



# R290 INVERTER POOL HEAT PUMP FAMILY

**ALL-YEAR-ROUND RUNNING** 



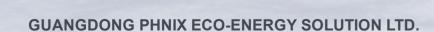












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\*ACOP: ALL-YEAR-ROUND RUNNING COMPREHENSIVE COP

### **R290 Refrigerant**

R290 refrigerant has an extremely low GWP value (GWP=3), showing a minimal impact on the global-warming effect and playing a positive role in going carbon-neutral.

#### The Feature of R290 Refrigerant



Stable running at -25°C ambient temperature.



The max outlet water temperature can be up to 75°C.



Stable operation: R290 operates stably at low ambient temperature, and can reach the same level of R32 EVI product at ultra-low temperature.



Strong cooling capacity: The cooling capacity of R290 is better than that of R32, which is 103%-105% of the cooling capacity of the same R32 product.



Small refrigerant charge: For heat pump with the same capacity, the refrigerant charge of R290 is 20% less than that of R32 refrigerant and 30% less than that of R410A refrigerant.

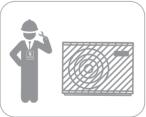


#### **Protective Measures for R290**









#### **1** Storage

- Warehouses must be ventilated
- R290 leak alarm system must be installed
- Fire and explosion hazard signs must be affixed
- Appropriate fire extinguishers must be equipped

#### **2** Transportation

- Fire extinguishers are required for transport equipment
- Avoid sparks, smoking and other sources of ignition
- Vertical transport to prevent dumping and collision

#### 3 Installation

- Professional staff is required for installation
- Must be installed outdoors
- Keep away from fire

#### 4 After-sales Service

 Must have professional staff to carry out after-sales maintenance

#### **Production and Manufacturing Requirements for R290 Refrigerant**

#### **1** Production Processes (Refrigerant Charging)





Employees must pass the qualification assessment for key positions and work with the certificates.



Check the effectiveness of refrigerant charging equipment and ventilation facilities at a fixed time every day.



Set up static elimination facilities to discharge static electricity from the human body before entering the work area.



Before charging R290 refrigerant, make sure that the ventilation and exhaust system and combustible gas detector in the charging area are turned on, and that each air outlet is ventilated smoothly.

