>0,32</td>
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<td>0,38</td>
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<td>Air volume Hi / Med / Lo m³/h</td>
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<td>480 / 420 / 360</td>
<td>510 / 460 / 390</td>
<td>540 / 480 / 420</td>
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<td>Sound pressure level Hi / Med / Lo dB(A)</td>
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<td>28 / 27 / 25 (30 / 29 / 27)</td>
<td>30 / 29 / 27 (32 / 29 / 27)</td>
<td>32 / 30 / 28 (34 / 32 / 28)</td>
<td>34 / 32 / 30 (34 / 32 / 30)</td>
<td>35 / 33 / 31 (35 / 33 / 32)</td>
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<tr>
<td>Dimensions H x W x D mm</td>
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<td>200 x 750 x 640</td>
<td>200 x 750 x 640</td>
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<td>Net weight kg</td>
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<td>19</td>
</tr>
<tr>
<td>Pipe connections</td>
<td>Liquid inch (mm)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
</tr>
<tr>
<td></td>
<td>Gas inch (mm)</td>
<td>1/2 (12,7)</td>
<td>1/2 (12,7)</td>
<td>1/2 (12,7)</td>
<td>1/2 (12,7)</td>
<td>1/2 (12,7)</td>
</tr>
<tr>
<td></td>
<td>Drain piping</td>
<td>VP-20</td>
<td>VP-20</td>
<td>VP-20</td>
<td>VP-20</td>
<td>VP-20</td>
</tr>
</tbody>
</table>

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.
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
- **NEW!** No need of rap valve
- **NEW!** 100% Fresh air duct function
- **NEW!** DC fan motor for more savings
- Complete flexibility for ductwork design
- Can be located into a weatherproof housing for external siting
- Air OFF sensor avoids cold air dumping
- Configurable air temperature control

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

### Discharge Range

<table>
<thead>
<tr>
<th>Mode</th>
<th>Min</th>
<th>Max</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling</td>
<td>15°C</td>
<td>24°C</td>
<td>18°C</td>
</tr>
<tr>
<td>Heating</td>
<td>17°C</td>
<td>45°C</td>
<td>40°C</td>
</tr>
</tbody>
</table>

### Plenums

<table>
<thead>
<tr>
<th>Air Outlet Plenum</th>
<th>N. of exits with diameters</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Outlet Plenum (suitable for rigid + flexible duct)</td>
<td>S-22AME1E5 / S-280ME1E5</td>
<td>1 x 500mm CZ-TREMIESPW76</td>
</tr>
</tbody>
</table>

### Kit for 100% Fresh air function

For 2 Way systems
- CZ P160RVK2 Rap valve kit
- CZ P160HR3 3-way valve kit
- CZ P160HRK2 Distribution Joint kit

For 3 Way systems
- CZ-CAPE2 3way control PCB
- CZ-CAPE2 3 way control PCB
- CZ-CAPE2 3way control PCB
- CZ-RE2C2 Simplified remote controller

**Optional Controller**

- Wired remote controller CZ-RIC5
- Timer remote controller CZ-RTC5
- Wireless remote controller CZ-RWSK2 + CZ-RWSC3
- Simplified remote controller CZ-RE2C2
- Wired remote controller CZ-RTC5

**Dimensions**

<table>
<thead>
<tr>
<th>Field</th>
<th>479 x 1,453 x 1,205</th>
<th>479 x 1,453 x 1,205</th>
<th>479 x 1,453 x 1,205</th>
<th>479 x 1,453 x 1,205</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>S-22AM1E5</td>
<td>S-280ME1E5</td>
<td>S-22AME1E5</td>
<td>S-280ME1E5</td>
</tr>
<tr>
<td><strong>Power source</strong></td>
<td>220 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
</tr>
<tr>
<td><strong>Cooling capacity kW</strong></td>
<td>22.4</td>
<td>28.6</td>
<td>22.4</td>
<td>28.6</td>
</tr>
<tr>
<td><strong>Power input kW</strong></td>
<td>290</td>
<td>350</td>
<td>440</td>
<td>715</td>
</tr>
<tr>
<td><strong>Operating current kW</strong></td>
<td>2.20</td>
<td>3.95</td>
<td>2.20</td>
<td>3.95</td>
</tr>
<tr>
<td><strong>Heating capacity kW</strong></td>
<td>21.2</td>
<td>25.5</td>
<td>25.0</td>
<td>31.5</td>
</tr>
<tr>
<td><strong>Power input kW</strong></td>
<td>240</td>
<td>356</td>
<td>440</td>
<td>715</td>
</tr>
<tr>
<td><strong>Operating current kW</strong></td>
<td>2.20</td>
<td>3.95</td>
<td>2.20</td>
<td>3.95</td>
</tr>
</tbody>
</table>

**Fan type**

Sirocco fan

**Air volume**

|--------------|-------------|---------------|-----------------------|-----------------------|

**External static pressure Pa**

<table>
<thead>
<tr>
<th>Va</th>
<th>250</th>
<th>340</th>
<th>275</th>
<th>260</th>
</tr>
</thead>
</table>

**Sound pressure level**

<table>
<thead>
<tr>
<th>Hi / Med / Lo</th>
<th>— / — / 43</th>
</tr>
</thead>
<tbody>
<tr>
<td>dB(A)</td>
<td>45 / 43 / 41</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>H x W x D mm</th>
<th>479 x 1,453 x 1,205</th>
</tr>
</thead>
</table>

**Net weight kg**

| 162 | 102 |

**Pipe connections**

<table>
<thead>
<tr>
<th>Liquid inch (mm)</th>
<th>3/8 (9.52)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td>3/4 (19.05)</td>
</tr>
<tr>
<td>Drain piping VP-25</td>
<td>2VP-25</td>
</tr>
</tbody>
</table>

**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.

**Optional Controller**

- Wired remote controller CZ-RIC5
- Timer remote controller CZ-RTC5
- Wireless remote controller CZ-RWSK2 + CZ-RWSC3
- Simplified remote controller CZ-RE2C2

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

---

**100% Fresh air duct function**

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

**100% Fresh air duct function (by using Kit for 100% Fresh air)**

<table>
<thead>
<tr>
<th>Model</th>
<th>S-22AM1E5</th>
<th>S-280ME1E5</th>
<th>S-22AM1E5</th>
<th>S-280ME1E5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power source</strong></td>
<td>230 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
</tr>
<tr>
<td><strong>Cooling capacity kW</strong></td>
<td>22.4</td>
<td>28.6</td>
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<td>28.6</td>
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<tr>
<td><strong>Power input kW</strong></td>
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**Air volume**

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</tr>
<tr>
<td>Drain piping VP-25</td>
<td>2VP-25</td>
</tr>
</tbody>
</table>

**Rating Conditions:**

Cooling Indoor: 27°C DB / 19°C WB. Cooling Outdoor: 33°C DB / 26°C WB. Heating Indoor: 20°C DB. 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 140Pa setting.
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.

<table>
<thead>
<tr>
<th>Model¹</th>
<th>PAW-500ZDX2</th>
<th>PAW-800ZDX2</th>
<th>PAW-01KZDX2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power source</td>
<td>230 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
</tr>
<tr>
<td>Air volume</td>
<td>m³/h</td>
<td>500 / 500 / 360</td>
<td>800 / 800 / 625</td>
</tr>
<tr>
<td>External static pressure²</td>
<td>Pa</td>
<td>177 / 68 / 16</td>
<td>184 / 59 / 17</td>
</tr>
<tr>
<td>Maximum current</td>
<td>A</td>
<td>2,3</td>
<td>2,5</td>
</tr>
<tr>
<td>Maximum power input</td>
<td>W</td>
<td>310</td>
<td>310</td>
</tr>
<tr>
<td>Sound pressure level³</td>
<td>dB(A)</td>
<td>39 / 37 / 33</td>
<td>39 / 37 / 33</td>
</tr>
<tr>
<td>Pipe connections</td>
<td>Liquid / Gas</td>
<td>1/4 (6,35) / 1/2 (12,7)</td>
<td></td>
</tr>
</tbody>
</table>

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 | 3,5 | 5,2 |
| Temperature efficiency winter mode | % | 74,5 (74,9) | 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 (9,8) |

DX COIL

| Total cooling capacity | kW | 4,9 |
| Sensible cooling capacity | kW | 3,3 |
| Off temperature | °C | 14,4 |
| Off relative humidity | Cooling | 65 |
| Heating capacity | kW | 6,4 (6,7) |
| Off temperature | Heating | 32,6 (31,7) |
| Off relative humidity | Heating | 11 (11) |

Nominal summer conditions: Outside air: 32°C DB, RH 50%. Ambient air: 24°C DB, RH 50%. Nominal winter conditions: Outside air: -3°C / 10°C DB, RH 80%. Ambient air: 28°C DB, RH 45%. Condensing temperature: 45°C DB, Dry Bulb: 35°C. Relative Humidity: 60% for summer and winter.

Optional Controller: Wired remote controller CZ-RTC5

Optional Controller: Timer remote controller CZ-RTC4

Optional Controller: P-net communication line

ERV+DX

CZ-RTC4

Indoor terminal units

Optional Controller: Timer remote controller CZ-RTC4

Wired remote controller CZ-RTC5

350
300
250
200
150
100
50
0
250
500
750
1.000
1.250

Air flow (m³/h)

External static pressure (Pa)

Bombardiera

NEW — VRF SYSTEMS

HEAT RECOVERY
WITH DX COIL

Technical focus
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- The Bioxigen® purifying system, activates when the fan runs, provides an efficient antibacterial treatment, ensuring optimum health of supplied air.

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<th>PAW-01KZDX2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power source</td>
<td>230 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
<td>230 V / Single Phase / 50 Hz</td>
</tr>
<tr>
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<td>m³/h</td>
<td>500 / 500 / 360</td>
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<td>Pa</td>
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</tr>
<tr>
<td>Maximum current</td>
<td>A</td>
<td>2,3</td>
<td>2,5</td>
</tr>
<tr>
<td>Maximum power input</td>
<td>W</td>
<td>310</td>
<td>310</td>
</tr>
<tr>
<td>Sound pressure level³</td>
<td>dB(A)</td>
<td>39 / 37 / 33</td>
<td>39 / 37 / 33</td>
</tr>
<tr>
<td>Pipe connections</td>
<td>Liquid / Gas</td>
<td>1/4 (6,35) / 1/2 (12,7)</td>
<td></td>
</tr>
</tbody>
</table>

HEAT RECOVERY

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| Off temperature | °C | 14,4 |
| Off relative humidity | Cooling | 65 |
| Heating capacity | kW | 6,4 (6,7) |
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Optional Controller: Wired remote controller CZ-RTC5

Optional Controller: Timer remote controller CZ-RTC4

P-net communication line

ERV+DX

CZ-RTC4

Indoor terminal units

Optional Controller: Timer remote controller CZ-RTC4

Wired remote controller CZ-RTC5

350
300
250
200
150
100
50
0
250
500
750
1.000
1.250

Air flow (m³/h)

External static pressure (Pa)
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 235mm high
- Large and wide air distribution
- Easy to install and maintain
- Fresh air knockout

Further comfort improvement
The wide air discharge opening widens the air flow to the left and the right, so that a comfortable temperature is obtained in the entire room. The unpleasant feeling caused when the air flow 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 of the unit

### Technical Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>S-3MT2E5A</th>
<th>S-4SM72E5A</th>
<th>S-5MT2E5A</th>
<th>S-73MT2E5A</th>
<th>S-10MT2E5A</th>
<th>S-140MT2E5A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power source</td>
<td>230 V / Single Phase / 50 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power input (cooling) kW</td>
<td>3,4</td>
<td>4,5</td>
<td>5,6</td>
<td>7,3</td>
<td>9,4</td>
<td>14,0</td>
</tr>
<tr>
<td>Operating current (A)</td>
<td>0,36</td>
<td>0,38</td>
<td>0,38</td>
<td>0,38</td>
<td>0,44</td>
<td>0,67</td>
</tr>
<tr>
<td>Heating capacity kW</td>
<td>4,2</td>
<td>5,0</td>
<td>6,3</td>
<td>8,0</td>
<td>11,4</td>
<td>16,0</td>
</tr>
<tr>
<td>Power input (heating) kW</td>
<td>35</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>55</td>
<td>100</td>
</tr>
<tr>
<td>Operating current (heating) A</td>
<td>0,36</td>
<td>0,38</td>
<td>0,38</td>
<td>0,38</td>
<td>0,44</td>
<td>0,67</td>
</tr>
<tr>
<td>Fan type</td>
<td>Sirocco fan</td>
<td>Sirocco fan</td>
<td>Sirocco fan</td>
<td>Sirocco fan</td>
<td>Sirocco fan</td>
<td>Sirocco fan</td>
</tr>
<tr>
<td>Air volume Hi / Med / Lo m³/h</td>
<td>840 / 720 / 630</td>
<td>990 / 790 / 630</td>
<td>990 / 790 / 630</td>
<td>1.590 / 1.200 / 990</td>
<td>1.800 / 1.500 / 1.380</td>
<td>1.920 / 1.700 / 1.640</td>
</tr>
<tr>
<td>Sound pressure level (LpA) dB(A)</td>
<td>36 / 32 / 30</td>
<td>36 / 32 / 30</td>
<td>36 / 32 / 30</td>
<td>36 / 32 / 30</td>
<td>37 / 37 / 33</td>
<td>42 / 40 / 37</td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>235 x 960 x 690</td>
<td>235 x 960 x 690</td>
<td>235 x 960 x 690</td>
<td>235 x 1.275 x 690</td>
<td>235 x 1.590 x 690</td>
<td>235 x 1.590 x 690</td>
</tr>
<tr>
<td>Net weight (kg)</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>33</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Pipe connections</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
<td>1/4 (6,35)</td>
<td>3/8 (9,52)</td>
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</tr>
<tr>
<td>Gas</td>
<td>1/4 (6,35)</td>
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<td>VP-20</td>
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<td>VP-20</td>
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</tr>
</tbody>
</table>


* Preliminary data.
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.

