Panasonic®

Building Passion,
Building Solutions.
Panasonic Air Conditioning Systems

We face a time in which "quality air" differentiates business. It's a time for Panasonic to fully display its strengths. Our ability to assemble and build superior systems isn't just due to the rich resources we have as a comprehensive electronics manufacturer, but also to Panasonic's 100 years of tradition, where each person thinks and acts on their own initiative while working in a team to reach further heights. We do not compromise. Each of our independent selves is a one stop solution. We face our customers' challenges together with our customers and do all that we can to build effective systems. As a true partner for our customers, we strive to always be at the forefront of business.

- 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 September 2021.
- Due to printing considerations, actual colours may vary slightly from those shown.
- All graphics are provided solely for the purpose of illustrating a point.

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

Authorised Dealer

FSV Mini FSV AU_September 2021

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Panasonic

FSV VRF SYSTEMS 2021/2022

FSV

Residential & Light Commercial Use

FSV EX

Commercial Use

nanoe™ TECHNOLOGY · INVERTER · DRED ready · MEPS COMPLIANT

A Better Life, A Better World

QUALITY AIR FOR LIFE

THE GAME CHANGER

FSV EX
Flexi System VRF

ALL INVERTER

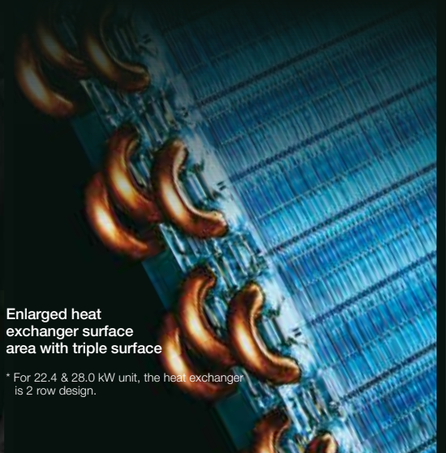
FSV-EX with Extraordinary Energy-Saving Performance and Powerful Operation

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 & 28.0 kW 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

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MINI GAME CHANGER

FSV Flexi System VRF INVERTER

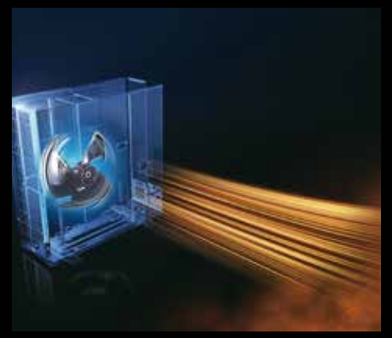
Mini FSV LE Series

Cooling or Heating Type

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

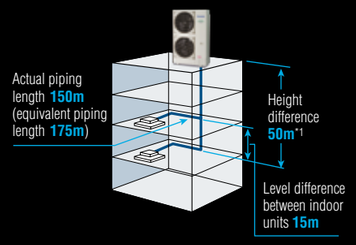
Mini-FSV with Extraordinary Energy-Saving Performance and High External Static Pressure(35Pa)

High External Static Pressure 35Pa



Compact Design

Long Piping Design Length forGreater 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.

LE1 Series

3.80* EER

* In the case of 22.4kw

LE2 Series

4.50* EER

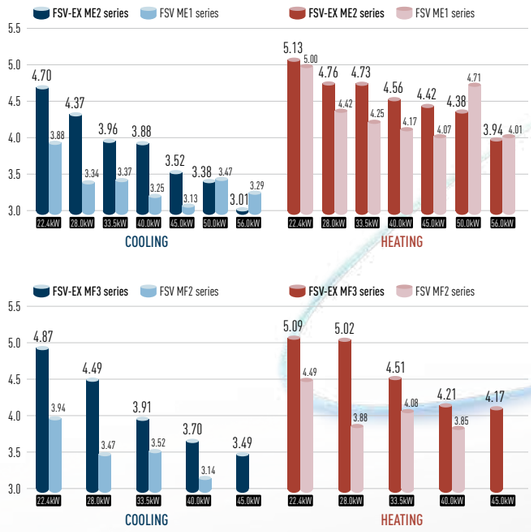
* In the case of 12.1kW

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.

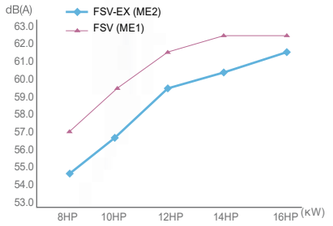


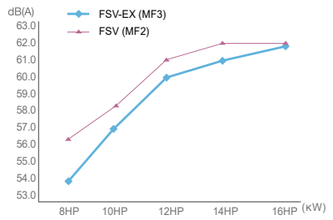
Extraordinary EER throughout the product range

Extraordinary EER in Part load throughout the product range

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.





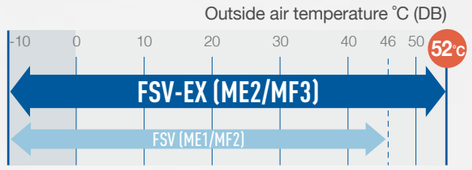
Multiple large-capacity all inverter compressors

(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.

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.



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

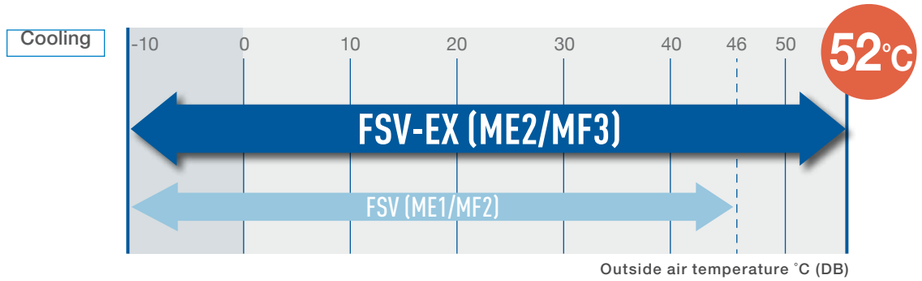
* For 22.4 & 28.0kW unit, the heat exchanger is 2 row design.
*1 Based on Panasonic in-house report

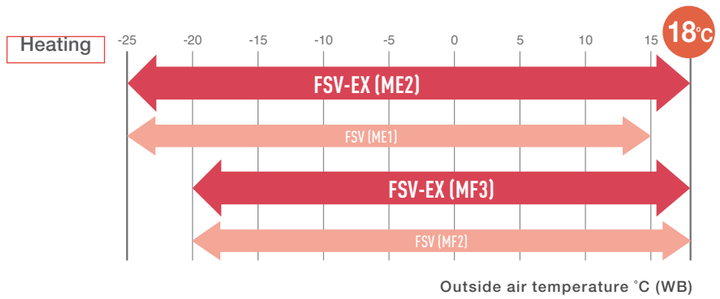
Extended Operation Range -25ºC* to 52ºC

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.

OPERATING RANGE

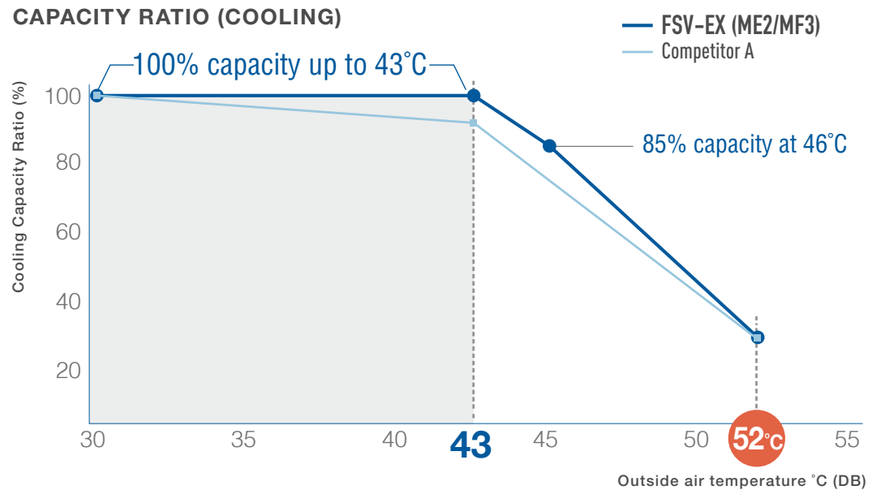




Full-capacity Operation up to 43°C

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:27ºC[DB]/19ºC[WB]
Competitor A spec is from technical data book.

Extraordinary Energy-Saving Performance

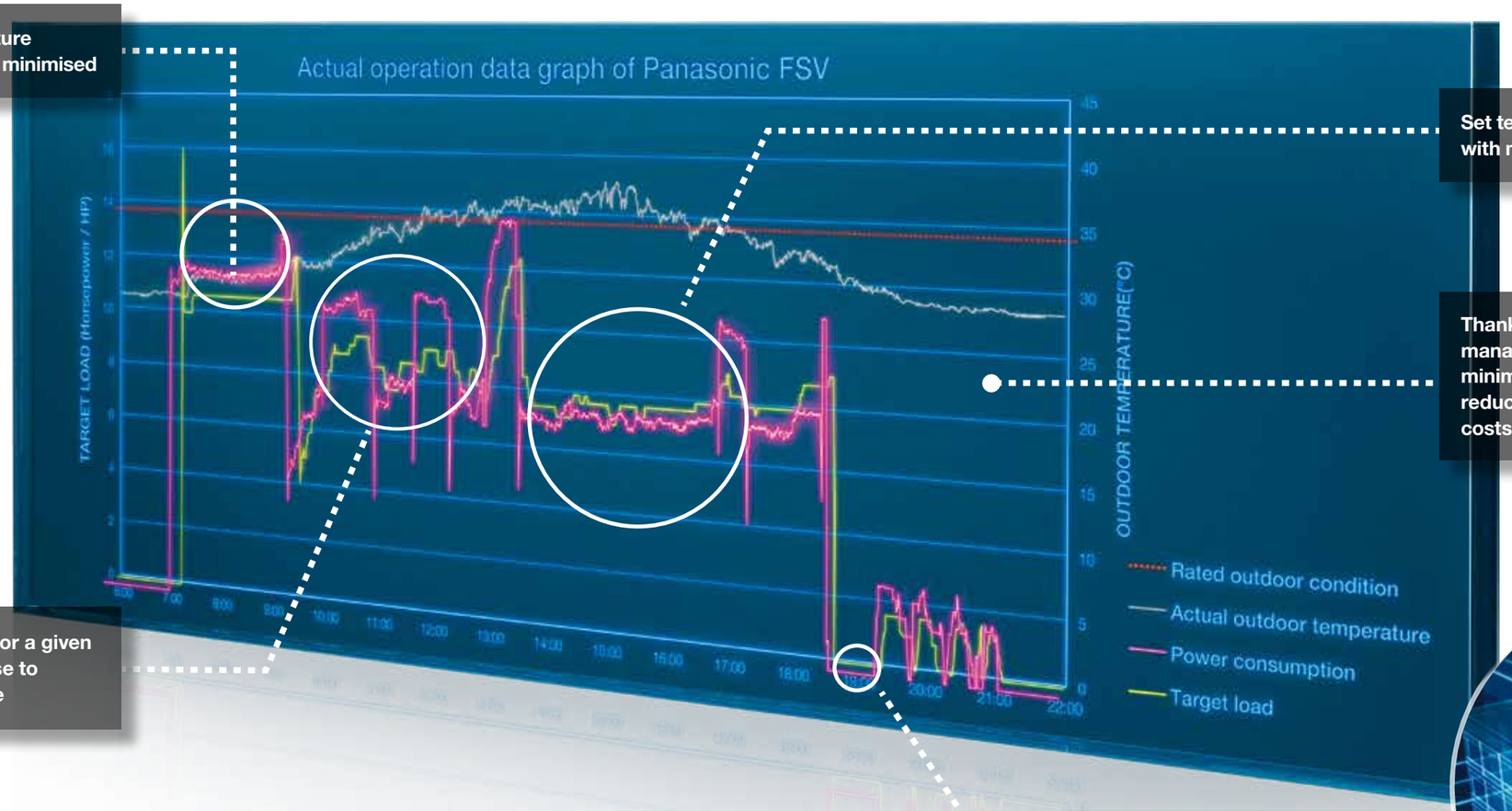
Designed for Actual Operation Performance

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, of course, as 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

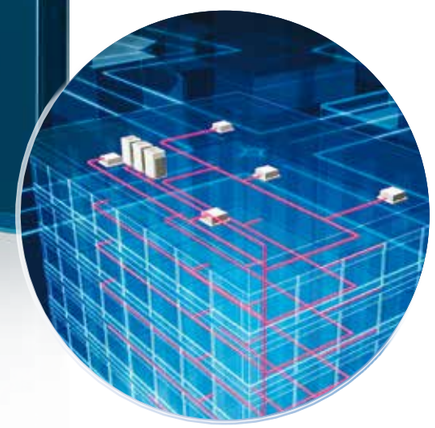


Set temperature maintained with minimum load operation

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 FSV-EX systems, a sensor for detecting oil levels is mounted on 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.

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

STAGE-1

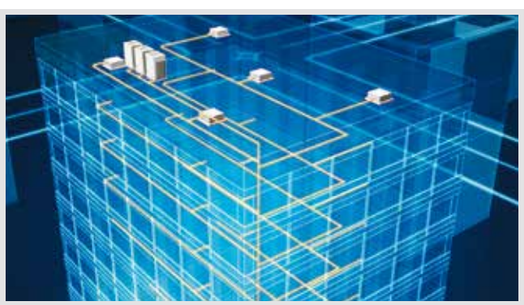
Panasonic compressors are equipped with sensors which monitor oil levels precisely at all times. If oil levels fall, oil can be transferred from other compressors within the same outdoor unit.

STAGE-2

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

STAGE-3

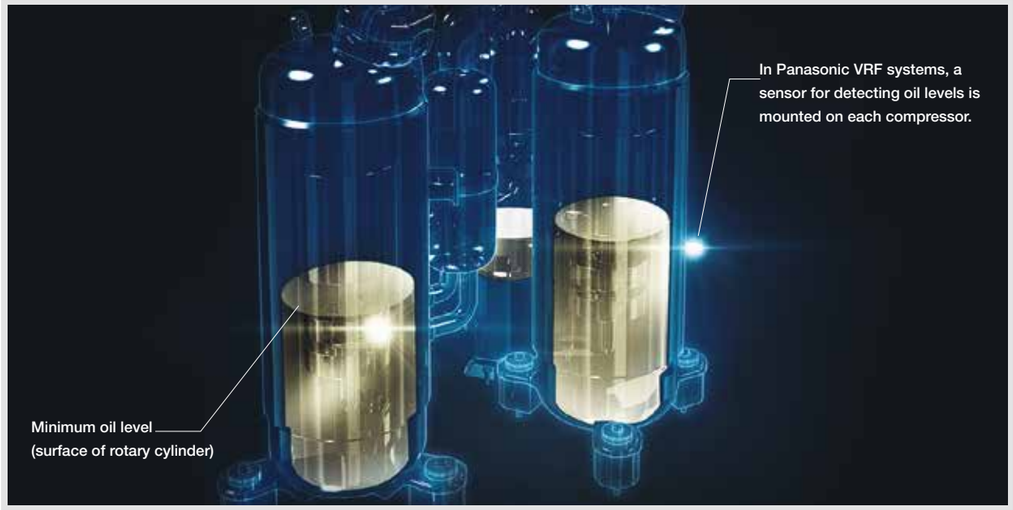
Forced oil recovery is implemented only if oil levels become insufficient in spite of above measures. The Panasonic system's design concept is radically different from conventional oil systems.



Features of 3-stage oil recovery design

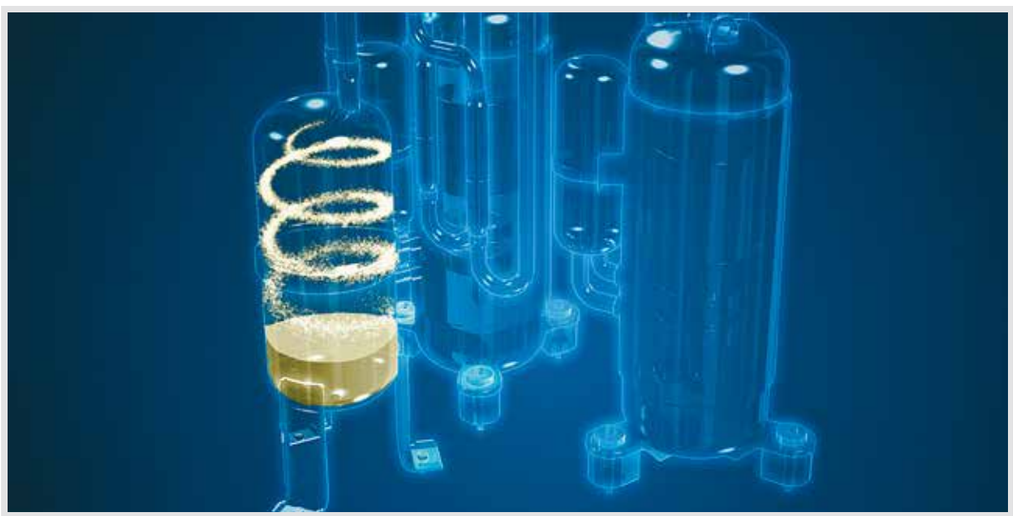
1 Oil sensors mounted on each compressor

Oil sensors mounted on each Panasonic compressor precisely monitor oil levels, eliminating unnecessary oil recovery.

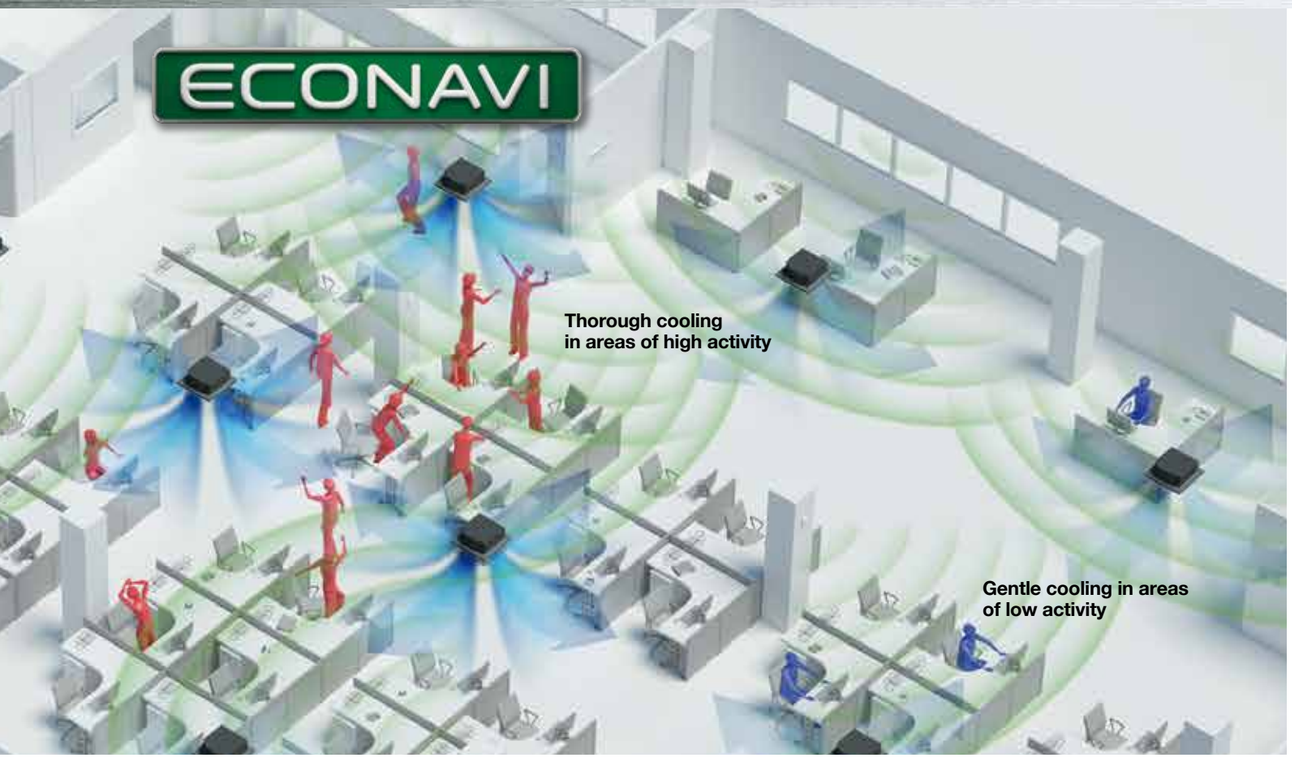


2 Highly functional oil separator

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

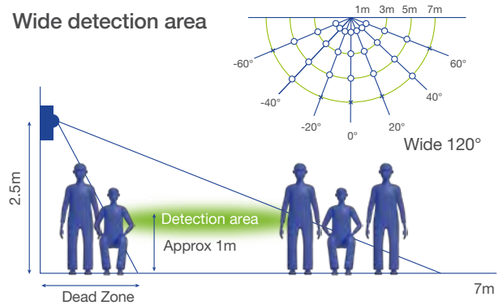
Activity detection		Presence detection	
HIGHER ACTIVITY	LOWER ACTIVITY	After 20 mins absence	After 3 hours absence
Cooling Set Temp. +/-0°C	Cooling Set Temp. +1°C	Cooling Set Temp. +2°C	Cooling Thermo OFF*
Heating Set Temp. -1°C	Heating Set Temp. +/-0 °C	Heating Set Temp. -2°C	Heating Thermo OFF*
Every 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.

ECONAVI

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.



A sensor is remotely set to maximise the detection area.

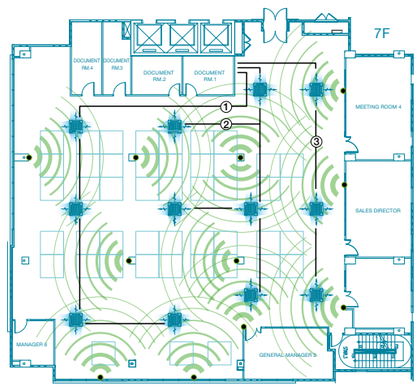
Installation flexibility ready for indoor unit replacement and layout changes.

ECONAVI sensor
CZ-CENSC1

Panasonic enables use with various types of indoor units

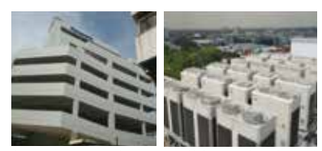
Providing outstanding energy-saving performance, Panasonic's inverter VRF System can be connected to ECONAVI to detect when energy is being wasted. ECONAVI senses the presence or absence of people and the level of activity in each area of an office. When unnecessary heating or cooling is detected, indoor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

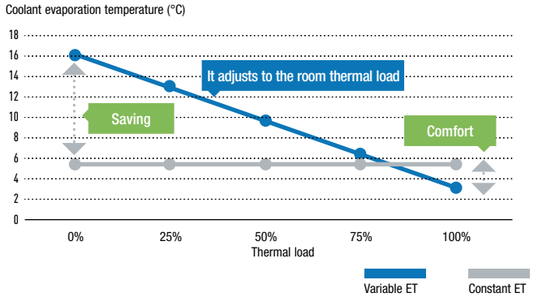
Energy-saving effect tested and verified by Field test

Panasonic VRF: Top In Comfort

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

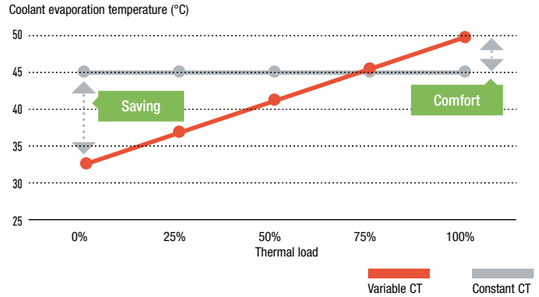
Variable Evaporation Temperature (VET)

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.

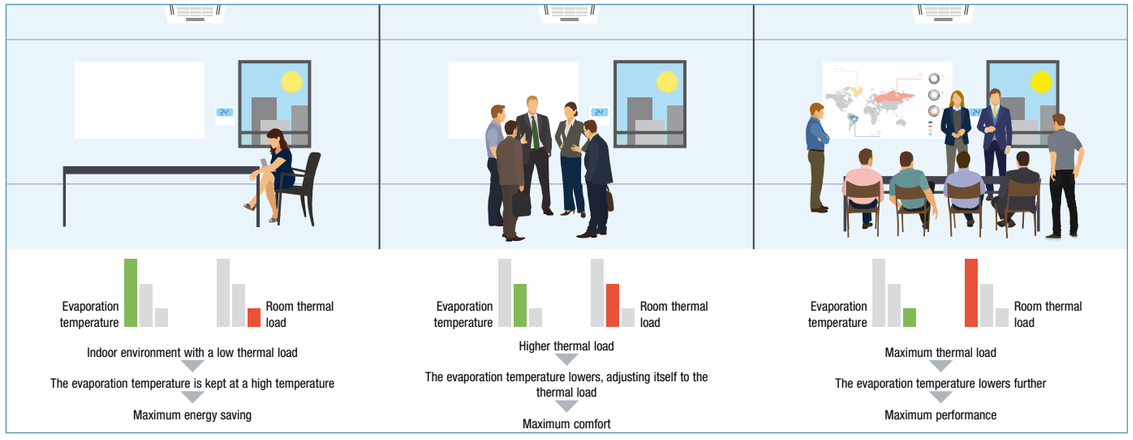


Variable Condensation Temperature (VCT)

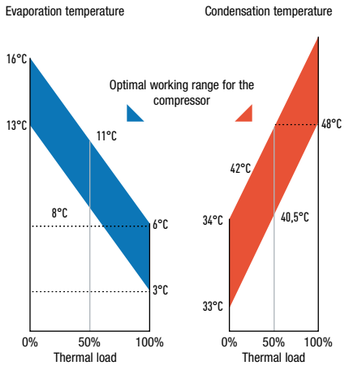
Temperature varies from 16°C to 3°C.
Similarly, the condensation temperature is also variable and is adjusted to the room thermal load, within a range of 33–55°C.



Example of cooling mode (heating mode is also available)

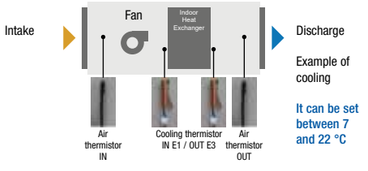


Technical focus Variable temperatures



Control of the discharge temperature

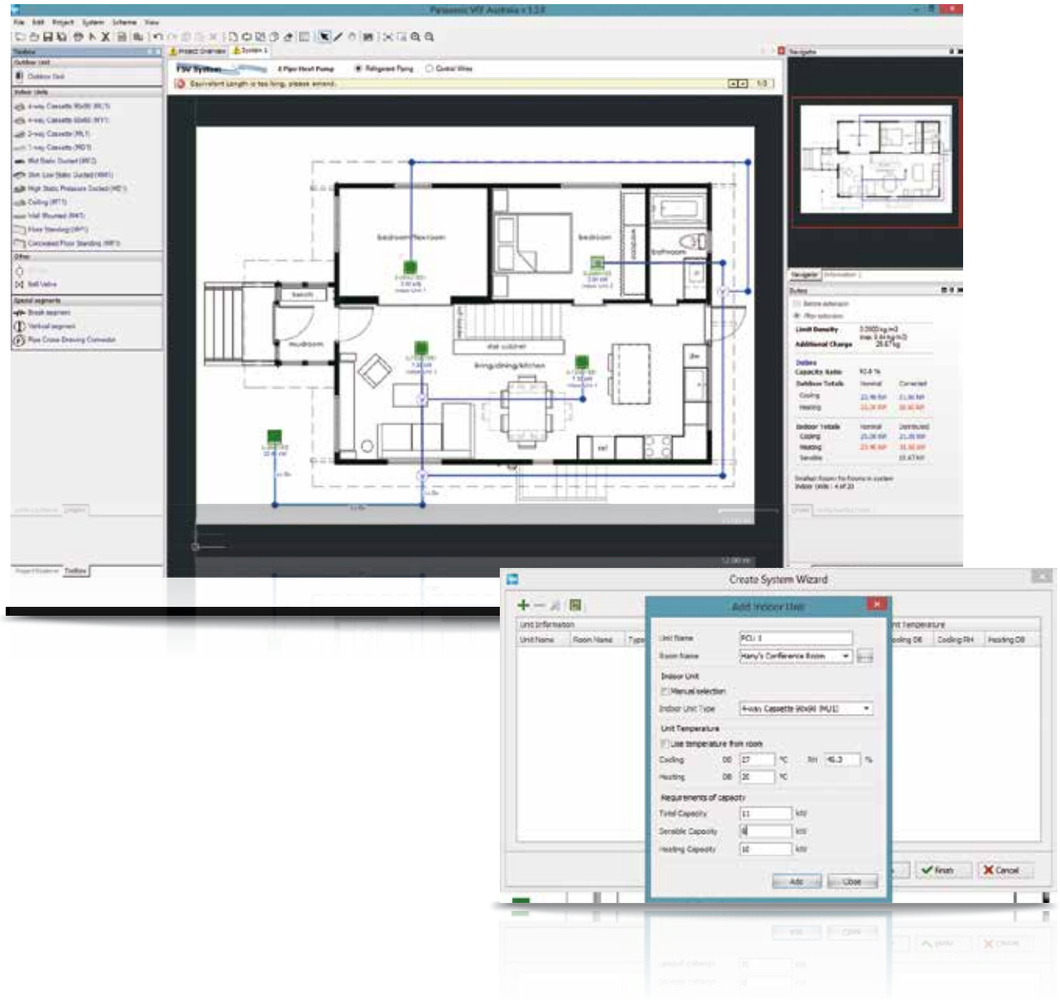
This special function is available in all of Panasonic VRF systems' indoor units to guarantee maximum comfort for the end user.
For example, in cooling mode, if the temperature of the discharged air was below 10°C, the user may feel discomfort, just as he would do in heating mode if the temperature was 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.

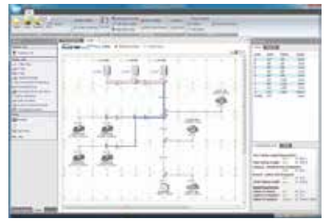
Commercial AC Design Software

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 our industry. More and more emphasis is being placed upon energy-efficiency in our marketplace. 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 system design software program.
The Panasonic Commercial AC Design Software has been customised to make the selection and design process as quick and easy as possible.
The design package utilises system wizards and 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

FSV systems are designed for energy savings, high efficiency, and high durability with strong cooling power even operating at high ambient temperature.
Panasonic continuously apply advanced technologies to meet the requirements of diverse situations and contribute to the creation of comfortable living spaces.

2-PIPE FSV-EX 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°C (DB)
- Long pipe length (up to 1,000 m)
- Up to 64 indoor units connectable
- External static pressure up to 80 Pa
- Extended operating range allows heating with outdoor temperatures as low as -25°C (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 30 and 31 for details)

3-PIPE FSV-EX Series

For simultaneous heating and cooling operation

Heat Recovery Type

Cooling and Heating Simultaneous Type

- Wide range of systems from 22.4kW to 135kW
- Top class EER : 4.87 / COP : 5.09 (22.4kW model)
- Longer piping length (up to 500 m)
- Increased max 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

2-PIPE Mini-FSV LE Series

For small-scale commercial and residential use

Industry Top Class EER/COP

Cooling or Heating Type 1-phase
Cooling or Heating Type 3-phase
12.1/14.0/15.5 kW **22.4/25.0 kW**

- High external static pressure 35Pa
- Top-class EER: 4.50 (12.1kW model) / 3.80 (22.4 kW model)
- 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 (22.4/25.0kW model)
- Actual piping length : 150m

Max. piping length : 150m (12.1/14.0/15.5kW) / 300m (22.4/25.0kW)

- Suitable for R22 renewal projects

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

ALL INVERTER

High-efficiency & Space-saving VRF system

FSV EX Flexi System VRF Eco Extreme

2-PIPE FSV-EX ME2

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

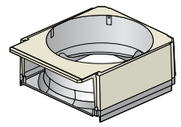
Conventional model [ME1]

New model [ME2]

Redesigned for smooth and better air discharge

3 Newly designed curved air discharge bell mouth for better aerodynamics

The new curved shape with integrated top and bottom assure smooth exhaust flow. This gives more air-volume with same sound level, less power input at 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. This design lead to the improvements in air resistance, but also contributed to better appearance designing.

Conventional model [ME1]

New model [ME2]

High-efficiency & Space-saving VRF system

2-PIPE FSV-EX 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!*

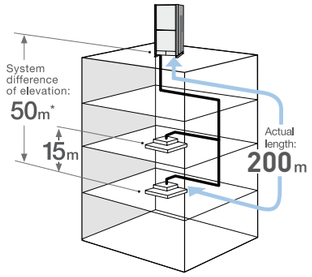
Increased piping length for greater design flexibility

Adaptable to various building types and sizes
Actual piping length : **200m**
(equivalent piping length : 210m)

*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.

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

Max. total piping length:1,000m



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

FSV systems attain 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

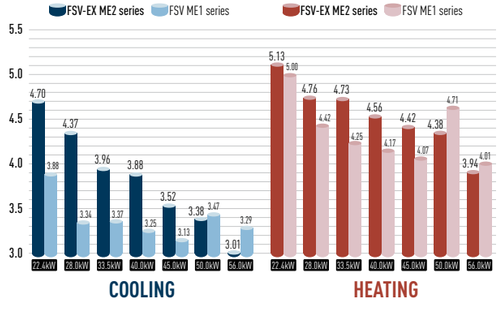
MNcIU : Maximum Number of Connectable Indoor Unit

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

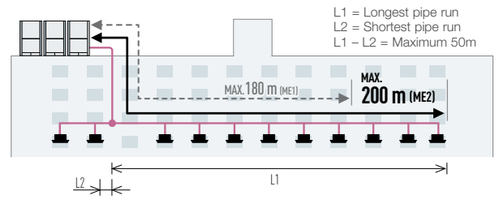
The operation efficiency has been improved using highly efficient R410A refrigerant, new DC inverter compressor, and new heat exchanger design.



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.

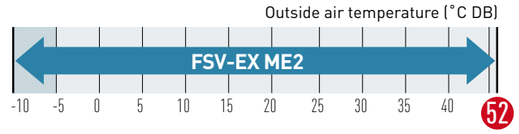
- Up to 64 units can be connected to one system.
- Difference between maximum and minimum pipe runs after first branch can be a maximum of 50m.
- Larger pipe runs can be up to 200m.



