

# Air treatment and ventilation



# Air treatment

## DX air curtains

**FRICO**


**DX FRICO air curtains.**  
Thermodynamic heating air curtain for door entrance areas of any size.

## Heat recovery units

240 Pa (M1)



**With energy recovery.**  
Ventilation system with energy recovery.  
KPI-252~2002E4E / KPI-502~2002E4E

## Heat recovery units with DX coils

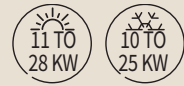
200 Pa 13 KW (M1)



**With energy recovery.**  
Ventilation system with energy recovery and built-in DX coil.  
KPI-502~1002X4E

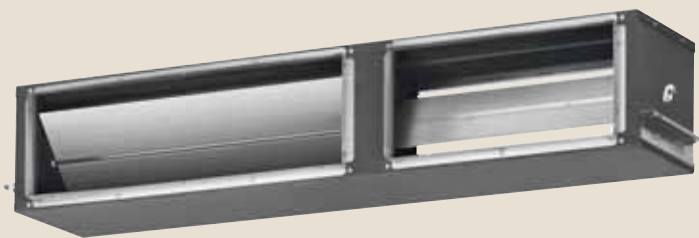


DX kit



Control system for DX coil.  
 Example of use:  
 air handling unit with DX coil.  
**EVX.2.0-10E2**

Free cooling kit for ducted units



Fresh air solution for ducted units.  
**EF-456N1E**

# DX air curtains



## Hitachi/Frico

- Hitachi and Frico come together to offer DX air curtains compatible with the Hitachi units in the Prime/IVX range.
- The factory assembly of the expansion valves, control box and a lift pump allows for ultra-fast installation.
- Frico's Linea DXH and AZR DXH air curtain ranges combine with a Hitachi split heat pump for 3.5m high installations.

## Functions

- The DX air curtain creates a thermal barrier all year round and provides comfort in both summer and winter with minimal energy expenditure.
- No need for a filter, with the microperforated intake grille.
- Max. air off temperature: 35°C.

## Advantages

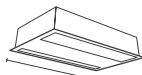
- Quick return on investment.
- Energy efficiency, reduced operating costs.
- Low CO<sub>2</sub> emissions.
- 2 versions available: recessed and surface mounted models.
- Model available in all RAL colors.
- Reversible range (heating or cooling operation).
- Also compatible with outdoor unit X-Premium.

### Air curtains



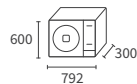
1000  
1500  
2000  
2500

Surface mounted curtain

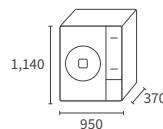


1000  
1500  
2000  
2500

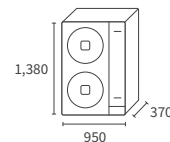
Recessed curtain



RAS-3HVNC1



RAS-4H(V)NC2E  
RAS-6H(V)NC2E



RAS-8HNCE  
RAS-10HNCE

### Outdoor units

# DX air curtains

### Surface mounted curtain

Linea M DXH compatible with Hitachi, height of up to 3 m, 230V~

Part number	Power	Air flow rate	Voltage	Weight
	kW	m³/h	(V)	kg
LINEAM1000DXH3	9	1560	230	52
LINEAM1500DXH4	12	2170	230	83
LINEAM2000DXH6	18	3100	230	113
LINEAM2500DXH8	22	4400	230	145

### Recessed curtain

AZR M DXH compatible with Hitachi, height of up to 3 m, 230V~

Part number	Power	Air flow rate	Voltage	Weight
	kW	m³/h	(V)	kg
AZRM1000DXH3	9	1560	230	52
AZRM1500DXH4	12	2170	230	83
AZRM2000DXH6	18	3100	230	113
AZRM2500DXH8	22	4400	230	145

### Hitachi-compatible outdoor units

Split installation: Compatible outdoor units (requires the remote control PC-ARFP1E)