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.

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

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

---

**K2/K1 TYPE WALL MOUNTED**

S-15MK2E5A // S-22MK2E5A // S-28MK2E5A // S-36MK2E5A
S-45MK1E5A // S-56MK1E5A // S-73MK1E5A // S-106MK1E5A

**Model**
- S-15MK2E5A
- S-22MK2E5A
- S-28MK2E5A
- S-36MK2E5A
- S-45MK1E5A
- S-56MK1E5A
- S-73MK1E5A
- S-106MK1E5A

**Power source**
230 V / Single Phase / 50 Hz

**Cooling capacity kW**
- S-15MK2E5A: 1.5
- S-22MK2E5A: 2.2
- S-28MK2E5A: 2.8
- S-36MK2E5A: 3.6
- S-45MK1E5A: 4.5
- S-56MK1E5A: 5.6
- S-73MK1E5A: 7.3
- S-106MK1E5A: 19.6

**Power input cooling W**
- S-15MK2E5A: 25
- S-22MK2E5A: 25
- S-28MK2E5A: 25
- S-36MK2E5A: 30
- S-45MK1E5A: 29
- S-56MK1E5A: 30
- S-73MK1E5A: 30
- S-106MK1E5A: 57

**Operating current cooling A**
- S-15MK2E5A: 0.20
- S-22MK2E5A: 0.21
- S-28MK2E5A: 0.23
- S-36MK2E5A: 0.25
- S-45MK1E5A: 0.25
- S-56MK1E5A: 0.26
- S-73MK1E5A: 0.35
- S-106MK1E5A: 0.39

**Heating capacity kW**
- S-15MK2E5A: 1.7
- S-22MK2E5A: 2.5
- S-28MK2E5A: 3.2
- S-36MK2E5A: 4.2
- S-45MK1E5A: 5.0
- S-56MK1E5A: 6.3
- S-73MK1E5A: 8.6
- S-106MK1E5A: 11.4

**Power input heating W**
- S-15MK2E5A: 25
- S-22MK2E5A: 25
- S-28MK2E5A: 25
- S-36MK2E5A: 30
- S-45MK1E5A: 29
- S-56MK1E5A: 30
- S-73MK1E5A: 30
- S-106MK1E5A: 57

**Operating current heating A**
- S-15MK2E5A: 0.20
- S-22MK2E5A: 0.21
- S-28MK2E5A: 0.23
- S-36MK2E5A: 0.25
- S-45MK1E5A: 0.26
- S-56MK1E5A: 0.35
- S-73MK1E5A: 0.39
- S-106MK1E5A: 0.58

**Fan type**
- Cross flow

**Air volume high / medium / low m³/h**
- S-15MK2E5A: 474 / 444 / 390
- S-22MK2E5A: 540 / 444 / 390
- S-28MK2E5A: 570 / 444 / 390
- S-36MK2E5A: 645 / 540 / 390
- S-45MK1E5A: 720 / 630 / 510
- S-56MK1E5A: 840 / 720 / 630
- S-73MK1E5A: 1.080 / 870 / 690
- S-106MK1E5A: 1.140 / 990 / 780

**Sound pressure level L1¹ high / medium / low dB(A)**
- S-15MK2E5A: — / 34 / 29
- S-22MK2E5A: — / 34 / 29
- S-28MK2E5A: — / 34 / 29
- S-36MK2E5A: — / 34 / 29
- S-45MK1E5A: — / 34 / 29
- S-56MK1E5A: — / 40 / 36
- S-73MK1E5A: — / 47 / 44
- S-106MK1E5A: — / 49 / 46

**Dimensions H x W x D mm**
- S-15MK2E5A: 290 x 870 x 214
- S-22MK2E5A: 290 x 870 x 214
- S-28MK2E5A: 290 x 870 x 214
- S-36MK2E5A: 290 x 870 x 214
- S-45MK1E5A: 300 x 1.065 x 230
- S-56MK1E5A: 300 x 1.065 x 230
- S-73MK1E5A: 300 x 1.065 x 230
- S-106MK1E5A: 300 x 1.065 x 230

**Net weight kg**
- S-15MK2E5A: 9
- S-22MK2E5A: 9
- S-28MK2E5A: 9
- S-36MK2E5A: 9
- S-45MK1E5A: 13
- S-56MK1E5A: 13
- S-73MK1E5A: 14.5
- S-106MK1E5A: 14.5

**Pipe connections Liquid inch (mm)**
- S-15MK2E5A: 1/4 (6.35)
- S-22MK2E5A: 1/4 (6.35)
- S-28MK2E5A: 1/4 (6.35)
- S-36MK2E5A: 1/4 (6.35)
- S-45MK1E5A: 1/4 (6.35)
- S-56MK1E5A: 1/4 (6.35)
- S-73MK1E5A: 5/8 (15.88)
- S-106MK1E5A: 5/8 (15.88)

**Drain piping inch (mm)**
- S-15MK2E5A: ø 16
- S-22MK2E5A: ø 16
- S-28MK2E5A: ø 16
- S-36MK2E5A: ø 16
- S-45MK1E5A: ø 18
- S-56MK1E5A: ø 18
- S-73MK1E5A: ø 18
- S-106MK1E5A: ø 18

1) Sound pressure level with fan only.
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 air flow.
- Room for condensate pump.
- For build-in remote control, only CZ-RTC2 is suitable.

Effective perimeter handling

A standard wired remote control can be installed in the body.

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

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Model P1 Type | S-22MP1E5 | S-28MP1E5 | S-36MP1E5 | S-45MP1E5 | S-56MP1E5 | S-71MP1E5
---|---|---|---|---|---|---
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 | 0.66 | 0.66 | 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 | 0.64 | 0.64 | 0.86
Fan type | Sirocco fan | Sirocco fan | Sirocco fan | Sirocco fan | Sirocco fan | Sirocco fan
Air volume Hi / Med / Lom³/h | 420 / 360 / 300 | 420 / 360 / 300 | 540 / 420 / 360 | 720 / 540 / 400 | 900 / 720 / 660 | 1.200 / 900 / 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 | 39 | 39 | 39 | 39

---|---|---|---|---|---|---
Power source | 230 V / Single Phase / 50 Hz
Cooling capacity kW | 2.5 | 3.2 | 4.2 | 5.0 | 6.3 | 8.0
Power input cooling W | 40 | 40 | 70 | 91 | 91 | 120
Operating current cooling A | 0.18 | 0.18 | 0.31 | 0.64 | 0.64 | 0.86
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 | 0.64 | 0.64 | 0.86
Fan type | Sirocco fan | Sirocco fan | Sirocco fan | Sirocco fan | Sirocco fan | Sirocco fan
Air volume Hi / Med / Lom³/h | 420 / 360 / 300 | 420 / 360 / 300 | 540 / 420 / 360 | 720 / 540 / 400 | 900 / 720 / 660 | 1.200 / 900 / 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 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 | 28 | 28 | 28 | 28

Pipe connections
- Gas inch (mm): 1/2 (12.7) 1/2 (12.7) 1/2 (12.7) 1/2 (12.7) 1/2 (12.7) 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.
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

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 * Hydromkit capacity: up to 130 % ** * ** % vs. total outdoor unit capacity

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

* Cold water also available.
Panasonic Ventilation Solutions
For maximum savings and easy integration.

Air Handling Unit Kit
Connects easily to your ECOi and ECO G systems.

Energy Recovery Ventilator
Energy recovery ventilators offer ventilation which increases comfort and saves energy. They efficiently recover the heat lost in ventilation during the heat recovery process.
Air Curtain with DX Coil
High efficiency Air curtain connected to your VRF installation. EC Fan motor for a smooth operation and efficient performance.

Energy Recovery Ventilator
Suppresses indoor temperature changes while providing fresh air.

Air Handling Unit Kit
New AHU Kits connect ECOi and GHP systems to air handling unit systems, using the same refrigerant circuit as the VRF system.

NEW — VRF SYSTEMS / VENTILATION

AHU connection kit 16 kW, 28 kW and 56 kW 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

<table>
<thead>
<tr>
<th>Model Code</th>
<th>IP 65</th>
<th>0-10V demand control</th>
<th>Outdoor temperature shift compensation</th>
<th>Cold draft prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAW-160MAH2 / PAW-280MAH2 / PAW-560MAH2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>PAW-160MAH2L / PAW-280MAH2L / PAW-560MAH2L</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

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 (Aq: Tl, Tb)

Remote controller

Standard wired remote controller. Can be installed inside the box.
Panasonic AHU Kit, 16-56 kW connected to ECOi or ECO G outdoor unit
PCB, Transformer, Solenoid Control Valve, Thermistor x 4 pcs, Terminal Base and Electrical Component Box.

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

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

**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 maximum 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)

**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
### AHU CONNECTION KIT
16, 28 and 56 kW for ECOi and GHP

**NEW**
16kW // IP65 // COMPACT BODY

### 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 way, 56 kW).
- Multiple AHU kits cannot be used.
- Mixed with standard indoor units is not allowed.
- Power specifications are Single Phase 220 V to 240 V.

### AHU connection kit / System combination

<table>
<thead>
<tr>
<th>HP</th>
<th>Capacity (HP)</th>
<th>HP</th>
<th>Capacity (HP)</th>
<th>HP</th>
<th>Capacity (HP)</th>
<th>HP</th>
<th>Capacity (HP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 kW (16 HP)</td>
<td>U-10M1E81</td>
<td>56 kW (20 HP)</td>
<td>U-20DGE25</td>
<td>6N series 2-Pipe ECOi outdoor unit combination shall be used for AHU connection KIT.</td>
<td>6N series 2-Pipe ECOi outdoor unit combination shall be used for AHU connection KIT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56 kW (20 HP)</td>
<td>U-20DGE25</td>
<td>112 kW (48 HP)</td>
<td>U-20DGE25</td>
<td>16 kW (6 HP)</td>
<td>U-10M1E81</td>
<td>16 kW (6 HP)</td>
<td>U-10M1E81</td>
</tr>
<tr>
<td>84 kW (33 HP)</td>
<td>U-10M1E81</td>
<td>168 kW (60 HP)</td>
<td>U-20DGE25</td>
<td>168 kW (60 HP)</td>
<td>U-20DGE25</td>
<td>168 kW (60 HP)</td>
<td>U-20DGE25</td>
</tr>
<tr>
<td>168 kW (60 HP)</td>
<td>U-20DGE25</td>
<td>168 kW (60 HP)</td>
<td>U-20DGE25</td>
<td>168 kW (60 HP)</td>
<td>U-20DGE25</td>
<td>168 kW (60 HP)</td>
<td>U-20DGE25</td>
</tr>
</tbody>
</table>

| Model | Nominal cooling capacity @ 50Hz kW | Nominal heating @ 50Hz kW | Cooling airflow | Cooling airflow | Bypass factor | Dimensions of the box | Weight kg | Piping length | Elevation difference (in/out) | Intake temperature of AHU Kit | Ambient temperature of outdoor unit |
|-------|-----------------------------------|---------------------------|-----------------|-----------------|--------------|---------------------|-----------|---------------|-----------------------------|--------------------------------|---------------------------------
| PAW-160MAH2 | 14.0 | 16.0 | High m³/min | 2,160 | 0.9 | 305 x 252 x 110 | 3,2 | 10 / 100 | 10 / 100 | 18 - 32°C DB | -10 - 34°C DB |
| PAW-280MAH2 | 28.0 | 31.5 | Medium m³/min | 5.000 | 0.9 | 404 x 425 x 78 | 6,3 | 10 / 100 | 10 / 100 | 19 - 33°C DB | -10 - 34°C DB |
| PAW-560MAH2 | 56.0 | 63.0 | Low m³/min | 10.000 | 0.9 | 404 x 425 x 78 | 6,3 | 10 / 100 | 10 / 100 | 19 - 33°C DB | -10 - 34°C DB |
| PAW-280MAH2 + PAW-560MAH2 | 84.0 | 90.0 | 10.000 | 15.000 | 0.9 | 404 x 425 x 78 | 6,3 | 10 / 100 | 10 / 100 | 19 - 33°C DB | -10 - 34°C DB |
| PAW-560MAH2 + PAW-560MAH2 | 112.0 | 127.0 | 10.000 | 15.000 | 0.9 | 404 x 425 x 78 | 6,3 | 10 / 100 | 10 / 100 | 19 - 33°C DB | -10 - 34°C DB |
| PAW-560MAH2 + PAW-560MAH2 | 140.0 | 155.0 | 10.000 | 15.000 | 0.9 | 404 x 425 x 78 | 6,3 | 10 / 100 | 10 / 100 | 19 - 33°C DB | -10 - 34°C DB |
| PAW-280MAH2 + PAW-560MAH2 | 140.0 | 155.0 | 10.000 | 15.000 | 0.9 | 404 x 425 x 78 | 6,3 | 10 / 100 | 10 / 100 | 19 - 33°C DB | -10 - 34°C DB |
| PAW-560MAH2 + PAW-560MAH2 | 140.0 | 155.0 | 10.000 | 15.000 | 0.9 | 404 x 425 x 78 | 6,3 | 10 / 100 | 10 / 100 | 19 - 33°C DB | -10 - 34°C DB |
| PAW-560MAH2 + PAW-560MAH2 | 140.0 | 155.0 | 10.000 | 15.000 | 0.9 | 404 x 425 x 78 | 6,3 | 10 / 100 | 10 / 100 | 19 - 33°C DB | -10 - 34°C DB |
| PAW-560MAH2 + PAW-560MAH2 | 140.0 | 155.0 | 10.000 | 15.000 | 0.9 | 404 x 425 x 78 | 6,3 | 10 / 100 | 10 / 100 | 19 - 33°C DB | -10 - 34°C DB |

