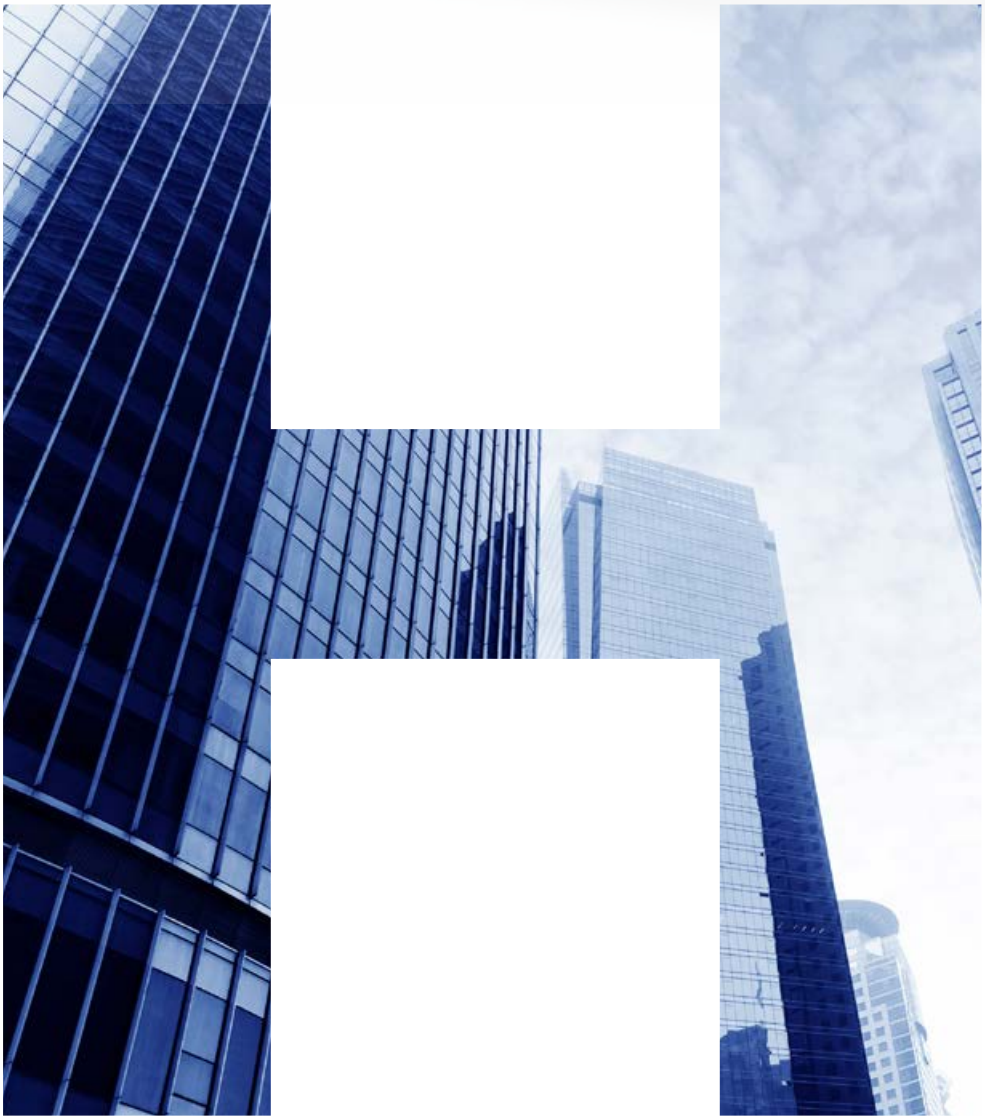
2018
2019

Set Free Sigma

Advanced VRF Series

HITACHI

Cooling & Heating



SET FREE SIGMA

ADVANCED VRF SERIES

HIGH COMBINATION POSSIBILITIES

- 8 to 96 HP combination for Standard range
- 5 to 72 HP combination for High Efficiency range

SUITABLE FOR HEATPUMP AND HEAT RECOVERY APPLICATIONS

Set Free Sigma outdoor units can be installed at 2 pipes and 3 pipes applications

HIGH CAPACITY MODULES

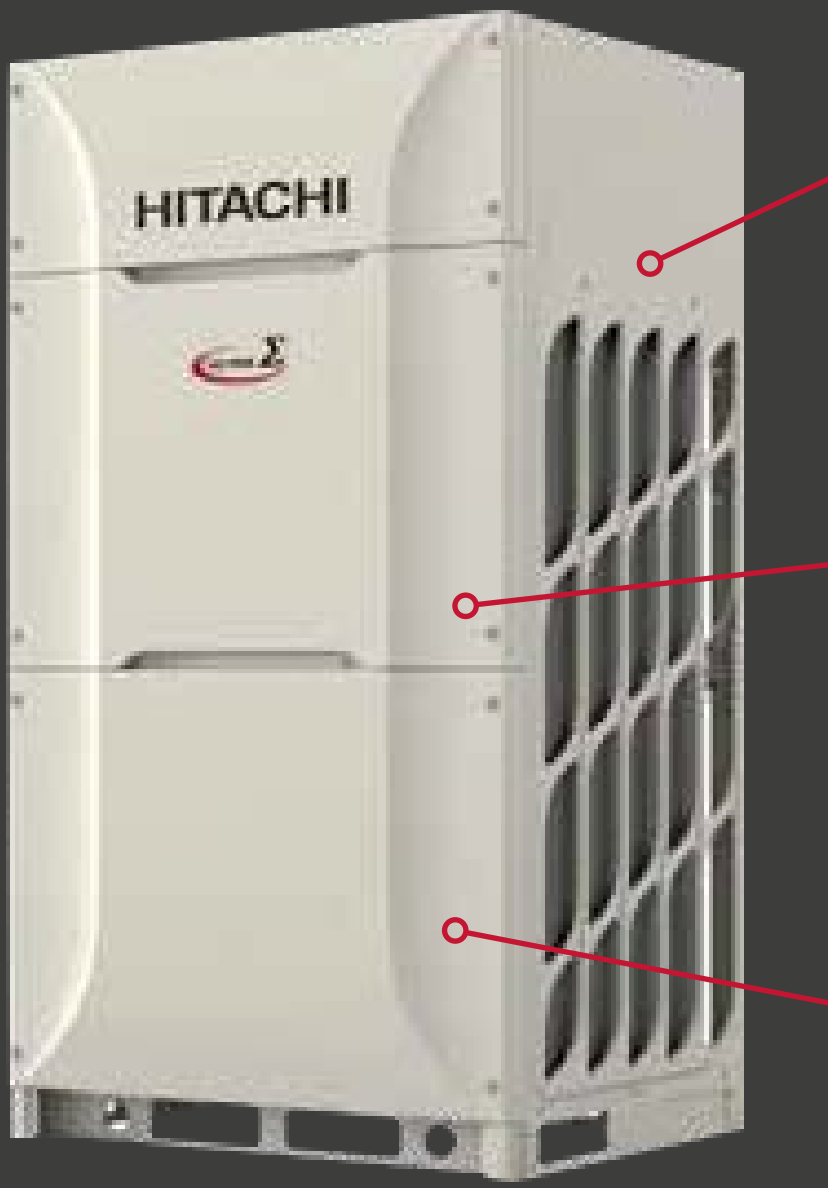
Up to 24HP on a single module unit

SMOOTH CONTROL

State of the art control and precise compressor leads to the better efficiency and comfort

HIGH EFFICIENCY

Best efficiency thanks to a complete redesign of compressor, heat exchanger and fan air path design



SYSTEM FREE COMPATIBILITY

WIDE INDOOR UNIT RANGE TO FIT EVERY APPLICATION NEEDS

INDOOR UNITS

Cassette: 1 to 16 kW (0.4 - 6 HP)

Ceiling: 4 to 16 kW (1.5 - 6 HP)

Floor mounted: 2.8 to 7 kW (1 - 2.5 HP)

Ducted (mini, low profile, high pressure) 1 to 56 kW (0.4 - 4 HP)

Wall mounted: 1 to 11 kW (0.4 - 4 HP)

VENTILATION

Heat recovery ventilators

Active and passive ventilators: 250-2000 m3/h

DX-Kit

Enables connection to third party AHU: 7 to 31 kW (500 to 5300 m3/h)

WATER MODULES

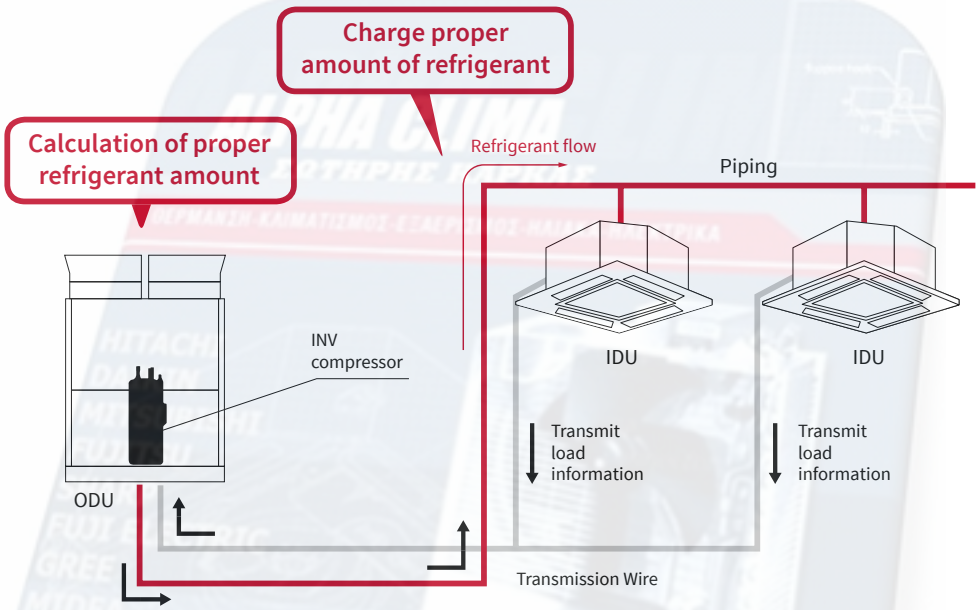
Low Temperature and High Temperature: 7 kW to 20 kW

Hot water production (also cooling for specific models)

SMOOTH CONTROL

Real time load control

The model calculates the appropriate amount of coolant supplied by the outdoor units on the basis of inf ormation about the required load from the individual indoor units. The model employs smooth operation control to control the number of revolutions of the inverter compressor. The model supplies the appropriate amount of coolant to the indoor units according to the required load. The model increases energy-saving efficiency by operating smoothly while controlling the switching on and off of the compressor at low-load.



Smart refrigerant temperature control

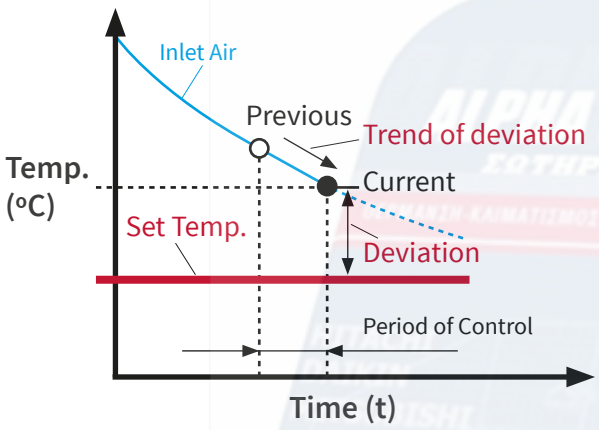
Increasing evaporating temperature set point has some benefits and disadvantages:

HIGH TEMPERATURE	LOW TEMPERATURE
• Operation at lower compressor frequencies → Increased seasonal cooling efficiency • Less dehumidification • Less risk of cold draft feeling thanks to higher air discharge temperature	• Slower response
EFFICIENCY	COMFORT

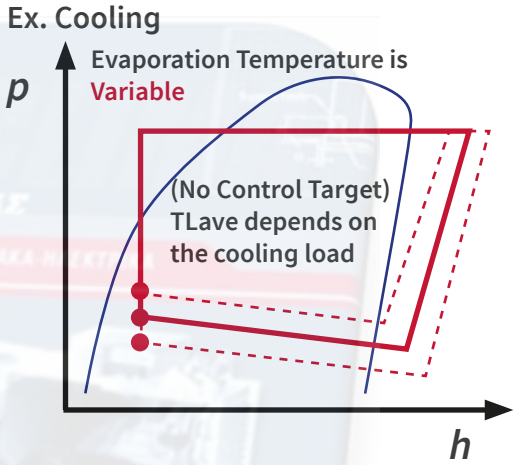
EFFICIENCY? **OR** **COMFORT?**

SMART REFRIGERANT TEMPERATURE CONTROL

Smart Refrigerant Temperature control is adaptative, so for if load is low or the set temperature is close to the actual one, will prevail evaporating temperature increase. In contraposition, if load demand is high or difference from set point and real temperature is high, evaporating temperature is decreased and compressor frequency is increased.



