



# 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 2023.
- 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 CAMBODIA\_SEPTEMBER\_2023

## FSV VRF SYSTEMS 2023/2024



NEW ///

**FSV EX**

COOLING ONLY ///



**FSV EX**

HEAT PUMP ///



**FSV**

HEAT PUMP ///



**nanoeX** **INVERTER**

**Create Today. Enrich Tomorrow.**

**Branch of Panasonic Asia Pacific Pte. Ltd  
Customers Care Centre**

#327-329, Sihanouk Blvd, Sangkat Vealvong, Khan  
7 Makara, Phnom Penh, Cambodia  
Tel : +855 23 215 503  
Email: service@kh.panasonic.com

**QUALITY AIR FOR LIFE**

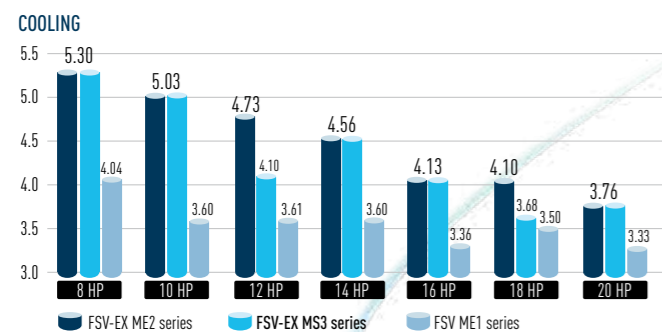
# FSV-EX Advantages



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.

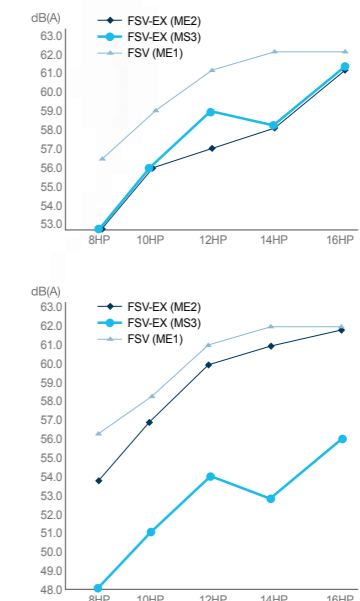
## Extraordinary Energy-Saving Performance

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.



## 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 twin rotary compressor

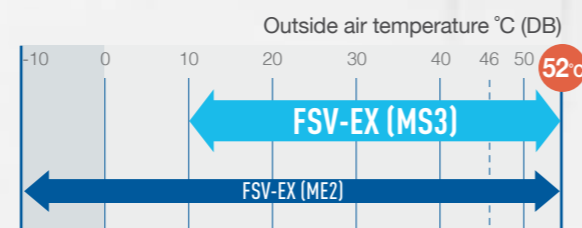
(multiple compressors for more than 14HP)

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.



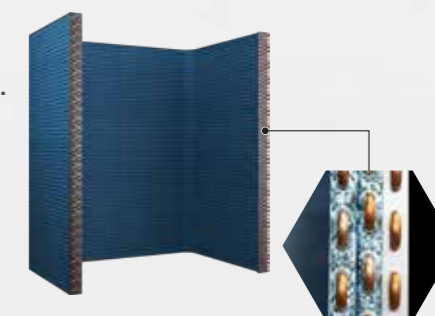
## Extended Operation Range Up to 52°C

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%.<sup>1</sup>



\* For 8 and 10 HP of ME2, and 8, 10 and 12 HP of MS3, the heat exchanger is 2-row design.

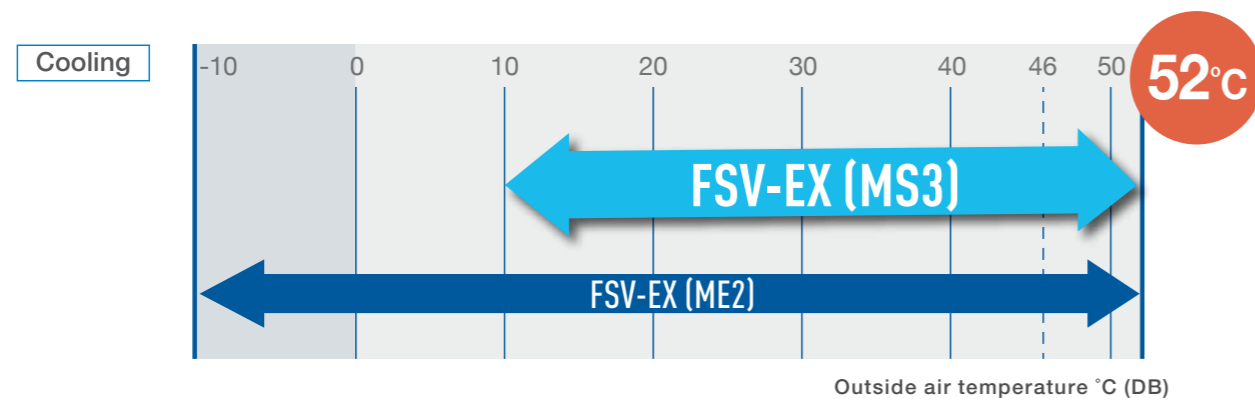
# Extended Operation Range up to 52°C



## 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.

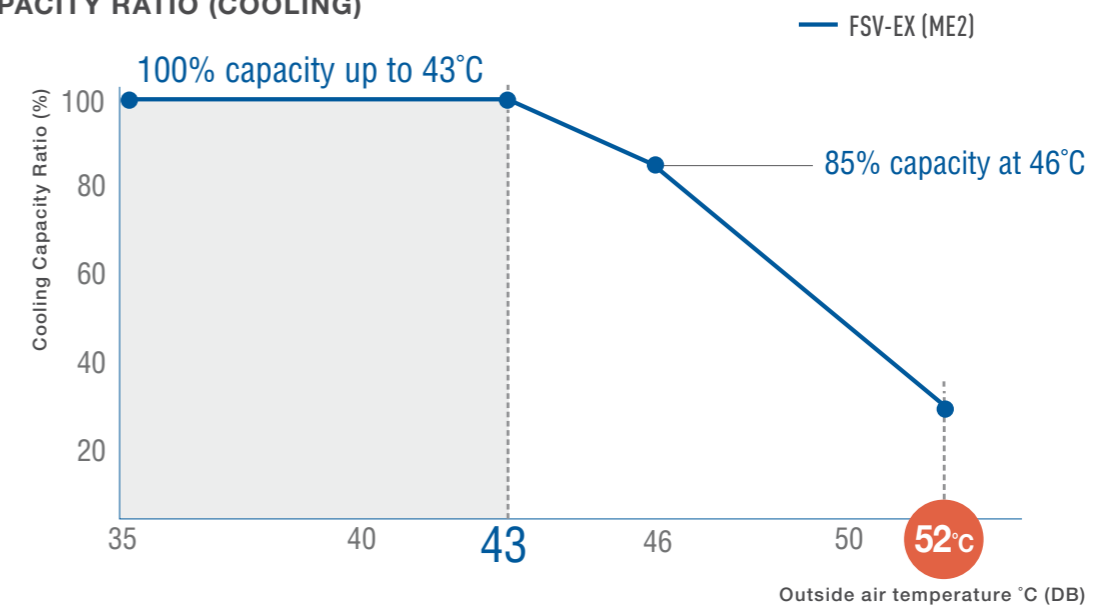
### OPERATING RANGE



## 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> 12HP model, IU/OU capacity ratio:100%, Indoor Condition:27°C[DB]/19°C[WB]  
Competitor A spec is from technical data book.



# Extraordinary Energy-Saving Performance



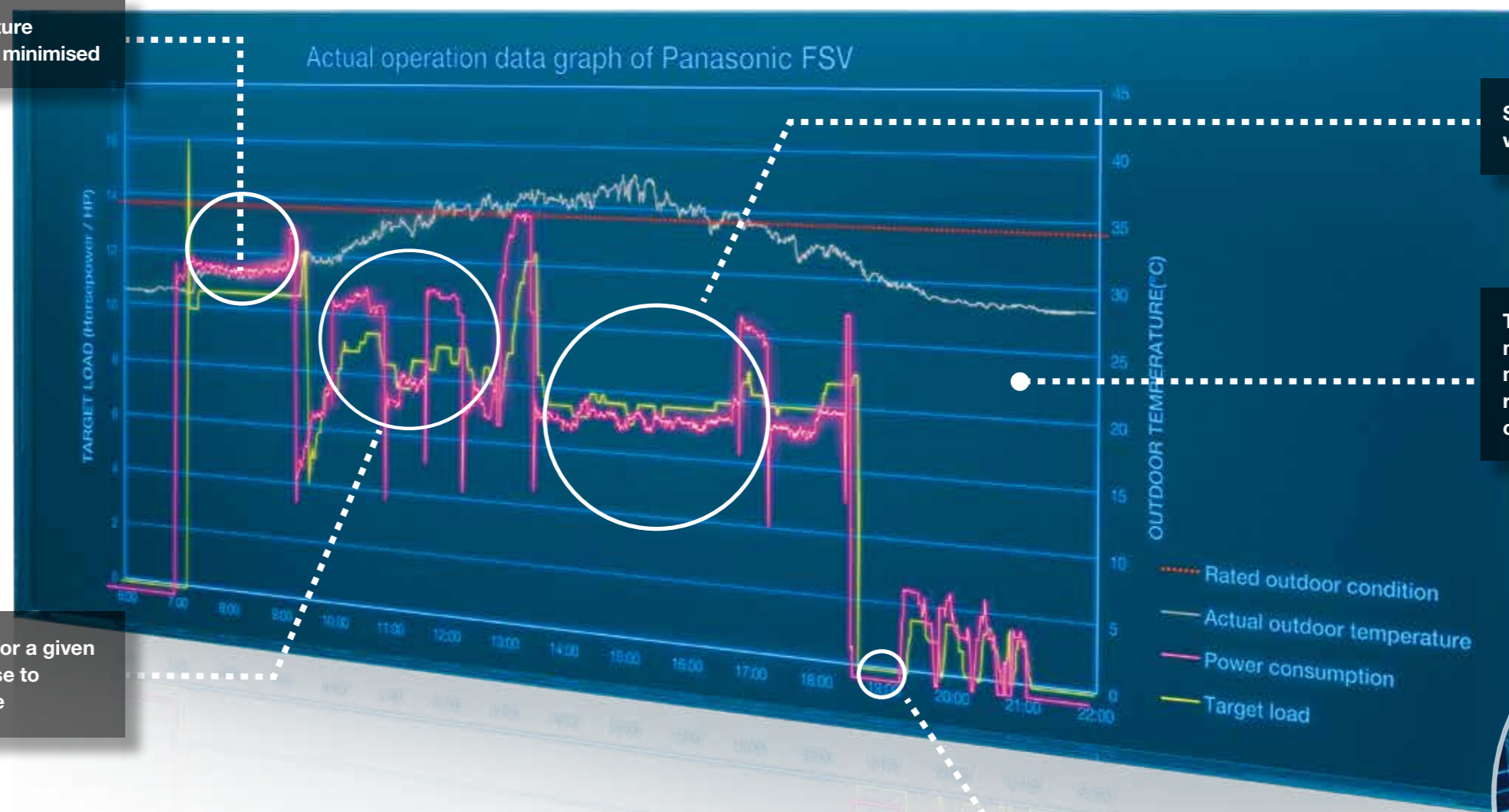
## Practical Design for Actual Operation

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

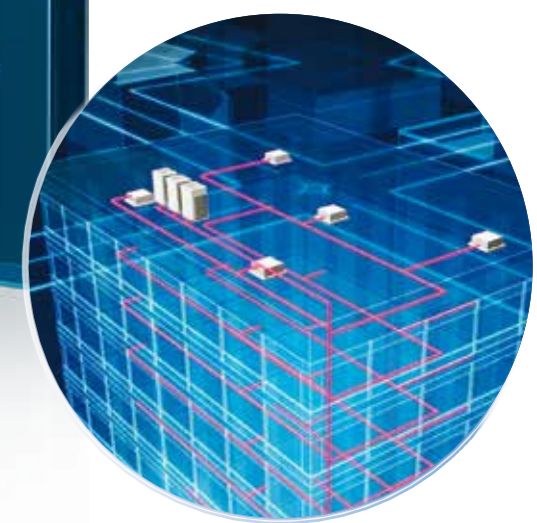


Set temperature maintained with minimum load operation

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 installed in Asia**

Simulated conditions  
Location: Panasonic building in Malaysia System: One 16HP 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 VRF systems, a sensor for detecting oil levels is mounted in each compressor. In installations with multiple outdoor units, a shortage of oil in one compressor can be compensated for by recovering oil either from another compressor in the same unit, from a compressor in an adjacent outdoor unit, or from a connected indoor unit. Panasonic VRF 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.



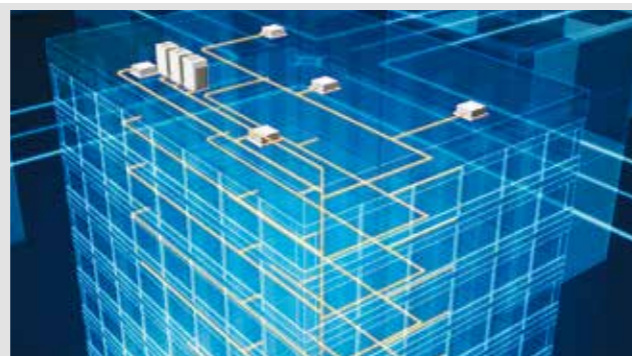
## STAGE-2

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



## STAGE-3

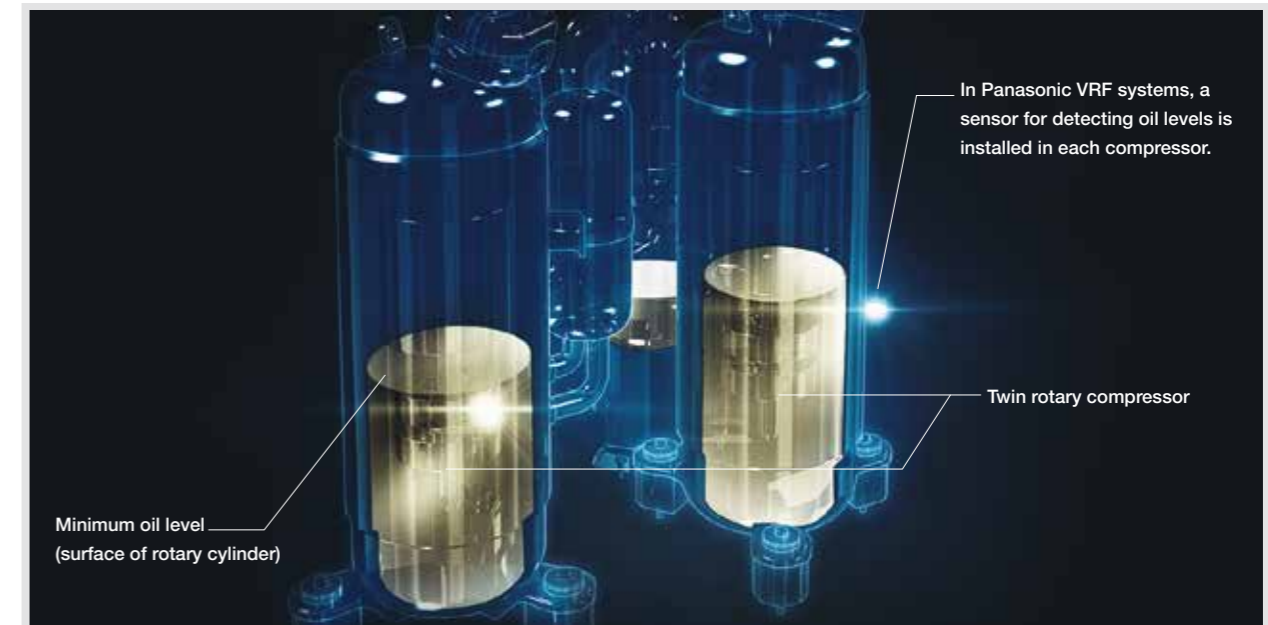
Forced oil recovery is implemented only if oil levels become insufficient in spite of above measures. The Panasonic system's design concept is radically different from conventional oil systems.



## Features of 3-stage oil recovery design

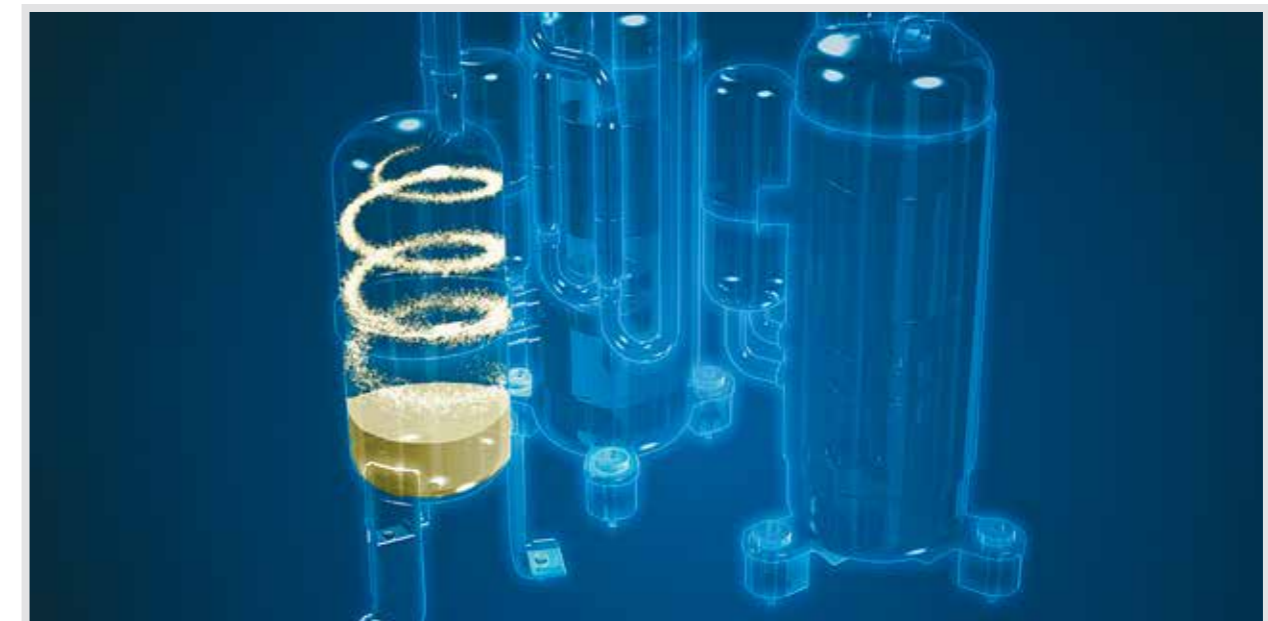
### 1 Oil sensors installed in each compressor

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



### 2 Highly functional oil separator

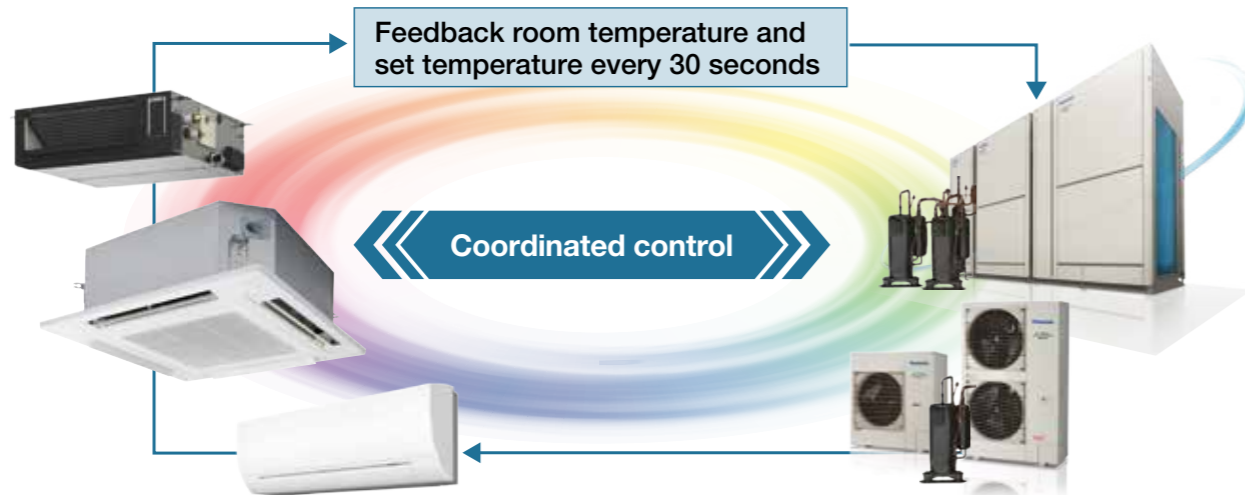
Thanks to extended separate piping, oil recovery efficiency reaches 90%, minimising the oil to be discharged from the compressor.



# Panasonic VRF: Top In Comfort

## Energy savings × Comfortable air conditioning ~Variable Evaporation Temperature (VET)~

Since 2006, all Panasonic VRF systems have included special VET technology, with variable refrigerant temperature, as standard. Our 'smart logic' system checks the temperature every 30 seconds, automatically adjusting the refrigerant temperature according to actual demand and outdoor conditions.

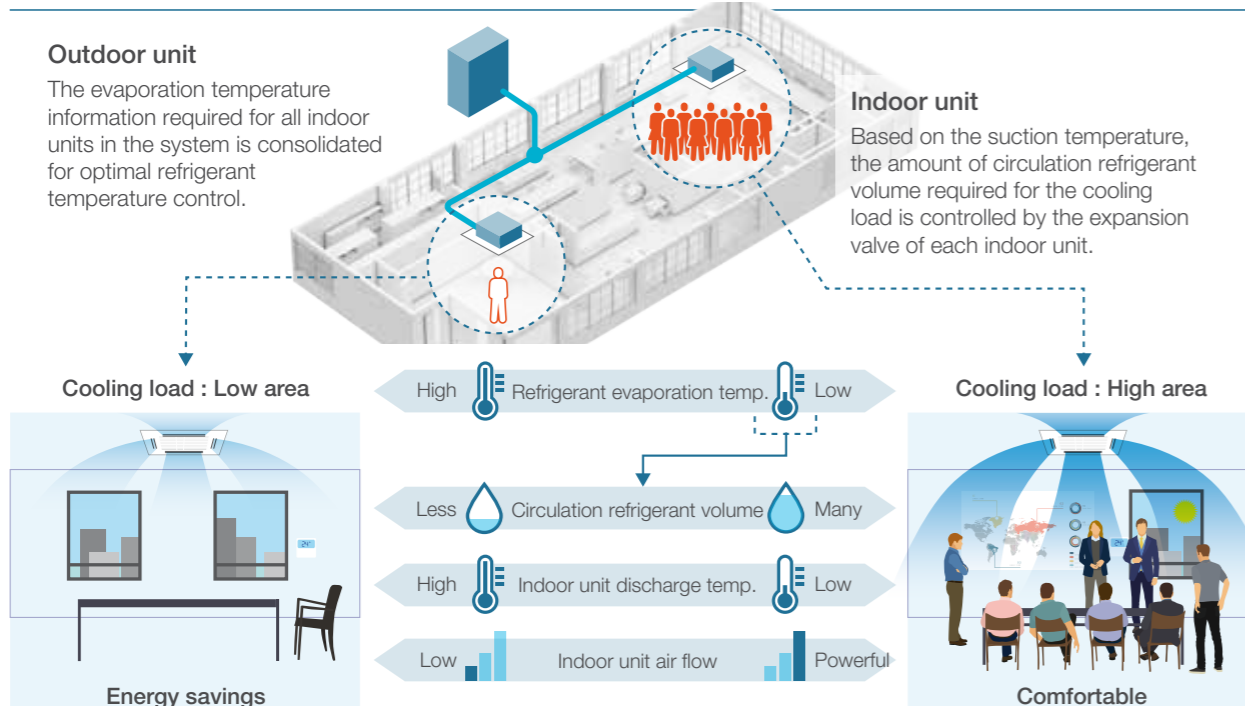


Calculate indoor refrigerant temperature and control the airflow automatically based on the difference between the setting temperature and actual indoor temperature.

Determine system refrigerant temperature and control compressor speed.

\* When fan speed is Auto.

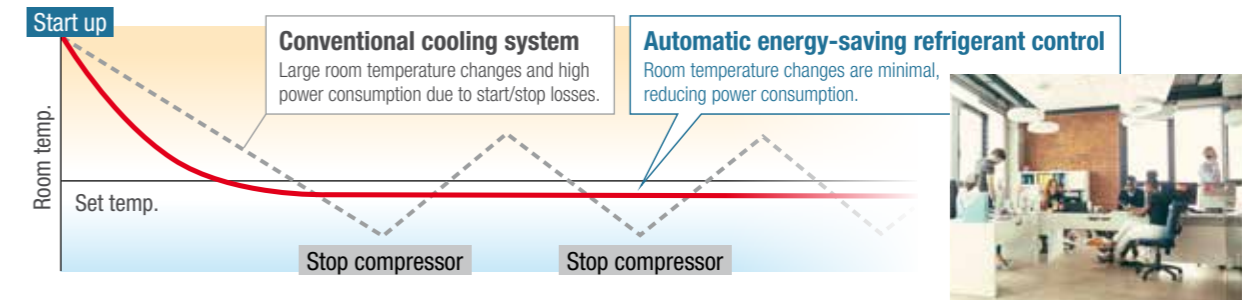
Achieves room-by-room comfort and overall system energy savings by controlling optimal refrigerant temperature and circulation volume based on all information of the entire system.



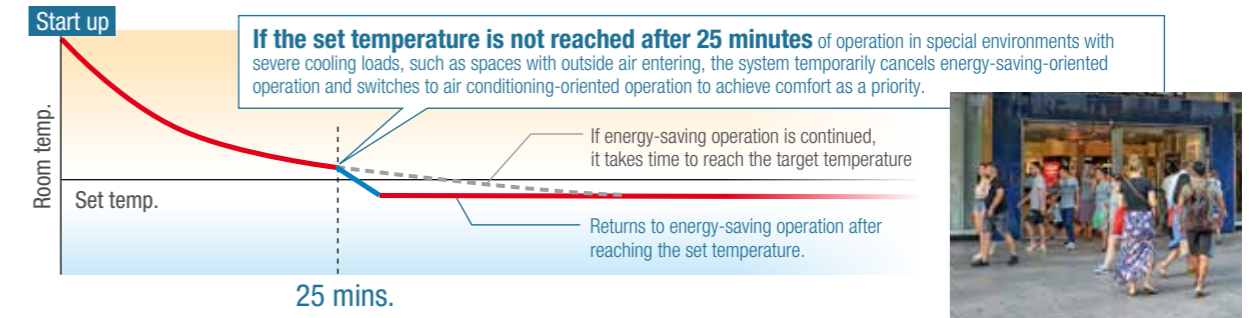
Combination of VET technology and inverter compressor achieves both energy savings and comfort by smoothly controlling the compressor to match the air conditioning load without stopping the compressor for optimum performance.

Image of room temperature change during cooling operation by scene.

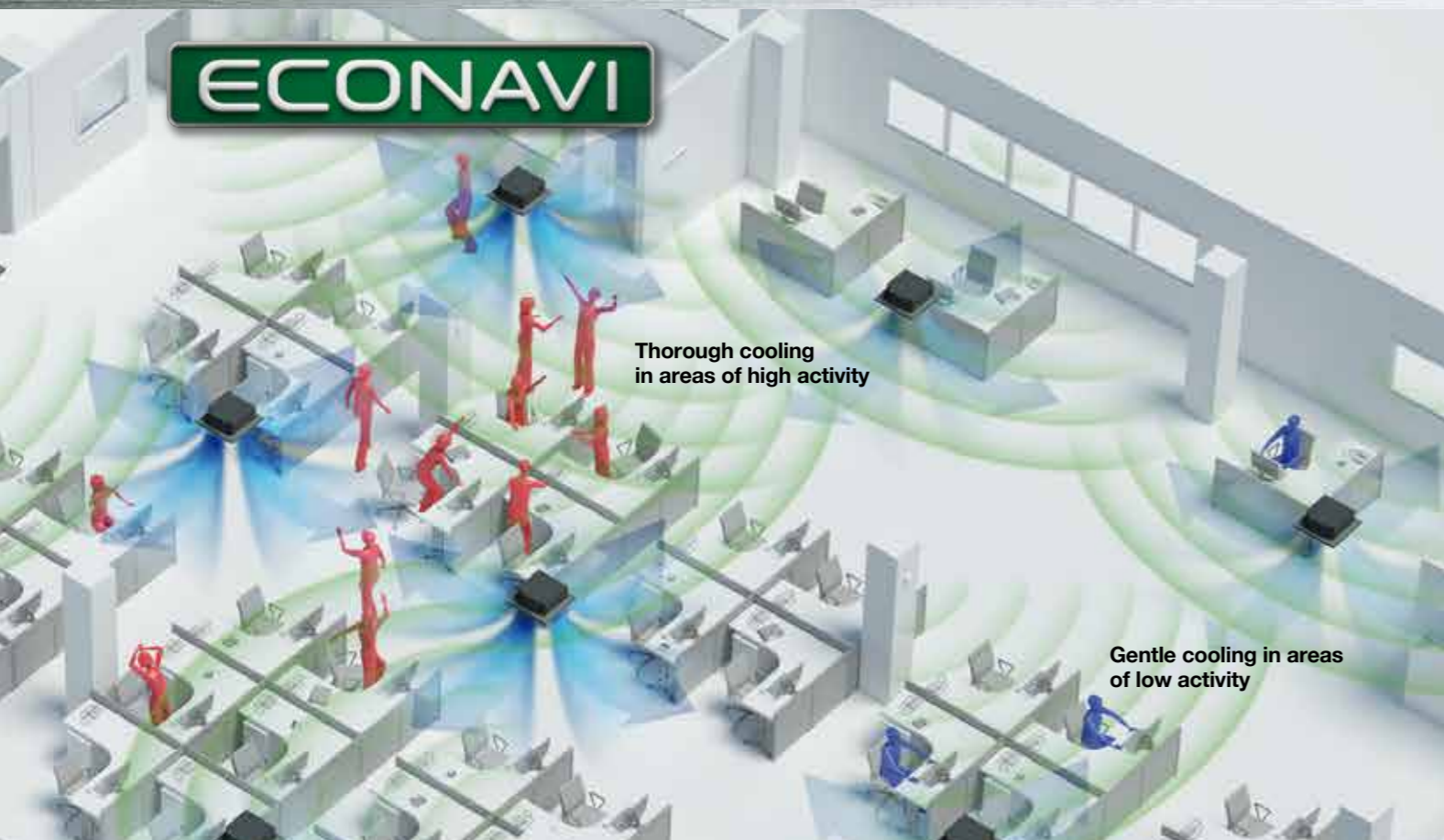
1) Normal environment



2) Environment with severe cooling load



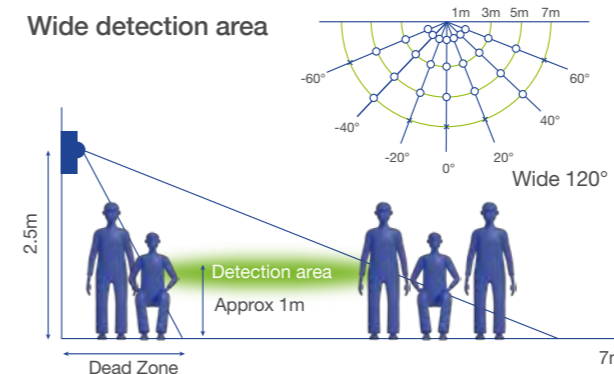
# ECONAVI Detects Inefficiencies and Saves Energy



## 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.



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.

- A sensor is remotely set to maximise the detection area.
- Installation flexibility ready for indoor unit replacement and layout changes.

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\*

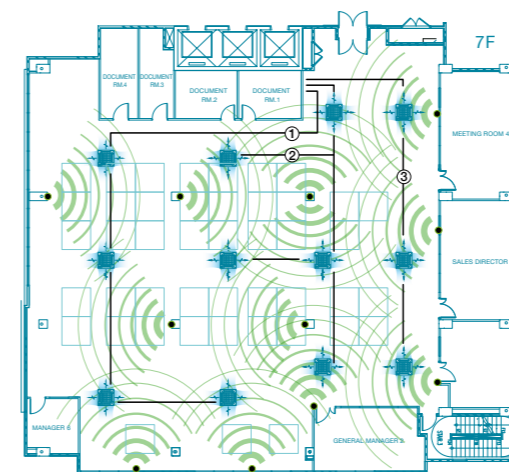
### Human activity and presence detection

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 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
		5 S-56MU1E5
② CU-L7-7	U-20ME1E8	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



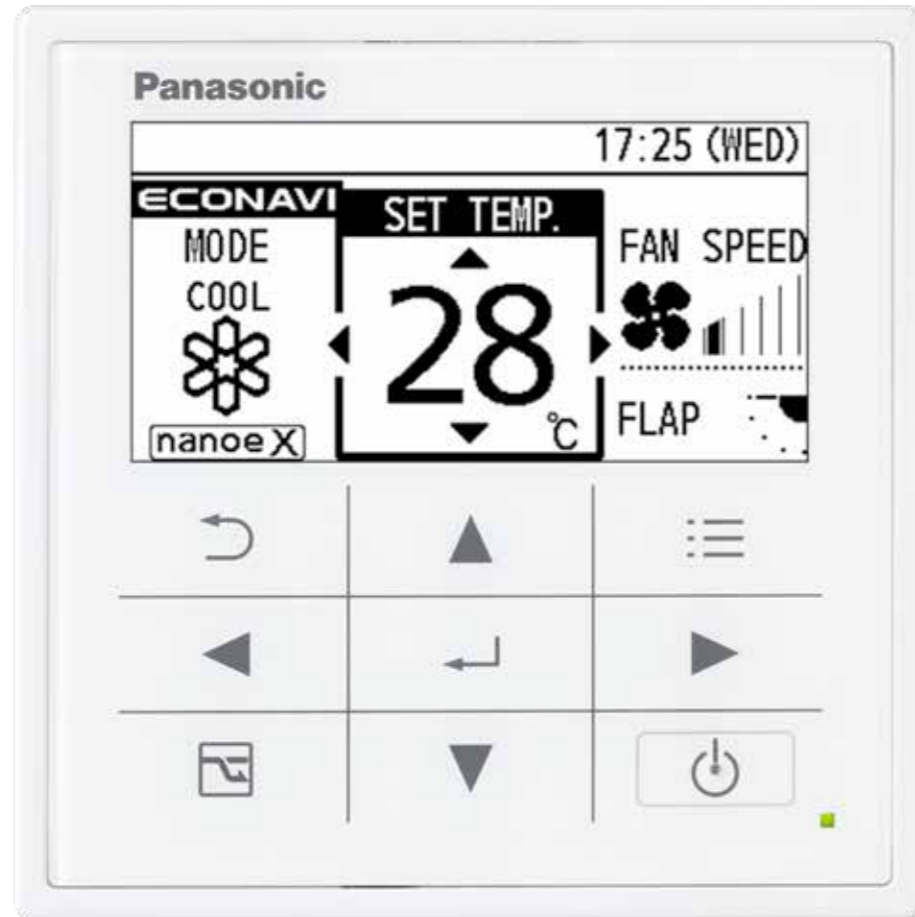
### Power consumption



Up to **15%** energy saving

Energy-saving effect tested and verified by Field test

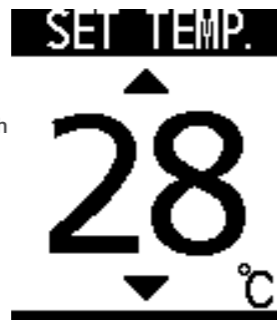
# High-spec Wired Remote Controller



CZ-RTC5B Actual size

## Large 3.5" Full-dot LCD with White LED Backlight

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

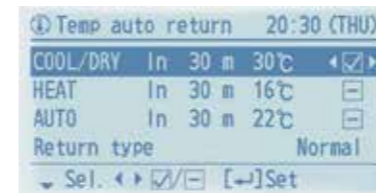


## Stylish, Easy-to-use Touch Key Design

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



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



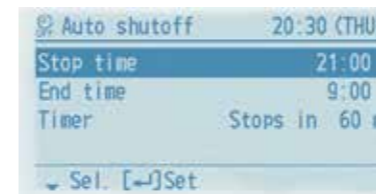
### Temperature Auto Return

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



### Temperature Setting Range

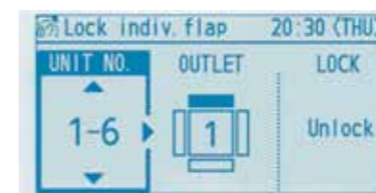
You can set the upper and lower temperature limits. Doing this helps reduce power consumption due to over cooling or heating. Setting is possible in the Cooling, Heating and Dry modes.