**Capacity (HP) / Outdoor unit combination** | **AHU kit combination**
| 28 kW (16 HP) | PAW-280MAH2 | PAW-560MAH2 |
| 56 kW (20 HP) | PAW-560MAH2 | PAW-560MAH2 |
| 84 kW (33 HP) | PAW-560MAH2 | PAW-280MAH2 |
| 112 kW (48 HP) | PAW-560MAH2 | PAW-560MAH2 |
| 168 kW (60 HP) | PAW-560MAH2 | PAW-560MAH2 |
| 168 kW (60 HP) | PAW-280MAH2 | PAW-280MAH2 |

**AHU Connection Kit:**
- **Capacity (HP):** 28 kW (16 HP), 56 kW (20 HP), 84 kW (33 HP), 112 kW (48 HP), 168 kW (60 HP), 168 kW (60 HP), 56 kW (20 HP)
- **Outdoor unit combination:** PAW-280MAH2, PAW-560MAH2
- **AHU kit combination:** PAW-560MAH2, PAW-280MAH2
Technical focus

- Maximum capacity: 60HP (168 kW)
- Maximum piping length: 100 m (120 m equivalent)
- Elevation difference (O_U~L_U): 50 m (O_U above)
- Elevation difference (L_U~L_U): 4 m
- In/Out capacity ratio: 50~100%
- Maximum L_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
Air Curtain with DX Coil, connected to the VRF or PACi Systems

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.

- 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.

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 2.5m, 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 3.5m with the standard model up to 3.0m. 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.
Intelligent Operation
Our air curtains combine air flow 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.

Optimised air flow 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

Ideal air flow:
1.5-2 m/s at 15cm from the floor
## AIR CURTAIN WITH DX COIL

High efficiency Air curtain connected to your VRF installation. EC Fan motor for a smooth operation and efficient performance.


Easy Cleaning and Servicing.

### HP 4 HP 6 HP 8 HP 14 HP 4 HP 8 HP

<table>
<thead>
<tr>
<th>Air Curtain Type</th>
<th>PAW-10EAIRC-MJ</th>
<th>PAW-15EAIRC-MJ</th>
<th>PAW-20EAIRC-MJ</th>
<th>PAW-25EAIRC-MJ</th>
<th>PAW-10EAIRC-MS</th>
<th>PAW-20EAIRC-MS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Flow Length (A)</strong></td>
<td><strong>m</strong></td>
<td><strong>Jet-flow</strong></td>
<td><strong>Standard</strong></td>
<td><strong>m</strong></td>
<td><strong>Jet-flow</strong></td>
<td><strong>Standard</strong></td>
</tr>
<tr>
<td>High</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
<td>2.5</td>
<td>1.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Medium</td>
<td>1.500</td>
<td>2.300</td>
<td>3.600</td>
<td>4.500</td>
<td>1.800</td>
<td>2.700</td>
</tr>
<tr>
<td>Low</td>
<td>1.200</td>
<td>1.900</td>
<td>2.600</td>
<td>3.100</td>
<td>1.200</td>
<td>1.900</td>
</tr>
<tr>
<td><strong>Cooling capacity nominal</strong></td>
<td><strong>kW</strong></td>
<td>9.2</td>
<td>17.5</td>
<td>25.0</td>
<td>24.4</td>
<td>9.2</td>
</tr>
<tr>
<td>Heating capacity nominal</td>
<td><strong>kW</strong></td>
<td>11.4</td>
<td>29.0</td>
<td>31.0</td>
<td>31.5</td>
<td>11.4</td>
</tr>
<tr>
<td>Heating capacity with air in 20°C, air out 40°C</td>
<td><strong>kW</strong></td>
<td>19.9</td>
<td>29.9</td>
<td>29.9</td>
<td>29.9</td>
<td>19.9</td>
</tr>
<tr>
<td>Heating capacity with air in 20°C, air out 35°C</td>
<td><strong>kW</strong></td>
<td>23.4</td>
<td>17.9</td>
<td>22.4</td>
<td>8.9</td>
<td>13.4</td>
</tr>
<tr>
<td>Heating capacity with air in 20°C, air out 30°C</td>
<td><strong>kW</strong></td>
<td>23.4</td>
<td>17.9</td>
<td>14.9</td>
<td>9.9</td>
<td>8.9</td>
</tr>
<tr>
<td><strong>Max installation height</strong></td>
<td><strong>m</strong></td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Good condition</td>
<td><strong>m</strong></td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
<td>2.7</td>
</tr>
<tr>
<td>Normal condition</td>
<td><strong>m</strong></td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
<td>2.4</td>
</tr>
<tr>
<td>Bad condition</td>
<td><strong>m</strong></td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Refrigerant</strong></td>
<td><strong>R410A</strong></td>
<td><strong>R410A</strong></td>
<td><strong>R410A</strong></td>
<td><strong>R410A</strong></td>
<td><strong>R410A</strong></td>
<td><strong>R410A</strong></td>
</tr>
<tr>
<td><strong>Hot gas temperature</strong></td>
<td><strong>°C</strong></td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td><strong>Condensing temperature</strong></td>
<td><strong>°C</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Subcooling</strong></td>
<td><strong>K</strong></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Pressure</strong></td>
<td><strong>bar</strong></td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td><strong>Liquid pipe</strong></td>
<td><strong>Inch (mm)</strong></td>
<td>3/8 (9.52)</td>
<td>3/8 (9.52)</td>
<td>3/8 (9.52)</td>
<td>3/8 (9.52)</td>
<td>3/8 (9.52)</td>
</tr>
<tr>
<td><strong>Gas pipe</strong></td>
<td><strong>Inch (mm)</strong></td>
<td>5/8 (15.88)</td>
<td>3/4 (19.05)</td>
<td>7/8 (22.22)</td>
<td>7/8 (22.22)</td>
<td>7/8 (22.22)</td>
</tr>
<tr>
<td><strong>Fan</strong></td>
<td><strong>230V / 50Hz / 1 / N / PE</strong></td>
<td><strong>230V / 50Hz / 1 / N / PE</strong></td>
<td><strong>230V / 50Hz / 1 / N / PE</strong></td>
<td><strong>230V / 50Hz / 1 / N / PE</strong></td>
<td><strong>230V / 50Hz / 1 / N / PE</strong></td>
<td><strong>230V / 50Hz / 1 / N / PE</strong></td>
</tr>
<tr>
<td><strong>Currency</strong></td>
<td><strong>High A</strong></td>
<td>2.1</td>
<td>2.8</td>
<td>4.2</td>
<td>4.9</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td><strong>Medium A</strong></td>
<td>2.8</td>
<td>3.2</td>
<td>3.2</td>
<td>3.2</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td><strong>Low A</strong></td>
<td>0.8</td>
<td>1.1</td>
<td>1.6</td>
<td>1.9</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Electrical Consumption</strong></td>
<td><strong>High kW</strong></td>
<td>0.4</td>
<td>0.9</td>
<td>0.9</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td><strong>Medium kW</strong></td>
<td>0.4</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td><strong>Low kW</strong></td>
<td>0.6</td>
<td>1.1</td>
<td>1.6</td>
<td>1.9</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Protecting Fuse</strong></td>
<td><strong>A</strong></td>
<td>M16A</td>
<td>M16A</td>
<td>M16A</td>
<td>M16A</td>
<td>M16A</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td><strong>dB(A)</strong></td>
<td>40-55</td>
<td>40-55</td>
<td>40-57</td>
<td>40-57</td>
<td>40-55</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td><strong>W x H x D</strong></td>
<td><strong>1,210 x 260 x 590</strong></td>
<td><strong>1,710 x 260 x 590</strong></td>
<td><strong>2,210 x 260 x 590</strong></td>
<td><strong>2,710 x 260 x 590</strong></td>
<td><strong>1,210 x 260 x 490</strong></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td><strong>kg</strong></td>
<td>70</td>
<td>100</td>
<td>130</td>
<td>160</td>
<td>60</td>
</tr>
</tbody>
</table>

1) or bigger size.

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.

2) Rated Conditions Cooling Outdoor +35°C DB Indoor +27°C DB/+19°C WB, Discharge temperature ≥ 16°C.
Technical focus

- Save up to 40% Energy Costs by use of the integrated EC Fan Technology (Higher efficiency than conventional AC fan, softstart 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 Air-Flow 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

### Jet-flow dimensions

<table>
<thead>
<tr>
<th>TOP VIEW</th>
<th>SIDE VIEW</th>
<th>FRONT VIEW</th>
<th>BOTTOM VIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure line</td>
<td>Intake line</td>
<td>Rivetting nut M8</td>
<td>Pressure line</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Jet-Flow)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Standard dimensions

<table>
<thead>
<tr>
<th>TOP VIEW</th>
<th>SIDE VIEW</th>
<th>FRONT VIEW</th>
<th>BOTTOM VIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure line</td>
<td>Intake line</td>
<td>Rivetting nut M8</td>
<td>Pressure line</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Jet-Flow)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PAW-10PAIRC-MS** PAW-20PAIRC-MS

**PAW-15PAIRC-MJ** PAW-25EAIRC-MJ

<table>
<thead>
<tr>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000</td>
</tr>
<tr>
<td>1.500</td>
</tr>
<tr>
<td>2.000</td>
</tr>
<tr>
<td>2.500</td>
</tr>
</tbody>
</table>

NEW — VRF SYSTEMS / VENTILATION
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.

Heat exchanger characteristics

Former (cross-flow element)  New (counter-flow element)

20% energy savings
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.

Adopts a highly efficient counter-flow heat exchange element

Heat exchanger
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.

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 heat-exchange element service life
Cleaning reduced due to the special material heat exchanger. The nylon/polyester fibre filter offers high dust retention capacity.

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.
270mm Height: FY-250ZDY8 // FY-350ZDY8 // FY-500ZDY8
388mm Height: FY-650ZDY8 // 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

**WINTER**

**SUMMER**
ENERGY RECOVERY VENTILATION SYSTEM

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

<table>
<thead>
<tr>
<th>Models</th>
<th>FY-250ZDY8</th>
<th>FY-350ZDY8</th>
<th>FY-500ZDY8</th>
<th>FY-800ZDY8</th>
<th>FY-01KZDY8A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated flow rate</td>
<td>250 m³/h</td>
<td>350 m³/h</td>
<td>500 m³/h</td>
<td>800 m³/h</td>
<td>1000 m³/h</td>
</tr>
<tr>
<td>Air Volume m³/h</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>External Static Pressure Pa</td>
<td>105</td>
<td>105</td>
<td>105</td>
<td>105</td>
<td>105</td>
</tr>
<tr>
<td>Noise dB</td>
<td>35,0 - 37,5</td>
<td>35,0 - 37,5</td>
<td>35,0 - 37,5</td>
<td>35,0 - 37,5</td>
<td>35,0 - 37,5</td>
</tr>
<tr>
<td>Temp. Exchange Effiency %</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Normal Ventilation</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>E - High</td>
<td>E - High</td>
<td>E - High</td>
<td>E - High</td>
<td>E - High</td>
<td>E - High</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>
| Air conditioner outlet; no-volt contact | Power source

Typical system linked to a cassette type air conditioner

Use conditions

Outdoor air conditions
Temperature range: -10°C – 40°C
Relative humidity: 80% or less

Indoor air conditions
Temperature range: 15°C – 40°C
Relative humidity: 80% or less

Requirements for installation
Use is to be avoided in refrigerated chambers or other places where the temperature may undergo significant fluctuations, even when the temperature range is acceptable.

