

ADVANCED PRODUCT NEWS

SUBJECT

Launching of new SET FREE SIGMA outdoor units for Heat Pump and Heat Recovery series RAS-FSXNPE and RAS-FSXNSE

DATE: NOV'17

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Summary

- 1 This Advanced Product News informs about the launching of the new SET FREE SIGMA outdoor units Series, for High Efficiency Series and Standard Series.
- 2 The details are indicated in the description.

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All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

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1. Applicable products, new models code and date of sales

SET FREE SIGMA series



Heat pump (2 pipes) and Heat Recovery (3 pipes systems)				Power supply	Date of sales
High Efficiency		Standard			
Unit	Code	Unit	Code		
RAS-5FSXNPE	7E334308	-	-	3N~ 400V 50Hz	Jan'18
RAS-6FSXNPE	7E334309	-	-		
RAS-8FSXNPE	7E334310	RAS-8FSXNSE	7E334210		
RAS-10FSXNPE	7E334311	RAS-10FSXNSE	7E334211		
RAS-12FSXNPE	7E334312	RAS-12FSXNSE	7E334212		
RAS-14FSXNPE	7E334330	RAS-14FSXNSE	7E334230		
RAS-16FSXNPE	7E334331	RAS-16FSXNSE	7E334231		
RAS-18FSXNPE	7E334332	RAS-18FSXNSE	7E334232		
-	-	RAS-20FSXNSE	7E334239		
-	-	RAS-22FSXNSE	7E334251		
-	-	RAS-24FSXNSE	7E334240		

CH-Box (only for Heat Recovery (3 pipes) system)				Power supply	Date of sales
Single					
		CH-AP160SSX	60292158		
		CH-AP280SSX	60292159	1~ 230V 50HZ	Jan'18
Multiple	4 Branch	CH-AP04MSSX	60292160		
	8 Branch	CH-AP08MSSX	60292161		
	12 Branch	CH-AP12MSSX	60292162		
	16 Branch	CH-AP16MSSX	60292163		

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2. Discontinued models

SET FREE series



Heat Pump (2 pipes) / Heat Recovery (3 pipes)				Heat Pump (2 pipes)		Power supply	Finish of sales
High Efficiency		Standard		Standard			
Unit	Code	Unit	Code	Unit	Code		
RAS-5FSXNHE	7E332008	-	-	-	-		
RAS-6FSXNHE	7E332009	-	-	-	-		
RAS-8FSXNHE	7E332010	RAS-8FSXN1E	7E331110	RAS-8FSN3E	7E333110		
RAS-10FSXNHE	7E332011	RAS-10FSXN1E	7E331111	RAS-10FSN3E	7E333111		
RAS-12FSXNHE	7E332012	RAS-12FSXN1E	7E331112	RAS-12FSN3E	7E333112		
		RAS-14FSXN1E	7E331130	RAS-14FSN3E	7E333130		
		RAS-16FSXN1E	7E331131	RAS-16FSN3E	7E333131		

CH-Box		Power supply	Finish of sales
Unit	Code		
CH-6.0N2	60291930	1~ 230V 50Hz	Dec'17
CH-10.0N2	60291931		

3. Outdoor unit classification

Unit type (outdoor unit): RAS

Position-separating hyphen (fixed)

System capacity (HP): (5-96)

SET FREE System

X: ready for 3 pipes system installation

Refrigerant type N: R410A

P : High efficiency type

S : Standard type

E: Made in Europe

RAS - XX FS X N (P/S) E

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4. Combination of outdoor units

By combining a maximum of 3 base outdoor units, the Set Free Sigma outdoor units series allows to build up the total capacity up to 54 HP for Heat Recovery system and by combining a maximum of 4 base outdoor units allows up to 72/96 (Standard series/ High Efficiency series) for a Heat Pump system.

	Base unit	Build up the total capacity Heat Recovery system (3 pipes)	Build up the total capacity Heat Pump system (2 pipes)
Standard	from 8 to 24 HP	from 8 to 54 HP	from 8 to 96 HP
High efficiency type	from 5 to 18 HP	from 5 to 54 HP	from 5 to 72 HP

4.1 FSXNSE - Standard type

Base units

HP	8	10	12	14	16
Model	RAS-8FSXNSE	RAS-10FSXNSE	RAS-12FSXNSE	RAS-14FSXNSE	RAS-16FSXNSE

HP	18	20	22	24
Model	RAS-18FSXNSE	RAS-20FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE

Combinations of base units

HP	26	28	30	32	34
Model	RAS-26FSXNSE	RAS-28FSXNSE	RAS-30FSXNSE	RAS-32FSXNSE	RAS-34FSXNSE
Combination	RAS-12FSXNSE	RAS-12FSXNSE	RAS-12FSXNSE	RAS-14FSXNSE	RAS-16FSXNSE
	RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE

HP	36	38	40	42	44
Model	RAS-36FSXNSE	RAS-38FSXNSE	RAS-40FSXNSE	RAS-42FSXNSE	RAS-44FSXNSE
Combination	RAS-18FSXNSE	RAS-14FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-22FSXNSE
	RAS-18FSXNSE	RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-22FSXNSE

HP	46	48	50	52	54
Model	RAS-46FSXNSE	RAS-48FSXNSE	RAS-50FSXNSE	RAS-52FSXNSE	RAS-54FSXNSE
Combination	RAS-22FSXNSE	RAS-24FSXNSE	RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE
	RAS-24FSXNSE	RAS-24FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE
	-	-	RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE

Combinations of base units only for Heat Pump system (*)

HP	56	58	60	62	64
Model	RAS-56FSXNSE	RAS-58FSXNSE	RAS-60FSXNSE	RAS-62FSXNSE	RAS-64FSXNSE
Combination	RAS-14FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-14FSXNSE	RAS-18FSXNSE
	RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-24FSXNSE	RAS-22FSXNSE
	RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE

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HP	66	68	70	72	74
Model	RAS-66FSXNSE	RAS-68FSXNSE	RAS-60FSXNSE	RAS-62FSXNSE	RAS-64FSXNSE
Combination	RAS-18FSXNSE	RAS-22FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-14FSXNSE
	RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-18FSXNSE
	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-18FSXNSE
	-	-	-	-	RAS-24FSXNSE

HP	76	78	80	82	84
Model	RAS-76FSXNSE	RAS-78FSXNSE	RAS-80FSXNSE	RAS-82FSXNSE	RAS-84FSXNSE
Combination	RAS-18FSXNSE	RAS-18FSXNSE	RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE
	RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE
	RAS-18FSXNSE	RAS-18FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE
	RAS-22FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE

HP	86	88	90	92	94
Model	RAS-86FSXNSE	RAS-88FSXNSE	RAS-90FSXNSE	RAS-92FSXNSE	RAS-94FSXNSE
Combination	RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE	RAS-22FSXNSE	RAS-22FSXNSE
	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

HP	96
Model	RAS-96FSXNSE
Combination	RAS-24FSXNSE
	RAS-24FSXNSE
	RAS-24FSXNSE
	RAS-24FSXNSE

NOTE

- Only the combinations in the table are allowed, not being possible to mix heat pump system (2 pipes) and heat recovery system (3 pipes) in the same combination. It is not possible to mix standard and high efficiency units either.
- (*) DSW7 pin4 must be set OFF in all the modules of the combination.

4.2 FSXNPE - High Efficiency type

Base units

HP	5	6	8	10
Model	RAS-5FSXNPE	RAS-6FSXNPE	RAS-8FSXNPE	RAS-10FSXNPE

HP	12	14	16	18
Model	RAS-12FSXNPE	RAS-14FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE

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Combinations of base units

HP	20	22	24	26	28
Model	RAS-20FSXNPE	RAS-22FSXNPE	RAS-24FSXNPE	RAS-26FSXNPE	RAS-28FSXNPE
Combination	RAS-10FSXNPE	RAS-10FSXNPE	RAS-12FSXNPE	RAS-10FSXNPE	RAS-12FSXNPE
	RAS-10FSXNPE	RAS-12FSXNPE	RAS-12FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE

HP	30	32	34	36	38
Model	RAS-30FSXNPE	RAS-32FSXNPE	RAS-34FSXNPE	RAS-36FSXNPE	RAS-38FSXNPE
Combination	RAS-12FSXNPE	RAS-14FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE	RAS-12FSXNPE
	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-12FSXNPE
	-	-	-	-	RAS-14FSXNPE

HP	40	42	44	46	48
Model	RAS-40FSXNPE	RAS-42FSXNPE	RAS-44FSXNPE	RAS-46FSXNPE	RAS-48FSXNPE
Combination	RAS-12FSXNPE	RAS-14FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE	RAS-12FSXNPE
	RAS-14FSXNPE	RAS-14FSXNPE	RAS-14FSXNPE	RAS-14FSXNPE	RAS-18FSXNPE
	RAS-14FSXNPE	RAS-14FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE

HP	50	52	54
Model	RAS-50FSXNPE	RAS-52FSXNPE	RAS-54FSXNPE
Combination	RAS-14FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE
	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE

Combinations of base units only for Heat Pump system (*)

HP	56	58	60	62	64
Model	RAS-56FSXNPE	RAS-58FSXNPE	RAS-60FSXNPE	RAS-62FSXNPE	RAS-64FSXNPE
Combination	RAS-12FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE	RAS-14FSXNPE	RAS-16FSXNPE
	RAS-12FSXNPE	RAS-14FSXNPE	RAS-14FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE
	RAS-14FSXNPE	RAS-14FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE
	RAS-18FSXNPE	RAS-18FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE

HP	66	68	70	72
Model	RAS-66FSXNPE	RAS-68FSXNPE	RAS-70FSXNPE	RAS-72FSXNPE
Combination	RAS-16FSXNPE	RAS-16FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE
	RAS-16FSXNPE	RAS-16FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
	RAS-16FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE

NOTE

- Only the combinations in the table are allowed, not being possible to mix heat pump system (2 pipes) and heat recovery system (3 pipes) in the same combination. It is not possible to mix standard and high efficiency units either.
- (*) DSW7 pin4 must be set OFF in all the modules of the combination

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5. New Features

5.1 New external appearance of the unit

New casing for all Set Free Sigma series with three different sizes:



small



medium



large

5.2 New and extended line-up

- Expand High efficiency series line-up (from max. 36HP to 54HP in Head Recovery system and to 72 in Heat Pump system)
- Expand Standard series line-up (from max. 54HP to 96 HP in a Heat pump system)
- Expand single module range (both for standard and high efficiency)

Series	Type	HP												
		5	6	8	10	12	14	16	18	20	22	24	26	28
Current Model (Heat Pump/ Heat Recovery)	Standard (RAS-FSXN1E)	-	-	●	●	●	●	●	○	○	○	○	○	○
	High Efficiency (RAS-FSXNHE)	●	●	●	●	●	○	○	○	○	○	○	○	○
New Model (Heat Pump/ Heat Recovery)	Standard (RAS-FSXNSE)	-	-	★	★	★	★	★	★	★	★	★	☆	☆
	High Efficiency (RAS-FSXNPE)	★	★	★	★	★	★	★	★	☆	☆	☆	☆	☆

Series	Type	HP												
		30	32	34	36	38	40	42	44	46	48	50	52	54
Current Model (Heat Pump/ Heat Recovery)	Standard (RAS-FSXN1E)	○	○	○	○	○	○	○	○	○	○	○	○	○
	High Efficiency (RAS-FSXNHE)	○	○	○	○	-	-	-	-	-	-	-	-	-
New Model (Heat Pump/ Heat Recovery)	Standard (RAS-FSXNSE)	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
	High Efficiency (RAS-FSXNPE)	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

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Series	Type	HP												
		56	58	60	62	64	66	68	70	72	74	76	78	80
Current Model (Heat Pump/ Heat Recovery)	Standard (RAS-FSXN1E)	-	-	-	-	-	-	-	-	-	-	-	-	-
	High Efficiency (RAS-FSXNHE)	-	-	-	-	-	-	-	-	-	-	-	-	-
New Model (Heat Pump)	Standard (RAS-FSXNSE)	★	★	★	★	★	★	★	★	★	★	★	★	★
	High Efficiency (RAS-FSXNPE)	★	★	★	★	★	★	★	★	★	-	-	-	-

Series	Type	HP							
		82	84	86	88	90	92	94	96
Current Model (Heat Pump/ Heat Recovery)	Standard (RAS-FSXN1E)	-	-	-	-	-	-	-	-
	High Efficiency (RAS-FSXNHE)	-	-	-	-	-	-	-	-
New Model (Heat Pump)	Standard (RAS-FSXNSE)	★	★	★	★	★	★	★	★
	High Efficiency (RAS-FSXNPE)	-	-	-	-	-	-	-	-

● Current model (Single Module) ○ Current model combination - Not available

★ New model (Single Module) ☆ New model combination ☆ New model combination Heat Pump system only

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5.3 All Inverter compressors model

In order to achieve greater efficiency at partial loads the constant compressor has been replaced by an inverter compressor.

Type	New Model	Current Model
Standard	Inverter	Inverter + Constant
High Efficiency	Inverter	Inverter

5.4 New CH-Box

New CH-Box series with models for a single connection or multiple connection, compatibles with the new Heat Recovery models (3 pipes) Set Free RAS-FSXN(S/P)E series:

Series	Single		Multiple			
	<6HP	6.1HP - 10HP	4 Branch	8 Branch	12 Branch	16 Branch
Current Model (CH Unit)	•	•	-	-	-	-
New Model (CH-Box)	★	★	★	★	★	★

• Current model ★ New model - Not available

5.5 Extended combinability ratio in High Efficiency Series (FSXNPE), from 50% to 150%

The combination ratio has increased up to 150% in the High Efficiency series FSXNPE, covering the installation needs with a less outdoor units power, which means in practice into a lower cost of installation.

Note: Indoor unit simultaneous operation capacity should be less than outdoor unit capacity. Otherwise, it may cause a decrease of operating performance and operating limit in overload operation.

5.6 Combination with new 0.4HP indoor unit (RCIM/RPI/RPK)

Maximum connectable indoor units enhancement by the application of the 0.4HP indoor unit, featuring the individual operation even with the 0.4HP units. Comparison between 0,4HP indoor units vs. 0,6HP:

Outdoor Units HP	5	6	8	10	12	14	16	18	20	22	24	26	28	30 or larger
Maximum number of connectable 0.4 HP indoor units	16	19	26	32	39	45	52	58	64	64	64	64	64	64
Maximum number of connectable 0.6 HP indoor units	10	13	17	21	26	30	34	39	43	47	52	56	60	64

See "6.4 Maximum number of indoor units that can be connected" chapter.

5.7 Extended Working Range

Wide Working Range for Cooling Capacity

In Cooling operation, the working range is extended up to maximum outdoor temperature 48°C DB (for standard type) and 52°C DB (for high efficiency type).

Additionally, the working range is extended up to minimum outdoor air inlet temperature -10°C DB at cooling operation mode and for combination of outdoor unit of 54 HP or less (special installation considerations and setting are required).

