Shenling

Polestar profile

Shenling

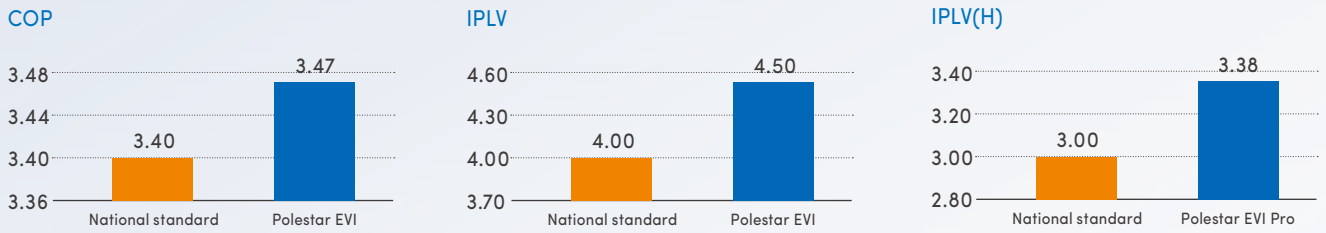
Polestar

- Energy Saving & Environmental Friendly
- Reliable operation
- Intelligent control
- Flexible application

Energy saving & environment-friendly

Excellent energy efficiency

Polestar EVI, EVI Pro and INV series all exceed China national energy efficiency Class-I



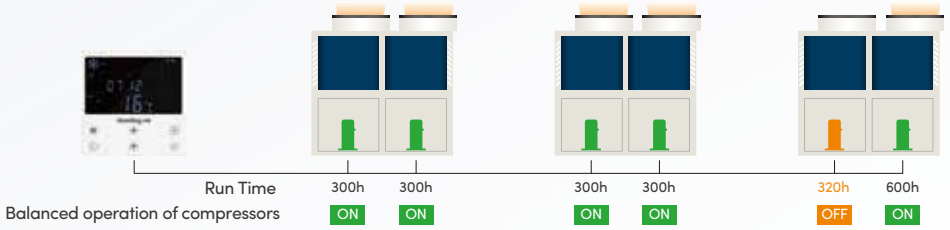
AI learning

Graded startup

Polestar can realize graded startup, reduce the startup current of the unit and reduce the impact on the power grid.

Optimal starting up

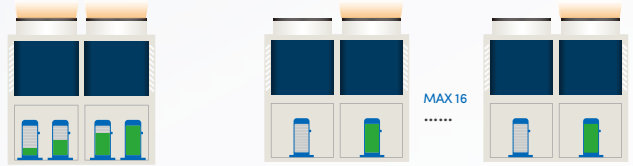
Through a detection and AI-learning function, the compressor and the unit with the best performance are searched and identified each start up , so as to reduce the system wear and prolong its service life cycle of the unit and to ensure the best performance and reliablity of the unit.



Low consumption and energy saving

Multistage operation regulation

Polestar E, EVI and EVI Pro series can realize 25%-50%-75%-100% four-stage regulation in single unit , and 16 modular combination can realize 1.5%-100% stepless regulation, which can realize accurate output in partial load and reduce system energy consumption.



25%-50%-75%-100%
four-stage regulation

16 modular combination
1.5%-100% stepless regulation

Green and environment-friendly

R410a environmental protection refrigerant

R410a refrigerant is used in the unit. R410a is a new type of environment friendly refrigerant, which is non-toxic, non-flammable, and zero ODP value. It does not destroy the ozone layer, has high refrigeration (heat) efficiency, and has the characteristics of high efficiency and environment-friendly.

Reliable operation

Brand parts to ensure excellent quality

Efficient hermetic compressor

- Hermetic scroll compressor of international famous brand, scroll axial and radial flexible technology, reliable and efficient.
- Equipped with check valve so the safety co-efficient is higher; ultra-large capacity, super liquid impact resistance and long service life.

Axial flow aluminum alloy low noise fan

- Integrated axial flow aluminum alloy low noise fan with large air volume perfectly realizes aerodynamic performance.
- The unique tooth edge of the wing is designed with blades to effectively control air turbulence, reduce cyclone and wind noise.

High efficient water-side heat exchanger

- Stainless steel vacuum brazed plate heat exchanger and double system cross diagonal flow structure, so heat exchange is sufficient and more efficient.

High-precision throttling part

- High quality 480-class double electronic expansion valve with wide regulation range.
- Dynamic & real-time matching according to actual load demand, with faster control speed and more accurate precision.

