AIR IS LIFE

AIR IS COMFORT

AIR IS ENERGY

QUALITY AIR FOR LIFE

- Please read the Installation Instructions carefully before installing the unit, and the Operating Instructions before using it.
- Specifications are subject to change without prior notice.
- The contents of this catalogue are accurate as of December 2018.
- Due to printing considerations, the actual colours may vary slightly from those shown.
- All graphics are provided merely for the purpose of illustrating a point.

Do not add or replace refrigerant other than the specified type. Manufacturer is not responsible for the damage and deterioration in safety due to usage of other refrigerant.

18VRF1201

Authorised Dealer

Panasonic Australia Pty. Limited.

Address: 1 Innovation Road, Macquarie Park, NSW 2113
ACN 001 592 187 ABN 83 001 592 187

aircon.panasonic.com.au

Panasonic
Air Conditioning

A CENTURY OF RELIABILITY

Panasonic

FSV SYSTEMS

FSV
MINI-FSV HEAT PUMP
12.1 - 25.0kW

FSV EX
FSV-EX HEAT PUMP
22.4 - 224.0kW

FSV EX
FSV-EX HEAT RECOVERY
22.4 - 135.0kW

QUALITY AIR FOR LIFE

Panasonic
Air Conditioning

FSV-EX THE GAME CHANGER

Quality Air For Life

ONE-STOP AIR SOLUTIONS

Panasonic Air Conditioners deliver more than just heating or cooling solutions. We want to create total Air Solutions that improve indoor air quality, for healthier and better living.

THE GAME CHANGER

FSV EX
Flexi System VRF

ALL INVERTER

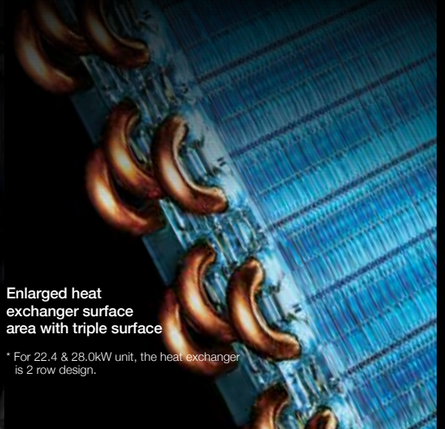
FSV-EX with Extraordinary Energy-Saving Performance and Powerful Operation EER 4.87*

* In the case of U-8MF3R7

A game-changing FSV-EX system delivering energy-saving performance, powerful operation, reliability and comfort surpassing anything previously possible.

It represents a true paradigm shift in air conditioning solutions. Taking quality to the extreme – that's the Panasonic challenge.

Multiple large-capacity all inverter compressors (more than 40kW)



Enlarged heat exchanger surface area with triple surface

* For 22.4 & 28.0kW unit, the heat exchanger is 2 row design.

Newly designed curved air discharge bell mouth for better aerodynamics

Extraordinary

4.87

EER

In the case of U-8MF3R7

CONTENTS

MINI GAME CHANGER

FSV Flexi System VRF

INVERTER

MINI-FSV LE Series

Cooling & Heating Type

22.4/25.0kW [LE1] **12.1/14.0/15.5kW** [LE2]

MINI-FSV with Extraordinary Energy-Saving Performance and High External Static Pressure (35Pa*)

LE1 Series

3.80* EER

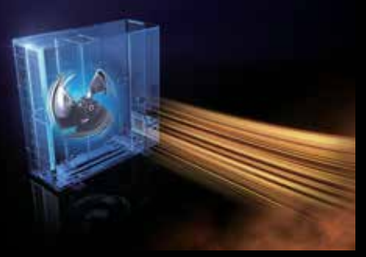
* In the case of 22.4kW

LE2 Series

4.50* EER

* In the case of 12.1kW

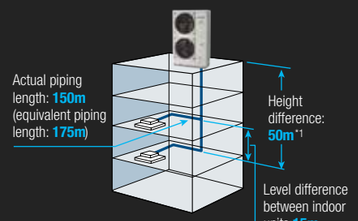
High External Static Pressure 35Pa*



* LE2, 22.4kW & 25.0kW only.

Compact Design

Long Piping Design Length for Greater Design Flexibility



LE1 Max. total piping length: 300m
LE2 Max. total piping length: 180m

*1: 40m if the outdoor unit is below the indoor unit.

A GLOBALLY TRUSTED AIR CONDITIONING BRAND

Celebrating 60 Years within the air conditioning industry, the Panasonic Air Conditioning Division has grown to become a globally recognised and celebrated entity. Driven by an endless quest for innovation, the Group has evolved from manufacturing compressors to providing comprehensive solutions to our customers' air conditioning needs. Panasonic has become a brand that possesses inextricable associations with superior quality and reliability.

1958

Panasonic introduces its first home cooler, a window-type Air Conditioner.

1971

Begins the production & distribution of Absorption Chillers.

1985

Introduces first GHP VRF Air Conditioner.

1989

Introduces the world's first simultaneous, 3-Pipe Heating & Cooling VRF Air Conditioning System.

1993

Introduces the world's first large-capacity modular combination VRF Air Conditioning system.

1995

Introduces the world's first large-capacity modular combination VRF Air Conditioning system, incorporating heating and cooling.

2016

Introduces FSV EX (VRF System) that sets new benchmarks for performance, energy efficiency and reliability.

2018

Introduces the Panasonic AC Smart Cloud; allowing anytime, anywhere, multiple site control & monitoring.

NEXT100 YEARS

1957

- Start of the Home Cooler business

1958

- Panasonic (using the National brand) introduces its first Home Cooler, a window-type air conditioner model

- Electrical Appliance Business Group (Kadoma) starts manufacture of Home Coolers
- Sales of Home Coolers begin

1961

- Starts exports of Home Coolers to South Vietnam

1965

- Launches Room Coolers

1968

- Begins development of rotary compressors
- The high efficiency and quality of these compressors draw interest from domestic and overseas air conditioner manufacturers
- External sales begin

1972

- MAICO, the Division's first overseas manufacturing base, established in Malaysia
- Starts export from MAICO to Japan, Indonesia, Australia, and other markets
- Begins operating twin-based system out of Japan and Malaysia

1983

- Launches inverter air conditioners
- Starts sale of Panasonic's first inverter air conditioners
- Inverters grow to become a core technology in the air conditioner industry
- Starts shipment of air conditioners to Panasonic America

1985

- Begins development of scroll compressors
- Scroll compressors bring high efficiency, low noise, and low vibration in comparison to rotary compressors

1990

- Launches world's first air conditioner equipped with compact scroll compressor

1993

- Establishes Matsushita-Wanbao (Guangzhou) Air Conditioner (MWAC)
- Establishes Matsushita-Wanbao (Guangzhou) Compressor (MWCC)
- Establishes Matsushita Air Conditioner Engineering (Matsushita ACE)

2003

- Launches automatic filter-cleaning function for air conditioners (AC robot)

- Debuts quiet, lightweight, compact EcoCute systems with improved energy-saving technology
- EcoCute adopts highly efficient, accumulator-less CO_2 scroll compressor
- CO_2 heat-pump hot water heater (EcoCute) uses non-toxic, non-combustible natural refrigerant (CO_2) instead of Freon, to reduce environmental impact
- Begins production of new energy-saving mini-VRF series multi-split packaged air conditioners for residential use

2005

- Panasonic products become extremely successful in Japan's air conditioner market
- Innovations such as airstream robots and motion sensors help grow Panasonic's market share

2006

- Cumulative global production of Panasonic compressors reaches 200 million units

2008

- Starts air-to-water heat pump business in Europe
- Hot water heating considered an eco-friendly alternative to conventional fuel-type heating systems
- At the Energy Conservation Grand Prize awards, Panasonic air conditioners won the Chairman Prize of ECCJ,whilst EcoCute won the Director General Prize of Agency of Natural Resources and Energy (prizes presented by Energy Conservation Center of Japan)
- nanoe technology installed on room air conditioners

nanoe™

2009

- Establishes sales company in Europe (PHAAE) dedicated to selling air conditioners
- Panasonic HA Air-Conditioning Europe (PHAAE) strengthens company's commercial air conditioning business

2010

- Begins collaboration with SANYO air conditioner business
- Through share exchange, SANYO and Panasonic Electric Works become wholly owned subsidiaries

2011

- Launches FSV series of large-capacity VRF air conditioners

2012

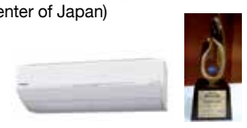
- New Panasonic Group inaugurated

2013

- Expands VRF operation in Malaysia

2016

- Partnership started with Schneider Electric
- At the Energy Conservation Grand Prize awards, the room air conditioner "WX series" won the Minister Prize of Economic, Trade and Industry (prize presented by Energy Conservation Center of Japan)



RELIABILITY AND DURABILITY

At Panasonic, we believe that the best air conditioner is one that works quietly and effectively in the background whilst minimising its impact on the environment. People who use our products can look forward to years of high-quality performance without the need for constant maintenance.

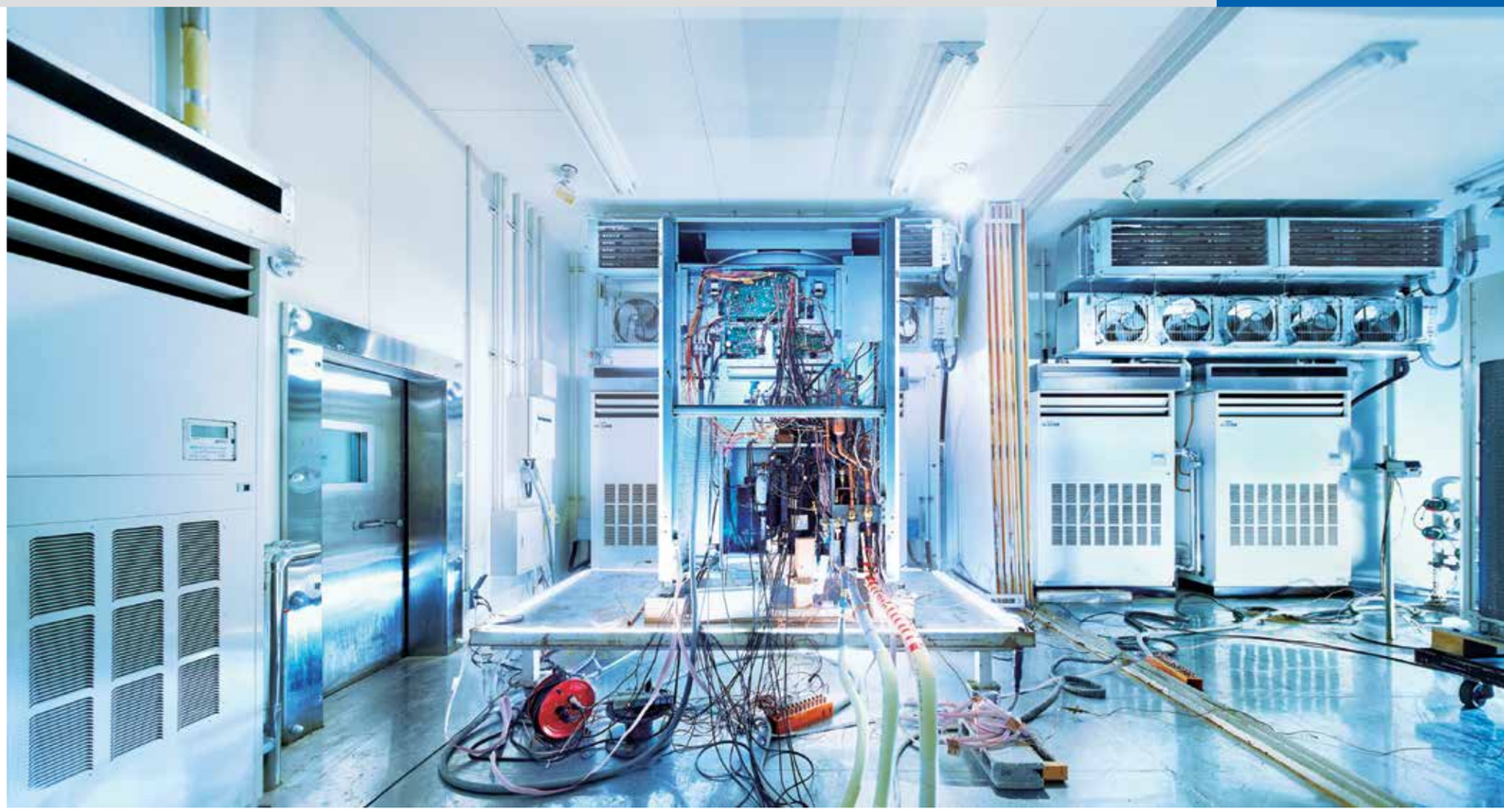
As part of our rigorous design and development process, Panasonic air conditioners undergo a variety of stringent tests to ensure effectiveness and long-term reliability. Tests for durability, waterproofing, shock resistance, and noise are conducted on component parts or on the finished products themselves.

As a result of all of these painstaking efforts, Panasonic air conditioners meet even the most demanding industrial standards and regulations in every country where they are sold.

JAPAN QUALITY

Applying advanced technologies that truly make life better, we live by an unparalleled commitment to product quality. Our approach to product development originates in the DNA of Japanese craftsmanship.

Panasonic is building on the Japanese tradition of uncompromising quality control worldwide, developing and manufacturing fine products and delivering them to customers everywhere.



Testing laboratory Panasonic Gunma, Japan (PAPARS)

DURABILITY

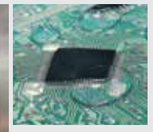
At Panasonic we know the importance of a long service life with minimal maintenance. That's why we subject our air conditioners to a wide range of stringent durability tests.

Long-Term Durability Test

To ensure durability and stable operation for many years, we conduct a long-term continuous operation test under conditions that are much more severe than actual operating conditions.

Compressor Reliability Test

After the continuous operation test, we remove the compressor from a selected outdoor unit, disassemble it, and examine the internal mechanisms and parts for potential failure. This helps ensure reliable long-term performance under harsh conditions.



A resin-potted circuit board

Waterproofing Test

The outdoor unit, which is subject to rain and wind, complies with IPX4 waterproof specifications. Contact sections on printed circuit boards are resin-potted to prevent adverse effects caused by exposure to water (an unlikely occurrence).

INTERNATIONAL STANDARD QUALITY

To uphold the company's reputation around the world, Panasonic strives continuously to offer the highest quality with the lowest possible environment impact.

The strength of the resin material used in a propeller fan is confirmed by a tension test

Reliable Parts That Meet or Exceed Industrial Standards

In every country where they are sold, Panasonic air conditioners comply with all required industrial standards and regulations. In addition, Panasonic conducts stringent testing to ensure the reliability of parts and materials.

RoHS / REACH Compliant Parts

All Panasonic parts and materials comply with Europe's strict RoHS/REACH environmental regulations. During the development and production of parts, stringent inspections are conducted on over 100 materials to ensure that no hazardous substances are included.

Sophisticated Production Process

Panasonic's air conditioner production lines employ state-of-the-art factory automation technologies to ensure products are manufactured efficiently and with uniformly high levels of quality and reliability.

GLOBAL NETWORKING OF AIR CONDITIONING SOLUTIONS

In any indoor environment, eco-friendly air conditioning plays a vital role in maintaining our health, comfort, and productivity. Whether it's an office, a hotel, or a shopping mall, every building matters. That's why Panasonic has developed energy-efficient large-scale air conditioning solutions to suit a variety of business applications.

As one of the pillars of Panasonic's BtoB operations, our air conditioning sector provides comprehensive solutions to businesses around the world. Harnessing our advanced technology and extensive on-site expertise, we serve clients in a diverse range of environments throughout the world.

Panasonic air conditioning solutions are designed from the ground up to meet the specific needs of each location, whilst placing a premium on efficiency and reliability. At every stage, we seek to make optimal use of resources and energy to create solutions that benefit the environment.

PACT Training Facilities

The 24 Panasonic Air Conditioning Training Centres (PACTs) around the world provide a wide range of support for Panasonic's business-use air conditioning systems. PACT represents Panasonic's unwavering commitment to our sales partners, distributors, and service teams in Europe, Asia, Oceania, and the Americas.

Quality Assurance from Japan to the World

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. As our business expands globally, we strive to transcend borders with our superior-quality products.

Japan

Air Conditioning Division
(Appliances Company) (Shiga, Japan)

Established April 1972
- Appliances Company HQ
- Home Appliances Business Group
- Corporate Engineering Division

PAPARS
Panasonic Appliances Air Conditioning & Refrigeration System (Gunma, Japan)

Established July 1959
- Air conditioners
- Cold-chain/refrigeration products

Malaysia

PAPAMY
Panasonic Appliances Air Conditioning Malaysia Sdn Bhd.

Established April 1972
- Air conditioners
- Air-to-water heat pumps

PAPARADMY
Panasonic Appliances Air Conditioning R&D Malaysia Sdn. Bhd.

Established June 1991
- R&D for air conditioners
- Air-to-water heat pumps

PAPAMY Compressor

Established January 1987
- Rotary compressors for air conditioners

PAPAMY Compressor R&D

Established September 1997
- R&D for rotary compressors

China

PAPAGZ
Panasonic Appliances Air Conditioning (Guangzhou) Co., Ltd.

Established June 1993
Air conditioners

PWAPCGZ
Panasonic Wanbao Appliances Compressor (Guangzhou) Co., Ltd.

Established June 1993
- Rotary compressors for air conditioners
- Compressors for automotive air conditioners

PRDCS
Panasonic R&D Center Suzhou Co., Ltd.

Established April 2002
- Air conditioners
- R&D for home appliance products

PAPARDL
Panasonic Appliances Air-Conditioning and Refrigeration (Dalian) Co., Ltd.

Established September 1992
- Air conditioners

Taiwan

PTW
Panasonic Taiwan Co., Ltd.

Established October 1962
- Air conditioners
- Automotive air conditioners
- Home appliance products

Indonesia

PMI
Panasonic Manufacturing Indonesia

Established September 1965
- Air conditioners
- Home appliance products

Philippines

PMPC
Panasonic Manufacturing Philippines Corporation

Established September 1967
- Air conditioners
- Home appliance products

India

PI
Panasonic India Pvt. Ltd.

Established December 2012
- Room Air conditioners

PACT Headquarters and Bases

EUROPE

Germany Wiesbaden

Nordic Stockholm

Hungary Budapest

Russia (CIS) Moscow

Spain Barcelona

Spain Madrid

France Paris

Italy Milan

Czech Rep. Prague

France Lyon

UK Bracknell

ASIA

Malaysia Shah Alam

Vietnam Hanoi

India New Delhi

Thailand Bangkok

Taiwan Zhonghe

Indonesia Jakarta

China

Hong Kong

India Mumbai

OCEANIA

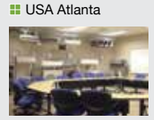
Australia Sydney

New Zealand Auckland

AMERICAS

Latin America Panama

USA Atlanta

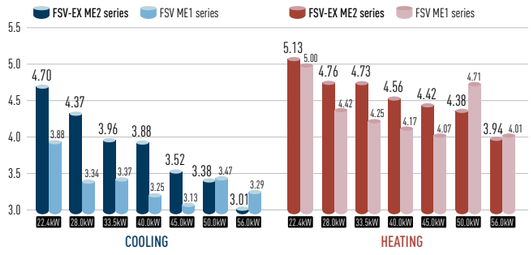


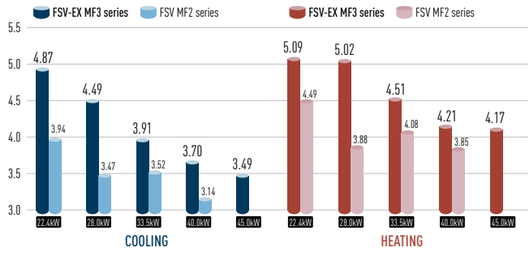
FSV-EX ADVANTAGES

The most efficient, powerful and quiet system in Panasonic's history.
There has never been a VRF system like it.
It's the story of a true game changer - Panasonic FSV-EX.

Extraordinary Energy-Saving Performance

The FSV-EX marks a revolutionary step forward in VRF efficiency. A look at the incredible EER value clearly indicates that. What's more, this high EER value is achieved even during part load operation.
This shows the extraordinary energy-saving performance the FSV-EX is capable of providing.



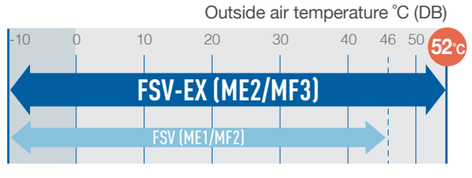


Extraordinary EER throughout the product range

Extraordinary EER in Part load throughout the product range

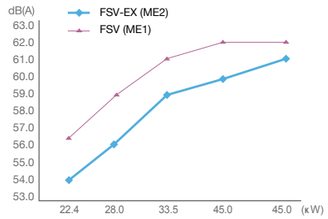
Extended Operation Range Up to 52°C

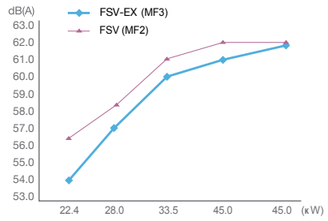
The FSV-EX can provide cooling even when the outside temperature reaches a maximum of about 52°C.
And amazingly, it can still operate at 100% capacity when the outside temperature is as high as 43°C.
This high power capability enables reliable operation even under extremely high temperature conditions.



Low-Noise Operation

Numerous technological innovations, including an improved compressor and a newly designed bell mouth and larger fan, have dramatically reduced the outdoor noise level. The result is an even more comfortable building environment.





Multiple large-capacity all inverter compressors

(more than 40kW)

Two independently controlled inverter compressors achieve high efficiency. Redesigned components in the body provide performance improvement especially in the rated cooling condition and EER performance.

Enlarged heat exchanger surface area with triple surface*

The new heat exchanger features a triple-surface construction. Compared to the divided dual-surface construction in current models, there is no division of space and the area for heat exchange is larger. Also, highly efficient piping pattern increases heat exchange performance by 5%.*1

* For 22.4 & 28.0kW unit, the heat exchanger is 2 row design.
*1 Based on Panasonic in-house report

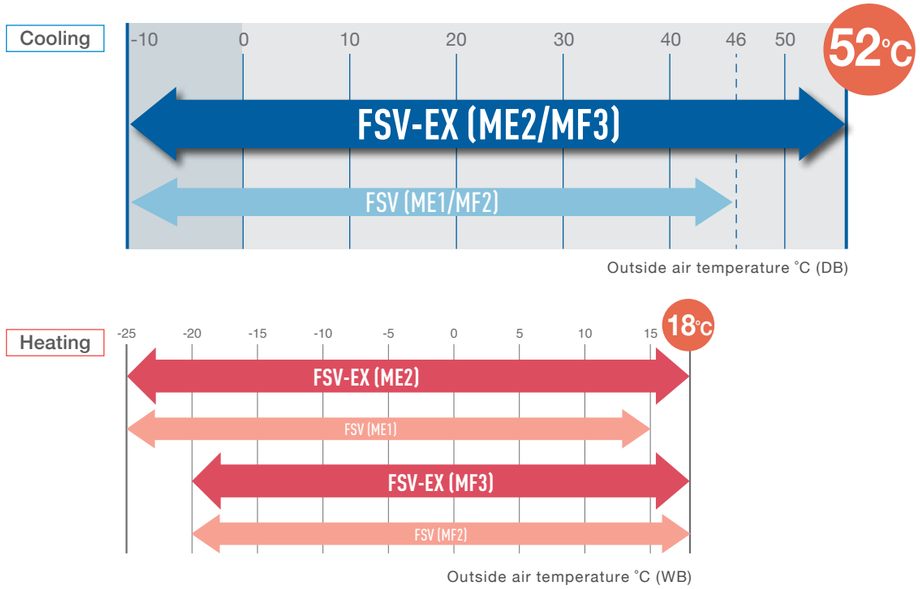
EXTENDED OPERATION RANGE-25ºC* TO 52ºC

High reliability even under high temperature conditions

Designed to be durable enough to withstand extreme heat, FSV-EX ensures reliable cooling operation over an extended operation range up to 52˚C.

*In the case of FSV-EX (ME2)

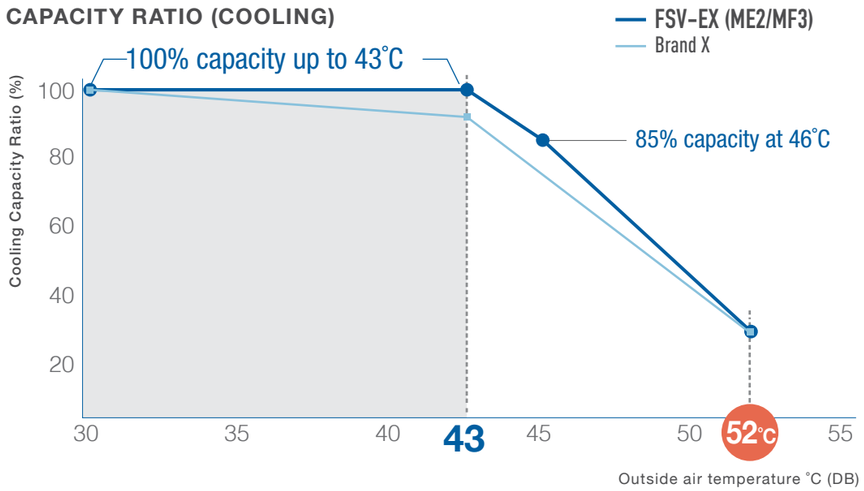
OPERATING RANGE



Full-capacity Operation up to 43°C

The FSV-EX can provide cooling even when the outside temperature reaches a maximum of about 52°C, and amazingly, it can still operate at 100% capacity when the outside temperature is as high as 43°C. This high power capability enables reliable operation even under extremely high temperature conditions.

CAPACITY RATIO (COOLING)



<Test Condition> 33.5kW model, IU/OU capacity ratio:100%, Indoor Condition:27°C[DB]/19°C[WB]
Brand X spec is from technical data book.

EXTRAORDINARY ENERGY-SAVING PERFORMANCE

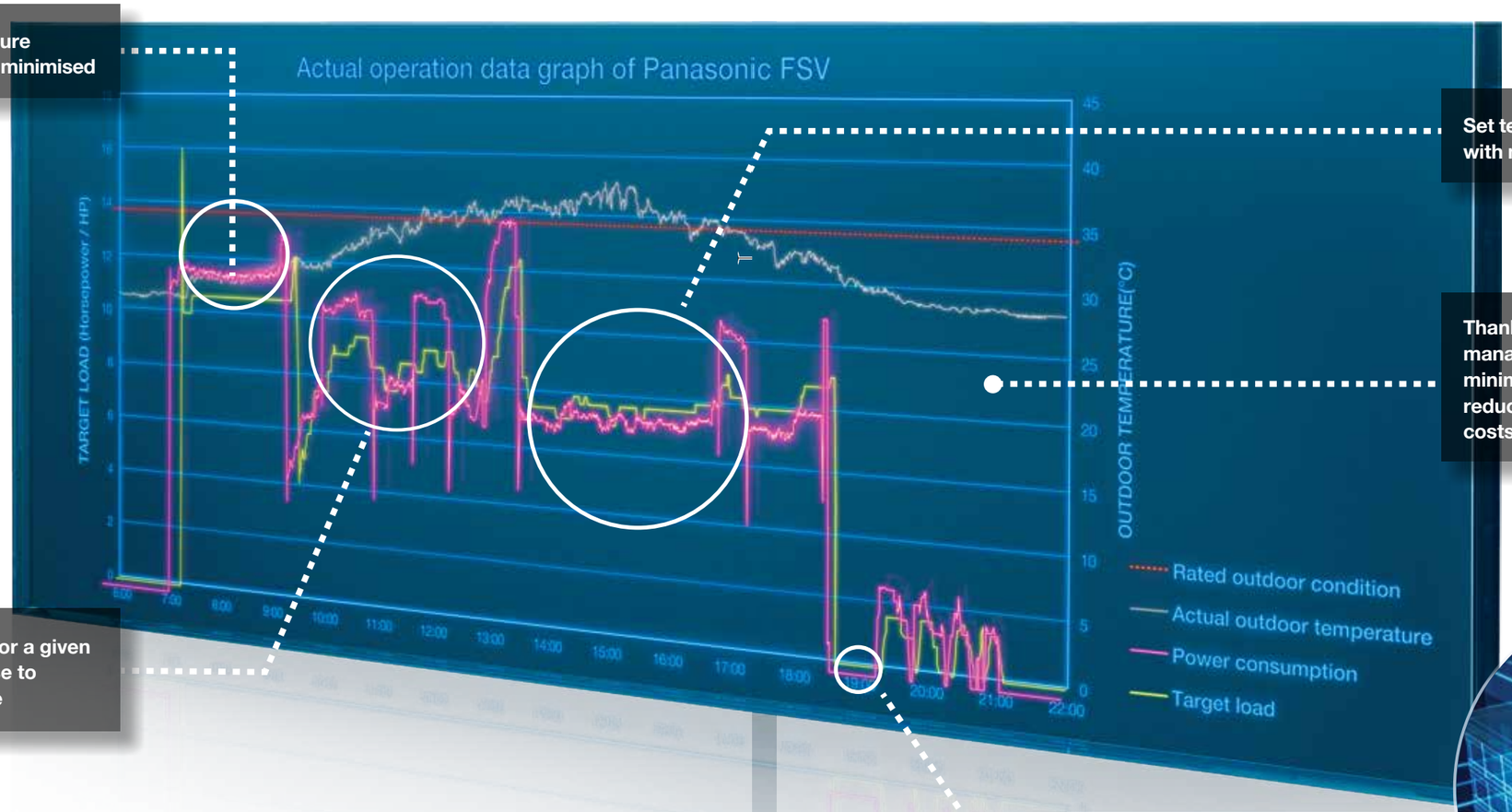
Designed for Actual Operation Performance

Panasonic builds air conditioning systems not only with a high EER for rated operation, but also with Seasonal-EER appropriate to the customer's actual environment of use. For instance, with rated operation, outdoor temperature is constant at 35°C, but in reality the outdoor temperature is continuously changing. Consequently, required air conditioning performance also changes. That's why Panasonic implements the following kind of proprietary control.

1. Set temperature is rapidly attained; full-load operating time is kept to a minimum.
2. The frequency of forced oil recovery is minimised. The volume of oil within the compressors is monitored precisely by sensors, so forced oil recovery under full-load operation is conducted only when necessary. Since this suppresses noise due to oil recovery, comfort is maintained.
3. Panasonic pursues a high EER, well as high EER in part load, for energy saving performance under a broad range of loads.

Panasonic's design concept contributes to substantial energy cost reductions.

Rapidly reaches set temperature → full-load operation duration minimised

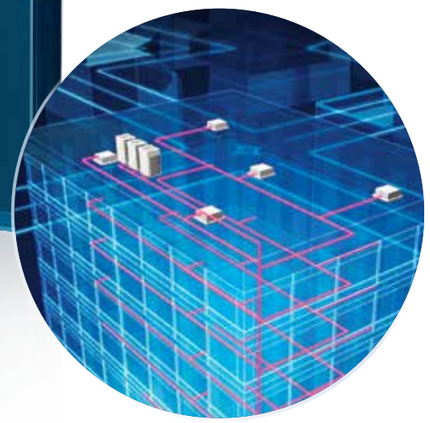


Set temperature maintained with minimum load operation

Thanks to superior oil management, oil recovery is minimised, contributing to reduced energy use and costs

Load increased as required for a given outdoor temperature increase to maintain the set temperature

When outdoor temperature drops, operation is immediately stopped



Actual performance data of Panasonic FSV-EX installed in Asia

Simulated conditions

Location: Panasonic building in Malaysia System: One 45.0kW outdoor unit, 4 cassette-type indoor units

INTELLIGENT 3-STAGE OIL MANAGEMENT SYSTEM

In a VRF system, where lengthy piping and a large number of indoor units need to be controlled collectively, the key to maintaining the system's reliability is to ensure an appropriate amount of oil is secured in the compressors. In order to avoid oil shortage in the compressor, maximum operation is normally forcibly conducted at regular intervals to recover oil from indoor units. This method, typically employed in a standard VRF, causes the system to overheat or overcool and thus waste energy.

In Panasonic's FSV-EX systems, a sensor for detecting oil levels is mounted in each compressor. In installations with multiple outdoor units, a shortage of oil in one compressor can be compensated for by recovering oil either from another compressor in the same unit, from a compressor in an adjacent outdoor unit, or from a connected indoor unit. Panasonic FSV-EX systems provide users with a comfortable environment whilst saving energy.

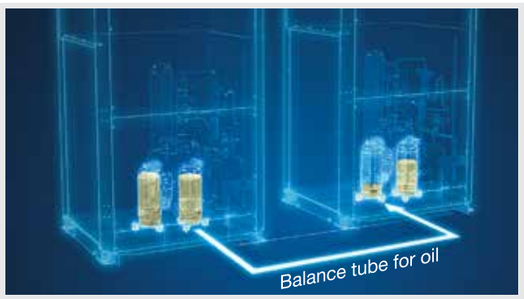
Panasonic's intelligent oil management system efficiently manages oil recovery in three stages; minimising the frequency of forced oil recovery while reducing energy cost and maintaining comfort.

STAGE-1

Panasonic compressors are equipped with sensors which monitor oil levels precisely at all times. If oil levels fall, oil can be transferred from other compressors within the same outdoor unit.

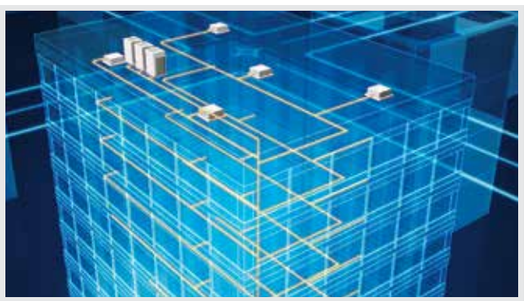
STAGE-2

If oil levels in all compressors within the outdoor unit fall, oil can be replenished from adjacent outdoor units.



STAGE-3

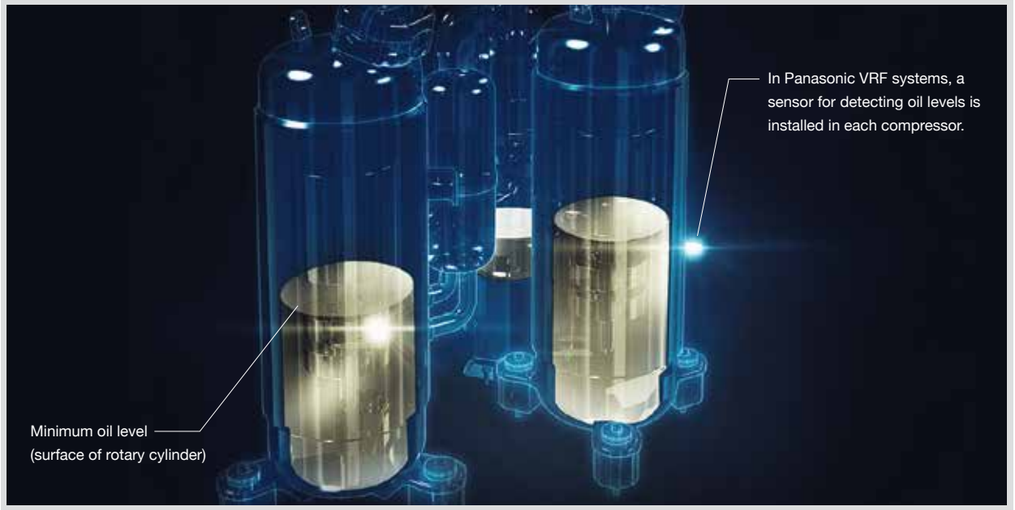
Forced oil recovery is implemented only if oil levels become insufficient in spite of above measures. Panasonic's intelligent oil management system is radically different from conventional oil systems.



Features of 3-stage oil recovery design

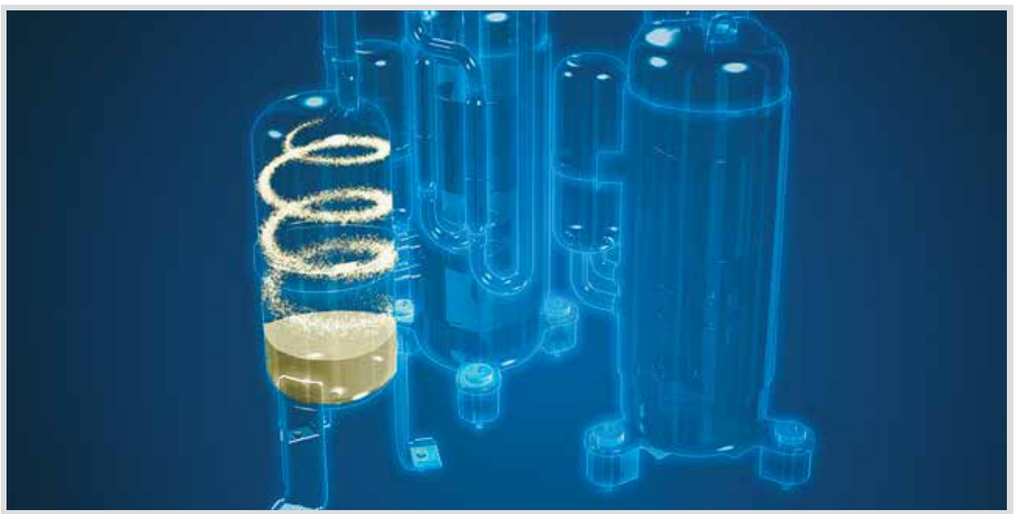
1 Oil sensors installed in each compressor

Oil sensors installed in each Panasonic compressor precisely monitor oil levels, eliminating unnecessary oil recovery.

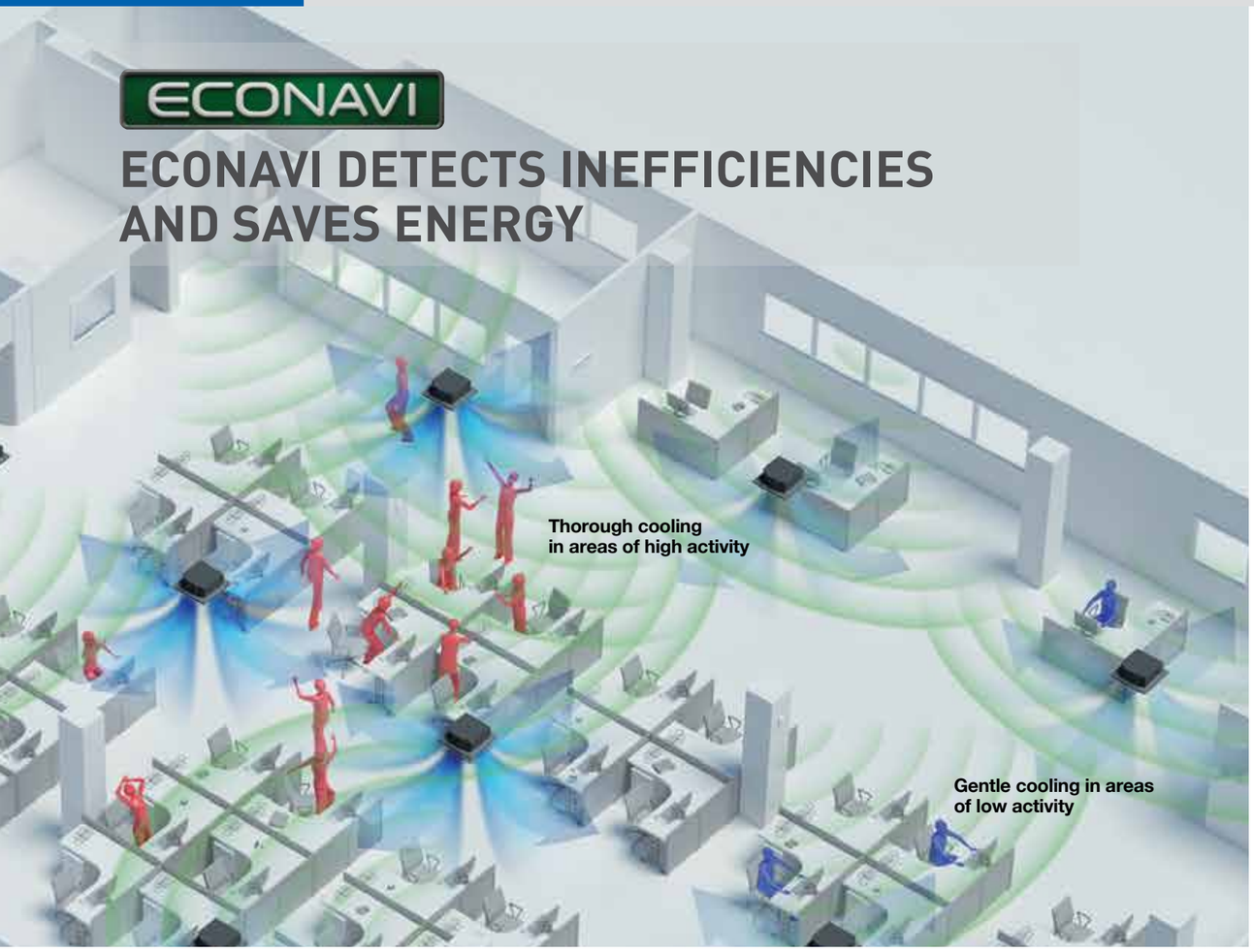


2 Highly functional oil separator

Thanks to extended separate piping, oil recovery efficiency reaches 90%, minimising the oil to be discharged from the compressor.



ECONAVI DETECTS INEFFICIENCIES AND SAVES ENERGY



Detection of the level of activity enables precise power saving.

Presence or absence of people at their desks and the level of activity in the office are detected in real time. Set temperature is automatically adjusted to optimise the lower power consumption.

In the morning
Thorough cooling when there is a high level of activity

In the afternoon
Reduced cooling when there are fewer people

At night
Automatic Thermo Off depending on conditions at the end of the day*

Human activity and presence detection

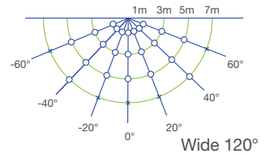
Activity detection		Presence detection	
HIGHER ACTIVITY	LOWER ACTIVITY	After 20 mins absence	After 3 hours absence
Cooling Set Temp. +/-0°C	Cooling Set Temp. +1°C	Cooling Set Temp. +2°C	Cooling Thermo OFF*
Heating Set Temp. -1°C	Heating Set Temp. +/-0 °C	Heating Set Temp. -2°C	Heating Thermo OFF*
Every 2 min	Every 2 min	After 3 hours the setting can change to Stop or Temperature Shift	

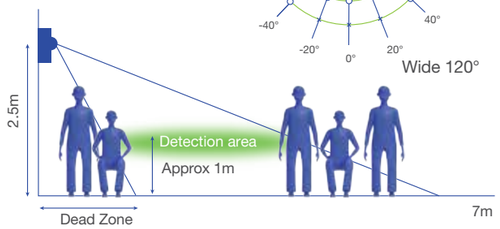
*Depending on conditions, the setting can change to Switch Off After 3 Hours, Thermo Off or Temperature Shift.

Remote ECONAVI sensor allows optimum energy operation

Pillars, walls, cabinets and other fittings obstruct the sensor, reducing the area of detection and lowering the energy-saving effect. Taking into consideration blind spots, Panasonic enables the optimum layout for sensors in any office.

Wide detection area





A sensor is remotely set to maximise the detection area.

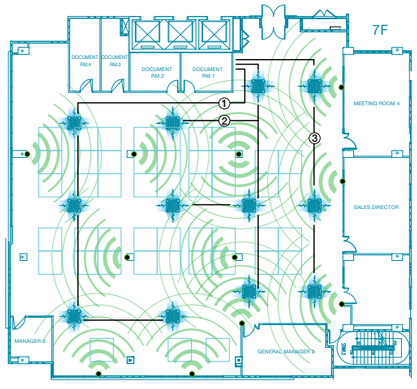
Installation flexibility ready for indoor unit replacement and layout changes.

ECONAVI sensor
CZ-CENSC1

Panasonic enables use with various types of indoor units

Providing outstanding energy-saving performance, Panasonic's inverter VRF System can be connected to ECONAVI to detect when energy is being wasted. ECONAVI senses the presence or absence of people and the level of activity in each area of an office. When unnecessary heating or cooling is detected, indoor units are individually controlled to match office conditions for energy-saving operation.

