



# set free

R410a

#### Models

FSVN  
FSN  
FXN  
8.0 – 85.0 KW

Variable refrigerant flow  
air conditioning systems

**HITACHI**  
Inspire the Next



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Air Conditioning from HITACHI can justifiably be described as the art of exploiting the latest ideas and developments in technology to create a range of innovative products which provide a more comfortable and more productive environment in which people can happily live and work. It is also an art executed with a responsible concern for protecting the environment. Ecological thinking begins at the very first stages of new product design and continues throughout production, installation procedures, equipment and operation.

Specifiers and users alike can always be assured that performance and costs are not the only parameters by which HITACHI products can be judged.

To achieve success with such objectives on a global scale requires not only enormous resources but also a commitment to the future. As one of the largest companies in the world, with over 321,517 employees, HITACHI is well positioned to undertake this commitment with confidence that comes from successfully responding to the changing needs of people for over 90 years.

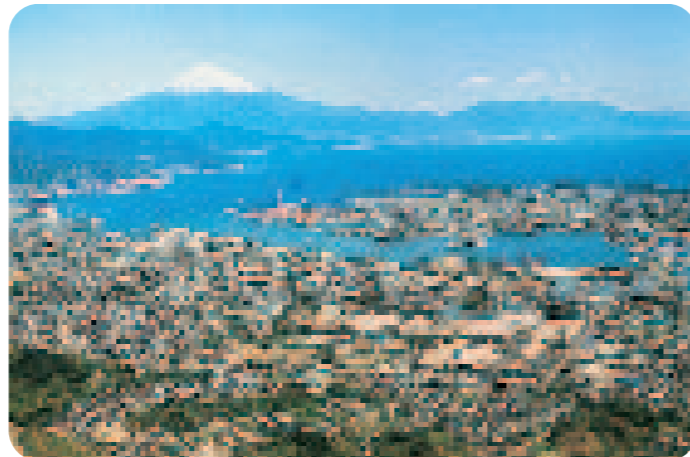
worldwide. In 1993 HITACHI invested in a new purpose built, state of the art factory (HAPE) in Barcelona, Spain. The site of the factory was carefully chosen to accommodate further building on its 40,000 square meter site. The creation of a European manufacturing facility and customer training centre helps reduce production costs, speed up delivery times and enables full support to be given to all customers.

HITACHI's advanced air conditioning products are specified all over the world, wherever there is a requirement for ultimate performance and cost effective, long term reliability. A wide range of units coupled with a choice of advanced control systems mean HITACHI can provide solutions to meet every possible air conditioning application or specification. Authorised Distributors all over the world contribute their own specialised technical support and practical assistance to provide individual system designs, commissioning and after sales service.

**HITACHI Authorised Distributors** are committed to providing an unrivalled support from a combination of experienced engineers, local product and spare parts stock,



Hitachi Air Conditioning Products Europe  
HAPE works, Spain



Hitachi Air Conditioning Systems Co., Ltd.  
Shimizu works, Japan



Hitachi Air Conditioning Products (M)  
HAPM works, Malaysia

## Company profile

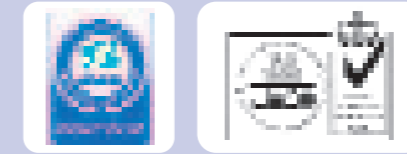
**HITACHI – in Japanese the name** means sunrise – is at the forefront of research and development turning new ideas and innovations into new products. Of its \$81.4 billion sales worldwide in 2003, close to 5.2% was invested in research and development programs. This vast amount of money has given HITACHI the opportunity to conceive many 'world firsts' – examples of which include the technologically advanced and acclaimed scroll and semi-hermetic Screw compressors. These have been incorporated in HITACHI's air conditioning systems and water chillers which have revolutionised air conditioning

supported in turn by on-going technical support from HITACHI.

From the initial product concept at HITACHI's research and development facility in Japan, product development is dedicated to providing the products the customer requires. Product design and development is continuous with priority being given to the use of ecologically friendly refrigerants. To satisfy your cooling and heating requirements and to ensure the optimum indoor environment, consider HITACHI the first and last word in air conditioning.



**Hitachi Air Conditioning Products Europe (HAPE works, Spain)** has acquired International Standard Quality Management System ISO9001 & ISO 14001 authorisation. HAPE performs thorough product quality control using various environmental tests. Hitachi Set Free Series Indoor units and panels are manufactured according to this ISO certification system.

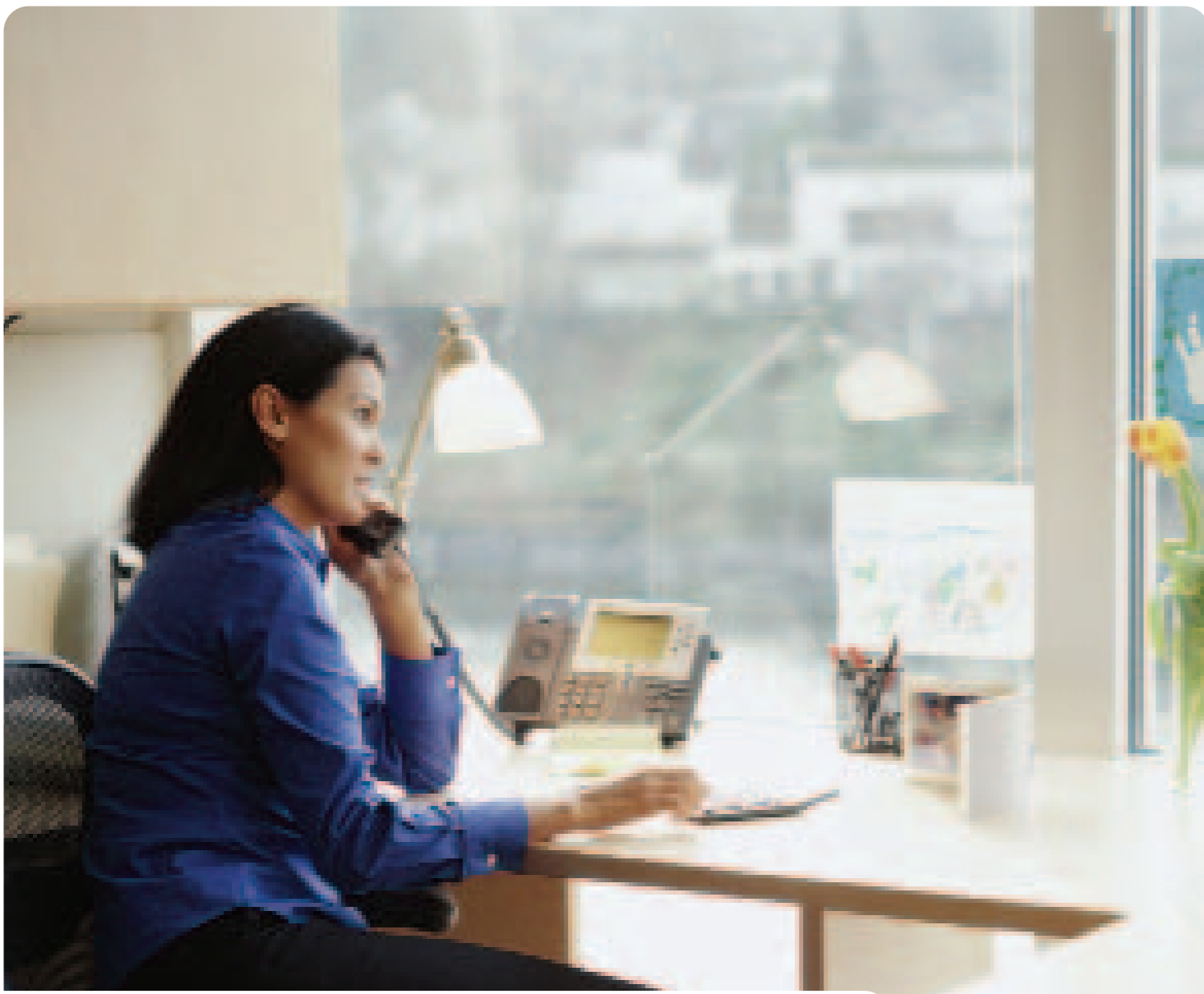


**Hitachi Air Conditioning Systems Co., Ltd. (Shimizu works, Japan)** has acquired International Standard Quality Management System ISO9001 and ISO14001 authorisation. Shimizu works perform thorough product quality control using various environmental tests, severe heating testing for compressors, and many others. Hitachi Set Free Series Outdoor units are manufactured according to this ISO certification system.

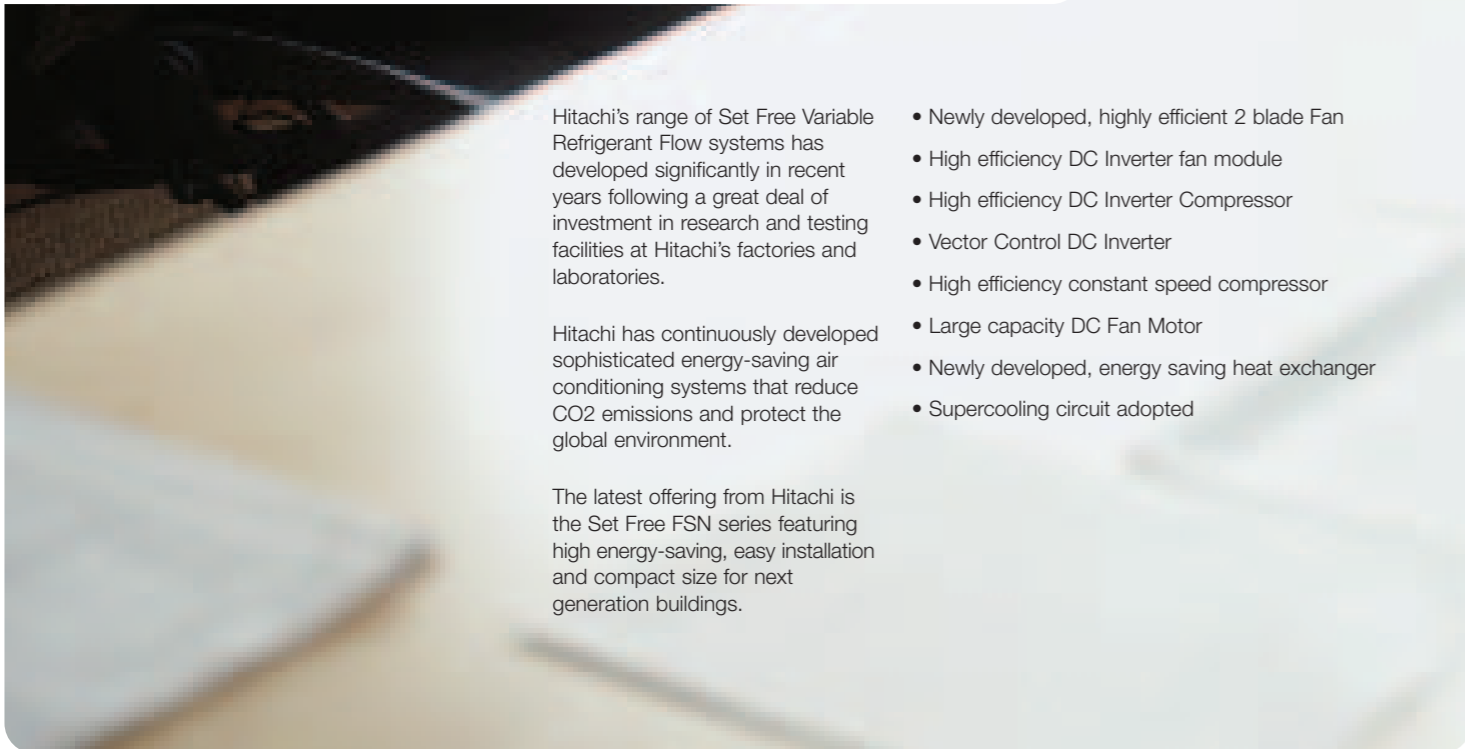


**Hitachi Air Conditioning Products (M) Sdn.Bhd (HAPM works, Malaysia)** has acquired International Standard Quality Management System ISO9001 and ISO14001 authorisation. HAPM perform thorough product quality control using various environmental tests. Hitachi Set Free Series RPK Indoor units are manufactured according to this ISO certification system.

## Quality control



# Product range overview



Hitachi's range of Set Free Variable Refrigerant Flow systems has developed significantly in recent years following a great deal of investment in research and testing facilities at Hitachi's factories and laboratories.

Hitachi has continuously developed sophisticated energy-saving air conditioning systems that reduce CO2 emissions and protect the global environment.

The latest offering from Hitachi is the Set Free FSN series featuring high energy-saving, easy installation and compact size for next generation buildings.