### Auto Shutoff

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

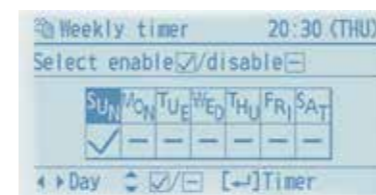
## Wide range of controls for extra convenience



### Individual Flap Control

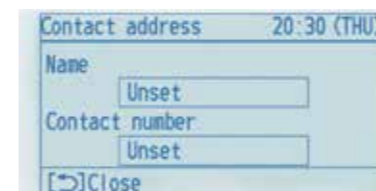
(Lock individual flap only for 4-way cassette U1 type)

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



### Weekly Timer

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



### Service Contact Address

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



## Convenient Controls



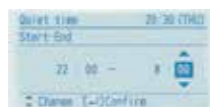
### Operation Lock

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



### Filter Information

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



### Quiet Operation Mode

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



### Maintenance Function

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



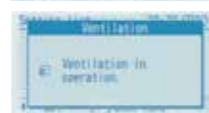
### Repeat OFF Timer

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



### Setting Lists

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



## Function List

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



# Air Handling Unit Kit

AHU Kit connects FSV-EX and FSV outdoor units to Air Handling Units System



If you require this fresh air solution, please contact an authorized Panasonic distributor.

Connect Air Handling Unit to your FSV-EX and FSV systems for a high efficiency operation.

Application: Hotels, offices, server rooms or all large buildings where air quality control such as humidity control and fresh air are needed.

## Project References

### Office

**Hong Kong**  
Red Cross Headquarters



Air Conditioning System:  
VRF 2-way FSV ME1 series:  
2 systems  
Indoor Units: 2 units  
AHU Kit: 6 units  
Cooling Capacity: 280 kW / 80 USRT

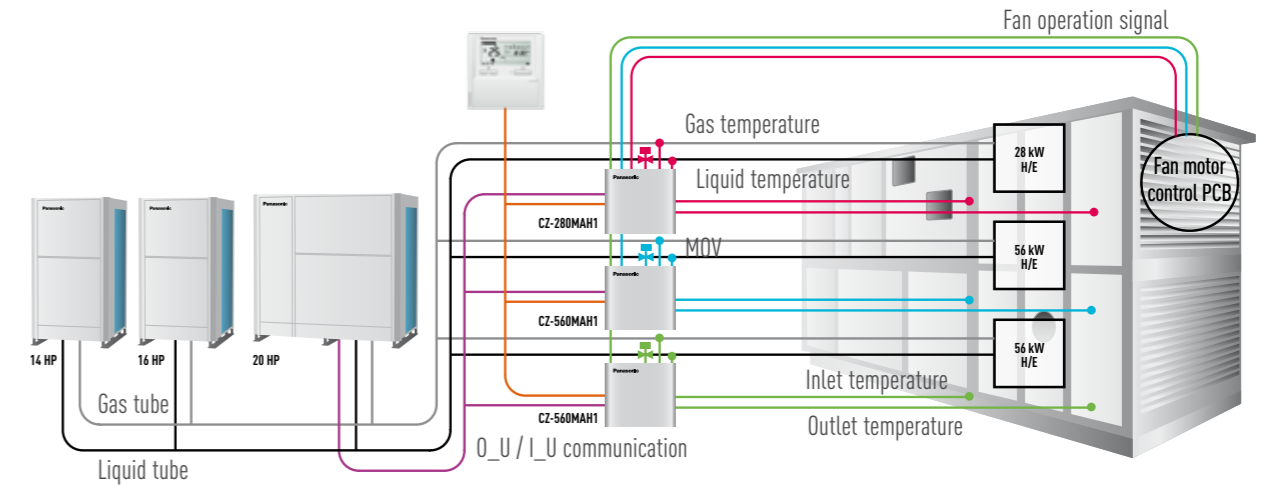


### Residential + Commercial

**Malaysia** Utropolis, Glenmarie

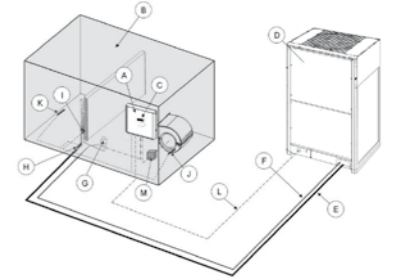


Air Conditioning System:  
VRF 2-way FSV ME1 series:  
29 systems  
Indoor Units: 168 units  
AHU Kit: 9 units  
Cooling Capacity: 3,077 kW / 875 USRT



## System and regulations. System overview

- A: AHU Kit controller box (with control PCB)
- B: AHU equipment (Field supplied)
- C: Remote controller (option parts)
- D: Outdoor unit
- E: Gas piping (Field supplied)
- F: Liquid piping (Field supplied)
- G: Electronic expansion valve
- H: Thermistor for gas pipe (E3)
- I: Thermistor for liquid pipe (E1)
- J: Thermistor for suction air (TA)
- K: Thermistor for discharge air (BL)
- L: Inter unit wiring
- M: Magnetic relay for operating the blower (Field supplied)



## Air Handling Unit Kit to connect to your ventilation system

### AHU Connection Kit

PCB, Power trans, Terminal block

Remote control can be easily installed on the AHU Kit box. (Remote control must be purchase separately.)

Expansion valve

Thermistor x2 (Refrigerant: E1, E3)

Thermistor x2 (Air: Tf, Tb)



### Optional remote controller

High-spec Wired Remote Controller CZ-RTC5B



Timer remote controller. CZ-RTC4A

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

### CZ-RTC4A Wired remote controller

- Operation-ON/OFF
- Mode select
- Temperature setting
- \* Fan operation signal can be taken from the PCB.

### T10 terminal

- Input signal= Operation ON/OFF

- Remote controller prohibition
- Output signal= Operating-ON status
- Alarm output (by DC12 V)

### OPTION terminal, DC12V outlet

- Output signal= Cool / Heat/Fan status
- Defrost
- Thermostat-ON

### CZ-CAPBC2 Seri-para I/O unit for each indoor unit

- Temperature setting by 0-10 V or 0-140 V input signal
- Room (inlet air) temp outlet by 4-20 mA
- Mode select or/and ON/OFF control
- Fan operation control
- Operation status output/ Alarm output

### Technical Zoom

- Max. piping length: 100m (actual)/ 120m (equivalent)
- Difference between longest and shortest piping from first branch: 10m
- Max. length of branch tubing: 12m
- \* Other conditions to be referred the standard piping design regulations.
- Available temperature range in Heating: -20 °C (WB)-15 °C (WB)
- Available temperature range for the suction air at AHU Kit: Cool: 18-32 °C / Heat: 16-30 °C

### CZ-280MAH1 / CZ-560MAH1

- The system controlled by the suction air (or return air from room) temperature as same as standard indoor unit. (Selectable mode: Automatic / Cooling / Heating / Fan / Dry (but same as Cool))
- The discharge air temperature is also controlled to prevent too-low air discharge in Cooling or too-high air discharge in Heating. (in case of VRF system)
- Demand control (Forcible thermostat-OFF control by operating current)

- Defrost operation signal, Thermo-ON/OFF states output
- External target temperature setting via Indoor/Outdoor signal interface is available with CZ-CAPBC2. (Ex. 0 - 10 V)
- Connectable with P-LINK system

## AHU Connection Kit / System Combination

	Capacity (HP)	Outdoor unit combination				AHU kit combination					
FSV-EX ME2/ MS3 series (Space-saving Combination)	28.0 kW (10 HP)	U-10MS3H7	U-10ME2H7			CZ-280MAH1					
	56.0 kW (20 HP)	U-20MS3H7	U-20ME2H7			CZ-560MAH1					
	85.0 kW (30 HP)	U-12MS3H7	U-14ME2H7	U-18MS3H7	U-16ME2H7	CZ-560MAH1	CZ-280MAH1				
	113.0 kW (40 HP)	U-16MS3H7	U-20ME2H7	U-24MS3H7	U-20ME2H7	CZ-560MAH1	CZ-560MAH1				
	140.0 kW (50 HP)	U-8MS3H7	U-14ME2H7	U-18MS3H7	U-16ME2H7	U-24MS3H7	U-20ME2H7	CZ-560MAH1	CZ-560MAH1	CZ-280MAH1	
	168.0 kW (60 HP)	U-12MS3H7	U-20ME2H7	U-24MS3H7	U-20ME2H7	U-24MS3H7	U-20ME2H7	CZ-560MAH1	CZ-560MAH1	CZ-560MAH1	
	196.0 kW (70 HP)	U-22MS3H7	U-10ME2H7	U-24MS3H7	U-20ME2H7	U-24MS3H7	U-20ME2H7	U-20ME2H7	CZ-560MAH1	CZ-560MAH1	CZ-280MAH1
	224.0 kW (80 HP)	U-8MS3H7	U-20ME2H7	U-24MS3H7	U-20ME2H7	U-24MS3H7	U-20ME2H7	U-24MS3H7	CZ-560MAH1	CZ-560MAH1	CZ-560MAH1
	254.0 kW (90HP)	U-18MS3H7	U-24MS3H7	U-24MS3H7	U-24MS3H7	U-24MS3H7			CZ-560MAH1	CZ-560MAH1	CZ-280MAH1

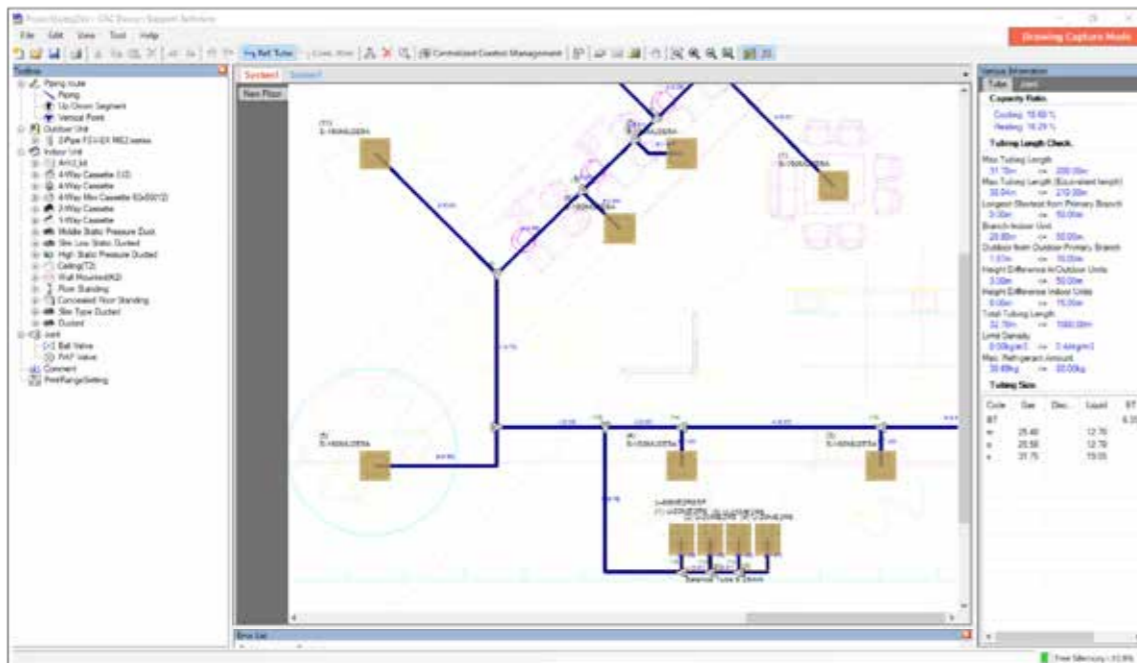
\*These are preliminary. Please consult with Panasonic sales engineers.

# CAC Design Support Software

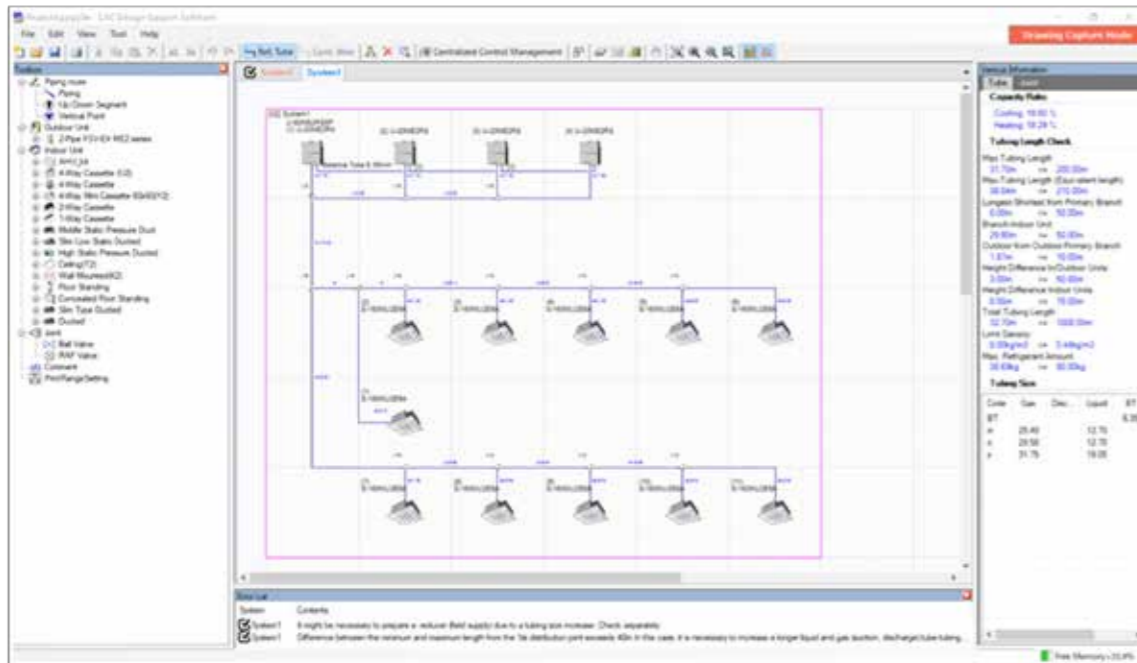


Features the unique Drawing Capture Mode function providing More thorough spec-in and tender quotation support for easier, Faster completion of work.

## Drawing Capture Mode Diagram

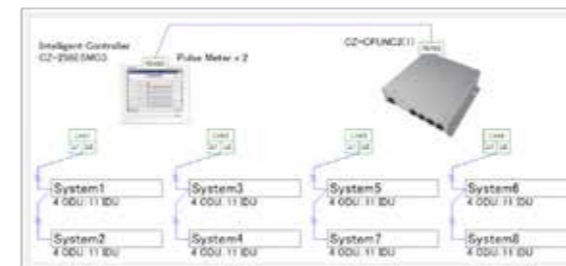
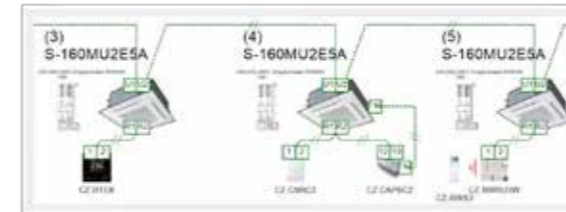


## Schematic Mode Diagram



## The Panasonic CAC Design Support software can be used for all Panasonic FSV

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 CAC Design Support Software has been customized to make the selection and design process as quick and easy as possible. The design package utilizes 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.



System No.	Area Name	Area	Area Type	Area Volume	Area Height	Area Cooling Load	Area Heating Load	Area Cooling Capacity	Area Heating Capacity	Area Cooling Deficit	Area Heating Deficit	Area Cooling Surplus	Area Heating Surplus
1	1st Floor	101	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
2	1st Floor	102	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
3	1st Floor	103	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
4	1st Floor	104	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
5	1st Floor	105	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
6	1st Floor	106	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
7	1st Floor	107	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
8	1st Floor	108	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
9	1st Floor	109	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
10	1st Floor	110	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
11	1st Floor	111	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
12	1st Floor	112	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
13	1st Floor	113	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
14	1st Floor	114	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
15	1st Floor	115	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
16	1st Floor	116	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
17	1st Floor	117	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
18	1st Floor	118	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
19	1st Floor	119	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
20	1st Floor	120	Office	100.0	3.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0

## Features

- Drawing Capture mode  
Design selection from building floor drawing.
- Any kind of drawing format. (.pdf, .dxf, .dwg, etc.)
- Conventional Schematic diagram.
- Easy to use system wizards.
- Converted duties for conditions and pipework.
- Auto(CAD) [.dxf/.dwg], Excel and PDF export.
- Detailed wiring and pipework diagrams with advising terminal number.

# 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.

FSV EX INVERTER COOLING ONLY

## FSV-EX MS3 Series

Cooling-only model with space-saving system and high efficiency

### Space-saving Combination Model

Cooling only Type

- Wide range of systems from 8HP to 96HP
- Class-leading EER of 5.3 (for 8HP model)
- Industry-leading low noise of 53.0 DB (8HP model)
- Cooling operation possible with outdoor temperature as high as 52°C (DB)
- Long maximum pipe length (up to 1,000 m)
- Up to 64 indoor units connectable
- External static pressure of 80 Pa

### High Efficiency Combination Model

Cooling only Type

- Wide range of systems from 8HP to 64HP
- Class-leading EER of 5.3 (for 8HP model)
- Higher EER than the Space-saving Combination Model  
e.g., a combination of two 10HP units delivering 20HP reduces compressor load.



NEW



MS3 series movie

FSV EX INVERTER HEAT PUMP

## 2-WAY FSV-EX ME2 Series

Extraordinary energy-saving performance and powerful operation

### Space-saving Combination Model

Cooling or Heating Type High-Durability Model

- Wide range of systems from 8HP to 80HP
- Class-leading EER of 5.3 (for 8HP model)
- Industry-leading low noise of 53.0 DB (8HP model)
- Cooling operation possible with outdoor temperature as high as 52°C (DB)
- Long maximum pipe length (up to 1,000 m)
- Up to 64 indoor units connectable
- External static pressure of 80 Pa
- Extended operating range allows heating with outdoor temperatures as low as -25°C (WB)

### High Efficiency Combination Model

Cooling or Heating Type High-Durability Model

- Wide range of systems from 8HP to 64HP
- Class-leading EER of 5.3 (for 8HP model)
- Higher EER than the Space-saving Combination Model  
e.g., a combination of two 10HP units delivering 20HP reduces compressor load.



FSV EX INVERTER HEAT PUMP

## 2-WAY Mini-FSV LE2 Series

For small-scale commercial and residential use

Cooling or Heating Type 1/3-phase

4/5/6 HP High-Durability Model

- High external static pressure 35Pa
- Wide operation range: Cooling: -10°C to 46°C DB, Heating at: -20°C to 18°C WB
- Refrigerant chargeless up to 50m
- Extraordinary energy saving: 5.08\* EER for 4HP model
- Demand response (Peak cut) by optional parts.
- Maximum number of connectable indoor units : 9\*
- Diversity ratio 50-130%
- DC inverter technology combined with R410A for excellent efficiency
- Demand response (Peak cut) by optional parts.
- One ampere starting current
- Full range of indoor units and control options
- Auto restart from outdoor unit
- Hi-durability outdoor unit model is available.
- Suitable for R22 renewal projects

\* 6 HP only; 4 HP for 7 units, 5 HP for 8 units.

Industry Top Class EER/COP



FSV EX INVERTER HEAT PUMP

## 2-WAY Mini-FSV LE1 Series

For small-scale commercial and residential use

Cooling or Heating Type 3-phase

8/10 HP High-Durability Model

- High external static pressure 35Pa
- 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
- Diversity ratio 50-130%
- DC inverter technology combined with R410A for excellent efficiency
- Actual piping length: 150m (Total piping length: 300m)
- System difference of elevation: 50m / 40m (outdoor above/below)
- Difference in elevation between indoor units: 15m
- Demand response (Peak cut) by optional parts.
- One ampere starting current
- Full range of indoor units and control options
- Auto restart from outdoor unit
- Hi-durability outdoor unit model is available.
- Suitable for R22 renewal project

Industry Top Class EER/COP



High-efficiency & Space-saving VRF system

# FSV-EX MS3/ME2

## Remarkable improvement on key components



## Extraordinary energy-saving performance

### 1 Multiple large-capacity all inverter compressors

(for middle and large outdoor units)

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.

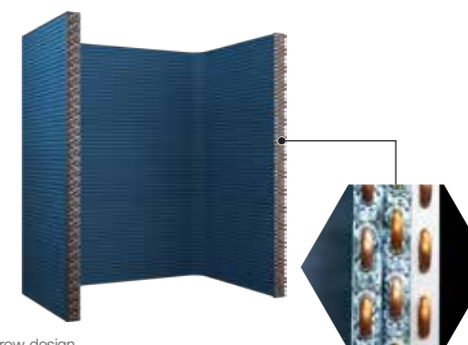


### 2 Enlarged heat exchanger surface area with triple surface\*

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%.

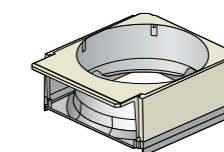
\* For 8 and 10 HP of ME2, and 8, 10 and 12 HP of MS3, the heat exchanger is 2-row design.



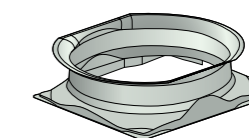
## Redesigned for smooth and better air discharge

### 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 leads to improvement in air resistance but also contributed to better appearance design.



Conventional model [ME1]



New model [ME2]

High-efficiency & Space-saving VRF system

# FSV-EX MS3/ME2



## Increased piping length for greater design flexibility

\*1: 40 m if the outdoor unit is below the indoor unit. Elevation difference of Max. 90m in case of ODU is higher than IDU may be allowed following certain conditions.

\*1, \*2: Please consult with Panasonic sales engineers about the certain conditions in case of piping elevation of over 50m or level difference between indoor units over 15m is required.

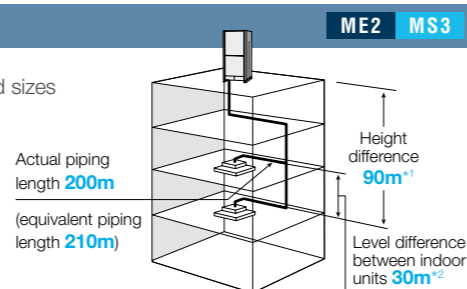
MS3 series with exceeding 82HP does not support a height difference of 90m and a level difference of 30m.

Adaptable to various building types and sizes

Actual piping length : **200m**

(equivalent piping length : 210m)

**Max. total piping length:1,000m**



## Connectable indoor/outdoor unit capacity ratio up to 130%\*1

FSV systems attain maximum indoor unit connection capacity of up to 130 %\*1 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.

\*1 82HP and above is equivalent to 80HP.

SYSTEM / HP	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96		
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	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	230.0	236.0	241.0	247.0	253.0	259.0	265.0	271.0		
ME2 SERIES																																															
MS3 SERIES																																															
MNcIU	13	16	19	23	26	29	33	36	40	43	46	50	53	56	59	63	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
No.1	26.1	36.4	43.6	52.0	56.5	65.0	72.8	80.0	88.4	94.0	102.1	110.5	117.0	124.0	131.2	138.1	146.9	153.4	161.2	169.0	175.5	182.0	188.5	195.3	202.8	210.5	218.4	226.2	234.0	240.5	247.0	254.0	260.6	267.4	274.9	281.2	289.2	297.2	305.2	313.2	321.2	329.2	337.2	345.2	353.2	361.2	369.2
No.2	44.8	56.0	67.0	80.0	90.0	100.0	112.0	123.0	136.0	146.0	157.0	170.0	180.0	192.0	202.0	214.0	226.0	236.0	248.0	260.0	270.0	280.0	290.0	302.0	312.0	324.0	336.0	348.0	360.0	370.0	380.0	392.0	404.0	416.0	428.0	440.0	448.0	448.0	448.0	448.0	448.0	448.0	448.0	448.0	448.0	448.0	448.0

MNcIU : Maximum Number of Connectable Indoor Unit

No.1 : Max connectable IDU capacity / kW (without condition) No.2 : Max connectable IDU capacity / kW (with below \*2 condition)

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

\*2 If the following conditions are satisfied, the effective range is "Max connectable IDU capacity / kW (with below \*condition) figures" written in above No.2.

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). (Only for ME2 series.)

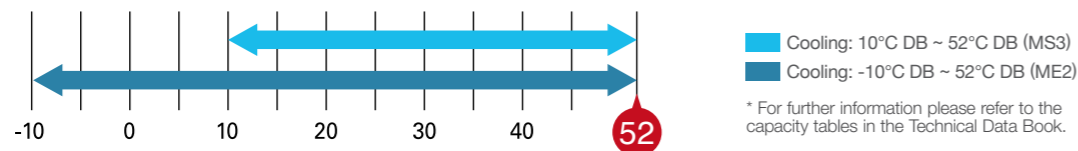
iii) Simultaneous operation is limited to less than "Max connectable IDU capacity / kW (without condition) figures" written in above No.1.

## Wide operating range

- Cooling operation is possible when outdoor temperature as low as -10°C DB
- Cooling operation is possible when outdoor temperature as high as 52°C DB
- Heating operation is possible when outdoor temperature as low as -25°C WB

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

\* Depending on the type of remote controller.



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

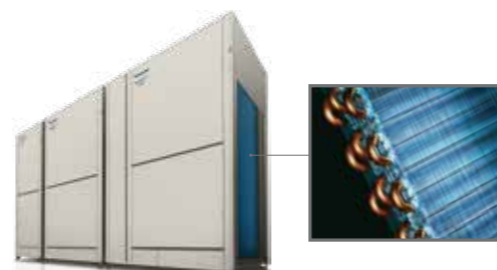
## High-durability outdoor unit

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.

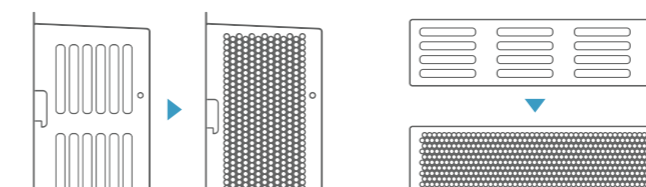
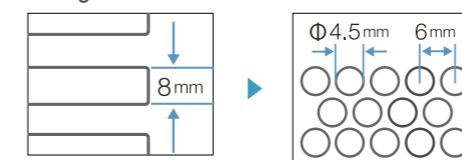
\* Specific model with suffix "E" has this treatment.



## Prevents unit stoppages due to short circuits caused by geckos

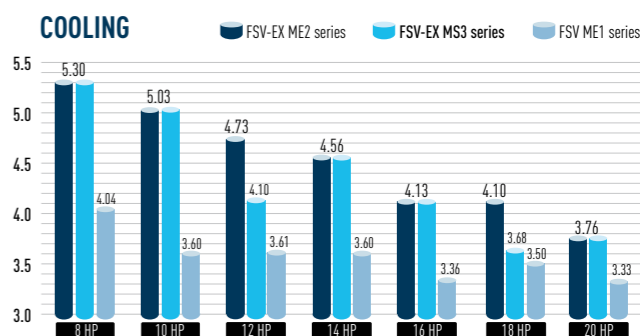
One of the common causes of failures of the outdoor unit is electrical short circuits caused by geckos, small animals such as rats and insects entering the unit. The unit eliminates gaps that prevent geckos from entering the internal PCB and thus prevent operation stoppages.

### Change Slit



## Excellent energy savings

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



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High-efficiency & Space-saving VRF system

# FSV-EX MS3/ME2

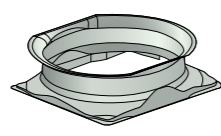


## High external static pressure on condensers

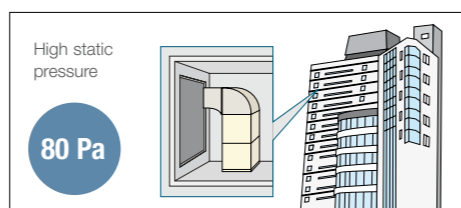
With a newly designed fan, fan guard, motor, and casing, new models can be custom-installed on-site to provide up to 80 Pa of external static pressure. An air discharge duct prevents shortages of air circulation, allowing outdoor units to be installed on every floor of a building.



Fan



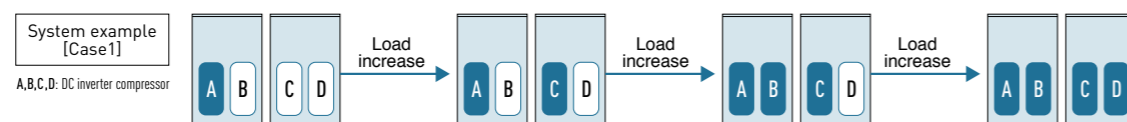
Fan Motor and Casing



## 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.

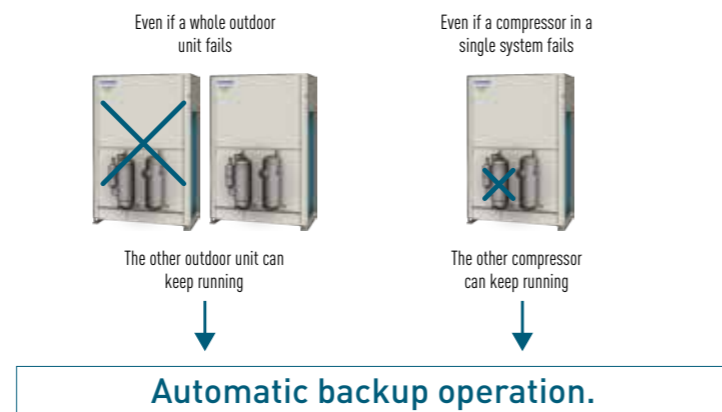


\* Depend on accumulated operation time of each compressors.  
 \* Compressor priority has possibility to be changed.  
 (e.g) Case1: A→C→B→D, Case2: C→A→D→B, Case3: A→C→D→B, Case4: C→A→B→D

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

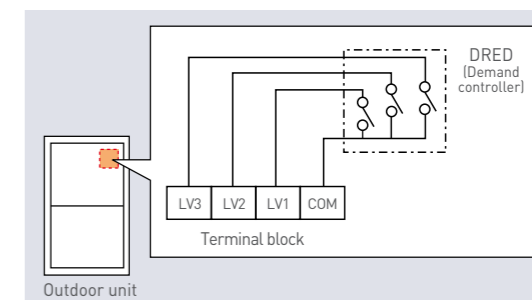
Except for 8, 10 & 12 HP single unit installation

\*Backup operation allows uninterrupted cooling or heating to continue while waiting for service. Users should contact their authorised service center 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.



### Simple Demand Response with the CZ-CAPDC3

Demand control terminal is available to control 0-70-100% of capacities.