Outdoor temperature maximum			Outdoor temperature minimum	
Type	New Model	Current Model	New Model	Current Model
Standard	48°C (*)	43°C	-10°C (*)	-5°C
High Efficiency	52°C (*)	43°C	-10°C (*)	-5°C

This limits are available under certain working conditions. (*) See working range chapter for more details and restrictions.

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5.8 Energy saving technology

Bell-mouth

Long Bell-mouth Structure

Create smooth air flow and reduce fan input by adopting multi-stage enhanced structure.

Long Blade Propeller Fan

Multi-stage Enhanced Structure
Smooth air flow by distributing multipolar vortex.

Long Bell-mouth
Suppress leakage and effectively operate in wide range.

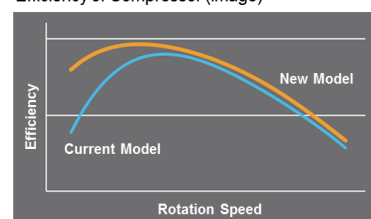


Compressor

Improve Compressor Efficiency at Low Load Operation

Optimize oil rate by improving oil distribution to the compressor and expand operation range at low load operation

Efficiency of Compressor (image)

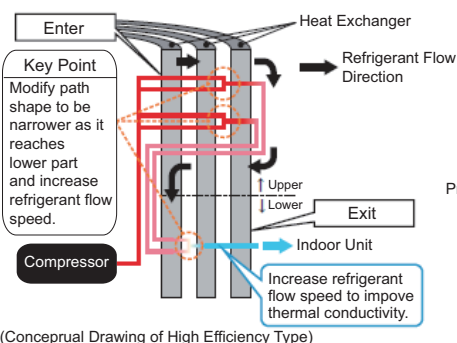


Heat Exchanger

Improve Efficiency at Low Load Cooling Operation with New Path Structure

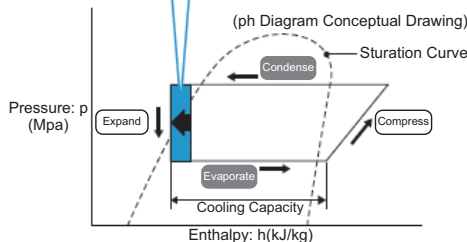
Adopt best effective heat exchanger path structure during low load cooling operation. Divide heat exchanger to upper and lower parts and modify path shape to be narrower as it reaches lower part and increase refrigerant flow speed to improve thermal conductivity. Improved energy efficiency and cooling capacity.

• New Heat Exchanger Path Structure



• Operation Condition at Low Load Cooling Operation

Improve cooling capacity and energy efficiency by adopting new path structure to increase refrigerant flow speed.

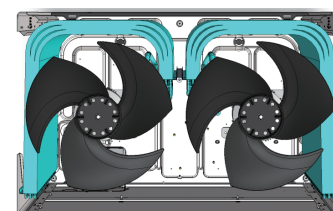


Σ Shape Heat Exchanger

Standard Type: ≥14HP

High Efficiency Type: ≥8HP

Adopt two fan structure for improve efficiency at low load operation. Adopt Σ shape heat exchanger to maximize the effect of the two fan structure for better energy saving.



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Launching of new SET FREE SIGMA outdoor units for Heat Pump and Heat Recovery series RAS-FSXNPE and RAS-FSXNSE

DATE: NOV'17

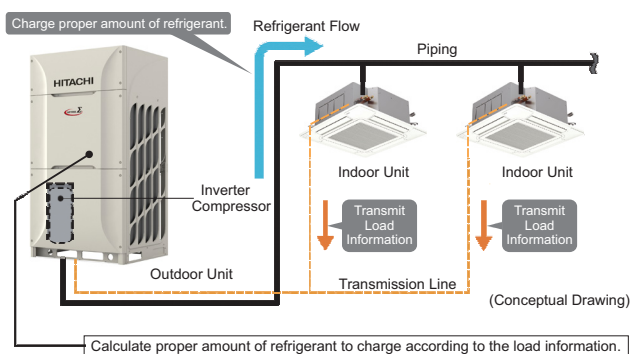
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5.9 Operation Control

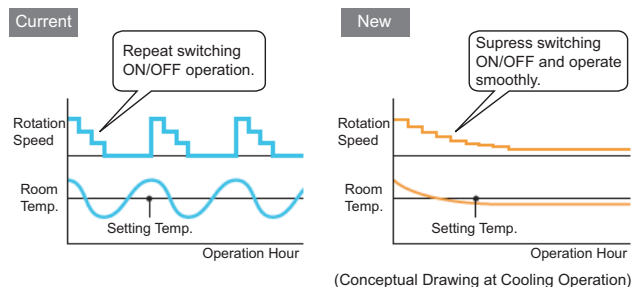
◆ Smooth Drive Control System

Calculate the amount of refrigerant to charge based on the load information from the indoor units. Control inverter compressor rotation speed and charge proper amount of refrigerant to indoor unit at each loading condition. Suppress compressor switching ON/OFF at low load operation for better energy efficiency with smooth operation.

Concept of Smooth Drive Control

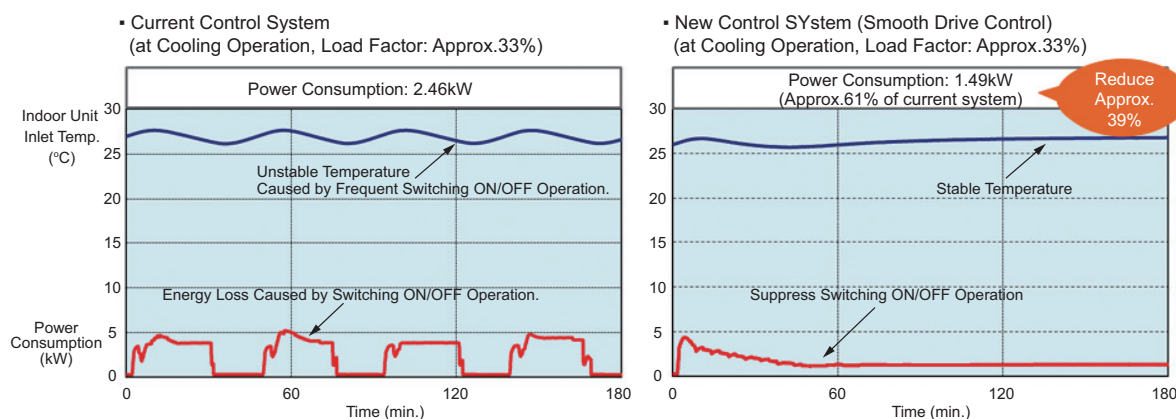


Comparison at Low Load Operation



◆ Verification Result of Energy Saving Effect from Smooth Drive Control

The verification result of energy saving effect at part load testing chamber is shown below. The "Smooth Drive Control System" suppress the compressor switching ON/OFF operation and keep room temperature stable. The reduction of power consumption has been verified



The verification test has been implemented with the combination of VRF outdoor unit and two 4-way cassette indoor units (RCI).

Testing Condition

- Indoor Unit Inlet Temperature: 27°C (Dry Bulb) / 19°C (Wet Bulb)
- Ambient Temperature at Air Volume "High": 23°C (Dry Bulb)
- Piping Length between Indoor Unit and Outdoor Unit: 15m
- Testing Location: Environment Testing Facility at Kansai Denryoku (power supply company)

All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

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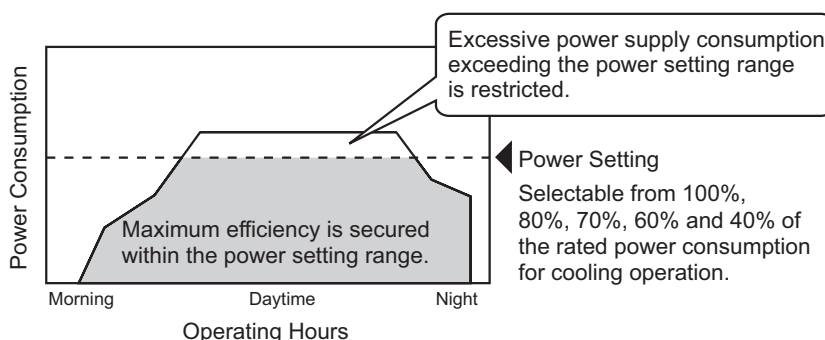
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5.10 Improvement of Energy-Saving by Central Station

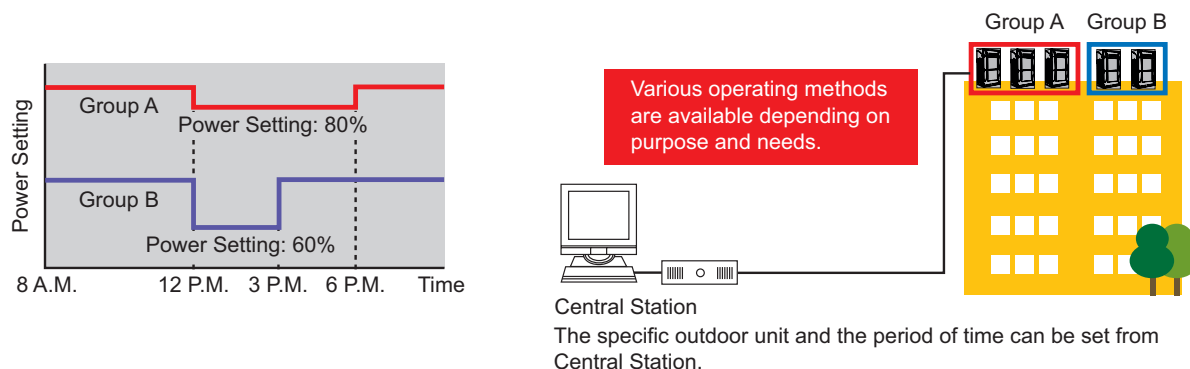
“Self-Demand Function(*)” can be set per outdoor unit from Central Station.

For small and medium buildings, it facilitates the power saving. The energy-saving operation can be adjusted according to an operating environment and individual needs.

(*) *Self-Demand Function*: It saves the capacity in order not to exceed the demand current control according to the electric power information which the air conditioner detects. The current can exceed the limits depending on the system conditions (for example in defrost mode).



- Setting Example: Schedule Setting for Each Group by Central Station DX



NOTES

- The demand current control (%) is indicated by approximate values. The value in this control which is calculated by the current is different precision from the value in the wattmeter.
- If it is required that the maximum power consumption is managed precisely, a field-supplied demand controller should be used.
- The range may temporarily be higher than the power setting range (%) depending on the operating control condition such as protection control.
- When the above self-demand control is set, the performance is restricted because the rotation frequency of compressor is forcibly decreased.

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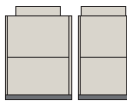
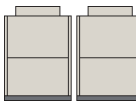
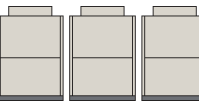
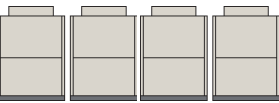
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5.11 Reduce Installation Space and Improve Installation Flexibility

Enhance the range of single module unit and reduce the combination number of outdoor units to reduce the number of process at connecting outdoor units.

◆ FSXNSE - Standard Type

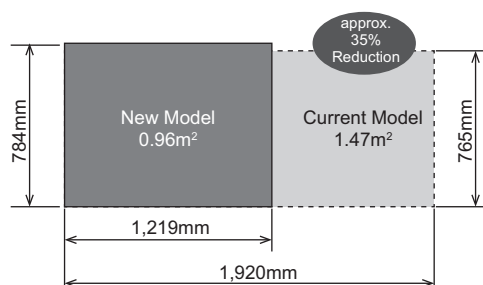
Examples of the comparison of the combination of outdoor unit (current vs. new series)

HP	8 to 16	18 to 24	26 to 32	34 to 48	50 to 54
Current Model (RAS-FSXN1E)	 single module	 two units	 two units	 three units	 four units
New Model (RAS-FSXNSE)	 single module	 single module	 two units	 two units	 three units

Examples of the comparison of the installation dimension and installation space reduction ratio outdoor unit (current vs. new series)

HP	18	20	22	24	34, 36	38, 40	42	44	46, 48	50 - 54
Current Model (RAS-FSXN1E)	1.47m2		1.67m2		2.21m2	2.41m2	2.61m2		2.81m2	3.35m2
New Model (RAS-FSXNSE)	0.96m2	1.26m2			1.93m2	2.23m2		2.54m2		2.90m2
Reduction Ratio	Approx. 35%	Approx. 14%	Approx. 25%		Approx. 13%	Approx. 7%	Approx. 15%	Approx. 3%	Approx. 10%	Approx. 13%

Example of Standard 18 HP model



Current Model
(RAS-18FSXN1E)



New Model
(RAS-18FSXNSE)

All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

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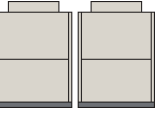
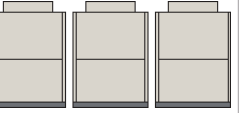
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◆ FSXNPE - High Efficiency Type

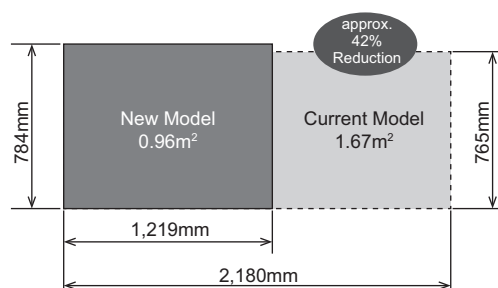
Combination comparison of outdoor unit

HP	5 to 12	14 to 18	20 to 24	26 to 36	38 to 54
Current Model (RAS-FSXNHE)	 single module	 two units	 two units	 three units	--
New Model (RAS-FSXNPE)	 single module	 single module	 two units	 two units	 three units

Installation Dimension and Installation Space Reduction Ratio Outdoor Unit

HP	14	16, 18	26 to 32	34, 36
Current Model (RAS-FSXNHE)	1.67m ²	1.87m ²	2.81m ²	
New Model (RAS-FSXNPE)	0.96m ²	1.26m ²	2.23m ²	2.54m ²
Reduction Ratio	Approx. 42%	Approx. 32%	Approx. 20%	Approx. 10%