High efficient heat exchanger

- Four sided fin heat exchanger with larger ventilation, high efficiency heat exchange with internally threaded tubes and higher heat exchange efficiency.
- The corrugated aluminum fin technology has fewer cuts, less corrosion and dust collection, and longer service life cycle.

Y-type water filter

- 20-mesh Y-type filter is equipped to prevent impurities from entering the system and affecting the performance and reliability of the unit, and facilitate the subsequent cleaning of the water system at the same time.

Anti-freezing & trouble-free operation

Quadruple detection: temp., pressure, temp. difference & pressure difference

Equipped with temperature and pressure sensors through real-time detection of temperature, pressure, temperature difference and pressure difference to analyse the water flow of the unit.

Triple soft design: water pressure difference sensor

Equipped with water pressure difference switch; when the water flow is too low, the water pressure difference switch is turned off, and the unit stops, so as to avoid freezing and cracking of evaporator caused by too low water temperature.

Triple soft design: water pump linkage control

Through linkage control of the water pump, when the water tempeature is detected too low in standby status, the water pump is started firstly to circulate water to prevent the pipeline from freezing.

Triple soft design: compressor

In standby status, if the water temperature is still low after the water pump is turned on, the compressor will start until the water reaches the set temperature point.

Quadruple detection and triple design anti-freezing

Real-time detection of quadruple hardware of temperature, pressure, pressure difference and temperature difference, and all-round anti-freezing protection of evaporator through triple soft design of water flow sensor, water pump and automatic operation of compressor to prevent frost crack, which is reliable and guaranteed.

Anti-freezing & trouble-free operation

Intelligent defrosting & constant water temperature

- Multiple choice

  Automatic defrosting or manual defrosting can be selected.

- Intelligent judgment

  The unit can accurately judge the frosting situation through multivariable comprehensive evaluation so as to defrost when needed. At low andient temperature, it can achieve no defrosting for up to 180 minutes, bringing longer heating time and higher comfort.

- Heating and defrosting without shutdown

  In a system with multiple compressors or modular combination , the defrosting unit is less than 1/2 of the total number of systems, which can realize defrosting and heating simultaneously, so as to avoid fluctuation of water temperature, and avoid cold air blowing.

Intelligent protection, stable and reliable

- Temperature protection
- High & low voltage protection
- Fan overload protection
- Unit frequent startup protection
- Sensor fault protection
- Balanced run of compressor
- Anti-freezing protection
- Power supply lackreverse protection
- Overload protection of compressor
- Overheating prevention

Smart control

Smart building

Modbus protocol is available, and RS485 building communication interface is configured as standard. The unit can be connected to the building automatic control system and other building equipment for centralized control. Up to 64 systems can be connected and each system can be connected with 16 modular untis, that is, up to 1024 modular untis can be controlled in one system.

Group control

One wired controller can control maximum 16 units, whether the 16 units are from the same series or not.

Time on/off function

On/off time could be set according to user's requirement, and system can realize unattended operation.

Password lock function

Password lock is available for installation and safety purpose. You can set initial startup password after the unit installation and water system are confirmed ok.

Self-diagnostic function

Real-time display of unit parameters and self-diagnosis of system errors, which can show up to 99 errors and is convenient for after-sale maintenance.

Power-off Memory

The unit can automatically remember the unit settings before the power failure& automatically restore the original setting after power recovery.

Long-distance communication

The long distance communication between the touch screen and the host can be up to 1000m, which is convenient for users to operate.

Flexible application

Flexible installation

- **Transport**

Compact design enable a minimum floor area is 1.27m² , which is 35% less than that of ordinary modular units in the market. Single system unit can be transported by elevator instead of crane, which reduces installation and transportation costs.

- **System**

Air cooling system does not need cooling water system, cooling tower and cooling pump. With the simple design, convenient construction and short installation period, the investment cost is reduced.

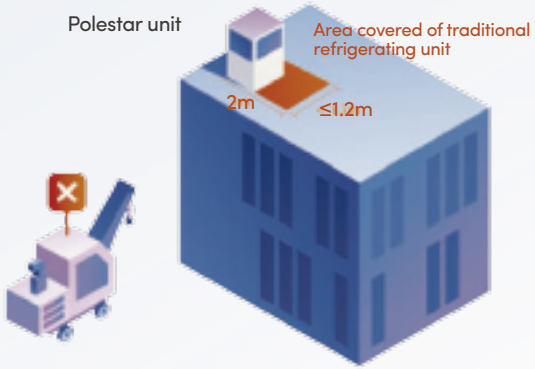
- **Space**

It can be installed outdoors, on the roof or other opening spaces without the necessity of special equipment room.