Tracking parameters



Operation working point

Inlet air temp. and Set temp. difference	Speed to reach T Set Temp.
Large	Slow
Small	Fast

Evaporating temperature	Compressor frequency
Reduced	Increased
Increased	Reduced

EXAMPLE

Meeting Room, mid season

High cooling needs: occupancy (variable), computers and sun

Evaporating temperature is decreased :

Blown air temperature = 8ºC
Cooling capacity = 100%, nominal energy consumption

Office desk

Low cooling needs : stable occupancy

Evaporating temperature is increased :

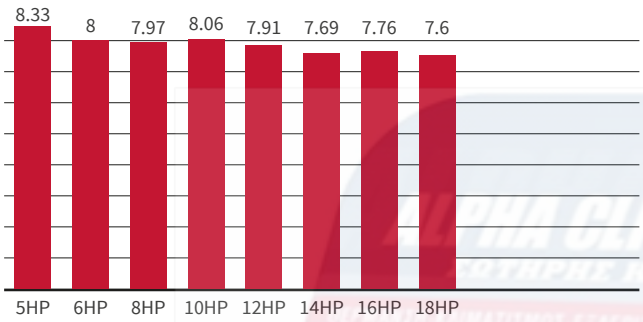
Blown air temperature = 16ºC
Cooling capacity = 53%, with 30% energy consumption savings

HIGH EFFICIENCY

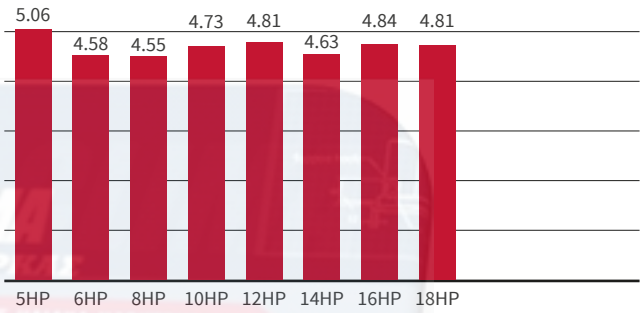
Set free Sigma is achieving outstanding performance results due to its core components new design. Heat exchanger, compressor and exhaust fans have been completely updated.

Efficiency Ratio

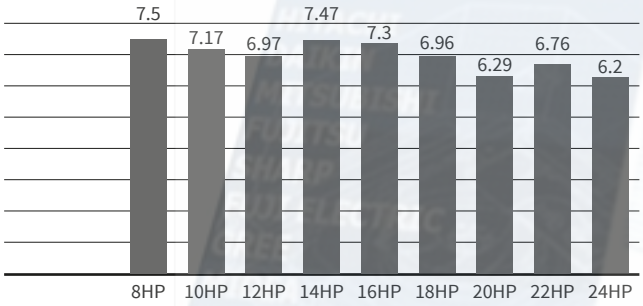
High Efficiency SEER



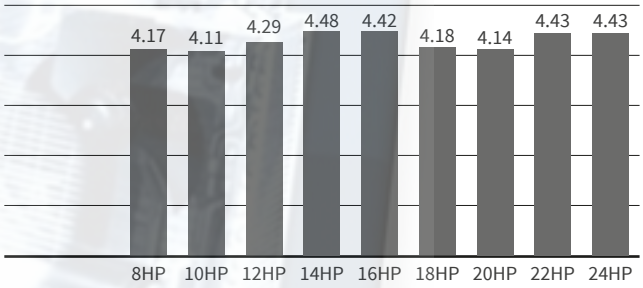
High Efficiency SCOP



Standard SEER

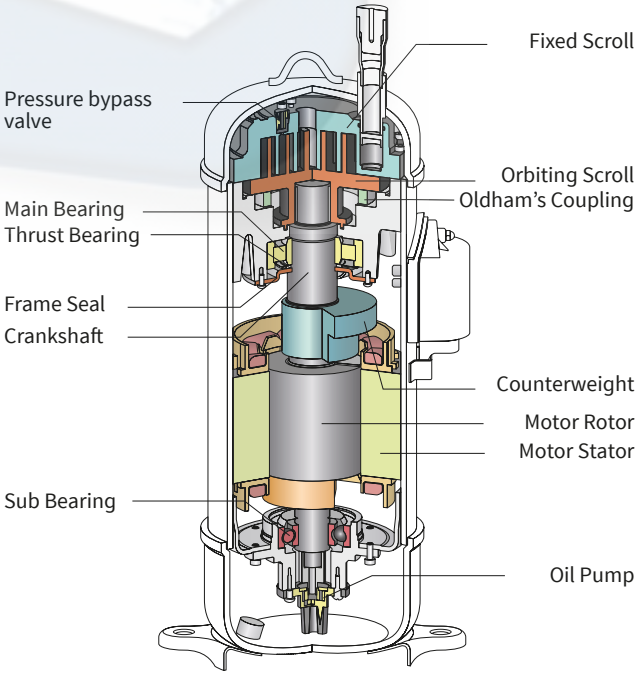


Standard SCOP



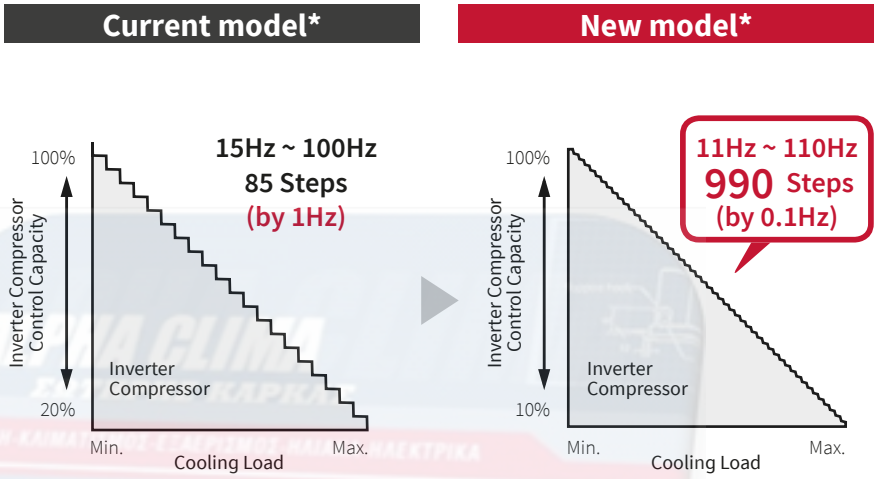
Improved Compressor

Compressor has been completely redesigned achieving efficiency increases (nominal capacity) of +4% compared vs previous model.



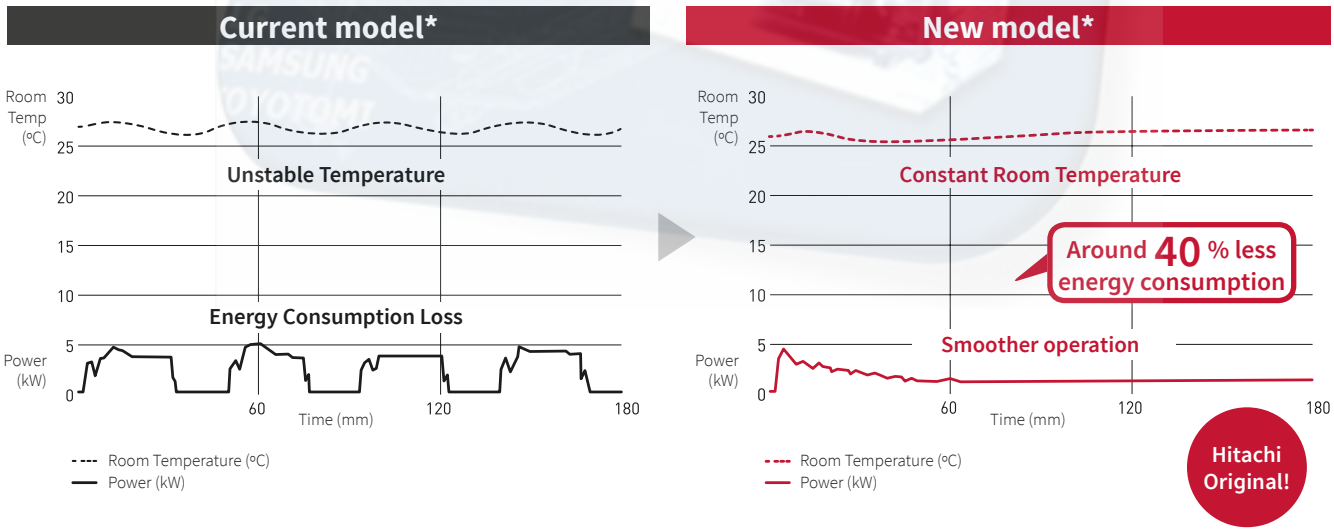
Greater capacity control

The highly improved performance as well as greater energy saving is achieved by adopting newly developed high efficiency DC inverter compressor, with outstandingly precise control technology of 0.1Hz increments inverter frequency. Another feature is the dramatically extended working range, menabled by expanding the compressor's operating frequency band, both upwards and downwards.



*Example at 12HP

Compressor has been completely redesigned achieving efficiency increases (nominal capacity) of +4% compared vs previous model.

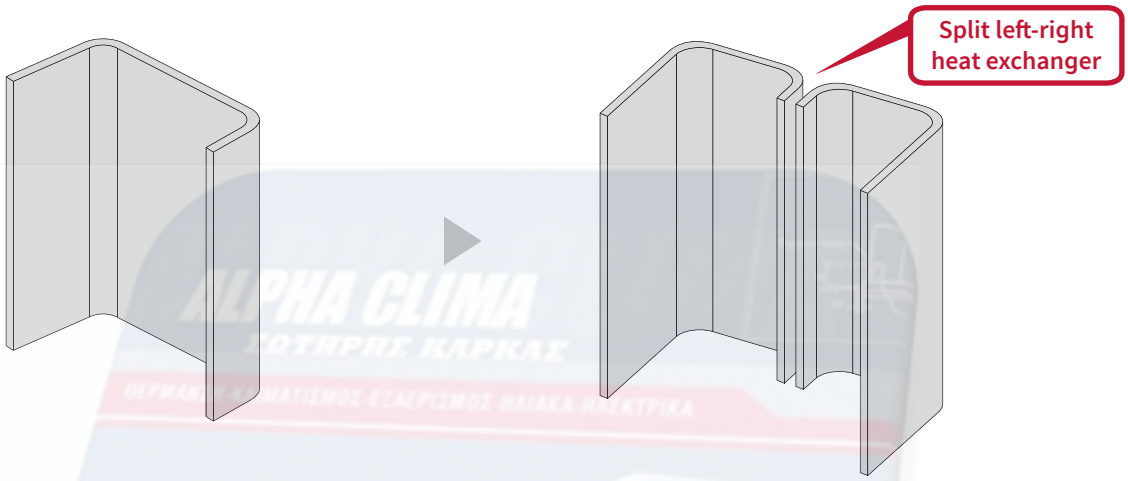


New Heat Exchanger

Heat exchanger shape (∑ shape) and angle have been redesigned, achieving an increase of +10% of the Exchange Surface and consequently the energy efficiency.

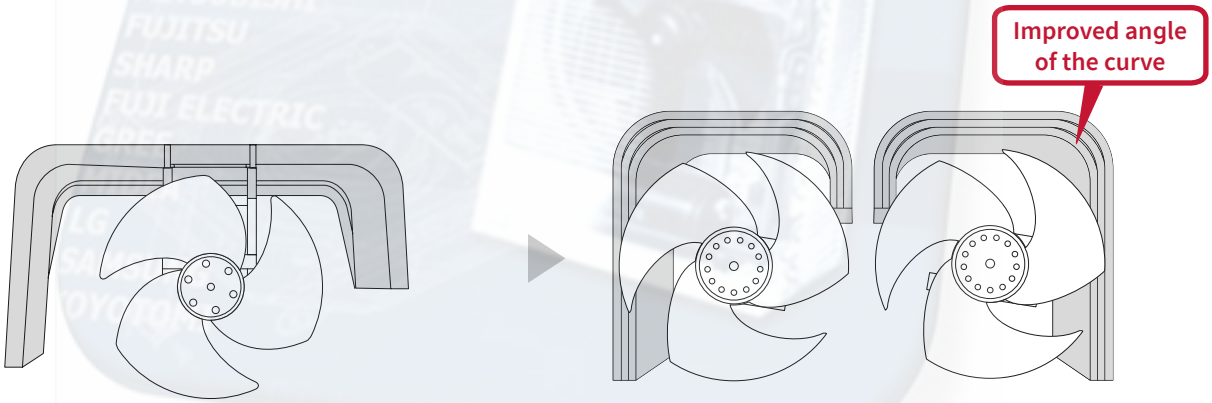
New shape

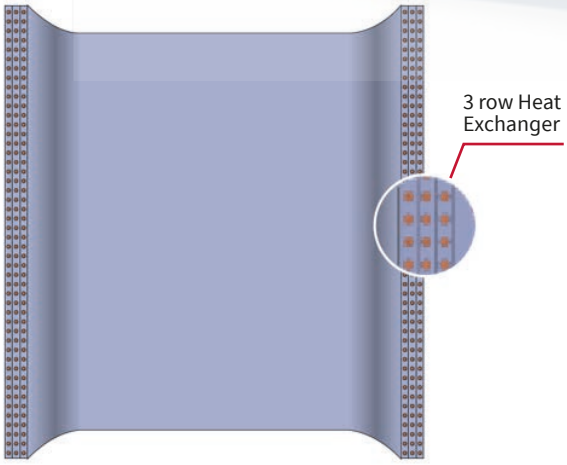
Current model (14-16HP) | **New model (14-24HP)**



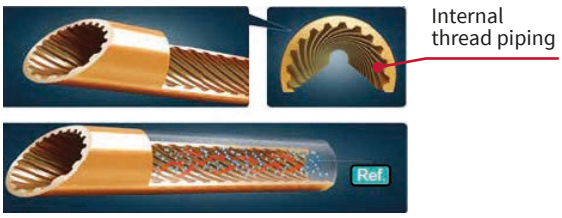
New angle

Current model (14-16HP) | **New model (14-24HP)**





New 3 row Heat Exchanger adapts a newly developed High Efficiency Heat transfer fin for optimum performance. Internal tread piping enhances even more the results.