ECONAVI VRF Field Test



- Indoor units (12)
- Sensors (12)
- Trial term: 11 Apr - 16 May 2014
- Location: Panasonic Malaysia Building
- Office floor: Cooling capacity 112kW
- Testing conditions:
  - Remote controller setting temperature 23℃
  - Setting time AM7:00~PM21:00
- Units used

System	Outdoor unit		Indoor unit
① CU-L7-6	U-20ME1E8	1	S-106MU1E5
		2	S-106MU1E5
		3	S-106MU1E5
		4	S-106MU1E5
② CU-L7-7	U-20ME1E8	5	S-56MU1E5
		6	S-106MU1E5
		7	S-106MU1E5
		8	S-56MU1E5
		9	S-106MU1E5
③ CU-L7-7	U-14ME1E8	10	S-106MU1E5
		11	S-56MU1E5
		12	S-106MU1E5


Panasonic Malaysia Building


Outdoor units on the roof

Interior of the office

Power consumption

Without ECONAVI

With ECONAVI

Up to 15% energy saving

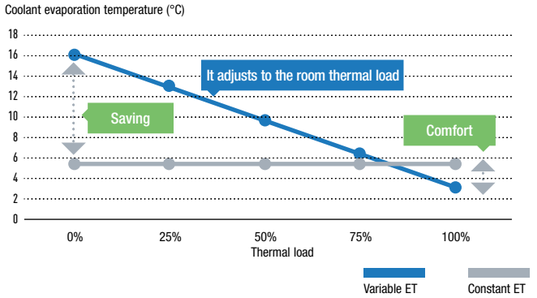
Energy-saving effect tested and verified by Field test

PANASONIC VRF: TOP IN COMFORT

Since 2006, all Panasonic VRF systems have included special VET & VCT technology as standard.

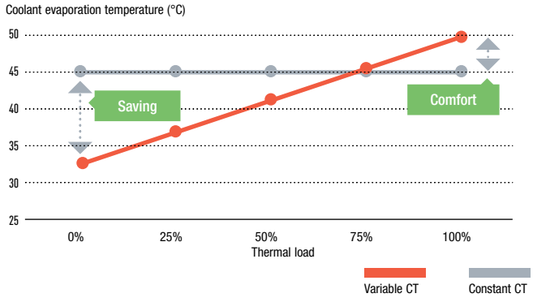
Variable Evaporation Temperature (VET)

Our ‘smart logic’ system checks the temperature every 30 seconds, automatically adjusting coolant temperature according to actual demand and outdoor conditions. This ensures better energy performance at all times.

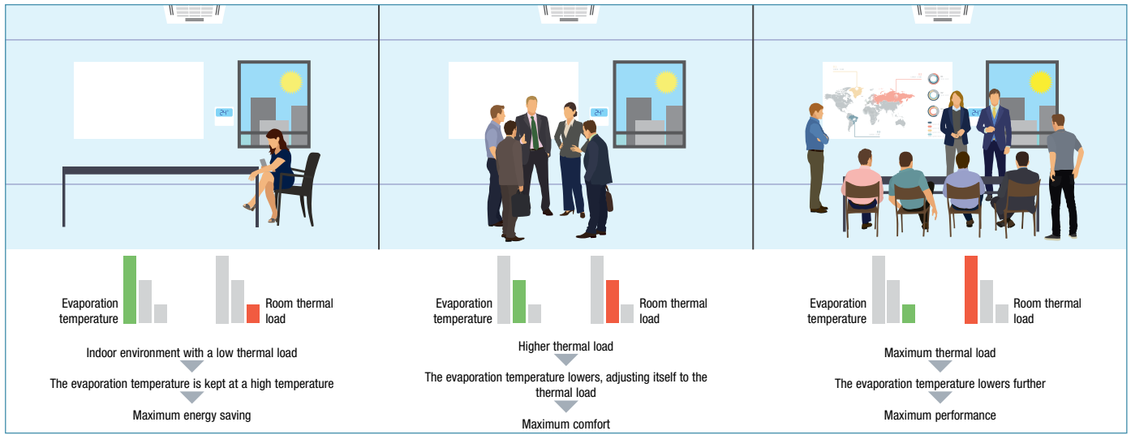


Variable Condensation Temperature (VCT)

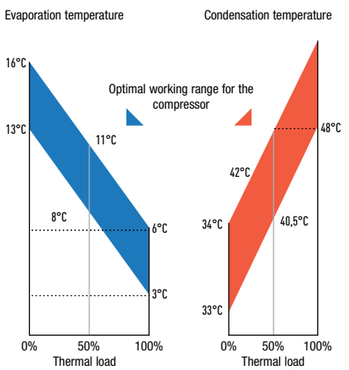
Temperature varies from 16°C to 3°C.
Similarly, the condensation temperature is also variable and is adjusted to the room thermal load, within a range of 33–55°C.



Example of cooling mode (heating mode is also available)

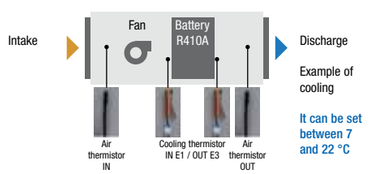


Technical focus Variable temperatures



Control of the discharge temperature

This special function is available in all of Panasonic VRF systems’ indoor units to guarantee maximum comfort for the end user.
For example, in cooling mode, if the temperature of the discharged air was below 10°C, the user may feel discomfort, just as he would do in heating mode if the temperature was far too high.
With the Panasonic control of the discharge air temperature, this can be adjusted within a cooling range of 7–22°C.



Benefits
- The air will never be too cold or too warm
- Cooling and Heating function
- Comfort
- Energy saving
- It prevents the formation of condensation within ducts and vents, improving levels of hygiene.

DELUXE WIRED REMOTE CONTROLLER

CZ-RTC5B Actual size

Large 3.5" Full-dot LCD with White LED Backlight

Characters and icons are clearly displayed for improved visibility. The display is also large enough to provide a wide range of information for easy confirmation of operation conditions.

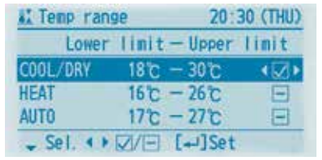
Stylish, Easy-to-use Touch Key Design

The elegant, flat design features large touch keys in a simple layout enabling easy, intuitive operation.

Multiple control settings to meet a wide range of air conditioning needs

Temperature Auto Return

Even if you change the temperature setting, after a set time it automatically returns to the original temperature setting. You can set temperature auto return time in 10-minute intervals within a period of 4 hours.



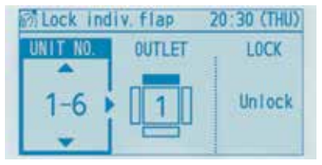
Temperature Setting Range

You can set the upper and lower temperature limits. Doing this helps reduce power consumption due to over cooling or heating. Setting is possible in the Cooling, Heating and Dry modes.

Auto Shutoff

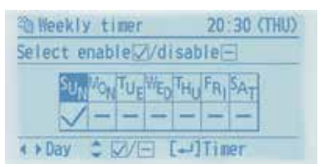
Air conditioning automatically stops after a set time, so you don't have to worry about forgetting to switch the unit off. Even if you manually switch the unit back on after it has stopped, it automatically switches off again after the set time.

Wide range of controls for extra convenience



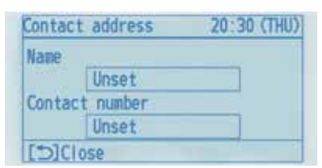
Individual Louvre Control
Lock individual flap (only for 4-PIPE cassette U2 type)

Each of the 4-directional outlets can be selected and locked to provide efficient air distribution that matches the indoor unit layout. Indoor units can be set individually.



Weekly Timer

This lets you specify 8 Start/Stop times and temperature presets for each day of the week.



Service Contact Address

Once you have register service contact details, they are automatically displayed if a problem with the air conditioner occurs. This helps you quickly deal with the situation.

Convenient Controls

Operation Lock

To prevent operation by anyone other than the supervisor, operation keys can be locked. This prevents unauthorised personnel from changing temperature settings, airflow rate, airflow direction and other settings.

Filter Information

Filter information is indicated for cleaning after a set time of operation period has past. The number of hours can be adjusted.

Quiet Operation Mode

There's a Quiet mode that reduces the outdoor unit's operating noise. The mode can be switched On/ Off and Start/ End times can be set.

Maintenance Function

Display of outdoor malfunction data, service contact details, filter cleaning remaining time and other data enables at-a-glance verification of maintenance information with the remote controller.

Repeat OFF Timer

You can stop the operation after a certain period of time each time operation is performed.

Setting Lists

Information concerning current settings is displayed in the remote controller's LCD for easy confirmation.

Function List

Control Item		Controllability	
		”A”model	Non”A” model
Menu items	Basic instructions	●	●
	FLAP	●	●
	Individual louvre control (Lock individual flap only for 4-way cassette U2 type)	●	●
	ON/ OFF timer	●	●
	Weekly timer	●	●
	Filter information	●	———
	Outing function	●	●
	Quiet operation mode	●	———
	Energy saving	●	●
	Initial settings	●	●
	Ventilation	●	●
Energy Saving	Temperature auto return	●	●
	Temperature setting range	●	●
	Auto shutoff	●	●
	Schedule peak cut	●	———
	Repeat off timer	●	●
	ECONAVI on/ off	●	———
Maintenance Function	Outdoor unit error data	●	———
	Service Contact address	●	●
	RC setting mode	●	●
	Test Run	●	●
	Sensor Information	●	●
	Service check	●	●
	Simple/ Detailed Settings	●	●
	Auto address	●	●

COMMERCIAL AC DESIGN SOFTWARE

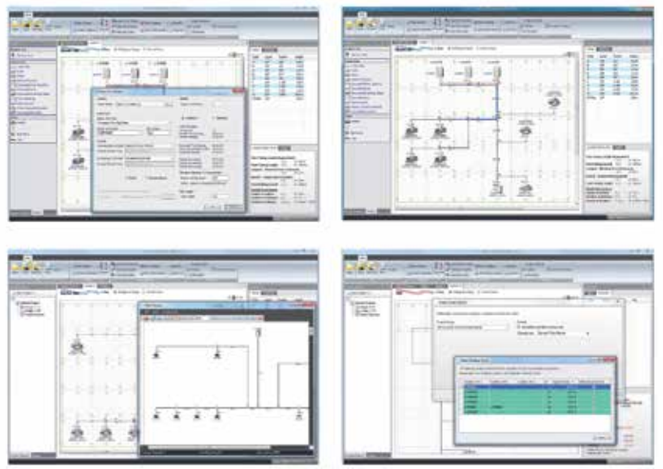
Features the unique Mounting Scheme function providing more thorough spec-in and tender quotation support for easier, faster completion of work.

The Panasonic Commercial AC Design software can be used for all Panasonic FSV and FSV-EX ranges

Panasonic has identified the importance of ever-increasing demands for fast and accurate responses to customer requests in the air conditioning industry, as well as an ever greater emphasis on energy efficiency. The ability to calculate cooling/heating loads and produce information of actual design conditions is a major advantage to any architect, consultant, contractor or end user.

Panasonic understands the time-poor and demanding industry we are in and we are pleased to announce the launch of the next generation of our Commercial AC Design Software, streamlining the selection and design process.

Import tools to enable both simple and complex systems to be created. In addition, the system will allow outdoor and indoor units to be dragged on an interactive desktop. This allows users to create everything from realistic floor plans with detailed piping and wiring schematics to send out with quotations, through to installation guidance drawings.



Features include

- Mounting scheme
  Design selection from building floor drawing.
- Any kind of drawing format. (dxf, jpg, png..etc.)
- Conventional principal scheme.
- 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 diagrams.
- Automatic price quotation.
- Automatic tender document assist.

FSV SYSTEMS

Panasonic's FSV systems are designed for energy savings, high durability, and even operation at extreme ambient temperature.

Panasonic continuously apply advanced technologies to meet the requirements of a variety of diverse situations, constantly contributing to the creation of comfortable living spaces.

FSV EX ALL INVERTER

2-PIPE FSV-EX HEAT PUMP ME2 Series

Extraordinary energy-saving performance and powerful operation

Space-saving Combination Model

Cooling or Heating Type | **Anti-Corrosion Model**

- Wide range of systems from 22.4kW to 224.0kW
- Class-leading EER of 4.7 (22.4kW model)
- Industry-leading low noise of 54dB (22.4kW model)
- Cooling operation possible with outdoor temperature as high as 52℃ (DB)
- Long piping length (up to 1,000m)
- Up to 64 indoor units connectable
- External static pressure up to 80Pa
- Extended operating range allows heating with outdoor temperatures as low as -25℃ (WB)
- Suitable for R22 renewal projects*

*(Please refer to technical document for further details) RENEWAL R22

High Efficiency Combination Model

Cooling or Heating Type | **Anti-Corrosion Model**

- Wide range of systems from 22.4kW to 180.0kW
- Higher EER than the Space-saving Combination Model

(Please refer to page 42 and 43 for details)

FSV EX ALL INVERTER

3-PIPE FSV-EX HEAT RECOVERY MF3 Series

Extraordinary energy-saving for simultaneous cooling and heating operation

Cooling and Heating Simultaneous

- Wide range of systems from 22.4kW to 135.0kW
- Class-leading EER : 4.87 / COP : 5.09 (22.4kW model)
- Long piping length (up to 500m)
- Increased maximum number of connectable indoor units (up to 52)
- External static pressure up to 80Pa
- Cooling operation is possible when outdoor temperature as high as 52°C DB
- Operating range to provide heating at outdoor temperature as low as -20°C WB
- Suitable for R22 renewal projects

(Please refer to technical document for further details) RENEWAL R22

FSV INVERTER

2-PIPE Mini-FSV HEAT PUMP LE Series

For small-scale commercial and residential use

Cooling or Heating | **Anti-Corrosion Model**

- Wide range of systems from 12.1kW to 25.0kW
- High external static pressure 35Pa
- Class leading EER: 4.50 (12.1kW model) / 3.80 (22.4kW model)
- Less than 1 metre high (LE2 range)
- Wide operation range: Cooling: -10°C to 46°C DB, Heating at: -20°C to 18°C DB
- Maximum number of connectable indoor units : 13 (22.4/ 28.0kW model)
- Actual piping length: 150m
  Maximum piping length: 150m (12.1/ 14.0/ 15.5kW) / 300m (22.4/ 28.0kW)
- Suitable for R22 renewal projects

(Please refer to technical document for further details) RENEWAL R22

DRED ready

FSV-EX 2-PIPE ME2 SERIES

ALL INVERTER FSV EX

High-efficiency & space-saving VRF System

2-PIPE FSV-EX ME2 SERIES

Remarkable improvement on key components

4 Flat fan guard

3 New curved bell mouth

2 Combined triple-surface heat exchanger

1 Multiple large-capacity inverter compressor (More than 40.0kW)

Extraordinary energy-saving performance

1 Multiple large-capacity all inverter compressors (more than 40.0kW)

Two independently controlled inverter compressors achieve high efficiency. Redesigned components in the body provide performance improvement especially in the rated cooling condition and EER performance.

2 Enlarged heat exchanger surface area with triple surface*

The new heat exchanger features a triple-surface construction. Compared to the divided dual-surface construction in current models, there is no division of space and the area for heat exchange is larger. Also, highly efficient piping pattern increases heat exchange performance by 5%.

* For 22.4 & 28.0kW unit, the heat exchanger is 2 row design.

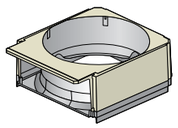
Conventional model [ME1]

New model [ME2]

Redesigned for smooth and better air discharge

3 Newly designed curved air discharge bell mouth for better aerodynamics

This newly designed curved air discharge with integrated top and bottom assures a smooth exhaust flow. This provides a greater air volume with the same sound levels, as well as a lower power input at the same air volume.



Conventional model [ME1]

New model [ME2]

4 Large air discharge area with new flush surface top panel

To reduce air resistance, instead of a tubular fan design, a new, large, flat fan guard design, flush with the top panel, is employed. Consequently, this new design leads to improvements in air resistance as well as modernising the exterior to a more minimalistic look and feel.

Conventional model [ME1]

New model [ME2]

A large number of indoor units can be connected

Up to 64 indoor units can be connected in a single system for ultimate design flexibility.

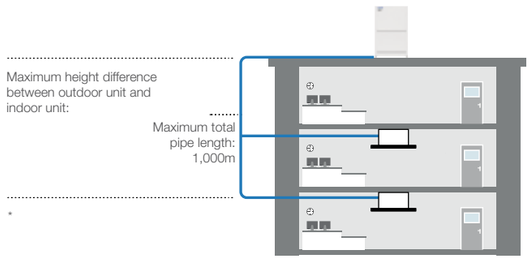
*Maximum number of indoor units depends on outdoor unit capacity.

Up to 64 Indoor Units Connectable!*

Long piping length for greater design flexibility

Adaptable to various building types and sizes
Actual piping length: 200m
Maximum piping length: 1,000m

*Elevation difference of Max. 90m in case of ODU is higher than IDU may be allowed following certain conditions. Please consult with Panasonic sales engineers in case of piping elevation of over 50m is required.



Connectable indoor/outdoor unit capacity ratio up to 130% *

FSV systems attain a maximum indoor unit connection capacity of up to 130%* of the unit's connection range, depending on the outdoor and indoor models selected. So for a reasonable investment, FSV systems provide an ideal air conditioning solution for locations where full cooling/heating are not always required.

SYSTEM / kW	22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0	73.0	78.5	85.0	90.0	96.0	101.0	107.0	113.0	118.0	124.0
MNcIU: 130%	13	16	19	23	26	29	33	36	40	43	46	50	53	56	59	63	64	64	64

SYSTEM / kW	130.0	135.0	140.0	145.0	151.0	156.0	162.0	168.0	174.0	180.0	185.0	190.0	196.0	202.0	208.0	213.0	219.0	224.0
MNcIU: 130%	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64

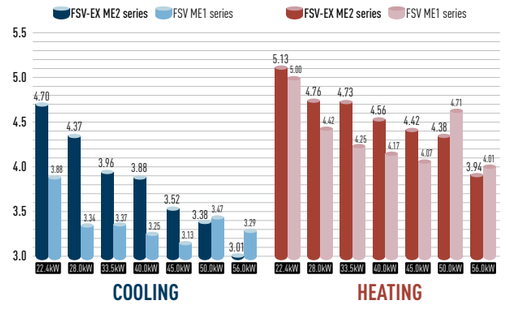
MNcIU: Maximum Number of Connectable Indoor Unit

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

* If the following conditions are satisfied, the effective range is above 130% up to 200%.
i) Obey the limited number of connectable indoor units.
ii) The lower limit of operating range for heating outdoor temperature is limited to -10°CWB (standard -25°CWB).
iii) Simultaneous operation is limited to less than 130% of connectable indoor units.

Excellent energy savings

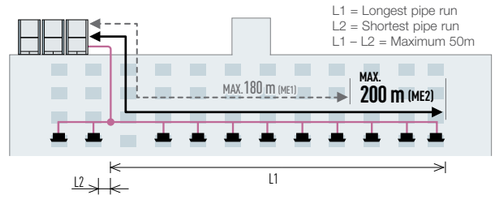
The operation efficiency has been improved using highly efficient R410A refrigerant, a new DC inverter compressor, and a new heat exchanger design.



Up to 50m length difference between the longest and the shortest piping from the first branch

Flexible piping layout makes it easier to design systems for locations such as train stations, airports, schools and hospitals.

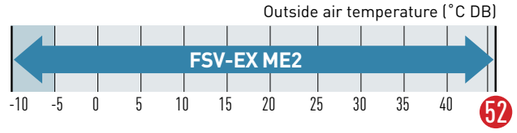
- Up to 64 units can be connected to one system.
- Difference between maximum and minimum pipe runs after first branch can be a maximum of 50m.
- Larger pipe runs can be up to 200m.



Extended operating range

Cooling operation range:

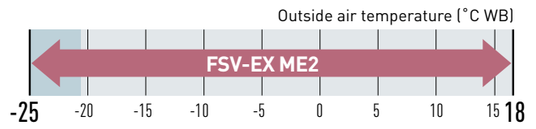
-10°C DB to +52°C DB



Heating operation range:

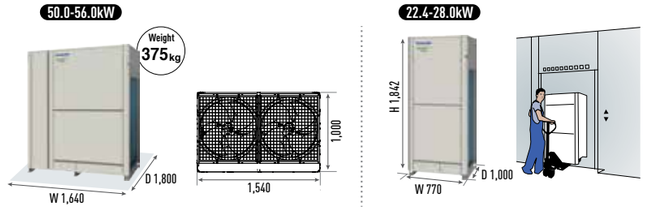
Extended heating operation range enables heating even when the outdoor temperature is as low as -25°C. Using a wired remote control, indoor heating temperature range can be set from 16°C to 30°C*.

* Depending on the type of remote controller.



Compact design

The ME2 series has reduced the installation space required with up to 56.0kW available in a single chassis. 22.4 – 28.0kW are able to fit inside a lift for easy handling on site.



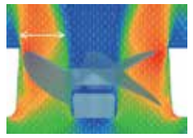
Required installation space

(Unit: mm)

Newly designed fan

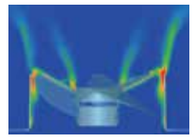
Optimised air flow

Newly designed fan and bell-mouth reduces stress on the fan by dispersing air quickly, thus lowering air resistance results in lower energy consumption.



Noise reduction

Turbulence (blue) can be suppressed and the unwanted noise can be reduced. Even though a high speed fan is utilised, the noise level is still very low.

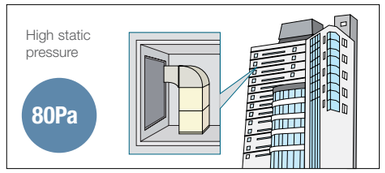


High external static pressure on condensers

With a newly designed fan, fan guard, motor, and casing, new models can be custom-installed on-site to provide up to 80Pa of external static pressure. An air discharge duct prevents shortages of air circulation, allowing outdoor units to be installed on every floor of a building.

Fan

Fan Motor and Casing



Extended compressor life by uniform compressor operation time

The total run-time of compressors are monitored by a built-in microcomputer which ensures that operation times of all compressors, within the same refrigerant circuit, are balanced.

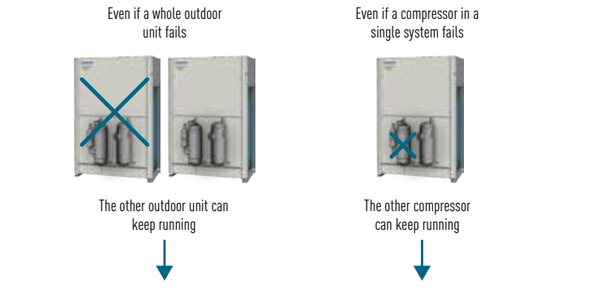
Compressors with histories showing shorter run times are selected first, ensuring equal wear and tear across all units and extending the working life of the system.

* Depend on accumulated operation time of each compressors.
* Compressor priority has possibility to be changed.
(e.g) Case1: A→C→B→D, Case2: C→A→D→B, Case3: A→C→D→B, Case4: C→A→B→D

Automatic backup operation in the case of compressor failure or outdoor unit malfunction

Except for 22.4, 28.0 & 33.5kW single unit installation

*Backup operation allows uninterrupted cooling or heating to continue whilst waiting for service.
Users should contact their authorised service centre as soon as fault occurs.



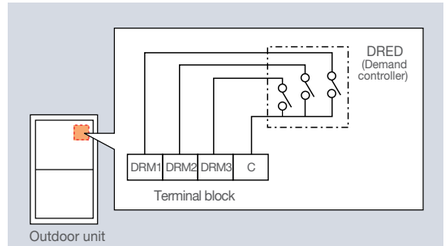
Demand response

Featuring inverter control technology, all Panasonic FSV systems are Demand Response Management (DRM) ready. With this control, power consumption at times of peak load can be set in three steps to deliver optimum performance. This helps to reduce annual power consumption with minimal loss in comfort.

Demand control terminal is available to control 0 – 50 – 75 – 100% of capacities.

ME2 series features a DR terminal as standard (not a required option)

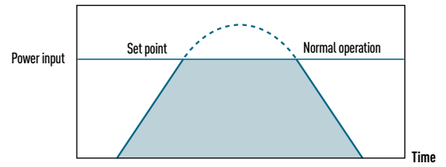
DRED DEMAND RESPONSE ENABLING DEVICE ready



Demand Response Signal	Power Input
DRM 1	0%
DRM 2	50%
DRM 3	75%

Flexible Demand Response with the CZ-CAPDC2*1

Setting is possible as 0% or in the range from 40 to 100% (in 5% intervals). Prior to shipping, these steps have been configured at intervals of 0%, 70% & 100%.

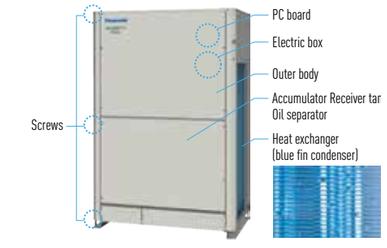


*1 An outdoor Seri-Para I/O unit (CZ-CAPDC2) is required for demand input signal.

	Power input	
Level 1	100% (Preset)	Possible to change 40-100%
Level 2	70% (Preset)	
Level 3	0% (Always in stop condition)	

Anti-corrosion outdoor unit

All heat exchangers feature our standard Blue Fin technology which increases resistance to corrosion compared to non-Blue Fin models. For high corrosion environments, Panasonic offers optional “Premium Anti-corrosion” models, available for order. The “Premium Anti-corrosion” coating encompasses the treatment of many of the internal electrical and refrigeration components as well as the chassis and screws, offering the highest degree of corrosion protection.



Note: Selecting this unit does not completely eliminate the possibility of rust developing. For details concerning unit installation and maintenance, please consult an authorised dealer.
*Specific model with suffix “E” has this treatment.

FSV-EX 2-PIPE ME2 SERIES

2-PIPE FSV-EX ME2 Series HIGH EFFICIENCY COMBINATION MODEL

U-8ME2R8
U-10ME2R8

U-12ME2R8
U-14ME2R8
U-16ME2R8

Appearance														
kW			**22.4**	**28.0**	**33.5**	**40.0**	**45.0**	**50.0**	**56.0**	**61.5**	**68.0**	**73.0**	**78.5**	**85.0**
Model name			**U-8ME2R8**	**U-10ME2R8**	**U-12ME2R8**	**U-14ME2R8**	**U-16ME2R8**	**U-8ME2R8 U-10ME2R8**	**U-10ME2R8 U-10ME2R8**	**U-10ME2R8 U-12ME2R8**	**U-12ME2R8 U-12ME2R8**	**U-10ME2R8 U-16ME2R8**	**U-12ME2R8 U-16ME2R8**	**U-14ME2R8 U-16ME2R8**
Power supply			400V/415V/3-phase/50Hz											
Capacity	Cooling	kW	22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0	73.0	78.5	85.0
		BTU/h	76,500	95,600	114,300	136,500	153,500	170,600	191,100	209,900	232,100	249,100	267,900	290,100
	Heating	kW	25.0	31.5	37.5	45.0	50.0	56.0	63.0	69.0	76.5	81.5	87.5	95.0
		BTU/h	85,300	107,500	128,000	153,600	170,600	191,100	215,000	235,500	261,100	278,200	298,600	324,200
EER / COP	Cooling	W/W	4.70	4.37	3.96	3.88	3.52	4.55	4.38	4.13	3.93	3.80	3.69	3.68
	Heating	W/W	5.13	4.76	4.73	4.56	4.42	4.96	4.77	4.76	4.69	4.55	4.56	4.48
Dimensions	H x W x D	mm	1,842 x 770 x 1,000	1,842 x 770 x 1,000	1,842 x 1,180 x 1,000	1,842 x 1,180 x 1,000	1,842 x 1,180 x 1,000	1,842 x 1,600 x 1,000	1,842 x 1,600 x 1,000	1,842 x 2,010 x 1,000	1,842 x 2,420 x 1,000	1,842 x 2,010 x 1,000	1,842 x 2,420 x 1,000	1,842 x 2,420 x 1,000
Net weight		kg	220	220	270	315	315	440	440	490	540	535	585	630
Electrical ratings	Cooling Running current	A	7.40 / 7.14	10.2 / 9.80	13.0 / 12.5	16.5 / 15.9	20.1 / 19.4	17.3 / 16.6	20.3 / 19.6	23.1 / 22.3	26.6 / 25.6	30.1 / 29.0	33.1 / 31.9	36.6 / 35.3
	Cooling Power input	kW	4.77	6.41	8.47	10.3	12.8	11.0	12.8	14.9	17.3	19.2	21.3	23.1
	Heating Running current	A	7.56 / 7.29	10.5 / 10.1	12.3 / 11.9	15.8 / 15.2	17.9 / 17.3	17.7 / 17.1	20.9 / 20.2	22.7 / 21.9	25.3 / 24.4	28.4 / 27.4	30.1 / 29.0	33.6 / 32.4
	Heating Power input	kW	4.87	6.62	7.92	9.86	11.3	11.3	13.2	14.5	16.3	17.9	19.2	21.2
Starting current		A	1	1	1	2	2	2	2	2	2	3	3	4
Air flow rate		m³/h	13,440	13,440	13,920	13,920	13,920	26,880	26,880	27,360	27,840	27,360	27,840	27,840
		L/s	3,733	3,733	3,866	3,866	3,866	7,466	7,466	7,600	7,733	7,600	7,733	7,733
Refrigerant amount at shipment		kg	11.1	11.1	11.3	11.3	11.3	22.2	22.2	22.4	22.6	22.4	22.6	22.6
External static pressure		Pa	80	80	80	80	80	80	80	80	80	80	80	80
Piping connections	Gas pipe	mm (inches)	Ø19.05 (Ø3/4)	Ø22.22 (Ø7/8)	Ø25.40 (Ø1)	Ø25.40 (Ø1)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)
	Liquid pipe	mm (inches)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø12.70 (Ø1/2)	Ø12.70 (Ø1/2)	Ø12.70 (Ø1/2)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)
	Balance pipe	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Ambient temperature operating range			Cooling: -10℃ (DB)~ +52℃ (DB). Heating: -25℃ (WB)~ +18℃ (WB)											
Sound pressure level	Normal mode	dB (A)	54.0	56.0	59.0	60.0	61.0	58.5	59.0	61.0	62.0	62.5	63.5	63.5
	Silent mode (2)	dB (A)	49.0	51.0	54.0	55.0	56.0	53.5	54.0	56.0	57.0	57.5	58.5	58.5
Sound power level	Normal mode	dB	75.0	77.0	80.0	81.0	82.0	79.5	80.0	82.0	83.0	83.5	84.5	84.5

Appearance									
kW			**140.0**	**145.0**	**151.0**	**156.0**	**162.0**	**168.0**	**174.0**	**180.0**
Model name			**U-10ME2R8 U-12ME2R8 U-12ME2R8 U-16ME2R8**	**U-12ME2R8 U-12ME2R8 U-12ME2R8 U-16ME2R8**	**U-10ME2R8 U-12ME2R8 U-16ME2R8 U-16ME2R8**	**U-12ME2R8 U-12ME2R8 U-16ME2R8 U-16ME2R8**	**U-10ME2R8 U-16ME2R8 U-16ME2R8 U-16ME2R8**	**U-12ME2R8 U-16ME2R8 U-16ME2R8 U-16ME2R8**	**U-14ME2R8 U-16ME2R8 U-16ME2R8 U-16ME2R8**	**U-16ME2R8 U-16ME2R8 U-16ME2R8 U-16ME2R8**
Power supply			400V/415V/3-phase/50Hz							
Capacity	Cooling	kW	140.0	145.0	151.0	156.0	162.0	168.0	174.0	180.0
		BTU/h	477,800	494,900	515,400	532,400	552,900	573,400	593,600	614,160
	Heating	kW	155.0	160.0	169.0	175.0	182.0	189.0	195.0	201.0
		BTU/h	529,000	546,100	576,800	597,300	621,200	645,100	665,300	686,000
EER / COP	Cooling	W/W	3.87	3.82	3.75	3.71	3.65	3.60	3.60	3.52
	Heating	W/W	4.65	4.66	4.56	4.56	4.47	4.47	4.45	4.42
Dimensions	H x W x D	mm	1,842 x 4,490 x 1,000	1,842 x 4,900 x 1,000	1,842 x 4,490 x 1,000	1,842 x 4,900 x 1,000	1,842 x 4,490 x 1,000	1,842 x 4,900 x 1,000	1,842 x 4,900 x 1,000	1,842 x 4,900 x 1,000
Net weight		kg	1,075	1,125	1,120	1,170	1,165	1,215	1,260	1,260
Electrical ratings	Cooling Running current	A	56.2 / 54.2	59.0 / 56.8	63.2 / 60.9	65.3 / 63.0	69.7 / 67.1	73.3 / 70.6	75.8 / 73.0	80.3 / 77.4
	Cooling Power input	kW	36.2	38.0	40.3	42.1	44.4	46.7	48.3	51.2
	Heating Running current	A	52.2 / 50.4	53.8 / 51.9	58.8 / 56.7	60.2 / 58.1	64.6 / 62.2	67.1 / 64.7	69.5 / 67.0	72.2 / 69.6
	Heating Power input	kW	33.3	34.3	37.1	38.4	40.7	42.3	43.8	45.5
Starting current		A	5	5	6	6	7	7	8	8
Air flow rate		m³/h	55,200	55,680	55,200	55,680	55,200	55,680	55,680	55,680
		L/s	15,333	15,466	15,333	15,466	15,333	15,466	15,466	15,466
Refrigerant amount at shipment		kg	45.0	45.2	45.0	45.2	45.0	45.2	45.2	45.2
External static pressure		Pa	80	80	80	80	80	80	80	80
Piping connections	Gas pipe	mm (inches)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)
	Liquid pipe	mm (inches)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)
	Balance pipe	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Ambient temperature operating range			Cooling: -10℃ (DB)~ +52℃ (DB). Heating: -25℃ (WB)~ +18℃ (WB)							
Sound pressure level	Normal mode	dB (A)	65.5	66.0	66.0	66.5	66.5	67.0	67.0	67.0
	Silent mode (2)	dB (A)	60.5	61.0	61.0	61.5	61.5	62.0	62.0	62.0
Sound power level	Normal mode	dB	86.5	87.0	87.0	87.5	87.5	88.0	88.0	88.0

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27℃ DB / 19℃ WB	20℃ DB
	Outdoor air temperature	35℃ DB	7℃ DB / 6℃ WB

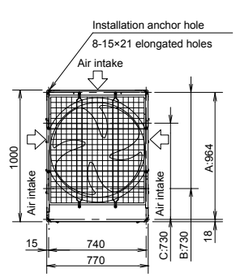
These specifications are subject to change without notice.

22.4 / 28.0kW

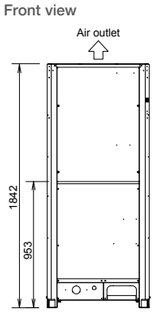
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

A: (Installation hole pitch) For removing pipe forward
B: (Installation hole pitch) For removing the downward
C: (Installation hole pitch)

Top view



Front view



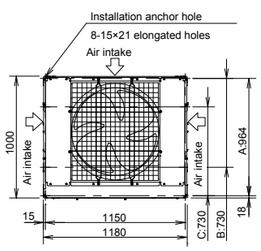
unit: mm

33.5 / 40.0 / 45.0kW

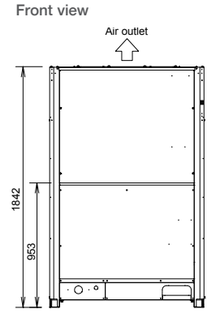
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

A: (Installation hole pitch) For removing pipe forward
B: (Installation hole pitch) For removing the downward
C: (Installation hole pitch)

Top view



Front view



unit: mm

FSV-EX 2-PIPE ME2 SERIES

2-PIPE FSV-EX ME2 Series SPACE SAVING COMBINATION MODEL


U-8ME2R8
U-10ME2R8


U-12ME2R8
U-14ME2R8
U-16ME2R8


U-18ME2R8
U-20ME2R8

Appearance										
kW			**22.4**	**28.0**	**33.5**	**40.0**	**45.0**	**50.0**	**56.0**	**61.5**	**68.0**
Model name			**U-8ME2R8**	**U-10ME2R8**	**U-12ME2R8**	**U-14ME2R8**	**U-16ME2R8**	**U-18ME2R8**	**U-20ME2R8**	**U-10ME2R8 U-12ME2R8**	**U-12ME2R8 U-12ME2R8**
Power supply			400V/415V/3-phase/50Hz								
Capacity	Cooling	kW	22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0
		BTU/h	76,500	95,600	114,300	136,500	153,600	170,600	191,100	209,900	232,100
	Heating	kW	25.0	31.5	37.5	45.0	50.0	56.0	63.0	69.0	76.5
		BTU/h	85,300	107,500	128,000	153,600	170,600	191,100	215,000	235,500	261,100
EER / COP	Cooling	W/W	4.70	4.37	3.96	3.88	3.52	3.38	3.01	4.13	3.93
	Heating	W/W	5.13	4.76	4.73	4.56	4.42	4.38	3.94	4.76	4.69
Dimensions	H x W x D	mm	1,842 x 770 x 1,000	1,842 x 770 x 1,000	1,842 x 1,180 x 1,000	1,842 x 1,180 x 1,000	1,842 x 1,180 x 1,000	1,842 x 1,540 x 1,000	1,842 x 1,540 x 1,000	1,842 x 2,010 x 1,000	1,842 x 2,420 x 1,000
Net weight		kg	220	220	270	315	315	375	375	490	540
Electrical ratings	Cooling Running current	A	7.40 / 7.14	10.2 / 9.80	13.0 / 12.5	16.5 / 15.9	20.1 / 19.4	23.0 / 22.1	28.3 / 27.2	23.1 / 22.3	26.6 / 25.6
	Cooling Power input	kW	4.77	6.41	8.47	10.3	12.8	14.8	18.6	14.9	17.3
	Heating Running current	A	7.56 / 7.29	10.5 / 10.1	12.3 / 11.9	15.8 / 15.2	17.9 / 17.3	20.1 / 19.4	24.6 / 23.7	22.7 / 21.9	25.3 / 24.4
	Heating Power input	kW	4.87	6.62	7.92	9.86	11.3	12.8	16.0	14.5	16.3
Starting current		A	1	1	1	2	2	2	2	2	2
Air flow rate		m³/h	13,440	13,440	13,920	13,920	13,920	24,300	24,300	27,360	27,840
		L/s	3,733	3,733	3,866	3,866	3,866	6,750	6,750	7,600	7,733
Refrigerant amount at shipment		kg	11.1	11.1	11.3	11.3	11.3	11.0	11.0	22.4	22.6
External static pressure		Pa	80	80	80	80	80	80	80	80	80
Piping connections	Gas pipe	mm (inches)	Ø19.05 (Ø3/4)	Ø22.22 (Ø7/8)	Ø25.40 (Ø1)	Ø25.40 (Ø1)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)
	Liquid pipe	mm (inches)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø12.70 (Ø1/2)	Ø12.70 (Ø1/2)	Ø12.70 (Ø1/2)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)
	Balance pipe	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Ambient temperature operating range			Cooling: -10℃ (DB)~ +52℃ (DB). Heating: -25℃ (WB)~ +18℃ (WB)								
Sound pressure level	Normal mode	dB (A)	54.0	56.0	59.0	60.0	61.0	59.0	60.0	61.0	62.0
	Silent mode (2)	dB (A)	49.0	51.0	54.0	55.0	56.0	54.0	55.0	56.0	57.0
Sound power level	Normal mode	dB	75.0	77.0	80.0	81.0	82.0	80.0	81.0	82.0	83.0

Appearance													
kW			**73.0**	**78.5**	**85.0**	**90.0**	**96.0**	**101.0**	**107.0**	**113.0**	**118.0**	**124.0**	**130.0**	**135.0**
Model name			**U-10ME2R8 U-16ME2R8**	**U-12ME2R8 U-16ME2R8**	**U-14ME2R8 U-16ME2R8**	**U-16ME2R8 U-16ME2R8**	**U-14ME2R8 U-20ME2R8**	**U-16ME2R8 U-20ME2R8**	**U-18ME2R8 U-20ME2R8**	**U-20ME2R8 U-20ME2R8**	**U-10ME2R8 U-16ME2R8 U-16ME2R8**	**U-12ME2R8 U-16ME2R8 U-16ME2R8**	**U-14ME2R8 U-16ME2R8 U-16ME2R8**	**U-16ME2R8 U-16ME2R8 U-16ME2R8**
Power supply			400V/415V/3-phase/50Hz											
Capacity	Cooling	kW	73.0	78.5	85.0	90.0	96.0	101.0	107.0	113.0	118.0	124.0	130.0	135.0
		BTU/h	249,100	267,900	290,100	307,200	327,600	344,700	365,200	385,700	402,700	423,200	443,700	460,800
	Heating	kW	81.5	87.5	95.0	100.0	108.0	113.0	119.0	127.0	132.0	138.0	145.0	150.0
		BTU/h	278,200	298,600	324,200	341,300	368,600	385,700	406,100	433,300	450,500	471,000	494,900	511,900
EER / COP	Cooling	W/W	3.80	3.69	3.68	3.52	3.32	3.22	3.16	3.00	3.69	3.62	3.62	3.52
	Heating	W/W	4.55	4.56	4.48	4.42	4.17	4.14	4.13	3.92	4.49	4.50	4.46	4.42
Dimensions	H x W x D	mm	1,842 x 2,010 x 1,000	1,842 x 2,420 x 1,000	1,842 x 2,420 x 1,000	1,842 x 2,420 x 1,000	1,842 x 2,780 x 1,000	1,842 x 2,780 x 1,000	1,842 x 3,140 x 1,000	1,842 x 3,140 x 1,000	1,842 x 3,250 x 1,000	1,842 x 3,660 x 1,000	1,842 x 3,660 x 1,000	1,842 x 3,660 x 1,000
Net weight		kg	535	585	630	630	690	690	750	750	850	900	945	945
Electrical ratings	Cooling Running current	A	30.1 / 29.0	33.1 / 31.9	36.6 / 35.3	40.2 / 38.7	44.9 / 43.2	48.2 / 46.5	52.1 / 50.2	57.3 / 55.2	50.2 / 48.4	53.2 / 51.3	56.9 / 54.9	60.2 / 58.1
	Cooling Power input	kW	19.2	21.3	23.1	25.6	28.9	31.4	33.9	37.7	32.0	34.3	35.9	38.4
	Heating Running current	A	28.4 / 27.4	30.1 / 29.0	33.6 / 32.4	35.8 / 34.6	40.6 / 39.2	42.4 / 40.8	44.7 / 43.1	49.8 / 48.0	46.6 / 44.9	48.2 / 46.4	51.5 / 49.7	53.8 / 51.8
	Heating Power input	kW	17.9	19.2	21.2	22.6	25.9	27.3	28.8	32.4	29.4	30.7	32.5	33.9
Starting current		A	3	3	4	4	4	4	4	4	5	5	6	6
Air flow rate		m³/h	27,360	27,840	27,840	27,840	38,220	38,220	48,600	48,600	41,280	41,760	41,760	41,760
		L/s	7,600	7,733	7,733	7,733	10,616	10,616	13,500	13,500	11,466	11,600	11,600	11,600
Refrigerant amount at shipment		kg	22.4	22.6	22.6	22.6	22.3	22.3	22.0	22.0	33.7	33.9	33.9	33.9
External static pressure		Pa	80	80	80	80	80	80	80	80	80	80	80	80
Piping connections	Gas pipe	mm (inches)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)
	Liquid pipe	mm (inches)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)
	Balance pipe	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Ambient temperature operating range			Cooling: -10℃ (DB)~ +52℃ (DB). Heating: -25℃ (WB)~ +18℃ (WB)											
Sound pressure level	Normal mode	dB (A)	62.5	63.5	63.5	64.0	63.0	63.5	62.5	63.0	65.0	65.5	65.5	66.0
	Silent mode (2)	dB (A)	57.5	58.5	58.5	59.0	58.0	58.5	57.5	58.0	60.0	60.5	60.5	61.0
Sound power level	Normal mode	dB	83.5	84.5	84.5	85.0	84.0	84.5	83.5	84.0	86.0	86.5	86.5	87.0

Appearance									
kW			**140.0**	**145.0**	**151.0**	**156.0**	**162.0**	**168.0**	**174.0**	**180.0**	**185.0**
Model name			**U-14ME2R8 U-16ME2R8 U-20ME2R8**	**U-16ME2R8 U-16ME2R8 U-20ME2R8**	**U-14ME2R8 U-20ME2R8 U-20ME2R8**	**U-16ME2R8 U-20ME2R8 U-20ME2R8**	**U-18ME2R8 U-20ME2R8 U-20ME2R8**	**U-20ME2R8 U-20ME2R8 U-20ME2R8**	**U-14ME2R8 U-16ME2R8 U-16ME2R8 U-16ME2R8**	**U-16ME2R8 U-16ME2R8 U-16ME2R8 U-16ME2R8**	**U-10ME2R8 U-16ME2R8 U-20ME2R8 U-20ME2R8**
Power supply			400/415V/3-phase/50Hz								
Capacity	Cooling	kW	140.0	145.0	151.0	156.0	162.0	168.0	174.0	180.0	185.0
		BTU/h	477,800	494,900	515,400	532,400	552,900	573,400	593,700	614,200	631,200
	Heating	kW	155.0	160.0	169.0	175.0	182.0	189.0	195.0	201.0	207.0
		BTU/h	529,000	546,100	576,800	597,300	621,200	645,100	665,300	686,000	706,300
EER / COP	Cooling	W/W	3.39	3.32	3.21	3.15	3.12	3.01	3.60	3.52	3.28
	Heating	W/W	4.29	4.27	4.11	4.08	4.06	3.94	4.45	4.42	4.16
Dimensions	H x W x D	mm	1,842 x 4,020 x 1,000	1,842 x 4,020 x 1,000	1,842 x 4,380 x 1,000	1,842 x 4,380 x 1,000	1,842 x 4,740 x 1,000	1,842 x 4,740 x 1,000	1,842 x 4,900 x 1,000	1,842 x 4,900 x 1,000	1,842 x 5,210 x 1,000
Net weight		kg	1,005	1,005	1,065	1,065	1,125	1,125	1,260	1,260	1,285
Electrical ratings	Cooling Running current	A	64.1 / 61.8	67.8 / 65.4	72.2 / 69.6	76.0 / 73.3	79.8 / 77.0	84.8 / 81.7	75.8 / 73.0	80.3 / 77.4	86.6 / 83.5
	Cooling Power input	kW	41.3	43.7	47.0	49.5	52.0	55.8	48.3	51.2	56.4
	Heating Running current	A	56.6 / 54.6	58.8 / 56.7	63.8 / 61.5	66.6 / 64.2	69.5 / 67.0	73.7 / 71.0	69.5 / 67.0	72.2 / 69.6	77.1 / 74.3
	Heating Power input	kW	36.1	37.5	41.1	42.9	44.8	48.0	43.8	45.5	49.7
Starting current		A	6	6	6	6	6	6	8	8	7
Air flow rate		m³/h	52,140	52,140	62,520	62,520	72,900	72,900	55,680	55,680	75,960
		L/s	14,483	14,483	17,366	17,366	20,250	20,250	15,466	15,466	21,100
Refrigerant amount at shipment		kg	33.6	33.6	33.3	33.3	33.0	33.0	45.2	45.2	44.4
External static pressure		Pa	80	80	80	80	80	80	80	80	80
Piping connections	Gas pipe	mm (inches)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø38.10 (Ø1-1/2)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)
	Liquid pipe	mm (inches)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)
	Balance pipe	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Ambient temperature operating range			Cooling: -10℃ (DB)~ +52℃ (DB). Heating: -25℃ (WB)~ +18℃ (WB)								
Sound pressure level	Normal mode	dB (A)	65.5	65.5	65.0	65.5	64.5	65.0	67.0	67.0	66.0
	Silent mode (2)	dB (A)	60.5	60.5	60.0	60.5	59.5	60.0	62.0	62.0	61.0
Sound power level	Normal mode	dB	86.5	86.5	86.0	86.5	85.5	86.0	88.0	88.0	87.0

Appearance							
kW		**190.0**	**196.0**	**202.0**	**208.0**	**213.0**	**219.0**	**224.0**
Model name		**U-12ME2R8 U-16ME2R8 U-20ME2R8 U-20ME2R8**	**U-10ME2R8 U-20ME2R8 U-20ME2R8 U-20ME2R8**	**U-16ME2R8 U-16ME2R8 U-20ME2R8 U-20ME2R8**	**U-16ME2R8 U-18ME2R8 U-20ME2R8 U-20ME2R8**	**U-16ME2R8 U-20ME2R8 U-20ME2R8 U-20ME2R8**	**U-18ME2R8 U-20ME2R8 U-20ME2R8 U-20ME2R8**	**U-20ME2R8 U-20ME2R8 U-20ME2R8 U-20ME2R8**
Power supply		400/415V/3-phase/50Hz						
Capacity	Cooling	190.0	196.0	202.0	208.0	213.0	219.0	224.0
	BTU/h	648,300	668,800	689,200	709,700	727,000	747,200	764,300
	Heating	213.0	219.0	226.0	233.0	239.0	245.0	252.0
	BTU/h	726,800	747,200	771,100	795,000	815,500	836,000	860,100
EER / COP	Cooling	3.26	3.15	3.22	3.19	3.10	3.08	3.01
	Heating	4.18	4.05	4.14	4.12	4.03	4.03	3.94
Dimensions	H x W x D	1,842 x 5,620 x 1,000	1,842 x 5,570 x 1,000	1,842 x 5,620 x 1,000	1,842 x 5,980 x 1,000	1,842 x 5,980 x 1,000	1,842 x 6,340 x 1,000	1,842 x 6,340 x 1,000
Net weight		1,335	1,345	1,380	1,440	1,440	1,500	1,500
Electrical ratings	Cooling Running current	89.4 / 86.1	95.5 / 92.1	96.4 / 92.9	100.3 / 96.6	105.3 / 101.5	108.0 / 104.1	113.0 / 109.0
	Cooling Power input	58.2	62.2	62.8	65.3	68.6	71.1	74.4
	Heating Running current	79.2 / 76.3	83.1 / 80.1	84.7 / 81.7	87.7 / 84.5	92.0 / 88.7	93.4 / 90.0	98.3 / 94.7
	Heating Power input	51.0	54.1	54.6	56.5	59.3	60.8	64.0
Starting current		7	7	8	8	8	8	8
Air flow rate		76,440	86,340	76,440	86,820	86,820	97,200	97,200
		21,233	23,983	21,233	24,116	24,116	27,000	27,000
Refrigerant amount at shipment		44.6	44.1	44.6	44.3	44.3	44.0	44.0
External static pressure		80	80	80	80	80	80	80
Piping connections	Gas pipe	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø44.45 (Ø1-3/4)	Ø44.45 (Ø1-3/4)	Ø44.45 (Ø1-3/4)	Ø44.45 (Ø1-3/4)	Ø44.45 (Ø1-3/4)
	Liquid pipe	Ø22.22 (Ø7/8)	Ø22.22 (Ø7/8)	Ø22.22 (Ø7/8)	Ø22.22 (Ø7/8)	Ø22.22 (Ø7/8)	Ø22.22 (Ø7/8)	Ø22.22 (Ø7/8)
	Balance pipe	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Ambient temperature operating range		Cooling: -10℃ (DB)~ +52℃ (DB). Heating: -25℃ (WB)~ +18℃ (WB)						
Sound pressure level	Normal mode	66.5	65.5	66.5	66.5	66.5	66.0	66.0
	Silent mode (2)	61.5	60.5	61.5	61.5	61.5	61.0	61.0
Sound power level	Normal mode	87.5	86.5	87.5	87.5	87.5	87.0	87.0

GLOBALREMARKS

Rated conditions:	Cooling	Heating
Indoor air temperature	27℃ DB / 19℃ WB	20℃ DB
Outdoor air temperature	35℃ DB	7℃ DB / 6℃ WB

These specifications are subject to change without notice.

