PANASONIC VENTILATION SOLUTIONS

Panasonic ventilation solutions for maximum savings and easy integration.

AHU Kit connects PACi outdoor units to Air Handling Units system

Heat exchanger, Fan & Fan motor to be mounted in AHU Kit shall be provided in the field.
AHU connection Kit (field supplied) AHU Kit system. (Contents of kit: Control for PCB, expansion valve, sensors).
Application: Hotels, offices, server rooms or all large buildings where air quality control such as humidity control and fresh air and is needed.
AHU Kit combine air conditioning and fresh air in just one solution.
The Panasonic AHU Kits offer a wealth of connectivity possibilities so can be easily integrated into many systems.
Application: Hotels, offices, server rooms or all large buildings where air quality control such as humidity control and fresh air and is needed.
Besides the advantages in terms of indoor air quality, air conditioning offers also an energy saving potential. For example, while uncontrolled ventilation through open windows leads to large amounts of heat being lost to the outside during the heating season or gained from the outside during the cooling season, air conditioning systems provide possibilities to utilize the extra "free" energy in heat recovery modules so that overall operating costs will be reduced.
The larger the area of the comfort range, the better the energy saving opportunities.

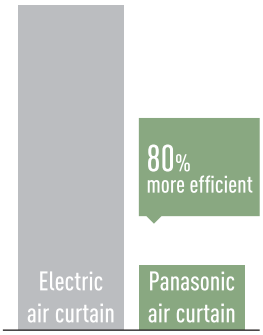
Air Curtain with DX Coil

Highly efficient heating effect

The combined air stream, which has a desirable low air current induction factor (mixing factor), can carry the selected initial temperature effect over long distances, and will reach the floor area while still at room temperature. This is necessary to avoid cooling down the interior spaces.

The Panasonic range of air curtains is designed for smooth operation and efficient performance. Air curtains produce a continuous stream of air blown from the top to the bottom of an open doorway and create a barrier that people and products can flow across, but air can't. Designed to improve energy efficiency, minimise heat loss from a building, and to allow retailers to keep doors open to encourage customers, our Air Curtains are suitable for connection to both VRF and PACi Systems.

Heating capacity comparison: Electrical air curtain / Panasonic air curtain



* With the U-100PE1E5A on the PAW-20PAIRC-MS. Calculation method: Taking as consideration SCOP of the Panasonic combination of 6.0. If 100 is the energy needed for a air curtain, Panasonic Air curtain will need 1/(1-6)*100=20.

Electric Air Curtain

Air curtains can help reduce whole building heating or cooling costs by helping to stop heat escaping the building or keeping cooled air in. Panasonic offers two sizes - 900mm and 1200mm electric air curtains. Ideal for separating areas and energy saving.

Technical focus

- 2 sizes: 900mm and 1.200mm
- Powerful air flow (10 m/s)
- Very low noise, only 42 dB

Comfort

- Easy redirection of airflow by means of the manual deflector

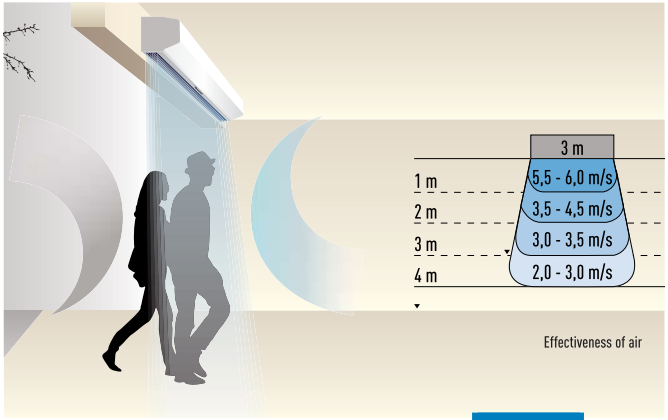
Ease of use

- Speed selector (high and low) on the unit itself

Easy installation and maintenance

- Simple installation
- Compact dimensions improve installation and positioning in any space

