Your Perfect ATW Supplier

Pushing Air Tech

PAT CO., LTD

Content

About US

PAT CO., LTD

Pushing Air Tech, a member of Xiaosong Group in China, was established in 2013. Our company is aiming to provide customers best service and specializes in heat pump products.

2023	Export	Professionals	Facilities	Manufacturing	Rank
$120 Millions	30+	20+	6	300K units	Top 5
Annual Revenue	Countries/Regions	Engineers	Testing Labs	Annual Capacity	CHN HP Supplier Since 2017

7 Years Leading Position in China ATW Heat Pump Industry

MANUFACTURING BASE

PAT CO., LTD

Our factory is located in Jiangmen, Guangdong, China, where belongs to Pearl River Delta. It spans 50,000 square meters and boasts 7 assembly lines.

WORKSHOPS

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WORLDWIDE CERTIFICATES

PAT CO., LTD

MCS

UK Heat Pump
Efficiency Certificate

Bundesamt
für Wirtschaft und
Ausfuhrkontrolle

Germany Heat Pump
Efficiency Certificate

SAA

Australia Product
Safety Certificate

TÜVRheinland
C US

US And Canada Product
Safety Certificate

CEN KEYMARK

Europe heat Pump
Certificate

CE

Europe Product Safety
Certificate

WATERMARK

Australia Sanitary Water
Product Safety Certificate

INMETRO

Brazil Product Safety
Certificate

KEY SUPPLIERS

PAT CO., LTD

Component suppliers are dedicatedly selected, especially on key parts. Good relationship allows us to have stable supply and short lead time.

SANHUA

Pushing Air Tech

GMCC

MITSUBISHI

Panasonic

SHIMGE

ALFA LAVAL

SWEP

wilo

XIAOSONG GROUP

PAT CO., LTD

XIAOSONG

Xiaosong was established in 2000. It was officially listed on the Shenzhen Stock Exchange(main board code 002723) in January 2014. It is a professional manufacturer in the field of appliances. There are more than 600 varieties of products, mainly for residential using The products are sold to more than 100 countries

Introduction Of PAT Combo DHW Heat Pump For The Warm And Green World

Product Line-up

PAT CO., LTD

EU Series

R290/R134a Gas
ERP A+

INOX or Enamel inner tank
80~150L wall mounted
150~500L floor stand

Top Discharge/Suction

CE certificate

AU Series

R290 Gas
STC 38

Enamel inner tank
200~300L floor stand

Side Discharge/Suction

Watermark/SAA certificate

US Series

R513A/R134a Gas
4.1 UEF

Enamel inner tank
60~80gallon floor stand

Side Discharge/Top Suction

ETL certificate

Main features

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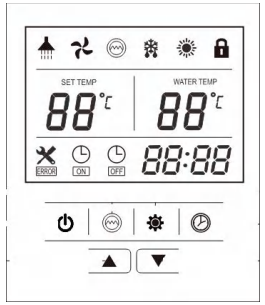


Smart Controller:

Tuya solution

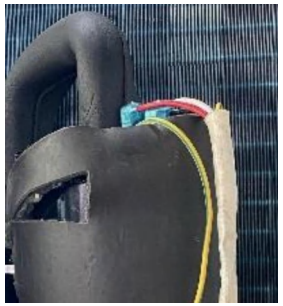
PV control, solar hot water, Electric Anode, Modbus are optional

SMART

Multiple Tank material Options

- **Enamel**
- **Inox SS304, SS316, Duplex 2205**

TANK



Reliable for R290 anti-explosion Design

- **PCB anti-explosion components**
- **Compressor power cable full seal connection**

SAFETY

Good Performance

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outdoor air (placed indoor side) (Average climate) (Table 1 to Table 6):

Table 1: Filling and heating up period [stage C] (Average climate)		
Measured quantity	**Unit**	**Recorded data**
Heat source, Ambient DB/WB	°C	7.01/6.03
Ambient temperature of storage tank	°C	20.05
Test Voltage	V	229.78
Test Frequency	Hz	50
Heating up electrical energy consumption: $W_{eh\text{-}HP}$	kWh	4.218
Heating up time: t_h	s	37299

Table 3: Water draw-offs and COP calculation [stage E] (Average climate)		
Measured quantity	**Unit**	**Recorded data**
Heat source, Ambient DB/WB	°C	7.01/6.03
Ambient temperature of storage tank	°C	20.05
Test Voltage	V	229.78
Test Frequency	Hz	50
Load profile time in hours: t_{TTC}	H	48.07
Total useful energy content during the load profile: Q_{LP}	kWh	19.243
Useful energy during one single draw-off: $Q_{HP\text{-}tap}$	kWh	19.103
Calculated heat energy produced by electrical resistance heater during the whole load profile: $Q_{EL\text{-}LP}$	kWh	0.140
Total electrical energy consumption during the whole load profile: $W_{EL\text{-}LP}$	kWh	6.204
Total measured electrical energy consumption: $W_{EL\text{-}M\text{-}LP}$	kWh	6.948
Standby power input: P_{es}	kW	0.037
Coefficient of performance: COP_{DHW}	--	3.102

Less than 10 hours to heat up water from 10~53C degree
@ 7C degree heat source

COPDHW 3.1, ERP A+
@ 7C degree heat source

Optional design

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Introduction of PAT Air to Water Heat Pump
For the warm and green world

Product Roadmap

PAT CO., LTD

R410A Series
Space
Heating&Cooling
56,000 hps installed

2016

R32 Series split
DHW function
ERP A+++

2020

R290 Series mono

2024

This year, we are working on upgrade our product with the compact structure and develop smart control functions.

Product Line-up 2023

PAT CO., LTD

EU Full DC Inverter Heat Pump

● R290 ● R32 ● R410a

MONOBLOC SERIES												
Capacity(KW)	6	7	8	9	10	12	14	16	18	20	24	30
220-240V/1Ph	●	●	●	●	●	● ●	●	● ●	●			
380-415V/3Ph						●	●	●	●	●	●	●

SPLIT SERIES										
Capacity(KW)	6	8	10	12	14	16	18	20	24	30
220-240V/1Ph	●	●	●	●	●	●				
380-415V/3Ph				●	●	●	●	●	●	●

