Shenling
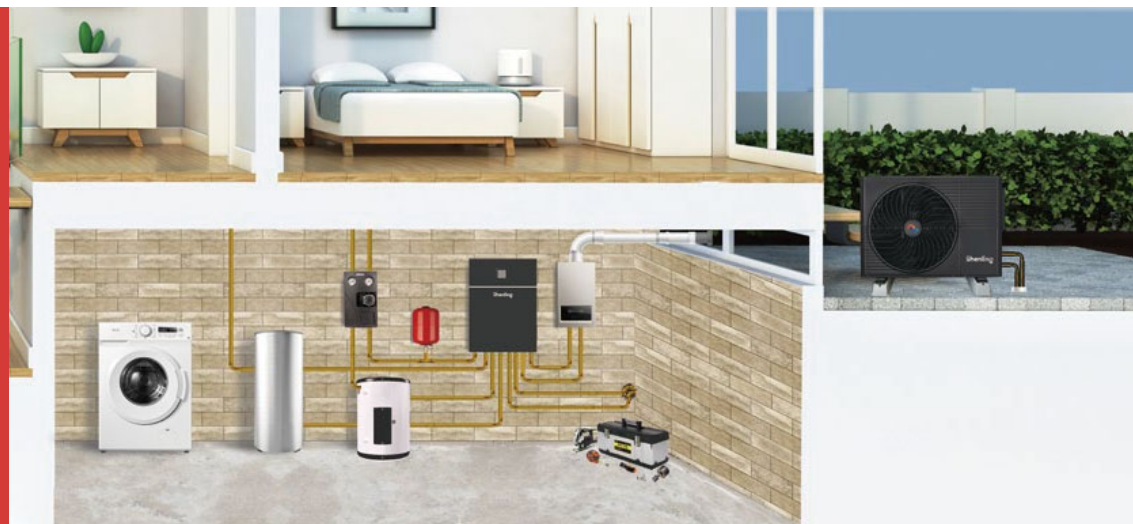
Green the Comfort

GD Shenling Thermal Tech Co., Ltd

+86-757-22971134

global@shenling.com

www.shenlingglobal.com（Shenling ETS）
www.shenling.com（Shenling Corporation）

No.29, Shunye East Road, Shunde, 528325, Foshan, Guangdong, China

ThermaX R290 V2.0

R290

ThermaX R290
Air-to-Water Heat Pump

One-stop solution

Heating, cooling and DHW in one system

ThermaX provides one-stop solution for space heating, cooling and sanitary hot water for households, through integrating underfloor heating, FCUs, radiators and water tanks.

ThermaX offers a versatile year-round solution, through linking with solar panels, gas boilers and other heat sources, allowing user to create a hybrid and tailored system.

Meanwhile, ThermaX is compatible with your smart home system.

ThermaX R290

Full-DC Inverter Air Source Heat Pump

HyQube series	Capacity(kW)	9	12	15
	220-240V/1N/50Hz	√		
	380-415V/3N/50Hz		√	√

Mono series	Capacity(kW)	6	9	12	15	18	22
	220-240V/1N/50Hz	√	√	√	√		
	380-415V/3N/50Hz			√	√	√	√

Bundesamt für Wirtschaft und Ausfuhrkontrolle

Certified by intertek | DIN CERTCO

Certified by

PV READY

MCS Certified by intertek | DIN CERTCO

CE

ERP by intertek
LVD & RED by SGS | TÜV

RoHS Compliant

REACH

ErP

R290

• **Aesthetic industrial design**

Easy to integrate with the architectures
Lower noise
Optimisation of air duct
Reduction of screw

• **Mould shaped plate casing and structure**

Higher processing precision;
Higher reliability and consistency;
Higher production efficiency and guaranteed delivery date

• **Single fan & compact design**

Smaller floor area
Higher installation freedom
Larger container loading quantity

Overview

Energy class: A+++
R290 refrigerant
Space heating+cooling+DHW
Min operation ambient temp. -25℃
R290 max leaving water temp. 75℃
Full colour LCD display controller
Wi-Fi smart control
Smart grid
Disinfection
Power consumption counting

DC Inverter   WiFi   -25°C   75°C

Space heating | DHW mode | Cooling mode | Space heating & DHW mode | Cooing & DHW Mode | Auto mode

Ultra-Silence

ThermaX produces as low as 35dB(A) sound pressure level at 3 meters.