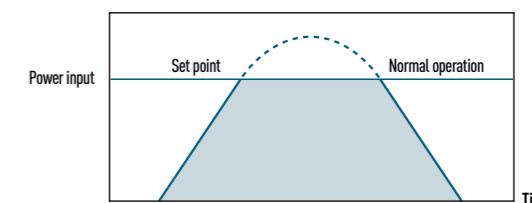
\*CZ-CAPDC3 is required as an option

Demand Response Signal	Power Input
LV 3	0%
LV 2	70%
LV 1	100%

### 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)	

# Cooling Only FSV-EX MS3 Series HIGH EFFICIENCY COMBINATION MODEL

Appearance																										
HP	8		10		12		14		16		18		20		22		24									
Model name	U-8MS3H7		U-10MS3H7		U-12MS3H7		U-14MS3H7		U-16MS3H7		U-18MS3H7E		U-20MS3H7E		U-22MS3H7E		U-24MS3H7E									
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	78.5	85.0	90.0	96.0	101.0	107.0	113.0	118.0	124.0	130.0	135.0	140.0	145.0	
		BTU/h	76,500	95,600	114,300	136,500	153,600	170,600	191,100	209,900	232,100	249,100	267,900	290,100	307,200	327,600	344,700	365,200	385,700	402,700	423,200	443,700	460,800	477,800	494,900	
EER / COP	Cooling	W/W	5.30	5.03	4.10	4.56	4.13	5.15	5.05	4.49	4.07	4.42	4.11	4.31	4.13	4.30	4.09	4.31	4.09	4.31	4.11	4.25	4.13	4.27	4.12	
		mm	1,842 x 770 x 1,000	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 1,600 x 1,000	1,842 x 1,600 x 1,000	1,842 x 1,600 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 2,010 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 2,430 x 1,000	1,842 x 2,430 x 1,000	1,842 x 2,840 x 1,000	1,842 x 2,840 x 1,000	1,842 x 3,250 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 3,670 x 1,000
Net weight		kg	210	210	210	313	313	420	420	420	420	523	523	626	626	630	630	733	733	836	836	939	939	943	943	
Electrical ratings	Cooling	Running current	A	7.14 / 6.78 / 6.54	9.62 / 9.14 / 8.81	13.6 / 13.0 / 12.5	15.3 / 14.5 / 14.0	18.4 / 17.5 / 16.8	16.6 / 15.7 / 15.2	19.2 / 18.2 / 17.5	23.1 / 22.0 / 21.2	27.9 / 26.5 / 25.5	28.2 / 26.8 / 25.8	32.2 / 30.6 / 29.5	33.6 / 31.9 / 30.8	36.8 / 35.0 / 33.7	37.6 / 35.8 / 34.5	41.2 / 39.2 / 37.8	41.9 / 39.8 / 38.3	46.1 / 43.8 / 42.2	46.3 / 43.9 / 42.4	51.0 / 48.4 / 46.7	52.2 / 49.6 / 47.8	55.2 / 52.4 / 50.5	55.4 / 52.6 / 50.7	58.8 / 55.8 / 53.8
		Power input	kW	4.23	5.57	8.17	8.77	10.9	9.70	11.1	13.7	16.7	16.5	19.1	19.7	21.8	22.3	24.7	24.8	27.6	27.4	30.2	30.6	32.7	32.8	35.2
Starting current		A	1	1	1	2	2	2	2	2	3	3	4	4	4	3	3	4	4	5	5	6	6	5	5	
Air flow rate		m³/h	13,440	13,440	13,440	13,920	13,920	26,880	26,880	26,880	26,880	27,360	27,360	27,840	27,840	40,320	40,320	40,800	40,800	41,280	41,280	41,760	41,760	54,240	54,240	
		L/s	3,733	3,733	3,733	3,867	3,867	7,467	7,467	7,467	7,467	7,600	7,600	7,733	7,733	11,200	11,200	11,333	11,333	11,467	11,467	11,600	11,600	15,067	15,067	
Refrigerant amount at shipment		kg	5.6	5.6	5.6	8.3	8.3	11.2	11.2	11.2	11.2	13.9	13.9	16.6	16.6	16.8	16.8	19.5	19.5	22.2	22.2	24.9	24.9	25.1	25.1	
External static pressure		Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	
Piping connections	Gas pipe	mm (inches)	Ø19.05 (Ø3/4)	Ø22.22 (Ø7/8)	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)	Ø28.58 (Ø1-1/8)	Ø28.58 (Ø1-1/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	
	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)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	
	Balance pipe	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	
Ambient temperature operating range			Cooling: 10°C (DB)~ +52°C (DB)																							
Sound pressure level	Normal mode	dB (A)	53.0	56.0	59.0	58.0	61.0	58.0	59.0	61.0	62.0	62.0	63.0	63.0	64.0	63.0	64.0	64.0	65.0	65.0	65.0	65.0	66.0	65.0	66.0	
	Silent mode (2)	dB (A)	48.0	51.0	54.0	53.0	56.0	53.0	54.0	56.0	57.0	57.0	58.0	58.0	59.0	58.0	59.0	59.0	60.0	60.0	60.0	60.0	61.0	60.0	61.0	
Sound power level	Normal mode	dB	74.0	77.0	80.0	79.0	82.0	79.0	80.0	82.0	83.0	83.0	84.0	84.0	85.0	84.0	85.0	85.0	86.0	86.0	86.0	86.0	87.0	86.0	87.0	



Appearance																												
HP	26		28		30		32		34		36		38		40		42		44		46		48		50		52	
Model name	U-26MS3H7E		U-28MS3H7E		U-30MS3H7E		U-32MS3H7E		U-34MS3H7E		U-36MS3H7E		U-38MS3H7E		U-40MS3H7E		U-42MS3H7E		U-44MS3H7E		U-46MS3H7E		U-48MS3H7E		U-50MS3H7E		U-52MS3H7E	
Power supply	380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz																											
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	140.0	145.0	149.0	154.0	159.0	164.0	169.0	174.0	179.0	184.0	189.0	194.0	199.0	204.0
		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	477,800	494,900	512,000	529,100	546,200	563,300	580,400	597,500	614,600	631,700	648,800	665,900	683,000	700,100
EER / COP	Cooling	W/W	4.42	4.11	4.31	4.13	4.30	4.09	4.31	4.09	4.31	4.11	4.25	4.13	4.27	4.12	4.42	4.11	4.31	4.09	4.31	4.11	4.25	4.13	4.27	4.12	4.42	4.11
		mm	1,842 x 2,010 x 1,000	1,842 x 2,010 x 1,000	1,842 x 2,420 x 1,000	1,842 x 2,420 x 1,000	1,842 x 2,430 x 1,000	1,842 x 2,430 x 1,000	1,842 x 2,840 x 1,000	1,842 x 2,840 x 1,000	1,842 x 3,250 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 3,670 x 1,000	1,842 x 3,670 x 1,000	1,842 x 4,080 x 1,000	1,842 x 4,080 x 1,000	1,842 x 4,490 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 5,310 x 1,000	1,842 x 5,310 x 1,000	1,842 x 5,720 x 1,000	1,842 x 5,720 x 1,000	1,842 x 6,130 x 1,000	1,842 x 6,130 x 1,000
Net weight		kg	523	523	626	626	630	630	733	733	836	836	939	939	943	943	1,046	1,046	1,149	1,149	1,252	1,252	1,355	1,355	1,458	1,458	1,561	1,561
Electrical ratings	Cooling	Running current	A	28.2 / 26.8 / 25.8	32.2 / 30.6 / 29.5	33.6 / 31.9 / 30.8	36.8 / 35.0 / 33.7	37.6 / 35.8 / 34.5	41.2 / 39.2 / 37.8	41.9 / 39.8 / 38.3	46.1 / 43.8 / 42.2	46.3 / 43.9 / 42.4	51.0 / 48.4 / 46.7	52.2 / 49.6 / 47.8	55.2 / 52.4 / 50.5	55.4 / 52.6 / 50.7	58.8 / 55.8 / 53.8	59.8 / 56.8 / 54.8	60.8 / 57.8 / 55.8	61.8 / 58.8 / 56.8	62.8 / 59.8 / 57.8	63.8 / 60.8 / 58.8	64.8 / 61.8 / 59.8	65.8 / 62.8 / 60.8	66.8 / 63.8 / 61.8	67.8 / 64.8 / 62.8	68.8 / 65.8 / 63.8	70.2 / 66.7 / 64.2
		Power input	kW	16.5	19.1	19.7	21.8	22.3	24.7	24.8	27.6	27.4	30.2	30.6	32.7	32.8	35.2	36.2	37.2	38.2	39.2	40.2	41.2	42.2	43.2	44.2	45.2	46.2
Starting current		A	3	3	4	4	4	3	3	4	4	5	5	6	6	5	5	6	6	7	7	8	8	9	9	10	10	11
Air flow rate		m³/h	27,360	27,360	27,840	27,840	40,320	40,320	40,800	40,800	41,280	41,280	41,760	41,760	54,240	54,240	54,720	54,720	55,200	55,200	55,680	55,680	56,160	56,160	56,640	56,640	57,120	57,120
		L/s	7,600	7,600	7,733	7,733	11,200	11,200	11,333	11,333	11,467	11,467	11,600	11,600	15,067	15,067	15,167	15,167	15,300	15,300	15,433	15,433	15,567	15,567	15,700	15,700	15,833	15,833
Refrigerant amount at shipment		kg	13.9	13.9	16.6	16.6	16.8	16.8	19.5	19.5	22.2	22.2	24.9	24.9	25.1	25.1	27.8	27.8	30.5	30.5	33.2	33.2	35.9	35.9	38.6	38.6	41.3	41.3
External static pressure		Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Piping connections	Gas pipe	mm (inches)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)	Ø47.63 (Ø1-7/8)
	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)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)
	Balance pipe	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Ambient temperature operating range																												



Cooling Only FSV-EX MS3 Series

SPACE SAVING COMBINATION MODEL

Appearance																				
HP	8		10		12		14		16		18		20		22		24			
Model name	U-8MS3H7		U-10MS3H7		U-12MS3H7		U-14MS3H7		U-16MS3H7		U-18MS3H7		U-20MS3H7		U-22MS3H7		U-24MS3H7			
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									
		BTU/h	76,500	95,600	114,300	136,500	153,600	170,600	191,100	209,900	232,100									
EER / COP	Cooling	W/W	5.30	5.03	4.10	4.56	4.13	3.68	3.76	3.60	3.42									
Dimensions	H x W x D	mm	1,842 x 770 x 1,000	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 1,540 x 1,000									
			Net weight	kg	210	210	210	313	313	313	366	366	366							
Electrical ratings	Cooling	Running current	A	7.14 / 6.78 / 6.54	9.62 / 9.14 / 8.81	13.6 / 13.0 / 12.5	15.3 / 14.5 / 14.0	18.4 / 17.5 / 16.8	23.0 / 21.8 / 21.0	24.6 / 23.4 / 22.5	28.2 / 26.8 / 25.9	32.8 / 31.2 / 30.1								
		Power input	kW	4.23	5.57	8.17	8.77	10.9	13.6	14.9	17.1	19.9								
Starting current		A	1	1	1	2	2	2	2	2	2									
Air flow rate		m³/h	13,440	13,440	13,440	13,920	13,920	13,920	24,300	24,300	24,300									
		L/s	3,733	3,733	3,733	3,867	3,867	3,867	6,750	6,750	6,750									
Refrigerant amount at shipment		kg	5.6	5.6	5.6	8.3	8.3	8.3	9.5	9.5	9.5									
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)	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)	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)																	
Sound pressure level	Normal mode	dB (A)	53.0	56.0	59.0	58.0	61.0	59.0	62.0	62.0	62.0									
	Silent mode (2)	dB (A)	48.0	51.0	54.0	53.0	56.0	57.0	54.0	57.0	57.0									
Sound power level	Normal mode	dB	74.0	77.0	80.0	79.0	82.0	83.0	80.0	83.0	83.0									



HP	26		28		30		32		34		36		38		40		42		44		46		48			
Model name	U-26MS3H7SP		U-28MS3H7SP		U-30MS3H7SP		U-32MS3H7SP		U-34MS3H7SP		U-36MS3H7SP		U-38MS3H7SP		U-40MS3H7SP		U-42MS3H7SP		U-44MS3H7SP		U-46MS3H7SP		U-48MS3H7SP			
Power supply	380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz																									
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												
EER / COP	Cooling	W/W	4.03	4.05	3.79	3.75	3.76	3.63	3.78	3.67	3.52	3.56	3.49	3.44												
Dimensions	H x W x D	mm	1,842 x 2,010 x 1,000	1,842 x 2,010 x 1,000	1,842 x 2,010 x 1,000	1,842 x 2,370 x 1,000	1,842 x 2,370 x 1,000	1,842 x 2,370 x 1,000	1,842 x 2,780 x 1,000	1,842 x 2,780 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 3,140 x 1,000											
			Net weight	kg	523	523	523	576	576	576	679	679	679	732	732	732										
Electrical ratings	Cooling	Running current	A	30.6 / 29.0 / 28.0	33.1 / 31.5 / 30.3	37.8 / 35.9 / 34.6	39.6 / 37.7 / 36.3	42.6 / 40.4 / 39.0	45.9 / 43.6 / 42.0	47.8 / 45.4 / 43.7	51.4 / 48.9 / 47.1	55.9 / 53.1 / 51.2	57.5 / 54.6 / 52.6	61.4 / 58.4 / 56.3	64.9 / 61.7 / 59.4											
		Power input	kW	18.1	19.4	22.4	24.0	25.5	27.8	28.3	30.8	33.5	34.8	37.2	39.3											
Starting current		A	3	3	3	3	3	3	4	4	4	4	4													
Air flow rate		m³/h	27,360	27,360	27,360	37,740	37,740	37,740	38,220	38,220	38,220	48,600	48,600	48,600												
		L/s	7,600	7,600	7,600	10,483	10,483	10,483	10,617	10,617	10,617	13,500	13,500	13,500												
Refrigerant amount at shipment		kg	13.9	13.9	13.9	15.1	15.1	15.1	17.8	17.8	17.8	19.0	19.0	19.0												
External static pressure		Pa	80	80	80	80	80	80	80	80	80	80	80	80												
Piping connections	Gas pipe	mm (inches)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø34.92 (Ø1-3/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	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)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)	Ø19.05 (Ø3/4)											
	Balance pipe	mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)											
Ambient temperature operating range			Cooling: 10°C (DB)~ +52°C (DB)																							
Sound pressure level	Normal mode	dB (A)	63.0	63.0	64.0	63.0	63.0	64.0	63.0	65.0	65.0	64.0	65.0	65.0												
	Silent mode (2)	dB (A)	58.0	58.0	59.0	58.0	58.0	59.0	58.0	60.0	60.0	59.0	60.0	60.0												
Sound power level	Normal mode	dB	84.0	84.0	85.0	84.0	84.0	85.0	84.0	86.0	86.0	85.0	86.0	86.0												

Appearance																											
HP	50			52			54			56			58			60			62			64			66		
Model name	U-50MS3H7SP			U-52MS3H7SP			U-54MS3H7SP			U-56MS3H7SP			U-58MS3H7SP			U-60MS3H7SP			U-62MS3H7SP			U-64MS3H7SP			U-66MS3H7SP		
Power supply	380/400/415V/3-phase/50Hz 380/400/3-phase/60Hz																										
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																
EER / COP	Cooling	W/W	3.72	3.75	3.65	3.63	3.64	3.55	3.65	3.59	3.50																
Dimensions	H x W x D	mm	1,842 x 3,610 x 1,000	1,842 x 3,610 x 1,000	1,842 x 3,610 x 1,000	1,842 x 3,970 x 1,000	1,842 x 3,970 x 1,000	1,842 x 3,970 x 1,000	1,842 x 4,380 x 1,000	1,842 x 4,380 x 1,000	1,842 x 4,380 x 1,000																
			Net weight	kg	889	889	889	942	942	942	1,045	1,045	1,045														
Electrical ratings	Cooling	Running current	A	62.8 / 59.6 / 57.5	64.6 / 61.4 / 59.2	69.1 / 65.7 / 63.3	71.0 / 67.5 / 65.0	73.5 / 69.8 / 67.3	78.1 / 74.2 / 71.5	79.6 / 75.7 / 72.9	82.9 / 78.8 / 75.9	87.4 / 83.0 / 80.0															
		Power input	kW	37.6	38.7	41.4	43.0	44.5	47.3	47.7	50.2	52.9															
Starting current		A	5	5	5	5	5	5	6	6	6																
Air flow rate		m³/h	51,660	51,660	51,660	62,040	62,040	62,040	62,520	62,520	62,520																
		L/s	14,350	14,350	14,350	17,233	17,233	17,233	17,367	17,367	17,367																
Refrigerant amount at shipment		kg	23.4	23.4	23.4	24.6	24.6	24.6	27.3	27.3	27.3																
External static pressure		Pa	80	80	80	80	80	80	80	80	80																
Piping connections	Gas pipe	mm (inches)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	Ø41.28 (Ø1-5/8)	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°C (DB)~ +52°C (DB)																								
Sound pressure level	Normal mode	dB (A)	65.0	66.0	66.0	65.0	66.0	66.0	66.0	66.0	67.0																
	Silent mode (2)	dB (A)	60.0	61.0	61.0	60.0	61.0	61.																			

### Cooling Only FSV-EX MS3 Series

### SPACE SAVING COMBINATION MODEL



Appearance						
HP		92	94	96		
		U-92MS3H7SP	U-94MS3H7SP	U-96MS3H7SP		
Model name		U-20MS3H7	U-22MS3H7	U-24MS3H7		
		U-24MS3H7	U-24MS3H7	U-24MS3H7		
		U-24MS3H7	U-24MS3H7	U-24MS3H7		
		U-24MS3H7	U-24MS3H7	U-24MS3H7		
Power supply		380/400/415V/3-phase/50Hz 380/400/3-phase/60Hz				
Capacity	Cooling	kW	260.0	266.0	272.0	
		BTU/h	887,400	907,800	928,300	
EER / COP	Cooling	W/W	3.49	3.45	3.42	
Dimensions	H x W x D	mm	1,842 x 6,340 x 1,000	1,842 x 6,340 x 1,000	1,842 x 6,340 x 1,000	
Net weight		kg	1,464	1,464	1,464	
Electrical ratings	Cooling	Running current	A	123.0 / 116.9 / 112.7	127.2 / 120.8 / 116.4	131.3 / 124.7 / 120.2
		Power input	kW	74.5	77.0	79.5
Starting current			A	8	8	8
Air flow rate			m <sup>3</sup> /h	97,200	97,200	97,200
			L/s	27,000	27,000	27,000
Refrigerant amount at shipment			kg	38.0	38.0	38.0
External static pressure			Pa	80	80	80
Piping connections	Gas pipe	mm (inches)	Ø53.98 (Ø2-1/8)	Ø53.98 (Ø2-1/8)	Ø53.98 (Ø2-1/8)	
	Liquid pipe	mm (inches)	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)	
Ambient temperature operating range		Cooling: 10°C (DB)- +52°C (DB)				
Sound pressure level	Normal mode	dB (A)	67.0	68.0	68.0	
	Silent mode (2)	dB (A)	62.0	63.0	63.0	
Sound power level	Normal mode	dB	88.0	89.0	89.0	

GLOBALREMARKS

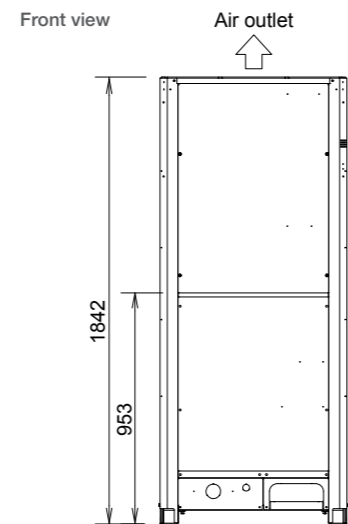
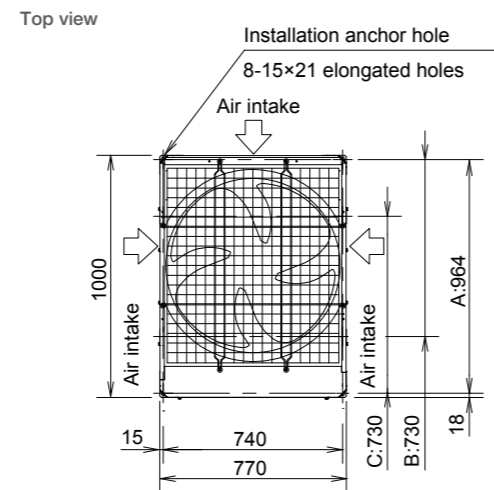
Rated conditions:	Cooling
Indoor air temperature	27°C DB / 19°C WB
Outdoor air temperature	35°C DB

These specifications are subject to change without notice.

#### 8 / 10 / 12 HP

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

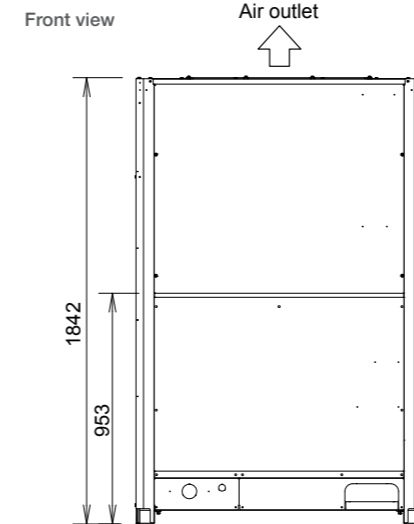
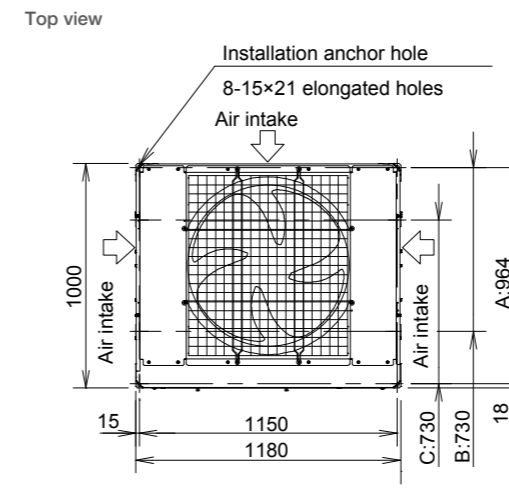


unit: mm

#### 14 / 16 / 18 HP

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

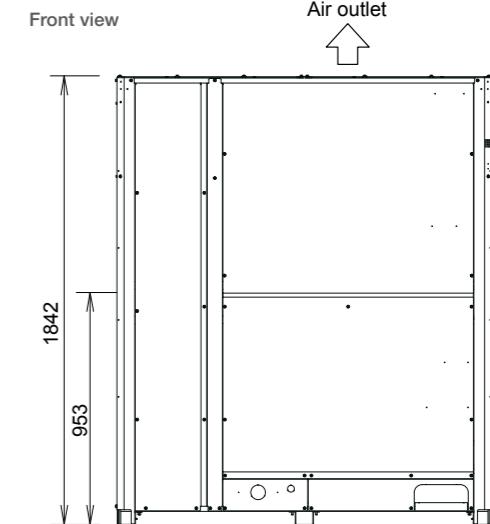
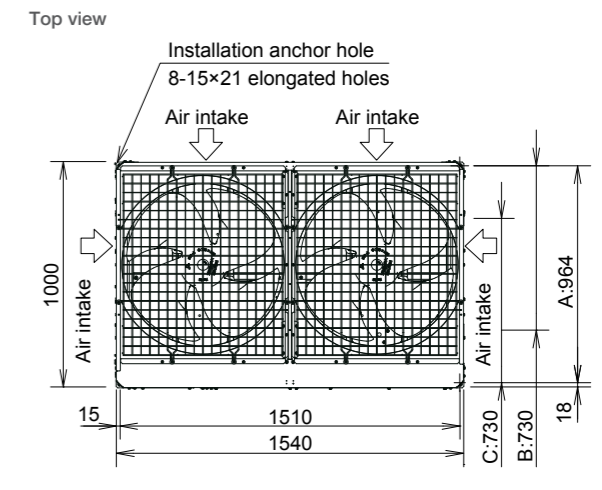


unit: mm

#### 20 / 22 / 24 HP

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



unit: mm



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

Appearance												
HP		8	10	12	14	16	18	20	22	24		
Model name		U-8ME2H7	U-10ME2H7	U-12ME2H7	U-14ME2H7	U-16ME2H7	U-18ME2H7	U-20ME2H7	U-10ME2H7 U-12ME2H7	U-12ME2H7 U-12ME2H7		
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	
	BTU/h	76,500	95,600	114,300	136,500	153,600	170,600	191,100	209,900	232,100		
EER / COP	Cooling	W/W	5.30	5.03	4.73	4.56	4.13	4.10	3.76	4.84	4.69	
	Heating	W/W	5.84	5.56	5.38	5.29	5.13	5.05	4.60	5.48	5.31	
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	210	210	270	315	315	375	375	480	540	
Electrical ratings	Cooling	Running current	A	7.14 / 6.78 / 6.54	9.62 / 9.14 / 8.81	11.8 / 11.2 / 10.8	15.3 / 14.5 / 14.0	18.4 / 17.5 / 16.8	20.6 / 19.6 / 18.9	24.6 / 23.4 / 22.5	21.4 / 20.4 / 19.6	24.2 / 23.0 / 22.2
		Power input	kW	4.23	5.57	7.08	8.77	10.9	12.2	14.9	12.7	14.5
	Heating	Running current	A	7.15 / 6.79 / 6.54	9.68 / 9.20 / 8.86	11.6 / 11.1 / 10.7	14.9 / 14.1 / 13.6	16.6 / 15.8 / 15.2	18.9 / 18.0 / 17.4	22.9 / 21.7 / 20.9	21.3 / 20.2 / 19.5	24.0 / 22.8 / 22.0
		Power input	kW	4.28	5.67	6.97	8.51	9.75	11.1	13.7	12.6	14.4
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	3,867	3,867	3,867	6,750	6,750	7,600	7,733	
Refrigerant amount at shipment		kg	5.6	5.6	8.3	8.3	8.3	9.5	9.5	13.9	16.6	
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)	53.0	56.0	57.0	58.0	61.0	59.0	59.0	59.5	60.0	
	Silent mode (2)	dB (A)	48.0	51.0	52.0	53.0	56.0	54.0	54.0	54.5	55.0	
Sound power level	Normal mode	dB	74.0	77.0	78.0	79.0	82.0	80.0	80.0	80.5	81.0	



Appearance															
HP	26	28	30	32	34	36	38	40	42	44	46	48			
Model name	U-26ME2H7	U-28ME2H7	U-30ME2H7	U-32ME2H7	U-34ME2H7SP	U-36ME2H7SP	U-38ME2H7SP	U-40ME2H7SP	U-42ME2H7	U-44ME2H7	U-46ME2H7	U-48ME2H7			
Power supply	380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz														
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		
EER / COP	Cooling	W/W	81.5	87.5	95.0	100.0	108.0	113.0	119.0	127.0	132.0	138.0	145.0	150.0	
	Heating	W/W	278,200	298,600	324,200	341,300	368,600	385,700	406,100	433,400	450,500	471,000	494,900	511,900	
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	525	585	630	630	690	690	750	750	840	900	945	945	
Electrical ratings	Cooling	Running current	A	28.2 / 26.8 / 25.8	30.4 / 28.9 / 27.8	33.6 / 31.9 / 30.8	36.8 / 35.0 / 33.7	40.0 / 38.0 / 36.6	43.1 / 40.9 / 39.4	45.9 / 43.6 / 42.0	49.9 / 47.4 / 45.7	46.3 / 43.9 / 42.4	49.1 / 46.7 / 45.0	52.2 / 49.6 / 47.8	55.2 / 52.4 / 50.5
		Power input	kW	16.5	18.0	19.7	21.8	23.7	25.8	27.5	30.2	27.4	29.1	30.6	32.7
	Heating	Running current	A	26.3 / 25.0 / 24.1	28.2 / 26.8 / 25.8	31.6 / 30.0 / 28.9	33.3 / 31.6 / 30.5	37.9 / 36.0 / 34.7	39.7 / 37.7 / 36.3	41.9 / 39.8 / 38.3	46.2 / 43.9 / 42.3	43.2 / 41.0 / 39.5	44.9 / 42.7 / 41.1	48.3 / 45.9 / 44.3	50.0 / 47.5 / 45.8
		Power input	kW	15.4	16.7	18.3	19.5	22.2	23.5	24.8	27.7	25.3	26.6	28.0	29.3
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	10,617	10,617	13,500	13,500	11,467	11,600	11,600	11,600	
Refrigerant amount at shipment		kg	13.9	16.6	16.6	16.6	17.8	17.8	19.0	19.0	22.2	24.9	24.9	24.9	
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)	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)	
	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°C (DB)~ +52°C (DB). Heating: -25°C (WB)~ +18°C (WB)												
Sound pressure level	Normal mode	dB (A)	62.5	62.5	63.0	64.0	61.5	63.5	62.0	62.0	65.0	65.0	65.0	66.0	
	Silent mode (2)	dB (A)	57.5	57.5	58.0	59.0	56.5	58.5	57.0	57.0	60.0	60.0	60.0	61.0	
Sound power level	Normal mode	dB	83.5	83.5	84.0	85.0	82.5	84.5	83.0	83.0	86.0	86.0	86.0	87.0	

GLOBALREMARKS

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

Appearance												
HP	50	52	54	56	58	60	62	64	66			
Model name	U-14ME2H7 U-16ME2H7 U-20ME2H7	U-16ME2H7 U-16ME2H7 U-20ME2H7	U-14ME2H7 U-20ME2H7 U-20ME2H7	U-16ME2H7 U-20ME2H7 U-20ME2H7	U-18ME2H7 U-20ME2H7 U-20ME2H7	U-20ME2H7 U-20ME2H7 U-20ME2H7	U-14ME2H7 U-16ME2H7 U-16ME2H7	U-16ME2H7 U-16ME2H7 U-16ME2H7	U-10ME2H7 U-20ME2H7 U-20ME2H7			
Power supply	380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz											
Capacity	Cooling	kW	140.0	145.0	151.0	156.0	162.0	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		
EER / COP	Cooling	W/W	4.09	3.99	3.95	3.87	3.86	4.23	4.13	4.00		
	Heating	W/W	5.00	4.95	4.79	4.76	4.73	4.60	5.16	5.11	4.85	
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 5,210 x 1,000		
Net weight		kg	1,005	1,005	1,065	1,065	1,125	1,125	1,260	1,275		
Electrical ratings	Cooling	Running current	A	57.7 / 54.8 / 52.9	60.6 / 57.6 / 55.5	63.8 / 60.6 / 58.4	67.3 / 63.9 / 61.6	70.1 / 66.6 / 64.2	73.8 / 70.1 / 67.6	70.2 / 66.7 / 64.2	73.6 / 69.9 / 67.4	77.3 / 73.4 / 70.8
		Power input	kW	34.2	36.3	38.2	40.3	42.0	44.7	41.1	43.6	46.3
	Heating	Running current	A	52.9 / 50.3 / 48.5	54.5 / 51.8 / 49.9	59.6 / 56.6 / 54.6	62.1 / 59.0 / 56.9	65.0 / 61.7 / 59.5	68.6 / 65.2 / 62.8	64.5 / 61.3 / 59.1	67.1 / 63.7 / 61.4	72.1 / 68.5 / 66.0
		Power input	kW	31.0	32.3	35.3	36.8	38.5	41.1	37.8	39.3	42.7
Starting current		A	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	15,467	15,467	21,100	
Refrigerant amount at shipment		kg	26.1	26.1	27.3	27.3	28.5	28.5	33.2	33.2	32.9	
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°C (DB)~ +52°C (DB). Heating: -25°C (WB)~ +18°C (WB)									
Sound pressure level	Normal mode	dB (A)	64.5	65.5	65.5	64.5	64.0	66.5	67.0	65.5		
	Silent mode (2)	dB (A)	59.5	60.5	58.5	59.5	59.0	59.0	61.5	62.0	60.5	
Sound power level	Normal mode	dB										

2-WAY FSV-EX ME2 Series **SPACE SAVING COMBINATION MODEL**

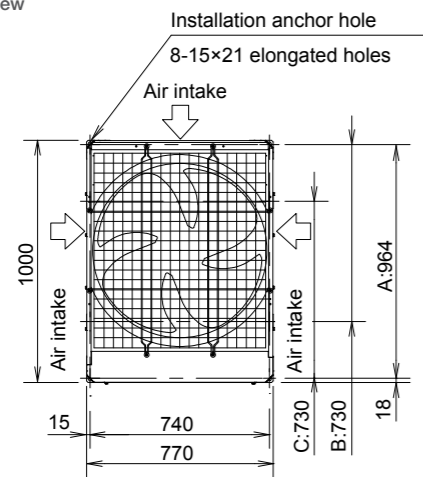


**8 / 10 HP**

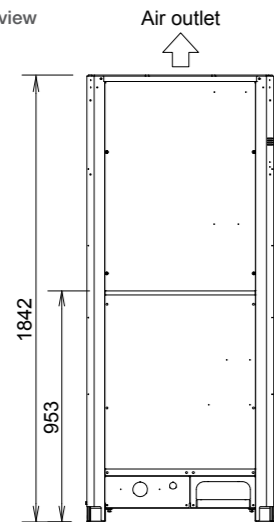
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

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

Top view



Front view



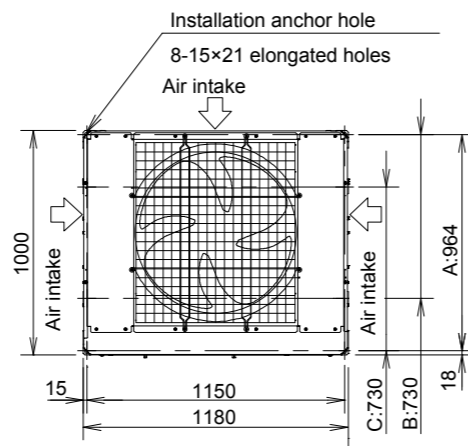
unit: mm

**12 / 14 / 16 HP**

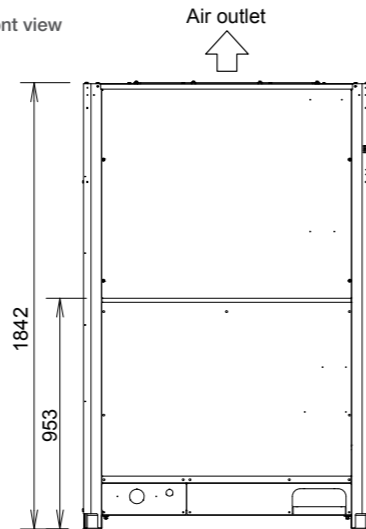
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

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

Top view



Front view



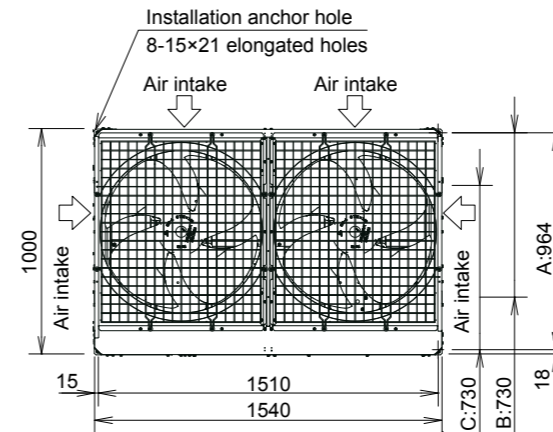
unit: mm

**18 / 20 HP**

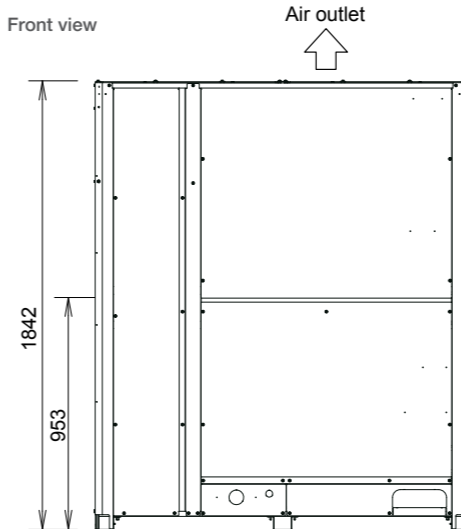
According to the installation site, you may choose the setting position in the depth direction of the anchor bolt from A, B or C.

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

Top view



Front view



unit: mm

# 2-WAY Mini-FSV LE Series

## High External Static Pressure 35Pa



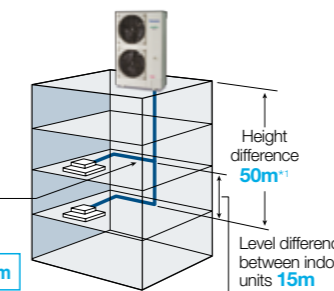
### Long piping design length for greater design flexibility

LE1 LE2

Adaptable to various building types and sizes

Actual piping length 150m (equivalent piping length 175m)

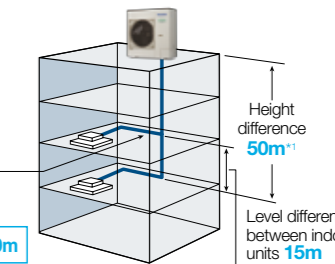
Max. total piping length: 300m



LE 1

Actual piping length 150m (equivalent piping length 175m)

Max. total piping length: 180m



LE 2

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

### Refrigerant chargeless up to 50m

LE2

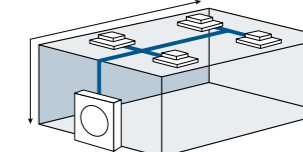
Up to 50m of piping without additional gas charging makes installation flexible, easy and hassle-free.