This noise of the product is the value which was measured at the acoustic room. Actually, in the established condition, that undergoes 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 1,5m below the centre of the unit. The temperature exchange efficiency averages that of when cooling and when heating.
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
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

<table>
<thead>
<tr>
<th>Model type</th>
<th>Item code</th>
<th>Setting data</th>
<th>Setting only for</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Pipe VRF System</td>
<td>4B</td>
<td>Set to 0001 = Renewal system operation (Factory set = 0000)</td>
<td>Master unit</td>
<td></td>
</tr>
<tr>
<td>2-Pipe VRF System</td>
<td>4B</td>
<td>Set to 0000 = Renewal system operation (Factory set = 0002)</td>
<td>Master unit</td>
<td></td>
</tr>
<tr>
<td>Mini VRF System</td>
<td>4B</td>
<td>Set to –001 = Renewal system operation (Factory set = 0000)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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...

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

Outdoor unit  
B  

Filter Drier  

Change Port  

Indoor unit side  
A  

Connecting tube dimensions (Inch [mm]): A Ø 3/8 (9.52) [4,5,6,8, 10 HP] 
B Ø 1/2 (12.7) [12, 14, 16 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 regards 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?

- **Renewal flow**
  - Can the existing pipe work be reused? **No**
    - Can the existing unit perform cooling operation? **No**
      - Recover the refrigerant using a refrigerant recovery device.
    - Perform cooling operation for at least 15 minutes, and then perform a pump down to recover refrigerant in the existing unit.
  - 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.

- **New pipe work needs to be installed.**

**Perform a heating test run:** (1) Operate in heating test run mode for 30 minutes. (2) Replace the filter driers of all outdoor units. *Obtain replacement filter driers separately.*

**Install the new indoor and outdoor units, and attach the VRF Renewal Kit (CZ-SLK2).** If the exact length of the pipe work is uncertain, attach a sight glass to aid charging. If the gas pipe size of the main piping is three sizes larger, add oil. (Judgment 3 Item)

- **Remove the existing indoor and outdoor units**

**Recheck**
- **Judgments 1 to 4 all ok**

**Is there any history of compressor failure in the existing unit?** **Yes**
- Perform a heating test run. (1) Operate in heating test run mode for 30 minutes. (2) Replace the filter driers of all outdoor units.

- **Could the existing unit perform the cooling operation?** **No**
  - 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.

**Recheck**
- **Recheck**

**NEW — VRF SYSTEMS**

![Diagram of VRF Renewal Kit (CZ-SLK2)](diagram.png)
Optional Distribution Joint Kits
See the installation instructions packaged with the distribution joint kit for the installation procedure.

<table>
<thead>
<tr>
<th>Cooling capacity after distribution</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor unit side</td>
<td></td>
</tr>
<tr>
<td>68.0 kW or less</td>
<td>CZ-P680PH2BM</td>
</tr>
<tr>
<td>From 68.0 kW to 168.0 kW</td>
<td>CZ-P1350PH2BM</td>
</tr>
<tr>
<td>Indoor unit side</td>
<td></td>
</tr>
<tr>
<td>22.4 kW or less</td>
<td>CZ-P224BK2BM</td>
</tr>
<tr>
<td>From 22.4 kW to 68.0 kW</td>
<td>CZ-P680BK2BM</td>
</tr>
<tr>
<td>From 68.0 kW 168.0 kW or less</td>
<td>CZ-P1350BK2BM</td>
</tr>
</tbody>
</table>

Tubing size (with thermal insulation)

**CZ-P680PH2BM**
For outdoor unit side (Capacity after distribution joint is 68.0 kW or less).

**CZ-P1350PH2BM**
For outdoor unit side (Capacity after distribution joint is greater than 68.0 kW and no more than 168.0 kW).
CZ-P224BK2BM
For indoor unit side (Capacity after distribution joint is 22,4 kW or less).

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

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

### Diameters

<table>
<thead>
<tr>
<th>1</th>
<th>6,35 mm 1/4&quot;</th>
<th>6</th>
<th>22,40 mm 7/8&quot;</th>
<th>13</th>
<th>38,10 mm 1&quot; 1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>9,52 mm 3/8&quot;</td>
<td>7</td>
<td>26,46 mm 1&quot;</td>
<td>12</td>
<td>41,36 mm 1 1/8</td>
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<tr>
<td>3</td>
<td>12,70 mm 1/2&quot;</td>
<td>8</td>
<td>28,57 mm 1&quot; 1/8</td>
<td>13</td>
<td>44,45 mm 1 3/4</td>
</tr>
<tr>
<td>4</td>
<td>15,88 mm 5/8&quot;</td>
<td>9</td>
<td>31,75 mm 1&quot; 1/4</td>
<td>14</td>
<td>50,80 mm 2&quot;</td>
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<tr>
<td>5</td>
<td>19,05 mm 3/4&quot;</td>
<td>10</td>
<td>34,92 mm 1&quot; 3/8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Optional Distribution Joint Kits
See the installation instructions packaged with the distribution joint kit for the installation procedure.

<table>
<thead>
<tr>
<th>Capacity after distribution joint</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>68,0 kW or less</td>
<td>CZ-P680PJ2BM</td>
</tr>
<tr>
<td>Greater than 68,0 kW and no more than 135,0 kW</td>
<td>CZ-P1350PJ2BM</td>
</tr>
<tr>
<td>22,4 kW or less</td>
<td>CZ-P224BH2BM</td>
</tr>
<tr>
<td>Greater than 22,4 kW and no more than 68,0 kW</td>
<td>CZ-P680BH2BM</td>
</tr>
<tr>
<td>Greater than 68,0 kW and no more than 135,0 kW</td>
<td>CZ-P1350BH2BM</td>
</tr>
</tbody>
</table>

Tubing size (with thermal insulation)

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

**CZ-P1350PJ2BM**
For outdoor unit side (Capacity after distribution joint is greater than 68,0 kW and no more than 135,0 kW).
CZ-P224BH2BM
For outdoor unit side (Capacity after distribution joint is 22,4 kW or less).

Suction tubing
Discharge tubing
Liquid tubing

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

Suction tubing
Discharge tubing
Liquid tubing

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

Suction tubing
Discharge tubing
Liquid tubing

<table>
<thead>
<tr>
<th>Diameters</th>
<th>Diameters</th>
<th>Diameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6,35 mm 1/4''</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>9,52 mm 3/8''</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>12,70 mm 1/2''</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>15,88 mm 5/8''</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>19,05 mm 3/4''</td>
<td>10</td>
</tr>
</tbody>
</table>
Headers

Header pipe set for ECOi 6N 2-Pipe system

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

Header pipe set for ECOi 6N 3-Pipe system

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

<table>
<thead>
<tr>
<th>Diameters</th>
<th>Diameters</th>
<th>Diameters</th>
</tr>
</thead>
<tbody>
<tr>
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<td>4,35 mm 1/4&quot;</td>
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<tr>
<td>2</td>
<td>9,52 mm 3/8&quot;</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>12,70 mm 1/2&quot;</td>
<td>7</td>
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<tr>
<td>4</td>
<td>15,88 mm 5/8&quot;</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>31,75 mm 1 1/4</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>34,92 mm 1 3/8</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>38,10 mm 1 1/2</td>
<td></td>
</tr>
</tbody>
</table>
Control equipment external dimensions

### Control Systems

- **Timer remote controller** (CZ-RTC4)
- **Wireless remote controller** (CZ-WRC2)
- **Separate receiver for wireless remote controller**
- **Simplified remote controller** (CZ-RE2C2)
- **Remote sensor** (CZ-CSRC2)
- **4.4 x 9.4 slot**
- **ON/OFF controller** (CZ-ANC2)
- **Seri-Para I/O unit for each indoor unit** (CZ-CAPBC2)
- **LonWorks interface** (CZ-CLNC2)
- **Seri-Para I/O unit for outdoor unit** (CZ-CAPDC2)
- **4 - Ø 5 hole**
- **3 - Ø 30 hole**
- **Potbellied hole (4 locations)**

**Magnified view**

- **Detail of the potbellied hole**

NEW — VRF SYSTEMS
ECOi and ECO G indoor units dimensions

U1 Type // 4 Way 90x90 Cassette

<table>
<thead>
<tr>
<th>Type</th>
<th>22-56</th>
<th>60-160</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Air intake grill</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Air discharge outlet</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Refrigerant piping (liquid pipes) Ø 6,35 (flared) Ø 9,52 (flared)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Refrigerant piping (gas pipes) Ø 12,7 (flared) Ø 15,88 (flared)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Drain outlet VP58 Outer diameter 32mm</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Power supply port</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Suspension bolt hole 4-Ø12x30 slot</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Fresh air intake duct connection port Ø 100¹</td>
<td></td>
</tr>
</tbody>
</table>

¹ Air inlet kit is necessary. Filter size: 500 x 500 x 16

Y2 Type // 4 Way 60x60 Cassette

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

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
### 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 32mm
4. Power supply entry

![Diagram of L1 Type // 2 Way Cassette](image)

### D1 Type // 1 Way Cassette

<table>
<thead>
<tr>
<th>Part</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2B-56</td>
<td>Air intake grille</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Discharge outlet</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Refrigerant piping (liquid pipes): Ø 6.35 (flared) Ø 9.52 (flared)</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Refrigerant piping (gas pipes): Ø 10.7 (flared) Ø 15.88 (flared)</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Drain connection VP2</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Power supply entry</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Drain connection port (for descending ceiling)</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Fresh air intake duct connection port: Ø 100</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Installation port for wireless remote controller receiver</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Suspension bolt hole: 4–12 30 hole</td>
</tr>
</tbody>
</table>

![Diagram of D1 Type // 1 Way Cassette](image)
ECOi and ECO G indoor units dimensions

F2 Type // Variable Static Pressure Hide Away


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 & 200 flexible hose supplied
4. Bottom drain port VP 25 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 & 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
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  
6. Flange for air intake duct  
7. Electrical component box  
8. Frame filter  
10. Signal output board [ACC-5S-AGB: optional]  

Dimensions: mm
ECOi and ECO G indoor units dimensions

**E2 Type // High Static Pressure Hide Away**

- Refrigerant liquid line: Ø 9.52
- Refrigerant gas line: Ø 19.35 and Ø 22.22
- Power supply outlet
- Drain port: Water diameter 32 mm
- Duct connection for suction
- Duct connection for discharge

**Dimensions: mm**

**Heat Recovery with DXCoil**

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>A1</th>
<th>A2</th>
<th>B</th>
<th>B1</th>
<th>B2</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>Ø</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAW-500ZDX2</td>
<td>1470</td>
<td>1430</td>
<td>1630</td>
<td>997</td>
<td>1063</td>
<td>1112</td>
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<td>882</td>
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<td>994</td>
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<tr>
<td>PAW-01KZDX2</td>
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<td>1752</td>
<td>1906</td>
<td>1132</td>
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<td>1244</td>
<td>390</td>
<td>681</td>
<td>532</td>
<td>250</td>
<td>169</td>
</tr>
</tbody>
</table>

**Check cover**

**Electrical case**

**Dimensions: mm**
T2 Type // Ceiling

S-34M72ESA // S-45M72ESA // S-56M72ESA

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-73MT2ESA // S-106MT2ESA // S-140MT2ESA

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
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<tbody>
<tr>
<td>18k</td>
<td>1.990</td>
<td>235</td>
<td>690</td>
<td>1.584</td>
<td>1.541</td>
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<td>18k</td>
<td>1.275</td>
<td>235</td>
<td>690</td>
<td>1.269</td>
<td>1.226</td>
</tr>
</tbody>
</table>

Dimensions: mm

Approx. 2°

Closed with rubber stopper at time of shipment (Left drain position)

Dimensions: mm
ECOi and ECO G indoor units dimensions

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 80

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

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
**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.)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Liquid pipes</th>
<th>Gas pipes</th>
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</thead>
<tbody>
<tr>
<td>27-36</td>
<td>1965</td>
<td>665</td>
<td>632</td>
<td>Ø 6,35</td>
</tr>
<tr>
<td>45</td>
<td>1380</td>
<td>980</td>
<td>947</td>
<td>Ø 9,52</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Liquid pipes</th>
<th>Gas pipes</th>
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</thead>
<tbody>
<tr>
<td>27-36</td>
<td>984</td>
<td>492</td>
<td>672</td>
<td>665</td>
<td>568</td>
<td>Ø 6,35</td>
<td>Ø 12,7</td>
</tr>
<tr>
<td>45</td>
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<td>1,087</td>
<td>1,002</td>
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<td>985</td>
<td>Ø 9,52</td>
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<tr>
<td>71</td>
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<td>1,087</td>
<td>1,002</td>
<td>980</td>
<td>985</td>
<td>Ø 9,52</td>
<td>Ø 15,88</td>
</tr>
</tbody>
</table>
Panasonic has developed the largest range of control systems to offer the best option to each need. From the individual remote control for the residential single units up to the newest technology to control each your buildings around the world from an easy to use software in the cloud by your portable device.
Panasonic Smart Cloud

Take control of all your shops around the world from a single device.