Example of High Efficiency 14 HP model



Current Model
RAS-14FSXNHE



New Model
RAS-14FSXNPE

All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

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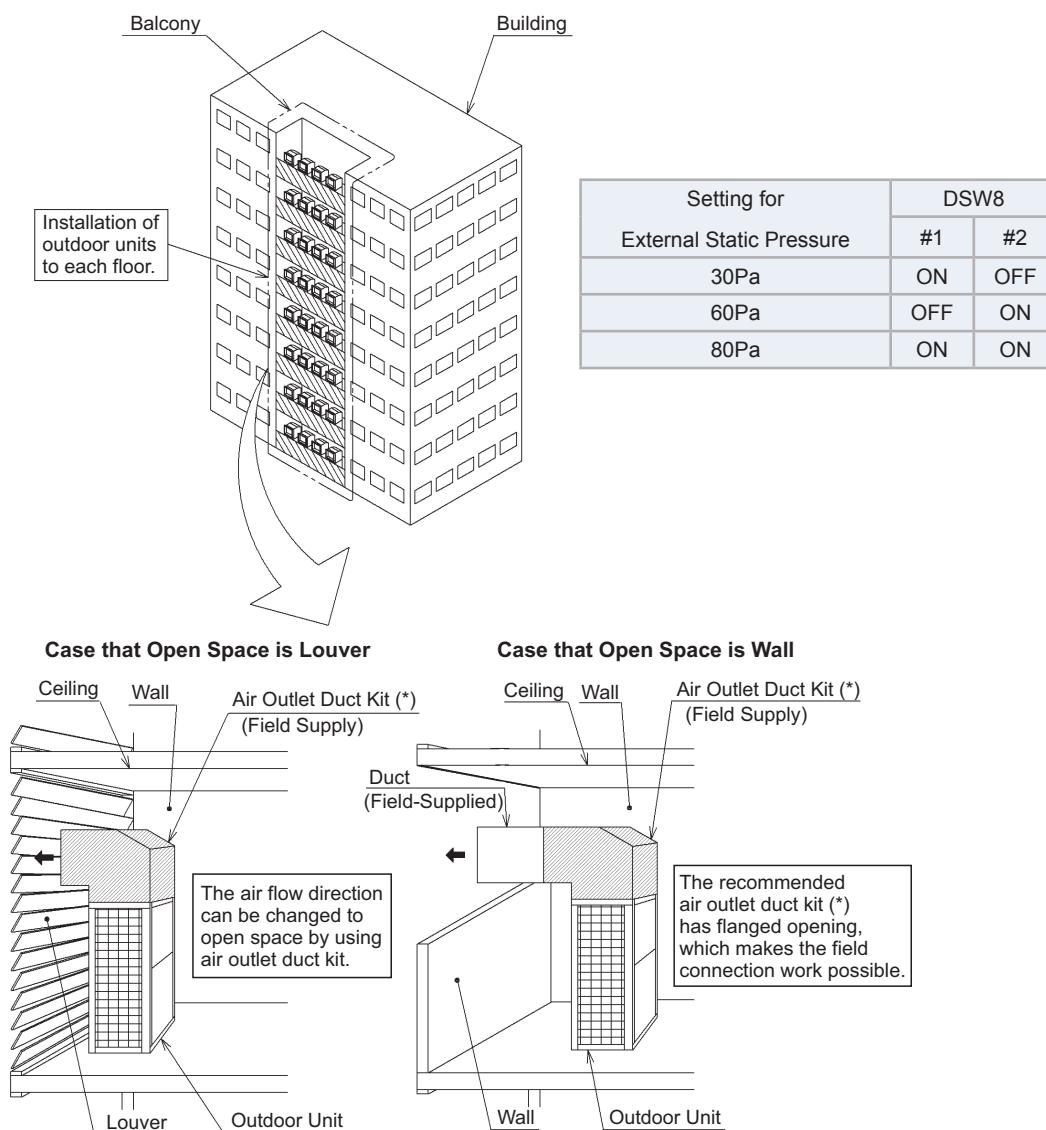
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5.12 Installation flexibility for expand external static pressure

For installation spaces such as a balcony or a floor where an external static pressure such as a louver or a duct is required to secure, the 3 steps external static pressure (80Pa, 60Pa and 30Pa) by the dip switch setting (DSW8) is newly adopted (current model is 60Pa only).

◆ Installation example for air outlet duct (field supplied)



NOTES

- Pay attention to the following case at the design and the installation. If the outlet air intakes by short-circuit, the operation range is limited due to increasing high pressure in the cooling operation or decreasing low pressure in the heating operation so that may cause failure of unit.
- (*) Air outlet duct is field supply.

All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

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5.13 Improvement of Servicing and Easy Maintenance

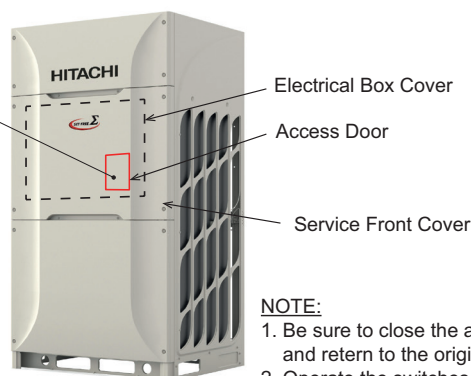
• Adopting Access Door for Electrical Box Cover

Improve serviceability and maintenance performance by adopting access door to electrical box cover. This makes possible to access PCB without opening whole electrical box cover.

Access Door Opened



Behind the Service Front Cover we have access to the Electrical Box Cover. The Access Door is located on the right side of the Electrical Box Cover.



NOTE:

1. Be sure to close the access door and return to the original position.
2. Operate the switches and push the buttons with an insulated stick (such as a closed ball-point pen) to avoid electrical shocking.

The following operations are capable from the access door.

- Checking 7-segment and alarm display
- LED operation condition
- PSW, DSW and RSW setting for function selection
- Connecting service checker to TB2 (transmission terminal block)

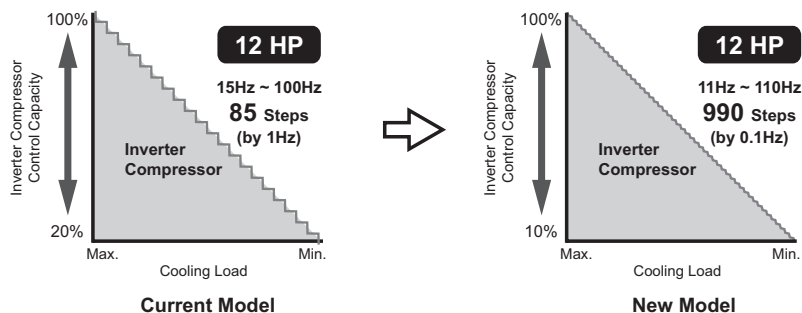
• Rotational Operation to Distribute Load of Outdoor Unit

• Backup Operation Function for Emergency

5.14 Other Advance Technologies

• Capacity Control by 0.1Hz

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, enabled by expanding the compressor's operating frequency band, both upwards and downwards.



All Areas		Out of Europe	
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Eastern Europe	☉		
Others			

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5.15 Comparison between New Model and Current Model

◆ FSXNSE - Standard type

Item		New Model	Current Model																																														
Model		RAS-FSXNSE	RAS-FSXN1E																																														
(1) Series horsepower		8 to 54HP																																															
(2) Applicable operation system		Heat Pump System and Heat Recovery System	Heat Pump System and Heat Recovery System																																														
(3) Refrigerant		R410A																																															
(4) Pressure	High	4.15MPa																																															
	Low	2.21MPa																																															
(5) Operation range	Cooling	-10 ~ 48°C (DB) (*)		-5 ~ 43°C (DB)																																													
	Heating	-20 ~ 15°C (WB)		-20 ~ 15°C (WB)																																													
		(*)Cooling operation at max. 48°CDB should be available only if the outdoor air inlet temperature increase temporarily according to the installation condition. Cooling operation at min. -10°C only under certain conditions. Refer to the “working range” chapter for the detail.																																															
(6) Dimensions (mm)		<table><tr><td>HP</td><td>8 - 12</td><td>14 - 18</td><td>20 - 24</td><td>26 - 30</td></tr><tr><td>W</td><td>959</td><td>1219</td><td>1609</td><td>2198 *</td></tr><tr><td>D</td><td colspan="4">784</td></tr><tr><td>H</td><td colspan="4">1725</td></tr></table>				HP	8 - 12	14 - 18	20 - 24	26 - 30	W	959	1219	1609	2198 *	D	784				H	1725				<table><tr><td>HP</td><td>8 - 12</td><td>14, 16</td><td>18, 20</td><td>22 - 26</td></tr><tr><td>W</td><td>950</td><td>1210</td><td>1920 *</td><td>2180 *</td></tr><tr><td>D</td><td colspan="4">765</td></tr><tr><td>H</td><td colspan="4">1720</td></tr></table>				HP	8 - 12	14, 16	18, 20	22 - 26	W	950	1210	1920 *	2180 *	D	765				H	1720			
		HP	8 - 12	14 - 18	20 - 24	26 - 30																																											
		W	959	1219	1609	2198 *																																											
		D	784																																														
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		HP	8 - 12	14, 16	18, 20	22 - 26																																											
		W	950	1210	1920 *	2180 *																																											
		D	765																																														
		H	1720																																														
		<table><tr><td>HP</td><td>32 - 36</td><td>38 - 42</td><td>44 - 48</td><td>50 - 54</td></tr><tr><td>W</td><td>2458 *</td><td>2848 *</td><td>3238 *</td><td>3697 *</td></tr><tr><td>D</td><td colspan="4">784</td></tr><tr><td>H</td><td colspan="4">1725</td></tr></table>				HP	32 - 36	38 - 42	44 - 48	50 - 54	W	2458 *	2848 *	3238 *	3697 *	D	784				H	1725				<table><tr><td>HP</td><td>28 - 32</td><td>34, 36</td><td>38, 40</td><td>42, 44</td></tr><tr><td>W</td><td>2440 *</td><td>2890 *</td><td>3150 *</td><td>3410*</td></tr><tr><td>D</td><td colspan="4">765</td></tr><tr><td>H</td><td colspan="4">1720</td></tr></table>				HP	28 - 32	34, 36	38, 40	42, 44	W	2440 *	2890 *	3150 *	3410*	D	765				H	1720			
		HP	32 - 36	38 - 42	44 - 48	50 - 54																																											
		W	2458 *	2848 *	3238 *	3697 *																																											
		D	784																																														
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		HP	28 - 32	34, 36	38, 40	42, 44																																											
		W	2440 *	2890 *	3150 *	3410*																																											
D	765																																																
H	1720																																																
* It is the value when each distance between the base outdoor units is specified to 20mm.				<table><tr><td>HP</td><td>46, 48</td><td>50 - 54</td></tr><tr><td>W</td><td>3670 *</td><td>4380*</td></tr><tr><td>D</td><td colspan="2">765</td></tr><tr><td>H</td><td colspan="2">1720</td></tr></table>				HP	46, 48	50 - 54	W	3670 *	4380*	D	765		H	1720																															
HP	46, 48	50 - 54																																															
W	3670 *	4380*																																															
D	765																																																
H	1720																																																
				* It is the value when each distance between the base outdoor units is specified to 20mm																																													
(7) Net weight (kg) (preliminary data)		<table><tr><td>HP</td><td>8, 10</td><td>12</td><td>14</td><td>16</td></tr><tr><td>Weight</td><td>(195)</td><td>(215)</td><td>(271)</td><td>(314)</td></tr></table>				HP	8, 10	12	14	16	Weight	(195)	(215)	(271)	(314)	<table><tr><td>HP</td><td>8</td><td>10, 12</td><td>14, 16</td></tr><tr><td>Weight</td><td>215</td><td>230</td><td>310</td></tr></table>				HP	8	10, 12	14, 16	Weight	215	230	310																						
		HP	8, 10	12	14	16																																											
		Weight	(195)	(215)	(271)	(314)																																											
		HP	8	10, 12	14, 16																																												
		Weight	215	230	310																																												
		<table><tr><td>HP</td><td>18</td><td>20</td><td>22</td><td>24</td></tr><tr><td>Weight</td><td>(315)</td><td>(355)</td><td>(369)</td><td>(370)</td></tr></table>				HP	18	20	22	24	Weight	(315)	(355)	(369)	(370)																																		
HP	18	20	22	24																																													
Weight	(315)	(355)	(369)	(370)																																													
The units 26HP to 54HP are formed by the base units combination.				The units 18HP to 54HP are formed by the base units combination.																																													

HITACHI

Distributed to ☉ Areas:

All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

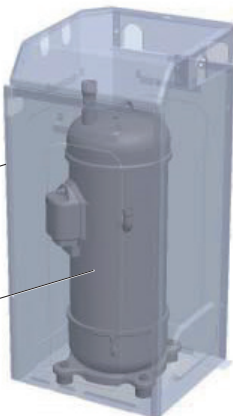
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Item	New Model										Current Model																																																					
Model	RAS-FSXNSE										RAS-FSXN1E																																																					
(8) Nominal capacity and efficiency (preliminary data)	Cooling	HP	8	10	12	14	16	18	20	22	24	Cooling	HP	8	10	12	14	16																																														
		Capacity (kW)	(22.4)	(28.0)	(33.5)	(40.0)	(45.0)	(50.0)	(56.0)	(61.5)	(67.0)		Capacity (kW)	22.4	28.0	33.5	40.0	45.0																																														
	Heating	EER	(4.54)	(4.22)	(4.13)	(3.43)	(3.47)	(3.68)	(3.24)	(3.16)	(3.11)	Heating	EER	4.12	3.98	3.16	3.30	3.24																																														
		Capacity (kW)	(25.0)	(31.5)	(37.5)	(45.0)	(50.0)	(56.0)	(63.0)	(69.0)	(77.5)		Capacity (kW)	25.0	31.5	37.5	45.0	50.0																																														
	COP	(5.17)	(5.09)	(4.49)	(3.60)	(3.55)	(3.58)	(3.65)	(3.29)	(3.70)	COP	4.08	4.07	3.79	3.62	3.12																																																
The above values indicate the EER/COP per outdoor unit when it is combined with specified indoor units.																																																																
(9) Compressor	All Inverter <table><tr><th>HP</th><th>Inverter</th><th>Constant</th></tr><tr><td>8</td><td>AA50PHD</td><td>—</td></tr><tr><td>10</td><td>AA50PHD</td><td>—</td></tr><tr><td>12</td><td>DC80PHD</td><td>—</td></tr><tr><td>14</td><td>DC80PHD</td><td>—</td></tr><tr><td>16</td><td>AA50PHD x 2</td><td>—</td></tr><tr><td>18</td><td>AA50PHD x 2</td><td>—</td></tr><tr><td>20</td><td>AA50PHD x 2</td><td>—</td></tr><tr><td>22</td><td>DC80PHD x 2</td><td>—</td></tr><tr><td>24</td><td>DC80PHD x 2</td><td>—</td></tr></table>										HP	Inverter	Constant	8	AA50PHD	—	10	AA50PHD	—	12	DC80PHD	—	14	DC80PHD	—	16	AA50PHD x 2	—	18	AA50PHD x 2	—	20	AA50PHD x 2	—	22	DC80PHD x 2	—	24	DC80PHD x 2	—	Inverter + constant <table><tr><th>HP</th><th>Inverter</th><th>Constant</th></tr><tr><td>8</td><td>DA50PHD</td><td>—</td></tr><tr><td>10</td><td>DA65PHD</td><td>—</td></tr><tr><td>12</td><td>DA65PHD</td><td>—</td></tr><tr><td>14</td><td>DA65PHD</td><td>E655DH</td></tr><tr><td>16</td><td>DA65PHD</td><td>E655DH</td></tr></table> The units 18HP to 54HP are formed by the base unit combination.						HP	Inverter	Constant	8	DA50PHD	—	10	DA65PHD	—	12	DA65PHD	—	14	DA65PHD	E655DH	16	DA65PHD	E655DH
	HP	Inverter	Constant																																																													
	8	AA50PHD	—																																																													
	10	AA50PHD	—																																																													
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	16	AA50PHD x 2	—																																																													
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	20	AA50PHD x 2	—																																																													
	22	DC80PHD x 2	—																																																													
24	DC80PHD x 2	—																																																														
HP	Inverter	Constant																																																														
8	DA50PHD	—																																																														
10	DA65PHD	—																																																														
12	DA65PHD	—																																																														
14	DA65PHD	E655DH																																																														
16	DA65PHD	E655DH																																																														
The units 26HP to 54HP are formed by the base units combination.																																																																
(10) Compressor cover	Compressor Cover (Steel Plate) Compressor 										Compressor Cover (Resin Material) Compressor 																																																					
(11) Sound power level (dB (A)) (preliminary data)	<table><tr><th>HP</th><th>8</th><th>10, 12</th><th>14, 16</th><th>18, 20</th><th>22</th><th>24</th></tr><tr><td>Sound Power Level</td><td>(80)</td><td>(82)</td><td>(85)</td><td>(86)</td><td>(84)</td><td>(86)</td></tr></table>										HP	8	10, 12	14, 16	18, 20	22	24	Sound Power Level	(80)	(82)	(85)	(86)	(84)	(86)	<table><tr><th>HP</th><th>8</th><th>10</th><th>12</th><th>14</th><th>16</th></tr><tr><td>Sound Power Level</td><td>81.5</td><td>82.5</td><td>84</td><td>85.4</td><td>85.5</td></tr></table>						HP	8	10	12	14	16	Sound Power Level	81.5	82.5	84	85.4	85.5																						
	HP	8	10, 12	14, 16	18, 20	22	24																																																									
Sound Power Level	(80)	(82)	(85)	(86)	(84)	(86)																																																										
HP	8	10	12	14	16																																																											
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All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