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 ]



### High external static pressure 35Pa

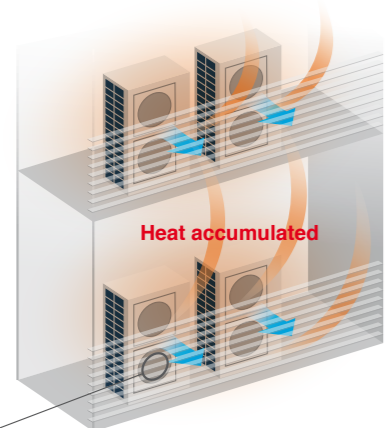
LE1 LE2

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



#### Previous model - Low pressure

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



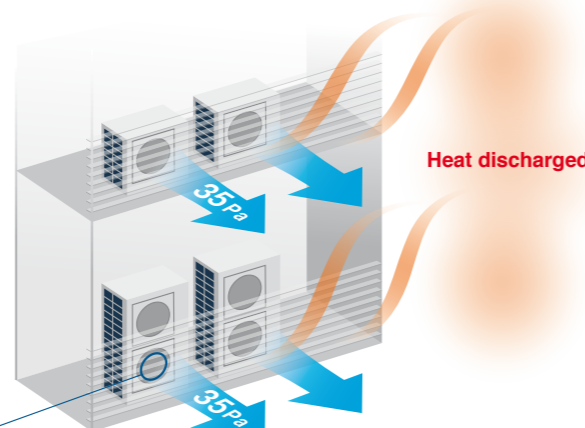
#### Previous fan

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



#### LE series - High pressure

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



#### LE series fan

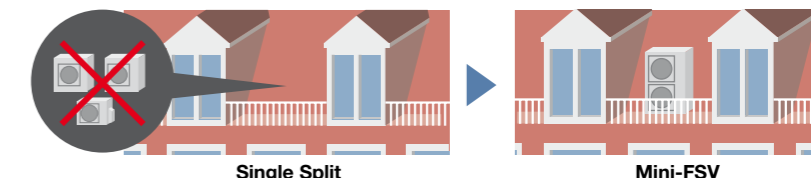
The new LE Series fan has ribs extending near the blade tips, in a structure that resists deformation. During high electrostatic pressure, this blade shape suppresses disruptions in the airflow, and a high air pressure of 35 Pa discharges the hot air a sufficient distance.



### Compact design

LE1 LE2

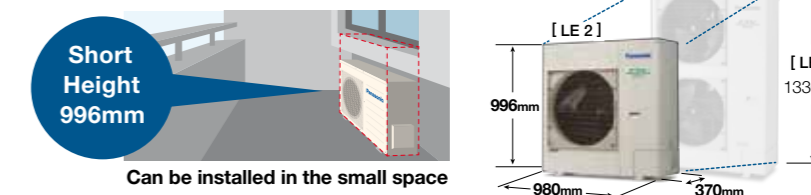
Also, since Mini VRF LE Series is a single unit, it is possible to install the unit in more various places compared to the Single Split system.



### Short height of 996mm

LE2

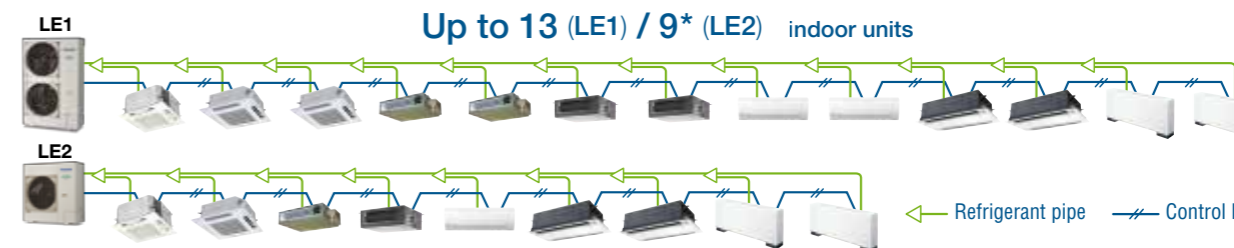
In addition to raising efficiency, we have made the outdoor unit more compact. It can now be installed in places that were previously too small.



### Up to 13 indoor units connectable

LE1 LE2

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



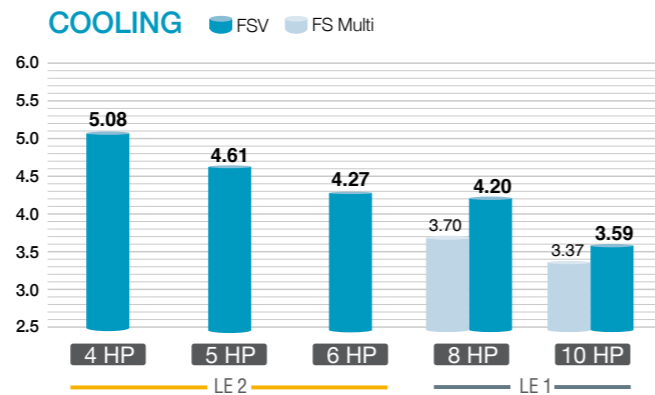
\* Use any of the 22 type indoor models. Depending on the size or type of indoor unit, tubing size shall be changed. Please refer manuals for details.  
\* Diversity ratio 50-130%  
\* 6 HP only; 4 HP for 7 units, 5 HP for 8 units.

## 2-WAY 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.



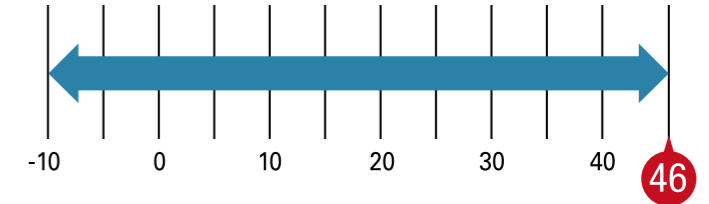
### Wide operating range

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.

The remote controller temperature can be set from 18°C up to 30°C \*1.

\*1 Depending on the type of remote controller.

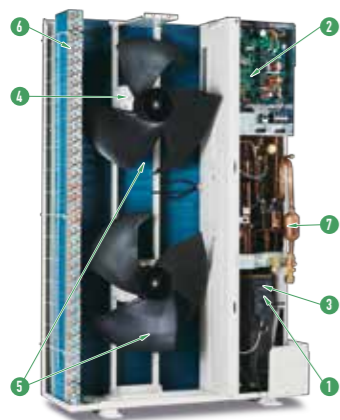


Cooling: -10°C DB ~ 46°C DB

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

### Energy savings design

LE1 LE2

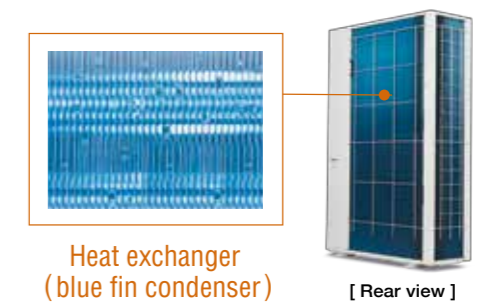


- 1 Panasonic Inverter Compressor** A large-capacity inverter compressor has been adopted. The inverter compressor is superior in performance with improved partial-load capacity.
- 2 Printed Circuit Board** The number of PCB is 2 pieces for making maintenance easier.
- 3 Accumulator** A large accumulator 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.

### 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.



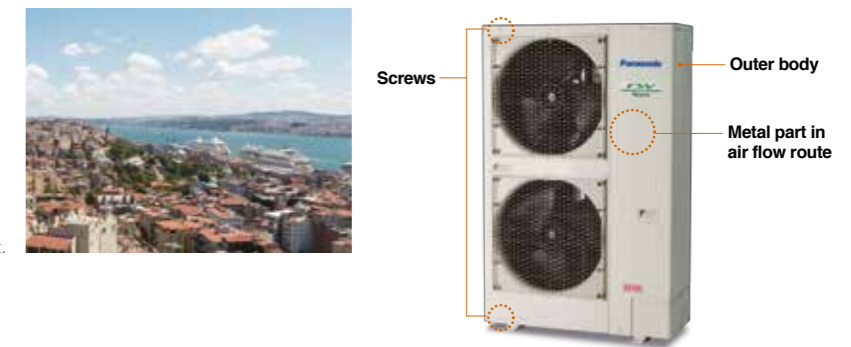
### High durability outdoor unit

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.



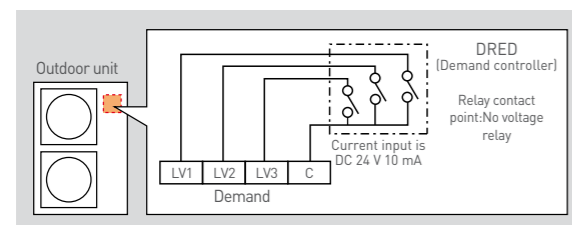
### Flexible demand response with the optional terminal block

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.

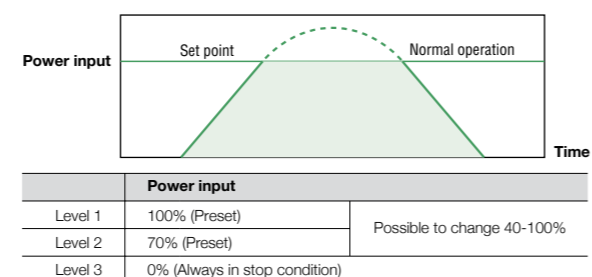
\*Terminal block supplied as optional kit. (CZ-CAPDC3) Please ask you dealer.



#### 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.



### 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-RTC5B/CZ-RTC6 series).



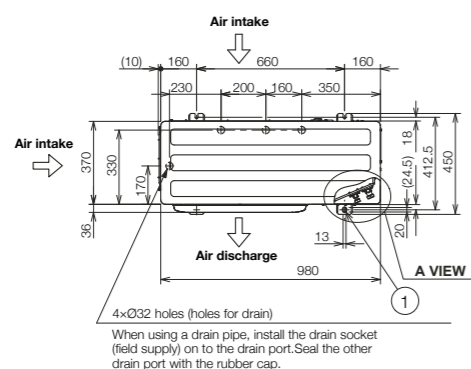
### 2-WAY Mini-FSV LE2 Series

HP	4			4			5			5			6			6					
Model name	U-4LE2H4			U-4LE2H7			U-5LE2H4			U-5LE2H7			U-6LE2H4			U-6LE2H7					
Power supply	220/230/240V/1-phase/50Hz 220/230V/1-phase/60Hz			380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz			220/230/240V/1-phase/50Hz 220/230V/1-phase/60Hz			380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz			220/230/240V/1-phase/50Hz 220/230V/1-phase/60Hz			380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz					
Voltage	220V	230V	240V	380V	400V	415V	220V	230V	240V	380V	400V	415V	220V	230V	240V	380V	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								
EER/COP	Cooling		W/W		5.08		5.08		4.61		4.61		4.27		4.27						
	Heating		W/W		5.95		5.95		5.25		5.25		5.08		5.08						
Dimensions	H x W x D			mm			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					
	Electrical ratings	Cooling	Running current	A	11.90	11.40	10.90	3.89	3.69	3.56	15.20	14.50	13.90	4.91	4.67	4.50	18.10	17.30	16.60	5.87	5.57
Power input			kW	2.38	2.38	2.38	2.38	2.38	3.04	3.04	3.04	3.04	3.04	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.63
Heating		Running current	A	10.60	10.10	9.70	3.47	3.29	3.18	15.20	14.60	14.0	4.93	4.68	4.51	16.20	15.50	14.90	5.25	4.99	4.81
		Power input	kW	2.10	2.10	2.10	2.10	2.10	3.05	3.05	3.05	3.05	3.05	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
Starting current	A	1			1			1			1			1			1				
Air flow rate	m <sup>3</sup> / min		69		69		72		72		74		74								
	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		-10°CDB~+46°CDB		-10°CDB~+46°CDB		-10°CDB~+46°CDB		-10°CDB~+46°CDB		-10°CDB~+46°CDB		-10°CDB~+46°CDB		-10°CDB~+46°CDB		-10°CDB~+46°CDB		
	Heating		-20°CWB~+18°CWB		-20°CWB~+18°CWB		-20°CWB~+18°CWB		-20°CWB~+18°CWB		-20°CWB~+18°CWB		-20°CWB~+18°CWB		-20°CWB~+18°CWB		-20°CWB~+18°CWB		-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 (3)	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			
	Rated conditions:		Cooling			Heating															
Global remarks	Indoor air temperature		27°C DB / 19°C WB			20°C DB															
	Outdoor air temperature		35°C DB			7°C DB / 6°C WB															

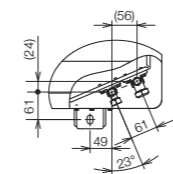
These specifications are subject to change without notice. High durable model (with suffix "E") has same specifications.

### Dimensions

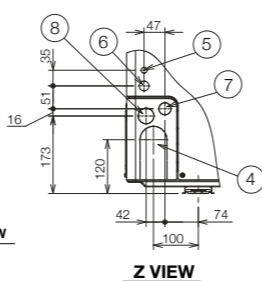
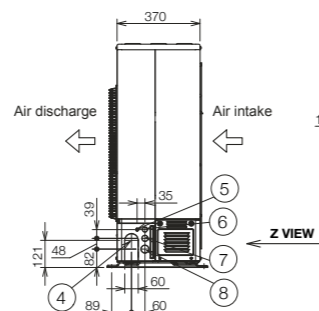
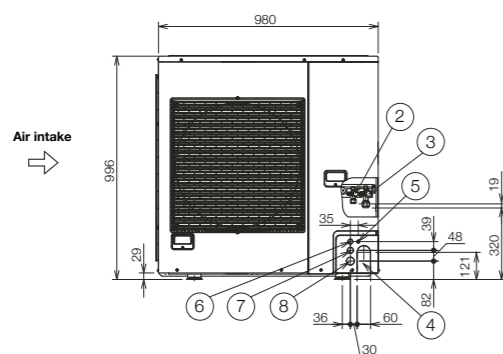
U-4LE2H4 / U-4LE2H7  
U-5LE2H4 / U-5LE2H7  
U-6LE2H4 / U-6LE2H7



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



A VIEW



Unit: mm

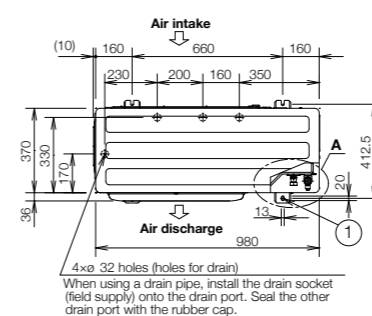
### 2-WAY Mini-FSV LE1 Series

HP	8			10							
Model name	U-8LE1H7			U-10LE1H7							
Power supply	380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz			380/400/415V/3-phase/50Hz 380/400V/3-phase/60Hz							
Voltage	380V	400V	415V	380V	400V	415V					
Capacity	Cooling		kW		22.4		28.0				
	BTU/h		76,500		95,600		95,600				
EER/COP	Cooling		W/W		4.20		3.59				
	Heating		W/W		4.52		4.55				
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	8.70	8.25	7.95	12.7	12.1	11.7		
		Power input	kW	5.33	5.33	5.33	7.8	7.80	7.80		
	Heating	Running current	A	9.05	8.60	8.25	10.0	9.55	9.20		
		Power input	kW	5.53	5.53	5.53	6.15	6.15	6.15		
Starting current	A	1			1			1			
Air flow rate	m <sup>3</sup> / min		150		150		160				
	L/s		2,500		2,500		2,666				
Refrigerant amount at shipment	kg	R410A 6.30			R410A 6.60			R410A 6.60			
Piping connection	Gas pipe	mm (inches)	Ø19.05 (Ø3/4)			Ø22.22 (Ø7/8)			Ø22.22 (Ø7/8)		
	Liquid pipe	mm (inches)	Ø9.52 (Ø3/8)			Ø9.52 (Ø3/8)			Ø9.52 (Ø3/8)		
Ambient temperature operating range	Cooling		-10°CDB~+46°CDB		-10°CDB~+46°CDB		-10°CDB~+46°CDB		-10°CDB~+46°CDB		
	Heating		-20°CWB~+18°CWB		-20°CWB~+18°CWB		-20°CWB~+18°CWB		-20°CWB~+18°CWB		
Sound pressure level (Cooling)	Normal mode	dB(A)	59.0			62.0			62.0		
	Silent mode (3)	dB(A)	52.0			55.0			55.0		
Sound power level (Cooling)	Normal mode	dB(A)	80.0			83.0			83.0		
	Rated conditions:		Cooling			Heating					
Global remarks	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. High durable model (with suffix "E") has same specifications.

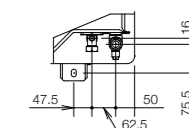
### Dimensions

U-8LE1H7 / U-10LE1H7

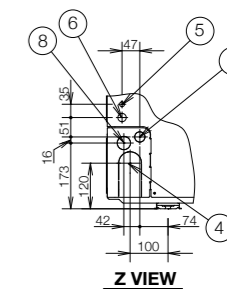
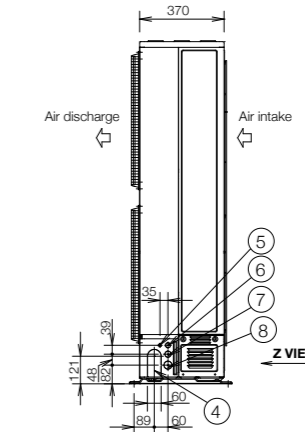
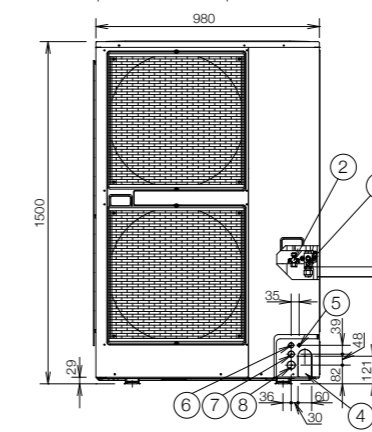


- ① Mounting hole (4-R6.5), anchor bolt : M10
- ② Refrigerant tubing (liquid tube), flared connection (Ø9.52) for 8-10 HP finally.
- ③ Refrigerant tubing (gas tube), flared connection (Ø19.05)
- ④ Refrigerant tubing port
- ⑤ Electrical wiring port (Ø13)
- ⑥ Electrical wiring port (Ø22)
- ⑦ Electrical 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 (brazing).



A VIEW



Z VIEW

Unit: mm



# 2-WAY Mini-FSV LE2 Series

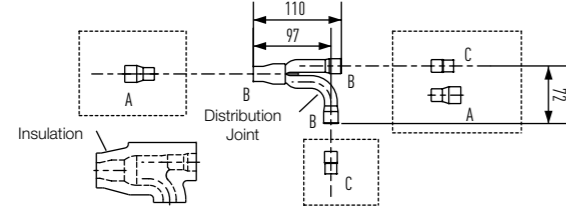
## Distribution Joint Kits

### CZ-P160BK2

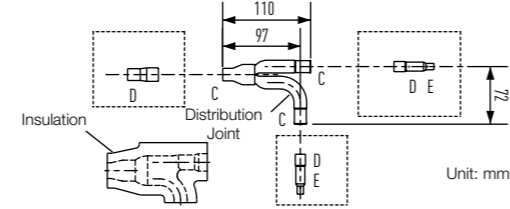
Use: For indoor unit (Capacity after distribution joint is 22.4 kW or less.)\*

\* In case the total capacity of indoor units connected after distribution exceeds the total capacity of the outdoor units, select the distribution piping size for the total capacity of the outdoor units.

#### GAS PIPING



#### LIQUID PIPING



Unit: mm

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

## Wiring System Diagrams (LE2/LE1)

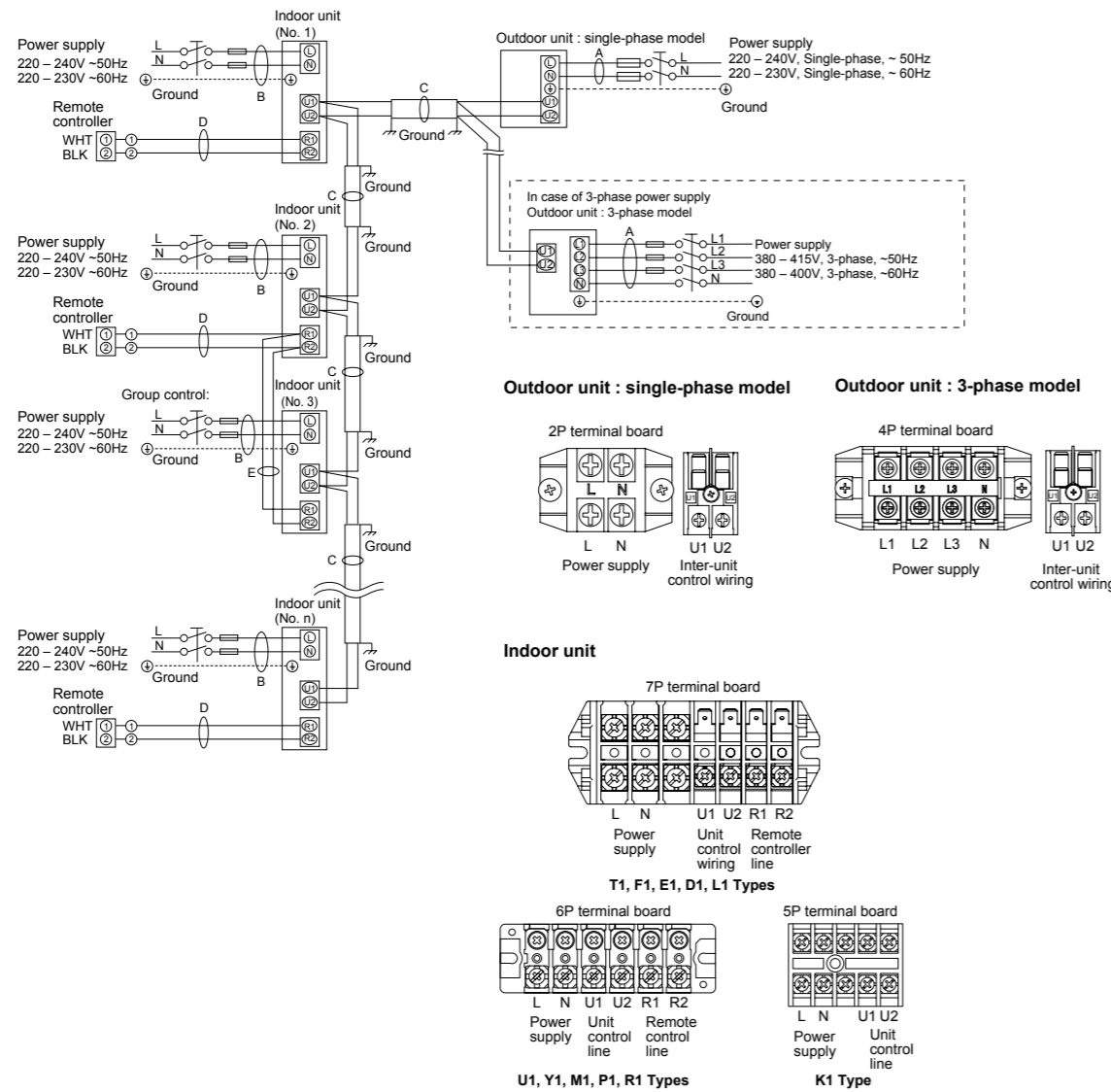
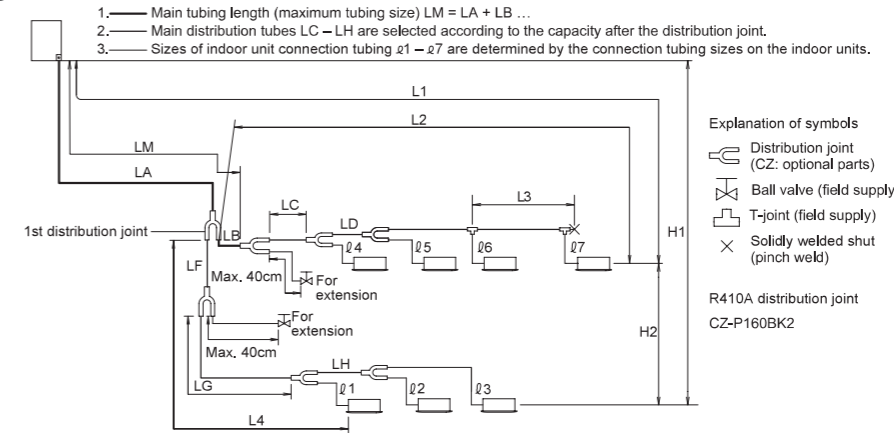


Fig. 2-1

## 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.



- Explanation of symbols
- Distribution joint (CZ: optional parts)
  - Ball valve (field supply)
  - T-joint (field supply)
  - Solidly welded shut (pinch weld)

R410A distribution joint  
CZ-P160BK2

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

Items	Mark	Contents	Length (m)	
			Actual length	Equivalent length
Allowable piping length	L1	Max. piping length	≤150	—
	ΔL (L2 - L4)	Difference between max. length and min. length from the 1st distribution joint	≤175	—
	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	—
	H2	When outdoor unit is installed lower than indoor unit	≤40	—
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	≤15	—
	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 tubing mm (inches)	ø15.88 (ø5/8)	—	—
Flare connection	—	—	—
Liquid tubing mm (inches)	ø9.52 (ø3/8)	—	—
Flare connection	—	—	—

Note :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)	
	Over kW		—	
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

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.

### 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)						

## 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%		

kW = kilowatts

# 2-WAY Mini-FSV LE1 Series

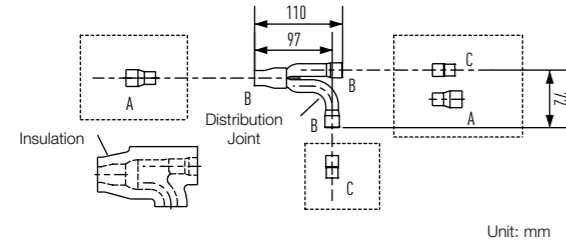
## Distribution Joint Kits

### CZ-P160BK2

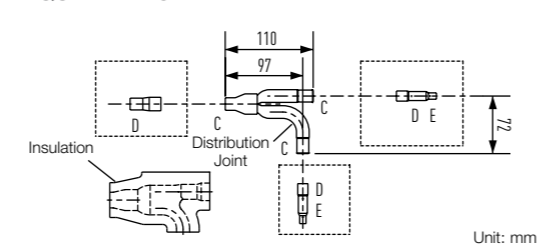
Use: For indoor unit (Capacity after distribution joint is 22.4 kW or less.)\*

\* In case the total capacity of indoor units connected after distribution exceeds the total capacity of the outdoor units, select the distribution piping size for the total capacity of the outdoor units.

#### GAS PIPING



#### LIQUID PIPING



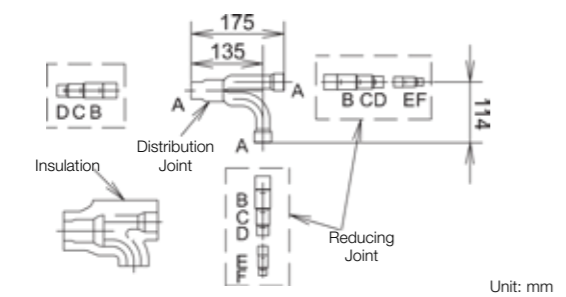
Size of connection point on each part (Shown are inside diameters of tubing)					
Size	Part A	Part B	Part C	Part D	Part E
Dimension (mm)	Ø19.05	Ø15.88	Ø12.70	Ø9.52	Ø6.35
(inches)	Ø3/4	Ø5/8	Ø1/2	Ø3/8	Ø1/4

### CZ-P680BK2

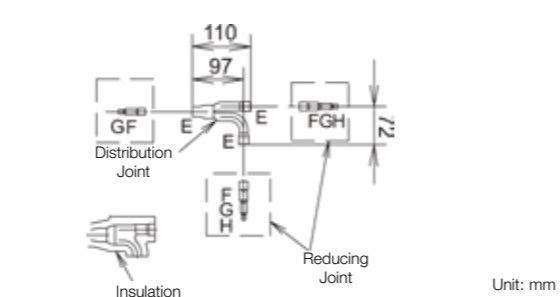
Use: For indoor unit (Capacity after distribution joint is greater than 22.4 kW and no more than 68.0 kW.)\*

\* In case the total capacity of indoor units connected after distribution exceeds the total capacity of the outdoor units, select the distribution piping size for the total capacity of the outdoor units.

#### GAS PIPING



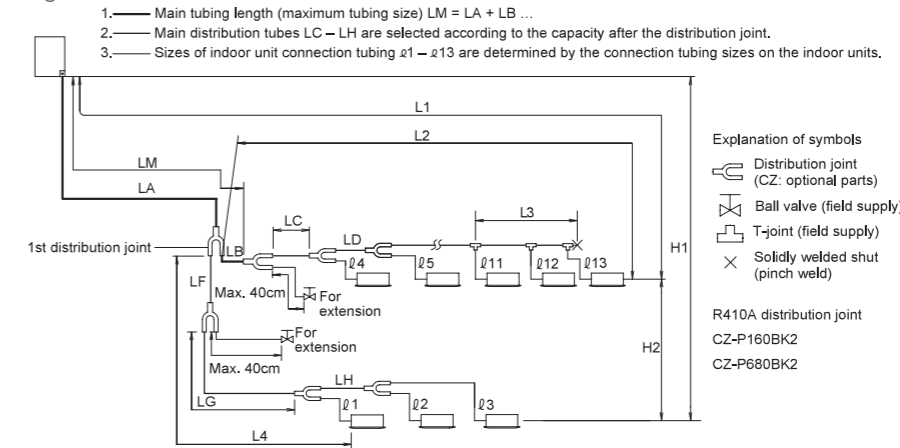
#### LIQUID PIPING



Size of connection point on each part (Shown are inside diameters of piping)								
Size	Part A	Part B	Part C	Part D	Part E	Part F	Part G	Part H
Dimension (mm)	Ø28.58	Ø25.4	Ø22.22	Ø19.05	Ø15.88	Ø12.7	Ø9.52	Ø6.35
(inches)	Ø1-1/8	Ø1	Ø7/8	Ø3/4	Ø5/8	Ø1/2	Ø3/8	Ø1/4

## Piping design

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



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

Items	Mark	Contents	Length (m)	
			Actual length	Equivalent length
Allowable piping length	L1	Max. piping length	≤150	≤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.	—	
	l1, l2- l13	Max. length of each distribution pipe	≤50	
	L1 + l1 + l2- l12 + 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	
	H2	When outdoor unit is installed lower than indoor unit	≤40	
Allowable length of joint piping	L3	Max. difference between indoor units	≤15	
		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 tubing	(mm)	Ø12.7	Ø15.88	Ø19.05	Ø22.22
		(inches)	Ø1/2	Ø5/8	Ø3/4	Ø7/8
	Liquid tubing	(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 (l1, l2...ln-1)

Indoor unit 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%	

# 24-hour 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. As well as this, the Panasonic Comfort Cloud and WLAN smart adaptor (CZ-CAPWFC1) gives you access to your air conditioner anywhere, anytime, so you can turn nanoe™ X on even while you're out and enjoy 24-hour quality air.



\*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>

## 24-hour nanoe™ X air Purification, anywhere, anytime

Actively purifies your air and inhibits pollutants all day long

Get 24 hr Quality Air for you and your loved ones by turning nanoe™ X on using Panasonic Comfort Cloud even when you're out. nanoe™ X functions in both cooling and heating modes and is maintenance-free, helping you keep your costs down with cleaner air.

- nanoe™ X functions in cooling 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.



Please refer to the nanoe™ X website. (In Khmer language)

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

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

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

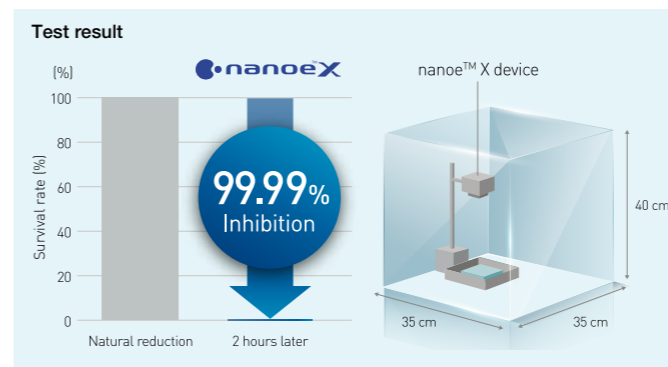
## nanoe™ X device evolution

	nanoe™	nanoe™ X Generator Mark 1	nanoe™ X Generator Mark 2	nanoe™ X Generator Mark 3	Differences in discharge systems Changed from 4-point discharge to circular discharge
Hydroxyl radicals					
		10x times	20x times	100x times	
	0.48 Trillion* hydroxyl radicals/sec	4.8 Trillion* hydroxyl radicals/sec	9.6 Trillion* hydroxyl radicals/sec	48 Trillion* hydroxyl radicals/sec	
Device status					
		Electrostatic atomisation Multi-leader discharge		Electrostatic atomisation Circular discharge	

\* Measured using the ESR (Electron Spin Resonance) method (amount of hydroxyl radicals immediately after release from the generator). (Source: Panasonic internal research)

## nanoe™ X technology inhibits novel coronavirus

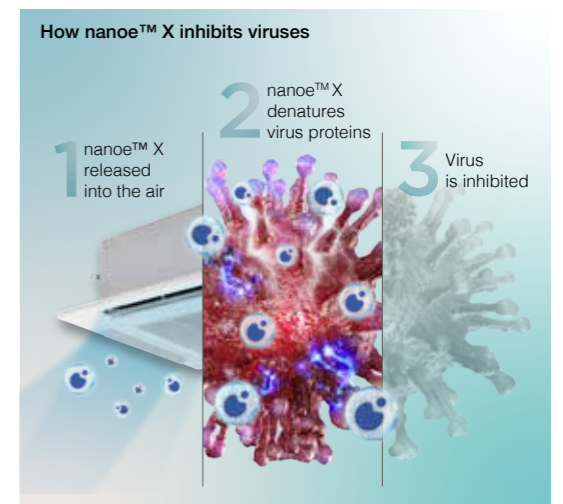
Our nanoe™ X technology has shown to suppress the activity of viruses & bacteria. Enjoy cleaner and quality air at home. Stay safer indoors with nanoe™ X.