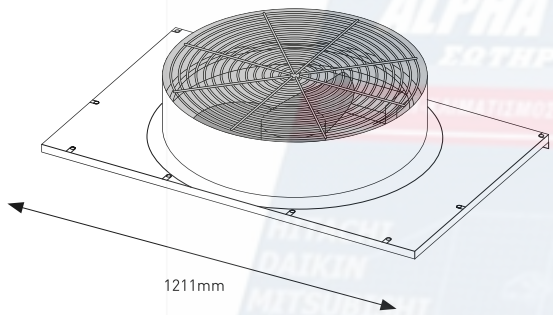


New Fan Design

Exhaust fans have been redesigned, achieving an increase of the airflow volume by 23% (12HP). Energy consumption in the driving shaft has decreased by 20% on average.

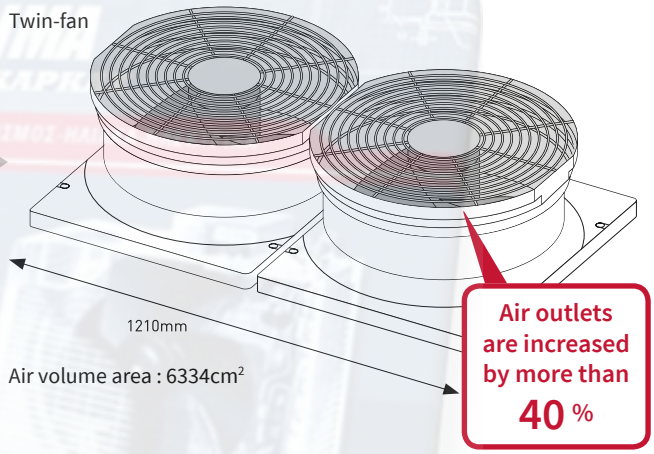
Expansion of Air Outlets

Current model



Air volume area : 4403cm²

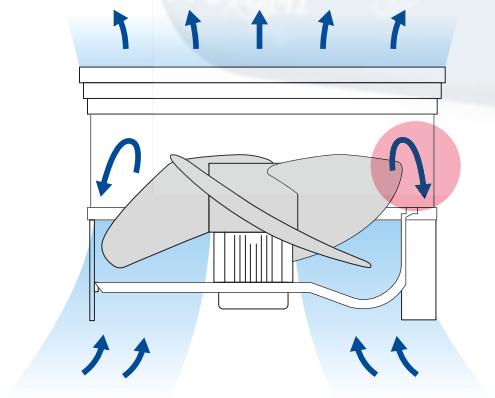
New model



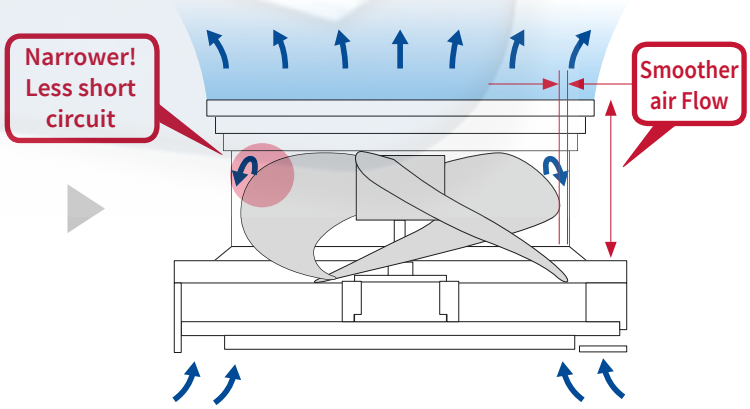
Air volume area : 6334cm²

Improvement in bell-mouth

Current model



New model

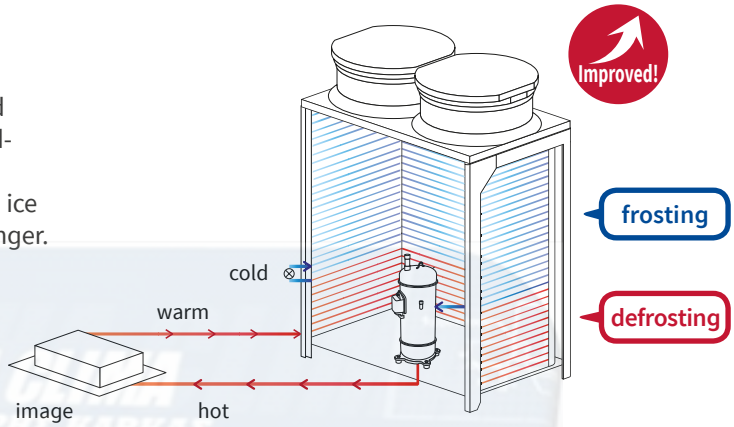


COMFORT

Defrosting

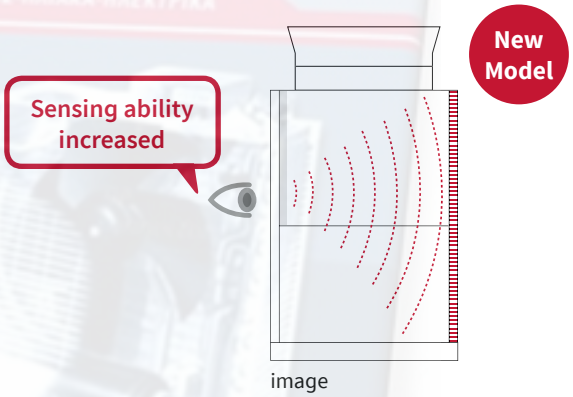
Prevention

For defrosting prevention, the model controls frost and ice formation during heating operation by running mid-temperature coolant (5°C-20°C) before decreasing the pressure through a heat exchanger to control frost and ice formation on the lower part of the outdoor heat exchanger.



Better Sensing

Even while defrosting, Hitachi's original sensing function has improved the system for detecting the frost amount.

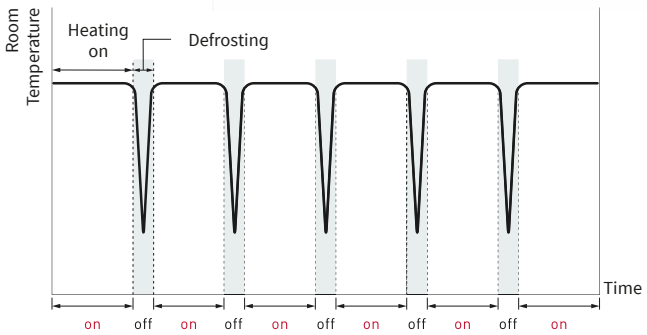


More efficient defrosting

In addition, the defrosting interval has been increased by more than 200%, from 120 minutes to 250 minutes. Undertakes defrosting more efficiently, rather than unnecessary defrosting every two hours.

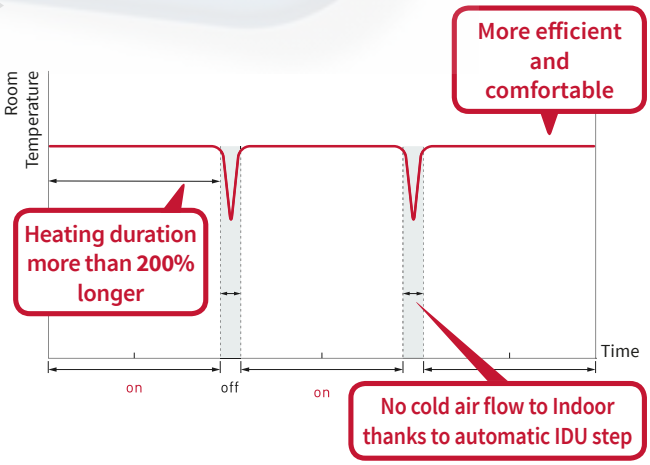
Current Model (image)

Unstable Temperature



New model (image)

More constant Temperature

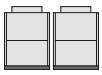
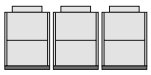


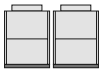
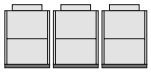
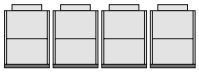
DESIGN FLEXIBILITY

SINGLE MODULE 24HP

Compact

Combination Comparison of Outdoor Unit

	8 to 24HP	26 to 48HP	50 to 72HP	74 to 96HP
Standard FSXNSE	 Single Module	 Two Units	 Three Units	 Four Units

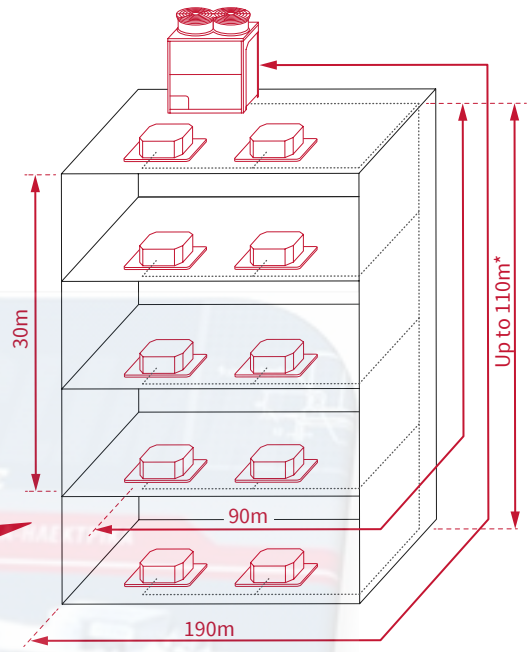
	8 to 18HP	20 to 36HP	38 to 54HP	56 to 72HP
High Efficiency FSXNPE	 Single Module	 Two Units	 Three Units	 Four Units

Piping Connection Workability

Improvement of restrictions on piping construction

Total piping length	1000m	
Longest length actual (Equivalent)	165m (190m)	
Longest length after first branch	90m	
Level difference between ODU and IDU	Higher ODU	Standard 50m Optional 110m(*)
	Lower ODU	40m
Level difference between IDUs	30m	

* Please consult your distributor or dealer if the height difference is over 50m.



- Suitable for a highrise building or complex facilities.
- Leads to cost/time saving for designers, with more efficient design.

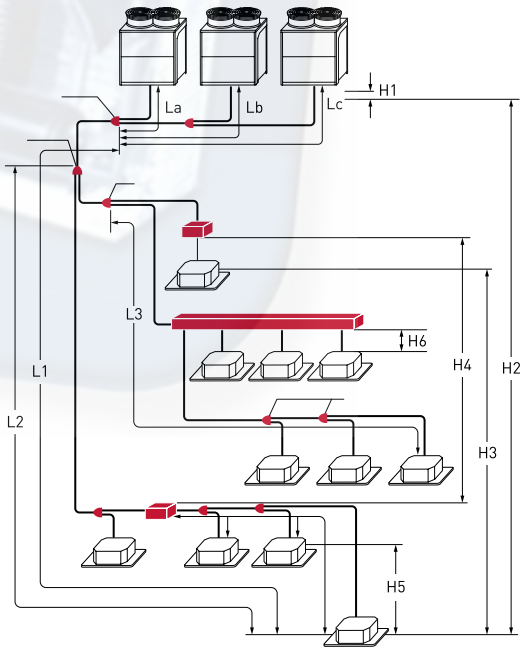
Better Piping Limit

Improvement of restrictions on piping construction

		Example	Length (m)
Maximum Piping Length	Total piping length	-	1000
	Refrigerant piping length	L1	165 (190)
	Between Piping connection kit and each ODU	La, Lb, Lc	10
	Between "1st branch Multi-kit" and the farthest IDU	L2	90
	Between "Multi-kit" and each IDU	L3	40
	Total piping length Between CH-Box and IDU	-	40

			Example	Height (m)
Maximum Height Difference	Between ODUs (combination of base units)		H1	0.1
	Between ODUs and IDUs	ODU is higher than IDU	H2	≤ 110(*)
		IDU is higher than ODU		40
	Between IDUs		H3	15
	Between CH-Box		H4	15
	Between IDUs connecting to one CH-Box		H5	4
	Between IDU and CH-Box		H6	≤15

Each maximum length or height difference has several conditions, please refer to the technical documents in inquiry.
(*) Custom Order: up to 110m / Standard: up to 50m

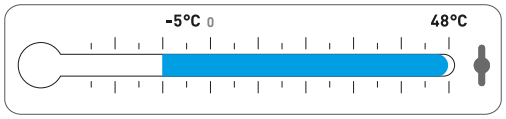


Operation Temperature Range

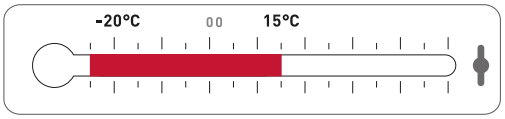
Expansion of scope of outdoor operating temperature

Improved!

