



**HITACHI**  
Air conditioning solutions

**HITACHI**

# SET FREE mini

**VARIABLE REFRIGERANT FLOW SYSTEM**

**AIR SOURCE**

**HEAT PUMP / HEAT RECOVERY TYPE**

**FS(V)NME SERIES / FSXNME SERIES**

Cooling & Heating

air

air

**Company Name**

**CUSTOMER SERVICE**

**SALES OFFICE**

**SPARE PARTS**

**DISTRIBUTOR**

**CERTIFICATION**



JOHNSON CONTROLS HITACHI AIR CONDITIONING EUROPE SAS, participates in the Eurovent Certified Performance Programme for Liquid Chilling Packages and Hydronic Heat Pumps, Fan Coil Units and Variable Refrigerant Flow systems.

Check ongoing validity of certificate:  
[www.eurovent-certification.com](http://www.eurovent-certification.com)

**WARRANTY**

**SOCIAL MEDIA**



# SIDE FLOW IS REACHING NEW HEIGHTS!

SET FREE mini, Hitachi SIDE FLOW, will meet the most demanding space constraints, thanks to this compact-size unit yet large capacity. For the first time in the HVAC industry, simultaneous cooling and heating (Heat Recovery system) available from 8HP class to 12HP class, is no longer reserved to Top Flow VRF systems.

## LINE UP OVERVIEW

### DIMENSION & CAPACITY

With this compact size, it's an ideal product for application with space constraint. Furthermore, by achieving 12HP class in heat recovery, the Set Free mini allowed to cover applications usually reserved to top flow VRF.



#### Heat Pump

- 4HP Class / 12.1kW / 12.5kW / 114 (115\*) kg
- 5HP Class / 14.0kW / 16.0kW / 114 (115\*) kg
- 6HP Class / 15.5kW / 18.0kW / 118 (119\*) kg

Note: Net weight Single phase (\* 3 phase)

#### Heat Pump & Heat Recovery

- 8HP Class / 22.4kW / 25.0kW / 188kg
- 10HP Class / 28.0kW / 31.5kW / 194kg
- 12HP Class / 33.5kW / 37.5kW / 196kg

### SUMMARY TABLE

	Unit	FS(V)NME series	FSXNME series	
Power Supply		1N~, 230V 50Hz 3N~, 400V 50Hz	3N~, 400V 50Hz	
Capacity	HP Class	4-6	8-12	
	Nominal Cooling	kW	12.1-15.5	22.4-33.5
	Nominal Heating	kW	12.5-18.0	25.0-37.5
Maximum connectable indoor unit quantity	Units	13-18	26-39	
Range of combination capacity	%	50-130	50-130	
Maximum piping length	Total liquid piping length	m	180	500
	Between outdoor unit and farthest indoor unit	m	85	125
	Between 1st branch multi kit and farthest indoor unit	m	40	90
	Between multi kit and each indoor unit	m	15	40
Maximum level difference	Between Outdoor unit and Indoor unit ※ ODU Above IDU	m	30	50
	Between Indoor unit and Indoor unit	m	15	15
Cooling operation working range (outdoor temperature)	°C DB	-5.0 to 48.0	-5.0 to 48.0	
Heating operation working range (outdoor temperature)	°C WB	-20.0 to 15.0	-20.0 to 15.0	

\*For more details, please consult your distributors or dealer, or, refer to technical manuals.

## COMFORT

### GENTLECOOL: Hitachi Exclusive



Set your comfortable temperature not only for "Room" but also for "Air" in cooling operation.

To make your room reach to the desired temperature faster, the discharged air from the indoor unit can be sometimes much cooler, causing discomfort at the beginning of operation.

Now, you can choose "discharge air temperature = your own comfort level", as you like, by our advanced wired remote controller PC-ARFP1E.

You can be in comfort and avoid cold draft from the moment when cooling operation starts, while the room gently cools down.