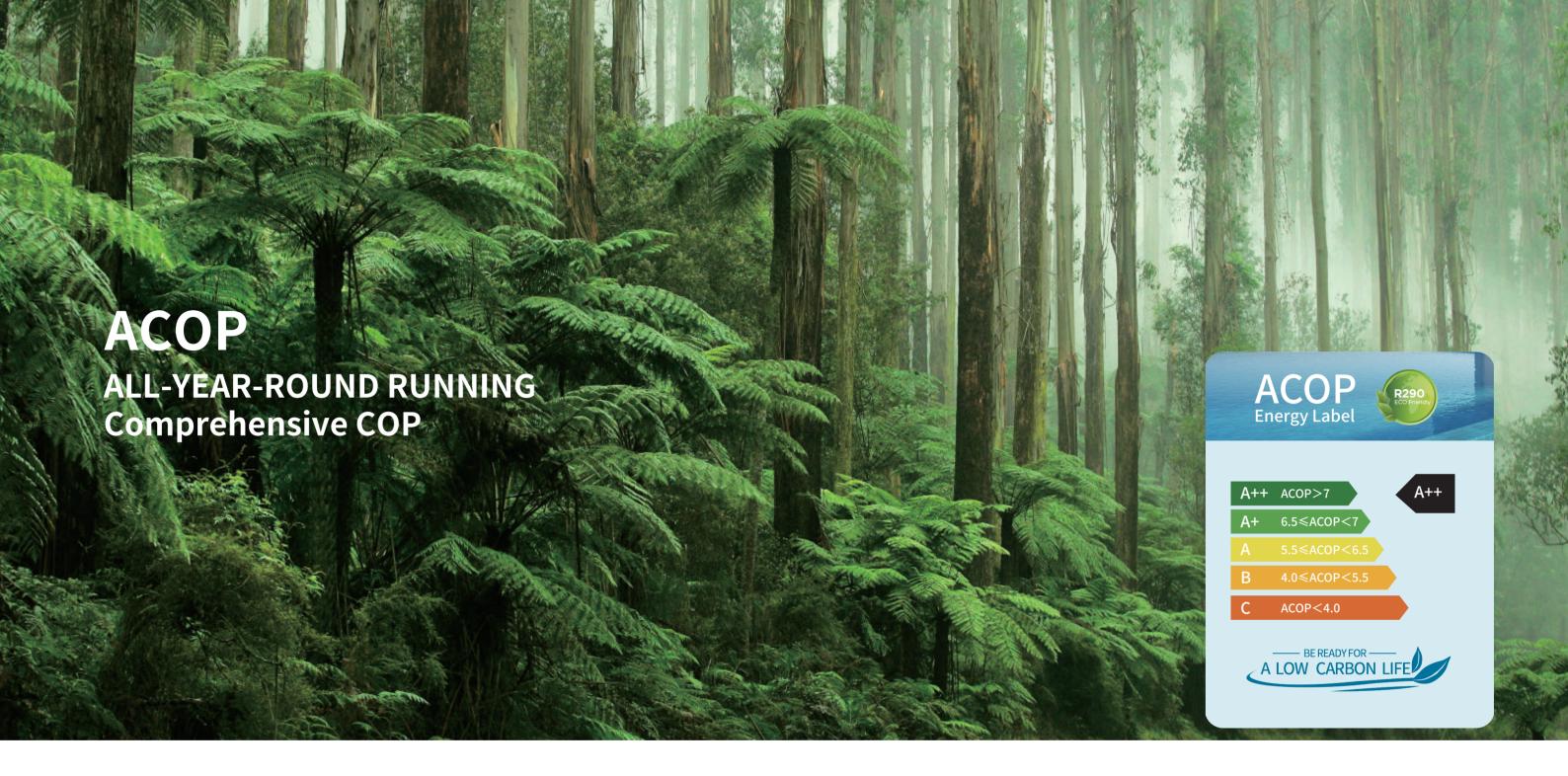


An obvious danger source identification line must be drawn within a radius of 3m around the charging machine placement area and the refrigerant charging area. It is forbidden to use open flames, pyrotechnics and high-temperature items (such as hot-melt welding guns, etc.) within this range, and it is not allowed to use a grinder for grinding.

### **2** Laboratory Testing

Based on the flammability characteristics of R290 gas, PHNIX built up several anti-explosion labs to ensure safer and higher-quality R290 heat pumps. The lab is specially designed with multiple complicated devices, including explosion-proof fans, circuits and other specific anti-explosion equipments, ventilation device, R290 concentration detection probes and automatic alarm systems. In addition, preventing static electricity is one of the important measures to ensure safety. Static electricity removal devices are installed and anti-static rubber is laid in the laboratory and production lines, where employees need to eliminate static electricity before entering. In particular, experimenters should wear anti-static clothing and shoes.





PHNIX has always been committed to the concept of green environmental protection, and actively shoulders the responsibility of energy conservation and environmental protection. With both low carbon emissions and low GWP, R290 is recognized as the most potential refrigerant in the industry, and its application is conducive to achieving the goal of global carbon neutrality.

The value of COP is based on the ambient temperature at -25°C, -15°C, 15°C, and 27°C, ensuring the unit can run efficiently all year round.

With the application of the most cutting-edgy technology and modern design, the R290 inverter pool heat pump undoubtedly meet stringent requirements for efficiency, stability and quietness. Both the R290 eco-friendly refrigerant and the inverter technology has contributed to i-GreenLine Ultra range awarded the A++ label. The top energy rating A++ means that the unit is energy-efficient and can greatly reduce energy cost for users.



## **Smart Touch Display**

PHNIX endeavors to provide users with an easy and smart control experience. Different displays are developed for user's choices.

## **Smart Display Easily to Reach Multiple Functions**

- Silent mode
- Boost mode
- Start up to be PV-READY
- Start up flowmeter
- Running status curve
- Failure list

## **i**-GreenLine Ultra

As one of the leading heat pump manufacturers, PHNIX always adheres to the philosophy of low carbon and environmental protection. Through solid and steady steps, PHNIX will pursue an orderly phase-down of traditional refrigerants in the course of finding reliable substitutions in a new and eco-friendly refrigerant. Finally, PHNIX developed the greenest and the most competitive i-GreenLine Ultra R290 full-inverter pool heat pump after persistent efforts.