2-PIPE FSV-EX ME2 Series SPACE SAVING COMBINATION MODEL

U-8ME2R8
U-10ME2R8

U-12ME2R8
U-14ME2R8
U-16ME2R8

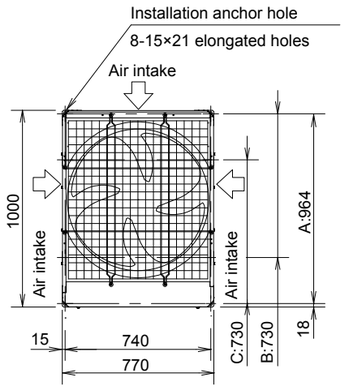
U-18ME2R8
U-20ME2R8

22.4 / 28.0kW

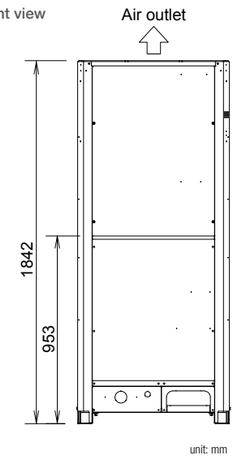
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

A: (Installation hole pitch) For removing pipe forward
B: (Installation hole pitch) For removing the tube downward
C: (Installation hole pitch)

Top view



Front view



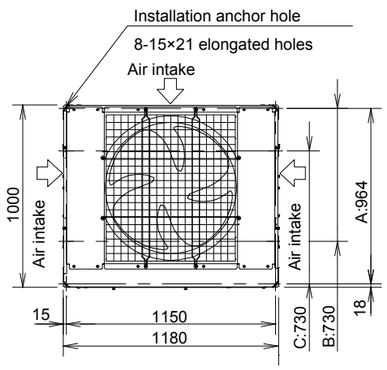
unit: mm

22.4 / 28.0 / 33.5 / 40.0 / 45.0kW

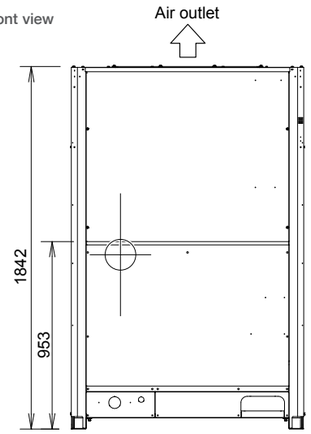
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

A: (Installation hole pitch) For removing pipe forward
B: (Installation hole pitch) For removing the tube downward
C: (Installation hole pitch)

Top view



Front view



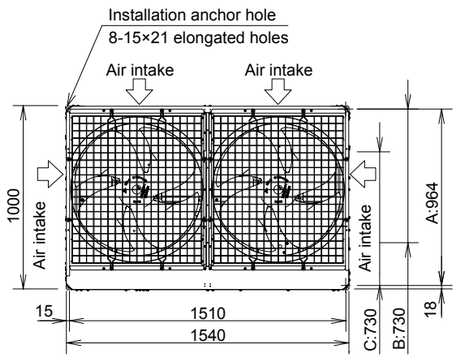
unit: mm

50.0 / 56.0kW

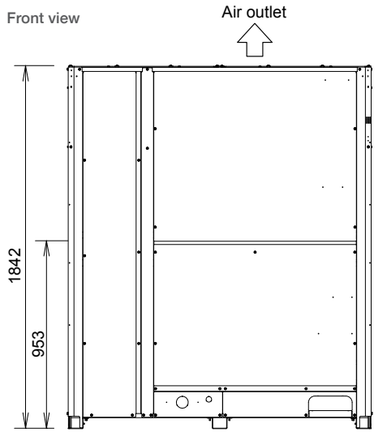
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

A: (Installation hole pitch) For removing pipe forward
B: (Installation hole pitch) For removing the tube downward
C: (Installation hole pitch)

Top view



Front view

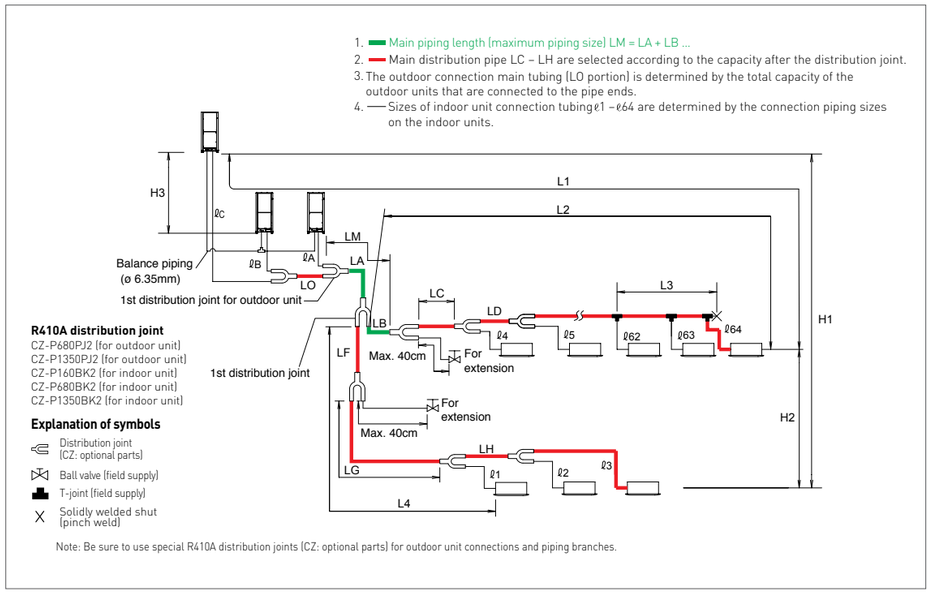


unit: mm

FSV-EX 2-PIPE ME2 SERIES

Piping Design

Select installation locations so that the lengths and sizes of refrigerant piping are within the allowable ranges shown in the figure below.



Note: Be sure to use special R410A distribution joints (CZ: optional parts) for outdoor unit connections and piping branches.

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

Items	Mark	Contents		Length (m)
Allowable piping length	L1	Maximum piping length	Actual length	≤200*2
			Equivalent length	≤210*2
	Δ L (L2-L4)	Difference between max. length and minimum length from the 1st distribution joint		≤50*5
	LM	Maximum length of main piping (at maximum size) * Even after 1st distribution joint, LM is allowed if at maximum piping length.		— *3
	ℓ1, ℓ2~ ℓ64	Maximum length of each distribution pipe		≤30*7
	L1+ ℓ1+ ℓ2~ ℓ63+ ℓA+ ℓB+LF+LG+LH	Total maximum piping length including length of each distribution pipe (only liquid tubing)		≤1000
	ℓA, ℓB+LO, ℓC+LO	Maximum piping length from outdoor's 1st distribution joint to each outdoor unit		≤10
Allowable elevation difference	H1	When outdoor unit is installed higher than indoor unit		≤50
		When outdoor unit is installed lower than indoor unit		≤40
	H2	Maximum difference between indoor units		≤15*6
	H3	Maximum difference between outdoor units		≤4
Allowable length of joint tubing	L3	T-joint piping (field-supply); Max. piping length between the first T-joint and solidly welded-shut end point		≤2

L = Length, H = Height

NOTE
1: The outdoor connection main piping (LO portion) is determined by the total capacity of the outdoor units that are connected to the pipe ends.
2: If the longest piping length (L1) exceeds 90m (equivalent length), increase the sizes of the main pipe (LM) by 1 rank for gas pipe and liquid pipe. Use a field supply reducer. Select the pipe size from the table of main piping sizes (Table 3) and from the table of refrigerant piping sizes (Table 8) on the second following page.
3: If the longest main piping length (LM) exceeds 50m, increase the main piping size at the portion before 50m by 1 rank for the gas pipe. Use a field supply reducer. Determine the length less than the limitation of allowable maximum piping length. For the portion that exceeds 50m, set ba sed on the main piping size (LA) listed in Table 3.
4: If the size of the existing piping is already larger than the standard piping size, it is not necessary to further increase the size.
* If the existing piping is used, and the amount of on-site refrigerant charge exceeds the value listed below, then change the size of the piping to reduce the amount of refrigerant.
Total amount of refrigerant for the system with 1 outdoor unit: 50kg
Total amount of refrigerant for the system with 2 outdoor units: 80kg
Total amount of refrigerant for the system with 3 outdoor units or 4 outdoor units: 105kg
5: When the piping length exceeds 40m, increase a longer liquid or gas piping by 1 rank. Refer to the Technical Data for the details.
6: If the total distribution piping length exceeds 500m, maximum allowable elevation difference (H2) between the indoor units is calculated by the following formula. Make sure the indoor unit's actual elevation difference should fall within the figure calculated as follows.
Unit of account (metre): 15 x (2 - total piping length(m) ÷ 500)
7: If any of the piping length exceeds 30m, increase the size of the liquid and gas pipe by 1 rank.

Necessary amount of additional refrigerant charge per outdoor unit

U-8ME2R8	U-10ME2R8	U-12ME2R8	U-14ME2R8	U-16ME2R8	U-18ME2R8	U-20ME2R8
0kg	0kg	4.0kg	4.0kg	4.0kg	5.5kg	5.5kg

System limitations

Max. No. allowable connected outdoor units	4 *2
Max. capacity allowable connected outdoor units	224kW (80HP)
Max. connectable indoor units	64 *1
Max. allowable indoor/outdoor capacity ratio	50-130 % *3

*1: In the case of 107.0kW or smaller units, the number is limited by the total capacity of the connected indoor units.
*2: Up to 4 units can be connected if the system has been extended.
*3: If the following conditions are satisfied, the effective range is above 130% and below 200%.
i) Obey the limited number of connectable indoor units.
ii) The lower limit of operating range for heating outdoor temperature is limited to -10°CWB (standard -25°CWB).
iii) Simultaneous operation is limited to less than 130% of connectable indoor units.

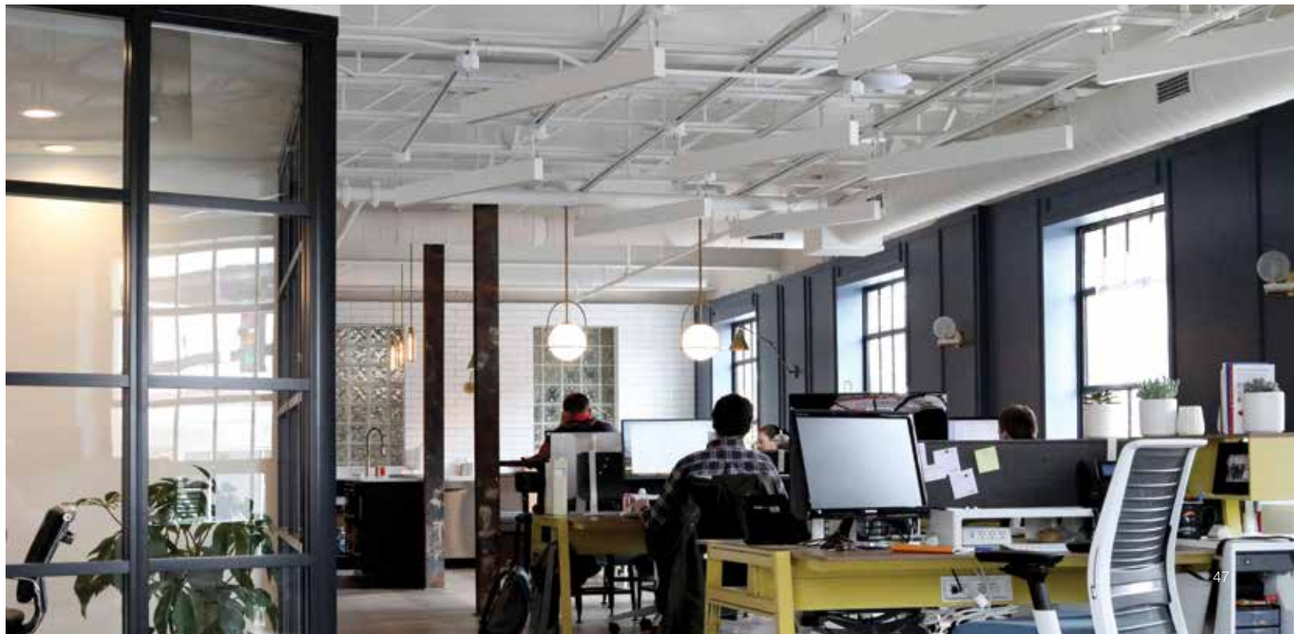
Additional refrigerant charge

Liquid piping size mm (inches)	Amount of refrigerant charge/m (g/m)
ø6.35 (ø1/4)	26
ø9.52 (ø3/8)	56
ø12.7 (ø1/2)	128
ø15.88 (ø5/8)	185
ø19.05 (ø3/4)	259
ø22.22 (ø7/8)	366
ø25.4 (ø1)	490

Refrigerant piping (Existing piping can be used.)

Piping size (mm)	Material Temper - O	ø6.35	ø9.52	ø12.7	ø15.88	ø19.05		
		t 0.8	t 0.8	t 0.8	t 1.0	t 1.2		
	Material Temper - 1/2 H, H	ø22.22	ø25.4	ø28.58	ø31.75	ø38.1	ø41.28	ø44.45
		t 1.0	t 1.0	t 1.0	t 1.1	over t 1.35	over t 1.45	over t1.55

* When bending the pipes, use a bending radius that is at least 4 times the outer diameter of the pipes. In addition, take sufficient care to avoid crushing or damaging the pipes when bending them.



Refrigerant Branch Pipes (accessories) for 2-PIPE ME2 Series

See the installation instructions packaged with the refrigerant branch pipes for the installation procedure.

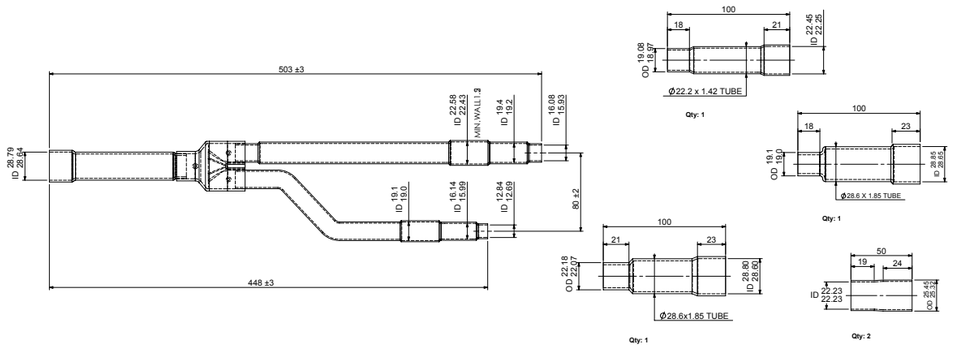
Model name	Cooling capacity after distribution	Remarks
1. CZ-P680PJ2	68.0kW or less	For outdoor unit
2. CZ-P1350PJ2	168.0kW or less	For outdoor unit
3. CZ-P160BK2	22.4kW or less	For indoor unit
4. CZ-P680BK2	68.0kW or less	For indoor unit
5. CZ-P1350BK2	1680.0kW or less	For indoor unit

Piping size (with thermal insulation)

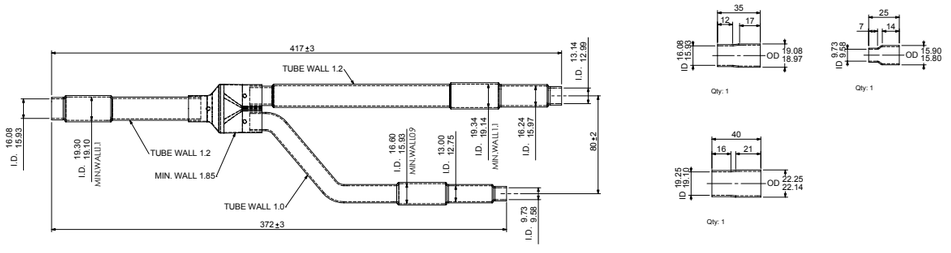
1. CZ-P680PJ2

Use: For outdoor unit
(Capacity after refrigerant branch pipe is 68.0kW or less.)

GAS PIPING



LIQUID PIPING

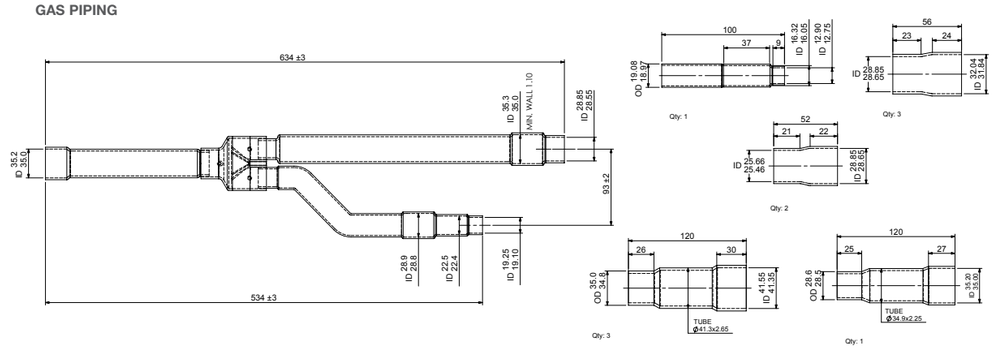


All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

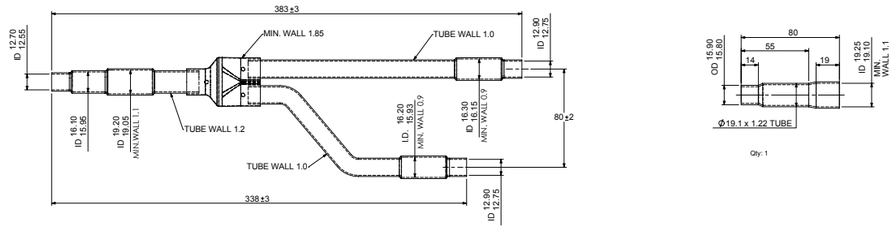
2. CZ-P1350PJ2

Use: For outdoor unit (Capacity after refrigerant branch pipe is greater than 68.0kW and no more than 168.0kW.)

GAS PIPING



LIQUID PIPING

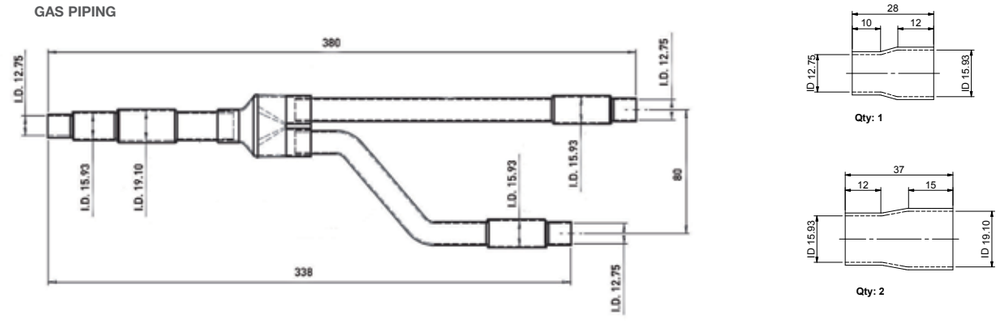


All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

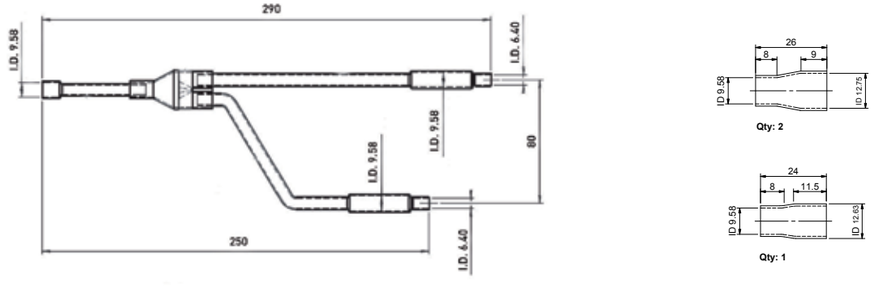
3. CZ-P160BK2

Use: For indoor unit (Capacity after refrigerant branch pipe is 22.4kW or less.)

GAS PIPING



LIQUID PIPING



All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

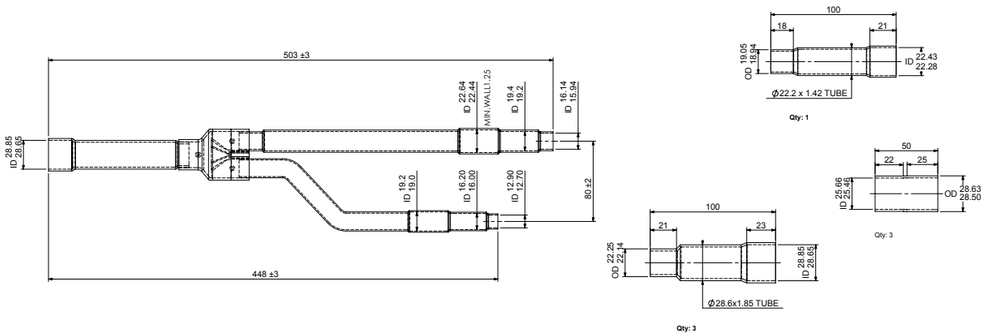
Refrigerant Branch Pipes (accessories) for 2-PIPE ME2 Series

Piping size (with thermal insulation)

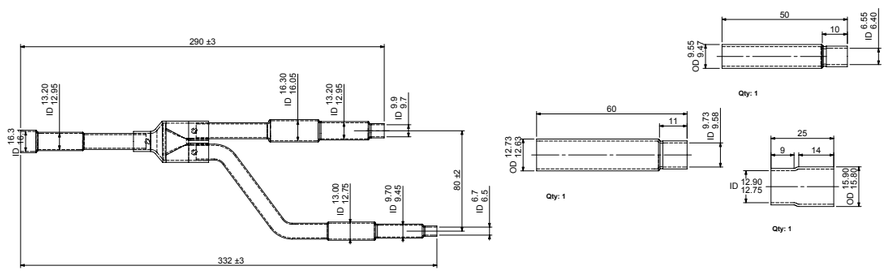
4. CZ-P680BK2

Use: For indoor unit (Capacity after refrigerant branch pipe is more than 22.4kW and no more than 68.0kW.)

GAS PIPING



LIQUID PIPING

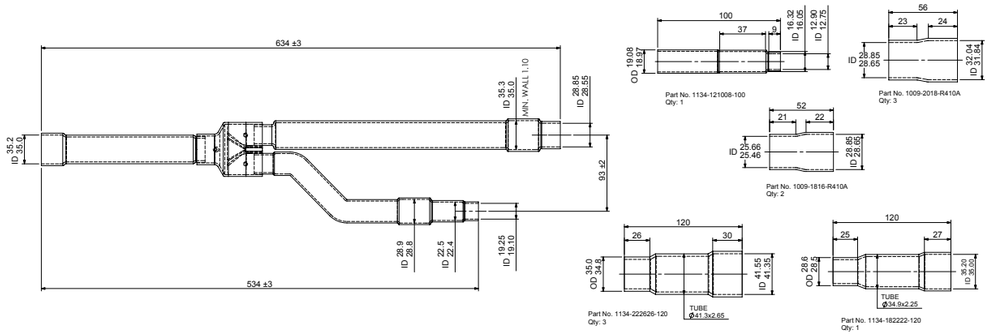


All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

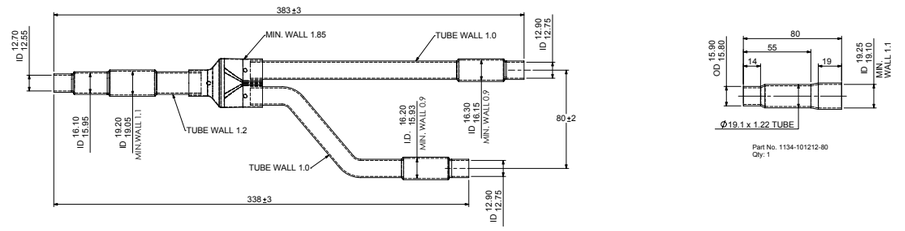
5. CZ-P1350BK2

Use: For indoor unit (Capacity after refrigerant branch pipe is greater than 68.0kW and no more than 168.0kW.)

GAS PIPING



LIQUID PIPING



All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

FSV-EX 3-PIPE MF3 SERIES

Simultaneous cooling and heating VRF System

3-PIPE FSV-EX MF3 SERIES

Heat Recovery Type

New 3-PIPE FSV-EX MF3 series enables simultaneous cooling and heating operation

- Suitable for R22 renewal projects (Refer to Page 142)
- Demand response ready (Peak cut)

* Office building with diverse room temperatures due to the different amount of sunshine received.
* The building with computer/business equipment rooms requiring year-round cooling.

Fully-automatic simultaneous cooling/heating operation and heat recovery

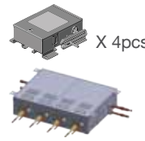
3-PIPE MF3 series enables simultaneous cooling and heating operation by each solenoid valve kit.
New design to decrease chattering noise at low capacity load.

CZ-P56HR3
Up to 5.6kW

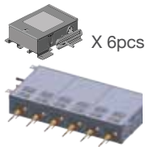
CZ-P160HR3
From 5.7 to 16.0kW

3-Pipe control PCB
CZ-CAPE2

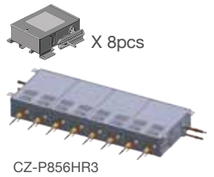
Must be added to the CZ-P56HR3 OR CZ-P160HR3.



CZ-P456HR3
CZ-P4160HR3



CZ-P656HR3

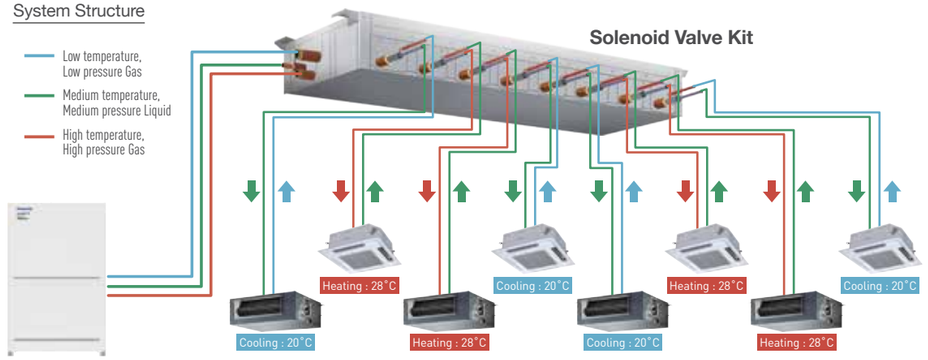


CZ-P856HR3

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 DB.

System Structure



Outdoor unit
3-PIPE FSV-EX MF3

Indoor unit

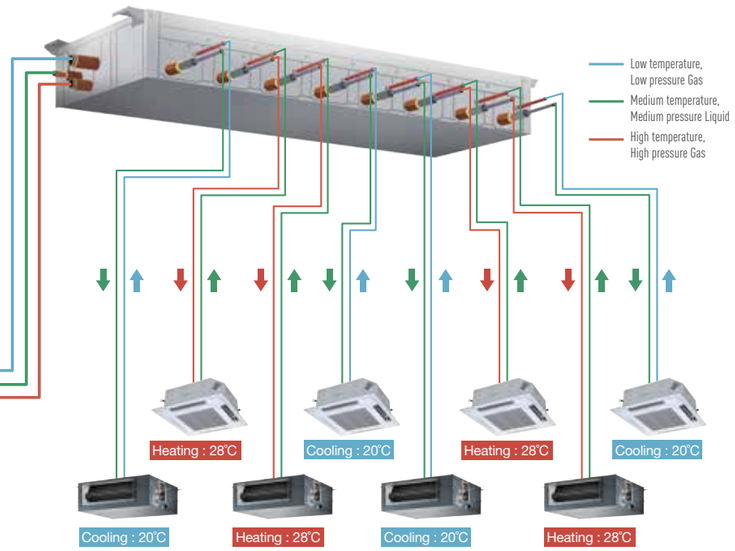
New Solenoid Valve Kit Multiple Connection Port Type

Panasonic's new solenoid valve kit has been designed to minimise the burden of field installation. Featuring connection pipes for the main refrigerant circuit line on both sides of the unit, improved flexibility in both system design and piping layout has been achieved.

System Structure

The system monitors high pressure, low pressure, and the heat exchanger mode to set an appropriate frequency. The heat exchanger controls the amounts of heat exchange.

Solenoid Valve Kit

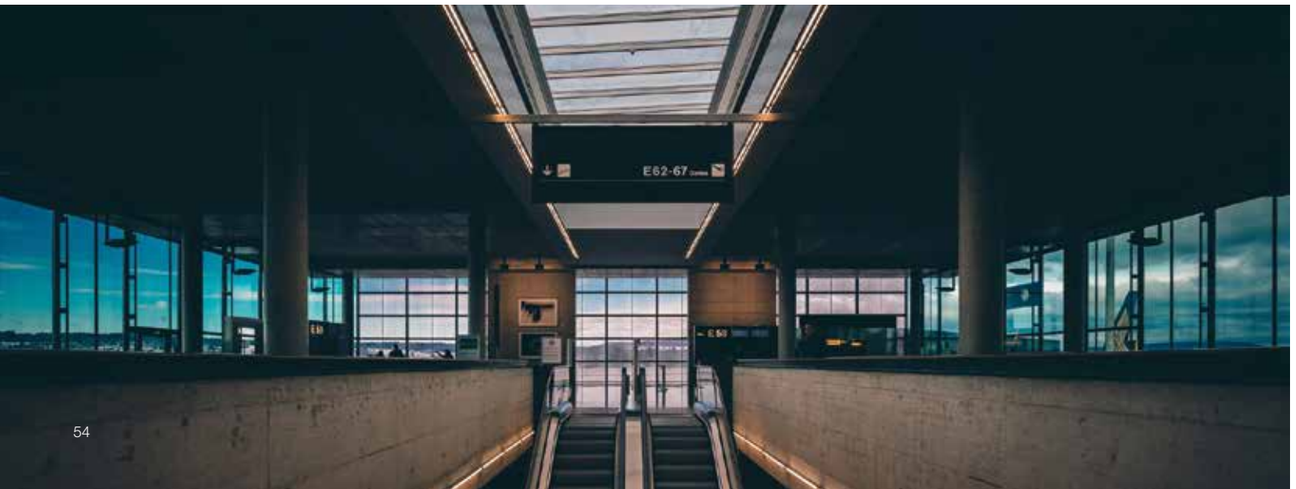


Outdoor unit

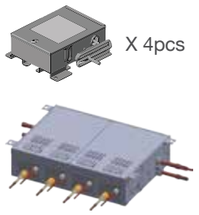
3-PIPE FSV-EX MF3

Indoor unit

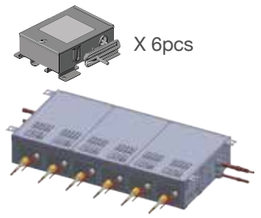
Heat exchanger temperature is controlled by the temperature difference between target and return air.



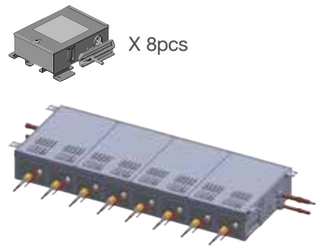
CZ-P456HR3
CZ-P4160HR3



CZ-P656HR3



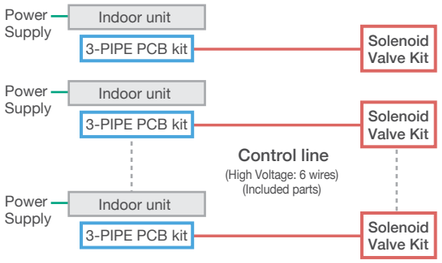
CZ-P856HR3



	1 port	4 port	6 port	8 port
56 type	CZ-P56HR3	**CZ-P456HR3**	**CZ-P656HR3**	**CZ-P856HR3**
160 type	CZ-P160HR3	**CZ-P4160HR3**	--	--

Solenoid Valve Kit / Wiring Work

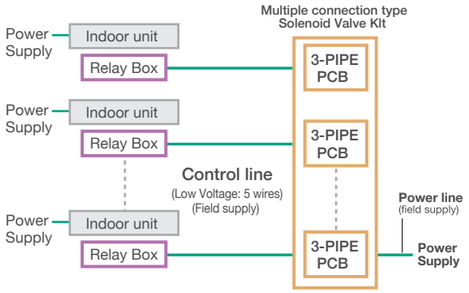
Current Model / Single Connection Type



Parts included in HR3 kit

3-PIPE PCB kit (separately purchased)

New Model / Multiple Connection Type



Parts included in HR3 kit

Signal Relay Box (included accessory)

Increased max. number of connectable indoor units

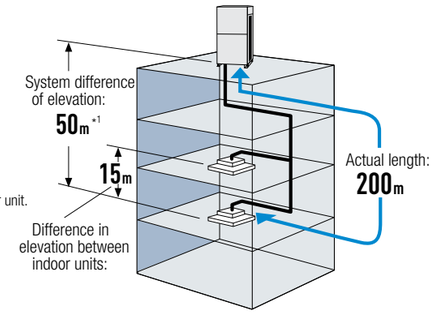
The 3-PIPE MF3 series has five DC inverter outdoor units from 22.4kW to 45.0kW as the standard, and by combining up to three units, an air-conditioning capacity of 22.4kW to 135.0kW can be set according to the user needs.

System (kW)	22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0	73.0	78.5	85.0	90.0	96.0	101.0	107.0	113.0	118.0	124.0	130.0	135.0
Outdoor units	22.4	28.0	33.5	40.0	45.0	28.0	33.5	33.5	33.5	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
						22.4	22.4	28.0	33.5	28.0	33.5	40.0	45.0	28.0	33.5	33.5	45.0	45.0	45.0	45.0	45.0
														22.4	22.4	28.0	22.4	28.0	33.5	40.0	45.0
Connectable indoor units	15	19	22	27	30	34	38	41	46	49	52	52	52	52	52	52	52	52	52	52	52

Connectable indoor/outdoor unit capacity ratio up to 150%

Long piping design

Adaptable to various building types and sizes
Actual piping length : 200m
Max piping length : 500m

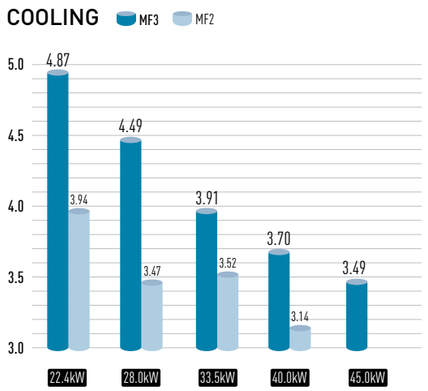


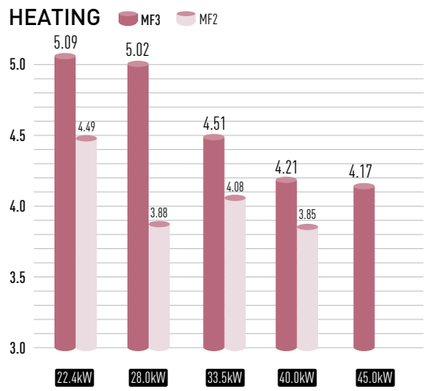
*1: 40m if the outdoor unit is below the indoor unit.

Maximum total length: 500m

Excellent energy saving

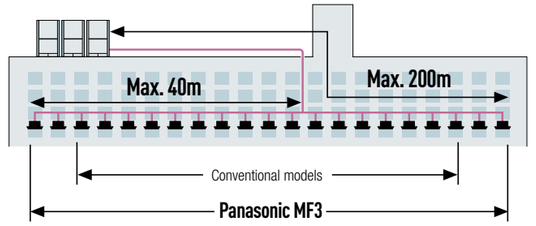
The operation efficiency has been improved using highly efficient R410A refrigerant, new DC inverter compressor, and new heat exchanger design.





Up to 40m piping after first branch

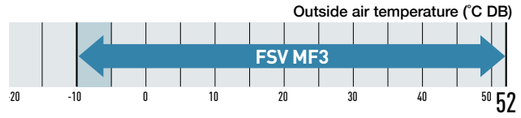
Up to 52 units can be connected to one system. Flexible piping layout makes it easier to design systems for locations such as train stations, airports, schools and hospitals.



Wide operating range

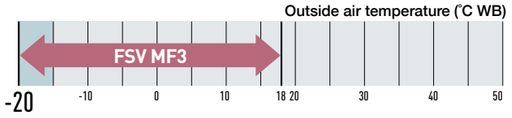
Cooling operation range:

The cooling operation range is from -10˚C DB to +52˚C DB, thanks to all Inverter outdoor.



Heating operation range:

Stable heating operation even with an outside air temperature of -20˚C WB.



Wide temperature setting range

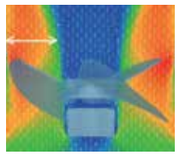
Wired remote control heating temperature setting range is 16 – 30°C.

Remark: Cooling/heating capacity depend on indoor/outdoor temperature.
Please refer to the technical databook.

Newly designed fan

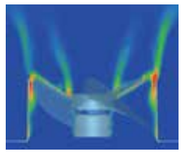
Optimised air flow

Newly designed fan and bell-mouth reduces stress on the fan by dispersing air quickly, thus lowering air resistance results in lower energy consumption.



Noise reduction

Turbulence (blue) can be suppressed and the unwanted noise can be reduced.
Even at high speed fan mode the noise level is still very low.

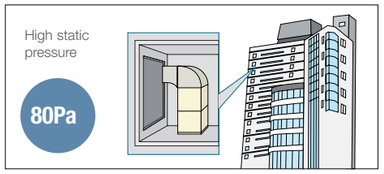


High external static pressure on condensers

With a newly designed fan, fan guard, motor, and casing, new models can be custom-installed on-site to provide up to 80Pa of external static pressure. An air discharge duct prevents shortages of air circulation, allowing outdoor units to be installed on every floor of a building.

Fan

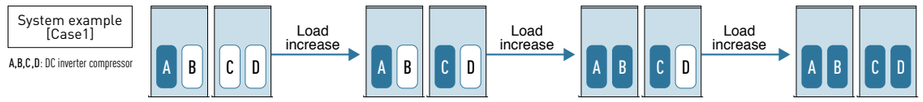
Fan Motor and Casing



Extended compressor life by uniform compressor operation time

The total run-time of compressors are 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 extending the working life of the system.

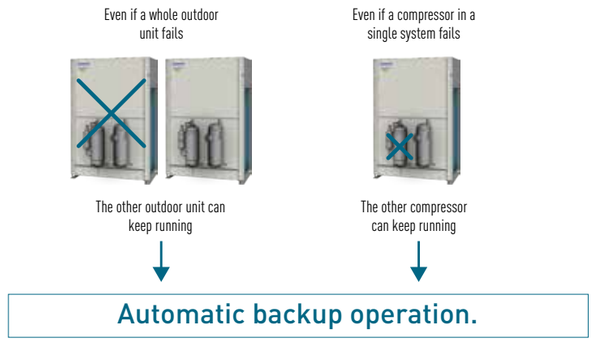


* Depend on accumulated operation time of each compressors.
* Compressor priority has possibility to be changed.
(e.g) Case1: A→C→B→D, Case2: C→A→D→B, Case3: A→C→D→B, Case4: C→A→B→D

Automatic backup operation in the case of compressor failure or outdoor unit malfunction

Except for 22.4, 28.0 & 33.5kW single unit installation

*Backup operation allows uninterrupted cooling or heating to continue whilst waiting for service.
Users should contact their authorised service centre as soon as fault occurs.