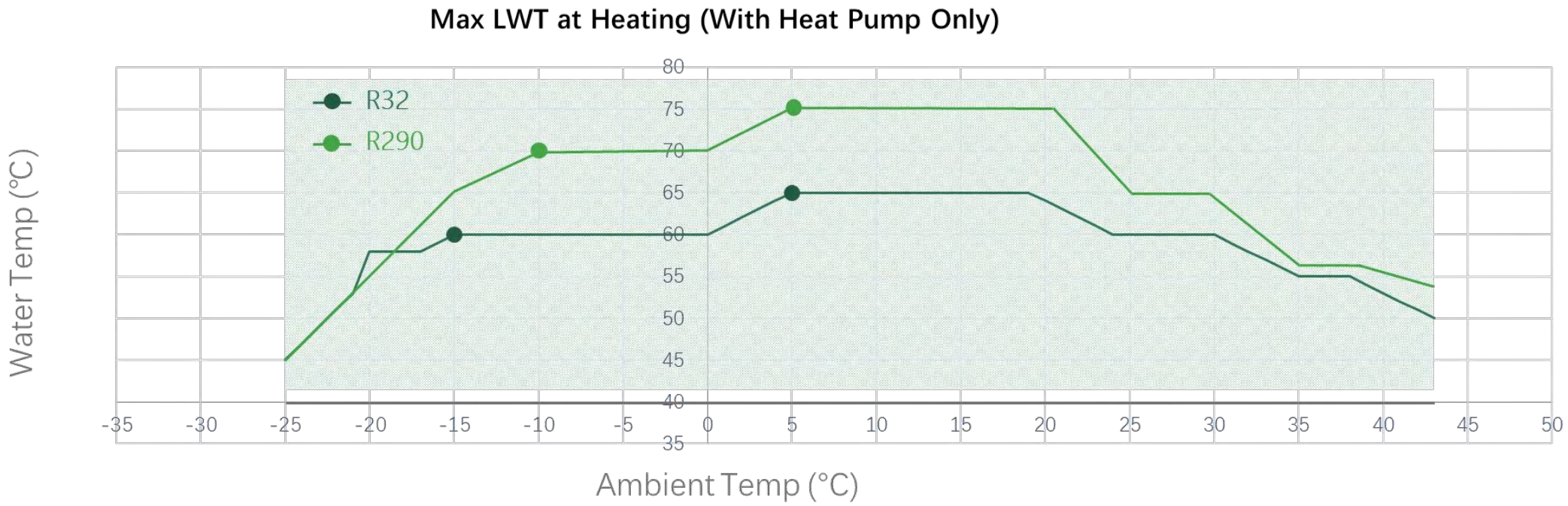
Wide Operation Range and Outstanding Performance

PAT CO., LTD

Operation Range: -25~43°C (heating)

R32: Max Leving water temp: 65°C (ambient temp5°C~18°C)

R290：Max Leving water temp： 75C，70C at -10C



Remark: Overall performance is satisfied, saying 16KW model running in -15°C condition, heating capacity is tested as 8kw with LWT as 60°C and water flow as 1.4m/h.

Reliable Key Components

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Component suppliers are dedicatedly selected, especially on key parts. Good relationship allows us to have stable supply and short lead time.

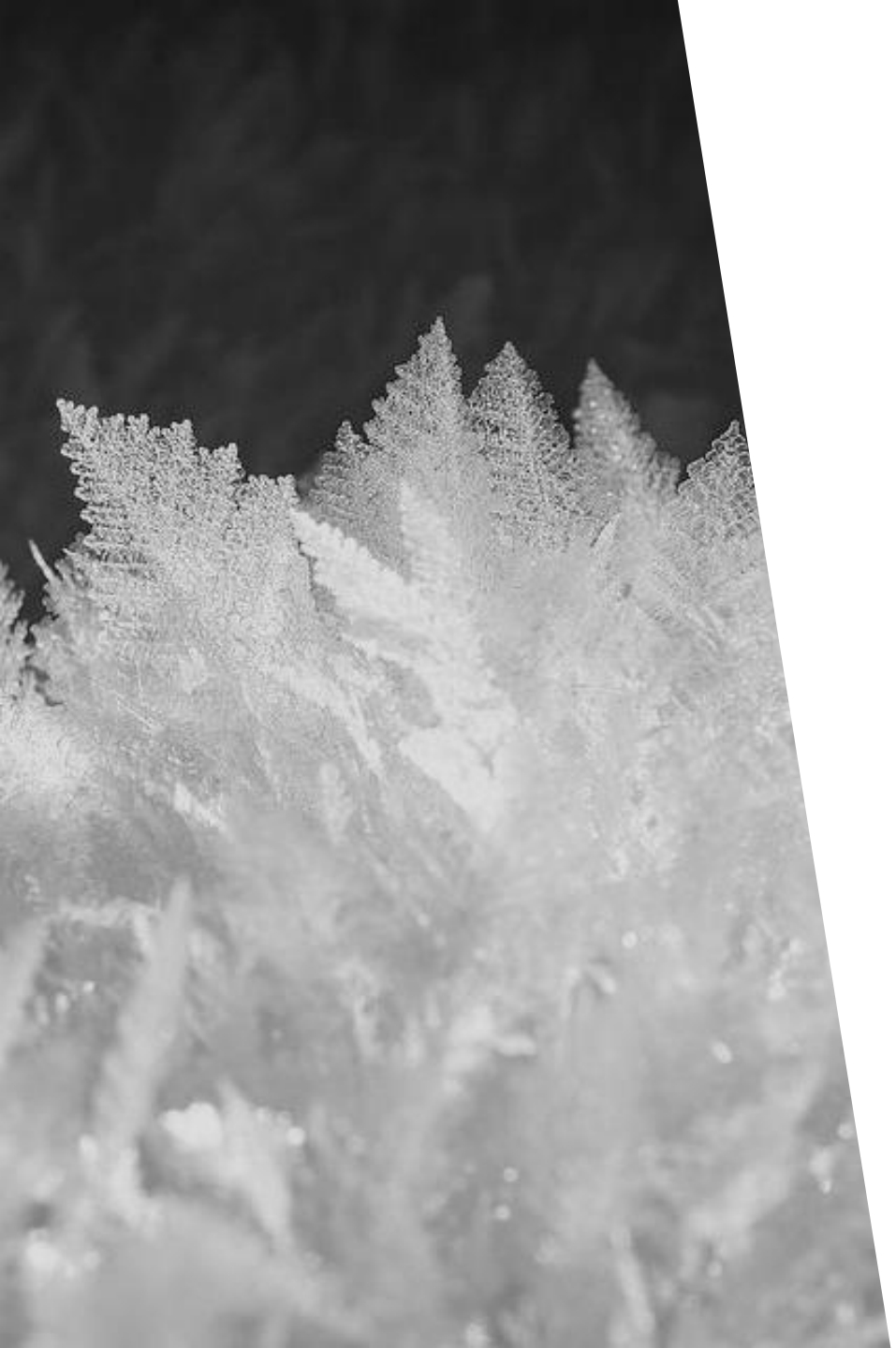
Panasonic compressor

Plate heat exchanger

adjustable water pump

DC fan motor

4 inch touch screen



Low-ambient Operation

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Electric Heater

Plate heat exchanger Heater

Anti-frozen to protect the plate heat exchanger.

Chassis Heater

For extremely cold area with high humidity.

Accurate Control with Algorithm

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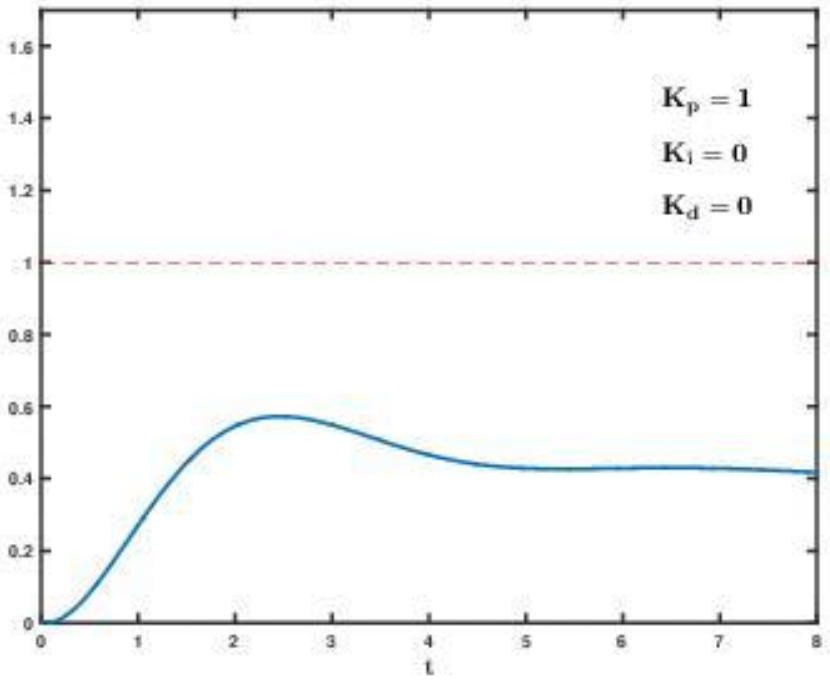
PID Control

Widely used in VRF system, Proportional integral derivative (PID) control is also developed in our heat pump series.