- Newly developed, highly efficient 2 blade Fan
- High efficiency DC Inverter fan module
- High efficiency DC Inverter Compressor
- Vector Control DC Inverter
- High efficiency constant speed compressor
- Large capacity DC Fan Motor
- Newly developed, energy saving heat exchanger
- Supercooling circuit adopted

## Indoor Units

	Capacity Range [HP]										
	0.8	1.0	1.3	1.5	1.8	2.0	2.3	2.5	3.0	4.0	5.0
In-the-Ceiling	●	●	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●	●	●	●
4-Way Cassette	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●	●	●	●
2-Way Cassette	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●	●	●	●
Wall	●	●	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●	●	●	
Ceiling					● <sup>+</sup>	●	● <sup>+</sup>	●	●	●	●
Floor-Standing	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●			
Floor-Concealed	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●	● <sup>+</sup>	●			

Adjustable by dip switch setting

## Outdoor Units

	Capacity Range [HP]								
	3.0	4.0	5.0	8.0	10.0	16.0	20.0	24.0	30.0
RAS-FSVN Series	●	●	●						
RAS-FSN Series			●	●	●	●	●	●	●
RAS-FXN Series				●	●		●		●



FSVN and FXN Series will be available from 2005

## System Equipment

	Capacity Range [m³/h]			
	250	500	800	1,000
Total Heat Exchanger	●	●	●	●

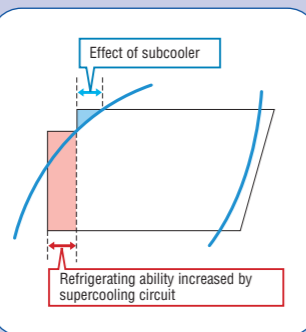
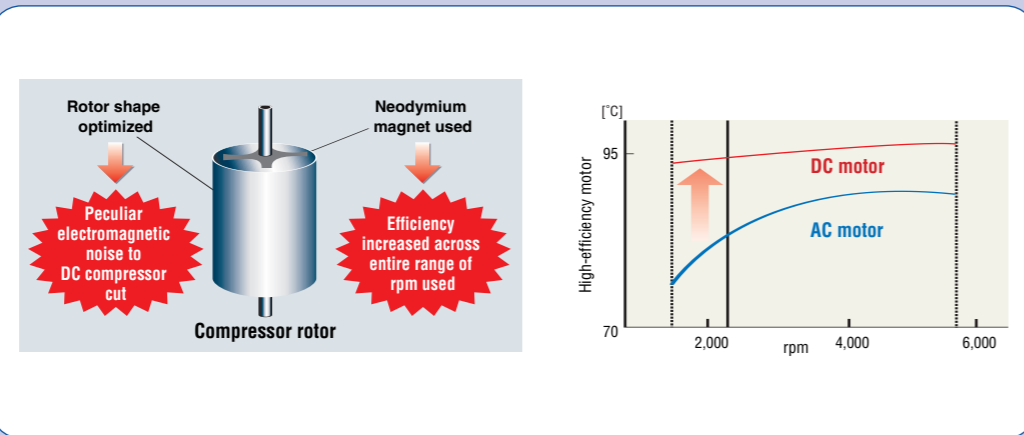
## High COP

Performance is greatly improved by the high-efficiency, high pressure, inverter driven scroll compressor.

- Reliability greatly improved by optimised bearing
- Intake loss and leakage loss largely reduced by asymmetric scroll lap
- Heat loss largely reduced by oil return structure
- Accurate oiling to the compressor by improved oiling system

## Supercooling circuit

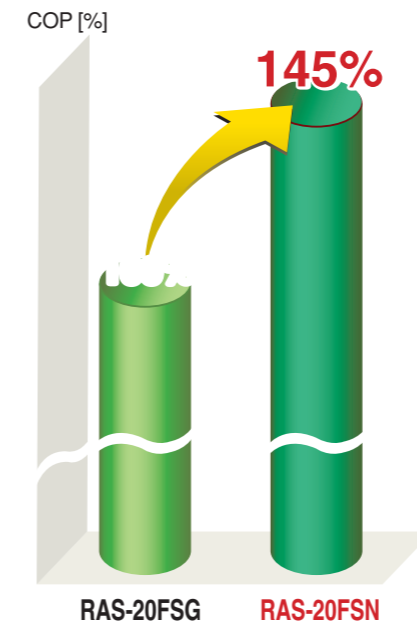
- Performance improved by high-efficiency plate type of heat exchanger



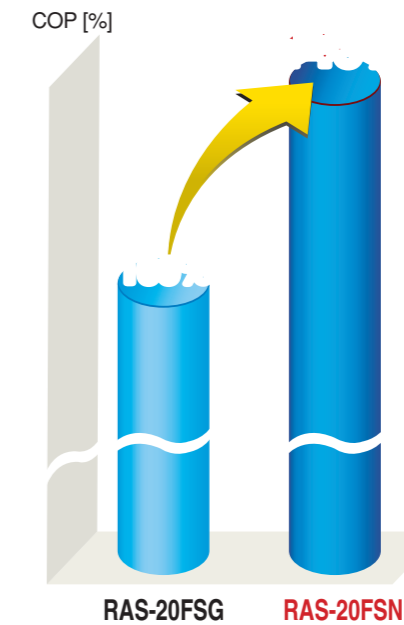
## DC Compressor

By using DC, the performance is improved at around 30 - 40Hz where the operation time of the inverter compressor is longest. Also, to suppress electromagnetic noise interference and achieve low noise, the rotor has been divided into two and the electric pole displaced.

## Cooling/heating operation on average



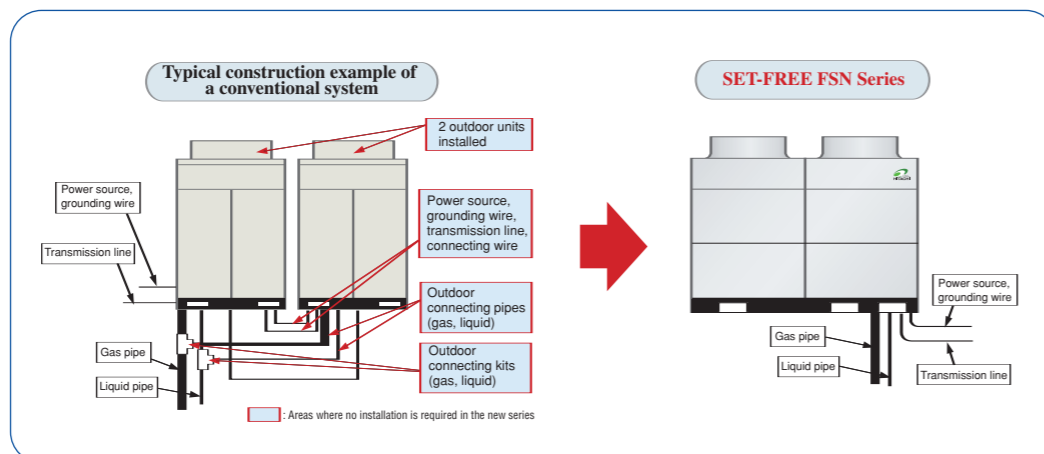
## Cooling operation



# Features and benefits

## Integral type unit for all product series

- All units are assembled and tested at Hitachi factories therefore minimising problems at installation stage.



## Flexible, more compact design



RAS-16FSN

- Installation space : Reduced by **37%**
- Weight : Reduced by **24%**
- No. of condenser fans : 2 → **1**

\* Comparison with RAS-16FSG



## 2-Blade Fan

- Hitachi unique patented design
- Noise is reduced by decreasing the number of blades to 2
- The length of each blade is longer, increasing air quantity by 25%
- Motor input decrease by 8%

## Increased flexibility in project design

Outdoor unit capacity	Conventional model		SET-FREE FSN	
	Min. capacity of indoor units connectable	Max. number of indoor units connectable	Min. capacity of indoor units connectable	Max. number of indoor units connectable
5 HP	0.8 HP	8(8)	0.8 HP	8(8)
8 HP	0.8 HP	13(13)	0.8 HP	13(13)
10 HP	0.8 HP	16(16)	0.8 HP	16(16)
16 HP	1.0 HP	16(16)	0.8 HP	20(20)
20 HP	1.0 HP	16(16)	0.8 HP	20(20)
24 HP	1.0 HP	27(12)	0.8 HP	27(12)
30 HP	1.0 HP	32(12)	0.8 HP	32(12)

( ) : Max. number of min. capacity indoor units connectable

\* Indoor unit connected capacity range: 50-130% of outdoor unit capacity

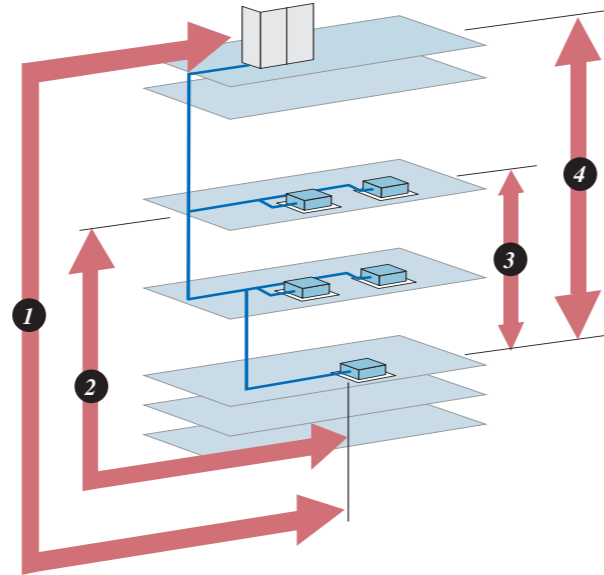
\* Secure air permeability in the event of refrigerant leakage.

- Indoor unit selection is easier as the minimum capacity and the maximum number of indoor units to be connected are increased to match the indoor load.

### More flexible refrigerant construction conditions

Improved flexibility of design by increasing the pipe length to 150 m max. (equivalent length of 175 m) in FSN series.

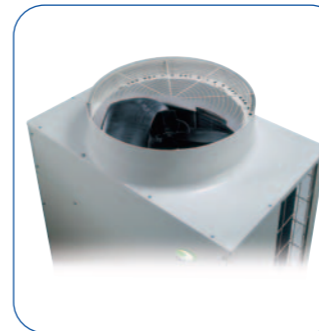
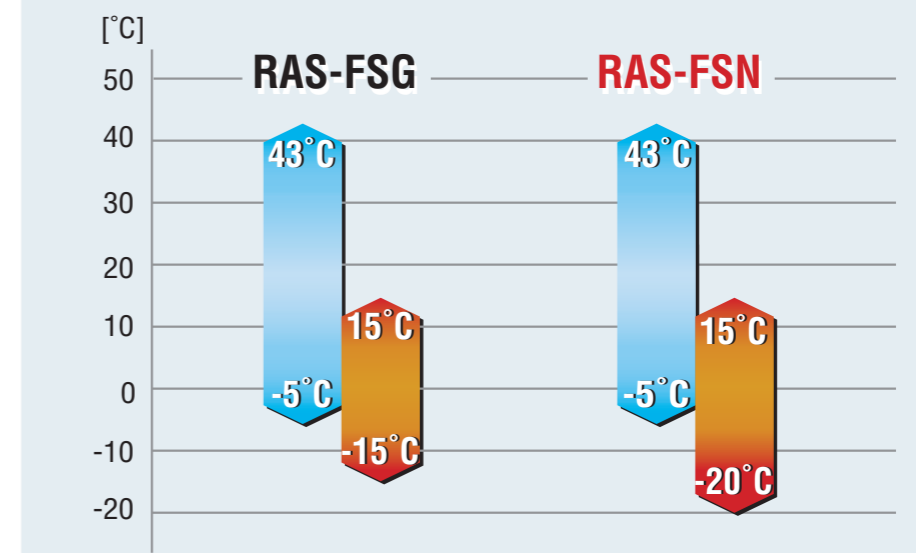
- 1 Max. pipe length: 150 m
- 2 Between first branch and indoor unit: 40m or less
- 3 Height difference between highest and lowest indoor units: 15m or less
- 4 Height difference between outdoor and indoor units: 50m\*



\* In case the outdoor unit is installed at a higher level than indoor units.  
If the outdoor unit is installed lower than indoor units, the maximum height difference is 40m.

### Expansion of Operation Range

Can be used with outdoor air temperatures down to -20°C



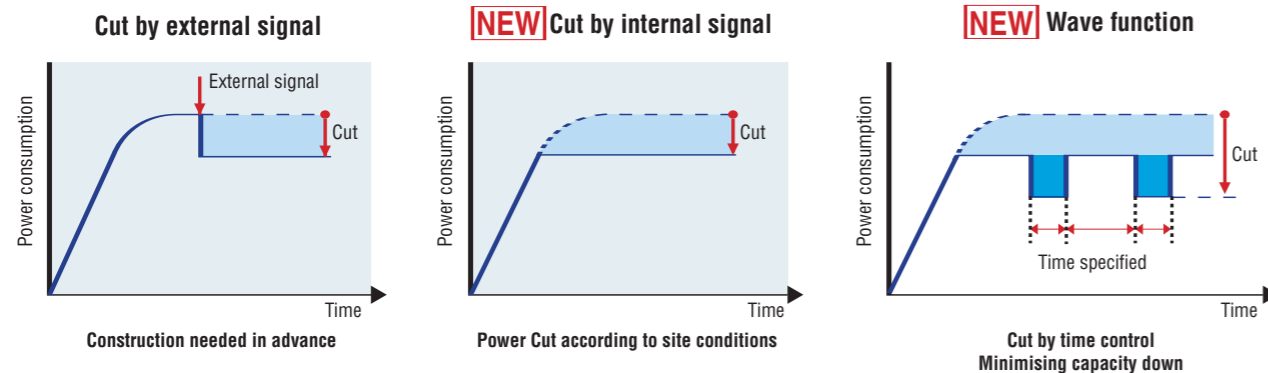
### High Static Pressure, Long Duct Bell Mouth

- Fan motive energy is reduced by combining with a high-efficiency fan
- External static pressure of 60 Pa as standard

# Features and benefits

### Improved Demand Control

Control is optimised to suit each customer's air conditioning environment.



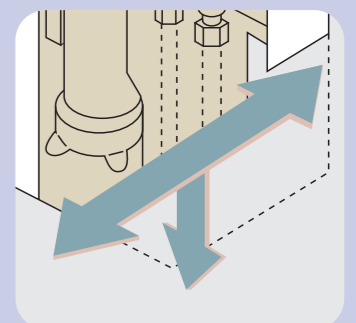
### Pipe Downsizing

By downsizing the piping compared with the R407C unit, installation is easier and piping material costs are reduced.