16.0 ~ 8.1 COP





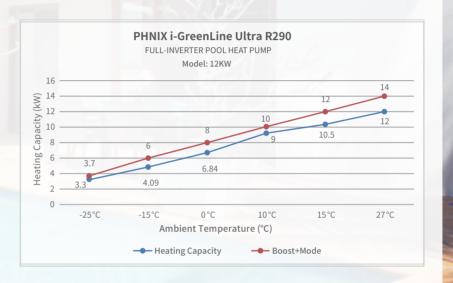






## **Spring Season**

i-GreenLine Ultra R290 full-inverter pool heat pump adopts advanced and self-developed full inverter technology. It is also worth noting that R290 pool heat pump (12kw) can achieve manual frequency adjustment based on personal needs and the unit has no heating capacity recession from 27°C to 15°C. Meanwhile, the user can turn on "Boost" mode, maintaining a strong and stable heating capacity all year round.



## **Summer Season**

i-GreenLine Ultra R290 full-inverter pool heat pump adopts self-developed driver boards, the unit is highlighted with a central control system as an RS485 port and Modbus protocol is designed for communications in every unit. Furthermore, all machines have PV-Ready function. Ultra R290 pool heat pump can connect with Photovoltaic (PV) system and directly use the electricity generated during operation. It can achieve 100% free running when solar energy is the strongest in summer.



### **Smart Control**

PHNIX endeavors to provide users with easy and smart control experience. IoT Cloud Server for your service. PHNIX commits to offering the priority and uniqueness for UI design of the display with the most advanced remote control technology.







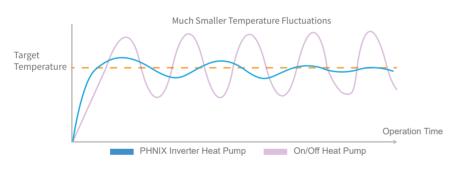








The application of an improved compressor and inverter technology synergies is a crucial element for the unit to be a top performer, which can raise the energy efficiency and provide homeowners with greater cost savings.



Fast Heating

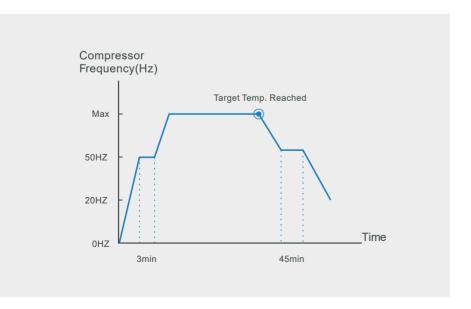
Energy Saving

• Precise Temperature Control

High COP

#### **Stepless Control**

 Compressor is self-controlled with 5Hz/Step under operating range.





### PHNIX Self-developed Driver Board



Full Model Range: PHNIX swimming pool heat pump has a full model range covering from domestic to commercial applications. In China market, inverter swimming pool heat pumps have been successfully applied on commercial occasions.



Remote Software Update: If there is any error happens in the software, PHNIX can provide the remote service by updating the software online. When the software has a new version with functions upgraded, as long as PHNIX gets users' permission, the software update can be done remotely.



Self-designed Driver Board Control Logic: To ensure more stable operation and longer service life, PHNIX's swimming pool heat pump products use its self-designed driver board with unique control logic which enables more suitable running conditions for its compressors'.



Centralized Control: Each PHNIX heat pump uses the power board and current sampling module with the most innovative technology.



Self-designed Structure: The unique structure of each PHNIX heat pump can perfectly match with the heat pump itself and is convenient for its after-sales service as well.





### **Noise Reduction Technology**

PHNIX dedicates to creating a super quiet running environment for users. R290 pool heat pump adopts multiple noise reduction technologies, every product has been repeatedly tested and optimized.





#### **Primary Sound Reduction:**

Soundproof sponge around the compressor.

#### **Second Sound Reduction:**

Sealed compressor chamber

#### **Third Sound Reduction:**

Soundproof sponge around the fan chamber.