36dB(A)
The noise of falling leaves
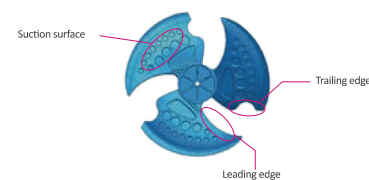
39dB(A)
Noise from sleep

50dB(A)
Noise in the library

36 dB   39 dB   50dB   1m   3m   5m

Biomimetic fan design

● Concave design of suction surface

● Thickening design of leading edge

● Notch design of trailing edge

Suction surface
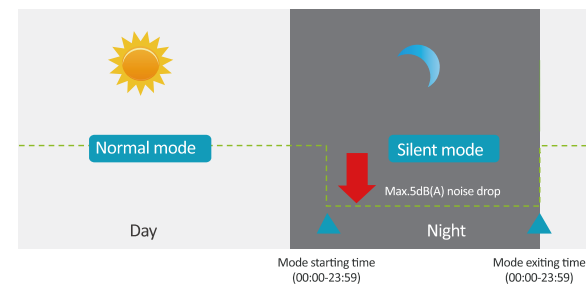
Trailing edge

Leading edge

ODU sound proof design

● Full set of plate and plastic mould

● Simulation at different frequencies

● 3 layers of sound insulation

Silence mode

Normal mode

Silent mode

Max.5dB(A) noise drop

Day

Night

Mode starting time
(00:00-23:59)

Mode exiting time
(00:00-23:59)

5dB(A) noise decrease
In silent mode, ThermaX will decrease the frequency of compressor and fan motor to effectively lower down the operating sound, while output capacity affected slightly.

High Efficency
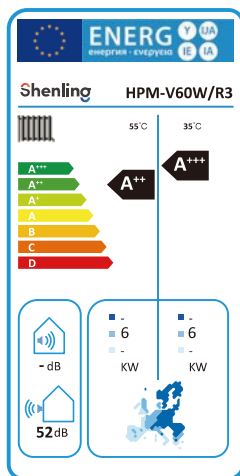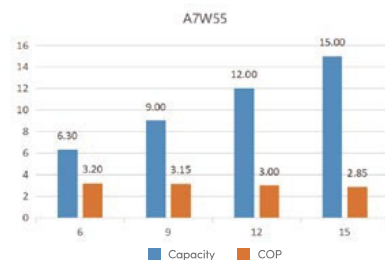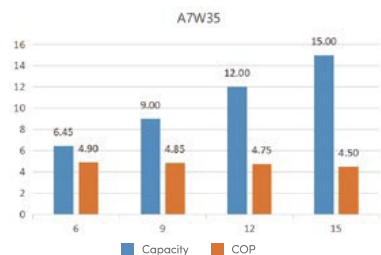
ErP Directive

Seasonal space heating energy efficiency

ηs. average up to **A+++** at 35°C

ηs. average up to **A++** at 55°C

It represents the highest level of ThermaX product.
Please refer to the product for specific grade of different models.

Green the Comfort

Spectification-R290

A7W35

- Capacity
- COP

A7W55

- Capacity
- COP

SCOP

- SCOP W35
- A+++ Min Valve(W35)
- SCOP W55
- A++ Min Valve(W35)
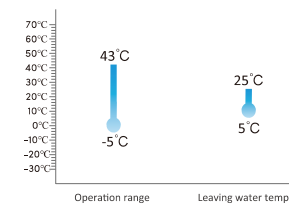
ηs

- ηs W35
- ηs W55

Wide operation range

Space heating

● Min ambient temp. for space heating is -25°C.
● Outlet water can reach 70°C at -15°C ambient temp.
● Outlet water can reach 75°C.

75°C
35°C
25°C
-25°C

Operation range   Leaving water temp.
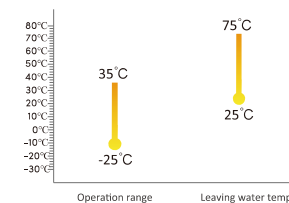
Space cooling

● Start cooling at -5°C ambient temp.

43°C
25°C
-5°C
5°C

Operation range   Leaving water temp.

DHW

● Min ambient temp. for DHW is -25°C.
● Max DHW temp. is 70°C.
● Outlet water can reach 80°C with electric booster heater.