Extended operating range

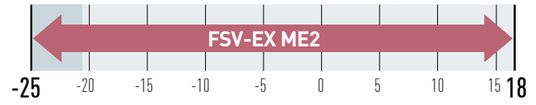
Cooling operation range:

-10°C DB to +52°C DB



Heating operation range:

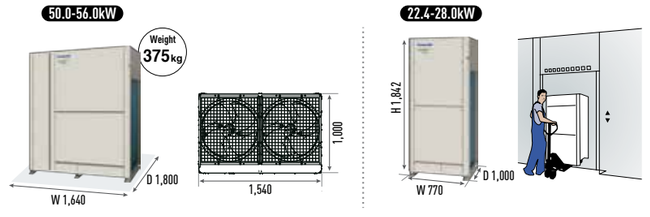
Extended heating operation range enables heating even when the outdoor temperature is as low as -25°C. Using a wired remote control, indoor heating temperature range can be set from 16°C to 30°C*.



* Depending on the type of remote controller.

Compact design

The new 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.



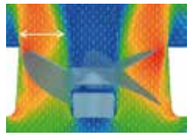
Required installation space

(Unit: mm)

Newly designed fan

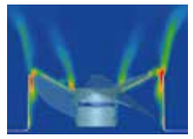
Optimised air flow

Newly designed fan and bell-mouth reduces stress on the fan by dispersing air quickly. Thus, lower 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-efficiency & Space-saving VRF system

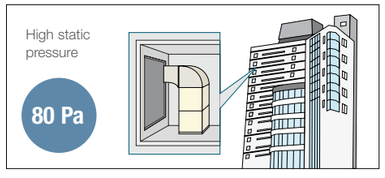
2-PIPE FSV-EX ME2

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 80 Pa 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

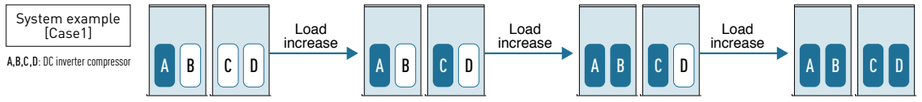
Fan Motor and Casing



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 extended the working life of the system.

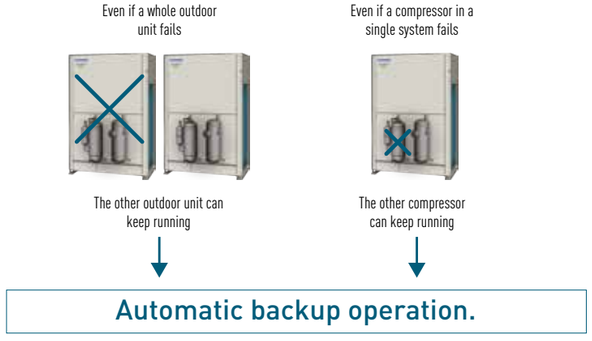


* Depend on accumulated operation time of each compressors.
* Compressor priority has possibility to be changed.
(e.g) Case1: A→C→B→D, Case2: C→A→D→B, Case3: A→C→D→B, Case4: C→A→B→D

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.



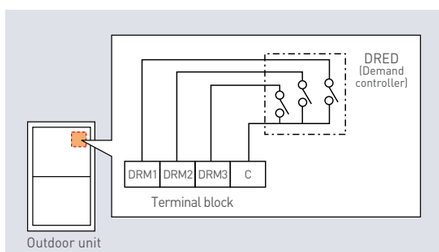
Demand response

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

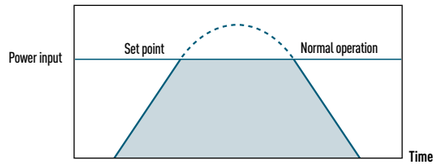


Demand Response Signal	Power Input
DRM 1	0%
DRM 2	50%
DRM 3	75%

Flexible Demand Response with the CZ-CAPDC2*1

Setting is possible as 0% or in the range from 40 to 100% (in steps of 5%). At the time of shipping, setting has been done to the three steps of 0%, 70% and 100%.

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

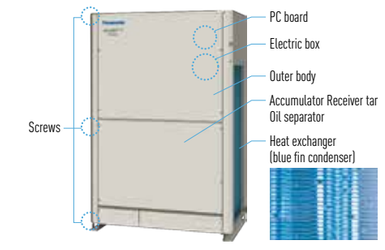


	Power input	
Level 1	100% (Preset)	Possible to change 40-100%
Level 2	70% (Preset)	
Level 3	0% (Always in stop condition)	

Hi-durability outdoor unit

Corrosion-resistance treated for high resistance to rust and salty air to assure long-lasting performance.

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.



FSV-EX ME2 Series

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

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-8ME2R8 U-10ME2R8**	**U-10ME2R8 U-10ME2R8**	**U-10ME2R8 U-12ME2R8**	**U-12ME2R8 U-12ME2R8**
Power supply			400/415V, 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	153,500	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	4.55	4.38	4.13	3.93
	Heating	W/W	5.13	4.76	4.73	4.56	4.42	4.96	4.77	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 1,600 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
Net weight		kg	220	220	270	315	315	440	440	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	17.3 / 16.6	20.3 / 19.6	23.1 / 22.3	26.6 / 25.6
	Cooling Power input	kW	4.77	6.41	8.47	10.3	12.8	11.0	12.8	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	17.7 / 17.1	20.9 / 20.2	22.7 / 21.9	25.3 / 24.4
	Heating Power input	kW	4.87	6.62	7.92	9.86	11.3	11.3	13.2	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	26,880	26,880	27,360	27,840
		L/s	3,733	3,733	3,866	3,866	3,866	7,466	7,466	7,600	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
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˚C (DB)~ +52˚C (DB). Heating: -25˚C (WB)~ +18˚C (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
	Silent mode (2)	dB (A)	49.0	51.0	54.0	55.0	56.0	53.5	54.0	56.0	57.0
Sound power level	Normal mode	dB	75.0	77.0	80.0	81.0	82.0	79.5	80.0	82.0	83.0

U-8ME2R8
U-10ME2R8

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

												
73.0	**78.5**	**85.0**	**90.0**	**96.0**	**101.0**	**107.0**	**113.0**	**118.0**	**124.0**	**130.0**	**135.0**
U-10ME2R8 U-16ME2R8	**U-12ME2R8 U-16ME2R8**	**U-14ME2R8 U-16ME2R8**	**U-16ME2R8 U-16ME2R8**	**U-10ME2R8 U-12ME2R8 U-12ME2R8**	**U-12ME2R8 U-12ME2R8 U-12ME2R8**	**U-10ME2R8 U-12ME2R8 U-16ME2R8**	**U-12ME2R8 U-12ME2R8 U-16ME2R8**	**U-10ME2R8 U-16ME2R8 U-16ME2R8**	**U-12ME2R8 U-16ME2R8 U-16ME2R8**	**U-14ME2R8 U-16ME2R8 U-16ME2R8**	**U-16ME2R8 U-16ME2R8 U-16ME2R8**
400/415V, 3 phase - 50Hz											
73.0	78.5	85.0	90.0	96.0	101.0	107.0	113.0	118.0	124.0	130.0	135.0
249,100	267,900	290,100	307,200	327,600	344,700	365,200	385,700	402,700	423,200	443,700	460,800
81.5	87.5	95.0	100.0	108.0	113.0	119.0	127.0	132.0	138.0	145.0	150.0
278,200	298,600	324,200	341,300	368,600	385,700	406,100	433,400	450,500	471,000	494,900	511,900
3.80	3.69	3.68	3.52	4.05	3.95	3.84	3.75	3.69	3.62	3.62	3.52
4.55	4.56	4.48	4.42	4.72	4.73	4.61	4.57	4.49	4.50	4.46	4.42
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 3,250 x 1,000	1,842 x 3,660 x 1,000	1,842 x 3,250 x 1,000	1,842 x 3,660 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
535	585	630	630	760	810	805	855	850	900	945	945
30.1 / 29.0	33.1 / 31.9	36.6 / 35.3	40.2 / 38.7	36.8 / 35.5	39.3 / 37.9	43.8 / 42.2	46.7 / 45.0	50.2 / 48.4	53.2 / 51.3	56.9 / 54.9	60.2 / 58.1
19.2	21.3	23.1	25.6	23.7	25.6	27.9	30.1	32.0	34.3	35.9	38.4
28.4 / 27.4	30.1 / 29.0	33.6 / 32.4	35.8 / 34.6	35.9 / 34.6	37.1 / 35.8	40.5 / 39.0	43.6 / 42.0	46.6 / 44.9	48.2 / 46.4	51.5 / 49.7	53.8 / 51.8
17.9	19.2	21.2	22.6	22.9	23.9	25.8	27.8	29.4	30.7	32.5	33.9
3	3	4	4	3	3	4	4	5	5	6	6
27,360	27,840	27,840	27,840	41,280	41,760	41,280	41,760	41,280	41,760	41,760	41,760
7,600	7,733	7,733	7,733	11,466	11,600	11,466	11,600	11,466	11,600	11,600	11,600
22.4	22.6	22.6	22.6	33.7	33.9	33.7	33.9	33.7	33.9	33.9	33.9
80	80	80	80	80	80	80	80	80	80	80	80
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)
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)
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)
Cooling: -10˚C (DB)~ +52˚C (DB). Heating: -25˚C (WB)~ +18˚C (WB)											
62.5	63.5	63.5	64.0	63.0	64.0	64.0	64.5	65.0	65.5	65.5	66.0
57.5	58.5	58.5	59.0	58.0	59.0	59.0	59.5	60.0	60.5	60.5	61.0
83.5	84.5	84.5	85.0	84.0	85.0	85.0	85.5	86.0	86.5	86.5	87.0

Appearance								
HP			**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			400/415V, 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	614,300
	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	665,500	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˚C (DB)~ +52˚C (DB). Heating: -25˚C (WB)~ +18˚C (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˚C DB / 19˚C WB	20˚C DB
	Outdoor air temperature	35˚C DB	7˚C DB / 6˚C WB

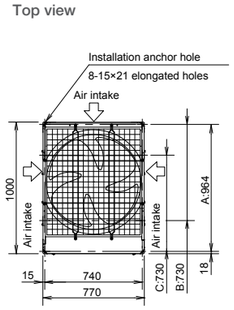
* These specifications are subject to change without notice.
** Anti-corrosion model (with suffix "E") has the same specifications.

22.4 / 28.0 kW

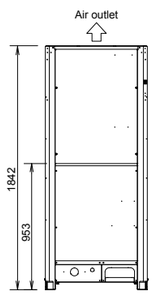
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

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

Top view



Front view



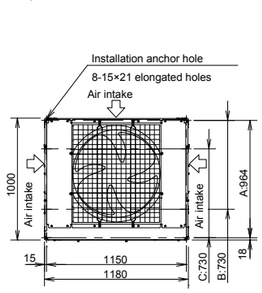
unit: mm

33.5 / 40.0 / 45.0 kW

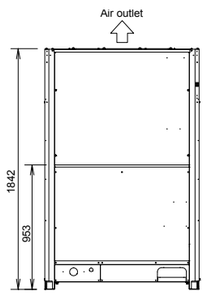
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

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 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			400/415V, 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			400/415V, 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	433,400	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	593,900	614,300	631,400
	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	665,500	686,000	706,500
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	648,500	668,900	689,400	709,900	727,000	747,400	764,500
	Heating kW	213.0	219.0	226.0	233.0	239.0	245.0	252.0
	BTU/h	727,000	747,400	771,300	795,200	815,700	836,200	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 mm	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	kg	1,335	1,345	1,380	1,440	1,440	1,500	1,500
Electrical ratings	Cooling Running current A	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 kW	58.2	62.2	62.8	65.3	68.6	71.1	74.4
	Heating Running current A	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 kW	51.0	54.1	54.6	56.5	59.3	60.8	64.0
Starting current	A	7	7	8	8	8	8	8
Air flow rate	m³/h	76,440	86,340	76,440	86,820	86,820	97,200	97,200
	L/s	21,233	23,983	21,233	24,116	24,116	27,000	27,000
Refrigerant amount at shipment	kg	44.6	44.1	44.6	44.3	44.3	44.0	44.0
External static pressure	Pa	80	80	80	80	80	80	80
Piping connections	Gas pipe mm (inches)	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 mm (inches)	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 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)
Ambient temperature operating range		Cooling: -10℃ (DB)~ +52℃ (DB). Heating: -25℃ (WB)~ +18℃ (WB)						
Sound pressure level	Normal mode dB (A)	66.5	65.5	66.5	66.5	66.5	66.0	66.0
	Silent mode (2) dB (A)	61.5	60.5	61.5	61.5	61.5	61.0	61.0
Sound power level	Normal mode dB	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.
** Anti-corrosion model (with suffix "E") has the same specifications.

FSV-EX ME2 Series

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

U-8ME2R8
U-10ME2R8

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

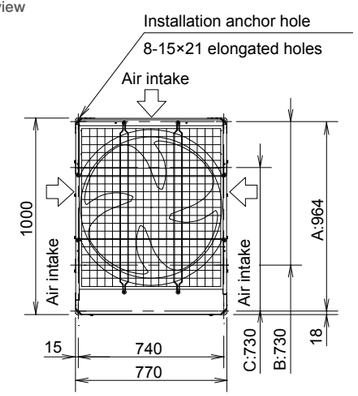
U-18ME2R8
U-20ME2R8

22.4 / 28.0kW

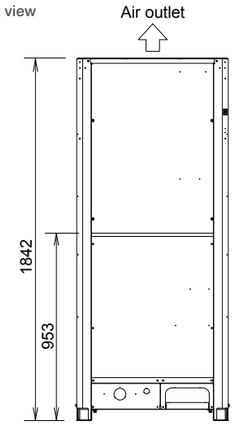
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

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

Top view



Front view



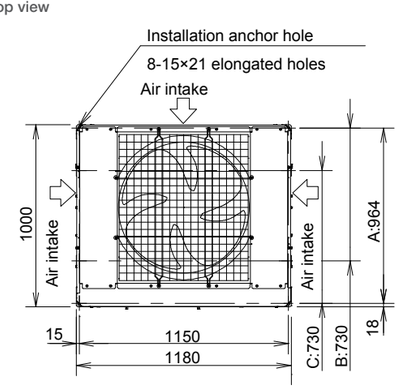
unit: mm

22.4 / 28.0 / 33.5 / 40.0 / 45.0kW

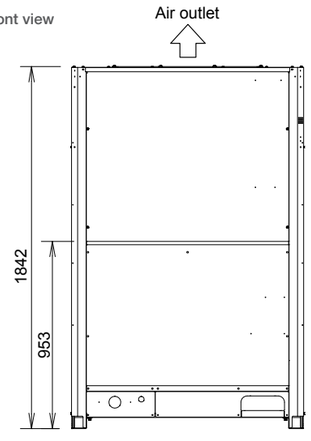
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

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

Top view



Front view



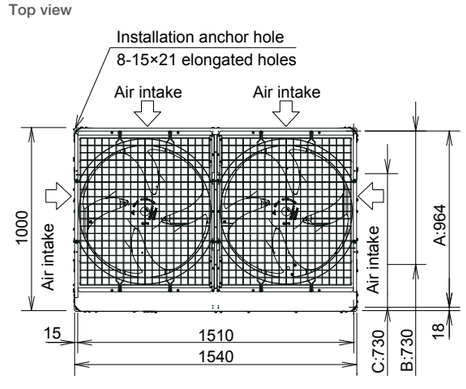
unit: mm

50.0 / 56.0kW

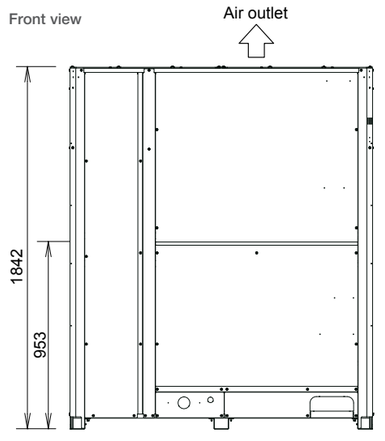
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

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

Top view



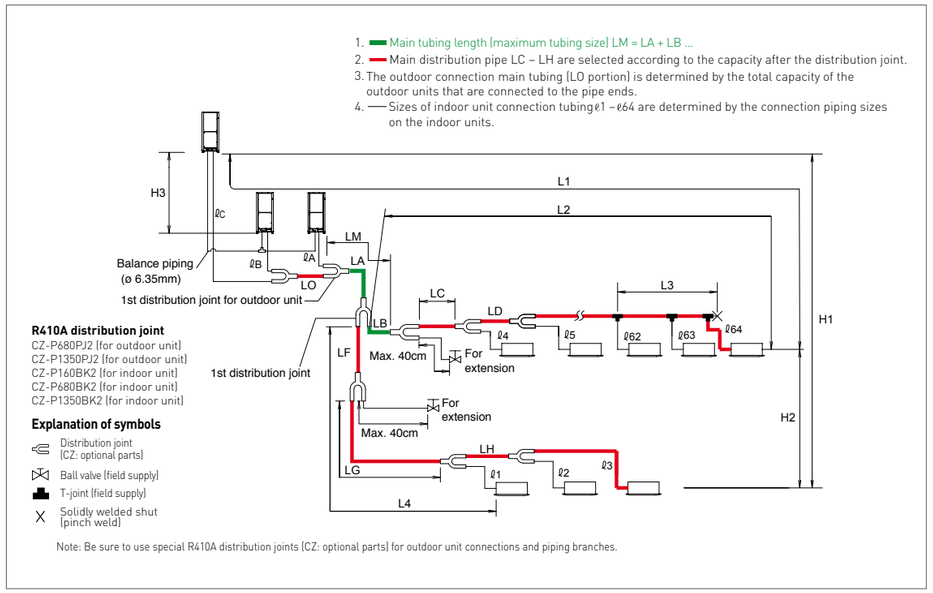
Front view



unit: mm

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	Max. piping length	Actual length	≤200*2
			Equivalent length	≤210*2
	Δ L (L2-L4)	Difference between max. length and min. length from the 1st distribution joint		≤50*5
	LM	Max. length of main piping (at maximum size) * Even after 1st distribution joint, LM is allowed if at maximum piping length.		— *3
	ℓ1, ℓ2~ ℓ64	Max. length of each distribution pipe		≤30*7
	L1+ ℓ1+ ℓ2~ ℓ63+ ℓA+ ℓB+LF+LG+LH	Total max. piping length including length of each distribution pipe (only liquid piping)		≤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	Max. difference between indoor units		≤15*6
	H3	Max. difference between outdoor units		≤4
Allowable length of joint piping	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 90 m (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 50 m, increase the main piping size at the portion before 50 m 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 50 m, set based 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: 50 kg
Total amount of refrigerant for the system with 2 outdoor units: 80 kg
Total amount of refrigerant for the system with 3 outdoor units or 4 outdoor units: 105 kg
5: When the piping length exceeds 40 m, 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 (meter): 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
0 kg	0 kg	4.0 kg	4.0 kg	4.0 kg	5.5 kg	5.5 kg

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.)

High Efficiency Combination Model

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

Space Saving Combination Model

Piping size (mm)			
Material Temper - O		Material Temper - 1/2 H, H	
ø6.35	t 0.8	ø22.22	t 1.0
ø9.52	t 0.8	ø25.4	t 1.0
ø12.7	t 0.8	ø28.58	t 1.0
ø15.88	t 1.0	ø31.75	t 1.1
ø19.05	t 1.2	ø38.1	over t 1.35
		ø41.28	over t 1.45
		ø44.45	over t1.55
		ø50.8	over t1.8

* 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 (optional accessories) for 2-PIPE ME2 Series

Optional Distribution Joint Kits

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

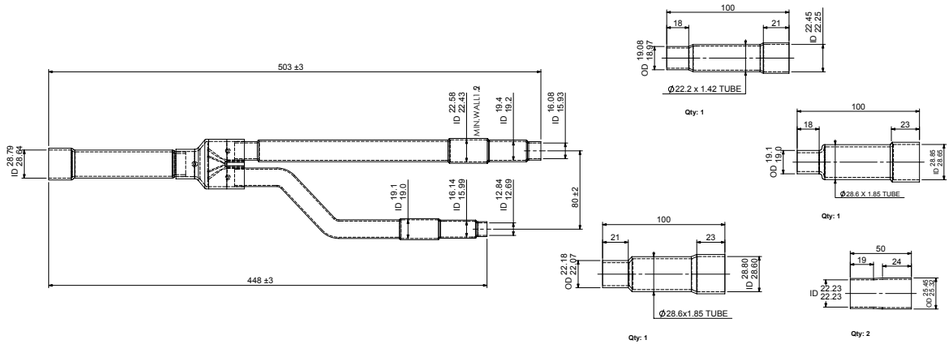
Model name	Cooling capacity after distribution	Remarks
1. CZ-P680PJ2	68.0 kW or less	For outdoor unit
2. CZ-P1350PJ2	168.0kW or less	For outdoor unit
3. CZ-P160BK2	22.4 kW or less	For indoor unit
4. CZ-P680BK2	68.0 kW or less	For indoor unit
5. CZ-P1350BK2	168.0kW or less	For indoor unit

Piping size (with thermal insulation)

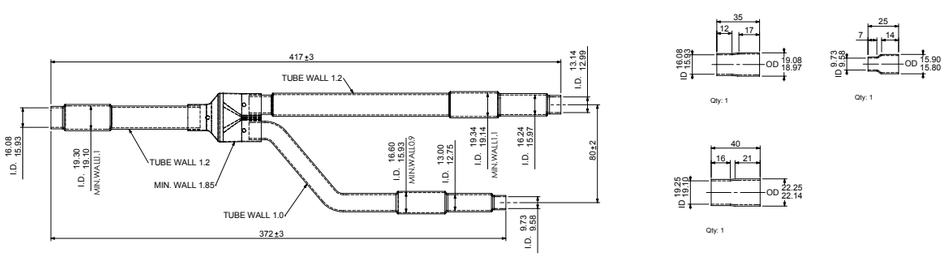
1. CZ-P680PJ2

Use: For outdoor unit
(Capacity after distribution joint is 68.0kW or less.)

GAS PIPING



LIQUID PIPING

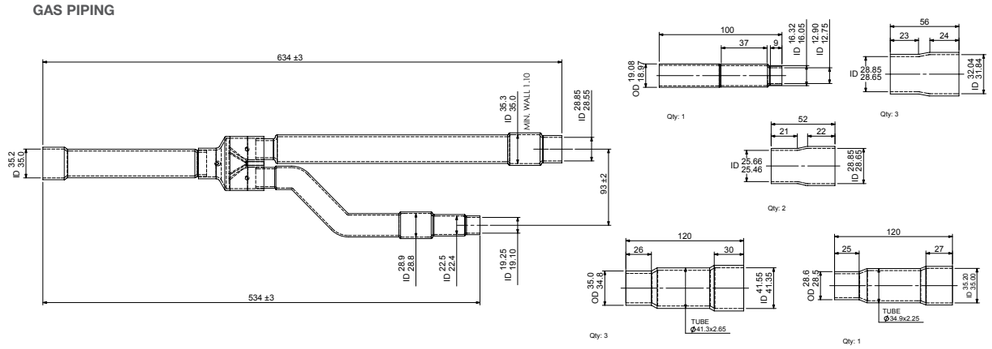


All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

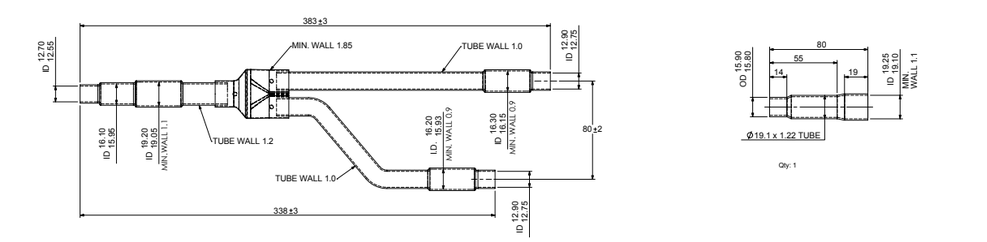
2. CZ-P1350PJ2

Use: For outdoor unit (Capacity after distribution joint is greater than 68.0kW and no more than 168.0kW.)

GAS PIPING



LIQUID PIPING

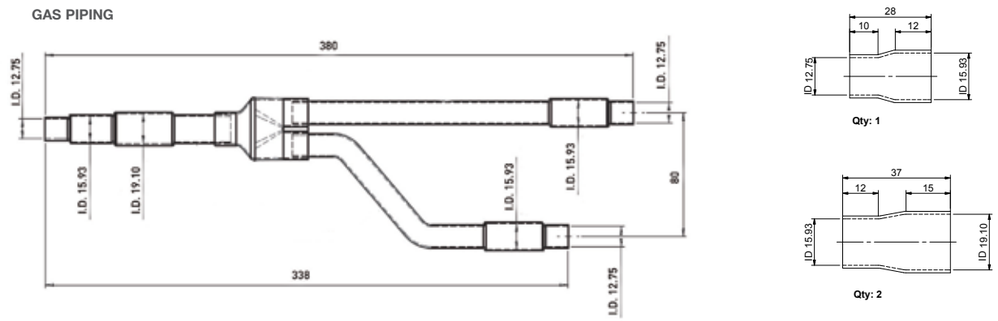


All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

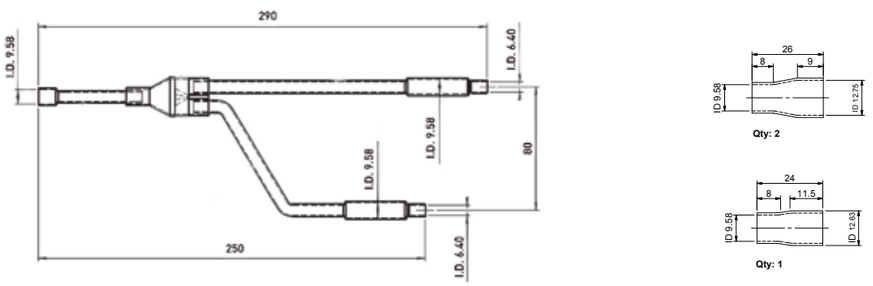
3. CZ-P160BK2

Use: For indoor unit (Capacity after distribution joint is 22.4 kW or less.)

GAS PIPING



LIQUID PIPING



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

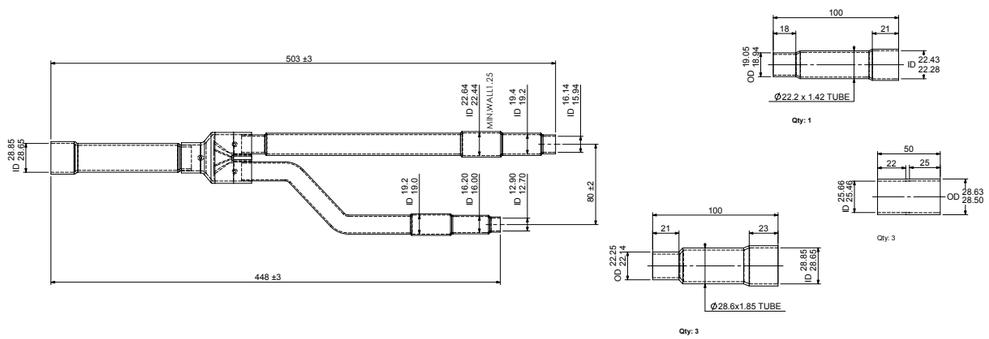
Refrigerant Branch Pipes (optional accessories) for 2-PIPE ME2 Series

Piping size (with thermal insulation)

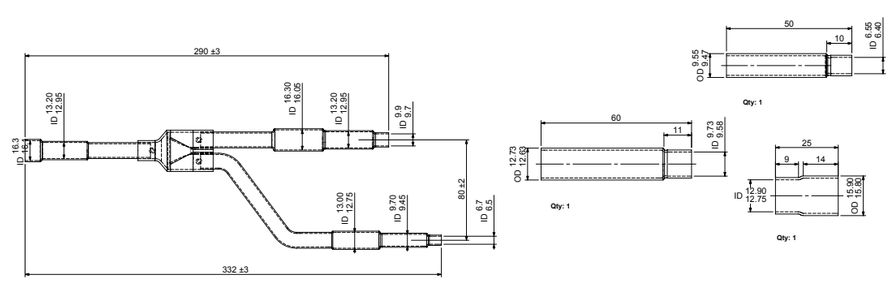
4. CZ-P680BK2

Use: For indoor unit (Capacity after distribution joint is more than 22.4 kW and no more than 68.0 kW.)

GAS PIPING



LIQUID PIPING

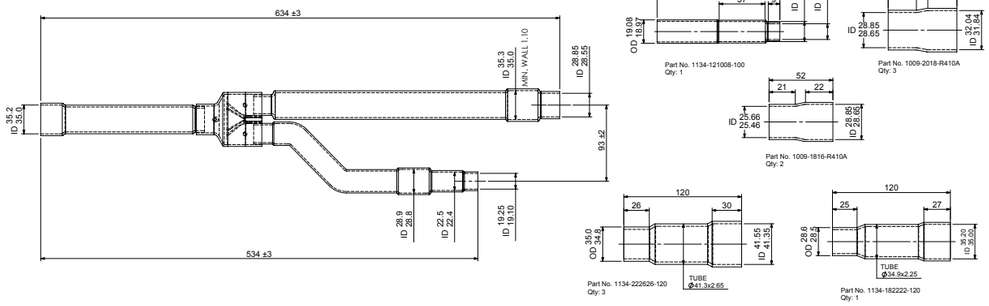


All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

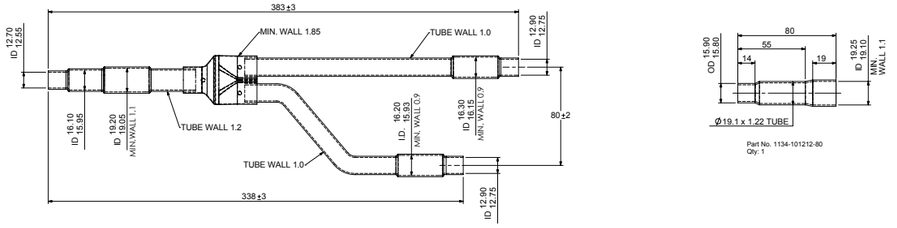
5. CZ-P1350BK2

Use: For indoor unit (Capacity after distribution joint 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.

ALL INVERTER FSV EX (Flexi System VRF / Eco Extreme)

Simultaneous heating and cooling VRF system

3-PIPE FSV-EX MF3 Series

Heat Recovery Type

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

- Suitable for R22 renewal projects (Refer to Page 138) RENEWAL R22
- Demand response ready (Peak cut) DRED ready

* 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

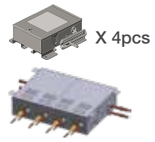
3-PIPE MF3 series enables simultaneous heating and cooling operation by each solenoid valve kit.
New design to decrease chattering noise at low capacity load.

CZ-P56HR3
Up to 5.6 kW

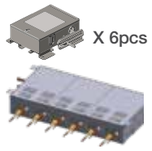
CZ-P160HR3
From 5.7 to 16 kW

3-Pipe control PCB
CZ-CAPE2*

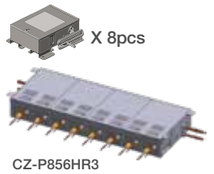
Must be added to the CZ-P56HR3 OR CZ-P160HR3.



CZ-P456HR3
CZ-P4160HR3



CZ-P656HR3

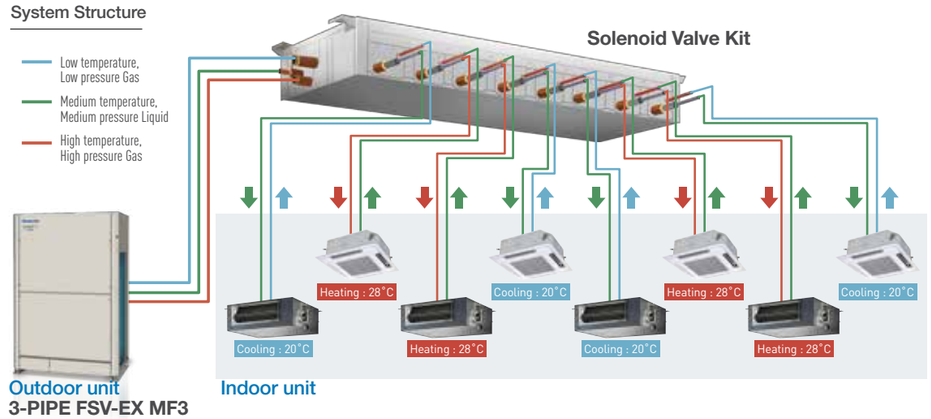


CZ-P856HR3

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℃ DB.

System Structure



FSV-EX MF3 Series

Simultaneous heating and cooling VRF system

3-PIPE FSV-EX MF3 Series

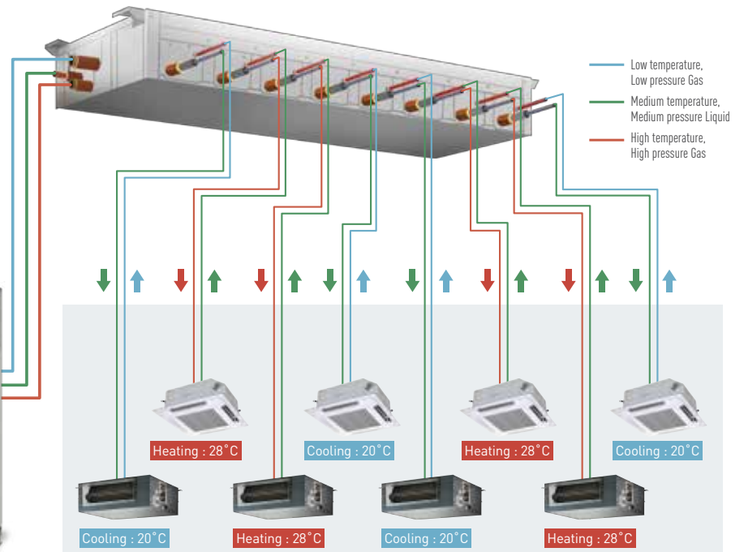
New Solenoid Valve Kit Multiple Connection Port Type

The new Panasonic Solenoid Valve Kit field installation work becomes more easy. In fact, our latest technology is designed new packages body without additional branch-kits and 3-PIPE control PCB. Connection pipe for main refrigerant circuit line comes on both side of the unit. It helps the system design and piping layout for more flexible.

System Structure

Solenoid Valve Kit

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.