### Overview

The objective of this test was to determine if nanoe™ X inhibit the activity of the SARS-CoV-2 virus. Gauze saturated with SARS-CoV-2 virus solution was exposed to a generator of nanoe™ X from a distance of 15 cm in a 45-liter box for 2 hours. Over 99.99%\* of the activity of the SARS-CoV-2 virus was inhibited.

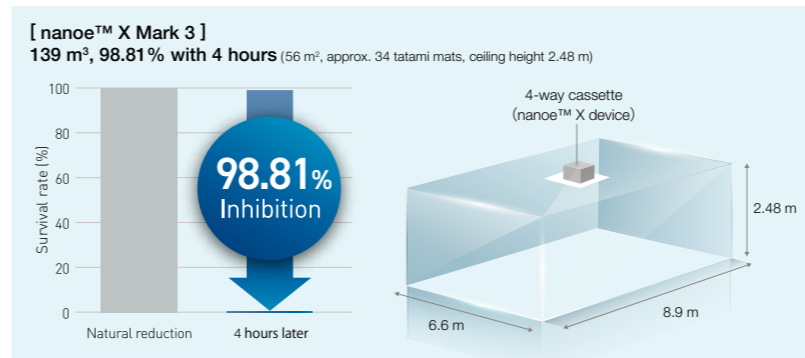
Device type: 10 x nanoe™ X (Mark 1)  
Subject: Novel coronavirus (SARS-CoV-2)  
Test Institute: TEXCELL (France) Test duration: 2 hours



Notes: 1) The virus infectious titer was measured and used to calculate the inhibition rate. 2) This verification was designed to generate basic research data on the effects of nanoe™ X on the novel coronavirus in laboratory conditions. It was not designed to evaluate product performance.

## nanoe™ X Mark 3 achieves virus inhibition in a larger space in a shorter time

Mark 3 (100 x) Device: 4-Way Cassette Large-Space Test for Adherent Virus (Bacteriophage)  
In a large space of 139 m<sup>3</sup> (56 m<sup>2</sup>), a 98.81% inhibition rate was achieved in 4 hours.



Please refer to the nanoe™ X website for the Mark 3 information.

Device type: nanoe™ X Generator Mark 3  
Subject: Adhesive virus (coliphage)  
Indoor unit: 4-way cassette  
Test Institute: SGS Inc  
Test duration: 4 hours  
Report No.: SHES210901902584

# Indoor Units

Wide choice of models depending on the indoor requirements

## Key Indoor Units Equipped DC motors



### Simplified Wired Remote Controller



CZ-RTC6W



CZ-RTC6

#### Simple and Sophisticated Design In-and-Out

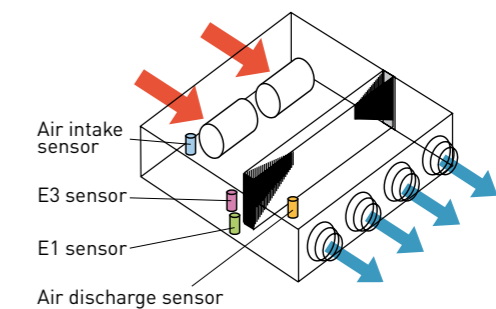
User friendly interface with stylish design measuring just 86 x 86 mm, this is an extremely compact remote controller which looks great in any room.



### 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.

### High-spec Wired Remote Controller



CZ-RTC5B

#### Large 3.5" full-dot LCD with white LED backlight

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



#### Stylish, easy-to-use touch key design

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



### 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.



NEW

# F3 TYPE Mid Static Adaptive Ducted



nanoe™ X Generator Mark3



Please refer to the nanoe™ X website for the Mark 3 information.

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-22MF3E5AN / S-28MF3E5AN / S-36MF3E5AN / S-45MF3E5AN / S-56MF3E5AN



S-60MF3E5AN / S-73MF3E5AN / S-90MF3E5AN



S-112MF3E5AN / S-140MF3E5AN / S-160MF3E5AN

Optional accessory

ECONAVI ECONAVI ready

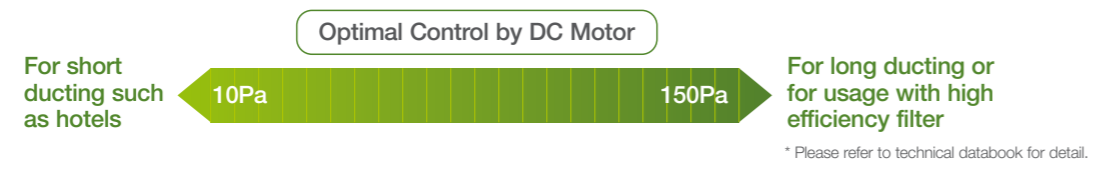


## Technical focus

- 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 : 100x for CAC (100 times more nanoe™ particle for wide commercial space)
- Accurate temperature control to reduce cold drafts during operation

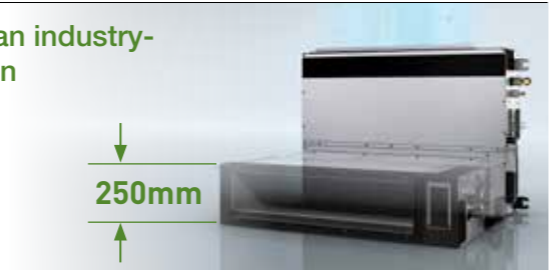
## Variable external static pressure control

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



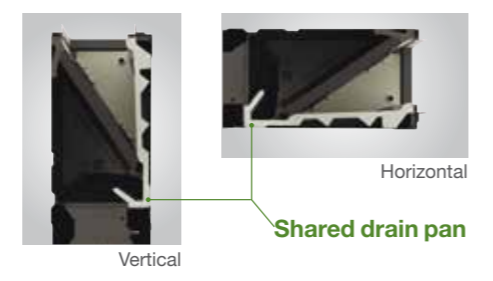
## Powerful 150Pa external static pressure in an industry-leading horizontal/vertical installation design

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.



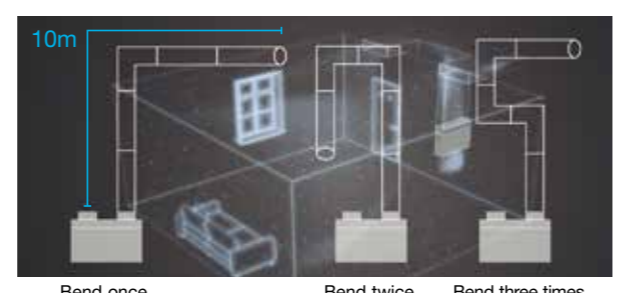
## Improved drain pan design

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

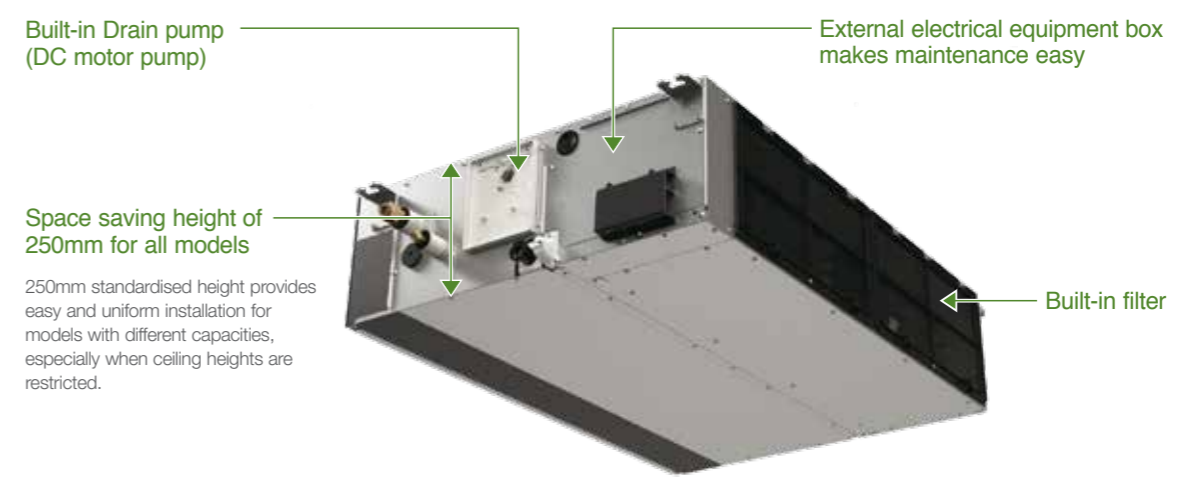


## Superior Air Quality

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.

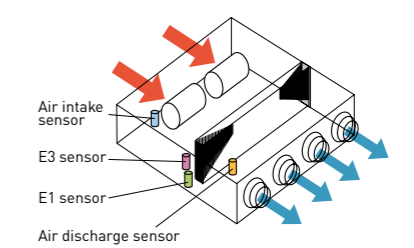


Bend once, Bend twice, Bend three times. As the experiments demonstrate, even with a total ductwork length of up to 10m, effectiveness of nanoe™ X is maintained.



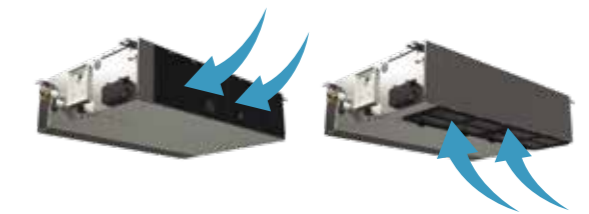
## Discharge air temperature control

- 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.



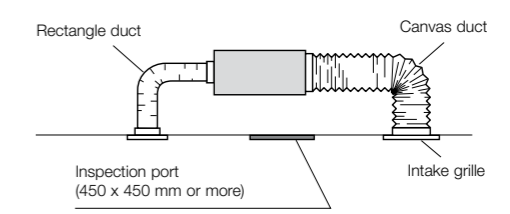
## Selectable air inlet position

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



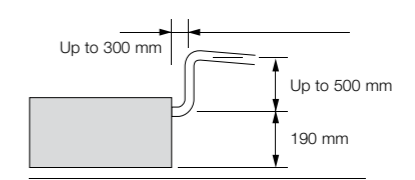
## System example

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 690 mm from the base of the unit.

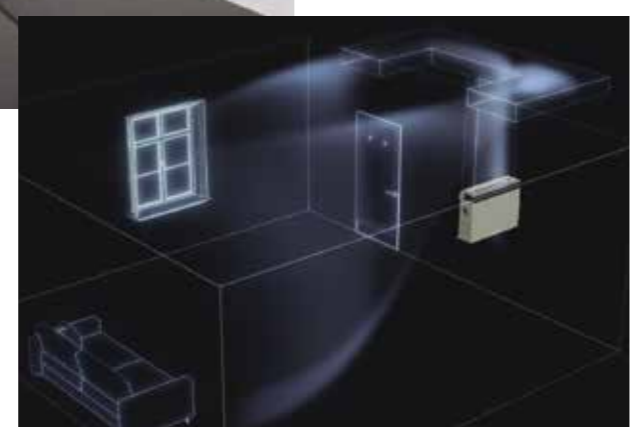


# F3 TYPE Mid Static Adaptive Ducted

Model Name	S-22MF3E5AN	S-28MF3E5AN	S-36MF3E5AN	S-45MF3E5AN	S-56MF3E5AN	
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
	Cooling m³/h	768/660/480	768/660/480	840/720/480	840/720/480	960/840/600
	Air flow rate (H/M/L) L/s	213/183/133	213/183/133	233/200/133	233/200/133	267/233/167
	Heating m³/h	840/720/480	840/720/480	840/720/480	840/720/480	960/840/600
	Air flow rate (H/M/L) 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
	Liquid mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Pipe connections 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	

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.

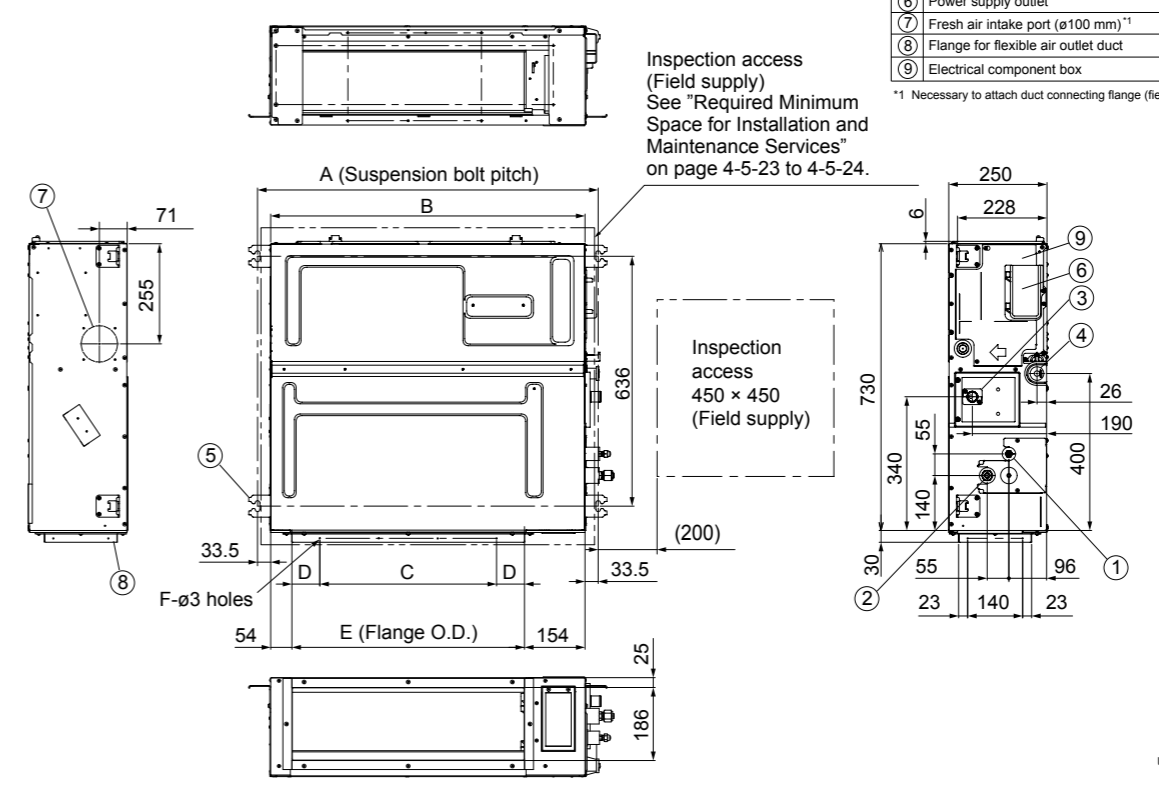


S-60MF3E5AN	S-73MF3E5AN	S-90MF3E5AN	S-112MF3E5AN	S-140MF3E5AN	S-160MF3E5AN
220/230/240 V, 1 phase - 50/60 Hz					
6.0	7.3	9.0	11.2	14.0	16.0
20,500	24,900	30,700	38,200	47,800	54,600
7.1	8.0	10.0	12.5	16.0	18.0
24,200	27,300	34,100	42,700	54,600	61,400
0.079/0.079/0.079	0.079/0.079/0.079	0.136/0.136/0.136	0.265/0.265/0.265	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	0.265/0.265/0.265	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	1.80/1.76/1.72	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	1.80/1.76/1.72	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	2,220/1,920/1,560	2,220/1,920/1,560	2,400/2,040/1,680
350/300/250	350/300/250	417/383/267	617/533/433	617/533/433	667/567/467
1,260/1,080/900	1,260/1,080/900	1,500/1,380/960	2,220/1,920/1,560	2,220/1,920/1,560	2,400/2,040/1,680
350/300/250	350/300/250	417/383/267	617/533/433	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)	50 (10-150)	50 (10-150)	50 (10-150)
54/51/46	54/51/46	58/56/48	64/59/55	64/59/55	66/60/56
31/28/23	31/28/23	35/33/25	41/36/32	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

## F3 TYPE MID STATIC DUCTED Dimensions

Type	A	B	C	D	E	F	Air intake port size
	mm	mm	mm	mm	mm	Q'ty	mm
22/28/36/45/56	867	800	450 (Pitch 150 x 3)	71	592	12	204 x 683
60/73/90	1,067	1,000	750 (Pitch 150 x 5)	21	792	16	204 x 883
112/140/160	1,467	1,400	1,050 (Pitch 150 x 7)	71	1,192	20	204 x 1,283

- ① Refrigerant tubing joint (liquid tube)  
S-22/28/36/45/56MF3E5AN : Φ6.35 (flared)  
S-60/73/90/112/140/160MF3E5AN : Φ9.52 (flared)
  - ② Refrigerant tubing joint (gas tube)  
S-22/28/36/45/56MF3E5AN : Φ12.7 (flared)  
S-60/73/90/112/140/160MF3E5AN : 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 x 30 mm)
  - ⑥ Power supply outlet
  - ⑦ Fresh air intake port (ø100 mm)<sup>\*1</sup>
  - ⑧ Flange for flexible air outlet duct
  - ⑨ Electrical component box
- <sup>\*1</sup> Necessary to attach duct connecting flange (field supply).



unit: mm

# M1<sub>TYPE</sub> Slim Low Static Ducted Concealed duct

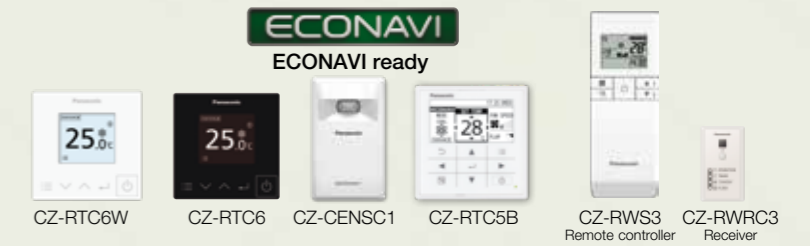


The ultra slim M1 type is one of the leading products of its type in the industry. With a height of only 200 mm, it provides greater flexibility and adaptability for various applications. In addition, high efficiency and extreme low noise level make it highly suitable for hotels and small offices.



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

Optional accessory



## 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.

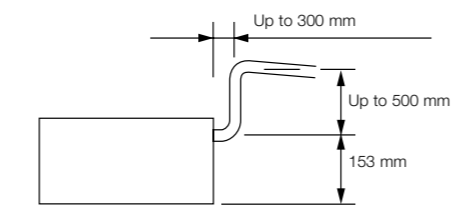
## Ultra-slim profile for all models

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.

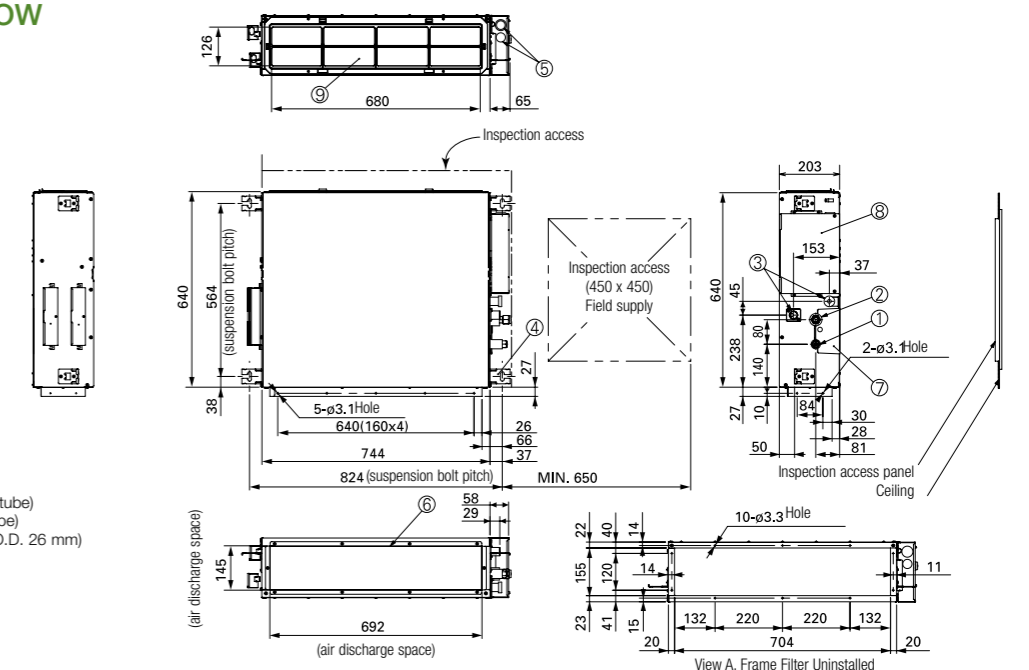


Model Name		S-22MM1E5A	S-28MM1E5A	S-36MM1E5A	S-45MM1E5A	S-56MM1E5A
Power source		220/230/240 V, 1 phase - 50/60 Hz				
Cooling capacity	kW	2.2	2.8	3.6	4.5	5.6
	BTU/h	7,500	9,600	12,300	15,400	19,100
Heating capacity	kW	2.5	3.2	4.2	5.0	6.3
	BTU/h	8,500	10,900	14,300	17,100	21,500
Power input	Cooling kW	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				
	Air flow rate (H/M/L) m <sup>3</sup> /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				
	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				
	Liquid mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Pipe connections	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				
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



# Z1 TYPE Slim Low Static Ducted Twenty Series 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.



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

Optional accessory



## 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 drainage pump, the drain piping rise height can be increased up to 1,000 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	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco 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		200x830x500	200x830x500	200x830x500	200x830x500	200x830x500	200x830x500	200x1,050x550
	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)
Pipe connections mm (inches)	Gas	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

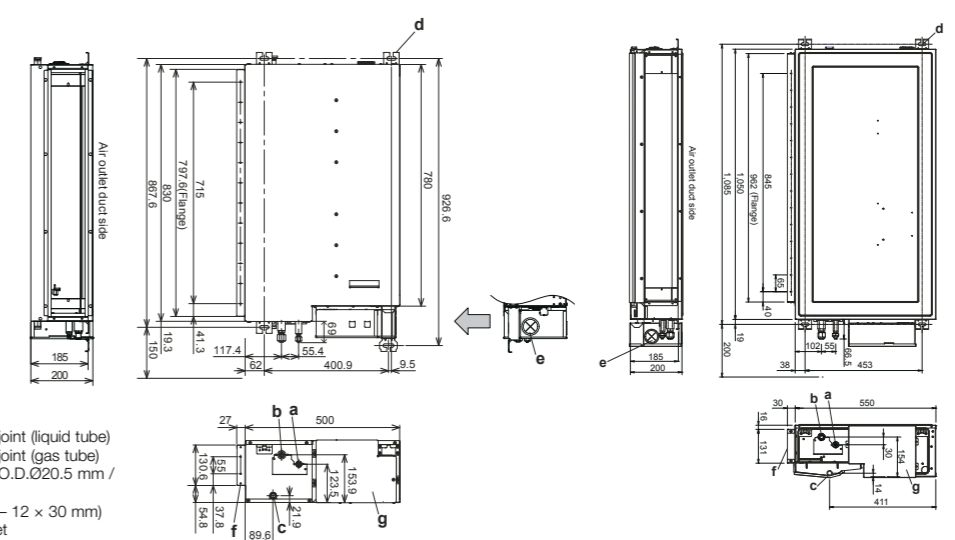
GLOBAL REMARKS	Rated conditions:	
	Cooling	Heating
	Indoor air temperature 27°C DB / 19°C WB	20°C DB
	Outdoor air temperature 35°C DB / 24°C WB	7°C DB / 6°C WB

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 x 30 mm)
- e) Power supply outlet
- f) Flange for flexible air outlet duct
- g) Electrical component box

unit: mm

# E2 TYPE High Static Ducted

## Concealed duct / Air conditioning mode

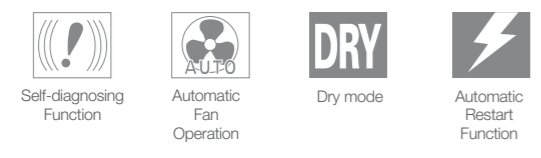
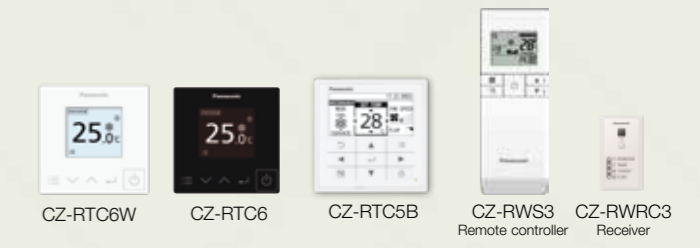


High static and large airflow ducted for exceptional installation flexibility.



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

Optional accessory

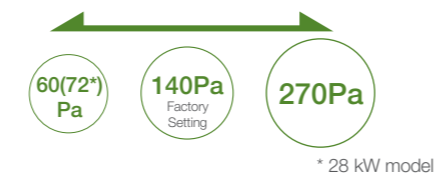


### Technical focus

- 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.



### 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  $\phi$  7mm pipe that increases the heat transfer surface to improve sensible cooling (5-10% improvement)

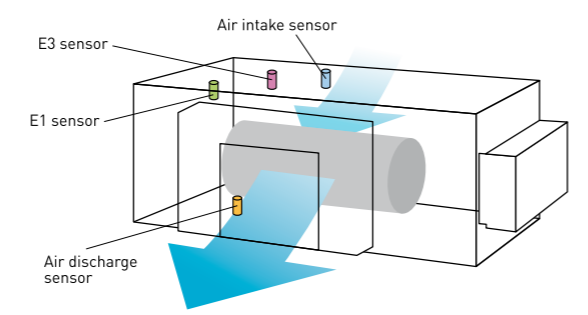
### No Rap Valve Kit required

Thanks to improved performance, a Rap Valve Kit (CZ-P160RVK2) is no longer required.



### 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.

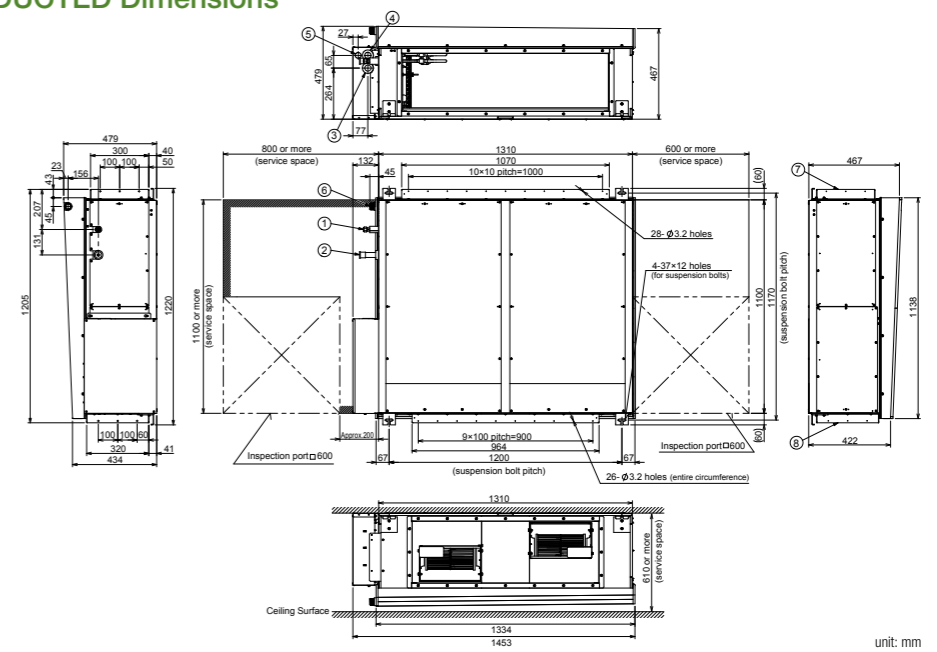


Model Name		S-180ME2E5	S-224ME2E5	S-280ME2E5
Power source		220/230/240 V, 1 phase - 50 Hz, 220/230 V, 1 phase - 60 Hz		
Cooling capacity	kW	18.0	22.4	28.0
	BTU/h	61,400	76,400	95,500
Heating capacity	kW	20.0	25.0	31.5
	BTU/h	68,200	85,300	107,500
Power input	Cooling kW	0.400	0.440	0.715
	Heating kW	0.400	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		
	Air flow rate (H/M/L) m <sup>3</sup> /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		
	External static pressure Pa	140 (60/270)		
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		
Pipe connections	Liquid inches (mm)	Ø9.52 (3/8)		
	Gas inches (mm)	Ø19.05 (3/4)		
	Drain piping	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

Concealed duct high-static pressure

High static and large airflow ducted for exceptional installation flexibility.



S-224ME2E5 / S-280ME2E5

Optional accessory

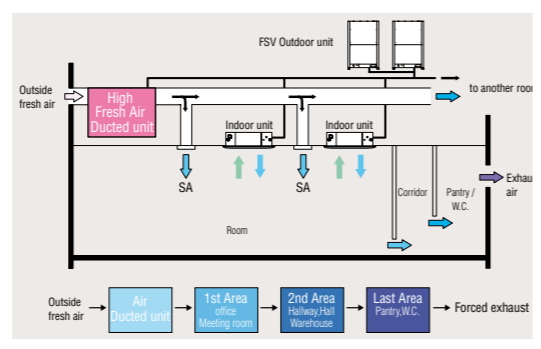


### Technical focus

- 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.

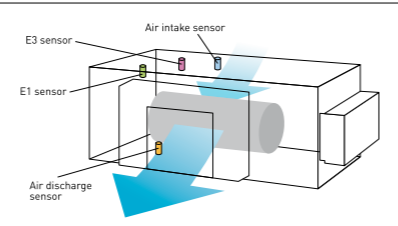


### Mix operation unit with standard indoor units

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.



### Remark For High Static Ducted Series

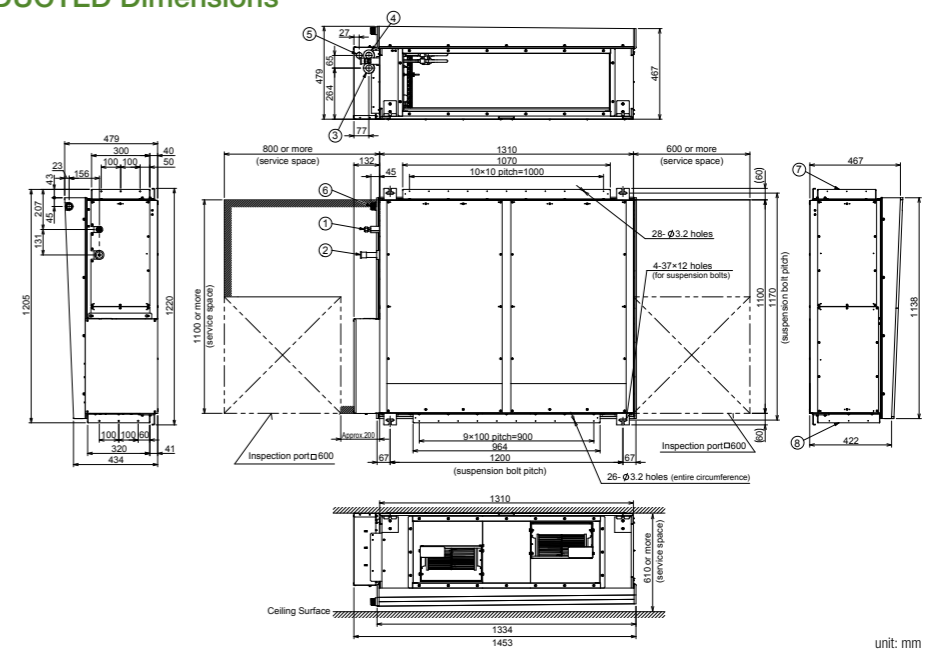
Model	Operation	Rap valve kit CZ-P160RVK2	3way control PCB CZ-CAPE2	3way valve kit CZ-P160HR3	Distribution Joint kit <2pipes> CZ-P160BK2 for 22.4kW unit or less CZ-P680BK2 for more than 22.4kW	Distribution Joint kit <3pipes> CZ-P224BH2 for 22.4kW unit CZ-P680BH2 for 28.0kW unit
E2 Type Energy Saving 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	
	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	
	Liquid inches (mm)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
Pipe connections	Gas inches (mm)	Ø19.05 (Ø3/4)	Ø22.22 (Ø7/8)
	Drain piping	VP-25	
Net weight	kg	102	106

GLOBAL REMARKS: Rated conditions: Cooling 33°C DB / 28°C WB, Heating 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



# E1 TYPE High Static Ducted

## Concealed duct high-static pressure

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

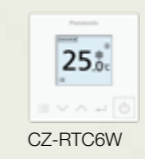


S-73ME1E5/S106ME1E5/S-140MH1H5

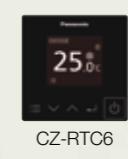


S-224ME1E5 / S-280ME1E5

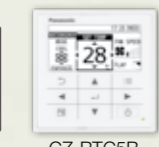
### Optional accessory



CZ-RTC6W



CZ-RTC6



CZ-RTC5B



Optional Controller  
Wireless remote controller  
CZ-RWS3 + CZ-RWRC3



Self-diagnosing Function



Automatic Fan Operation



Dry mode



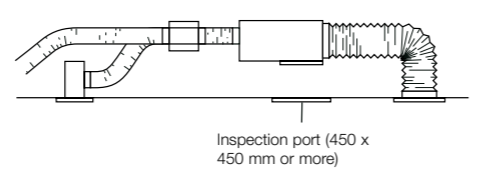
Automatic Restart Function

### Technical focus

- Complete flexibility for ductwork design
- Can be located into a weatherproof housing for external installation
- Discharge air temperature control to reduce cold drafts during heating operation
- Configurable air temperature control

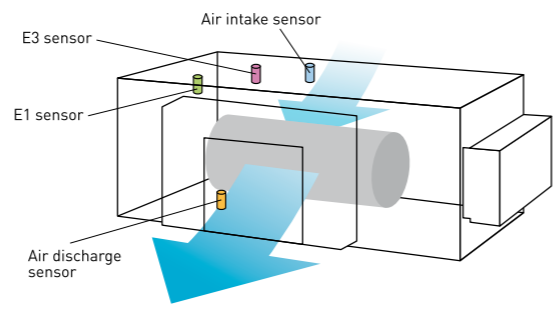
### System example

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



### 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.



### Remark For High Static Ducted Series

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
E1 Type High Static Ducted (Only for S-224,S-280)	Cooling Only	-	-	-	-	-
	Cool or Heat	2pcs	-	-	2pcs	-
	Heat Recovery	-	-	2pcs	1pc	1pc

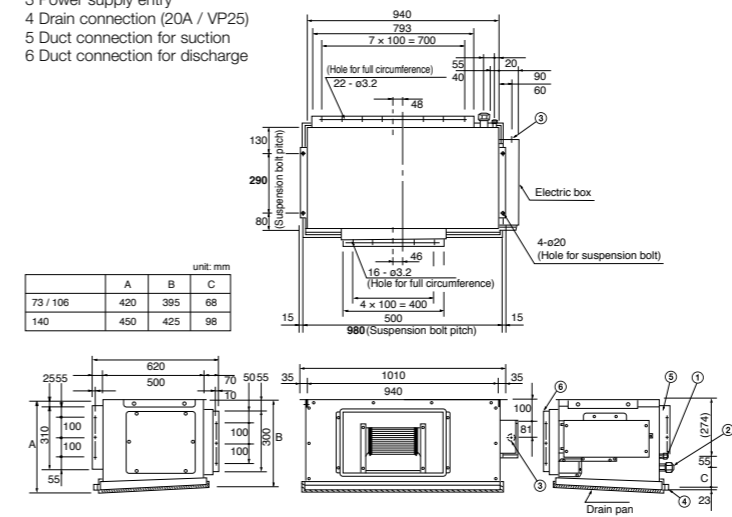
Model Name		S-73ME1E5	S-106ME1E5	S-140ME1E5	S-224ME1E5	S-280ME1E5	
Power source		220/230/240 V, 1 phase - 50/60 Hz				220/230/240 V, 1 phase - 50 Hz	
Cooling capacity	kW	7.3	10.6	14.0	22.4	28.0	
	BTU/h	25,000	36,000	47,800	76,400	95,500	
Heating capacity	kW	8.0	11.4	16.0	25.0	31.5	
	BTU/h	27,000	39,000	54,600	85,300	107,500	
Power input	Cooling kW	0.480/0.505/0.530	0.520/0.545/0.570	0.600/0.660/0.710	0.870/0.900/0.930	1.270/1.330/1.390	
	Heating kW	0.480/0.505/0.530	0.520/0.545/0.570	0.600/0.660/0.710	0.870/0.900/0.930	1.270/1.330/1.390	
Running current	Cooling A	2.29/2.30/2.31	2.46/2.46/2.47	2.80/2.90/3.00	4.05/4.06/4.07	6.04/6.06/6.07	
	Heating A	2.29/2.30/2.31	2.46/2.46/2.47	2.80/2.90/3.00	4.05/4.06/4.07	6.04/6.06/6.07	
Fan	Type	Sirocco fan	Sirocco fan	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	3,360/3,190/2,980	4,320/4,200/3,960
	L/s		383/367/350	500/467/417	600/583/550	933/886/828	1,200/1,167/1,100
	Motor output kW		0.2	0.2	0.35	0.2	0.4
External static pressure Pa		186	176	167	176	216 (235)*	
Sound power level (H/M/L)	dB	55/54/53	56/55/53	58/57/55	59/58/57	62/61/60	
Sound pressure level (H/M/L)	dB(A)	44/43/42	45/44/42	47/46/44	48/47/46	51/50/49 (52/51/50)*	
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	479 x 1,428 x 1,230	479 x 1,428 x 1,230
	Liquid	mm (inches)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
Pipe connections	Gas	mm (inches)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø19.05 (Ø3/4)	Ø22.22 (Ø7/8)
	Drain piping		VP-25	VP-25	VP-25	VP-25	VP-25
Net weight	kg	47	50	54	110	120	

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	

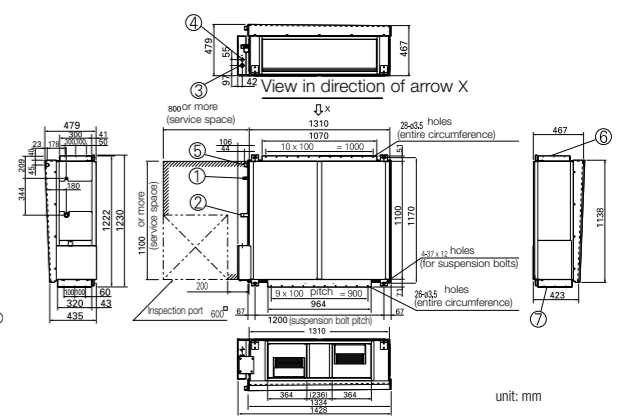
Specifications are subject to be changed without notice.  
\* With booster cable.