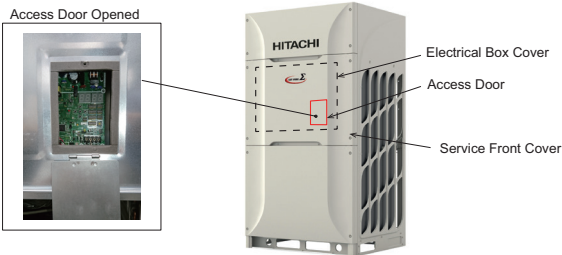
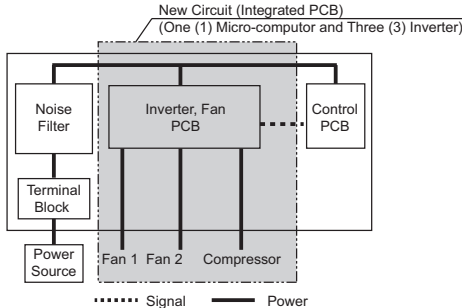
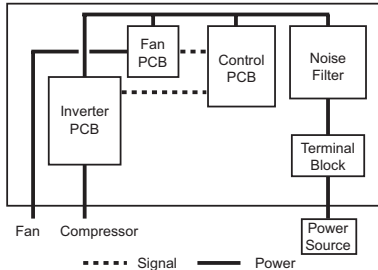
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SUBJECT

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Item	New Model	Current Model
Model	RAS-FSXNSE	RAS-FSXN1E
(12) Access door for electrical box cover		--
(13) Electrical wiring diagram (Representative example)		
(14) Combination ratio of indoor units	50 to 130% (*1) (In case the combination ratio exceed 130%) (*2)	50 to 130%
(15) Piping work condition Height difference between outdoor unit and indoor unit (Outdoor unit is higher)	≤50m (Standard) ≤110m (*3)	≤50m (Standard) ≤90m (Sales Order)
(16) CH-Box (for Heat Recovery system (3 pipes) only)	- Single Type - Multiple Type (4, 8, 12 and 16 Branch)	Single Type Only

NOTE

- (*1) There might be the possibility of insufficient capacity of 130% combination ratio if the capacity of combination ratio of indoor units exceed 100% capacity of outdoor unit in simultaneous operation. In this case it is not allowed to exceed the 100% (in simultaneous operation).
- (*2) Maximum connections ratio is 130%. Note that the approval from HITACHI Customer Service Department must be obtained beforehand in case that the capacity of combination ratio exceed 130%. Contact the HITACHI Customer Service Department in order to provide the relevant system characteristics for feasibility evaluation. The system configuration exceed standard combination ratio (130%) without consultation with HITACHI Customer Service Department is not acceptable. It may cause activation of alarm and operation failure.
- (*3) Longer piping (up to 110m) is available for all models. Note that the approval from HITACHI Customer Service Department must be obtained beforehand in case that height difference is over 50m. Contact the HITACHI Customer Service Department in order to provide the relevant system characteristics for feasibility evaluation.
- See "6.6 Important considerations" chapter.

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◆ FSXNPE - High Efficiency type

Item		New Model					Current Model											
Model		RAS-FSXNPE					RAS-FSXNHE											
(1) Series horsepower		5 to 54HP					5 to 36HP											
(2) Applicable operation System		Heat Pump System and Heat Recovery System					Heat Pump System and Heat Recovery System											
(3) Refrigerant		R410A																
(4) Pressure	High	4.15MPa																
	Low	2.21MPa																
(5) Operation range	Cooling	-10 ~ 52°C (DB) (*)					-5 ~ 43°C (DB)											
	Heating	-20 ~ 15°C (WB)					-20 ~ 15°C (WB)											
		(*) Cooling operation at max. 52°CDB should be available only if the outdoor air inlet temperature increase temporarily according to the installation condition. Cooling operation at min. -10°C only under certain conditions. Refer to the “working range” chapter for the detail																
(6) Dimensions (mm)		HP	5, 6	8 - 14	16, 18			HP	5, 6	8 - 12								
		W	959	1219	1609			W	950	1210								
		D	784					D	765									
		H	1725					H	1720									
		HP	20 - 24	26 - 32	34, 36		38 - 42		HP	14	16 - 24	26 - 36						
		W	2458 *	2848 *	3238 *		3697 *		W	2180 *	2440 *	3670 *						
		D	784					D	765									
		H	1715					H	1720									
		HP	44, 46	48, 50	52, 54			* It is the value when each distance between the base outdoor units is specified to 20mm										
		W	4087 *	4477 *	4867 *													
		D	784															
		H	1715															
		(7) Net Weight (kg) (preliminary data)		HP	5, 6	8	10	12		HP	5, 6	8 - 12						
				Weight	(195)	(258)	(262)	(263)		Weight	215	260						
HP	14			16	18			The units 14HP to 36HP are formed by the base units combination.										
Weight	(273)			(350)	(365)													
(8) Nominal capacity and Efficiency (preliminary data)		The units 20HP to 54HP are formed by the base units combination.																
		Cooling	HP	5	6	8	10	12	14	16	18	Cooling	HP	5	6	8	10	12
			Capacity (kW)	(14.0)	(16.0)	(22.4)	(28.0)	(33.5)	(40.0)	(45.0)	(50.0)		Capacity (kW)	14	16	22.4	28	33.5
		EER	(5.23)	(5.15)	(4.75)	(4.94)	(4.33)	(3.95)	(4.26)	(4.26)	EER	4.49	4.56	4.66	4.34	3.93		
		Heating	Capacity (kW)	(16.0)	(18.0)	(25.0)	(31.5)	(37.5)	(45.0)	(50.0)	(56.0)	Heating	Capacity (kW)	16	18	25	31.5	37.5
			COP	(6.19)	(5.55)	(5.37)	(5.18)	(5.08)	(4.54)	(4.21)	(4.06)		COP	4.80	4.58	4.67	4.67	4.11
		The above values indicate the EER/COP per outdoor unit when it is combined with specified indoor units.																

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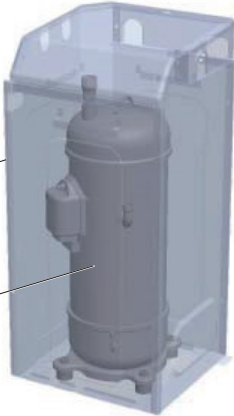
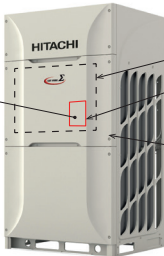
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Item	New Model	Current Model																																													
Model	RAS-FSXNPE	RAS-FSXNHE																																													
(9) Compressor	All Inverter <table><thead><tr><th>HP</th><th>Inverter</th><th>Constant</th></tr></thead><tbody><tr><td>5</td><td>AA50PHD</td><td>—</td></tr><tr><td>6</td><td>AA50PHD</td><td>—</td></tr><tr><td>8</td><td>AA50PHD</td><td>—</td></tr><tr><td>10</td><td>DB65PHD</td><td>—</td></tr><tr><td>12</td><td>DC80PHD</td><td>—</td></tr><tr><td>14</td><td>DC80PHD</td><td>—</td></tr><tr><td>16</td><td>AA50PHD x 2</td><td>—</td></tr><tr><td>18</td><td>DC80PHD x 2</td><td></td></tr></tbody></table> The units 20HP to 54HP are formed by the base units combination.	HP	Inverter	Constant	5	AA50PHD	—	6	AA50PHD	—	8	AA50PHD	—	10	DB65PHD	—	12	DC80PHD	—	14	DC80PHD	—	16	AA50PHD x 2	—	18	DC80PHD x 2		Inverter <table><thead><tr><th>HP</th><th>Inverter</th><th>Constant</th></tr></thead><tbody><tr><td>5</td><td>DA50PHD</td><td>—</td></tr><tr><td>6</td><td>DA50PHD</td><td>—</td></tr><tr><td>8</td><td>DA65PHD</td><td>—</td></tr><tr><td>10</td><td>DA65PHD</td><td>—</td></tr><tr><td>12</td><td>DA65PHD</td><td>—</td></tr></tbody></table> The units 14HP to 36HP are formed by the base units combination.	HP	Inverter	Constant	5	DA50PHD	—	6	DA50PHD	—	8	DA65PHD	—	10	DA65PHD	—	12	DA65PHD	—
	HP	Inverter	Constant																																												
	5	AA50PHD	—																																												
	6	AA50PHD	—																																												
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	10	DB65PHD	—																																												
	12	DC80PHD	—																																												
	14	DC80PHD	—																																												
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10	DA65PHD	—																																													
12	DA65PHD	—																																													
(10) Compressor cover	Compressor Cover (Steel Plate) Compressor 	Compressor Cover (Resin Material) Compressor 																																													
(11) Sound power level (dB (A)) (preliminary data)	<table><thead><tr><th>HP</th><th>5</th><th>6</th><th>8</th><th>10</th><th>12</th><th>14,16</th><th>18</th></tr></thead><tbody><tr><td>Sound Power Level</td><td>(75)</td><td>(78)</td><td>(77)</td><td>(82)</td><td>(83)</td><td>(85)</td><td>(86)</td></tr></tbody></table>	HP	5	6	8	10	12	14,16	18	Sound Power Level	(75)	(78)	(77)	(82)	(83)	(85)	(86)	<table><thead><tr><th>HP</th><th>5, 6</th><th>8</th><th>10</th><th>12</th></tr></thead><tbody><tr><td>Sound Power Level</td><td>79.5</td><td>81.5</td><td>82.5</td><td>84.5</td></tr></tbody></table>	HP	5, 6	8	10	12	Sound Power Level	79.5	81.5	82.5	84.5																			
HP	5	6	8	10	12	14,16	18																																								
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HP	5, 6	8	10	12																																											
Sound Power Level	79.5	81.5	82.5	84.5																																											
(12) Access door for electrical box cover	Access Door Opened  HITACHI Electrical Box Cover Access Door Service Front Cover 	--																																													

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Item	New Model	Current Model
Model	RAS-FSXNPE	RAS-FSXNHE
(13) Electrical wiring diagram (Representative Example)		
(14) Combination ratio of indoor units	50 to 150% (*1) (In case the combination ratio exceed 150%) (*2) (*3)	50 to 130%
(15) Piping work condition Height difference between outdoor unit and indoor unit (Outdoor unit is higher)	≤50m (Standard) ≤110m (*4)	≤50m (Standard) ≤90m (Sales Order)
(16) CH-Box (FSXNPE only)	- Single Type - Multiple Type (4, 8, 12 and 16 Branch)	Single Type Only

NOTE

- (*1) There might be the possibility of insufficient capacity of 150% combination ratio if the capacity of combination ratio of indoor units exceed 100% capacity of outdoor unit. In this case it is not allowed to exceed the 100% of indoor units in simultaneous operation.
- (*2) Maximum connections ratio is 150%. Note that the approval from HITACHI Customer Service Department must be obtained beforehand in case that the capacity of combination ratio exceed 150%. Contact the HITACHI Customer Service Department in order to provide the relevant system characteristics for feasibility evaluation. The system configuration exceed standard combination ratio (150%) without consultation with HITACHI Customer Service Department is not acceptable. It may cause activation of alarm and operation failure.
- (*3) In the following cases, 150% capacity ratio is not available. Set the connection ratio to be below 130%:
 - All the connected indoor units are 4-way cassette high efficiency RCI-1.0FSN4.
 - Total capacity of connected 4-way cassette high efficiency indoor units (RCI-FSN4) exceed 80% of all the connected indoor units.
 - Total capacity of connected indoor units of 0.6HP and/or 0.4HP exceed 80% of all the connected indoor units.
- (*4) Longer piping (up to 110m) is available for all models. Note that the approval from HITACHI Customer Service Department must be obtained beforehand in case that height difference is over 50m. Contact the HITACHI Customer Service Department in order to provide the relevant system characteristics for feasibility evaluation.
- See "6.6 Important considerations" chapter.

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5.16 New CH-Box line-up

Unit Type

CH: Cooling/Heating Changeover Box

Position-separating hyphen (fixed)

Refrigerant Type.

AP: R410A

Maximum Connectable Indoor Unit Capacity (HP)

160: 6.0HP

280: 6.1HP - 10.0HP

Applicable System

SSX: for Heat Recovery System (3 Pipes System)

CH

-

AP

XXX

SSX

Model	Branch	Connectable Indoor Unit Total Capacity	Number of Connectable Indoor Unit ^(*1)
CH-AP160SSX	1	6.0HP or less (Max. 16kW)	1 - 7
CH-AP280SSX	1	6.1HP - 10.0HP (Max. 28kW)	1 - 8

(*1) When multiple indoor units are connected to the same CH-Box, they are controlled with the same operation mode.

Unit Type

CH: Cooling/Heating Changeover Box

Position-separating hyphen (fixed)

Refrigerant Type.