Utopia Prime / IVX
Model Ref
RAS-3HVCN1
RAS-4H(V)NC2E
RAS-6H(V)NC2E
RAS-8HNCE

Linea G DXH compatible with Hitachi, height of up to 3.5 m, 230V~

Part number	Power	Air flow rate	Voltage	Weight
	kW	m³/h	(V)	kg
LINEAG1000DXH4	12	2170	230	55
LINEAG1500DXH6	15	3100	230	85
LINEAG2000DXH8	22	4400	230	115
LINEAG2500DXH10	26	5450	230	147

AZR M DXH compatible with Hitachi, height of up to 3.5 m, 230V~

Part number	Power	Air flow rate	Voltage	Weight
	kW	m³/h	(V)	kg
AZRG1000DXH4	12	2170	230	55
AZRG1500DXH6	15	3100	230	85
AZRG2000DXH8	22	4400	230	115
AZRG2500DXH10	26	5450	230	147

Utopia Prime / IVX
Model Ref
RAS-4H(V)NC2E
RAS-6H(V)NC2E
RAS-8HNCE
RAS-10HNCE

Part number	Height	Length	Depth
LINEA1000DXH	140+260	1000	480
LINEA1500DXH	140+260	1500	480
LINEA2000DXH	140+260	2000	480
LINEA2500DXH	140+260	2500	480

Part number	Height	Length	Depth
AZR1000DXH	130+260	1000	700
AZR1500DXH	130+260	1500	700
AZR2000DXH	130+260	2000	700
AZR2500DXH	130+260	2500	700



# Ventilation units

With energy recovery



KPI



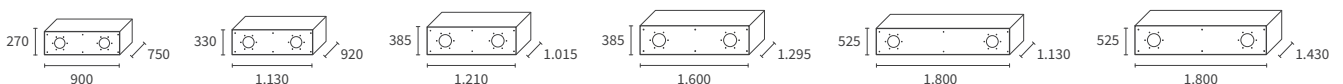
## Functions and features

- Suitable for a wide variety of buildings applications.
- Option to connect a CO<sub>2</sub> sensor (not supplied) and automatically regulate air quality based on a pre-set maximum CO<sub>2</sub> concentration.
- High-efficiency F7 filters are available (optional).
- The Hitachi heat recovery ventilation system adjusts the temperature and humidity of incoming fresh air to match the indoor environment.
- Automatic ventilation mode where the KPI controls which mode to operate within to ensure maximum energy efficiency.
- Forced bypass mode where 100% fresh air is supplied for free cooling
- KPI units can alter a room's pressurisation level if required to either help keep air in or extract air depending on the requirement.

## Advantages

- Temperature exchange efficiency up to 83%.
- Low-consumption electronic fan motors.
- Sound pressure from 25 dB(A).
- All insulation with these KPIs is M1-certified (NF-P92-501).
- Up to 240 Pa available static pressure.

KPI



KPI-252E4E

KPI-502E4E

KPI-802E4E

KPI-1002E4E

KPI-1502E4E

KPI-2002E4E

## KPI

Celluloid paper heat exchanger	Unit	KPI-252E4E	KPI-502E4E	KPI-802E4E	KPI-1002E4E	KPI-1502E4E	KPI-2002E4E
Nominal air flow	m <sup>3</sup> /h	250	500	800	1000	1500	2000
Exchange efficiency (H / M / L)	%	74 / 77 / 79	74 / 77 / 78	75 / 76 / 78	78 / 81 / 83	73 / 76 / 80	76 / 78 / 80
Airflow rate (H / M / L)	m <sup>3</sup> /h	250 / 208 / 180	500 / 420 / 360	800 / 650 / 540	1000 / 800 / 620	1500 / 1250 / 950	2000 / 1450 / 1200
Sound pressure level (H / M / L)	dB(A)	28 / 27 / 25	33 / 31 / 30	35 / 34 / 33	37 / 34 / 32	39 / 37 / 35	40 / 39 / 36
Available static pressure (H / M / L)	Pa	55 / 35 / 30	80 / 50 / 37	90 / 60 / 40	95 / 65 / 40	100 / 70 / 45	120 / 65 / 40
Maximum external pressure (nominal)	Pa	240	210	120	190	200	170
Dimensions (H x W x D)	mm	270 x 900 x 750	330 x 1130 x 920	385 x 1210 x 1015	385 x 1600 x 1295	525 x 1800 x 1130	525 x 1800 x 1430
Weight	kg	34	46	51	79	97	106
Power supply	-	1~230V 50Hz					
Recommended fuse size	A	5			10		