"Comfort Setting" Control Cool Air in PC-ARFP1E

#### Potential Discomfort



GentleCool: OFF

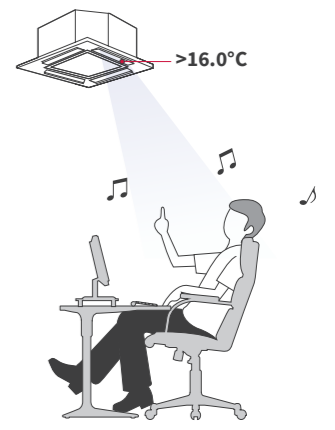
#### GentleCool → No Cold Draft



GentleCool: LOW



GentleCool: MED



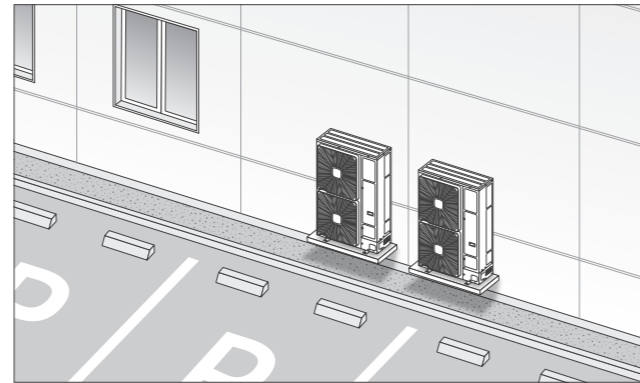
GentleCool: HIGH



# DESIGN FLEXIBILITY

## COMPACT

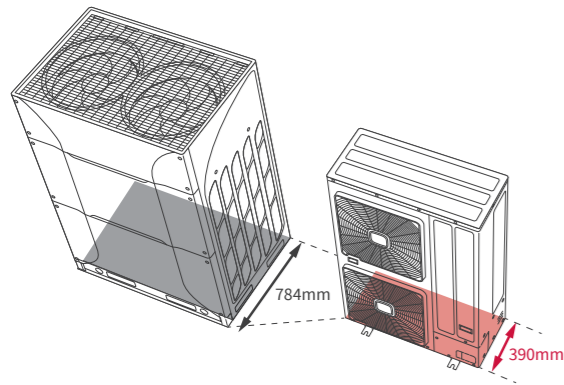
Thanks to Ultra-compact footprint with bigger capacity, our SET FREE mini outdoor units can be placed discreetly out of sight or configured to optimize space usage.