Cooling Capacity Range	°C DB (°F)	-5 to 48 (23 to 118)
Heating Capacity Range	°C WB (°F)	-20 to 15 (-4 to 59)



Cooling mode

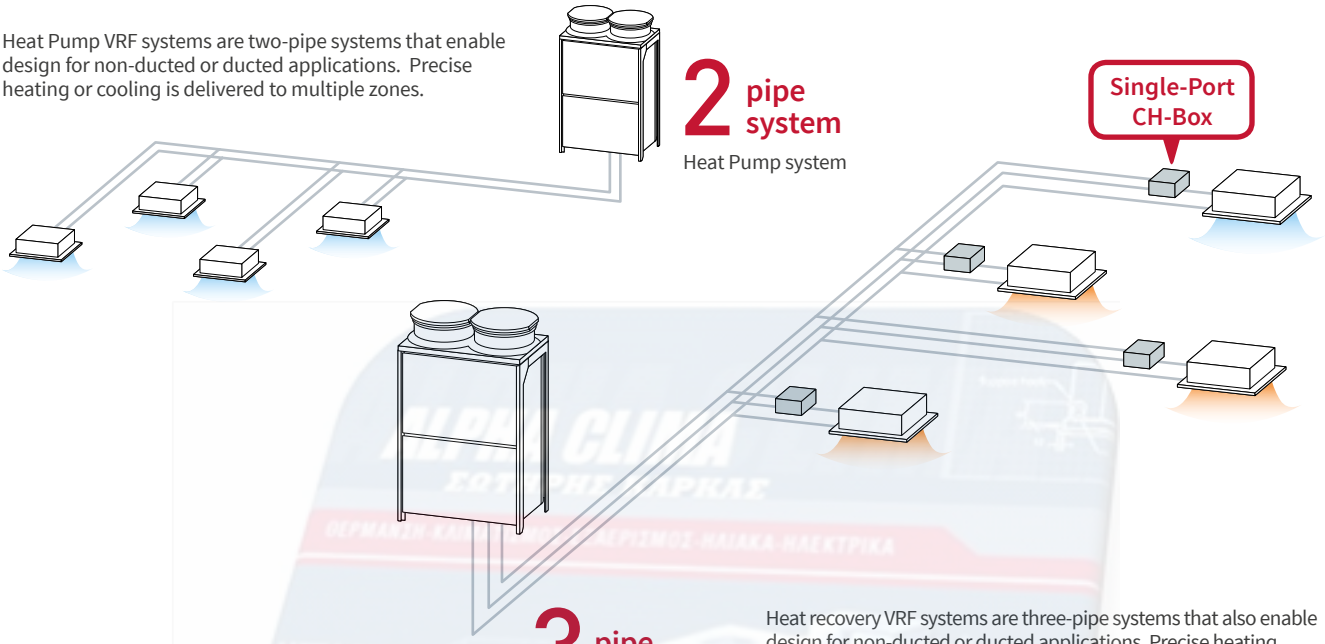


Heating mode

WHAT IS HEAT RECOVERY SYSTEM ?

Heat Pump system and Heat Recovery system

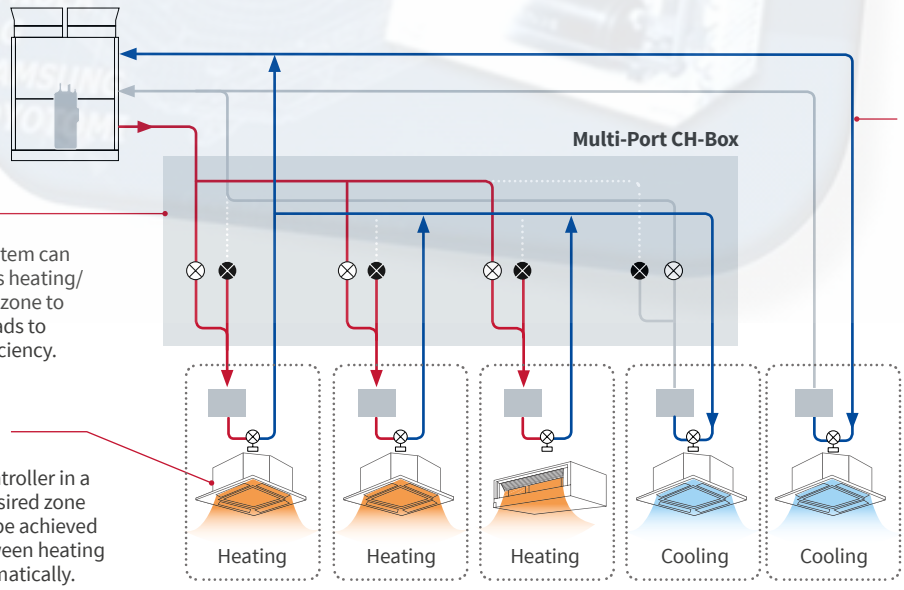
Heat Pump VRF systems are two-pipe systems that enable design for non-ducted or ducted applications. Precise heating or cooling is delivered to multiple zones.



3 pipe system
Heat Recovery system

Heat recovery VRF systems are three-pipe systems that also enable design for non-ducted or ducted applications. Precise heating and cooling is delivered with an extra measure of flexibility, since the system can provide simultaneous heating and cooling while transferring any excess heat or cooling from one zone to another.

Merits in Heat Recovery system



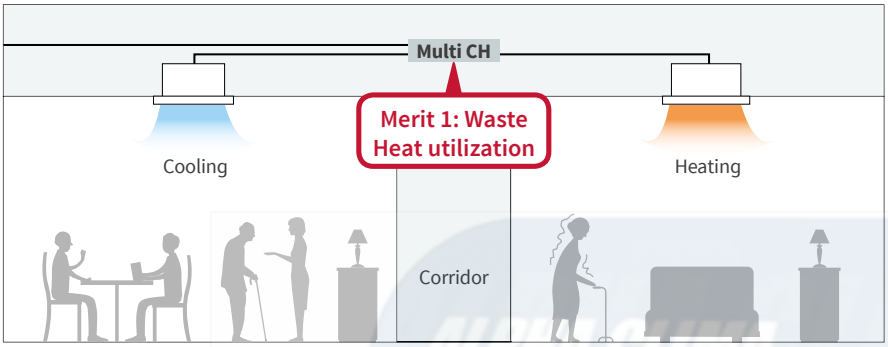
1 Waste Heat utilization
Heat Recovery system can transfer the excess heating/ cooling f rom one zone to another, which leads to higher energy efficiency.

2 Auto Cool/Heat operation in IDU
With a remote controller in a zone, constant desired zone temperature can be achieved by switching between heating and cooling automatically.

3 With or Without CH-Box
In one heat recovery system, cooling-only IDU is also utilized by without going through CH-Box.

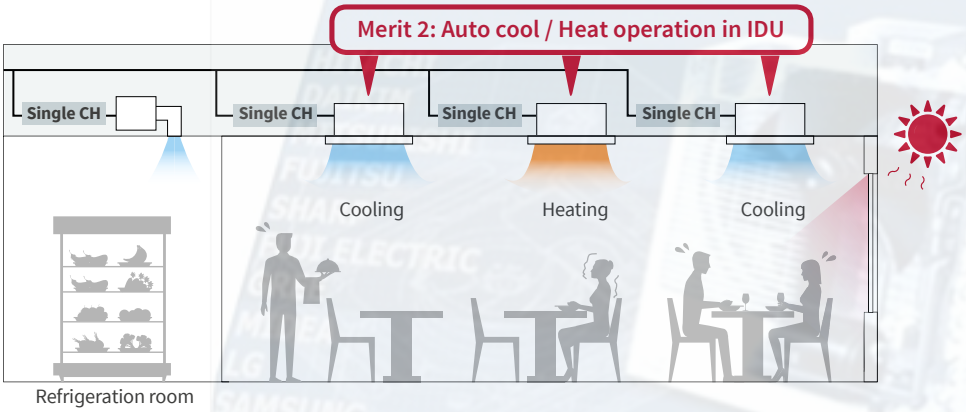
Recommended Applications

Nursing home in all season



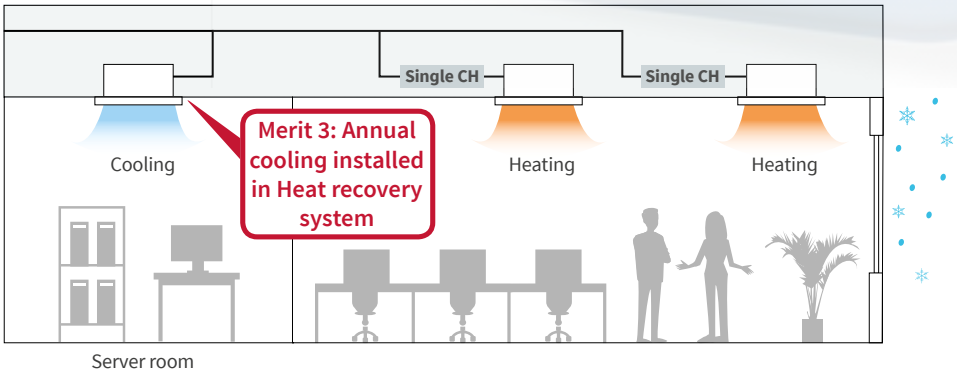
Heat Recovery system able to individual heating and cooling simultaneously along each room's requirement.

Restaurant in shoulder season



In AUTO mode, by thermistor built in IDU air inlet or RCS, IDU check the gap between the current temperature and set-point, which leads to the great comfortability and energy saving as well.

Office in winter season



Cooling-only IDU is also utilized in the heating recovery system, which is useful for small server room for offices.

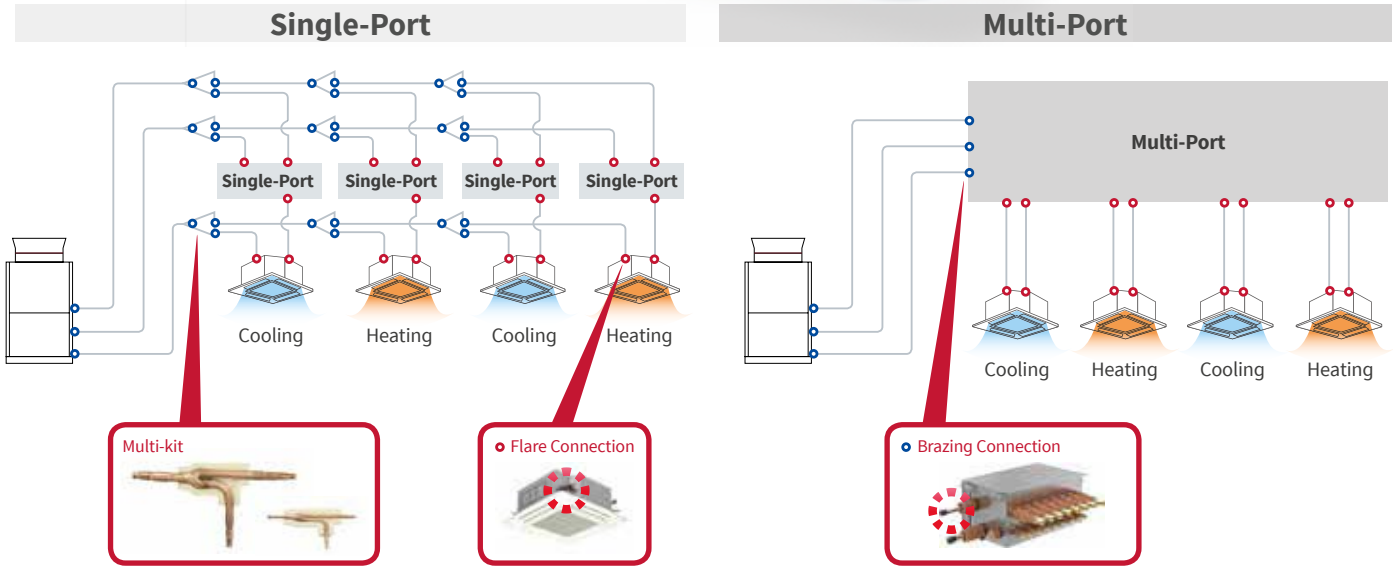
DESIGN FLEXIBILITY

New CH-Box (Change-Over Box)