AP: R410A

Maximum Connectable Indoor Unit Capacity (HP)

04: 4 branches; 08: 8 branches; 12: 12 branches; 16: 16 branches

M : multiple

Applicable System

SSX: for Heat Recovery System (3 Pipes System)

CH

-

AP

XX

M

SSX

Model	Branch	Connectable Indoor Unit Total Capacity	Number of Connectable Indoor Unit per Branch ^(*2)
CH-AP04MSSX	4	16.0HP or less (Max. 44.8kW)	1 - 6
CH-AP08MSSX	8	30.0HP or less (Max. 85kW)	1 - 6
CH-AP12MSSX	12	30.0HP or less (Max. 85kW)	1 - 6
CH-AP16MSSX	16	30.0HP or less (Max. 85kW)	1 - 6

(*2) The indoor units connected to the same branch of the CH-Box are controlled with the same operation mode.

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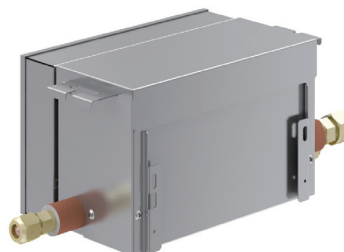
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Single

CH-AP160SSX

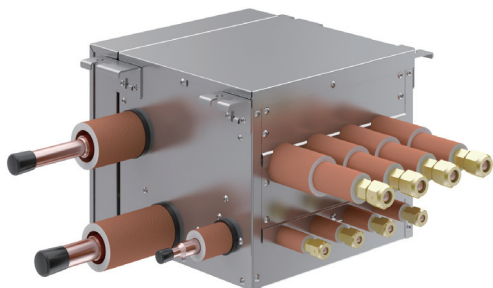


CH-AP280SSX



Multiple

CH-AP04MSSX



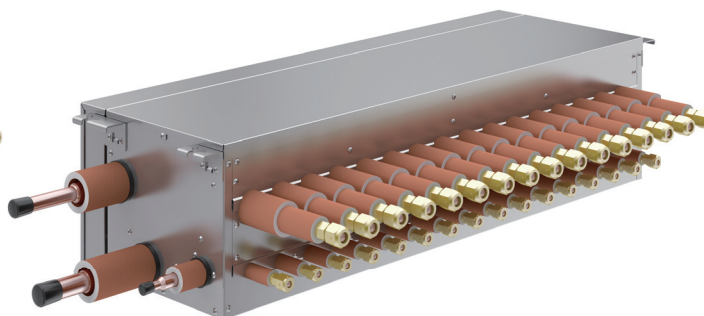
CH-AP08MSSX



CH-AP12MSSX



CH-AP16MSSX



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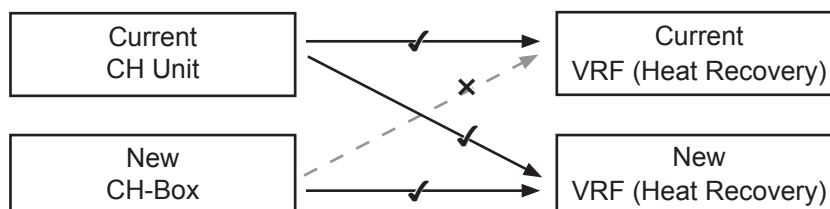
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◆ Interchangeability between Current CH Unit and New CH Box

The product name has been changed to CH-Box for the new product

New CH-Box and current CH Unit are compatible for the new outdoor units. However, only the current CH-unit is compatible for the current outdoor unit.



✓: Available

✗: Not Available

The current CH Unit and the new CH-Box can not be used in the same system together.

The production of current CH Unit shall be discontinued, however, it will be supplied for servicing and maintenance until further notice. Contact us if there are order request for the current CH Unit.

i NOTE

CH-Box Multiple

In case that the number of connected indoor units is less than the number of connections available at the CH-Unit:

- Seal any unused pipe connection with the flare nut originally provided. It is not necessary to attach closed-end piping. Also, any number of piping connections can be left unused.
- Make sure that the flare nuts are tightened with the specified tightening torque and the connection is sealed completely. Refrigerant leakage may occur because of loosened flare nuts.
- Set the CH-Box PCB DSW2 to indicate accordingly which are the non-used piping connection ports

In case that the installation of additional indoor units is planned in the future:

- Use the piping size corresponding only to the number of indoor units being currently installed, and select the adequate piping size again in the future.
- Connect the additional indoor units only after having recovered the refrigerant in the cycle.

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6. General Data

6.1 General considerations

- 1 The heating and cooling capacities indicated refer to the outdoor unit operating with the indoor units at 100% of their capacity, and are based on Standard EN14511.

Operating conditions		Cooling	Heating
Indoor air inlet temperature	DB	27.0 °C	20.0 °C
	WB	19.0 °C	—
Outdoor air inlet temperature	DB	35.0 °C	7.0 °C
	WB	—	6.0 °C

DB: dry bulb; WB: wet bulb.

Pipe length: 7.5 m; pipe height: 0 m

- 2 The sound pressure level was measured under the following conditions:
 - a. 1 m from the surface of the unit's service cover and 1.5 m from floor level.
 - b. The provided data corresponds to cooling mode. In the case of heating mode, the sound pressure level increases from 1 to 2 dB(A).
 - c. The provide data has been measured in an anechoic chamber, so the reflected sound must be taken into account for installation.
- 3 Sound power levels were measured in a reverberant room, in accordance with the EN12102 standard. Used environment conditions are the same as specified in EN14511 for performance test.
- 4 If the main refrigerant pipe specified in the table is not available at the installation location, select the size given in brackets. In this case, prepare a suitable reducer.
- 5 There are no combinations of units other than those specified in the tables.
- 6 For combination of base units, the width of outer dimensions, it is the value when each distance between the base outdoor units is specified to 20 mm.

NOTE

See "6.6 Important considerations" chapter

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6.2 FSXNSE - Standard type

Model			RAS-8FSXNSE	RAS-10FSXNSE	RAS-12FSXNSE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	22.4	28.0	33.5
Nominal Heating Capacity		kW	25.0	31.5	37.5
EER (Cooling mode) <i>(preliminary data)</i>			(4.54)	(4.22)	(4.13)
COP (Heating mode) <i>(preliminary data)</i>			(5.17)	(5.09)	(4.49)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(80)	(82)	(82)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(58)	(60)	(59)
Outer Dimensions	Height x Width x Depth	mm	1725 x 959 x 784	1725 x 959 x 784	1725 x 959 x 784
Net Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(190)	(190)	(210)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(195)	(195)	(215)
Gross Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(206)	(206)	(226)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(211)	(211)	(231)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		AA50PHD	AA50PHD	DC80PHD
	Quantity		1	1	1
	Motor Output (Pole)	kW	3.3 (6)	4.3 (6)	5.4 (6)
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	6.0	6.0	6.0
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		1	1	1
	Air Flow Rate	m3/min.	165	170	190
	Motor Output (Pole)	kW	0.26 (8)	0.28 (8)	0.42 (8)
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø9.52 (3/8)	Ø9.52 (3/8)	Ø12.7 (1/2)
	Gas Line - Low Pressure	mm (in.)	Ø19.05 (3/4)	Ø22.2 (7/8)	Ø25.4 (1)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø15.88 (5/8)	Ø19.05 (3/4)	Ø22.2 (7/8)
Refrigerant Charge (before Shipment)		kg	5.0	5.0	7.2
Packing Dimensions	Height x Width x Depth	mm	1,800 x 1,030 x 810	1,800 x 1,030 x 810	1,800 x 1,030 x 810
Approximate Packing Volume		m3	1.5	1.5	1.5

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Model			RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	40.0	45.0	50.0
Nominal Heating Capacity		kW	45.0	50.0	56.0
EER (Cooling mode) <i>(preliminary data)</i>			(3.43)	(3.47)	(3.68)
COP (Heating mode) <i>(preliminary data)</i>			(3.60)	(3.55)	(3.58)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(85)	(85)	(86)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(63)	(63)	(65)
Outer Dimensions	Height x Width x Depth	mm	1725 x 1219 x 784	1725 x 1219 x 784	1725 x 1219 x 784
Net Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(268)	(310)	(311)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(271)	(314)	(315)
Gross Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(286)	(328)	(329)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(289)	(332)	(333)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DC80PHD	AA50PHD + AA50PHD	AA50PHD + AA50PHD
	Quantity		1	2	2
	Motor Output (Pole)	kW	8.0 (6)	4.5 (6) × 2	5.0 (6) × 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	6.9	7.9	7.9
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		2	2	2
	Air Flow Rate	m3/min.	239	256	256
	Motor Output (Pole)	kW	0.33 (8) × 2	0.39 (8) × 2	0.39 (8) × 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø12.7 (1/2)	Ø12.7 (1/2)	Ø15.88 (5/8)
	Gas Line - Low Pressure	mm (in.)	Ø25.4 (1)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø22.2 (7/8)	Ø22.2 (7/8)	Ø22.2 (7/8)
Refrigerant Charge (before Shipment)		kg	8.9	9.9	10.7
Packing Dimensions	Height x Width x Depth	mm	1,800 x 1,290 x 810	1,800 x 1,290 x 810	1,800 x 1,290 x 810
Approximate Packing Volume		m3	1.9	1.9	1.9

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Model			RAS-20FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	56.0	61.5	67.0
Nominal Heating Capacity		kW	63.0	69.0	77.5
EER (Cooling mode) <i>(preliminary data)</i>			(3.24)	(3.16)	(3.11)
COP (Heating mode) <i>(preliminary data)</i>			(3.65)	(3.29)	(3.70)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(86)	(84)	(86)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(65)	(64)	(66)
Outer Dimensions	Height x Width x Depth	mm	1725 x 1609 x 784	1725 x 1609 x 784	1725 x 1609 x 784
Net Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(350)	(364)	(365)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(355)	(369)	(370)
Gross Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(370)	(384)	(385)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(375)	(389)	(390)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		AA50PHD + AA50PHD	DC80PHD + DC80PHD	DC80PHD + DC80PHD
	Quantity		2	2	2
	Motor Output (Pole)	kW	5.5 (6) x 2	6.7 (6) x 2	7.1 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	8.4	8.4	8.4
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		2	2	2
	Air Flow Rate	m3/min.	329	329	348
	Motor Output (Pole)	kW	0.48 (8) x 2	0.48 (8) x 2	0.56 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)
	Gas Line - Low Pressure	mm (in.)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø22.2 (7/8)	Ø25.4 (1)	Ø25.4 (1)
Refrigerant Charge (before Shipment)		kg	11.3	11.3	11.6
Packing Dimensions	Height x Width x Depth	mm	1,800 x 1,680 x 810	1,800 x 1,680 x 810	1,800 x 1,680 x 810
Approximate Packing Volume		m3	2.4	2.4	2.4

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Model			RAS-26FSXNSE	RAS-28FSXNSE	RAS-30FSXNSE
Combination of Base Unit			RAS-12FSXNSE	RAS-12FSXNSE	RAS-12FSXNSE
			RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	73.0	77.5	85.0
Nominal Heating Capacity		kW	82.5	90.0	95.0
EER (Cooling mode) <i>(preliminary data)</i>			(3.74)	(3.78)	(3.78)
COP (Heating mode) <i>(preliminary data)</i>			(3.96)	(3.80)	(3.83)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(87)	(87)	(87)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(64.5)	(64.5)	(66)
Outer Dimensions	Height x Width x Depth	mm	1725 x 2198 x 784	1725 x 2198 x 784	1725 x 2198 x 784
Net Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(210 + 268)	(210 + 310)	(210 + 311)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(215 + 271)	(215 + 314)	(215 + 315)
Gross Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(226 + 286)	(226 + 328)	(226 + 329)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(231 + 289)	(231 + 332)	(231 + 333)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DC80PHD + DC80PHD	DC80PHD + AA50PHD + AA50PHD	DC80PHD + AA50PHD + AA50PHD
	Quantity		2	3	3
	Motor Output (Pole)	kW	5.4 (6) x 1 + 8.0 (6) x 1	5.4 (6) x 1 + 4.5 (6) x 2	5.4 (6) x 1 + 5.0 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	12.9	13.9	13.9
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		3	3	3
	Air Flow Rate	m3/min.	190 + 239	190 + 256	190 + 256
	Motor Output (Pole)	kW	0.42 (8) + 0.33 (8) x 2	0.42 (8) + 0.39 (8) x 2	0.42 (8) + 0.39 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø25.4 (1)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
Refrigerant Charge (before Shipment)			16.1	17.1	17.9

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Model			RAS-32FSXNSE	RAS-34FSXNSE	RAS-36FSXNSE
Combination of Base Unit			RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE
			RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	90.0	95.0	100.0
Nominal Heating Capacity		kW	100.0	106.0	112.0
EER (Cooling mode) <i>(preliminary data)</i>			(3.57)	(3.58)	(3.68)
COP (Heating mode) <i>(preliminary data)</i>			(3.62)	(3.56)	(3.58)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(89)	(89)	(89)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(67)	(67)	(68)
Outer Dimensions	Height x Width x Depth	mm	1725 x 2458 x 784	1725 x 2458 x 784	1725 x 2458 x 784
Net Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(268 + 311)	(310 + 311)	(311 + 311)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(271 + 315)	(314 + 315)	(315 + 315)
Gross Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(286 + 329)	(328 + 329)	(329 + 329)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(289 + 333)	(332 + 333)	(333 + 333)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DC80PHD + AA50PHD + AA50PHD	AA50PHD + AA50PHD + AA50PHD + AA50PHD	AA50PHD + AA50PHD + AA50PHD + AA50PHD
	Quantity		3	4	4
	Motor Output (Pole)	kW	8.0 (6) x 1 + 5.0 (6) x 2	4.5 (6) x 2 + 5.0 (6) x 2	5.0 (6) x 2 + 5.0 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	14.8	15.8	15.8
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		4	4	4
	Air Flow Rate	m3/min.	239 + 256	256 x 2	256 x 2
	Motor Output (Pole)	kW	0.33 (8) x 2 + 0.39 (8) x 2	0.39 (8) x 2 + 0.39 (8) x 2	0.39 (8) x 2 + 0.39 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø38.1 (1-1/2)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
Refrigerant Charge (before Shipment)		kg	19.6	20.6	21.4