## Controls and compatible accessories (see the tab VRF TWIN controls)



Wired remote control  
weekly timer  
PC-ARFP1E



Noise attenuator  
SLT-30-200-L600:  
Compatible with KPI-502E4E  
SLT-30-250-L600:  
Compatible with KPI-802E4E  
SLT-30-300-L600:  
Compatible with KPI-1002E4E  
SLT-30-355-L600:  
compatible with KPI-1502-2002E4E



High-efficiency filter  
HEF-252:  
Compatible with KPI-252E4E  
HEF-502:  
Compatible with KPI-502E4E  
HEF-802:  
Compatible with KPI-802E4E  
HEF-1002:  
Compatible with KPI-1002E4E  
HEF-1502:  
Compatible with KPI-1502E4E  
HEF-2002:  
Compatible with KPI-2002E4E

# Ventilation with DX coil

With energy recovery

KPI active



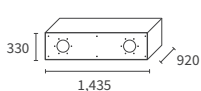
## Functions and features

- System dedicated to the handling of fresh air.
- Suitable for a wide range of building applications, especially in areas with lower outside temperatures.
- Option to connect a CO<sub>2</sub> sensor (not supplied) and automatically regulate air quality based on a pre-set maximum CO<sub>2</sub> concentration.
- High-efficiency F7 filters are available (optional).
- The Hitachi heat recovery ventilation system adjusts the temperature and humidity of incoming fresh air to match the indoor environment.
- Automatic ventilation mode where the KPI controls which mode to operate within to ensure maximum energy efficiency.
- Forced bypass mode where 100% fresh air is supplied for free cooling
- KPI units can alter a room's pressurisation level if required to either help keep air in or extract air depending on the requirement.

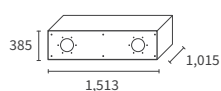
## Advantages

- Temperature exchange efficiency up to 83%.
- Low-consumption electronic fan motors.
- All insulation in these KPIs is M1 certified (NF-P92-501).
- Compatible with Utopia IVX, Set Free Mini, Centrifugal, or VRF SIGMA.
- Sound pressure from 29 dB(A).
- Up to 200 Pa available static pressure.
- Heating capacity up to 13 kW.

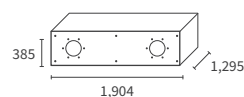
KPI active



KPI-502X4E



KPI-802X4E



KPI-1002X4E



Celluloid paper heat Exchanger with DX coil	Unit	KPI-502X4E	KPI-802X4E	KPI-1002X4E
Nominal cooling capacity (recovery)	kW	5,32 (of which is recovered: 1.81)	7,96 (of which is recovered: 2.94)	10,83 (of which is recovered: 3.73)
Nominal heating capacity (recovery)	kW	6,92 (of which is recovered: 2.12)	9,79 (of which is recovered: 3.49)	12,93 (of which is recovered: 4.43)
Exchange efficiency (H / M / L)	%	74 / 77 / 78	75 / 76 / 78	78 / 81 / 83
Sound pressure level (H / M / L)	dB(A)	32 / 30 / 29	34 / 33 / 32	36 / 33 / 31
Airflow rate (H / M / L)	m <sup>3</sup> /h	500 / 430 / 380	800 / 700 / 590	1000 / 820 / 740
Available static pressure (H / M / L)	Pa	90 / 82 / 60	110 / 80 / 57	170 / 105 / 80
Maximum external pressure (nominal)	Pa	200	110	170
Dimensions (H x W x L)	mm	330 x 1435 x 920	385 x 1513 x 1015	385 x 1904 x 1295
Weight	kg	62	69	100
Power supply	-	1~230V 50Hz		
Recommended fuse size	A	5		10