Demand response

Featuring inverter control technology, all Panasonic FSV systems are Demand Response Management (DRM) ready. With this control, power consumption at times of peak load can be set in three steps to deliver optimum performance. This helps to reduce annual power consumption with minimal loss in comfort.

Demand control terminal is available to control 0-50-75-100% of capacities.

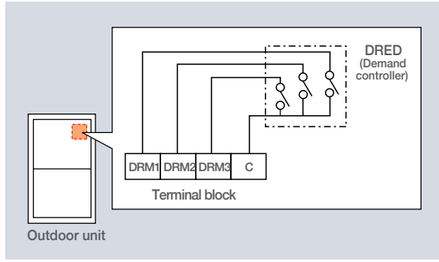
MF3 series features a DR terminal as standard (not a required option)

DRED DEMAND RESPONSE ENABLING DEVICE ready

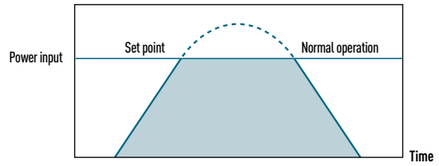
Flexible Demand Response with the CZ-CAPDC2*1

Setting is possible as 0% or in the range from 40 to 100% (in 5% intervals). Prior to shipping, these steps have been configured at intervals of 0%, 70% & 100%.

*1 An outdoor Seri-Para I/O unit (CZ-CAPDC2) is required for demand input signal.



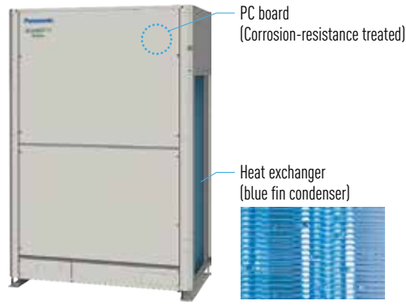
Demand Response Signal	Power Input
DRM 1	0%
DRM 2	50%
DRM 3	75%



	Power input	
Level 1	100% (Preset)	Possible to change 40-100%
Level 2	70% (Preset)	
Level 3	0% (Always in stop condition)	

Blue fin condenser outdoor unit

The anti-corrosion Blue Fin treatment of the heat exchanger provides greater resistance against corrosion. All models are equipped with Blue Fin condenser.



FSV-EX 3-PIPE MF3 SERIES

3-PIPE FSV-EX MF3 Series

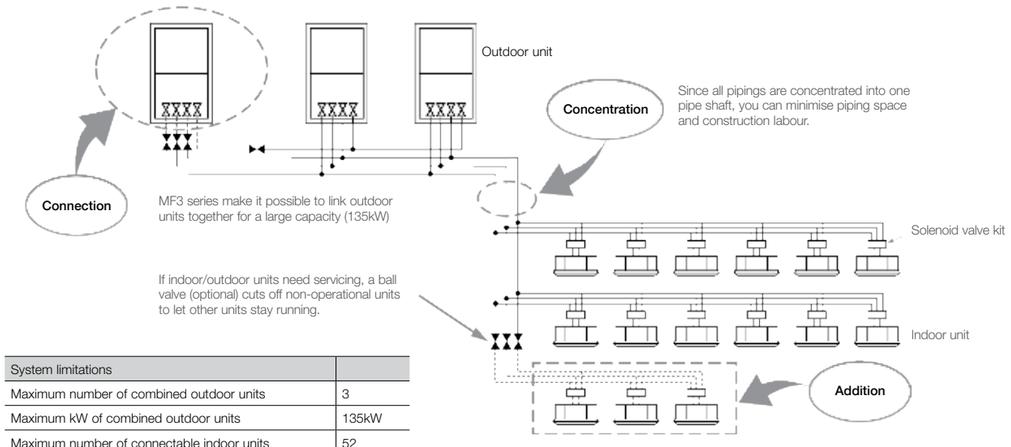
Appearance																						
kW			22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0	73.0	78.5	85.0	90.0	96.0	101.0	107.0	113.0	118.0	124.0	130.0	135.0
Model name			**U-8MF3R7**	**U-10MF3R7**	**U-12MF3R7**	**U-14MF3R7**	**U-16MF3R7**	**U-8MF3R7 U-10MF3R7**	**U-8MF3R7 U-12MF3R7**	**U-10MF3R7 U-12MF3R7**	**U-12MF3R7 U-12MF3R7**	**U-10MF3R7 U-16MF3R7**	**U-12MF3R8 U-16MF3R8**	**U-14MF3R7 U-16MF3R7**	**U-16MF3R7 U-16MF3R7**	**U-8MF3R7 U-10MF2R7 U-16MF3R7**	**U-8MF3R7 U-12MF3R7 U-16MF3R7**	**U-10MF3R7 U-12MF3R7 U-16MF3R7**	**U-8MF3R7 U-16MF3R7 U-16MF3R7**	**U-10MF3R7 U-16MF3R7 U-16MF3R7**	**U-12MF3R7 U-16MF3R7 U-16MF3R7**	**U-14MF3R7 U-16MF3R7 U-16MF3R7**	**U-16MF3R7 U-16MF3R7 U-16MF3R7**
Power supply			380/400/415V/3-phase/50Hz 380/400V/3-phase/60																				
Capacity	Cooling	kW	22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0	73.0	78.5	85.0	90.0	96.0	101.0	107.0	113.0	118.0	124.0	130.0	135.0
		BTU/h	76,500	95,600	114,300	136,500	153,600	170,600	191,100	209,900	232,100	249,100	267,900	290,100	307,200	327,600	344,700	365,200	385,700	402,700	423,200	443,700	460,800
	Heating	kW	25.0	31.5	37.5	45.0	50.0	56.0	63.0	69.0	76.5	81.5	87.5	95.0	100.0	108.0	113.0	119.0	127.0	132.0	138.0	145.0	150.0
		BTU/h	85,300	107,500	128,000	153,600	170,600	191,100	215,000	235,500	261,100	278,200	298,600	324,200	341,300	368,600	385,700	406,100	433,400	450,500	471,000	494,900	511,900
EER / COP	Cooling	W/W	4.87	4.49	3.91	3.70	3.49	4.67	4.24	4.16	3.89	3.82	3.65	3.59	3.49	4.00	3.87	3.84	3.69	3.69	3.58	3.55	3.49
	Heating	W/W	5.09	5.02	4.51	4.21	4.17	5.09	4.70	4.73	4.47	4.45	4.31	4.19	4.17	4.56	4.45	4.47	4.29	4.34	4.25	4.18	4.17
Dimensions	H x W x D	mm	1,842x1,180 x1,000	1,842x1,180 x1,000	1,842x1,180 x1,000	1,842x1,180 x1,000	1,842x1,180 x1,000	1,842x2,420 x1,000	1,842x2,420 x1,000	1,842x2,420 x1,000	1,842x2,420 x1,000	1,842x2,420 x1,000	1,842x2,420 x1,000	1,842x2,420 x1,000	1,842x2,420 x1,000	1,842x3,660 x1,000	1,842x3,660 x1,000	1,842x3,660 x1,000	1,842x3,660 x1,000	1,842x3,660 x1,000	1,842x3,660 x1,000	1,842x3,660 x1,000	1,842x3,660 x1,000
Net weight		kg	264	265	289	337	337	529	553	553	578	602	626	674	674	866	890	891	938	939	963	1,011	1,011
Electrical ratings	Cooling	Running current A	7.52	10.4	13.9	18.2	21.3	17.7	21.3	24.2	28.3	31.5	35.1	39.6	42.6	39.6	42.6	46.1	50.5	52.8	56.5	61.1	63.9
		Power input kW	4.60	6.23	8.57	10.8	12.9	10.7	13.2	14.8	17.5	19.1	21.5	23.7	25.8	24.0	26.1	27.9	30.6	32.0	34.6	36.6	38.7
	Heating	Running current A	8.02	10.5	13.4	18.1	20.0	18.2	21.7	23.9	27.6	30.6	33.5	37.9	40.1	39.6	41.9	43.9	49.4	50.8	53.7	57.9	60.1
		Power input kW	4.91	6,27	8.32	10.7	12.0	11.0	13.4	14.6	17.1	18.3	20.3	22.7	24.0	23.7	25.4	26.6	29.6	30.4	32.5	34.7	36.0
Air flow rate		m³/h	12,600	13,200	13,920	13,920	13,920	25,800	26,520	27120	27,840	27,120	27,840	27,840	27,840	39,720	40,440	41,040	40,440	41,040	41,760	41,760	41,760
		L/s	3,500	3,667	3,867	3,867	3,867	7,167	7,367	7,533	7,733	7,533	7,733	7,733	7,733	11,033	11,233	11,400	11,233	11,400	11,600	11,600	11,600
Refrigerant amount at shipment		kg	9.8	9.8	11.8	11.8	11.8	19.6	21.6	21.6	23.6	21.6	23.6	23.6	23.6	31.4	33.4	33.4	33.4	33.4	35.4	35.4	35.4
Piping connections	Suction pipe	mm (inches)	Ø19.05 (Ø3/4)	Ø22.22 (Ø7/8)	Ø25.40 (Ø1)	Ø25.40 (Ø1)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø38.1 (Ø1-1/2)	Ø38.1 (Ø1-1/2)	Ø38.1 (Ø1-1/2)	Ø38.1 (Ø1-1/2)	Ø38.1 (Ø1-1/2)	Ø38.1 (Ø1-1/2)	Ø38.1 (Ø1-1/2)
	Discharge pipe	mm (inches)	Ø15.88 (Ø5/8)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø22.22 (Ø7/8)	Ø22.22 (Ø7/8)	Ø22.22 (Ø7/8)	Ø22.22 (Ø7/8)	Ø25.40 (Ø1)	Ø25.40 (Ø1)	Ø25.40 (Ø1)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)	Ø31.75 (Ø1-1/4)
	Liquid pipe	mm (inches)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø12.70 (Ø1/2)	Ø12.70 (Ø1/2)	Ø12.70 (Ø1/2)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)
	Balance pipe	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Ambient temperature operating range			Cooling/Dry: -10℃~+52℃ (DB). Heating: -20℃~+18℃ (WB) Simultaneous operation: -10℃~+24℃ (DB)																				
Sound pressure level	Normal mode	dB (A)	54.0	57.0	60.0	61.0	62.0	59.0	61.0	62.0	63.0	63.5	64.5	64.5	65.0	64.0	64.5	65.0	65.5	66.0	66.5	66.5	67.0
	Silent mode	dB (A)	51.0	54.0	57.0	58.0	59.0	56.0	58.0	59.0	60.0	60.5	61.5	61.5	62.0	61.0	61.5	62.0	62.5	63.0	63.5	63.5	64.0

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27℃ DB / 19℃ WB	20℃ DB
	Outdoor air temperature	35℃ DB	7℃ DB / 6℃ WB

These specifications are subject to change without notice.

* For mixed heating and cooling operation with an outdoor temperature in excess of 24℃ DB, please use 50% or more of the horsepower of the outdoor unit for cooling operation.

System example



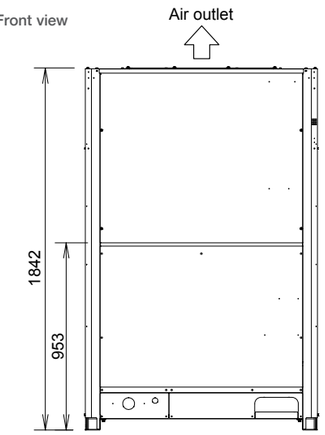
System limitations	
Maximum number of combined outdoor units	3
Maximum kW of combined outdoor units	135kW
Maximum number of connectable indoor units	52
Indoor/outdoor unit capacity ratio	50-150%
Maximum actual piping length	200m
Maximum level difference (when outdoor unit is lower)	50 (40)m
Maximum total piping length in one direction	500m

If your indoor capacity load changes in the future, it's easy to add on both indoor and outdoor units using the same pipings.

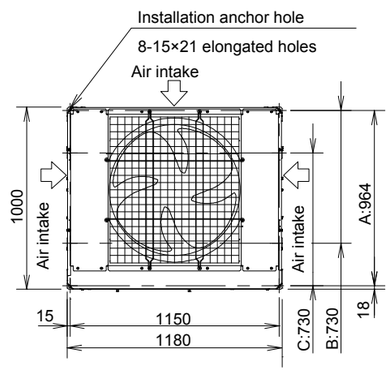
If the additional installment of outdoor and indoor units is expected, the size of refrigerant piping should be decided according to the total capacity after the addition.

Dimensions

Front view



Top view

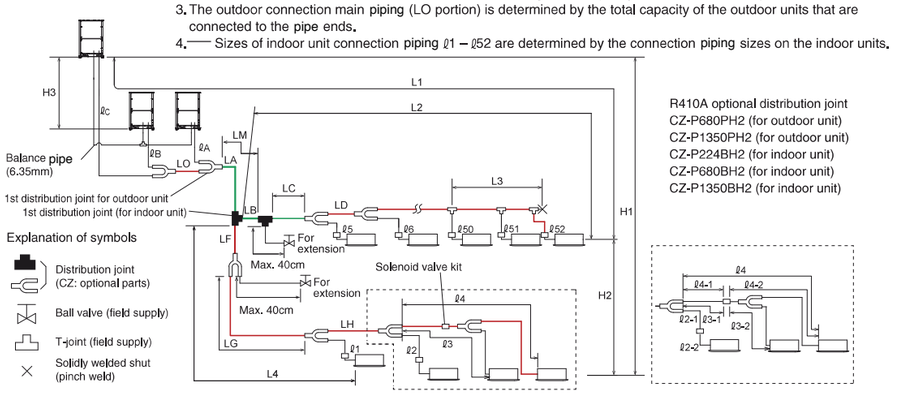


unit: mm

Piping design

Select the installation location so that the length and size of refrigerant piping are within the allowable range shown in the figure below.

1. — Main piping length (maximum tubing size) LM = LA + LB …
2. — Main distribution tubes LC – LH are selected according to the capacity after the distribution joint.
3. The outdoor connection main piping (LO portion) is determined by the total capacity of the outdoor units that are connected to the pipe ends.
4. — Sizes of indoor unit connection piping ø1 – ø52 are determined by the connection piping sizes on the indoor units.



R410A optional distribution joint
CZ-P680PH2 (for outdoor unit)
CZ-P1350PH2 (for outdoor unit)
CZ-P224BH2 (for indoor unit)
CZ-P680BH2 (for indoor unit)
CZ-P1350BH2 (for indoor unit)

* Be sure to use special R410A distribution joints (CZ: optional parts) for outdoor unit connections and piping branches.

Table 2 Ranges that Apply to Refrigerant piping Lengths and to Differences in Installation Heights

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

Item	Mark	Contents		Length (m)
Allowable piping length	L1	Maximum piping length	Actual length	≦200*2
			Equivalent length	≦210*2
	Δ L (L2 - L4)	Difference between maximum length and minimum length from the 1st distribution joint		≦50*4
	LM	Maximum length of main piping (at maximum size) *Even after 1st distribution joint,LM is allowed if at maximum piping length.		—*3
	ℓ1,ℓ2~ℓ52	Maximum length of each distribution pipe		≦50*5
	L1+ℓ1+ℓ2~ℓ51+ℓA +ℓB+LF+LG+LH	Total maximum piping length including length of each distribution pipe (only liquid tube)		≦500
	ℓA,ℓB+LO,ℓC+LO	Maximum piping length from outdoor's 1st distribution joint to each outdoor unit		≦10
	ℓ1-2,ℓ2-2~ℓ52-2	Maximum length between solenoid valve kit and indoor unit		≦30
Allowable elevation difference	H1	When outdoor unit is installed higher than indoor unit		≦50
		When outdoor unit is installed lower than indoor unit		≦40
	H2	Maximum difference between indoor units		≦15
	H3	Maximum difference between outdoor units		≦4
Allowable length of joint tubing	L3	T-joint tubing (field-supply); Maximum piping length between the first T-joint and solidly welded-shut end point		≦2

L = Length, H = Height
1: The outdoor connection main piping (LO portion) is determined by the total capacity of the outdoor units that are connected to the pipe ends.
2: If the longest piping length (L1) exceeds 90m (equivalent length), increase the sizes of the main pipe (LM) by 1 rank for the suction pipe,discharge pipe and liquid pipe.Use a field supply reducer. Select the pipe size from the table of main piping sizes (Table 3) and from the table of refrigerant piping sizes (Table 8).
3: If the longest main piping length (LM) exceeds 50m, increase the main piping size at the portion before 50m by 1 rank for the suction pipe and discharge pipe. Use a field supply reducer. Determine the length less than the limitation of allowable maximum piping length. For the portion that exceeds 50 m, set based on the main piping size (LA) listed in Table 3.
4: If the piping length marked "L" (L2-L4) exceeds 40m, increase the piping size at the portion after the 1st distribution joint by 1 rank for the liquid pipe, suction pipe and discharge pipe. Refer to the Technical Data for the details.
5: If any of the piping length exceeds 30m, increase the size of the suction pipe,discharge pipe and liquid pipe by 1 rank.

Necessary Amount of Additional Refrigerant Charge Per Outdoor Unit

U-8MF3R7	U-10MF3R7	U-12MF3R7	U-14MF3R7	U-16MF3R7
1.0kg	1.0kg	3.9kg	3.9kg	3.9kg

System limitations

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

*1: In the case of 24 HP (Type 68.0kW) or smaller units, the number is limited by the total capacity of the connected indoor units.
*2: Up to 3 units can be connected if the system has been extended.
*3: It is strongly recommended that you choose the unit so the load can become between 50 and 130%.

Additional refrigerant charge

Liquid piping size mm (inches)	Amount of refrigerant charge/m (g/m)
ø6.35 (ø1/4)	26
ø9.52 (ø3/8)	56
ø12.7 (ø1/2)	128
ø15.88 (ø5/8)	185
ø19.05 (ø3/4)	259
ø22.22 (ø7/8)	366

Necessary Amount of Additional Refrigerant Charge per metre, According to Discharge Piping Size

Discharge piping size	mm	ø12.7	ø15.88	ø19.05	ø22.22	ø25.4	ø28.58	ø31.75	ø38.1
Additional amount	g/m	12	21	31	41	55	71	89	126

*Additional refrigerant charge amount of discharge piping should be less than 9,000g.

Refrigerant branch pipes

Remarks	Model name	Cooling capacity after distribution
For outdoor unit	1. CZ-P680PH2	68.0kW or less
	2. CZ-P1350PH2	118.0kW or less
For indoor unit	3. CZ-P224BH2	22.4kW or less
	4. CZ-P680BH2	68.0kW or less
	5. CZ-P1350BH2	118.0kW or less

Refrigerant piping

Piping size mm (inches)			
Material 0		1/2 H, H material	
Outer diameter	Wall thickness	Outer diameter	Wall thickness
ø6.35 (ø1/4)	t 0.8 mm	ø22.22 (ø7/8)	t 1.0 mm
ø9.52 (ø3/8)	t 0.8 mm	ø 25.4 (ø1)	t 1.0 mm
ø12.7 (ø1/2)	t 0.8 mm	ø 28.58 (ø1-1/8)	t 1.0 mm
ø15.88 (ø5/8)	t 1.0 mm	ø 31.75 (ø1-1/4)	t 1.1 mm
ø19.05 (ø3/4)	t 1.0 mm	ø 38.1 (ø1-1/2)	t 1.15 mm
		ø 41.28 (ø1-5/8)	t 1.20 mm

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.

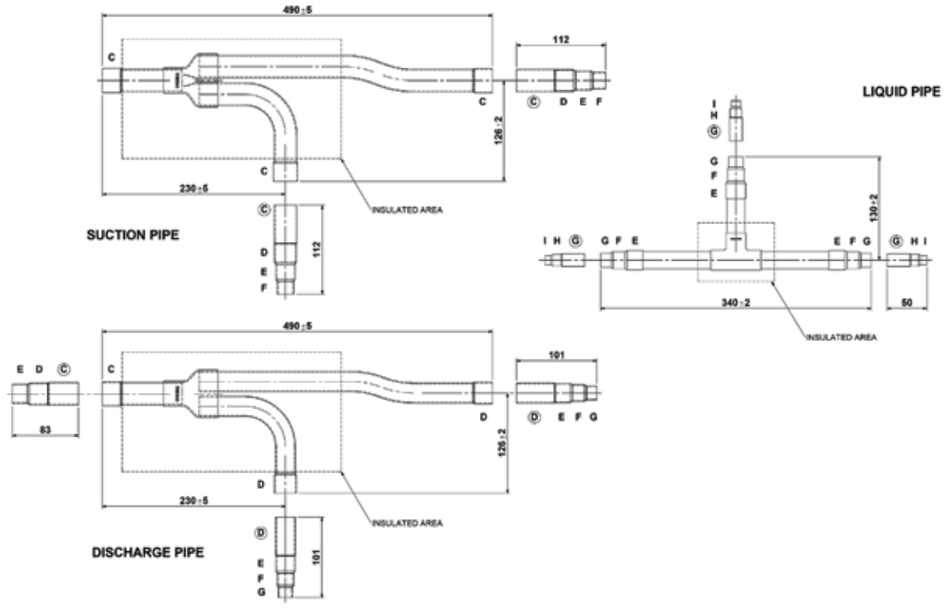
Refrigerant Branch Pipes (accessories) for 3-PIPE MF3 Series

See the installation instructions packaged with the refrigerant branch pipes for the installation procedure.

Model name	capacity after refrigerant branch pipe	Remarks
1. CZ-P680PH2	68.0kW or less	For outdoor unit
2. CZ-P1350PH2	greater than 68.0kW and no more than 135.0kW	For outdoor unit
3. CZ-P224BH2	22.4kW or less	For indoor unit
4. CZ-P680BH2	greater than 22.4kW and no more than 68.0kW	For indoor unit
5. CZ-P1350BH2	greater than 68.0kW and no more than 135.0kW	For indoor unit

1. CZ-P680PH2

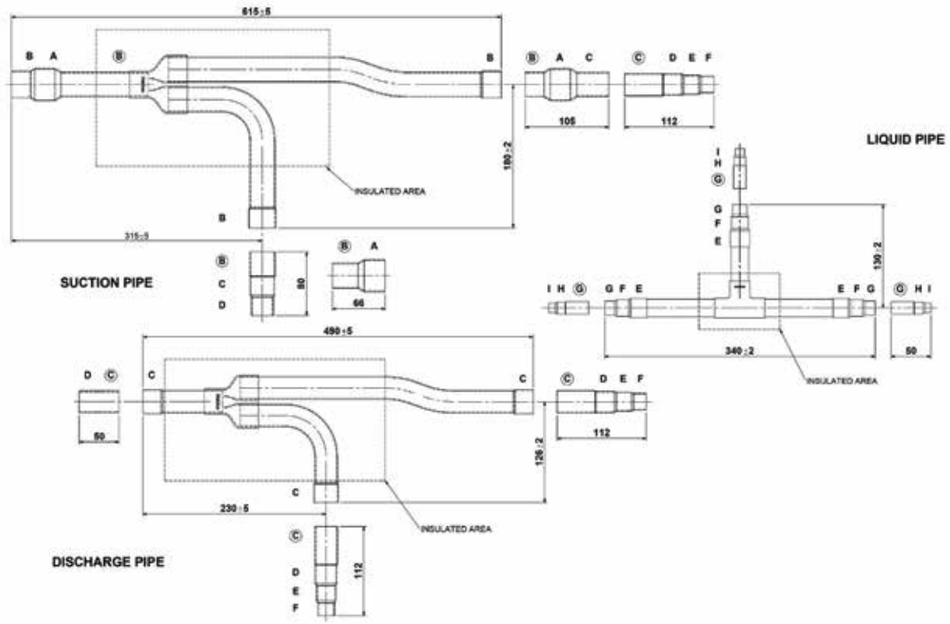
Use: For outdoor unit (Capacity after refrigerant branch pipe is 68.0kW or less.)



All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

2. CZ-P1350PH2

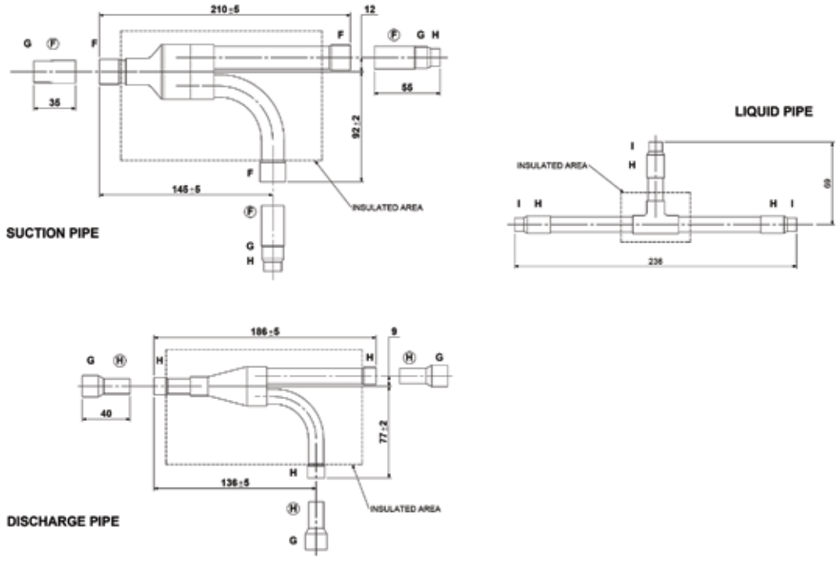
Use: For outdoor unit (Capacity after refrigerant branch pipe is greater than 68.0kW and no more than 135.0kW.)



All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

3. CZ-P224BH2

Use: For indoor unit (Capacity after refrigerant branch pipe is 22.4kW or less.)

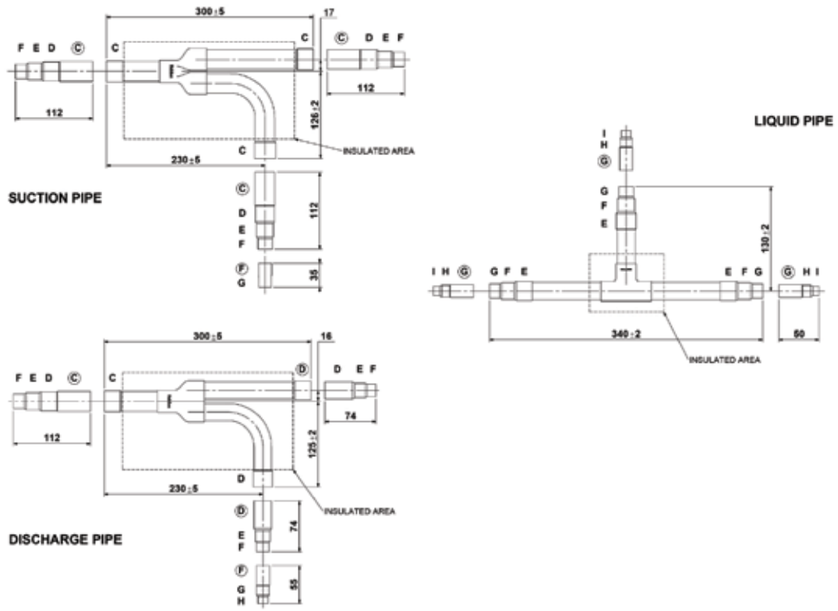


All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

Refrigerant Branch Pipes (accessories) for 3-PIPE MF3 Series

4. CZ-P680BH2

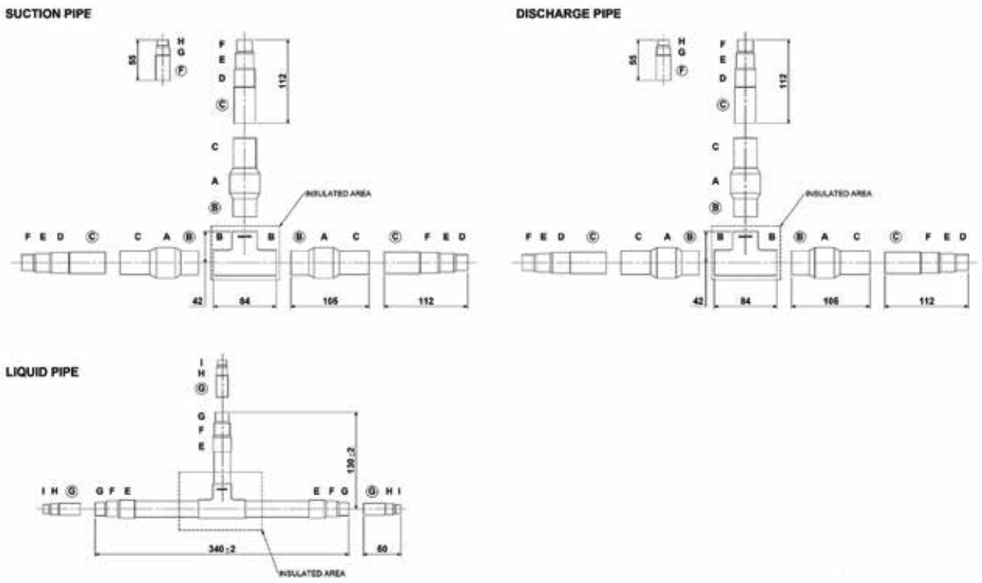
Use: For indoor unit (Capacity after refrigerant branch pipe is greater than 22.4kW and no more than 68.0kW.)



All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

5. CZ-P1350BH2

Use: For indoor unit (Capacity after refrigerant branch pipe is greater than 68.0kW and no more than 135.0kW.)



All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

2-PIPE MINI-FSV LE SERIES

LE2 - 12.1kW/ 14.0kW/ 15.5kW
LE1 - 22.4kW/ 25.0kW

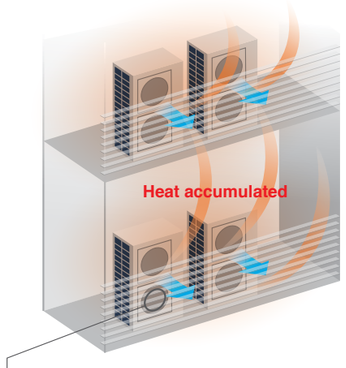
High external static pressure 35Pa

LE1 LE2

When unit is installed on a narrow balcony and exposed to the sun, the fence at the front side would restrict hot air from being discharged. Heat accumulated in an enclosure can cause over-heating. This could potentially result in damage or shorten the product's life span. A high external static pressure sends the air further away from the outdoor unit and through the fence. This provides better air circulation and distribution.

Previous model - Low pressure

When the pressure is low, hot air will accumulate in the unit thus affecting its work performance and of the unit above it as well.

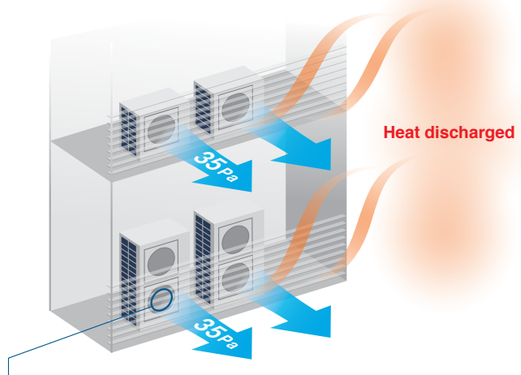


Previous fan

High electrostatic pressure disrupted the airflow of the previous fan, lowering the air pressure and preventing hot air from being discharged far enough.

LE series - High pressure

With a high pressure of 35Pa, hot air is sent further away preventing overheating inside the outdoor unit enclosure.



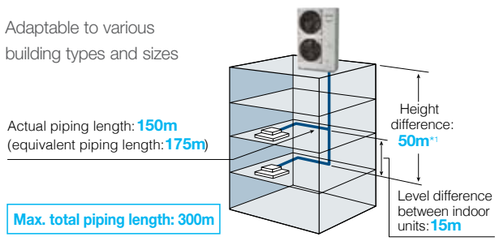
LE series fan

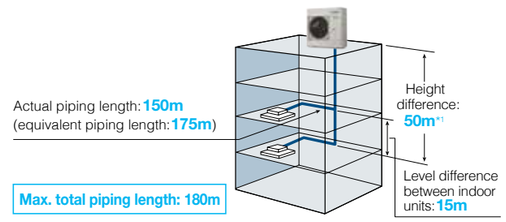
The new LE Series fan has ribs extending near the blade tips, in a structure that resists deformation. During high electrostatic pressure, this blade shape suppresses disruptions in the airflow, and a high air pressure of 35Pa discharges the hot air a sufficient distance.

Long piping design length for greater design flexibility

LE1 LE2

Adaptable to various building types and sizes





*1: 40m if the outdoor unit is below the indoor unit.

Refrigerant chargeless up to 50m

LE2

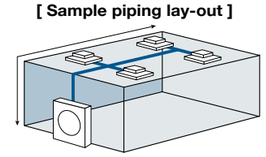
Up to 50m of piping without additional gas charging makes installation flexible, easy and hassle-free.

A 50m pipe length is sufficient for most residential and small business buildings. When total piping length exceeds 50m, additional refrigerant charge is required.

Chargeless
Max. total piping length: 50m

Charge
Max. total piping length: 180m
(Actual length: 150m)

[Sample piping lay-out]



Compact design

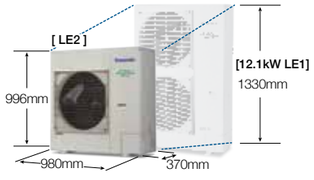
LE1 LE2

As the MINI-FSV LE Series is a single unit, it is possible for installation to occur in a greater variety of places compared to a single split system.

Short height of 996mm

LE2

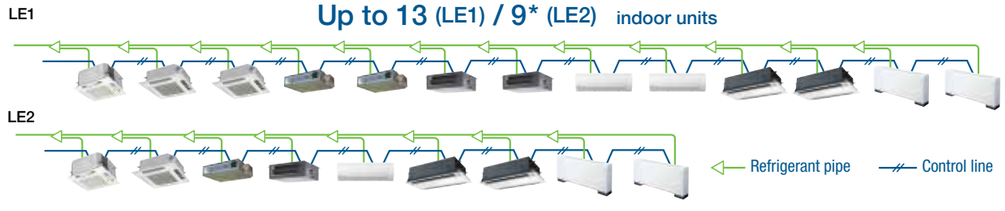
In addition to raising efficiency, we have made the outdoor unit more compact. It can now be installed in places that were previously too small.



Up to 13 indoor units connectable

LE1 LE2

An expansion from Panasonic FSV line up, the MINI-FSV is compatible with the same indoor units and controls as the rest of the FSV range.

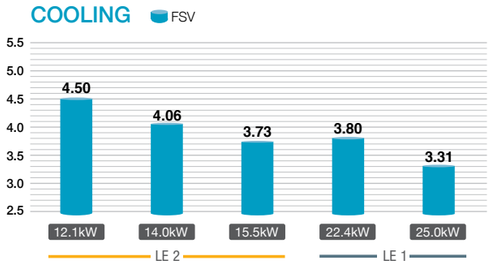


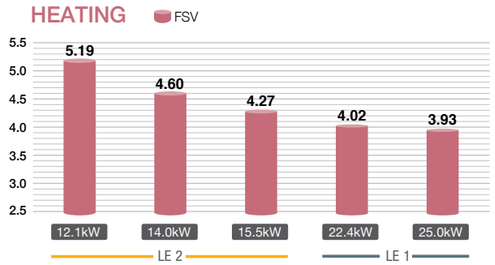
* Use any of the FSV indoor models. Depending on the size or type of indoor unit, piping size shall be changed. Please refer technical documents for details.
* Diversity ration 50-130%
* 15.5kW only; 12.1kW for 7 units, 14.0kW for 8 units.

High efficiency

LE1 LE2

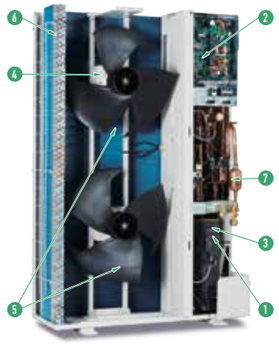
The operation efficiency has been improved using highly efficient R410A refrigerant, a DC Inverter compressor, DC motor and a heat exchanger design.





Energy savings design

LE1 LE2



1 Panasonic Inverter Compressor	A large-capacity inverter compressor has been adopted. The inverter compressor is superior in performance with improved partial-load capacity.
2 Printed Circuit Board	Two PCBs have been included, increasing installation ease.
3 Accumulator	A large accumulator has been adopted to maintain compressor reliability because of the increased refrigerant quantity, which allows an extended max piping length.
4 DC Fan Motor	Checking load and outside temperature, the DC motor is controlled for optimum air volume.
5 Newly Designed Fan	The newly designed fan blades have been developed to inhibit air turbulence and to increase efficiency. As the fan diameter has increased in size, so too has air volume increased whilst maintaining the same sound level.
6 Heat Exchanger & Copper Tubes	The heat exchanger and copper pipe sizes in the heat exchanger have been redesigned to increase efficiency.
7 Oil Separator	A centrifugal separator has been adopted to improve oil separation efficiency and reduce refrigerant pressure loss.

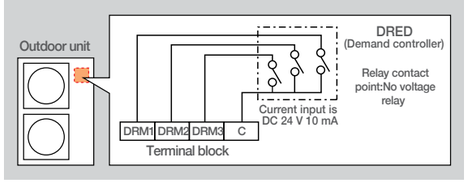
Flexible demand response with the optional terminal block

LE1 LE2

Demand Response

Featuring inverter control technology, all Panasonic MINI-FSV systems are Demand Response Management (DRM) ready. With this control, power consumption at times of peak load can be set in three steps to deliver optimum performance. This helps to reduce annual power consumption with minimal loss in comfort.

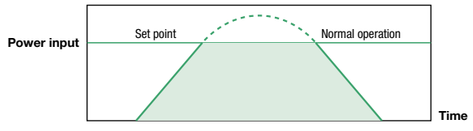
*Terminal block parts to be supplied separately. Please ask your dealer.



Flexible Demand Response with the CZ-CAPDC2*1

Setting is possible as 0% or in the range from 40-100% (in 5% intervals). Prior to shipping, these steps have been configured at intervals of 0%, 70%, and 100%.

*1 An outdoor Seri-Para I/O unit (CZ-CAPDC2) is required for demand input signal.
* Demand timer setting for high spec remote controller is available.



	Power input	
Level 1	100% (Preset)	Possible to change 40-100%
Level 2	70% (Preset)	
Level 3	0% (Always in stop condition)	

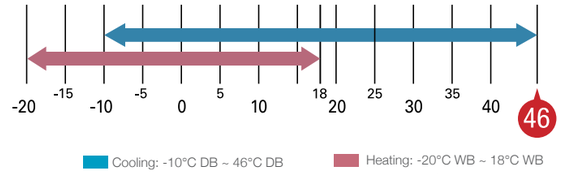
Wide operating range

LE1 LE2

- Cooling operation is possible even when outdoor temperature is as low as -10°C DB.
- Cooling operation is possible even when outdoor temperature is as high as 46°C DB.
- Heating operation is possible even when outdoor temperature is as low as -20°C WB.

The remote controller temperature can be set from 18°C up to 30°C (Cooling), 16°C up to 30°C (Heating)*1.

*1 Depending on the type of remote controller.

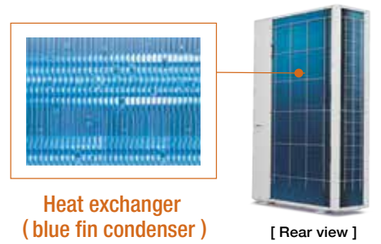


* For further information please refer to the capacity tables in the Technical Data Book.

Blue fin condenser

LE1 LE2

The anti-corrosion Blue Fin treatment of the heat exchanger provides greater resistance against corrosion. All models are equipped with Blue Fin condenser.



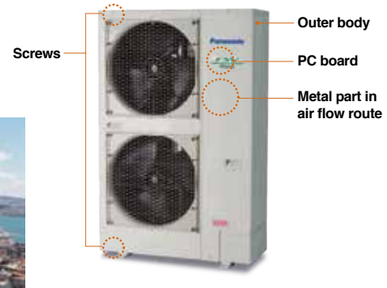
Anti-corrosion outdoor unit

LE1 LE2

All heat exchangers feature our standard Blue Fin technology which increases resistance to corrosion compared to non-Blue Fin models. For high corrosion environments, Panasonic offers optional “Premium Anti-corrosion” models, available for order. The “Premium Anti-corrosion” coating encompasses the treatment of many of the internal electrical and refrigeration components as well as the chassis and screws, offering the highest degree of corrosion protection.

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

* Specific model with suffix “E” has this treatment.



Quiet operation mode

LE1 LE2

- Quiet operation mode reduces outdoor unit operating sound down to 7dB than rating.
- 3-step set point is available.
- External input signal is also available.

* Timer setting of quiet operation mode is available in Deluxe Remote Controller.

2-PIPE MINI-FSV LE2 SERIES

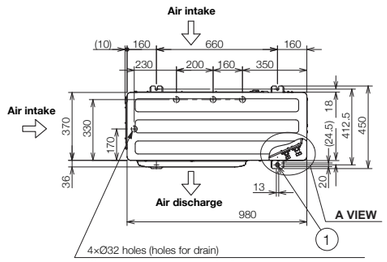
kW			12.1		12.1		14.0		14.0		15.5		15.5	
Model name			**U-4LE2R5 / U-4LE2R5E***		**U-4LE2R8**		**U-5LE2R5 / U-5LE2R5E***		**U-5LE2R8**		**U-6LE2R5 / U-6LE2R5E***		**U-6LE2R8**	
Power supply			230/240V/1-phase/50Hz		400/415V/3-phase/50Hz		230/240V/1-phase/50Hz		400/415V/3-phase/50Hz		230/240V/1-phase/50Hz		400/415V/3-phase/50Hz	
Voltage			230V	240V	400V	415V	230V	240V	400V	415V	230V	240V	400V	415V
Capacity	Cooling	kW	12.1		12.1		14.0		14.0		15.5		15.5	
		BTU/h	41,300		41,300		47,800		47,800		52,900		52,900	
	Heating	kW	12.5		12.5		16.0		16.0		16.5		16.5	
		BTU/h	42,700		42,700		54,600		54,600		56,300		56,300	
EER/COP	Cooling	W/W	4.50		4.50		4.06		4.06		3.73		3.73	
	Heating	W/W	5.19		5.19		4.60		4.60		4.27		4.27	
Dimensions (H/W/D)		mm	996 x 980 x 370		996 x 980 x 370		996 x 980 x 370		996 x 980 x 370		996 x 980 x 370		996 x 980 x 370	
Net weight		kg	106		106		106		106		106		106	
Electrical ratings	Cooling	Running current A	12.70	12.20	4.17	4.02	16.30	15.60	5.30	5.11	19.40	18.60	6.37	6.14
		Power input kW	2.69	2.69	2.69	2.69	3.45	3.45	3.45	3.45	4.15	4.15	4.15	4.15
	Heating	Running current A	11.60	11.20	3.78	3.64	16.60	15.90	5.34	5.15	18.20	17.50	5.93	5.71
		Power input kW	2.41	2.41	2.41	2.41	3.48	3.48	3.48	3.48	3.86	3.86	3.86	3.86
Starting current		A	1		1		1		1		1		1	
Air flow rate		m^3 / h	4,140		4,140		4,320		4,320		4,440		4,440	
		L/s	1,150		1,150		1,200		1,200		1,233		1,233	
Refrigerant amount at shipment		kg	R410A 6.70		R410A 6.70		R410A 6.70		R410A 6.70		R410A 6.70		R410A 6.70	
Piping connection	Gas pipe	mm (inches)	Ø15.88 (Ø5/8)		Ø15.88 (Ø5/8)		Ø15.88 (Ø5/8)		Ø15.88 (Ø5/8)		Ø15.88 (Ø5/8)		Ø15.88 (Ø5/8)	
	Liquid pipe	mm (inches)	Ø9.52 (Ø3/8)		Ø9.52 (Ø3/8)		Ø9.52 (Ø3/8)		Ø9.52 (Ø3/8)		Ø9.52 (Ø3/8)		Ø9.52 (Ø3/8)	
Ambient temperature operating range			Cooling:-10˚CDB~+46˚CDB, Heating:-20˚CWB~+18˚CWB		Cooling:-10˚CDB~+46˚CDB, Heating:-20˚CWB~+18˚CWB		Cooling:-10˚CDB~+46˚CDB, Heating:-20˚CWB~+18˚CWB		Cooling:-10˚CDB~+46˚CDB, Heating:-20˚CWB~+18˚CWB		Cooling:-10˚CDB~+46˚CDB, Heating:-20˚CWB~+18˚CWB		Cooling:-10˚CDB~+46˚CDB, Heating:-20˚CWB~+18˚CWB	
Sound pressure level (Cooling)	Normal mode	dB(A)	52.0		52.0		53.0		53.0		54.0		54.0	
	Silent mode	dB(A)	45.0		45.0		46.0		46.0		47.0		47.0	
Sound power level (Cooling)	Normal mode	dB	69.0		69.0		71.0		71.0		73.0		73.0	

Global remarks	Rated conditions:	Cooling	Heating
	Indoor air temperature	27˚C DB / 19˚C WB	20˚C DB
	Outdoor air temperature	35˚C DB	7˚C DB / 6˚C WB

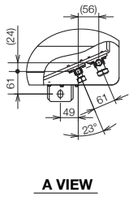
* High durable model (with suffix "E") has same specifications.