- **Place**

It can be widely used in hospitals, schools, hotels, office buildings and other places.

The area cover reduced by 35%



Module mutual backup

- **System mutual backup**

Different systems of the same unit are independent of each other. And the failure of any one system does not affect the operation of other systems.

- **Module mutual backup**

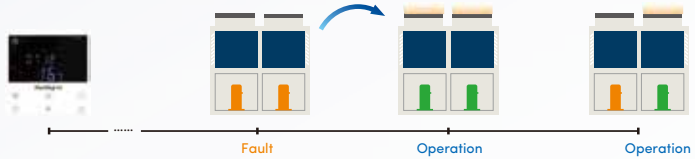
Different units in the same water system are independent from each other, and the failure of any one unit does not affect the use other units, and the stable cooling/heating capacity is uninterrupted.

- **Master and slave modules backup**

In modular combination, any unit can be operated as a master. And the failure of the master does not affect the stable operation of other slaves.

- **Applicable to variable flow water system**

Two-way valve in water system, can be automatically opened or closed according to the load change of terminals, which supports the operation of DC water pump and saves energy during operation.



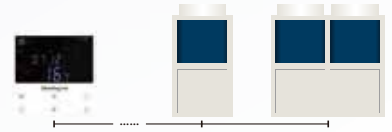
Flexible configuration

- **Modular combination**

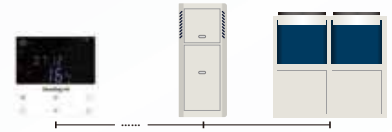
Modular design, offers the customer choice to invest and install in batches according to projects or funds, thus reducing initial investment costs . The modular combination of up to 16 units can be realized to meet the refrigerating demand of different projects.

- **Interconnection control**

Modular combination can be realized among different models within the same series or models between dilferent series, such as Polestar E and EVI.



Modular combination of different models in the same series



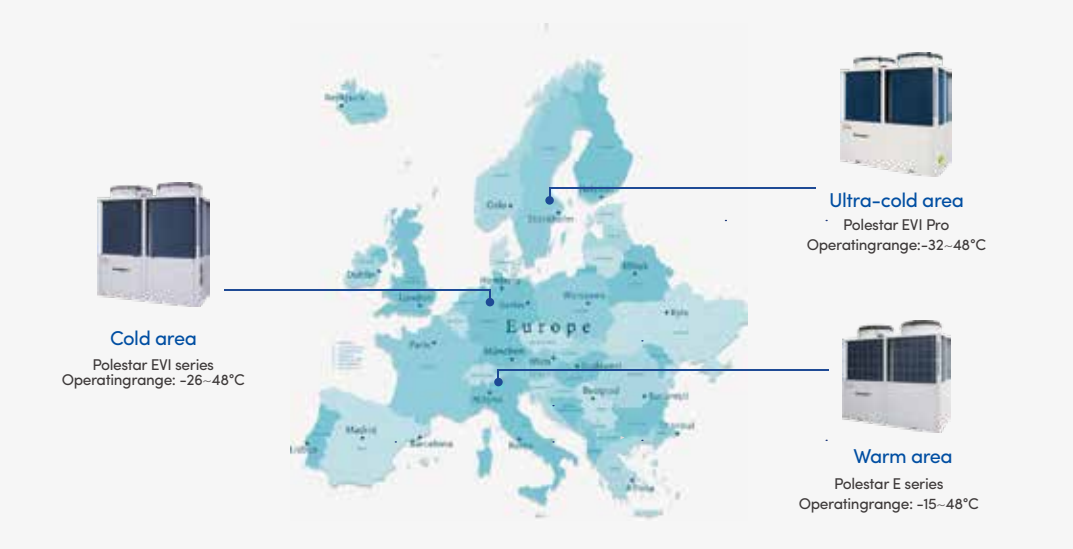
Modular combination of models in different series

Smaller foot print | Batch investment | Interconnection control | Module combination | Module mutual backup

Complete lineup

Wide range operation

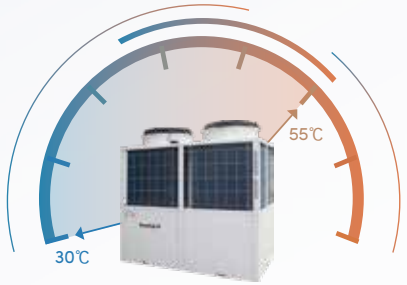
• Refrigeration can cover the ambient temperature of 5~48℃ and heating can cover the ambient temperature of -32~30℃. Polestar series is applicable for different ambient temperature areas.