## **3**-GreenLine Ultra























## **Specification**

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Model	PASRW030-Ultra	PASRW040-Ultra	PASRW050-Ultra	PASRW060-Ultra	PASRW050S-Ultra	PASRW060S-Ultra	PASRW070S-Ult		
Operating Air Temp. (°C)				-25~43					
Heating Temp. Range(°C)				10~45					
Refrigerant				R290					
Performance (Heating)									
ACOP*	7.4	7.2	7.1	7.2	7.1	7.2	7.2		
Air 27°C/Water 26°C/Humid. 80%									
Heating Capacity(kW)Boost Mode	14.00	18.00	22.00	28.60	22.00	28.60	35.00		
Heating Capacity(kW)	4.5-12.0	6.8-16.0	8.5-20.0	8.7-24.0	8.5-20.0	8.7-24.0	9.5-32.4		
COP	18.0-8.0	18.0-7.8	18.0-7.5	18.0-7.8	18.0-7.5	18.0-7.8	18.0-7.5		
Air 15°C/Water 26°C/Humid. 70%									
Heating Capacity(kW) Boost Mode	12.00	16.00	20.00	24.00	20.00	24.00	32.40		
Heating Capacity(kW)	3.5-10.5	5.0-13.0	5.9-18.4	6.2-22.0	5.9-18.4	6.2-22.0	6.2-26.2		
СОР	7.0-6.0	6.8-5.5	6.8-5.3	7.0-5.3	6.8-5.3	7.0-5.3	7.0-5.5		
Air 10°C/Water 26°C/Humid. 64%									
Heating Capacity(kW)	2.50-9.00	18.00	22.00	28.60	22.00	28.60	35.00		
COP	5.5-4.8	5.3-4.6	5.3-4.6	5.3-4.6	5.3-4.6	5.3-4.6	5.3-4.8		
Air 0°C/Water 26°C/Humid. 64%									
Heating Capacity(kW)	1.90-6.84	2.20-8.00	4.50-10.60	4.60-13.50	4.50-10.60	4.60-13.50	4.70-15.60		
COP	3.5-3.0	3.3-2.9	3.4-2.9	3.4-2.9	3.4-2.9	3.4-2.9	3.4-3.0		
Air -15°C/Water 26°C/Humid. 64%									
Heating Capacity(kW)	1.30-4.09	1.80-5.30	2.40-6.30	2.40-8.50	2.40-6.30	2.40-8.50	2.60-9.80		
COP	2.3-2.1	2.1-2.0	2.3-2.2	2.4-2.2	2.3-2.2	2.4-2.2	2.4-2.2		
Air -25°C/Water 26°C/Humid. 64%									
Heating Capacity(kW)	1.80-3.30	1.50-4.50	1.90-5.30	2.00-6.10	1.90-5.30	2.00-6.10	2.23-6.85		
COP	1.8-1.7	1.8-1.7	1.8-1.7	1.8-1.7	1.8-1.7	1.8-1.7	1.8-1.7		
Power Supply	230V~/50Hz				380-400V/3N~/50Hz				
Fan Quantity	1	1	1	2	1	2	2		
Fan Speed (RPM)	300-600	300-550	300-600	300-500	300-600	300-500	300-600		
Sound Pressure 1m dB(A)	34-43.5	34-45	35-46	37-48	35-46	37-48	39-50		
Sound Pressure 10m dB(A)	14-23.5	14-25	14-26	17-28	14-26	17-28	19-30		
Water Connection (mm)				50					
Water Flow Volume (m3/h)	4.5	6.0	7.5	9.0	7.5	9.0	11.0		
Water Pressure Drop (max) kPa	6	7	8	10	8	10	12		
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<sup>\*</sup>ACOP: ALL-YEAR-ROUND RUNNING COMPREHENSIVE COP

The above data is for reference only; specific data is subject to the product nameplate.