Dimensions

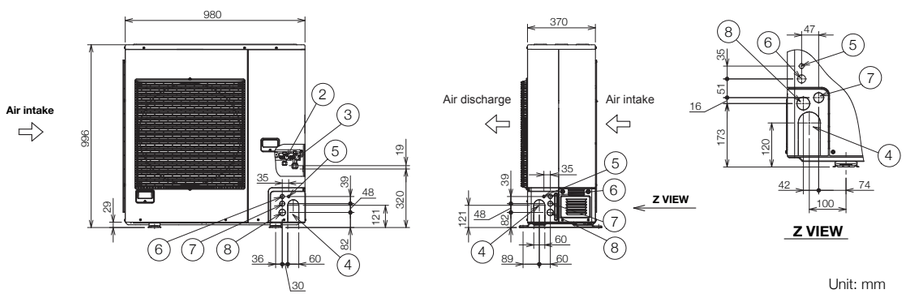
U-4LE2R5 / U-4LE2R8 / U-4LE2R5E
U-5LE2R5 / U-5LE2R8 / U-5LE2R5E
U-6LE2R5 / U-6LE2R8 / U-6LE2R5E



①	Mounting hole (4-R6.5), anchor bolt : M10
②	Refrigerant tubing (liquid tube), flared connection (Ø9.52)
③	Refrigerant tubing (gas tube), flared connection (Ø15.88)
④	Refrigerant tubing port
⑤	Electrical wiring port (Ø13)
⑥	Electrical wiring port (Ø22)
⑦	Electrical wiring port (Ø27)
⑧	Electrical wiring port (Ø35)



A VIEW



Z VIEW

Unit: mm

2-PIPE MINI-FSV LE1 SERIES

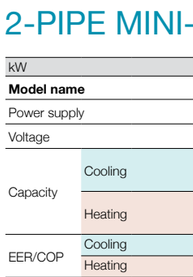
kW			22.4		25.0	
Model name			**U-8LE1R8 / U-8LE1R8E***		**U-10LE1R8 / U-10LE1R8E***	
Power supply			400/415V/3-phase/50Hz 380/400V/3-phase/60Hz		400/415V/3-phase/50Hz 380/400V/3-phase/60Hz	
Voltage			400V	415V	400V	415V
Capacity	Cooling	kW	22.4		25.0	
		BTU/h	76,500		85,300	
	Heating	kW	25.0		28.0	
		BTU/h	85,300		95,600	
EER/COP	Cooling	W/W	3.80		3.31	
	Heating	W/W	4.02		3.93	
Dimensions (H/W/D)		mm	1,500 x 980 x 370		1,500 x 980 x 370	
Net weight		kg	132		133	
Electrical ratings	Cooling	Running current A	9.15	8.80	11.70	11.30
		Power input kW	5.89	5.89	7.55	7.55
	Heating	Running current A	9.65	9.30	11.10	10.70
		Power input kW	6.22	6.22	7.13	7.13
Starting current		A	1		1	
Air flow rate		m^3 / h	9,000		9,600	
		L/s	2,500		2,666	
Refrigerant amount at shipment		kg	R410A 6.30		R410A 6.60	
Piping connection	Gas pipe	mm (inches)	Ø19.05 (Ø3/4)		Ø22.22 (Ø7/8)	
	Liquid pipe	mm (inches)	Ø9.52 (Ø3/8)		Ø9.52 (Ø3/8)	
Ambient temperature operating range			Cooling:-10˚CDB~+46˚CDB, Heating:-20˚CWB~+18˚CWB		Cooling:-10˚CDB~+46˚CDB, Heating:-20˚CWB~+18˚CWB	
Sound pressure level (Cooling)	Normal mode	dB(A)	60.0		62.0	
	Silent mode	dB(A)	53.0		55.0	
Sound power level (Cooling)	Normal mode	dB	81.0		83.0	

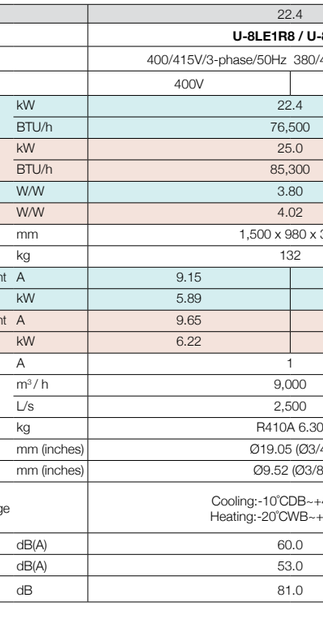
Global remarks	Rated conditions:	Cooling	Heating
	Indoor air temperature	27˚C DB / 19˚C WB	20˚C DB
	Outdoor air temperature	35˚C DB	7˚C DB / 6˚C WB

* High durable model (with suffix "E") has same specifications.

Dimensions

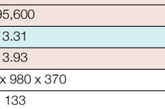
U-8LE1R8 / U-10LE1R8
U-8LE1R8E / U-10LE1R8E



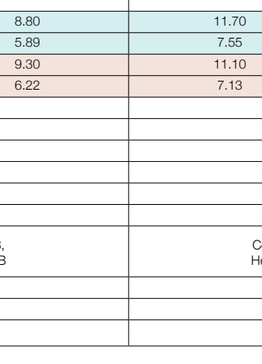


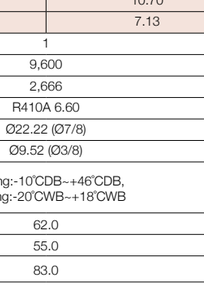
①	Mounting hole (4-R6.5), anchor bolt : M10
②	Refrigerant tubing (liquid tube), flared connection (ø9.52) for 8-10 HP finally.
③	Refrigerant tubing (gas tube), flared connection (ø19.05)
④	Refrigerant tubing port
⑤	Electrical wiring port (ø13)
⑥	Electrical wiring port (ø22)
⑦	Electrical wiring port (ø27)
⑧	Electrical wiring port (ø35)

For U-10LE1H7
The tubing of the gas main has a diameter of ø22.22, but the connection to the service valve of the outdoor unit has a diameter of ø19.05, so a flare has to be used. Consequently, be sure to use the enclosed joint tube B and joint tube A in making connections (braze).



A VIEW

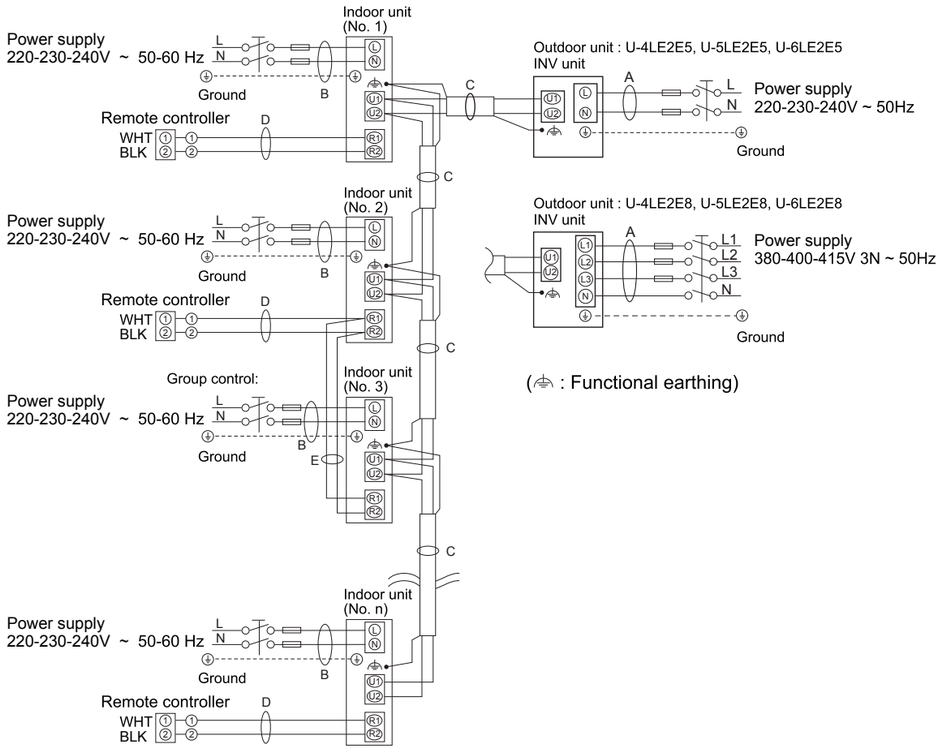




Z VIEW

Unit: mm

Wiring System Diagrams



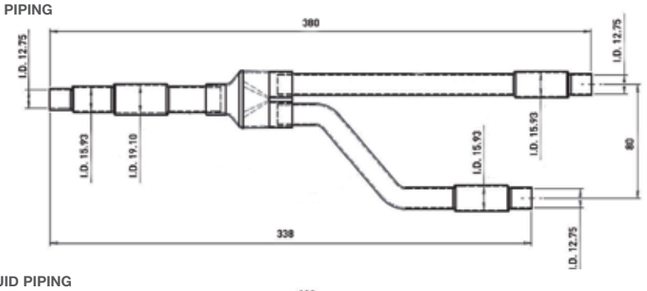
(⏚ : Functional earthing)

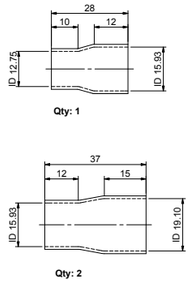
Refrigerant Branch Pipes

CZ-P160BK2

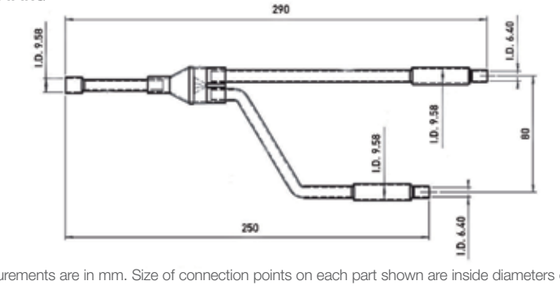
Use: For indoor unit (Capacity after refrigerant branch pipe is 22.4kW or less.)

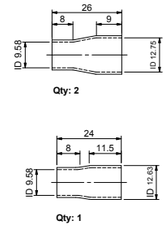
GAS PIPING





LIQUID PIPING



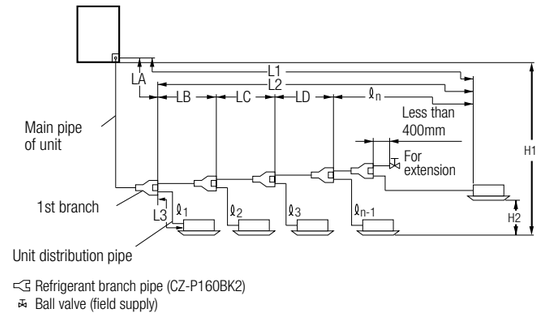


All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

Size of connection point on each part (Shown are inside diameters of piping)						
Size		Part A	Part B	Part C	Part D	Part E
Dimension	(mm)	Ø19.05	Ø15.88	Ø12.70	Ø9.52	Ø6.35
	(inches)	Ø3/4	Ø5/8	Ø1/2	Ø3/8	Ø1/4

Piping design

Select the installation location so that the length and size of refrigerant piping are within the allowable range shown in the figure below.



Refrigerant branch pipe (CZ-P160BK2)
Ball valve (field supply)

Ranges that Apply to Refrigerant Piping Lengths and to Differences in Installation Heights

Items	Marks	Contents		Length (m)
Allowable piping length	L1	Maximum tubing length	Actual length	120
			Equivalent length	140
	ΔL (L2 – L3)	Difference between maximum length and minimum length from the No.1 refrigerant branch pipe		40
	ℓ1, ℓ2... ℓn	Maximum length of each distribution pipe		30
	ℓ1, ℓ2... ℓn-1+L1	Total maximum piping length including length of each distribution pipe (only narrow piping)		150
Allowable elevation difference	H1	When outdoor unit is installed higher than indoor unit		50
		When outdoor unit is installed lower than indoor unit		40
	H2	Maximum difference between indoor units		15

L = Length, H = Height

Piping Size

Main Piping Size (LA)

	12.1kW	14.0kW	15.5kW
System kilowatts	12.1	14.0	15.5
Gas piping mm (inches)	ø15.88 (ø5/8)		ø19.05 (ø3/4)
Liquid piping mm (inches)	ø9.52 (ø3/8)		

Note :If the system consists of only one indoor unit with an outdoor 15.5kW, the main pipe of the unit (LA) should be ø19.05. Convert ø19.05 to ø15.88 using a reducer (field supply) close to the indoor unit and then make the connection.

Indoor Unit Piping Connection (ℓ1,ℓ2...ℓn–1)

Indoor unit type	22	28	36	45	56	73	90	106	140	160
Gas piping mm (inches)	ø12.7 (ø1/2)					ø15.88 (ø5/8)				
Liquid piping mm (inches)	ø6.35 (ø1/4)					ø9.52 (ø3/8)				

System Limitations

Outdoor units	12.1kW	14.0kW	15.5kW
Number of maximum connectable indoor units	6	8	9
Maximum allowable indoor/outdoor capacity ratio	50 – 130%		

kW = kilowatts

Main Piping Size After Distribution (LB, LC...)

Total capacity after distribution	Below kW		7.1	12.1	14.0	15.5
	Over kW		–	7.1		
Piping size	Gas piping	(mm)	ø12.7	ø15.88		ø19.05
		(inches)	ø1/2	ø5/8		ø3/4
	Liquid piping	(mm)	ø9.52			
		(inches)	ø3/8			

kW = kilowatts

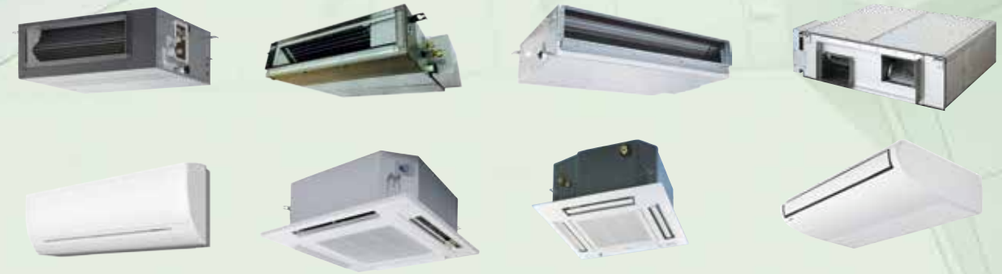
Note :In case the total capacity of connected indoor units exceeds the total capacity of the outdoor units, select the main piping size for the total capacity of the outdoor units.

FSV INDOOR UNITS

FSV Indoor Units

Offering a wide choice of models depending upon the indoor requirements

Key Indoor Units equipped with DC motors



ECONAVI sensor

ECONAVI

Providing outstanding energy-saving performance, Panasonic VRF Systems can be connected to ECONAVI to detect when energy is being wasted. ECONAVI senses the presence or absence of people and the level of activity in each area of an office. When unnecessary heating or cooling is detected, indoor units are individually controlled to match office conditions for energy-saving operation.

ECONAVI Sensor
CZ-CENSC1

Detection of the level of activity enables optimum power saving

Activity or absence of people at their desks, and the level of activity in the office, are detected in real time. Cooling or heating is automatically adjusted for optimum operation required to lower power consumption.

Sensor is remotely located to maximise the energy saving effect

Pillars, walls, cabinets and other fittings obstruct the sensors, reducing the area of detection and lowering the energy-saving effect. Taking into consideration blind spots, Panasonic enables the optimum layout of sensors in any office.

Deluxe Wired Remote Controller

CZ-RTC5B

Large 3.5" full-dot LCD with white LED backlight

Characters and icons are clearly displayed for improved visibility. The display is also large enough to provide a wide range of information for easy confirmation of operation conditions.

Stylish, easy-to-use touch key design

The elegant, flat design features large touch keys in a simple layout enabling easy, intuitive operation.

Wall Mounted / K2 type

Compact design enables seamless match with any type of room interior

Noise reducing external valve kit

To reduce noise level of expansion valve.
(Optional accessory)

CZ-P56SVK2 (for 22 - 56 type)
CZ-P160SVK2 (for 73 - 106 type)

Remote Temperature Sensor

CZ-CSRC3

- This is a remote sensor which can be used with indoor units. 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.

FSV INDOOR UNITS

FSV Indoor Units Range

Wide choice of models depending on the indoor requirements

Class	22	28	36	45	56	60	73	90	106	112	140	160	180	224	280	Wireless remote control		Functions
	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Cooling/Heating	Type with built-in sensor	Type with separately installed sensor	
Capacity kW / Type	2.2/2.5	2.8/3.2	3.6/4.2	4.5/5.0	5.6/6.3	6.0/7.1	7.3/8.0	9.0/10.0	10.6/11.4	11.2/12.5	14.0/16.0	16.0/18.0	18.0/20.0	22.4/25.0	28.0/31.5			
F2 type ECONAVI **Mid Static Ducted**	S-22MF2E5A	S-28MF2E5A	S-36MF2E5A	S-45MF2E5A	S-56MF2E5A	S-60MF2E5A	S-73MF2E5A	S-90MF2E5A	S-106MF2E5A		S-140MF2E5A	S-160MF2E5A					●	self-diagnosing, Auto fan, Mild dry, Auto restart, Drain pump, DC motor
M1 type ECONAVI **Slim Low Static Ducted**	S-22MM1E5A	S-28MM1E5A	S-36MM1E5A	S-45MM1E5A	S-56MM1E5A												●	self-diagnosing, Auto fan, Mild dry, Auto restart, Drain pump, DC motor
Z1 type ECONAVI **Slim & Narrow Ducted**	S-22MZ1H4A	S-28MZ1H4A	S-36MZ1H4A	S-45MZ1H4A	S-56MZ1H4A	S-60MZ1H4A	S-73MZ1H4A										●	self-diagnosing, Auto fan, Mild dry, Auto restart, DC motor
E1/E2 type **High Static Ducted / Energy Saving High-Fresh Air Ducted***							S-73ME1E5		S-106ME1E5		S-140ME1E5		S-180ME2E5	High Fresh Air S-224ME2E5*	High Fresh Air S-280ME2E5*			self-diagnosing, Auto fan, Mild dry (High Static Ducted), Auto restart, DC motor
ER1 type **High Static Compact Ducted**								S-90ME1R5A		S-112ME1R5A	S-140ME1R5A	S-160ME1R5A					●	self-diagnosing, Auto fan, Mild dry, Auto restart
K2 type ECONAVI **Wall Mounted**	S-22MK2E5A	S-28MK2E5A	S-36MK2E5A	S-45MK2E5A	S-56MK2E5A		S-73MK2E5A		S-106MK2E5A							●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, DC motor
U2 type ECONAVI** nanoeX*** **4-Way Cassette** Panel No. CZ-KPU3	S-22MU2E5A	S-28MU2E5A	S-36MU2E5A	S-45MU2E5A	S-56MU2E5A	S-60MU2E5A	S-73MU2E5A	S-90MU2E5A	S-106MU2E5A		S-140MU2E5A	S-160MU2E5A				●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, Drain pump, DC motor
Y2 type ECONAVI **4-Way Mini Cassette** Panel No. CZ-KPY3AW	S-22MY2E5A	S-28MY2E5A	S-36MY2E5A	S-45MY2E5A	S-56MY2E5A											●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, Drain pump, DC motor
L1 type **2-Way Cassette** Panel No. CZ-02KPL2 Panel No. CZ-03KPL2 (Only for S-73ML1E5)	S-22ML1E5	S-28ML1E5	S-36ML1E5	S-45ML1E5	S-56ML1E5		S-73ML1E5									●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, Drain pump
D1 type **1-Way Cassette** Panel No. CZ-KPD2		S-28MD1E5	S-36MD1E5	S-45MD1E5	S-56MD1E5		S-73MD1E5									●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, Drain pump, DC motor
T2 type ECONAVI **Ceiling**			S-36MT2E5A	S-45MT2E5A	S-56MT2E5A		S-73MT2E5A		S-106MT2E5A		S-140MT2E5A					●	●	self-diagnosing, Auto fan, Mild dry, Auto flap, Auto restart, Air swing, DC motor
P1 type **Floor Standing**	S-22MP1E5	S-28MP1E5	S-36MP1E5	S-45MP1E5	S-56MP1E5		S-71MP1E5										●	self-diagnosing, Auto fan, Mild dry, Auto restart
R1 type **Concealed Floor Standing**	S-22MR1E5	S-28MR1E5	S-36MR1E5	S-45MR1E5	S-56MR1E5		S-71MR1E5										●	self-diagnosing, Auto fan, Mild dry, Auto restart

* Only for High Static Ducted (22.4kW & 28.0kW only)
** Only for CZ-KPU3A (ECONAVI Panel)
*** Only for CZ-CNEXU1 (nanoeX Sensor) with CZ-RTC5B

Self-diagnosing function · Automatic fan operation · DRY Mild dry · AUTO Intelligent auto flap control · Automatic restart function for power failure · Air swing · DP Built-in drain pump · DC motor

F2 TYPE Mid Static Ducted

The new F2 type is designed specifically for applications requiring fixed square ducting. An anti-mould filter is equipped as standard.

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

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

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

ECONAVI ready

CZ-CENSC1

CZ-RTC5B

For all indoor units
CZ-RWSK2 +
CZ-RWSC3

Self-diagnosing Function

Automatic Fan Operation

Mild dry

Automatic Restart Function

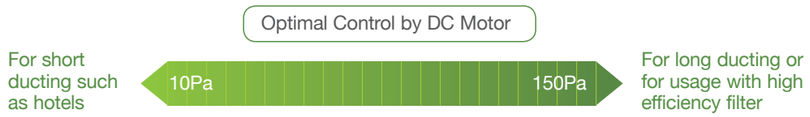
Built-in Drain Pump

Technical focus

- Variable external static pressure control
- Industry-leading low sound levels from 25dB (A)
- Built-in drain pump provides 702mm lift
- Easy to install and maintain
- Air off sensor avoids cold air drafts during heating operation
- Anti-mould washable filters included

Variable external static pressure control

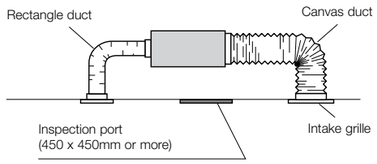
Optimal airflow set-up is possible depending on ducting design and conditions.



* Please refer to technical databook for detail.

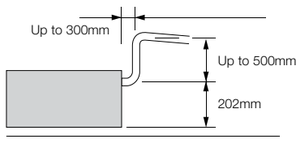
System example

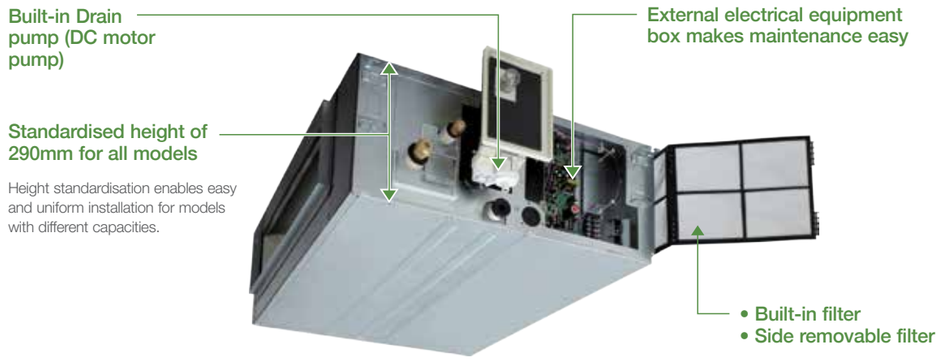
An inspection port (450mm x 450mm or larger) is required at the lower side of the indoor unit body.



More powerful drain pump

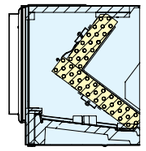
Using a high-lift drain pump, drain piping can be elevated up to 702mm from the base of the unit.





V-shaped heat exchanger

To improve heat exchange efficiency, an original V-shaped heat exchanger was developed incorporating a conventional high-efficiency slit fan and high-efficiency grooved heat transfer tubes. This increases the heat exchange surface area.



Increased heat exchange surface area

Model Name			S-22MF2E5A	S-28MF2E5A	S-36MF2E5A	S-45MF2E5A	S-56MF2E5A
Power source			220/230/240V, 1 phase - 50/60Hz				
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6
		BTU/h	7,500	9,600	12,300	15,400	19,100
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3
		BTU/h	8,500	10,900	14,300	17,100	21,500
Power input	Cooling	kW	0.070/0.070/0.070	0.070/0.070/0.070	0.070/0.070/0.070	0.070/0.070/0.070	0.100/0.100/0.100
	Heating	kW	0.070/0.070/0.070	0.070/0.070/0.070	0.070/0.070/0.070	0.070/0.070/0.070	0.100/0.100/0.100
Running amperes	Cooling	A	0.60/0.57/0.56	0.60/0.57/0.56	0.60/0.57/0.56	0.60/0.57/0.56	0.77/0.74/0.71
	Heating	A	0.60/0.57/0.56	0.60/0.57/0.56	0.60/0.57/0.56	0.60/0.57/0.56	0.77/0.74/0.71
Fan motor	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	840/780/600	840/780/600	840/780/600	840/780/600	960/900/720
		L/s	233/217/167	233/217/167	233/217/167	267/250/220	267/250/220
	Output	kW	0.119	0.119	0.119	0.119	0.119
	External static pressure	Pa	70(10-150)	70(10-150)	70(10-150)	70(10-150)	70(10-150)
Power sound level (H/M/L)		dB(A)	55/51/47	55/51/44	55/51/44	56/54/47	56/54/47
Sound pressure sound (H/M/L)		dB(A)	33/29/25	33/29/22	33/29/22	34/32/25	34/32/25
Dimensions	H x W x D	mm	290x800x700	290x800x700	290x800x700	290x800x700	290x800x700
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25
Net weight		kg	29	29	29	29	29

S-60MF2E5A	S-73MF2E5A	S-90MF2E5A	S-106MF2E5A	S-140MF2E5A	S-160MF2E5A
	220/230/240V, 1 phase - 50/60Hz				
6.0	7.3	9.0	10.6	14.0	16.0
20,500	24,900	30,700	36,200	47,800	54,600
7.1	8.0	10.0	11.4	16.0	18.0
24,200	27,300	34,100	38,900	54,600	61,400
0.120/0.120/0.120	0.120/0.120/0.120	0.135/0.135/0.135	0.195/0.195/0.195	0.215/0.215/0.215	0.225/0.225/0.225
0.120/0.120/0.120	0.120/0.120/0.120	0.135/0.135/0.135	0.200/0.200/0.200	0.210/0.210/0.210	0.225/0.225/0.225
0.91/0.89/0.87	0.91/0.89/0.87	0.99/0.97/0.95	1.35/1.30/1.27	1.48/1.44/1.39	1.55/1.50/1.47
0.91/0.89/0.87	0.91/0.89/0.87	0.99/0.97/0.95	1.37/1.34/1.29	1.46/1.42/1.38	1.55/1.50/1.46
Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
1,260/1,140/900	1,260/1,140/900	1,500/1,380/1,140	1,920/1,620/1,320	2,040/1,740/1,380	2,160/1,860/1,500
350/317/250	350/317/250	417/383/317	533/450/367	567/483/383	600/517/417
0.124	0.124	0.124	0.235	0.235	0.235
70(10-150)	70(10-150)	70(10-150)	100(10-150)	100(10-150)	100(10-150)
57/54/48	57/54/48	59/56/50	60/56/53	61/57/54	62/58/55
35/32/26	35/32/26	37/34/28	38/34/31	39/35/32	40/36/33
290x1,000x700	290x1,000x700	290x1,000x700	290x1,400x700	290x1,400x700	290x1,400x700
Ø6.35 (Ø1/4)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
Ø12.7 (Ø1/2)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)
VP-25	VP-25	VP-25	VP-25	VP-25	VP-25
34	34	34	46	46	46

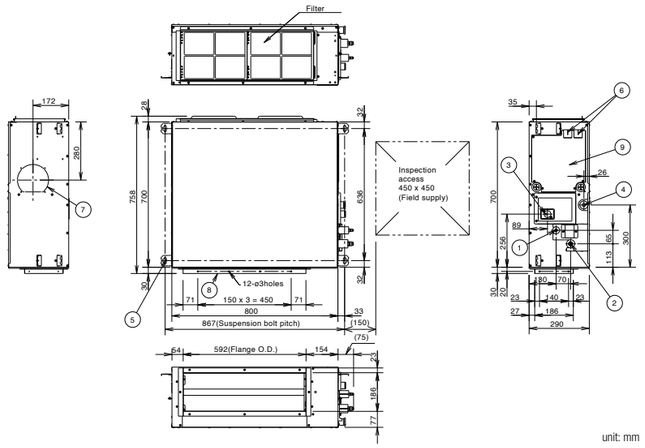
GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27℃ DB / 19℃ WB	20℃ DB
	Outdoor air temperature	35℃ DB / 24℃ WB	7℃ DB / 6℃ WB

Specifications are subject to change without notice.

F2 TYPE MID STATIC DUCTED Dimensions

SIZE 22-56 MF2E5A

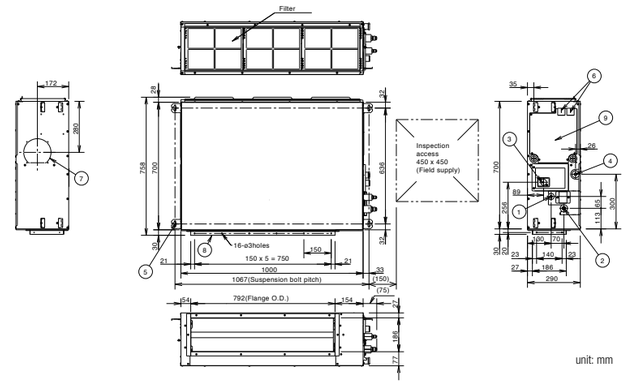
1 Refrigerant piping joint (liquid tube) Ø6.35 Flare
2 Refrigerant piping joint (gas tube) Ø12.7 Flare
3 Upper drain port VP25 (O.D. Ø32mm)
ℓ 200 flexible hose supplied
4 Bottom drain port VP25 (O.D. Ø32mm)
5 Suspension lug (4-12 × 30mm)
6 Power supply outlet
7 Fresh air intake port (Ø150mm)
8 Flange for flexible air outlet duct
9 Electrical component box



unit: mm

SIZE 60-90 MF2E5A

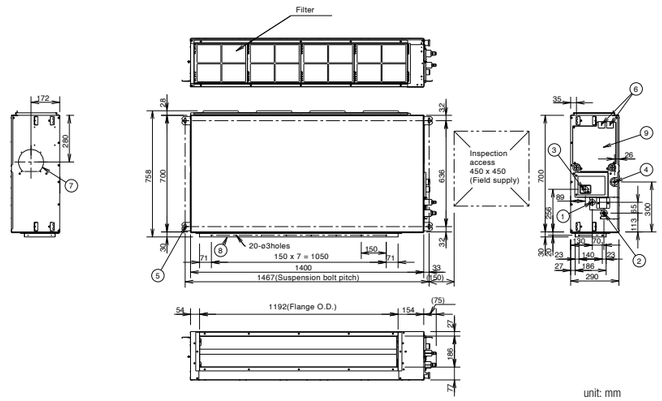
1 Refrigerant piping joint (liquid tube) Ø9.52 Flare
2 Refrigerant piping joint (gas tube) Ø15.88 Flare
3 Upper drain port VP25 (O.D. Ø32mm)
ℓ 200 flexible hose supplied
4 Bottom drain port VP25 (O.D. Ø32mm)
5 Suspension lug (4-12 × 30mm)
6 Power supply outlet
7 Fresh air intake port (Ø150mm)
8 Flange for flexible air outlet duct
9 Electrical component box



unit: mm

SIZE 106-160 MF2E5A

1 Refrigerant piping joint (liquid tube) Ø9.52 Flare
2 Refrigerant piping joint (gas tube) Ø15.88 Flare
3 Upper drain port VP25 (O.D. Ø32mm)
ℓ 200 flexible hose supplied
4 Bottom drain port VP25 (O.D. Ø32mm)
5 Suspension lug (4-12 × 30mm)
6 Power supply outlet
7 Fresh air intake port (Ø150mm)
8 Flange for flexible air outlet duct
9 Electrical component box



unit: mm

INDOOR UNITS / M1 TYPE

M1 TYPE Slim Low Static Ducted

Concealed duct

Featuring a height of only 200mm, greater flexibility and adaptability, the ultra slim M1 Type is the perfect solution for a variety of applications, especially residential apartments, hotels and small offices.

S-22MM1E5A / S-28MM1E5A / S-36MM1E5A
S-45MM1E5A / S-56MM1E5A

ECONAVI ready

CZ-CENSC1 CZ-RTC5B

For all indoor units
CZ-RWSK2 +
CZ-RWSC3

Self-diagnosing Function

Automatic Fan Operation

Mild dry

Automatic Restart Function

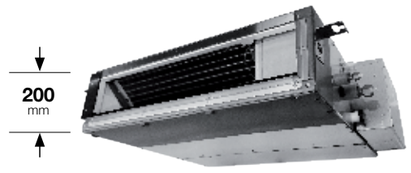
Built-in Drain Pump

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
- Anti-mould washable filters included
- Easy maintenance and service by external electrical box
- 40Pa static pressure enables ductwork to be fitted.
- Up to 653mm drain pump

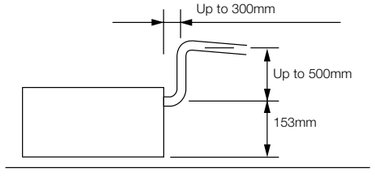
Ultra-slim profile for all models

200mm height for all models allows installation in very narrow ceilings.



Drain pump with increased power!

Using the built-in high-lift drain pump, the drain piping rise height can be increased to 653mm from the lower surface of the body.



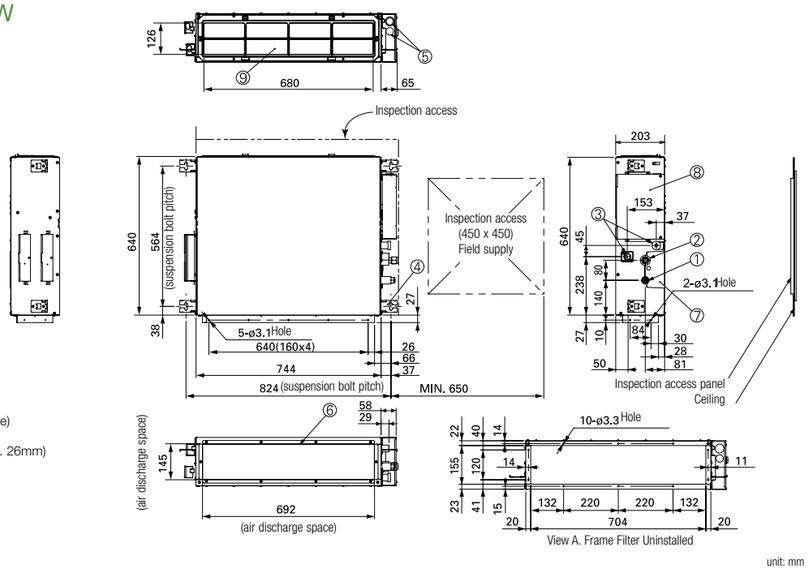
Model Name			S-22MM1E5A	S-28MM1E5A	S-36MM1E5A	S-45MM1E5A	S-56MM1E5A
Power source			220/230/240 V, 1 phase - 50 / 60 Hz				
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6
		BTU/h	7,500	9,600	12,300	15,400	19,100
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3
		BTU/h	8,500	10,900	14,300	17,100	21,500
Power input	Cooling	kW	0.036/0.036/0.036	0.040/0.040/0.040	0.042/0.042/0.042	0.049/0.049/0.049	0.064/0.064/0.064
	Heating	kW	0.026/0.026/0.026	0.030/0.030/0.030	0.032/0.032/0.032	0.039/0.039/0.039	0.054/0.054/0.054
Running current	Cooling	A	0.26/0.26/0.26	0.30/0.30/0.30	0.31/0.31/0.31	0.37/0.37/0.37	0.48/0.48/0.48
	Heating	A	0.23/0.23/0.23	0.27/0.27/0.27	0.28/0.28/0.28	0.34/0.34/0.34	0.45/0.45/0.45
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	480/420/360	510/450/390	540/480/420	630/570/480	750/690/600
		L/s	133/117/100	142/125/108	150/133/117	175/158/133	208/192/167
	Motor output	kW	0.06	0.06	0.06	0.06	0.06
	External static pressure	Pa	10 (30)	15 (30)	15 (40)	15 (40)	15 (40)
Sound power level (H/M/L)		dB	43/42/40	45/44/42	47/45/43	49/47/45	50/48/46
Sound pressure level (H/M/L)		dB(A)	28/27/25 (30/29/27)*	30/29/27 (32/31/29)*	32/30/28 (34/32/30)*	34/32/30 (36/34/32)*	35/33/31 (37/35/32)*
Dimensions	H x W x D	mm	200 x 750 x 640	200 x 750 x 640	200 x 750 x 640	200 x 750 x 640	200 x 750 x 640
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)
	Drain piping		VP-20	VP-20	VP-20	VP-20	VP-20
Net weight		kg	19	19	19	19	19

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

Specifications are subject to change without notice.

* With booster cable.

M1 TYPE SLIM LOW STATIC DUCTED Dimensions



1 Refrigerant piping joint (narrow pipe)
2 Refrigerant piping joint (wide pipe)
3 Upper and bottom drain port (O.D. 26mm)
4 Suspension lug
5 Power supply outlet (2- Ø30)
6 Flange for air intake duct
7 PI cover
8 Electrical component box
9 Frame filter

unit: mm

INDOOR UNITS / Z1 TYPE

Z1 TYPE Slim & Narrow Ducted

Concealed duct

Featuring a height of only 200mm, greater flexibility and adaptability, the slim and narrow Z1 Type is the perfect solution for a variety of applications. In addition, high efficiency and an extremely low noise level make it highly suitable for hotels and small offices.

S-22MZ1H4A/ S-28MZ1H4A/ S-36MZ1H4A/
S-45MZ1H4A/ S-56MZ1H4A/ S-60MZ1H4A

S-73MZ1H4A

ECONAVI

ECONAVI ready

CZ-CENSC1 CZ-RTC5B

For all indoor units
CZ-RWSK2 +
CZ-RWSC3

Self-diagnosing Function

Automatic Fan Operation

Mild dry

Automatic Restart Function

Technical focus

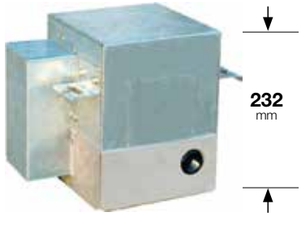
- Ultra-slim profile: 200mm for all models
- DC fan motor greatly reduces power consumption
- Ideal for hotel application with very narrow false ceilings
- Easy maintenance and service by external electrical box
- 29Pa static pressure enables ductwork to be fitted.
- Up to 700mm drain pump (optional)

Ultra-slim profile for all models

200mm height for all models allows installation in very narrow ceilings.

Drain pump with increased power! (optional)

Using the optional high-lift drain pump, the drain piping rise height can be increased to 700mm from the drain pipe port. (Please refer to technical documents for further details)



CZ-73DMZ1

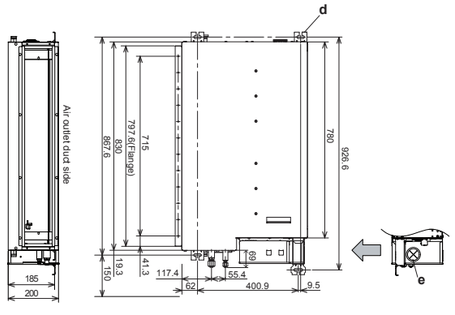
Model Name			S-22MZ1H4A	S-28MZ1H4A	S-36MZ1H4A	S-45MZ1H4A	S-56MZ1H4A	S-60MZ1H4A	S-73MZ1H4A
Power source			220/230/240 V, 1 phase - 50 / 60 Hz						
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6	6.0	7.3
		BTU/h	7,500	9,500	12,200	15,300	19,100	20,500	24,900
Heating capacity		kW	2.5	3.2	4.2	5.1	6.4	7.1	8.0
		BTU/h	8,500	10,900	14,300	17,400	21,800	24,200	27,300
Power input	Cooling	kW	0.075/0.075/0.075	0.080/0.080/0.080	0.085/0.085/0.085	0.095/0.095/0.095	0.100/0.100/0.100	0.100/0.100/0.100	0.125/0.125/0.125
	Heating	kW	0.075/0.075/0.075	0.080/0.080/0.080	0.085/0.085/0.085	0.095/0.095/0.095	0.100/0.100/0.100	0.100/0.100/0.100	0.125/0.125/0.125
Running current	Cooling	A	0.50/0.47/0.45	0.55/0.52/0.50	0.60/0.57/0.55	0.70/0.68/0.65	0.75/0.72/0.70	0.75/0.72/0.70	0.80/0.78/0.75
	Heating	A	0.50/0.47/0.45	0.55/0.52/0.50	0.60/0.57/0.55	0.70/0.68/0.65	0.75/0.72/0.70	0.75/0.72/0.70	0.80/0.78/0.75
Fan	Type		Sirroco fan	Sirroco fan	Sirroco fan	Sirroco fan	Sirroco fan	Sirroco fan	Sirroco fan
	Air flow rate (H/M/L)	m³/h	480/420/360	600/540/420	600/540/420	690/630/510	720/660/540	870/750/630	1,080/840/660
		L/s	133/117/100	167/150/117	167/150/117	192/175/142	200/183/150	242/208/175	300/233/183
	Motor output	W	60	60	60	60	60	60	60
	External static pressure	Pa	10-30	10-30	10-30	10-30	10-30	10-30	10-30
Sound power level (H/M/L)		dB	50/49/47	52/51/49	54/52/50	56/54/52	57/55/53	60/57/55	62/60/58
Sound pressure level (H/M/L)		dB(A)	28/27/25	30/29/27	32/30/28	34/32/30	35/33/31	38/35/33	40/38/36
Dimensions	H x W x D	mm	200x830×500	200x830×500	200x830×500	200x830×500	200x830×500	200x830×500	200x1,050×550
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø9.52 (Ø3/8)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø15.88 (Ø5/8)
	Drain piping		O.D. Ø20.5 mm / I.D. Ø15.5mm	O.D. Ø20.5 mm / I.D. Ø15.5mm	O.D. Ø20.5 mm / I.D. Ø15.5mm	O.D. Ø20.5 mm / I.D. Ø15.5mm	O.D. Ø20.5 mm / I.D. Ø15.5mm	O.D. Ø20.5 mm / I.D. Ø15.5mm	O.D. Ø20.5 mm / I.D. Ø15.5mm
Net weight		kg	17	17	18	18	18	18	24

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27℃ DB / 19℃ WB	20℃ DB
	Outdoor air temperature	35℃ DB / 24℃ WB	7℃ DB / 6℃ WB

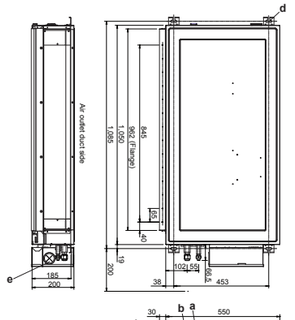
Specifications are subject to change without notice.

Z1 TYPE SLIM & NARROW DUCTED Dimensions

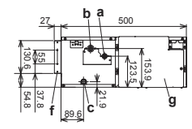
SIZE 22-60MZ1H4A

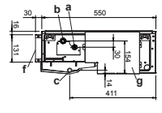


SIZE 73MZ1H4A



a) Refrigerant piping joint (liquid pipe)
b) Refrigerant piping joint (gas pipe)
c) Bottom drain port O.D.Ø20.5mm / I.D. Ø15.5mm
d) Suspension lug (4 – 12 × 30mm)
e) Power supply outlet
f) Flange for flexible air outlet duct
g) Electrical component box





unit: mm

INDOOR UNITS / E1 TYPE

E1 TYPE High Static Ducted

Concealed duct

The E1 range of ducted units offers improved design flexibility for extended duct layouts as a result of their increased external static pressures.

S-73ME1E5 /
S-106ME1E5 / S-140ME1E5

CZ-RTC5B

Self-diagnosing Function

Automatic Fan Operation

Mild dry

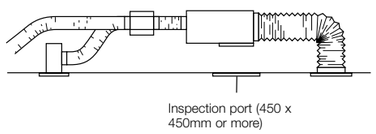
Automatic Restart Function

Technical focus

- Complete flexibility for ductwork design
- Can be located into a weatherproof housing for external installation
- Up to 186Pa external static pressure (in the case of S-73ME1E5)
- Discharge air temperature control to reduce cold drafts during heating operation
- Up to 600L/s airflow (in the case of S-140ME1E5)

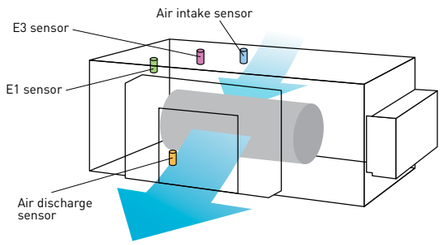
System example

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



Discharge air temperature control

- Able to control discharge air temperature for accurate room temperature control.
- Possible to reduce cold drafts during heating operation.