### E1 TYPE HIGH STATIC DUCTED Dimensions

- 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



- 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 Drain port 25 A, male thread
- 6 Duct connection for suction
- 7 Duct connection for discharge



# H1 TYPE High-Fresh Air Ducted Concealed duct

High static and large airflow ducted for exceptional installation flexibility.



Optional accessory

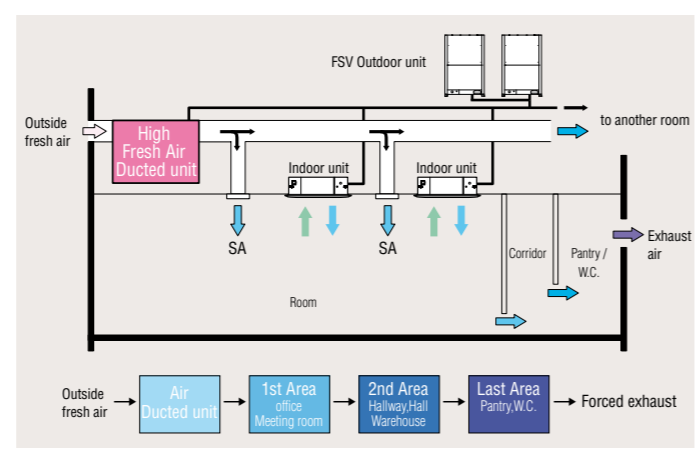


### Technical focus

- 100% fresh Air intake for ventilation purpose
- Design flexibility thanks to high static pressure and large air volume
- 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.



Model Name		S-140MH1H5	S-224MH1H5	S-280MH1H5
Power source		220/230/240 V, 1 phase - 50 Hz		
Cooling capacity	kW	14.0	22.4	28.0
	BTU/h	47,800	76,400	95,500
Heating capacity	kW	13.2	21.2	26.5
	BTU/h	45,000	72,300	90,400
Power input	Cooling kW	0.430/0.430/0.430	0.670/0.670/0.670	0.730/0.730/0.730
	Heating kW	0.430/0.430/0.430	0.670/0.670/0.670	0.730/0.730/0.730
Running current	Cooling A	2.0/1.9/1.9	3.2/3.1/3.0	3.6/3.4/3.3
	Heating A	2.0/1.9/1.9	3.2/3.1/3.0	3.6/3.4/3.3
Fan	Type	Sirocco fan		
	Air flow rate m³/h	1,560	1,800	2,100
	L/s	433	500	583
	Motor output kW	0.3	0.38	0.38
Sound power level (H/M/L)	dB	75/76/76	78/79/79	79/80/80
Sound pressure level (H/M/L)	dB(A)	43/44/44	46/47/47	47/48/48
Dimensions H x W x D	mm	420 x 1,065 x 620	479 x 1,428 x 1,230	479 x 1,428 x 1,230
	Liquid mm (inches)	Ø9.52 (Ø3/8)	Ø12.7 (Ø1/2)	Ø12.7 (Ø1/2)
Pipe connections	Gas mm (inches)	Ø15.88 (Ø5/8)	Ø25.4 (Ø1)	Ø25.4 (Ø1)
	Drain piping	VP-25		
Net weight	kg	50	110	110

GLOBAL REMARKS	Rated conditions:		Specifications are subject to change without notice.
	Cooling	Heating	
Outdoor air temperature	33°C DB / 28°C WB	0°C DB / -2.9°C WB	

### 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.  
 H1 type/Outdoor unit < 30%, and Total of indoors(incl. H1)/outdoor < 100%

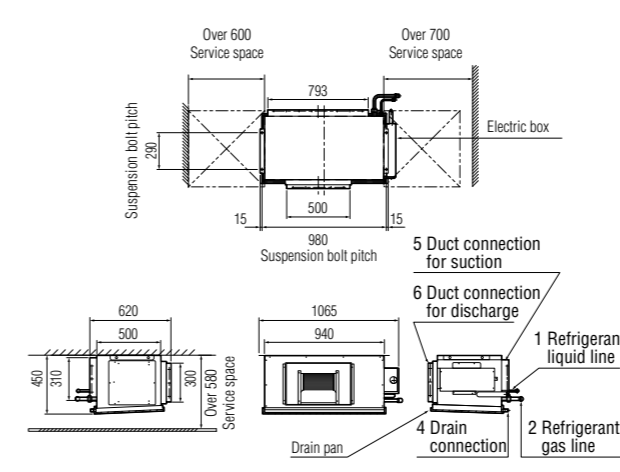
### Remark For High Static Ducted Series

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
H1 Type High-Fresh Air Ducted	Cooling Only	-	-	-	-	-
	Cool or Heat	2pcs	-	-	2pcs	-
	Heat Recovery	-	-	2pcs	1pc	1pc

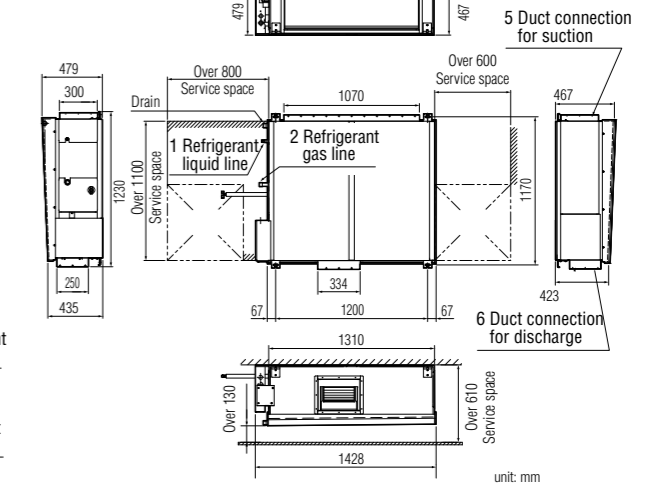
### H1TYPE HIGH-FRESH AIR DUCTED Dimensions

- 1 Refrigerant liquid line
- 2 Refrigerant gas line
- 3 Power supply entry
- 4 Drain connection
- 5 Duct connection for suction
- 6 Duct connection for discharge

#### SIZE 140



#### SIZE 224-280



# K2<sub>TYPE</sub> Wall Mounted



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



\*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)



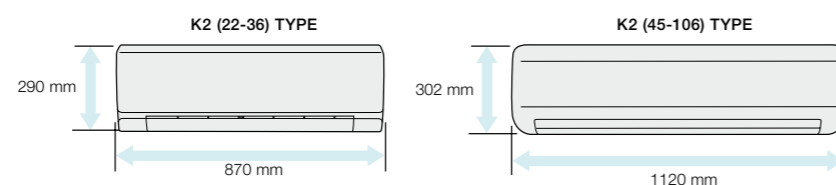
CZ-P56SVK2 (for 22 - 56 type)  
CZ-P160SVK2 (for 73\* - 106 type)

\*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.

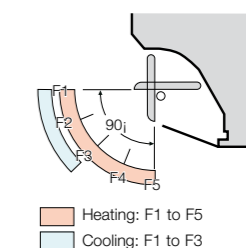
## Washable front panel

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.





**NEW**  
**U2 TYPE 4-Way Cassette**  
Semi concealed cassette



Please refer to the nanoe™ X website for the Mark 3 information.

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



- AIR INTAKE CHAMBER**
- 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.



Optional accessory



**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 : 100x for CAC (100 times more nanoe™ particle for wide commercial space). Inside cleaning by 100x nanoe™ + dry control

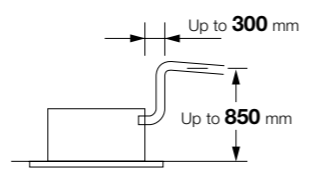
**Flat Horizontal Design**

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



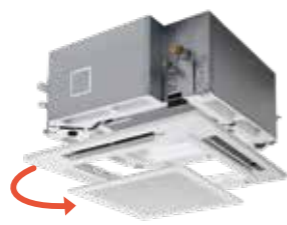
**Drain pump of up to 850 mm from the ceiling surface**

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



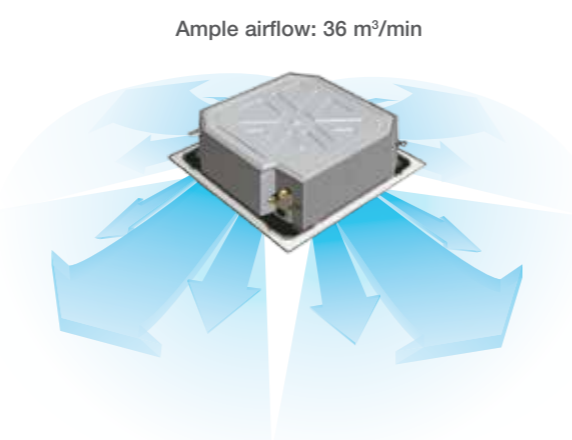
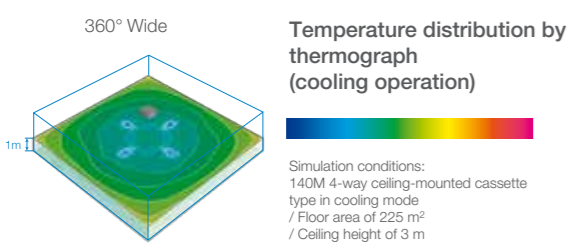
**Easy to clean suction grille**

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.



\*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)

New model	2.7m	3.0m	3.6m
Capacity	2.2-5.6kW	6.0-9.0kW	10.6-16.0kW

10.6-16.0kW	4.5m	4.7m	5m
Capacity	4-way discharge high ceiling setting 2	3-way discharge with the optional air-blocking materials	2-way discharge with the optional air-blocking materials

**Ceiling height guidelines**

Indoor unit	4-way discharge			3-way discharge (optional air-blocking materials)	2-way discharge (optional air-blocking materials) *2
	*1 settings 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



**nanoe™ X Generator Mark 3**

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





# U2<sub>TYPE</sub> 4-WAY Cassette

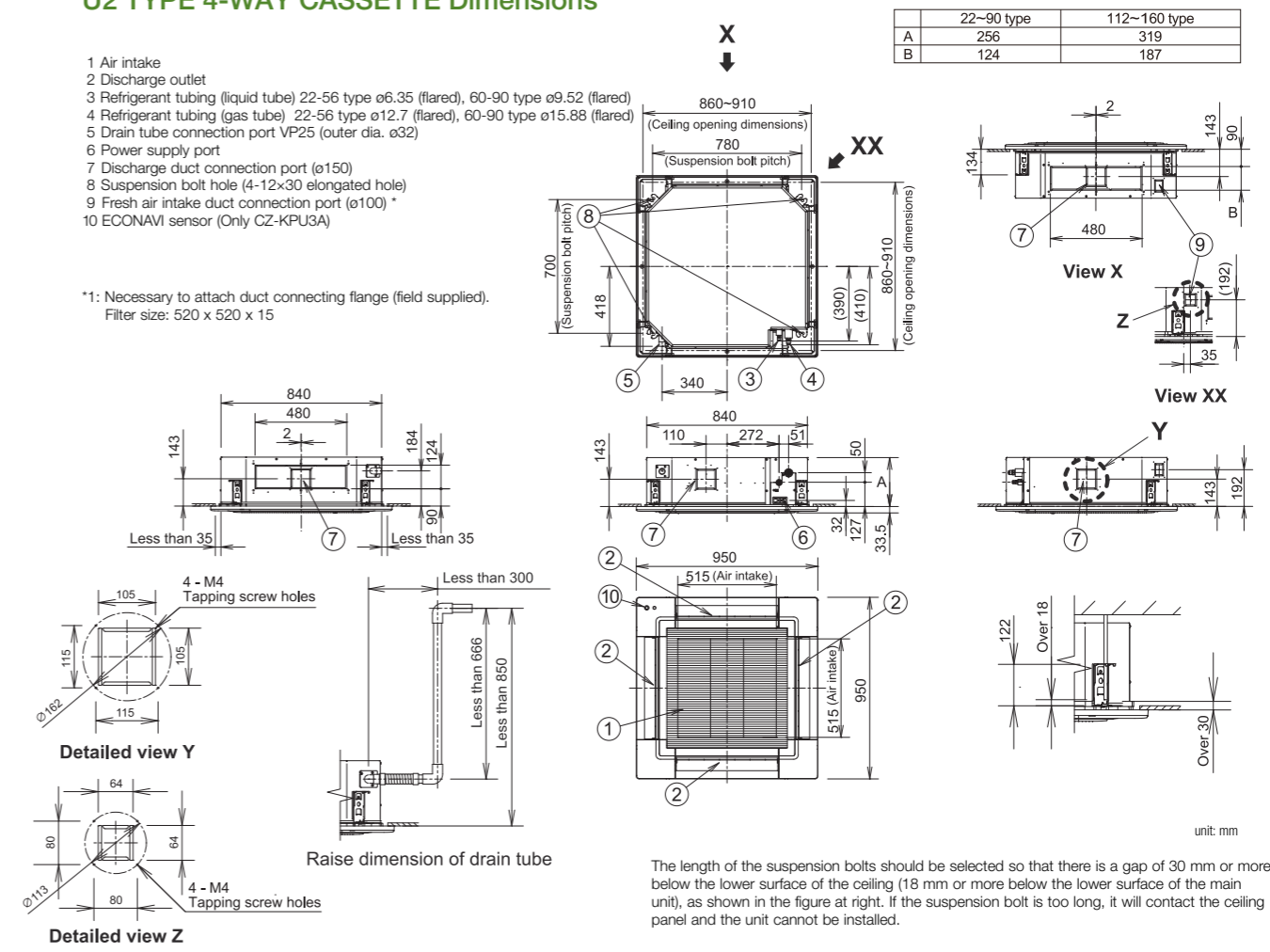
Model Name		S-22MU2E5BN	S-28MU2E5BN	S-36MU2E5BN	S-45MU2E5BN	S-56MU2E5BN	
Power source		220/230/240 V, 1 phase - 50Hz/60Hz					
Cooling capacity	kW	2.2	2.8	3.6	4.5	5.6	
	BTU/h	7,500	9,600	12,300	15,400	19,100	
Heating capacity	kW	2.5	3.2	4.2	5.0	6.3	
	BTU/h	8,500	10,900	14,300	17,100	21,500	
Power input	Cooling kW	0.020/0.020/0.020	0.020/0.020/0.020	0.020/0.020/0.020	0.020/0.020/0.020	0.025/0.025/0.025	
	Heating kW	0.020/0.020/0.020	0.020/0.020/0.020	0.020/0.020/0.020	0.020/0.020/0.020	0.025/0.025/0.025	
Running current	Cooling A	0.21/0.21/0.20	0.21/0.21/0.20	0.21/0.21/0.20	0.21/0.21/0.20	0.24/0.23/0.22	
	Heating A	0.20/0.20/0.19	0.20/0.20/0.19	0.20/0.20/0.19	0.20/0.20/0.19	0.23/0.22/0.21	
Fan	Type	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	
	Air flow rate (H/M/L)	m <sup>3</sup> /h	768/726/690	768/726/690	870/780/690	930/780/690	990/810/690
		L/s	213/202/192	213/202/192	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)	

Global remarks	Rated conditions:	
	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB
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.  
In the case of nanoe X OFF Specifications are subject to change without notice.

S-60MU2E5BN	S-73MU2E5BN	S-90MU2E5BN	S-112MU2E5BN	S-140MU2E5BN	S-160MU2E5BN
220/230/240 V, 1 phase - 50Hz/60Hz					
6.0	7.3	9.0	11.2	14.0	16.0
20,500	24,900	30,700	38,200	47,800	54,600
7.1	8.0	10.0	14.0	16.0	18.0
24,200	27,300	34,100	47,800	54,600	61,400
0.035/0.035/0.035	0.040/0.040/0.040	0.040/0.040/0.040	0.095/0.095/0.095	0.095/0.095/0.095	0.105/0.105/0.105
0.035/0.035/0.035	0.040/0.040/0.040	0.040/0.040/0.040	0.090/0.090/0.090	0.090/0.090/0.090	0.100/0.100/0.100
0.34/0.33/0.32	0.37/0.36/0.35	0.39/0.38/0.37	0.77/0.74/0.71	0.77/0.74/0.71	0.85/0.82/0.79
0.33/0.32/0.31	0.36/0.35/0.34	0.38/0.37/0.36	0.75/0.72/0.69	0.75/0.72/0.69	0.83/0.80/0.77
Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan	Turbo fan
1,260/960/780	1,350/960/780	1,380/1,110/840	2,160/1,560/1,200	2,160/1,560/1,200	2,220/1,680/1,440
350/267/217	375/267/217	383/308/233	600/433/333	600/433/333	617/467/400
0.06	0.06	0.06	0.09	0.09	0.09
51/47/44	52/47/44	53/50/47	60/54/50	60/54/50	61/55/53
36/32/29	37/32/29	38/35/32	45/39/35	45/39/35	46/40/38
319+(33.5) x 840 (950) x 840 (950)					
Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)	Ø9.52 (Ø3/8)
Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)	Ø15.88 (Ø5/8)
VP-25	VP-25	VP-25	VP-25	VP-25	VP-25
20 (+5)	20 (+5)	20 (+5)	25 (+5)	25 (+5)	25 (+5)

## U2 TYPE 4-WAY CASSETTE Dimensions



## Standard Equipped nanoe™ Technology

- 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).



**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 module

Unique nanoe™ X module casing releases 48 trillion hydroxyl radical [OH radical] per second.



nanoe™ X device

# Y3 TYPE 4-Way Mini Cassette

## Mini semi concealed cassette



Designed to fit perfectly into a 60 x 60 cm ceiling grid without the need to alter the bar configuration, the Y3 is ideal for small commercial and retrofit applications. In addition, improvements to the Y3's efficiency make this model one of the most advanced units in the industry.



Please refer to the nanoe™ X website for the Mark 3 information.



Optional accessory

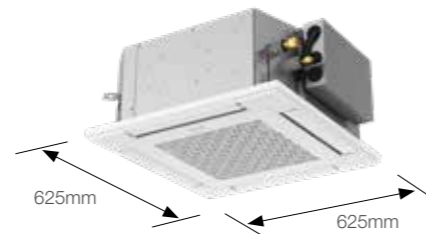


### Technical focus

- Mini cassette fits into a 60 x 60 cm ceiling grid
- DC fan motor with variable speed and a new heat exchanger ensures efficient power consumption
- Powerful drain pump gives 850 mm lift
- Multi-directional air flow
- Easy installation
- nanoe™ X : 100x for CAC (100 times more nanoe™ particle for wide commercial space). Inside cleaning by 100x nanoe™ + dry control

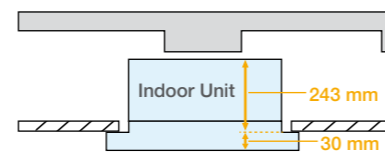
### Compact design

Thanks to advanced Panasonic design the panel is a compact 625 x 625 mm, offering elegant, unobtrusive installation even where space is limited.



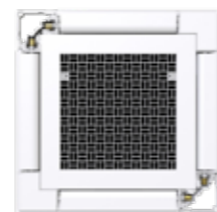
### Lighter and slimmer, easier installation

When only 230 mm of indoor body height, it can easily fit in limited spaces and tight spots. (Required 243 mm from bottom of panel to top of the unit)



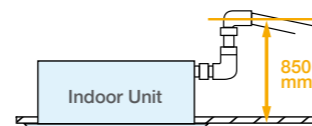
### Individual flap control

Keep everyone comfortable by directing air where it's needed and away from where it isn't with individual flap control.



### A drain height of up to 850 mm from the ceiling surface

The internal pump allows the drain pipe to be elevated up to 850 mm above the base of the unit.

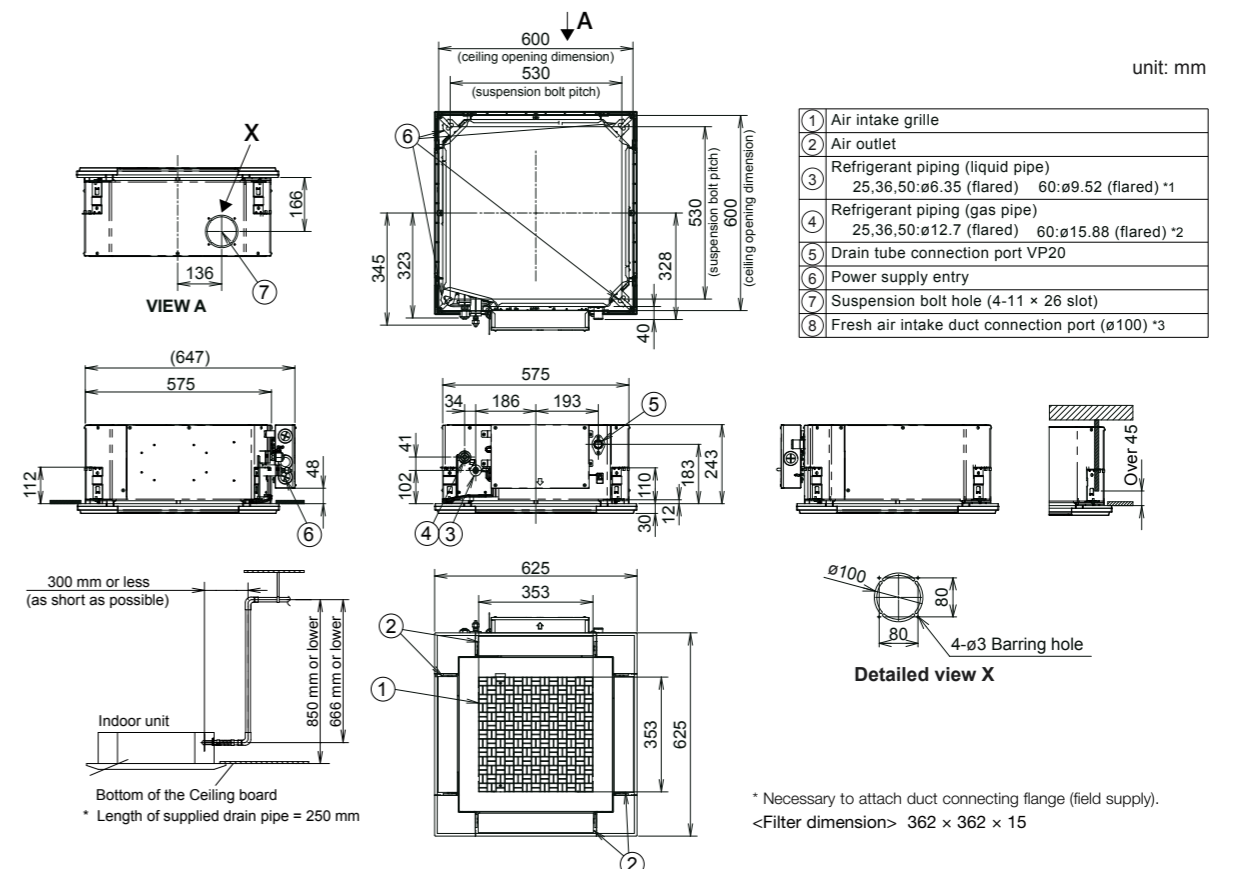


Model Name	S-22MY3E	S-28MY3E	S-36MY3E	S-45MY3E	S-56MY3E	
Power source	220/230/240 V, 1 phase - 50Hz/60Hz					
Cooling capacity	kW	2.2	2.8	3.6	4.5	5.6
	BTU/h	7,500	9,600	12,300	15,400	19,100
Heating capacity	kW	2.5	3.2	4.2	5.0	6.3
	BTU/h	8,500	10,900	14,300	17,100	21,500
Power input	Cooling kW	0.020	0.021	0.022	0.030	0.042
	Heating kW	0.018	0.019	0.020	0.028	0.040
Running amperes	Cooling A	0.25   0.24   0.23	0.26   0.25   0.24	0.27   0.26   0.25	0.35   0.34   0.33	0.44   0.43   0.42
	Heating A	0.22   0.21   0.20	0.23   0.22   0.21	0.24   0.23   0.22	0.32   0.31   0.30	0.41   0.40   0.39
Fan motor	Type	Turbo fan				
	Airflow rate (H/M/L) m³/h	522/420/360	540/450/360	570/468/360	690/540/390	810/630/480
	(H/M/L) L/s	145/117/100	150/125/100	158/130/100	192/150/108	225/175/133
	Output kW	0.03	0.03	0.03	0.03	0.03
Sound power level (H/M/L)	Cooling dB	48/45/43	49/45/43	50/46/43	54/49/45	57/52/48
	Heating dB	48/45/43	49/45/43	50/46/43	54/49/45	57/52/48
Sound pressure level (H/M/L)	Cooling dB(A)	33/30/28	34/30/28	35/31/28	39/34/30	42/37/33
	Heating dB(A)	33/30/28	34/30/28	35/31/28	39/34/30	42/37/33
Dimensions* H x W x D mm		243(+30) x 575(625) x 575(625)	243(+30) x 575(625) x 575(625)	243(+30) x 575(625) x 575(625)	243(+30) x 575(625) x 575(625)	243(+30) x 575(625) x 575(625)
	Liquid mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)
Pipe connections	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	15(+2.8)	15(+2.8)	15(+2.8)	15(+2.8)	15(+2.8)

Global remarks	Rated conditions:	
	Cooling	Heating
	Indoor air temperature	27°C DB / 19°C WB
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.

### Y3 TYPE 4-WAY MINI CASSETTE Dimension



# 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.



### Optional accessory

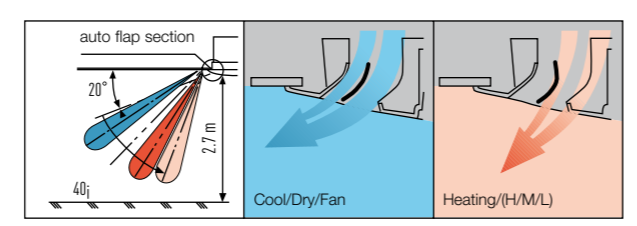


### Technical focus

- 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

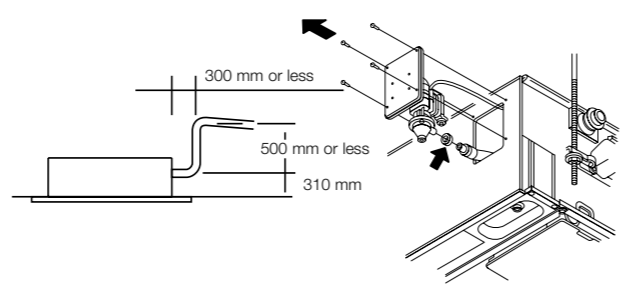
### Auto flap control

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

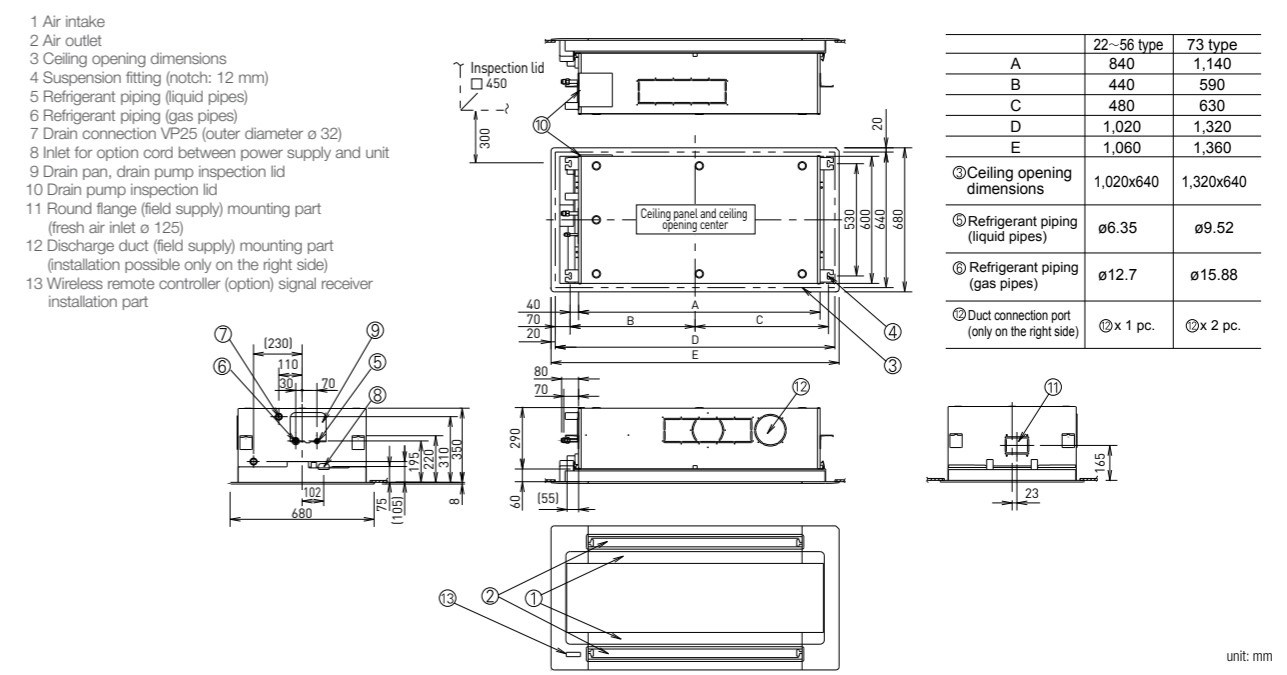
The drain pan is equipped with site wiring and can be removed. The fan case has a split construction, and the fan motor can be removed easily when the lower case is removed.