Pipes can be downsized because refrigerant pressure loss is greatly reduced, and discharge volume is small for the same capacity compared with R407C.

(Pipe length ≤ 100m)

Capacity	Pipes	Conventional model	SET-FREE FSN
5HP	Liquid	φ 9.53	φ 9.53
	Gas	φ 19.05	φ 15.88
8HP	Liquid	φ 12.7	φ 9.53
	Gas	φ 22.2 or φ 25.4	φ 19.05
10HP	Liquid	φ 12.7	φ 9.53
	Gas	φ 28.6 or φ 25.4	φ 22.2
16HP	Liquid	φ 15.88	φ 12.7
	Gas	φ 31.75 or φ 28.6	φ 28.6
20HP	Liquid	φ 15.88	φ 15.88
	Gas	φ 38.1 or φ 34.92	φ 28.6
24HP	Liquid	φ 19.05	φ 15.88
	Gas	φ 38.1 or φ 34.92	φ 28.6
30HP	Liquid	φ 22.2	φ 19.05
	Gas	φ 44.45 or φ 41.3	φ 31.75 (34.92)



### Refrigerant piping connections

In an outdoor unit piping connections are easily conducted from any three directions: "front, rear or downwards"

## Set Free – RPI Technical Description

- Slim, space saving design
- Adjustable fan speed
- Adjustable static pressure
- Drain Pump as standard
- Air Filter as standard

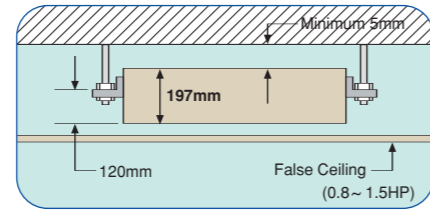


## In the ceiling



### Slimmest design in the industry

Less than 197mm in height, this unit can be fitted practically any existing false ceiling or formerly ducted space, without substantial modification.



### Broader range of external static pressure up to 150 Pa.

### Flexibly supports a wide range of installation conditions at site, e.g. longer ducts.

Increased flexibility and extended ducting now available, provides full temperature control even to remote areas. Adjustable air flow and fan speed control.

### Wide selection

Full line-up from model 0.8HP to 5.0HP.

### Drain-up mechanism

Drain-up mechanism is built in the units as standard.

An electronic sensor monitors the water level and automatically activates the pump when draining becomes necessary.

### Return Air

(2.0-5.0HP) Available as bottom or rear entry.

### Econofresh Kit

As part of the Set Free range the Econofresh can provide up to 100% fresh air and has the ability to provide 'free cooling' via dampers when the outdoor ambient temperature is below the temperature required indoors. Available for 5.0HP unit.

### Suction filter equipped as standard

New RPI unit is equipped with a filter as standard.

### General Data

Model	RPI-0.8FSNE	RPI-1.0FSNE	RPI-1.5FSNE	RPI-2.0FSNE	RPI-2.5FSNE	RPI-3.0FSNE	RPI-4.0FSNE	RPI-5.0FSNE	
<b>Power Supply</b>	220-240 V, 50 Hz								
<b>Nominal Cooling Capacity</b> W	2,200	2,800	4,500	5,600	7,100	8,000	11,200	14,000	
<b>Nominal Heating Capacity</b> W	2,500	3,200	5,000	6,300	8,500	9,000	12,500	16,000	
<b>Air Flow Rate (Hi/Lo)</b>									
HSP	m <sup>3</sup> /min	–	–	–	16/15/11	19/17/14	22/20/16	30/28/25	35/31/28
STDSP	m <sup>3</sup> /min	8/6	8/6	10/9/7	16/14/12	19/17/15	22/20/17	30/28/26	35/32/29
LSP	m <sup>3</sup> /min	–	–	–	16/13	19/15	22/18	30/28	35/31
<b>Static Pressure (Hi/Lo)</b>									
HSP	mmAq	–	–	–	12/10/6	12/10/6	12/10/6	12/10/8	12/10/8
STDSP	mmAq	5	5	5	8/6/5	8/6/5	8/6/5	8/7/6	8/7/6
LSP	mmAq	–	–	–	3/2	3/2	3/2	3/2	3/2
<b>Fan Motor</b>	W	55	55	55	80	225	225	350	350
<b>Sound Pressure Level (Overall A Scale)</b>									
HSP	dB (A)	–	–	–	44/42/35	47/44/38	48/46/40	50/48/46	52/50/47
STDSP	dB (A)	41-36	41-36	45-42-37	42/38/35	44/41/38	45/43/39	48/46/44	50/49/46
LSP	dB (A)	–	–	–	35/29	39/33	41/36	44/42	48/44
<b>Outer Dimensions</b>									
Height	mm	197	197	197	274	274	274	274	274
Width	mm	1020	1020	1020	1074	1074	1074	1464	1464
Depth	mm	574	574	574	643	643	643	643	643
<b>Net Weight</b>	kg	33,5	33,5	33,5	43	45	45	51	52
<b>Refrigerant</b>	R410A/R407C (Nitrogen Charged in Factory for Corrosion-Resistance)								
<b>Connections</b>									
Refrigerant Piping	Flare-Nut Connection (with flare nut)								
Liquid Line	mm(in.)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 9.53 (3/8)	Ø 9.53 (3/8)	Ø 9.53 (3/8)	Ø 9.53 (3/8)
Gas Line	mm(in.)	Ø 12.7 (1/2)	Ø 12.7 (1/2)	Ø 12.7 (1/2)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Condensate Drain	mm	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD
<b>Packing Measurements</b>	m <sup>3</sup>	0.16	0.16	0.16	0.36	0.36	0.36	0.48	0.48

### NOTES:

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system, and are based on the ISO 5151.

#### Cooling Operation Conditions

Indoor Air Inlet Temperature: 27.0 °C DB

19.0 °C WB

Outdoor Air Inlet Temperature: 35.0 °C DB

#### Heating Operation Conditions

Indoor Air Inlet Temperature: 20.0 °C DB

7.0 °C DB

6.0 °C WB

#### Piping Length: 5 meters

DB: Dry Bulb; WB: Wet Bulb

2. The Sound Pressure Level is based on the following conditions:

– 1.5 meters Beneath the Unit.

– Voltage of the power source for the indoor fan motor is 220V.

The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration when installing the unit.

3. Sound pressure level

HSP = High static pressure

STDSP = Standard static pressure

LSP = Low static pressure

OD: Outer Diameter

HSP: High Static Pressure Connection

LSP: Low Static Pressure Connection

Model	EF-5GE
<b>Combined Indoor Unit Model</b>	RPI-5HP
<b>Outer Dimensions</b>	
Height	mm 254
Width	mm 1350 + 59
Depth	mm 270
<b>Net Weight</b>	Kg 12.5
<b>Damper Motor Quantity</b>	1
<b>Approximate Packaging Measurement</b>	m <sup>3</sup> 0.13
<b>Standard Accessories</b>	Fresh Outdoor Air Inlet Thermistor

## Set Free – RCI Technical Description

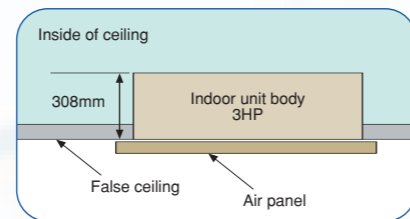
- Silent Operation
- Slim Air Panel
- Drain Pump as standard

### New design air panel

The air panel was revised to give a fresh and simple design. Prevention of smudging and short-circuiting is also taken into account.

### Extremely Quite Operation

Uses a blade design resulting in an exceptionally quiet fan. HI-stream fan achieves the lowest level of noise, 35 dB (A) (RCI-1.0FSG2E). Requires limited ceiling space to improve work efficiency in installation behind ceiling.



### Drain-up mechanism

Drain-up mechanism is equipped as standard.

Anti-mould filter is equipped as standard.

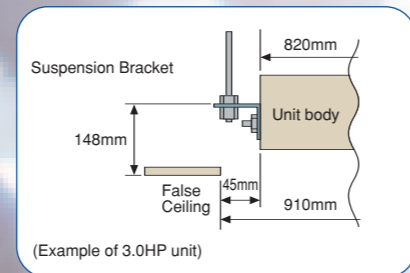
### Wireless controller (option)

### Fresh air intake

Connection of fresh air intake can be taken in by connecting the duct beside indoor unit. The control duct fan will operate only when unit is operating giving good air recirculation and comfort.

### Branch duct

Available across the range for added flexibility



### General Data

Model		RCI-1.0FSNE	RCI-1.5FSNE	RCI-2.0FSNE	RCI-2.5FSNE	RCI-3.0FSNE	RCI-4.0FSNE	RCI-5.0FSNE
<b>Power Supply</b>		220-240 V, 50 Hz						
<b>Nominal Cooling Capacity</b>	W	2,800	4,500	5,600	7,100	8,000	11,200	14,000
<b>Nominal Heating Capacity</b>	W	3,200	5,000	6,300	8,500	9,000	12,500	16,000
<b>Sound Pressure Level</b>	dB(A)	35-33-30	38-35-32	38-36-32	40-37-33	41-39-33	45-41-37	46-41-37
<b>(Overall A Scale)</b>								
<b>Outer Dimensions</b>								
Height		298	298	298	298	298	348	348
Width		820	820	820	820	820	1,140	1,140
Depth		820	820	820	820	820	820	820
Net Weight	kg	30	30	32	34	34	43	44
<b>Refrigerant</b>		R410A/R407C (Nitrogen-Charged for Corrosion-Resistance)						
<b>Indoor Fan</b>								
Air Flow Rate (Hi/Me/Lo)	m <sup>3</sup> /min	8/7/6	13/11/10	15/13/10	18/15/12	21/18/15	32/28/24	34/29/25
<b>Fan Motor</b>	W	12	23	30	30	30	60	60
<b>Connections</b>		Flare-Nut Connection (With Flare Nuts)						
<b>Refrigerant Piping</b>								
Liquid Line	mm(in.)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 9.53 (3/8)	Ø 9.53 (3/8)	Ø 9.53 (3/8)	Ø 9.53 (3/8)
Gas Line	mm(in.)	Ø 12.7 (1/2)	Ø 12.7 (1/2)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Condensate Drain		Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD
<b>Approximate Packing</b>								
<b>Measurement</b>	m <sup>3</sup>	0.30	0.30	0.30	0.30	0.30	0.45	0.45
<b>Standard Accessories</b>		Suspension Brackets						

Adaptable Panel Model	Standard	P-G12WA2E	P-G23WA2E	P-G23WA2E	P-G23WA2E	P-G23WA2E	P-G46WA2E	P-G46WA2E
	With infrared receiver	P-G12WAH2E	P-G23WAH2E	P-G23WAH2E	P-G23WAH2E	P-G23WAH2E	P-G46WAH2E	P-G46WAH2E
<b>Colour</b> (MUNSELL Code)		Spring White (4.1Y 8.5/0.7)						
<b>Outer Dimensions</b>								
Height	mm	31 + 10	31 + 10	31 + 10	31 + 10	31 + 10	31 + 10	31 + 10
Width	mm	950	950	950	950	950	1,270	1,270
Depth	mm	950	950	950	950	950	950	950
Net Weight	kg	7	7	7	7	7	10	10
<b>Approximate Packing</b>								
<b>Measurement</b>	m <sup>3</sup>	0.12	0.12	0.12	0.12	0.12	0.22	0.22

### NOTES:

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system, and are based on the ISO 5151.

#### Cooling Operation Conditions

Indoor Air Inlet Temperature: 27.0 °C DB  
19.0 °C WB

Outdoor Air Inlet Temperature: 35.0 °C DB

#### Heating Operation Conditions

Indoor Air Inlet Temperature: 20.0 °C DB

Outdoor Air Inlet Temperature: 7.0 °C DB  
6.0 °C WB

#### Piping Length: 5 meters

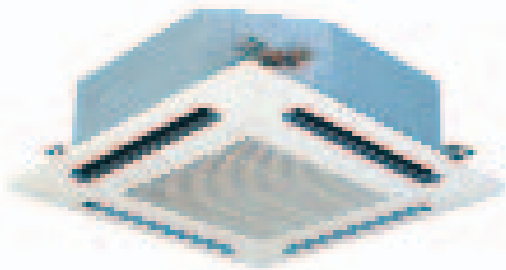
DB: Dry Bulb; WB: Wet Bulb

2. The Sound Pressure Level is based on the following conditions:

- 1.5 meters Beneath the Unit.
- Voltage of the power source for the indoor fan motor is 220V.

The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration when installing the unit.

# 4-way cassette



## Set Free – RCD Technical Description

- Quiet Operation
- Slim line design
- New Air panel, perfect fit for any ceiling

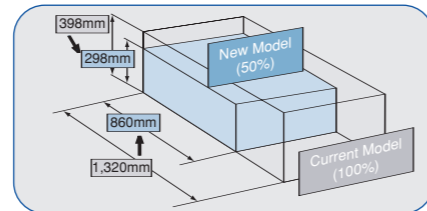


# 2-way cassette

### Quiet operation and low height design for any ceiling.

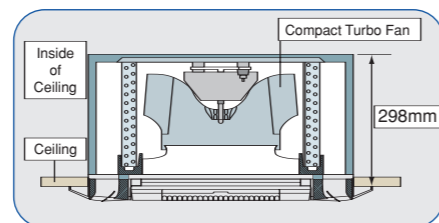
### Reduced weight and size simplify handling for easier renewal.