## **3**-GreenLine X

16.0 ~ 7.0 COP







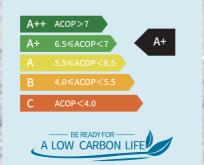












## **Specification**

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Model	PASRW 020-P-BP14	PASRW 030-P-BP14	PASRW 040-P-BP14	PASRW 050-P-BP14	PASRW 060-P-BP14	PASRW 050S-P-BP14	PASRW 060S-P-BP14	PASRW 070S-P-BP14
Operating Air Temp. (°C)				-2	5~43			
Max Heating Temperature(°C)					45			
Refrigerant				R	290			
Performance (Heating)								
ACOP*	6.6	6.6	6.5	6.5	6.7	6.5	6.7	6.5
Air 27°C/Water 26°C/Humid. 80%								
Heating Capacity(kW)Boost Mode	11.00	14.00	18.00	22.00	26.00	22.00	26.00	30.00
Heating Capacity(kW)	2.8-9	3.2-12.0	5.25-16	6.80-20	7.60-24	6.80-20	7.60-24	8.20-28.0
COP	16-7.5	16-7.5	16-7.3	16-7.3	16-7.3	16-7.3	16-7.3	16-7.0
Air 15°C/Water 26°C/Humid. 70%								
Heating Capacity(kW) Boost Mode	8.00	11.00	14.00	17.50	21.00	17.50	21.00	24.00
Heating Capacity(kW)	2.1-7.2	2.5-9.8	3.89-13.0	4.97-16.0	5.16-19.1	4.97-16.01	5.16-19.1	5.32-22.6
СОР	6.8.0~5.2	6.8.0~5.2	6.5-5.1	6.5-5.0	6.8-5.1	6.5-5.0	6.8-5.1	6.5-5.0
Air 10°C/Water 26°C/Humid. 64%								
Heating Capacity(kW)	1.6-6.1	1.9-8.2	3.52-11.2	4.55-13.4	4.82-17.0	4.55-13.4	4.82-17.0	4.96-19.8
СОР	5.25-4.7	5.25-4.7	5.1-4.5	5.1-4.4	5.2-4.4	5.1-4.4	5.2-4.4	5.2-4.5
Air 0°C/Water 26°C/Humid. 64%								
Heating Capacity(kW)	1.3-5.15	1.5~6.22	3.26-8.25	4.02-9.65	4.21-12.3	4.02-9.65	4.21-12.3	4.28-14.2
COP	3.2-2.8	3.2-2.8	3.1-2.7	3.1-2.7	3.4-2.9	3.1-2.7	3.4-2.9	3.0-2.7
Air -15°C/Water 26°C/Humid. 64%				'				
Heating Capacity(kW)	1.0-3.16	1~3.72	1.63~4.95	2.16~5.81	2.26~7.89	2.16~5.81	2.26~7.89	2.39~8.91
СОР	2.1~1.9		2.0~1.8	2.2~2.0		2.2~2.0	2.4~2.2	2.1~1.8
Air -25°C/Water 26°C/Humid. 64%								
Heating Capacity(kW)	0.7~2.43	0.7~3.02	1.36~4.15	1.78~4.92	1.91~5.63	1.78~4.92	1.91~5.63	2.03~6.35
COP	1.6~1.5	1.6~1.5	1.6~1.5	1.7~1.5	1.7~1.6	1.7~1.5	1.7~1.6	1.7~1.5
Technical Data								
Power Supply				380V~3P				
Fan Quantity	1	1	1	1	2	1	2	2
Fan Speed (RPM)	300-700	400-700	400-750	400-800	400-600	400-800	400-600	400-700
Sound Pressure 1m dB(A)	35-44	35-45	36-47	36-50	38-50	36-50	38-50	39-51
Sound Pressure 10m dB(A)	15-23	15-25	16-37	16-30	18-30	16-30	18-30	19-31
Water Connection (mm)					50			
Water Flow Volume (m3/h)	2.5-3.4	4.0-5.1	5-6.9	6.5-8.6	8-10.3	6.5-8.6	8-10.3	9.5-12
Water Pressure Drop (max) kPa	7	8	9	9	11	9	11	12
Net Dimensions L/W/H (mm)	1046*4	50*768	1150*47	70*870	1150*470*1274	1150*470*870	1150*4	70*1274
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\*ACOP: ALL-YEAR-ROUND RUNNING COMPREHENSIVE COP
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## **3**-GreenLine Pro