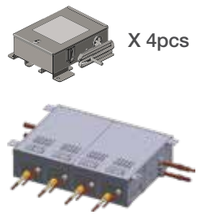
Outdoor unit

3-PIPE FSV-EX MF3

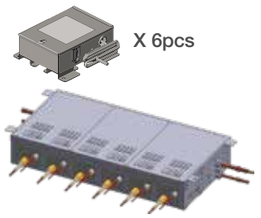
Indoor unit

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

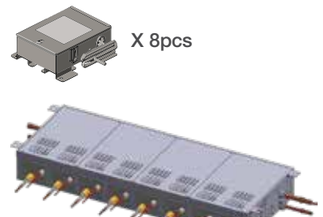
CZ-P456HR3
CZ-P4160HR3



CZ-P656HR3



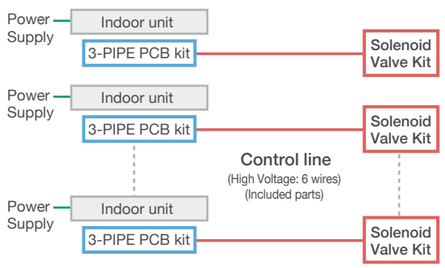
CZ-P856HR3



	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

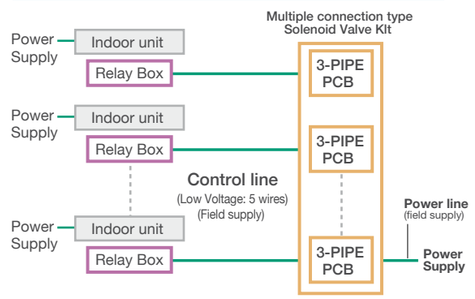
Current Model / Single Connection Type



Parts included in HR3 kit

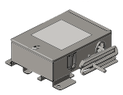
3-PIPE PCB kit (separately purchased)

New Model / Multiple Connection Type



Parts included in HR3 kit

Signal Relay Box (included accessory)



FSV-EX MF3 Series

Simultaneous heating and cooling VRF system

3-PIPE FSV-EX MF3 Series

Increased max. number of connectable indoor units

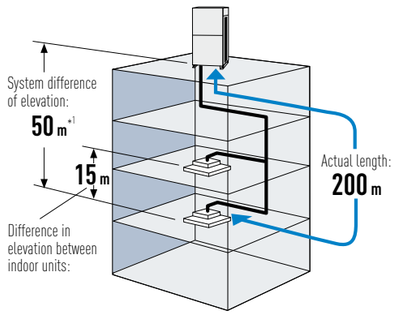
The 3-PIPE MF3 series has four DC inverter outdoor units from 22.4kW to 45.0kW as the basic models, and by combination of up to three units, an air-conditioning capacity of 22.4kW to 135.0kW can be set according to the user needs.

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

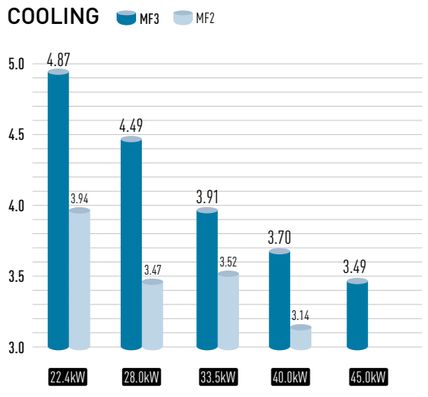


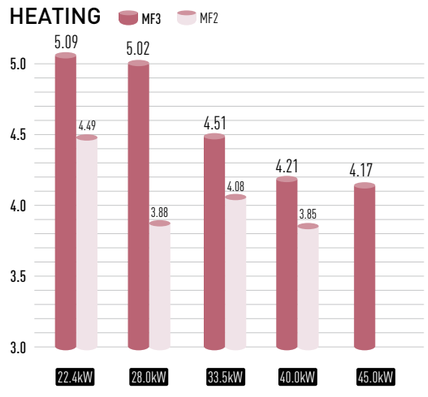
*1: 40 m if the outdoor unit is below the indoor unit.

Max. total length:500 m

Excellent energy saving

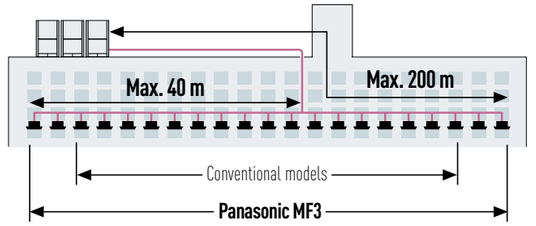
The operation efficiency has been improved using highly efficient R410A refrigerant, new DC inverter compressor, and new heat exchanger design.





Up to 40m piping after first branch

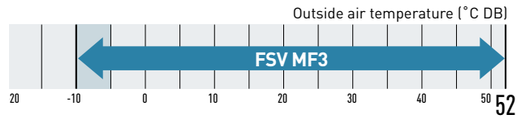
Up to 52 units can be connected to one system. Flexible piping layout makes it easier to design systems for locations such as train stations, airports, schools and hospitals.



Extended operating range

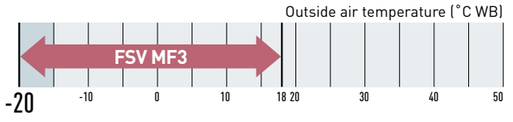
Cooling operation range:

The cooling operation range has been extended to -10℃ DB to +52℃ DB by changing the outdoor fan to an inverter type.



Heating operation range:

Stable heating operation even with an outside air temperature of -20℃ WB



Wide temperature setting range

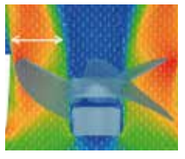
Wired remote control heating temperature setting range is 16 to 30°C

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

Newly designed fan

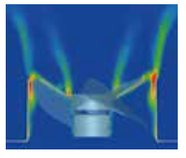
Optimised air flow

Newly designed fan and bell-mouth reduces stress on the fan by dispersing air quickly. Thus, lower 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.



FSV-EX MF3 Series

Simultaneous heating and cooling VRF system

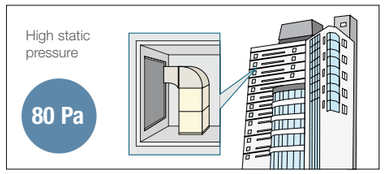
3-PIPE FSV-EX MF3 Series

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 80 Pa 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

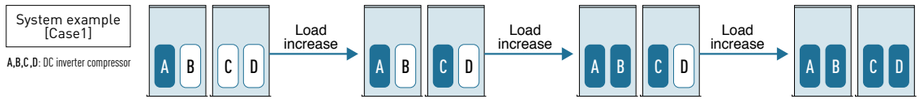
Fan Motor and Casing



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 extended the working life of the system.

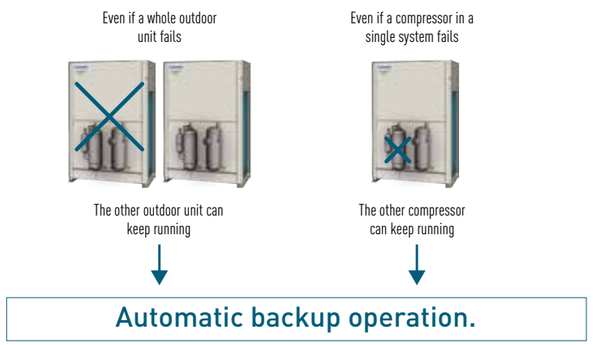


* Depend on accumulated operation time of each compressors.
* Compressor priority has possibility to be changed.
(e.g) Case1: A→C→B→D, Case2: C→A→D→B, Case3: A→C→D→B, Case4: C→A→B→D

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.

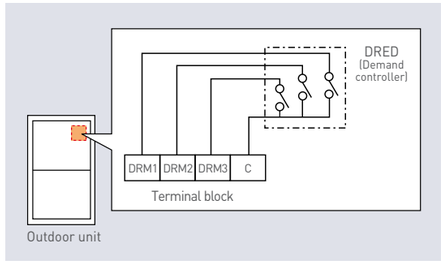


Demand response

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)

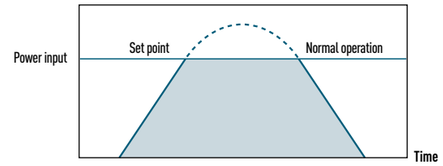


Demand Response Signal	Power Input
DRM 1	0%
DRM 2	50%
DRM 3	75%

Flexible Demand Response with the CZ-CAPDC2*1

Setting is possible as 0% or in the range from 40 to 100% (in steps of 5%). At the time of shipping, setting has been done to the three steps of 0%, 70% and 100%.

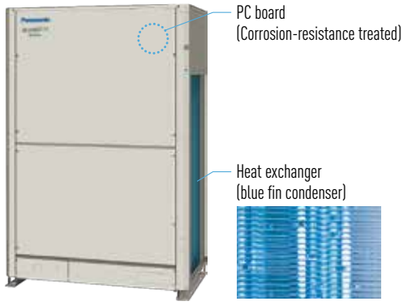
*1 An outdoor Seri-Para I/O unit (CZ-CAPDC2) is required for demand input signal.



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

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.



3-PIPE FSV-EX MF3 Series

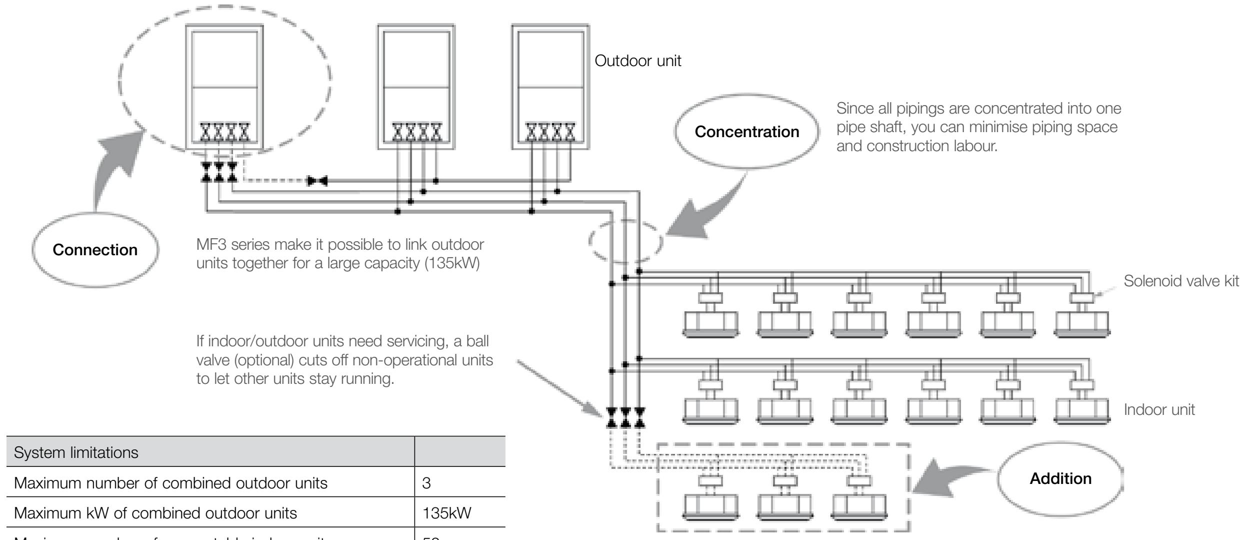
			22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0	73.0
Appearance												
kW			22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0	73.0
Model name			**U-8MF3R7**	**U-10MF3R7**	**U-12MF3R7**	**U-14MF3R7**	**U-16MF3R7**	**U-8MF3R7 U-10MF3R7**	**U-8MF3R7 U-12MF3R7**	**U-10MF3R7 U-12MF3R7**	**U-12MF3R7 U-12MF3R7**	**U-10MF3R7 U-16MF3R7**
Power supply			380/400/415V, 3 phase - 50Hz 380/400V, 3 phase - 60Hz									
Capacity	Cooling	kW	22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0	73.0
		BTU/h	76,500	95,600	114,300	136,500	153,600	170,600	191,100	209,900	232,100	249,100
	Heating	kW	25.0	31.5	37.5	45.0	50.0	56.0	63.0	69.0	76.5	81.5
		BTU/h	85,300	107,500	128,000	153,600	170,600	191,100	215,000	235,500	261,100	278,200
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
	Heating	W/W	5.09	5.02	4.51	4.21	4.17	5.09	4.70	4.73	4.47	4.45
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
Net weight		kg	264	265	289	337	337	529	553	554	578	602
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
	Cooling Power input	kW	4.60	6.23	8.57	10.8	12.9	10.7	13.2	14.8	17.5	19.1
	Heating Running current	A	8.02	10.5	13.4	18.1	20.0	18.2	21.7	23.9	27.6	30.6
	Heating Power input	kW	4.91	6,27	8.32	10.7	12.0	11.0	13.4	14.6	17.1	18.3
Air flow rate		m³/h	12,600	13,200	13,920	13,920	13,920	25,800	26,520	27120	27,840	27,120
		L/s	3,500	3,667	3,867	3,867	3,867	7,166	7,366	7,533	7,733	7,533
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
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)
	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)
	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)
	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)
Ambient temperature operating range			Cooling/Dry: -10˚C~+52˚C (DB). Heating: -20˚C~+18˚C (WB) Simultaneous operation: -10˚C~+24˚C (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
	Silent mode	dB (A)	49.0	52.0	55.0	56.0	57.0	54.0	56.0	57.0	58.0	58.5

			78.5	85.0	90.0	96.0	101.0	107.0	113.0	118.0	124.0	130.0	135.0
Appearance													
kW			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-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 - 60Hz										
Capacity	Cooling	kW	78.5	85.0	90.0	96.0	101.0	107.0	113.0	118.0	124.0	130.0	135.0
		BTU/h	267,900	290,100	307,200	327,600	344,700	365,200	385,700	402,700	423,200	443,700	460,800
	Heating	kW	87.5	95.0	100.0	108.0	113.0	119.0	127.0	132.0	138.0	145.0	150.0
		BTU/h	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	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	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	1,842x2,420 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	626	674	674	866	890	891	938	939	963	1,011	1,011
Electrical ratings	Cooling Running current	A	35.1	39.6	42.6	39.6	42.6	46.1	50.5	52.8	56.5	61.1	63.9
	Cooling Power input	kW	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	33.5	37.9	40.1	39.6	41.9	43.9	49.4	50.8	53.7	57.9	60.1
	Heating Power input	kW	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	27,840	27,840	27,840	39,720	40,440	41,040	40,440	41,040	41,760	41,760	41,760
		L/s	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	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)	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)	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)
	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)
	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)
Ambient temperature operating range			Cooling/Dry: -10˚C~+52˚C (DB). Heating: -20˚C~+18˚C (WB) Simultaneous operation: -10˚C~+24˚C (DB)										
Sound pressure level	Normal mode	dB (A)	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)	59.5	59.5	60.0	59.0	59.5	60.0	60.5	61.0	61.5	61.5	62.0

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

These specifications are subject to change without notice.
* For mixed heating and cooling operation with an outdoor temperature in excess of 24˚C DB, please use 50% or more of the horsepower of the outdoor unit for cooling operation.

System example

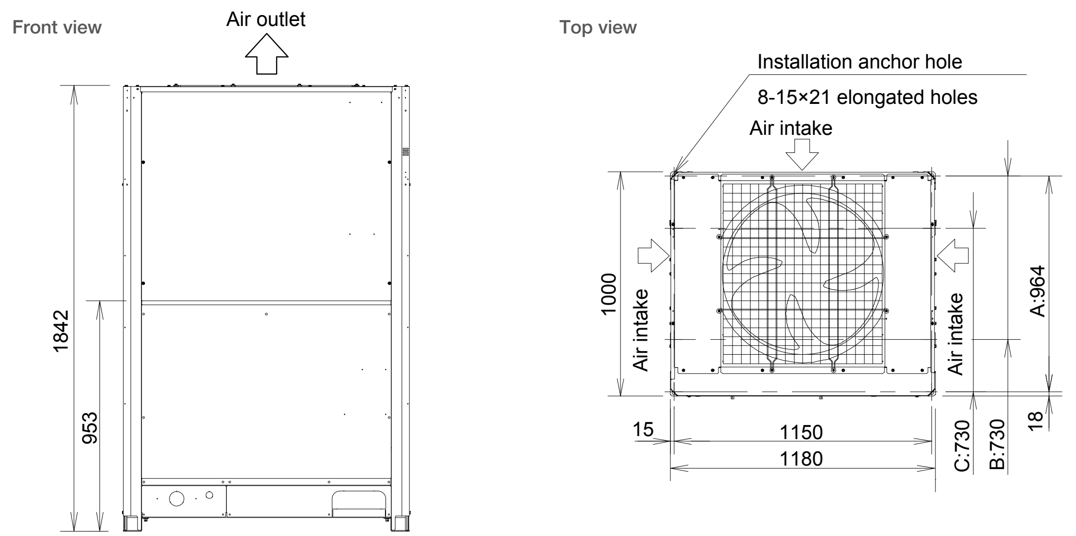


System limitations	
Maximum number of combined outdoor units	3
Maximum kW of combined outdoor units	135kW
Maximum number of connectable indoor units	52
Indoor/outdoor unit capacity ratio	50-150%
Maximum actual piping length	200 m
Maximum level difference (when outdoor unit is lower)	50 (40) m
Maximum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

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

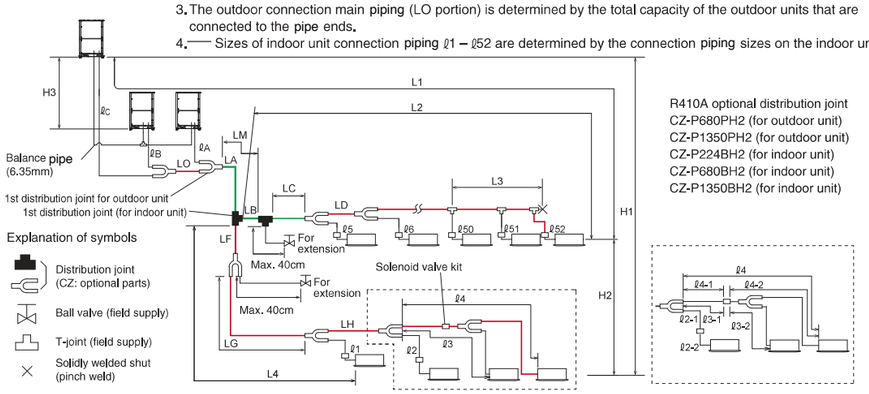


unit: mm

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 ℓ1 – ℓ52 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	Max. piping length	Actual length	≦200*2
			Equivalent length	≦210*2
	Δ L (L2 - L4)	Difference between max. length and min. length from the 1st distribution joint		≦50*4
	LM	Max. length of main piping (at maximum size) *Even after 1st distribution joint,LM is allowed if at maximum piping length.		—*3
	ℓ1,ℓ2~ℓ52	Max. length of each distribution pipe		≦50*5
	L1+ℓ1+ℓ2~ℓ51+ℓA +ℓB+LF+LG+LH	Total max. piping length including length of each distribution pipe (only liquid pipe)		≦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	Max.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	Max. difference between indoor units		≦15
	H3	Max. difference between outdoor units		≦4
Allowable length of joint piping	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
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 90 m (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 50 m, increase the main piping size at the portion before 50 m 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 marksd "L" (L2-L4) exceeds 40 m, 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 1rank.

System limitations

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

*1: In the case of 24 HP (type 68.0 kW) 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 meter, 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.

Distribution joint kits

Remarks	Model name	Cooling capacity after distribution
For outdoor unit	1. CZ-P680PH2	68.0 kW or less
	2. CZ-P1350PH2	118.0 kW or less
For indoor unit	3. CZ-P224BH2	22.4 kW or less
	4. CZ-P680BH2	68.0 kW or less
	5. CZ-P1350BH2	118.0 kW 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 (optional accessories) for 3-PIPE MF3 Series

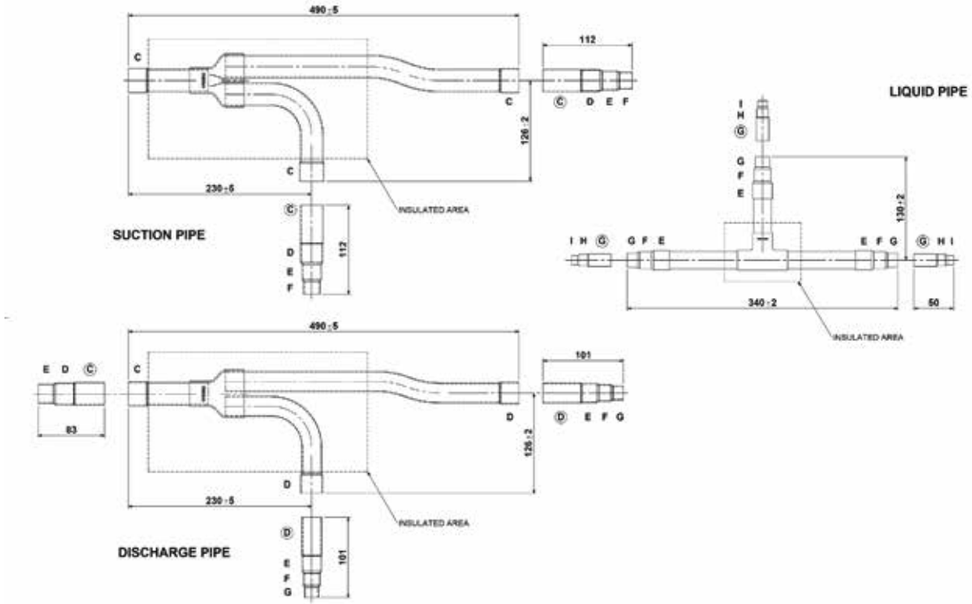
Optional Distribution Joint Kits

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

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

1. CZ-P680PH2

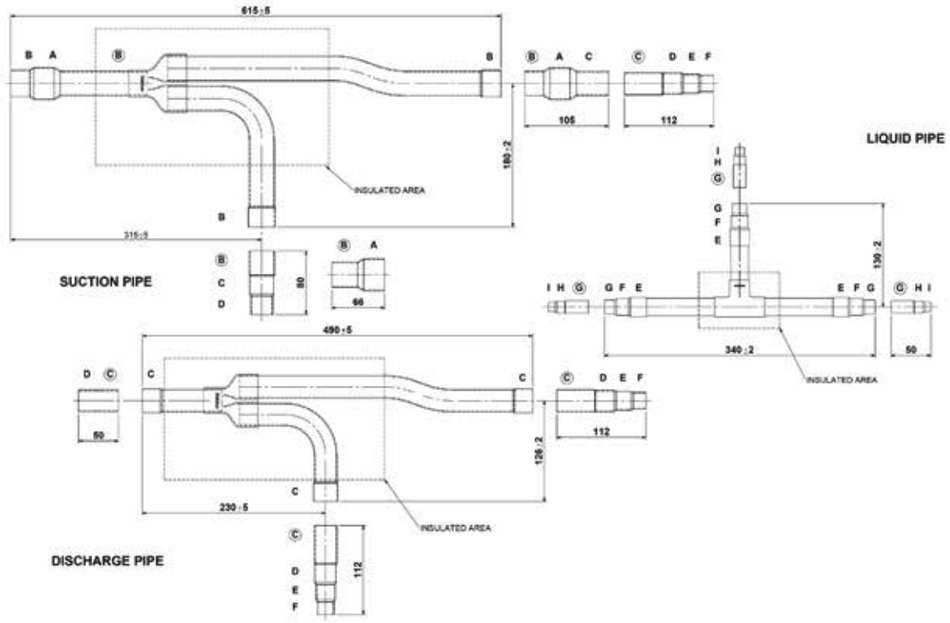
Use: For outdoor unit (Capacity after distribution joint is 68.0 kW or less.)



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

2. CZ-P1350PH2

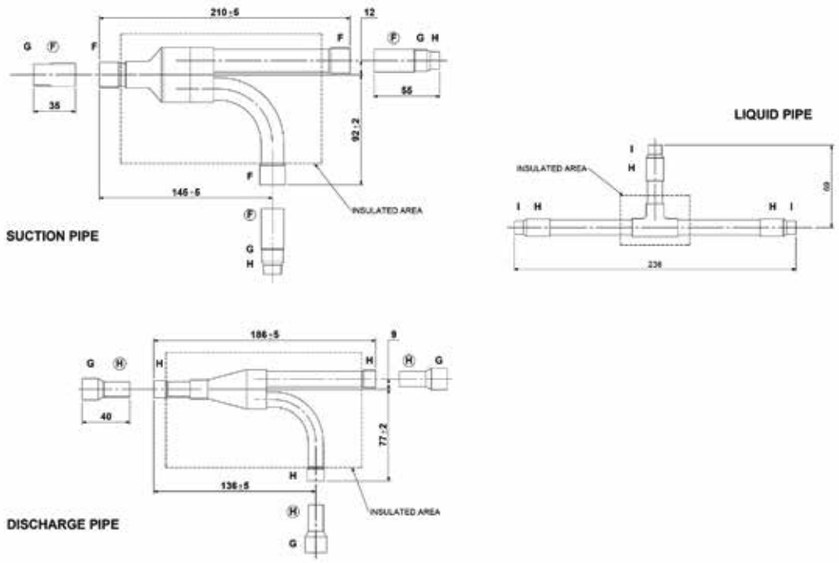
Use: For outdoor unit (Capacity after distribution joint is greater than 68.0 kW and no more than 135.0 kW.)



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 distribution joint is 22.4 kW or less.)

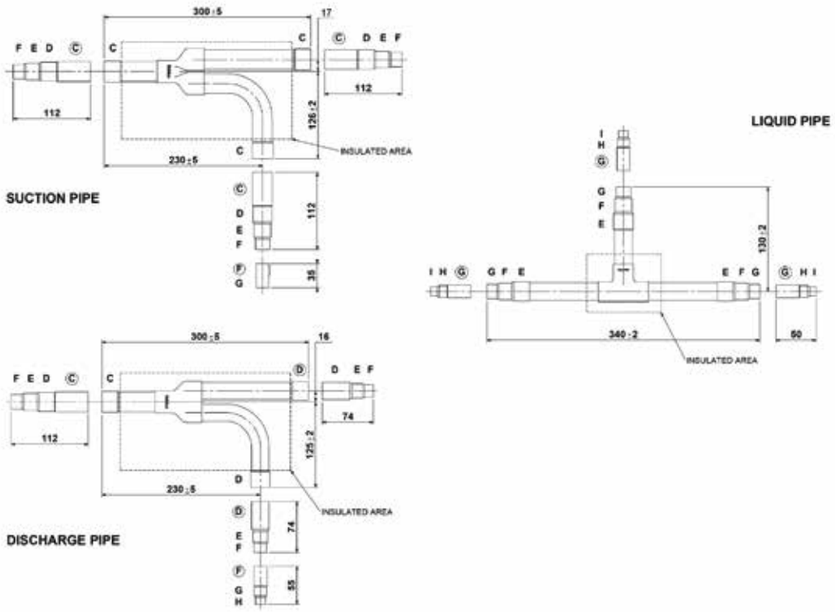


All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

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

4. CZ-P680BH2

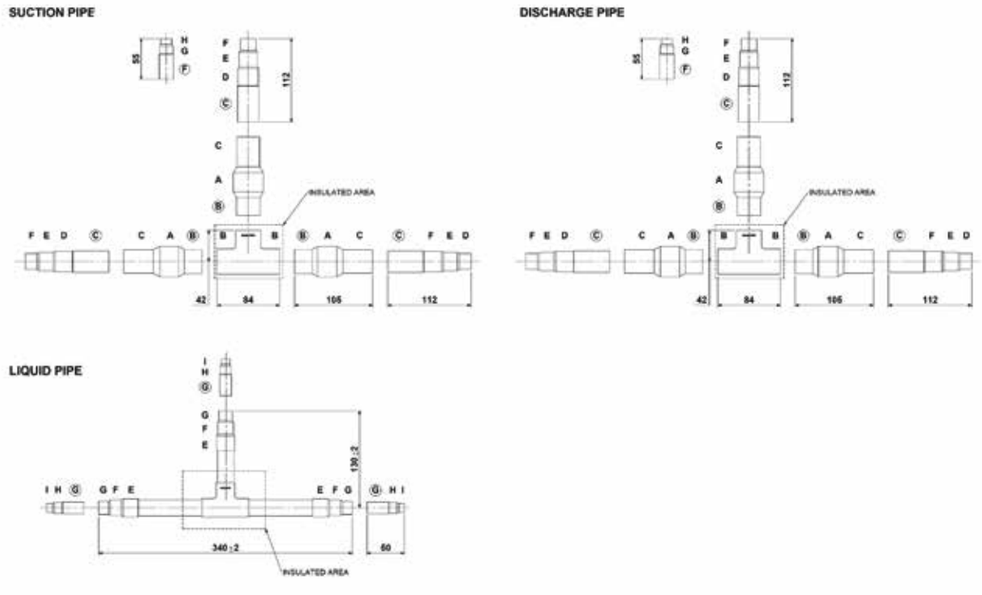
Use: For indoor unit (Capacity after distribution joint is greater than 22.4 kW and no more than 68.0 kW.)



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 distribution joint is greater than 68.0 kW and no more than 135.0 kW.)



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

High external static pressure 35Pa

LE1 LE2

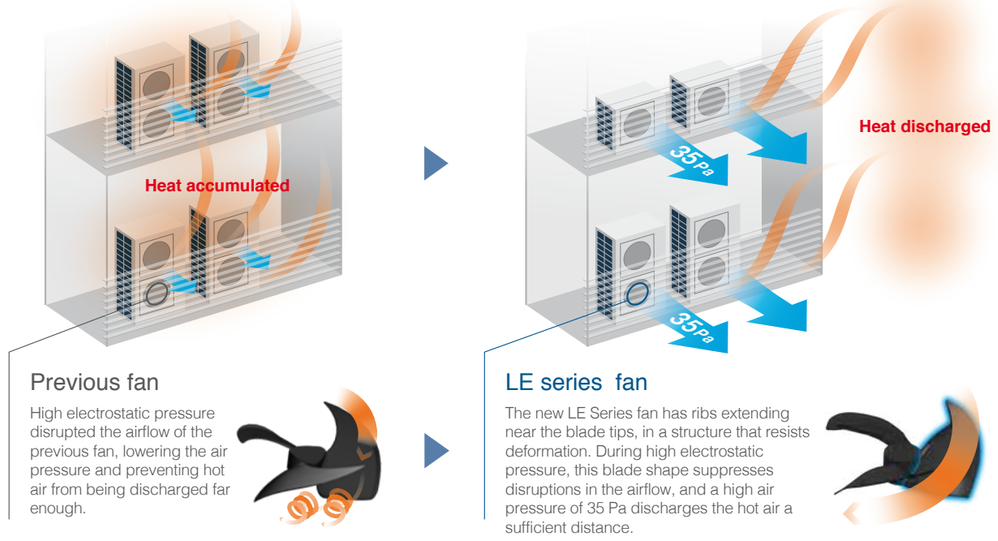
When unit is installed on a narrow balcony and exposed to the sun, the fence at the front side would restrict hot air from being discharged. Heat accumulated in an enclosure can cause over-heating. This could potentially result in damage or shorten the product's life span. A high external static pressure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

LE series - High pressure

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



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.

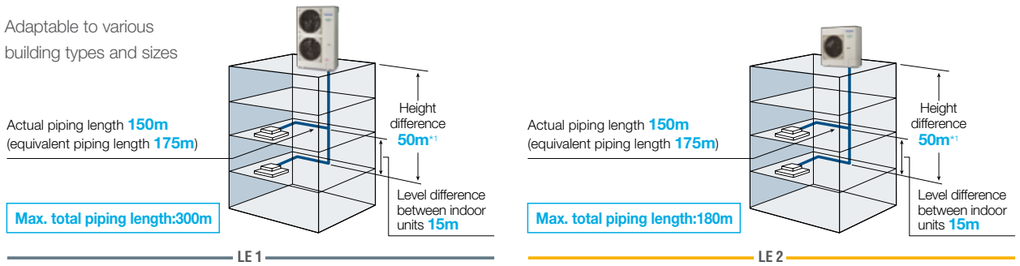
LE series fan

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 35 Pa 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

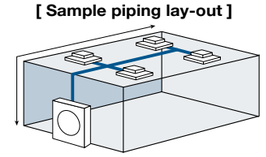
Up to 50m of piping without additional gas charging makes installation flexible, easy and hassle-free.

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)

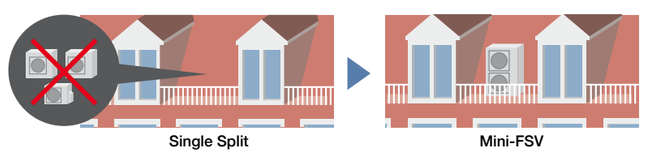
[Sample piping lay-out]



Compact design

LE1 LE2

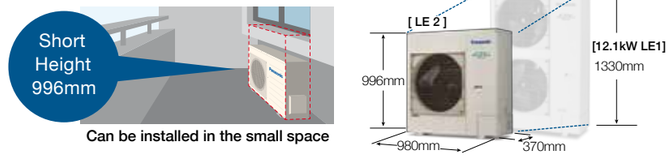
Also, since Mini VRF LE Series is a single unit, it is possible to install the unit in more various places compared to the Single Split system.



Short height of 996mm

LE2

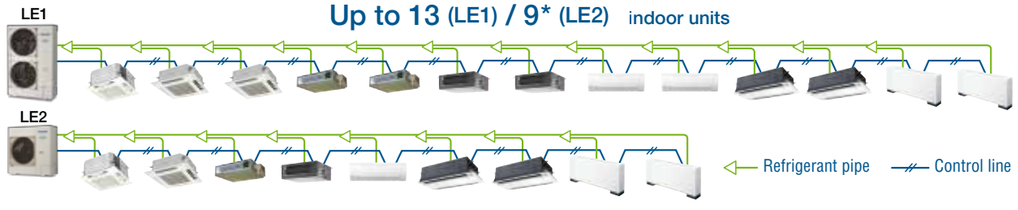
In addition to raising efficiency, we have made the outdoor unit more compact. It can now be installed in places that were previously too small.



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.



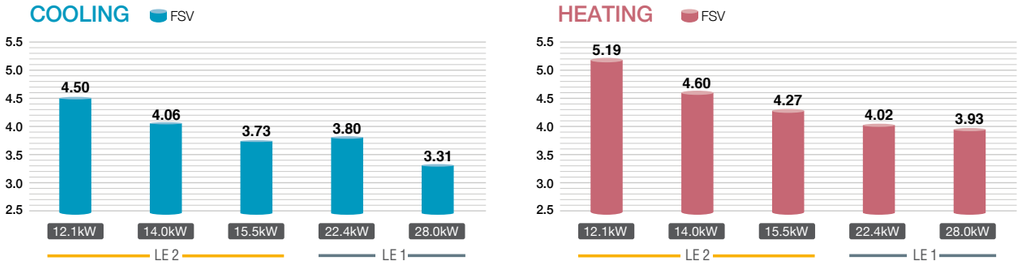
* Use any of the FSV indoor models. Depending on the size or type of indoor unit, piping size shall be changed. Please refer technical documents for details.
* Diversity ration 50-130%
* 15.5kW only; 12.1kW for 7 units, 14.0kW for 8 units.

2-PIPE Mini-FSV LE Series

High efficiency

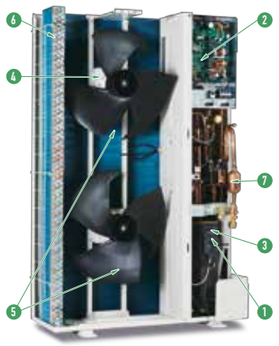
LE1 LE2

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	The number of PCB is 2 pieces for making maintenance easier.
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 fan diameter has been increased its size, the air volume has been increased whilst maintaining a same sound level.
6	Heat Exchanger & Copper Tubes	The heat exchanger size and the copper tube 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.