PID is similar to proportional control, but with the addition of algorithm components relating to the integral and derivative values of the error data. This adds an element of history to the algorithm, rather than it being responsive to the current error value alone.

The tuning of the system becomes even more complex, but the results can be an accurate control system with low steady error and low overshoot.



PID Algorithm Similation Example

User-firendly Control

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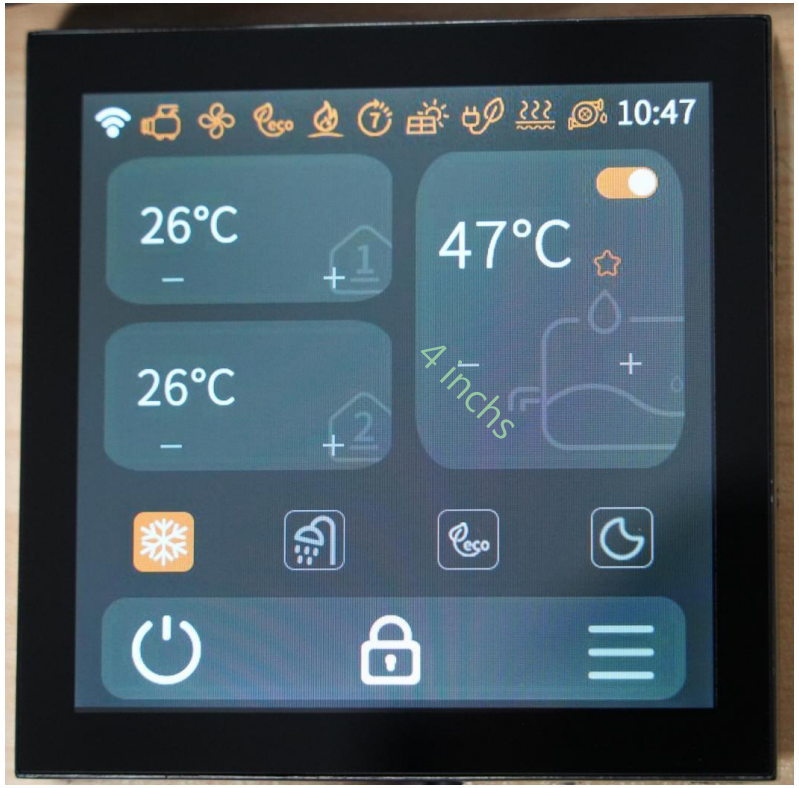
Individual Wired Remote Control



Intuitive UI, Full-color and Touch-screen

Efficient Climate-Specific

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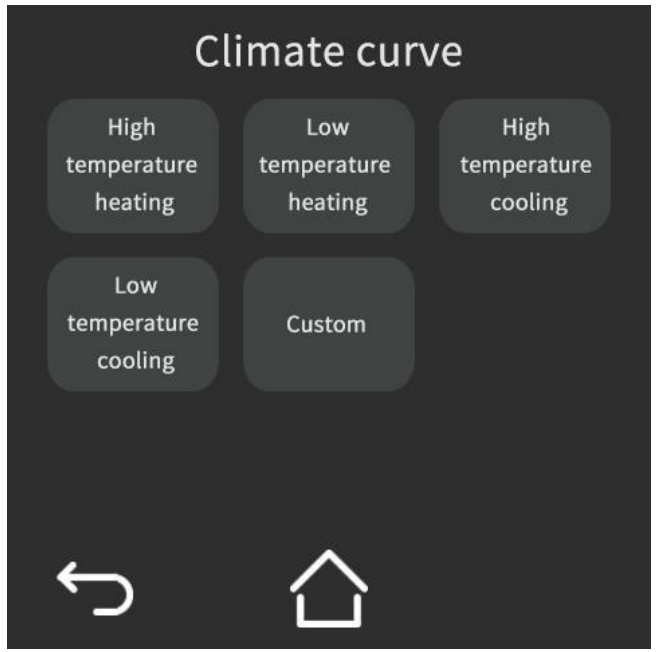
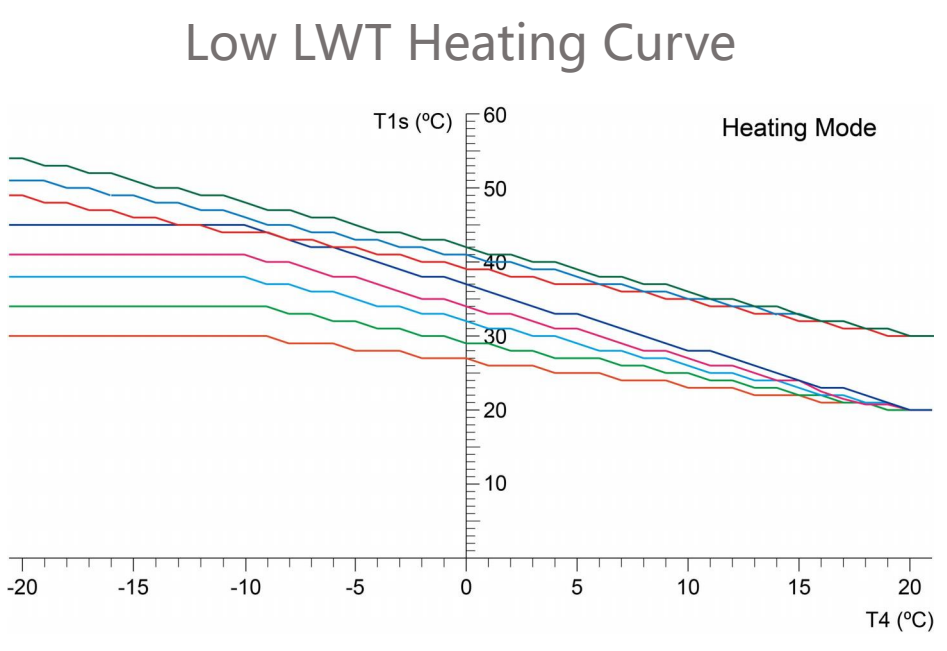
33 Climate Curves

Demands and operation conditions varies in different climate zones. Our heat pump series offers eight options of climate curves for users.