			FY-10ESPNAH	FY-10ELPNAH
Width			900	1.200
Watts	Hi	W	71,5	96
	Lo	W	61,5	74
Current	Hi	A	0,40	0,54
	Lo	A	0,29	0,35
Air speed	Hi	m/s	13,0	13,1
	Lo	m/s	11,1	11,0
Air volume	Hi	m^3/min	12,5	16,7
	Lo	m^3/min	10,5	13,8
Noise lever	Hi	dB(A)	46	46
	Lo	dB(A)	42	41
Weight		kg	11	14

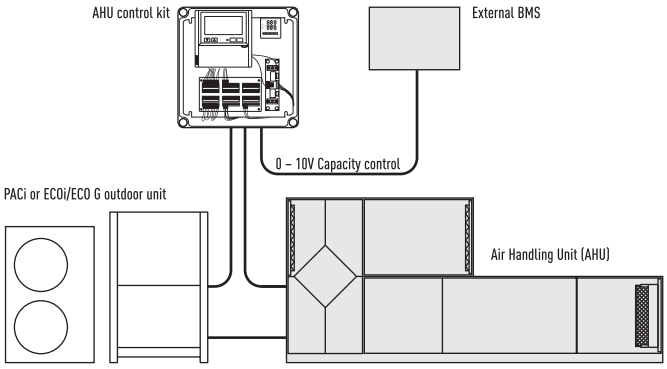


AIR HANDLING UNIT KIT 10-25kW FOR PACi

Panasonic AHU Kit, 10-25kW connected to PACi outdoor unit

The new Air Handling Unit Kit has been developed to better meet customer demand: IP 65 Box in order to be installed outside, 0-10V demand control* and easy control by BMS

* Only available with Elite PACi, up to from 6kW to 14kW.



Demand control on the outdoor unit managed by external 0–10 V signal.

Control option 1: PAW-280PAH2L
- The system's control is simple: control of actual suction temperature vs. set point
- Control works in the same way as that of any indoor unit
- Fan signal issued by the PCB (OFF while defrosting, for instance)

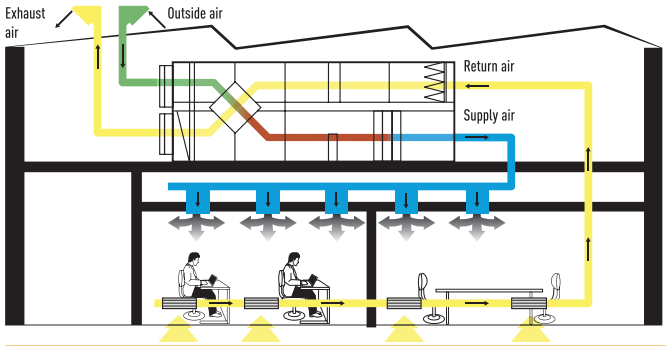
Control option 2: PAW-280PAH2
- System control by probe located at air intake. Sensor works as a 0–10V control thermostat which manages the set point temperature. Control to prevent cold draughts.
- All signals as per standard

Control option 3: PAW-280PAH2
- System control by external environment probe. Sensor works as a 0–10V control thermostat which manages the set point temperature. Enhances efficiency by adjusting capacity to the ambient temperature and enhances comfort as well.
- All signals as per standard

Control option 4: PAW-280PAH2
- System control by a 0–10V control working from an external BMS that manages the set point for the temperature or the capacity. Enhances efficiency by adjusting capacity to the ambient temperature and enhances comfort as well.
- All signals as per standard

Main components of mechanical ventilation systems

The main components of a mechanical ventilation system are the following: Air Handling Unit (AHU), air ducts and air distribution elements.



0-10V control

With the 0-10 v demand control the capacity of the outdoor unit can be controlled by 20 steps.