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)	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+8x840 (1,060) x600 (680)	350+8x840 (1,060) x600 (680)	350+8x840 (1,060) x600 (680)	350+8x840 (1,060) x600 (680)	350+8x840 (1,060) x600 (680)	350+8x 1,140 (1,360) x600 (680)
	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)
Pipe connections	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:		
	Indoor air temperature	Cooling 27°C DB / 19°C WB	Heating 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

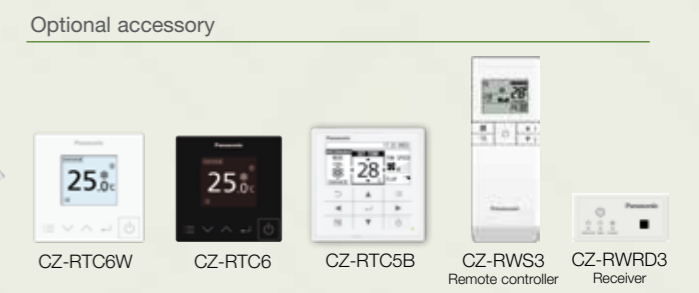


# D1 TYPE 1-Way Cassette

## 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.

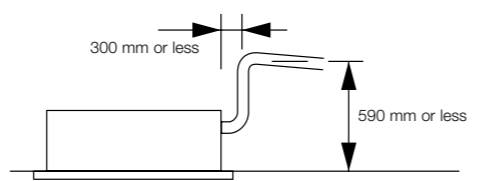


### Technical focus

- 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

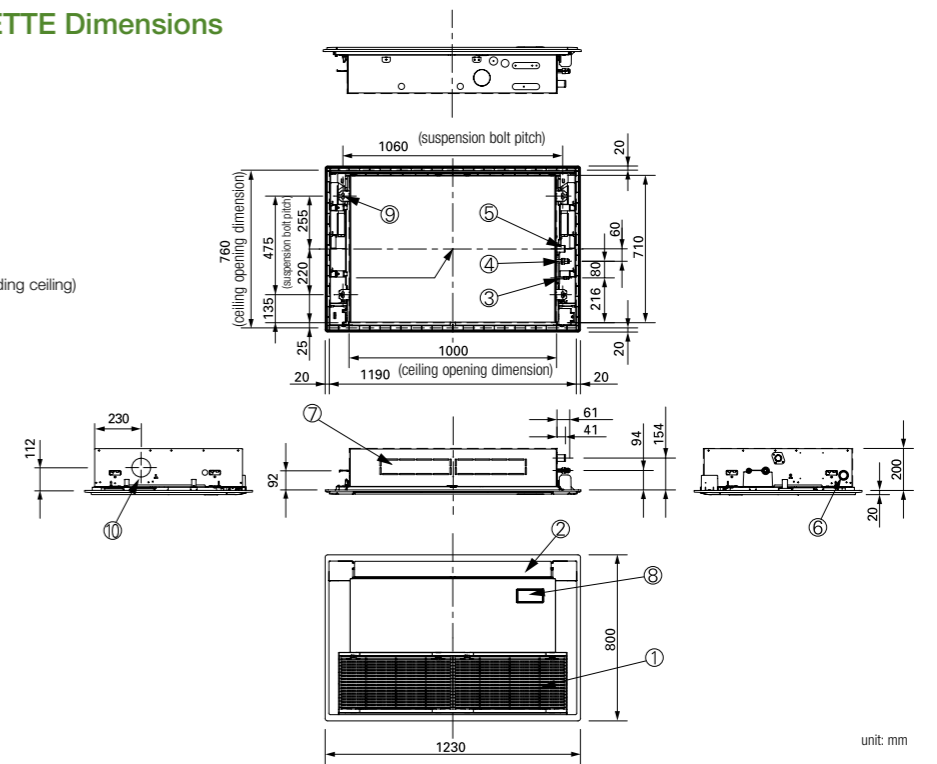
This powerful ceiling-mounted "front-blow" system efficiently air-conditions the space in front of the unit. (Additional accessories required)

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				
	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				
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)
	Liquid mm (inches)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø6.35 (Ø1/4)	Ø9.52 (Ø3/8)
Pipe connections	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				
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)



unit: mm

# T2 TYPE Ceiling Mounted

## 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



- 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

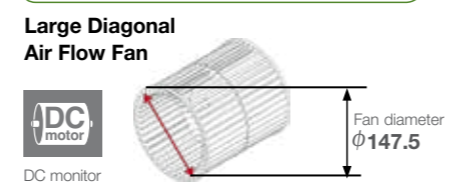
With its streamlined, one-motion form, the unit looks slim and compact when installed for a neat appearance in any room. When not operating, the louver closes to provide an elegant look while keeping the unit clean.



### 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.

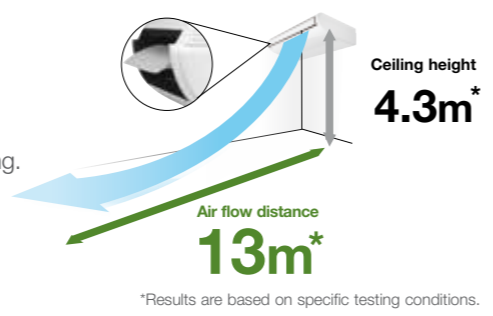
#### Top Class Energy Saving



### Comfortable, Long-Distance Air Flow Distribution

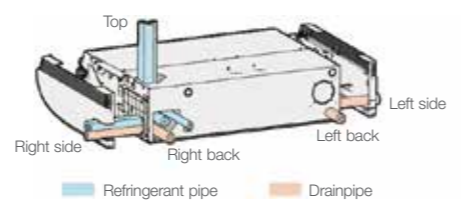
The shape of the outlet has been optimized to provide long-distance air flow distribution. Even in deep spaces, air flow reaches every corner for exceptionally comfortable air conditioning.

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



### 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
	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)
Pipe connections	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:		
	Indoor air temperature	Cooling 27°C DB / 19°C WB	Heating 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 diameter 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)

#### 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

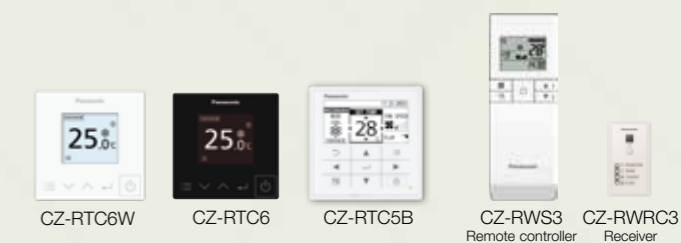
unit: mm

# 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.



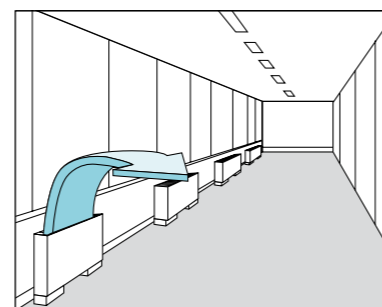
Optional accessory



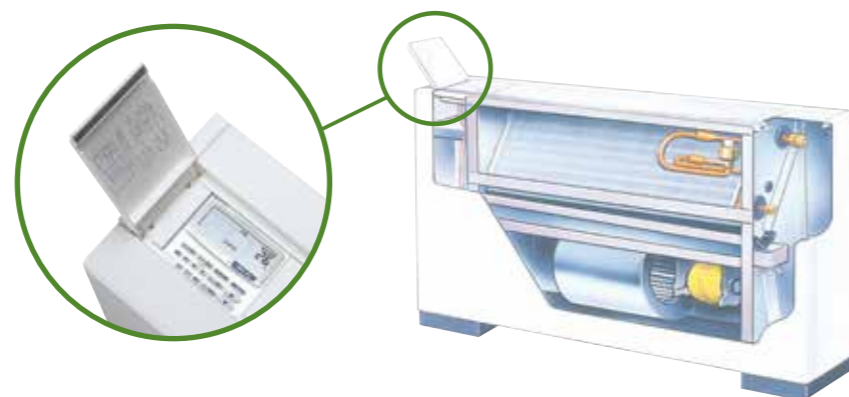
## Technical focus

- 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-RTC4A/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	
	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)
Pipe connections	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	

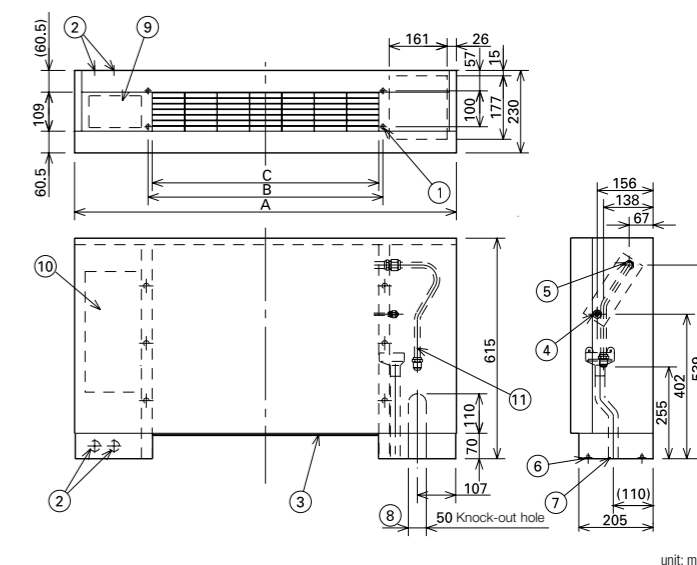
Specifications are subject to change without notice.

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

## 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					



unit: mm

# 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.



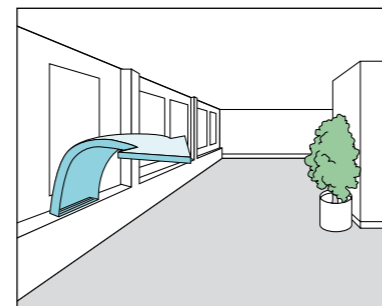
Optional accessory



## Technical focus

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

## Perimeter air conditioning with high interior quality



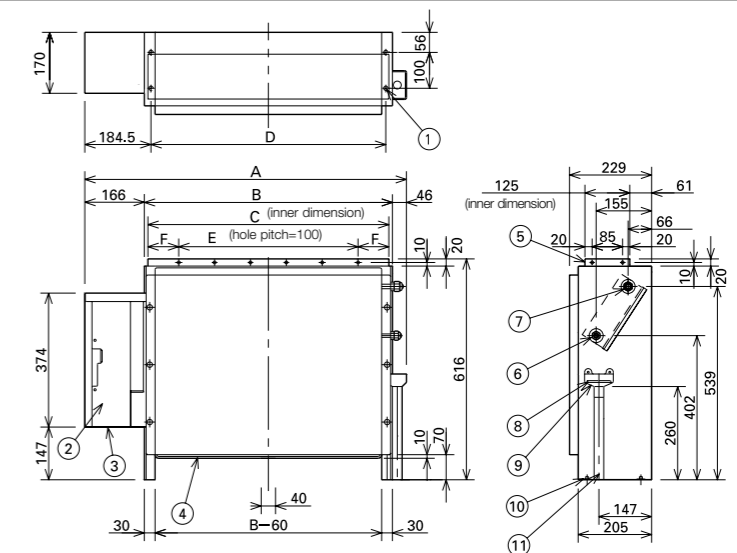
Model Name			S-22MR1E5	S-28MR1E5	S-36MR1E5	S-45MR1E5	S-56MR1E5	S-71MR1E5
Power source			220/230/240 V, 1 phase - 50/60 Hz					
Cooling capacity	kW		2.2	2.8	3.6	4.5	5.6	7.1
	BTU/h		7,500	9,600	12,000	15,000	19,000	24,000
Heating capacity	kW		2.5	3.2	4.2	5.0	6.3	8.0
	BTU/h		8,500	11,000	14,000	17,000	21,000	27,000
Power input	Cooling kW		0.051/0.056/0.061	0.051/0.056/0.061	0.079/0.085/0.091	0.116/0.126/0.136	0.116/0.126/0.136	0.150/0.160/0.170
	Heating kW		0.036/0.040/0.045	0.036/0.040/0.045	0.064/0.070/0.076	0.079/0.091/0.101	0.079/0.091/0.101	0.110/0.120/0.130
Running current	Cooling A		0.24/0.25/0.26	0.24/0.25/0.26	0.37/0.38/0.39	0.54/0.56/0.58	0.54/0.56/0.58	0.70/0.72/0.73
	Heating A		0.17/0.18/0.19	0.17/0.18/0.19	0.30/0.31/0.32	0.37/0.41/0.43	0.37/0.41/0.43	0.52/0.54/0.56
Fan	Type		Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan	Sirocco fan
	Air flow rate (H/M/L)	m³/h	420/360/300	420/360/300	540/420/360	720/540/480	900/780/660	1,020/840/720
		L/s	117/100/183	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
	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)
Pipe connections	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								
56 type	1,219	1,007	1,002	980	900	51	Ø9.52	Ø15.88
71 type								

## Remark for High Static Ducted Series



E2 type  
**High Static Ducted**



E2 type  
**Energy Saving High-Fresh Air Ducted**





E1 type  
**High Static Ducted**



H1 type  
**High-Fresh Air Ducted**



Model	Operation	Rap valve kit <b>CZ-P160RVK2</b> 	3-way control PCB <b>CZ-CAPE2</b> 	Distribution Joint kit <2pipes> <b>CZ-P160BK2</b> for 22.4kW unit or less <b>CZ-P680BK2</b> for more than 22.4kW
E2 Type <b>High Static Ducted</b>	Cooling Only	-	-	-
	Cool or Heat	-	-	-
E2 Type <b>Energy Saving High-Fresh Air Ducted</b>	Cooling Only	-	-	-
	Cool or Heat	2pcs	2pcs	2pcs
E1 Type <b>High Static Ducted</b> (Only for S-224,S-280)	Cooling Only	-	-	-
	Cool or Heat	2pcs	-	2pcs
H1 Type <b>High-Fresh Air Ducted</b>	Cooling Only	-	-	-
	Cool or Heat	2pcs	-	2pcs





# 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 adaptor with the already feature rich systems, makes it an ideal solution for both residential and commercial applications.



## 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.



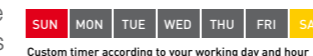
### Multiple User

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.



### 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



## 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



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

# FSV Controllers

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

**ECONAVI**  
**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.

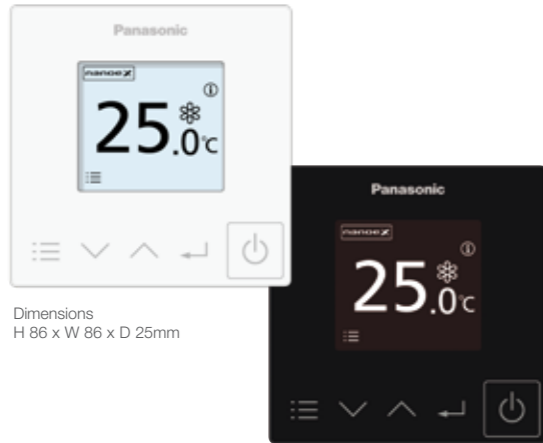
- Activity detection
- Absence detection

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 with Bluetooth CZ-RTC6W/ *CZ-RTC6WBLW (White) CZ-RTC6/ *CZ-RTC6BLW (Black) *Available for particular types of VRF indoor units.	High-spec Wired Remote Controller CZ-RTC5B	Timer Remote Controller (Wired) CZ-RTC4A	Wireless Remote Controller Controller: CZ-RWS3 Receiver: CZ-RWRU3 CZ-RWRY3 CZ-RWRL3 CZ-RWRD3 CZ-RWRT3 CZ-RWRC3
Built-in thermostat	●	●	●	—
nanoe™ X on/off control	●	●	●	●
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	· CZ-RTC6(W) : Up to 2 controllers can be connected per group (only combination possible with CZ-RTC6(W)) · CZ-RTC6(W)BL/CZ-RTC6(W)BLW : 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-RTC6(W)BL/CZ-RTC6(W)BLW with H&C Control App)

Timer operation	Centralised control systems			
Daily and weekly program	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	BMS System PC Base Connection with 3rd Party Controller
Schedule Timer	System Controller	ON/OFF Controller	Intelligent Controller	<b>P-AIMS Software</b> Up to 1024 units  CZ-CSWKC2
CZ-ESWC2	CZ-64ESMC3	CZ-ANC3	CZ-256ESMC3 (CZ-CFUNC2)	<b>Optional software</b>  CZ-CSWAC2 for Load distribution CZ-CSWWC2 for Web application CZ-CSWGC2 for Object layout display CZ-CSWBC2 for BACnet software interface *PC required (field supply)
64 groups, max. 64 units	64 groups, max. 64 units	16 groups, max. 64 units	64 units x 16 systems, max. 256 units	<b>Seri-Para I/O unit for outdoor unit</b>  CZ-CAPDC2
· Required power supply from the system controller · When there is no system controller, connection is possible to the T10 terminal of an indoor unit.	· 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.	<b>Interface Adaptor</b>  CZ-CAPC3
—	●	●	●	<b>Seri-Para I/O unit for each indoor unit</b>  CZ-CAPBC2
—	●	—	●	<b>Communication Adaptor</b>  CZ-CFUNC2
—	●	—	●	<b>LonWorks Interface</b>  CZ-CLNC2
—	●	—	●	
—	●	●	●	
●	●	—	●	

**Simplified wired remote controller  
(CZ-RTC6W / CZ-RTC6)**



Dimensions  
H 86 x W 86 x D 25mm

**Deluxe wired remote controller  
(CZ-RTC5B)**



Dimensions  
H 120 x W 120 x  
D 16 mm

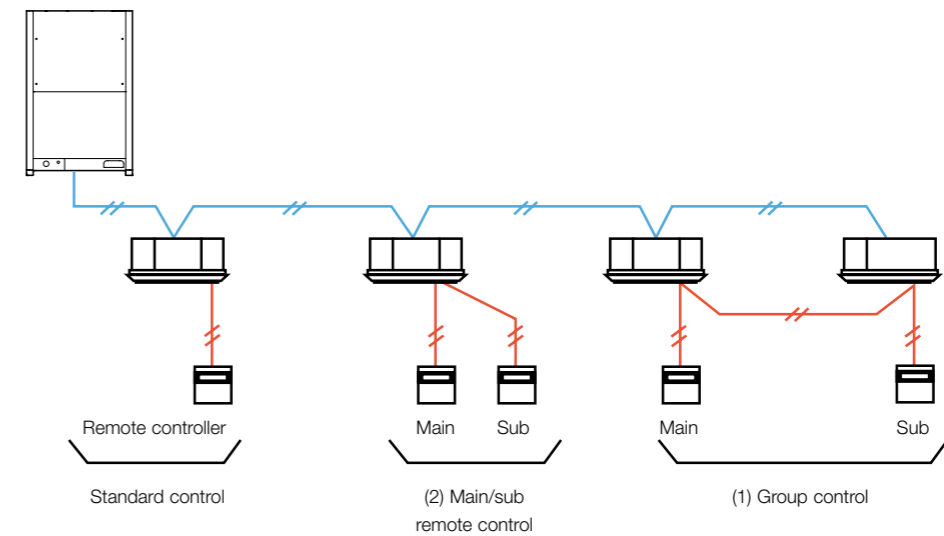
	CZ-RTC6W/CZ-RTC6	CZ-RTC5B
<b>Energy Saving</b>		
ECONAVI on/off	●	●
Temperature Auto Return	—	●
Temperature Setting range	—	●
Auto Shutoff	—	●
Schedule peak cut	—	●
Repeat off timer	—	●
<b>Basic Operation</b>		
Individual Louver Control(Lock individual flap for 4-WAY cassette)	—	●
ON/OFF timer	—	●
Weekly timer	—	●
Filter information	●*	●*
Outing function	●	●
Quiet operation mode	—	●*
Power consumption monitor	—	●*
Energy saving	—	●*
initial settings	—	●
Ventilation	—	●
nanoe™X	●*	●*
<b>Maintenance Function</b>		
Outdoor unit error data	—	—
Service Contact address	—	—
RC setting mode	●	●
Test run	●	●
Sensor information	●*	●*
Service check	●	●
Simple/Detailed Settings	●	●
Auto address	●	●
<b>Initial Settings</b>		
Rotation operation	—	●
Backup operation	—	●
Support operation	—	●

\* Subject to the connected

## Individual Control Systems

Control contents	Part name, model No.	Quantity
<b>Standard Control</b> <ul style="list-style-type: none"> <li>Control of the various operations of the indoor unit by wired or wireless remote controller.</li> <li>Cooling or heating mode of the outdoor unit is decided by the first priority of the remote controller.</li> <li>Switching between remote controller sensor and body sensor is possible.</li> </ul>	Wired remote controller CZ-RTC4A,CZ-RTC5B,CZ-RTC6W,CZ-RTC6  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
<b>(1) Group control</b> <ul style="list-style-type: none"> <li>Batch remote control on all indoor units.</li> <li>Operation of all indoor units in the same mode.</li> <li>Up to 8 units can be connected.</li> <li>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.</li> </ul>	Wired remote controller CZ-RTC4A,CZ-RTC5B,CZ-RTC6W,CZ-RTC6  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
<b>(2) Main/sub remote control</b> <ul style="list-style-type: none"> <li>Max 2 remote controllers per indoor unit. (Main remote controller can be connected)</li> <li>The button pressed last has priority.</li> <li>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)</li> </ul>	Wired remote controller CZ-RTC4A,CZ-RTC5B,CZ-RTC6W,CZ-RTC6  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 length are different between the controller. Please confirm the installation instructions of controller or consult with Panasonic service center.

### Timer remote controller (CZ-RTC4A)



Dimensions  
H 120 x W 120 x D 20 mm

#### 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

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

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

#### 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.
- nanoe™ X on/off control
- ECONAVI on/ off\*

### Wireless 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.

#### 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).

## Timer Operation

### Schedule timer (CZ-ESWC2)



Dimensions  
H 120 x W 120 x D 16 mm

- A function for pausing the timer in case of national holidays has been added, and timer operation also can be stopped for a long time

- By setting holidays or operation stop within one week, the timer can be paused just for that week.
- All timer settings can be stopped with the timer "ON/OFF effective" button. (Return to timer operation is made by pressing the button again.)

#### Up to 64 groups (max 64 indoor units) can be controlled divided into 8 timer groups

#### • Six program operations (Operation/Stop/ Local permission/ Local prohibition) per day can be set in a program for one week

- Only operation or stop, remote controller local permission or remote controller local prohibition, and their respective combinations are possible. (Operation + local permission, stop + local prohibition, only local permission, etc.)
- Local prohibition and the combination of the three items of temperature setting, mode change, and operation/stop can be set at the time of installation.

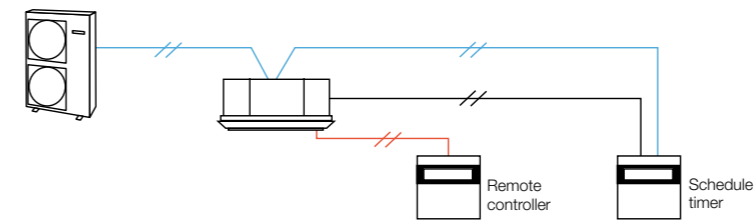
The power supply for the schedule timer is taken from one of the following.

1. Control circuit board (T10) of a nearby indoor unit (power supply wiring length: within 200m from the indoor unit).
2. System controller (power supply wiring length: within 100 m from the indoor unit).

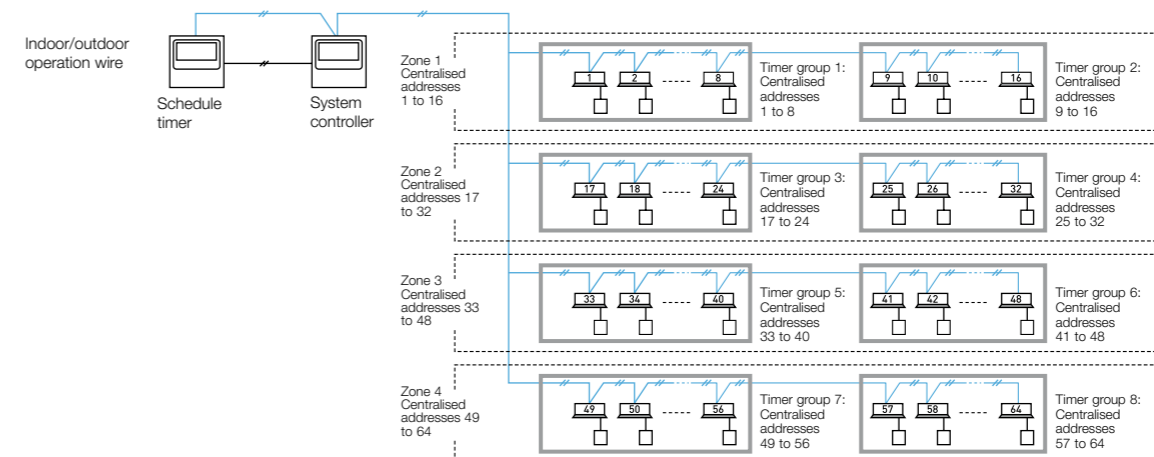
When the power supply for the schedule timer is taken from the control circuit board of the indoor unit, that indoor unit cannot be used with other control devices using the T10 terminal.

As operation mode and temperature settings are not possible with the schedule timer, it must be used together with a remote controller, a system controller, an intelligent controller, etc. Also, as it does not have an address setting function, the control function of a system controller etc. must be used for address setting.

#### Connection example 1 (POWER SUPPLY FROM THE INDOOR UNIT)

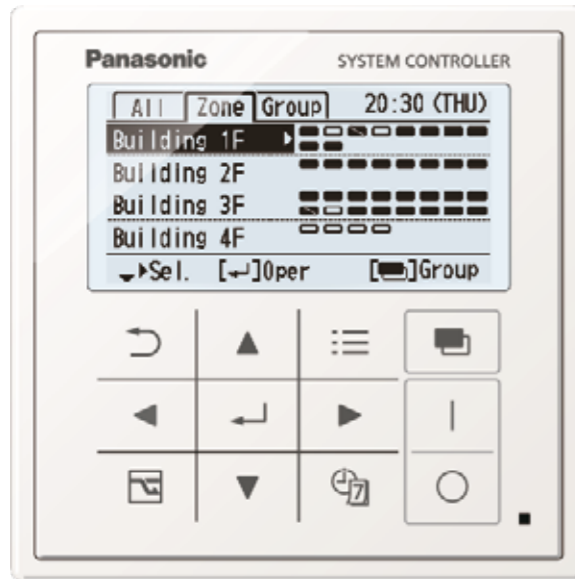


#### Connection example 2 (POWER SUPPLY FROM THE SYSTEM CONTROLLER AND ON/OFF CONTROLLER)



# 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 "Prohibit" (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.)

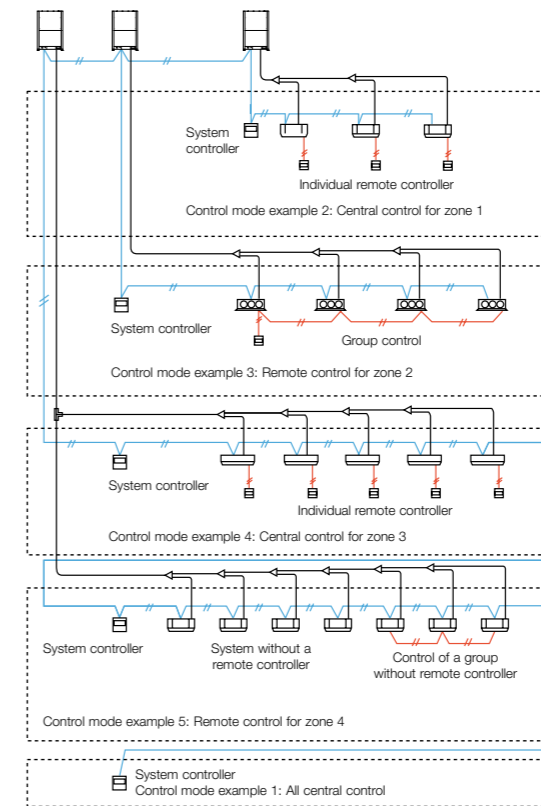
Remote control mode: The system controller is used as a remote controller. (Setting from the system controller can be prohibited by prohibiting local operation from another central control unit.)

B : Controlled unit number mode: All mode or zone 1, 2, 3, 4 mode can be selected

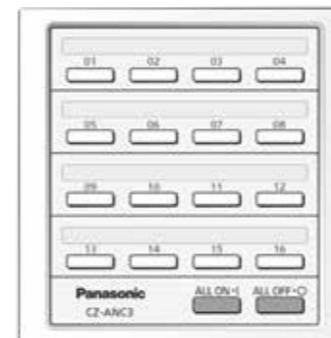
All mode: All, zone, or group unit can be selected.

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 Example 3	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 Example 5	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

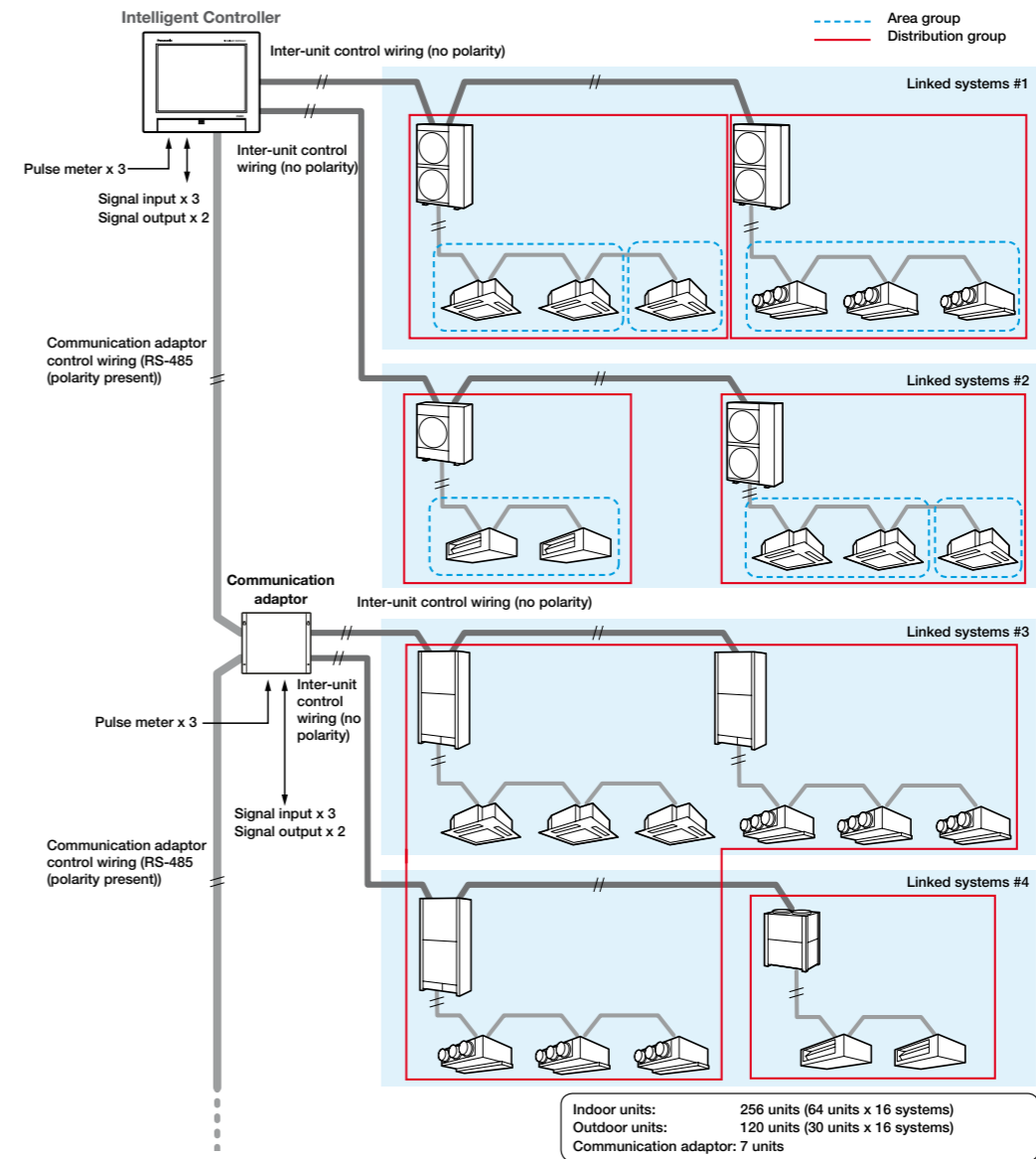
The LAN terminal on this unit enables you to connect it to a network. Connecting to internet will enable you to operate the unit and check the status using a PC from remote location.



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.



# Panasonic total air conditioning management system P-AIMS

## P-AIMS Basic software / CZ-CSWKC2

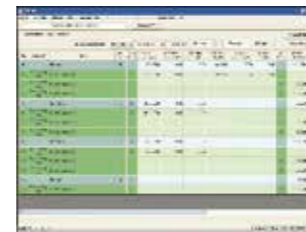
Up to 1024 indoor units can be controlled by one PC

Functions of basic software

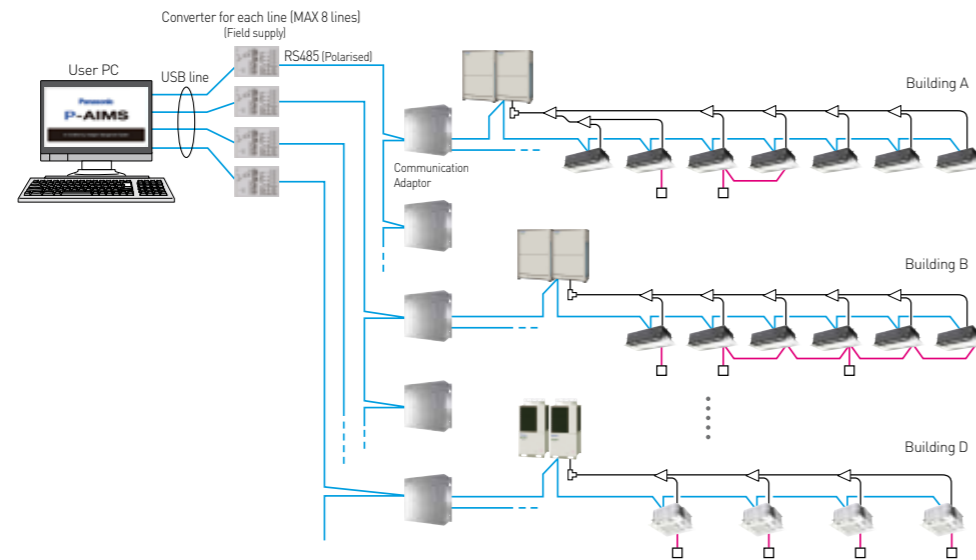
- Standard remote control for all indoor units
- Many timer schedule programs can be set on the calendar
- Detailed information display for alarms
- CSV file output with alarm history, operating status.
- Automatic data backup to HDD



With 4 upgrade packages the basic software can be upgraded to suit individual requirements



The P-AIMS is ideal for large areas/buildings such as shopping centers, universities and office buildings. Each line can have max.8C/A units, and control max.512 units. In total, 1024 indoor units can be controlled by 1 "P-AIMS" PC.



Recommended computer specs (Desktop type)

Operating system	Windows 10 Pro 64bit
CPU	Intel Core™ i5-6500 3.20GHz or higher (Recommended computer) Intel Core™ i7-7700 3.60GHz or higher (When installing Layout Display Software or using 512 or more indoor units)
Memory	8GB or larger
HDD	SSD (Solid State Drive) 250GB or larger
Monitor	1920 x 1080 (full HD) Recommended (1280 x 1024 (SXGA) minimum) 1920 x 1080 (full HD) Required (when installing Layout Display Software)
External HDD	500GB or larger (An external power supply type is preferable because the HDD will be used for backing up data.)
LAN	Network adaptor equipped machine (when Web Software or BACnet Communication Software installed)
UPS (Field Supply)	Select a UPS with a sine output wave form

## P-AIMS optional software CZ-CSWAC2 for Load distribution

Load distribution calculation for each tenant

- Air-conditioner load distribution ratio is calculated for each unit (tenant) with used energy consumption data (m3, kWh).
- Calculated data is stored with CSV type file.
- Data of last 365 days is stored



## P-AIMS optional software CZ-CSWWC2 for Web application

Web access & control from remote station

- Accessing P-AIMS software from remote PC.
- You can monitor/operate FSV systems by using Web browser (Internet Explorer).