### 12HP Class Comparison

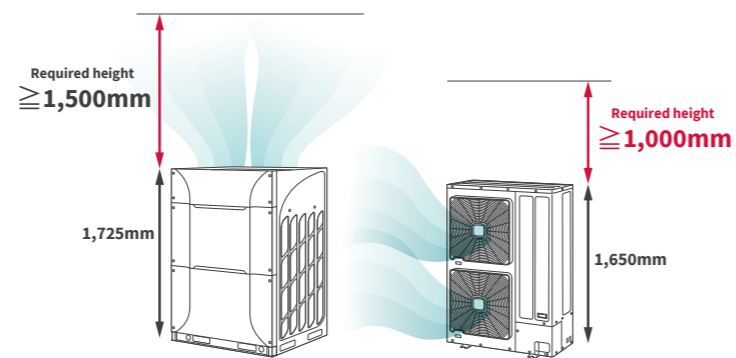
Depth difference -394mm

Footprint requirement -43%



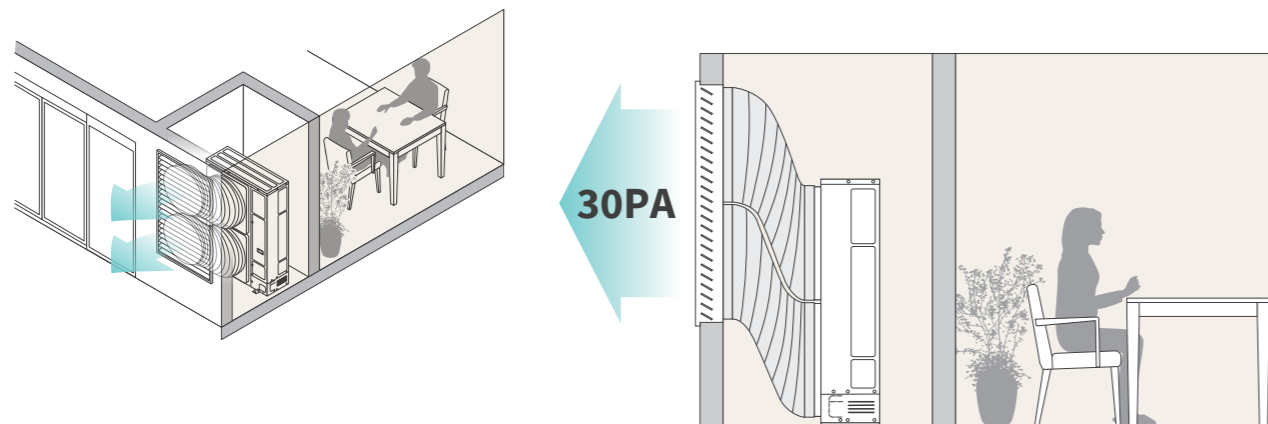
Required height difference -575mm

Height requirement -18%



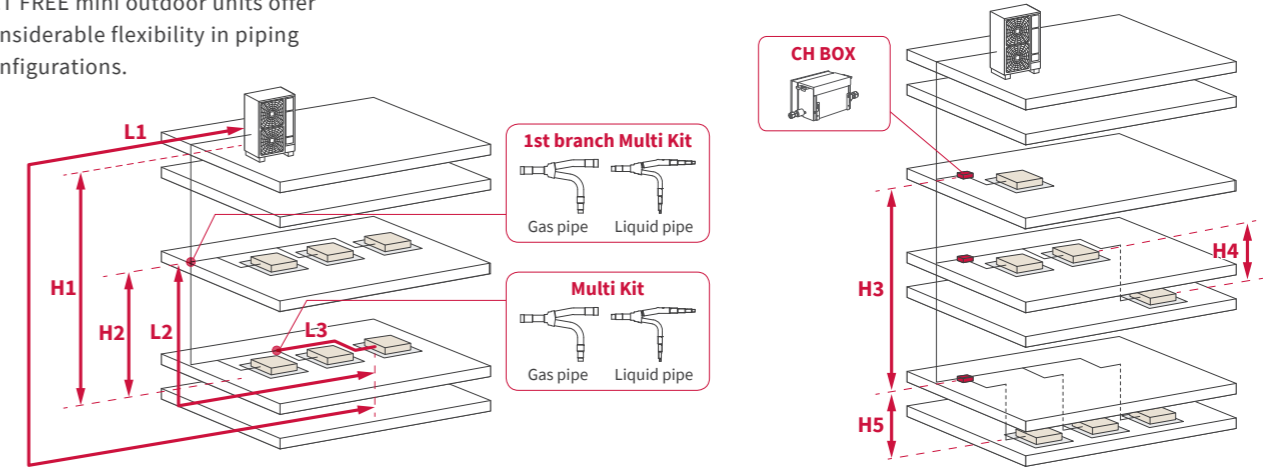
## POWERFULNESS IN AIR

Our SET FREE mini outdoor units are designed to be located internally by the straightness of air flow thanks to higher external static pressure with DC inverter fan, leading to more options for installation and visual aesthetics of buildings.



## MORE PIPING CAPABILITIES

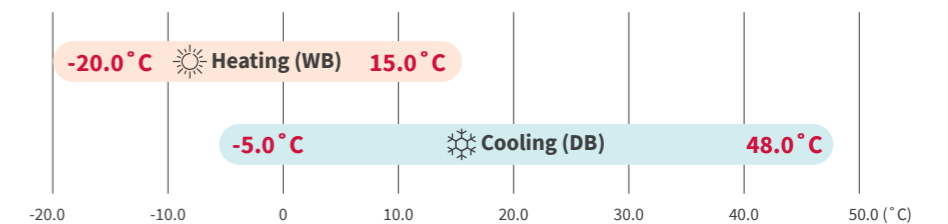
To aid in the design process, SET FREE mini outdoor units offer considerable flexibility in piping configurations.



		Example	4 to 6HP class (Heat Pump)	8 to 12HP class (Heat Pump)	8 to 12HP class (Heat Recovery)
Maximum Piping Length	Total		180	500	500
	Between ODU and the farthest IDU	L1	85	125	125
	Between 1st branch Multi Kit and the farthest IDU	L2	40	90	90
	Between Multi Kit and each IDU	L3	15	40	40
Maximum Level Difference	Between CH-Box and Indoor Unit		-	-	40
	Between ODU and IDU	ODU above IDU	H1	30	50
		IDU above ODU		30	40
	Between IDUs		H2	15	15
	Between CH-Box		H3	-	15
	Between Indoor Units connected to same branch of CH-Box		H4	-	4
	Between CH-Box and Indoor Unit		H5	-	15

## HARMONY IN ANY CLIMATE

Because we live in a diverse and changeable world, SET FREE mini outdoor units are designed to perform faultlessly in the coldest or hottest of climates, to ensure a consistently comfortable temperature in every room.