With the included resistance. 0-10V control scheme with 10V= maximum capacity

Input Voltage* (V)	0 – 0,55	1,1	1,65	2,2	2,8	3,35	3,9	4,45	5,0	5,55	6,1	6,65	7,2	7,8	8,35	8,9	9,45	10,0
Demand (% of nominal current)	Stop[1]	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	No limit / Full capacity[3]

When you remove the resistance. 0-10V control scheme with 10V= Thermo-Off

Input Voltage* (V)	0 – 0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0	8,5	9,0	9,5 – 10,0
Demand (% of nominal current)	Stop[1]	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	No limit[2]	Thermo-Off[3]

* If a voltage range (0 – 0,5 or 9,5 – 10.0V) is indicated, the applied voltage must be within the given limits.
However, if a single value (e.g. 1,0V) is indicated, the applied voltage must be within +/–0,1V of the given value to achieve the assigned demand setting.
Examples: "Stop" can be achieved with any analogue input value greater than 0V and less than or equal to 0.5 V; 40% demand can be achieved with any analogue input value greater than or equal to 0,9V and less than or equal to 1,1V etc.
1) Stop: AHU system / indoor unit is completely switched off.
2) No Limit: No restrictions applied by BMS to AHU system / indoor unit performance (equivalent to "full-load operation" of AHU system / indoor unit.
3) Thermo-Off: No cooling / heating operation (compressor is switched off; however, the fans may still be operating). For example, forced Thermostat-Off mode can be used for free cooling.

Optional parts: Following functions are available by using different control accessories:

CZ-RTC4 Timer remote controller
- Operation-ON/OFF
- Mode select
- Temperature setting

* Fan operation signal can be taken from the PCB.

CZ-CAPBC2 Mini seri-para I/O unit (advanced version only)
- Easy integration in external AHU control systems and BMS
- Demand control: 40 to 115 % (5 % steps) of nominal current by 0–10 V input signal*
- Target temperature setting by 0–10 V or 0–140 Ω input signal*
- Room supply air temperature output by 4–20 mA signal
- Mode select or/and ON/OFF control
- Fan operation control
- Operation status output/ Alarm output
- Thermostat ON/OFF control

* Demand control by external BMS cannot be combined with the demand control or target temperature setting accomplished by the thermostat. However, if simultaneous demand control and target temperature setting is needed, this can only be achieved by using a second (optional) CZ-CAPBC2 interface.

PAW-OCT, DC12 V outlet. OPTION terminal
- Output signal= Cooling/Heating/Fan status
- Defrost
- Thermostat-ON

CZ-T10 terminal / PAW-T10 PCB to connect to T10 connector
- A Dry contact PCB has been developed to easily control the unit
- Input signal operation ON/OFF
- Remote control prohibition
- Output signal Operation ON status maximum 230 V 5 A (NO/NC)
- Output signal alarm status max. 230 V 5 A (NO/NC)
- Alarm output (by DC12V)
- Additional available contacts:
  - External humidifier control (ON/OFF) 230 VAC 3 A
  - External fan control (ON/OFF) 12V DC
  - External filter status signal potential free
  - External float switch signal potential free
  - External leakage detection sensor or TH. OFF contact potential free (possible usage for external blow out temperature control)

AHU Kit connects PACi outdoor units to Air Handling Units system

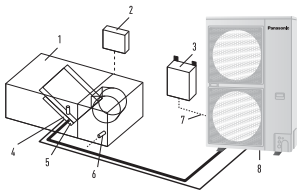
The Panasonic AHU Kits offer a wealth of connectivity possibilities so can be easily integrated into many systems.
Application: Hotels, offices, server rooms or all large buildings where air quality control such as humidity control and fresh air and is needed.

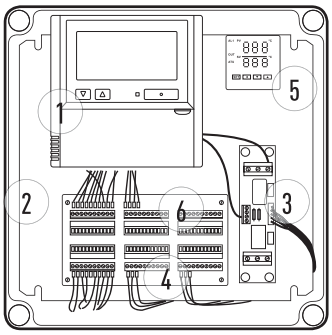
3 types of AHU Kit: Deluxe, Medium and Light

Model Code	IP 65	0-10V demand control*	Outdoor temperature shift compensation. Cold draft prevention
PAW-280PAH2	Yes	Yes	Yes
PAW-280PAH2M	Yes	Yes	No
PAW-280PAH2L	Yes	No	No

* With CZ-CAPBC2.

