

# Swimming Pool Heat Pump

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## i-Series Inverter Installation and Operation Manual



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## 1. Models

Heating capacity	Cooling capacity	Model	Power supply
1.60kW - 5.30kW	1.50kW - 2.80kW	i5	230V~,1Ph,50Hz
1.60kW - 7.20kW	1.70kW - 3.60kW	i7	230V~,1Ph,50Hz
1.90kW - 9.20kW	1.80kW - 4.60kW	i9	230V~,1Ph,50Hz
2.70kW - 10.90kW	2.40kW - 6.00kW	i11	230V~,1Ph,50Hz
3.40kW - 14.30kW	3.20kW - 7.87kW	i14	230V~,1Ph,50Hz
4.30kW - 17.40kW	3.90kW - 9.60kW	i17	230V~,1Ph,50Hz
4.80kW - 21.20kW	4.30kW - 11.50kW	i21	230V~,1Ph,50Hz
6.20kW - 25.10kW	5.80kW - 13.90kW	i25	230V~,1Ph,50Hz
6.60kW - 29.00kW	6.20kW - 16.00kW	i29	230V~,1Ph,50Hz
7.70kW - 31.70kW	7.20kW - 17.50kW	i32	230V~,1Ph,50Hz

Notes:

Heating and cooling capacity based on the below conditions.

Heating: Outdoor ambient temperature = 26°C and RH70%; inlet/outlet water temperature = 26°C/28°C.

Cooling: Outdoor ambient temperature = 35°C; inlet/outlet water temperature = 28°C/26°C.

## 2. Product appearance

**PLEASE USE PICTURE OF A MODEL**

Model	Unit dimension	Packing dimension	Net / gross weight
<b>i5</b>	860×330×668	950×410×800	35 / 42
<b>i7</b>	860×330×668	950×410×800	38 / 45
<b>i9</b>	860×330×668	950×410×800	40 / 48
<b>i11</b>	986×356×668	1,080×435×800	44 / 54
<b>i14</b>	986×356×668	1,080×435×800	46 / 56
<b>i17</b>	986×356×668	1,080×435×800	56 / 66
<b>i21</b>	1,076×426×720	1,161×490×855	67 / 80
<b>i25</b>	1,076×426×720	1,161×490×855	72 / 85
<b>i29</b>	1,176×451×822	1,261×515×957	90 / 108
<b>i32</b>	1,176×451×822	1,261×515×957	98 / 116

### 3. Specifications

Model			i5	i7
Power supply			230V~, 1Ph, 50Hz	230V~, 1Ph, 50Hz
Air temperature: 15°C, RH70%, inlet/outlet water temperature: 26°C/28°C				
Heating capacity		kW	1.10 - 3.80	1.30 - 5.10
Power input		kW	0.14 - 0.75	0.17 - 1.06
COP			5.10 - 7.90	4.80 - 7.80
Boost mode	Heating capacity	kW	3.80	5.10
	COP		5.10	4.80
Smart mode	Heating capacity	kW	3.04	4.08
	COP		5.91	5.90
Silent mode	Heating capacity	kW	2.01	2.55
	COP		6.82	6.75
Air temperature: 26°C, RH70%, inlet/outlet water temperature: 26°C/28°C				
Heating capacity		kW	1.60 - 5.30	1.60 - 7.20
Power input		kW	0.13 - 0.88	0.13 - 1.19
COP			6.25 - 14.50	6.22 - 14.55
Boost mode	Heating capacity	kW	5.30	7.20
	COP		6.31	6.26
Smart mode	Heating capacity	kW	4.40	5.92
	COP		7.70	7.65
Silent mode	Heating capacity	kW	2.80	3.70
	COP		10.50	10.42
Air temperature: 35°C, inlet/outlet water temperature: 28°C/26°C				
Cooling capacity		kW	1.50 - 2.80	1.70 - 3.60
Power input		kW	0.20 - 0.62	0.22 - 0.80
EER			4.51 - 7.55	4.48 - 7.53
Boost mode	Heating capacity	kW	2.80	3.60
	EER		4.51	4.48
Smart mode	Heating capacity	kW	2.24	2.88
	EER		5.62	5.60
Silent mode	Heating capacity	kW	1.70	2.16
	EER		6.95	6.92
Max. input		kW	1.23	1.50
Max. current		A	5.35	6.53
Water flow		m <sup>3</sup> /h	2 - 3	3 - 4
Water pressure drop		kPa	16	16
Running temperature range			-15°C - 43°C	-15°C - 43°C
Advised swimming pool size			10m <sup>3</sup> - 20m <sup>3</sup>	15m <sup>3</sup> - 30m <sup>3</sup>
Refrigerant system pressure (Max. / Min.)			1.5MPa / 4.15MPa	1.5MPa / 4.15MPa