## CONNECTION UP TO 39 INDOOR UNITS

Diverse building applications have diverse rooms with different needs. Our SET FREE mini outdoor units can meet any indoor requirements thanks to introduction of the new 0.4HP indoor units compatibility. This can help you save the initial costs with the capacity of connection up to 39 indoor units.

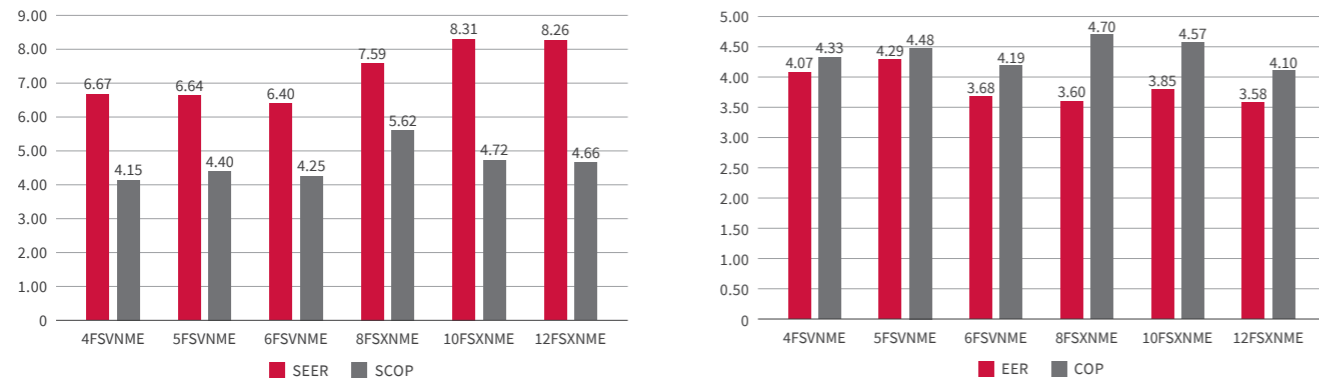
Outdoor Unit Capacity (HP class)	4	5	6	8	10	12
Max Number of Connectable Indoor Units	13	16	18	26	32	39

NOTES:  
 \*: For a system in which all indoor units are operated simultaneously, the maximum total capacity will be 100%. Determine the number of indoor units carefully so that a problem such as decreased outlet air temperature will not occur. Refer to the technical catalog for more details.

# BETTER PERFORMANCE

## SETTING THE STANDARD

SET FREE mini lifts performance and efficiency to a new level. Both will reward you with superior performance as well as significant energy and cost savings.



## THE BEAUTY OF SILENCE

Balance is the key to harmony, so SET FREE mini outdoor units incorporates advanced features to ensure a more peaceful environment with less disturbance to the outside environment



## SMART DEFROSTING

Frost on the outdoor unit's heat exchanger reduces heating capability. Defrosting is, therefore, essential, although there is no heating in a defrosting operation. Intelligent defrosting technology automatically learns the operating data of the fan motor. From these data it determines the optimal operation of the next defrosting cycle, thereby helping to reduce the frequency of defrosting while enhancing the comfort level and heating capacity.



## SMOOTH DRIVE: SUPERIOR REFRIGERANT CYCLE CONTROL

"Smooth Drive" is designed to solve the issue that "COP is much lower in low load operation" which has been raised by specialists for long time, by optimizing both compressor and fan operation in the smoothest way.

Exclusive to Hitachi VRF technology, this newly developed refrigerant cycle control technology, Smooth Drive, helps you achieve new standards in performance and efficiency with our new outdoor units.

### How does it benefit you?



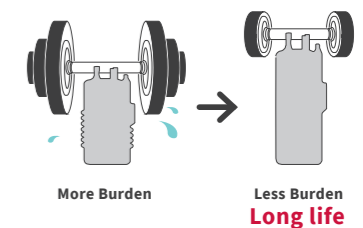
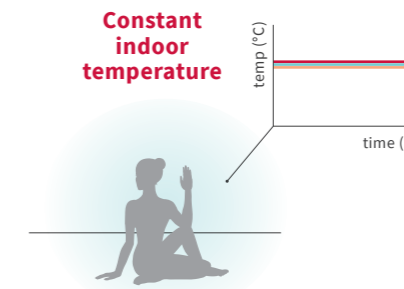
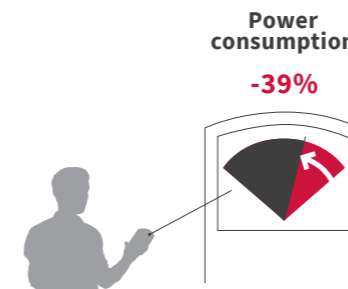
**Efficiency**  
Power consumption is reduced by -39% in the testing condition at air conditioning load 33%.