Worry-free Holiday

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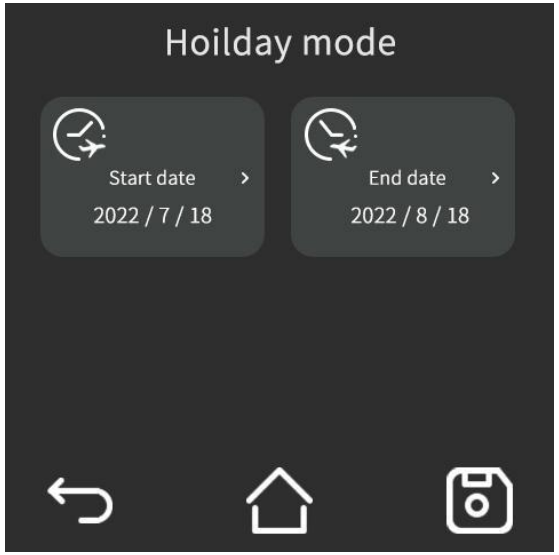
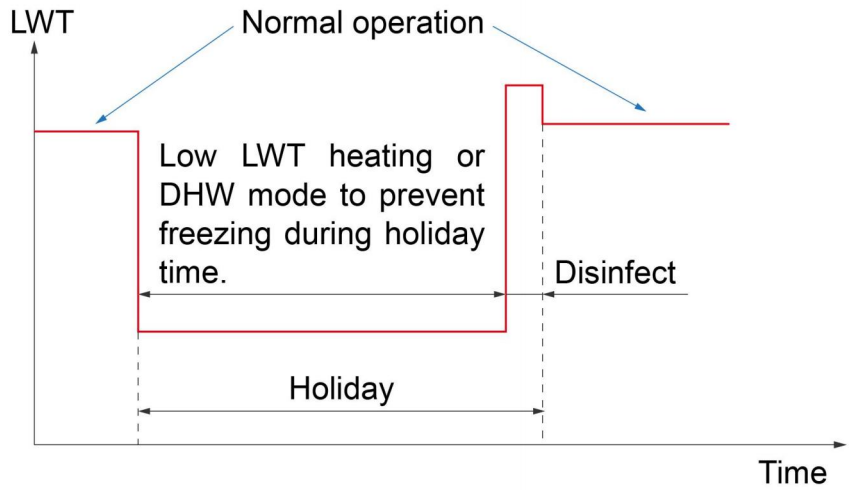
Holiday Mode

A specialized eco mode to prevent tubing frozen during holiday time, and the heat pump will warm up house before the end user come back.
i.e. units runs at low LWT and at weekly basis unit will heat up DHW to 70°C for anti-legionella.





Dual Zone Control

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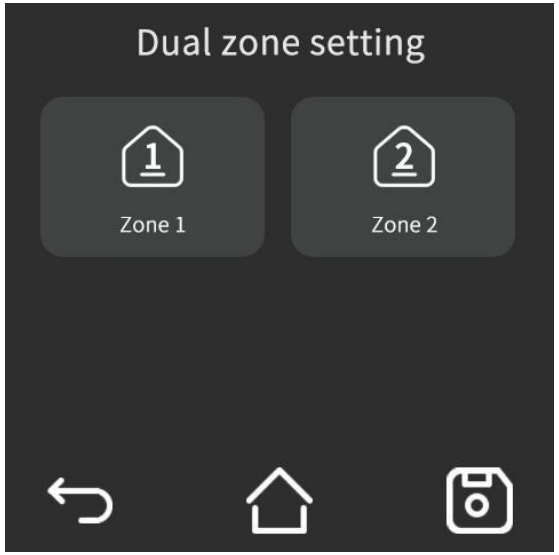
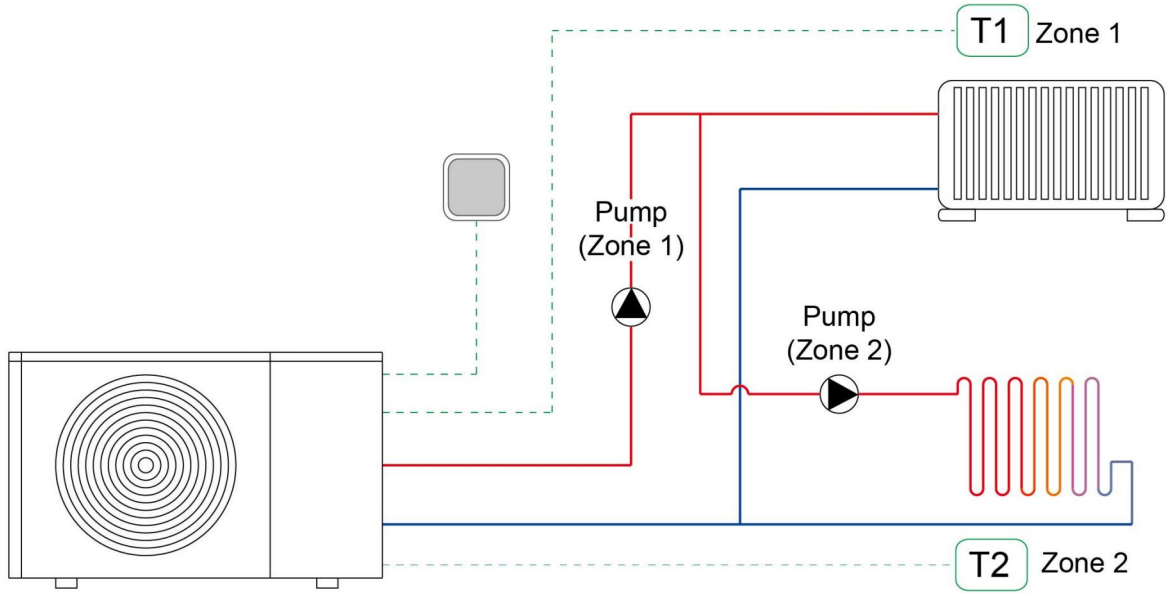
Floor Heating + Radiator/Fan Coil Synergy

At the scenario that the unit connects both floor heating and Radiator/Fan Coil, let's take the diagram below as example. When the water temp. of Zone 1 is reached, Pump/valve(Zone 1) stops but heat pump will keeps running. When water temp. of Zone 1 and Zone 2 are both reached and no DHW requirement, heat pump will stop.