Centralize control of your business premises, from wherever you are, 24/7

It doesn’t matter how many sites you have, or where they are! The new Cloud system from Panasonic allows you to have complete control of all your installations, from your smartphone or from your computer. 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.

With Panasonic Smart Cloud, have your business under control, and start saving!

- Monitor temperature in your shops, optimize temperatures, reduce energy costs!
- Monitor running time, anticipate maintenance and optimise costs consumption
- Monitor breakdowns in order to take quick action to maintain the comfort in the shops
- Monitor energy consumption and running time of the units
- Compare the performance of your shops easily and develop best practices plan
- Alarms
- 2 connections possible:
  - by internet, using the shop internet connection
  - by 3G module. In this case, the system does not need internet connection, but a SIM Card and the 3G contract should be supply on the field.

Main Advantages
- Control of all installations from a single internet connection, in the cloud
- All the parameters automatically updated from the GHP/ECOi/PACi in real time
- Remote maintenance advice
- Alarms
Security
Panasonic has developed both physical and software protection with a high level of encryption to secure your data on our servers which are located in Germany.

Scalable solution according to the needs
Panasonic Smart Cloud is fully scalable to the needs of your shops, franchises, facility companies.

Panasonic Smart Cloud is giving value not only for your business but also for your partners

3 steps to setup the Smart Cloud
Panasonic Smart Cloud is very easy to install on existing and new installations. The communication adapter (CZ-CFUNC2 + PAW-CCA-1) is connected to the Panasonic bus and the Ethernet. Then in only 3 steps, the cloud system is running.

Availability of the solution

<table>
<thead>
<tr>
<th>Phase</th>
<th>Feature</th>
<th>May 2014</th>
<th>September 2014</th>
<th>December 2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
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<td>✔️</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Set mode per units/groups/sites</td>
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<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Set temperature per units/groups/sites</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Running time per units</td>
<td>✔️</td>
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<td>✔️</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Schedule per units/groups/sites</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>1</td>
<td>Shops status display on Map</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Initial configuration wizard</td>
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<td>✔️</td>
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<tr>
<td>1</td>
<td>Alert notifications</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>1</td>
<td>Users management</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Advanced statistics (working hours, performance etc.)</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Energy consumption calculation</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
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<td>2</td>
<td>Systems ranking mode based on define parameters</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<td>2</td>
<td>Error logs</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<td>2</td>
<td>Status on map</td>
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<td>✔️</td>
<td>✔️</td>
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<tr>
<td>2</td>
<td>Email notifications</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3-G module</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Maintenance module</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Energy Management module</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
</tbody>
</table>

1) This service is available on a 2-year base contract, with automatic renewal every year. The parties can cancel the contract at the end of the year with 3-month notice. 2) This cost only covers the activation of the system on the cloud. The 3G card and the 3G monthly fee from the telecommunication company is not included and must be supply locally.

NEW PANASONIC Smart Cloud

1) Secure connection between portal and adapters (encrypted). 2) Portal: Single point of access for shops owners, employers, franchisers and facility companies. 3) Easy integration in existing systems via RS485 protocol.
Remote controller with Econavi

Easy to use, attractive, clear design, with new demand control functions and energy consumption display! This useful feature makes this remote control unique!

Design
The new CZ-RTC5 wired remote control is ideal for integration into the most demanding interior architectures.

The touch panel features a very sleek and easy to use display, which with its compact display is only 120mm x 120mm x 16mm.

Display of information
The information is mainly based on pictograms to ensure easy understanding.

The minimal amount of text is available in 4 languages (English / German / French / Spanish / Italian).

The screen is back lit to enable reading even during the night.

Easy Access to the menus
With the new pictograms, the navigation, the selection and the settings are simple and easy to follow.

Key Functions
- Easy setup of the timer and settings of the indoor unit
- Energy consumption display (only available with PACi units with the reference ending with A)
- Limitation of the energy consumption (Demand control) by timer.
Basic function (Operation display & indication)
All functions are easily available on the remote controller.
- OFF/ON timer
- Weekly timer
- Quiet operation
- Remote control sensor
- Operation prohibit
- Filter sign
- Energy saving
- Centralized control indication
- Mode change prohibit
- Automatic temperature return
- Temperature range limitation
- OFF reminder
- Schedule demand control
- Ventilation
- Out Function

Example of easy access to the functions:
- Energy consumption monitoring display per day, week, month and year (only available with PACi units)

Example of easy access to the functions: Air direction setting
1. Select “Air direction” and press “determine” key.
2. Select the unit No. by up/down key.
3. Select the flap position by up/down key.
4. Press “Return” key to go back the Menu display.

Example of easy access to the functions: Weekly timer setting
1. Weekly timer menu display
2. Setting for each day of the week
3. Timer program setting of the day

Example of easy access to the functions: Energy consumption monitoring display per day, week, month and year (only available with PACi units)

Functions available on the CZ-RTC5

Control item | Controllability | Indoor Units | PACi | Only PACi ending on A | All VRF
--- | --- | --- | --- | --- | ---
Basic Operation | Operation, Mode, Temperature setting, Airflow volume, Airflow direction | ✔ | ✔ | ✔ | ✔
Timer function | Time display | ✔ | ✔ | ✔ | ✔
Energy saving | Outing function | ✔ | ✔ | ✔ | ✔
 | Temperature auto return | ✔ | ✔ | ✔ | ✔
 | Temperature setting range limitation | ✔ | ✔ | ✔ | ✔
 | OFF reminder | ✔ | ✔ | ✔ | ✔
 | Energy saving mode | ✔ | ✔ | ✔ | ✔
 | Schedule demand control | ✔ | ✔ | ✔ | ✔
 | Energy monitoring | ✔ | ✔ | ✔ | ✔
Maintenance | System failure information | ✔ | ✔ | ✔ | ✔
 | Service contact registration | ✔ | ✔ | ✔ | ✔
 | Filter sign (rest time display) & Reset | ✔ | ✔ | ✔ | ✔
 | Auto-address, Test run | ✔ | ✔ | ✔ | ✔
 | Sensor value monitor | ✔ | ✔ | ✔ | ✔
 | Simple/Detail setting mode | ✔ | ✔ | ✔ | ✔
Others | Key lock | ✔ | ✔ | ✔ | ✔
 | Ventilation fan control | ✔ | ✔ | ✔ | ✔
 | Display contrast adjustment | ✔ | ✔ | ✔ | ✔
 | Remote controller sensor | ✔ | ✔ | ✔ | ✔
 | Quiet operation mode | ✔ | ✔ | ✔ | ✔
 | Prohibit setting control from Central controller | ✔ | ✔ | ✔ | ✔

All specifications subject to change without notice.
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.

- Detects human activity and adjusts temperature by 2 degrees (up or down) to optimize comfort and efficiency
- If there is no activity detected for a set time, the Econavi will stop the unit or move to a new temperature previously set
- The Econavi device is installed independently of the indoor unit, and is located in the area best suited for detection

Applications

Saving Energy for Offices: if the air conditioning is left on after the last employee leaves the office, Econavi will automatically react, reducing or stopping the system. Increased comfort in hotel rooms: when presence is detected in the room, the temperature is automatically adjusted to achieve best comfort.

Econavi function

- Analyses room activity: Human activities and human heat
- Modifies the capacity to adapt in real-time to the needs of the room

Key points

- Compatible with Cassette, Wall Mounted, Hide Away and Ceiling
- Sensor
- Improves efficiency
- Better Comfort
- Can be installed in the best place of the room for detection purposes.
Human activity and presence detection

### Activity detection

<table>
<thead>
<tr>
<th>Higher Activity</th>
<th>Lower Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling Set Temp. +/-0°C</td>
<td>Cooling Set Temp. +1°C</td>
</tr>
<tr>
<td>Heating Set Temp. -1°C</td>
<td>Heating Set Temp. +/-0°C</td>
</tr>
<tr>
<td>HIGHER ACTIVITY</td>
<td>LOWER ACTIVITY</td>
</tr>
</tbody>
</table>

### Presence detection

<table>
<thead>
<tr>
<th>After 20 mins absence</th>
<th>After 3 hours absence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling Set Temp. +2°C</td>
<td>Cooling Thermo OFF</td>
</tr>
<tr>
<td>Heating Set Temp. -2°C</td>
<td>Heating Thermo OFF</td>
</tr>
</tbody>
</table>

After 3 hours set up can be change to stop or temp shift

Sensor location image

### Model evaluation only for PACi (Laboratory Testing/Cooling Operation)

#### Test Method

To establish conditions for our field tests, because human movements and door open/close are random, we did not test on set conditions. To replicate typical conditions, we have fixed variable numbers (see below) and tested how Econavi’s temperature control function contributes to energy efficiency level.

For each temperature setting, we have tested and compared power consumption at three-hourly intervals.

#### Test Condition

- Testing location: New 6.0HP testing room / 29m²
- Test sample remote controller setting: Setting temperature: Cooling 24 – 28°C / Fan Speed: Hi
- Measured integral power consumption every 30 minutes and compare (including thermo OFF period)
- Room temperatures / 19°C, outdoor temperature 35/24°C (cooling nominal capacity) cool down the room for 1 hour and keep the room temperature stable. After the room temperature become stable, turn OFF indoor unit refrigerator and heater and only operate circulator and continue cooling down the room by the unit (operating circulator to avoid temperature variation)

#### Integral Power Consumption Cooling Operation

- Energy Saving for 28%
- Energy Saving for 28%
- Energy Saving for 28%

Increasing setting temperature +2°C during cooling operation, maximum 28% energy saving can achieved.
## Operation System

### Individual Control Systems

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Control for hotel application (for VRF)</th>
<th>Wired remote controller</th>
<th>Wireless remote controller</th>
<th>Quick and easy operation</th>
</tr>
</thead>
</table>

### External appearance

- **Type, model name**
  - Intelligent Controller
  - Normal operation
  - Normal operation with Econavi
  - Design wired remote controller
  - Wireless remote controller
  - Simplified remote controller

- **Stand-Alone White**
  - PAW-RE2C3-30R-WH
  - PAW-RE2C3-30R-GR

- **Modbus White**
  - PAW-RE2C3-3MOD-WH
  - PAW-RE2C3-3MOD-GR

- **LonWorks White**
  - PAW-RE2C3-3LON-WH
  - PAW-RE2C3-3LON-GR

### Econavi Control

- Yes

### Power consumption monitor

- Yes

### I/O which can be controlled

- 1 indoor unit
  - 1 group, 8 units
  - 1 group, 8 units
  - 1 group, 8 units
  - 1 group, 8 units
  - 1 group, 8 units

### Use limitations

- Function ON/OFF
  - AUTO
- Fan speed setting
- Temperature setting
- Air flow direction
- Permit/Prohibit switching
- Weekly program

1. Setting is not possible when a remote control unit is present (use the remote control for setting).
2. Only for PAC Elite except 50 type.

* All specifications subject to change without notice.
Control systems for PACi, ECOi and ECO G

A wide variety of control options to meet the requirements of different applications.