Application at different terminals

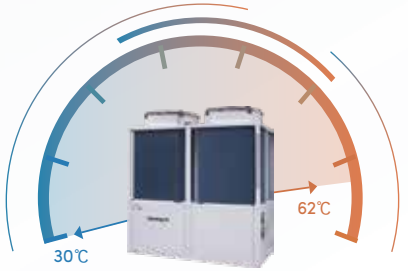
• The heating outlet water temperature can cover 30-62℃, which can meet the needs of different terminals such as floor heating, fan coil & radiator.

Applicable scenes



Outlet water temperature: 30°C ~55°

Polestar E, EVI, INI, series



Outlet water temperature: 30°C ~62°C

Polestar EVI Pro series

Polestar E series

Reliable design

• Control technology of dual electronic expansion valves

A single system of the unit is equipped with multiple electronic expansion valves, which not only can avoid the shutdown risk caused by failure of the single electronic expansion valve, but also can realize the rapid and accurate adjustment of refrigerant according to the load demand and improve the heat exchange efficiency.

• Intelligent detection and control technology

The pressure sensor and temperature sensor can detect the system temperature and pressure in time and automatically adjust the system to ensure the safe and efficient operation of the unit.

• Advanced liquid hammer prevention technology

Equipped with electric heating belt for compressor crankcase and design of large-capacity gas-liquid separator to avoid a large amount of liquid refrigerant directly entering the compressor.

• Optimized design of electric control

Separation of strong and weak current, which is safe and relable; troughing design makes wiring tidy and safe; anti-reverse connection design to avoid damage due to reverse connection unit of power cord; overload protection can automatically power off when current is too high; overall waterproof design with higher safety.

Reliable design

• Basic module and varied splicing

As the basic module, polestar E series can be mixed and spliced with Polestar EVI series and other series to meet different engineering requirements.

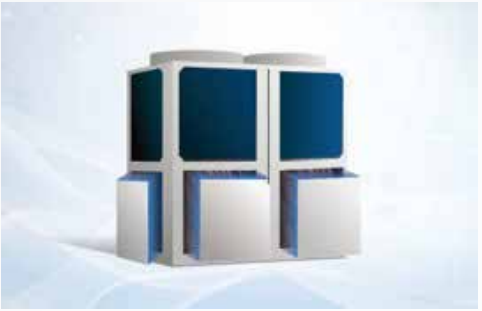
• Water system operation guarantee

Each unit is equipped with Y-type filter and differential pressure sensor as standard. In case of water shortage, no water and dirty blockage of water system,the unit can be protected in time without damaging the evaporator.

• Variable primary flow system

The unit is equipped with a two-way valve control port as standard, which can automatically control the flow of water pump according to the actual flowde-mand, thus easily realizing the variable primary flow system.

Easy maintenance



• Balanced layout for easy maintenance

Components of the unit are evenly distributed around the unit, and the lower half metal plate of the unit is fully enclosed and the unit can be inspected and maintained by disassembling the panel.

• Intelligent diagnosis and quick positioning

Automatically analyze the cause of the fault according to the operating parameters of the system, which can guide the quick solution of the unit malfunction.

-26℃ low ambient temp. heating

55℃ outlet water temp.

Small floor space

Modular combination

Intelligent control system

Polestar EVI series

Enhanced vapor injection technology

• High efficient enhanced vapor injection compressor

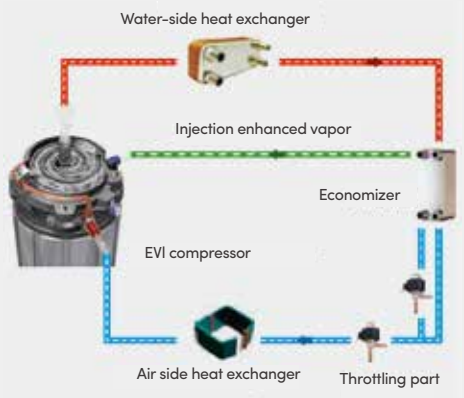
Through injection of the medium pressure vapor and remixing with the partially compressed refrigerant for recompression, Polestar EVI series can realize two-stage compression with a single compression with a single compressor, which can increase the refrigerant flow in the condenser and the enthalpy difference of the main cycle sircuit, and thus greatly improve the efficiency of the compressor.