System & regulations. System overview
1. AHU Kit equipment (Field supplied)
2. AHU Kit system controller (Field supplied)
3. AHU Kit controller box (with control PCB)
4. Thermistor for Gas pipe (E2)
5. Thermistor for Liquid pipe (E1)
6. Thermistor for Suction air
7. Inter-unit wiring
8. Outdoor unit





1. Remote control CZ-RTC4
2. New plastic IP 65 Box
3. PAW-T10 PCB for dry contact
4. 0-10V demand control PCB
5. Intelligent thermostat for:
   - Cold draft prevention
   - Outdoor temperature shift compensation
6. Terminal base for sensors and power supply

AHU Connection Kit

PCB, Power trans, Terminal block

Thermistor x2 (Refrigerant: E1, E2)

Thermistor (Air: TA; 1 sensor)

Standard wired remote controller.

Optional Controller.
Timer remote controller
CZ-RTC4
Compatible with Econavi

AHU PACi Elite	Cooling capacity	Heating capacity	Air volume	Dimensions	Piping length	Elevation difference (in/out)
	Nominal	Nominal	High / Low	H x B x D	Min / Max	Min / Max
	kW	kW	m³/min	mm	m	m
PAW-280PAH2	6 / 25	7 / 28	8,0 / 74,0	404 x 425 x 78	5 / 30*	10
PAW-280PAH2+PAW-280PAH2	50,0	56,0	38,0 / 148,0	404 x 425 x 78	5 / 30*	10

* For U-200PE2E8A and U-250PE2E8A.

AHU connection kit / System combination			Air volume	Dimensions	Piping length	Elevation difference (in/out)	Piping connections	
			High / Low	H x B x D	Min / Max	Min / Max	Liquid pipe	Gas pipe
Capacity kW	Outdoor unit	AHU	m³/min	mm	m	m	Tum (mm)	Tum (mm)
5,0	U-50PE2E5A	PAW-280PAH2	8,0 / 13,0	404 x 425 x 78	5 / 30	10	1/4 (6,35)	1/2 (12,7)
6,0	U-60PE2E5A	PAW-280PAH2	9,0 / 16,0	404 x 425 x 78	5 / 30	10	3/8 (9,62)	5/8 (15,88)
7,5	U-71PE1E5A/U-71PE1E8A	PAW-280PAH2	12,0 / 25,0	404 x 425 x 78	5 / 30	10	3/8 (9,62)	5/8 (15,88)
10,0	U-100PE1E5A/U-100PE1E8A	PAW-280PAH2	14,0 / 33,0	404 x 425 x 78	5 / 30	10	3/8 (9,62)	5/8 (15,88)
12,5	U-125PE1E8A	PAW-280PAH2	19,0 / 35,0	404 x 425 x 78	5 / 30	10	3/8 (9,62)	5/8 (15,88)
14,0	U-140PE1E8A	PAW-280PAH2	19,0 / 35,0	404 x 425 x 78	5 / 30	10	3/8 (9,62)	5/8 (15,88)
20,0	U-200PE2E8A	PAW-280PAH2	28,0 / 66,0	404 x 425 x 78	5 / 70	10	3/8 (9,62)	1 (25,4)
25,0	U-250PE2E8A	PAW-280PAH2	38,0 / 74,0	404 x 425 x 78	5 / 70	10	1/2 (12,7)	1 (25,4)

	Air flow rate m³/min																																				
Outdoor Unit	8,00	8,33	9,00	10,00	10,83	11,67	12,00	13,00	13,33	14,00	15,00	16,00	16,67	18,00	19,00	20,00	25,00	26,67	28,00	30,00	33,00	35,00	36,00	38,00	40,00	43,33	45,00	50,00	58,33	66,00	66,67	71,67	74,00	75,00	83,33	90,00
U-50PE2E5A	■	■	■	■	■	■	■	■	■	■	■	■	■	■																						
U-60PE2E5A			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																		
U-71PE1E5A/8A							■	■	■	■	■	■	■	■	■	■	■	■	■	■																
U-100PE1E5A/8A										■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■										
U-125PE1E5A/8A															■	■	■	■	■	■	■	■	■	■	■	■	■									
U-140PE1E5A/8A															■	■	■	■	■	■	■	■	■	■	■	■	■	■								
U-200PE2E8A																			■	■	■	■	■	■	■	■	■	■	■	■	■	■				
U-250PE2E8A																								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

■ Standard condition in cooling mode intake air temperature. Rating Conditions: Cooling Indoor 27°C DB / 19°C WB.