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Model			RAS-38FSXNSE	RAS-40FSXNSE	RAS-42FSXNSE
Combination of Base Unit			RAS-14FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE
			RAS-24FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	106.0	112.0	118.0
Nominal Heating Capacity		kW	118.0	125.0	132.0
EER (Cooling mode) <i>(preliminary data)</i>			(3.25)	(3.36)	(3.30)
COP (Heating mode) <i>(preliminary data)</i>			(3.82)	(3.45)	(3.61)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(89)	(88)	(89)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(68)	(67.5)	(68.5)
Outer Dimensions	Height x Width x Depth	mm	1725 x 2848 x 784	1725 x 2848 x 784	1725 x 2848 x 784
Net Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(268 + 365)	(311 + 364)	(311 + 365)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(271 + 370)	(315 + 369)	(315 + 370)
Gross Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(286 + 385)	(329 + 384)	(329 + 385)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(289 + 390)	(333 + 389)	(333 + 390)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DC80PHD + DC80PHD + DC80PHD	AA50PHD + AA50PHD + DC80PHD + DC80PHD	AA50PHD + AA50PHD + DC80PHD + DC80PHD
	Quantity		3	4	4
	Motor Output (Pole)	kW	8.0 (6) x 1 + 7.1 (6) x 2	5.0 (6) x 2 + 6.7 (6) x 2	5.0 (6) x 2 + 7.1 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	15.3	16.3	16.3
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		4	4	4
	Air Flow Rate	m3/min.	239 + 348	256 + 329	256 + 348
	Motor Output (Pole)	kW	0.33 (8) x 2 + 0.56 (8) x 2	0.39 (8) x 2 + 0.48 (8) x 2	0.39 (8) x 2 + 0.56 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
Refrigerant Charge (before Shipment)		kg	20.5	22.0	22.3

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Model			RAS-44FSXNSE	RAS-46FSXNSE	RAS-48FSXNSE
Combination of Base Unit			RAS-22FSXNSE	RAS-22FSXNSE	RAS-24FSXNSE
			RAS-22FSXNSE	RAS-24FSXNSE	RAS-24FSXNSE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	122.0	128.0	136.0
Nominal Heating Capacity		kW	140.0	145.0	150.0
EER (Cooling mode) <i>(preliminary data)</i>			(3.19)	(3.15)	(3.10)
COP (Heating mode) <i>(preliminary data)</i>			(3.25)	(3.53)	(3.71)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(87)	(88)	(89)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(67)	(68)	(69)
Outer Dimensions	Height x Width x Depth	mm	1725 x 3238 x 784	1725 x 3238 x 784	1725 x 3238 x 784
Net Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(364 + 364)	(364 + 365)	(365 + 365)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(369 + 369)	(369 + 370)	(370 + 370)
Gross Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(384 + 384)	(384 + 385)	(385 + 385)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(389 + 389)	(389 + 390)	(390 + 390)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DC80PHD + DC80PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD + DC80PHD
	Quantity		4	4	4
	Motor Output (Pole)	kW	6.7 (6) x 2 + 6.7 (6) x 2	6.7 (6) x 2 + 7.1 (6) x 2	7.1 (6) x 2 + 7.1 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	16.8	16.8	16.8
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		4	4	4
	Air Flow Rate	m3/min.	329 x 2	329 + 348	348 x 2
	Motor Output (Pole)	kW	0.48 (8) x 2 + 0.48 (8) x 2	0.48 (8) x 2 + 0.56 (8) x 2	0.56 (8) x 2 + 0.56 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
Refrigerant Charge (before Shipment)		kg	22.6	22.9	23.2

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Model			RAS-50FSXNSE	RAS-52FSXNSE	RAS-54FSXNSE
Combination of Base Unit			RAS-14FSXNSE	RAS-16FSXNSE	RAS-18FSXNSE
			RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE
			RAS-18FSXNSE	RAS-18FSXNSE	RAS-18FSXNSE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	140.0	145.0	150.0
Nominal Heating Capacity		kW	155.0	160.0	165.0
EER (Cooling mode) <i>(preliminary data)</i>			(3.61)	(3.61)	(3.68)
COP (Heating mode) <i>(preliminary data)</i>			(3.63)	(3.61)	(3.64)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(90)	(90)	(91)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(69)	(69)	(70)
Outer Dimensions	Height x Width x Depth	mm	1725 x 3697 x 784	1725 x 3697 x 784	1725 x 3697 x 784
Net Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(268 + 311 + 311)	(310 + 311 + 311)	(311 + 311 + 311)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(271 + 315 + 315)	(314 + 315 + 315)	(315 + 315 + 315)
Gross Weight	RAS-FSNSE <i>(preliminary data)</i>	kg	(286 + 329 + 329)	(328 + 329 + 329)	(329 + 329 + 329)
	RAS-FSXNSE <i>(preliminary data)</i>	kg	(289 + 333 + 333)	(332 + 333 + 333)	(333 + 333 + 333)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DC80PHD + AA50PHD + AA50PHD + AA50PHD + AA50PHD	AA50PHD + AA50PHD + AA50PHD + AA50PHD + AA50PHD + AA50PHD	AA50PHD + AA50PHD + AA50PHD + AA50PHD + AA50PHD + AA50PHD
	Quantity		5	6	6
	Motor Output (Pole)	kW	8.0 (6) x 1 + 5.0 (6) x 2 + 5.0 (6) x 2	4.5 (6) x 2 + 5.0 (6) x 2 + 5.0 (6) x 2	5.0 (6) x 2 + 5.0 (6) x 2 + 5.0 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	22.7	23.7	23.7
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		6	6	6
	Air Flow Rate	m3/min.	239 + 256 x 2	256 x 3	256 x 3
	Motor Output (Pole)	kW	0.33 (8) x 2 + 0.39 (8) x 2 + 0.39 (8) x 2	0.39 (8) x 2 + 0.39 (8) x 2 + 0.39 (8) x 2	0.39 (8) x 2 + 0.39 (8) x 2 + 0.39 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
Refrigerant Charge (before Shipment)		kg	30.3	31.3	32.1

NOTE

Tables up to 96HP will be inform later

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6.3 FSXNPE - High Efficiency type

Model			RAS-5FSXNPE	RAS-6FSXNPE	RAS-8FSXNPE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	14.0	16.0	22.4
Nominal Heating Capacity		kW	16.0	18.0	25.0
EER (Cooling mode) <i>(preliminary data)</i>			(5.23)	(5.15)	(4.75)
COP (Heating mode) <i>(preliminary data)</i>			(6.19)	(5.55)	(5.37)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(75)	(78)	(77)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(54)	(56)	(55)
Outer Dimensions	Height x Width x Depth	mm	1725 x 959 x 784	1725 x 959 x 784	1725 x 1219 x 784
Net Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(190)	(190)	(255)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(195)	(195)	(258)
Gross Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(206)	(206)	(273)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(211)	(211)	(276)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		AA50PHD	AA50PHD	AA50PHD
	Quantity		1	1	1
	Motor Output (Pole)	kW	1.9 (6)	2.1 (6)	3.1 (6)
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	6.0	6.0	6.0
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		1	1	2
	Air Flow Rate	m3/min.	150	170	185
	Motor Output (Pole)	kW	0.20 (8)	0.28 (8)	0.18 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø9.52 (3/8)	Ø9.52 (3/8)	Ø9.52 (3/8)
	Gas Line - Low Pressure	mm (in.)	Ø15.88 (5/8)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø12.7 (1/2)	Ø15.88 (5/8)	Ø15.88 (5/8)
Refrigerant Charge (before Shipment)		kg	4.7	5.0	8.5
Packing Dimensions	Height x Width x Depth	mm	1,800 x 1,030 x 810	1,800 x 1,030 x 810	1,800 x 1,290 x 810
Approximate Packing Volume		m3	1.5	1.5	1.9

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Model			RAS-10FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	28.0	33.5	40.0
Nominal Heating Capacity		kW	31.5	37.5	45.0
EER (Cooling mode) <i>(preliminary data)</i>			(4.94)	(4.33)	(3.95)
COP (Heating mode) <i>(preliminary data)</i>			(5.18)	(5.08)	(4.54)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(82)	(83)	(85)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(59)	(60)	(62)
Outer Dimensions	Height x Width x Depth	mm	1725 x 1219 x 784	1725 x 1219 x 784	1725 x 1219 x 784
Net Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(259)	(260)	(270)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(262)	(263)	(273)
Gross Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(277)	(278)	(288)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(280)	(281)	(291)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DB65PHD	DC80PHD	DC80PHD
	Quantity		1	1	1
	Motor Output (Pole)	kW	3.8 (6)	5.1 (6)	6.4 (6)
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	6.0	6.0	6.9
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		2	2	2
	Air Flow Rate	m3/min.	219	219	243
	Motor Output (Pole)	kW	0.26 (8) x 2	0.26 (8) x 2	0.34 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø9.52 (3/8)	Ø12.7 (1/2)	Ø12.7 (1/2)
	Gas Line - Low Pressure	mm (in.)	Ø22.2 (7/8)	Ø25.4 (1)	Ø25.4 (1)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø19.05 (3/4)	Ø22.2 (7/8)	Ø22.2 (7/8)
Refrigerant Charge (before Shipment)		kg	8.5	9.3	9.3
Packing Dimensions	Height x Width x Depth	mm	1,800 x 1,290 x 810	1,800 x 1,290 x 810	1,800 x 1,290 x 810
Approximate Packing Volume		m3	1.9	1.9	1.9

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Model			RAS-16FSXNPE	RAS-18FSXNPE	RAS-20FSXNPE
Combination of Base Unit			-	-	RAS-10FSXNPE
			-	-	RAS-10FSXNPE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	45.0	50.0	56.0
Nominal Heating Capacity		kW	50.0	56.0	63.0
EER (Cooling mode) <i>(preliminary data)</i>			(4.26)	(4.26)	(4.94)
COP (Heating mode) <i>(preliminary data)</i>			(4.21)	(4.06)	(5.18)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(85)	(86)	(85)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(65)	(65)	(62)
Outer Dimensions	Height x Width x Depth	mm	1725 x 1609 x 784	1725 x 1609 x 784	1725 x 2458 x 784
Net Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(345)	(360)	(259 + 259)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(350)	(365)	(262 + 262)
Gross Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(365)	(380)	(277 + 277)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(370)	(385)	(280 + 280)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		AA50PHD + AA50PHD	DC80PHD + DC80PHD	DB65PHD + DB65PHD
	Quantity		2	2	2
	Motor Output (Pole)	kW	3.7 (6) x 2	4.4 (6) x 2	3.8 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	7.9	7.9	12.0
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		2	2	4
	Air Flow Rate	m3/min.	326	362	219 x 2
	Motor Output (Pole)	kW	0.47 (8) x 2	0.62 (8) x 2	0.26 (8) x 2 + 0.26 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø12.7 (1/2)	Ø15.88 (5/8)	Ø15.88 (5/8)
	Gas Line - Low Pressure	mm (in.)	Ø28.58 (7/8)	Ø28.58 (7/8)	Ø28.58 (7/8)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø22.2 (7/8)	Ø22.2 (7/8)	Ø22.2 (7/8)
Refrigerant Charge (before Shipment)		kg	10.0	10.6	17.0
Packing Dimensions	Height x Width x Depth	mm	1,800 x 1,680 x 810	1,800 x 1,680 x 810	-
Approximate Packing Volume		m3	2.4	2.4	-

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Model			RAS-22FSXNPE	RAS-24FSXNPE	RAS-26FSXNPE
Combination of Base Unit			RAS-10FSXNPE	RAS-12FSXNPE	RAS-10FSXNPE
			RAS-12FSXNPE	RAS-12FSXNPE	RAS-16FSXNPE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	61.5	67.0	73.0
Nominal Heating Capacity		kW	69.0	77.5	82.5
EER (Cooling mode) <i>(preliminary data)</i>			(4.59)	(4.33)	(4.50)
COP (Heating mode) <i>(preliminary data)</i>			(5.13)	(4.94)	(4.47)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(86)	(86)	(87)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(62.5)	(63)	(66)
Outer Dimensions	Height x Width x Depth	mm	1725 x 2458 x 784	1725 x 2458 x 784	1725 x 2848 x 784
Net Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(259 + 260)	(260 + 260)	(259 + 345)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(262 + 263)	(263 + 263)	(262 + 350)
Gross Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(277 + 278)	(278 + 278)	(277 + 365)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(280 + 281)	(281 + 281)	(280 + 370)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DB65PHD + DC80PHD	DC80PHD + DC80PHD	DB65PHD + AA50PHD + AA50PHD
	Quantity		2	2	3
	Motor Output (Pole)	kW	3.8 (6) x 1 + 5.1 (6) x 1	5.1 (6) x 2	3.8 (6) x 1 + 3.7 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	12.0	12.0	13.9
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		4	4	4
	Air Flow Rate	m3/min.	219 x 2	219 x 2	219 + 326
	Motor Output (Pole)	kW	0.26 (8) x 2 + 0.26 (8) x 2	0.26 (8) x 2 + 0.26 (8) x 2	0.26 (8) x 2 + 0.47 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø28.58 (7/8)	Ø28.58 (7/8)	Ø31.75 (1-1/4)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø25.4 (1)	Ø25.4 (1)	Ø25.4 (1)
Refrigerant Charge (before Shipment)		kg	17.8	18.6	18.5

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Model			RAS-28FSXNPE	RAS-30FSXNPE	RAS-32FSXNPE
Combination of Base Unit			RAS-12FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE
			RAS-16FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	77.5	85.0	90.0
Nominal Heating Capacity		kW	90.0	95.0	100.0
EER (Cooling mode) <i>(preliminary data)</i>			(4.36)	(4.21)	(4.11)
COP (Heating mode) <i>(preliminary data)</i>			(4.43)	(4.36)	(4.31)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(87)	(88)	(89)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(66)	(66)	(67)
Outer Dimensions	Height x Width x Depth	mm	1725 x 2848 x 784	1725 x 2848 x 784	1725 x 2848 x 784
Net Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(260 + 345)	(260 + 360)	(270 + 360)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(263 + 350)	(263 + 365)	(273 + 365)
Gross Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(278 + 365)	(278 + 380)	(288 + 380)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(281 + 370)	(281 + 385)	(291 + 385)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DC80PHD + AA50PHD + AA50PHD	DC80PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD
	Quantity		3	3	3
	Motor Output (Pole)	kW	5.1 (6) x 1 + 3.7 (6) x 2	5.1 (6) x 1 + 4.4 (6) x 2	6.4 (6) x 1 + 4.4 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	13.9	13.9	14.8
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		4	4	4
	Air Flow Rate	m3/min.	219 + 326	219 + 362	243 + 362
	Motor Output (Pole)	kW	0.26 (8) x 2 + 0.47 (8) x 2	0.26 (8) x 2 + 0.62 (8) x 2	0.34 (8) x 2 + 0.62 (2) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
Refrigerant Charge (before Shipment)			19.3	19.9	19.9