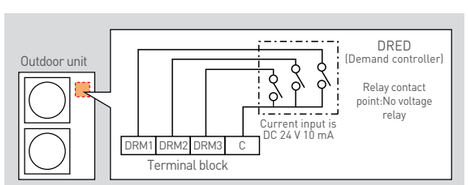
Flexible demand response with the optional terminal block

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.

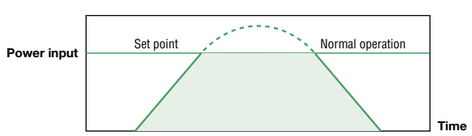
*Terminal block parts to be supplied separately. Please ask your dealer.



Flexible Demand Response with the CZ-CAPDC2*1

Setting is possible as 0% or in the range from 40 to 100% (in steps of 5%). At the time of shipping, setting has been done to the three steps 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)	

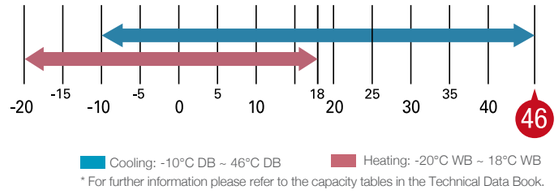
Wide operating range

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.

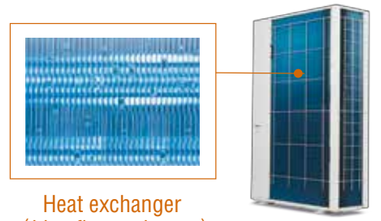


* For further information please refer to the capacity tables in the Technical Data Book.

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.



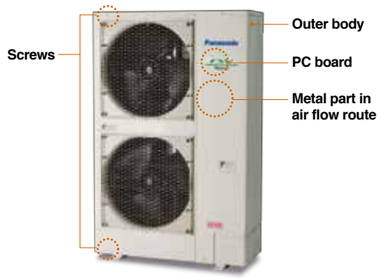
High durability outdoor unit

LE1 LE2

Corrosion-resistance treated for high resistance to rust and salty air to assure long-lasting performance.

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 High-spec Remote Controller (CZ-RTC6).

2-PIPE Mini-FSV LE2 Series

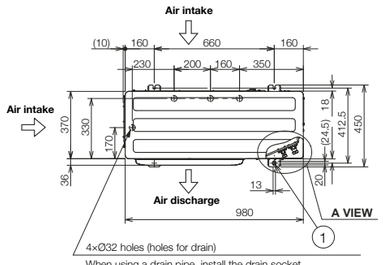
kW			12.1		12.1		14.0		14.0		15.5		15.5	
Model name			**U-4LE2R5**		**U-4LE2R8**		**U-5LE2R5**		**U-5LE2R8**		**U-6LE2R5**		**U-6LE2R8**	
Power supply			230/240V/1-phase/50Hz		400/415V/3-phase/50Hz		230/240V/1-phase/50Hz		400/415V/3-phase/50Hz		230/240V/1-phase/50Hz		400/415V/3-phase/50Hz	
Voltage			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

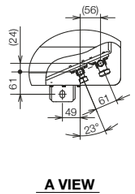
* As a foot print.
** Anti-corrosion model (with suffix "E") has the same specifications.
Applies to single phase models only.

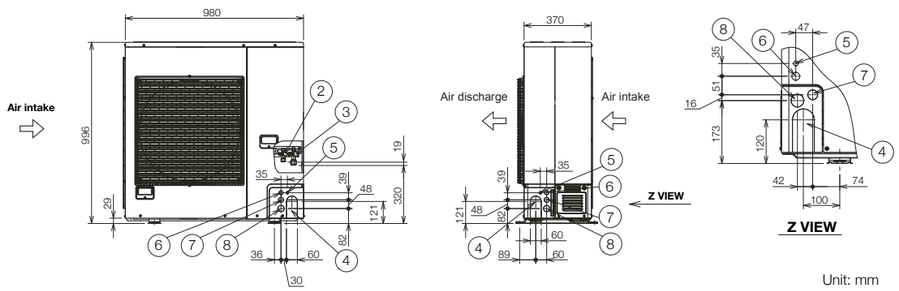
Dimensions

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



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)





Unit: mm

2-PIPE Mini-FSV LE1 Series

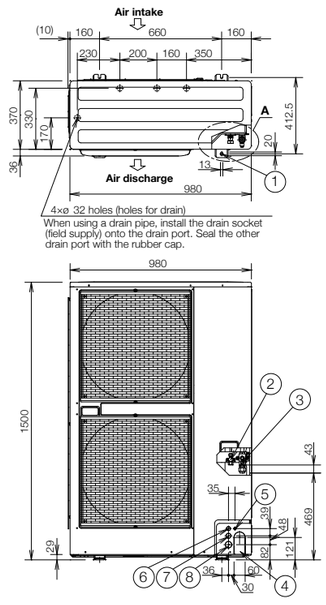
kW			22.4		25.0	
Model name			**U-8LE1R8**		**U-10LE1R8**	
Power supply			400/415V/3-phase/50Hz 380/400V/3-phase/60Hz		400/415V/3-phase/50Hz 380/400V/3-phase/60Hz	
Voltage			400V	415V	400V	415V
Capacity	Cooling	kW	22.4		25.0	
		BTU/h	76,500		85,300	
	Heating	kW	25.0		28.0	
		BTU/h	85,300		95,600	
EER/COP	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

* As a foot print.
** Anti-corrosion model (with suffix "E") has the same specifications.

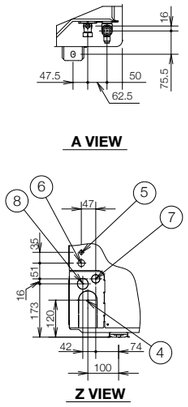
Dimensions

U-8LE1R8 / U-10LE1R8



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).



Unit: mm

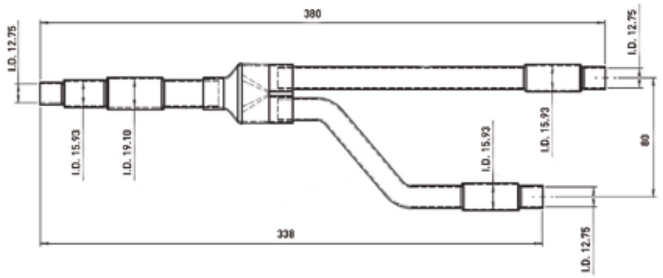
2-PIPE Mini-FSV LE2 Series

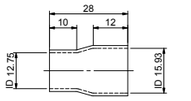
Distribution Joint Kits

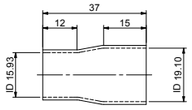
CZ-P160BK2

Use: For indoor unit (Capacity after distribution joint is 22.4 kW or less.)

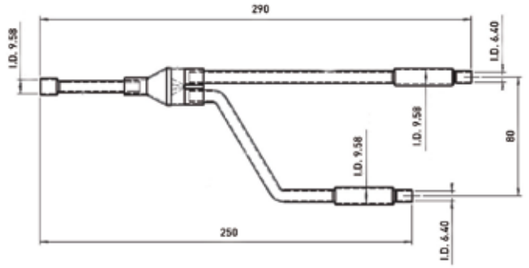
GAS PIPING

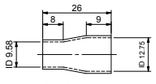


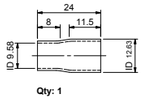




LIQUID PIPING

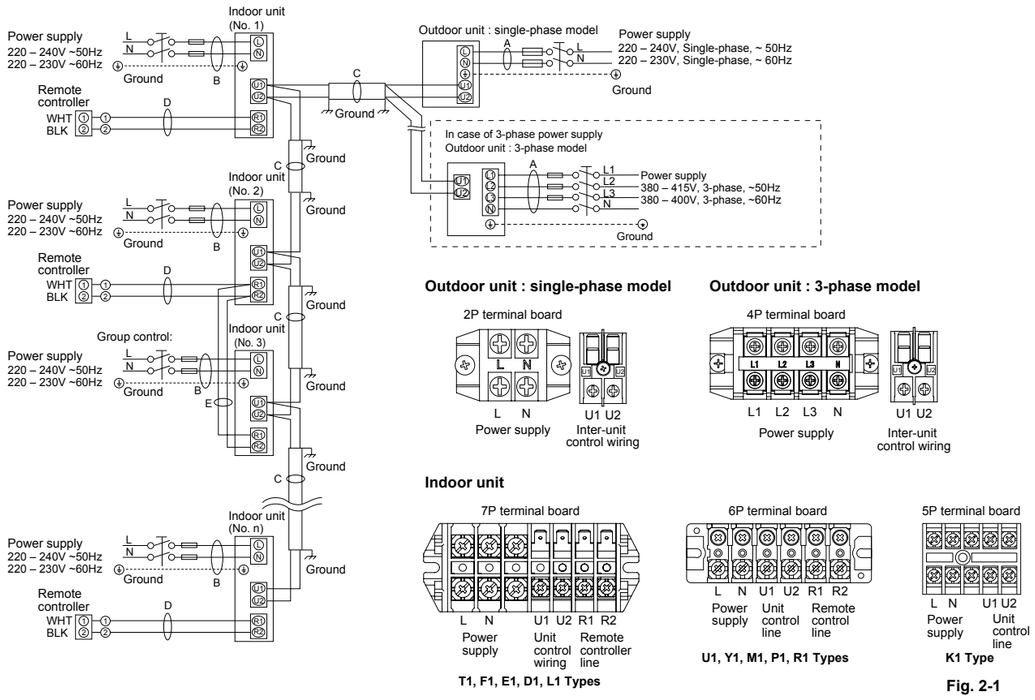






All measurements are in mm. Size of connection points on each part shown are inside diameters of piping.

Wiring System Diagrams (LE1/LE2)



Outdoor unit : single-phase model

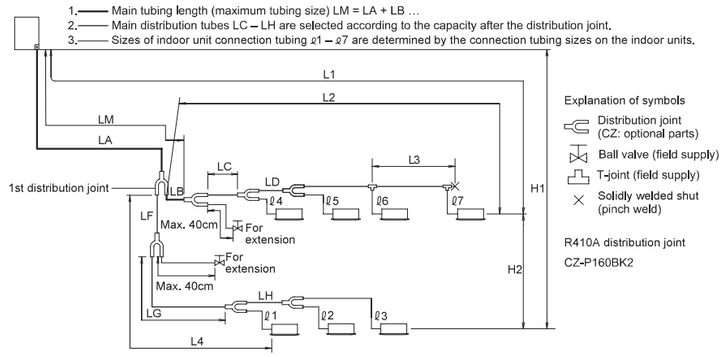
Outdoor unit : 3-phase model

Indoor unit

Fig. 2-1

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.



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

Items	Mark	Contents		Length (m)
Allowable piping length	L1	Max. piping length	Actual length	≤150
			Equivalent length	≤175
	ΔL (L2 – L4)	Difference between max. length and min. length from the 1st distribution joint		≤50
	LM	Max. length of main piping (at maximum size) *Even after 1st distribution joint, LM is allowed if at maximum piping length.		–
	ø1, ø2~ ø7	Max. length of each distribution pipe		≤50
	L1+ø1+ø2~ ø6 + LF + LG + LH	Total max. piping length including length of each distribution pipe (only liquid piping)		≤180
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	Max. difference between indoor units		≤15
Allowable length of joint piping	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

Piping Size

Main Piping Size (LA)

	12.1 kW	14.0 kW	15.5 kW
Gas piping mm (inches)	ø15.88 (ø5/8)		
	Flare connection		
Liquid piping mm (inches)	ø9.52 (ø3/8)		
	Flare connection		

Note :The refrigerant piping should be used with R410A refrigerant.

Indoor Unit Piping Connection (ø1,ø2...øn–1)

Indoor unite type	22	28	36	45	56	60	71/73	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)					

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

Total capacity after distribution	Below kW		7.1 (2.5HP)	–
	Over kW		–	7.1 (2.5HP)
Piping size	Gas piping	(mm)	ø12.7	ø15.88
		(inches)	ø1/2	ø5/8
	Liquid piping	(mm)	ø9.52	ø9.52
		(inches)	ø3/8	ø3/8

kW = kilowatts

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

System Limitations

Outdoor units	12.1 kW	14.0 kW	15.5 kW
Number of max. connectable indoor units	7	8	9
Max. allowable indoor/ outdoor capacity ratio	50 – 130%		

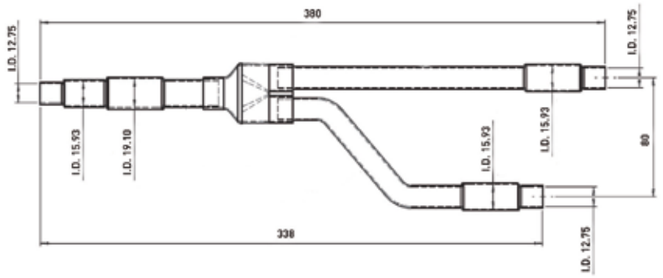
2-PIPE Mini-FSV LE1 Series

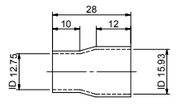
Distribution Joint Kits

CZ-P160BK2

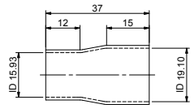
Use: For indoor unit (Capacity after distribution joint is 22.4 kW or less.)

GAS PIPING



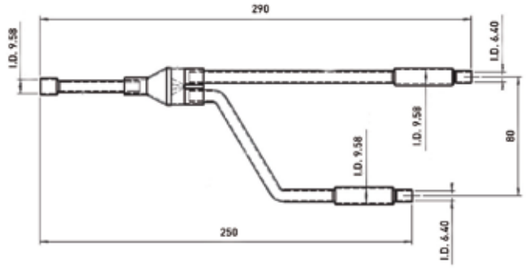


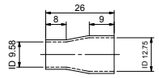
Qty: 1



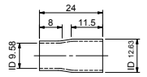
Qty: 2

LIQUID PIPING





Qty: 2



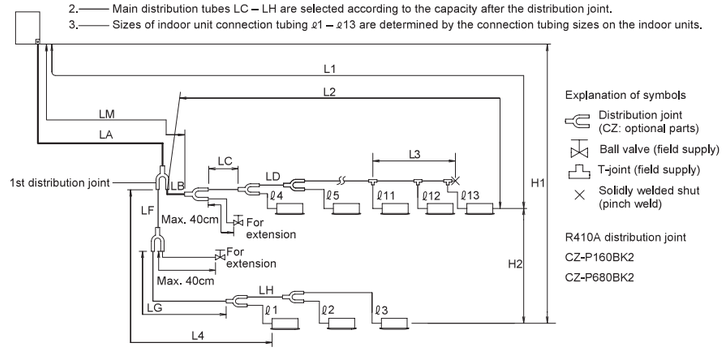
Qty: 1

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

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 tubing length (maximum tubing size) LM = LA + LB ...
2.—— Main distribution tubes LC – LH are selected according to the capacity after the distribution joint.
3.—— Sizes of indoor unit connection tubing ø1 – ø13 are determined by the connection tubing sizes on the indoor units.



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

Items	Mark	Contents		Length (m)
Allowable piping length	L1	Max. piping length	Actual length	≤150
			Equivalent length	≤175
	ΔL (L2 – L4)	Difference between max. length and min. length from the 1st distribution joint		≤50
	LM	Max. length of main piping (at maximum size) *Even after 1st distribution joint, LM is allowed if at maximum piping length.		–
	ø1, ø2~ ø13	Max. length of each distribution pipe		≤50
	L1+ø1+ø2~ ø12 + LF + LG + LH	Total max. piping length including length of each distribution pipe (only liquid piping)		≤300
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	Max. difference between indoor units		≤15
Allowable length of joint piping	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

Piping Size

Main Piping Size (LA)

	22.4 kW	28.0 kW
Outdoor unit horsepower	8 HP	10 HP
Gas piping mm (inches)	ø19.05 (ø3/4)	ø22.22 (ø7/4)
	Flare connection	Brazing connection
Liquid piping mm (inches)	ø9.52 (ø3/8)	
	Flare connection	

Note :If future extension is planned, select the piping diameter based on the total horsepower after extension. The refrigerant piping should be used with R410A refrigerant.

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

Total capacity after distribution	Below kW		7.1 (2.5HP)	16.0 (6 HP)	22.5 (8.1 HP)	–
	Over kW		–	7.1 (2.5 HP)	16.0 (6 HP)	22.5 (8.1 HP)
Piping size	Gas piping	(mm)	ø12.7	ø15.88	ø19.05	ø22.22
		(inches)	ø1/2	ø5/8	ø3/4	ø7/8
	Liquid piping	(mm)	ø9.52	ø9.52	ø9.52	ø9.52
		(inches)	ø3/8	ø3/8	ø3/8	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.

Indoor Unit Piping Connection (ø1,ø2...øn–1)

Indoor unite type	22	28	36	45	56	60	71/73	90	106	140	160	180	224	280
Gas tubing mm (inches)	ø12.7 (ø1/2)					ø15.88 (ø5/8)						ø19.05 (ø3/4)		ø22.22 (ø7/8)
Liquid tubing mm (inches)	ø6.35 (ø1/4)					ø9.52 (ø3/8)								

System Limitations

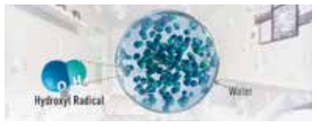
Outdoor units	22.4 kW (8 HP)	28.0 kW (10 HP)
Number of max. connectable indoor units	13	13
Max. allowable indoor/ outdoor capacity ratio	50 – 130%	

nanoe™ X Air Purification*

While the general filters in air purifiers are effective against airborne bacteria and viruses, nanoe™ X also works to inhibit longer-living, adhered bacteria and viruses.

*Unit must be constantly turned on and operating in the air purification mode - nanoe™ X.
** https://www.businessinsider.com/coronavirus-lifespan-on-surfaces-graphic-2020-3

What is unique about nanoe™ X ?



❶ Huge Quantity

9.6 trillion hydroxyl radicals are generated per a second, inhibiting bacteria and adhered viruses. (nanoe X Generator Mark 1 generates 4.8 trillion hydroxyl radicals/ sec)

❷ Longer lifespan

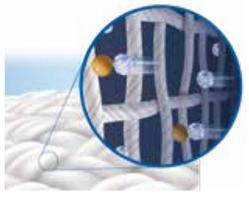
By creating hydroxyl radicals contained in water, nanoe™ X technology, increasing hydroxyl radicals lifetime so that nanoe™ X can spread over long distance.

❸ Actively fill in the room

Going beyond standard filter technology, hydroxyl radicals circulate throughout rooms inhibiting both airborne and adhered bacteria and viruses.

Effective on Adhered Pollutants

Nano-sized (5-20 nm) nanoe™ X penetrates deep into fabrics and deodorises, inhibits bacteria, viruses, mould, allergens, pollen and hazardous substances.
nanoe™ X extensively spread out through the room to inhibit adhered pollutants adhering to surfaces, while air filters only collect airborne dust but adhered substances.



nanoe™ X actively purifies your air and inhibits pollutants all day long

Get quality air for you and your loved ones by turning nanoe™ X on in both cooling and heating modes. nanoe™ X device is maintenance-free, helping you keep your costs down with cleaner air.

Clean air independently when you are away (Fan Mode + nanoe™ X ON)

Comfort and Clean air when you are at home (Cooling or Heating Mode + nanoe™ X ON)

- nanoe™ X functions in cooling/heating as well as fan mode after business hours.
- Cleans indoor air even when the space is not in use.
- No need to consume excessive electricity to clean the air.

Business Hours

•Simulated image

nanoe ON, Cooling/Heating ON (Cooling/Heating Mode)

nanoe™ X cleans indoor air while maintaining a comfortable temperature when people are present.

After Business Hours

nanoe ON, Cooling/Heating OFF (Fan Mode)

After business hours, nanoe™ X keeps cleaning indoor air in fan mode.

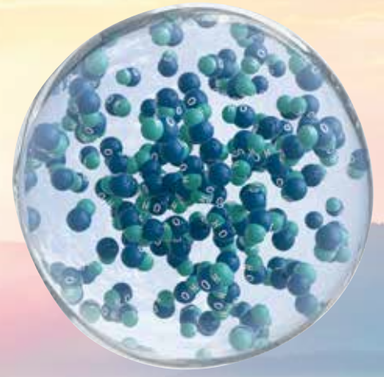
*In case of using 2.2kW~7.3kW 4 way cassette models with fan tap L, flap position 5, standard panel. Energy consumption may vary depending on models.

Bringing Nature's Balance Indoors

nanoe™X technology with the benefits of hydroxyl radicals

The well-being benefits of nature are well known - but do you know the power of hydroxyl radicals?

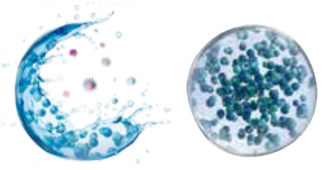
Abundant in nature, hydroxyl radicals (also known as OH radicals) inhibit pollutants, viruses and bacteria to clean and deodorise.nanoe™ X technology bring these incredible benefits indoors by containing hydroxyl radicals in water, so that hard surfaces, soft furnishings and the indoor environment can be a clean and pleasant place to be, whether at home, at work, or visiting hotels, shops, restaurants etc.



Hydroxyl radicals contained in water

A naturally occurring process

Hydroxyl radicals are unstable molecules looking to react with other elements like hydrogen molecules of pollutants, capturing it. Thanks to this reaction, hydroxyl radicals inhibit the growth of pollutants such as viruses, bacteria, moulds, and odours, breaking them down and neutralising the unpleasant effects. This naturally occurring process has major benefits to improve indoor environments.



Bringing nature's balance indoors nanoe™ X technology with the benefits of hydroxyl radicals

nanoe™ X technology with the benefits of hydroxyl radicals

Panasonic's nanoe™ X technology takes a step further and brings nature's detergent - hydroxyl radicals - indoors to help create an ideal environment.

By creating hydroxyl radicals contained in water, nanoe™ X technology significantly boosts their effectiveness, increasing hydroxyl radicals lifetime from less than a second in nature, to more than 600 seconds – 10 minutes.

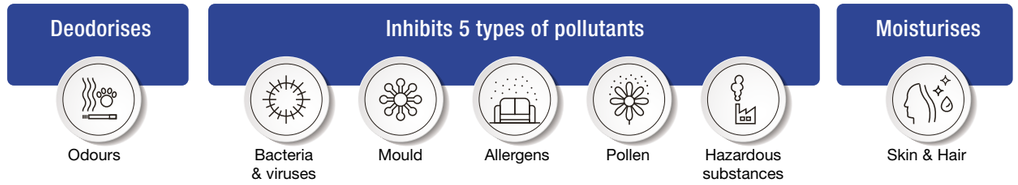
https://www.panasonic.com/global/consumer/clean/hydroxyl/technology.html

Hydroxyl radicals in nature

Hydroxyl radicals contained in water - nanoe™ X

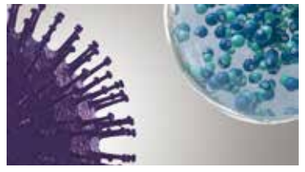
Effectiveness of nanoe™ X

nanoe™ X deodorises, inhibits bacteria & viruses, mould, allergens, pollen and hazardous substances, as well as moisturising the whole room for smoother skin and hair.

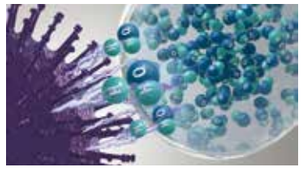


For further details and validation data, please refer to the following website:
https://aircon.panasonic.com/introducing/whats_nanoe/nanoex.html

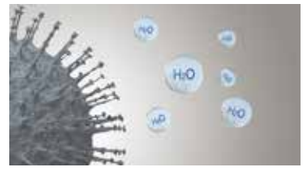
Thanks to the nanoe™ X properties, several types of pollutants can be inhibited.



nanoe™ X reliably reaches pollutants.



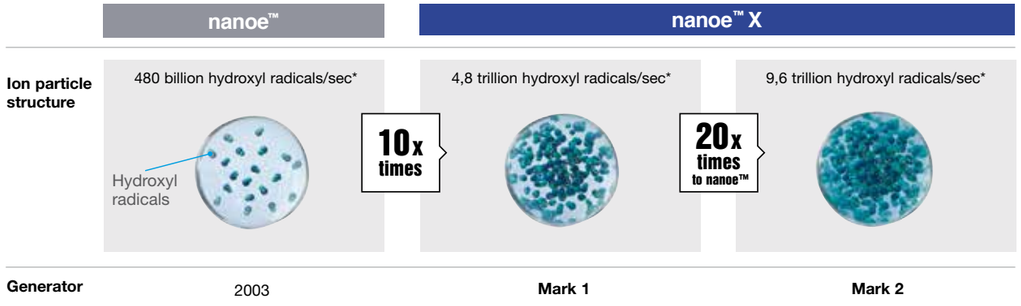
Hydroxyl radicals transform pollutants' proteins.



Pollutants activity is inhibited.

The evolution of nanoe™ X technology

After annual R&D investments, the technology has been improved with launch of nanoe™ X.



* Measured using ESR method

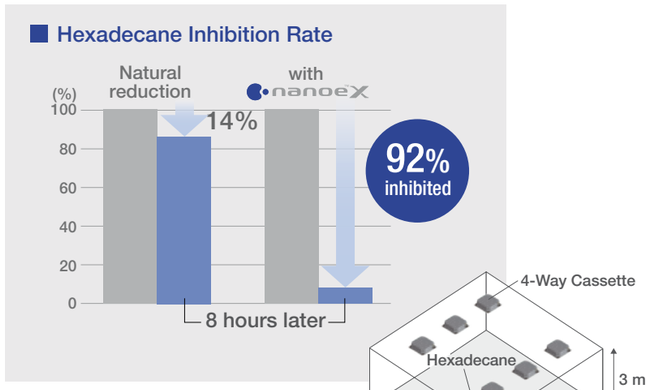
Verification tests for nanoe™ X effects in large spaces

Hazardous substances

The nanoe™ X inhibited hexadecane, a chemical contained in PM2.5 (267m²)

3rd party

A third-party certification organization SIRIM Berhad (SIRIM)*1, conducted the performance experiment using a 4-Way Cassette equipped with a nanoe™ X device to inhibit hexadecane*2, a chemical contained in PM2.5.



*1 SIRIM is a premier industrial research and technology organisation in Malaysia, a wholly-owned company of the Malaysian Government under the Ministry of International Trade and Industry (MITI).
*2 Hexadecane is a hazardous substance contained in gasoline and diesel exhaust gas.

Testing method: Measured the amount of attached organic substances in an approximately 802 ㎥ sized test room
Inhibition method: nanoe X Generator Mark 1 released
Test substance: Hexadecane
Test result: Broken down 92% in 8 hours (ETRC257/16/1402 (R479/19))

odours

The nanoe™ X reduced the odours adhering to fibers such as curtains and carpets (139m²)

3rd party

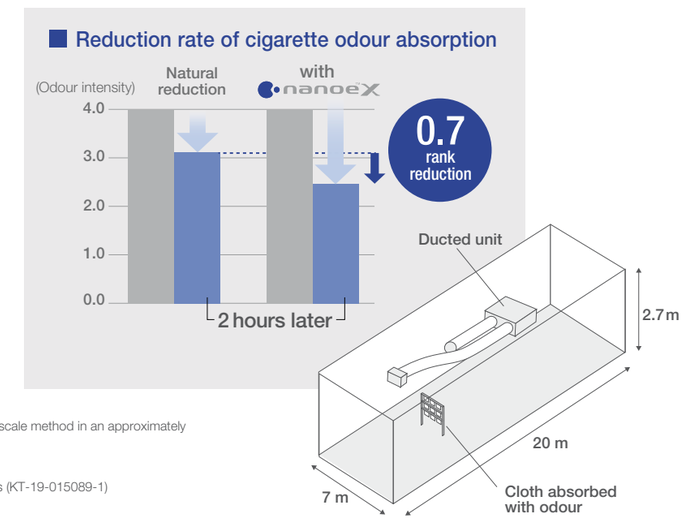
Cigarette smoke odour

Results

Compared to natural reduction, the nanoe™ X blast reduced the odour intensity by more than approximately 0.7 after two hours.

Testing organization

KAKEN TEST CENTER General Incorporated Foundation in Japan, international testing institute.

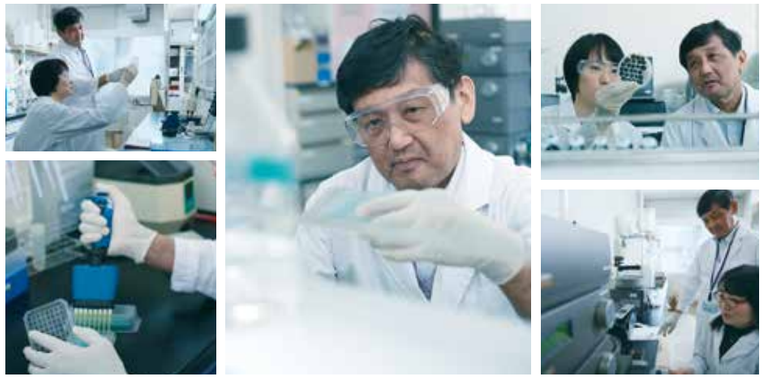


Testing method: Verified using the six-level odour intensity scale method in an approximately 378㎥ sized test room
Inhibition method: nanoe X Generator Mark 2 released
Test substance: Surface-attached cigarette smoke odour
Test result: Odour intensity reduced by 0.7 levels in 2 hours (KT-19-015089-1)

The effects of nanoe™ X are recognised by experts in each field

Professor
Masafumi Mukamoto

Osaka Prefecture University
Veterinary Infectious Disease Studies



Various types of moulds enter houses along with people and air. Even if preventive action is taken in our everyday lives, it is often very difficult to inhibit the growth of mould, especially in humid environments. With nanoe™ X, we have experimental results*3*4 that show we can inhibit the growth of the types of mould and bacteria commonly found in various places in the house.

Hope for the creation of more comfortable spaces for those who have problems with asthma or atopic dermatitis

Professor
Masahiro Sakaguchi

Azabu University
School of Veterinary Medicine
Laboratory of Veterinary Microbiology I

We have experimental results that show nanoe™ X is capable of inhibiting allergens, such as pollen and dust mites. It is important to take precautions against the allergens that we inadvertently inhale in our daily lives.
As nanoe™ X is effective in inhibiting invisible allergens, we can expect it will create a cleaner environment. As the safety of nanoe™ X has also been verified, nanoe™ X gives peace of mind to families with small children.

*3 Experimental results show that nanoe™ X is effective in inhibiting the growth of the following types of mould and bacteria commonly found in homes:
Mould: Trichophyton, Cladosporium, Malassezia furfur, Sporothrix schenckii, Exophiala jeanselmei, Absidia corymbifera, Rhodotorula rubra, Neurospora sitophila, Schizophyllum communeBacteria: Methicillin-resistant Staphylococcus aureus (MRSA), Listeria monocytogenes, Bacillus subtilis, Mycobacterium smegmatis, Nocardia asteroids, Neisseria gonorrhoeae, Salmonella enterica subsp. Enterica, Haemophilus influenza, Campylobacter jejuni.
*4 This verification was designed to generate basic research data on the effects of nanoe™ X on the mould and bacteria in laboratory conditions different from those found in living spaces. It was not designed to evaluate product performance.

Smart Comfort with CONEX

CONEX goes beyond simple remote control to combine sophistication with simplicity, offering IoT integration that connects directly to a variety of apps for next-generation solutions.

Simple and sophisticated design in-and-out

User friendly interface with stylish design measuring just 86 x 86 mm, CONEX is an extremely compact remote controller which perfectly matches with all kinds of modern building.

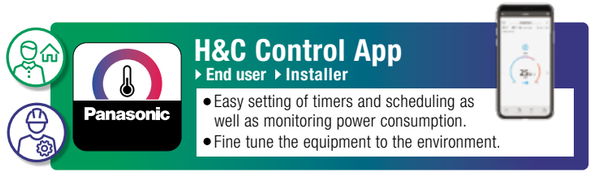
CONEX

(CZ-RTC6BL)

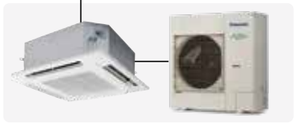
Easy control and access for end users and installers with just one remote

User-friendly day day-to-day operation for end users and simplified set up for installers.

A next-generation remote control solution optimised for usability



(CZ-RTC6BL)



Download on the App Store

GET IT ON Google Play

Scan QR code to download free Panasonic H&C Control App

True-comfort for end user and installer – H&C Control App

H&C Control App makes complex initial set-up visually touch and feel easy and respond swiftly to clients' requests via Bluetooth using a smartphone or tablet.

Panasonic

Advantages

Comfort day-to day operations

It's now simpler than ever for end users to further customize settings to meet their needs and perform operations including basic settings.

Intuitive operation for easy configuration

Simplifies initial controller configuration as well as access to comprehensive settings including weekly timers and maintenance.

Straightforward suggestions to clients

Share a single screen with your customer and together tailor everything to meet their needs, from basic setup to weekly timers, all in real time.

Quicker configuration for multiple controllers

Save time and copy templates for weekly timers and settings to multiple remote controllers.

Indoor Units

Wide choice of models depending on the indoor requirements

Key Indoor Units Equipped DC motors

ECONAVI sensor

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 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 maximize 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 for sensors in any office.

Simplified Wired Remote Controller

CZ-RTC6BL

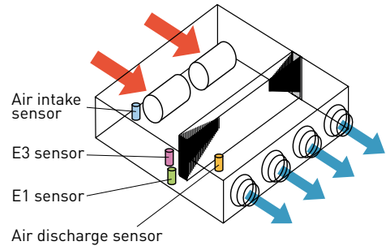
Simple and Sophisticated Design In-and-Out

User friendly interface with stylish design measuring just 86 x 86 mm, this is an extremely compact remote controller which looks great in any room.

All Ducted Series

Discharge air temperature control

Smart sensors control discharge air temperature for precise room temperature control.
Possible to reduce cold drafts during heating operation.



Wall Mounted / K2 (22~36), K2 (45~106) type

Compact design with flat surface 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)

*When the pipe diameter is (Liquid) Ø6.35 - (Gas) Ø12.7, please use CZ-P56SVK2.