70°C
43°C
20°C
-25°C

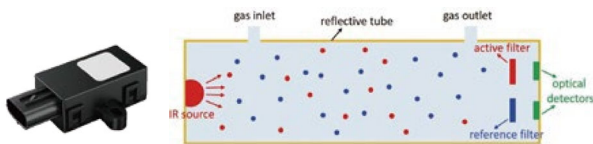Operation range   Leaving water temp.
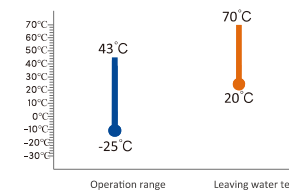
Ultra-Reliability

Refrigerant leak detection

ThermaX is equipped with refrigerant leak sensor. Should any leakage happen in the system, the unit will shut down to make sure end user's safety.

- Smart NDIR gas module
- High sensitivity
- Temperature compensation
- High resolution & fast response
- Excellent linear output
- Anti-vapor interference

gas inlet   reflective tube   gas outlet
active filter
optical detectors
IR source
reference filter

Intelligent defrosting

ThermaX uses smart defrosting technology to figure out the exact defrosting time and start intelligent defrosting according to the real frosting condition, which reduces energy consumption under low temperature environment and prevents defrosting errors.
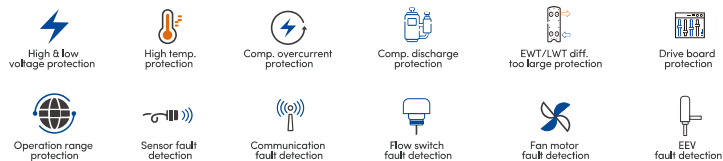
Heating capacity output

— Intelligent defrost
— Regular defrost

Times(s)
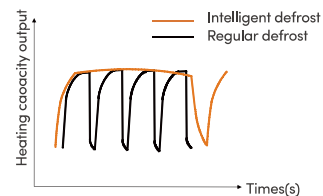
Anti-freeze protection

ThermaX adopts 3 layers of anti-freeze protections.
When low ambient temp. and water temperature detected, water pump started first. When situation remain unimproved, electric booster heater will be started (if equipped). If still unimproved, heat pump will be started.

Multiple system protection

| High & low voltage protection | High temp. protection | Comp. overcurrent protection | Comp. discharge protection | EWT/LWT diff. too large protection | Drive board protection |
| Operation range protection | Sensor fault detection | Communication fault detection | Flow switch fault detection | Fan motor fault detection | EEV fault detection |

Quality parts

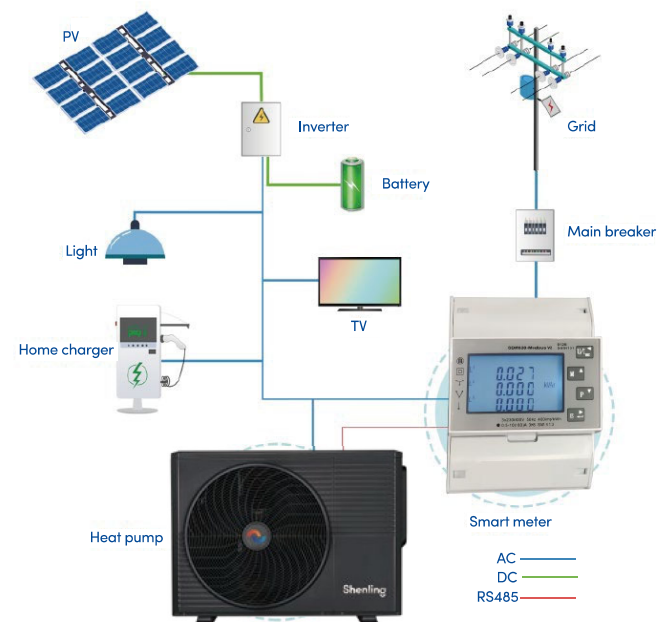| DC inverter compressor | DC fan motor | Electric expansion valve | DC water pump | High efficeincy plate heat exchanger |

Multi-Functions

Smart grid

ThermaX heat pump system can be connected to the smart grid and adjust its operating status according to the load of the grid. When the power is sufficient, the unit operates efficiently, and when the power is insufficient, the unit is allowed to operate at low frequency.
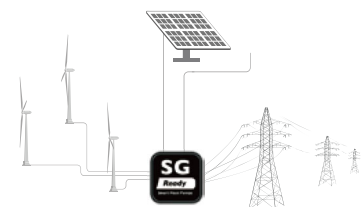
Energy States	Description	
	Smart Grid(contact)	
	Operation Mode	Power Suppy Status
SG1	Operation OFF	
SG2	Normal	
SG3	On Recommend	
SG4	On Command	

PV ready (Smart meter function)

PV ready is smart design to better utilize PV power and the smart meter connecting with heat pump is also available from Shenling. When the local PV power generation on is detected sufficient enough, smart meter will adjust the power sold into the grid and supply to heat pump in priority, so as to maximize the local consumption to lower down the overall energy cost.