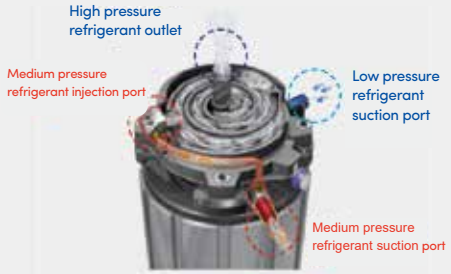
• Efficient economizer

On the one hand, it can increase the degree of undercooling of the main circuit refrigerant in front of the valve; on the other hand, it can increase the degree of superheat of the auxiliary circuit refrigerant injection to the compressor, increase the system circulation and improve the performance of

• Auxiliary circuit electronic expansion valve control

The auxiliary circuit is also controlled by high-precision electronic expansion valve, with advantages of wider adjustment range, higher precision, faster reaction speed and more stable system.

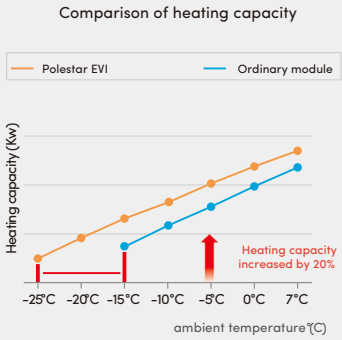


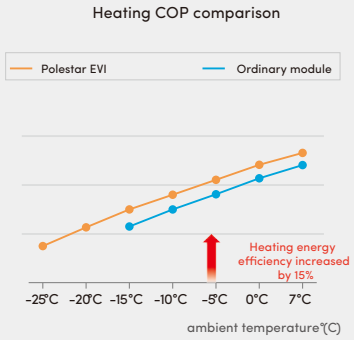


Twice
One compressor realizes twice compression

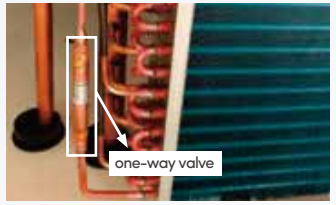
20%
More refrigerant flow

-32℃
Low temperature stable operation



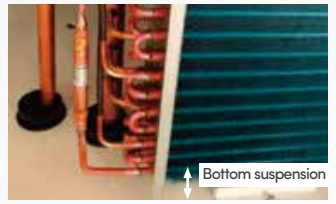


3 key design for reliable defrosting



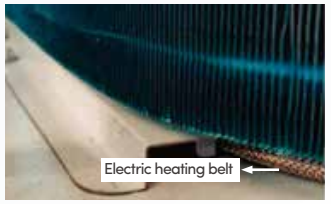
First design:
One way-valve is set at the bottom of the heat exchanger

When heating, the one-way valve is closed without refrigerant passing to avoid frosting. When defrosting, the high-temperature refrigerant passes through the one way valve to defrost quickly.



Second design:
Heat exchanger suspended from the bottom tray

Set a certain height distance difference between the bottom of the heat exchanger and the water tray to avoid ice accumulation, and quickly remove the condensed water during defrosting.



Third design:
Water and electricity heating belt in heat exchange chassis

Automatically open at low temperature to prevent frost accumulation in water tray and ensure smooth drainage.

-26℃ low ambient temp. heating

55℃ outlet water temperature

Exceed China national energye fficiency Class-I

Quick defrosting

Low noise operation

Polestar EVI Pro series

Shenling

New stable and reliable design

Plum heat exchanger

· Unit 340 adopts plum pattern heat exchanger with air inlet from all sides. Heat exchange capacity is about 15% higher than that of two C-type units.

U-tube dry shell-and-tube heatexchanger

· A new type of high-efficiency internal thread heat exchange tube with pure countercurrent is adopted, which has higher heat exchange efficiency. U-tube structure can reduce internal pressure loss, easy to clean and stronger anti-deposit ability.

Ventilation column

· Ventilation column is adopted to increase ventilation and enhance heat exchange, and there is no dead angle in 360° for heat exchange.

4 side removable panel

· Components are evenly arranged around the machine, and removable panels are used to facilitate after-sale maintenance, which can reduce the noise of the unit and prolong the life cycle components.