<table>
<thead>
<tr>
<th>Timer Operation</th>
<th>Centralized Control Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily and weekly program</td>
<td>Operation with various function from center station</td>
</tr>
<tr>
<td></td>
<td>Only ON/OFF operation from center station</td>
</tr>
<tr>
<td></td>
<td>Simplified load distribution ratio (LDR) for each tenant</td>
</tr>
<tr>
<td></td>
<td>BMS System. PC Base</td>
</tr>
<tr>
<td></td>
<td>Connection with 3rd Party Controller</td>
</tr>
<tr>
<td>Schedule timer</td>
<td>System controller</td>
</tr>
<tr>
<td></td>
<td>New System Controller with Schedule timer</td>
</tr>
<tr>
<td></td>
<td>ON/OFF Controller</td>
</tr>
<tr>
<td></td>
<td>Intelligent Controller (Touch screen panel)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CZ-ESWC2</th>
<th>CZ-64ESMC2</th>
<th>CZ-64ESMC3 (Available in December 2015. Tentative data)</th>
<th>CZ-JNC2</th>
<th>CZ-264ESMC2 (CZ-CFUNC2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
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</tr>
<tr>
<td>64 groups, max. 64 units</td>
<td>64 groups, max. 64 units</td>
<td>64 groups, max. 64 units</td>
<td>16 groups, max. 64 units</td>
<td>64 units x 4 systems, max. 256 units</td>
</tr>
<tr>
<td>- Required power supply from the system controller</td>
<td>- Up to 10 controllers, can be connected to one system</td>
<td>- Up to 10 controllers, can be connected to one system</td>
<td>- Up to 8 controllers (4 main units + 4 sub units) can be connected to one system</td>
<td>- A communication adaptor (CZ-CFUNC2) must be installed for three or more systems</td>
</tr>
<tr>
<td>- When there is no system controller, connection is possible to the T10 terminal of an indoor unit</td>
<td>- Main unit/sub unit (1 main unit + 1 sub unit) connection is possible</td>
<td>- Use without remote controller is possible</td>
<td>- Use without remote controller is possible</td>
<td>- Use without remote controller is impossible</td>
</tr>
<tr>
<td></td>
<td>- Up to 10 controllers, can be connected to one system</td>
<td>- Main unit/sub unit (1 main unit + 1 sub unit) connection is possible</td>
<td>- Use without remote controller is possible</td>
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<tr>
<td></td>
<td>- Use without remote controller is possible</td>
<td>- Use without remote controller is possible</td>
<td>- A communication adaptor (CZ-CFUNC2) must be installed for three or more systems</td>
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</tbody>
</table>

NEW — CONTROL AND CONNECTIVITY

<table>
<thead>
<tr>
<th>Connection with 3rd Party Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-AIMS. Basic Software</td>
</tr>
<tr>
<td>CZ-CSWKC2</td>
</tr>
<tr>
<td>Optional software</td>
</tr>
<tr>
<td>CZ-CSWAC2</td>
</tr>
<tr>
<td>CZ-CSWWC2</td>
</tr>
<tr>
<td>CZ-CSWGC2</td>
</tr>
<tr>
<td>CZ-CSWBC2</td>
</tr>
<tr>
<td>*PC required (field supply)</td>
</tr>
<tr>
<td>Web Interface Systems</td>
</tr>
<tr>
<td>CZ-CWEBC2</td>
</tr>
<tr>
<td>CZ-ESWC2</td>
</tr>
<tr>
<td>CZ-ANC2</td>
</tr>
<tr>
<td>CZ-256ESMC2 (CZ-CFUNC2)</td>
</tr>
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<tr>
<td>✓</td>
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</tbody>
</table>

NEW __ CONTROL AND CONNECTIVITY

<table>
<thead>
<tr>
<th>Communication Adaptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>CZ-CFUNC2</td>
</tr>
<tr>
<td>—</td>
</tr>
</tbody>
</table>

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Control for hotel application

Nice, easy and cost effective!

Panasonic has developed an innovative line up of remote controls specially designed for applications:

- Easy to install
- Cost effective installation as all electrical cable are centralized on this remote
- Architect inspired attractive design
- Direct connection to the Indoor unit with most of the functions of the indoor unit
- 3 options available: Stand-Alone, Modbus or LonWorks communication
- 2 frame colours: White and aluminium

From this remote control:

- The lighting, card contact, motion detector, window contact and the air conditioning are controlled.

Energy saving functions included on the device:

- Turns Off air conditioning and lighting when room is unoccupied
- Disables air conditioning when window is open
- Maximum/minimum setpoint temperature configurable

Easy remote control:

- The hotel customer will have access to limited functions to control the air conditioning:
  - ON/OFF, Temperature (under a certain limit fixed during the start up) and Fan speed

Easy set up:

- Stand-Alone model with easy configuration menu to access all parameters. The installation is simplified as all the cables should arrive to the remote control. A pre-define scenario can be uploaded on the remote control connected to a computer to make installation on site plug and play (only on the Modbus and LonWorks models).
Control to integrate all room hotel needs in one device:
Card switch. Heating and cooling control.
Light control. Window control. Possible to connect to Modbus

Four preconfigured systems (option 1 to 4)
The remote control have a 4 preconfigured systems in order to easily integrate it.

4 options available I/O configurations: Inputs

<table>
<thead>
<tr>
<th>Configurations</th>
<th>Digital</th>
<th>Digital</th>
<th>Digital</th>
<th>Analog</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>Card</td>
<td>Window</td>
<td>Lighting</td>
<td>Temperature</td>
</tr>
<tr>
<td>Option 2</td>
<td>Card</td>
<td>Window</td>
<td>Blinds Up</td>
<td>Blinds Down</td>
</tr>
<tr>
<td>Option 3</td>
<td>Motion Sensor</td>
<td>Window</td>
<td>Door Contact</td>
<td>Temperature</td>
</tr>
<tr>
<td>Option 4</td>
<td>Lighting</td>
<td>Window</td>
<td>Blinds Up</td>
<td>Blinds Down</td>
</tr>
</tbody>
</table>

Available I/O Configurations: Outputs

<table>
<thead>
<tr>
<th>Configurations</th>
<th>Relay</th>
<th>Relay</th>
<th>Relay</th>
<th>Relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>Courtesy</td>
<td>Lighting</td>
<td>Not Used</td>
<td>Valve actuator</td>
</tr>
<tr>
<td>Option 2</td>
<td>Courtesy</td>
<td>Lighting</td>
<td>Blinds Up</td>
<td>Blinds Down</td>
</tr>
<tr>
<td>Option 3</td>
<td>Courtesy</td>
<td>Lighting</td>
<td>Not Used</td>
<td>Valve actuator</td>
</tr>
<tr>
<td>Option 4</td>
<td>Not used</td>
<td>Lighting</td>
<td>Blinds Up</td>
<td>Blinds Down</td>
</tr>
</tbody>
</table>

Example I/O: Wiring configuration for Option 2

Example I/O: Option 2

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B</td>
<td>Modbus RS-485</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>R1, R2</td>
<td>Indoor Unit</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>1, 2</td>
<td>Card contact</td>
<td>Digital Input</td>
</tr>
<tr>
<td>3, 4</td>
<td>Window Contact</td>
<td>Digital Input</td>
</tr>
<tr>
<td>5, 6</td>
<td>Blinds Up</td>
<td>Digital Input</td>
</tr>
<tr>
<td>7, 8</td>
<td>Blinds Down</td>
<td>Analog Input</td>
</tr>
<tr>
<td>9, 10</td>
<td>Blinds Down</td>
<td>Relay Output</td>
</tr>
<tr>
<td>11, 12</td>
<td>Blinds Down</td>
<td>Relay Output</td>
</tr>
<tr>
<td>13, 14</td>
<td>Lighting Room</td>
<td>Relay Output</td>
</tr>
<tr>
<td>15, 16</td>
<td>Lighting Courtesy</td>
<td>Relay Output</td>
</tr>
</tbody>
</table>

Example Panasonic Reference

- PAW-RE2C3-WH: Stand-Alone with I/O White frame
- PAW-RE2C3-GR: Stand-Alone with I/O Grey frame
- PAW-RE2C3-MOD-WH: Modbus RS-485 with I/O White frame
- PAW-RE2C3-MOD-GR: Modbus RS-485 with I/O Grey frame
- PAW-RE2C3-LON-WH: LONWorks TP/FF-10 with I/O White frame
- PAW-RE2C3-LON-GR: LONWorks TP/FF-10 with I/O Grey frame
Individual Control Systems


- Time Function 24 hours real time clock (week day indicator)
- Weekly programme function (a maximum of 6 actions can be programmed for each day)
- Sleeping function (this function controls the room temperature for comfortable sleeping)
- Maximum 8 indoor units can be controlled from one remote controller
- Remote control by main remote controller and sub controller is possible (maximum 2 remote controllers (main remote controller and sub controller) can be installed for one indoor unit)
- Possible to connect to the outdoor unit using PAW-MRC cable for servicing purposes
- Outing function (this function can prevent the room temperature from dropping or rising when the occupants are out for a long time)
- Dimensions (H x W x D): 120 x 120 x 20 mm
- Weight: 160 g

Basic remote controller ON/OFF
- Econavi compatible
- Operation mode changeover (Cooling, Heating, Dry, Auto, Fan)
- Temperature setting (Cooling / Dry: 18-30 °C Heating: 16-30 °C)
- Fan speed setting High / Medium / Low and Auto
- Air flow direction adjustment

High-spec wired remote controller (CZ-RTC5) (Available in October 2015)

- Power consumption monitor (only for PACi)
- Flat face design & Touch sensor switch for stylish design and operating usability
- New functions such as for Energy saving & monitoring and for Service use are available on the Full dot LCD (3.5” display)
- Improved illumination
- White LED backlight
- Blink when alarm occurs
- Improved illumination
- White LED backlight
- Blink when alarm occurs

Timer remote controller (CZ-RTC2)

- Time Function 24 hours real time clock (week day indicator)
- Weekly programme function (a maximum of 6 actions can be programmed for each day)
- Sleeping function (this function controls the room temperature for comfortable sleeping)
- Maximum 8 indoor units can be controlled from one remote controller
- Remote control by main remote controller and sub controller is possible (maximum 2 remote controllers (main remote controller and sub controller) can be installed for one indoor unit)
- Possible to connect to the outdoor unit using PAW-MRC cable for servicing purposes
- Outing function (this function can prevent the room temperature from dropping or rising when the occupants are out for a long time)

Basic remote controller ON/OFF
- Econavi compatible
- Operation mode changeover (Cooling, Heating, Dry, Auto, Fan)
- Temperature setting (Cooling / Dry: 18-30 °C Heating: 16-30 °C)
- Fan speed setting High / Medium / Low and Auto
- Air flow direction adjustment

Dimensions (H x W x D): 120 x 120 x 16mm

* Several functions can not use on same outdoor unit. Ex. Power consumption monitor is not available for PACi Standard, Big PACi and PACi Elite 50 type.
**Wireless remote controller**

- Easy installation for the 4 Way cassette type simply by replacing the corner part
- 24 hour timer function
- Remote control by main remote controller and sub controller is possible (Max. 2 remote controllers (main remote controller and sub controller) can be installed for one indoor unit)
- When CZ-RWSC3 is used, wireless control becomes possible for all indoor units (1: when a separate receiver is set up in a different room, control from that room also becomes possible. 2: automatic operation by means of the emergency operation button is possible even when the remote controller has been lost or the batteries have been exhausted)
- Operation of separate energy recovery ventilators (When commercial ventilation fans or heat-exchange ventilation fans have been installed, they can be operated with this remote control (interlocked operation with the indoor unit or independent ventilation ON/OFF)

**Simplified remote controller (CZ-RE2C2)**

- A remote controller with simple functions and basic operation
  - Suitable for open rooms or hotels where detailed functions are not required
  - ON/OFF, operation mode switching, temperature setting, air speed switching, air flow direction setting, alarm display, and remote controller self-diagnosis can be performed
  - Batch group control for up to 8 indoor units

- Remote control by main remote controller and sub controller is possible with a simplified remote controller or a wired remote controller (up to two units)

Dimensions (H x W x D): 120 x 70 x 16mm

**Remote sensor (CZ-CSRC2)**

- This remote sensor can be connected to any indoor unit. Please use it to detect the room temperature when no remote controller sensor or body sensor is used (connection to a system without a remote controller is possible)
- For joint use with a remote control switch, use the remote control switch as main remote controller
- Batch group control for up to 8 indoor units

**Remote sensor (CZ-CSRC3) (Available in July 2015)**

- New appearance design based on simplified remote controller chassis
Centralised Control Systems

Schedule timer (CZ-ESWC2)

The power supply for the schedule timer is taken from one of the following:
1. Control circuit board (T10) of a nearby indoor unit (power supply wiring length: within 200 m from the indoor unit).
2. System controller (power supply wiring length: within 100 m from the indoor unit).

When the power supply for the schedule timer is taken from the control circuit board of the indoor unit, that indoor unit cannot be used with other control devices using the CZ-T10 terminal. As operation mode and temperature settings are not possible with the schedule timer, it must be used together with a remote controller, a system controller, an intelligent controller, etc. Also, as it does not have an address setting function, the control function of a system controller etc. must be used for address setting.

- Up to 64 groups (maximum 64 indoor units) can be controlled divided into 8 timer groups

- Six program operations (Operation/Stop/Local permission/Local prohibition) per day can be set in a program for one week
- Only operation or stop, remote controller local permission or remote controller local prohibition, and their respective combinations are possible. (Operation + local permission, stop + local prohibition, only local permission, etc.)
- Local prohibition and the combination of the three items of temperature setting, mode change, and operation/stop can be set at the time of installation.
- A function for pausing the timer in case of national holidays has been added, and timer operation also can be stopped for a long time
- By setting holidays or operation stop within one week, the timer can be paused just for that week.
- All timer settings can be stopped with the timer “ON/OFF effective” button. (Return to timer operation is made by pressing the button again.)

Dimensions (H x W x D): 120 x 120 x 16mm.

ON/OFF controller (CZ-ANC2)

- 16 groups of indoor units can be controlled.
- Collective control and individual group (unit) control can also be performed.
- Up to 8 ON/OFF controller (4 main, 4 sub) can be installed in one link system.
- The operation status can be determined immediately.

Dimensions (H x W x D): 121 x 122 x 14 + 52mm (embedding dimension).