The length of the 3HP type is reduced from 1,320mm to 860mm, the height is also reduced and the volume is decreased by about 50%. The reduced weight of 30kg also makes handling much easier.



### Low-profile design allows installation in a small space inside of ceiling.

A compact turbo fan simplifies the structure and reduces the height to 298mm, for easy installation.



### Top-class noise control due to compact turbo fan.

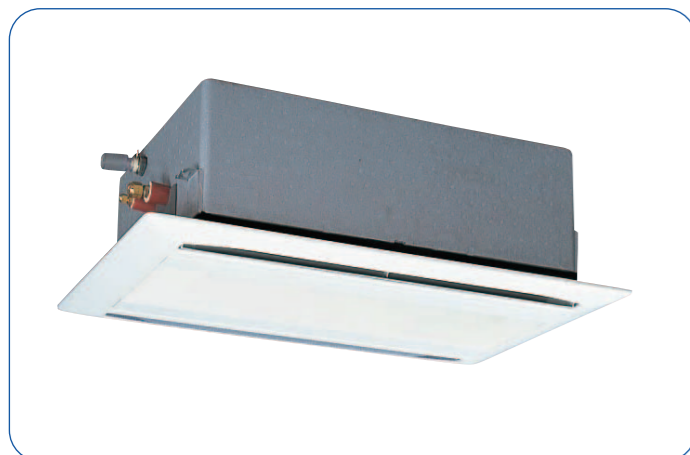
The three-dimensional twisted wings of the compact turbo fan greatly reduce noise and electromagnetic disturbance is minimised by PWM (Pulse Width Modulation) control.

### Simple Maintenance

Auto-louvers are not flocked, therefore the unit does not accumulate dirt and is easy to clean.

### Speed-up tap ensures comfortable air conditioning even when installed in high ceiling areas.

Even rooms with a high ceiling can be comfortably air-conditioned by setting the speed-up tap with the remote control switch.



## General Data

Model	RCD-1.0FSNE	RCD-1.5FSNE	RCD-2.0FSNE	RCD-2.5FSNE	RCD-3.0FSNE	RCD-4.0FSNE	RCD-5.0FSNE
<b>Power Supply</b>	220-240 V, 50 Hz						
<b>Nominal Cooling Capacity</b> W	2,800	4,500	5,600	7,100	8,400	11,200	14,200
<b>Nominal Heating Capacity</b> W	3,300	5,000	6,300	8,500	9,000	12,500	16,000
<b>Sound Pressure Level</b>							
<b>(Overall A Scale)</b> dB(A)	34/32/30	35/32/30	35/32/30	38/34/31	40/36/33	40/36/33	43/40/36
<b>Outer Dimensions</b>							
<b>Height</b> mm	298	298	298	298	298	298	298
<b>Width</b> mm	860	860	860	860	860	1,420	1,420
<b>Depth</b> mm	620	620	620	620	620	620	620
<b>Net Weight</b> kg	27	27	27	30	30	48	48
<b>Refrigerant</b>	R410A/R407C (Nitrogen-Charged for Corrosion-Resistance)						
<b>Indoor Fan</b> m <sup>3</sup> /min	8/7/6	12/10/8.5	15/13/11	18/15.5/13	22/19/16	30/26/23	32/29/25
<b>Fan Motor</b> W	35	35	35	55	55	35 x 2	55 x 2
<b>Connections</b>							
<b>Refrigerant Piping</b>	Flare-Nut Connection						
<b>Liquid Line</b> mm (in.)	Ø6.35 (1/4)	Ø6.35 (1/4)	Ø6.35 (1/4)	Ø9.53 (3/8)	Ø9.53 (3/8)	Ø9.53 (3/8)	Ø9.53 (3/8)
<b>Gas Line</b> mm (in.)	Ø12.7 (1/2)	Ø12.7 (1/2)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)
<b>Condensate Drain</b> m <sup>3</sup>	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD	Ø 32 OD
<b>Approximate Packing</b>							
<b>Measurements</b>	0.23	0.23	0.23	0.23	0.23	0.37	0.37
<b>Adaptable Panel Model</b>	P-G23DWA1	P-G23DWA1	P-G23DWA1	P-G23DWA1	P-G23DWA1	P-G46DWA1	P-G46DWA1
<b>Colour</b>	Silky White (2.5Y 8.9/1)						
<b>Outer Dimensions</b>							
<b>Height</b> mm	30 + 10	30 + 10	30 + 10	30 + 10	30 + 10	30 + 10	30 + 10
<b>Width</b> mm	1,100	1,100	1,100	1,100	1,100	1,660	1,660
<b>Depth</b> mm	710	710	710	710	710	710	710
<b>Net Weight</b> kg	6	6	6	6	6	8	8
<b>Approximate Packing</b>							
<b>Measurements</b> m <sup>3</sup>	0.10	0.10	0.10	0.10	0.10	0.15	0.15

### NOTES:

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system, and are based on the ISO 5151.

#### Cooling Operation Conditions

Indoor Air Inlet Temperature: 27.0 °C DB  
19.0 °C WB  
Outdoor Air Inlet Temperature: 35.0 °C DB

#### Heating Operation Conditions

Indoor Air Inlet Temperature: 20.0 °C DB  
Outdoor Air Inlet Temperature: 7.0 °C DB  
6.0 °C WB

#### Piping Length: 5 meters

DB: Dry Bulb; WB: Wet Bulb

2. The Sound Pressure Level is based on the following conditions:

– 1.5 meters Beneath the Unit.

– Voltage of the power source for the indoor fan motor is 220V.

The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration when installing the unit.

OD: Outer Diameter

## Set Free – RPK Technical Description

- New Design
- Extended Line-up NEW 0.8 – 4.0
- R407c and R410a compatible
- More compact than previous models

### Compact, allowing easy installation

Designed with ease of installation in mind this new space saving model uses a high proportion of light weight parts reducing the unit weight to 12kg.

### Expanded product line up

2.5/3.0/4.0HP models available

### Compact design

It's compact size allows easy installation and the weight has been reduced by 15%.

### Quiet Operation

Trapezoidal blades cut the air diagonally to reduce air flow resistance. The conical blade fan ensures a high air flow and low noise with slow rotation. This model creates a pleasant, quiet and comfortable environment.

### Swing Louver

The 'Swing Louver' with 3 flaps at both sides has been adopted, in order to provide comfortable air to the entire room.

### Wireless or Wired Control

The indoor unit is equipped with a wireless receiver kit inside as a standard accessory. The wired remote control switch, PC-P1HE is also applicable.



# Wall mounted



### General Data

Model		RPK-0.8FSNM	RPK-1.0FSNM	RPK-1.5FSNM	RPK-2.0FSNM	RPK-2.5FSNM	RPK-3.0FSNM	RPK-4.0FSNM
<b>Power Supply</b>		220-240 V, 50 Hz						
<b>Nominal Cooling Capacity</b>	W	2,200	2,800	4,500	5,600	7,100	8,000	11,200
<b>Nominal Heating Capacity</b>	W	2,500	3,200	5,000	6,300	8,500	9,000	12,500
<b>Sound Pressure Level</b>								
<b>(Overall A Scale)</b>	dB	36/34/31	36/34/31	39/37/34	39/37/34	44/41/38	44/41/38	49/46/43
<b>Cabinet Colour</b>		Pearl White						
<b>Outer Dimensions</b>								
Height	mm	295	295	295	295	360	360	360
Width	mm	1,030	1,030	1,030	1,030	1,390	1,390	1,390
Depth	mm	183	183	183	183	225	225	225
<b>Net Weight</b>	kg	12	12	12	12	21	21	22
<b>Refrigerant</b>		R410A / R407C (Nitrogen-Charged for Corrosion-Resistance)						
<b>Indoor Fan</b>								
Air Flow Rate (Hi/Me/Lo)	m <sup>3</sup> /min	11/9/8	11/9/8	13/11/9	14/12/10	22/18/17	22/18/17	26/22/19
<b>Fan Motor</b>	W	20	20	20	20	40	40	41
<b>Connections</b>								
Refrigerant Piping		Flare Nuts Connection (with Flare Nuts)						
Liquid Line	mm(in.)	Ø6.35 (1/4)	Ø6.35 (1/4)	Ø6.35 (1/4)	Ø6.35 (1/4)	Ø9.53 (3/8)	Ø9.53 (3/8)	Ø9.53 (3/8)
Gas Line	mm(in.)	Ø12.7 (1/2)	Ø12.7 (1/2)	Ø12.7 (1/2)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)
Condensate Drain		VP16	VP16	VP16	VP16	VP20	VP20	VP20
<b>Approximate Packing</b>								
<b>Measurement</b>	m <sup>3</sup>	0.11	0.11	0.11	0.11	0.20	0.20	0.20
<b>Standard Accessories</b>		Mounting Brackets						

### NOTES:

OD: Outer Diameter

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system, and are based on the ISO 5151.

#### Cooling Operation Conditions

Indoor Air Inlet Temperature: 27.0 °C DB  
19.0 °C WB  
Outdoor Air Inlet Temperature: 35.0 °C DB

#### Heating Operation Conditions

Indoor Air Inlet Temperature: 20.0 °C DB  
Outdoor Air Inlet Temperature: 7.0 °C DB  
6.0 °C WB

#### Piping Length: 5 meters

DB: Dry Bulb; WB: Wet Bulb

2. The Sound Pressure Level is based on the following conditions:

- 1.5 meters Beneath the Unit.
- Voltage of the power source for the indoor fan motor is 220V.

The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration when installing the unit.

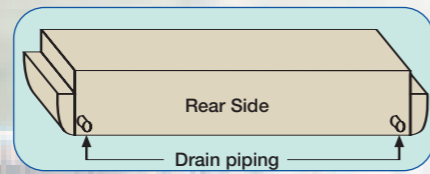
## Set Free – RPC Technical Description

- Stylish design
- Space saving design
- Easy installation
- Quiet Operation

### Quiet operation, easy installation and space saving design

#### Versatile mounting

To expand installation and positioning options, HITACHI has added a second drain pipe connector, one more than conventional units. Refrigeration pipes have also been improved and can now be connected at the left, right or rear of the unit.



#### Space saving design – Hitachi's unique feature

An innovative fan and heat exchanger design led to the creation of today's ultra-slim ceiling unit. Fully adjustable mounting brackets permit close fitting to the ceiling to make installation possible in even the smallest area. Less than 163mm of vertical space are required for installation.

#### Quiet Operation

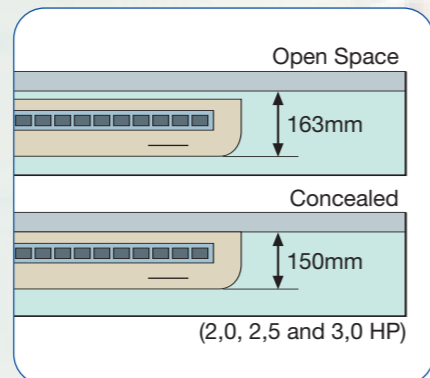
The ceiling unit is equipped with a highly efficient, multi-blade centrifugal fan that generates a powerful yet gentle airflow throughout the room. A redesigned aerodynamically tested air panel minimises operational sound even at high fan speeds.

#### Easier installation

By enabling refrigeration piping to be tucked-in close to each indoor unit, piping layout and installation have been made much easier.

#### Anti-mildew filter

Anti-mildew filter is equipped as a standard accessory.



# Ceiling suspended

### General Data

Model		RPC-2.0FSNE	RPC-2.5FSNE	RPC-3.0FSNE	RPC-4.0FSNE	RPC-5.0FSNE
<b>Power Supply</b>		220-240 V, 50 Hz				
<b>Nominal Cooling Capacity</b>	W	5,600	7,100	8,000	11,200	14,000
<b>Nominal Heating Capacity</b>	W	6,300	8,500	9,000	12,500	16,000
<b>Sound Pressure Level</b>						
<b>(Overall A Scale)</b>	dB(A)	44/42/38	46/43/41	48/45/42	49/45/39	49/46/41
<b>Colour</b> (MUNSELL Code)		Spring White (4.1Y 8.5/0.7)				
<b>Outer Dimensions</b>						
Height	mm	163	163	163	225	225
Width	mm	1,094	1,314	1,314	1,314	1,574
Depth	mm	625	625	625	625	625
<b>Net Weight</b>	kg	28	31	31	35	41
<b>Refrigerant</b>		R410A / R407C (Nitrogen-Charged for Corrosion-Resistance)				
<b>Indoor Fan</b>						
<b>Air Flow Rate</b> (Hi/Me/Lo)	m <sup>3</sup> /min	15/13/10	18/16/12	21/17/15	30/24/19	35/28/21
<b>Fan Motor</b>	W	75	75	75	145	145
<b>Connections</b>						
<b>Refrigerant Piping</b>		Flare-Nut Connection (With Flare Nuts)				
<b>Liquid Line</b>	mm (in.)	Ø6.35 (1/4)	Ø9.53 (3/8)	Ø9.53 (3/8)	Ø9.53 (3/8)	Ø9.53 (3/8)
<b>Gas Line</b>	mm (in.)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)
<b>Condensate Drain</b>	mm	Ø25 OD	Ø25 OD	Ø25 OD	Ø25 OD	Ø25 OD
<b>Approximate Packing</b>						
<b>Measurements</b>	m <sup>3</sup>	0.24	0.29	0.29	0.36	0.43
<b>Standard Accessories</b>		(Suspension)				

#### NOTES:

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system, and are based on the ISO 5151.