Compact structure & small floor space

· Unit 340 covers only 4.84m², which is only 76% of the floor space of two unit 170 combined and the installation cost is low.

One-stop solution

In the system, space heating, cooling and domestic hot water can be realized

In heating mode, the outlet water temperature can cover 30-62℃, which can meet the needs of different terminals such as floor heating, fan coil and radiator.

-32℃ ultra-low ambient temp. heating

3.38 IPLV(H) as high as 3.38

1级 Far beyond China energy efficiency Class-I

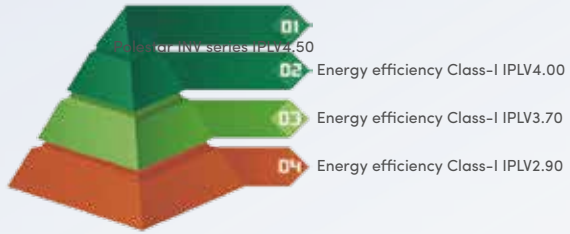
62℃ ultra-high outlet water temp.

Space heating/cooling /DHW

Polestar INV series

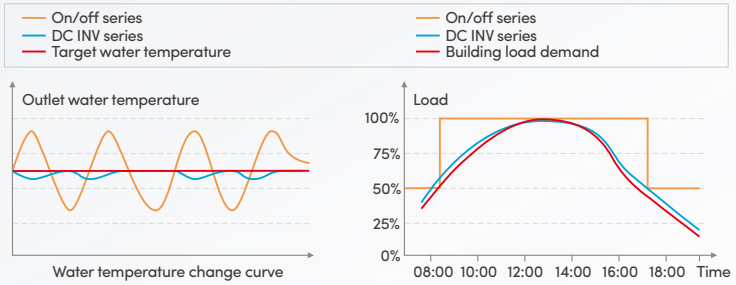
Beyond China national energy efficiency Class-I

- Polestar INV series uses R410A environment friendly refrigerant.
- IPLV is as high as 4.50, exceeding China national energy efficiency Class-I by 12.5%.

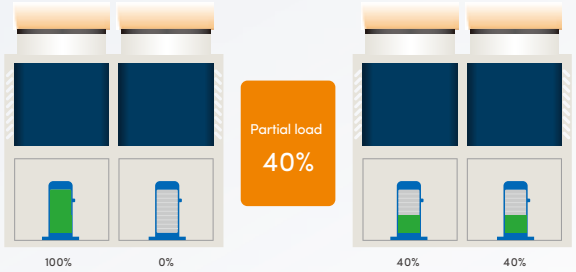


Adaptive Requirements

DC inverter compression can adjust the operating frequency according to the actual load demand of the building to reduce energy consumption. Through frequency stepless adjustment, it can stabilize the outlet water temperature and keep more stable indoor temperature.



Intelligent distribution and efficient operation



The unit carries out the capacity calculation and makes the optimal allocation according to the terminal load demand, so that each unit can be operated in the high efficiency area to reduce the loss during full-load operation which is efficient and can save energy.

Low noise operation, better application experience

Low-noise components and sofe control are adopted to optimize the structure of the unit, and realize low-nose operation of the unit. In the mute mode, the noise can be reduced by 6~10dB(A), providing customers a high-quality experience.

Closed structure
Lower-half closed design, effectively isolate the noise transmission of the unit.

Low noise axial fan
Optimal design of fan blade, restrain air turbulence, reduce noise.

Mute mode
Mute optional mode, quiet operation without noise.

Mute defrosting
Reduce compressor frequency to reduce reversing noise when defrosting.

Low noise DC Inverter compressor
DC inverter compressor, vibration reduction design, sound-absording cotton design optional.