Power supply: AC 220 to 240 V.
I/O part: Remote input (effective voltage: within DC 24 V):
  - All ON/OFF.
Remote output (allowable voltage: within DC 30 V):
  - All ON, All alarm.

Note: As operation mode and temperature settings are not possible with the ON/OFF controller, it must be used together with a remote controller, a system controller etc.
New System Controller with scheduled timer (CZ-64ESMC3) (available in December 2015)

System controller (CZ-64ESMC2)

Individual control is possible for max. 64 groups, 64 indoor units.
Control of 64 indoor units divided into 4 zones. (One zone can have up to 16 groups, and one group can have up to 8 units.)
Control is possible for ON/OFF, operation mode, fan speed, air flow direction (only when used without a remote controller), operation monitoring, alarm monitoring, ventilation, remote controller local operation prohibition, etc.

Individual All operations are possible from the remote controller. However, the contents will be changed to the last settings used on the controller.
Central 1 The remote controller cannot be used for ON/OFF. (All other operations are possible from the remote controller.)
Central 3 The remote controller cannot be used for mode change or temperature setting change. (All other operations are possible from the remote controller.)
Central 4 The remote controller cannot be used for operation mode change. (All other operations are possible from the remote controller.)

Joint use with a remote controller, an intelligent controller, a schedule timer, etc. is possible
(The maximum number of connectable system controllers is 10, including other central controllers on the same circuit.)
(In case of joint use with a wireless remote controller, there are limitations for the control mode. Please use only with “Individual” and “Central 1.”)

Control of systems without a remote controller and of main/sub systems (a total of up to 2 units) is possible

A control mode corresponding to the use condition can be selected from 10 patterns
A. Operation mode: Central control mode or remote control mode can be selected
Central control mode: The system controller is used as centralised control device. (Setting from a remote controller can be prohibited by prohibiting local operation from the system controller.)
Remote control mode: The system controller is used as a remote controller. (Setting from the system controller can be prohibited by prohibiting local operation from another central control unit.)
B. Controlled unit number mode: All mode or zone 1, 2, 3, 4 mode can be selected
All mode: All, zone, or group unit can be selected.
Zone 1, 2, 3, 4 mode: Setting is possible only for the indoor units of zone 1, 2, 3, or 4.

<table>
<thead>
<tr>
<th>Connection example</th>
<th>A Operation mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Controlled unit number mode</td>
<td>Central control mode</td>
</tr>
<tr>
<td>All mode</td>
<td>All central control. Example 1</td>
</tr>
<tr>
<td>Zone 1 mode</td>
<td>Zone 1 central control. Example 2</td>
</tr>
<tr>
<td>Zone 2 mode</td>
<td>Zone 2 central control. Example 3</td>
</tr>
<tr>
<td>Zone 3 mode</td>
<td>Zone 3 central control. Example 4</td>
</tr>
<tr>
<td>Zone 4 mode</td>
<td>Zone 4 central control</td>
</tr>
</tbody>
</table>

External Contacts On Central Controllers
Terminals for remote monitoring:
A1) Input for turning ON air conditioners concurrently
A2) Input for turning OFF air conditioners concurrently
A3) Common input for turning air conditioners ON or OFF
B1) On operation state indicator output
B2) Alarm indicator output
B3) Common indicator output

New System Controller with scheduled timer (CZ-64ESMC3) (available in December 2015)

New System Controller with scheduled timer (CZ-64ESMC3) (available in December 2015)

NEW — CONTROL AND CONNECTIVITY
Intelligent controller (CZ-256ESMC2)

Limitation contents for prohibited operation
Prohibition means limiting the operations possible from the remote controller. It is also possible to change the prohibition items.

Limitation contents (Limitations can be user defined)
Individual No limits are set for the remote controller operation. However, the contents will be changed to the controller’s last settings. (Last-pressed priority.)
Prohibition 1 The remote controller cannot be used for ON/OFF. (All other operations are possible from the remote controller.)
Prohibition 2 The remote controller cannot be used for ON/OFF, operation mode change and temperature setting. (All other operations are possible from the remote controller.)
Prohibition 3 The remote controller cannot be used for operation mode change and temperature setting. (All other operations are possible from the remote controller.)
Prohibition 4 The remote controller cannot be used for operation mode change. (All other operations are possible from the remote controller.)

Note: Avoid joint use of the AMY system and the intelligent controller on the same indoor/outdoor operation line.

- Max. 256 indoor units (4 systems x 64 units) can be controlled. In case of three or more systems, a communication adaptor CZ-CFUNC2 must be installed on the outside
- Operation is possible as batch, in zone units, in tenant and in group units
- ON/OFF, operation mode setting, temperature setting, fan speed setting, air flow direction setting (when used without a remote controller), and remote controller local operation prohibition (prohibition 1, 2, 3, 4)
- A system without a remote controller is possible. Joint use with a remote controller or a system controller is also possible
- Use of a schedule timer and holiday setting also can be done
- Proportional distribution of the air conditioning energy is possible. Including CSV-file export via CF-card (supplementary accessory)
- Pulse signal input from electric/gas consumption meter

In case of joint use with a wireless remote control system, there are limitations for the control mode. Please use only with “Permission” and “Prohibition 1”.

Dimensions (H x W x D): 240 x 280 x 138mm.
Power supply: AC 100 to 240 V (50 Hz), 30 W (separate power supply).
I/O part: Remote in put (voltage-free contact): All ON/OFF.
Remote output (voltage-free contact): All ON, All alarm (external power supply within DC 30 V, 0.5 A).
Total wiring length: 1 km for each system.
Only for embedding in the panel.

CZ-CBPCC2: Additional back up memory for CZ-256ESMC2.
Web Interface (CZ-CWEBC2)

Functions
- Access and operation by Web browser.
- Icon display.
- Language codes available in English, French, German, Italian, Portuguese, Spanish.
- Individual control possible (max. 64 indoor units) ON/OFF operation mode, set temperature, fan speed, flap set, timer ON/OFF alarm code monitoring, prohibit Remote Control.
- Zone control*.
- All Units control.
- Alarm Log.
- Mail Sent Log.
- Program Timer set 50 daily timers with 50 actions each day, 50 weekly timers 50 weekly timers, 1 holiday timer, 5 special day timers, for each tenant.
- Prohibit Remote Control settings.
- IP ADDRESS could be changed via Internet.

Note: it is recommended to install a remote controller or a system controller on site to enable local control if the network experiences a problem.

Easy to set to every room by recognizable icon and user-friendly remote control window
- If any of the indoor units is selected, the remote control window shown will be displayed for detailed setting modifications.

Easy to manage and monitor each tenant use*
- Each floor or tenant, otherwise each zone can be displayed and controlled.
- All unit statuses can also be displayed on one screen.

Program Timer set
- 50 daily timers with 50 actions each day, 50 weekly timers, holiday timer, 5 special day timers, for each tenant.

* Web interface system not applicable for load distribution.

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- Access and operation by Web browser.
- Icon display.
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- Individual control possible (max. 64 indoor units) ON/OFF operation mode, set temperature, fan speed, flap set, timer ON/OFF alarm code monitoring, prohibit Remote Control.
- Each Tenant (Zone) control.
- All Units control.
- Alarm Log.
- Mail Sent Log.
- Program Timer set 50 daily timers with 50 actions each day, 50 weekly timers 50 weekly timers, 1 holiday timer, 5 special day timers, for each tenant.
- Prohibit Remote Control settings.
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Note: it is recommended to install a remote controller or a system controller on site to enable local control if the network experiences a problem.
Centralised Control Systems

Seri-Para I/O unit for outdoor unit (CZ-CAPDC2 for ECOi / CZ-CAPDC3 for Mini ECOi and PACi)

- This unit can control up to 4 outdoor units.
- From the central control device, mode changing and batch operation/batch stop are possible.
- Required for demand control.

Dimensions (H x W x D): 80 x 290 x 260mm.
Power supply: Single Phase 100/200V (50/60Hz), 18W.
Input: Batch operation/Batch stop (non-voltage contact/DC 24 V, pulse signal). Cooling/Heating (non-voltage contact/static signal). Demand 1/2 (non-voltage contact/static signal) (Local stop by switching)
Output: Operation output (non-voltage contact).
Alarm output (non-voltage contact)

Local adaptor for ON/OFF control (CZ-CAPC2)

- Control and status monitoring is possible for individual indoor unit (or any external electrical device up to 250 V AC, 10 A) by contact signal.

Demand Control 0 -10 V (CZ-CAPBC2)

- Control and status monitoring is possible for individual indoor unit (1 group).
- In addition to operation and stop, there is a digital input function for air speed and operation mode.
- Temperature setting and measuring of the indoor suction temperature can be performed from central monitoring.
- The analog input for demand of the outdoor capacity by 20 steps (from 40% to 120%) by 0-10V.
- The analog input for temperature setting is 0 to 10 V, or 0 to 140 Ohm.
- Power is supplied from the CZ-T10 terminal of the indoor units.
- Separate power supply also is possible (in case of suction temperature measuring).

* Ask to your distributor.
P-AIMS. Panasonic Total Air Conditioning Management System

P-AIMS Basic software / CZ-CSWKC2
Up to 1024 indoor units can be controlled by one PC.

Functions of basic software
- Standard remote control for all indoor units.
- Many timer schedule programs can be set on the calender.
- Detailed information display for alarms.
- CSV file output with alarm history, operating status.
- Automatic data backup to HDD.

P-AIMS is suitable for large shopping centers and universities with many areas/ buildings. 1 “P-AIMS” PC can have 4 independent systems at once. Each system can have max. 8 C/A units, and control max. 512 units. In total, 1024 indoor units can be controlled by 1 "P-AIMS" PC.

PC Environment:
- XP Professional
- CPU: Pentium 2.8 GHz or over
- Memory: 2 GB or over
- HDD: 100 GB or over
- Wiring length (PC~C/A) Max. 1 km
- Max. 8 C/A for 1 system
- Wiring length for each link from C/A Max. 1 km

P-AIMS optional software CZ-CSWAC2 for Load distribution
Load distribution calculation for each tenant
- Air-conditioner load distribution ratio is calculated for each unit (tenant) with used energy consumption data (m³, kWh).
- Calculated data is stored as a CSV type file.
- Data from the last 365 days is stored.

P-AIMS optional software CZ-CSWWC2 for Web application
Web access & control from remote station
- Accessing P-AIMS software from remote PC.
- You can monitor/operate ECOi 6N system by using Web browser (Internet Explorer).

P-AIMS optional software CZ-CSWGC2 for Object layout display
Whole system can be controlled visually
- Operating status monitor is available on the layout display.
- Object’s layout and indoor unit’s location can be checked at once.
- Each unit can be controlled by virtual remote controller on the display.
- Max. 4 layout screens are shown at once.

P-AIMS optional software CZ-CSWBC2 for BACnet software interface
Connectable to BMS system
- Can communicate with other equipment by BACnet protocol.
- ECOi 6N system can be controlled by both BMS and P-AIMS.
- Max. 255 indoor units can be connected to 1 PC (that has P-AIMS basic & BACnet software).
Centralised Control Systems

A custom web application to manage the centralized operation of A2W and GHP systems.

Operation and monitoring of devices connected to the new Management System can be realized both remotely/locally from any device with connection to the internet (Laptop, Tablet, Mobile)

The new system will make the interaction with air conditioning systems easier, improving the operation set as well as the global control of installations.

The application will act with various units, regardless of whether they are available in the same intranet or in different locations, transparently to users at any time. In this way, our solution allows to overcome main restrictions like onsite maintenance or the lack of centralization.

In addition, the application offers significant improvements in terms of control:
- Aircon units can be grouped in a totally custom way
- Possibility to realize group commands and batch commands (in succession)
- Alarms and events can be controlled more efficiently and a lot more...

Benefits

The new solution for the centralized control of air conditioning systems offers significant benefits for the different actors involved in its management:

For the building Ownership:
- Maximum equipment performance
- Energy saving
- Increased lifetime of equipment
- Savings in maintenance costs

For Maintenance companies:
- Instant knowledge of any incident
- Possibility of preventive alarms
- Reduction of systematic visits (warning and remote control)
- More effective maintenance support

Features of current system

Operation Functions
- Start & Stop
- Temperature settings
- Operation mode selection
- Fan speed, Fan direction settings
- Prohibition of use of remote controller

Program Timers
- Up to 50 types of weekly timer
- Holiday and Special Days

Operation Monitoring
- Monitoring of operation status and alarms
- Monitoring of filter cleaning signs
- Display of alarm logs

Current installation

Internet

Main restrictions: Decentralization: need to connect to every CZ-WEB one by one to manage installation.
On-site maintenance: Access limited to local network.

Offer reliable solution to improve existing functionalities

- Running timer
- Remote control through Web Cloud Application or local. Accessible anytime, anywhere, via a device with internet connection
- Centralized Control: Manage several installations in one single interface.
  Ideal for multi-site organizations
- Easy monitoring and maintenance thanks to group commands, and batch commands. Easy supervision of complex installations
- Secure Remote Access. Powerful identity protection and convenient access control
PACi and VRF Control

Aware of the importance of both control and connectivity in offering the best comfort at the lowest price, Panasonic offers its customers cutting-edge technology, specially designed to ensure our air conditioning systems deliver maximum performance. You can properly manage the air conditioning and perform comprehensive monitoring and control, with all of the features the remote control provides, from anywhere in the world thanks to the internet applications Panasonic has created for you.