Controls and compatible accessories (see the tab VRF TWIN controls)



Wired remote control weekly timer  
PC-ARFP1E



Noise attenuator  
SLT-30-200-L600:  
SLT-30-250-L600:  
SLT-30-300-L600:  
SLT-30-355-L600:  
SLT-30-450-L600



High-efficiency filter  
HEF-252: HEF-1002  
HEF-502: HEF-1502  
HEF-802: HEF-2002

# DX kit

Air-handling unit.

DX kit



### The kit includes:

- 4 temperature sensors with extensions (THM1: air inlet sensor and THM2: air outlet sensor. THM3 and THM4: sensors at liquid and gas lines).
- 1 electronic expansion valve box.
- 1 electrical box.
- 1 harness jumper.

### Not included:

- Remote control PCARFP1E.
- PCC-1A connectors.

## Functions and features

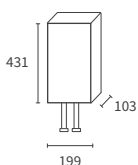
- An "expansion valve / control box" kit that connects an Hitachi unit to a 3rd party system with a DX heat exchanger coil (AHU, ventilation, air curtain, etc.) and manages it like an Hitachi indoor unit.
- Modular operation: Combine up to 5 DX interfaces to works as a group on the same DX coil (up to 50HP with outdoor unit IVX PREMIUM only). The Master unit has 4 temperature sensors. Slave units have only gas and liquid sensors (heat exchanger pipes).
- Synchronized defrosting between the units.
- Precise temperature: the combination of the DX kit with RAS-XH(V)NP1E guarantees the highest levels of precision on the market in terms of maintaining the target temperature.
- The control of capacity demand can be done by inlet air temperature, outlet air temperature, incremental reference duty control and absolute reference duty control, depending on the needs of the installation

## Important

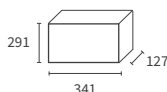
- Do not stop the air flow through the DX coil while defrosting the outdoor units. You can add an electrical heater battery to avoid blowing cold air (not managed or sold by Hitachi). A 12Vdc relay (not sold by Hitachi) to serve the heater battery must be provided.
- 12Vdc relay must be used for heating/cooling mode selection if the AHU has inputs to select heating/cooling mode.
- If the AHU has outputs for managing the mode (heating/cooling), these must connect to the inputs (dry contact) of the outdoor unit.

### DX kit

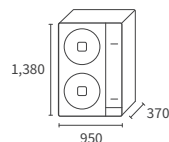
### Outdoor units



Expansion valve box



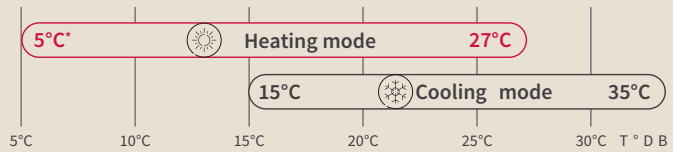
Control box



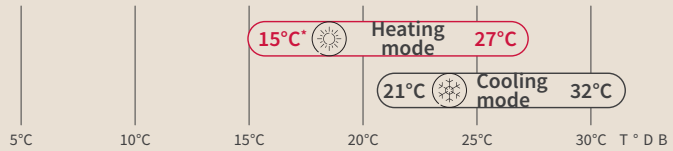
RAS-4XH(V)NP1E  
RAS-5XH(V)NP1E  
RAS-6XH(V)NP1E  
RAS-8XHNPE  
RAS-10XHNPE