■ Maximum condition in cooling mode intake air restriction temperature Min18°C DB / 13°C WB Max 32°C DB / 23°C WB

AIR CURTAIN WITH DX COIL, CONNECTED TO THE VRF OR PACi SYSTEMS

High efficiency air curtain connected to your VRF installation. EC Fan motor for a smooth operation and efficient performance. 2 types of air flow available: Jet-Flow and Standard. Easy cleaning and servicing.

Highly efficient heating effect

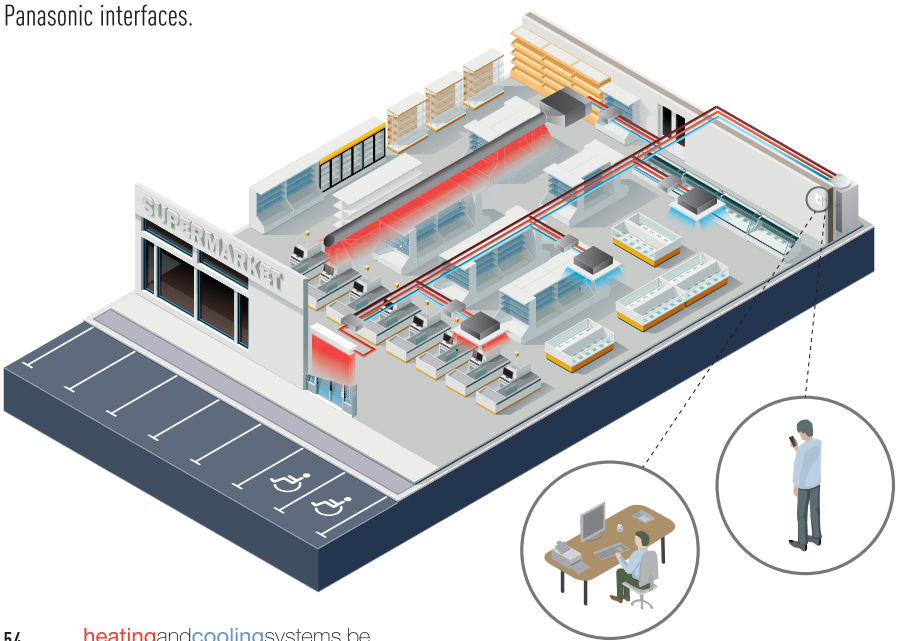
The combined air stream, which has a desirable low air current induction factor (mixing factor), can carry the selected initial temperature effect over long distances, and will reach the floor area while still at room temperature. This is necessary to avoid cooling down the interior spaces.
Available in different lengths to suit requirements between 1 and 2,5 m, both air curtains have outlet grilles that can be adjusted to five different positions. The jet flow model can be installed up to a height of 3,5 m with the standard model up to 3,0 m. The outlet grilles can be easily adjusted into five positions to suit different installations requirements and the air filter can be accessed without the need for specialist tools.

- Super-efficient with new EC fan motor (40% lower running costs compared to a standard AC fan motor)
- Easy Cleaning and Servicing
- Can be connected to either Panasonic VRF or PACi systems
- Built-in drain for cooling operation
- Standard and Jet Flow air curtains can be controlled via Panasonic's range of remote internet controls

The new standard and jet-flow models are ideal for connection to a ECOi or PACi system. With simple "plug and play" installation, both are fitted with an EC fan motor for a smooth operation and efficient performance. This new fan guarantees 40% lower running cost than with a standard AC fan motor. With air curtains often running for 12 hours a day as a minimum, this can lead to considerable savings.