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

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	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	
Capacity kW / Type / BTU/h	2.2/2.5 7,500/8,500	2.8/3.2 9,600/11,000	3.6/4.2 12,000/14,000	4.5/5.0 15,000/17,000	5.6/6.3 19,000/21,000	6.0/7.1 20,400/24,200	7.3/8.0 25,000/27,000	9.0/10.0 30,000/34,000	10.6/11.4 36,000/39,000	11.2/12.5 38,200/42,700	14.0/16.0 47,800/54,600	16.0/18.0 54,600/61,500	18.0/20.0 61,400/68,200	22.4/25.0 76,400/85,300	28.0/31.5 95,500/107,500	
nanoe™ X as a standard F3 type ECONAVI **Mid Static Adaptive Ducted**	NEW S-22MF3E5A	NEW S-28MF3E5A	NEW S-36MF3E5A	NEW S-45MF3E5A	NEW S-56MF3E5A	NEW S-60MF3E5A	NEW S-73MF3E5A	NEW S-90MF3E5A	NEW S-106MF3E5A		NEW S-140MF3E5A	NEW S-160MF3E5A				self-diagnosing, Auto fan, Dry mode, 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, Dry mode, 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, Dry mode, 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, Dry mode, Auto restart, DC motor
E1R type **High Static Ducted**								S-90ME1R5A		S-112ME1R5A	S-140ME1R5A	S-160ME1R5A				self-diagnosing, Auto fan, Dry mode, 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, Auto restart
nanoe™ X as a standard U2 type ECONAVI ** **4-Way Cassette** Panel No. CZ-KPU3H/CZ-KPU3A	NEW S-22MU2E5B	NEW S-28MU2E5B	NEW S-36MU2E5B	NEW S-45MU2E5B	NEW S-56MU2E5B	NEW S-60MU2E5B	NEW S-73MU2E5B	NEW S-90MU2E5B	NEW S-106MU2E5B		NEW S-140MU2E5B	NEW S-160MU2E5B				self-diagnosing, Auto fan, Dry mode, Auto flap, Auto restart, Air swing, 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, Dry mode, 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, Dry mode, Auto flap, Auto restart, Air swing, Drain pump, DC motor
D1 type **1-Way Cassette** Panel No. CZ-KPD2		S-28MD1E5	S-36MD1E5	S-45MD1E5	S-56MD1E5		S-73MD1E5									self-diagnosing, Auto fan, Dry mode, Auto flap, Auto restart, Air swing, Drain pump
T2 type ECONAVI **Under Ceiling**			S-36MT2E5A	S-45MT2E5A	S-56MT2E5A		S-73MT2E5A		S-106MT2E5A		S-140MT2E5A					self-diagnosing, Auto fan, Dry mode, Auto flap, DC motor, Auto restart, Air swing, Drain pump
P1 type **Floor Standing**	S-22MP1E5	S-28MP1E5	S-36MP1E5	S-45MP1E5	S-56MP1E5		S-71MP1E5									self-diagnosing, Auto fan, Dry mode, Auto restart
R1 type **Concealed Floor Standing**	S-22MR1E5	S-28MR1E5	S-36MR1E5	S-45MR1E5	S-56MR1E5		S-71MR1E5									self-diagnosing, Auto fan, Dry mode, Auto restart

* High flesh air system is not allowed for 18 kW model. ** Only for CZ-KPU3A

Self-diagnosing function · Automatic fan operation · Dry mode · Intelligent auto flap control · Automatic restart function for power failure · Air swing · Built-in drain pump · DC motor

Indoor Unit / F3 Type

NEW

F3 TYPE Mid Static Adaptive Ducted

Control all aspects of your environment with exceptional performance and quiet operation. Vertical installation flexibility offers the perfect solution when ceiling heights are restricted.

S-22MF3E5A / S-28MF3E5A / S-36MF3E5A
S-45MF3E5A / S-56MF3E5A

S-60MF3E5A / S-73MF3E5A / S-90MF3E5A

nanoe™ X as a standard*
*nanoe X Generator Mark 2

S-106MF3E5A / S-140MF3E5A / S-160MF3E5A

DC motor
Self-diagnosing Function
Automatic Fan Operation
Dry mode
Automatic Restart Function
Built-in Drain Pump

Optional accessory

ECONAVI ready

CZ-RTC6BL

CZ-CENSC1

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRC3
Receiver

Technical focus

- 4 installation possibilities with horizontal and vertical mounting and selectable rear or bottom air inlet
- Space saving 250mm height
- DC fan motor for variable external static pressure control
- Industry-leading horizontal/vertical design
- Powerful 150Pa static pressure in a compact unit.
- Leading-class low sound levels from 20 dB(A)
- Improved drain pan suitable for both horizontal / vertical installation
- nanoe™ X : 20x for CAC (20 times more nanoe™ particle for wide commercial space)
- Accurate temperature control to reduce cold drafts during operation

Variable external static pressure control

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

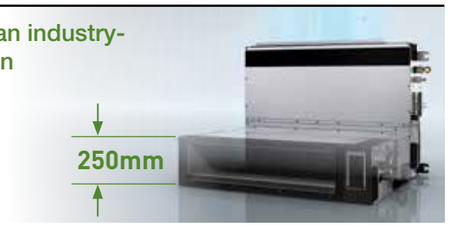
Optimal Control by DC Motor

For short ducting such as hotels — 10Pa ——— 150Pa — For long ducting or for usage with high efficiency filter

* Please refer to technical databook for detail.

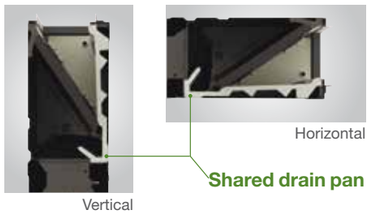
Powerful 150Pa external static pressure in an industry-leading horizontal/vertical installation design

Delivering static pressure up to 150Pa external static pressure, the industry-leading horizontal/vertical design offers the power you need in a compact form factor.



Improved drain pan design

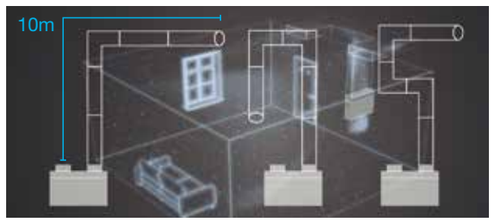
Drain pan is shared in both cases horizontal and vertical installation.
No need to alternate anymore.



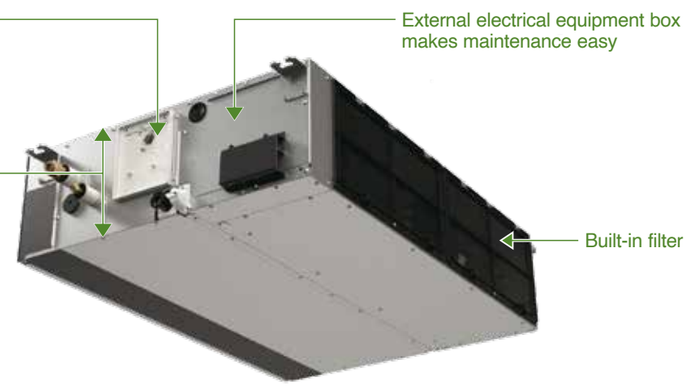
Superior Air Quality

Combined with the strong static pressure this model ensures pristine nanoe™ X air travels unaffected even through multiple duct shapes at lengths of 10m, as well as making them ideal for use in larger spaces.

nanoe™ X



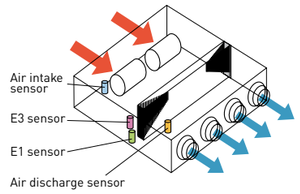
As the experiments demonstrate; even with a total ductwork length of up to 10m, effectiveness of nanoe™ X is maintained.



Discharge air temperature control

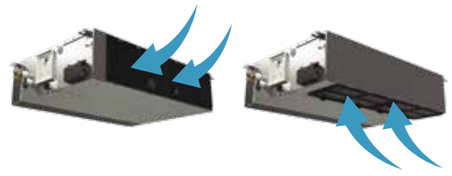
- Possible to control discharge air temperature for accurate room temperature control.
- Possible to reduce cold drafts during heating operation.

Note: Before spec-in, please consult with an authorised Panasonic dealer.



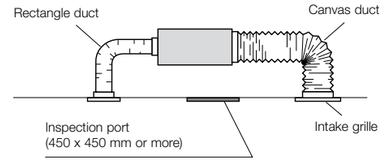
Selectable air inlet position

A removable panel allows air inlet position to be adjusted to enable rear or bottom entry, depending on ductwork installation.



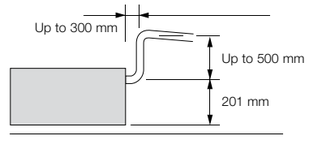
System example

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



More powerful drain pump

Using a high-lift built-in drain pump, drain piping can be elevated up to 701 mm from the base of the unit.



Indoor Unit / F3 Type

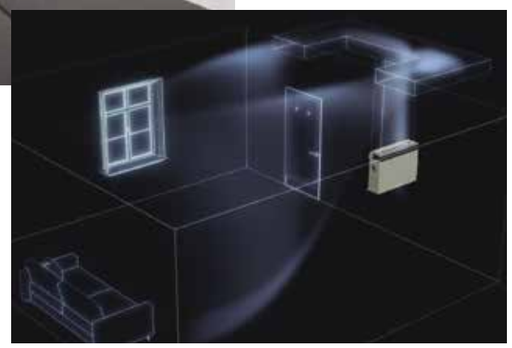
F3 TYPE Mid Static Adaptive Ducted

Model Name			S-22MF3E5A	S-28MF3E5A	S-36MF3E5A	S-45MF3E5A	S-56MF3E5A
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	0.06/0.06/0.06	0.06/0.06/0.06	0.06/0.06/0.06	0.06/0.06/0.06	0.089/0.089/0.089
	Heating	kW	0.06/0.06/0.06	0.06/0.06/0.06	0.06/0.06/0.06	0.06/0.06/0.06	0.089/0.089/0.089
Running amperes	Cooling	A	0.46/0.45/0.44	0.46/0.45/0.44	0.46/0.45/0.44	0.46/0.45/0.44	0.65/0.63/0.61
	Heating	A	0.46/0.45/0.44	0.46/0.45/0.44	0.46/0.45/0.44	0.46/0.45/0.44	0.65/0.63/0.61
Fan motor	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	840/720/480	840/720/480	840/720/480	840/720/480	960/840/600
		L/s	233/200/133	233/200/133	233/200/133	233/200/133	267/233/167
	Output	kW	0.107	0.107	0.107	0.107	0.107
	External static pressure	Pa	30 (10-150)	30 (10-150)	30 (10-150)	30 (10-150)	30 (10-150)
Sound power level (H/M/L)		dB	54/51/43	54/51/43	54/51/43	54/51/43	58/55/47
Sound pressure sound (H/M/L)		dB(A)	31/28/20	31/28/20	31/28/20	31/28/20	35/32/24
Dimensions	H x W x D	mm	250 x 800 x 730	250 x 800 x 730	250 x 800 x 730	250 x 800 x 730	250 x 800 x 730
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	26	26	26	26	26

S-60MF3E5A	S-73MF3E5A	S-90MF3E5A	S-106MF3E5A	S-140MF3E5A	S-160MF3E5A
220/230/240 V, 1 phase - 50/60 Hz					
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
0.079/0.079/0.079	0.079/0.079/0.079	0.136/0.136/0.136	0.146/0.146/0.146	0.265/0.265/0.265	0.330/0.330/0.330
0.079/0.079/0.079	0.079/0.079/0.079	0.136/0.136/0.136	0.146/0.146/0.146	0.265/0.265/0.265	0.330/0.330/0.330
0.53/0.52/0.51	0.53/0.52/0.51	0.92/0.90/0.88	1.03/1.00/0.97	1.80/1.76/1.72	2.22/2.14/2.09
0.53/0.52/0.51	0.53/0.52/0.51	0.92/0.90/0.88	1.03/1.00/0.97	1.80/1.76/1.72	2.22/2.14/2.09
Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
1,260/1,080/900	1,260/1,080/900	1,500/1,380/960	1,920/1,560/1,260	2,220/1,920/1,560	2,400/2,040/1,680
350/300/250	350/300/250	417/383/267	533/433/350	617/533/433	667/567/467
0.165	0.165	0.165	0.259	0.259	0.259
30 (10-150)	30 (10-150)	40 (10-150)	40 (10-150)	50 (10-150)	50 (10-150)
54/51/46	54/51/46	58/56/48	59/55/50	64/59/55	66/60/56
31/28/23	31/28/23	35/33/25	36/32/27	41/36/32	43/37/33
250 x 1,000 x 730	250 x 1,000 x 730	250 x 1,000 x 730	250 x 1,400 x 730	250 x 1,400 x 730	250 x 1,400 x 730
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-20	VP-20	VP-20	VP-20	VP-20	VP-20
31	31	31	40	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.

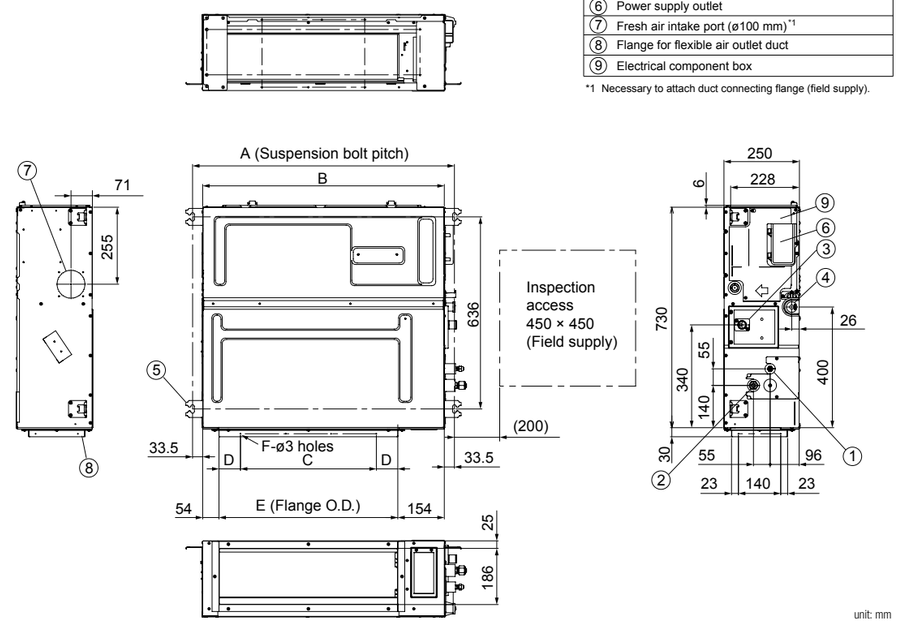


F3 TYPE MID STATIC DUCTED Dimensions

Type	A	B	C	D	E	F
	mm	mm	mm	mm	mm	Q'ty
22/28/36/45/56	867	800	450 (Pitch 150 × 3)	71	592	12
60/73/90	1,067	1,000	750 (Pitch 150 × 5)	21	792	16
106/140/160	1,467	1,400	1,050 (Pitch 150 × 7)	71	1,192	20

①	Refrigerant tubing joint **(liquid tube)** S-22/28/36/45/56MF3E5A：Φ6.35 (flared) S-60/73/90/106/140/160MF3E5A：Φ9.52 (flared)
②	Refrigerant tubing joint **(gas tube)** S-22/28/36/45/56MF3E5A：Φ12.7 (flared) S-60/73/90/106/140/160MF3E5A：Φ15.88 (flared)
③	Upper drain port VP20 (ø26 mm) 200 mm flexible hose supplied
④	Bottom drain port VP20 (ø26 mm)
⑤	Suspension lug (4 – 12 × 30 mm)
⑥	Power supply outlet
⑦	Fresh air intake port (ø100 mm)*1
⑧	Flange for flexible air outlet duct
⑨	Electrical component box

*1 Necessary to attach duct connecting flange (field supply).



unit: mm

Indoor Unit / M1 Type

M1 TYPE Slim Low Static Ducted

Concealed duct

The ultra slim M1 type is one of the leading products of its type in the industry.
With a height of only 200 mm, it provides greater flexibility and adaptability for various applications.
In addition, high efficiency and extreme low noise level make it highly suitable for hotels and small offices.

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

Optional accessory

CZ-RTC6BL | CZ-CENSC1 | CZ-RTC5B | CZ-RWS3 Remote controller | CZ-RWRC3 Receiver

Self-diagnosing Function | Automatic Fan Operation | Dry mode | Automatic Restart Function | Built-in Drain Pump

Technical focus

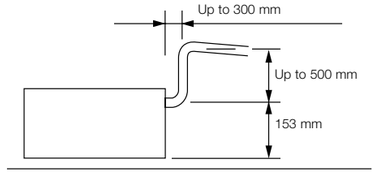
- Ultra-slim profile: 200 mm for all models
- DC fan motor greatly reduces power consumption
- Ideal for hotel application with very narrow false ceilings
- Easy maintenance and service by external electrical box
- 40 Pa static pressure enables ductwork to be fitted.
- Includes drain pump
- Includes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

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 653 mm from the lower surface of the body.



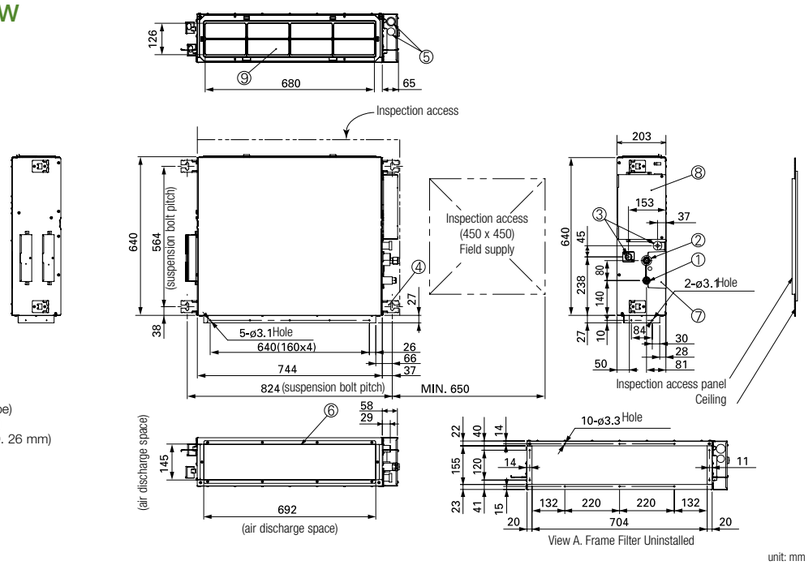
Model Name			S-22MM1E5A	S-28MM1E5A	S-36MM1E5A	S-45MM1E5A	S-56MM1E5A
Power source			220/230/240 V, 1 phase - 50/60 Hz				
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6
		BTU/h	7,500	9,600	12,300	15,400	19,100
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3
		BTU/h	8,500	10,900	14,300	17,100	21,500
Power input	Cooling	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	52/50/48
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 tube)
2 Refrigerant piping joint (wide tube)
3 Upper and bottom drain port (O.D. 26 mm)
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 Unit / Z1 Type

Z1 TYPE Slim & Narrow Ducted

Concealed duct

The ultra slim Z1 type is one of the leading products of its type in the industry.
With a height of only 200 mm, it provides greater flexibility and adaptability for various applications.
In addition, high efficiency and extreme low noise level make it highly suitable for hotels and small offices.

DC motor

S-73MZ1H4A

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

Optional accessory

ECONAVI ready

CZ-RTC6BL

CZ-CENSC1

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRC3
Receiver

Self-diagnosing Function

Automatic Fan Operation

Dry mode

Automatic Restart Function

Technical focus

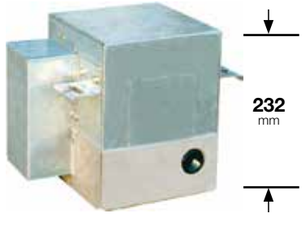
- Ultra-slim profile: 200 mm for all models
- DC fan motor greatly reduces power consumption
- Ideal for hotel application with very narrow false ceilings
- Easy maintenance and service by external electrical box
- 29 Pa static pressure enables ductwork to be fitted.
- Drain pump (optional)

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 700 mm from the drain pipe port.



CZ-73DMZ1

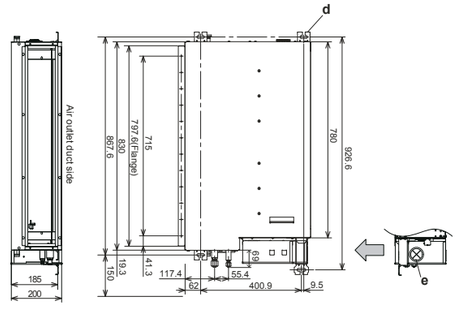
Model Name			S-22MZ1H4A	S-28MZ1H4A	S-36MZ1H4A	S-45MZ1H4A	S-56MZ1H4A	S-60MZ1H4A	S-73MZ1H4A
Power source			220/230/240 V, 1 phase - 50/60 Hz						
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6	6.0	7.3
		BTU/h	7,500	9,500	12,200	15,300	19,100	20,500	24,900
Heating capacity		kW	2.5	3.2	4.2	5.1	6.4	7.1	8.0
		BTU/h	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	200×830×500	200×830×500	200×830×500	200×830×500	200×830×500	200×830×500	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)	Ø9.52 (Ø3/8)	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)	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°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

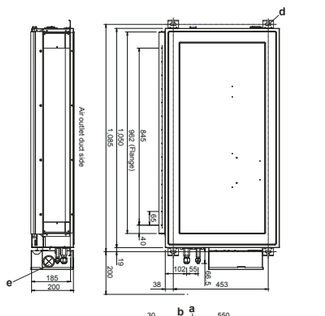
Specifications are subject to change without notice.

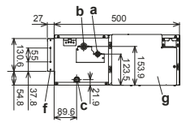
Z1 TYPE SLIM LOW STATIC DUCTED TWENTY SERIES Dimensions

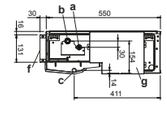
SIZE 22-60



SIZE 73







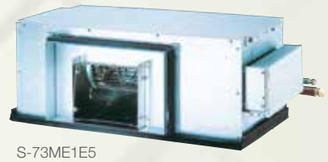
a) Refrigerant tubing joint (liquid tube)
b) Refrigerant tubing joint (gas tube)
c) Bottom drain port O.D.Ø20.5 mm / I.D. Ø15.5mm
d) Suspension lug (4 – 12 × 30 mm)
e) Power supply outlet
f) Flange for flexible air outlet duct
g) Electrical component box

unit: mm

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

Optional accessory

CZ-RTC6BL

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRC3
Receiver

Self-diagnosing Function

Automatic Fan Operation

Dry mode

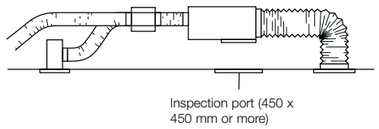
Automatic Restart Function

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)

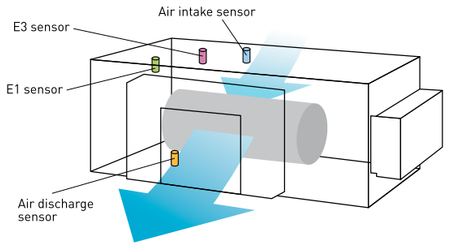
System example

An inspection port (450 x 450 mm 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.



Indoor Unit / E1 Type

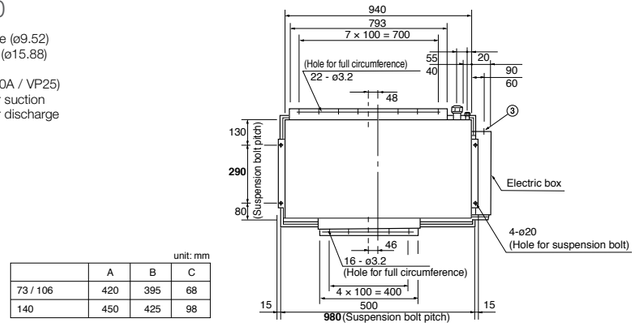
Model Name			S-73ME1E5	S-106ME1E5	S-140ME1E5
Power source			220/230/240 V, 1 phase - 50 / 60 Hz		
Cooling capacity		kW	7.3	10.6	14.0
		BTU/h	25,000	36,000	47,800
Heating capacity		kW	8.0	11.4	16.0
		BTU/h	27,000	39,000	54,600
Power input	Cooling	kW	0.480/0.505/0.530	0.520/0.545/0.570	0.600/0.660/0.710
	Heating	kW	0.480/0.505/0.530	0.520/0.545/0.570	0.600/0.660/0.710
Running current	Cooling	A	2.29/2.30/2.31	2.46/2.46/2.47	2.80/2.90/3.00
	Heating	A	2.29/2.30/2.31	2.46/2.46/2.47	2.80/2.90/3.00
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	1,380/1,320/1,260	1,800/1,680/1,500	2,160/2,100/1,980
		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	mm (inches)	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)
	Drain piping		VP-25	VP-25	VP-25
Net weight		kg	47	50	54

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

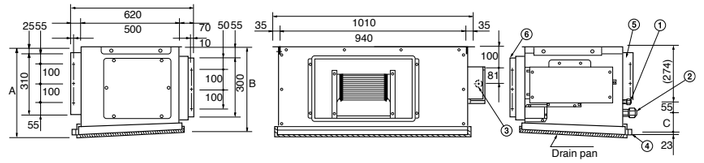
SIZE 73-140

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



unit: mm

	A	B	C
73 / 106	420	395	68
140	450	425	98



unit: mm

E2 TYPE High Static Ducted

Concealed duct / Air conditioning mode

High static and large airflow ducted for exceptional installation flexibility.

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

Optional accessory

CZ-RTC6BL

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRC3
Receiver

Self-diagnosing Function

Automatic Fan Operation

Dry mode

Automatic Restart Function

Technical focus

- Design flexibility thanks to high static pressure and large air volume
- DC motor equipped
- Power input 45% less (compared to E1 type)
- Discharge air temperature control to reduce cold drafts during heating operation
- Configurable air temperature control
- Available Fresh Air Intake mode (See page 80-81)

3-step static pressure set up

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

* 28 kW model

Max. 270 Pa static pressure setting

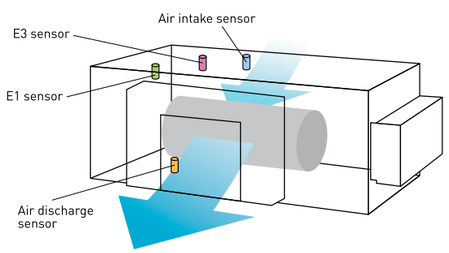
A maximum static pressure setting of a high 270 Pa enables the use of long ducts for installation in a wide range of spaces. Ideal for large-scale offices, restaurants and other facilities.

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.

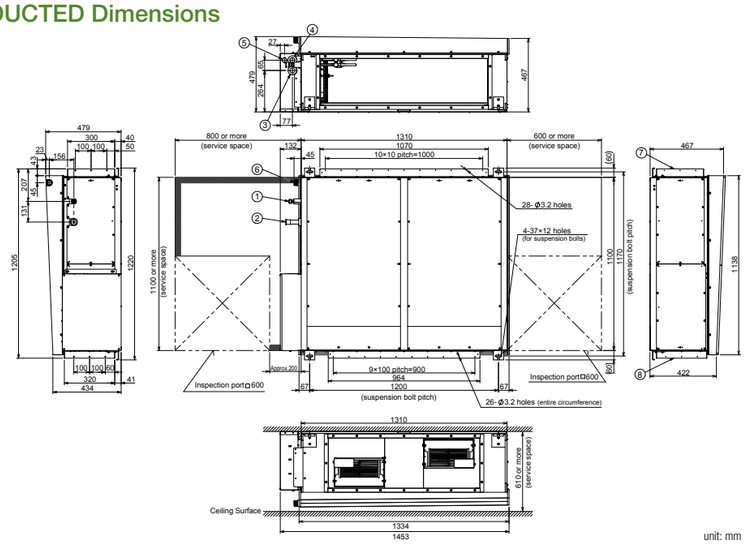


Model Name			S-180ME2E5	S-224ME2E5	S-280ME2E5
Power source			220/230/240 V, 1 phase - 50 Hz, 220/230 V, 1 phase - 60 Hz		
Cooling capacity		kW	18.0	22.4	28.0
		BTU/h	61,400	76,400	95,500
Heating capacity		kW	20.0	25.0	31.5
		BTU/h	68,200	85,300	107,500
Power input	Cooling	kW	0.400	0.440	0.715
	Heating	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)	m³/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
	Motor output	kW	0.560 x 2	0.560 x 2	0.750 x 2
	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	inches (mm)	Ø9.52 (3/8)	Ø9.52 (3/8)	Ø9.52 (3/8)
	Gas	inches (mm)	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°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

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

E2 TYPE Energy Saving High Fresh Air Ducted

DC motor

Concealed duct high-static pressure

High static and large airflow ducted for exceptional installation flexibility.

S-224ME2E5 / S-280ME2E5

Optional accessory

CZ-RTC6BL

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRC3
Receiver

Self-diagnosing Function

Automatic Fan Operation

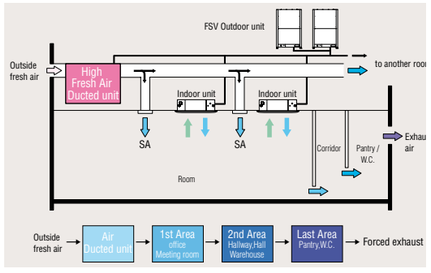
Automatic Restart Function

Technical focus

- 100% fresh air intake for ventilation purpose
- Design flexibility with high static pressure and large air volume
- DC motor equipped
- Power input 45% less (compared to H1 type)
- Discharge air temperature control to reduce cold drafts during heating operation
- Configurable air temperature control

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.

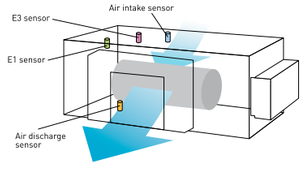


Mix operation unit with standard indoor units

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



Installation Conditions

Model	Operation	Rap valve kit **CZ-P160RVK2**	3way control PCB **CZ-CAPE2**	3way 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

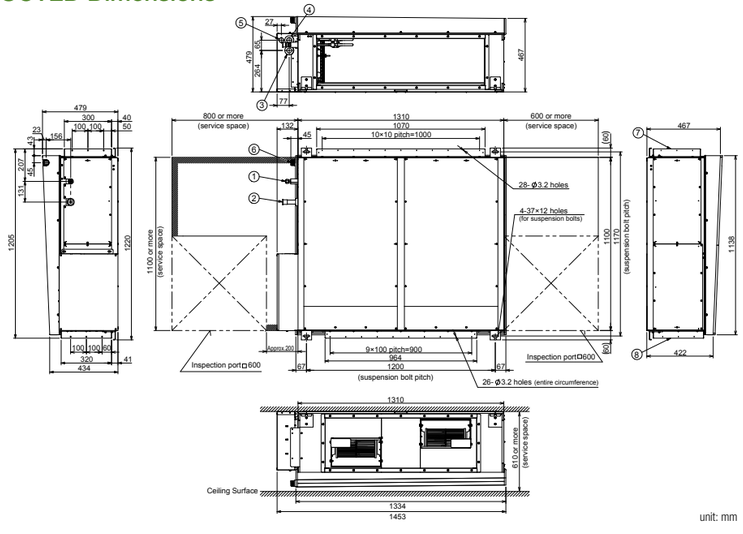
Model Name			S-224ME2E5	S-280ME2E5
Power source			220/230/240 V, 1 phase - 50 Hz, 220/230 V, 1 phase - 60 Hz	
Cooling capacity		kW	22.4	28.0
		BTU/h	76,400	95,500
Heating capacity		kW	21.2	26.5
		BTU/h	72,300	90,400
Power input	Cooling	kW	0.290	0.350
	Heating	kW	0.290	0.350
Running current	Cooling	A	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	kW	0.560 x 2	0.750 x 2
	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	inches (mm)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
	Gas	inches (mm)	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 Unit / E1R Type

E1R TYPE High Static 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

Optional accessory

CZ-RTC6BL

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRC3
Receiver

Self-diagnosing Function

Automatic Fan Operation

Dry mode

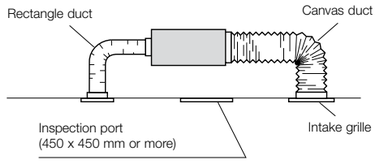
Automatic Restart Function

Technical focus

- Complete flexibility for ductwork design
- Can be located into a weatherproof housing for external installation
- Up to 150 pa external static pressure
- Discharge air temperature control to reduce cold drafts during heating operation
- Configurable air temperature control
- Up to 70 L/s air flow

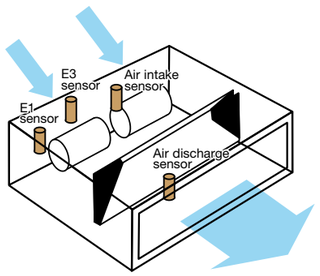
System Example

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



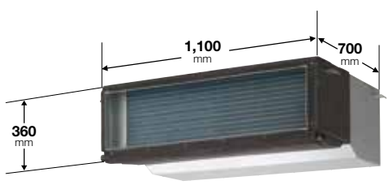
Cold Drafts Reduction at Heating

- Accurate temperature measurement by E1/E3 sensor to reduce cold drafts at heating.

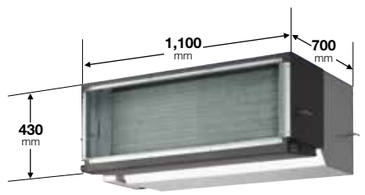


Compact Body Size

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



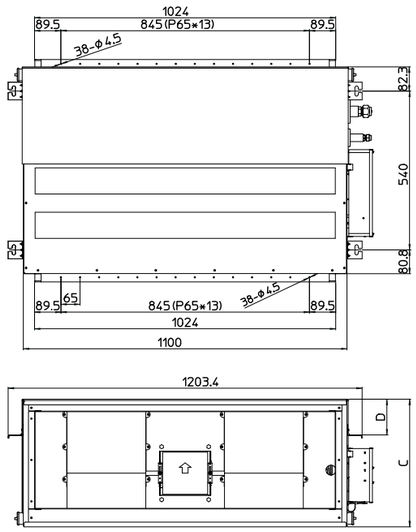
S-140ME1R5A / S-160ME1R5A

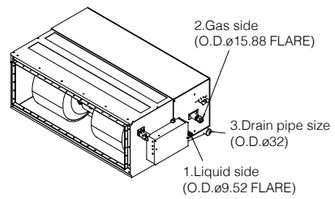
Model Name			S-90ME1R5A	S-112ME1R5A	S-140ME1R5A	S-160ME1R5A
Power source			230/240V, 1 phase - 50Hz			
Cooling capacity		kW	9.0	11.2	14.0	16.0
		BTU/h	30,700	38,200	47,800	54,600
Heating capacity		kW	10.0	12.5	16.0	18.0
		BTU/h	34,100	42,700	54,600	61,400
Power input	Cooling	kW	0.275/0.290	0.390/0.410	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	500/433/367	667/583/483	833/767/600	1,000/833/700
	Motor output	kW	0.155	0.275	0.310	0.44
	External static pressure	Pa	100 (10-150)	100 (10-150)	100 (10-150)	100 (10-150)
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.