**Continued:**

Model			i5	i7
Refrigerant	Type		R32	R32
	Charged	kg	0.5	0.7
GWP value			675	675
Equivalent CO <sub>2</sub>		Ton	0.3375	0.4725
Compressor	Brand		GMCC	GMCC
	Model		KSK103D53UFZ	KSK103D53UFZ
	Type		DC inverter, rotary	DC inverter, rotary
	Quantity		1	1
	Capacity	kW	3.220 (@60rps)	3.220 (@60rps)
	Input	kW	0.839 (@60rps)	0.839 (@60rps)
	Current	A	5.70 (@60rps)	5.70 (@60rps)
	Oil type / charged		Estel oil VG74 / 320ml	Estel oil VG74 / 320ml
Air side heat-exchanger	Material		Hydrophilic aluminum & Inner groove copper tube	
	Rows		1	1
	Tube size	mm	Φ7	Φ9.52
Fan motor	Fan type		Axial	Axial
	Fan size	mm	Φ429×119	Φ429×119
	Motor type		BLDC	BLDC
	Motor model		RD34HA	RD34HA
	Motor Brand		LT	LT
	Quantity		1	1
	Speed	rpm	1,000	1,000
Throttling type			Electronic Expansion valve	
Water side heat-exchanger			Titanium heat-exchanger with PVC casing	
Sound pressure level	@1m	dB(A)	35.3 - 43.1	37.7 - 46.1
	@4m	dB(A)	27.4 - 35.8	29.5 - 36.6
	@10m	dB(A)	19.1 - 27.2	19.5 - 27.4
Water pipe connection	Inlet		G1-1/2	G1-1/2
	Outlet		G1-1/2	G1-1/2
Controller (Standard: LCD)			LWC04-V01	LWC04-V01
Anti-UV cover			Yes	Yes
Water resistance			IP×4	IP×4
Dimension (L×W×H)	Unit	mm	860×330×668	860×330×668
	Packing	mm	950×410×800	950×410×800
Weight	Net	kg	35	38
	Gross	kg	42	45

## Notes:

1. Advised swimming pool size is the size of the pool with IOSthermal cover at night and when not in use.
2. The specification may be changed for product improvement, please refer to the nameplate of product.

Model			i9	i11
Power supply			230V~, 1Ph, 50Hz	230V~, 1Ph, 50Hz
Air temperature: 15°C, RH70%, inlet/outlet water temperature: 26°C/28°C				
Heating capacity		kW	1.60 – 6.70	2.18 - 8.13
Power input		kW	0.21 - 1.34	0.28 - 1.59
COP			5.00 - 7.70	4.9 - 7.8
Boost mode	Heating capacity	kW	5.95	8.13
	COP		5.00	4.90
Smart mode	Heating capacity	kW	4.76	6.50
	COP		5.88	5.76
Silent mode	Heating capacity	kW	2.98	4.07
	COP		6.67	6.53
Air temperature: 26°C, RH70%, inlet/outlet water temperature: 26°C/28°C				
Heating capacity		kW	1.90 - 9.20	2.70 - 10.90
Power input		kW	0.13 - 1.28	0.18 - 1.74
COP			6.24 - 14.71	6.27 - 14.8
Boost mode	Heating capacity	kW	9.20	10.90
	COP		6.24	6.27
Smart mode	Heating capacity	kW	7.45	8.94
	COP		7.80	7.84
Silent mode	Heating capacity	kW	4.60	5.45
	COP		10.40	10.45
Air temperature: 35°C, inlet/outlet water temperature: 28°C/26°C				
Cooling capacity		kW	1.80 - 4.60	2.40 - 6.00
Power input		kW	0.28 - 1.20	0.33 - 1.39
EER			4.47 - 7.46	4.32 - 7.34
Boost mode	Heating capacity	kW	4.60	6.00
	EER		4.47	4.32
Smart mode	Heating capacity	kW	3.68	4.80
	EER		5.59	5.40
Silent mode	Heating capacity	kW	2.30	3.00
	EER		6.88	6.65
Max. input		kW	1.66	1.93
Max. current		A	7.24	8.4
Water flow		m <sup>3</sup> /h	3 - 5	4 - 6
Water pressure drop		kPa	17	18
Running temperature range			-15°C - 43°C	-15°C - 43°C
Advised swimming pool size			20m <sup>3</sup> - 40m <sup>3</sup>	25m <sup>3</sup> - 50m <sup>3</sup>
Refrigerant system pressure (Max. / Min.)			1.5MPa / 4.15MPa	1.5MPa / 4.15MPa