#### Cooling Operation Conditions

Indoor Air Inlet Temperature: 27.0 °C DB  
19.0 °C WB  
Outdoor Air Inlet Temperature: 35.0 °C DB

#### Heating Operation Conditions

Indoor Air Inlet Temperature: 20.0 °C DB  
Outdoor Air Inlet Temperature: 7.0 °C DB  
6.0 °C WB

**Piping Length:** 5 meters  
**DB:** Dry Bulb; **WB:** Wet Bulb

2. The Sound Pressure Level is based on the following conditions:

- 1.5 meters Beneath the Unit.
- Voltage of the power source for the indoor fan motor is 220V.

The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration when installing the unit.

**OD:** Outer Diameter

## Set Free – RPF/RPFI Technical Description

### Floor mounted indoor units – RPF

- Floor Type
- Slim design, only 200mm deep
- Low height, only 630mm
- Light unit
- Low sound level

### Floor concealed indoor units – RPFI

- Compact design
- 620mm in height
- 220mm in depth

### Space-saving slim unit, only 220mm in depth

Slim line design only 220mm in depth allowing the unit to be installed without spoiling the style or beauty of the room.

### Effective use of space by window

With a height of 630mm, may be installed by a window leaving plenty of window space. Best installed in a perimeter zone.

### Low height

Only 630mm.

## Concealed Floor Mounted

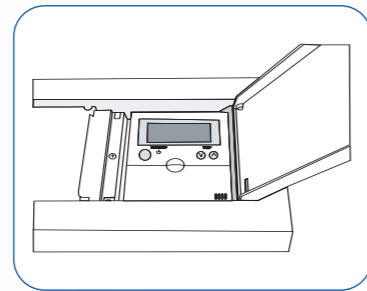
### Compact design for limited space inside of perimeter wall.

### So compact that it fits into even the smallest space.

Special emphasis placed on interior design compatibility as well as space saving design, allowing it to fit perfectly into the space below a bay window.

### Optional location for remote control switch

Install the PC-P1HE under the plastic cover



# Floor mounted



## General Data

Model		RPF-1.0FSNE	RPF-1.5FSNE	RPF-2.0FSNE	RPF-2.5FSNE	RPFI-1.0FSNE	RPFI-1.5FSGNE	RPFI-2.0FSGNE	RPFI-2.5FSGNE
<b>Power Supply</b>		220-240 V, 50 Hz				220-240 V, 50 Hz			
<b>Nominal Cooling Capacity</b>	W	2,800	4,500	5,600	7,100	2,800	4,000	5,600	7,100
<b>Nominal Heating Capacity</b>	W	3,200	5,000	6,300	8,500	3,200	4,800	6,300	8,500
<b>Air Flow Rate (Hi/Me/Lo)</b>	m <sup>3</sup> /min	8.5/7/6	12/10/9	16/14/11	16/14/11	8.5/7/6	12/10/9	16/14/11	16/14/11
<b>Fan Motor</b>	W	20	28	45	45	20	28	45	45
<b>Sound Pressure Level (Overall A Scale)</b>	dB(A)	35/32/29	38/35/31	39/36/32	42/38/34	35/32/29	38/35/31	39/36/32	42/38/24
<b>Outer Dimensions</b>									
Height	mm	630	630	630	630	620	620	620	620
Width	mm	1045	1170	1420	1420	863	988	1238	1238
Depth	mm	220	220	220	220	220	220	220	220
<b>Net Weight</b>	kg	19	23	33	34	19	23	27	28
<b>Colour (Munsell Code)</b>		Spring White (4.1Y 8.5/0.7)							
<b>Refrigerant</b>		R410A / R407C (Nitrogen Charged in Factory for Corrosion-Resistance)				R410A / R407C (Nitrogen Charged in Factory for Corrosion-Resistance)			
<b>Connections</b>									
Refrigerant Piping		Flare-nut Connection		Flare-nut Connection					
Liquid Line	mm(in.)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 9.53 (3/8)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 6.35 (1/4)	Ø 9.53 (3/8)
Gas Line	mm(in.)	Ø 12.7 (1/2)	Ø 12.7 (1/2)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 12.7 (1/2)	Ø 12.7 (1/2)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Condensate Drain	mm	Ø 18.5 OD	Ø 18.5 OD	Ø 18.5 OD	Ø 18.5 OD	Ø 18.5 OD	Ø 18.5 OD	Ø 18.5 OD	Ø 18.5 OD
<b>Packing Measurements</b>	m <sup>3</sup>	0.22	0.24	0.29	0.29	0.22	0.23	0.25	0.25

### NOTES:

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system, and are based on the ISO 5151.

#### Cooling Operation Conditions

Indoor Air Inlet Temperature: 27.0 °C DB  
19.0 °C WB  
Outdoor Air Inlet Temperature: 35.0 °C DB

#### Heating Operation Conditions

Indoor Air Inlet Temperature: 20.0 °C DB  
Outdoor Air Inlet Temperature: 7.0 °C DB  
6.0 °C WB

**Piping Length:** 5 meters  
**DB:** Dry Bulb; **WB:** Wet Bulb

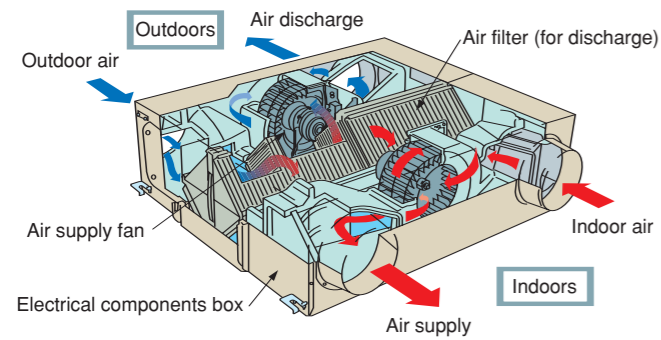
2. The Sound Pressure Level is based on the following conditions:

- 1.5 metres beneath the unit.
- Voltage of the power source for the indoor fan motor is 220V.

The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration when installing the unit.

## Set Free – KPI Technical Description

### Structure



### Fixed Type Heat Exchanging Element

- The newly developed fixed type heat exchanging element with high temperature exchange efficiency equivalent to the rotor type element, has been adopted for the new total heat exchangers (Temp Exchange Efficiency: 77% <in case of 500m<sup>3</sup>/h type unit>). In addition, reliability is increased due to reduction of moving parts.
- Low weight with simple unit structure: 33kg (in case of 500m<sup>3</sup>/h type unit).

Provides a comfortable environment by control interlocking with air conditioning units.

Controllable using the remote control switch for the air conditioning unit.

Can be controlled in various ways using the remote control switch for the air conditioning unit (PC-P1H).

### Functions

- Simultaneous RUN/STOP switch both for air conditioning units and heat exchanging unit
- Individual operation of heat exchanging unit
- Fan speed control (high/medium/low)
- Ventilation mode selection (automatic/heat exchange/bypass)\*1
- Pre-cool/pre-heat control (interlocking start with delay in 30 or 60 minutes)\*1
- ON/OFF timer (every half hour, maximum 24 hours)
- Increased air supply operation
- Specific alarm display

\*1 Required option to be selected at remote control switch.

### Automatic selection of most suitable ventilation mode

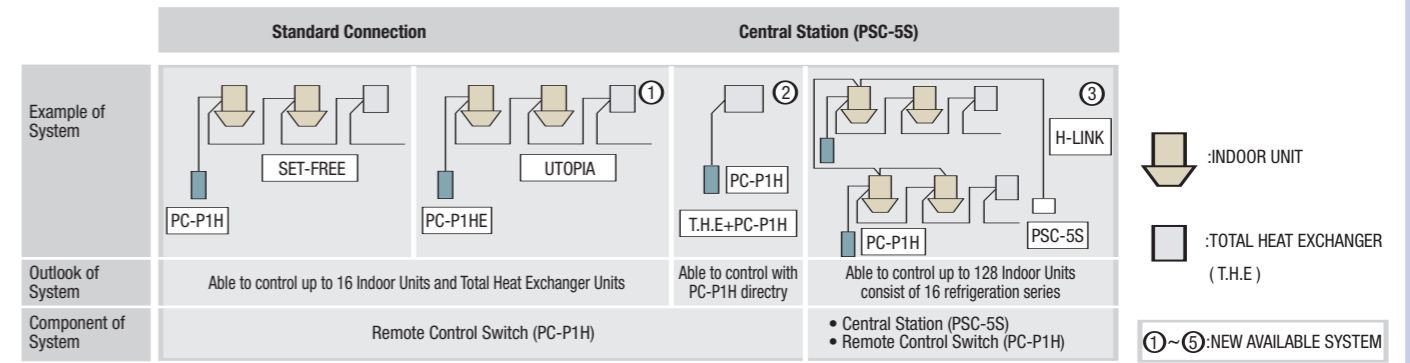
Depending on temperature conditions both outdoors and indoors, the most suitable ventilation mode is automatically selected, designed for energy efficiency.

### Other Characteristics

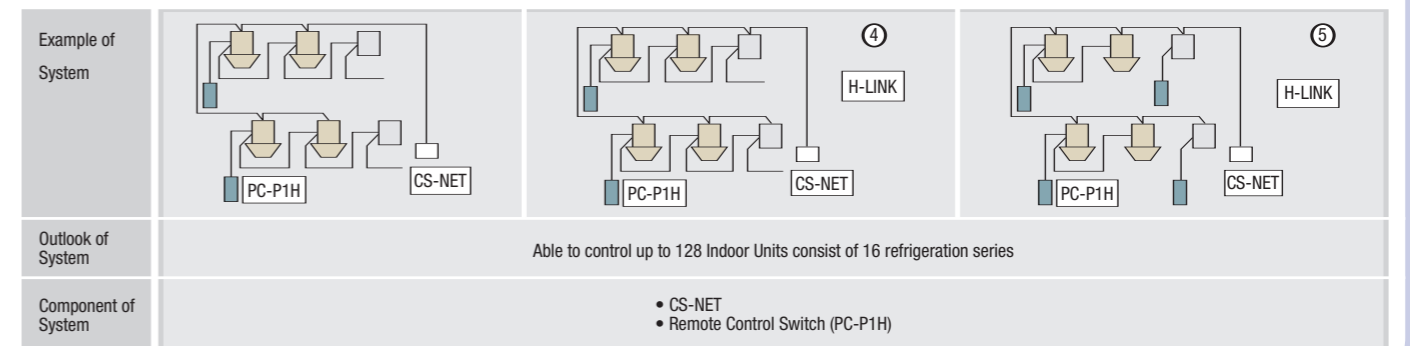
- Quiet operation with low noise level of 32.5-33.5 dB (A) (at Hi Tap of KPI 5021 Type) has been realised by improving the flow path configuration.
- Operation not only with SET-FREE Series Indoor Unit, but also with UTOPIA Series Indoor Unit.
- Connectable to H-LINK System with Central Station or with CS-NET in Operation with Indoor Unit.
- Flexible Duct Installation: The connecting direction of duct at outdoor side (OA,EA) can be changed according to the condition of the installation site (2 directions).
- Reduced packing material for environment protection. The wood for the packing use has been reduced for environment protection.
- Can also be installed upside down.

# Total heat exchanger

## Various Control Examples of Total Heat Exchanger



## Hitachi Computer Control Network System CS-NET (version 7)



## General Data

Model	KPI-2521	KPI-5021	KPI-8021	KPI-10021	
<b>Power Supply</b>	AC 1 -,220-240V / 50Hz, 60Hz*1				
<b>Air Flow Rate (m<sup>3</sup>/h)</b>	Hi Me Lo	250/250 250/250 165/150	500/500 500/500 350/300	800/800 800/800 670/660	1,000/1,000 1,000/1,000 870/720
<b>External Pressure (PA)</b>	Hi Me Lo	65/100 40/50 20/20	150/200 60/60 30/20	140/230 100/120 70/80	160/200 100/110 80/60
<b>Sound Pressure Level (Overall A Scale) at 1.5m from the unit (under)*3</b>	Hi Me Lo	26.5-27.5/28.5 25-26/25.5 21-22/21	32.5-33.5/32.5 30-31/28.5 23.5-24.5/23	33.3-34.5/35 32-33/31 30-31/29	36-37/36 34-35/34 31.5-32.5/30
<b>Outer Dimensions</b>					
Height	275	317	398	398	
Width	780	888	1164	1164	
Depth	735	1016	1004	1231	
<b>Net Weight</b>	Kg	21	33	61	72
<b>Approx Packing Measurement</b>	m <sup>3</sup>	0.26	0.46	0.70	0.84

### NOTES:

\*1 KPI-10021 has different units according to the applied power supply, 220-240v, 50Hz and 200V/60Hz

\*2 Use it under the following conditions. KPI-8021: 29Pa or more, KPI-10021: 49Pa or more

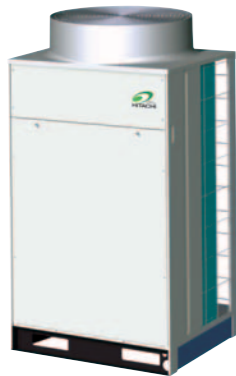
\*3 The sound pressure level is based on the following conditions; 1.5 meter beneath the unit and this data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

\*4 The sound pressure is based on the total heat exchange mode. In case of the bypass ventilation mode, the sound pressure level increased by approximately 1dB(A).