**Comfort**  
More constant indoor temperature achieved by better responsiveness thanks to direct compressor frequency control.



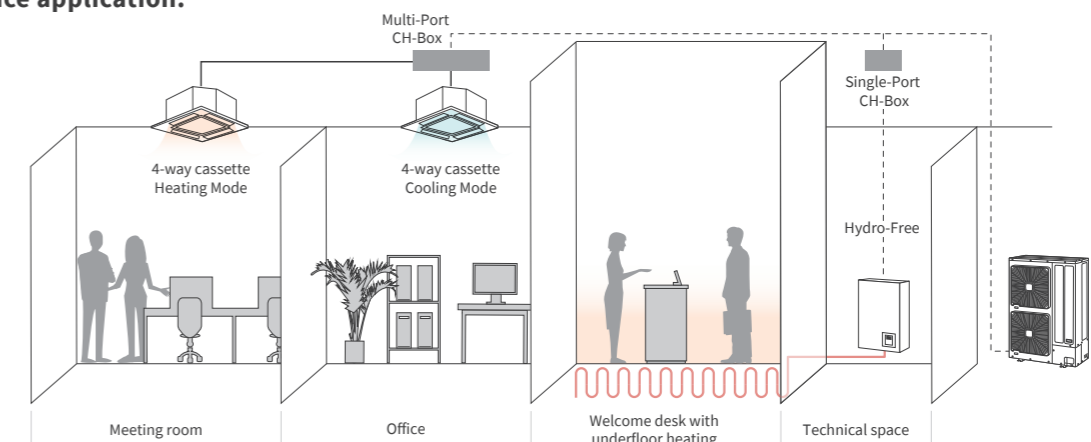
**Reliability**  
Less burden on compressor thanks to suppressing continuous on/off at low load operation, leading to less liquid-back and less shock into the scroll compressor.



## CREATING PERFECT INDOOR ENVIRONMENT

By using and transferring excess energy from one zone to another, Heat recovery systems from 8 to 12HP class provide simultaneous cooling and heating leading to your optimized energy consumption and great comfort.

### Office application:





**RELIABILITY**

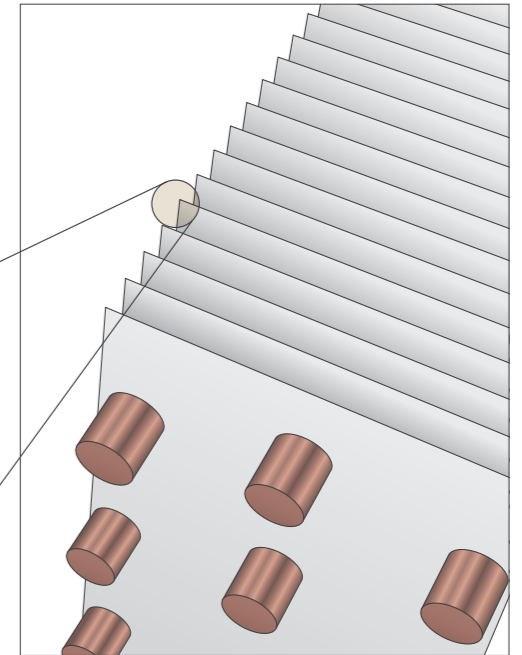
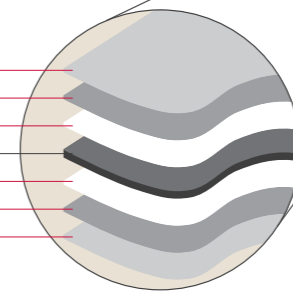
**ENHANCED PROTECTION**

If your project is in a location with extreme conditions such as sea-side or industrial area with fumes from factories, our 3 coating layers treatment to your outdoor units makes sure for better life-expectancy.