PV

Inverter   Grid

Battery

Light   Main breaker

TV

Home charger

Heat pump   Smart meter

AC ———
DC ———
RS485 ———

Multi-Functions

Power limitation

In the case of insufficient power supply or weak power cords, especially when using multiple electrical devices, users can select a predefined configuration (8 different levels) on the wired controller to limit the output of the heat pump and reduce the load on the power supply equipment.

Spot time control

According to the spot price of the local power grid, a day can be roughly divided into 8 time periods. The user can set the mode, target temperature, maximum frequency limit and timer based on the spot price of the power grid.

Spot price:

USD/kWh
0.30
0.25
0.20
0.15
0.10
0.05
00:00   4:00   8:00   12:00   16:00   20:00   24:00
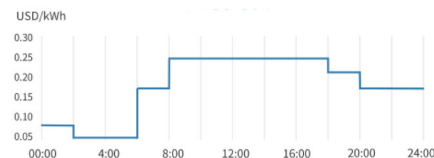
Smart weather adaptation

ThermaX will detect the outdoor ambient temperature and vary the outlet water temp. based on the set temp. automatically, so as to realize the best way for energy saving and comfort. When outdoor ambient temp. increases/decreases, the heating load will decrease/increase accordingly.

Set temp.($^{\circ}C$)

——— Weather temp curoe
------- Load

T1S1

T1S2

-20   20
Ambient temp.($^{\circ}C$)
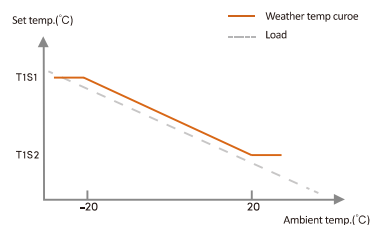
Quick hot water supply

In this function, ThermaX will circulate and heat the cold water in the pipeline in advance, allowing user to use hot water instantly without waiting for cold water released and wasted. To realize this function, a DHW circulating pump(code 7) should be installed in the water system.
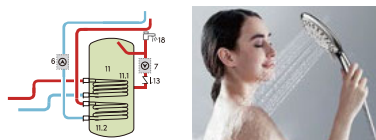
Power consumption counting

ThermaX has preserved a statistical counting function for the power consumption of the unit itself. The user needs only connect an electricity meter to read and collect the statistics.
This function may have difference with the other measurement and is for reference only.

Dual temperature zone control

ThermaX provides the option to simultaneously control dual temperature zones by supplying different water temperatures for floor heating and radiators, ensuring optimal comfort. Users can easily make their selection with a touch on the wired controller, and ThermaX will automatically operate in the chosen mode. Users can also set their preferred temperatures for each zone accordingly. This versatile function includes options for floor heating only, radiator only, and a combination of floor heating and radiators, among others.

Water tank
Heat pump
55℃
35℃
8℃
Surge tank
Room1   Room2   Room3
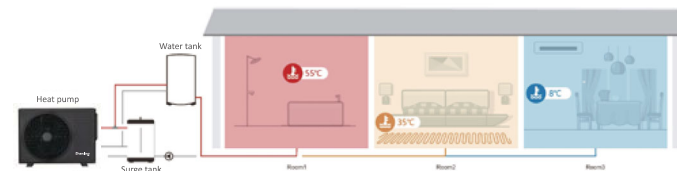
Cascade system

The design of modular combination is for capacity extension in certain case when large cooling/heating capacity is required. In modular combination, max 8 units can be cascaded into one system and controlled through 1 controller.

Slave unit   Slave unit   Master unit

one controller can control up to 8 units in group
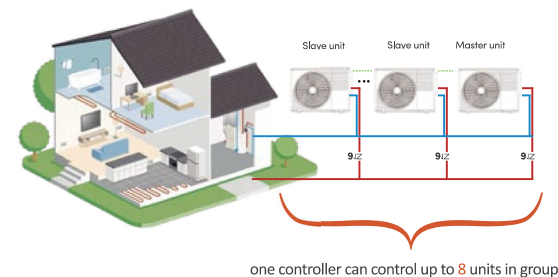
Modbus function

ThermaX provides a free Modbus port, allowing users to connect it with third-party Building Management Systems (BMS). BMS can monitor maximum 16 systems by setting the modbus address from wire controller.