Model Name			S-73ME1E5	S-106ME1E5	S-140ME1E5
Power source			240 V, 1 phase - 50Hz		
Cooling capacity		kW	7.3	10.6	14.0
		BTU/h	25,000	36,000	47,800
Heating capacity		kW	8.0	11.4	16.0
		BTU/h	27,000	39,000	54,600
Power input	Cooling	kW	0.530	0.570	0.710
	Heating	kW	0.530	0.570	0.710
Running current	Cooling	A	2.31	2.47	3.00
	Heating	A	2.31	2.47	3.00
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	L/s	383/367/350	500/467/417	600/583/550
	Motor output	kW	0.2	0.2	0.35
	External static pressure	Pa	186	176	167
Sound power level (H/M/L)		dB	55/54/53	56/55/53	58/57/55
Sound pressure level (H/M/L)		dB(A)	44/43/42	45/44/42	47/46/44
Dimensions	H x W x D	mm	420 x 1,065 x 620	420 x 1,065 x 620	450 x 1,065 x 620
Pipe connections	Liquid	inches (mm)	3/8 (Ø9.52)	3/8 (Ø9.52)	3/8 (Ø9.52)
	Gas	inches (mm)	5/8 (Ø15.88)	5/8 (Ø15.88)	5/8 (Ø15.88)
	Drain piping		VP-25	VP-25	VP-25
Net weight		kg	47	50	54

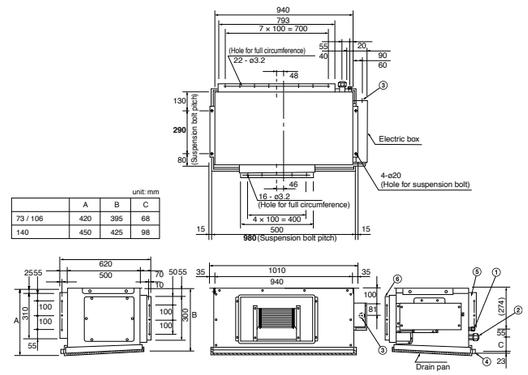
Specifications subject to change without notice.

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

E1 TYPE HIGH STATIC DUCTED Dimensions

SIZE 73-140

1 Refrigerant liquid line (ø9.52)
2 Refrigerant gas line (ø15.88)
3 Power supply entry
4 Drain connection (20A / VP25)
5 Duct connection for suction
6 Duct connection for discharge



E2 TYPE High Static Ducted

Concealed duct

High static and large airflow ducted for exceptional installation flexibility.

DC motor

S-180ME2E5 / S-224ME2E5 / S-280ME2E5

CZ-RTC5B

For all indoor units
CZ-RWSK2 +
CZ-RWSC3

Self-diagnosing Function

Automatic Fan Operation

Mild dry

Automatic Restart Function

Technical focus

- Design flexibility thanks to high static pressure and large air volume
- DC motor equipped
- Discharge air temperature control to reduce cold drafts during heating operation
- Available Fresh Air Intake mode

3-step static pressure set up

You can select between the three static pressure modes of 270Pa/ 140Pa/ 60 (72*)Pa for extra installation flexibility.

60(72*) Pa — 140Pa Factory Setting — 270Pa

* 28kW model

Up to 270Pa static pressure setting

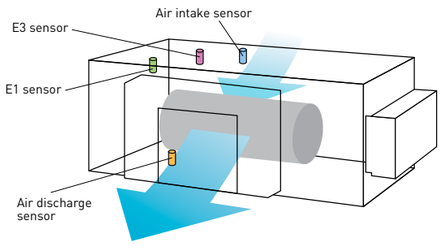
A maximum static pressure setting of a high 270Pa enables the use of long ducts for installation in a wide range of spaces. Ideal for large-scale offices, restaurants and other facilities.

Sensible cooling 5-10% improved

New heat exchanger with ϕ7mm pipe that increases the heat transfer surface to improve sensible cooling (5-10% improvement)

Discharge air temperature control

- Equipped with 4 sensors (Intake/ Discharge)
- Able to control discharge air temperature for accurate room temperature control.
- Possible to reduce cold drafts during heating operation.



Model	Operation	Rap valve kit **CZ-P160RVK2**	3-PIPE control PCB **CZ-CAPE2**	3-PIPE valve kit **CZ-P160HR3**	3-PIPE valve kit multiple connection port type 4 port **CZ-P4160HR3** (160 type)	Distribution Joint kit <2pipes> **CZ-P160BK2** for 22.4kW unit or less **CZ-P680BK2** for more than 22.4kW	Distribution Joint kit <3pipes> **CZ-P224BH2** for 22.4kW unit **CZ-P680BH2** for 28.0kW unit
E2 Type **High Static Ducted**	Cooling Only	-	-	-	-	-	-
	Cool or Heat	-	-	-	-	-	-
	Heat Recovery	-	2pcs	2pcs	use 2ports	1pc	1pc

X 4pcs

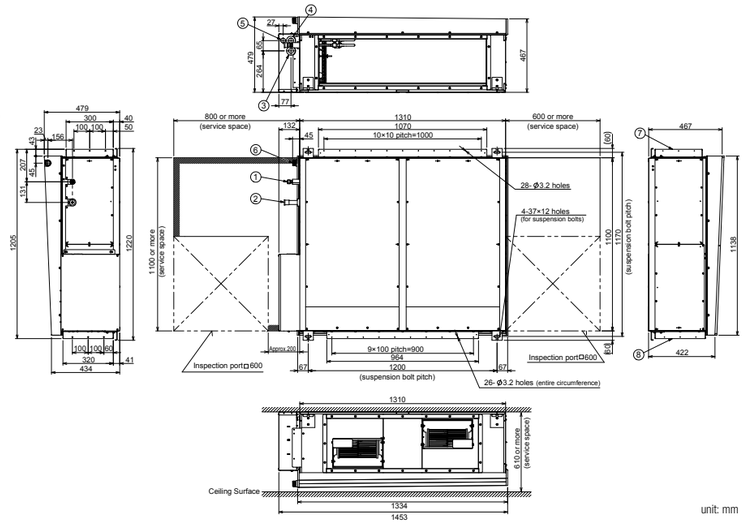
Model Name			S-180ME2E5	S-224ME2E5	S-280ME2E5
Power source			220/230/240 V, 1 phase - 50/60Hz		
Cooling capacity		kW	18.0	22.4	28.0
		BTU/h	61,400	76,400	95,500
Heating capacity		kW	20.0	25.0	31.5
		BTU/h	68,200	85,300	107,500
Power input	Cooling	kW	0.400	0.440	0.715
	Heating	kW	0.400	0.440	0.715
Running current	Cooling	A	2.40 / 2.30 / 2.20	2.55 / 2.45 / 2.35	3.95 / 3.85 / 3.70
	Heating	A	2.40 / 2.30 / 2.20	2.55 / 2.45 / 2.35	3.95 / 3.85 / 3.70
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m^3/h	2,940 / 2,640 / 2,340	3,360 / 3,060 / 2,640	4,320 / 3,780 / 3,180
		L/s	817 / 733 / 650	933 / 850 / 733	1,200 / 1,050 / 883
	External static pressure	Pa	140 (60/270)	140 (60/270)	140 (72/270)
Sound power level (H/M/L)		dB	76 / 74 / 72	77 / 75 / 73	81 / 79 / 75
Sound pressure level (H/M/L)		dB(A)	44 / 42 / 40	45 / 43 / 41	49 / 47 / 43
Dimensions	H x W x D	mm	479 x 1,453 x 1,205	479 x 1,453 x 1,205	479 x 1,453 x 1,205
Pipe connections	Liquid	mm (inches)	Ø9.52 (3/8)	Ø9.52 (3/8)	Ø9.52 (3/8)
	Gas	mm (inches)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø22.22 (7/8)
	Drain piping		VP-25	VP-25	VP-25
Net weight		kg	102	102	106

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27℃ DB / 19℃ WB	20℃ DB
	Outdoor air temperature	35℃ DB / 24℃ WB	7℃ DB / 6℃ WB

Specifications are subject to change without notice.

E2 TYPE HIGH STATIC DUCTED Dimensions

1 Refrigerant piping (liquid pipes) Ø9.52
2 Refrigerant piping (gas pipes)
180 & 224 type: Ø19.05, 280 type: Ø22.22
3 Power supply outlet (Ø25 grommet, rubber)
4 Power supply outlet (spare) (Ø30 knock-out)
5 Optional outlet for piping
6 Drain port 25 A, male thread
7 Duct connection for suction
8 Duct connection for discharge



unit: mm

INDOOR UNITS / E2 TYPE

E2 TYPE Energy Saving High Fresh Air Ducted

DC motor

Concealed duct

High static and large airflow ducted for exceptional installation flexibility.

S-224ME2E5 /
S-280ME2E5

CZ-RTC5B

For all indoor units
CZ-RWSK2 +
CZ-RWSC3

Self-diagnosing Function

Automatic Fan Operation

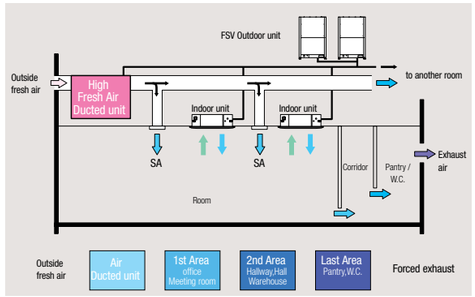
Automatic Restart Function

Technical focus

- 100% fresh air intake for ventilation purpose
- Design flexibility with high static pressure and large air volume
- DC motor equipped
- Discharge air temperature control to reduce cold drafts during heating operation

High Fresh System

High Fresh System enables delivery of fresh outside air at almost the same temperature and humidity as indoor air without putting a burden on air conditioning.
* Capable of treating outdoor air only. Indoor air conditioner units are required to adjust indoor air temperature.

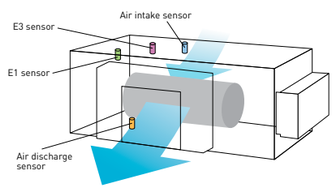


Mix operation unit with standard indoor units

Possible to combine High Fresh Air ducted indoor unit and standard air ducted indoor units.
When other indoor units are connected in same circuit, keep following capacity ratio.
E2 type/ Outdoor unit < 30%, and Total of indoors (incl. E2) /outdoor <100%

Discharge air temperature control

- Equipped with 4 sensors (Intake/ Discharge)
- Ability to control discharge air temperature for accurate room temperature control.
- Ability to reduce cold drafts during heating operation.



Installation Conditions

Model	Operation	Rap valve kit **CZ-P160RVK2**	3-PIPE control PCB **CZ-CAPE2**	3-PIPE valve kit **CZ-P160HR3**	Distribution Joint kit <2pipes> **CZ-P160BK2** for 22.4kW unit or less **CZ-P680BK2** for more than 22.4kW	Distribution Joint kit <3pipes> **CZ-P224BH2** for 22.4kW unit **CZ-P680BH2** for 28.0kW unit
E2 Type **Energy Saving High-Fresh Air Ducted**	Cooling Only	-	-	-	-	-
	Cool or Heat	2pcs	2pcs	-	2pcs	-
	Heat Recovery	-	2pcs	2pcs	1pc	1pc

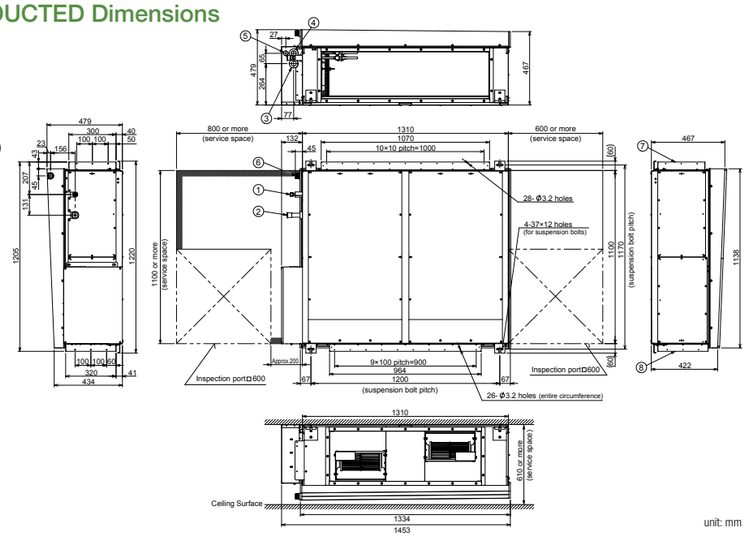
Model Name			S-224ME2E5	S-280ME2E5
Power source			220/230/240 V, 1 phase - 50/60Hz	
Cooling capacity		kW	22.4	28.0
		BTU/h	76,400	95,500
Heating capacity		kW	21.2	26.5
		BTU/h	72,300	90,400
Power input	Cooling	kW	0.290	0.350
	Heating	kW	0.290	0.350
Running current	Cooling	A	1.90/1.85/1.80	2.30/2.20/2.10
	Heating	A	1.90/1.85/1.80	2.30/2.20/2.10
Fan	Type		Sirocco fan	Sirocco fan
	Air flow rate	m³/h	1,700	2,100
		L/s	472	583
	Motor output	W	560	750
	External static pressure	Pa	200	200
Sound power level		dB	75	76
Sound pressure level		dB(A)	43	44
Dimensions	H x W x D	mm	479 x 1,453 x 1,205	479 x 1,453 x 1,205
Pipe connections	Liquid	mm (inches)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
	Gas	mm (inches)	Ø19.05 (Ø3/4)	Ø22.22 (Ø7/8)
	Drain piping		VP-25	VP-25
Net weight		kg	102	106

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Outdoor air temperature	33°C DB / 28°C WB	0°C DB / -2.9°C WB

Specifications are subject to change without notice.

E2 TYPE HIGH STATIC DUCTED Dimensions

1 Refrigerant piping (liquid pipes) Ø9.52
2 Refrigerant piping (gas pipes)
224 type: Ø19.05, 280 type: Ø22.22
3 Power supply outlet (Ø25 grommet, rubber)
4 Power supply outlet (spare) (Ø30 knock-out)
5 Optional outlet for piping
6 Drain port 25 A, male thread
7 Duct connection for suction
8 Duct connection for discharge



unit: mm

INDOOR UNITS / E1 TYPE

E1 TYPE High Static Compact Ducted

Concealed duct

Hidden in the ceiling to provide an ideal match for luxury residences and light commercial buildings.

S-90ME1R5A/
S-112ME1R5A

S-140ME1R5A/
S-160ME1R5A

ECONAVI

ECONAVI ready

CZ-RTC5B

For all indoor units
CZ-RWSK2 +
CZ-RWSC3

Self-diagnosing Function

Automatic Fan Operation

Mild dry

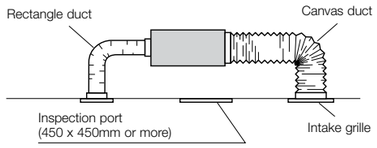
Automatic Restart Function

Technical focus

- Complete flexibility for ductwork design
- Can be located into a weatherproof housing for external installation
- Up to 150Pa external static pressure
- Discharge air temperature control to reduce cold drafts during heating operation
- Up to 1000 L/s air flow (in the case of S-160ME1R5A)

System Example

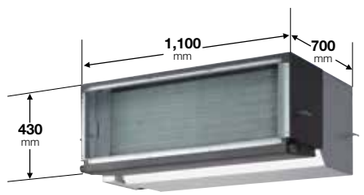
An inspection port (450mm x 450mm or more) is required at the control-box side of the indoor unit body.



Compact Body Size

Hidden in the ceiling, ideal when interior decor is an important consideration such as in residences with many rooms and light commercial buildings.

S-90ME1R5A / S-112ME1R5A



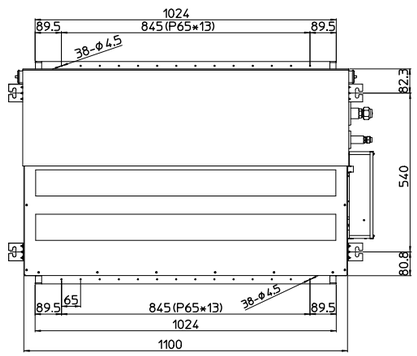
S-140ME1R5A / S-160ME1R5A

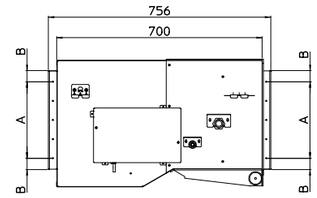
Model Name			S-90ME1R5A	S-112ME1R5A	S-140ME1R5A	S-160ME1R5A
Power source			230/240 V, 1 phase - 50Hz			
Cooling capacity		kW	9.0	11.2	14.0	16.0
		BTU/h	30,700	38,200	47,800	54,600
Heating capacity		kW	10.0	12.5	16.0	18.0
		BTU/h	34,100	42,700	54,600	61,400
Power input	Cooling	kW	0.275/0.290	0.390/0.410	0.410/0.430	0.590/0.640
	Heating	kW	0.275/0.290	0.390/0.410	0.410/0.430	0.590/0.640
Running current	Cooling	A	1.24/1.25	1.72/1.74	1.82/1.84	2.62/2.70
	Heating	A	1.24/1.25	1.72/1.74	1.82/1.84	2.62/2.70
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	1,800/1,560/1,320	2,400/2,100/1,740	3,000/2,760/2,160	3,600/3,000/2,520
		L/s	500/433/366	666/583/483	833/766/600	1,000/833/700
	Motor output	kW	0.155	0.275	0.310	0.44
	External static pressure	Pa	100 (max150)	100 (max150)	100 (max150)	100 (max150)
Sound power level (H/M/L)		dB	62/61/60	70/68/66	71/69/67	73/71/69
Sound pressure level (H/M/L)		dB(A)	45/44/43	48/46/44	49/47/45	51/49/47
Dimensions	H x W x D	mm	360 x 1,100(+100) x 700	360 x 1,100(+100) x 700	430 x 1,100(+100)x 700	430 x 1,100(+100) x 700
Pipe connections	Liquid	mm (inches)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
	Gas	mm (inches)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)
	Drain piping		VP-25	VP-25	VP-25	VP-25
Net weight		kg	42	44	48	53

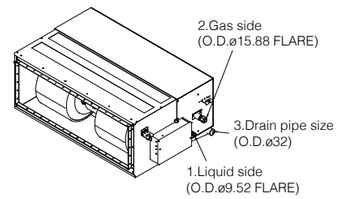
GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

Specifications are subject to be changed without notice.

E1 TYPE HIGH STATIC DUCTED Dimensions







Dimensions: mm

model	A	B	C	D
S-90ME1R5A S-112ME1R5A	195	35.7	360	50
S-140ME1R5A S-160ME1R5A	260	38.2	430	121.5

INDOOR UNITS / K2 TYPE

K2 TYPE Wall Mounted

DC motor

The K2 type wall mounted unit has a stylish smooth design with a washable front panel.
Small, lightweight, and a low noise level, this unit is ideal for small offices and other commercial applications.

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

S-45MK2E5A / S-56MK2E5A / S-73MK2E5A / S-106MK2E5A

ECONAVI

ECONAVI ready

CZ-CENSC1

CZ-RTC5B

CZ-RWSU3

Self-diagnosing Function

Automatic Fan Operation

Mild dry

Intelligent Auto Swing

Automatic Restart Function

Auto Swing (Auto Flap Control)

Technical focus

- Closed discharge port when not in use
- Lighter and smaller units make installation easy
- Quiet operation
- Smooth and durable design
- Piping outlet in six directions
- Washable front panel
- Air distribution is automatically altered depending on the operational mode of the unit
- Anti-mould washable filters are included

Noise reducing external valve kit

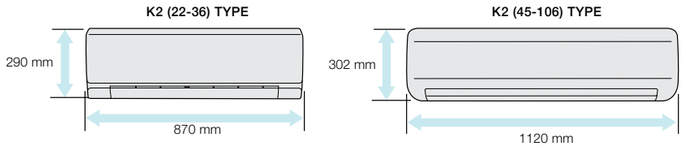
To reduce noise level of expansion valve.
(Optional accessory)

CZ-P56SVK2 (for 22 - 56 type)
CZ-P160SVK2 (for 73 - 106 type)

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.

Compact indoor units make the installation easy



Quiet operation

Low operating noise level makes these units ideal for hotels and hospital applications.

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 six directions

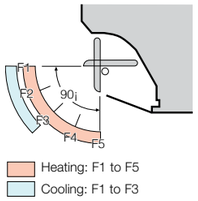
Piping outlet operates in six directions: right, right rear, right bottom, left, left rear, left bottom, making installation easier.

Washable front panel

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

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

Air outlet angle is automatically adjusted for cooling and heating operation.



Model Name			S-22MK2E5A	S-28MK2E5A	S-36MK2E5A	S-45MK2E5A
Power source			220/230/240 V, 1 phase - 50 / 60 Hz			
Cooling capacity		kW	2.2	2.8	3.6	4.5
		BTU/h	7,500	9,600	12,300	15,400
Heating capacity		kW	2.50	3.20	4.20	5.0
		BTU/h	8,500	10,900	14,300	17,100
Power input	Cooling	kW	0.025/0.025/0.025	0.025/0.025/0.025	0.030/0.030/0.030	0.030/0.030/0.030
	Heating	kW	0.025/0.025/0.025	0.025/0.025/0.025	0.030/0.030/0.030	0.030/0.030/0.030
Running current	Cooling	A	0.21	0.23	0.25	0.33/0.32/0.31
	Heating	A	0.21	0.23	0.25	0.33/0.32/0.31
Fan	Type		Cross-flow fan	Cross-flow fan	Cross-flow fan	Cross-flow fan
	Air flow rate (H/M/L)	m³/h	540/450/390	570/498/390	654/540/390	870/750/600
		L/s	153/138/113	161/142/113	187/158/113	242/208/167
	Motor output	kW	0.03	0.03	0.03	0.054
Sound power level (H/M/L)		dB	51/48/44	52/49/44	55/51/44	53/50/48
Sound pressure level (H/M/L)		dB(A)	36/33/29	37/34/29	40/36/29	38/35/33
Dimensions	H x W x D	mm	290 x 870 x 214	290 x 870 x 214	290 x 870 x 214	302 x 1,120 x 236
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)
	Drain piping	mm	Ø18	Ø18	Ø18	Ø18
Net weight		kg	9	9	9	13

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27℃ DB / 19℃ WB	20℃ DB
	Outdoor air temperature	35℃ DB / 24℃ WB	7℃ DB / 6℃ WB

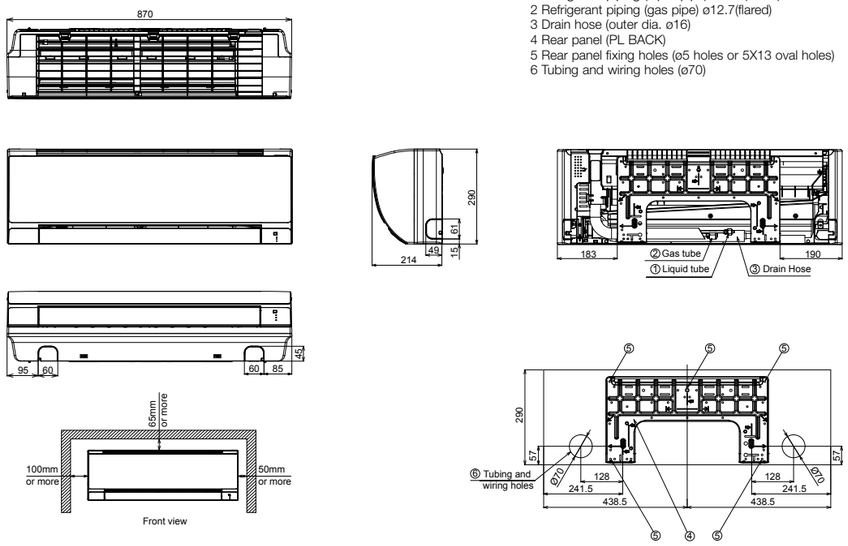
Specifications are subject to change without notice.

S-56MK2E5A	S-73MK2E5A	S-106MK2E5A
220/230/240 V, 1 phase - 50 / 60 Hz		
5.6	7.3	10.6
19,100	24,900	36,200
6.3	8.0	11.4
21,500	27,300	38,900
0.035/0.035/0.035	0.055/0.055/0.055	0.080/0.080/0.080
0.035/0.035/0.035	0.055/0.055/0.055	0.080/0.080/0.080
0.36/0.35/0.34	0.52/0.51/0.50	0.72/0.70/0.68
0.36/0.35/0.34	0.52/0.51/0.50	0.72/0.70/0.68
Cross-flow fan	Cross-flow fan	Cross-flow fan
960/840/720	1,170/1,020/840	1,290/1,110/900
267/233/200	325/283/233	358/308/250
0.054	0.054	0.054
55/52/50	62/59/55	64/61/57
40/37/35	47/44/40	49/46/42
302 x 1,120 x 236	302 x 1,120 x 236	302 x 1,120 x 236
Ø6.35 (Ø1/4)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
Ø12.7 (Ø1/2)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)
Ø18	Ø18	Ø18
13	14	14

K2 (22-36) TYPE WALL MOUNTED Dimensions

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

1 Refrigerant piping (liquid pipe) ø6.35(flared)
2 Refrigerant piping (gas pipe) ø12.7(flared)
3 Drain hose (outer dia. ø16)
4 Rear panel (PL BACK)
5 Rear panel fixing holes (ø5 holes or 5X13 oval holes)
6 Tubing and wiring holes (ø70)

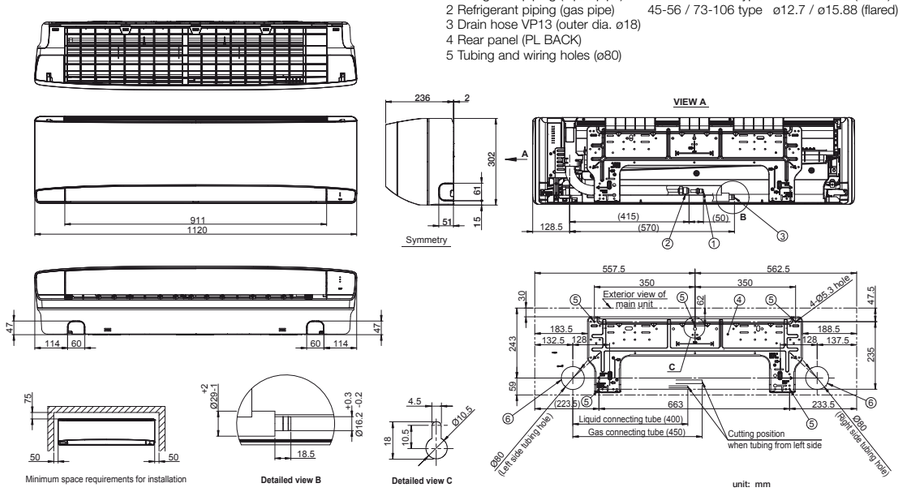


unit: mm

K2 (45-106) TYPE WALL MOUNTED Dimensions

S-45MK2E5A / S-56MK2E5A / S-73MK2E5A / S-106MK2E5A

1 Refrigerant piping (liquid pipe) 45-56 / 73-106 type ø6.35 / ø9.52 (flared)
2 Refrigerant piping (gas pipe) 45-56 / 73-106 type ø12.7 / ø15.88 (flared)
3 Drain hose VP13 (outer dia. ø18)
4 Rear panel (PL BACK)
5 Tubing and wiring holes (ø80)



INDOOR UNITS / U2 TYPE

U2 TYPE 4-WAY Cassette

Semi concealed cassette

AIR INTAKE CHAMBER

CZ-FDU3

1 [1] Air intake flange (Ø100) (field supply)
2 Air intake box CZ-ATU2 *
3 Air intake plenum CZ-FDU3

* When using Air intake box (CZ-ATU2), Air intake plenum (CZ-FDU3) is required.

FLAT PANEL DESIGN

Normal Panel : CZ-KPU3
ECONAVI Panel : CZ-KPU3A

ECONAVI ready

CZ-RTC5B

nanoe™X Ready

CZ-CNEXU1
[CZ-RTC5B is required]

For cassette only
CZ-RWSU3

Technical focus

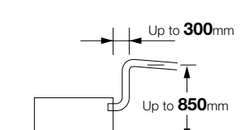
- New high performance turbo fan, new path system for heat exchanger
- Lower noise in slow fan operation
- Industry top light weight, easy piping
- ECONAVI: Floor temperature and humidity sensor added Activity amount detection and new circulator
- nanoe™X: For clean and healthy air
- Easy installation structure of the panel

Flat horizontal design

The intuitive design of the 4-WAY cassette ensures a low unit profile protruding from the ceiling at a mere 33.5mm, this elegant unit is perfectly suited to interior spaces.

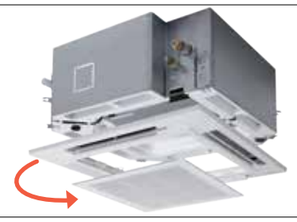
Drain pump of up to 850mm from the ceiling surface

Built in drain pump allows flexible install and design options with up to 850mm lift. Long horizontal piping is also possible.



Easy to clean suction grille

Suction grille is able to make 90-degree turns.

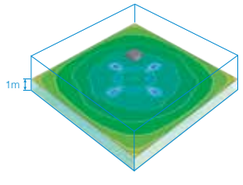


360° wide & comfortable airflow

Comfort air flow control and proper energy use. Flexible air flow direction control by individual flap control:
-4 flaps can be controlled individually (by standard wired remote controller*)
-Versatile air flow control to cover a wide variety of demands.

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

360° Wide



Temperature distribution by thermograph (cooling operation)

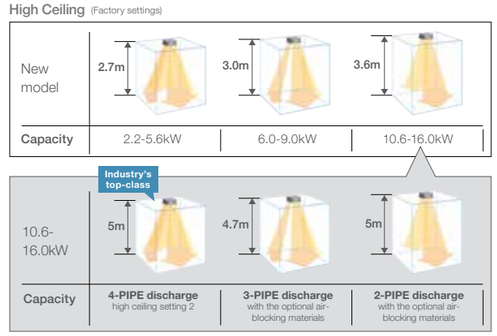
Simulation conditions:
140M 4-PIPE ceiling-mounted cassette type in cooling mode
/ Floor area of 225m ²
/ Ceiling height of 3m

Ample airflow: 36 m³/min
Industry's leading in the 140PU class.

High-ceiling installation (Up to 5m for 10.6kW and higher capacity models)

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

High Ceiling (Factory settings)



Ceiling height guidelines

*1 settings / Indoor unit	4-Way discharge			3-Way discharge (optional air-blocking materials)	2-Way discharge (optional air-blocking materials) *2
	Factory setting 1	High ceiling setting 1	High ceiling setting 2		
2.2-5.6kW	2.7	3.2	3.5	3.8	4.2
6.0-9.0kW	3.0	3.3	3.6	3.8	4.2
10.6-16.0kW	3.6	4.3	5.0	4.7	5.0

*1 When using the unit in a configuration other than the factory settings, it is necessary to make settings on site to increase airflow.
*2 Use air-blocking materials (CZ-CFU3) to completely block two discharge outlets for 2-PIPE airflow.

ECONAVI energy saving function (CZ-KPU3A is required)

Newly positioned humidity sensor on suction side of coil allows unit to achieve increased energy saving operation and comfort.

- Energy saving operation in case of low humidity during cooling operation
- Energy saving operation in case of high humidity during heating operation
- Energy saving operation based on activity amount and comfort and energy saving based on temperature and humidity.

Panels & panel parts

Normal panel: CZ-KPU3
ECONAVI panel: CZ-KPU3A

Wireless receiver (option)

Econavi panel

nanoe™X with 10 times*1 the concentration

nanoe™ X contains plenty of OH radicals that inhibit bacteria and viruses, deodorise unpleasant odours and keeps room air clean and fresh.

Invisible air contaminants are suppressed

*CZ-CNEXU1 & CZ-RTC5B to use nanoe™ X function.
*1 Panasonic in-house test report

Model Name			S-22MU2E5A	S-28MU2E5A	S-36MU2E5A	S-45MU2E5A	S-56MU2E5A
Power source			220/230/240 V, 1 phase - 50Hz/60Hz				
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6
		BTU/h	7,500	9,600	12,300	15,400	19,100
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3
		BTU/h	8,500	10,900	14,300	17,100	21,500
Power input	Cooling	kW	0.020/0.020/0.020	0.020/0.020/0.020	0.020/0.020/0.020	0.020/0.020/0.020	0.025/0.025/0.025
	Heating	kW	0.020/0.020/0.020	0.020/0.020/0.020	0.020/0.020/0.020	0.020/0.020/0.020	0.025/0.025/0.025
Running current	Cooling	A	0.21/0.21/0.20	0.21/0.21/0.20	0.21/0.21/0.20	0.21/0.21/0.20	0.24/0.23/0.22
	Heating	A	0.20/0.20/0.19	0.20/0.20/0.19	0.20/0.20/0.19	0.20/0.20/0.19	0.23/0.22/0.21
Fan	Type		Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan
	Air flow rate (H/M/L)	m^3/h	870/780/690	870/780/690	870/780/690	930/780/690	990/810/690
		L/s	233/200/183	233/200/183	233/200/183	250/217/200	275/225/192
	Motor output	kW	0.06	0.06	0.06	0.06	0.06
Sound power level (H/M/L)		dB	45/44/43	45/44/43	45/44/43	46/44/43	47/45/43
Sound pressure level (H/M/L)		dB(A)	30/29/28	30/29/28	30/29/28	31/29/28	32/30/28
Dimensions*	H x W x D	mm	256+(33.5) x 840 (950) x 840 (950)				
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25
Net weight (Panel)		kg	19 (+5)	19 (+5)	19 (+5)	19 (+5)	19 (+5)

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27℃ DB / 19℃ WB	20℃ DB
	Outdoor air temperature	35℃ DB / 24℃ WB	7℃ DB / 6℃ WB

Specifications are subject to change without notice.

* The values in ( ) for external dimensions and Net weight are the values for the optional ceiling panel.

nanoe™X

Test report for odours and mould suppression performance

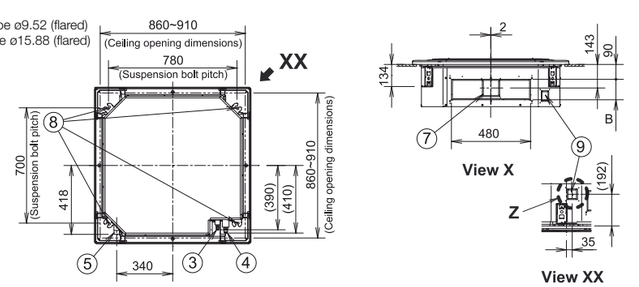
No.	Target Substance	Effectiveness	Testing Institute	Test Report No.	Method	Result
1	**Odours**	**Decrease by 0.7 level**	Gunma Research Center	Test Report No. 27055	nanoe™X was operated in a test space (55m^3) and the deodorisation effect on a piece of cloth impregnated with odour components of cigarette smoke was evaluated using 6 level odour intensity indication method.	**Decrease in odour intensity by 0.7 level after 2 hour of operation**
2	**Mould**	**Inhibit mould growth**	Institute of Environmental Biology	Test Report No.150901, 150904	Mould sensor was attached at indoor unit inside. In a test space (95m^3) at 25 degree and 75% humidity, AC cooling with nanoe™X was operated during 2 hour per day for 9 days.	**No mould growth after 9 days.**

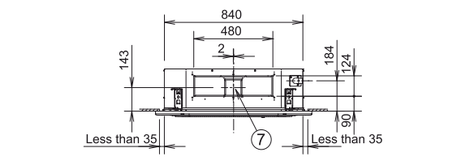
S-60MU2E5A	S-73MU2E5A	S-90MU2E5A	S-106MU2E5A	S-140MU2E5A	S-160MU2E5A
			220/230/240 V, 1 phase - 50Hz/60Hz		
6.0	7.3	9.0	10.6	14.0	16.0
20,500	24,900	30,700	36,200	47,800	54,600
7.1	8.0	10.0	11.4	16.0	18.0
24,200	27,300	34,100	38,900	54,600	61,400
0.035/0.035/0.035	0.040/0.040/0.040	0.040/0.040/0.040	0.090/0.090/0.090	0.095/0.095/0.095	0.105/0.105/0.105
0.035/0.035/0.035	0.040/0.040/0.040	0.040/0.040/0.040	0.085/0.085/0.085	0.090/0.090/0.090	0.100/0.100/0.100
0.34/0.33/0.32	0.37/0.36/0.35	0.39/0.38/0.37	0.74/0.71/0.68	0.77/0.74/0.71	0.85/0.82/0.79
0.33/0.32/0.31	0.36/0.35/0.34	0.38/0.37/0.36	0.72/0.69/0.66	0.75/0.72/0.69	0.83/0.80/0.77
Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan
1,260/960/780	1,350/960/780	1,380/1,110/840	2,040/1,500/1,140	2,160/1,560/1,200	2,220/1,680/1,440
350/283/233	367/283/233	383/317/250	550/450/350	600/433/333	600/483/383
0.06	0.06	0.06	0.09	0.09	0.09
51/47/44	52/47/44	53/50/47	59/53/49	60/54/50	61/55/53
36/32/29	37/32/29	38/35/32	44/38/34	45/39/35	46/40/38
			319+(33.5) x 840 (950) x 840 (950)		
Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)
VP-25	VP-25	VP-25	VP-25	VP-25	VP-25
20 (+5)	20 (+5)	20 (+5)	25 (+5)	25 (+5)	25 (+5)

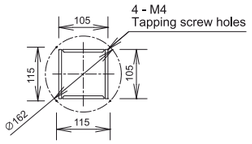
U2 TYPE 4-WAY CASSETTE Dimensions

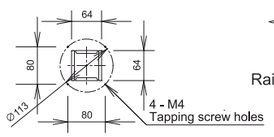
1 Air intake
2 Discharge outlet
3 Refrigerant piping (liquid pipe) 22-56 type ø6.35 (flared), 60-90 type ø9.52 (flared)
4 Refrigerant piping (gas pipe) 22-56 type ø12.7 (flared), 60-90 type ø15.88 (flared)
5 Drain tube connection port VP25 (outer dia. ø32)
6 Power supply port
7 Discharge duct connection port (ø150)
8 Suspension bolt hole (4-12×30 elongated hole)
9 Fresh air intake duct connection port (ø100) *
10 ECONAVI sensor (Only CZ-KPU3A)

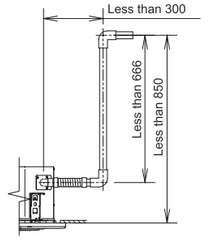
*1: Necessary to attach duct connecting flange (field supplied).
Filter size: 520 x 520 x 15

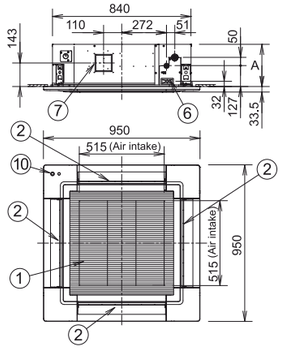


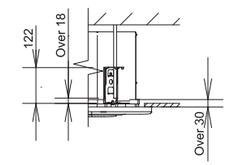












unit: mm

	22~90 type	106~160 type
A	256	319
B	124	187

The length of the suspension bolts should be selected so that there is a gap of 30mm or more below the lower surface of the ceiling (1mm or more below the lower surface of the main unit), as shown in the figure at right. If the suspension bolt is too long, it will contact the ceiling panel and the unit cannot be installed.

INDOOR UNITS / Y2 TYPE

Y2 TYPE 4-WAY Mini Cassette

Mini semi concealed cassette

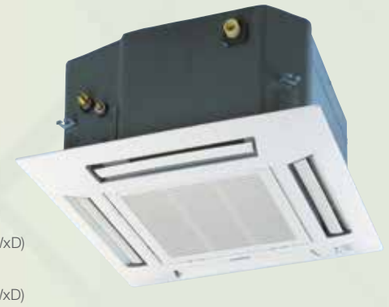
Designed to fit perfectly into a 600 x 600mm ceiling grid without the need to alter the bar configuration, the Mini Cassette Y2 Type is ideal for small commercial and retrofit applications.

PANEL

8 x 1060 x 680mm (HxWxD)

CZ-KPY3AW

8 x 1360 x 680mm (HxWxD)



ECONAVI ready

CZ-CENSC1

CZ-RTC5B

CZ-RWSK2

Self-diagnosing Function

Automatic Fan Operation

Mild dry

Intelligent Auto Swing

Automatic Restart Function

Auto Swing (Auto Flap Control)

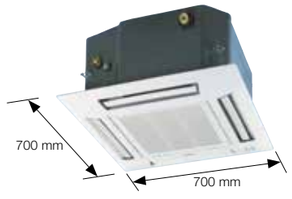
Built-in Drain Pump

Technical focus

- Mini cassette fits into a 600 x 600mm ceiling grid
- Anti-mould and anti-bacteria washable filters
- Powerful drain pump gives 750mm lift
- DC fan motor with variable speed and a new heat exchanger ensures efficient power consumption
- Fresh air knock out
- Multi directional air flow

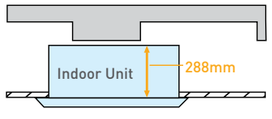
Compact design

The panel is a compact (700 × 700mm) so it can be installed even in a small room where space is limited.



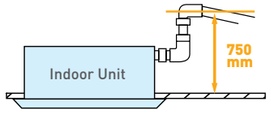
Lighter and slimmer, easier installation

When only 260mm of indoor body height, it can easily fit in limited spaces and tight spots.
(Required 288mm from bottom of panel to top of the unit)



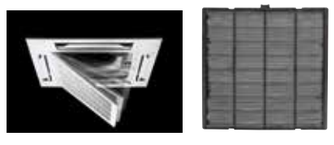
A drain height of up to 750 mm from the ceiling surface

The internal pump allows the drain pipe to be elevated up to 750mm above the base of the unit.



Anti-Mould Long-Life Air Filter

Anti-mould and anti-bacteria washable filter ensures clean, healthy air.



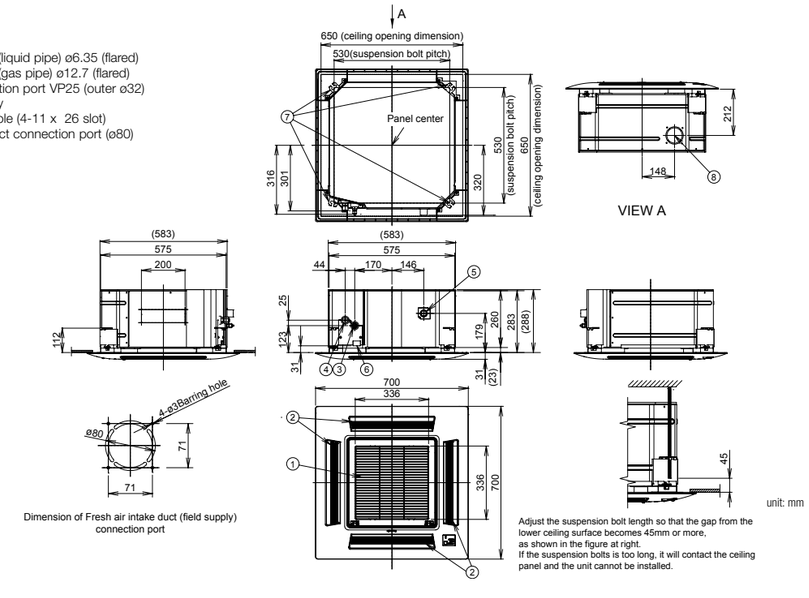
Model Name			S-22MY2E5A	S-28MY2E5A	S-36MY2E5A	S-45MY2E5A	S-56MY2E5A
Power source			220/230/240 V, 1 phase - 50, 60 Hz				
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6
		BTU/h	7,500	9,600	12,300	15,400	19,100
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3
		BTU/h	8,500	10,900	14,300	17,100	21,500
Power input	Cooling	kW	0.035	0.035	0.040	0.040	0.045
	Heating	kW	0.030	0.030	0.035	0.035	0.040
Running amperes	Cooling	A	0.30	0.30	0.30	0.32	0.35
	Heating	A	0.25	0.30	0.30	0.30	0.35
Fan motor	Type		Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan
	Airflow rate (H/M/L)	m^3/h	546/492/336	558/504/336	582/522/360	600/558/492	624/588/510
		L/s	155/140/93	160/140/93	165/151/100	172/160/137	185/163/145
	Output	kW	0.04	0.04	0.04	0.04	0.04
Power sound level (H/M/L)	Cooling	dB	50/46/40	50/46/40	5 /47/41	53/49/43	55/52/49
	Heating	dB	50/46/40	50/46/40	51/47/41	53/49/43	55/52/49
Sound pressure level (H/M/L)	Cooling	dB(A)	35/31/25	35/31/25	36/32/26	38/34/28	40/37/34
	Heating	dB(A)	35/31/25	35/31/25	36/32/26	38/34/28	40/37/34
Dimensions*	H x W x D	mm	288 (+31) x 575 (700) x 575 (700)	288 (+31) x 575 (700) x 575 (700)	288 (+31) x 575 (700) x 575 (700)	288 (+31) x 575 (700) x 575 (700)	288 (+31) x 575 (700) x 575 (700)
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25
Net weight*		kg	18 (+2.4)	18 (+2.4)	18 (+2.4)	18 (+2.4)	18 (+2.4)

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

*The values in ( ) for external dimensions and Net weight are the values for the optional ceiling panel.
Specifications are subject to change without notice.