- Strong protection from various corrosive external conditions like salty environments or industrial areas

**3 Coating Layers**

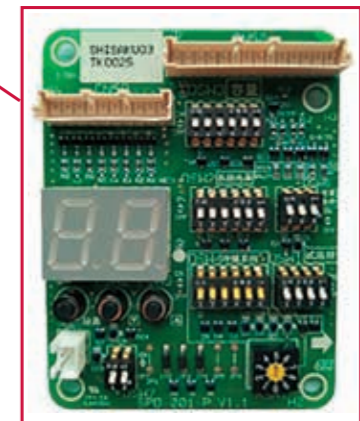
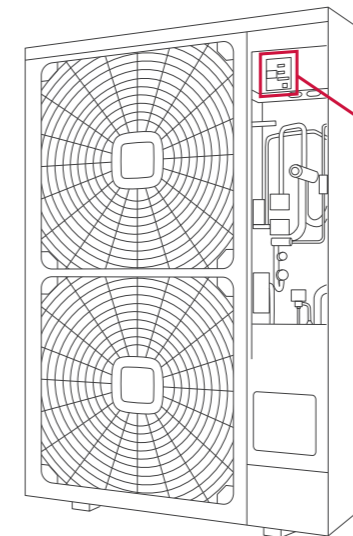
- Lubricative coating
- Hydrophilic coating
- Anti-corrosive coating
- Aluminum fin
- Anti-corrosive coating
- Hydrophilic coating
- Lubricative coating



**SIMPLE AND EASY CHECK**

User-friendly service board with dial code switch and push button is designed for easier testing and diagnostics. The service board, which is located in front of the outdoor unit, is easy to set.

- Monitoring real-time running status
- Displaying the fault code for diagnostics
- Checking historical fault information
- Optimizing control parameters based on the installation field condition



SPECIFICATIONS



Specifications			RAS-4FS(V)NME	RAS-5FS(V)NME	RAS-6FS(V)NME
Power Supply	1-phase		1N ~230V 50Hz	1 ~230V 50Hz	1 ~230V 50Hz
	3-phase		3N ~400V 50 Hz	3N ~400V 50 Hz	3N ~400V 50 Hz
Nominal Capacity	Cooling	kW	12.10	14.00	16.00
	Heating	kW	12.50	16.00	18.00
Nominal Power input	Cooling	1-phase	2.97	3.26	4.35
		3-phase	2.97	3.26	4.35
	Heating	1-phase	2.89	3.57	4.30
		3-phase	2.89	3.57	4.30
EER	1-phase		4.07	4.29	3.68
	3-phase		4.07	4.29	3.68
COP	1-phase		4.33	4.48	4.19
	3-phase		4.33	4.48	4.19
SEER	1-phase		6.67	6.64	6.40
	3-phase		6.61	6.61	6.37
SCOP	1-phase		4.15	4.40	4.25
	3-phase		4.15	4.40	4.25
Number of Indoor units connectable			13	16	18
Capacity connection ratio			% 50-130	50-130	50-130
Cabinet	Dimensions	H×W×D mm	1,380×950×370	1,380×950×370	1,380×950×370
	N/W	1 phase kg	114.0	114.0	118.0
Packaging	Dimensions	H×W×D mm	1,515×1,012×460	1,515×1,012×460	1,515×1,012×460
	Measurement	m <sup>3</sup>	0.7	0.7	0.7
Fan	Number of fan		2	2	2
		Air flow rate	Cooling m <sup>3</sup> /h	8,700	8,700
		Heating m <sup>3</sup> /h	8,700	8,700	8,700
	External static pressure	Pa	30	30	30
Compressor	Type		Rotary DC Inverter	Rotary DC Inverter	Rotary DC Inverter
	Refrigerant	Type	R410A	R410A	R410A
	Charge	kg	3.70	3.70	4.10
Sound pressure level	Cooling	dB(A)	52	52	53
Sound power level	Cooling	dB(A)	69	69	70
Piping connections	Liquid-gas LP-gas LP/HP	inches	3/8-5/8	3/8-5/8	3/8-5/8
	Total	m	180	180	180
Maximum piping length	Between ODU and the farthest IDU	m	85	85	85
	Between 1st branch Multi Kit and the farthest IDU	m	40	40	40
	Between Multi Kit and each IDU	m	15	15	15
	Between ODU above IDU and IDU	m	30	30	30
Maximum level difference	Between ODU and IDU	m	-	-	-
	Between IDUs	m	15	15	15