## Extended DX coil operating range

**T° of DX coil air inlet**  
(Installation with X PREMIUM unit)



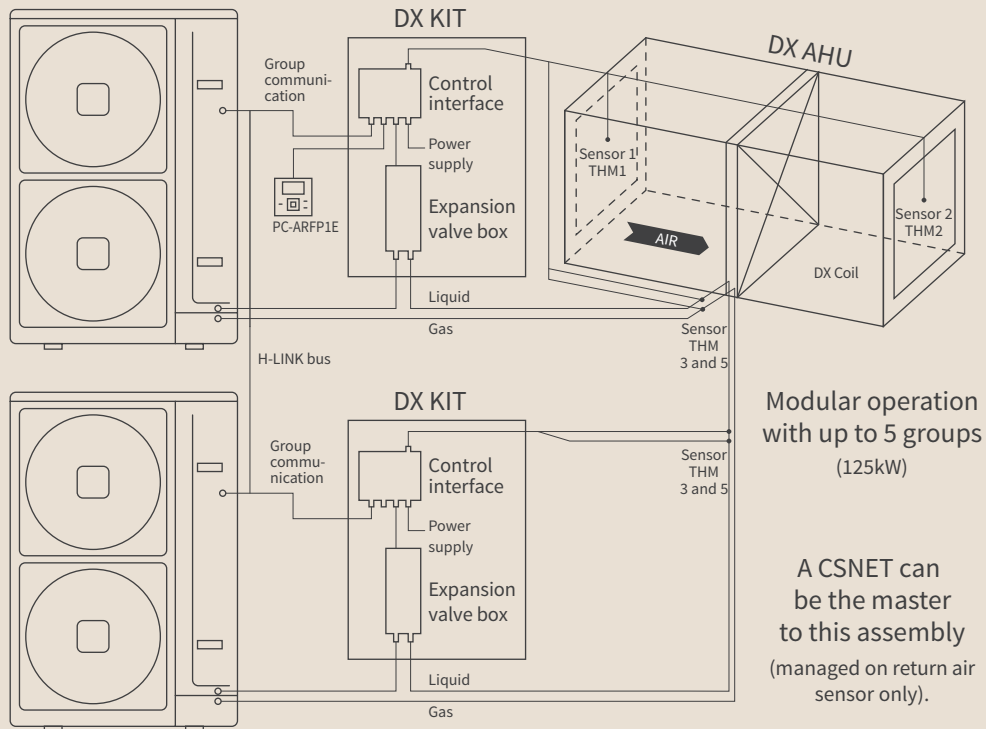
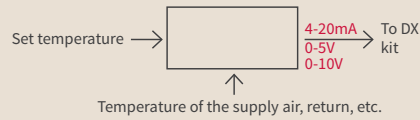
**T° of DX coil air inlet**  
(Installation IVX Prime, IVX Comfort, SET FREE MINI and SIGMA).



Below these values, provide an electrical heater battery or a heat recovery system upstream of the DX coil.

## Ultimate control

- **Compatible with X PREMIUM units RAS-4~10XH(V)NP1E only.**
  - A 0-10V, 0-5V/4-20mA input for external control can be utilised.
  - Capacity control possible on the return or supply air temperature.
  - External control with a 0-10V signal to precisely control the frequency of the compressor.
- **Compatible with units IVX Prime, IVX Comfort and FREE Mini and SIGMA units.**
  - Control based on return air only.



## Optimal defrosting

- Installation with 3 units: only one unit in defrosting mode.
- Installation with 5 units: 2 units in defrosting mode and 3 units operating.