Y2 TYPE 4-WAY CASSETTE Dimensions

1 Air intake grill
2 Air outlet
3 Refrigerant piping (liquid pipe) ø6.35 (flared)
4 Refrigerant piping (gas pipe) ø12.7 (flared)
5 Drain tube connection port VP25 (outer ø32)
6 Power supply entry
7 Suspension bolt hole (4-11 x 26 slot)
8 Fresh air intake duct connection port (ø80)



INDOOR UNITS / L1 TYPE

L1 TYPE 2-WAY Cassette

Semi Concealed Cassette

The L1 is very thin, compact and light, allowing flexible installation options.
A redesigned fan has been used to achieve this size and weight reduction.

PANEL

CZ-02KPL2
8 x 1060 x 680mm (HxWxD)

Big size panel (for S-73ML1E5)
CZ-03KPL2
8 x 1360 x 680mm (HxWxD)

CZ-RTC5B

CZ-RWSL2N

Self-diagnosing Function

Automatic Fan Operation

Mild dry

Intelligent Auto Swing

Automatic Restart Function

Auto Swing (Auto Flap Control)

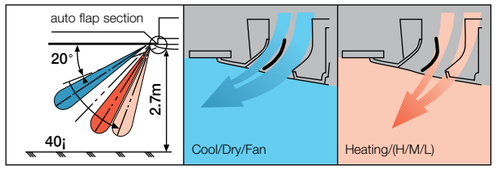
Built-in Drain Pump

Technical focus

- Airflow and distribution is automatically altered depending on the operational mode of the unit
- Drain up is possible up to 500mm via the built-in drain pump
- Simple maintenance

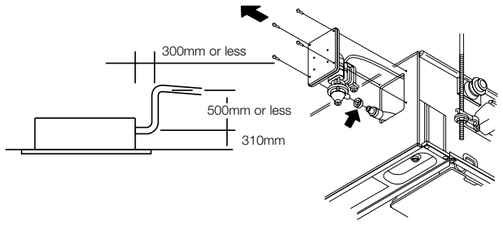
Auto flap control

Airflow and distribution is automatically altered depending on the operational mode (cooling or heating) of the unit.



Drain up is possible up to 500mm via the built-in drain pump.

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



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.

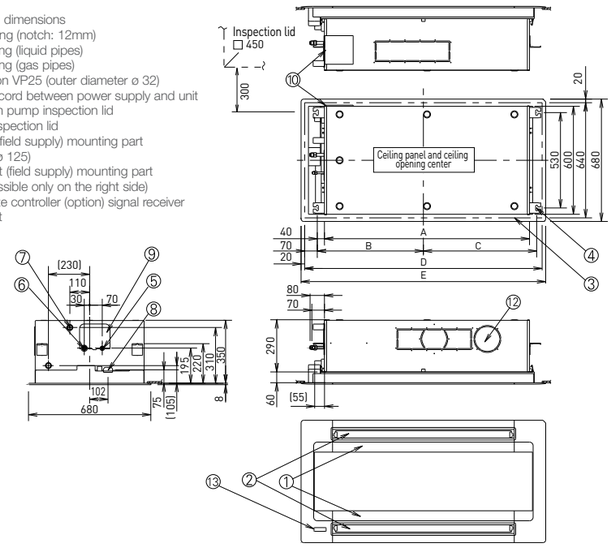
Model Name			S-22ML1E5	S-28ML1E5	S-36ML1E5	S-45ML1E5	S-56ML1E5	S-73ML1E5
Power source			220/230/240V, 1 phase - 50 / 60Hz					
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6	7.3
		BTU/h	7,500	9,600	12,000	15,000	19,000	25,000
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3	8.0
		BTU/h	8,500	11,000	14,000	17,000	21,000	27,000
Power input	Cooling	kW	0.086/0.090/0.095	0.086/0.092/0.097	0.088/0.093/0.099	0.091/0.097/0.103	0.091/0.097/0.103	0.135/0.145/0.154
	Heating	kW	0.055/0.058/0.062	0.055/0.060/0.064	0.057/0.061/0.066	0.060/0.065/0.070	0.060/0.065/0.070	0.100/0.109/0.117
Running current	Cooling	A	0.45/0.45/0.45	0.44/0.45/0.45	0.44/0.45/0.45	0.45/0.45/0.45	0.45/0.45/0.45	0.64/0.65/0.66
	Heating	A	0.29/0.29/0.30	0.28/0.29/0.30	0.28/0.29/0.30	0.29/0.29/0.30	0.29/0.29/0.30	0.46/0.48/0.49
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	480/420/360	540/480/420	580/520/460	660/540/480	660/540/480	1,140/960/840
		L/s	133/117/100	150/133/117	161/144/128	183/150/133	183/150/133	317/267/233
	Motor output	kW	0.03	0.03	0.03	0.03	0.03	0.05
Sound power level (H/M/L)		dB	40/38/35	44/40/37	45/42/39	46/44/40	46/44/40	49/46/44
Sound pressure level (H/M/L)		dB(A)	30/27/24	33/29/26	34/31/28	35/33/29	35/33/29	38/35/33
Dimensions*	H x W x D	mm	350+(8)x840 (1,060) x600 (680)	350+(8)x840 (1,060) x600 (680)	350+(8)x840 (1,060) x600 (680)	350+(8)x840 (1,060) x600 (680)	350+(8)x840 (1,060) x600 (680)	350+(8)x 1,140 (1,360) x600 (680)
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø9.52 (Ø3/8)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø15.88 (Ø5/8)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25	VP-25
Net weight*		kg	23 (+5.5)	23 (+5.5)	23 (+5.5)	23 (+5.5)	23 (+5.5)	30 (+9)

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

*The values in ( ) for external dimensions and Net weight are the values for the optional ceiling panel.
Specifications are subject to change without notice.

L1 TYPE 2-WAY CASSETTE Dimensions

1 Air intake
2 Air outlet
3 Ceiling opening dimensions
4 Suspension fitting (notch: 12mm)
5 Refrigerant piping (liquid pipes)
6 Refrigerant piping (gas pipes)
7 Drain connection VP25 (outer diameter ø 32)
8 Inlet for option cord between power supply and unit
9 Drain pan, drain pump inspection lid
10 Drain pump inspection lid
11 Round flange (field supply) mounting part (fresh air inlet ø 125)
12 Discharge duct (field supply) mounting part (installation possible only on the right side)
13 Wireless remote controller (option) signal receiver installation part



	22~56 type	73 type
A	840	1,140
B	440	590
C	480	630
D	1,020	1,320
E	1,060	1,360
③Ceiling opening dimensions	1,020x640	1,320x640
⑤Refrigerant piping (liquid pipes)	ø6.35	ø9.52
⑥Refrigerant piping (gas pipes)	ø12.7	ø15.88
⑫Duct connection port (only on the right side)	⑰x 1 pc.	⑰x 2 pc.

unit: mm

INDOOR UNITS / D1 TYPE

D1 TYPE 1-WAY Cassette

Semi concealed slim cassette

Designed for installation within the ceiling void, the D1 range of slimline 1-PIPE cassettes feature a quiet yet powerful fan that can reach the floor up 4.2m from ceiling height.

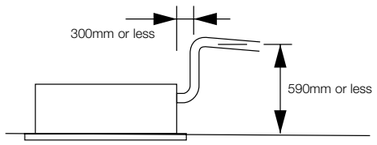
Self-diagnosing Function | Automatic Fan Operation | Mild dry | Intelligent Auto Swing | Automatic Restart Function | Auto Swing (Auto Flap Control) | Built-in Drain Pump

Technical focus

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

Drain height

A built-in drain pump provides up to 590mm lift from ceiling height for flexible install options.



With 3 types of air-blow systems, the units can be used in various ways.

(1) One-direction “down-blow” system

Powerful one-direction “down-blow” system reaches the floor even from high ceilings (up to 4.2m).

(2) Two-direction ceiling-mounted system

“Down-blow” and “front-blow” systems are combined in a ceiling-mounted unit to blow air over a wide area.

(3) One-direction ceiling-mounted system

This powerful ceiling-mounted “front-blow” system efficiently air-conditions the space in front of the unit.
(Additional accessories required)

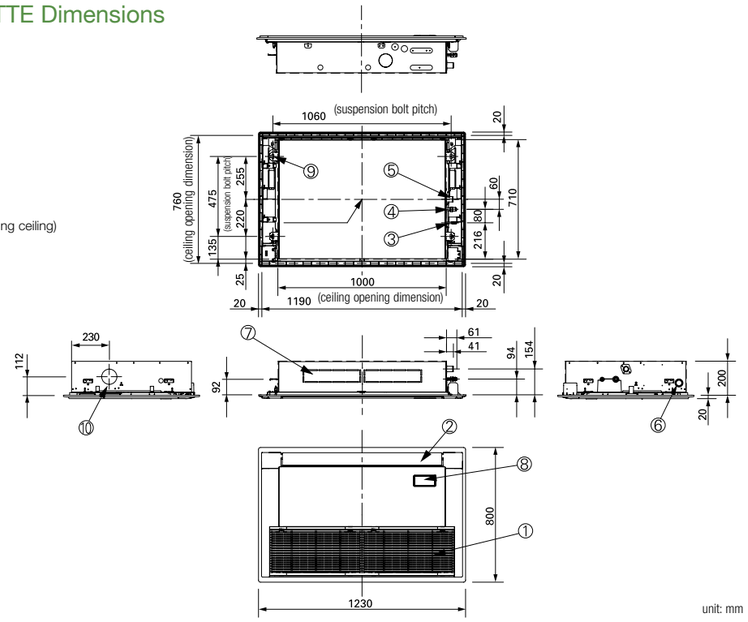
Model Name			S-28MD1E5	S-36MD1E5	S-45MD1E5	S-56MD1E5	S-73MD1E5
Power source			220/230/240 V, 1 phase - 50 / 60 Hz				
Cooling capacity		kW	2.8	3.6	4.5	5.6	7.3
		BTU/h	9,600	12,000	15,000	19,000	25,000
Heating capacity		kW	3.2	4.2	5.0	6.3	8.0
		BTU/h	11,000	14,000	17,000	21,000	27,000
Power input	Cooling	kW	0.050/0.051/0.052	0.050/0.051/0.052	0.050/0.051/0.052	0.058/0.060/0.061	0.086/0.087/0.089
	Heating	kW	0.039/0.040/0.042	0.039/0.040/0.042	0.039/0.040/0.042	0.046/0.048/0.049	0.075/0.076/0.077
Running current	Cooling	A	0.40/0.39/0.39	0.40/0.39/0.39	0.40/0.39/0.39	0.46/0.46/0.46	0.71/0.70/0.69
	Heating	A	0.36/0.35/0.35	0.36/0.35/0.35	0.36/0.35/0.35	0.42/0.41/0.41	0.66/0.65/0.63
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	720/600/540	720/600/540	720/660/600	780/690/600	1,080/900/780
		L/s	200/167/150	200/167/150	200/183/167	217/192/167	300/250/217
	Motor output	kW	0.05	0.05	0.05	0.05	0.05
Sound power level (H/M/L)		dB	47/45/44	47/45/44	47/46/45	49/47/45	56/51/47
Sound pressure level (H/M/L)		dB(A)	36/34/33	36/34/33	36/35/34	38/36/34	45/40/36
Dimensions*	H x W x D	mm	200+(20) x 1,000 (1,230) x 710 (800)	200+(20) x 1,000 (1,230) x 710 (800)	200+(20) x 1,000 (1,230) x 710 (800)	200+(20) x 1,000 (1,230) x 710 (800)	200+(20) x 1,000 (1,230) x 710 (800)
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø9.52 (Ø3/8)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø15.88 (Ø5/8)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25
Net weight*		kg	21 (+5.5)	21 (+5.5)	21 (+5.5)	21 (+5.5)	22 (+5.5)

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

*The values in ( ) for external dimensions and Net weight are the values for the optional ceiling panel.
Specifications are subject to change without notice.

D1 TYPE 1-PIPE CASSETTE Dimensions

1 Air intake grille
2 Air outlet
3 Refrigerant piping (liquid pipes)
Size 28 to 56: Ø6.35 (flared)
Size 73: Ø9.52 (flared)
4 Refrigerant piping (gas pipes)
Size 28 to 56: Ø12.7 (flared)
Size 73: Ø15.88 (flared)
5 Drain connection VP25 (outer Ø32)
6 Power supply entry
7 Discharge duct connection port (for descending ceiling)
8 Wireless remote control receiver (option)
9 Suspension mounting (4-12 x 30 slot)
10 Fresh air intake (Ø100)



INDOOR UNITS / T2 TYPE

T2 TYPE Ceiling

DC motor

Ceiling mounted

Providing outstanding energy-saving performance and comfortable, long-distance air flow distribution, it's recommended for stores and schools.

ECONAVI ready

Self-diagnosing Function | Automatic Fan Operation | Mild dry | Intelligent Auto Swing | Automatic Restart Function | Auto Swing (Auto Flap Control)

Technical focus

- Lower sound levels
- Standardised height and depth for all models
- Long and wide air distribution
- Easy to install and maintain
- Fresh air knockout

Compact Looking, Stylish, One-Motion Design

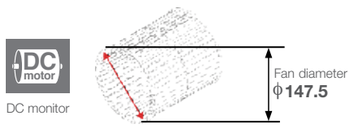
With its streamlined, one-motion form, the unit looks slim and compact when installed for a neat appearance in any room. When not operating, the louvre closes to provide an elegant look while keeping the unit clean.

Energy-Saving Technology Delivering Top-Class Efficiency

Optimisation of the shape of the casing and fan assures greater air flow and higher efficiency. Energy-saving performance is top class in the industry.

Top Class Energy Saving

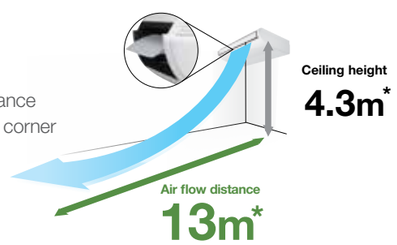
Large Diagonal Air Flow Fan



Comfortable, Long-Distance Air Flow Distribution

The shape of the outlet has been optimised to provide long-distance air flow distribution. Even in deep spaces, air flow reaches every corner for exceptionally comfortable air conditioning.

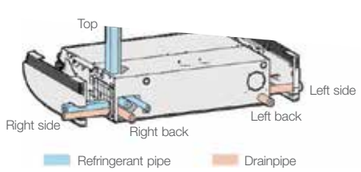
High Ceiling Setting *Setting by remote control	Air flow distance		
	112	140	160
4.3m	12m	13m	13m



*Results are based on specific testing conditions.

Multiple Piping Directions For Flexible Installation

The 5-directional drain pipe and 3-directional refrigerant pipe make installation much easier. And the neat fit with walls and ceilings assures more installation flexibility.



Model Name			S-36MT2E5A	S-45MT2E5A	S-56MT2E5A	S-73MT2E5A	S-106MT2E5A	S-140MT2E5A
Power source			220 / 230 / 240 V, 1 phase - 50 / 60 Hz					
Cooling capacity		kW	3.6	4.5	5.6	7.3	10.6	14.0
		BTU/h	12,300	15,400	19,100	24,900	36,200	47,800
Heating capacity		kW	4.2	5.0	6.3	8.0	11.4	16.0
		BTU/h	14,300	17,100	21,500	27,300	38,900	54,600
Power input	Cooling	kW	0.035/0.035/0.035	0.040/0.040/0.040	0.040/0.040/0.040	0.055/0.055/0.055	0.080/0.080/0.080	0.100/0.100/0.100
	Heating	kW	0.035/0.035/0.035	0.040/0.040/0.040	0.040/0.040/0.040	0.055/0.055/0.055	0.080/0.080/0.080	0.100/0.100/0.100
Running current	Cooling	A	0.37/0.36/0.35	0.39/0.38/0.37	0.39/0.38/0.37	0.45/0.44/0.43	0.69/0.67/0.65	0.82/0.79/0.77
	Heating	A	0.37/0.36/0.35	0.39/0.38/0.37	0.39/0.38/0.37	0.45/0.44/0.43	0.69/0.67/0.65	0.82/0.79/0.77
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	840/720/630	900/750/630	900/750/630	1,260/1,080/930	1,800/1,500/1,380	1,920/1,680/1,440
		L/s	233/200/175	250/208/175	250/208/175	350/300/258	500/417/383	533/467/400
	Motor output	kW	0.043	0.043	0.043	0.074	0.111	0.111
Sound power level (H/M/L)		dB	54/50/48	55/51/48	55/51/48	57/53/51	60/55/54	62/58/55
Sound pressure level (H/M/L)		dB(A)	36/32/30	37/33/30	37/33/30	39/35/33	42/37/36	44/40/37
Dimensions	H x W x D	mm	235 x 960 x 690	235 x 960 x 690	235 x 960 x 690	235 x 1,275 x 690	235 x 1,590 x 690	235 x 1,590 x 690
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)
	Drain piping		VP-20	VP-20	VP-20	VP-20	VP-20	VP-20
Net weight		kg	27	27	27	33	40	40

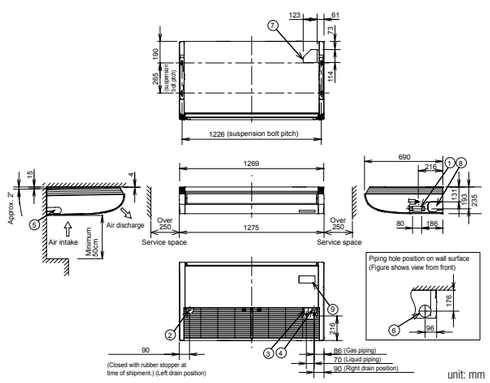
GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

Specifications are subject to change without notice.

T2 PIPE CEILING Dimensions

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

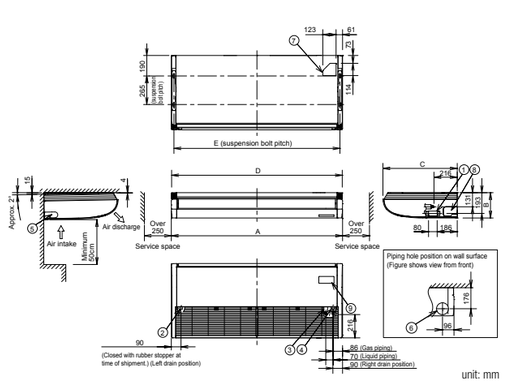
1	Drain port VP20	Inside diameter ø26mm, drain hose supplied
2	Left drain position	
3	Refrigerant liquid piping	Ø6.35mm for 36~56type, Ø9.52mm for 73~140type
4	Refrigerant gas piping	Ø12.77mm for 36~56type, Ø15.88mm for 73~140type
5	Left side drain hose outlet port (cutout)	
6	Tubing hole on wall surface	Ø100mm
7	Upper side piping port	
8	Right side drain hose outlet port (cutout)	
9	Wireless remote controller receiver installation location	



unit: mm

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

	A	B	C	D	E
106-140 type	1,590	235	690	1,584	1,541
73 type	1,275	235	690	1,269	1,226



unit: mm

INDOOR UNITS / P1 TYPE

P1 TYPE Floor Standing

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

CZ-RTC5B

CZ-RWSK2 +
CZ-RWSC3

Self-diagnosing Function

Automatic Fan Operation

Mild dry

Automatic Restart Function

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

Effective perimeter air conditioning

Model Name			S-22MP1E5	S-28MP1E5	S-36MP1E5	S-45MP1E5	S-56MP1E5	S-71MP1E5
Power source			220/230/240 V, 1 phase - 50 / 60 Hz					
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6	7.1
		BTU/h	7,500	9,600	12,000	15,000	19,000	24,000
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3	8.0
		BTU/h	8,500	11,000	14,000	17,000	21,000	27,000
Power input	Cooling	kW	0.051/0.056/0.061	0.051/0.056/0.061	0.079/0.085/0.091	0.116/0.126/0.136	0.116/0.126/0.136	0.150/0.160/0.170
	Heating	kW	0.036/0.040/0.045	0.036/0.040/0.045	0.064/0.070/0.076	0.079/0.091/0.101	0.079/0.091/0.101	0.110/0.120/0.130
Running current	Cooling	A	0.24/0.25/0.26	0.24/0.25/0.26	0.37/0.38/0.39	0.54/0.56/0.58	0.54/0.56/0.58	0.70/0.72/0.73
	Heating	A	0.17/0.18/0.19	0.17/0.18/0.19	0.30/0.31/0.32	0.37/0.41/0.43	0.37/0.41/0.43	0.52/0.54/0.56
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m^3/h	420/360/300	420/360/300	540/420/360	720/540/480	900/780/660	1,020/840/720
		L/s	117/100/83	117/100/83	150/117/100	200/150/133	250/217/183	283/233/200
	Motor output	kW	0.01	0.01	0.02	0.02	0.03	0.06
Sound power level (H/M/L)		dB	44/41/39	44/41/39	50/46/40	49/46/42	50/47/42	52/49/46
Sound pressure level (H/M/L)		dB(A)	33/30/28	33/30/28	39/35/29	38/35/31	39/36/31	41/38/35
Dimensions	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
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø9.52 (Ø3/8)
	Gas	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø15.88 (Ø5/8)
	Drain piping		VP-20	VP-20	VP-20	VP-20	VP-20	VP-20
Net weight		kg	29	29	29	39	39	39

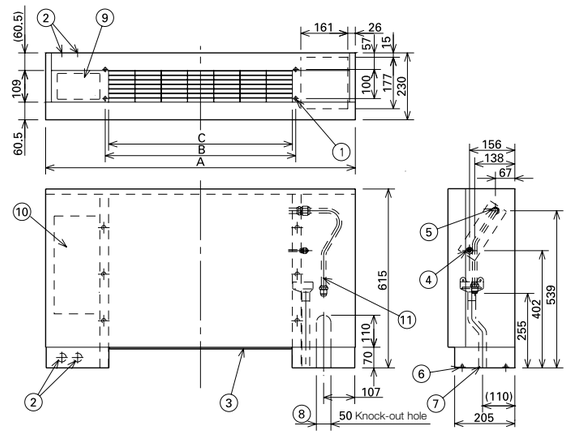
GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

Specifications are subject to change without notice.

P1 TYPE FLOOR STANDING
Dimensions

1 4 x Ø12 holes (for floor fixing)
2 Power supply outlet
3 Air filter
4 Refrigerant piping (liquid pipes)
5 Refrigerant piping (gas pipes)
6 Level adjustment bolt
7 Drain outlet VP20 (with vinyl hose)
8 Refrigerant piping connection port (bottom or rear)
9 Operation switch (remote controller RCS-SH80AG) mounting part
10 Electric equipment box
11 Accessory copper pipe for gas pipe connection

Indoor unit	A	B	C	Liquid pipes	Gas pipes
22 to 36 type	1,065	665	632	Ø6.35	Ø12.7
45 type	1,380	980	947		
56 type					
71 type				Ø9.52	Ø15.88



unit: mm

INDOOR UNITS / R1 TYPE

R1 TYPE Concealed Floor Standing

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

CZ-RTC5B

CZ-RWSK2+
CZ-RWSC3

Self-diagnosing Function

Automatic Fan Operation

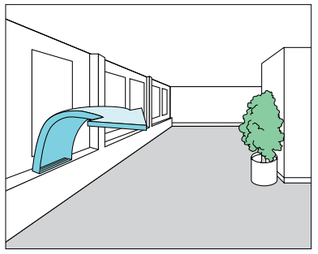
Mild dry

Automatic Restart Function

Technical focus

- Chassis unit for discrete customisable installation
- Complete with removable filters
- Pipes can be connected to the unit either from the bottom or rear
- Easy to install

Perimeter air conditioning with high interior quality



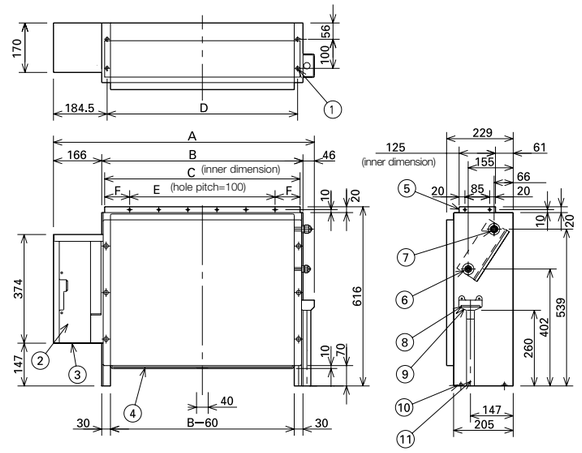
Model Name			S-22MR1E5	S-28MR1E5	S-36MR1E5	S-45MR1E5	S-56MR1E5	S-71MR1E5
Power source			220/230/240 V. 1 phase - 50. 60 Hz					
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6	7.1
		BTU/h	7,500	9,600	12,000	15,000	19,000	24,000
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3	8.0
		BTU/h	8,500	11,000	14,000	17,000	21,000	27,000
Power input	Cooling	kW	0.051/0.056/0.061	0.051/0.056/0.061	0.079/0.085/0.091	0.116/0.126/0.136	0.116/0.126/0.136	0.150/0.160/0.170
	Heating	kW	0.036/0.040/0.045	0.036/0.040/0.045	0.064/0.070/0.076	0.079/0.091/0.101	0.079/0.091/0.101	0.110/0.120/0.130
Running current	Cooling	A	0.24/0.25/0.26	0.24/0.25/0.26	0.37/0.38/0.39	0.54/0.56/0.58	0.54/0.56/0.58	0.70/0.72/0.73
	Heating	A	0.17/0.18/0.19	0.17/0.18/0.19	0.30/0.31/0.32	0.37/0.41/0.43	0.37/0.41/0.43	0.52/0.54/0.56
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	420/360/300	420/360/300	540/420/360	720/540/480	900/780/660	1,020/840/720
		L/s	117/100/83	117/100/83	150/117/100	200/150/133	250/217/183	283/233/200
	Motor output	kW	0.01	0.01	0.02	0.02	0.03	0.06
Sound power level (H/M/L)		dB	44/41/39	44/41/39	50/46/40	49/46/42	49/46/42	52/49/46
Sound pressure level (H/M/L)		dB(A)	33/30/28	33/30/28	39/35/29	38/35/31	39/36/31	41/38/35
Dimensions	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
Pipe connections	Liquid	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø9.52 (Ø3/8)
	Gas 410 A	mm (inches)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)	Ø15.88 (Ø5/8)
	Drain piping		VP-20	VP-20	VP-20	VP-20	VP-20	VP-20
Net weight		kg	21	21	21	28	28	28

GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

Specifications are subject to change without notice.

R1 TYPE CONCEALED FLOOR STANDING Dimensions

1 4 x Ø12 holes (for floor fixing)
2 Electric equipment box
3 Power supply outlet
4 Air filter
5 Discharge duct connection flange
6 Refrigerant connection outlet (liquid pipes)
7 Refrigerant connection outlet (gas pipes)
8 Drain filter
9 Drain pan
10 Level adjustment bolt
11 Drain outlet VP20 (with vinyl hose)



unit: mm

Indoor unit	A	B	C	D	E	F	Liquid pipes	Gas pipes
22 to 36 type	904	692	672	665	500	86	Ø6.35	Ø12.7
45 type	1,219	1,007	1,002	980	900	51		
56 type								
71 type							Ø9.52	Ø15.88

INDOOR UNITS

SMART CONTROL MANAGEMENT SYSTEMS

Smart Control Management Solutions

Panasonic has developed the latest range of smart control management solutions offering streamlined approaches for each unique need. From individual remote control for residential split systems, up to the newest cloud based technology, allowing you to control each of your buildings around the world, all from your portable device.

Centralised Control System

This integrated control system is ideal for large-scale spaces, and achieves more efficient operation.

Individual Controllers

A remote control solution to optimise the temperature in each room.

PAC/VRF Smart Connectivity

Through thorough energy management, Panasonic's PAC/VRF Smart Connectivity is a completely new, state-of-the-art solution providing energy saving and comfort as well as simple installation, operating and running.

Panasonic AC Smart Cloud

With a simple click, all your units from several locations, receive status updates in real-time reducing the chance of breakdowns and optimising costs.

Life Is On | Schneider Electric

PAC/VRF Smart Connectivity

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Life Is On | Schneider Electric

PAC/VRF Smart Connectivity

PAC/VRF Smart Connectivity offers efficient energy management and a new air conditioning control solution with high IAQ.

Energy Management System for Rooms	Each room is monitored by high-precision sensors, making it possible to make every room's temperature comfortable without wasting energy.
Management System for the Entire Building	A Building Energy Management System (BEMS) can also be connected for Plug & Play centralised control of the building's entire energy consumption.

Advantages

Dramatic Reduction of OpEx with Outstanding IAQ.
- 3 Built-in sensors: Temperature, RH and Light (PIR Optional)
- ZigBee wireless sensors: CO_2, window/door, human presence.

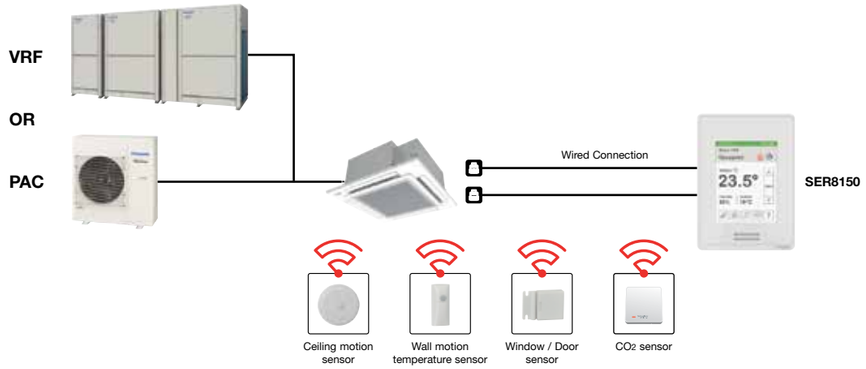
User-/Owner-friendly.
- Colour touch screen
- Ease and simply of use
- 20 Languages
- Easy-to-understand error description

Ultimate Customisation.
- Background colour customisable
- Custom display/icons, messages
- Programmable logic (also stand alone)

Easy Design and Plug and Play to Reduce CapEx.
- Simple Plug & Play PAC/VRF connection to Building Energy Management System (BEMS)
- Stand alone or BEMS connected
- Easy Installation of Zigbee Sensors

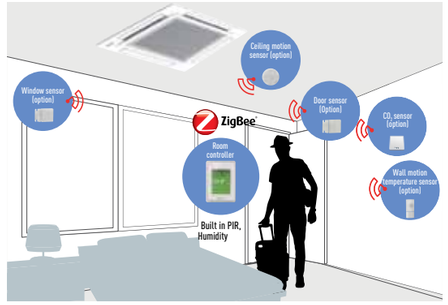
Energy Management System for Rooms

By installing a ceiling motion sensor, wall motion temperature sensor, window/door sensor, and CO_2 sensor in the room, ideal, waste-free air conditioning is achieved.



Sensing Technology

Using sensors from Schneider Electric, high-quality occupancy control and automatic IAQ control were realised. The sensors detect the presence or absence of occupants, and the opening and closing of doors and windows to achieve the most efficient energy management for exceptional air-conditioned comfort. Flexible installation is possible to match different applications and building features such as walls, ceilings and proximity to doors and windows. No wiring means extra installation versatility.



Batteries last for up to five years and are easy to install and replace.

SED-WMS-P-5045 Window / Door sensor	SED-CMS-P-5045 Ceiling motion sensor	SED-WMS-P-5045 Wall motion temperature sensor	SED-CO2-G-5045 CO_2 sensor

* Specifications are subject to change.

Built-in PIR Sensor Control

Built-in occupancy sensors detect the presence or absence of people in each room for optimum control. This creates an environment of high productivity and efficiency.

Humidity Sensor Control

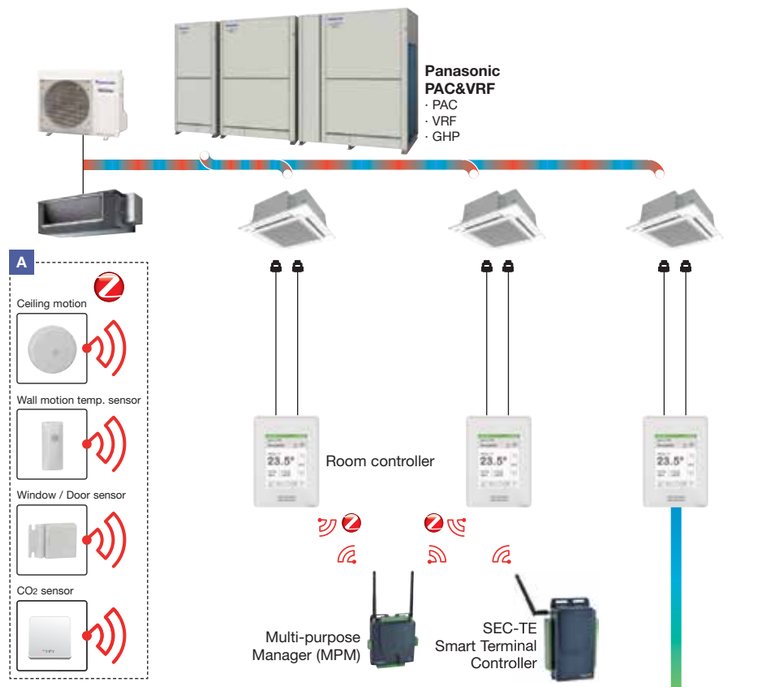
Humidity sensors enable automatic dehumidification for the optimum IAQ regardless of climatic conditions.

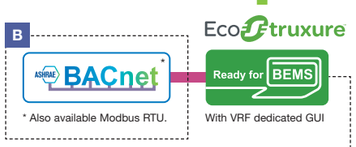
Management System for the Entire Building

The smarter solution to simplify energy management, optimise building efficiency and drive savings.

Plug and Play BEMS connection.

With the SER8150 connection to BEMS is extremely easy. Better still, a remote controller is all that's needed to enable use as a stand-alone system. In addition to dramatically reducing the burden on system integrators, this cuts costs.





A SER8150 smart controller with direct hub to ZigBee® Pro sensors.
Great Occupancy and IAQ control.
Ex: Hotel room occupancy check by PIR sensor, IAQ by CO_2 sensor, Door / Window contacts.

B BACnet MS/TP or Modbus RTU direct connection can be assigned a device address by room scale.

C For Schneider Electric BEMS connection, Panasonic VRF widgets enable easy Plug and Play.

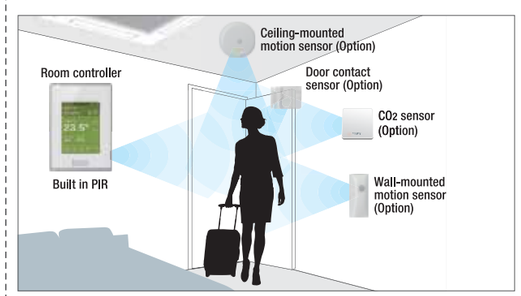
* Graphic shows combination of products from Panasonic, Schneider Electric and others. Currently, some products might not available in Australia, please consult authorised dealer for more details.

Smart Management Solutions

1 Hotels

Room Key Cardless Solution with Programmable Controller

The SER8150 and Zigbee Sensor automatic detection function offer optimal air conditioning regardless of whether there is a hotel room key or not. Sensors detect the presence or absence of occupants and the opening and closing of doors and windows for the optimum air-conditioned environment guests expect. Automatic control ensures the most efficient operation when guests are away or when windows are open. This contributes to an appreciable reduction in operation costs.



System Example

1. If a guest's presence is detected and the window is closed, the air-conditioner can be operated.
2. If the room is empty and RH is over 60%, dry mode is automatically selected.

* System integration may be required.

A truly comfortable experience for guests

Easy-to-understand, refined on-screen images enable display of hotel logos and original welcoming messages. Colour and design can also be customised for different facilities to create an even more comfortable environment for guests.

2 Small and Medium Offices

CO_2 sensors (option) and Humidity sensors

CO_2 sensors (option) take measurements in units of ppm, and humidity sensors enable fine air quality control. This creates the most comfortable space for occupants while contributing to improved employee satisfaction.

3 Super Markets

Humidity sensors

Humidity sensors enable automatic dehumidification for the optimum IAQ regardless of climatic conditions. This creates an even more comfortable environment for customers, employees, and products themselves.

Innovative and Unrivalled Advantages

Colour and Design to Match Office Interiors

Colour combinations and design can be set to match different facilities.

Customisation in 20 Languages Possible

The display can be customised to match the native languages of guests to enable smooth, stress-free communication for hospitality at its finest.

*Currently 6. More languages scheduled for a late 2018 release.

Easy-to-Understand Error Description

Error description during an emergency is easy to understand, enabling staff to respond quickly.

Programmable Logic

Full customisation of remote control logic possible, and updating to match conditions.

Smart Connectivity Devices

Schneider Electric brand - SER8150

SED-WDS-P-5045
Window / Door sensor

SED-CMS-P-5045
Ceiling motion sensor

SED-WMS-P-5045
Wall motion temperature sensor

SED-CO2-G-5045
CO_2 sensor

Features

- Up to 5-year battery life, batteries included
- Battery level is a point
- Sensor points visible in SBO when SER8150 is integrated via BACnet MS/TP
- Sensor status and battery level visible in SBE when SER8150 is integrated via ZigBee® Pro
- Integration to SBE only recommended when each MPM is connected to Ethernet and set as a ZigBee® Coordinator node

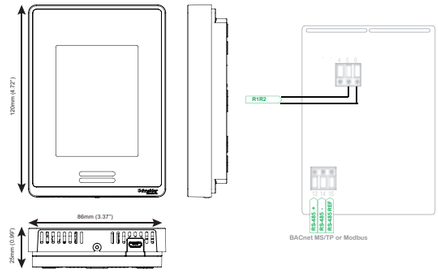
Remote Controller	Description
SER8150R0B1194	Panasonic Net Con, RH, No PIR, R1/R2 (Wired)
SER8150R5B1194	Panasonic Net Con, RH, PIR, R1/R2 (Wired)
Interface	**Description**
VCM8000V5094P	Panasonic wireless Zigbee Pro Com.card
VCM8000R94BOX *	Panasonic R1/R2 (Wired) to Zigbee adaptor box No Brand
VCM8000V5094G *	Wireless Zigbee Pro / Green Com card

Sensor	Description
SED-WMS-P-5045	SED SEN OCC WALL ZP
SED-WDS-P-5045	SED SW DOR/WIN ZP
SED-CMS-P-5045	SED SEN OCC CEIL ZP
SED-CO2-G-5045 *	Wireless Zigbee Green CO2 sensor
Fascia	**Description**
FAS-00	Silver
FAS-01	White
FAS-03	Translucent White
FAS-05	Light Tan Wood
FAS-06	Brown Wood
FAS-07	Dark Brown Wood
FAS-10	Brushed Steel

1. VCM8000V5094P : Required in case wired solution connecting with Zigbee Sensors.
2. VCM8000V5094G : Required in case wired solution need to do MPM connection.
3. As for the products marked with*, the time of release will be announced later.
4. Specifications are subject to change.

PAC/VRF Smart Connectivity controller external dimensions

Room Controller SER8150 - Dimensions & Wiring & Specifications



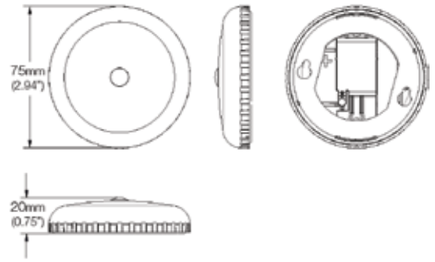
Dimensions
Height: 12cm/4.72in
Width: 8.6cm/3.39in
Depth: 2.7cm/1.06in
Power Requirements
16 Vdc from Panasonic R-R IDU connectors
50/60 Hz, 4VA, Class 2 Supply
Range from Indoor Unit
Recommended 500ft (150 m)
Operating Conditions
0 °C to 50°C (32°F to122°F)
0% to 95% R.H. non-condensing
Storage Conditions
-30°C to 50°C (-22°F to 122°F)
0% to 95% R.H. non-condensing
Temperature Sensor
Local 10 K NTC type 2 thermistor
Temperature Sensor Resolution
± 0.1°C (± 0.2°F)
Temperature Sensor Accuracy
± 0.5°C (± 0.9°F) @ 21°C (70°F) typical calibrated
Humidity Sensor and Calibration
Single point calibrated bulk polymer type sensor

Humidity Sensor Precision
Reading range from 10 to 90 % R.H. non-condensing 10 to 20% precision: 10%
20% to 80% precision: 5%
80% to 90% precision: 10%
Humidity Sensor Stability
Less than 1.0 % yearly (typical drift)
Wiring
Maximum wire length between last indoor unit to SER8150RxB1194 equals 490ft (150m) with AWG #18 wire (0.82 mm ^{2}).
Refer to Panasonic VRF guidelines "Wiring System Diagram for Remote Controller" for this limitation.
Approximate Shipping Weight
0.34 kg (0.75 lb)
Safety Standards All Models
LVD Directive 2006/95/EC
EN 60950-1:2006/A2:2013
UL 873 CSA C22.2 No.24-93
EMC Standards All Models
EMC Directive 2004/108/EC
IEC 61326-1:2005
FCC 15 Subpart B
ICES-003

Radio Standards (Wireless Models)
R&TTE Directive 1999/5/EC
IEC 61326-1:2005
EN 301 489-1 V1.9.2
EN 301 328 V1.8.1
FCC 15 Subpart C, Class A
RSS 210
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

Check with your local government for instruction on disposal of these products.

Ceiling Motion Sensor SED-CMS-P-5045 - Dimensions & Wiring & Specifications

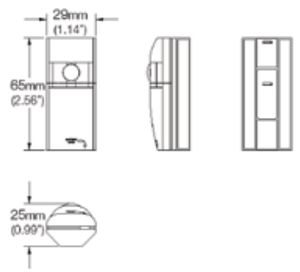


Dimensions	75mm diameter x 20mm thick (2.94in diameter x 0.75in thick)
Colour	White
Weight	50g (1.8oz) with batteries
Communication	ZigBee, HA1.2 Compatible
Communication Range	Up to 40ft (12m), open field 300ft (100m)
Detection Range	Maximum: 90 deg cone, 16.5ft (5m) Recommended: 45 deg, 12ft (3.6m)
Battery Voltage	1.5VDC Alkaline
Battery Cell	2 x AAA (recommended Panasonic LR03XWA)
Battery Life	Up to 5 years
Ambient Temperature	-10 °C to +50 °C (+14 °F to +122 °F)

Certification

Check with your local government for instruction on disposal of these products.

Wall Motion Sensor SED-WMS-P-5045 - Dimensions & Wiring & Specifications

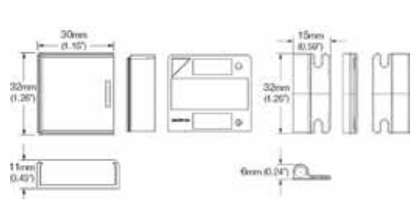


Dimensions	65mm H x 29mm W x 25mm D (2.56in H x 1.14in W x 0.99in D)
Color	White
Weight	30g (1.06oz) with battery
Communication	ZigBee, HA1.2 Compatible
Communication Range	Up to 40ft (12m) open field 300ft (100m)
Detection Range	Maximum: 90 deg cone, 16.5ft (5m) Recommended: 47 deg, 16ft (5m)
Battery Voltage	3.0VDC Lithium
Battery Cell	CR2 (recommended Panasonic CR15H270)
Battery Life	Up to 5 years
Ambient Temperature	-10 °C to +50 °C (+14 °F to +122 °F)

Certification

Check with your local government for instruction on disposal of these products.

Door/Window Contact SED-WDS-P-5045 - Dimensions & Wiring & Specifications



Sensor Dimensions	32mm wide x 30mm high x 11mm thick (1.26in wide x 1.16in high x 0.43in thick)
Magnet Dimensions	15mm wide x 32mm high x 6mm thick (0.59" wide x 1.26" high x 0.24" thick)
Color	White
Weight	11g (0.38oz) with battery
Communication	ZigBee, HA1.2 Compatible
Communication Range	Up to 40ft (12m) open field 300ft (100m)
Battery Voltage	3.0VDC Lithium
Battery Cell	CR2032 (recommended Panasonic CR2032)
Battery Life	Up to 5 years
Ambient Temperature	-10 °C to +50 °C (+14 °F to +122 °F)

Certification

Check with your local government for instruction on disposal of these products.

Panasonic AC Smart Cloud

The Panasonic AC Smart Cloud solution allows you to have complete control of all your installations. With a simple click all your units from several locations receive status updates in real-time, reducing the chance of breakdowns and optimising costs.

What is AC Smart Cloud?