Auxiliary Heat Sources

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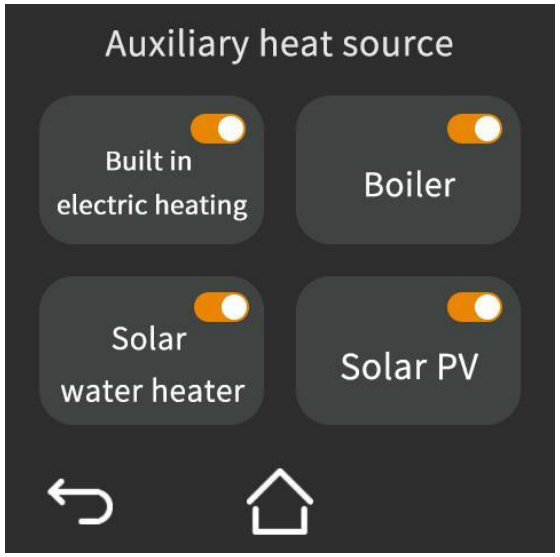
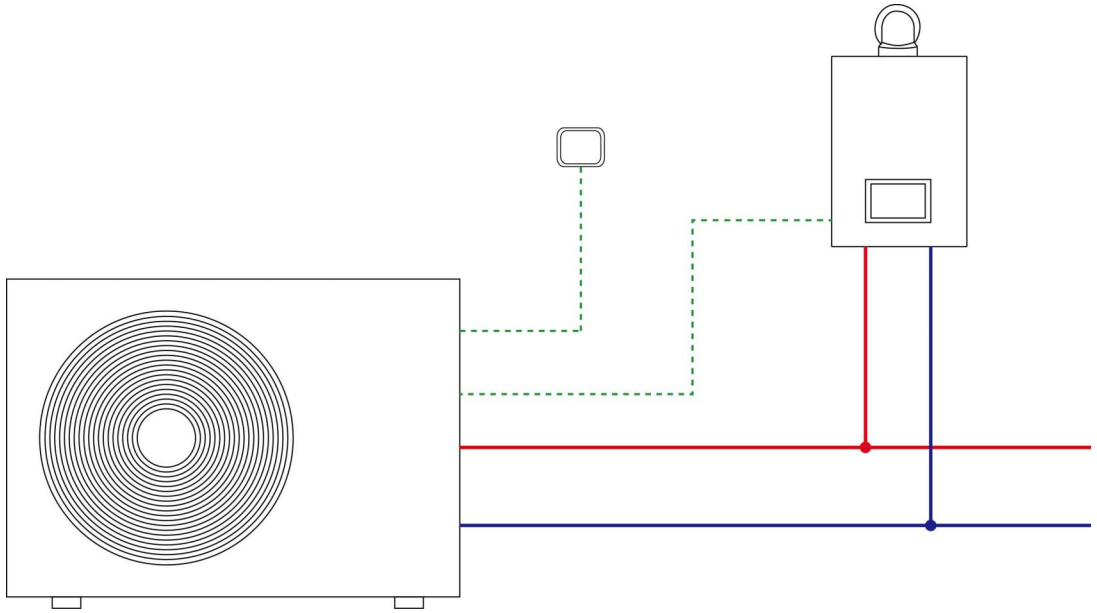
Compatible to Multi Heat Sources

Besides built-in electrical heater, our unit can also connect with boiler, solar water heater and solar PV.

Hybrid mode for small capacity heat pump(low initial investment) working with the existing boiler. It's on the ideal solution for renew or update project.

Connecting to Solar PV or Solar Hot water not only to have cost saving , but also more green.





Energy Saving

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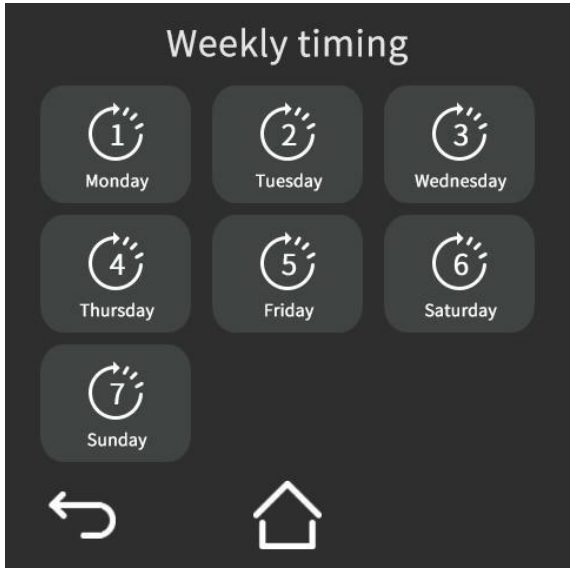
ECO Mode With Weekly Scheduler

Different water temperature and timer setting for working days and weekend



SG ready

Heat pump could receive signal from power company to adjust working status depends on power peak/valley.

SG Ready
Smart Heat Pumps

Sh... As You Wish

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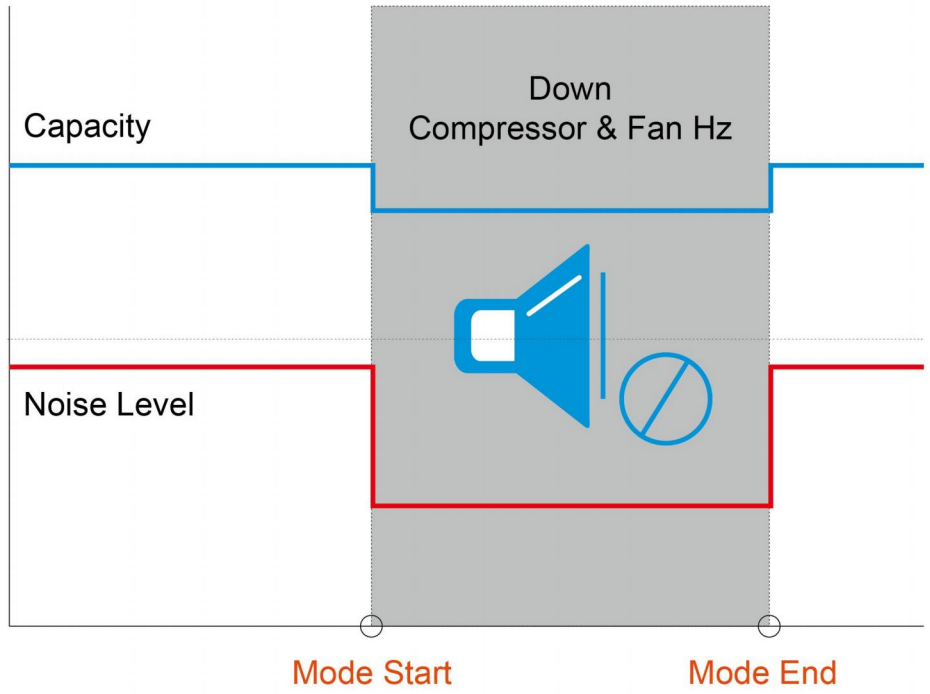
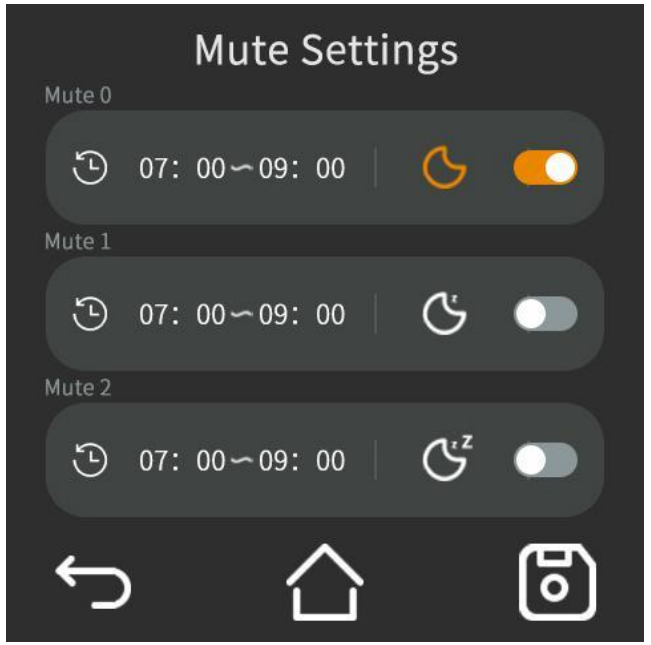
Silent Mode With Timer

When silent mode is activated, the heat pump will slow down the compressor, fan motor and water pump to reduce the noise. And this mode can be set with timer, three setting time periods at most.