**Continued:**

Model			i9	i11
Refrigerant	Type		R32	R32
	Charged	kg	1.0	1.3
GWP value			675	675
Equivalent CO <sub>2</sub>		Ton	0.6750	0.8775
Compressor	Brand		GMCC	GMCC
	Model		KTN150D42UFZ	KTN150D42UFZ
	Type		DC inverter, twin-rotary	DC inverter, twin-rotary
	Quantity		1	1
	Capacity	kW	4.680 (@60rps)	4.680 (@60rps)
	Input	kW	1.185 (@60rps)	1.185 (@60rps)
	Current	A	7.70 (@60rps)	7.70 (@60rps)
	Oil type / charged		Estel oil RB74AF / 670ml	Estel oil RB74AF / 670ml
Air side heat-exchanger	Material		Hydrophilic aluminum & Inner groove copper tube	
	Rows		1	1
	Tube size	mm	Φ9.52	Φ9.52
Fan motor	Fan type		Axial	Axial
	Fan size	mm	Φ429×119	Φ420×153
	Motor type		BLDC	BLDC
	Motor model		RD34HA	MWS100-8K-PD7
	Motor Brand		LT	Match-well
	Quantity		1	1
	Speed	rpm	1,000	800
Throttling type			Electronic Expansion valve	
Water side heat-exchanger			Titanium heat-exchanger with PVC casing	
Sound pressure level	@1m	dB(A)	38.1 - 47.2	38.3 - 48.1
	@4m	dB(A)	29.4 - 37.3	30.4 - 37.9
	@10m	dB(A)	20.5 - 27.9	20.6 - 28.2
Water pipe connection	Inlet		G1-1/2	G1-1/2
	Outlet		G1-1/2	G1-1/2
Controller (Standard: LCD)			LWC04-V01	LWC04-V01
Anti-UV cover			Yes	Yes
Water resistance			IP×4	IP×4
Dimension (L×W×H)	Unit	mm	860×330×668	986×356×668
	Packing	mm	950×410×800	1,080×435×800
Weight	Net	kg	40	44
	Gross	kg	48	54

## Notes:

1. Advised swimming pool size is the size of the pool with IOSthermal cover at night and when not in use.
2. The specification may be changed for product improvement, please refer to the nameplate of product.

Model			i14	i17
Power supply			230V~, 1Ph, 50Hz	230V~, 1Ph, 50Hz
Air temperature: 15°C, RH70%, inlet/outlet water temperature: 26°C/28°C				
Heating capacity		kW	2.86 - 10.65	3.49 - 13.00
Power input		kW	0.38 - 2.17	0.47 - 2.64
COP			4.9 - 7.6	4.85 - 7.44
Boost mode	Heating capacity	kW	10.65	13.00
	COP		4.90	4.85
Smart mode	Heating capacity	kW	8.52	10.40
	COP		5.76	5.71
Silent mode	Heating capacity	kW	5.33	6.50
	COP		6.53	6.47
Air temperature: 26°C, RH70%, inlet/outlet water temperature: 26°C/28°C				
Heating capacity		kW	3.40 - 14.30	4.30 - 17.40
Power input		kW	0.23 - 2.32	0.29 - 2.85
COP			6.15 - 14.62	6.00 - 14.50
Boost mode	Heating capacity	kW	14.30	17.40
	COP		6.15	6.00
Smart mode	Heating capacity	kW	11.44	14.01
	COP		7.69	7.50
Silent mode	Heating capacity	kW	7.15	8.70
	COP		10.25	10.00
Air temperature: 35°C, inlet/outlet water temperature: 28°C/26°C				
Cooling capacity		kW	3.20 - 7.87	3.90 - 9.60
Power input		kW	0.43 - 1.78	0.51 - 2.30
EER			4.41 - 7.42	4.24 - 7.40
Boost mode	Heating capacity	kW	7.87	9.60
	EER		4.41	4.24
Smart mode	Heating capacity	kW	6.30	7.68
	EER		5.51	5.30
Silent mode	Heating capacity	kW	3.94	4.80
	EER		6.78	6.52
Max. input		kW	2.21	3.17
Max. current		A	9.6	13.77
Water flow		m <sup>3</sup> /h	5 - 7	6 - 8
Water pressure drop		kPa	18	19
Running temperature range			-15°C - 43°C	-15°C - 43°C
Advised swimming pool size			30m <sup>3</sup> - 60m <sup>3</sup>	35m <sup>3</sup> - 70m <sup>3</sup>
Refrigerant system pressure (Max. / Min.)			1.5MPa / 4.15MPa	1.5MPa / 4.15MPa