Modbus
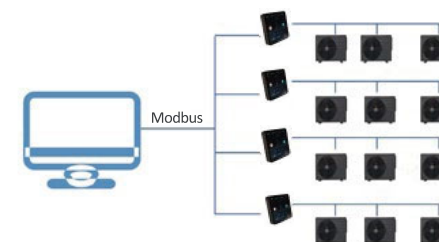
Easy Installation

Compact design

Thanks for the completely new structure platform, ThermaX has realized compact design of the whole series, which will be much easier for transportation and ideal for small spaces.

Easy for transportation

Ideal for small house
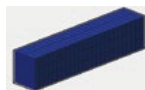
R290 6kW 40HQ: 150 uints

R290 9/12/15kW 40HQ: 82uints

Internal structure

● Mono series

Fin heat exchanger

Fan motor & bracket

Fan grille

Compressor

Electric control box

Water circuit pipeline (with water pump)

Refrigerant pipeline

● Hydro box

1 Electric control box

2 Safety group

3 Electric heater 3/6/9kW

4 DC water pump

5 Heat meter

6 3 way valve

7 Drain pan

● HyQube series

Fin heat exchanger

Fan motor & bracket

Fan grille

Compressor

Electric control box

Water circuit pipeline (without water pump)

Refrigerant pipeline

Easy Installation

Traditional installation

ThermaX Mono series is equipped with built-in water pump. Buffer tank, DHW tank and external fittings such as 3-way valve, Y type filter, check valve, shut off valve should be installed by installer. Should there be existing gas boiler already, it can be connected to the water circuit to build up a hybrid system.

Hot water   Cooled water   Wire connection

Installtion with HyQube

ThermaX HyQube series integrates water pump, valves, safety components, electric electric heater and other components. During installation, HyQube outdoor unit, gas boiler and water tank can be connected to the hydro box directly, which is very easy to access, even for those without much experience in installtion.

Hot water   Cooled water   Wire connection

Easy Installation

What is special in HyQube hydro box?

● Heat meter

Two heat meters record the heat produced by heat pump and gas boiler separately. It's convenient for user's energy management.
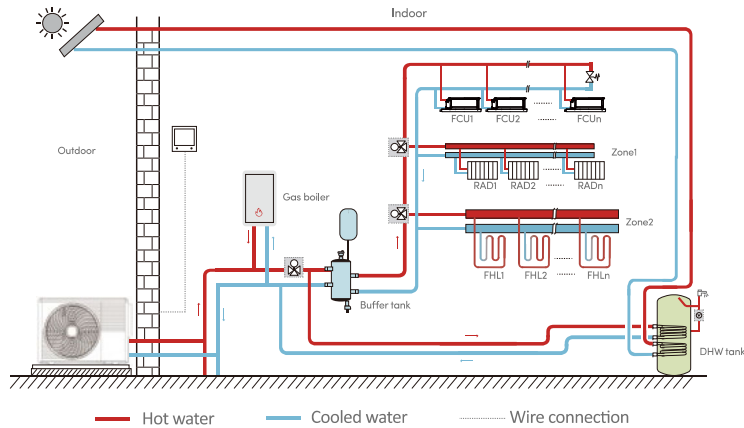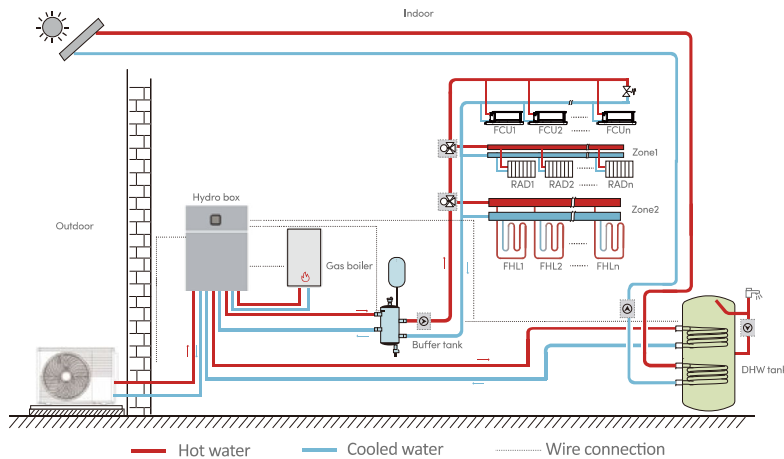
● 3 steps 3/6/9kW electric heating

Built-in 3 steps electric heating is used when the heating capacity is insufficient or for the anti freezing process of water circuit. Improve the user experience when outside temperature is low.