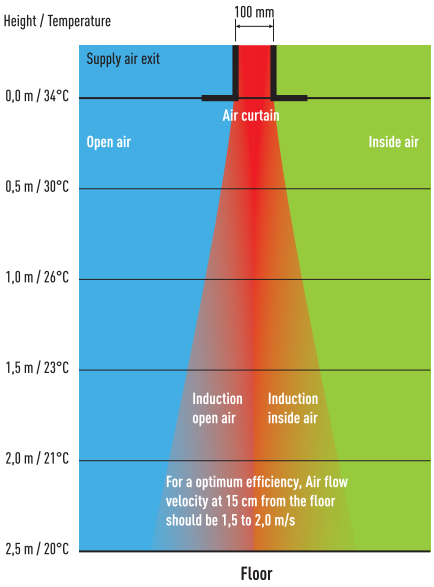
Internet Control

An app added to your tablet or smartphone or via the Internet allows you to control and manage the system remotely. There is also the option to integrate into existing BMS systems by using other Panasonic interfaces.



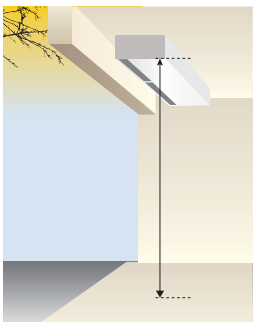
Intelligent Operation

Our air curtains combine airflow and heating / cooling technology to ensure optimum comfort and energy efficiency whilst also creating an effective barrier between indoor and outdoor environments. Design and installation is key to achieving the correct height / temperature settings to achieve optimum performance. Our air curtains are designed to answer the demands of the retail, commercial and industrial markets.



How does it work?

Stale air from the room is taken in and ejected near the door. This creates a 'roll of air' that shields the door area, mixing with the colder incoming air. It then turns away from the door, back into the room and toward the intake screen, where it is partly drawn in again. This flow of air helps to create a barrier for heat loss yet at the same time refreshes room air



Max installation high
Jet-Flow: 3,5 m
Standard flow: 3,0 m

TEKADOOR®

Technical focus

- Save up to 40% Energy Costs by use of the integrated EC Fan Technology (Higher efficiency than conventional AC fan, soft start and longer motor duration)
- 3 Lengths of Air Curtains Jet-Flow, from 1,0 to 2,0 m and 2 lengths of Air Curtains Standard, 1,0 and 2,0 m
- Installation Height up to 3,5 m (Jet-Flow) and 3,0 m (Standard)
- Outlet Grilles can be adjusted in five positions, to suite different Indoor and installation requirements (Jet-Flow)
- Control with Panasonic Remote Control systems (optional)
- Direct integration to BMS by optional Panasonic Interfaces
- Drain included for cooling operation

Features

Comfort

- Easy redirection of Airflow by means of manual deflector (Jet-Flow)

Ease of use

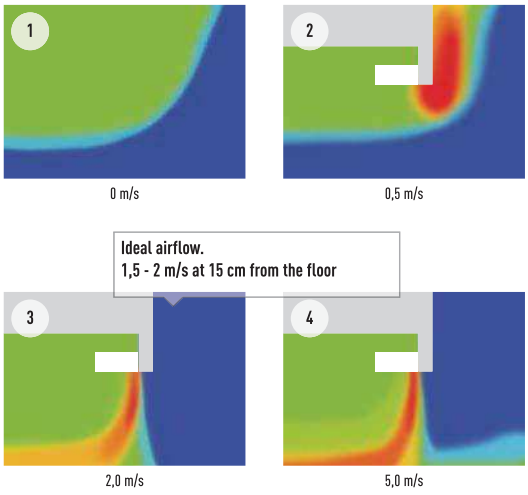
- Speed selector (high and low) on the unit itself

Easy installation and maintenance

- Easy installation
- Compact dimensions improve installation and positioning (Jet-Flow)
- Easy cleaning of grid without opening of the unit

Optimised airflow velocity

1. Energy losses, no air curtain installed
2. Too low velocity air curtain – air curtain not efficient
3. Optimum results with the Tekadoor air curtain connected to Panasonic VRF
4. Too high velocity air curtain – considerable turbulence, energy lost to the outside, air curtain not efficient