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Model			RAS-34FSXNPE	RAS-36FSXNPE	RAS-38FSXNPE
Combination of Base Unit			RAS-16FSXNPE	RAS-18FSXNPE	RAS-12FSXNPE
			RAS-18FSXNPE	RAS-18FSXNPE	RAS-12FSXNPE
			-	-	RAS-14FSXNPE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	95.0	100.0	106.0
Nominal Heating Capacity		kW	106.0	112.0	118.0
EER (Cooling mode) <i>(preliminary data)</i>			(4.26)	(4.26)	(4.21)
COP (Heating mode) <i>(preliminary data)</i>			(4.13)	(4.06)	(4.95)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(89)	(89)	(89)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(68)	(68)	(65.5)
Outer Dimensions	Height x Width x Depth	mm	1725 x 3238 x 784	1725 x 3238 x 784	1725 x 3697 x 784
Net Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(345 + 360)	(360 + 360)	(260 + 260 + 270)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(350 + 365)	(365 + 365)	(263 + 263 + 273)
Gross Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(365 + 380)	(380 + 380)	(278 + 278 + 288)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(370 + 385)	(385 + 385)	(281 + 281 + 291)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		AA50PHD + AA50PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD
	Quantity		4	4	3
	Motor Output (Pole)	kW	3.7 (6) x 2 + 4.4 (6) x 2	4.4 (6) x 2 + 4.4 (6) x 2	5.1 (6) x 2 + 6.4 (6) x 1
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	15.8	15.8	18.9
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		4	4	6
	Air Flow Rate	m3/min.	326 + 362	362 x 2	219 x 2 + 243
	Motor Output (Pole)	kW	0.47 (2) x 2 + 0.62 (2) x 2	0.62 (8) x 2 + 0.62 (8) x 2	0.26 (8) x 2 + 0.26 (8) x 2 + 0.34 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø31.75 (1-1/4)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø31.75 (1-1/4)
Refrigerant Charge (before Shipment)			20.6	21.2	27.9

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Model			RAS-40FSXNPE	RAS-42FSXNPE	RAS-44FSXNPE
Combination of Base Unit			RAS-12FSXNPE	RAS-14FSXNPE	RAS-12FSXNPE
			RAS-14FSXNPE	RAS-14FSXNPE	RAS-14FSXNPE
			RAS-14FSXNPE	RAS-14FSXNPE	RAS-18FSXNPE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	112.0	118.0	122.0
Nominal Heating Capacity		kW	125.0	132.0	140.0
EER (Cooling mode) <i>(preliminary data)</i>			(4.11)	(4.03)	(4.24)
COP (Heating mode) <i>(preliminary data)</i>			(4.79)	(4.67)	(4.42)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(89)	(90)	(90)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(66)	(67)	(67.5)
Outer Dimensions	Height x Width x Depth	mm	1725 x 3697 x 784	1725 x 3697 x 784	1725 x 4087 x 784
Net Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(260 + 270 + 270)	(270 + 270 + 270)	(260 + 270 + 360)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(263 + 273 + 273)	(273 + 273 + 273)	(263 + 273 + 365)
Gross Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(278 + 288 + 288)	(288 + 288 + 288)	(278 + 288 + 380)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(281 + 291 + 291)	(291 + 291 + 291)	(281 + 291 + 385)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DC80PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD + DC80PHD
	Quantity		3	3	4
	Motor Output (Pole)	kW	5.1 (6) x 1 + 6.4 (6) x 2	6.4 (6) x 3	5.1 (6) x 1 + 6.4 (6) x 1 + 4.4 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	19.8	20.7	20.8
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		6	6	6
	Air Flow Rate	m3/min.	219 + 243 x 2	243 x 3	219 + 243 + 362
	Motor Output (Pole)	kW	0.26 (8) x 2 + 0.34 (8) x 2 + 0.34 (8) x 2	0.34 (8) x 2 + 0.34 (8) x 2 + 0.34 (8) x 2	0.26 (8) x 2 + 0.34 (8) x 2 + 0.62 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
Refrigerant Charge (before Shipment)		kg	27.9	27.9	29.2

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Model			RAS-46FSXNPE	RAS-48FSXNPE	RAS-50FSXNPE
Combination of Base Unit			RAS-14FSXNPE	RAS-12FSXNPE	RAS-14FSXNPE
			RAS-14FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
			RAS-18FSXNPE	RAS-18FSXNPE	RAS-18FSXNPE
Power Supply			3N~ 400V 50Hz		
Nominal Cooling Capacity		kW	128.0	136.0	140.0
Nominal Heating Capacity		kW	145.0	150.0	155.0
EER (Cooling mode) <i>(preliminary data)</i>			(4.13)	(4.30)	(4.16)
COP (Heating mode) <i>(preliminary data)</i>			(4.38)	(4.27)	(4.25)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(90)	(90)	(90)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(68)	(68.5)	(69)
Outer Dimensions	Height x Width x Depth	mm	1725 x 4087 x 784	1725 x 4477 x 784	1725 x 4477 x 784
Net Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(270 + 270 + 360)	(260 + 360 + 360)	(270 + 360 + 360)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(273 + 273 + 365)	(263 + 365 + 365)	(273 + 365 + 365)
Gross Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(288 + 288 + 380)	(278 + 380 + 380)	(288 + 380 + 380)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(291 + 291 + 385)	(281 + 385 + 385)	(291 + 385 + 385)
Refrigerant			R410A		
Flow Control			Micro-Computer Control Expansion Valve		
Compressor	Type		Hermetic (Scroll)		
	Model		DC80PHD + DC80PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD + DC80PHD + DC80PHD
	Quantity		4	5	5
	Motor Output (Pole)	kW	6.4 (6) x 1 + 6.4 (6) x 1 + 4.4 (6) x 2	5.1 (6) x 1 + 4.4 (6) x 2 + 4.4 (6) x 2	6.4 (6) x 1 + 4.4 (6) x 2 + 4.4 (6) x 2
Refrigeration Oil	Type		FVC68D		
	Charge	L/Unit	21.7	21.8	22.7
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Condenser Fan	Type		Propeller Fan		
	Quantity		6	6	6
	Air Flow Rate	m3/min.	243 x 2 + 362	219 + 362 x 2	243 + 362 x 2
	Motor Output (Pole)	kW	0.34 (8) x 2 + 0.34 (8) x 2 + 0.62 (8) x 2	0.26 (8) x 2 + 0.62 (8) x 2 + 0.62 (8) x 2	0.34 (8) x 2 + 0.62 (8) x 2 + 0.62 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
Refrigerant Charge (before Shipment)		kg	30.5	30.5	30.5

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Model			RAS-52FSXNPE	RAS-54FSXNPE
Combination of Base Unit			RAS-16FSXNPE	RAS-18FSXNPE
			RAS-18FSXNPE	RAS-18FSXNPE
			RAS-18FSXNPE	RAS-18FSXNPE
Power Supply			3N~ 400V 50Hz	
Nominal Cooling Capacity		kW	145.0	150.0
Nominal Heating Capacity		kW	160.0	165.0
EER (Cooling mode) <i>(preliminary data)</i>			(4.26)	(4.26)
COP (Heating mode) <i>(preliminary data)</i>			(4.16)	(4.14)
Sound Power Level <i>(preliminary data)</i>		dB(A)	(90)	(91)
Sound Pressure Level <i>(preliminary data)</i>		dB(A)	(70)	(70)
Outer Dimensions	Height x Width x Depth	mm	1725 x 4867 x 784	1725 x 4867 x 784
Net Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(345 + 360 + 360)	(360 + 360 + 360)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(350 + 365 + 365)	(365 + 365 + 365)
Gross Weight	RAS-FSNPE <i>(preliminary data)</i>	kg	(365 + 380 + 380)	(380 + 380 + 380)
	RAS-FSXNPE <i>(preliminary data)</i>	kg	(370 + 385 + 385)	(385 + 385 + 385)
Refrigerant			R410A	
Flow Control			Micro-Computer Control Expansion Valve	
Compressor	Type		Hermetic (Scroll)	
	Model		AA50PHD + AA50PHD + DC80PHD + DC80PHD + DC80PHD + DC80PHD	DC80PHD + DC80PHD + DC80PHD + DC80PHD + DC80PHD + DC80PHD
	Quantity		6	6
	Motor Output (Pole)	kW	3.7 (6) x 2 + 4.4 (6) x 2 + 4.4 (6) x 2	4.4 (6) x 2 + 4.4 (6) x 2 + 4.4 (6) x 2
Refrigeration Oil	Type		FVC68D	
	Charge	L/Unit	23.7	23.7
Heat Exchanger			Multi-Pass Cross-Finned Tube	
Condenser Fan	Type		Propeller Fan	
	Quantity		6	6
	Air Flow Rate	m3/min.	326 + 362 x 2	362 x 3
	Motor Output (Pole)	kW	0.47 (8) x 2 + 0.62 (8) x 2 + 0.62 (8) x 2	0.62 (8) x 2 + 0.62 (8) x 2 + 0.62 (8) x 2
Main Refrigerant Piping	Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)
	Gas Line - Low Pressure	mm (in.)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
	Gas Line - High/Low Pressure for Heat Recovery System only (3 Pipes systems)	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
Refrigerant Charge (before Shipment)		kg	31.2	31.8

NOTE

Tables up to 72HP will be inform later

Johnson Controls-Hitachi Air Conditioning Spain, S.A.U

Nº

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All Areas		Out of Europe	
Western Europe	☉		
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6.4 Maximum number of indoor units that can be connected

The number of connectable indoor unit with SET FREE FSXNPE and FSXNPE series outdoor unit is as follows.

If the refrigerant pipe length exceeds the values indicated in brackets, the maximum number of indoor units that can be connected must be less than that recommended in the following table.

HP	5	6	8	10	12	14	16	18	20	22	24	26	28 -36	38 or larger
Maximum number of connectable indoor units	16	19	26	32	39	45	52	58	64	64	64	64	64	64
Recommended number of connectable indoor units	5	8	10	16	18	20	26	32	38					

NOTE

See "6.6 Important considerations" chapter

6.5 CH-Box

Type			Single Branch		Multiple Branch				
Model Name			CH-AP160SSX	CH-AP280SSX	CH-AP04MSSX	CH-AP08MSSX	CH-AP12MSSX	CH-AP16MSSX	
Electrical	Power Supply		1~ 230V 50Hz						
	Power Consumption	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 Branches(for Indoor Unit)			1	1	4	8	12	16	
Maximum Capacity Index per Branch		kW	-	-	16	16	16	16	
Maximum Connectable Indoor Units Per Branch			7	8	6	6	6	6	
Dimensions Height x Width x Depth		mm	191 x 301 x 214	191 x 301 x 214	260 x 303 x 352	260 x 543 x 352	260 x 783 x 352	260 x 1023 x 352	
Refrigerant			R410A						
Refrigerant Piping	Outdoor Unit Side	Gas Line (High and Low pressure side)	mm (in.)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø22.2 (7/8)	Ø22.2 (7/8)	Ø25.4 (1)	Ø28.58 (1-1/8)
		Gas Line (Suction Gas)	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø25.4 (1)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø31.75 (1-1/4)
		Liquid Line	mm (in.)	Not included	Not included	Ø12.7 (1/2)	Ø12.7 (1/2)	Ø15.88 (5/8)	Ø19.05 (3/4)
	Indoor Unit Side	Gas Line	mm (in.)	Ø15.88 (5/8)	Ø19.05 (3/4)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)
		Liquid Line	mm (in.)	Not included	Not included	Ø9.52 (3/8)	Ø9.52 (3/8)	Ø9.52 (3/8)	Ø9.52 (3/8)
Net Weight		kg	6.0	6.0	14.0	25.0	36.0	47.0	

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6.6 Important considerations

- 1 0.4 HP is the minimum capacity of Indoor Unit connectable.
- 2 The connectable indoor unit capacity ratio can be calculated as follows:
Connectable Indoor Unit Capacity Ratio = Total Indoor Unit Capacity / Total Outdoor Unit Capacity
- 3 The maximum number of connectable indoor units differs depending on the model, capacity, environment and installation place of connected indoor units.
- 4 If combination capacity of indoor units exceed 100% of outdoor unit capacity, there might be the possibility of insufficient capacity.
- 5 For systems in which all indoor units are operated simultaneously, the total indoor unit capacity should be equal to or less than the outdoor unit capacity. Otherwise, it may cause a decrease of operating performance and operating limit in overload operation.
- 6 For the system under which all the indoor units are not supposed to operate simultaneously, the total indoor unit capacity is available up to 130% (for FSXNSE series) and 150% (for FSXNPE series) against the outdoor unit capacity.
- 7 The load capacity per hour or the possibility of all indoor units simultaneous operation is unknown at the design stage, the total capacity of combined indoor units should be not over 100% against the outdoor unit capacity.
- 8 It is not encouraged to exceed the recommended number of connected units in cold regions (places where outdoor air temperature may fall below -10°C). In case of connecting a capacity larger than 100%, it may occur that the discharge temperature of a part of the indoor units becomes extremely low, or that indoor units do not operate for a long period of time upon start up. It is highly recommended the installation of a central control to ensure that the total capacity of the indoor units working simultaneously doesn't exceed the outdoor unit capacity, especially if the system is intended to work at very high temperatures is cooling mode or very low temperatures in heating mode. When operating the outdoor unit in cold areas with temperatures of -10°C, or under the high heating load conditions, the total indoor unit capacity should be less than 100% against the outdoor unit capacity and the total piping length should be less than 300m.
- 9 The air flow volume for indoor units of 0.8 and 1.0HP is set higher than that for indoor units of 1.5HP or more. Make sure to select appropriate indoor units when installing indoor units where cold draft may occur during heating operation. If installing indoor units in such places, refer to the recommended number of connectable indoor units.
- 10 Limit to "Recommended maximum number of combined indoor units" when the piping length exceeds any of the following conditions:
 - a. Maximum pipe length between the branch and the indoor unit: 30m
 - b. Maximum pipe length between the first branch of the multikit and the last indoor unit: 40m
 - c. Maximum total pipe length: 300m
- 11 The refrigerant R410A is non-flammable and non-toxic. However, if leakage occurs and gas fills a room, it may cause suffocation. The maximum permissible concentration of R410A in air is *0.44 kg/m³, according to the refrigeration and air conditioning facility standard (EN378-1). Therefore, some effective measure must be taken to lower the R410A concentration in air below *0.44 kg/m³, in case of leakage. If the condition is not satisfied, it is required that the safety measure is added and the system is changed.
- 12 For connecting Wall Type (RPK-FSNH3M Series) with the Expansion Valve Kit, the number of connectable indoor unit is limited according to the total piping length between the expansion valve and the indoor unit. The total piping length must be less than the length indicated in the table. HITACHI will accept no responsibility for units that have been charged with non-specified refrigerant once.
- 13 Make sure to charge the correct quantity of additional refrigerant on site according to the length of the refrigerant liquid pipes, according to the number and model of indoor units, and according to the connection capacity ratio of indoor units. A charge too low or too high could cause damage to the compressor. It is of the utmost importance to adjust the appropriate amount of refrigerant when exceeding the Recommended maximum number of combined indoor units.