● Magnetic filter

The magnetic filter is installed on the total water return pipe to avoid the dirty entering into the heat pump or gas boiler to protect the system.

Installation scenario

The hydro box is usually installed together with the buffer tank, DHW tank, gas boiler in the basement. Hydro box can not only reduce the complexity of water pipe connection but also wire connection like the buffer tank and DHW tank sensor. There is no need to connect the outdoor unit with a long sensor cable.
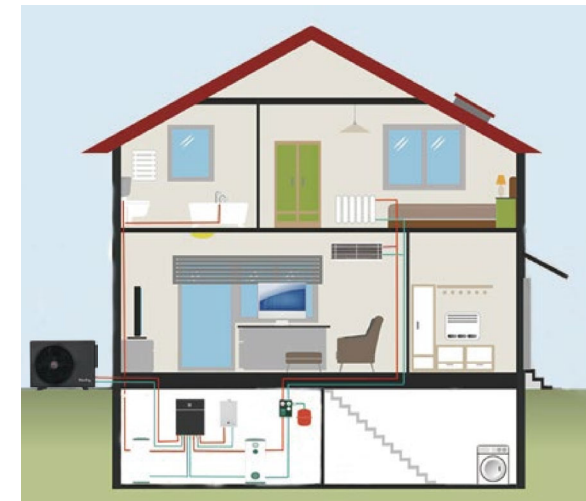
Smart Control

Wire controller

The wired controller offers standard Wi-Fi for remote control, easy SD card upgrades, an elegant obsidian black design, and versatile installation options.

86mm

86mm

14mm

IOT function

Router

Data transfer

Smart life

Web platform

1) Mobile app

● Easy to read and set
● Dual temperature zone control
● Schedule function and weekly/daily timer
● Silent mode/holiday
● Remote monitor
● Fault alarm
● Multi language control
● Android&IOS version

2) Web platform (for service and admin)

● User management
● Remote monitor
● Historical data curve
● Real-time data curve
● Faulty alarm
● OTA remote upgrade

0-10V control

ThermaX provides the 0-10V DC voltage output port that can connect the gas boiler, ThermaX can control the gas boiler outlet water temperature by different voltage signal.
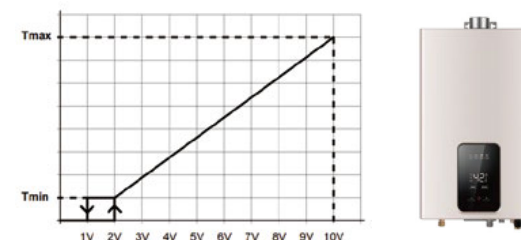
Dry contact control

ThermaX provides multiple dry contact ports. The dry contact port gives an on/off signal to the heat pump or auxillary heater to control their running, which is more easy to access and control.

1) Thermostat of terminal units like FCU, underfloor heating can connect with the heat pump by dry contact port to achieve the linkage control.

2) The heat pump also can connect with the auxillary heat source like gas boiler and solar panel by dry contact port.