Wider line-up

Type			Single-Port		Multi-Port			
Model Name			**CH-AP160SSX**	**CH-AP280SSX**	**CH-AP04MSSX**	**CH-AP08MSSX**	**CH-AP12MSSX**	**CH-AP16MSSX**
Images								
Dimensions (H*W*D)		mm	191 × 301 × 214	191 × 301 × 214	260 × 303 × 352	260 × 543 × 352	260 × 783 × 352	260 × 1023 × 352
N/W		kg	6 ↓	6 ↓	14	25	36	47
Electrical Details	Power Supply		AC1Ø 230V/50Hz, 220-240V/50Hz, 220V/60Hz		AC1Ø 230V/50Hz, 220-240V/50Hz, 220V/60Hz			
	Power Input	W	5	5	11.2	22.4	33.6	44.8
	Current	A	0.1	0.1	0.2	0.4	0.6	0.8
Maximum Total Capacity Index		kW	16	28	44.8	85	85	85
Number of port (for IDU)			1	1	4	8	12	16
Maximum Connectable IDUs per Port			7	8	6	6	6	6
Maximum Piping length	between CH-Box and the IDU		40 ↑					
Maximum Height difference	between CH-Box		15m					
	Between CH-Box and IDU		15m					
	between IDUs connecting to same CH-Box		4m					

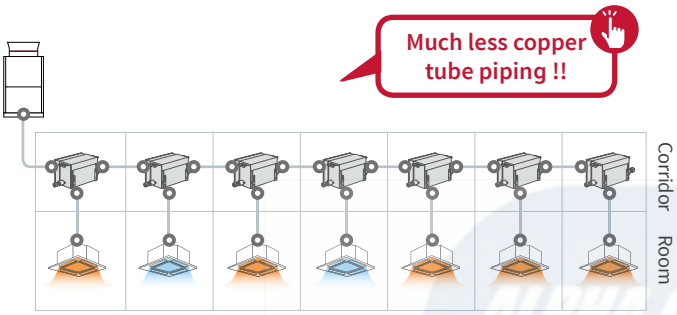
System configuration



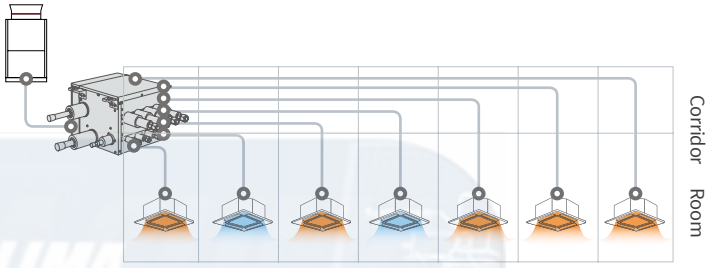
Which is better?

▼ ”Long narrow building” application

Single-Port



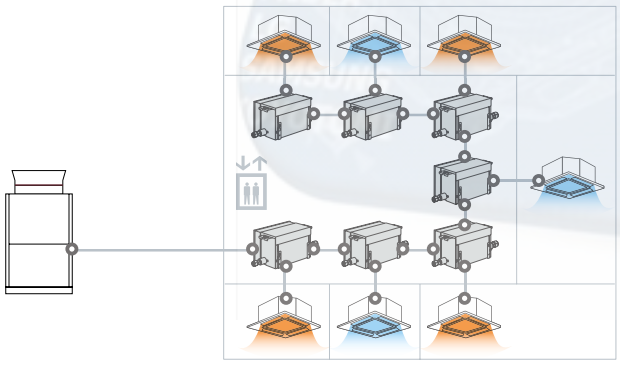
Multi-Port



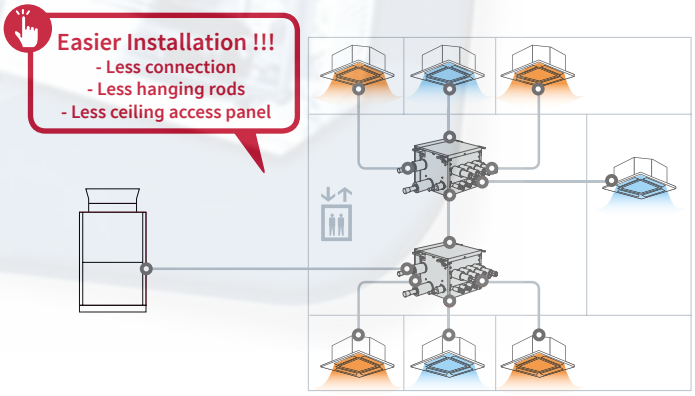
Single-Port	Item	Multi-Port
58 m	Total piping Length	136 m
6	Needed multi-kit sets	0
92 points (Brazing: 57 / Flare: 32)	Connection Points	34 points (Brazing: 6 / Flare: 28)
14	Hanging Rods for CH-Box	4
14 pieces	Total Ceiling Access Panel	8 pieces

▼ ”Central CH-Box location” application

Single-Port



Multi-Port



Single-Port	Item	Multi-Port
60 m	Total piping Length	63 m
6	Needed multi-kit sets	1
92 points (Brazing: 57 / Flare: 32)	Connection Points	40 points (Brazing: 12 / Flare: 28)
14	Hanging Rods for CH-Box	8
14 pieces	Total Ceiling Access Panel	9 locations

Hitachi’s CH-Box merit

Top-in-class compact body
Top-in-class light-weight unit

▼

More Design Flexibility

No drain connection needed

▼

Easier Installation

OPTIONAL FUNCTIONS

Low Noise Operation

Thanks to below 2 Design Changes

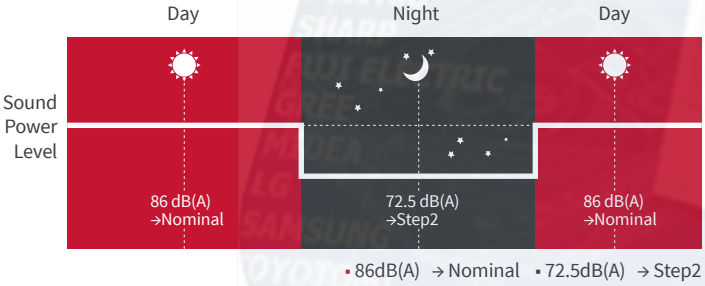
Sound Power Level	dB(A)							
HP	8	10	12	14	16	20	22	24
Current Model	81.5	82.5	84	85.4	**85.5**	**86**	**87**	**87**
New Model	80	82	82	85	**85**	**86**	**84**	**86**

-1.5 on Average!
The performance capability has increased, but the running Sound Power Level (dB(A)) has decreased.

Silent Mode

The user can set a (three-step) nighttime low-noise schedule using the control unit remote controller. The user can set a schedule for operation that takes the ambient environment into account.

Setting example



	18HP	42HP
Noise Reduction mode	**Sound Power Level**	**Sound Power Level**
Nominal	86	89
Step1	82.5	86
Step2	77.5	81
Step3	72.5	76

Smart building ready

Built-in functions for up to 3 inputs:

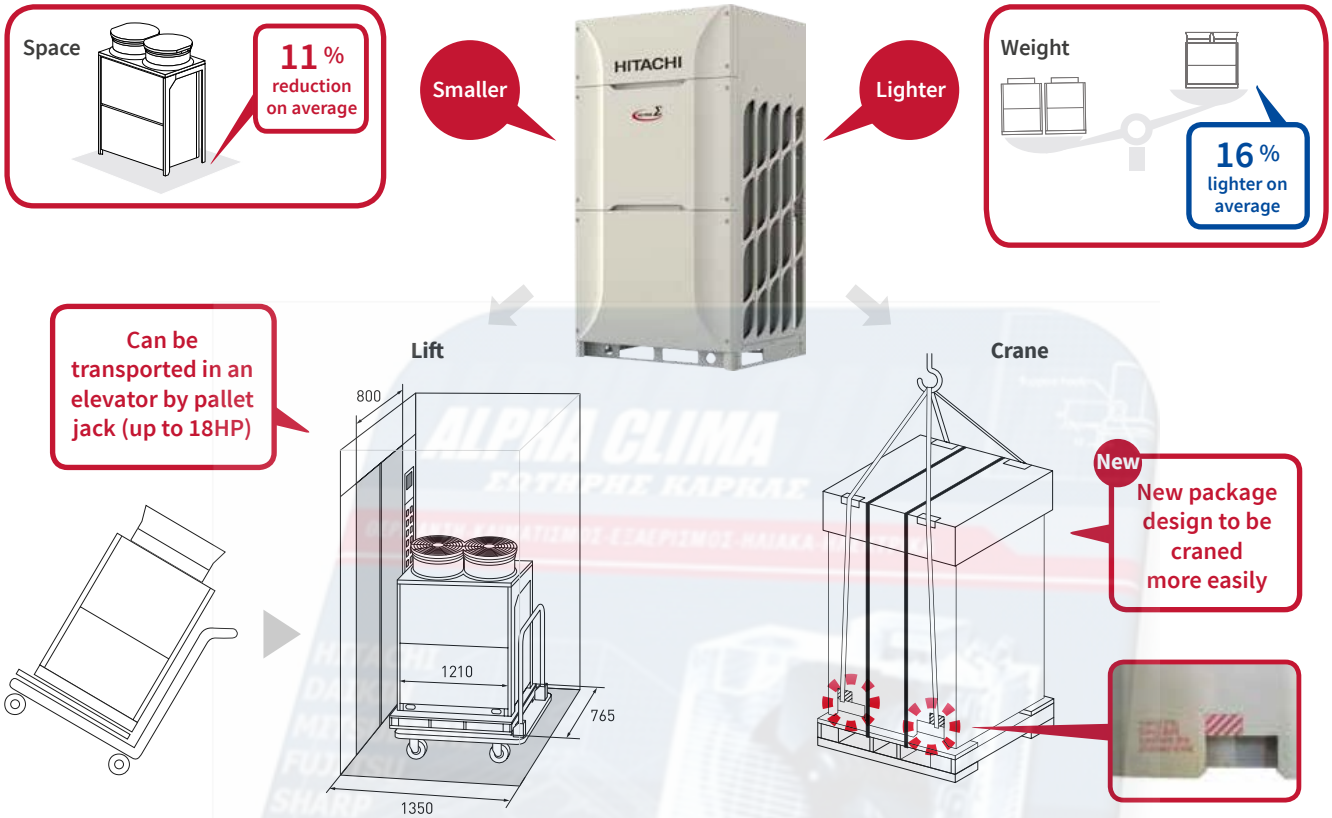
- Reduce sound level down to -14,5 dB(A) with up to 3 stages
- Limit energy consumption between 0 and 100% with up to 4 stages
- Operate an emergency stop or a mode change between cooling and heating

2 outputs to communicate operation status :

- Default alarm
- Compressor ON/OFF, defrosting...

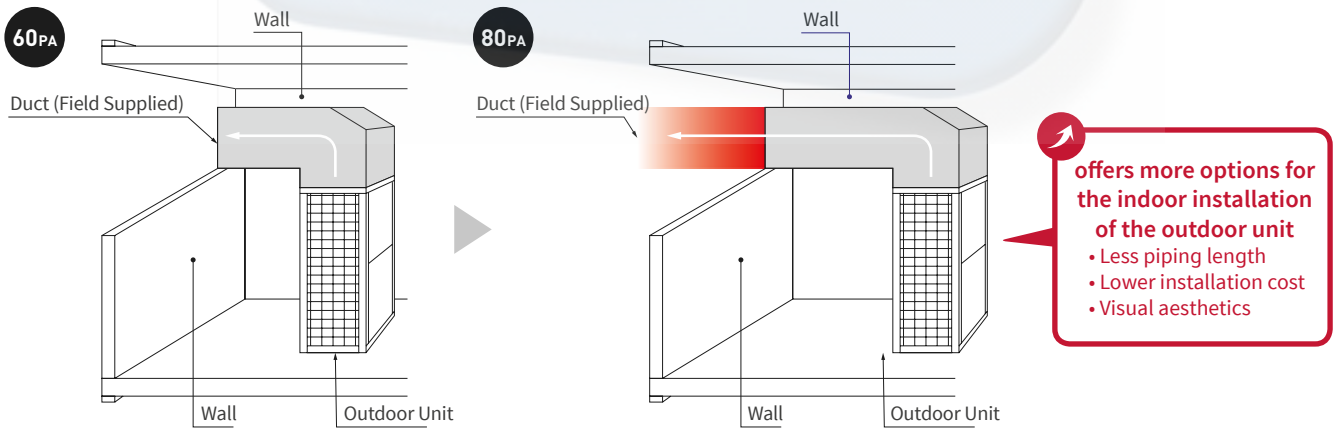
EASY INSTALLATION

Easy Transportation



Improved External Static Pressure

High static pressure for outdoor units: can handle up to 80Pa.