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Western Europe	☉		
Eastern Europe	☉		
Others			

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7. Electrical data

7.1 FSXNSE - Standard type

Model	Unit Main Power			Applicable Voltage		STC	Cooling Operation		Heating Operation		Maximum Current
	VOL	PH	HZ	Maximum	Minimum		RNC	IPT	RNC	IPT	
RAS-8FSXNSE	400	3	50	440	360	8	8.1	5.02	7.9	4.90	15.5
RAS-10FSXNSE						8	10.9	6.78	10.1	6.28	21.5
RAS-12FSXNSE						8	13.3	8.27	13.6	8.50	24.0
RAS-14FSXNSE						8	19.1	11.91	20.3	12.67	29.5
RAS-16FSXNSE						19	21.1	13.19	22.9	14.27	33.0
RAS-18FSXNSE						19	22.2	13.86	25.5	15.88	37.5
RAS-20FSXNSE						19	28.3	17.66	28.1	17.52	44.5
RAS-22FSXNSE						19	31.8	19.84	34.1	21.25	45.0
RAS-24FSXNSE						19	35.3	22.01	34.0	21.21	53.0
RAS-26FSXNSE						17	32.0	19.94	34.0	21.17	53.0
RAS-28FSXNSE						30	33.5	20.86	38.6	24.06	56.5
RAS-30FSXNSE						30	36.7	22.91	40.4	25.17	61.0
RAS-32FSXNSE						30	41.3	25.77	44.9	27.97	66.5
RAS-34FSXNSE						41	43.4	27.05	48.3	30.15	70.5
RAS-36FSXNSE						41	44.5	27.72	50.9	31.76	75.0
RAS-38FSXNSE						30	53.4	33.29	50.1	31.25	82.5
RAS-40FSXNSE						41	54.6	34.05	58.9	36.73	82.0
RAS-42FSXNSE						41	58.5	36.45	59.4	37.03	90.5
RAS-44FSXNSE						41	62.5	38.95	70.0	43.64	89.5
RAS-46FSXNSE						41	66.5	41.48	66.7	41.60	98.0
RAS-48FSXNSE						41	71.8	44.76	65.6	40.90	106
RAS-50FSXNSE						52	63.6	39.64	69.4	43.28	104
RAS-52FSXNSE						63	65.6	40.91	72.0	44.88	108
RAS-54FSXNSE						63	66.7	41.58	73.7	45.94	112
RAS-56FSXNSE						47	76.6	47.78	78.3	48.84	120
RAS-58FSXNSE						58	46.6	47.74	85.0	53.01	120
RAS-60FSXNSE						58	79.8	49.73	83.7	52.19	128
RAS-62FSXNSE						47	89.7	55.93	86.5	53.95	136
RAS-64FSXNSE						58	89.6	55.89	92.8	57.85	136
RAS-66FSXNSE						58	92.8	57.88	90.4	56.37	144
RAS-68FSXNSE						58	98.9	61.69	99.7	62.16	143
RAS-70FSXNSE						58	102.7	64.03	99.9	62.32	151
RAS-72FSXNSE						58	105.9	66.02	98.4	61.35	159
RAS-74FSXNSE						66	98.9	61.64	104	65.05	158
RAS-76FSXNSE						77	98.8	61.60	111	68.89	158
RAS-78FSXNSE						77	102	63.59	110	68.50	166
RAS-80FSXNSE						66	112	69.79	112	69.51	173
RAS-82FSXNSE						77	115	71.57	116	72.56	177
RAS-84FSXNSE						77	115	71.74	119	74.18	181
RAS-86FSXNSE						66	125	77.93	121	75.30	189
RAS-88FSXNSE						77	127	79.21	125	77.76	192
RAS-90FSXNSE						77	128	79.88	127	78.87	197
RAS-92FSXNSE						77	135	84.05	135	84.15	196
RAS-94FSXNSE						77	138	86.04	135	83.91	204
RAS-96FSXNSE						77	141	88.03	133	83.05	212

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7.2 FSXNPE High Efficiency type

Model	Unit Main Power			Applicable Voltage		STC	Cooling Operation		Heating Operation		Maximum Current
	VOL	PH	HZ	Maximum	Minimum		RNC	IPT	RNC	IPT	
RAS-5FSXNPE	400	3	50	440	360	8	4.3	2.70	4.2	2.61	11.5
RAS-6FSXNPE						8	5.0	3.14	5.2	3.27	12.0
RAS-8FSXNPE						8	7.7	4.80	7.6	4.73	15.0
RAS-10FSXNPE						8	9.2	5.75	9.9	6.19	19.0
RAS-12FSXNPE						8	12.6	7.86	12.0	7.46	23.0
RAS-14FSXNPE						8	17.2	10.73	16.2	10.10	28.0
RAS-16FSXNPE						19	17.2	10.72	19.3	12.02	33.0
RAS-18FSXNPE						19	19.1	11.90	22.3	13.93	34.5
RAS-20FSXNPE						17	18.5	11.51	19.8	12.37	38.0
RAS-22FSXNPE						17	21.8	13.61	21.9	13.65	42.0
RAS-24FSXNPE						17	25.2	15.71	25.5	15.88	46.0
RAS-26FSXNPE						30	26.4	16.47	30.0	18.69	51.5
RAS-28FSXNPE						30	28.9	18.05	33.0	20.57	55.5
RAS-30FSXNPE						30	32.8	20.47	35.4	22.05	57.0
RAS-32FSXNPE						30	36.3	22.63	37.7	23.53	62.0
RAS-34FSXNPE						41	36.3	22.62	41.6	25.95	67.0
RAS-36FSXNPE						41	38.2	23.81	44.7	27.85	68.5
RAS-38FSXNPE						25	41.7	25.98	38.8	24.21	73.5
RAS-40FSXNPE						25	45.7	28.51	42.6	26.56	78.5
RAS-42FSXNPE						25	49.7	31.02	46.2	28.81	83.0
RAS-44FSXNPE						41	47.5	29.59	51.6	32.15	85.0
RAS-46FSXNPE						41	51.9	32.34	53.9	33.63	89.5
RAS-48FSXNPE						52	51.4	32.05	57.0	35.52	91.0
RAS-50FSXNPE						52	55.4	34.54	59.3	36.96	96.0
RAS-52FSXNPE						63	55.4	34.53	62.4	38.88	101
RAS-54FSXNPE						63	57.3	35.71	64.6	40.28	103
RAS-56FSXNPE						44	61.5	38.34	62.5	38.95	109
RAS-58FSXNPE						44	65.0	40.53	64.7	40.33	114
RAS-60FSXNPE						55	67.4	42.00	69.5	43.32	122
RAS-62FSXNPE						66	68.1	42.49	74.3	46.32	127
RAS-64FSXNPE						77	68.2	42.50	78.0	48.65	132
RAS-66FSXNPE						77	70.1	43.72	80.4	50.16	134
RAS-68FSXNPE						77	72.6	45.25	83.5	52.06	135
RAS-70FSXNPE						77	74.6	46.49	87.0	54.27	137
RAS-72FSXNPE						77	76.6	47.76	89.9	56.08	138

NOTE

for Chapter 7.1 and 7.2

- VOL: Rated Unit Power Supply Voltage (V)
RNC: Running Current (A)
HZ: Frequency (Hz)
PH: Phase
STC: Starting Current (A)
IPT: Input (kW)
- 1. The above compressor data is based on 100% capacity combination of the indoor units at rated operating frequency.
- 2. The above performance data is based on 7.5m equivalent piping length and 0m piping lift.
- 3. These data are based on the same conditions as the nominal heating and cooling capacities.
- 4. The compressor is started by an inverter, resulting in extremely low starting current.

All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

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8. Working Range

8.1 Voltage supply

Service voltage

Between 90 and 110% of the rated voltage.

Start-up voltage

Between 85 and 115% of the rated voltage.

Voltage imbalance

Up to 3% in each phase, measured at the main terminal of the outdoor unit.

8.2 Working range

Set Free Sigma has been designed for cooling operation under low ambient temperatures down to -10°C. This feature enables cooling to be obtained even in winter in buildings with high internal heat gains due to lighting, people and machines, particularly in areas such as shops, lecture rooms, data processing areas, etc. And the heating operation under low ambient temperature down to -20°C can also be performed.

This heat pump and heat recovery system has been designed for the following temperatures. Use the system within this range.

The system can provide refrigeration or heating (heat pump system) or can provide refrigeration and heating simultaneously (heat recovery system).

The following table indicates the temperature range.

Operation		Cooling	Heating
Indoor temperature	Min.	21 °C DB / 15 °C WB	15 °C DB
	Max.	32 °C DB / 23 °C WB	27 °C DB
Outdoor temperature	Min.	-5 °C DB (-10 °C DB ⁽¹⁾)	-20 °C WB ⁽²⁾
	Max.	Standard type: 48 °C DB High Efficiency type: 52 °C DB	15 °C WB



NOTE

- DB: dry bulb; WB: wet bulb.
- ⁽¹⁾ In case cooling operation or simultaneous operation under the inlet air temperature -5°C or lower the conditions below must be considered at the time of installation.
 - Make sure to apply Snow Protection Hood (field supplied optional parts).
 - The minimum capacity of connectable indoor unit is 2.5HP.
 - Set the function "Cooling Operation under Low Load Operation" (DSW6) from the outdoor unit (If multiple outdoor units are connected in a system, set the function only for outdoor unit A).
 - Do not use the function if the total capacity of the outdoor unit connected in a system is 56HP or larger
- ⁽²⁾ For "Operation control range" area (minimum outdoor temperature is within -15 °C ~ -20 °C WB): Certain operation restrictions and protection controls may be activated when operating in this range. The activation of such controls does not imply abnormal operation of the unit. When operating in this range, it is assumed that indoor air inlet temperature in heating mode is within 15 °C ~ 27 °C WB, and operation is limited to a short period, such as in transitional operation upon startup, since these conditions are not suitable for continuous operation over extended periods.

All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

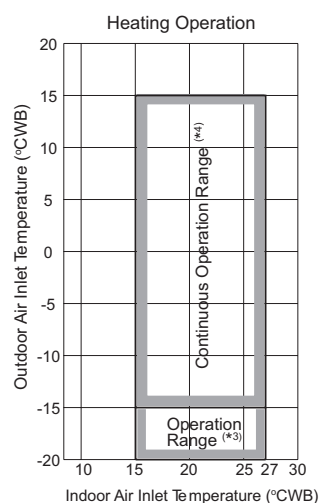
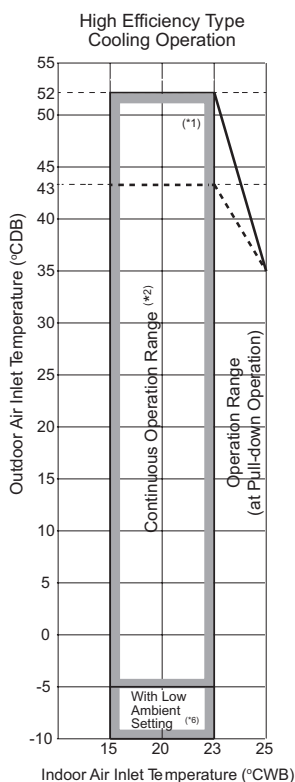
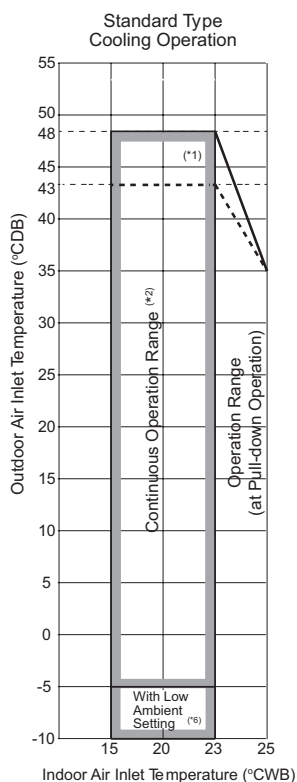
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NOTE

- (*1). (a) Cooling operation at maximum 48°C DB (for Standard type) and 52°C DB (for High Efficiency type) should be available only if the outdoor air inlet temperature increase temporarily according to the installation condition.
(b) If install the units to the place where exceed ambient temperature 43°C continuously, the combination ratio must be lower 130% and not to operate all of the indoor unit simultaneously.
(c) The cooling capacity is deteriorated at high ambient temperature. Select the larger capacity outdoor unit than compatible building heat load.
(d) The appropriate amount (100%) of refrigerant must be charged. Excessive charging of refrigerant is forbidden.
(e) It must be avoided to install the units where affected by direct sunlight reflection and short circuit. There may be the possibility to activate protection control and alarm system if install the units to inappropriate place. Also the life time of the products and parts must be considerably shortened.
(f) Periodic maintenance (1/certain month) must be applied to the heat exchanger fin to avoid adhesion of dirt and clogging of sand to the outdoor unit heat exchanger.
- (*2). There might be the possibility of thermo-OFF when cooling load is low and outdoor air inlet temperature is 10°C DB or lower to prevent frost formation on indoor unit heat exchanger.
- (*3). For "Operation control range" area (minimum outdoor temperature is within -15 °C ~ -20 °C WB): Certain operation restrictions and protection controls may be activated when operating in this range. The activation of such controls does not imply abnormal operation of the unit. When operating in this range, it is assumed that indoor air inlet temperature in heating mode is within 15 °C ~ 27 °C WB, and operation is limited to a short period, such as in transitional operation upon startup, since these conditions are not suitable for continuous operation over extended periods.
- (*4). There might be the possibility of thermo-OFF when heating load is low and outdoor air inlet temperature is high (higher than 15°C DB) in order to protect the outdoor unit. The outdoor unit operation stops at when outdoor air inlet temperature exceed 26°C DB.
- (*5). Operational range is different when connect to All Fresh Air Unit, Econofresh, and other special indoor units. Refer to the technical catalogue for the detail.
- (*6). In case cooling operation or simultaneous operation under the inlet air temperature -5°C or lower the conditions below must be considered at the time of installation.
- Make sure to apply Snow Protection Hood ((field supplied optional parts)).
 - The minimum capacity of connectable indoor unit is 2.5HP.

All Areas		Out of Europe	
Western Europe	☉		
Eastern Europe	☉		
Others			

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- Set the function "Cooling Operation under Low Load Operation" (DSW6) from the outdoor unit (If multiple outdoor units are connected in a system, set the function only for outdoor unit A).
- Do not use the function if the total capacity of the outdoor unit connected in a system is 56HP or larger.

9. Accessory list

HITACHI offers a range of different accessories and remote control systems that can be used with the SET FREE outdoor units.

The following components are available as an accessory upon request.

Name	Description	Code	Figure
MC-20AN1	Branch pipe (OU pipe connection kit)	70526209	
MC-21AN1		70526210	
MC-30AN1		70526211	
MC-40AN1		70526218	
MC-20XN1		70526309	
MC-21XN1		70526310	
MC-30XN1		70526311	
MC-40XN1		70526318	
DBS-TP10A	Drain Boss	60291683	
E-102SN4	Line Branch	70524201	
E-162SN4		70524202	
E-242SN3		70524104	
E-302SN3		70524105	
E-962SN		70524301	
E-52XN3		70525100	
E-102XN3		70525101	
E-162XN3		70525102	
E-202XN3		70525103	
E-242XN3		70525104	
E-322XN3		70525106	
MH-84AN1	Header branch	70522009	
MH-108AN		70522008	
MH-108XN		70523108	