## Set Free – FSN Technical Description – Outdoor units



RAS-5FSN



RAS-8/10FSN

### General Data

Model		RAS-5FSN	RAS-8FSN	RAS-10FSN
<b>Power Supply</b>		380-415V / 50Hz		
<b>Nominal Cooling Capacity</b>	kW	14.0	22.4	28.0
<b>Nominal Heating Capacity</b>	kW	16.0	25.0	31.5
<b>Cabinet Colour</b>		Natural Gray		
<b>Sound Pressure Level</b>		Maximum		
<b>Cool (Night Shift)/Heat</b>	dB(A)	52(47)	56(51)	58(53)
<b>Outer Dimensions</b>				
Height	mm	1,645	1,745	1,745
Width	mm	630	950	950
Depth	mm	750	750	750
<b>Net Weight</b>	kg	190	260	270
<b>Refrigerant</b>		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
<b>Compressor</b>		Hermetic (Scroll)		
Model		E405AHD	E405AHD E505DH	E405AHD E605DH
Quantity		1	1+1	1+1
Motor Output (Pole)	kW	3.0(4)	1.8(4)+3.7(2)	2.3(4)+4.4(2)
<b>Heat Exchanger</b>		Multi-Pass Cross-Finned Tube		
<b>Condenser Fan</b>		Propeller Fan		
Quantity		1	1	1
Air Flow Rate	m <sup>3</sup> /min	87	138	172
Motor Output (Pole)	W	160(8)	380(8)	275(6)
<b>Refrigerant Piping</b>		Flare-Nut Connection		
Liquid Line	mm(in.)	Ø 9.53 (3/8)	Ø 9.53 (3/8)	Ø 9.53 (3/8)
Gas Line	mm(in.)	Ø 15.88 (5/8)	Ø 19.05 (3/4)	Ø 22.2 (7/8)
<b>Refrigerant Charge</b>	kg	5.4	10.0	11.5
<b>Wiring Holes</b>				
Power Supply	mm	Ø 56	Ø 56	Ø 56
Control Circuit	mm	Ø 26.5	Ø 26.5	Ø 26.5
<b>Connecting Wire between</b>				
<b>Indoor and Outdoor Unit</b>		2	2	2
<b>Approximate Packing</b>				
<b>Measurement</b>	m <sup>3</sup>	0.87	1.44	1.44

#### NOTES:

1. The cooling and heating capacities show the capacities when the outdoor unit is operated with the 100% rating of indoor units, and are based on the standard JIS B8616-1984.

#### Cooling Operation Conditions

Indoor Air Inlet Temperature: 27°C DB (80°F DB)  
19.0°C WB (66.2°F WB)  
Outdoor Air Inlet Temperature: 35°C DB (95°F DB)

#### Heating Operation Conditions

Indoor Air Inlet Temperature: 20°C DB (68°F DB)  
Outdoor Air Inlet Temperature: 7°C DB (45°F DB)  
6°C WB (43°F WB)  
Piping Length: 5 Meters  
Piping Lift: 0 Meter

2. The sound pressure level is based on following conditions. In case of cooling operation mode. In case of heating operation mode, the sound pressure level increases by approximately 1~2dB.

1 Meter from the unit service cover surface, and 1.5 Meters from floor level. Voltage of the power source is 380V. In case of the power source of 415V, the sound pressure level increases by about 1 dB. The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

## Set Free – FSN Technical Description – Outdoor units



RAS-16FSN



RAS-20FSN

### General Data

Model		RAS-16FSN	RAS-20FSN
<b>Power Supply</b>		380-415V / 50Hz	
<b>Nominal Cooling Capacity</b>	W	45.0	56.0
<b>Nominal Heating Capacity</b>	W	50.0	63.0
<b>Cabinet Colour</b>		Natural Gray	
<b>Sound Pressure Level</b>		Maximum	
<b>Cool(Night Shift)/Heat</b>	dB(A)	62(57)	62(57)
<b>Outer Dimensions</b>			
Height	mm	1,745	1,745
Width	mm	1,210	1,910
Depth	mm	750	750
<b>Net Weight</b>	kg	370	535
<b>Refrigerant</b>		R410A	
Flow Control		Micro-Computer Control Expansion Valve	
<b>Compressor</b>		Hermetic (Scroll)	
Model		E405AHD	E405AHD
		E605DHx2	E605DHx3
Quantity		1+1x2	1+1x3
Motor Output (Pole)	kW	3.0+4.4 (2)x2	1.8(4)+4.4 (2)x3
<b>Heat Exchanger</b>		Multi-Pass Cross-Finned Tube	
<b>Condenser Fan</b>		Propeller Fan	
Quantity		1	2
Air Flow Rate	m <sup>3</sup> /min	210	172 + 172
Motor Output (Pole)	W	380 (8)	380 (8) + 275 (6)
<b>Refrigerant Piping</b>		Flare-Nut Connection	
Liquid Line	mm(in.)	Ø 12.70 (1/2)	Ø 15.88 (5/8)
Gas Line	mm(in.)	Ø 28.6 (1 1/8)	Ø 28.6 (1 1/8)
<b>Refrigerant Charge</b>	kg	16.0	22.0
<b>Wiring Holes</b>			
Power Supply	mm	Ø 56	Ø 56
Control Circuit	mm	Ø 26.5	Ø 26.5
<b>Connecting Wire between</b>			
<b>Indoor and Outdoor Unit</b>		2	2
<b>Approximate Packing</b>			
<b>Measurement</b>	m <sup>3</sup>	1.81	2.82

#### NOTES:

1. The cooling and heating capacities show the capacities when the outdoor unit is operated with the 100% rating of indoor units, and are based on the standard JIS B8616-1984.

#### Cooling Operation Conditions

Indoor Air Inlet Temperature: 27°C DB (80°F DB)  
19.0°C WB (66.2°F WB)  
Outdoor Air Inlet Temperature: 35°C DB (95°F DB)

#### Heating Operation Conditions

Indoor Air Inlet Temperature: 20°C DB (68°F DB)  
Outdoor Air Inlet Temperature: 7°C DB (45°F DB)  
6°C WB (43°F WB)  
Piping Length: 5 Meters  
Piping Lift: 0 Meter

2. The sound pressure level is based on following conditions. In case of cooling operation mode. In case of heating operation mode, the sound pressure level increases by approximately 1~2dB.

1 Meter from the unit service cover surface, and 1.5 Meters from floor level. Voltage of the power source is 380V. In case of the power source of 415V, the sound pressure level increases by about 1 dB. The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.

## Set Free – FSN Technical Description – Outdoor units

### General Data

Model		RAS-24FSN	RAS-30FSN
<b>Power Supply</b>		380-415V / 50Hz	
<b>Nominal Cooling Capacity</b>	W	69.0	85.0
<b>Nominal Heating Capacity</b>	W	77.5	95.0
<b>Cabinet Colour</b>		Natural Gray	
<b>Sound Pressure Level</b>			
<b>Cool(Night Shift)/Heat</b>	dB(A)	62(57)	63(58)
<b>Outer Dimensions</b>			
Height	mm	1,745	1,745
Width	mm	2,430	2,430
Depth	mm	750	750
<b>Net Weight</b>	kg	675	720
<b>Refrigerant</b>		R410A	
Flow Control		Micro-Computer Control Expansion Valve	
<b>Compressor</b>		Hermetic (Scroll)	
Model		E405AHD E605DHx4	E405AHD E655DHx5
Quantity		1+1x4	1+1x5
Motor Output (Pole)	kW	1.4(4)+4.4 (2)x4	1.4 (4)+4.4(2) x5
<b>Heat Exchanger</b>		Multi-Pass Cross-Finned Tube	
<b>Condenser Fan</b>		Propeller Fan	
Quantity		2	2
Air Flow Rate	m <sup>3</sup> /min	426	531
Motor Output (Pole)	W	380(8) + 275(6)	380(8) + 275(6)
<b>Refrigerant Piping</b>			
Liquid Line	mm(in.)	Ø15.85 (5/8)	Ø19.05 (3/4)
Gas Line	mm(in.)	Ø28.6 (1 1/8)	Ø31.75 (1 3/8)
<b>Refrigerant Charge</b>	kg	23.0	26.0
<b>Wiring Holes</b>			
Power Supply	mm	Ø 70	Ø 70
Control Circuit	mm		Ø 26.5
<b>Connecting Wire between</b>			
<b>Indoor and Outdoor Unit</b>		2	2
<b>Approximate Packing Measurement</b>	m <sup>3</sup>	3.57	3.57

### NOTES:

- The cooling and heating capacities show the capacities when the outdoor unit is operated with the 100% rating of indoor units, and are based on the standard JIS B8616-1984.

#### Cooling Operation Conditions

Indoor Air Inlet Temperature: 27°C DB (80°F DB)  
19.0°C WB (66.2°F WB)  
Outdoor Air Inlet Temperature: 35°C DB (95°F DB)

#### Heating Operation Conditions

Indoor Air Inlet Temperature: 20°C DB (68°F DB)  
Outdoor Air Inlet Temperature: 7°C DB (45°F DB)  
6°C WB (43°F WB)  
Piping Length: 5 Meters  
Piping Lift: 0 Meter

- The sound pressure level is based on following conditions. In case of cooling operation mode, the sound pressure level increases by approximately 1~2dB. 1 Meter from the unit service cover surface, and 1.5 Meters from floor level. Voltage of the power source is 380V. In case of the power source of 415V, the sound pressure level increases by about 1 dB. The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration in the field.



RAS-24/30FSN

## Set Free – FXN Technical Description – Outdoor units

Available soon



# Control systems

## H-Link Transmission System

This system connects the control wires for the outdoor and indoor units across two or more refrigerant systems. Regardless of the order or number of units to be connected, all the units can be controlled once they have been connected. By this method, design flexibility is very high, installation is easy and total costs are reduced. Furthermore, central control is possible by connecting CS-NET to H-LINK wiring located in the room next to the room where CS-NET is installed.

## Computer Controlled Network System

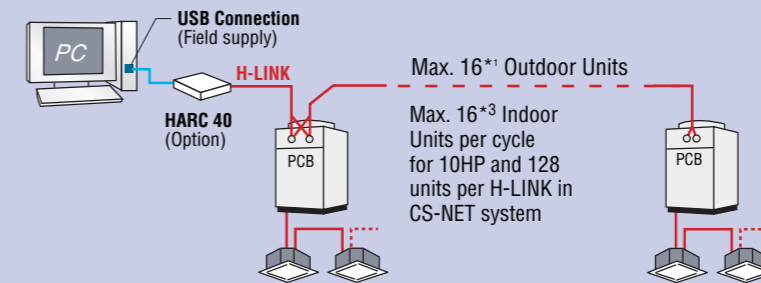


CS-NET

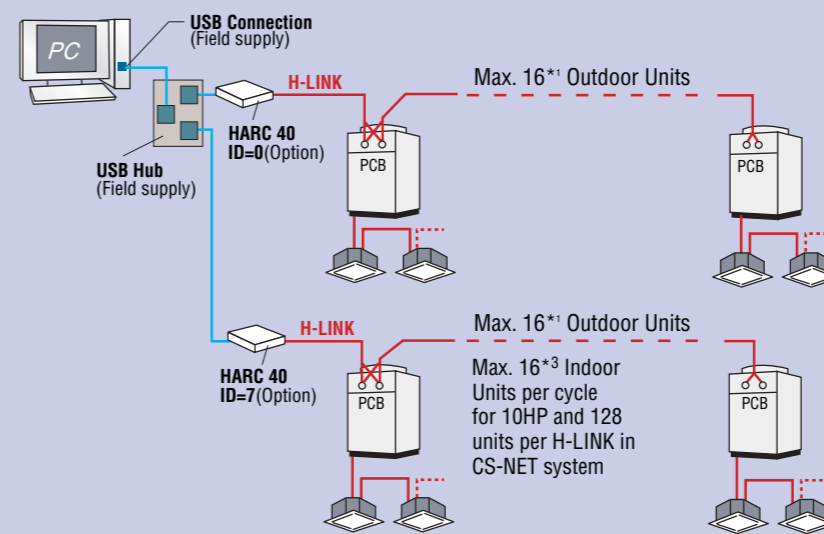


HARC-40

### ■ System Example 1 : Outdoor Units $\leq 16$



### ■ System Example 2 : $16 < \text{Outdoor Units} \leq 128$



- \*1: If the number of indoor units per a refrigerant cycle is 17 or greater, count one outdoor unit as two units.
- \*2: Max. total length of transmission wire is 1,000 meters.
- \*3: Max. 8 units for 5HP  
Max. 13 units for 8HP  
Max. 16 units for 16 and 20HP  
Max. 27 units for 24HP  
Max. 32 units for 30HP