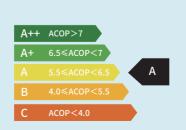














### **Specification**

Model	PASRW015-P-BP15	PASRW020-P-BP15	PASRW030-P-BP15	PASRW040-P-BP15	PASRW050-P-BP15
Operating Air Temp. (°C)			-25~43		
Max Heating Temperature(°C)			45		
Refrigerant			R290		
Performance (Heating)					
ACOP *	6.24	6.24	6.24	6.24	6.24
Air 27°C/Water 26°C/Humid. 80%					
Heating Capacity(kW)Boost Mode	2.8~ 7.0	2.8~ 8.5	3.2~12.0	5.2~16.0	6.8~19.0
Consumed Power (kW)	0.18~1.08	0.18~1.35	0.20~1.94	0.33~2.67	0.43~3.17
COP	16.0~6.5	16.0~6.3	16.0~6.2	16.0~6.0	16.0~6.0
Air 15°C/Water 26°C/Humid. 70%					
Heating Capacity(kW) Boost Mode	2.1~5.4	2.1~6.5	2.5~9.0	3.8~12.0	4.9~14.3
Consumed Power (kW)	0.34~1.20	0.34~1.44	0.40~2.00	0.63~2.72	0.81~3.32
COP	6.2~4.5	6.2~4.5	6.2~4.5	6.0~4.4	6.0~4.3
Air 10°C/Water 26°C/Humid. 64%					
Heating Capacity(kW)	1.6~4.6	1.6~5.6	1.9~7.5	3.5~10	4.5~11.9
Consumed Power (kW)	0.34~1.15	0.34~1.40	0.40~1.87	0.77~2.50	1.00~2.97
COP	4.7~4.0	4.7~4.0	4.7~4.0	4.5~4.0	4.5~4.0
Air 0°C/Water 26°C/Humid. 64%					
Heating Capacity(kW)	1.2~3.5	1.2~4.2	1.4~5.6	3.1~7.5	3.9~8.9
Consumed Power (kW)	0.41~1.34	0.41~1.62	0.48~2.15	1.10~3.00	1.39~3.56
COP	2.9~2.6	2.9~2.6	2.9~2.6	2.8~2.5	2.8~2.5
Air -15°C/Water 26°C/Humid. 64%					
Heating Capacity(kW)	0.9~1.8	0.9~2.1	0.9~2.8	1.5~3.7	2.0~4.4
Consumed Power (kW)	0.47~1.05	0.47~1.23	0.47~1.65	0.78~2.17	1.05~2.58
COP	1.9~1.7	1.9~1.7	1.9~1.7	1.9~1.7	1.9~1.7
Air -25°C/Water 26°C/Humid. 64%					
Heating Capacity(kW)	0.6~1.3	0.6~1.5	0.6~2.0	1.2~2.6	1.6~3.0
Consumed Power (kW)	0.40~1.00	0.40~1.15	0.40~1.54	0.80~2.00	1.06~2.30
COP	1.5~1.3	1.5~1.3	1.5~1.3	1.5~1.3	1.5~1.3
Technical Data					
Power Supply			220~240V~1P		
an Quantity	1	1	1	1	1
an Speed (RPM)	500~850	500~850	500~850	500~850	500~850
Sound Pressure 1m dB(A)	35~48	35~48	35~49	36~51	36~52
Sound Pressure 10m dB(A)	15~28	15~28	15~29	16~32	16~33
Nater Connection (mm)	20				
Water Flow Volume (m3/h)	2.3~3.0	2.8~3.7	φ50 3.9~5.2	5.2~6.9	6.2~8.2
Water Pressure Drop (max) kPa					
water Fressure DIOP (IIIdX) KPd	4	4	4	5	6

The above data is for reference only; specific data is subject to the product nameplate.