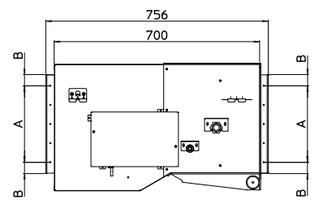
E1R TYPE HIGH STATIC DUCTED Dimensions





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 Unit / 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 low noise level makes it ideal for small offices and other commercial applications.

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

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

Optional accessory

CZ-RTC6BL

CZ-CENSC1

ECONAVI ready

CZ-RTC5B

CZ-RWS3
*Remote controller

*Receiver is included in the wall mounted indoor unit.

Self-diagnosing Function

Automatic Fan Operation

Dry mode

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

Noise reducing external valve kit

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

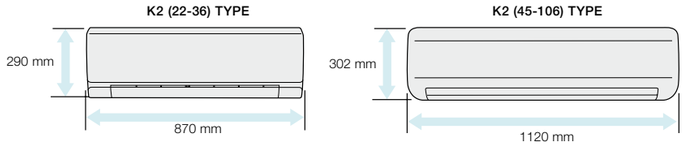
CZ-P56SVK2 (for 22 - 56 type)
CZ-P160SVK2 (for 73* - 106 type)

*When the pipe diameter is (Liquid) Ø6.35 - (Gas) Ø12.7, please use CZ-P56SVK2.

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

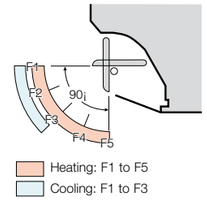
Piping outlet is possible in the six directions of right, right rear, right bottom, left, left rear, left bottom, making installation easier.

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.



Indoor Unit / K2 Type

K2 TYPE Wall Mounted DC motor

Model Name			S-22MK2E5A	S-28MK2E5A	S-36MK2E5A	S-45MK2E5A
Power source			220/230/240V, 1 phase - 50/60Hz			
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)	m^3/h	540/450/390	570/498/390	654/540/390	870/750/600
		L/s	150/125/108	158/138/108	181/150/108	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°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

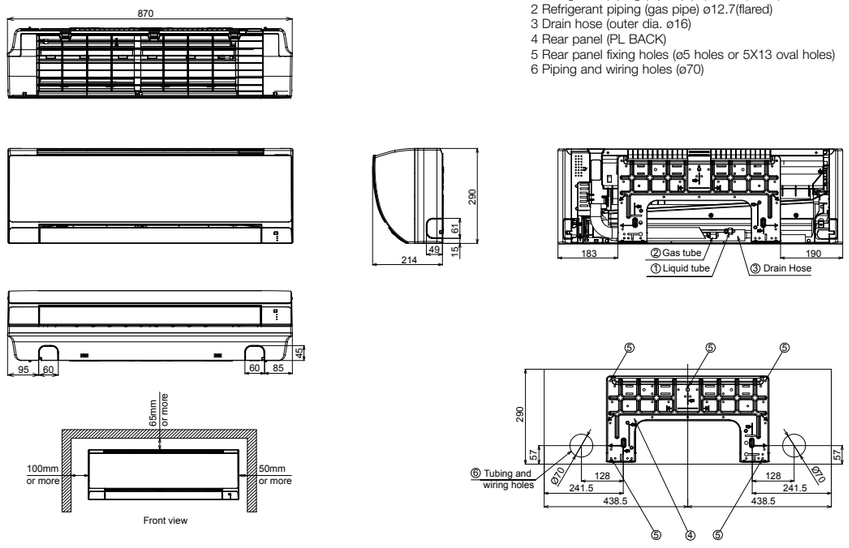
Specifications are subject to change without notice.

S-56MK2E5A	S-73MK2E5A	S-106MK2E5A
220/230/240V, 1 phase - 50/60Hz		
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 Piping and wiring holes (ø70)

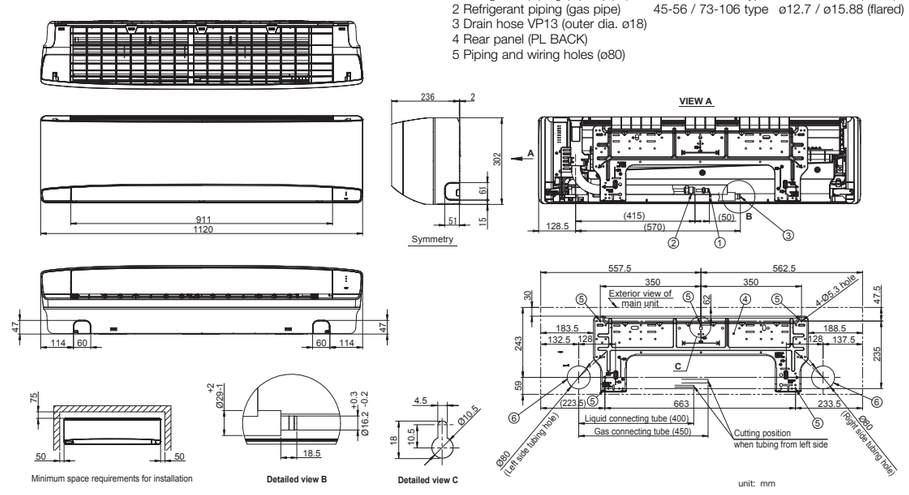


unit: mm

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 Piping and wiring holes (ø80)



unit: mm

NEW

U2TYPE 4-Way Cassette

DC motor

nanoe™ X as a standard*
*nanoe X Generator Mark 2

Semi concealed cassette

Provides a neat fit in the ceiling to match modern décor, and uniform cooling through out the room, and easy installation.

AIR INTAKE CHAMBER

CZ-FDU3

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

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

NEW PANEL DESIGN
Flat design, well-matched with interior, building.

Nomal Panel : CZ-KPU3H
ECONAVI Panel : CZ-KPU3A

Optional accessory

ECONAVI ready

CZ-RTC6BL

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRU3
Receiver

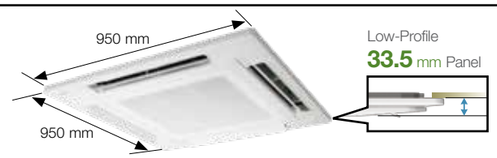
Self-diagnosing Function | Automatic Fan Operation | Dry mode | Intelligent Auto Swing | Automatic Restart Function | Auto Swing (Auto Flap Control) | Built-in Drain Pump

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
- Easy installation structure of the panel
- ECONAVI : Floor temperature and human sensor added. Activity amount detection and new circulator
- nanoe™X : 20x for CAC (20 times more nanoe™ particle for wide commercial space). Inside cleaning by 20x nanoe™ + dry control

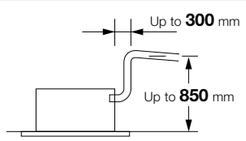
Flat Horizontal Design

The horizontal design of 4-way cassette achieves an elegant designed panel. Its slim design allow to protrude 33.5mm from the ceiling.



Drain pump of up to 850 mm 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.



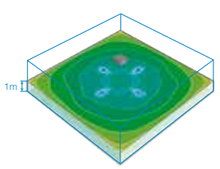
Easy to clean suction grille

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.

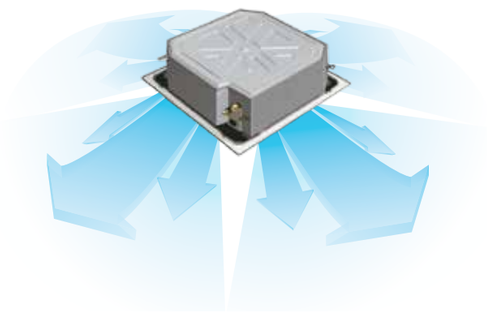
360° Wide



Temperature distribution by thermograph (cooling operation)

Simulation conditions:
140M 4-way ceiling-mounted cassette type in cooling mode
/ Floor area of 225 m²
/ Ceiling height of 3 m

Ample airflow: 36 m³/min

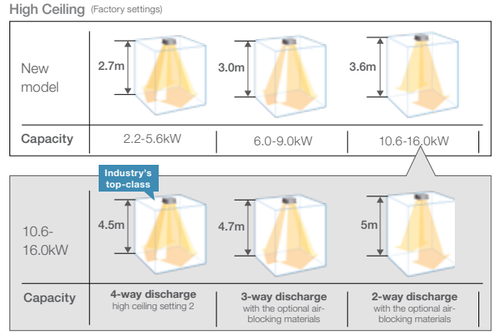


*Pre-setting is required for this function at System Test-run procedure

High-ceiling installation (Up to 5 m for 10.6 kW 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-way airflow.

ECONAVI panel is added into the line up

Continue Conventional function (Energy saving & comfort) and following are newly added.
- Energy saving function: comfortable energy saving based on temperature and humidity
- New circulate function that improves comfort
- Movement detection is improved improving comfort

ECONAVI energy saving function

Newly put humidity sensor on air suction part, and achieve more comfort and energy saving operation.
- 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-KPU3H
ECONAVI panel: CZ-KPU3A

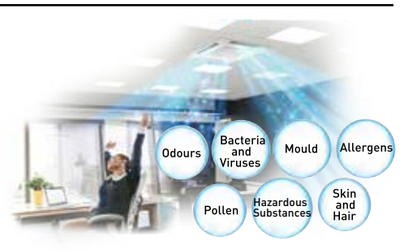
Wireless receiver (option)

ECONAVI panel

nanoe™X

nanoe X Generator Mark 2

nanoe™ X contains plenty of OH radicals that have outstanding effects on various air pollutants, including bacteria and viruses, mould, allergens, pollen, hazadous substances, as well as deodorise odours. It also keeps moisture in your skin and hair.



Invisible Air Contaminants are Suppressed

U2 TYPE 4-Way Cassette

Model Name			S-22MU2E5B	S-28MU2E5B	S-36MU2E5B	S-45MU2E5B	S-56MU2E5B
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	0.020/0.020/0.020	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)	m³/h	870/780/690	870/780/690	870/780/690	930/780/690	990/810/690
		L/s	242/217/192	242/217/192	242/217/192	258/217/192	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)

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

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

In the case of nanoe X OFF
Specifications are subject to change without notice.

Model Name	S-60MU2E5B	S-73MU2E5B	S-90MU2E5B	S-106MU2E5B	S-140MU2E5B	S-160MU2E5B
Power source	220/230/240 V, 1 phase - 50/60 Hz					
Cooling capacity	6.0	7.3	9.0	10.6	14.0	16.0
	20,500	24,900	30,700	36,200	47,800	54,600
Heating capacity	7.1	8.0	10.0	11.4	16.0	18.0
	24,200	27,300	34,100	38,900	54,600	61,400
Power input Cooling	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
Power input Heating	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
Running current Cooling	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
Running current Heating	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
Fan Type	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan
Fan Air flow rate (H/M/L) m³/h	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
Fan Air flow rate (H/M/L) L/s	350/267/217	375/267/217	383/308/233	567/417/317	600/433/333	617/467/400
Fan Motor output	0.06	0.06	0.06	0.09	0.09	0.09
Sound power level (H/M/L)	51/47/44	52/47/44	53/50/47	59/53/49	60/54/50	61/55/53
Sound pressure level (H/M/L)	36/32/29	37/32/29	38/35/32	44/38/34	45/39/35	46/40/38
Dimensions H x W x D	319+(33.5) x 840 (950) x 840 (950)					
Pipe connections Liquid	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
Pipe connections Gas	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)
Pipe connections Drain piping	VP-25	VP-25	VP-25	VP-25	VP-25	VP-25
Net weight (Panel)	20 (+5)	20 (+5)	20 (+5)	25 (+5)	25 (+5)	25 (+5)

Standard Equipped nanoe™ Technology

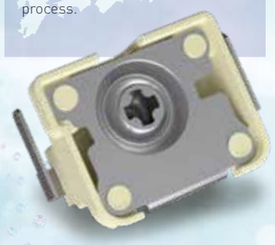
nanoe™ X

- nanoe™ X, charged water particles, contain hydroxyl radical (OH radical) that work to provide quality air.
- The electrodes of nanoe™ X devices are made of titanium and electricity discharge into the water particles of nanoe™. So no need to clean or replace the device (maintenance free without wear).

Made in JAPAN

Craftsmanship in Japan enables the adoption of titanium

Electrodes of nanoe™ X devices are produced with the support of craftsmen in Japan that has advanced expertise on processing ultra-small parts of titanium glass frames although titanium is very strong material and difficult to process.



nanoe™ X device

nanoe™ X module

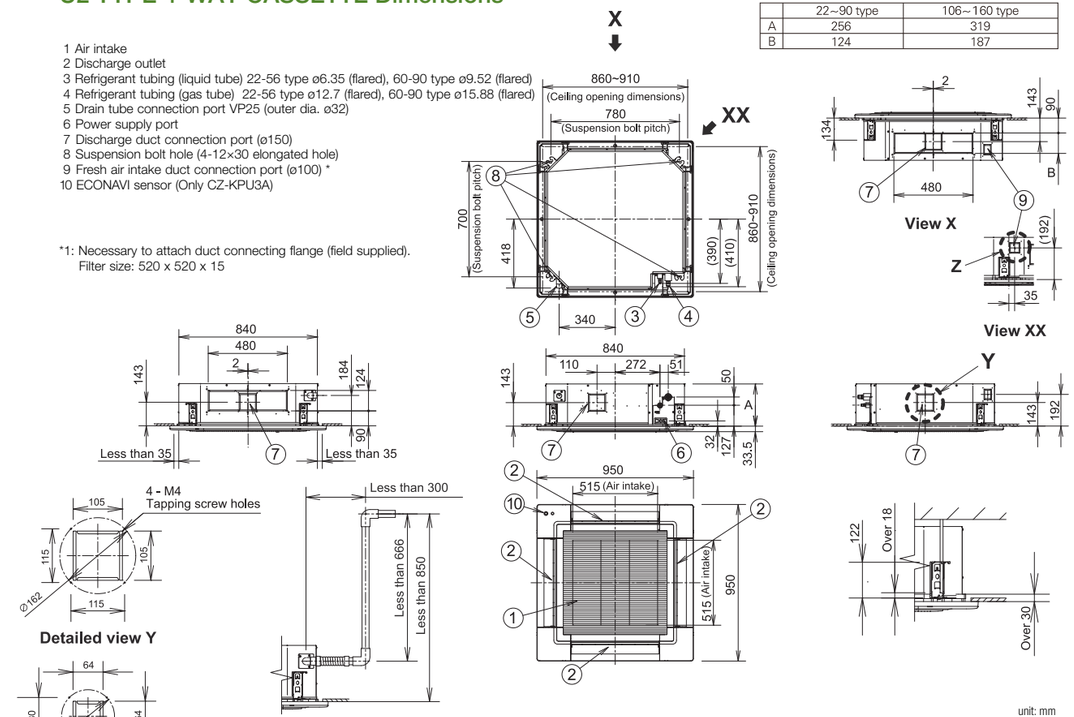
Unique nanoe™ X module casing releases 9.6 trillion hydroxyl radical (OH radical) per second.

U2 TYPE 4-WAY CASSETTE Dimensions

1 Air intake
2 Discharge outlet
3 Refrigerant tubing (liquid tube) 22-56 type ø6.35 (flared), 60-90 type ø9.52 (flared)
4 Refrigerant tubing (gas tube) 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

	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 30 mm or more below the lower surface of the ceiling (18 mm 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 Unit / Y2 Type

Y2TYPE 4-Way Mini Cassette

Mini semi concealed cassette

DC motor

Designed to fit perfectly into a 60 x 60 cm ceiling grid without the need to alter the bar configuration, the Y2 is ideal for small commercial and retrofit applications. In addition, improvements to the Y2's efficiency make this model one of the most advanced units in the industry.

PANEL

51 x 700 x 700 mm
(HxWxD)

CZ-KPY3AW

Optional accessory

ECONAVI

ECONAVI ready

CZ-RTC6BL

CZ-CENSC1

CZ-RTC5B

CZ-RWS3
*Remote controller

*Receiver is included in the 4-way mini cassette indoor unit.

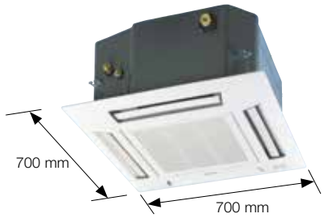
Self-diagnosing Function | Automatic Fan Operation | Dry mode | Intelligent Auto Swing | Automatic Restart Function | Auto Swing (Auto Flap Control) | Built-in Drain Pump

Technical focus

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

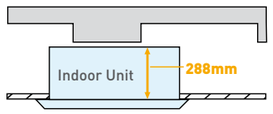
Compact design

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



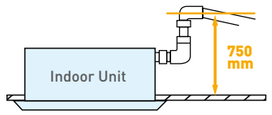
Lighter and slimmer, easier installation

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.



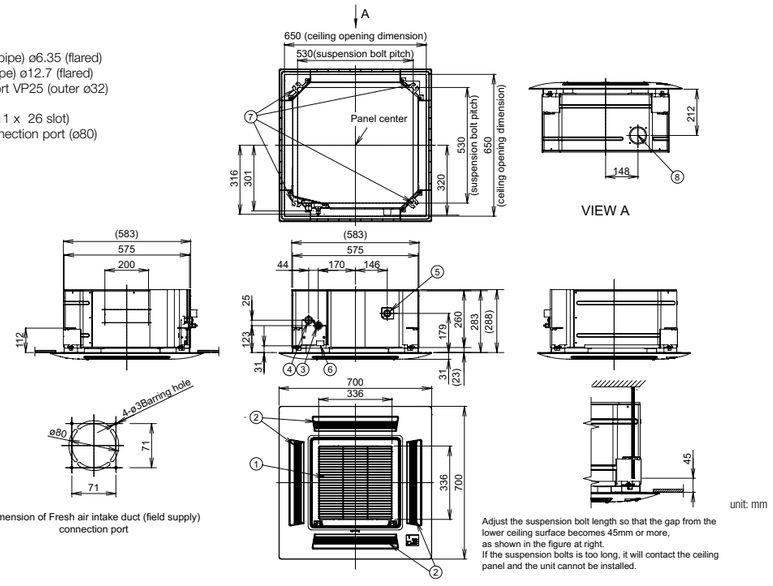
Model Name			S-22MY2E5A	S-28MY2E5A	S-36MY2E5A	S-45MY2E5A	S-56MY2E5A
Power source			220/230/240 V, 1 phase - 50/60 Hz				
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6
		BTU/h	7,500	9,600	12,300	15,400	19,100
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3
		BTU/h	8,500	10,900	14,300	17,100	21,500
Power input	Cooling	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)	m³/h	546/492/336	558/504/336	582/522/360	600/558/492	624/588/510
		L/s	152/137/93	155/140/93	162/145/100	167/155/137	173/163/142
	Output	kW	0.04	0.04	0.04	0.04	0.04
Power sound level (H/M/L)		dB	50/46/40	50/46/40	51/47/41	53/49/43	55/52/49
Sound pressure level (H/M/L)		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)



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

unit: mm

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

L1 TYPE 2-Way Cassette

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

PANEL

CZ-02KPL2 :
8 x 1,060 x 680 mm (H x W x D)

Big size panel (for S-73ML1E5)
CZ-03KPL2 :
8 x 1,360 x 680 mm (H x W x D)

Optional accessory

CZ-RTC6BL

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRL3
Receiver

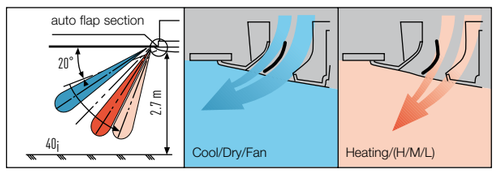
Self-diagnosing Function | Automatic Fan Operation | Dry mode | Intelligent Auto Swing | Automatic Restart Function | Auto Swing (Auto Flap Control) | Built-in Drain Pump

Technical focus

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

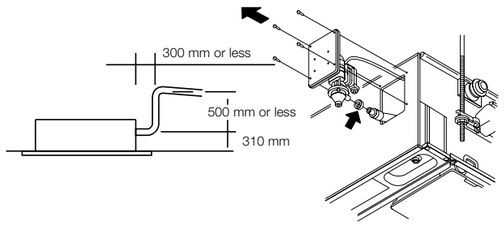
Auto flap control

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



Drain up is possible up to 500 mm 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.

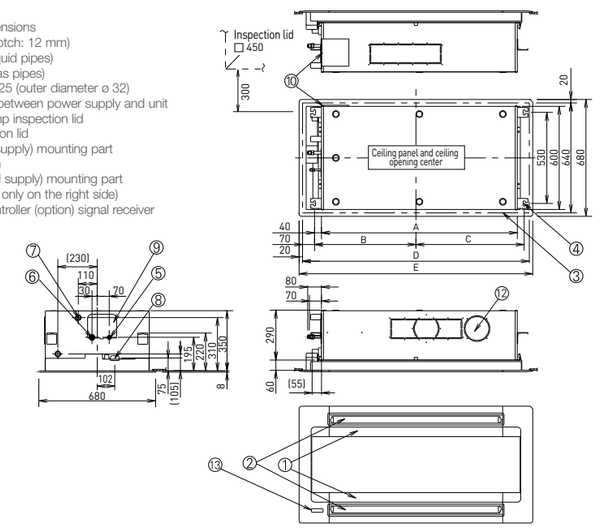
Model Name			S-22ML1E5	S-28ML1E5	S-36ML1E5	S-45ML1E5	S-56ML1E5	S-73ML1E5
Power source			220/230/240 V, 1 phase - 50/60 Hz					
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6	7.3
		BTU/h	7,500	9,600	12,000	15,000	19,000	25,000
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3	8.0
		BTU/h	8,500	11,000	14,000	17,000	21,000	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: 12 mm)
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)	⑫x 1 pc.	⑫x 2 pc.

unit: mm

Indoor Unit / D1 Type

D1 TYPE 1-Way Cassette

DC motor

Semi concealed slim cassette

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

CZ-02KPD2 :
20 x 1,230 x 800 mm (H x W x D)

Optional accessory

CZ-RTC6BL | CZ-RTC5B | CZ-RWS3 Remote controller | CZ-RWRD3 Receiver

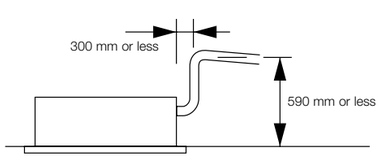
Self-diagnosing Function | Automatic Fan Operation | Dry mode | Intelligent Auto Swing | Automatic Restart Function | Auto Swing (Auto Flap Control) | Built-in Drain Pump

Technical focus

- Ultra-Slim profile
- Suitable for standard and high ceilings
- Built-in drain pump provides 590 mm 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

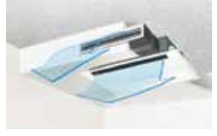
A built-in drain pump provides up to 590mm lift from ceiling height for flexible install options.



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 4.2 m).



(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)

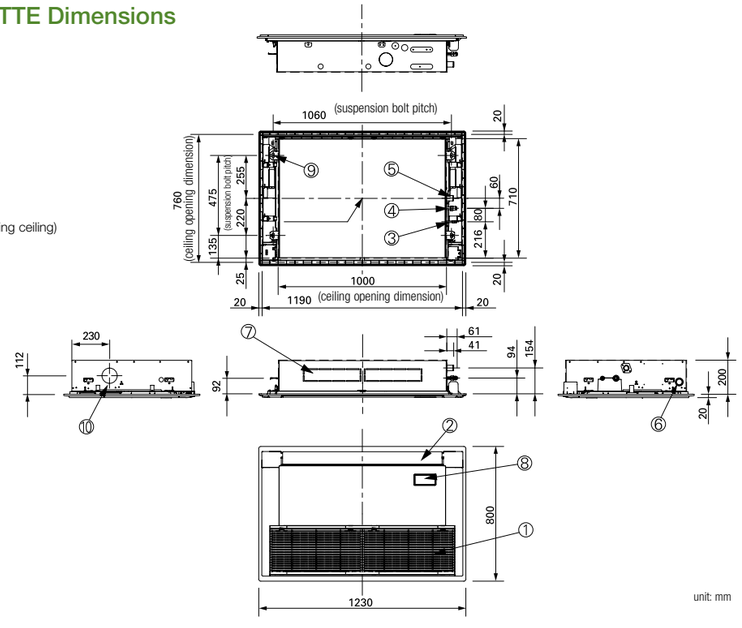
Model Name			S-28MD1E5	S-36MD1E5	S-45MD1E5	S-56MD1E5	S-73MD1E5
Power source			220/230/240 V, 1 phase - 50/60 Hz				
Cooling capacity		kW	2.8	3.6	4.5	5.6	7.3
		BTU/h	9,600	12,000	15,000	19,000	25,000
Heating capacity		kW	3.2	4.2	5.0	6.3	8.0
		BTU/h	11,000	14,000	17,000	21,000	27,000
Power input	Cooling	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-WAY 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)



T2 TYPE Under Ceiling

Ceiling mounted

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

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

S-73MT2E5A

S-106MT2E5A
S-140MT2E5A

Optional accessory

CZ-RTC6BL

CZ-CENSC1

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRT3
Receiver

Self-diagnosing Function | Automatic Fan Operation | Dry mode | 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 louver closes to provide an elegant look while keeping the unit clean.

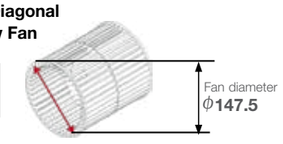
Energy-Saving Technology Delivering Top-Class Efficiency

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

Top Class Energy Saving

Large Diagonal Air Flow Fan

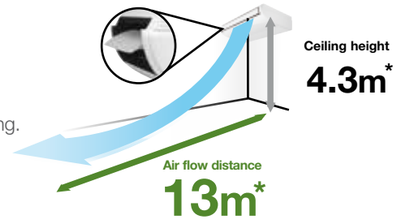
DC monitor



Comfortable, Long-Distance Air Flow Distribution

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

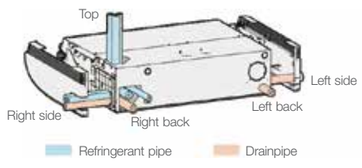
High Ceiling Setting *Setting by remote control	Air flow distance		
	112	140	160
4.3m	12m	13m	13m



*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

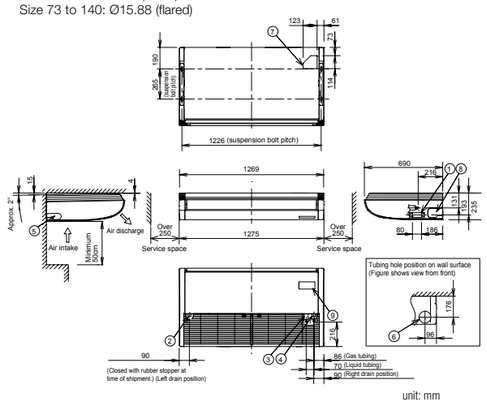
GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

Specifications are subject to change without notice.

T2 TYPE CEILING Dimensions

SIZE 36-56

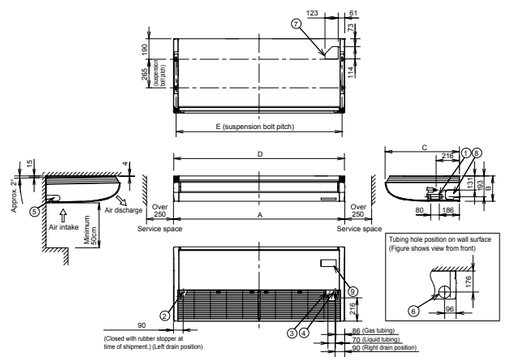
1 Drain port VP20 (inside siameter Ø26mm, drain hose supplied)
2 Left drain position
3 Refrigerant piping (liquid pipes)
Size 36 to 56: Ø6.35 (flared)
Size 73 to 140: Ø9.52 (flared)
4 Refrigerant piping (gas pipes)
Size 36 to 56: Ø12.7 (flared)
Size 73 to 140: Ø15.88 (flared)



unit: mm

SIZE 73-140

5 Left side drain hose outlet port (cutout)
6 Piping 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



	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

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.

Optional accessory

CZ-RTC6BL

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRC3
Receiver

Self-diagnosing Function

Automatic Fan Operation

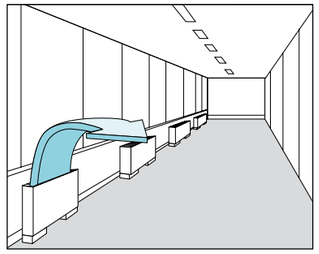
Dry mode

Automatic Restart Function

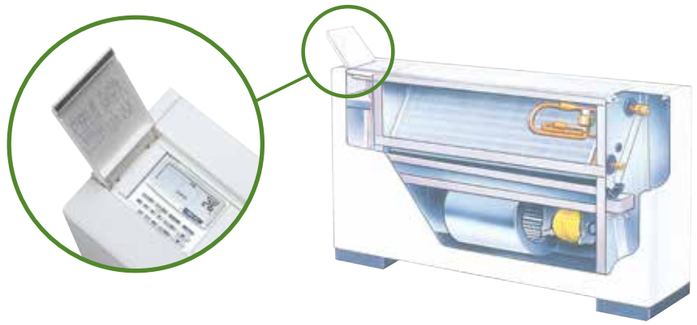
Technical focus

- 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



A wired remote control (CZ-RTC4/CZ-RTC5B) can be installed in the body



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)	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	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

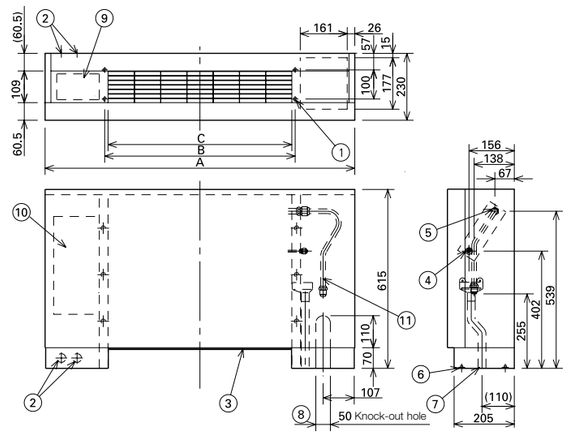
GLOBAL REMARKS	Rated conditions:	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB	20°C DB
	Outdoor air temperature	35°C DB / 24°C WB	7°C DB / 6°C WB

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

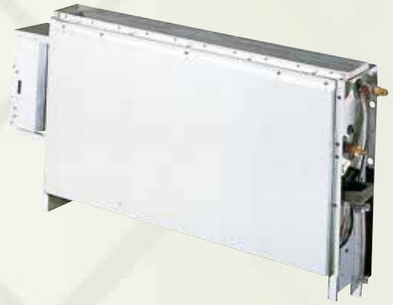


unit: mm

Indoor Unit / R1 Type

R1 TYPE Concealed Floor Standing

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



Optional accessory

CZ-RTC6BL

CZ-RTC5B

CZ-RWS3
Remote controller

CZ-RWRC3
Receiver

Self-diagnosing Function

Automatic Fan Operation

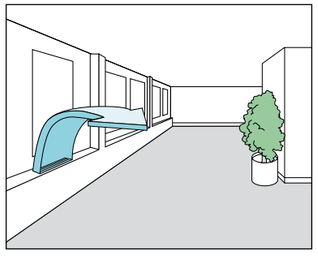
Dry mode

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



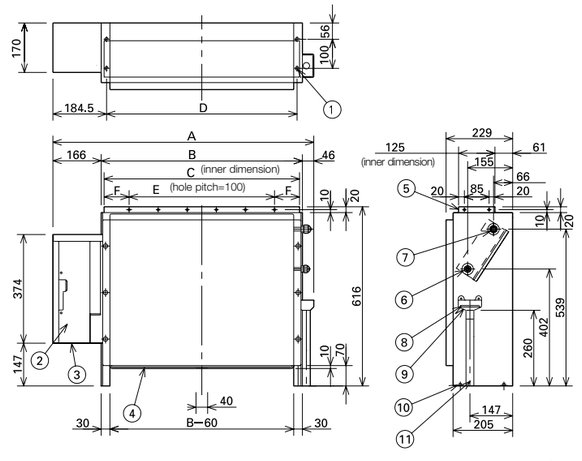
Model Name			S-22MR1E5	S-28MR1E5	S-36MR1E5	S-45MR1E5	S-56MR1E5	S-71MR1E5
Power source			220/230/240 V, 1 phase - 50/60 Hz					
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6	7.1
		BTU/h	7,500	9,600	12,000	15,000	19,000	24,000
Heating capacity		kW	2.5	3.2	4.2	5.0	6.3	8.0
		BTU/h	8,500	11,000	14,000	17,000	21,000	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)	m^3/h	420/360/300	420/360/300	540/420/360	720/540/480	900/780/660	1,020/840/720
		L/s	117/100/183	117/100/183	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

Smart Connectivity and Control Solutions

Panasonic offers a range of smart connectivity and control solutions for residential and commercial applications that allows you to conveniently manage and monitor air conditioning units in single or multiple locations from one mobile device.

Wide Range of Smart Control Solutions for All Needs

Whether you need to control multiple sites, a single office, or your home, we offer a range of innovative smart control solutions for a variety of needs.

Panasonic Comfort Cloud

Intuitive and scalable air conditioning control solution using a personal mobile device.

VRF Smart Connectivity+

Offers efficient energy management with high indoor air quality(IAQ) control.

Panasonic AC Smart Cloud

Monitor and manage energy consumption of multiple location through a cloud computing system.

For Residential

Panasonic Comfort Cloud

Personal Control Solutions

Panasonic Comfort Cloud

Remotely manage and monitor multiple air conditioning units in your home

Easily control and access all features of the air conditioning units with smart centralised control.

CZ-CAPWFC1

Network adaptor. Available for all types of VRF indoor units.

For Light Commercial

Panasonic Comfort Cloud

VRF Smart Connectivity+

Cost effective Energy Management Solution

Connectable up to 200 Units with just 1 device

Multiple location control at your convenience with Comfort Cloud

Gain control of multiple zones and sites intuitively adjusting temperature by areas with differentiated user rights settings.

Indoor Air Quality(IAQ) and efficient energy usage with VRF Smart Connectivity+

- Ultimate cooling comfort with sensing technology and automatic IAQ control.
- Simplified Plug & Play installation with BMS connection for better energy consumption.

For Multiple Building Management

Panasonic AC Smart Cloud

Full Control of All Installations From A Single Internet Connection

Panasonic AC Smart Cloud

Manage and monitor energy consumption patterns

Analyse energy usage, running time and optimise temperatures to reduce energy costs.

Centralised control solution with zero downtime

Receive real-time status updates to prevent breakdowns.

Flexible and scalable solution for expanding businesses and multi sites

Adaptable solutions that can easily be upgraded for new features, meet user demand and better IT management.

Panasonic Comfort Cloud

Control air conditioning units from wherever and whenever with your smartphone, by using Panasonic Comfort Cloud and WLAN smart adaptor.
This scalable solution is ideal for one system, one site or multiple locations. Coupling the adapter with the already feature rich systems, makes it an ideal solution for both residential and commercial applications.

Comfort Cloud

For Residential

Remotely manage and monitor air conditioning units from anywhere anytime.