Using a cloud computing system, AC Smart Cloud lets you monitor and manage the energy consumption of multiple locations from anywhere, anytime.

AC Smart Cloud is suitable for various facilities

Flexible and Scalable Solution

- **Energy monitoring**
- **Anytime, anywhere**
- **Site(s) management**

Centralise control of your business premises, from wherever you are, 24/7/365. It doesn't matter how many sites you have, or where they are! The AC Smart Cloud system from Panasonic allows you to have complete control of all your installations, from your tablet or your computer. In a simple click, receive status updates in real-time of all your installations, reducing the chance of breakdowns and optimising costs.

Flexible solution for your business.

Scalable solution for your business.

* Customised to meet user demand / Upgraded new functions / Upgraded by new products / IT smart management.

Key Functions and Uniqueness

Multi site monitoring.

- It doesn't matter how many sites you have, easy to manage, operate, compare per sites, locations, rooms.

Powerful statistics for energy savings.

- Power consumption, capacity, efficiency level can be compared according to variable parameters (Yearly / monthly / weekly/ daily bases)

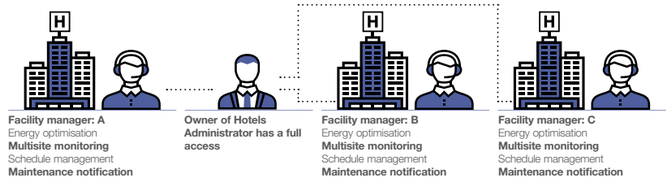
Schedule setting.

- Weekly / holiday timer setting as you want
- One setting can be copied to other sites

Maintenance notification.

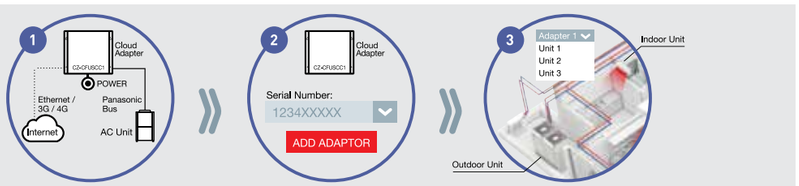
- Error notification by email and with floor layout
- Maintenance notification of PAC / VRF outdoor units

User customisation.
Site administrator can create users as desired and assign customised profiles.



3 Steps to Set Up AC Smart Cloud

Panasonic AC Smart Cloud is very easy to install on existing and new installations. The communication adaptor (CZ-CFUSCC1) is connected to the Panasonic bus and the Ethernet. Then in only 3 steps, the cloud system is running.



FSV CONTROLLERS

FSV Controllers

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

ECONAVI Sensor

CZ-CENSC1

Utilises ECONAVI Sensor and Control Program technologies to detect where energy is normally wasted and self-adjusts cooling power to reduce energy waste.

- Activity detection
- Absence detection

OPERATION SYSTEM	INDIVIDUAL CONTROL SYSTEMS		
Requirements	Advanced operation	Normal operation	Operation from anywhere in the room
External appearance			
Type, model name	Deluxe Wired Remote Controller	Timer Remote Controller (Wired)	Wireless Remote Controller
	CZ-RTC5B	CZ-RTC4	CZ-RWSU3 CZ-RWSD2 CZ-RWSL2N CZ-RWST3N CZ-RWSC3 CZ-RWSK2
Built-in thermostat	●	●	●
ECONAVI ON/OFF control	●	●	—
Number of indoor units which can be controlled	1 group, 8 units	1 group, 8 units	1 group, 8 units
Use limitations	· Up to 2 controllers can be connected per group (When using ECONAVI sensor, only one remote controller is possible to connect at indoor unit)	· Up to 2 controllers can be connected per group (When using ECONAVI sensor, only one remote controller is possible to connect at indoor unit)	· Up to 2 controllers can be connected per group.
Function ON/OFF	●	●	●
Mode setting	●	●	●
Fan speed setting	●	●	●
Temperature setting	●	●	●
Air flow direction	●	●	●
Permit/Prohibit switching	—	—	—
Weekly program	●	●	—

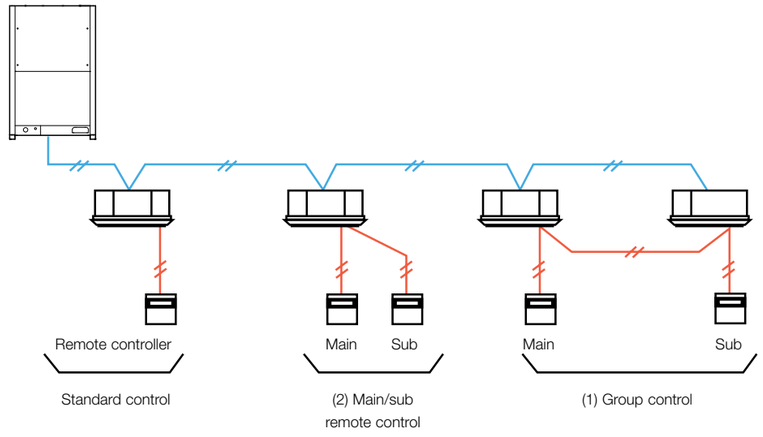
CENTRALISED CONTROL SYSTEMS			
Operation with various functions from a central location	Only ON/OFF operation from a central location	Simplified load distribution ratio (LDR) for each tenant	Connection with 3rd Party Controller
		10.4 in. touch screen panel colour LCD	**Seri-Para I/O unit for outdoor unit**
			 CZ-CAPDC2
System Controller	ON/OFF Controller	Intelligent Controller	**Interface Adaptor**
CZ-64ESMC3	CZ-ANC3	CZ-256ESMC3 (CZ-CFUNC2)	 CZ-CAPC3
—	—	—	
●	—	●	**Seri-Para I/O unit for each indoor unit**
64 groups, maximum 64 units	16 groups, maximum 64 units	64 units x 16 systems, maximum 256 units	 CZ-CAPBC2
· Up to 10 controllers, can be connected to one system. · Main unit/sub unit (1 main unit + 1 sub unit) connection is possible. · Use without remote controller is possible.	· Up to 8 controllers (4 main units + 4 sub units) can be connected to one system. · Use without remote controller is impossible.	· A communication adaptor (CZ-CFUNC2) must be installed for three or more links.	**Communication Adaptor**
●	●	●	 CZ-CFUNC2
●	—	●	
●	—	●	**LonWorks Interface**
●	—	●	 CZ-CLNC2
●	—	●	
●	●	●	
●	—	●	

All specifications are subject to change without notice.

Individual Control Systems

Control contents	Part name, model No.	Quantity
Standard Control • Control of the various operations of the indoor unit by wired or wireless remote controller. • Cooling or heating mode of the outdoor unit is decided by the first priority of the remote controller. • Switching between remote controller sensor and body sensor is possible.	Timer remote controller CZ-RTC4 / CZ-RTC5B Wireless remote controller CZ-RWSU3 / CZ-RWSL2N / CZ-RWSC3 / CZ-RWSK2 / CZ-RWST3N / CZ-RWSD2	1 unit each
(1) Group control • Batch remote control on all indoor units. • Operation of all indoor units in the same mode. • Up to 8 units can be connected. • The sensor is the body sensor, and thermostat ON/OFF setting in regard to the temperature set by the remote controller is possible for each indoor unit.	Timer remote controller CZ-RTC4 / CZ-RTC5B Wireless remote controller CZ-RWSU3 / CZ-RWSL2N / CZ-RWSC3 / CZ-RWSK2 / CZ-RWST3N / CZ-RWSD2	1 unit
(2) Main/sub remote control • Maximum 2 remote controllers per indoor unit. (Main remote controller can be connected) • The button pressed last has priority. • Timer setting is possible even with the sub remote controller. (When using ECONAVI sensor, only one remote controller is possible to connect at indoor unit)	Main or sub Timer remote controller CZ-RTC4 / CZ-RTC5B Wireless remote controller CZ-RWSU3 / CZ-RWSL2N / CZ-RWSC3 / CZ-RWSK2 / CZ-RWST3N / CZ-RWSD2	As required

SYSTEM EXAMPLE FSV-EX



Deluxe wired remote controller (CZ-RTC5B)

Dimensions
H 120 x W 120 x D 16mm

Energy Saving
- ECONAVI on/ off*
- Temperature Auto Return
- Temperature Setting Range
- Auto Shutoff
- Schedule peak cut
- Repeat off timer

Basic Operation
- Individual Louvre Control (Lock individual flap only for 4-WAY cassette U2 type)
- ON/ OFF timer
- Weekly Timer
- Filter information*
- Outing function
- Quiet operation mode*
- Energy saving
- Initial settings
- Ventilation

Maintenance Function
- Outdoor unit error data
- Service Contact address
- RC setting mode
- Test Run
- Sensor Information
- Service check
- Simple/ Detailed Settings
- Auto address

*Subject to the connected model.

Timer remote controller (CZ-RTC4)

Dimensions
H 120 x W 120 x D20mm

Basic remote controller ON/OFF
- Operation mode changeover (Cooling, Heating, Dry, Auto, Fan).
- Temperature setting (Cooling/Dry: 18-30º Heating: 16-30ºg).
- Fan speed setting H/ M/ L and Auto.
- Air flow direction adjustment.
- ECONAVI on/ off*

Time Function 24 hours real time clock
- Day of the week indicator.

Weekly Programme Function
- A maximum of 6 settings/ day and 42 settings/ week can be programmed.

Outing Function
- This function can prevent the room temperature from dropping or rising when the occupants are out for a long time.

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.

* Depending on the model, some menus cannot be used.

Wireless remote controller

L1 type
CZ-RWSL2N

U2 type
CZ-RWSU3

T2 type
CZ-RWST3N
D1 type
CZ-RWSD2

K2, Y2 type
CZ-RWSK2

For all indoor units
CZ-RWSK2 +
CZ-RWSC3

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.

When CZ-RWSC3 is used, wireless control becomes possible for all indoor units
- When a separate receiver is set up in a different room, control from that room also becomes possible.
- 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.

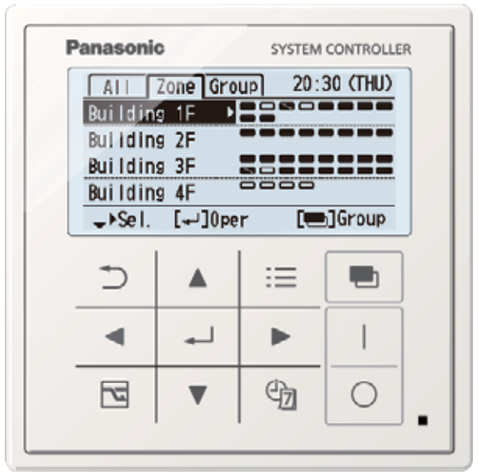
In addition, there are other functions such as temperature setting, operation switching, airflow direction/fan speed setting, etc

Ventilation independent operation is possible

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).

Centralised Control Systems

System controller (CZ-64ESMC3)



Dimensions
H 120 x W 120 x D 16 + 52
(embedding dimension mm)

Power supply: AC 100 to 240 V
I/O part:
Remote input part (effective voltage:DC24V) All operation,All stop,Demand 1,Demand 2
Remote output part (non voltage contact) Operation, Alarm (external power supply within DC 30V, max 0.5A)
Total wiring length : 1km

Individual control is possible for maximum 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, operation monitoring, alarm monitoring, ventilation, remote controller local operation prohibition, etc.**

Prohibition setting for Remote controller operation

Setting mode	ON/OFF	Mode	Temperature	Fan speed	Flap
Permit	●	●	●	●	●
Prohibit 1	–	●	●	●	●
Prohibit 2	–	–	–	●	●
Prohibit 3	●	–	–	●	●
Prohibit 4	●	–	●	●	●

In case of joint use with a wireless remote controller, there are limitations for the control mode. Please use only with setting “Permit” and “Prohibit1 (prohibition for ON/OFF)”.

*Contents for Prohibit 1~4 can be modified.
● : Operation from the remote controller is possible.
– : Operation from the remote controller is prohibited.

- **Joint use with a remote controller, an intelligent controller, 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 setting “Permit” and “Prohibit1 (prohibition for ON/OFF)”.)

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

- **Weekly timer function**
  - 8 programs per day (with ON/ OFF/ Mode/ Temperature/ Central control setting items) for 1week (7days) can be set.
  - Special holiday setting can ignore the timer operation temporarily by keeping the original timer setting. (Special holiday setting can be removed by same setting display.)

- **5 types of Energy saving function**

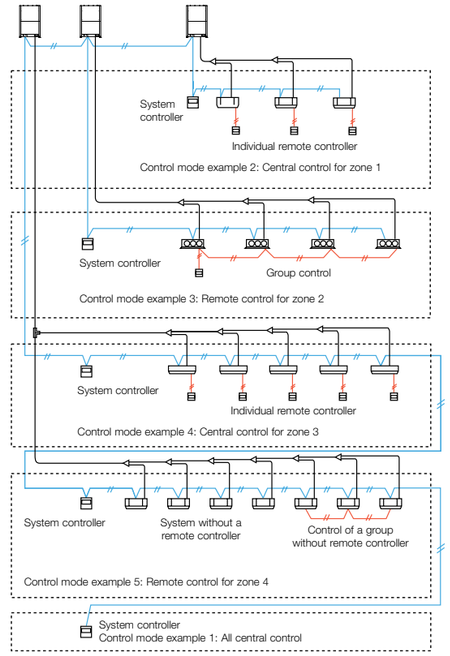
  Set temperature automatic return / Set temperature range limitation / Off remind / Off timer operation / Demand control timer.

- **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.

Connection example			
		A Operation mode	
		Central control mode	**Remote control mode**
B Controlled unit number mode	All mode	All central control Example 1	All remote control
	Zone 1 mode	Zone 1 central control Example 2	Zone 1 remote control
	Zone 2 mode	Zone 2 central control	Zone 2 remote control Example 3
	Zone 3 mode	Zone 3 central control Example 4	Zone 3 remote control
	Zone 4 mode	Zone 4 central control	Zone 4 remote control Example 5



ON/OFF controller (CZ-ANC3)

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

Power supply: AC 100 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

- 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.

Intelligent controller (CZ-256ESMC3)

Touch panel

Dimensions
H 240 x W 280 x D 85mm
Power supply: AC 100 to 240 V (50/60 Hz)
LCD: 10.4 in. TFT, XGA(1024 x 768), LED backlight

Product Features

- 10.4 in., Large, easy-to-use colour LCD
  - With Smartphone-like operations, such as swiping and flicking
- Enhanced energy-saving control functions
  - Packed with demand functions
  - Set temperature auto return settings, auto shutoff, set temperature range limit settings
- Energy Visualisation
  - Displays electricity and gas usage distribution
  - Supports energy-saving plans with graph display function

New Features

- Maximum 256 indoor unit [16 systems x 64 units] can be controlled. In case of three or more systems [more than 128 units], a communication adaptor CZ-CFUNC2 must be installed for three or more links.
- Operation is possible as batch, in zone units, and in group units.
- ON/OFF, operation mode setting, temperature setting, for fan speed setting, air flow direction setting (when used without a remote controller) and remote controller local operation prohibition [prohibition 1,2,3,4] can be done
- Graph display [trends, comparisons]
- ECONAVI ON/OFF

- Outdoor unit quiet operation ON/OFF
- Energy-saving Functions
- Event control [such as equipment linkage]
- Limitation contents for prohibited operation

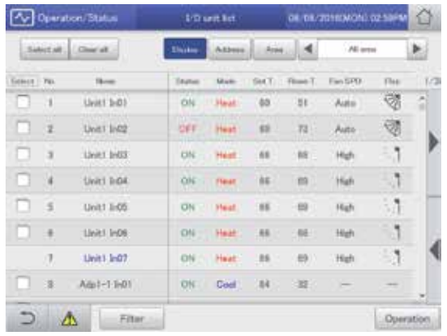
Prohibition means limitation of the operation contents from the remote controller. It is also possible to change the prohibition items.

Limitation contents
(Limitations can be user defined)

Individual	There is no limitation for the operation of the remote controller. However, the contents will be changed to the contents of the controller operated last. (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.)

- Remote Control

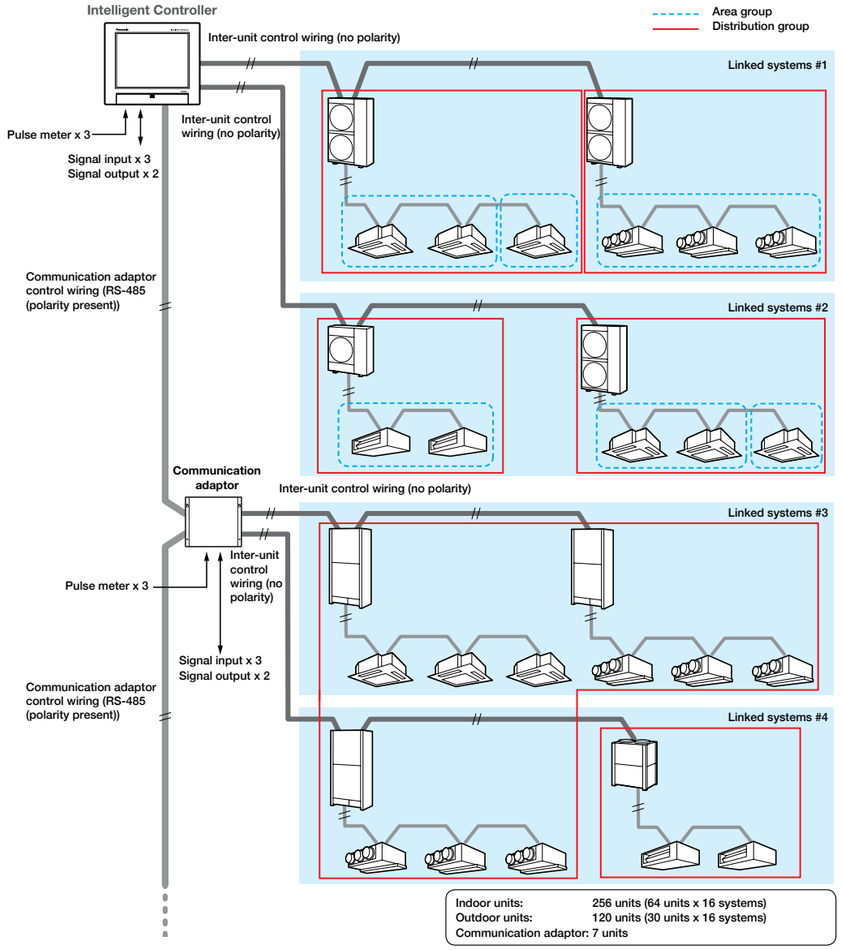
The LAN terminal on this unit enables you connect it to a network. Connecting to internet will enable you to operate the unit and check the status using a PC from remote location.



Display image on the remote PC is same design as the controller unit.

System configuration

The following is an example of a system configuration.



Communication adaptor (CZ-CFUNC2)

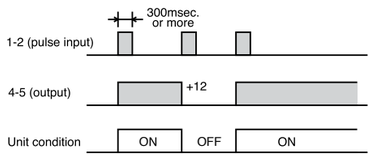
* Required when more than 129 indoor units are connected.

T10 Terminal for External Control (Digital Connection)

Connecting an FSV 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.

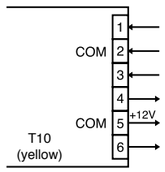
1. T10 Terminal Specification (T10:CN061 at indoor unit PCB)

- **Control items**: 1. Start/stop input (eg hotel key card, push button operation)
  2. Remote controller prohibit input
  3. Operation status output (eg fresh air fan)
  4. Fault status output



NOTE: The wire length from indoor unit to the Relay must be within 2.0m.
Pulse signal changeable to static with JP cutting. (Refer to JP001)

- **Example of wiring**



Condition

1. 1-2 (Pulse input): Unit ON/OFF condition switching with a pulse signal. (1 pulse signal: shortage status more than 300msec.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): 12V output during the unit ON. / No output at OFF.
4. 5-6 (Static output): 12V output when some errors occur / No output at normal.

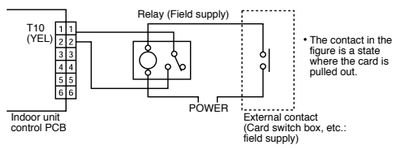
2. Usage Example

Forced OFF control

- **Condition**

1-2 (Static input): Close/ Operation with Remote is permitted. (Normal condition) Open/ Unit is forcibly OFF and Remote controller operation is prohibited.

- **Example of wiring**



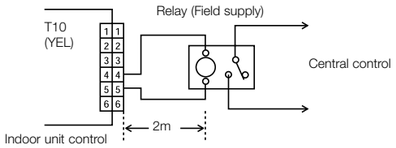
NOTE: The wire length from indoor unit to the Relay must be within 2.0m

Operation ON/OFF signal output

- **Condition**

4-5 (Static output): 12V output during the unit ON / No output at OFF

- **Example of wiring**

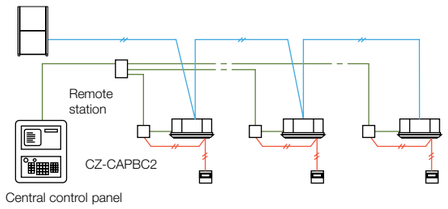


NOTE: The wire length from indoor unit to the Relay must be within 2.0m
Pulse signal changeable to static with JP cutting. (Refer to JP001)

Interfaces for External Control (Digital Connection)

Seri-Para I/O unit for each indoor unit (CZ-CAPBC2)

System example

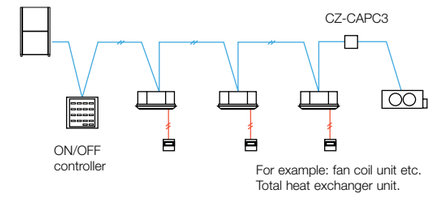


- Control and status monitoring is possible for individual indoor unit (1 group).
- In addition to operation and stop, there is a digital input function for air speed and operation mode.
- Temperature setting and measuring of the indoor suction temperature can be performed from central monitoring.
-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

Interface adaptor (CZ-CAPC3)

- 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.

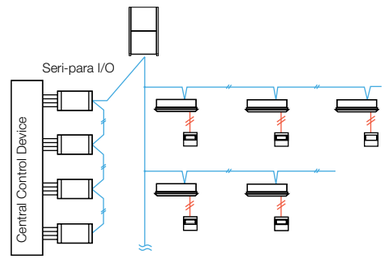
System example



Seri-Para I/O unit for outdoor unit (CZ-CAPDC2)

Dimensions	H 80 x W 290 x D 260mm
Power supply	Single phase 110-120/220-240V (50/60 Hz), 18W
Input	Batch operation/Batch stop (non-voltage contact/DC 24V, 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)
Wiring length	Indoor/Outdoor operation lines: Total length 1km. Digital signal: 10 m or shorter

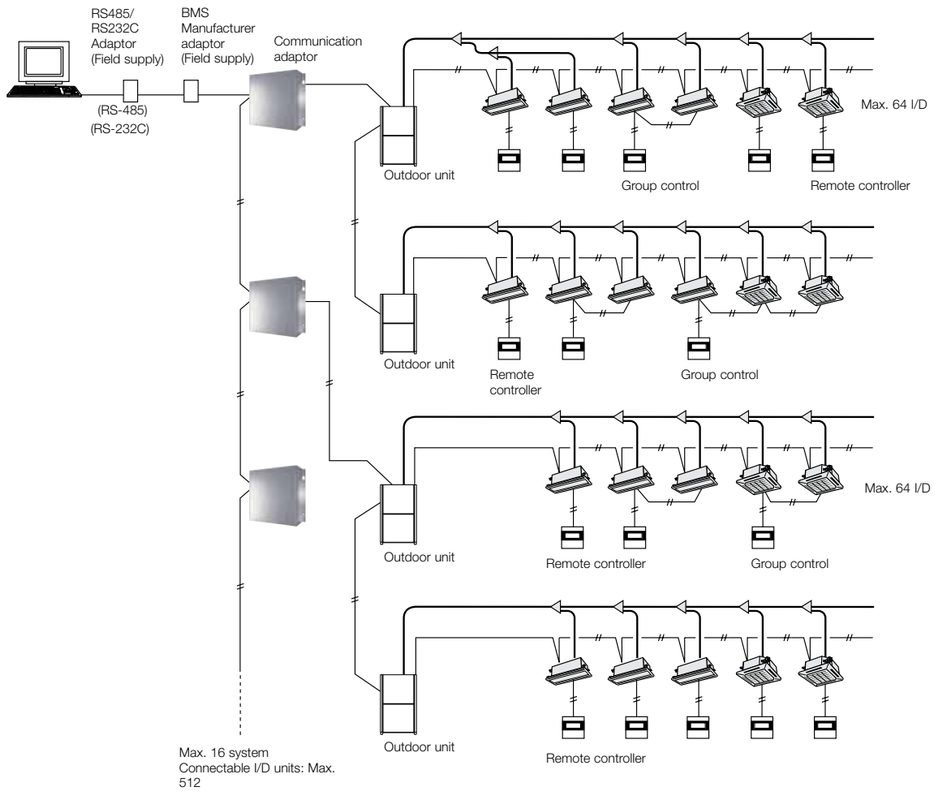
System example



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

Serial Interface for 3rd Party External Controller

Example of 3rd party BMS connection with CZ-CFUNC2
(For the detail please consult to authorised dealer)



Functions via communication adaptor [CZ-CFUNC2]	
A/C unit settings	Unit ON/OFF
	Mode-change
	Room temperature setting
	Fan speed setting
	Flap setting
	Central control setting
	Filter-sign clear
	Alarm reset
A/C unit status	Unit ON/OFF status
	Operation mode
	Setting temperature
	Fan speed status
	Flap status
	Central control setting
	Filter-sign situation
	Correct/incorrect status
	Alarm code

Communication Adaptor (CZ-CFUNC2)

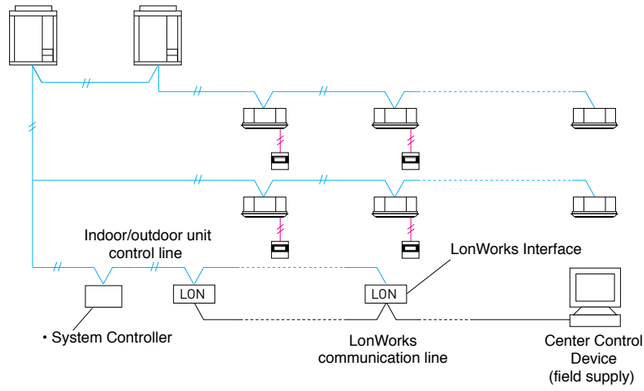
Up to 128 indoor units can be connected to one Communication Adaptor.

Serial Interface for LonWorks Network

LonWorks Interface (CZ-CLNC2)

- This interface is a communications converter for connecting LonWorks to the control network of FSV.
- From the host connected to LonWorks, basic settings and status monitoring is possible for up to 16 groups of indoor units.

System example



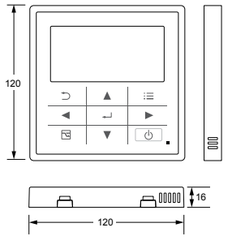
Functions

A/C unit settings from the LonWorks communicator	Settings for each group of indoor units	Start/stop
		Temp. setting
		Operation mode
		Option 1 settings
		Option 2 settings
	Settings for all units	Emergency stop
A/C unit status notifications made to the LonWorks communicator		Start/stop
		Temp setting
		Operation mode
		Option 1 settings
		Option 2 settings
		Alarm status
		Indoor units with active alarms
		Room temp.
		A/C unit status
Configuration properties		Transmission intervals settings
		Minimum time secured for transmission

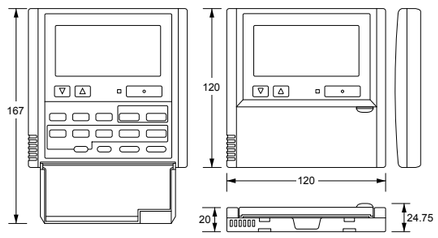
FSV CONTROLLERS

FSV Controller External Dimensions

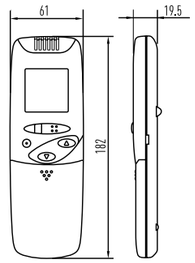
DELUXE WIRED REMOTE CONTROLLER (CZ-RTC5B)



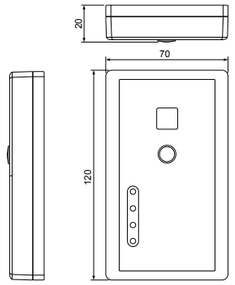
TIMER REMOTE CONTROLLER (CZ-RTC4)



WIRELESS REMOTE CONTROLLER

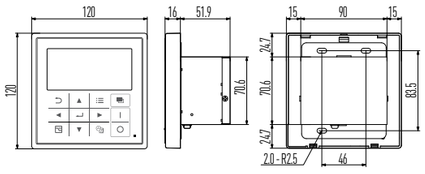


SEPARATE RECEIVER FOR WIRELESS REMOTE CONTROLLER (CZ-RWSC3)

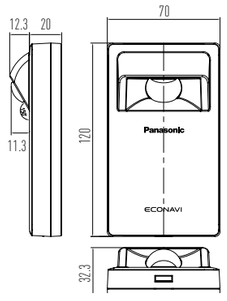


Unit: mm

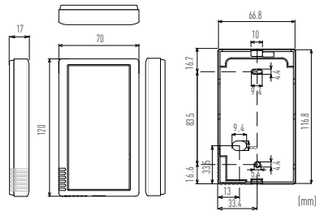
SYSTEM CONTROLLER (CZ-64ESMC3)



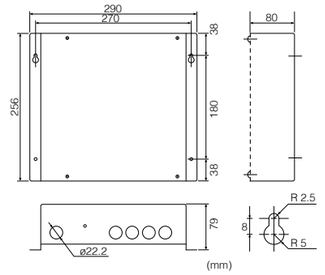
ECONAVI SENSOR (CZ-CENSC1)



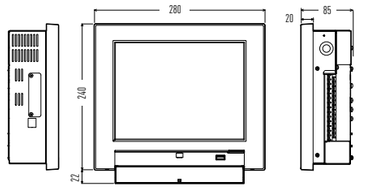
REMOTE SENSOR (CZ-CSRC3)



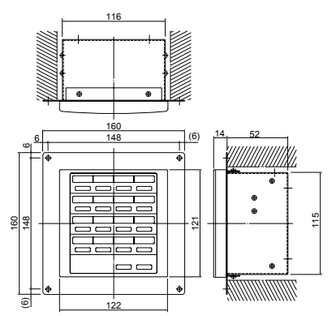
COMMUNICATION ADAPTOR (CZ-CFUNC2)



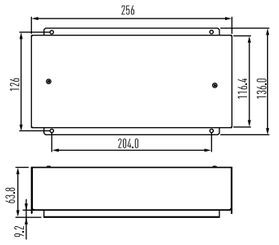
INTELLIGENT CONTROLLER (CZ-256ESMC3)



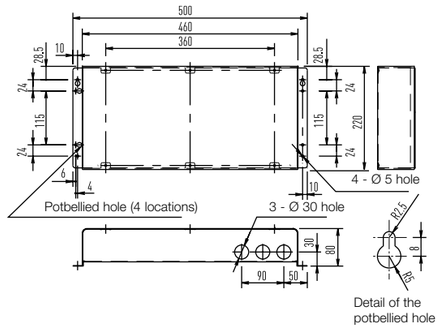
ON/OFF CONTROLLER (CZ-ANC3)



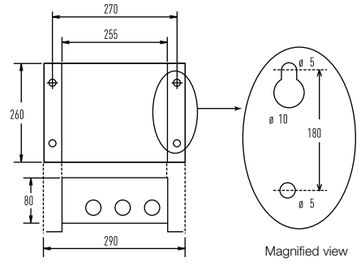
SERI-PARA I/O UNIT FOR EACH INDOOR UNIT (CZ-CAPBC2)



LONWORKS INTERFACE (CZ-CLNC2)



SERI-PARA I /O UNIT FOR OUTDOOR UNIT (CZ-CAPDC2)



VRF R22 Renewal

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

RENEWAL R22

R22 is a HCFC and classified as an ozone depleting substance banned under the Montreal Protocol.

Many existing R22 VRF Systems will need to be replaced over the coming years by more modern and efficient R410A VRF Systems.

Panasonic takes proactive action to switch to R410A refrigerant

Recognising consumers' anxiety and financial difficulties to adapt to the new R22 regulations, Panasonic developed a new cost-effective and simple solution to switch to R410A refrigerant.

What is Panasonic VRF Renewal?

Panasonic VRF Renewal enables reuse of good quality existing R22 pipework to be installed with a new high efficiency R410A system.

What's so unique about Panasonic's solution?

By enabling re-use of existing R22 piping, consumers get to save substantially from reduced installation cost, and without any sacrifices to warranty or performance.

Ozone Depletion Potential		
R22	HCFCs	0.055
R410A	HFC	0
R407C	HFC	0

R22 - The reduction of Chlorine critical for a cleaner future

Before renewing piping, be sure to contact an authorised Panasonic dealer for advice.

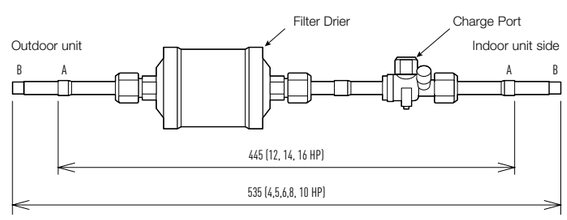
VRF Renewal

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 (3.3 bar) levels. This ensures the system works safely and efficiently without loss of capacity.
The new equipment has potential to increase 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 oil residue.

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 piping is re-used. If the exact pipe length and pipe size of the existing piping are uncertain, attach a sight glass in accordance with the figure below. It will be used for checking the amount of additional refrigerant charge (calculating the amount in Judgment 4)

VRF Renewal Kit: CZ-SLK2



unit: mm

Attaching the Renewal Kit and sight glass

- To adjust the limited pressure level into 3.3 MPa, special setting is necessary on site.
- A filter drier shall be attached to the liquid piping of each outdoor unit.
- Do not need to remove Renewal Kit after a test run is performed as it can be retained for normal operation.
- When attaching Renewal Kit, be extra careful with regards to installation location and orientation of the filter drier and ball valve. Any mistakes will complicate maintenance work.
- Thermal insulation material (field supply: heat resistance of 80˚C or higher and thickness of 10 mm or greater) shall be applied to the Renewall Kit.
- The filter drier of the Renewal 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).

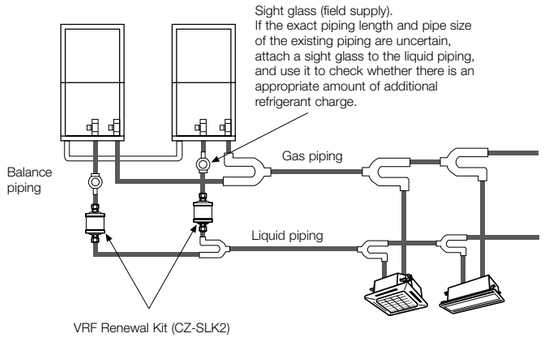
Connecting pipe dimensions (Inch/mm)

A Ø 1/2 (12.7) (33.5, 40.0, 45.0kW)
B Ø 3/8 (9.52) (22.4, 28.0kW)

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

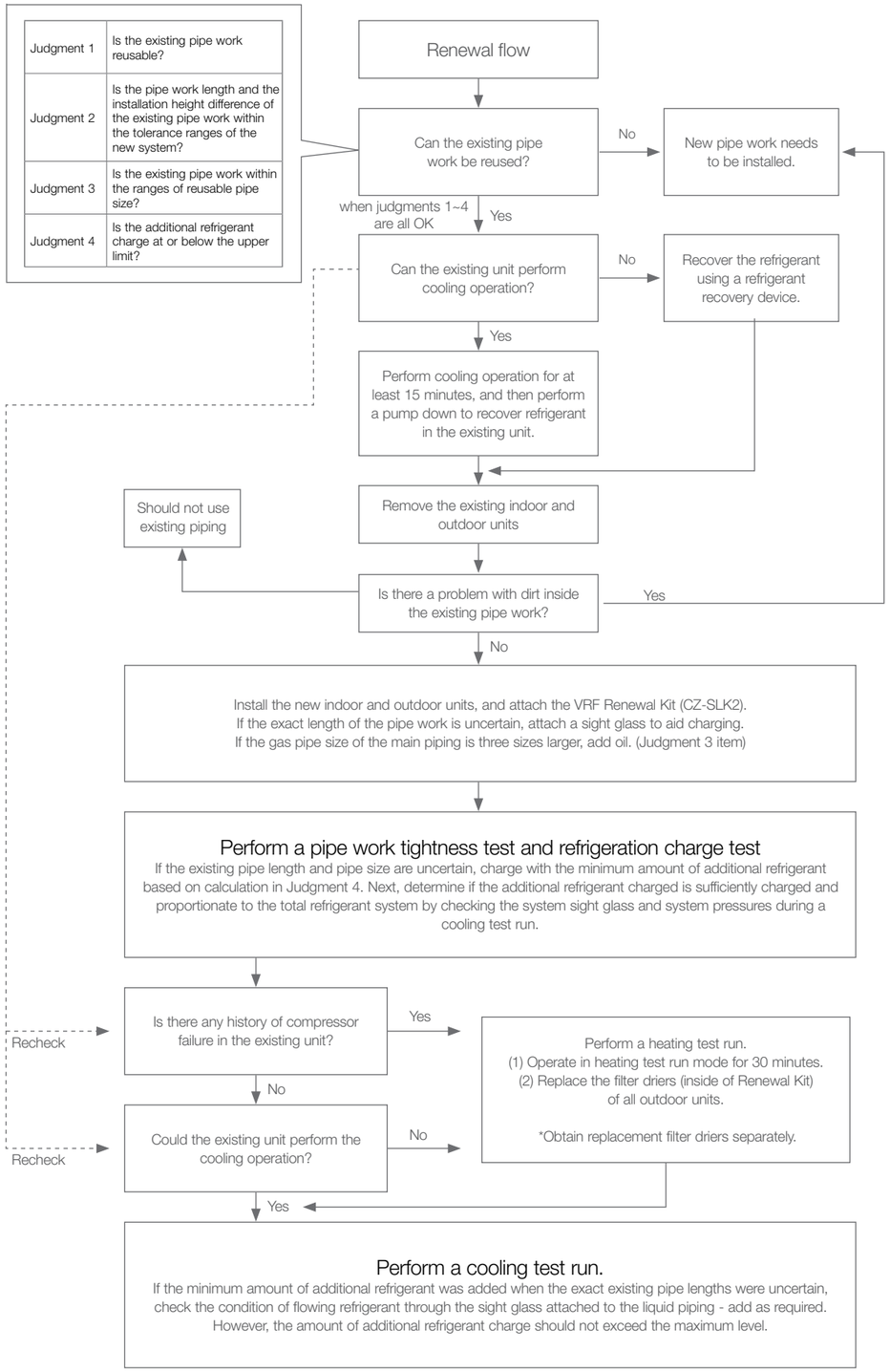
Sight glass (field supply)

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



Procedure for VRF R22 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 pipe size?
Judgment 4	Is the additional refrigerant charge at or below the upper limit?



Panasonic VRF Global Projects

Panasonic air conditioning systems provides comprehensive solutions to businesses around the world.

Harnessing our advanced technology and extensive on-site expertise, we serve clients in a diverse range of environments throughout the world.

HOTEL

Australia Travelodge Hobart

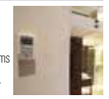
Air Conditioning System:
VRF 3-PIPE FSV MF2
series 8 systems
Indoor Units: 116 units
Cooling Capacity:
302 kW / 86 USRT

Indonesia Patra Jasa Hotel

Air Conditioning System:
VRF 2-PIPE FSV ME1 series
14 systems
Indoor Units: 132 units
Cooling Capacity:
677 kW / 193 USRT

Spain Hotel Claris 5 GL

Air Conditioning System:
VRF 2-PIPE ME1&LE1 series
11 systems
VRF 3-PIPE MF1 series 14 systems
Indoor Units: 233 units
Cooling Capacity: 769 kW / 218 USRT



Spain Monument Hotel

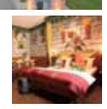
Air Conditioning System:
VRF 2-PIPE ME1 series 4 systems,
VRF 3-PIPE 12 systems
Indoor Units: 171 units
Cooling Capacity:
592 kW / 168.33 USRT

Russia River Park Hotel

Air Conditioning System:
VRF 2-PIPE ME1 series 47 systems
Indoor Units: 96 units
Cooling Capacity: 788 kW / 224 USRT

Germany The LEGOLAND Castle Hotel

Air Conditioning System:
VRF 3-PIPE MF2
12 systems
Indoor Units: 144 units
Cooling Capacity:
592 kW / 168.33 USRT



OFFICE

Malaysia Gapruna project

Air Conditioning System:
VRF 2-PIPE FSV ME1 series
109 systems
Indoor Units: 537 units
Cooling Capacity:
5,370 kW / 1,526 USRT

Malaysia Plaza 33 Office Block A

Air Conditioning System:
VRF 2-PIPE FSV ME1 series
99 systems
Indoor Units: 153 units
Cooling Capacity:
3,667 kW / 1,042 USRT

Thailand Areeya

Air Conditioning System:
VRF 2-PIPE FSV ME1 series 19 systems
Single split system 67 systems
Indoor Units: 85 units
Cooling Capacity:
1,519 kW / 432 USRT

HongKong King Yip Road

Air Conditioning System:
VRF FSM LA1 series
136 systems
Indoor Units: 294 units
Cooling Capacity:
2,108 kW / 599 USRT

England Soapworks

Air Conditioning System:
VRF 3-PIPE MF2
77 systems
with ERV 167 systems

Spain PTA Malaga

Air Conditioning System:
VRF 2-PIPE ME1 series
20 systems
Indoor Units: 74 units
Cooling Capacity:
908 kW / 258 USRT

Russia Russian Government Building

Air Conditioning System:
VRF 2-PIPE ME1 series 42 systems
Indoor Units: 277 units
Cooling Capacity:
2,045 kW / 581 USRT

RETAIL

Italy Le Centurie CENTRO COMMERCIALE

Air Conditioning System:
VRF 3-PIPE MF1 series
18 systems
Indoor Units: 57units
Cooling Capacity:
656 kW / 186 USRT

India Sai Aarav Motors, Mehsana

Air Conditioning System:
VRF 2-PIPE FSV ME1 series 3 systems
Indoor Units: 19 units
Cooling Capacity: 156 kW / 44 USRT

Russia Sun City Mall

Air Conditioning System:
VRF 2-PIPE ME1 series
47 systems,
VRF 3-PIPE 12 systems
Indoor Units: 283 units
Cooling Capacity:
1,605 kW / 456 USRT

SCHOOL

United States Shippensburg University

Air Conditioning System:
VRF 3-PIPE MF1 series
55 systems
Indoor Units: 530 units
Cooling Capacity:
1,498 kW / 426 USRT

SCHOOL

Malaysia Xiamen University

Air Conditioning System:
VRF FSV Systems 110 systems
Indoor Units: 1,349 units
Cloud adapter: CZ-CFUSCC1 17pcs

Russia Technopark of Nobosibirsk Academgorodok

Air Conditioning System:
VRF 2-PIPE ME1 series 38 systems,
VRF 3-PIPE 12 systems
Indoor Units: 234 units
Cooling Capacity:
1,487 kW / 422 USRT

HOSPITAL

Indonesia Bekasi Hospital

Air Conditioning System:
VRF 2-PIPE FSV ME1 series
42 systems
Indoor Units: 283 units
Cooling Capacity:
1,834 kW / 524 USRT

Indonesia Persada Hospital

Air Conditioning System:
VRF 2-PIPE FSV ME1 series
21 systems
Indoor Units:116 units
Cooling Capacity:
989 kW / 281 USRT

RESIDENTIAL

China Star River Group Luxury Condominium

Air Conditioning System:
VRF Master series 966 systems
Indoor Units: 3,948 systems
Cooling Capacity:
16,737 kW / 4,755 USRT

Singapore Punggol Eco-Town

Air Conditioning System:
Inverter multi-split
room air conditioner
Indoor Units:
Wall mounted S series (with ECOVAVI)
Control System: Panasonic HEMS

Hong Kong Gloucester Road Project

Air Conditioning System:
VRF FSM LA1 series 67 systems
Twenty series 105 systems
Indoor Units: 255 units
Cooling Capacity: 1,391 kW / 395 USRT

Hong Kong The Green Project

Air Conditioning System:
VRF FSM LA1 series 239 systems
Twenty series 538 systems
Indoor Units: 999 units
Cooling Capacity:
6,425 kW / 1,825 USRT

India Royal Orchids Eco-Green Homz

Air Conditioning System:
VRF 2-PIPE FSV ME1 series
22 systems,
Indoor Units: 139 units
Cooling Capacity:
802 kW / 228 USRT

India Heera Windfaire

Air Conditioning System:
VRF 2-PIPE FSV ME1 series 96 systems,
VRF 3-PIPE 12 systems
Indoor Units: 479 units
Cooling Capacity: 2,184kW / 620 USRT

Panama Mosaic Building PANAMA PACIFICO

Air Conditioning System:
VRF 2-PIPE FSV LE1 series 156 systems
Indoor Units: 357 units
Cooling Capacity: 2,338 kW / 664 USRT