NOTES:  
 1. Performances are based on the following conditions:  
 Cooling Temperature: Indoor 27.0°C DB/19.0°C WB / Outdoor 35.0°C DB/24.0°CWB  
 Heating Temperature: Indoor 20.0°C DB/15.0°C WB / Outdoor 7.0°C DB/6.0°C WB  
 Eurovent test condition: Type of indoor unit connected is only Cassette.  
 Refer to EUROVENT certification regulation for more detail test conditions  
 Refer to EUROVENT website for test values connected Ceiling concealed duct type indoors  
 2. The sound pressure level is based on following conditions: 1.0 meter from the unit service cover surface, and 1.5 meter from floor level. The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1-2 dB (A). The above data was measured in an anechoic chamber. Therefore, reflected sound should be taken into consideration in the field.  
 3. If the specified main refrigerant piping on the table is not available on site, use the following pipe diameter with an appropriate reducer on site. If φ25.4 pipe is not available, please use φ28.58 pipe. If φ31.75 pipe is not available, please use φ34.92 pipe. If φ38.1 pipe is not available, please use φ41.28 pipe.



Specifications			RAS-8FSXNME	RAS-10FSXNME	RAS-12FSXNME
Power Supply	1-phase		-	-	-
	3-phase		3N ~400V 50 Hz	3N ~400V 50 Hz	3N ~400V 50 Hz
Nominal Capacity	Cooling	kW	22.40	28.00	33.50
	Heating	kW	25.00	31.50	37.50
Nominal Power input	Cooling	3-phase	6.22	7.27	9.36
		3-phase	5.32	6.89	9.15
	Heating	3-phase	3.60	3.85	3.58
		3-phase	4.70	4.57	4.10
SEER	3-phase		7.59	8.31	8.26
SCOP	3-phase		5.62	4.72	4.66
Number of Indoor units connectable			26	32	39
Capacity connection ratio			% 50-130	50-130	50-130
Cabinet	Dimensions	H×W×D mm	1,650×1,100×390	1,650×1,100×390	1,650×1,100×390
	N/W	3 phase kg	188.0	194.0	196.0
Packaging	Dimensions	H×W×D mm	1,787×1,151×500	1,787×1,151×500	1,787×1,151×500
	Measurement	m <sup>3</sup>	1.0	1.0	1.0
Fan	Number of fan		2	2	2
		Air flow rate	Cooling m <sup>3</sup> /h	9,900	11,100
		Heating m <sup>3</sup> /h	9,900	11,100	11,100
	External static pressure	Pa	30	30	30
Compressor	Type		Scroll DC Inverter	Scroll DC Inverter	Scroll DC Inverter
	Refrigerant	Type	R410A	R410A	R410A
	Charge	kg	4.20	6.00	6.00
Sound pressure level	Cooling	dB(A)	55	59	60
Sound power level	Cooling	dB(A)	76	77	77
Piping connections	Liquid-gas LP-gas LP/HP	inches	3/8-3/4-5/8	3/8-7/8-3/4	1/2-1-7/8
	Total	m	500	500	500
Maximum piping length	Between ODU and the farthest IDU	m	125	125	125
	Between 1st branch Multi Kit and the farthest IDU	m	90	90	90
	Between Multi Kit and each IDU	m	40	40	40
Maximum level difference	Between ODU above IDU and IDU	m	50	50	50
	Between IDUs	m	15	15	15

NOTES:  
 1. Performances are based on the following conditions:  
 Cooling Temperature: Indoor 27.0°C DB/19.0°C WB / Outdoor 35.0°C DB/24.0°CWB  
 Heating Temperature: Indoor 20.0°C DB/15.0°C WB / Outdoor 7.0°C DB/6.0°C WB  
 Eurovent test condition: Type of indoor unit connected is only Cassette.  
 Refer to EUROVENT certification regulation for more detail test conditions  
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 2. The sound pressure level is based on following conditions: 1.0 meter from the unit service cover surface, and 1.5 meter from floor level. The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1-2 dB (A). The above data was measured in an anechoic chamber. Therefore, reflected sound should be taken into consideration in the field.  
 3. If the specified main refrigerant piping on the table is not available on site, use the following pipe diameter with an appropriate reducer on site. If φ25.4 pipe is not available, please use φ28.58 pipe. If φ31.75 pipe is not available, please use φ34.92 pipe. If φ38.1 pipe is not available, please use φ41.28 pipe.