Worry-Free Support

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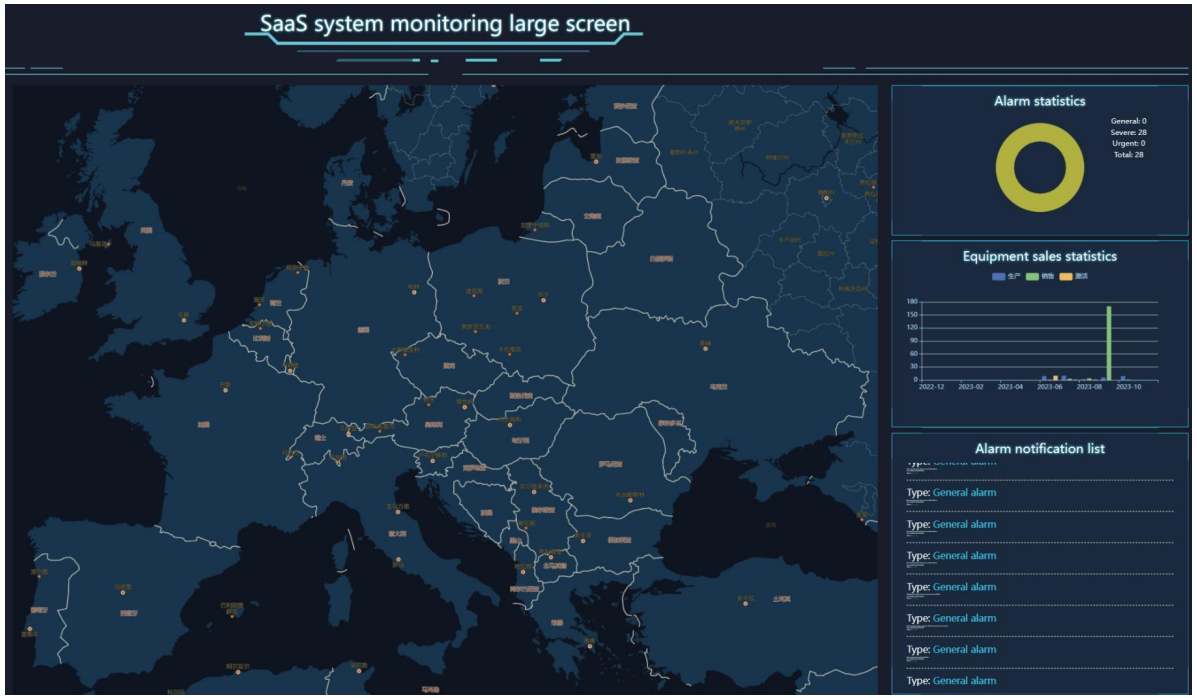
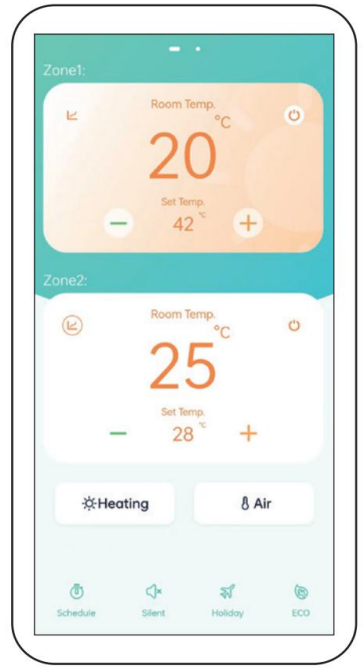
SaaS Platform

Design for distributor and partner and sub-ID is available remotely debug, OTA, running parameter analysis by WIFI or 4G. SaaS platform (or APP from mobile) remotely service includes setting debug, running parameter analysis, OTA and energy consumption statistics.





https://saas.patgreenworld.com/#/login

Worry-Free Support

multi accounts

Over 450 Parameters check and revise

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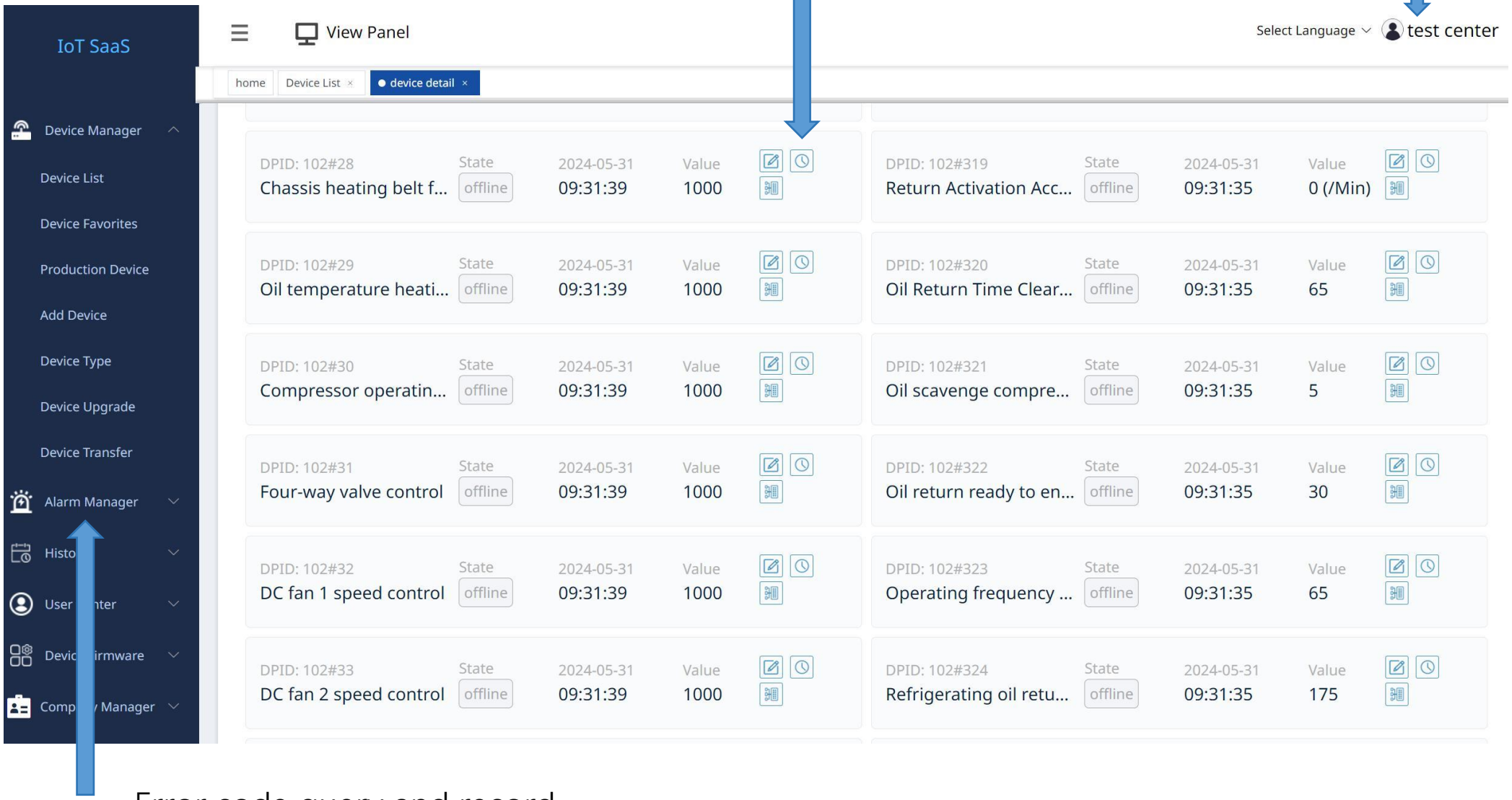