Specification

Polestar E Series

Model			LSQRF068PSE	LSQRF135PSE	LSQRF270PSE
Heating(nominal)	Capacity	kW	72	144	288
	Power input	kW	20.2	41.0	86.7
Cooling(nominal)	Capacity	kW	68	135	270
	Power input	kW	20.1	39.9	84.3
Power supply		/	380V/3N~/50Hz		
Maximum operating current		A	52	104	208
Refrigerant		/	R410A		
Throttling device		/	Electronic expansion valve		
Compressor	Type	/	Fully enclosed scroll compressor		
	Quantity	/	1	2	4
FAN	Type	/	axial flow fan		
	Quantity	/	1	2	4
Water-side heat exchanger	Type	/	Efficient vacuum brazing plate heat exchanger		
	Water flow	m^3/h	11.7	23.2	46.4
Unit water resistance		kPa	30	40	40
Water piping connection		inch	R 1-1/2"	R2-1/2"	R2-1/2"
Power cord	Live wire sectional area	mm^2	≥16	≥35	≥95
	Live wire quantity	/	3	3	3
	Neutral wire sectional area	mm^2	≥16	≥16	≥50
	Neutral wire guanting	/	1	1	1
	Earth wire sectional area	mm^2	≥16	≥16	≥50
	Earth wire quantity	/	1	1	1
Net dimension	L × W × H	mm	1150x1100x2100	2200x1150x2100	24900x2210x2600
Net weight		kg	450	930	1800
Wired controller		/	PJAC-T-A301XY		
Container loading quantity(40HQ)		pcs	20	10	5
Heating	Ambient temp. range	℃	-15~30		
	Outlet water temp. range	℃	30~55		
Cooling	Ambient temp. range	℃	5~48		
	Outlet water temp. range	℃	5~20		

Note

- Nominal cooling capacity test condition: rated water flow rate at 0.172m^3 /(h·kW), outlet water temperature at 7°C and outdoor ambient dry bulb temperature at 35°C.
- Nominal heating capacity test condition: rated water flow at 0.172m^3/(h·kW), outlet water temperature at 45°C and outdoor ambient dry bulb/wet bulb temperature at 7/6°C.
- Low temperature heating capacity test condition: rated water flow at 0.172m^3/(h·kW), outlet water temperature at 41°C and outdoor ambient dry bulb/wet bulb temperature at -12/-14°C.
- The performance may be adjusted due to product improvement without prior notice. Please refer to the nameplate for specific parameters.

Specification

Polestar EVI Series

Model			LSQRF075PLH	LSQRF135PLH	LSQRF150PLH	LSQRF320PLH
Heating(nominal)	Capacity	kW	80	144	160	320
	Power input	kW	22.3	40.1	44.6	89.2
Heating(low ambient temp.)	Capacity	kW	59	104	118	236
	Power input	kW	21.8	38.4	43.5	87.0
Cooling(nominal)	Capacity	kW	76	135	152	304
	Power input	kW	21.9	38.9	43.8	87.6
Power supply		/	380V/3N~/50Hz			
Maximum operating current		A	54	94	100	200
Refrigerant		/	R410A			
Throttling device		/	Electronic expansion valve			
Compressor	Type	/	EVI enhanced vapor injection compressor			
	Quantity	/	1	2	2	4
Water-side heat exchanger	Type	/	Efficient vacuum brazing plate heat exchanger			
	Water flow	m^3/h	13.1	23.2	26.1	52.3
Unit water resistance		kPa	45	40	48	40
Water piping connection		inch	R1-1/2"	R 2-1/2"	R 2-1/2"	R 3"
Power cord	Live wire sectional area	mm^2	≥16	≥35	≥35	≥95
	Live wire quantity	/	3	3	3	3
	Nautral line sectional area	mm^2	≥16	≥16	≥16	≥50
	Nautral line quantity	/	1	1	1	1
	Earth wire sectional area	mm^2	≥16	≥16	≥16	≥50
	Earth wire quantity	/	1	1	1	1
Net dimension	L × W × H	mm	1150x1100x2300	2200x1150x2100	2200x1150x2300	2490x2210x2600
Net weight		kg	450	930	950	1900
Wired controller		/	PJAC-T-A301XY			
Container loading quantity(40HQ)		pcs	20	10	10	5
Heating	Ambient temp. range	℃	-26~30			
	Outlet water temp. range	℃	30~55			
Cooling	Ambient temp. range	℃	5~48			
	Outlet water temp. range	℃	5~20			

Note

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- Nominal heating capacity test condition: rated water flow at 0.172m^3/(h·kW), outlet water temperature at 45°C and outdoor ambient dry bulb/wet bulb temperature at 7/6°C.
- Low temperature heating capacity test condition: rated water flow at 0.172m^3/((h·kW), outlet water temperature at 41°C and outdoor ambient dry bulb/wet bulb temperature at -12/-14°C.
- The performance may be adjusted due to product improvement without prior notice. Please refer to the nameplate for specific parameters.