## CS-NET Features

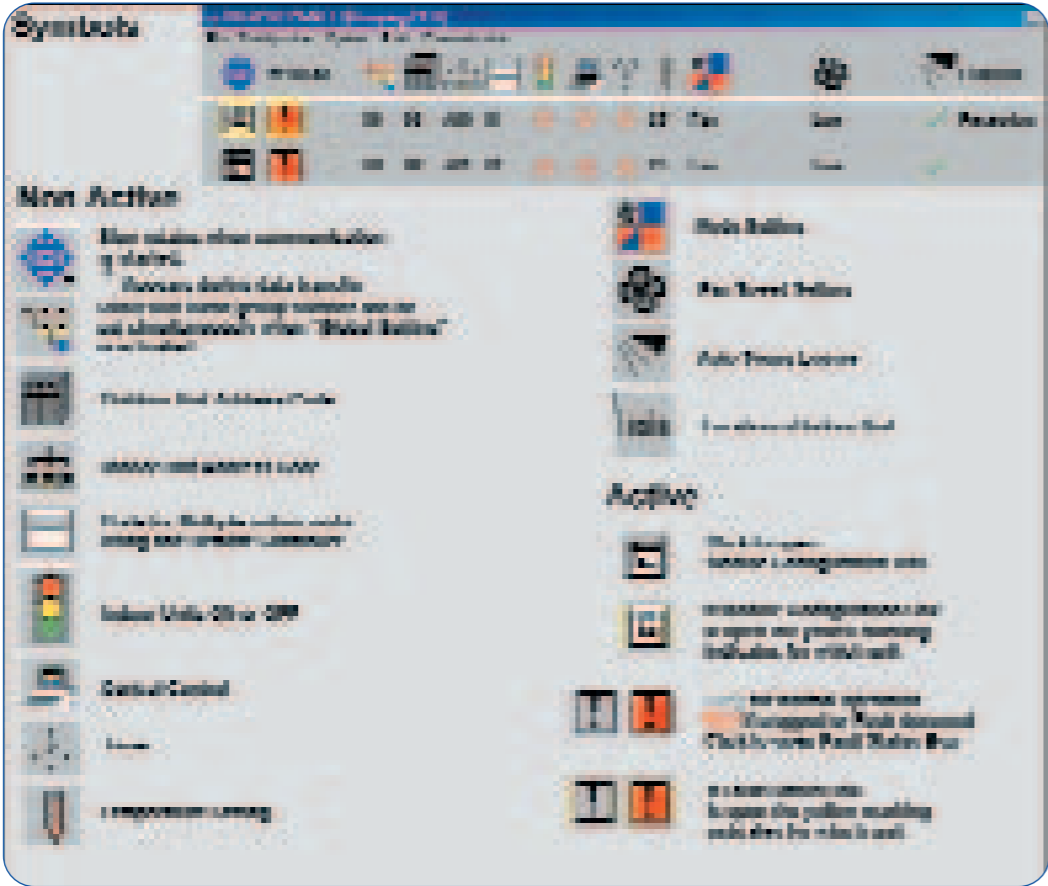
### Control Function

- On/Off control
- Operation mode setting
- Temperature setting [setting range: Cooling 19°C – 30°C, Heating 19°C – 30°C]
- Air direction setting
- Remote control fully allowed/prohibited
- Remote control partially allowed/prohibited
- Fan speed setting
- Air direction setting (cannot be set by wireless remote control)
- Filter sign resetting

### Monitoring Function

- On/Off Control
- Operation mode
- Set fan speed
- Set air direction
- Set temperature
- Remote control prohibition setting
- Filter sign
- Alarm
- Alarm code
- Air inlet temperature

Easy Set Up



# CS-NET set up and operation

**Module configuration box**

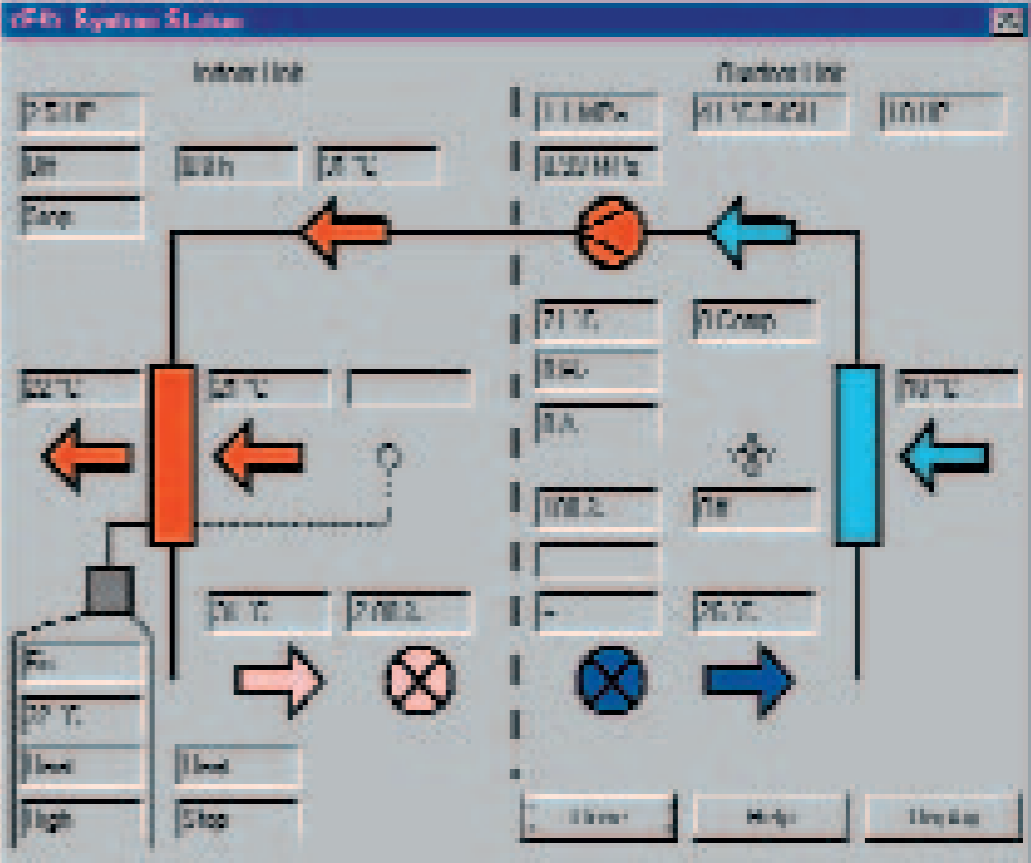
Click on the Module Configuration icon of the first Unit to open the Module Configuration Box. The icon for the open Module will have a yellow surround to indicate the Module that is open.

**Operation**

When the Set Up and Auto Configuration have been completed, the Unit information must be entered in each Individual Module. It is important for future service to enter the Serial Numbers and Models in their respective fields, as this will avoid time consuming searching in the event of warranty claims or spare parts identification.

**Graphic Representation**

When the systems are running, the operating conditions for each unit are shown in a graphical layout which can be operated through FAULT and then SYSTEM STATUS. By clicking on DISPLAY the operating conditions will be shown in a tabular form. This graphical layout is not available for UTOPIA or UTOPIA BIG units.



## Specifications of HARC-BX

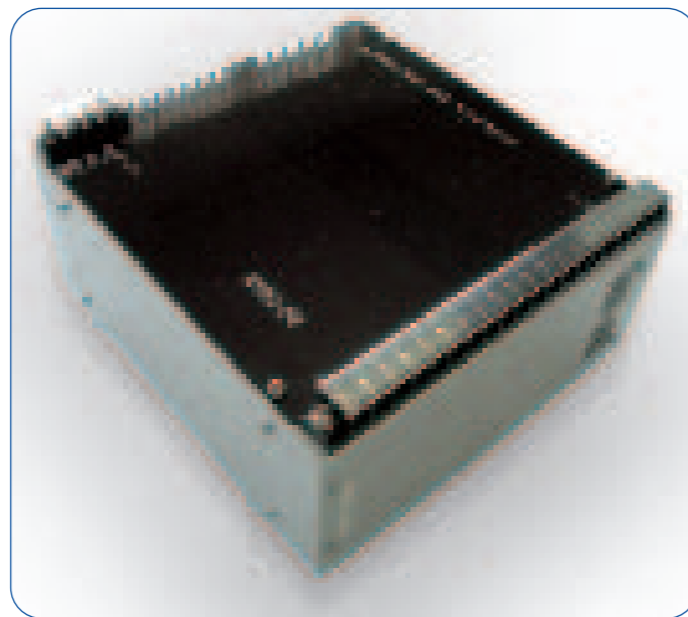
Type	Standard		Option A		Option B	
Connectable Q'ty	64		64		32	
	Control	Monitor	Control	Monitor	Control	Monitor
Run/Stop & Alarm*	•	•	•	•	•	•
Operation Mode	•	•	•	•	•	•
Set Temp	•	•	•	•	•	•
Fan Speed	-	-	•	-	•	•
Louver Position	-	-	-	-	•	•
RC. Sw.Permission/Prohibition	-	-	•	-	•	-
Alarm Code	-	-	-	-	-	•
IU Inlet Air Temp	-	-	-	•	-	•
IU Outlet Air Temp	-	-	-	-	-	•
Outdoor Air Temp	-	-	-	-	-	•
Thermo-ON/OFF	-	•	-	-	-	-
Remark	Use PC-P1H or PC-2H2					
Maximum Wiring Length	1000m (Bus Total length)					

\*Alarm for monitor only

## Lon interface

### Gateway Interface to LONG-WORKS BMS Systems

Using HARC-BX allows control of up to 5 setting points and remote monitoring of up to 9 valves. By connecting HARC-BX to H-LINK, a group of up to 16 remote controls can be used and up to 64 indoor units can be controlled.



HARC-BX



### PC-P1HE

#### Remote Control Switch

Features a wide range of functions, including a large liquid crystal display screen, self-diagnostic capabilities, and a timer which can be set in 0.5 hour intervals. A convenient remote control which is supplied as standard with all units.



### PC-LH3A

#### Wireless Remote Control Switch

No wiring work required. Two or more units can be operated simultaneously by remote control. The receiver kit is integral in wall mounted units. Receiver kit PC-RLH11 is required for all other models.



### PC-P5H

#### Half-size remote control switch

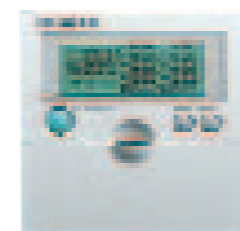
The main function of this easy-to-use remote control is temperature setting. Suitable for a variety of applications such as hotels, restaurants and offices. '2 remote controls' or 'group control' (for 16 controls max) can be used, similar to the standard remote control. If a problem occurs, an alarm code immediately shows the details of the problem. \*When the half-size remote control is used, cooling/heating is automatic.



### PSC-5S

#### Central Station

This Central Station enables centralised control of up to 16 groups of indoor units (at maximum 128 indoor units). Features a wide range of functions, including a large liquid crystal display screen and alarm code. User friendly Central Station. Remote start/stop and common fault signal available.



### PSC-5T

#### 7-Day Timer

The 7-Day Timer allows long-term unattended control. By plugging this time to the optional remote control switch or Central Station, daily ON/OFF operation control throughout the week is available. ON/OFF setting is available three times a day by two different patterns.

## Remote controllers



## Optional parts

### Indoor Units

#### 4-Way Cassette Type

Item	HP	RCI-1.0-3.0	RCI-4.0-5.0
Air Panel		P-G23WA2E	P-G46WA2E
Receiver Kit for Wireless Control		PC-RLH4/11 (wall mounted)	

#### 2-Way Cassette Type

Item		RCD-1.0FSNE, RCD -1.5FSNE, RCD -2.0FSNE, RCD-2.5FSNE, RCD-3.0FSNE	RCD-4.0FSNE, RCD-5.0FSNE
Air Panel	Standard	P-G23DWA1	P-G46DWA1
Receiver Kit for Wireless Control		PC-RLH9 (on the panel)	PC-RLH9 (on the panel)

#### In-the-Ceiling, Wall, Floor and Ceiling Type

Item	RPI (0.8-5.0HP), RPK (0.8-4.0HP), RPF (1.0-2.5HP), RPF1 (1.0-2.5HP), RPC (2.0-5.0HP)
Receiver Kit for Wireless Control (with 5m cable)	PC-RLH4/H11 (wall mounted)