Error code query and record

Top performance

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10kw model Average Climate	Brand	PAT	SUNRAIN/SolarEast	AXEN	SPRSUN	PHNIX
	model	PT-10WEN8	BLN-010TD1	KS-100W/EN8BP	CGK-030V3L-B (max 11.6KW)	PASRW040S-BP-PS-B (3.80~12.50kw)
	SCOP	4.7	4.47	4.6	4.61	4.61
	Prated	9.05KW	7.86KW	8.82KW	8.03KW	8.73KW

Prated is a very important data for heat pump, and it is related data with sCOP and ERP efficiency level.

Some manufacturers have a very big rank of heat pump capacity on the nameplate, but tested heat pump with small Prated to have higher sCOP.

And it is why people think Chinese heat pump is not saving, if the heat pump is always running in max capacity, the efficiency is very bad.

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Introduction Of Pat EVI Full Dc Inverter Pool Heat Pump For The Warm And Green World

What's the EVI Inverter Technology?

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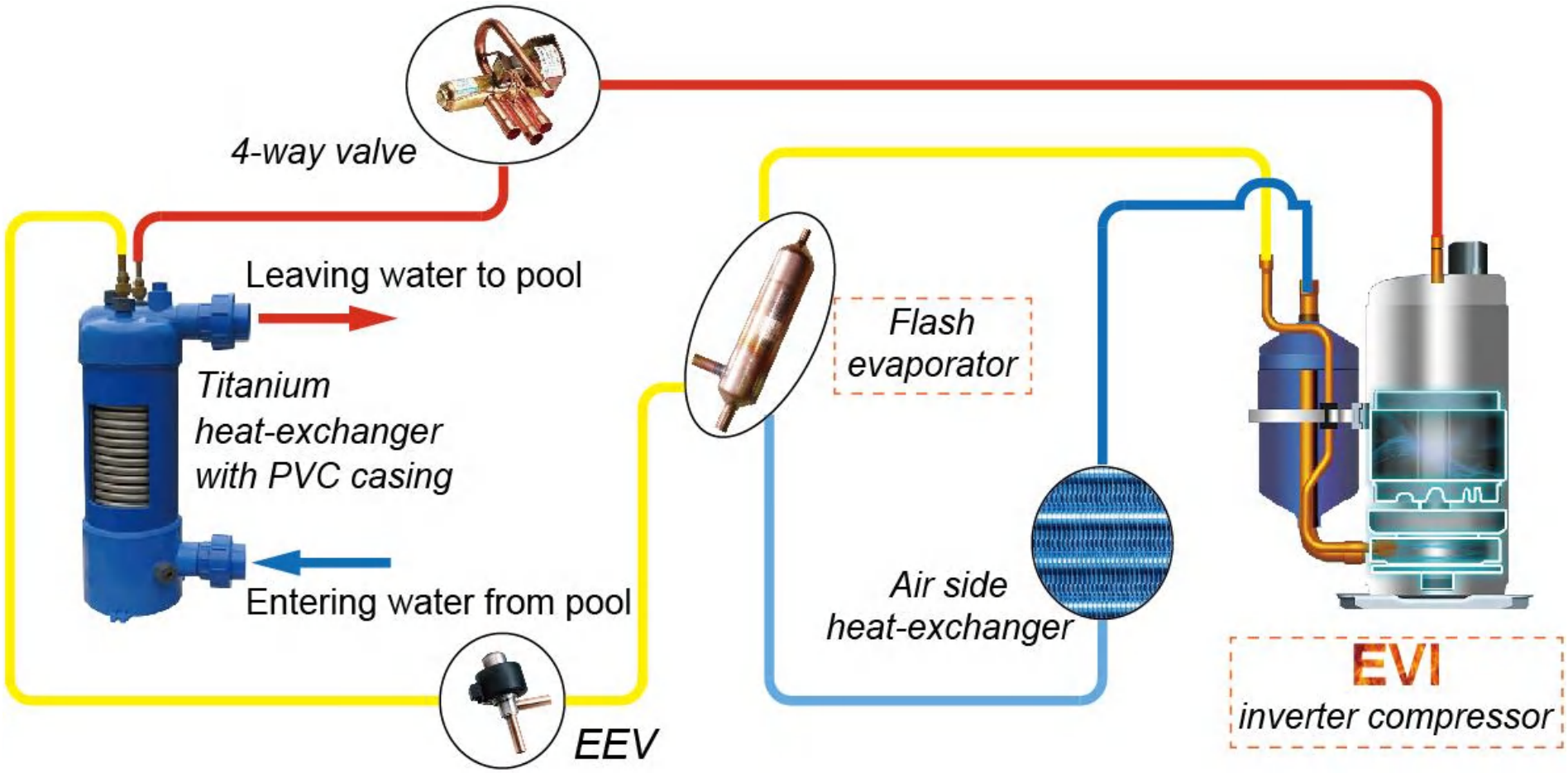

According to different condition, refrigerant go back to compressor by flash evaporator/air side heat- exchanger. In this way the compressor have better pressure balance during the running.