HP			4 HP	6 HP	8 HP	4 HP	8 HP
Air Curtain			**PAW-10PAIRC-MJ**	**PAW-15PAIRC-MJ**	**PAW-20PAIRC-MJ**	**PAW-10PAIRC-MS**	**PAW-20PAIRC-MS**
Air flow type			**Jet-Flow**			**Standard**	
Air Flow Length (A)		m	1,0	1,5	2,0	1,0	2,0
Air volume	Hi / Med / Lo	m^3/min	30,00 / 25,00 / 20,00	45,00 / 38,33 / 31,67	60,00 / 50,00 / 41,67	30,00 / 25,00 / 20,00	45,00 / 38,33 / 31,67
Cooling capacity nominal[1]		kW	9,2	17,5	23,1	9,2	17,5
Heating capacity with air in 20°C, air out 40°C		kW	11,9	17,9	23,9	11,9	17,9
Heating capacity with air in 20°C, air out 35°C		kW	8,9	13,4	17,9	8,9	13,4
Heating capacity with air in 20°C, air out 30°C		kW	5,9	8,9	11,9	5,9	8,9
Max installation height	Good / Normal / Bad condition	m	3,5 / 3,1 / 2,7	3,5 / 3,1 / 2,7	3,5 / 3,1 / 2,7	3,0 / 2,7 / 2,4	3,0 / 2,7 / 2,4
Refrigerant			R410A	R410A	R410A	R410A	R410A
Liquid pipe / Gas pipe		Inch (mm)	3/8 (9,52) / 5/8 (15,88)	3/8 (9,52) / 3/4 (19,05)	3/8 (9,52) / 7/8 (22,22)	3/8 (9,52) / 5/8 (15,88)	3/8 (9,52) / 7/8 (22,22)
Fan			230V / 50Hz / 1 / N / PE	230V / 50Hz / 1 / N / PE	230V / 50Hz / 1 / N / PE	230V / 50Hz / 1 / N / PE	230V / 50Hz / 1 / N / PE
Fan type			EC	EC	EC	EC	EC
Currency	Hi / Med / Lo	A	2,1 / 0,8 / 0,3	2,8 / 1,1 / 0,4	4,2 / 1,6 / 0,6	2,1 / 0,8 / 0,3	4,2 / 1,6 / 0,6
Electrical Consumption	Hi / Med / Lo	kW	0,44 / 0,17 / 0,06	0,59 / 0,23 / 0,08	0,89 / 0,34 / 0,12	0,44 / 0,17 / 0,06	0,89 / 0,34 / 0,12
Protecting Fuse		A	M16A	M16A	M16A	M16A	M16A
Noise		dB(A)	40-55	40-56	40-57	40-55	40-57
Dimensions / Weight	W x H x D	mm / kg	1.210 x 260 x 590 / 70	1.710 x 260 x 590 / 100	2.210 x 260 x 590 / 138	1.210 x 260 x 490 / 60	2.210 x 260 x 490 / 128

Outdoor combination with PACi Elite unit 40°C	U-100PE1E5A/8A	U-140PE1E5A/8A	U-200PE2E8A	U-100PE1E5A/8A	U-140PE1E5A/8A
Outdoor combination with PACi Standard unit 40°C	U-100PEY1E5/8	–	–	U-100PEY1E5/8	–
Outdoor combination with PACi Elite unit 35°C	U-71PE1E5A/8A	U-100PE1E5A/8A	U-140PE1E5A/8A	U-71PE1E5A/8A	U-100PE1E5A/8A
Outdoor combination with PACi Standard unit 35°C	U-100PEY1E5/8	U-100PEY1E5/8	–	U-100PEY1E5/8	U-100PEY1E5/8
Outdoor combination with PACi Elite unit 30°C	U-50PE2E5A	U-100PE1E5A/8A	U-100PE1E5A/8A	U-50PE2E5A	U-100PE1E5A/8A
Outdoor combination with PACi Standard unit 30°C	U-60PEY2E5	U-100PEY1E5/8	U-100PEY1E5/8	U-60PEY2E5	U-100PEY1E5/8

All combinations under rated conditions: Heating Outdoor +7°C DB/+6°C WB Indoor +20°C DB. In case of lower outdoor temperatures a higher capacity outdoor unit model may be necessary.
1) Rated Conditions Cooling Outdoor +35°C DB Indoor +27°C DB/+19°C WB, Discharge temperature [3] 16°C.

GREEN TECH

BMS CONNECTIVITY