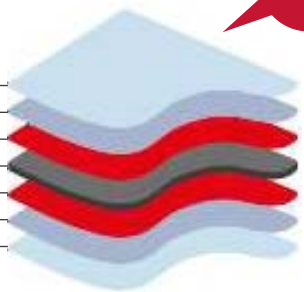
RELIABILITY & MAINTENANCE

Coating treatment over outer surface (Zinc Phosphate and Polyester resin)

Highly corrosion resistant hot dip coated

New

Lubrificant coating
Hydrophilic coating
Epoxy coating for anti corrosion treatment
Aluminium fin
Epoxy coating for anti corrosion treatment
Hydrophilic coating
Lubrificant coating

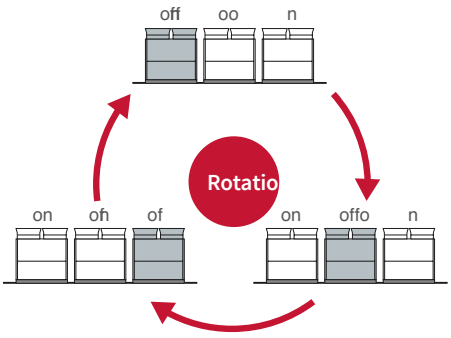


New 3 layer protection for the heat exchanger allows to increase by +100% working life on salty environment vs previous model

To prevent failure and emergency operation in case of failure

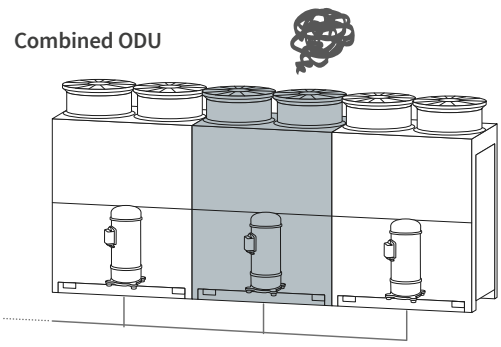
To prevent failure

Standardize the running time of the individual outdoor units and distribute the load by rotating the order of operation of the compressors of the outdoor units.



Back up function

Full introduction of backup operation function. If one outdoor unit should fail, the model can continue to operate using the remaining outdoor units, thereby preventing total system failure.



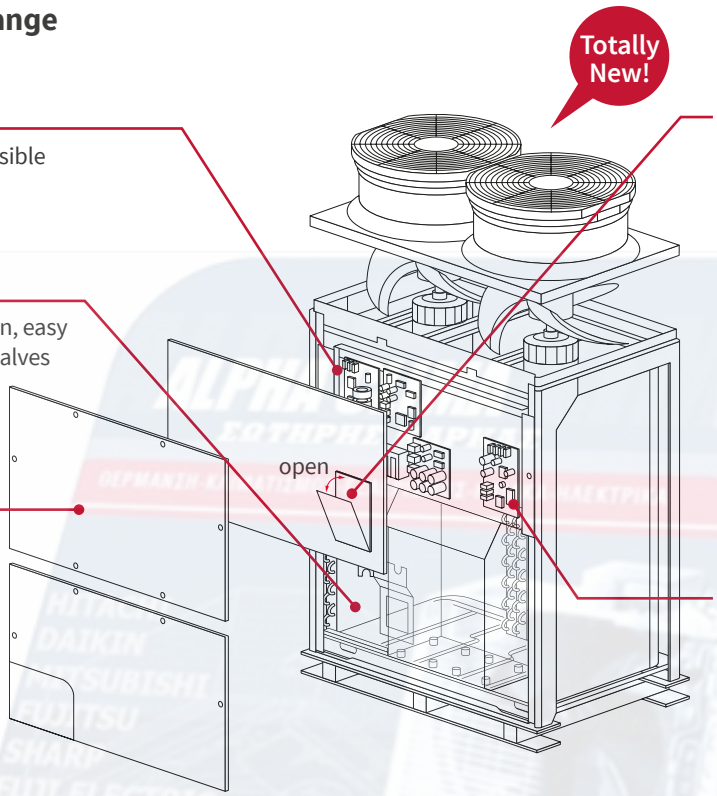
Maintenance Ease

Total Structure Change

New Structure:
In upper section, all PCB visible and easily accessible

New Structure:
More Space in lower section, easy access to compressors or valves

New Panel:
The upper panel (on the side of an electric box) can be independently detached from the lower panel (on the compressor chamber side)



Newly adopted window for 7-segment display:
Adopting access door to the electrical box in the upper panel, which leads to easy access to 7-segment display, PSW & DSW and so on

New DSW setting for Refrigerant pump-down:
Refrigerant evacuation: Enforced operation to open ODU EVO/EVB, IDU EVI, and Hi/Low pressure By-pass SVB

Tools

- **Bim library**

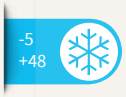
- **Autocad library**

- **Global Selection Software**

SET FREE SIGMA

Standard FSXNSE

- Compact units from 8 to 24 HP
- Scope of performance 8 to 96 HP
- Combined with 2-pipe and 3-pipe systems
- High efficiency
- Freedom in piping design
- Wide selection of indoor units



			RAS-8FSXNSE	RAS-10FSXNSE	RAS-12FSXNSE
Nominal Cooling capacity		kW	22.4	28	33.5
Nominal Heating capacity		kW	25	31.5	37.5
EER			4.15	3.85	3.77
COP			4.75	4.57	4.1
SEER			7.5	7.17	6.97
SCOP			4.17	4.11	4.29
Operating range	Heating	°C	-20 ~ 15	-20 ~ 15	-20 ~ 15
	Cooling	°C	-10 ~ 48	-10 ~ 48	-10 ~ 48
Air flow rate		m³/min	165	170	190
External static pressure		Pa	80	80	80
Fan number			1	1	1
Sound power level		dB(A)	80	82	82
Sound pressure level		dB(A)	58 (53)	60 (53)	59 (54)
Dimensions (HxWxD)		mm	1725x959x784	1725x959x784	1725x959x784
Weight		kg	210	210	233
Compressor			1 inverter	1 inverter	1 inverter
Connectable indoor units (max.)			26	32	39
Recommended connectable indoor units (max)			8	10	10
Refrigerant			R410A	R410A	R410A
Refrigerant charge		kg	5	5	7.2
Refrigerant pipe size **	Liquid	mm (inches)	Ø9.52 (3/8)	Ø9.52 (3/8)	Ø12.7 (1/2)
	Gas Low pressure	mm (inches)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø25.4 (1)
	Gas High pressure **	mm (inches)	Ø15.88 (5/8)	Ø19.05 (3/4)	Ø22.2 (3/4)
Power supply			3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
Maximum operating current		A	15.5	21.5	24

RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE	RAS-20FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE
40	45	50	56	61.5	67
45	50	56	**63**	**69**	**77.5**
3.3	3.25	3.35	**3.01**	**3.01**	**2.99**
3.74	3.37	3.29	3.35	3.19	3.4
7.47	7.3	6.96	6.29	6.76	6.2
4.48	4.42	4.18	4.14	4.43	4.43
-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48
239	256	256	329	329	348
80	80	80	80	80	80
2	2	2	2	2	2
85	85	86	86	84	86
63 (57)	63 (57)	65 (57)	65 (59)	64 (59)	66 (59)
1725x1219x784	1725x1219x784	1725x1219x784	1725x1609x784	1725x1609x784	1725x1609x784
289	332	333	382	396	397
1 inverter	2 inverter	2 inverter	2 inverter	2 inverter	2 inverter
45	52	58	64	64	64
16	16	16	18	20	26
R410A	R410A	R410A	R410A	R410A	R410A
8.9	9.9	10.7	11.3	11.3	11.6
Ø12.7 (1/2)	Ø12.7 (1/2)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)
Ø25.4 (1)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
Ø22.2 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)	Ø25.4 (1)	Ø25.4 (1)
3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
29.5	33	37.5	44.5	45	53

SET FREE SIGMA

Standard FSXNSE

Two modules combination

			RAS-26FSXNSE	RAS-28FSXNSE	RAS-30FSXNSE	RAS-32FSXNSE
Combination models			RAS-12FSXNSE	RAS-12FSXNSE	RAS-12FSXNSE	RAS-14FSXNSE
			RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE
Connection kit			MC-21AN1	MC-21AN1	MC-21AN1	MC-21AN1
Nominal Cooling capacity		kW	73	77.5	85	90
Nominal Heating capacity		kW	82.5	90	95	100
EER			3.12	3.45	3.51	3.04
COP			3.9	3.65	3.57	3.48
SEER			7.3	7.1	7.11	7.36
SCOP			4.39	4.35	4.22	4.3
Operating range	Heating	ºC	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
	Cooling	ºC	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48
Air flow rate		m³/min	190+239	190+256	190+256	239+256
External static pressure		Pa	80	80	80	80
Fan number			1+2	1+2	1+2	2+2
Sound power level		dB(A)	87	87	87	89
Sound pressure level		dB(A)	64.5 (58)	64.5 (58.5)	66 (58)	67 (60)
Dimensions (HxWxD)		mm	1725x2198x784	1725x2198x784	1725x2198x784	1725x2458x784
Weight		kg	233+289	233+332	233+333	289+333
Compressor			1 inv+1 inv	1 inv+2 inv	1 inv+2 inv	1 inv+2 inv
Connectable indoor units (max.)			64	64	64	64
Recommended connectable indoor units (max)			26	32	32	32
Refrigerant			R410A	R410A	R410A	R410A
Refrigerant charge		kg	16.1	17.1	17.9	19.6
Refrigerant pipe size **	Liquid	mm (inches)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Low pressure	mm (inches)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
	Gas High pressure **	mm (inches)	Ø25.4 (1)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
Power supply			3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
Maximum operating current		A	24+29.5+37.5	24+33	24+37.5	29.5+37.5

RAS-34FSXNSE	RAS-36FSXNSE	RAS-38FSXNSE	RAS-40FSXNSE	RAS-42FSXNSE	RAS-44FSXNSE	RAS-46FSXNSE	RAS-48FSXNSE
RAS-16FSXNSE	RAS-18FSXNSE	RAS-14FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-22FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE
RAS-18FSXNSE	RAS-18FSXNSE	RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE
MC-21AN1	MC-21AN1	MC-21AN1	MC-21AN1	MC-21AN1	MC-21AN1	MC-21AN1	MC-21AN1
95	100	106	112	118	122	128	136
106	112	118	125	**132**	**140**	**145**	**150**
3.3	3.35	2.89	3.15	**3.13**	**3.01**	**3**	**2.99**
3.33	3.29	3.52	3.23	3.35	3.19	3.3	3.4
7.18	7.2	6.63	6.93	6.57	6.75	6.45	6.19
4.28	4.18	4.45	4.3	4.31	4.43	4.43	4.43
-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48
256x2	256x2	239+348	256+329	256+348	329x2	329+348	348x2
80	80	80	80	80	80	80	80
2+2	2+2	2+2	2+2	2+2	2+2	2+2	2+2
89	89	89	88	89	87	88	89
67 (62)	68 (60)	68 (61)	67.5 (61.5)	68.5 (61)	67 (62)	68 (62)	69 (62)
1725x2458x784	1725x2458x784	1725x2848x784	1725x2848x784	1725x2848x784	1725x3238x784	1725x3238x784	1725x3238x784
332+333	333+333	289+397	333+396	333+397	396+396	396+397	397+397
2 inv+2 inv	2 inv+2 inv	1 inv+2 inv	2 inv+2 inv	2 inv+2 inv	2 inv+2 inv	2 inv+2 inv	2 inv+2 inv
64	64	64	64	64	64	64	64
32	32	64	64	64	64	64	64
R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
20.6	21.4	20.5	22	22.3	22.6	22.9	23.2
Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Ø31.75 (1-1/4)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
33+37.5	37.5+37.5	29.5+53	37.5+45	37.5+53	45+45	45+53	53+53

SET FREE SIGMA

Standard FSXNSE

Three modules combination

			RAS-50FSXNSE	RAS-52FSXNSE	RAS-54FSXNSE	RAS-56FSXNSE
Combination models			RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE	RAS-14FSXNSE
			RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE
			RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-24FSXNSE
Connection kit			MC-30AN1	MC-30AN1	MC-30AN1	MC-NP31SA
Nominal Cooling capacity		kW	140	145	150	157
Nominal Heating capacity		kW	155	160	165	176
EER			3.15	3.32	3.35	3.02
COP			3.41	3.31	3.29	3.44
SEER			7.3	7.18	7.2	6.79
SCOP			4.26	4.25	4.18	4.35
Operating range	Heating	ºC	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
	Cooling	ºC	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48
Air flow rate		m³/min	239+256x2	256x3	256x3	239+256+348
External static pressure		Pa	80	80	80	80
Fan number			2+2+2	2+2+2	2+2+2	2+2+2
Sound power level		dB(A)	90	90	91	90
Sound pressure level		dB(A)	69 (62)	69 (62)	70 (62)	69.5 (62)
Dimensions (HxWxD)		mm	1725x3697x784	1725x3697x784	1725x3697x784	1725x4087x784
Weight		kg	289+333+333	332+333+333	333+333+333	289+333+397
Compressor			1 inv+2 inv+2 inv	2 inv+2 inv+2	2 inv+2 inv+2 inv	1 inv+2 inv+2 inv
Connectable indoor units (max.)			64	64	64	64
Recommended connectable indoor units (max)			64	64	64	64
Refrigerant			R410A	R410A	R410A	R410A
Refrigerant charge		kg	30.3	31.3	32.1	31.2
Refrigerant pipe size **	Liquid	mm (inches)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Low pressure	mm (inches)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø44.45 (1-3/4)
	Gas High pressure **	mm (inches)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø44.45 (1-3/4)
Power supply			3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
Maximum operating current		A	29.5+37.5+37.5+53	33+37.5+37.5	37.5+37.5+37.5	29.5+37.5+53