Part number of DX KIT		EXV-2.0E2	EXV-2.5E2	EXV-3.0E2	EXV-4.0E2	EXV-5.0E2	EXV-6.0E2	EXV-8.0E2	EXV-10.0E2	
Nominal Cooling capacity	kW	5.0	6.0	7.1	10.00	12.50	14.00	20.00	25.00	
Nominal Heating capacity	kW	5.6	7.0	8.0	11.20	14.00	16.00	22.40	28.00	
<b>Control box</b>										
Colour	-	Natural Gray (Munsell 1.0Y8.5/0.5)								
Dimensions (H x W x D)	mm	291 x 341 x 127								
Weight	kg	3								
Power supply	-	1~230 V 50hz								
Max. fan current	A	3.5								
<b>Expansion valve box</b>										
Dimensions (H x W x D)	mm	431 x 199 x 103								
Weight	kg	2.0	2.7					4.5		
Pipe diameter (Liq.)	inches	1/4	3/8							
Remote control (not included)	-	PC-ARFP1E								
<b>Outdoor unit</b>	<b>Hp</b>	<b>2</b>	<b>2.5</b>	<b>3</b>	<b>4.0</b>	<b>5.0</b>	<b>6.0</b>	<b>8.0</b>	<b>10.0</b>	
		Ask technical for details	Ask technical for details	RAS-3XHVNP1E	RAS-4XH(V)NP1E	RAS-5XH(V)NP1E	RAS-6XH(V)NP1E	RAS-8XHNPE	RAS-10XHNPE	

## COMPATIBILITY TABLE FOR DX KITS WITH OUTDOOR UNITS

DX kit part no.	Mode	Allowed Heat exchanger capacity (kW)			Heat Exchanger inner volume (L)			Recommended Airflow (m <sup>3</sup> /h)	
		Min	Nominal	Max	Min	Max	Max Outdoor unit X-Premium only	Min	Max
EXV-2.0E2	Cooling Heating	4.0 4.5	5.0 5.6	5.6 7.1	0.57	1.16	-	480	1260
EXV-2.5E2	Cooling Heating	4.8 5.6	6.0 7.0	6.3 7.1	0.89	1.35	-	690	1560
EXV-3.0E2	Cooling Heating	5.7 6.4	7.1 8.0	9.0 11.2	1.03	1.57	2.89	750	1800
EXV-4.0E2	Cooling Heating	8 9	10 11.2	11.2 12.5	1.51	2.37	4.56	1200	2160
EXV-5.0E2	Cooling Heating	10 11.2	12.5 14	14 16	1.92	2.37	4.56	1380	2490
EXV-6.0E2	Cooling Heating	11.2 12.8	14 16	16 18	1.92	2.92	5.11	1500	2550
EXV-8.0E2	Cooling Heating	16 17.9	20 22.4	22.4 25	2.92	3.89	6.93	3540	4680
EXV-10.0E2	Cooling Heating	20 22.4	25 28	28 31.5	3.89	4.76	10.73	4080	5340

The capacity of the heat exchanger must match the specified rated capacity of each DX KIT under the following temperature conditions. Failure to comply with the heat exchanger's capacity can result in a system malfunction. Data applies under the following conditions:

Nominal conditions	Heating mode	Nominal conditions	Cooling mode
Indoor air inlet temperature	20°C(DB)	Indoor air inlet temperature	27°C(DB)/19°C(WB)
Outdoor temperature	7°C(DB)/6°C(WB)	Outdoor temperature	35°C(DB)
Condensing temperature	40°C ~ 45°C	Evaporation temperature	6°C
Subcooling temperature	3°C	Superheating temperature	5°C

(DB): dry bulb - (WB): wet bulb

**Combination with VRF:**

Control based on return air only.

Installing the VRF SIGMA as a single-split unit + DX KIT is not allowed.

It is possible to install several DX KITS (DX KIT only) with a SIGMA unit. But the maximum connection rate allowed is 100%.

With a combined installation of a DX KIT + Air/Air indoor units with VRF SIGMA, the connection rate is: 30% DX KIT and 70% Air/Air.