For Light Commercial

Gain control of multiple zones and sites intuitively up to 200 indoor units.

Panasonic Comfort Cloud features

From 1 to 200 units

User can control up to 200 indoor units. 10 different sites, with up to 20 units / groups per site.

Multiple User

The Panasonic Comfort Cloud App allows multiuser access control. Restrict user access to specific units.

Easy Scheduling

Complex weekly scheduling made simple. Not only for one units, but across multiple sites and from a smartphone.

Custom timer according to your working day and hour

Error Codes

Error code notification through the App, provides early notification and allows for faster repair.

Application Examples

Centralised control from reception.

Multiple location control for small businesses.

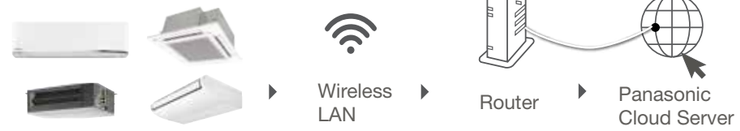
System configuration

Network Adaptor

CZ-CAPWFC1

CZ-CAPWFC1: Available for all types of VRF

Connection Diagram



In conformity with IEEE 802.11

WLAN Smart Adaptor specification

	CZ-CAPWFC1
Input Voltage	DC 12V (Supplied from indoor unit)
Power Consumption	Maximum 2.4W
Size [H x W x D]	120 x 70 x 25mm
Weight	190g (including communications lines)
Interface	Wireless LAN
Wireless LAN Standard	IEEE 802.11 b/g/n
Frequency range	2.4GHz band
Encryption	WPA2-PSK(TKIP/AES)
Operation range	0-55°C, 20 - 80RH%

Comfort Cloud App

Download on the App Store

GET IT ON Google Play

Scan QR code to download free Panasonic Comfort Cloud App

Compatible Device and Browsers
1. IOS 9.0 or above 2. Android™ 4.4 or above

VRF Smart Connectivity+

Through thorough energy management, Panasonic's VRF Smart Connectivity+[*1] is a completely new, state-of-the-art solution providing energy saving and comfort as well as simple installation, operation and maintenance.

Schneider Electric

VRF Smart Connectivity+

VRF Smart Connectivity+ offers efficient energy management and a new air conditioning control solution with high IAQ (Indoor Air Quality).

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 (BMS) 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 Occupancy
- ZigBee wireless sensors: CO_2/Temperature/RH%, window/door, ceiling/wall

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

Ultimate Customisation.
- Background colour customisable
- Custom display/icons, messages
- Programmable logic (also stand alone)
- Various controls and various external connection devices

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

[*1] Not compatible with Ultra Slim Ducted, 4-Way Mini Cassette and Floor Console systems.

VRF Smart Connectivity+ ~New SE8000 series~

1. Quality Air Control

Optimum IAQ is realized using the CO_2 & humidity sensors. The interior remains comfortable, while heating and cooling costs are minimized.
The CO_2 sensor controls ventilation systems which contributes to improving the room's air quality.

2. Room Key Card or Key Cardless Solutions for Hotels

Solutions are provided that meet the needs of various regions and hotel grades.
Whilst the previous model's automatic detection function offered optimal air conditioning with or without a hotel room key card, the latest model enables conventional key cards to control air conditioners and other devices coordinately.The increase in the types of devices that can be connected enables customized control of any hotel room.

3. Other Equipment Control

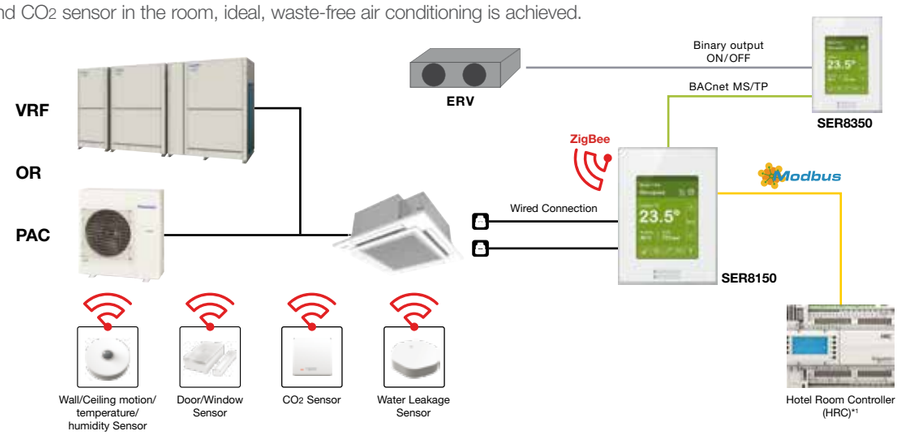
One room controller manages various devices including lighting and the blinds.
A ventilation system and other external connection devices can be connected by using HRC[*2] or SE8350 so that various control is possible with this controller alone, even without BMS.

Schneider Electric

[*2] Available through a Schneider Electric distribution channel.

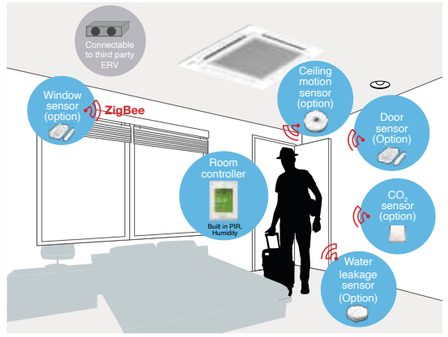
Energy Management System for Rooms

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.

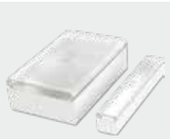


Sensing & Control technology

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 (10-year battery for CO_2 sensor) and are easy to install and replace.



Door/Window Sensor
Door and window contact detection sensor to monitor opening and closing.

Wall/Ceiling motion/ temperature/humidity Sensor
Wall and ceiling sensor to detect the presence or absence of occupants.

CO_2 Sensor
Monitor indoor air quality, review data on interfacing devices, and control fresh air inside customizable zones.

Water Leakage Sensor
Two sensing pads under the body activate when water is present between the two pads. Detecting the water, the sensor reports the event to the controller.

SER8350
Programmable controller for HVAC equipment. Includes local memory to store control sequence.

Hotel Room Controller (HRC)*1
The Hotel Room Controller controls connected guest room devices and aggregates data, making it visible to guest room and property management systems.

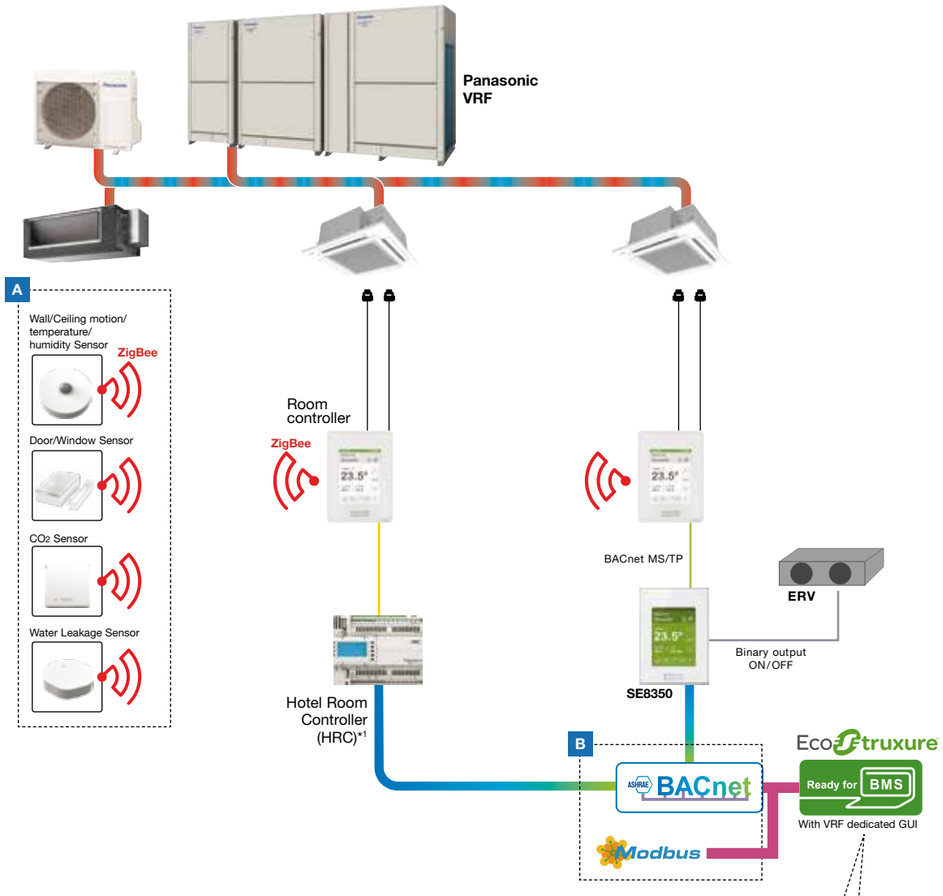
*1 Available through a Schneider Electric distribution channel.

Management System for the Entire Building*2

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

Plug and Play BMS connection.

With the SER8150, connection to BMS 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 communication are selectable

C For Schneider Electric BMS connection, Panasonic VRF widgets enable easy Plug and Play.
Better understanding for VRF as a chiller system.

*2 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

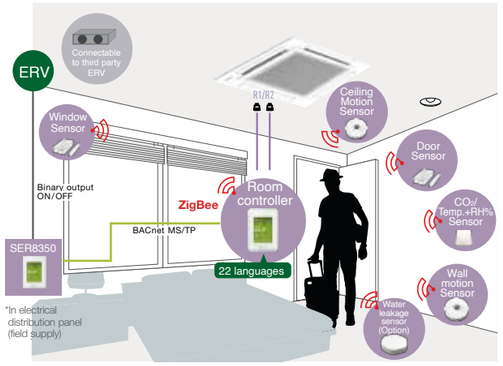
1 Hotels

Room Key Card or Key Cardless Solutions for Hotels

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.

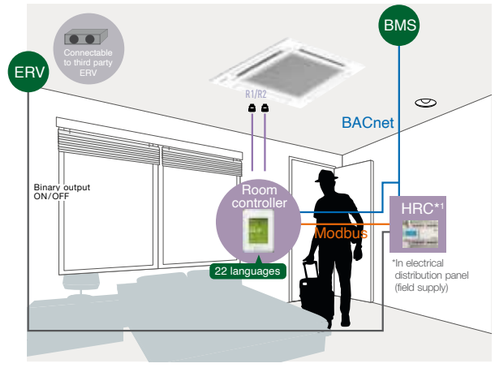
1. Remote sensing & IAQ contorol

In addition to detecting a room's temperature, humidity and CO_2 concentration, ZigBee remote sensors detect the opening/closing of windows and doors, and the presence/absence of people in a room.
Various IAQ controls and detailed energy savings are possible by using SE8350 based on this detected information.



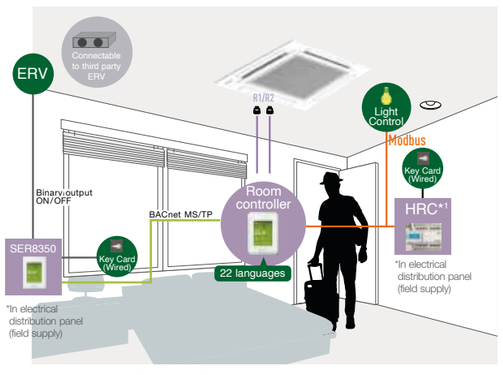
2. BMS Connectivity

By setting HRC*1 as the guestroom controller, sensing, control and BMS connection can be realized in coordination with SER8150!



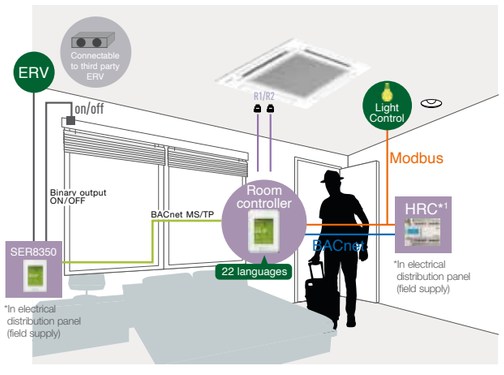
3. Key Cardless control

The introduction of SE8350 and HRC enables conventional wired keycards to be connected to the system so that it is possible to meet the specific requirements of various hotel and room types.



4. Other control

The introduction of SE8350 and HRC enables the on/off control of devices having dry contact input, such as ventilation, lighting and blinds.



*1 Available through a Schneider Electric distribution channel.

VRF Smart Connectivity+

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 22 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.

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.

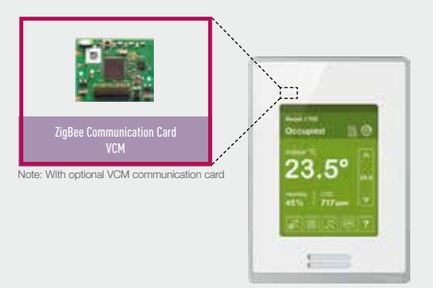
Smart Connectivity Devices

Door/Window Sensor
SED-WDC-G-5045

Wall/Ceiling motion/temperature/humidity Sensor
SED-MTH-G-5045

CO_2 Sensor
SED-CO_2-G-5045

Water Leakage Sensor
SED-WLS-G-5045



Features

- Up to 5-year battery life batteries included (CO_2 sensor is 10 years)
- Battery level is a point
- Sensor points visible when SER8150 is integrated via BACnet MS/TP
- Sensor status and battery level visible when SER8150 is integrated via ZigBee® Pro

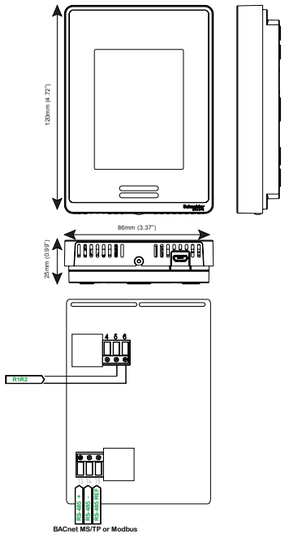
Reference	Description
SER8150R0B1194	Pana Net Con, RH, No PIR, SE Brand, R1R2
SER8150R5B1194	Pana Net Con, RH, PIR, SE Brand, R1R2
VCM8000V5094P	Wireless ZigBee Pro communication card
SE8350	
SE8350U0B00	BACnet MS/TP, 24VAC, 7UI/4UO/4DO
HRC[*1]	
HRCEP14R	Hotel Room Expansion Module 14IO
HRCPBG28R	Hotel Room Controller 28IO
HRCPDG42R	Hotel Room Controller w/Display 42IO

Reference	Description
ZigBee Sensors	
SED-CO2-G-5045	Sensor with Room CO_2, Temperature and Humidity
SED-TRH-G-5045	Sensor with Room Temperature and Humidity
SED-WDC-G-5045	Door/Window Sensor
SED-MTH-G-5045	Wall/Ceiling motion/temperature/humidity Sensor
SED-WLS-G-5045	Water Leakage Sensor

VRF Smart Connectivity+ controller external dimensions

Room Controller for SER8150

Dimensions



Specifications

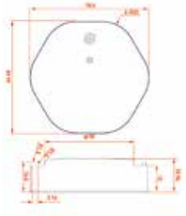
Dimensions
Height: 12cm/4.72in
Width: 8.6cm/3.39in
Depth: 2.7cm/1.06in
Power Requirements
16 Vdc from Panasonic R-R IDU connectors
50/60 Hz, 4VA, Class 2 Supply
Range from Indoor Unit
Recommended 500ft (150 m)
Operating Conditions
0 °C to 50°C (32°F to122°F)
0% to 95% R.H. non-condensing
Storage Conditions
-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 mm²). Refer to Panasonic VRF guidelines "Wiring System Diagram for Remote Controller" for this limitation.
Approximate Shipping Weight
0.34 kg (0.75 lb)

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

THIS PRODUCT FOR COMMERCIAL USE ONLY

Water Leakage Sensor

Dimensions



Specifications

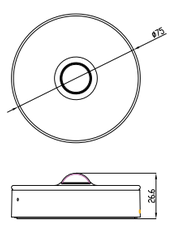
Dimensions	70.8mmx66.7mmx19mm
Colour	White
Weight	64g
Communication	ZigBee 3.0 HA
Battery Voltage	3V
Battery Cell	LR03 AAA (2pcs)
Battery Life	Up to 5 years
Rated Power	≦ 90 mW
Maximum Transmitted Power	≦ 5 dBm
Ambient Temperature	-10° - +50°C
Frequency Band	2405–2480 MHz

Certification

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

Wall/Ceiling Wireless Sensor SED-MTH-G-5045

Dimensions



Specifications

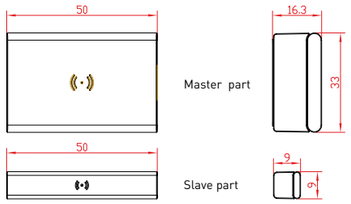
Dimensions	70mm diam..x26.6mm
Colour	White
Weight	59g
Communication	ZigBee 3.0 HA
Detection Range	Ceiling: Ø4m (installation height 2.5m) Wall: R5m (installation height 1.2m)
Battery Voltage	3V
Battery Cell	LR03 AAA (2pcs)
Battery Life	Up to 5 years
Ambient Temperature	-10° - +50°C

Certification

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

Door/Window Wireless Sensor SED-WDC-G-5045

Dimensions



Specifications

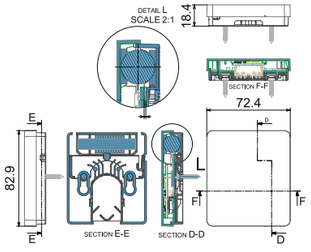
Dimensions	Master part: 50mmx33mmx16.3mm Slave part: 50mmx9mmx9mm
Colour	White/transp.
Weight	30g
Communication	ZigBee 3.0 HA
Detection Range	Trigger 'close': wood 30mm, metal 18mm Tigger 'open': wood 32mm, metal 20mm
Battery Voltage	3V
Battery Cell	CR2450
Battery Life	Up to 5 years
Ambient Temperature	-10° - +50°C

Certification

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

CO_2 Sensor SED-CO_2-G-5045

Dimensions



Specifications

Dimensions	3.26in x 2.85in x 0.72in 82.9 mm x 72.4 mm x 18.4 mm
Operating Temperature	0°C to 50°C (32°F to 122°F)
Temperature Accuracy	±0.3°C (0.54 °F) typical within operating range
Humidity Range	0% to 100%
Humidity Accuracy	± 3% RH (typical within 0% to 80% RH)
Measurement Range	0 to 5000 ppm
Measurement/ Transmission Intervals	2.5 minutes (day), 10 minutes (evening) Note: Battery life will be reduced should interval be shortened (i.e. using remote temperature/humidity functions)
CO2 Accuracy at NTP	±60ppm +3% of reading (400 - 2,000ppm range)
Communication	Zigbee 3.0 Green Power (encrypted, bi-directional)
Battery Voltage	3.6 V
Battery Cell	AA Lithium ion
Battery Life	10+ years (non-replaceable) Note: Battery life can be reduced when sensor is operated at temperatures approaching the operating limits.
Ambient Temperature	-30°C to 70°C

Certification

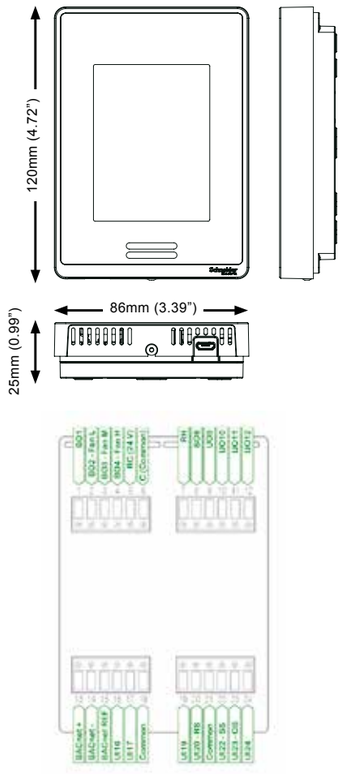
Check with your local government for instruction on disposal of these products.

[*1] Available through a Schneider Electric distribution channel.

VRF Smart Connectivity+

SE8350[*2]

Dimensions



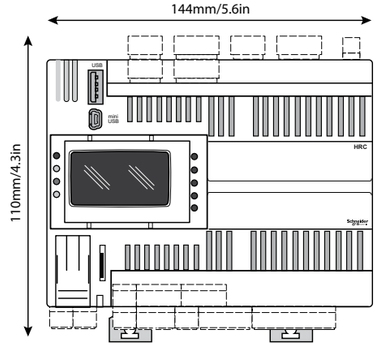
Main Specifications

Item	Description
Dimensions	12cm/4.72in (H) x 8.6cm/3.38in (W) x 2.5cm/1in (D)
Power Requirements	Input: 24VAC ±15% recommended, Absolute Max 29.5VAC, 50/60Hz or 24Vdc ±15% Peak device consumption: up to 6VA with CO2 sensor or Wi-Fi module Plus Output Load (max total 94VA) Transformer maximum rating: 100VA, 4.17 A
Output Ratings	**Nine Electronic Relays** : 24VAC or 24Vdc ±15% same as input power 1.0 Amp., in-rush = 3.0 Amps; **Four Analog Outputs** : 0 - 10 Vdc, 5mA maximum, (2 kilo-ohm resistance) Configurable Output Analog/Electronic Relay
Operating Conditions	0 °C to 50 °C (32 °F to 122 °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 Control Accuracy	±0.5 ° C (± 0.9 °F) @ 21 °C (70 °F) typical
Humidity Sensor Precision	Reading range from 10-90 % R.H. non-condensing 10 to 20% precision: 10% 20% to 70% precision: 5% 70% to 90% precision: 10%
Humidity Sensor Stability	Less than 0.25 % yearly (typical drift)
Dehumidification Setpoint Range	30% to 95% R.H.
Occ, Unocc and Standby Cooling Setpoint Range	12.0 °C to 37.5 °C (54 °F to 100 °F)
Occ, Unocc and Standby Heating Setpoint Range	4.5 °C to 32 °C (40 °F to 90 °F)
Room and Outdoor Air Temperature Display Range	-40 °C to 50 °C (-40 °F to 122 °F)
Proportional Band for Room Temperature Control	Cooling and Heating: Default: 1.8°C (3.2°F)
Analog Inputs	Modulating 0-10 VDC across UI19, UI24 to Common
Binary Inputs	Dry contact across terminals UI16, UI17 to Common
Remote Temperature Sensor	10 K NTC type 2 thermistor UI20, UI22, UI23
Wire Gauge	Power supply: 16 or 18 gauge Communications: 22 gauge typical, 24 gauge minimum
Shipping Weight	0.34 kg (0.75 lb)

[*2] **SE8350 does not connect directly to the air conditioner itself**

Hotel Room Controller HRC[*1]

Dimensions



Specifications

Dimensions	5.6in x 4.3in x 2.4in 144m x 110mm x 60.5mm
Digital Inputs	12
High Voltage Relay	10 x 3 A SPST +250 VAC relays
Digital Outputs	
Analog Inputs	12 x configurable analog inputs DI: voltage free DI, 10 kΩ input impedance 0-20mA: range 0..1000, < 150 Ω impedance 0-10V: range 0..1000 > 10 kΩ impedance
Analog Outputs	6 x 0-10 V outputs. Load impedance > 700 Ω
Supply Voltage	24 VAC + 10% NOT ISOLATED +20...38 Vdc NOT ISOLATED
Supply Frequency	50/60 Hz
Power Cycle	35 VA / 15 W
Operating Temperature	-20 to 60 °C (-4 to 140 °F) conforming to UL 60730-1
Storage Temperature	-30 to 70 °C (-22 to 158 °F)

Certification

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

Panasonic AC Smart Cloud

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

Flexible and scalable solution

- Energy saving
- Zero downtime
- 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 from your computer.
In a simple click, all your units from several locations, receive status updates in real-time of all your installations, preventing breakdowns and optimising costs.

Flexible solution for your business.

Every time | Everywhere | Multiplatform | Internet browser

Scalable solution for your business.

Small to large | 1 to multi sites | Upgrade features* | PAC / VRF

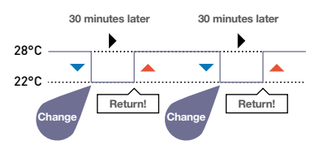
* Customised to meet user demand / Continuous upgrades: new functions and product introductions / IT smart management.

Panasonic AC Smart Cloud offers continuous improvement always thinking about users

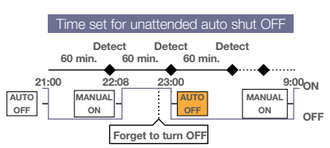
New e-CUT function

E-CUT functions are newly available in Panasonic AC Smart Cloud.
5 energy saving settings reduces automatically its energy consumption.

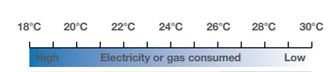
1. Set temperature auto return.
When you want to return to the set temperature after a certain time even if the temperature is changed.



2. Unattended auto shut OFF.
When you want to operate outside of a schedule but to monitor and stop automatically.

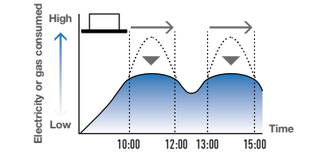


3. Set temperature range limit.
When you want to limit the temperatures that can be set.

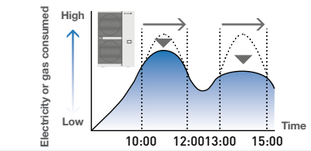


Reduced consumption of electricity or gas by over cooling.
Set temperature restricted to the range between 26°C and 30°C.

4. Energy saving timer / Efficient operation setting.
Specify time slots when you want operation capacity reduced.



5. Demand / peak shaving settings/ Peak cut settings.
Specify time slots when you want operation capacity of the outdoor units reduced.



Key functions and uniqueness

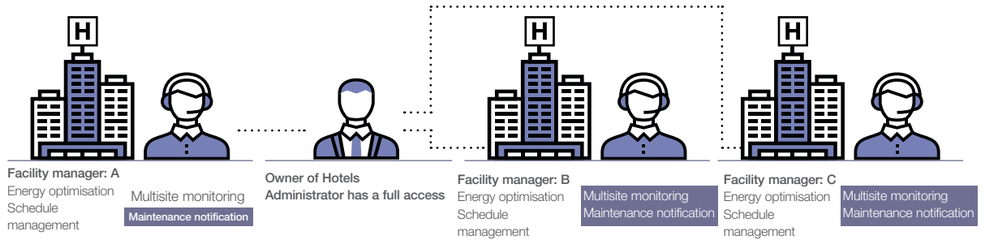
Multi site monitoring.
- It doesn't matter how many sites you have, easy to manage, operate, compare sites, locations, rooms.

Schedule setting.
- Yearly / weekly / holiday timer setting as you want

Powerful statistics for energy savings.
- Power consumption, capacity, efficiency level can be compared with different parameters (Yearly / monthly / weekly / daily bases)

Maintenance notification.
- Error notification by email and with floor layout
- Maintenance notification of PAC / VRF outdoor units
- Remote service checker function

User customisation[1].
Site administrator can create users as desired and assign customised profiles.



Main functions per user type

Function / Main Tab	Sub-Tab	Basic type (Eg.: Owners, facility managers)	Professional type (Eg.: Installers, maintenance companies)
AC setting	I_U / O_U operation details	✔	✔
	Cloud adapter (CZ-CFUSCC1) details	✔	✔
	AC maintenance		✔
	Map view	✔	✔
Energy saving function	NEW e-CUT	✔	✔
Schedule	Yearly, weekly schedule setting / view	✔	✔
Powerful statistics	Power consumption	✔	
	Capacity	✔	
	Efficiency ranking	✔	

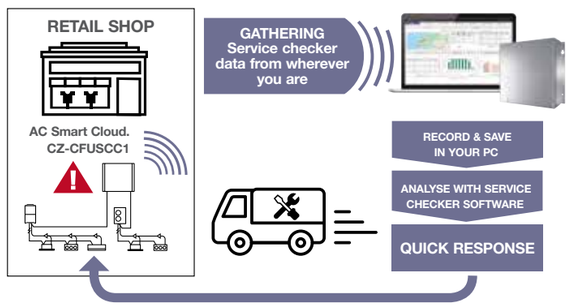
Function / Main Tab	Sub-Tab	Basic type (Eg.: Owners, facility managers)	Professional type (Eg.: Installers, maintenance companies)
Maintenance function	Notification overview / details	✔	✔
	Maintenance settings	✔	✔
	Map view	✔	✔
	Remote service checker		✔
User account [1]	New / update user registration	✔	
System setting	Distribution group overview / details	✔	
	Cut OFF request	✔	
	Map editor		✔

Remote service checker function

For professional profile

Zero down time
- Quick analysis & response
- Time & Cost saving for service maintenance task

Recording service checker parameters from wherever you are!
- Data duration: Maximum 120 minutes
- Data frequency: 10 – 90 seconds
- Mode selection: With test run or Without test run
- Count down schedule setting available



Panasonic AC Smart Cloud parts lists

*** Cloud service fee is additionally required. Please contact an authorised Panasonic dealer.**

CZ-CFUSCC1	AC Smart Cloud communication adaptor. Up to 128 groups. 128 units control

1) Please contact an authorized Panasonic dealer.

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	Simplified high-spec operation	High-spec operation	Normal operation	Operation from anywhere in the room
External appearance				
Type, model name	Simplified high-spec Wired Remote Controller CZ-RTC6BL (with Bluetooth)	High-spec Wired Remote Controller CZ-RTC5B	Timer Remote Controller (Wired) CZ-RTC4	Wireless Remote Controller Controller: CZ-RWS3 Receiver: CZ-RWRU3 CZ-RWRL3 CZ-RWRD3 CZ-RWRT3 CZ-RWRC3
Built-in thermostat	●	●	●	—
nanoe™ X on/off control *not applies to Floor Console	●	●	—	●
ECONAVI ON/OFF control	●	●	●	●
Number of indoor units which can be controlled	1 group, 8 units	1 group, 8 units	1 group, 8 units	1 group, 8 units
Use limitations	· Up to 1 controller can be connected per group	· 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 *	●	●	●	—

All specifications are subject to change without notice.
*(CZ-RTC6BL with H&C Control App)

Centralised control systems				SMART 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 10.4 in. touch screen panel color LCD	Connection with 3rd Party Controller	Cloud connectivity, operation from anywhere	Schneider Electric room controller
					
System Controller	ON/OFF Controller	Intelligent Controller		WLAN Smart Adaptor Comfort Cloud App	VRF smart connectivity+
CZ-64ESMC3	CZ-ANC3	CZ-256ESMC3 (CZ-CFUNC2)		CZ-CAPWFC1	SER8150 (room controller)
—	—	—		—	●
—	—	—		—	—
●	—	●		●	—
64 groups, max. 64 units	16 groups, max. 64 units	64 units x 16 systems, max. 256 units		1 adaptor : 1 group, 8 units. Multiple adaptors for each indoor units : 200 units(10 location x 20 units)	1 group, 8 units
· 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.		· Mobile device, free App and internet router is required separatelly. · Wired remote controller (master) required.	· Comparing to RTC5B, up to 1 controller can be connected per IDU due to short of power supply · Wired to R1/R2 · VRF and PAC(S-link) model only
●	●	●		●	●
●	—	●		●	●
●	—	●		●	●
●	—	●		●	●
●	—	●		●	●
●	●	●		—	—
●	—	●		●	—

Seri-Para I/O unit for outdoor unit

CZ-CAPDC2

Interface Adaptor

CZ-CAPC3

Seri-Para I/O unit for each indoor unit

CZ-CAPBC2

Communication Adaptor

CZ-CFUNC2

LonWorks Interface

CZ-CLNC2

Simplified wired remote controller (CZ-RTC6BL)

Dimensions
H 86 x W 86 x D 25mm

High-spec wired remote controller (CZ-RTC5B)

Dimensions
H 120 x W 120 x D 16 mm

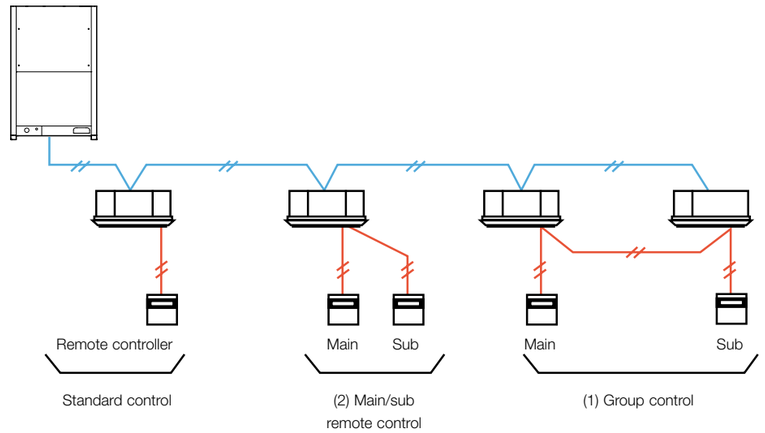
	CZ-RTC6BL	CZ-RTC6BL + H&C CONTROL APP	CZ-RTC5B
Energy Saving			
ECONAVI on/off	●	●	●
Temperature Auto Return	—	●*1	●
Temperature Setting range	—	●*1	●
Auto Shutoff	—	●*1	●
Schedule peak cut	—	●*1	●
Repeat off timer	—	●*1	●
Basic Operation			
Individual Louver Control(Lock individual flap for for 4-WAY cassette)	—	●*1	●
ON/OFF timer	—	●*1	●
Weekly timer	—	●*1	●
Filter information	●*2	●*1*2	●*2
Outing function	●	●	●
Quiet operation mode	—	●*1*2	●*2
Power consumption monitor	—	●*1*2	●*2
Energy saving	—	●*1*2	●*2
initial settings	—	—	●
Ventilation	—	●*1	●
nanoe™ X	●*2	●*1*2	●*2
Maintenance Function			
Outdoor unit error data	—	—	—
Service Contact address	—	●*1	—
RC setting mode	●	●	●
Test run	●	●	●
Sensor information	●*2	●*2	●*2
Service check	●	●	●
Simple/Detailed Settings	●	●	●
Auto address	●	●*3	●
Initial Settings			
Rotation operation	—	●*1	●
Backup operation	—	●*1	●
Support operation	—	●*1	●

*1 Only with H&C Control App *2 Subject to the connected model *3 Only with remote controller operation
Note: Product images not to scale.