**Continued:**

Model			i14	i17
Refrigerant	Type		R32	R32
	Charged	kg	1.5	1.58
GWP value			675	675
Equivalent CO <sub>2</sub>		Ton	1.0125	1.2150
Compressor	Brand		GMCC	GMCC
	Model		KTN150D42UFZ	KTM240D57UMT
	Type		DC inverter, twin-rotary	DC inverter, twin-rotary
	Quantity		1	1
	Capacity	kW	4.680 (@60rps)	7.715 (@60rps)
	Input	kW	1.185 (@60rps)	2.085 (@60rps)
	Current	A	7.70 (@60rps)	9.40 (@60rps)
	Oil type / charged		Estel oil VG74 / 670ml	Estel oil VG74 / 670ml
Air side heat-exchanger	Material		Hydrophilic aluminum & Inner groove copper tube	
	Rows		2	2
	Tube size	mm	Φ7	Φ9.52
Fan motor	Fan type		Axial	Axial
	Fan size	mm	Φ420×153	Φ420×153
	Motor type		BLDC	BLDC
	Motor model		MWS100-8K-PD7	MWS100-8K-PD7
	Motor Brand		Match-well	Match-well
	Quantity		1	1
	Speed	rpm	800	800
Throttling type			Electronic Expansion valve	
Water side heat-exchanger			Titanium heat-exchanger with PVC casing	
Sound pressure level	@1m	dB(A)	38.5 - 48.6	41.5 - 52.5
	@4m	dB(A)	30.6 - 38.2	32.8 - 40.5
	@10m	dB(A)	20.8 - 28.6	23.0 - 31.8
Water pipe connection	Inlet		G1-1/2	G1-1/2
	Outlet		G1-1/2	G1-1/2
Controller (Standard: LCD)			LWC04-V01	LWC04-V01
Anti-UV cover			Yes	Yes
Water resistance			IP×4	IP×4
Dimension (L×W×H)	Unit	mm	986×356×668	986×356×668
	Packing	mm	1,080×435×800	1,080×435×800
Weight	Net	kg	46	56
	Gross	kg	56	66

## Notes:

1. Advised swimming pool size is the size of the pool with IOSthermal cover at night and when not in use.
2. The specification may be changed for product improvement, please refer to the nameplate of product.

<b>Model</b>		<b>i21</b>	
Power supply		230V~, 1Ph, 50Hz	
Air temperature: 15°C, RH70%, inlet/outlet water temperature: 26°C/28°C			
Heating capacity		kW	3.76 - 15.70
Power input		kW	0.48 - 2.75
COP		5.10 - 7.52	
Boost mode	Heating capacity	kW	15.70
	COP		5.10
Smart mode	Heating capacity	kW	12.56
	COP		6.00
Silent mode	Heating capacity	kW	7.85
	COP		6.80
Air temperature: 26°C, RH70%, inlet/outlet water temperature: 26°C/28°C			
Heating capacity		kW	4.80 - 21.20
Power input		kW	0.33 - 3.38
COP		6.36 - 14.55	
Boost mode	Heating capacity	kW	21.20
	COP		6.36
Smart mode	Heating capacity	kW	17.17
	COP		7.95
Silent mode	Heating capacity	kW	10.60
	COP		10.60
Air temperature: 35°C, inlet/outlet water temperature: 28°C/26°C			
Cooling capacity		kW	4.30 - 11.50
Power input		kW	0.57 - 2.62
EER		4.38 - 7.48	
Boost mode	Heating capacity	kW	11.50
	EER		4.38
Smart mode	Heating capacity	kW	9.20
	EER		5.48
Silent mode	Heating capacity	kW	5.75
	EER		6.74
Max. input		kW	3.29
Max. current		A	14.3
Water flow		m <sup>3</sup> /h	7 - 9
Water pressure drop		kPa	20
Running temperature range		-15°C - 43°C	
Advised swimming pool size		40m <sup>3</sup> - 80m <sup>3</sup>	
Refrigerant system pressure (Max. / Min.)		1.5MPa / 4.15MPa	