What's the EVI Inverter Technology benefit

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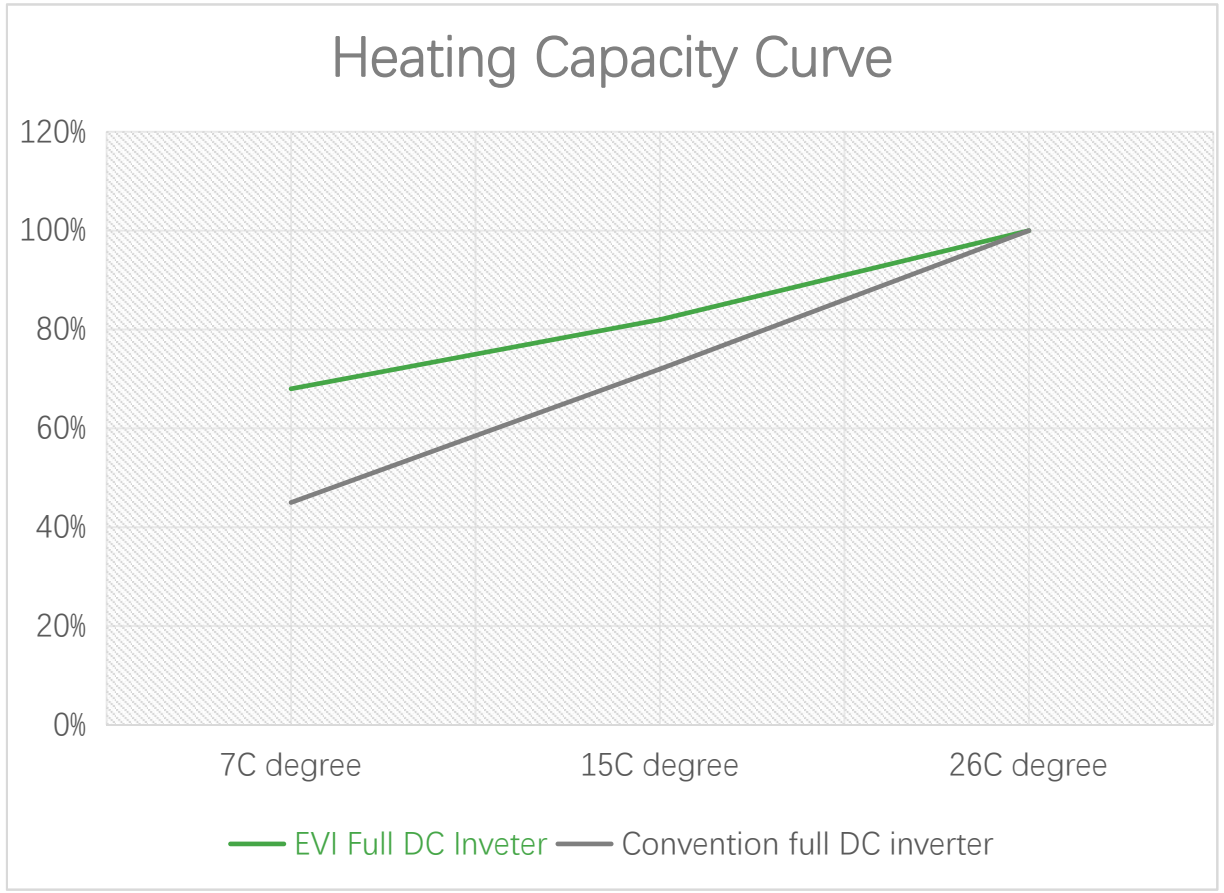

EVI 17kw model WE-17 vs ENPI17M

Descriptif	Unité	ENPI4MA	ENPI6MA	ENPI7M
Alimentation électrique	-			220 - 240 V ∿/ 1 ph
Fréquence	Hz			50
Fluide réfrigérant	-	R32		
Potentiel de réchauffement global	PRG	675		
Masse réfrigérant	kg	0.50	0.60	1.10
Équivalence dioxyde de carbone (1)	tCO_2eq	0.34	0.41	2.30
Plage de puissance de chauffage Air 27°C - Hr(2) 78% - Eau 26°C	kW	2.50 - **9.73**	5.60 - **11.90**	4.15 - **16.60**
Puissance électrique absorbée	kW	0.20 - 1.34	0.52 - 1.66	0.31 - 3.12
Intensité absorbée	A	1.33 - 6.02	2.33 - 7.29	1.48 - 13.48
Coefficient de performance	COP	12.32 - 7.12	10.77 - 7.10	13.39 - 5.32
Plage de puissance de chauffage Air 15°C - Hr(2) 71% - Eau 26°C	kW	1.71 - 7.60	4.40 - 9.20	3.13 - 12.75
Puissance électrique absorbée	kW	0.27 - 1.49	0.69 - 1.70	0.44 - 2.79
Intensité absorbée	A	1.47 - 6.59	3.09 - 7.42	2.06 - 12.14
Coefficient de performance	COP	6.40 - 5.10	6.40 - 5.40	7.12 - 4.57

WE-17: **17.45KW**

WE-17: **14.92KW**

The EVI full DC inverter pool heat pump could keep more heating capacity when the weather is getting cold.

Reliable PCB

PAT CO., LTD

ALL IN ONE TYPE INVERTER PCB

- Stable Quality
- Easy After Sales Service
- Pre-UV Coating
  (to resist moisture and sulfide)

User Friendly Operation

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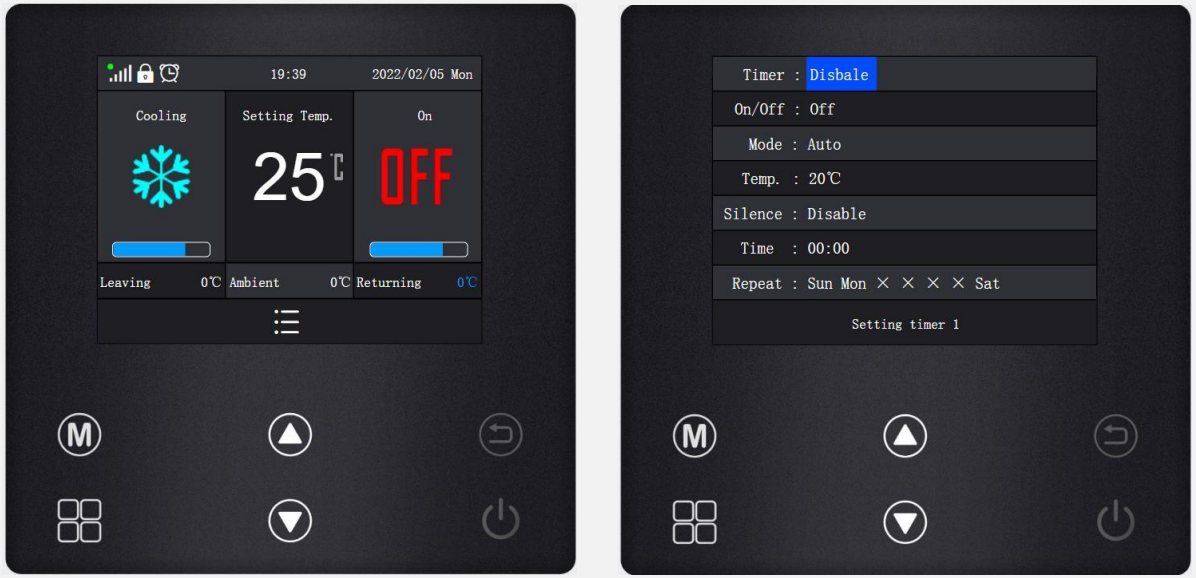

Modes:

Heating, Cooling, Auto, SPA

Setting:

Weekly Scheduler/Auto Silence

Languages:

English/French/Spanish

Wi-Fi:

Tuya solution

Reference Case

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CROSSWIND É TECNOLOGIA INVERTER

Uma atualização da tecnologia da bomba de calor da piscina, impulsiona a absorção de energia do ar e aumenta a produção de calor, aumentando 30% na produção em comparação a bomba de calor tradicional.

-25°C DE SUPERAQUECIMENTO

Desempenho incomparável, pois esta bomba é capaz de funcionar com temperatura ambiente entre -25°C a 43 °C.

APROVEITE SUA PISCINA TODOS OS MESES DO ANO

Banho de piscina durante todo o ano, desfrute sem interrupção de janeiro a dezembro.

MAIS POTÊNCIA E EFICIÊNCIA

Com sistema de refrigerante otimizado a bomba de calor Inverter EVI é capaz de produzir mais calor, reduzir o tempo para aquecer a piscina, podendo chegar a uma economia de até 1,5 dias.

QUATRO MODOS FÁCEIS DE USAR

Modo de resfriamento, aquecimento, SPA e automático refrigeração/aquecimento, atendendo às suas necessidades de todos os tempos para uma economia de energia perfeita

Simule agora!


Thank You