## Outdoor units specific to DX Kit


	Unit	RAS-4XH(V)NP1E	RAS-5XH(V)NP1E	RAS-6XH(V)NP1E	RAS-8XHNPE	RAS-10XHNPE
<b>Performance, cooling</b>						
Nominal cooling capacity (min-max)	kW	10.0 (4.5-11.2)	12.5 (5.7-14.0)	14.0 (6.0-16.0)	20.0 (8.0-22.4)	25.0 (10.0-28.0)
Rated power input cooling	kW	2.14	3.28	4.11	5.62	8.14
EER	-	4.68	3.81	3.41	3.56	3.07
Working range in Cooling outdoor unit	°C	-5 /+46				
<b>Performance, heating</b>						
Nominal heating capacity (min-max)	kW	11.2 (5.0-14.0)	14.0 (5.0-18.0)	16.0 (5.0-20.0)	22.4 (6.3-28.0)	28.0 (8.0-35.0)
Rated power input heating	kW	2.17	3.08	3.78	5.32	7.29
COP	-	5.16	4.55	4.23	4.21	3.84
Working range in Heating outdoor unit	-	-20 /+15				
<b>Technical features</b>						
Airflow (cooling)	m <sup>3</sup> /h	4,800	5,400	6,000	7,620	8,040
Sound pressure in Cooling mode (night mode)	dB(A)	47 (43)	48 (44)	48 (45)	57 (55)	58 (56)
Sound pressure in Heating mode	dB(A)	49	50		59	60
Sound power	dB(A)	63	64	65	76	
Net weight	kg	103		136		138
Dimensions (H x L x D)	mm	1380 x 950 x 370				
Diameter of pipes (Liq / Gas)	inches	3/8 - 5/8			3/8 - 1 1/8	1/2 - 1 1/8
Compressor	-	Scroll Inverter				
<b>Refrigeration characteristics</b>						
Min. pipe length	m	5				
Pre-charged for	m	30				
Initial refrigerant charge	kg	4.1	4.2	4.2	5.3	6
Additional charge	Kg	calculate based on the method indicated in the installation technical documentation <sup>(1)</sup>				
Max. pipe length	m	75			100	
Expansion valve box installation	-	Within 5 m MAX of DX Coil				
Max. level difference (outdoor unit above / below)	m	30 / 20				
Refrigerant	-	R410A				
<b>Technical features</b>						
Power supply	-	3N ~ 400V 50Hz (1 ~ 230V 50Hz)			3N ~ 400V 50Hz	
Max. current	A	14.0 (30.5)		16.0 (30.5)	24	
Recommended fuse size	A	16 (32)		20 (32)	32	
Cable width (EN 60 335-1) <sup>(2)</sup>	mm <sup>2</sup>	5 x 2.5 (3 x 6.00)			5 x 6.00	

(1) The values of "Additional charge needed" are determined on a case by case basis. To find out these values, see the "DX interface coolant refill and max. pipe lengths" section listed in the Technical Catalogue.  
(2) Data shown is for indication purpose only. It is the installer's responsibility to ensure that these cable widths meet the needs of the facility and current standards.



## Controls and compatible accessories (see the tab VRF TWIN controls)

 Wired remote control weekly timer  
PC-ARFP1E

 Adjustable input/output contact connections  
PCC-1A

# Econofresh

## Free cooling for ducted units

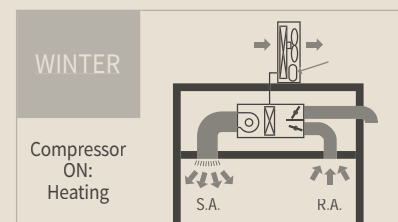
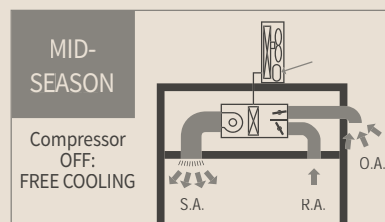
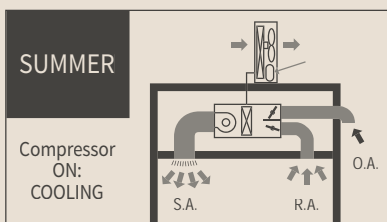