Specification

Mono series

Model	HPM-	V60W/R3	V90W/R3	V120W/R3	V150W/R3	V120W/SR3	V150W/SR3	V180W/SR3	V220W/SR3
Power Supply	V/Ph/Hz	220-240/1/50				380-415/3/50			
Heating[1] Capacity	kW	6.45	9.00	12.00	15.00	12.00	15.00	18.00	22.00
Heating[1] Rated Input	kW	1.32	1.86	2.53	3.33	2.53	3.33	3.79	4.94
Heating[1] COP	/	4.90	4.85	4.75	4.50	4.75	4.50	4.75	4.35
Heating[2] Capacity	kW	6.65	9.00	12.00	15.00	12.00	15.00	18.00	22.00
Heating[2] Rated Input	kW	1.73	2.43	3.33	4.29	3.33	4.29	5.07	6.38
Heating[2] COP	/	3.85	3.70	3.60	3.50	3.60	3.50	3.55	3.45
Heating[3] Capacity	kW	6.30	9.00	12.00	15.00	12.00	15.00	18.00	22.00
Heating[3] Rated Input	kW	1.97	2.86	4.00	5.26	4.00	5.26	6.32	8.00
Heating[3] COP	/	3.20	3.15	3.00	2.85	3.00	2.85	2.85	2.75
Cooling[4] Capacity	kW	6.50	9.00	12.00	15.00	12.00	15.00	18.00	22.00
Cooling[4] Rated Input	kW	1.31	1.91	2.61	3.57	2.61	3.57	3.75	4.68
Cooling[4] EER	/	4.95	4.70	4.60	4.20	4.60	4.20	4.80	4.70
Cooling[5] Capacity	kW	6.00	9.00	12.00	14.00	12.00	14.00	17.50	21.50
Cooling[5] Rated Input	kW	1.90	2.95	4.00	4.91	4.00	4.91	5.83	7.41
Cooling[5] EER	/	3.15	3.05	3.00	2.85	3.00	2.85	3.00	2.90
Seasonal space heating energy efficiency class[6] Outlet water temp. at 35℃	/	A+++							
Seasonal space heating energy efficiency class[6] Outlet water temp. at 55℃	/	A++							
Refrigerant Type(GWP)	/	R290(3)							
Refrigerant Charged volume	kg	0.6	0.85	1.20				1.50	
Sound power level[7]	dB	64	67	69	71	69	71	71	73
Sound power level[7](1m)	dB(A)	50	53	55	57	55	57	57	59
Net dimension(W×D×H)	mm	1000*450*725		1080*520*857				1150*460*1558	
Packge dimension(W×D×H)	mm	1110*475*870		1180*560*1005				1250*500*1700	
Net weight/Gross weight	kg	75/89	104/120	115/131		124/140		180/210	
Water piping connection	mm	R1"		R1-1/4"					
Ambient temp. range Cooling	℃	-5~43							
Ambient temp. range Heating	℃	-25~35							
Ambient temp. range Domestic hot water	℃	-25~43							
Outlet water temp. setting range Cooling	℃	5~25							
Outlet water temp. setting range Heating	℃	25~75							
Outlet water temp. setting range Domestic hot water	℃	20~70							
Backup electric heater[8] Optional installation	kW	3/9	3/9	3/9	3/9	3/9	3/9	3/9	3/9
Backup electric heater[8] Capacity steps	/	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
Backup electric heater[8] Power Supply 3kW	V/Ph/Hz	220-240/1/50							
Backup electric heater[8] Power Supply 9kW	V/Ph/Hz	380-415/3/50							

Note

1.Outdoor air temperature 7℃ DB, 6℃ WB; Water inlet 30℃, Water outlet 35℃;

2.Outdoor air temperature 7℃ DB, 6℃ WB; Water inlet 40℃, Water outlet 45℃;

3.Outdoor air temperature 7℃ DB, 6℃ WB; Water inlet 47℃, Water outlet 55℃;

4.Outdoor air temperature 35℃ DB; Water inlet 23℃, Water outlet 18℃;

5.Outdoor air temperature 35℃ DB; Water inlet 12℃, Water outlet 7℃;

6.Seasonal space heating energy efficiency class testes in average climate general conditions.

7.Testing standard: EN12102-1.

8.Backup electric heater is external installation.

9.Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.

Electric booster heater

The heater heats up water in case the outdoor temperature decreases and heat pump capacity is insufficient.

Split series: (Built-in)
4-16KW unit (1 phase) - 3KW heater
12-16KW unit (3 phase)- 9KW heater

Mono series: (Optional)
4-16KW unit (1 phase)- 3KW heater
4-16KW unit (3 phase)- 9KW heater

ThermorE

ThermorE model		EBH-30	EBH-90
Power supply	V/Ph/Hz	220-240/1/50	380-415/3/50
Capacity (max)	kW	3	9
Capacity steps	/	1	3
Input	kW	3	3/6/9
Net weight/Gross weight	kg	13/15	15/17
Net dimension(WxDxH)	mm	278*215*504	
Package dimension(WxDxH)	mm	379*279*665	
Water connection diameter	inch	R1"	

Note

1.Outdoor air temperature 7℃ DB, 6℃ WB; Water inlet 30℃, Water outlet 35℃;

2.Outdoor air temperature 7℃ DB, 6℃ WB; Water inlet 40℃, Water outlet 45℃;

3.Outdoor air temperature 7℃ DB, 6℃ WB; Water inlet 47℃, Water outlet 55℃;

4.Outdoor air temperature 35℃ DB; Water inlet 23℃, Water outlet 18℃;

5.Outdoor air temperature 35℃ DB; Water inlet 12℃, Water outlet 7℃;

6.Seasonal space heating energy efficiency class testes in average climate general conditions.