Internet Control

Control your air conditioning system with your smart device - smartphone & internet for PACi and VRF Systems

What’s Internet Control?

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

Simple Installation

Just connect the Internet Control device to the air conditioner or heat pump with the supplied wire and then link it to your WIFI Access point.

Internet Control. Easy to install. Maximum benefit

Internet Control is underlined with the slogan “Your home in the cloud”, meaning a simple and easy to handle solution has been considered for every user to manage the device, not requiring any communication or computer skills.

No servers. No adaptors. No wires. Just a small box is needed to be connected and placed close to the air conditioning indoor unit... and your smartphone, tablet or PC.

Your existing WiFi connection does the rest when you are at home. Start the App from your smartphone device, your tablet or your computer, and enjoy a new experience in comfort. And if you are out of home, just launch the App, and manage the air conditioning of your home from the cloud. An intuitive and user-friendly application on the screen of your smartphone or PC that lets you manage the air conditioning unit in the same way you do with the remote controller at home.

Internet Control can be downloaded in Apple’s AppStore and Android’s PlayStore.

Control your air conditioning with the smart internet control device via smartphones, tablet, PC and smart desktop phone via internet

Offering the same functions as if you were at home or office: start/stop, Mode Operation, Set Temperature, Room Temperature etc as well as the new, advanced functionality provided by Internet Control to achieve the best comfort and efficiency with the lowest energy consumption.

Case Study. Paul, Business Man

“My business is growing but I still want to feel like I’m in control. So I carry out all the arrangements, transactions and operations I can from my mobile. From bank transactions, processing orders, to controlling the temperature at the company’s different plants; I do everything from my smartphone thanks to Intesishome and Panasonic.”

Case Study. Alice, Shop Owner

“I want maximum comfort and the best savings for my shop. And I manage to get these in the easiest and most natural way possible. From my smartphone, something I always carry with me, I can control the temperature of my shop and in this way, as well as maintaining an ideal temperature I also save a small fortune in electricity at the end of the year.”
PACi Connectivity

Easy connection to KNX, Modbus, LonWorks and BACnet
Great flexibility for integration into your KNX / Modbus / LonWorks / BACnet projects allows fully bi-directional monitoring and control of all the functioning parameters.

For more information, contact Panasonic.

Communication adaptor for VRF Connectivity (CZ-CFUNC2)
This communication interface is required to connect a ECOi and GHP systems to a BMS. An additional interface is needed to convert the information into KNX/Modbus/Bacnet language. CZ-CFUNC2 is very easy to operate and to connect to the Panasonic P-link, which is the ECOi bus. From the CZ-CFUNC2, all the indoor and outdoor units of the installation can be easily control. Two linked wiring systems can be connected to one CZ-CFUNC2.
Dimensions: H 260 x W 200 x D 68mm
* As this is not a splash-proof design, it must be installed indoors or in the control panel, etc.

Airzone. Control of the PACi Hide Aways
Airzone has developed interfaces to easily connect to Panasonic PACi Hide Away units. Ensuring optimum performance, comfort and energy savings, the new system is efficient and easy to install.

Airzone full range of accessories for any duct project
Different type of outlets
Also plenum automatic doors
Full range of RC (wired/wireless, ...)

Airzone full range of accessories for any duct project
**ECOi and GHP Connectivity**

**New Plug and play interface connected directly to the P-Link**

The interface has been designed specifically for Panasonic and provides complete monitoring, control and full functionality of the Etherea, 4-Way 60x60 cassette and Low static pressure hide away line-up from IntesisHome, KNX, EnOcean, Modbus and BacNet installations. This connectivity solution is made by a third party company, please contact Panasonic for more information.

### Panasonic model name | Interface | Connected on P-link or in the indoor unit | Maximum number of indoor units connected
---|---|---|---
**ECOi / PACi**
Indoor Units<br>PAN-RC2-KNX-1i | KNX Indoor unit | 1 Group of indoor units<br>PAW-RC2-MBUS-1 | Modbus RTU** Indoor unit | 1 Group of indoor units<br>PA-RC2-WIFI-1 | IntesisHome Indoor unit | 1 Group of Indoor units
**ECOi / P-Link**
PAW-AC-KNX-64 | KNX** P-link | 64<br>PAW-AC-KNX-128 | KNX** P-link | 128<br>PAW-TM-MBUS-RTU-64 | Modbus RTU** P-link | 64<br>PAW-TM-MBUS-TCP-128 | Modbus TCP** P-link | 128<br>PAW-AC-BAC-64 | Bacnet** P-link | 64<br>PAW-AC-BAC-128 | Bacnet** P-link | 128<br>CZ-CLNC2 | Lonworks P-link | 16 groups of max. 8 indoor units, in total max. 64 indoor units

* Interface Modbus RTU/TCP is needed in case if Modbus TCP connection. PAW-MBS-TCP2RTU (Modbus RTU Slave devices).
** Interface CZ-CFUNC2 needed.

**Example of BMS connection for air conditioner central control system**

- **BMS system**
- **BMS interface**
- **Communication adapter**
- **CZ-CFUNC2**
- **Outdoor unit**
- **Remote controller**
- **Group control**
- **Max. 64 total indoor units connected to one link on CZ-CFUNC2**
ECOi, ECO G and PACi Connectivity indoor units

### PCB's and cables for ECOi, ECO G and PACi indoor units

<table>
<thead>
<tr>
<th>Name of the cable</th>
<th>Function</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CZ-T10</td>
<td>All T10 functions</td>
<td>Requires field supplied accessory</td>
</tr>
<tr>
<td>PAW-FDC</td>
<td>Operate external fan</td>
<td>Requires field supplied accessory</td>
</tr>
<tr>
<td>PAW-DCF</td>
<td>All option monitoring signals</td>
<td>Requires field supplied accessory</td>
</tr>
<tr>
<td>CZ-CAPES</td>
<td>Option monitoring signals w/o fan</td>
<td>Requires additional wires from spare part supply</td>
</tr>
<tr>
<td>PAW-ECT</td>
<td>Forced Thermo OFF/Leakage B.</td>
<td>Requires field supplied accessory</td>
</tr>
</tbody>
</table>

### Name of the PBC | Function | Comment |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PAW-T10</td>
<td>All T10 functions</td>
<td>Allows easy connection &quot;Plug &amp; Play&quot;</td>
</tr>
<tr>
<td>PAW-T10W</td>
<td>All T10 functions + powermonitoring</td>
<td>Same like PAW-T10 + monitoring the power supply of indoor unit</td>
</tr>
<tr>
<td>PAW-T10N</td>
<td>ON/OFF, Prohibit S1DC &amp; 23VAC</td>
<td>Specials for single hotel card or window contact</td>
</tr>
<tr>
<td>PAW-T10NW</td>
<td>ON/OFF, Prohibit S1DC</td>
<td>For hotel card + window contact at same time</td>
</tr>
<tr>
<td>PAW-PACK3</td>
<td>Redundancy of 2 or 3 systems; for ECOi and PACi</td>
<td>Redundancy of 2 or 3 ECOi or PACi systems including temperature monitoring, error indication, backup, alternative run</td>
</tr>
<tr>
<td>PAW-SERVER-PKEA</td>
<td>Redundancy of 2 units PKEA</td>
<td>Redundancy of 2 units PKEA including temperature monitoring, error indication, backup, alternative run</td>
</tr>
</tbody>
</table>

### CZ-T10 connector (CN015)

CZ-T10: Panasonic has developed an optional accessory (consisting of plug + wires) called CZ-T10 to enable an easy connection to this T10 connector. Connecting an ECOi indoor unit to an external device is easy. The T10 terminal featured in the electronic circuit board of all indoor units enables digital connection to external devices.

#### T10 terminal Specification (T10: CN015 at indoor unit PCB)

- **Control items:**
  1. Start/stop input
  2. Remote controller prohibit input
  3. Start signal output
  4. Alarm signal output

- **Condition:**
  1. 1-2 (Pulse input): Unit ON/OFF condition switching with a pulse signal. (1 pulse signal: shortage status more than 300 msc. or more)
  2. 2-3 (Static input): Open / Operation with Remote is permitted. (Normal condition) Close / Remote controller is prohibited.
  3. 4-5 (Static output): 12 V output during the unit ON / No output at OFF.
  4. 5-6 (Static output): 12 V output when some errors occur / No output at normal.

#### Example of wiring

- **Usage Example**
  **Forced OFF control**
  Term 1 & 2: Free contact for ON/OFF signal (cut *JP1* for static signal) when the hotel card is it connected the contact must be close (the unit can be used).
  Term 2 & 3: Free contact to prohibit all function in the remote controller install in the room when the hotel card is it removed the contact must be closed (the unit can not work).

- **Operation ON/OFF signal output**
  **Condition:**
  4-5 (Static output): 12 V output during the unit ON / No output at OFF
  **Example of wiring**

#### PCB’s and cables

<table>
<thead>
<tr>
<th>Name of the cables</th>
<th>Function</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CZ-T10</td>
<td>All T10 functions</td>
<td>Requires field supplied accessory</td>
</tr>
<tr>
<td>PAW-FDC</td>
<td>Operate external fan</td>
<td>Requires field supplied accessory</td>
</tr>
<tr>
<td>PAW-DCF</td>
<td>All option monitoring signals</td>
<td>Requires field supplied accessory</td>
</tr>
<tr>
<td>CZ-CAPES</td>
<td>Option monitoring signals w/o fan</td>
<td>Requires additional wires from spare part supply</td>
</tr>
<tr>
<td>PAW-ECT</td>
<td>Forced Thermo OFF/Leakage B.</td>
<td>Requires field supplied accessory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of the PBC</th>
<th>Function</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAW-T10</td>
<td>All T10 functions</td>
<td>Allows easy connection &quot;Plug &amp; Play&quot;</td>
</tr>
<tr>
<td>PAW-T10W</td>
<td>All T10 functions + powermonitoring</td>
<td>Same like PAW-T10 + monitoring the power supply of indoor unit</td>
</tr>
<tr>
<td>PAW-T10N</td>
<td>ON/OFF, Prohibit S1DC &amp; 23VAC</td>
<td>Specials for single hotel card or window contact</td>
</tr>
<tr>
<td>PAW-T10NW</td>
<td>ON/OFF, Prohibit S1DC</td>
<td>For hotel card + window contact at same time</td>
</tr>
<tr>
<td>PAW-PACK3</td>
<td>Redundancy of 2 or 3 systems; for ECOi and PACi</td>
<td>Redundancy of 2 or 3 ECOi or PACi systems including temperature monitoring, error indication, backup, alternative run</td>
</tr>
<tr>
<td>PAW-SERVER-PKEA</td>
<td>Redundancy of 2 units PKEA</td>
<td>Redundancy of 2 units PKEA including temperature monitoring, error indication, backup, alternative run</td>
</tr>
</tbody>
</table>
**NEW — CONTROL AND CONNECTIVITY**

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**Fan Drive Connector (CN032)**

PAW-FDC: Panasonic has developed an optional accessory (consisting of plug + wires) called PAW-FDC to enable an easy connection to this Fan Drive Connector (CN032).

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**Option Connector (CN060) Output external signals**

PAW-OCT: Panasonic has developed an optional accessory (consisting of plug + wires) called PAW-OCT to enable an easy connection to this Option Connector (CN060).

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**With the combination of the T10 and the option CN060 an external control of the I_U is possible!**

6P (white): Outputs external signals as shown in the figure below.

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**EXCT Connector (CN009)**

PAW-EXCT: Panasonic has developed an optional accessory (consisting of plug + wires) called PAW-EXCT to enable an easy connection to this EXCT Connector (CN009).

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- **A) With static input**
  - STATIC INPUT ➔ THERMO OFF ➔ ENERGY SAVING
  - 2P plug (red): Can be used for demand control. When input is present, forces the unit to operate with the thermostat OFF.

  Note: The length of the wiring from the indoor unit control PCB to the relay must be 2m or less.

  * Lead wire with 2P plug (special — order part: WIRE K/854 05280 75300)

- **B) Example: In connection with a refrigerant sensor**
  - Signal from leakage detector: non voltage, static.
  - Indoor unit setting: Code 0b ➔ 1
  - Connector for leak detector: EXCT
  - Outdoor unit setting:
    - Code C1 ➔ 1 power output if alarm from O2 connector 230 V
    - Code C1 ➔ 2 power output if alarm from O2 connector 0 V
  - Displayed alarm message P14

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**Examples of wiring:**

- PAW-EXCT: Panasonic has developed an optional accessory (consisting of plug + wires) called PAW-EXCT to enable an easy connection to this EXCT Connector (CN009).