### Functions and features

- The EconoFresh is a module that is added to the return air of a RPI unit (sizes 4-6 HP only). It can supply up to 100% fresh air and is able to provide natural 'free cooling' through a set of dampers when the outdoor air temperature is lower than the set indoor temperature.
- It can operate in conjunction with a CO2 sensor or an enthalpy sensor (taking into account latent heat) to ensure air quality in a room.
- The intelligent EconoFresh continuously modifies the damper opening to ensure the set point is always maintained, and where possible shut the compressor down to save on running costs and energy use.

### Advantages

- Compatible with Utopia Prime, IVX Comfort / Set Free Mini / VRF Sigma / VRF Centrifugal.
- 3 standard speeds.
- 3 adjustable levels of static pressure.
- Easily accessible filters.
- Automatic regulation (damper position and compressor speed).
- Free-cooling mode in mid-season.
- Potential 100% fresh air mid-season.
- 40% energy savings possible with use of EconoFresh compared to standard installations.



### Econofresh kit



EF-456N1E

## Medium-pressure ducted unit 150 Pa compatible with Econofresh

150Pa ducted indoor units	Unit	RPI-4.0FSN6E-EF	RPI-5.0FSN6E-EF	RPI-6.0FSN6E-EF
Power	Hp	4.00	5.00	6.00
Nominal Cooling capacity UTOPIA	kW	10.00	12.50	14.00
Nominal Heating capacity UTOPIA	kW	11.20	14.00	16.00
Nominal Cooling capacity SET FREE	kW	11.20	14.00	16.00
Nominal Heating capacity SET FREE	kW	12.50	16.00	18.00
Sound pressure (L / M / H) <sup>(1)(3)</sup>	dB(A)	35 / 38 / 39	36 / 38 / 40	36 / 36 / 40
Sound power	dB(A)	62	64	64
Airflow (L/M/H)	m <sup>3</sup> /h	1680 / 2070 / 2160	1920 / 2100 / 2220	1950 / 2130 / 2250
Rated static pressure (min-max)	Pa	37 (0~150)	50 (0~150)	50 (0~150)
Condensate pump		Yes		
Max. elevation	mm	850		
Diameter of pipes (Liq/Gas)	inches	3/8 - 5/8		
Condensate outlet diameter (ext)	mm	32		
Dimensions (H x L x D)	mm	240 x 1474 x 600		
Weight	kg	42		
Power supply	-	1~ 230V 50Hz		
Cable width (EN 60 335-1) <sup>(2)</sup>	mm <sup>2</sup>	3 x 0.75		
Max. current	A	3.2	3.5	
Recommended fuse size	A	5		
Remote control	-	PC-ARFP1E		

<sup>(1)</sup> Sound levels (pressure) are measured in an anechoic chamber at 1.50 m below the unit (no ceiling under the unit), with an extraction duct at 1 m and a discharge duct at 2 m.

<sup>(2)</sup> Data shown is for indication purposes only. It is the installer's responsibility to ensure that these cable widths meet the needs of the facility.

<sup>(3)</sup> Ultra high-speed access is possible with remote controls PC-ARFP1E (or PC-ARFG-E available second half of 2021) and PC-ARH1E.

Econofresh kit	Unit	EF-456N1E
Dimensions (H x L x D)	mm	254 x (1491 + 59) x 270
Weight	kg	13.7
Power supply	-	via the board of the indoor unit

controls and compatible accessories (see the tab VRF TWIN controls)



Wired remote control  
weekly timer

PC-ARFP1E