## P-AIMS optional software CZ-CSWGC2 for Object layout display

Whole system can be controlled visually

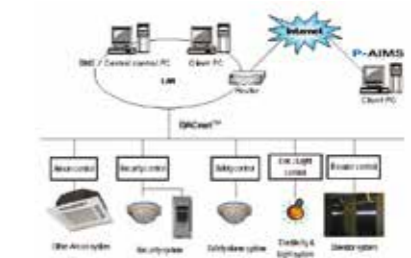
- Operating status monitor is available on the layout display.
- Object's layout and indoor unit's location can be checked at once.
- Each unit can be controlled by virtual remote controller on the display.
- Max 4 layout screens are shown at once.



## P-AIMS optional software CZ-CSWBC2 for BACnet software interface

Connectable to BMS system

- Can communicate with other equipment by BACnet protocol.
- FSV systems can be controlled by both BMS and P-AIMS.
- Max 255 indoor units can be connected to 1 PC (that has P-AIMS basic & BACnet software).



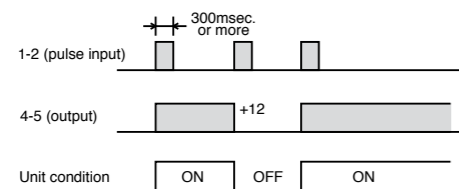
# T10 Terminal for External Control (Digital Connection)

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.



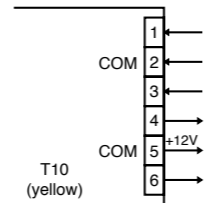
## 1. T10 Terminal Specification (T10:CN061 at indoor unit PCB)

- 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

- 1-2 (Pulse input): Unit ON/OFF condition switching with a pulse signal. (1 pulse signal: shortage status more than 300msec.or more)
- 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.

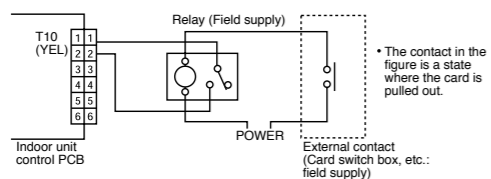
## 2. Usage Example

### 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



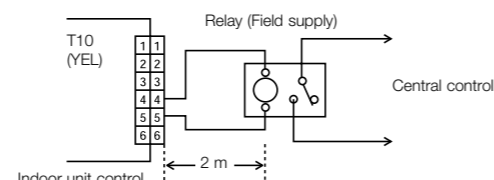
NOTE: The wire length from indoor unit to the Relay must be within 2.0m

### Operation ON/OFF signal output

#### Condition

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

#### Example of wiring



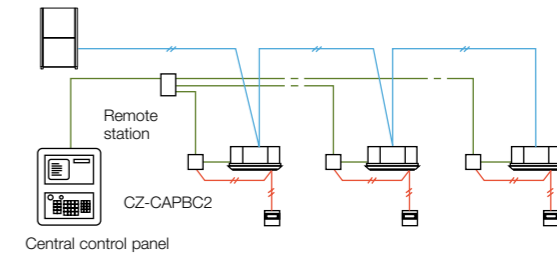
NOTE: The wire length from indoor unit to the Relay must be within 2.0m. Pulse signal changeable to static with JP cutting. (Refer to JP001)

# Interfaces for External Control (Digital Connection)

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



### System example

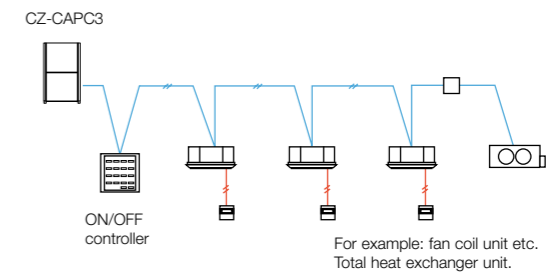


- Control and status monitoring is possible for individual indoor unit (1 group).
- In addition to operation and stop, there is a digital input function for air speed and operation mode.
- Temperature setting and measuring of the indoor suction temperature can be performed from central monitoring.
-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



### System example

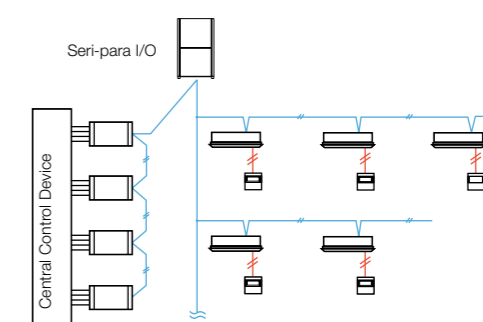


- Control and status monitoring is possible for individual indoor unit (or any external electrical device up to 250 V AC, 10 A) by contact signal.

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



### System example



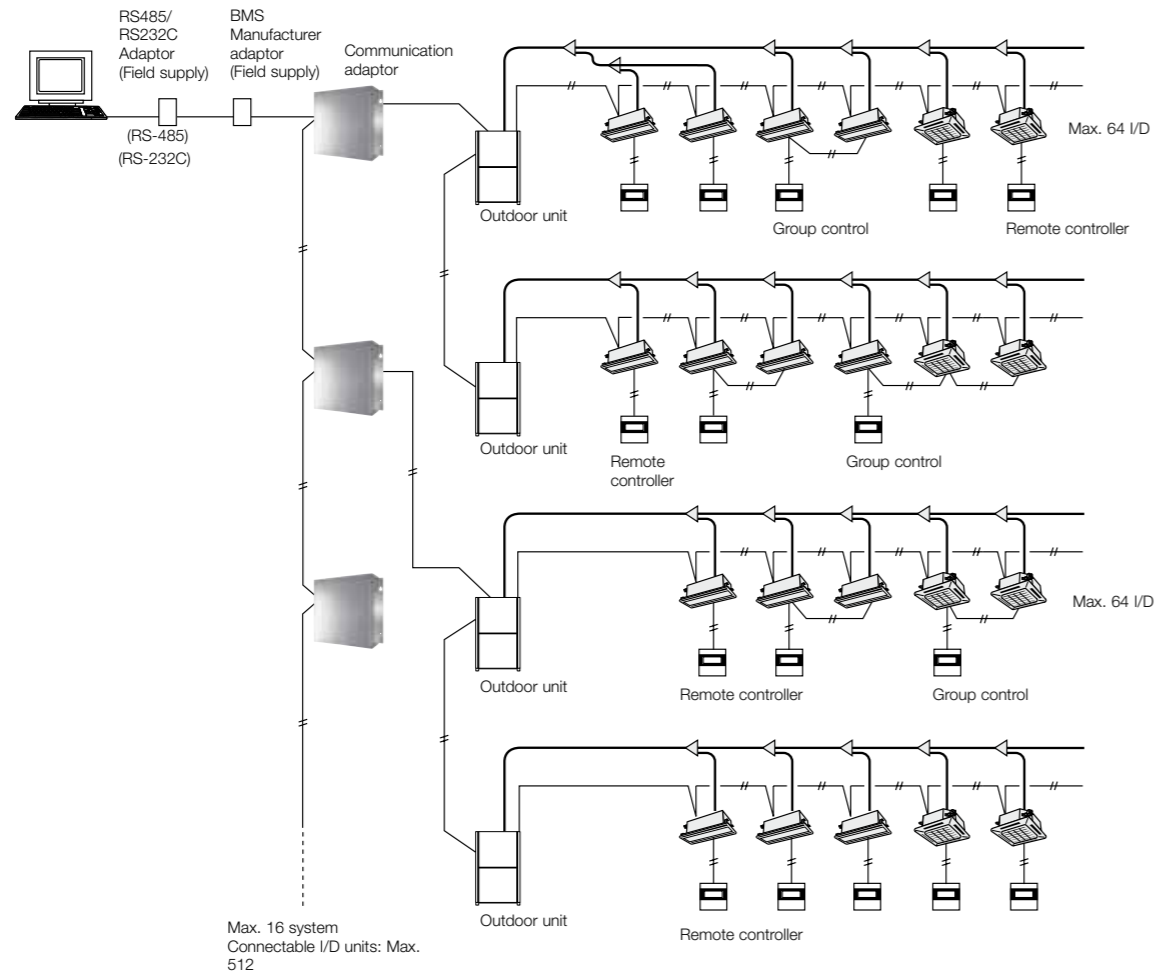
- Dimensions: H 80 x W 290 x D 260 mm
- Power supply: Single phase 110-120/220-240 V (50/60 Hz), 18 W
- Input: Batch operation/Batch stop (non-voltage contact/DC 24 V, pulse signal), Cooling/Heating (non-voltage contact/static signal), Demand 1/2 (non-voltage contact/static signal) (Local stop by switching)
- 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

- 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.

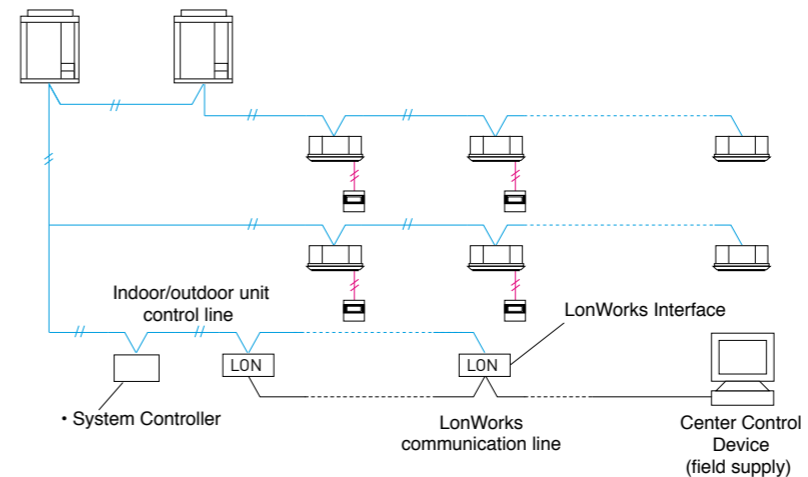
# Serial Interface for LonWorks Network

## 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

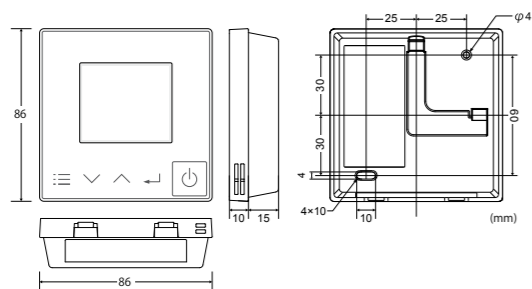


## Functions

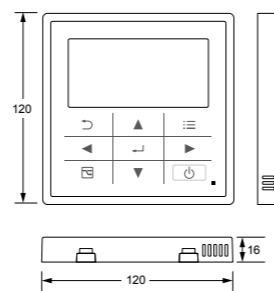
A/C unit settings from the LonWorks communicator	Settings for each group of indoor units	Start/stop
		Temp. setting
	Settings for all units	Operation mode
		Option 1 settings
		Option 2 settings
A/C unit status notifications made to the LonWorks communicator	Emergency stop	
	Start/stop	
	Temp setting	
	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 Controller External Dimensions

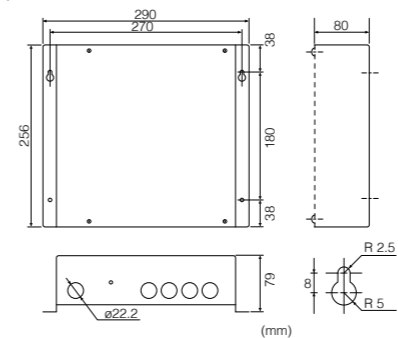
SIMPLIFIED WIRED REMOTE CONTROLLER  
(CZ-RTC6W/CZ-RTC6)



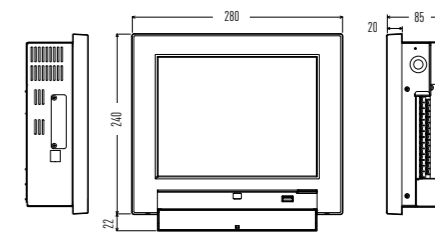
HIGH-SPEC WIRED REMOTE CONTROLLER  
(CZ-RTC5)



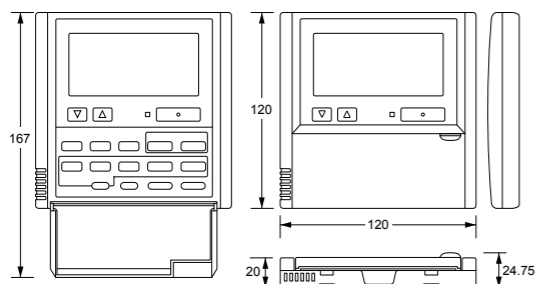
COMMUNICATION ADAPTOR  
(CZ-CFUNC2)



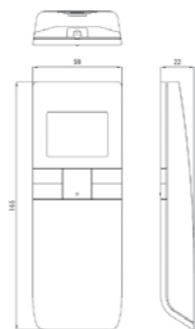
INTELLIGENT CONTROLLER  
(CZ-256ESMC3)



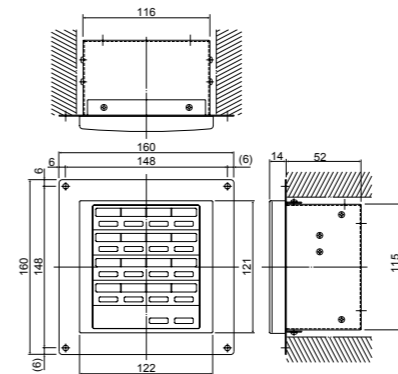
TIMER REMOTE CONTROLLER  
(CZ-RTC4A)



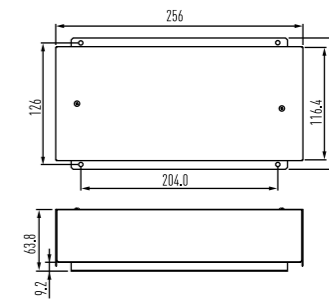
WIRELESS REMOTE CONTROLLER  
(CZ-RWS3)



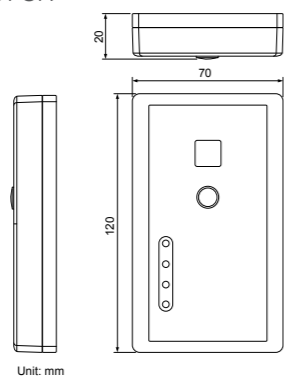
ON/OFF CONTROLLER  
(CZ-ANC3)



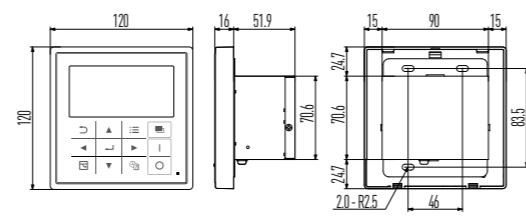
SERI-PARA I/O UNIT FOR EACH INDOOR UNIT  
(CZ-CAPBC2)



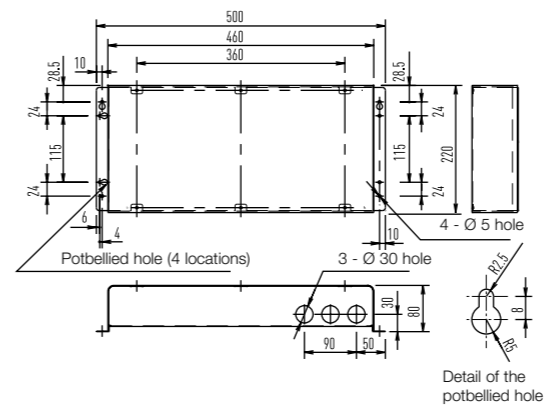
SEPARATE RECEIVER FOR WIRELESS REMOTE CONTROLLER  
(CZ-RWSC3)



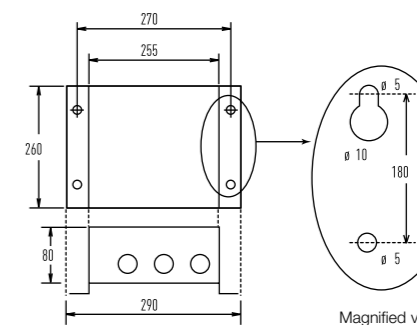
SYSTEM CONTROLLER  
(CZ-64ESMC3)



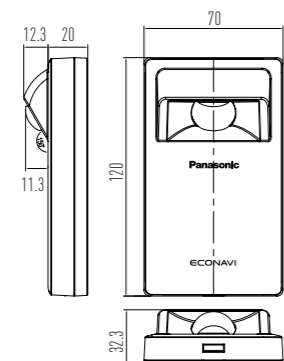
LONWORKS INTERFACE  
(CZ-CLNC2)



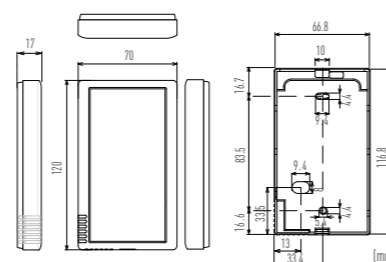
SERI-PARA I/O UNIT FOR OUTDOOR UNIT  
(CZ-CAPDC2)



ECONAVI SENSOR  
(CZ-CENSC1)



REMOTE SENSOR  
(CZ-CSRC3)



# VRF Renewal

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



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.

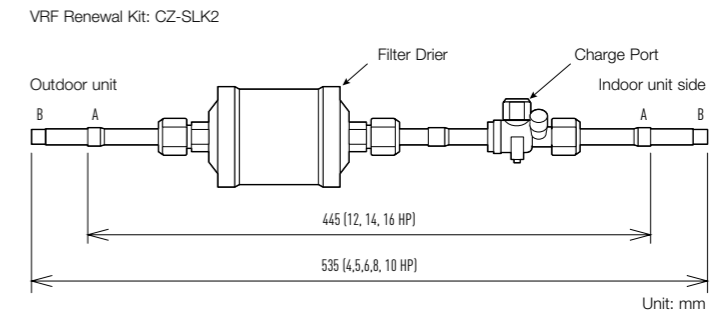
Firstly a thorough inspection of the pipe work must be carried out and any damage must be repaired.

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 tubing is reused. If the exact tube length and tube size of the existing tubing are uncertain, attach a sight glass in accordance with the figure below. It will be used for checking the amount of additional refrigerant charge.



## 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 tubing 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 Renewal 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).

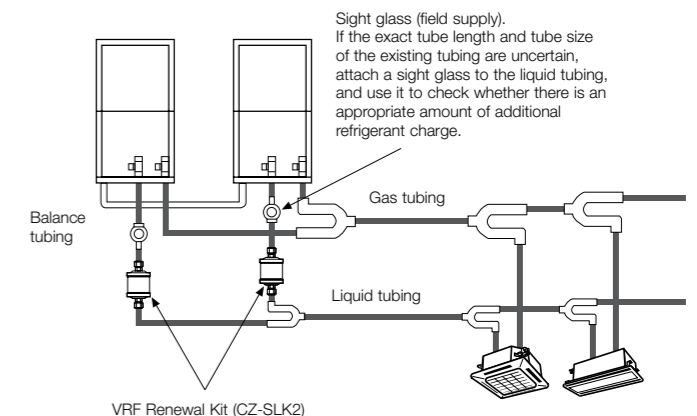
### Connecting tube dimensions (Inch mm)

- A Ø 1/2 (12.7) (12,14,16 HP)
- B Ø 3/8 (9.52) (8,10 HP)

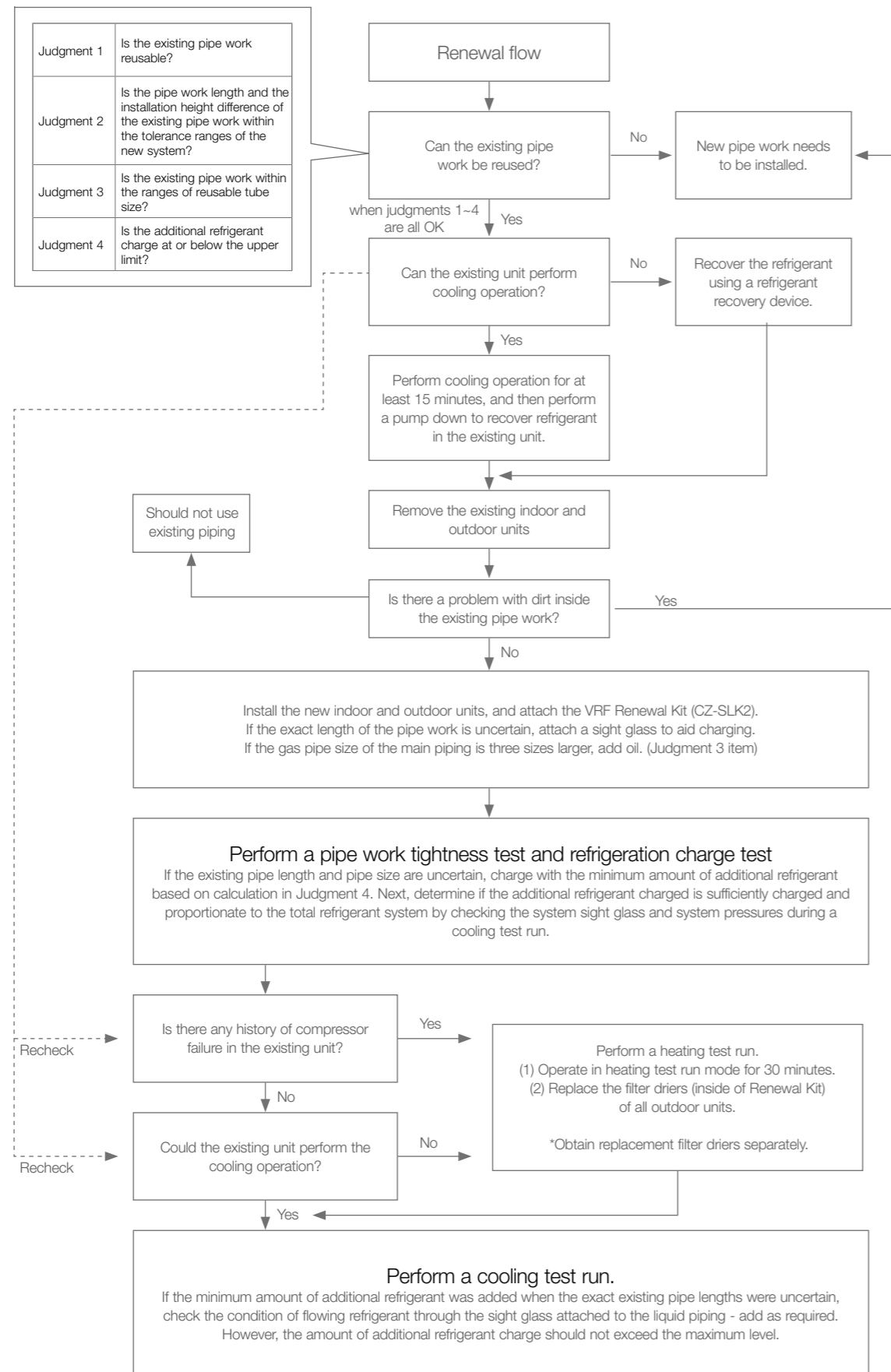
Note: If the tube size does not match that of the existing tubing, use a reducer (field supply) to adjust the tube diameter.

### Sight glass (field supply)

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



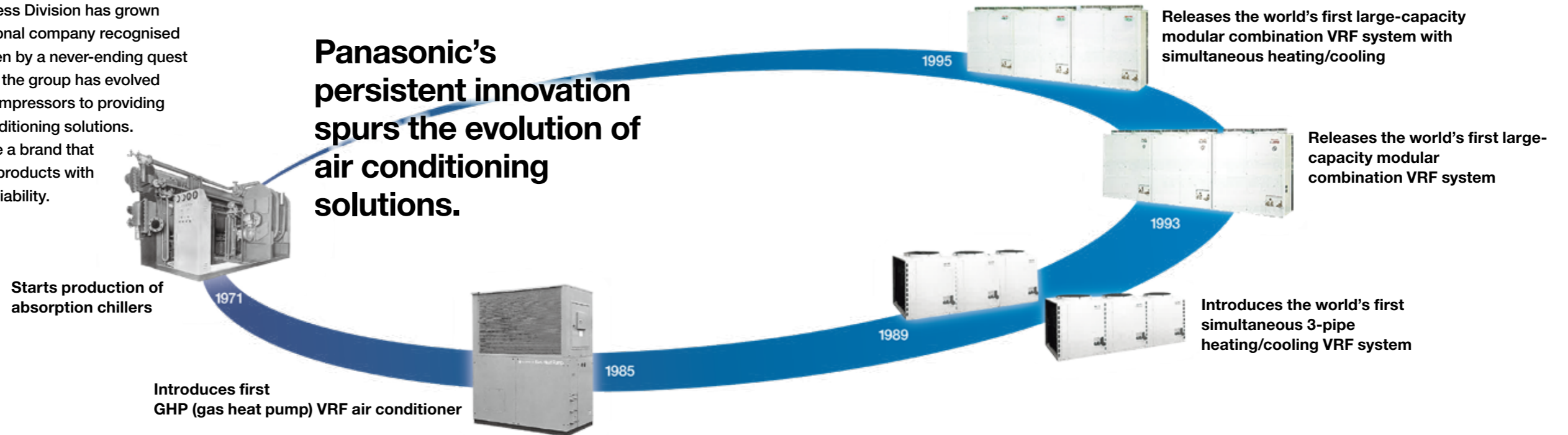
# Procedure for VRF Renewal



# 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.



### 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

### 1969

- Begins production at the Kusatsu Factory in Shiga Prefecture, Japan

### 1972

- MAICO, the Division's first overseas manufacturing base, established in Malaysia
- Begins operating twin-based system in 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

### 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<sub>2</sub> scroll compressor
- CO<sub>2</sub> heat-pump hot water heater (Eco Cute) uses non-toxic, non-combustible natural refrigerant (CO<sub>2</sub>) in place 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 as 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 wins the Energy Conservation Center of Japan (ECCJ) Chairman's Prize, whilst EcoCute wins the Agency of Natural Resources and Energy Director General's Prize (prizes presented by ECCJ)
- nanoe™ technology installed on room air conditioners



### 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

### 2012

- Launches FSV series of large-capacity VRF air conditioners
- New Panasonic Group inaugurated

### 2013

- Expands VRF operation in Malaysia



### 2015

- Air-Conditioner Company established

### 2016

- Partnership with Schneider Electric begins
- At the Energy Conservation Grand Prize awards, WX series room air conditioner wins the Ministry of Economic, Trade and Industry Prize for energy conservation



### 2017

- Celebrates 60th anniversary in air conditioning business
- Division completes its first acquisitions: A.M.P. Air Conditioning Ltd of the UK, and UNION RHAC TECNOLOGIA of Brazil

### 2018

- Establishes commercial air conditioner sales company in China (PAPAECN)

### 2019

- Name changes to Heating and Cooling Solutions Business Division
- Panasonic and Systemair announce development of integrated HVAC&R and ventilation solutions
- Panasonic and Welcome Air Tech's SAIVER announce development of connected air handling and VRF solution for Southeast Asia

### 2021

- R32 mini-VRF launches in Europe
- Heating & Ventilation A/C Company is established

### 2022

- nanoe™ X Generator Mark 3 (100 x) is introduced

# 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.



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.



### 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).

A resin-potted circuit board

## 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.



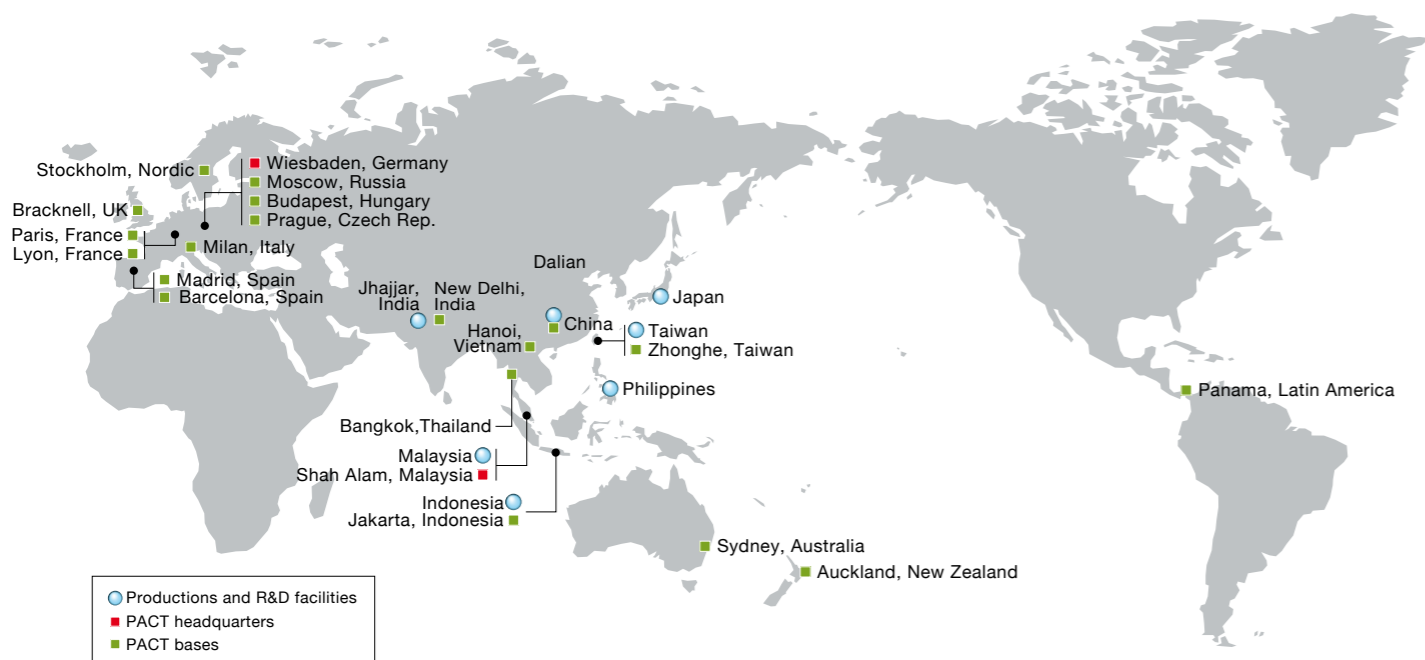
### Sophisticated Production Process

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 & Ventilation A/C Company Headquarters

Established October 2021



Heating & Ventilation A/C Company Heating & Cooling Solutions Business Division Residential Air-Conditioning Business Unit

Established April 1972  
 • Corporate Engineering Division



Heating & Ventilation A/C Company Heating & Cooling Solutions Business Division Commercial Air-Conditioning Business Unit

Panasonic Appliances Air-Conditioning and Refrigeration Systems Co., Ltd.

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

### Malaysia



PAMAMY Panasonic Appliances Air Conditioning Malaysia Sdn. Bhd.

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



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

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



PAMAMY Compressor

Established January 1987  
 • Rotary compressors for air conditioners



PAMAMY Compressor R&D

Established September 1997  
 • R&D for rotary compressors

### China



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

Established June 1993  
 Air conditioners



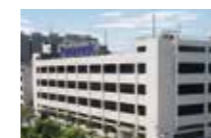
PRDCS Panasonic R&D Center Suzhou Co., Ltd.

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

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

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

### Taiwan



PTW Panasonic Taiwan Co., Ltd.

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



PMI Panasonic Manufacturing Indonesia

Established September 1970  
 • Air conditioners  
 • Home appliance products



PMPC Panasonic Manufacturing Philippines Corporation

Established September 1967  
 • Air conditioners  
 • Home appliance products



PI Panasonic India Pvt. Ltd.

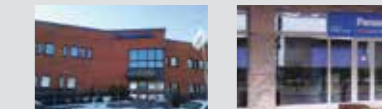
Established December 2012  
 • Room Air conditioners

## PACT Headquarters and Bases

### EUROPE



Germany Wiesbaden



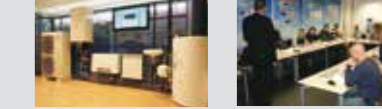
Nordic Stockholm

Hungary Budapest



Russia (CIS) Moscow

Spain Barcelona



Spain Madrid

France Paris

Italy Milan

Czech Rep. Prague

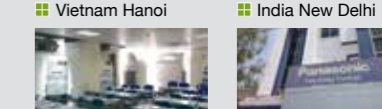
France Lyon

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.

## OFFICE

**Malaysia** Gapura project



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



**Thailand** Areeya



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



**HongKong** King Yip Road



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



**England** Soapworks



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



**Spain** PTA Malaga



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



**Russia** Russian Government Building



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



## HOTEL

**Cambodia** The Peninsula Hotel & Residences



Air Conditioning System:  
VRF 2-way FSV ME2 series 10 systems  
Indoor Units: 48 units Single split 56 systems  
Multi split 216 systems  
Cooling Capacity: 2,125kW / 604 USRT

**Australia** Travelodge Hobart



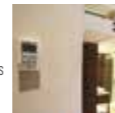
Air Conditioning System:  
VRF 3-way FSV MF2  
series 8 systems  
Indoor Units: 116 units  
Cooling Capacity:  
302 kW / 86 USRT



**Spain** Hotel Claris 5 GL



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



**Spain** Monument Hotel



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



**Spain** LAVIDA Hotel PGA Cataluña Resort



Air Conditioning System:  
VRF 2-way FSV ME2 series 2 systems  
Indoor Units: 54 units  
Cooling Capacity: 236 kW / 67 USRT

**Russia** River Park Hotel

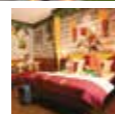


Air Conditioning System:  
VRF 2-way ME1 series 47 systems  
Indoor Units: 96 units  
Cooling Capacity: 788 kW / 224 USRT

**Germany** The LEGOLAND Castle Hotel



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



**Ireland** K Club, Co. Kildare



Air Conditioning System: VRF 3-way FSV MF2  
Indoor Units: 70 units  
Cooling Capacity: 200 kW / 56.87 USRT

## RETAIL

**Cambodia** HCN Mall and Residence



Air Conditioning System:  
VRF 2-way FSV ME2 series 14 systems  
Indoor Units: 99 units Single split 600 systems  
Cooling Capacity: 1,600kW / 455 USRT

**India** Sai Arav Motors, Mehsana



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

**Russia** Sun City Mall



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



## SCHOOL

**United States** Shippensburg University



Air Conditioning System:  
VRF 3-Way 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-FUSCC1 17pcs

**Russia** Technopark of Nobosibirsk Academgorodok



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



## HOSPITAL

**Indonesia** Bekasi Hospital



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



**Indonesia** Persada Hospital



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



## HOSPITAL

**France** Clinique Dentaire Ablis (Dental Clinic)



Air Conditioning System:  
mini VRF 2-way mini FSV LE1 series 3 systems  
Cooling Capacity:  
36.3 kW / 10.3 USRT

## RESIDENTIAL

**Cambodia** The Penthouse Residence



Air Conditioning System:  
VRF 2-way FSV ME2, LE2,  
LE1 series 42 systems  
Indoor Units: 785 units  
Single split 212 systems  
Multi split 149 systems  
Cooling Capacity: 3,685kW / 1048 USRT



**Singapore** Punggol Eco-Town



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