## OPTIONAL PARTS

### MULTI KIT

#### Line Branch (First Branch)



Model	Outdoor Unit Capacity	Remarks
E102-SN4	4-8 HP class	Heat Pump Application
E162-SN4	10-12HP class	Heat Pump Application
E102-XN3	8HP class	Heat Recovery Application
E162-XN3	10-12HP class	Heat Recovery Application

#### Header Branch



Model	Outdoor Unit Capacity	Remarks
MH-84AN1	4-8 HP class	Heat Pump Application
MH-108AN	8-12HP class	Heat Pump Application
MH-108XN	8-12HP class	Heat Recovery Application

### CH BOX





#### Greater design flexibility and ease of installation

- Widest range (1 to 16 ports)
- Compact and light-weight
- No drain connection required
- Suitable for any building shape

#### Single-Port CH Box

Model		
	CH-AP160SSX	CH-AP280SSX
Total Indoor Unit Capacity	6HP class	10HP class
Maximum Number of Indoor Unit	7	8
Dimensions (H×W×D)	mm 191 × 301 × 214	mm 191 × 301 × 214
Net Weight	kg 6	kg 7

#### Multi-Port CH Box

Model				
	CH-AP04MSSX	CH-AP08MSSX	CH-AP12MSSX	CH-AP16MSSX
Number of Port	4	8	12	16
Total Indoor Unit Capacity	16HP class	30HP class	30HP class	30HP class
Maximum Number of Indoor Unit per branch	6	6	6	6
Dimensions (H×W×D)	mm 260 × 303 × 352	mm 260 × 543 × 352	mm 260 × 783 × 352	mm 260 × 1,023 × 352
Net Weight	kg 31	kg 31	kg 34	kg 34



# LINE-UP OVERVIEW

## COMPARING INDOOR UNITS CAPACITY

IDU Category	kW (Cooling)																		
	1.1	1.7	2.2	2.8	4.0	5.6	7.1	8.0	10.0	11.2	12.5	14.0	16.0	20.6	22.4	28.0	45.0	56.0	
CEILING CASSETTE	4-WAY CASSETTE TYPE (800mm×800mm)				●	●	●	●		●		●	●						
	4-WAY CASSETTE COMPACT TYPE (600mm×600mm)	●	●	●	●	●	●												
	2-WAY CASSETTE TYPE			●	●	●	●	●		●		●	●						
DUCTED	COMPACT DUCTED UNIT	●	●	●	●	●													
	STANDARD DUCTED UNIT						●	●	●	●		●	●						
	DUCTED UNIT SPECIAL HOTEL		●	●	●	●													
	HIGH PRESSURE DUCTED UNIT														●	●	●	●	
EXPOSED	WALL MOUNTED UNIT	●	●	●	●	●	●	●		●									
	CEILING TYPE					●	●	●	●	●		●	●						
	FLOOR TYPE				●	●	●	●											
WATER MODULE	HYDRO-FREE Low temperature**								●							●			
	HYDRO-FREE High temperature**																●		

\*\* Only with 8 to 12HP class Set Free Mini heat recovery unit



## INDIVIDUAL CONTROLLERS

- Offering 3 types in advanced, simple, wired and remote controller variations.
- Intuitive and user friendly interface.



WIRED REMOTE CONTROLLER PC-ARFP1E



SIMPLIFIED WIRED REMOTE CONTROLLER PC-ARH1E



SIMPLE WIRELESS REMOTE CONTROLLER PC-AWR

## CENTRALIZED CONTROLLERS

- Offering 7 types suitable for small or larger scale buildings.
- From simple and intuitive room temperature management to visualized energy consumption monitoring.



CS MANAGER 2 T10



CS MANAGER 2 T15



CS MANAGER 2 SCREEN LESS



CSNET LITE



CENTRAL STATION mini PSC-A32MN



CENTRAL STATION EZ PSC-A64GT



SIMPLE CENTRALIZED REMOTE CONTROL WITH WEEKLY TIMER PSC-A64S

## GATEWAYS

- Available for Building Management System (Modbus/KNX/BACnet/LONWORKS).



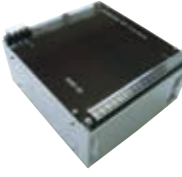
Modbus HC-A8MB/HC-A64MB



KNX HC-A16KNX1/HC-A64KNX



BACnet® HC-A16BAC/HC-A64BAC



LONWORKS® HARC-70BX-E