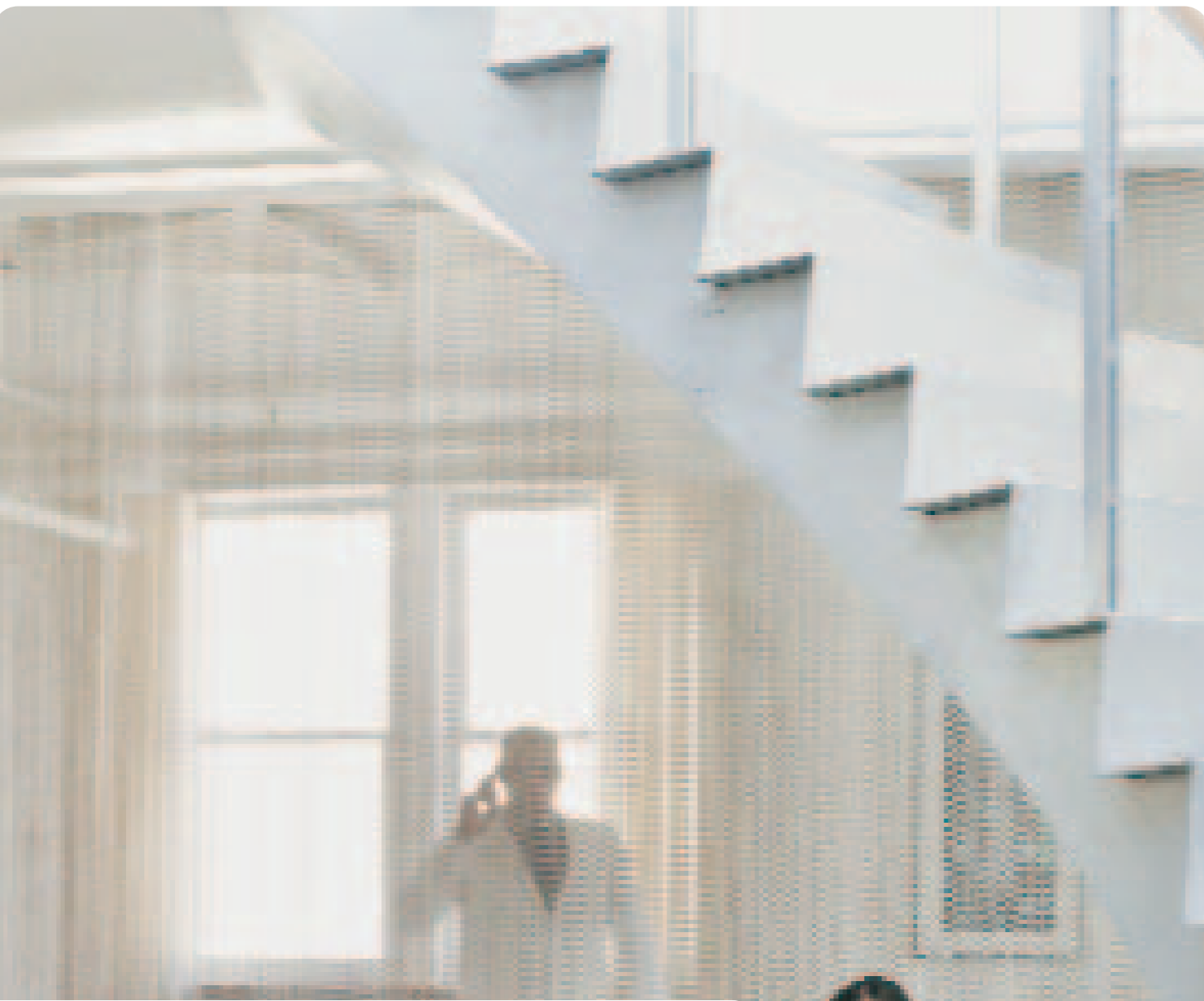
#### Control System Compatibility

Item		RPI-FSN	RCI-FSN	RCD-FSN	RPK-FSN	RPF(I)-FSN	RPC-FSN	KPI
Remote Control Switch*1	PC-P1H (without cable)	•	•	•	•	•	•	•
Wireless Remote Control Switch*2	PC-LH3A (new)	•	•	•	•	•	•	•
Half-size Remote Control Switch	PC-P5H	•	•	•	•	•	•	•
7-Day Timer	PSC-5T	•	•	•	•	•	•	•
Central Station*3	PSC-5S	•	•	•	•	•	•	•
Remote Control Cable	PRC-10E1, 15E1, 20E1, 30E1 for PC-P1H	•	•	•	•	•	•	•
3P Connector Cable	PCC-1A	•	•	•	•	•	•	•
Remote Sensor	THM-R2A	•	•	•	–	•	•	–
P/C Network System CS-NET	PSC-6WTX	•	•	•	•	•	•	•

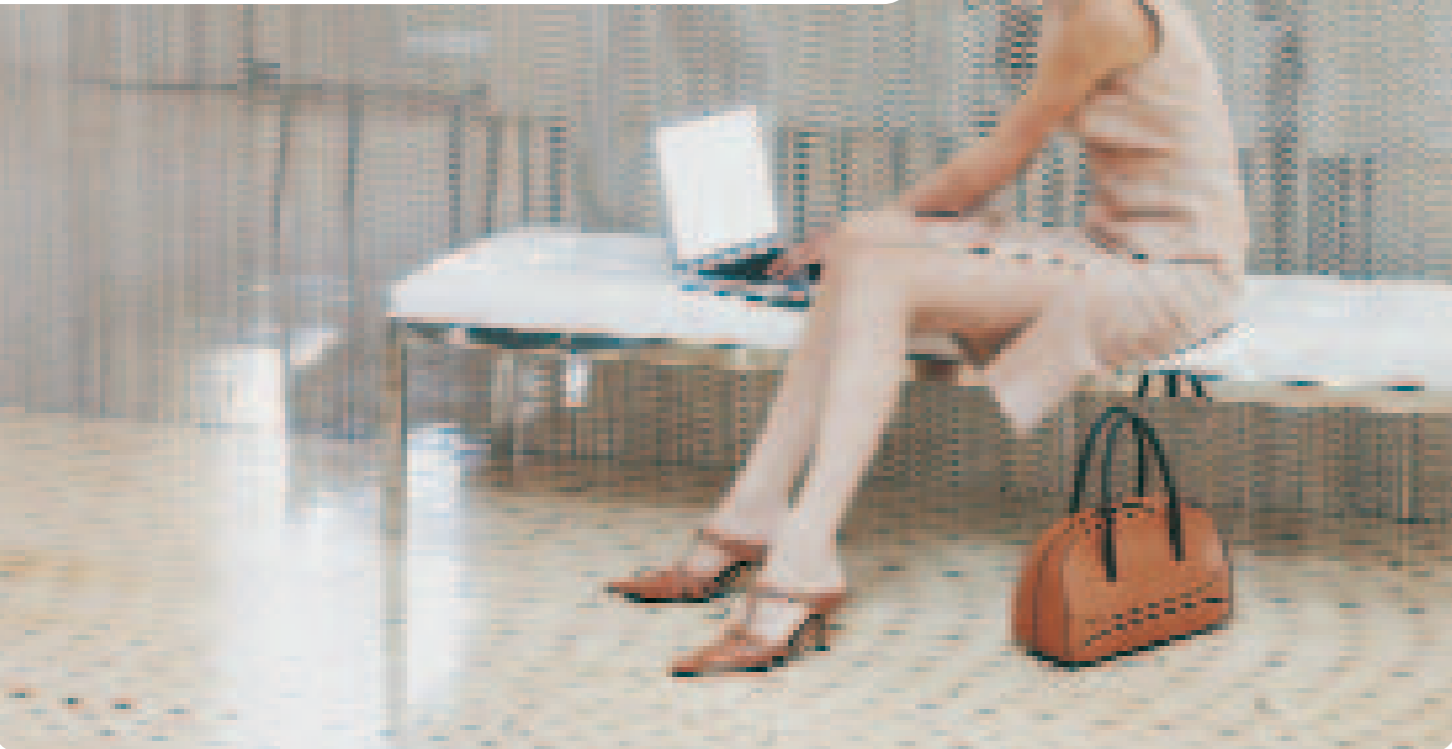
\*1 As the PC-P1H does not include a remote control cable, prepare one in the field, or use PRC-10E1, 15E1, 20E1, 30E1.

\*2 PC-LH3 can be used instead of PC-LH3A.

\*3 Supply 220V or 240V



# Optional parts



### Outdoor Unit – 1st Multi-Kit

In case that the equivalent piping length is **less** than 100m use the following pipe size:

Outdoor Unit	RAS-5FSN	RAS-8FSN	RAS-10FSN	RAS-16FSN	RAS-20FSN	RAS-24FSN	RAS-30FSN
<b>Pipe Size (Ø mm)</b>							
Gas	15.88	19.05	22.20	28.60	28.60	28.60	31.75
Liquid	9.53	9.53	9.53	12.70	15.88	15.88	19.05
<b>Multi-Kit</b>	E-102SN	E-102SN	E-102SN	E-162SN	E-242SN	E-242SN	E-302SN

In case that the equivalent piping length is **more** than 100m use the following pipe size:

Outdoor Unit	RAS-5FSN	RAS-8FSN	RAS-10FSN	RAS-16FSN	RAS-20FSN	RAS-24FSN	RAS-30FSN
<b>Pipe Size (Ø mm)</b>							
Gas	19.05	22.20	25.40 (28.60)	31.75	31.75	31.75	38.10 (41.27)
Liquid	12.70	12.70	12.70	15.88	19.05	19.05	22.20
<b>Multi-Kit</b>	E-102SN	E-102SN	E-162SN	E-242SN	E-302SN	E-302SN	E-302SN

Reducer for outdoor unit is necessary (field supplied).

### 1st Multi-Kit – Last Branch

Total Capacity of Outdoor Unit	HP<5.99	6<HP<8.99	9<HP<12.99	13<HP<15.99	16<HP<17.99	18<HP<25.99	26HP
<b>Pipe Size (Ø mm)</b>							
Gas	15.88	19.05	22.20	25.40 (28.60)	28.60	28.60	31.75
Liquid	9.53	9.53	9.53	12.70	12.70	15.88	19.05
<b>Multi-Kit</b>	E-102SN	E-102SN	E-102SN	E-162SN	E-162SN	E-242SN	E-302SN

The multi-kit selected must be compatible with pipe selected in technical catalogue.

### Header Branch

Applicable Model	RAS-5FSN	RAS-8FSN	RAS-10FSN	RAS-16FSN	RAS-20FSN	RAS-24FSN	RAS-30FSN
<b>Model of Multi-Kit</b>							
2-4 Branches	E-84HSN	E-84HSN			-		
2-8 Branches	E-108HSN	E-108HSN			E-108HSN		

# Project references

## Center Communication Systems Ltd.

### Project Reference

<b>Category</b>	Office Building
<b>Name of Building</b>	Center Communication Systems Ltd.
<b>Size (m²)</b>	3.600m²
<b>Location</b>	Vienna, 21st district
<b>Age (New/Re-furb)</b>	New building
<b>Occupancy</b>	Office and meeting-rooms between 15 and 90 m²
<b>Interesting Facts</b>	There is no other heating source and therefore no gas inside the building
<b>Distributor</b>	TVG
<b>Contractor/Installer</b>	Installed by TVG
<b>Consultant/Specifier</b>	TVG
<b>Project Date</b>	2004
<b>System</b>	VRF-System, Utopia-System
<b>Indoor Units</b>	81/RPF-units, 1/RPC-3,5HG7E
<b>Outdoor Units</b>	3/RAS-24FSG1, 2/RAS-16FSG1, 1/RAS-3,5AG7E
<b>Control System</b>	CS-NET, PCP-1HE and PC-LH3A and external remote via modem.
<b>Capacity</b>	297 KW/104 HP
<b>Project Description</b>	The brief was to install a 3-pipe simultaneous heating and cooling system split into phases; a number of fan coils were installed first followed by the remainder at a later date.



## Sandvik in Austria Ltd.

### Project Reference

<b>Category</b>	Office Building
<b>Name of Building</b>	Sandvik in Austria Ltd.
<b>Size (m²)</b>	1.310m²
<b>Location</b>	Vienna, 21st district
<b>Age (New/Re-furb)</b>	Re-furbishment of an old building
<b>Occupancy</b>	3 floors, the offices are between 15 and 45m² and the meeting and training rooms are between 60 and 140m².
<b>Purpose/Use</b>	Cooling and heating system for the whole office and the training rooms
<b>Distributor</b>	TVG
<b>Contractor/Installer</b>	Installed by TVG
<b>Consultant/Specifier</b>	Planning by TVG
<b>Project Date</b>	2004
<b>System</b>	Hitachi-VRF-System
<b>Indoor Units</b>	36/RPFI, 4/RPC, 1/RPK and 4/RCI
<b>Outdoor Units</b>	3/RAS-10FSG, 1/RAS-8FSG, 1/RAS-5F5SVG and 1/RAS-3F5SVG
<b>Control System</b>	CS-NET incl. external remote and PCP1-H
<b>Capacity</b>	128kw
<b>Project Description</b>	TVG specified and installed a HITACHI-VRF-System with CS-NET control monitored remotely at TVG headquarters in Vienna.





# Project references



## Planon Head Office

Project Reference	
<b>Category</b>	Office
<b>Name of Building</b>	Planon Head Office
<b>Size (m²)</b>	1800m²
<b>Location</b>	Nijmegen – The Netherlands
<b>Age (New/Re-furb)</b>	New Building 2004
<b>Occupancy</b>	Office of Planon International Ltd and Planon Netherlands BV
<b>Interesting Facts</b>	There is no other heating source and therefore no gas inside the building
<b>Distributor</b>	Coticlima NV
<b>Contractor/Installer</b>	Kuijpers Installaties BV – division Arnhem
<b>Consultant/Specifier</b>	Huisman & Van Muijen BV
<b>Project Date</b>	2004
<b>System</b>	Set Free FXG
<b>Indoor Units</b>	40 x RPI1.5FSG2E
<b>Outdoor Units</b>	5 x RAS10FXG
<b>Control System</b>	CS-NET 7.1
<b>Capacity</b>	50 HP
<b>Project Description</b>	Hitachi's Set Free FXG VRF system was carefully chosen to fulfil the requirements of Planon International Ltd, a leading software development company. The decision was re-inforced by well-known contractors, Huisman & Van Muijen BV who recognized Hitachi's Set Free VRF range as the best installation solution. The use of Hitachi's CS-Net system to control the installation via a central point secured the deal.



## Schneider Electric Ltd.

Project Reference	
<b>Category</b>	Office Building
<b>Name of Building</b>	Schneider Electric Ltd.
<b>Size (m²)</b>	2.300m²
<b>Location</b>	Vienna, 23rd district
<b>Age (New/Re-furb)</b>	Re-furbishment
<b>Purpose/Use</b>	Cooling- system for the whole office, training, restaurant and conference rooms
<b>Distributor</b>	TVG
<b>Contractor/Installer</b>	Installed by TVG
<b>Consultant/Specifier</b>	Planning by a consultant and TVG
<b>Project Date</b>	2004
<b>System</b>	Hitachi-VRF-System
<b>Indoor Units</b>	54/RPK and 15 RCI units
<b>Outdoor Units</b>	2/RAS-30FSG and 1/RAS-20FSG
<b>Control System</b>	CS-NET incl. external remote and PCRLH3A
<b>Capacity</b>	226 KW / 80 HP
<b>Project Description</b>	CS-Net won TVG's bid to undertake this project. The attraction with Hitachi's computer control system was the ability to control the air conditioning at TVG headquarters in Vienna.



Specifications in this catalogue are subject to change without notice in order that HITACHI may bring the latest innovations to their customers. Omitting typing errors.

Hitachi Europe Ltd  
Whitebrook Park  
Lower Cookham Road  
Maidenhead  
Berkshire  
SL6 8YA  
United Kingdom

**email:** [aircon.enquiries@hitachi-eu.com](mailto:aircon.enquiries@hitachi-eu.com)

**www:** [www.hitachiaircon.com](http://www.hitachiaircon.com)

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