7.Testing standard: EN12102-1.

8.Backup electric heater is external installation.

9.Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.

HyQube series

Model	HPM-	V90W/R3(A)	V120W/SR3(A)	V150W/SR3(A)
Power Supply	V/Ph/Hz	380-415/3/50		
Heating[1] Capacity	kW	9.00	12.00	15.00
Heating[1] Rated Input	kW	1.86	2.53	3.33
Heating[1] COP	/	4.85	4.75	4.50
Heating[2] Capacity	kW	9.00	12.00	15.00
Heating[2] Rated Input	kW	2.43	3.33	4.29
Heating[2] COP	/	3.70	3.60	3.50
Heating[3] Capacity	kW	9.00	12.00	15.00
Heating[3] Rated Input	kW	2.86	4.00	5.26
Heating[3] COP	/	3.15	3.00	2.85
Cooling[4] Capacity	kW	9.00	12.00	15.00
Cooling[4] Rated Input	kW	1.91	2.61	3.57
Cooling[4] EER	/	4.70	4.60	4.20
Cooling[5] Capacity	kW	9.00	12.00	14.00
Cooling[5] Rated Input	kW	2.95	4.00	4.91
Cooling[5] EER	/	3.05	3.00	2.85
Seasonal space heating energy efficiency class[6] — Outlet water temp. at 35℃	/	A+++		
Seasonal space heating energy efficiency class[6] — Outlet water temp. at 55℃	/	A++		
Refrigerant Type(GWP)	/	R290(3)		
Refrigerant Charged volume	kg	0.92	1.4	
Sound power level[7](1m)	dB	55	56	57
Net dimension(W×D×H)	mm	1080*520*857		
Package dimension(W×D×H)	mm	1180*560*1005		
Net weight/Gross weight	kg	100/117	125/142	
Water piping connection	mm	R1"	R1-1/4"	
Ambient temp. range — Cooling	℃	-5~43		
Ambient temp. range — Heating	℃	-25~35		
Ambient temp. range — Domestic hot water	℃	-25~43		
Outlet water temp. setting range — Cooling	℃	5~25		
Outlet water temp. setting range — Heating	℃	25~75		
Outlet water temp. setting range — Domestic hot water	℃	20~70		
Backup electric heater[8] — Optional installation	kW	3/9	3/9	3/9
Backup electric heater[8] — Capacity steps	/	1/3	1/3	1/3
Backup electric heater[8] — Power Supply 3kW	V/Ph/Hz	220-240/1/50		
Backup electric heater[8] — Power Supply 9kW	V/Ph/Hz	380-415/3/50		

Hydro Box

Model		HM90/DM
Power Supply	V/Ph/Hz	380-415/3/50
Space heating water temp. range	℃	25~75
Space cooling water temp. range	℃	5~25
Operation ambient temp. range	℃	-25~43
Water connection	inch	1
Water pressure (Max)	bar	3
Water pump type	/	Shimge/DC inveter/9m head
Water flow swtich	L/min	6
Electric heater	kW	3/6/9kW 3Ph 3 steps
3 way valve	inch	1
Sound pressure level(1m)	dB(A)	28
Net dimension (LxWxH)	mm	1200*620*200
Package dimension (LxWxH)	mm	1275*710*255

Note

1.Outdoor air temperature 7℃ DB, 6℃ WB; Water inlet 30℃, Water outlet 35℃;

2.Outdoor air temperature 7℃ DB, 6℃ WB; Water inlet 40℃, Water outlet 45℃;

3.Outdoor air temperature 7℃ DB, 6℃ WB; Water inlet 47℃, Water outlet 55℃;

4.Outdoor air temperature 35℃ DB; Water inlet 23℃, Water outlet 18℃;

5.Outdoor air temperature 35℃ DB; Water inlet 12℃, Water outlet 7℃;

6.Seasonal space heating energy efficiency class testes in average climate general conditions.

7.Testing standard: EN12102-1.

8.Backup electric heater is external installation.

9.Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.

Shenling is looking forward to

The alongside air source heat pump. Shenling has been studying in the field of renewable energy and an independent energy systems of "energy supply - energy storage - energy use". And, Shenling will soon provide European and global users packaged green solutions with clean heating and clean energy.