RAS-58FSXNSE	RAS-60FSXNSE	RAS-62FSXNSE	RAS-64FSXNSE	RAS-66FSXNSE	RAS-68FSXNSE	RAS-70FSXNSE	RAS-72FSXNSE
RAS-18FSXNSE	RAS-18FSXNSE	RAS-14FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-22FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE
RAS-18FSXNSE	RAS-18FSXNSE	RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE
RAS-22FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE
MC-NP31SA	MC-NP31SA	MC-NP31SA	MC-NP31SA	MC-NP31SA	MC-NP31SA	MC-NP31SA	MC-NP31SA
162	167	174	179	184	190	196	201
181	188	196	202	**207**	**213**	**220**	**225**
3.21	3.2	2.93	3.09	**3.08**	**3**	**3**	**2.99**
3.25	3.33	3.47	3.3	3.37	3.26	3.33	3.4
7.01	6.75	6.45	6.63	6.43	6.54	6.36	6.19
4.26	4.27	4.44	4.35	4.35	4.43	4.43	4.43
-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48
256+256+329	256+256+348	239+348+348	256+329+348	256+348+348	329+329+348	329+348x2	348x3
80	80	80	80	80	80	80	80
2+2+2	2+2+2	2+2+2	2+2+2	2+2+2	2+2+2	2+2+2	2+2+2
90	91	90	90	91	90	90	91
69.5 (62)	70 (63)	70 (63)	70 (63)	70.5 (63)	70 (63)	70 (63.5)	71 (63.5)
1725x4087x784	1725x 4087x784	1725x4477x784	1725x4477x784	1725x4477x784	1725x4867x784	1725x4867x784	1725x4867x784
333+333+396	333+333+397	289+397+397	333+396+397	333+397+397	396+396+397	396+397+397	397+397+397
2 inv+2 inv+2 inv	2 inv+2 inv+2 inv	1 inv+2 inv+2 inv	2 inv+2 inv+2 inv	2 inv+2 inv+2 inv	2 inv+2 inv+2 inv	2 inv+2 inv+2 inv	2 inv+2 inv+2 inv
64	64	64	64	64	64	64	64
64	64	64	64	64	64	64	64
R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
32.7	33	32.1	33.6	33.9	34.2	34.5	34.8
Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)
Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)
Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)
3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
37.5+37.5+45	37.5+37.5+53	29.5+53+53	37.5+45+53	37.5+53+53	45+45+53	45+53+53	53+53+53

SET FREE SIGMA

Standard FSXNSE

Four modules combination

-20 +15

-5 +48

			RAS-74FSXNSE	RAS-76FSXNSE	RAS-78FSXNSE	RAS-80FSXNSE
Combination models			RAS-14FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-14FSXNSE
			RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE
			RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-24FSXNSE
			RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE
Connection kit			MC-NP40SA	MC-NP40SA	MC-NP40SA	MC-NP40SA
Nominal Cooling capacity		kW	207	212	217	224
Nominal Heating capacity		kW	232	237	244	254
EER			3.09	3.24	3.23	3.01
COP			3.41	3.26	3.32	3.43
SEER			6.89	7.05	6.85	6.6
SCOP			4.31	4.24	4.24	4.37
Operating range	Heating	ºC	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
	Cooling	ºC	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48
Air flow rate		m³/min	239+256x2+348	256x3+329	256x3+348	239+256+348x2
External static pressure		Pa	80	80	80	80
Fan number			2+2+2+2	2+2+2+2	2+2+2+2	2+2+2+2
Sound power level		dB(A)	92	92	92	92
Sound pressure level		dB(A)	71 (63.5)	71 (64)	71.5 (64)	71 (65)
Dimensions (HxWxD)		mm	1725x5326x784	1725x5326x784	1725x5326x784	1725x5716x784
Weight		kg	289+333+333+397	333+333+333+396	333+333+333+397	289+333+397+397
Compressor			1 inv+2 inv+2 inv+2 inv	2 inv+2 inv+2 inv+2 inv	2 inv+2 inv+2 inv+2 inv	1 inv+2 inv+2 inv+2 inv
Connectable indoor units (max.)			64	64	64	64
Recommended connectable indoor units (max)			64	64	64	64
Refrigerant			R410A	R410A	R410A	R410A
Refrigerant charge		kg	41.9	43.4	43.7	42.8
Refrigerant pipe size **	Liquid	mm (inches)	Ø22.2 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)
	Gas Low pressure	mm (inches)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)
	Gas High pressure **	mm (inches)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)
Power supply			3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
Maximum operating current		A	29.5+37.5+37.5+53	37.5+37.5+37.5+45	37.5+37.5+37.5+53	29.5+37.5+53+53

RAS-82FSXNSE	RAS-84FSXNSE	RAS-86FSXNSE	RAS-88FSXNSE	RAS-90FSXNSE	RAS-92FSXNSE	RAS-94FSXNSE	RAS-96FSXNSE
RAS-16FSXNSE	RAS-18FSXNSE	RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE	RAS-22FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE
RAS-18FSXNSE	RAS-18FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE
RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE
RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE
MC-NP40SA	MC-NP40SA	MC-NP40SA	MC-NP40SA	MC-NP40SA	MC-NP40SA	MC-NP40SA	MC-NP40SA
230	234	224	230	234	258	263	268
261	267	254	261	**267**	**293**	**299**	**305**
3.11	3.13	2.94	3.03	**3.06**	**3**	**2.99**	**2.99**
3.37	3.35	3.45	3.39	3.38	3.3	3.35	3.4
6.57	6.58	6.38	6.36	6.37	6.45	6.32	6.2
4.35	4.31	4.44	4.41	4.37	4.43	4.43	4.43
-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48	-10 ~ 48
256+256+348x2	256 x2+348x2	239+348x3	256+348x3	256+348x3	329x2+348x2	329+348x3	348x4
80	80	80	80	80	80	80	80
2+2+2+2	2+2+2+2	2+2+2+2	2+2+2+2	2+2+2+2	2+2+2+2	2+2+2+2	2+2+2+2
92	92	92	92	92	92	92	92
71 (65)	71.5 (65)	71.5 (65)	71.5 (65)	72 (65)	72 (65)	71.5 (65)	72 (65)
1725x5716x784	1725x5716x784	1725x6106x784	1725x6106x784	1725x6106x784	1725x6496x784	1725x6496x784	1725x6496x784
332+333+397+397	333+333+397+397	289+397+397+397	332+397+397+397	333+397+397+397	396+396+397+397	396+397+397+397	397+397+397+397
2 inv+2 inv+2 inv+2 inv	2 inv+2 inv+2 inv+2 inv	1 inv+2 inv+2 inv+2 inv	2 inv+2 inv+2 inv+2 inv	2 inv+2 inv+2 inv+2 inv	2 inv+2 inv+2 inv+2 inv	2 inv+2 inv+2 inv+2 inv	2 inv+2 inv+2 inv+2 inv
64	64	64	64	64	64	64	64
64	64	64	64	64	64	64	64
R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
43.8	44.6	43.7	44.7	45.5	45.8	46.1	46.4
Ø22.2 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)	Ø25.4 (1)	Ø25.4 (1)	Ø25.4 (1)	Ø25.4 (1)
Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)
Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)
3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
33+37.5+53+53	37.5+37.5+53+53	29.5+53+53+53	33+53+53+53	37.5+53+53+53	45+45+53+53	45+53+53+53	53+53+53+53

SET FREE SIGMA

High Efficiency
FSXNPE

- Compact units from 5 to 18 HP
- Scope of performance 5 to 72 HP
- Combined with 2-pipe and 3-pipe systems
- First-class efficiency
- Freedom in piping design
- Wide selection of indoor units

-20 +15

-5 +52

			RAS-5FSXNPE	RAS-6FSXNPE	RAS-8FSXNPE
Nominal Cooling capacity		kW	14	16	22.4
Nominal Heating capacity		kW	25	25	25
EER			4.82	4.75	4.44
COP			5.72	5.12	4.92
SEER			8.33	8	7.97
SCOP			5.06	4.58	4.55
Operating range	Heating	°C	-20 ~ 15	-20 ~ 15	-20 ~ 15
	Cooling	°C	-10 ~ 52	-10 ~ 52	-10 ~ 52
Air flow rate		m³/min	150	170	185
External static pressure		Pa	80	80	80
Fan number			1	1	1
Sound power level		dB(A)	75	78	77
Sound pressure level		dB(A)	54	56	55
Dimensions (HxWxD)		mm	1725x959x784	1725x959x784	1725x959x784
Weight		kg	210	210	274
Compressor			1 inverter	1 inverter	1 inverter
Connectable indoor units (max.)			16	19	26
Recommended connectable indoor units (max)			8	10	10
Refrigerant			R410A	R410A	R410A
Refrigerant charge		kg	4.7	5	8.5
Refrigerant pipe size **	Liquid	mm (inches)	Ø9.52 (3/8)	Ø9.52 (3/8)	Ø9.52 (3/8)
	Gas Low pressure	mm (inches)	Ø15.88 (5/8)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas High pressure	mm (inches)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)
Power supply			3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
Maximum operating current		A	15.5	15.5	15.5

RAS-10FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE
28	33.5	40	45	50
31.5	37.5	45	**50**	**56**
4.53	3.97	3.47	**3.91**	**3.91**
4.74	4.68	4.15	3.87	3.74
8.06	7.91	7.69	7.76	7.6
4.73	4.81	4.63	4.84	4.81
-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52
219	219	243	326	326
80	80	80	80	80
2	2	2	2	2
82	83	85	85	86
59	60	62	65	65
1725x959x784	1725x959x784	1725x1219x784	1725x1219x784	1725x1219x784
278	282	292	369	384
1 inverter	1 inverter	1 inverter	2 inverter	2 inverter
32	39	45	52	58
16	16	16	18	20
R410A	R410A	R410A	R410A	R410A
8.5	9.3	9.3	10	10.6
Ø9.52 (3/8)	Ø12.7 (1/2)	Ø12.7 (1/2)	Ø12.7 (1/2)	Ø15.88 (5/8)
Ø22.2 (3/4)	Ø25.4 (1)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
Ø19.05 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)	Ø22.2 (3/4)
3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
21.5	24	29.5	33	37.5

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High Efficiency FSXNPE

Two modules combination

			RAS-20FSXNPE	RAS-22FSXNPE	RAS-24FSXNPE
Combination models			RAS-10FSXNPE	RAS-10FSXNPE	RAS-12FSXNPE
			RAS-10FSXNPE	RAS-12FSXNPE	RAS-12FSXNPE
Connection kit			MC-20AN1	MC-20AN1	MC-20AN1
Nominal Cooling capacity		kW	56	61.5	67
Nominal Heating capacity		kW	63	69	77.5
EER			4.53	4.21	3.97
COP			4.74	4.71	4.68
SEER			8.06	7.97	7.91
SCOP			4.76	4.76	4.81
Operating range	Heating	ºC	-20 ~ 15	-20 ~ 15	-20 ~ 15
	Cooling	ºC	-10 ~ 52	-10 ~ 52	-10 ~ 52
Air flow rate		m³/min	219 x 2	219 x 2	219 x 2
External static pressure		Pa	80	80	80
Fan number			2+2	2+2	2+2
Sound power level		dB(A)	85	86	86
Sound pressure level		dB(A)	62	62.5	63
Dimensions (HxWxD)		mm	1725 x 1609 × 784	1725 x 2458 × 784	1725 x 2458 x 784
Weight		kg	278+278	278+282	282+282
Compressor			1 inv + 1 inv	1 inv + 1 inv	1 inv + 1 inv
Connectable indoor units (max.)			64	64	64
Recommended connectable indoor units (max)			26	26	32
Refrigerant			R410A	R410A	R410A
Refrigerant charge		kg	17	17.8	18.6
Refrigerant pipe size **	Liquid	mm (inches)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)
	Gas Low pressure	mm (inches)	Ø28.58 (7/8)	Ø28.58 (7/8)	Ø28.58 (7/8)
	Gas High pressure **	mm (inches)	Ø22.2 (7/8)	Ø25.4 (1)	Ø25.4 (1)
Power supply			3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
Maximum operating current		A	21.5+21.5	21.5+24	24+24