**Continued:**

Model			i21
Refrigerant	Type		R32
	Charged	kg	2.0
GWP value			675
Equivalent CO <sub>2</sub>		Ton	1.3500
Compressor	Brand		GMCC
	Model		KTM240D57UMT
	Type		DC inverter, twin-rotary
	Quantity		1
	Capacity	kW	7.715 (@60rps)
	Input	kW	2.085 (@60rps)
	Current	A	9.40 (@60rps)
	Oil type / charged		Estel oil VG74 / 670ml
Air side heat-exchanger	Material		Hydrophilic aluminum & Inner groove copper tube
	Rows		1.5
	Tube size	mm	Φ9.52
Fan motor	Fan type		Axial
	Fan size	mm	Φ458.5×152
	Motor type		BLDC
	Motor model		MWS100-8K-PD
	Motor Brand		Match-well
	Quantity		1
	Speed	rpm	800
Throttling type			Electronic Expansion valve
Water side heat-exchanger			Titanium heat-exchanger with PVC casing
Sound pressure level	@1m	dB(A)	42.3 - 53.1
	@4m	dB(A)	33.2 - 40.9
	@10m	dB(A)	23.6 - 32.2
Water pipe connection	Inlet		G1-1/2
	Outlet		G1-1/2
Controller (Standard: LCD)			LWC04-V01
Anti-UV cover			Yes
Water resistance			IP×4
Dimension (L×W×H)	Unit	mm	1,076×426×720
	Packing	mm	1,161×490×855
Weight	Net	kg	67
	Gross	kg	80

## Notes:

1. Advised swimming pool size is the size of the pool with IOSthermal cover at night and when not in use.
2. The specification may be changed for product improvement, please refer to the nameplate of product.

Model			i25	i29
Power supply			230V~, 1Ph, 50Hz	230V~, 1Ph, 50Hz
Air temperature: 15°C, RH70%, inlet/outlet water temperature: 26°C/28°C				
Heating capacity		kW	5.15 - 18.52	5.43 - 21.28
Power input		kW	0.68 - 3.77	0.73 - 4.30
COP			4.91 - 7.53	4.95 - 7.51
Boost mode	Heating capacity	kW	18.52	21.28
	COP		4.91	4.95
Smart mode	Heating capacity	kW	14.82	17.02
	COP		5.74	5.82
Silent mode	Heating capacity	kW	9.26	10.54
	COP		6.51	6.60
Air temperature: 26°C, RH70%, inlet/outlet water temperature: 26°C/28°C				
Heating capacity		kW	6.20 - 25.10	6.60 - 29.00
Power input		kW	0.43 - 4.05	0.46 - 4.75
COP			6.20 - 14.52	6.10 - 14.54
Boost mode	Heating capacity	kW	25.10	29.00
	COP		6.20	6.10
Smart mode	Heating capacity	kW	20.10	23.20
	COP		7.60	7.63
Silent mode	Heating capacity	kW	12.52	14.55
	COP		10.15	10.17
Air temperature: 35°C, inlet/outlet water temperature: 28°C/26°C				
Cooling capacity		kW	5.80 - 13.90	6.20 - 16.00
Power input		kW	0.80 - 3.35	0.82 - 3.73
EER			4.15 - 7.22	4.29 - 7.54
Boost mode	Heating capacity	kW	13.90	16.00
	EER		4.15	4.29
Smart mode	Heating capacity	kW	11.10	12.80
	EER		5.18	5.36
Silent mode	Heating capacity	kW	6.95	8.00
	EER		6.40	6.60
Max. input		kW	4.49	4.91
Max. current		A	19.52	21.35
Water flow		m <sup>3</sup> /h	8 - 11	9 - 12
Water pressure drop		kPa	23	25
Running temperature range			-15°C - 43°C	-15°C - 43°C
Advised swimming pool size			65m <sup>3</sup> - 110m <sup>3</sup>	70m <sup>3</sup> - 130m <sup>3</sup>
Refrigerant system pressure (Max. / Min.)			1.5MPa / 4.15MPa	1.5MPa / 4.15MPa