## **i**-GreenLine Iron















### **Specification**

Model	PASRW 015-P-BP6II-X	PASRW 020-P-BP6II-X	PASRW 030-P-BP6II-X	PASRW 040-P-BP6II-X	PASRW 050-P-BP6II-X	PASRW 060-P-BP6II-X	PASRW 050S-P-BP6II-X	PASRW 060S-P-BP6II-X	PASRW 070S-P-BP6I		
Advised pool volume(m3)	20-40	30-55	40-70	50-85	60-100	70-115	60-100	70-115	80-130		
Operating Air Temp. (°C)	-25~43										
Max Heating Temperature(°C)					45						
Refrigerant	R290										
Certification	CE										
Function	Heating and Cooling										
Performance (Heating)											
ACOP *	6.28	6.26	6.18	6.28	6.2	6.3	6.2	6.3	6.24		
Air 27°C/Water 26°C/Humid. 80%											
New Capacity	1.82~7.1	2.47~9.5	3.12~13	3.25~17.8	4.55~20	7.8~24	9.88~21	10.0~25	10.1~27.8		
Consumed Power (kW)	0.11~1.09	0.15~1.53	0.19~2.16	0.2~2.87	0.28~3.22	0.48~0.31	0.6~3.39	0.62~3.9	0.62~4.63		
New COP	16.2~6.5	16.1~6.2	16.~6.0	16.2~6.2	16.1~6.2	16.2~6.4	16.2~6.2	16.2~6.4	16.2~6.0		
Air 15°C/Water 26°C/Humid. 70%											
New Capacity	1.32-5.5	1.68~7.0	1.92~9.1	2.76~12.8	3~14.7	5.16~18.2	5.76~15.4	5.88~18.9	6~21.2		
Consumed Power (kW)	0.18~1.07	0.23~1.35	0.27~1.82	0.38~2.46	0.82~3.16	0.71~3.76	0.82~3.16	0.71~3.76	0.85~4.72		
New COP	7.2~5.1	7.1~5.2	7.0~50	7.1~5.2	7.0~50	7.2~5.1	7.0~50	7.2~5.1	7.0~50		
Air10°C/Water 26°C/Humid. 64%	1.2 212							0.1	50		
New Capacity	1.10-4.0	1.40-5.5	1.82-7.2	2.24-9.8	2.91-11.3	3.47-13.7	3.92-11.9	4.03-14.2	4.14-15.9		
onsumed Power (kW)	0.23~1.05	0.31~1.48	0.38~1.89	0.46~2.58	0.60~2.97	0.72~3.84	0.81~3.13	0.84~3.89	0.86~4.42		
lew COP	4.6-3.8	4.5-3.7	4.8-3.8	4.8-3.8	4.8-3.8	4.8-3.8	4.8-3.8	4.8-3.8	4.8-3.8		
Air 0°C/Water 26°C/Humid. 80%	0.0										
New Capacity	1~2.8	1.1~4.2	1.3~5.8	3.0~6.8	3.8~7.6	3.8~10.8	3.8~7.6	3.8~10.8	4.4~12.6		
Consumed Power (kW)	0.45~1.47	0.5~2.21	0.59~3.05	1.36~3.57	1.73~4	1.38~4.32	1.72~9	1.36~4.32	1.57~4.84		
New COP	2.2~1.9	2.2~1.9	2.2~1.9	2.2~1.9	2.2~1.9	2.8~2.5	2.2~1.9	2.8~2.5	2.8~2.6		
hir -15°C/Water 26°C/Humid. 70%	212 210	2,2 2,0	212 213								
New Capacity	0.7~1.3	0.7~1.7	0.7~2.0	1.2~3.0	1.8~3.1	1.9~5.6	1.8~3.1	1.9~5.6	2.2~6.5		
Consumed Power (kW)	0.38~0.81	0.39~1.06	0.38~1.25	0.66~1.88	1~1.94	1~3.29	1~1.94	1~3.29	1.16~3.82		
New COP/Humid.60%	1.8~1.6	1.8~1.6	1.8~1.6	1.8~1.6	1.8~1.6	1.9~1.7	1.8~1.6	1.9~1.7	1.9~1.7		
vir -25°C/Water 26°C/Humid.60%											
New Capacity	0.3~0.9	0.3~1.1	0.3~1.3	0.9~2.0	1.3~2.1	1.3~3.7	1.3~2.1	1.3~3.7	1.5~4.3		
Consumed Power (kW)	0.2~0.69	0.2~0.85	0.2~1	0.5 2.0	0.86~1.61	0.86~2.84	0.86~1.61	0.86~2.84	1~3.3		
New COP	1.5~1.3	1.5~1.3	1.5~1.3	1.5~1.3	1.5~1.3	1.5~1.3	1.5~1.3	1.5~1.3	1.5~1.3		
Power Supply	1.5 1.5	1.5 1.5		)V~/1Ph	1.0 1.0	1.0 1.3	1.5 1.5	380V/3N~	1.3-1.3		
Fan Quantity	1										
Fan Speed (RPM)	400-700	400-750	400-800	400-750	5001750	500-800	500-750	500-800	500-850		
Sound Pressure 1m dB(A)	33-42	33-43	34-44	37-47	38-48	40-50	38-48	40-50	42-51		
ound Pressure 1m dB(A)											
	13-22	13-24	16-25	17-27	18-28	20-30	18-28	20-30	22-31		
Compressor Brand					TBD 50						
Nater Connection (mm)					50						
Water Flow Volume (m3/h)	2.4	3.2	4.1	5.2	5.6	7.8	6.6	8.1	9.1		
Water Pressure Drop (max) kPa	2	3	4	5	6	7	6	7	8		

\*ACOP: ALL-YEAR-ROUND RUNNING COMPREHENSIVE COP.

The above data is for reference only; specific data is subject to the product nameplate. This range will be launched in the market in 2023.