RAS-26FSXNPE	RAS-28FSXNPE	RAS-30FSXNPE	RAS-32FSXNPE	RAS-34FSXNPE	RAS-36FSXNPE
RAS-10FSXNPE	RAS-12FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE
RAS-16FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
MC-21AN1	MC-21AN1	MC-21AN1	MC-21AN1	MC-21AN1	MC-21AN1
73	77.5	85	90	95	100
82.5	90	95	**100**	**106**	**112**
4.13	3.94	3.93	**3.7**	**3.91**	**3.91**
4.17	4.18	4.07	3.91	3.8	3.74
7.92	7.71	7.43	7.62	7.83	7.6
4.78	4.82	4.71	4.63	4.72	4.64
-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52
219 + 326	219 + 326	219 + 362	243 + 362	326 + 362	362 x 2
80	80	80	80	80	80
2+2	2+2	2+2	2+2	2+2	2+2
87	87	88	89	89	89
66	66	66	67	68	68
1725 x 2458 x 784	1725 x 2848 × 784	1725 x 2848 x 784	1725 x 2848 x 784	1725 x 3238 × 784	1725 x 3238 ×784
278+369	282+369	282+384	292+384	369+384	384+384
1 inv + 2 inv	1 inv + 2 inv	1 inv + 2 inv	1 inv + 2 inv	2 inv + 2 inv	2 inv + 2 inv
64	64	64	64	64	64
32	32	32	32	64	64
R410A	R410A	R410A	R410A	R410A	R410A
18.5	19.3	19.9	19.9	20.6	21.2
Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø38.1 (1-1/2)
Ø25.4 (1)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
21.5+33	24+33	24+37.5	29.5+37.5	33+37.5	37.5+37.5

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High Efficiency FSXNPE

Three modules combination

			RAS-38FSXNPE	RAS-40FSXNPE	RAS-42FSXNPE
Combination models			RAS-12FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE
			RAS-12FSXNPE	RAS-14FSXNPE	RAS-14FSXNPE
			RAS-14FSXNPE	RAS-14FSXNPE	RAS-14FSXNPE
Connection kit			MC-30AN1	MC-30AN1	MC-30AN1
Nominal Cooling capacity		kW	106	112	118
Nominal Heating capacity		kW	118	125	132
EER			3.77	3.6	3.47
COP			4.47	4.29	4.15
SEER			7.67	7.67	7.67
SCOP			4.74	4.68	4.63
Operating range	Heating	ºC	-20 ~ 15	-20 ~ 15	-20 ~ 15
	Cooling	ºC	-10 ~ 52	-10 ~ 52	-10 ~ 52
Air flow rate		m³/min	219 x 2 + 243	219 + 243 x 2	243 x 3
External static pressure		Pa	80	80	80
Fan number			2+2+2	2+2+2	2+2+2
Sound power level		dB(A)	89	89	90
Sound pressure level		dB(A)	65.5	66	67
Dimensions (HxWxD)		mm	1725 x 3697 x 784	1725 x 3697 × 784	1725 x 3697 x 784
Weight		kg	282+282+292	282+292+292	292+292+292
Compressor			1 inv + 1 inv+1 inv	1 inv + 1 inv+1 inv	1 inv + 1 inv+1 inv
Connectable indoor units (max.)			64	64	64
Recommended connectable indoor units (max)			64	64	64
Refrigerant			R410A	R410A	R410A
Refrigerant charge		kg	27.9	27.9	27.9
Refrigerant pipe size **	Liquid	mm (inches)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Low pressure	mm (inches)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
	Gas High pressure **	mm (inches)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
Power supply			3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
Maximum operating current		A	24+24+29.5	24+29.5+29.5	29.5+29.5+29.5

RAS-44FSXNPE	RAS-46FSXNPE	RAS-48FSXNPE	RAS-50FSXNPE	RAS-52FSXNPE	RAS-54FSXNPE
RAS-12FSXNPE	RAS-14FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE
RAS-14FSXNPE	RAS-14FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
MC-30AN1	MC-30AN1	MC-30AN1	MC-30AN1	MC-30AN1	MC-30AN1
122	128	136	140	145	150
140	145	150	**155**	**160**	**165**
3.77	3.63	3.92	**3.77**	**3.91**	**3.91**
4.09	3.98	3.94	3.85	3.78	3.74
7.64	7.64	7.61	7.61	7.75	7.6
4.68	4.63	4.68	4.64	4.7	4.64
-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52
219 + 243 + 362	243 x 2 + 362	219 + 362 x 2	243 + 362 x 2	326 + 362 x 2	362 x 3
80	80	80	80	80	80
2+2+2	2+2+2	2+2+2	2+2+2	2+2+2	2+2+2
90	90	90	90	90	91
67.5	68	68.5	69	70	70
1725 x 4087 x 784	1725 x 4087 ×784	1725 x 4477 x 784	1725 x 4477 x 784	1725 x 4867 ×784	1725 x 4867 x 784
282+292+384	292+292+384	282+384+384	292+384+384	369+384+384	384+384+384
1 inv + 1 inv+2 inv	1 inv + 1 inv+2 inv	1 inv + 2 inv+2 inv	1 inv + 2 inv+2 inv	2 inv + 2 inv+2 inv	2 inv + 2 inv+2 inv
64	64	64	64	64	64
64	64	64	64	64	64
R410A	R410A	R410A	R410A	R410A	R410A
29.2	29.2	30.5	30.5	31.2	31.8
Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
24+29.5+37.5	29.5+29.5+37.5	24+37.5+37.5	29.5+37.5+37.5	33+37.5+37.5	37.5+37.5+37.5

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High Efficiency FSXNPE

Four modules combination

			RAS-56FSXNPE	RAS-58FSXNPE	RAS-60FSXNPE
Combination models			RAS-12FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE
			RAS-12FSXNPE	RAS-14FSXNPE	RAS-14FSXNPE
			RAS-14FSXNPE	RAS-14FSXNPE	RAS-16FSXNPE
			RAS-18FSXNPE	RAS-18FSXNPE	RAS-16FSXNPE
Connection kit			MC-NP40SA	MC-NP40SA	MC-NP40SA
Nominal Cooling capacity		kW	157	162	167
Nominal Heating capacity		kW	176	181	188
EER			3.81	3.69	3.69
COP			4.21	4.11	4
SEER			7.65	7.64	7.91
SCOP			4.7	4.67	4.73
Operating range	Heating	ºC	-20 ~ 15	-20 ~ 15	-20 ~ 15
	Cooling	ºC	-10 ~ 52	-10 ~ 52	-10 ~ 52
Air flow rate		m³/min	219 x 2 + 243 + 362	219 + 243 x 2 + 362	243 x 2 + 326 x 2
External static pressure		Pa	80	80	80
Fan number			2+2+2	2+2+2	2+2+2+2
Sound power level		dB(A)	90	91	91
Sound pressure level		dB(A)	68.5	68.5	70
Dimensions (HxWxD)		mm	1725 x 5326 x 784	1725 x 5326 x 784	1725 x 5716 x 784
Weight		kg	282+282+292+384	282+292+292+384	292+292+369+369
Compressor			1 inv + 1 inv+1 inv+2 inv	1 inv + 1 inv+1 inv+2 inv	1 inv + 1 inv+2 inv+2 inv
Connectable indoor units (max.)			64	64	64
Recommended connectable indoor units (max)			64	64	64
Refrigerant			R410A	R410A	R410A
Refrigerant charge		kg	38.5	38.5	38.6
Refrigerant pipe size **	Liquid	mm (inches)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Low pressure	mm (inches)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)
	Gas High pressure **	mm (inches)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)
Power supply			3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
Maximum operating current		A	24+24+29.5+37.5	24+29.5+29.5+37.5	29.5+29.5+33+33

RAS-62FSXNPE	RAS-64FSXNPE	RAS-66FSXNPE	RAS-68FSXNPE	RAS-70FSXNPE	RAS-72FSXNPE
RAS-14FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE
RAS-16FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
RAS-16FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
RAS-16FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
MC-NP40SA	MC-NP40SA	MC-NP40SA	MC-NP40SA	MC-NP40SA	MC-NP40SA
174	179	184	190	196	201
196	202	207	**213**	**220**	**225**
3.8	3.91	3.91	**3.91**	**3.91**	**3.91**
3.93	3.87	3.83	3.8	3.77	3.74
8.03	8.15	7.98	7.83	7.71	7.6
4.78	4.83	4.77	4.72	4.68	4.64
-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15	-20 ~ 15
-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52	-10 ~ 52
243 + 326 x 3	326 x 4	326 x 3 + 362	326 x 2 + 362 x 2	326 + 362 x 3	362 x 4
80	80	80	80	80	80
2+2+2+2	2+2+2+2	2+2+2+2	2+2+2+2	2+2+2+2	2+2+2+2
91	91	91	71	71	71
70.5	71	71	1725 x 6496 × 784	1725 x 6496 × 784	1725 x 6496 × 784
1725 x 6106 × 784	1725 x 6496 × 784	1725 x 6496 × 784	369 + 369 + 384 + 384	369 + 384 + 384 + 384	384 + 384 + 384 + 384
292+369+369+369	369+369+369+369	369+369+369+384	393+393+408+408	393+408+408+408	408+408+408+408
1 inv + 2 inv+2 inv+2 inv	2 inv + 2 inv+2 inv+2 inv	2 inv + 2 inv+2 inv+2 inv	2 inv + 2 inv+2 inv+2 inv	2 inv + 2 inv+2 inv+2 inv	2 inv + 2 inv+2 inv+2 inv
64	64	64	64	64	64
64	64	64	64	64	64
R410A	R410A	R410A	R410A	R410A	R410A
39.3	40	40.6	41.2	41.8	42.4
Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø22.2 (7/8)	Ø22.2 (7/8)	Ø22.2 (7/8)
Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)
Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)
3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz	3-phase, 400 V, 50Hz
29.5+33+33+33	33+33+33+33	33+33+33+37.5	33+33+37.5+37.5	33+37.5+37.5+37.5	37.5+37.5+37.5+37.5

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Accessories

Accessory type		Name	Description
Outdoor module connection kit	Heat Pump (2 pipes)	MC-20AN1	2 outdoor module conection kit: RAS-20FSXNPE to RAS-36FSXNPE
		MC-21AN1	2 outdoor module conection kit: RAS-26FSXNSE to RAS-48FSXNSE
		MC-30AN1	3 outdoor module conection kit: RAS-50FSXNSE to RAS-54FSXNSE RAS-38FSXNPE to RAS-54FSXNPE
		MC-NP31SA	3 outdoor module conection kit: RAS-56FSXNSE to RAS-72FSXNSE
		MC-NP40SA	4 outdoor module conection kit: RAS-74FSXNSE to RAS-96FSXNSE RAS-56FSXNPE to RAS-72FSXNPE
	Heat Recovery (3 pipes)	MC-20XN1	2 outdoor module conection kit: RAS-20FSXNPE to RAS-24FSXNPE
		MC-21XN1	2 outdoor module conection kit: RAS-26FSXNSE to RAS48FSXNE RAS-26FSXNPE to RAS-36FSXNPE
		MC-30XN1	3 outdoor module conection kit: RAS-50FSXNSE to RAS54FSXNSE RAS-38FSXNPE to RAS-54FSXNPE
Branch	Heat Pump (2 pipes)	E-102SN4	use as first branch for outdoor units 5-10 HP use as multikit after first branch for indoor unit capacity <12HP
		E-162SN4	use as first branch for outdoor units ,12-16 HP use as multikit after first branch for indoor unit capacity 12-17.99HP
		E-242SN3	use as first branch for outdoor units 18-24 HP use as multikit after first branch for indoor unit capacity 18-25.99 HP
		E-302SN3	use as first branch for outdoor units 26-54 HP use as multikit after first branch for indoor unit capacity 26-55.99 HP
		MW-NP2682A3	use as first branch for outdoor units 56-96 HP use as multikit after first branch for indoor unit capacity ≥ 56 HP
	Heat Recovery (3 pipes)	E-52XN3	use as first branch for outdoor units 5 HP use as multikit after first branch for indoor unit capacity <6HP
		E-102XN3	use as first branch for outdoor units 6-10 HP use as multikit after first branch for indoor unit capacity <6-11.99HP
		E-162XN3	use as first branch for outdoor units 12-16 HP use as multikit after first branch for indoor unit capacity <12-17.99HP
		E-202XN3	use as first branch for outdoor units 18-20 HP use as multikit after first branch for indoor unit capacity <18-21.99HP
		E-242XN3	use as first branch for outdoor units 22-24 HP use as multikit after first branch for indoor unit capacity <22-25.99HP
		E-322XN3	use as first branch for outdoor units 26-54 HP use as multikit after first branch for indoor unit capacity ≥ 26HP
Header	Heat Pump (2 pipes)	MH-108XN	indoor unit capacity 5-10HP. 2 pipes
	Heat Recovery (3 pipes)	MH-84AN1	indoor unit capacity 5-8HP. 3 pipes
		MH-108AN	indoor unit capacity 5-10HP. 3 pipes
Heat recovery boxes	Single	CH-AP160SSX	6.0HP or less (Max. 16kW) From 1-7 indoor units
		CH-AP280SSX	6.1HP - 10.0HP (Max. 28kW) From 1-8 indoor units
	Multiple	CH-AP04MSSX	4 Branch 16.0HP or less (Max. 44.8kW) 1 to 6 indoor units per branch
		CH-AP08MSSX	8 Branch 30.0HP or less (Max. 85kW) 1 to 6 indoor units per branch
		CH-AP12MSSX	12 Branch 30.0HP or less (Max. 85kW) 1 to 6 indoor units per branch
		CH-AP16MSSX	16 Branch 30.0HP or less (Max. 85kW) 1 to 6 indoor units per branch

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