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.	Wired remote controller CZ-RTC4,CZ-RTC5B,CZ-RTC6BL Wireless remote controller + Receiver CZ-RWS3 (Wall Mounted/ Mini Cassette) CZ-RWS3 + CZ-RWRU3 (4-WAY Cassette) CZ-RWS3 + CZ-RWRL3 (2-WAY Cassette) CZ-RWS3 + CZ-RWRD3 (1-WAY Cassette) CZ-RWS3 + CZ-RWRT3 (Ceiling Mounted) CZ-RWS3 + CZ-RWRC3 (All split type)	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.	Wired remote controller CZ-RTC4,CZ-RTC5B,CZ-RTC6BL Wireless remote controller + Receiver CZ-RWS3 (Wall Mounted/ Mini Cassette) CZ-RWS3 + CZ-RWRU3 (4-WAY Cassette) CZ-RWS3 + CZ-RWRL3 (2-WAY Cassette) CZ-RWS3 + CZ-RWRD3 (1-WAY Cassette) CZ-RWS3 + CZ-RWRT3 (Ceiling Mounted) CZ-RWS3 + CZ-RWRC3 (All split type)	As required
(2) Main/sub remote control • Max 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)	Wired remote controller CZ-RTC4,CZ-RTC5B,CZ-RTC6BL Wireless remote controller + Receiver CZ-RWS3 (Wall Mounted/ Mini Cassette) CZ-RWS3 + CZ-RWRU3 (4-WAY Cassette) CZ-RWS3 + CZ-RWRL3 (2-WAY Cassette) CZ-RWS3 + CZ-RWRD3 (1-WAY Cassette) CZ-RWS3 + CZ-RWRT3 (Ceiling Mounted) CZ-RWS3 + CZ-RWRC3 (All split type)	As required

SYSTEM EXAMPLE FSV



NOTE: Connectable number of controllers, controller combination, connectable indoor units, remote control maximum wiring lengh are different between the controller. Please confirm the installation Instructions of controller or consult with Panasonic service center.

Timer remote controller (CZ-RTC4)

Dimensions
H 120 x W 120 x D 20 mm

Basic remote controller ON/OFF
- Operation mode changeover (Cooling, Heating, Dry, Auto, Fan).
- Temperature setting (Cooling/Dry: 18-30 deg Heating: 16-30 deg).
- 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.

Max. 8 indoor units can be controlled from one remote controller

Remote control by main remote controller and sub controller is possible

Max. 2 remote controllers (main remote controller and sub controller) can be installed for one indoor unit.

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

Wireless remote controller

2-WAY Cassette
CZ-RWS3 +
CZ-RWRL3

4-Way Cassette
CZ-RWS3 +
CZ-RWRU3

Ceiling Mounted
CZ-RWS3 +
CZ-RWRT3

1-WAY Cassette
CZ-RWS3 +
CZ-RWRD3

For all indoor units
CZ-RWS3 +
CZ-RWRC3

Wall / Mini Cassette
CZ-RWS3

Remote control by main remote controller and sub controller is possible
- Max. 2 remote controllers (main remote controller and sub controller) can be installed for one indoor unit.

When CZ-RWS3 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.

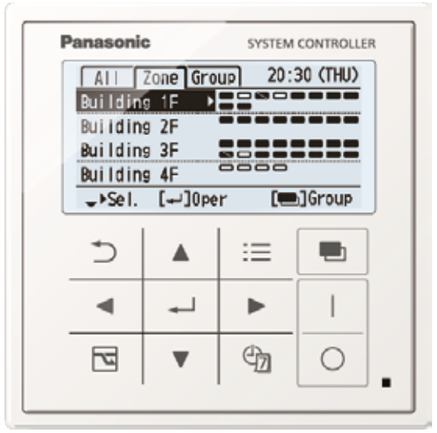
In addition, there are other functions such as temperature setting, operation switching, airflow direction/fan speed setting, etc

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).

FSV Controllers

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 : 1 km

Individual control is possible for max 64 groups, 64 indoor units.

- Control of 64 indoor units divided into 4 zones. (One zone can have up to 16 groups, and one group can have up to 8 units.)
- Control is possible for ON/OFF, operation mode, fan speed, air flow direction, 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 temporary by keeping original timer setting. (Special holiday setting can be removed by same setting display.)

- 5 types of Energy saving function

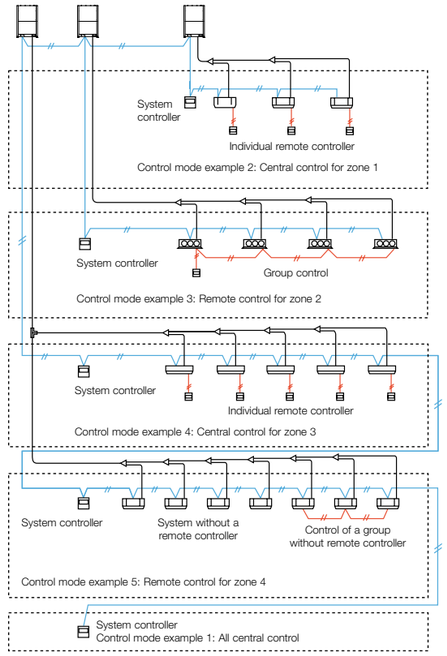
  Set temperature automatic return / Set temperature range limitation / Off remind / Off timer operation / Demand control timer

- A control mode corresponding to the use condition can be selected from 10 patterns

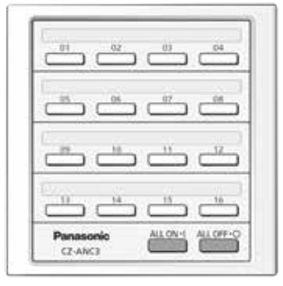
A : Operation mode: Central control mode or remote control mode can be selected
Central control mode: The system controller is used as centralised control device. (Setting from a remote controller can be prohibited by prohibiting local operation from the system controller.)
Remote control mode: The system 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 85 mm
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 color 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 Visualization
  - Displays electricity & gas usage distribution
  - Supports energy-saving plans with graph display function

New Features

- Max 256 indoor unit [4 links 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

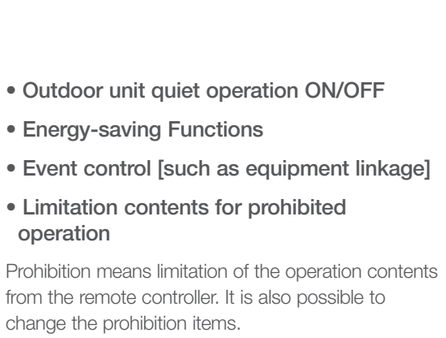
Prohibition means limitation of the operation contents from the remote controller. It is also possible to change the prohibition items.

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

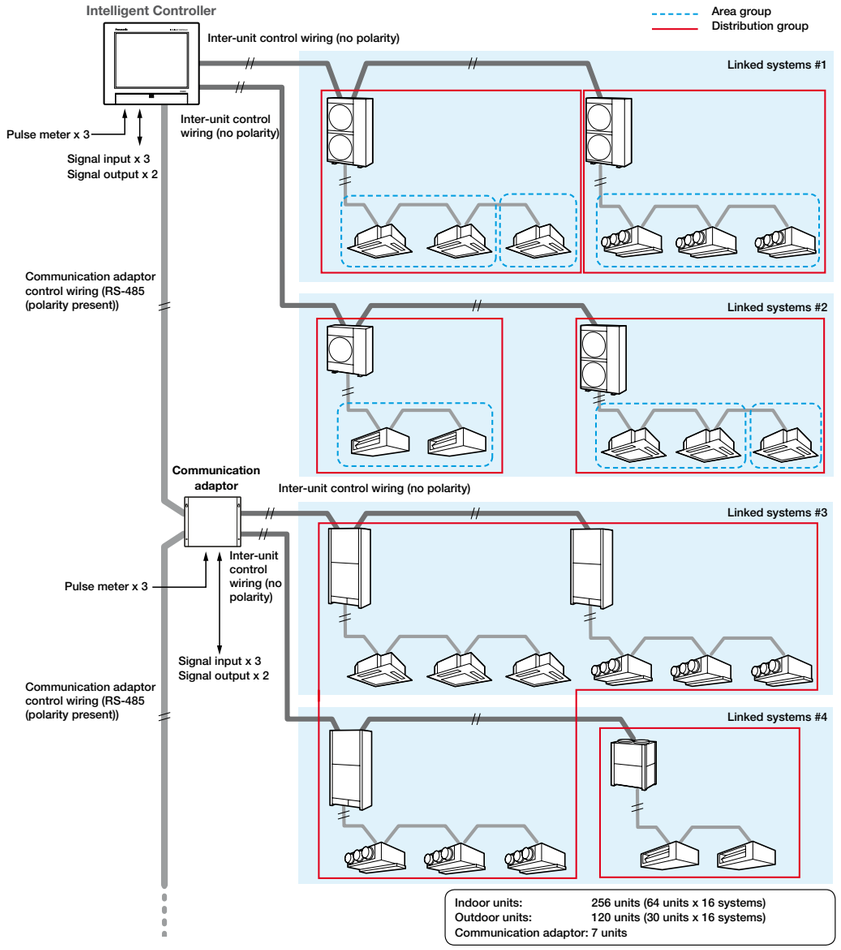
The LAN terminal on this unit enables you to connect it to a network. Connecting to internet will enable you to operate the unit and check the status using a PC from remote location.



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)

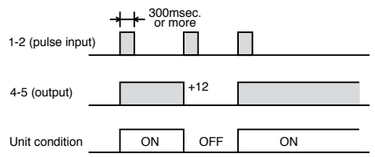
* Required when more than 129 indoor units are connected.

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.

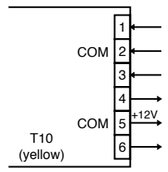
1. T10 Terminal Specification (T10:CN061 at indoor unit PCB)

- **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.

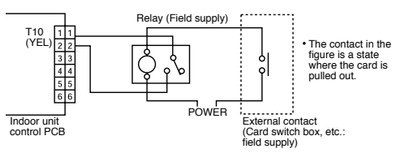
2. Usage Example

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**



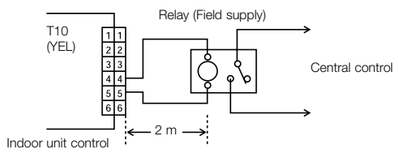
NOTE: The wire length from indoor unit to the Relay must be within 2.0m

Operation ON/OFF signal output

- **Condition**

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

- **Example of wiring**

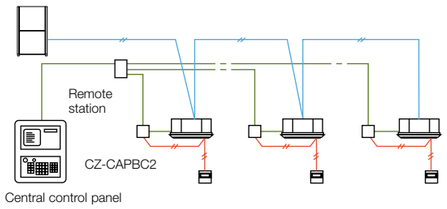


NOTE: The wire length from indoor unit to the Relay must be within 2.0m
Pulse signal changeable to static with JP cutting. (Refer to JP001)

Interfaces for External Control (Digital Connection)

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

System example

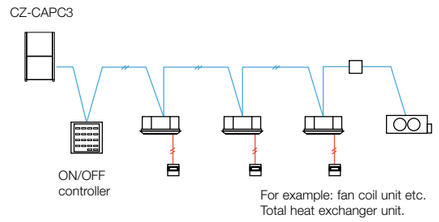


- Control and status monitoring is possible for individual indoor unit (1 group).
- In addition to operation and stop, there is a digital input function for air speed and operation mode.
- Temperature setting and measuring of the indoor suction temperature can be performed from central monitoring.
- The analog 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.

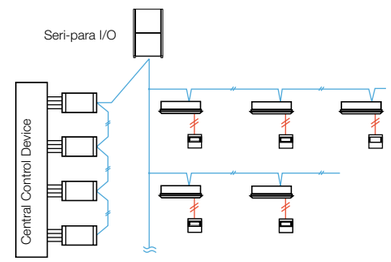
System example



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

Dimensions	H 80 x W 290 x D 260 mm
Power supply	Single phase 110-120/220-240 V (50/60 Hz), 18 W
Input	Batch operation/Batch stop (non-voltage contact/DC 24 V, pulse signal). Cooling/Heating (non-voltage contact/static signal). Demand 1/2 (non-voltage contact/static signal) (Local stop by switching)
Output	Operation output (non-voltage contact). Alarm output (non-voltage contact)
Wiring length	Indoor/Outdoor operation lines: Total length 1 km. Digital signal: 100 m or shorter

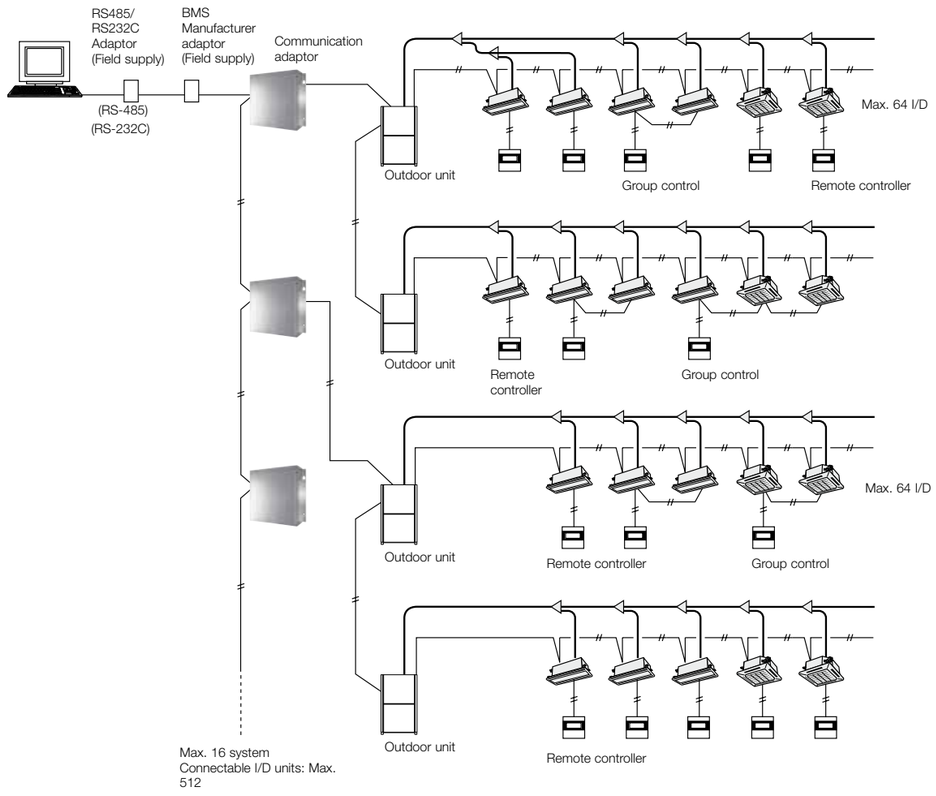
System example



- 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 authorized 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)

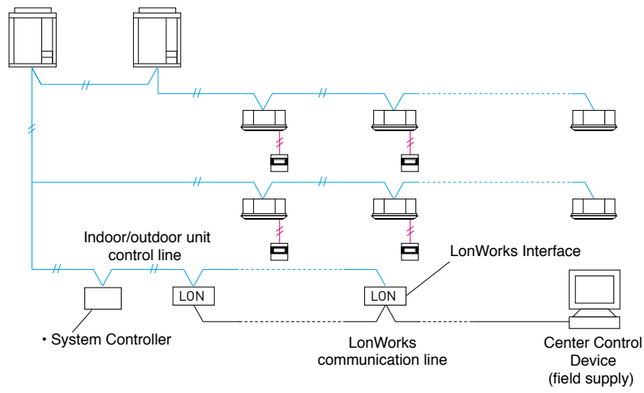
Up to 128 indoor units can be connected to one Communication Adaptor.

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



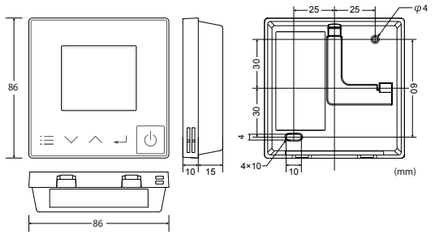
Functions

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

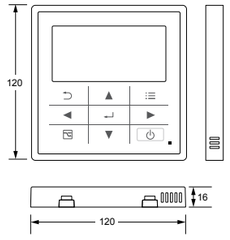
FSV Controllers

FSV Controller External Dimensions

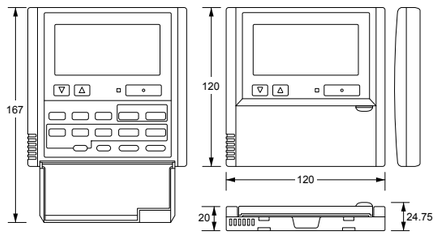
SIMPLIFIED WIRED REMOTE CONTROLLER (CZ-RTC6 / CZ-RTC6BL)



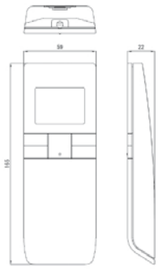
HIGH-SPEC WIRED REMOTE CONTROLLER (CZ-RTC5)



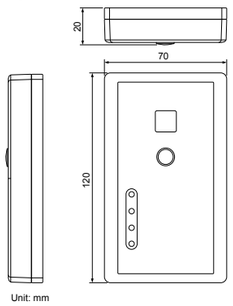
TIMER REMOTE CONTROLLER (CZ-RTC4)



WIRELESS REMOTE CONTROLLER (CZ-RWS3)

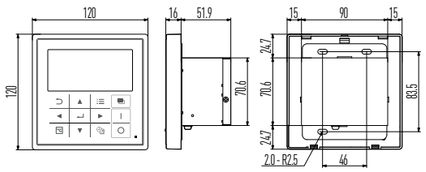


SEPARATE RECEIVER FOR WIRELESS REMOTE CONTROLLER (CZ-RWSC3)

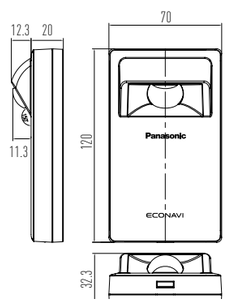


Unit: mm

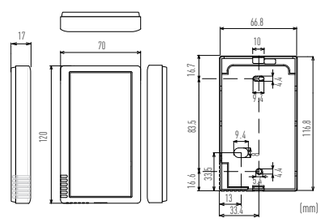
SYSTEM CONTROLLER (CZ-64ESMC3)



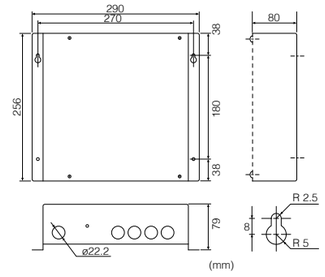
ECONAVI SENSOR (CZ-CENSC1)



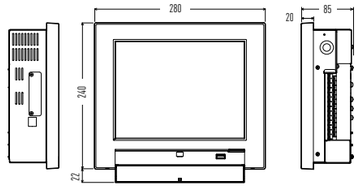
REMOTE SENSOR (CZ-CSRC3)



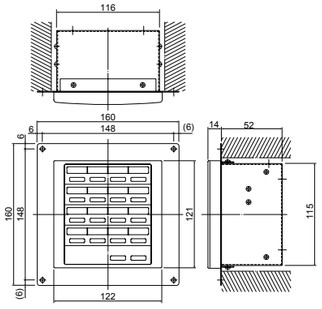
COMMUNICATION ADAPTOR (CZ-CFUNC2)



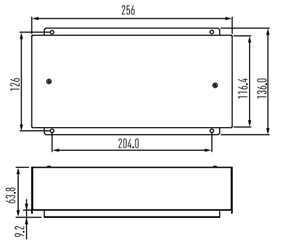
INTELLIGENT CONTROLLER (CZ-256ESMC3)



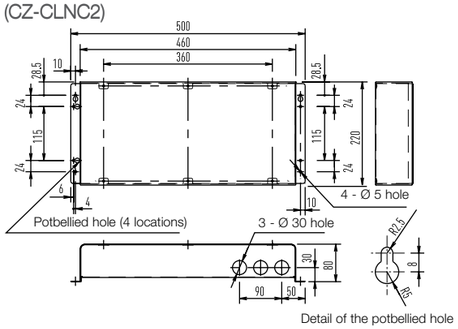
ON/OFF CONTROLLER (CZ-ANC3)



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

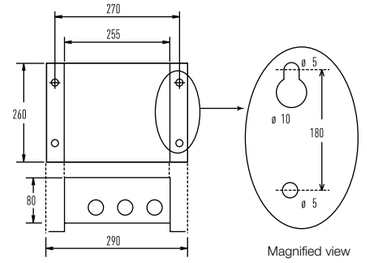


LONWORKS INTERFACE (CZ-CLNC2)



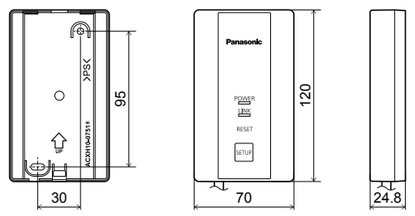
Detail of the potbellied hole

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



Magnified view

WLAN ADAPTOR (CZ-CAPWFC1)



VRF 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 pipe work to be installed with a new high efficiency R410A system.

What's so unique about Panasonic's solution?

By enabling reuse 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.

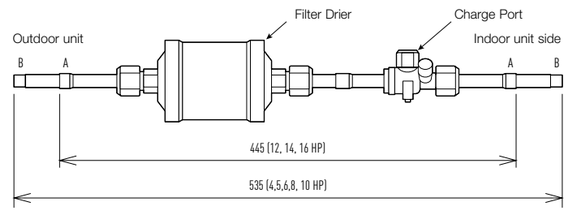
VRF Renewal

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 reused. 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 see page 122).

VRF Renewal Kit: CZ-SLK2



unit: mm

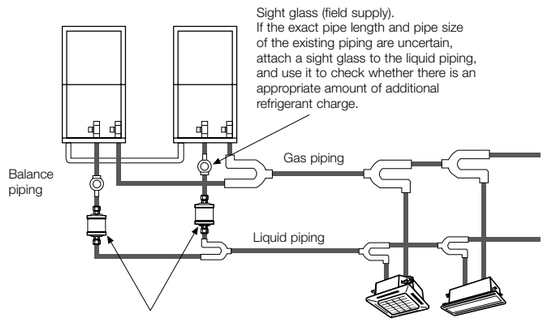
Attaching the Renewal Kit and sight glass

- 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.

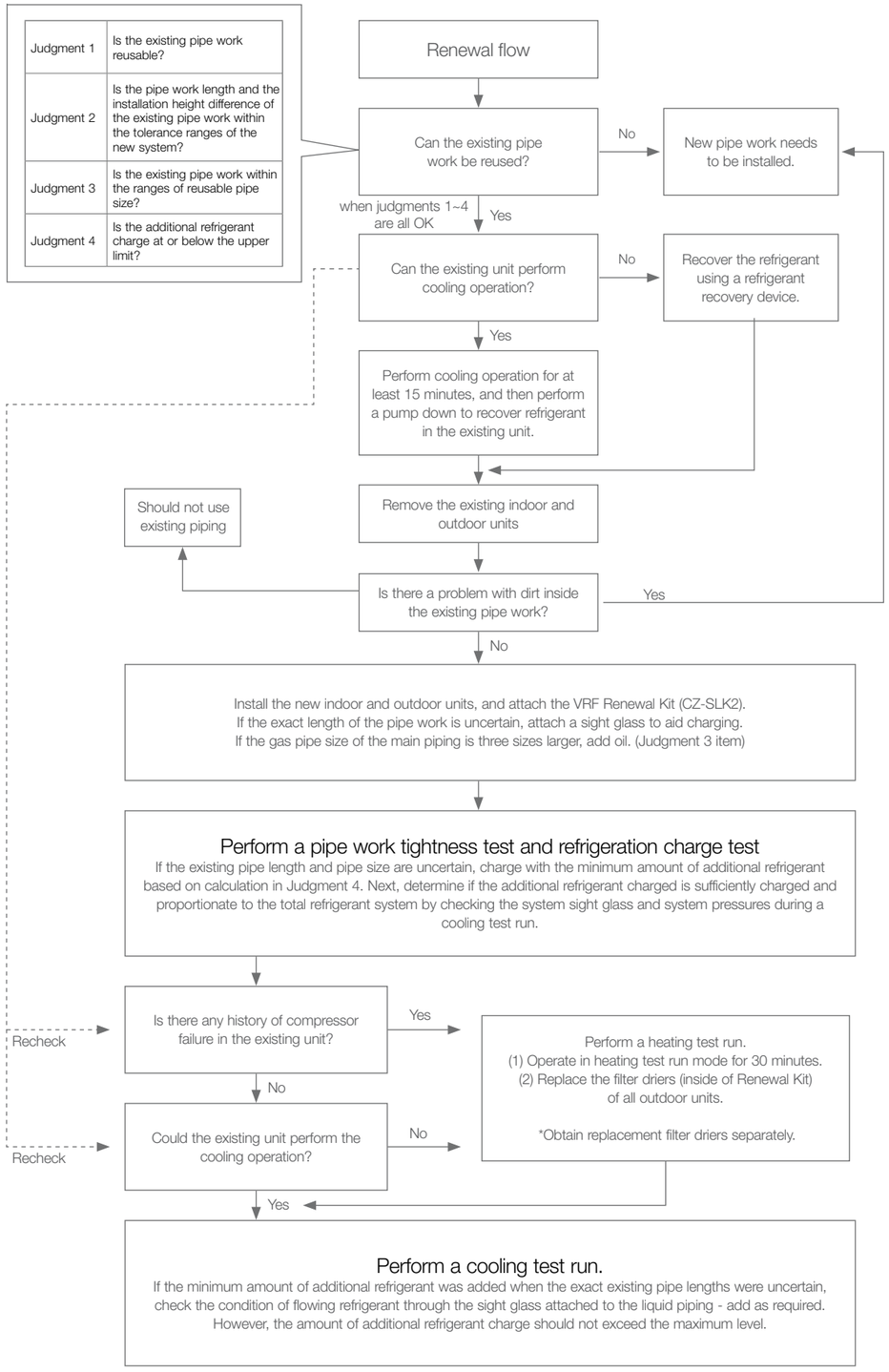
Sight glass (field supply)
If the exact pipe length and pipe size of the existing piping are uncertain, attach a sight glass to the liquid piping, and use it to check whether there is an appropriate amount of additional refrigerant charge.

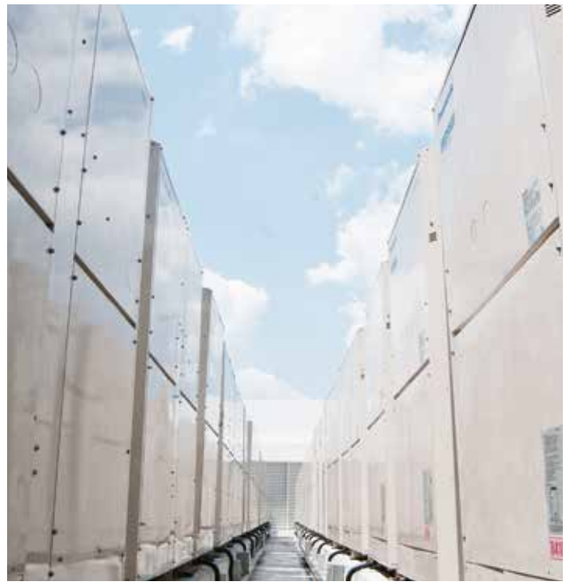


VRF Renewal Kit (CZ-SLK2)

Procedure for VRF Renewal

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





A Globally Trusted Air Conditioning Brand

With roots going back 60 years, the Panasonic Air Conditioning Business Division has grown to become a multinational company recognised around the world. Driven by a never-ending quest for product innovation, the group has evolved from manufacturing compressors to providing comprehensive air conditioning solutions. Panasonic has become a brand that people trust to deliver products with superior quality and reliability.

Panasonic's persistent innovation spurs the evolution of air conditioning solutions.

Starts production of absorption chillers

1971

Introduces first GHP (gas heat pump) VRF air conditioner

1985

1989

Introduces the world's first simultaneous 3-pipe heating/cooling VRF system

1993

Releases the world's first large-capacity modular combination VRF system

1995

Releases the world's first large-capacity modular combination VRF system with simultaneous heating/cooling

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(Eco Cute) 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

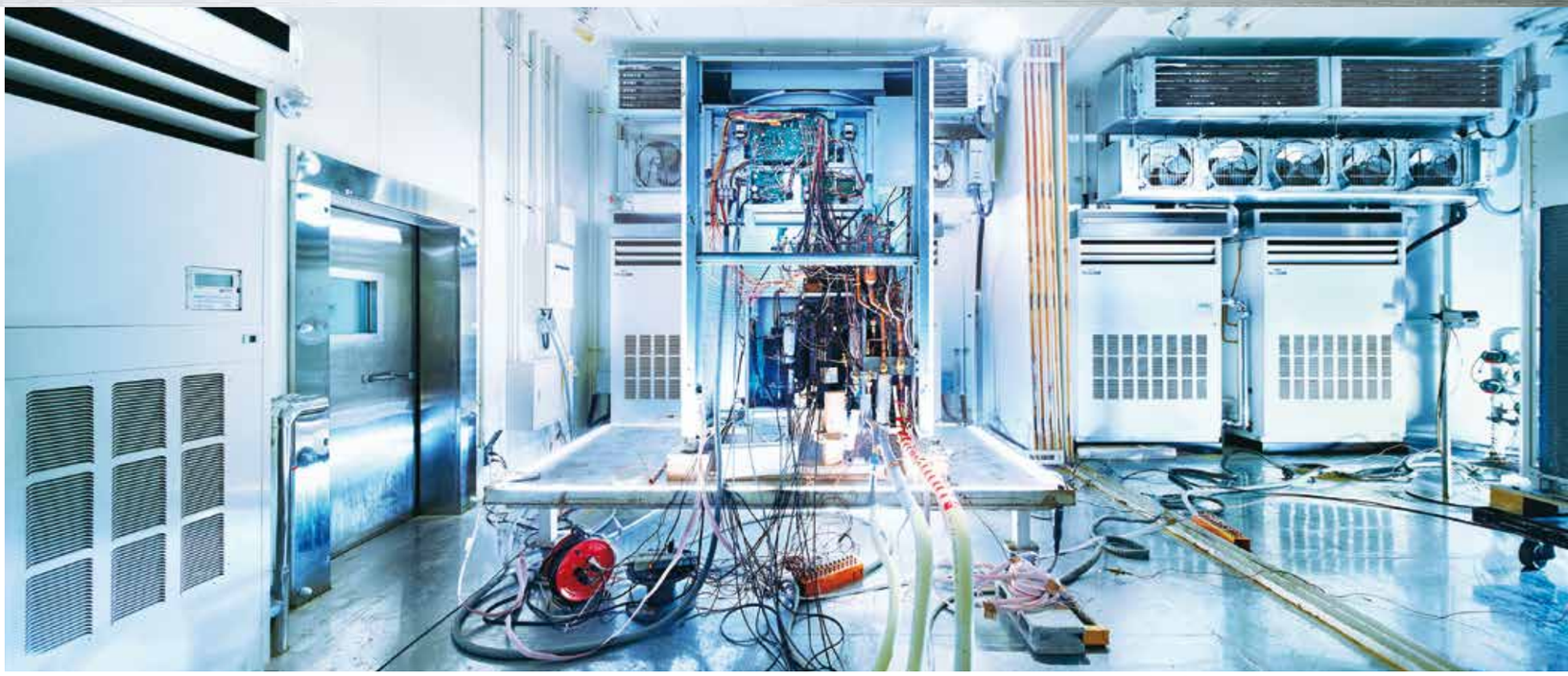
- Partnership started with Schneider Electric
- At the Energy Conservation Grand Prize awards, the room air conditioner "WX series" won the Minister Prize of Economic, Trade and Industry (prize presented by Energy Conservation Center of Japan)

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 long 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 their 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

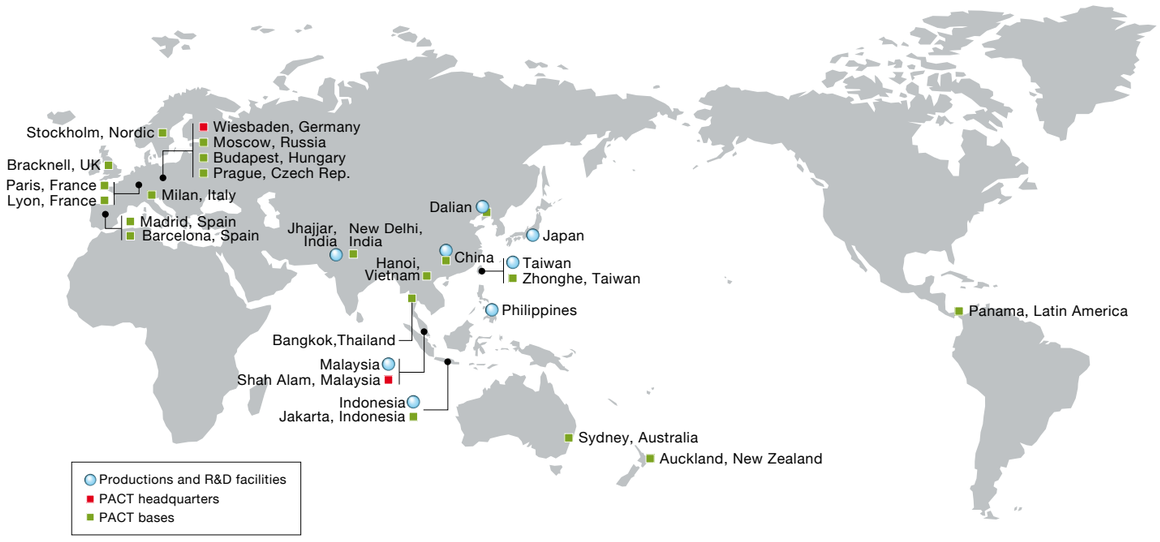
All Panasonic parts and materials comply with Europe's strict RoHS/REACH environmental regulations. During the development and production of parts, stringent inspections are conducted on over 100 materials to ensure that no hazardous substances are included.

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 Heating and Cooling 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 heating and cooling solutions to suit a variety of business applications. As one of the pillars of Panasonic's BtoB operations, our heating and cooling 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 42 Panasonic Air Conditioning Training Centers (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

Heating & Cooling Solutions Business Division, Air-Conditioning Business Unit (Appliances Company) (Shiga, Japan)

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

Commercial Air-Conditiong Business Unit (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 1970
- 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

OCEANIA

Australia Sydney
New Zealand Auckland

AMERICAS

Latin America Panama

Panasonic VRF Global Project References

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

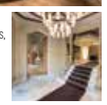
Air Conditioning System:
VRF 2-PIPE FSV ME1 series
14 systems
Indoor Units: 132 units
Cooling Capacity:
677 kW / 193 USRT

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

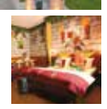


Russia River Park Hotel

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

New Zealand 151 Cambridge Terrace

Air Conditioning System:
VRF 3-PIPE FSV MF2 series:
20 systems
Indoor Units: 75 units
Cooling Capacity:
850 kW / 242 USRT

New Zealand IAG Christchurch

Air Conditioning System:
VRF 3-PIPE FSV MF2 series:
25 systems
Indoor Units: 132 units
Cooling Capacity:
976 kW / 278 USRT

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

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 ECOAVI)
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