Specification

Polestar EVI Pro Series

Model			SAH170AR1DST	SAH340AR1DST
Heating(nominal)	Capacity	kW	170	340
	Power input	kW	46	92
Heating(low ambient temp.)	Capacity	kW	110	220
	Power input	kW	40.5	81.0
Cooling(nominal)	Capacity	kW	150	300
	Power input	kW	44.6	89.2
IPLV(H)		/	3.38	3.38
Maximum operating current		A	112	224
Power supply		/	380V/3N~/50HZ	
Refrigerant		/	R410A	
Throttling device		/	Electronic expansion valve	
Compressor	Type	/	EVI enhanced vapor injection compressor	
	Quantity	/	2	4
Water-side heat exchanger	Type	/	Efficient shell-and-tube heat exchanger	
	Water flow	m^3/h	25.8	51.6
Unit water resistance		kPa	45	45
Water piping connection		inch	R2-1/2"	R3"
Power cord	Live wire sectional area	mm^2	≥35	≥95
	Live wire quantity	/	3	3
	Nautral wire sectional area	mm^2	≥16	≥50
	Nautral wire quantity	/	1	1
	Earth wire sectional area	mm^2	≥16	≥50
	Earth wire quantity	/	1	1
Net dimension	L × W × H	mm	2200x1150x2385	2490x2210x2600
Net weight		kg	1000	1900
Wired controller		/	PJAC-T-A301XY	
Container loading quantity(40HQ)		pcs	10	5
Heating	Ambient temp. range	℃	-32~30	
	Outlet water temp. range	℃	30~62	
Cooling	Ambient temp. range	℃	5~48	
	Outlet water temp. range	℃	5~20	

Note

- Low ambient temp. heating capacity test condition: rated water flow rate at 0.172m^3/(h·kW), outdoor ambient dry bulb/wet bulb temperature at -12/-14°C and outlet water temperature at 41°C.
- Nominal heating capacity test condition: rated water flow rate at 0.172m^3/(h·kW), outdoor ambient dry bulb/wet bulb temperature at 7/6°C outlet water temperature at 45°C.
- Nominal cooling capacity test condition: rated water flow rate at 0.172m^3/(h·kW), outdoor ambient dry bulb temperature at 35°C and outlet water temperature at 7°C.
- The performance may be adjusted due to product improvement without prior notice. Please refer to the nameplate for specific parameters.

Specification

Polestar INV Series

Model			LSQRF075PLV	LSQRF150PLV
Heating(nominal)	Capacity	kW	80	160
	Power input	kW	23.4	46.8
Cooling(nominal)	Capacity	kW	75	150
	Power input	kW	22.7	45.4
Power supply		/	4.50	4.50
Maximum operating current		/	380V/3N~/50HZ	
Refrigerant		/	R410A	
Throttling device		/	Electronic expansion valve	
Compressor	Type	/	DC compressor	
	Quantity	/	1	2
Water-side heat exchanger	Type	/	Efficient vacuum brazing plate heat exchanger	
	Water flow	m^3/h	12.9	25.8
Unit water resistance		kPa	45	48
Water piping connection		inch	R1-1/2"	R 2-1/2"
Power cord	Live wire sectional area	mm^2	≥16	≥35
	Live wire quantity	/	3	3
	Nautral wire sectional area	mm^2	≥16	≥16
	Nautral wire quantity	/	1	1
	Earth wire sectional area	mm^2	≥16	≥16
	Earth wire quantity	/	1	1
Net dimension	L × W × H	mm	1150x1100x2300	2200x1150x2300
Net weight		kg	440	930
Wired controller		/	PJAC-T-A301XY	
Container loading quantity(40HQ)		pcs	20	10
Heating	Ambient temp. range	℃	-26~30	
	Outlet water temp. range	℃	30~55	
Cooling	Ambient temp. range	℃	5~48	
	Outlet water temp. range	℃	5~20	

Note

- Nominal cooling capacity test condition: rated water flow rate at 0.172m^3/(h·kW), outlet water temperature at 7°C and outdoor ambient dry bulb temperature at 35°C.
- Nominal heating capacity test working condition: rated water flow at 0.172m^3/(h·kW), outlet water temperature at 45°C and outdoor ambient dry bulb/wet bulb temperature at 7/6°C.
- Unit water resistance include unit water pressure drop and attached Y-filter water pressure drop.
- The performance may be adjusted due to product improvement without prior notice. Please refer to the nameplate for specific parameters.

In the future

Shenling Smart Eco Energy System

THANK YOU

Keep warming your world

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