**Continued:**

Model			i25	i29
Refrigerant	Type		R32	R32
	Charged	kg	2.6	3.0
GWP value			675	675
Equivalent CO <sub>2</sub>		Ton	1.7550	2.0250
Compressor	Brand		GMCC	GMCC
	Model		KTF310D43UMT	KTQ420D1UMU
	Type		DC inverter, twin-rotary	DC inverter, twin-rotary
	Quantity		1	1
	Capacity	kW	10.0010 (@60rps)	13.700 (@60rps)
	Input	kW	2.765 (@60rps)	3.700 (@60rps)
	Current	A	5.38 (@60rps)	7.02 (@60rps)
	Oil type / charged		Estel oil VG74 / 1,000ml	Estel oil VG74 / 1,400ml
Air side heat-exchanger	Material		Hydrophilic aluminum & Inner groove copper tube	
	Rows		2	2
	Tube size	mm	Φ9.52	Φ7
Fan motor	Fan type		Axial	Axial
	Fan size	mm	Φ458.5×152	Φ525×135
	Motor type		BLDC	BLDC
	Motor model		MWS100-8K-PD	MWS100-8K-PD4
	Motor Brand		Match-well	Match-well
	Quantity		1	1
	Speed	rpm	800	800
Throttling type			Electronic Expansion valve	
Water side heat-exchanger			Titanium heat-exchanger with PVC casing	
Sound pressure level	@1m	dB(A)	44.7 - 54.9	45.6 - 57.1
	@4m	dB(A)	35.6 - 41.8	36.4 - 44.7
	@10m	dB(A)	24.6 - 33.7	26.6 - 36.5
Water pipe connection	Inlet		G1-1/2	G1-1/2
	Outlet		G1-1/2	G1-1/2
Controller (Standard: LCD)			LWC04-V01	LWC04-V01
Anti-UV cover			Yes	Yes
Water resistance			IP×4	IP×4
Dimension (L×W×H)	Unit	mm	1,076×426×720	1,176×451×822
	Packing	mm	1,161×490×855	1,261×515×957
Weight	Net	kg	72	90
	Gross	kg	85	108

## Notes:

1. Advised swimming pool size is the size of the pool with IOSthermal cover at night and when not in use.
2. The specification may be changed for product improvement, please refer to the nameplate of product.

Model		i32	
Power supply		230V~, 1Ph, 50Hz	
Air temperature: 15°C, RH70%, inlet/outlet water temperature: 26°C/28°C			
Heating capacity		kW	6.34 - 23.68
Power input		kW	0.87 - 4.80
COP		4.90 - 7.60	
Boost mode	Heating capacity	kW	23.68
	COP		4.90
Smart mode	Heating capacity	kW	18.94
	COP		5.76
Silent mode	Heating capacity	kW	11.84
	COP		6.53
Air temperature: 26°C, RH70%, inlet/outlet water temperature: 26°C/28°C			
Heating capacity		kW	7.70 - 31.70
Power input		kW	0.54 - 5.21
COP		6.11 - 14.60	
Boost mode	Heating capacity	kW	31.70
	COP		6.11
Smart mode	Heating capacity	kW	25.68
	COP		7.64
Silent mode	Heating capacity	kW	15.85
	COP		10.18
Air temperature: 35°C, inlet/outlet water temperature: 28°C/26°C			
Cooling capacity		kW	7.20 - 17.50
Power input		kW	0.97 - 4.17
EER		4.21 - 7.44	
Boost mode	Heating capacity	kW	17.50
	EER		4.21
Smart mode	Heating capacity	kW	14.00
	EER		5.26
Silent mode	Heating capacity	kW	8.75
	EER		6.48
Max. input		kW	5.80
Max. current		A	25.2
Water flow		m <sup>3</sup> /h	12 - 15
Water pressure drop		kPa	28
Running temperature range		-15°C - 43°C	
Advised swimming pool size		80m <sup>3</sup> - 150m <sup>3</sup>	
Refrigerant system pressure (Max. / Min.)		1.5MPa / 4.15MPa	

**Continued:**

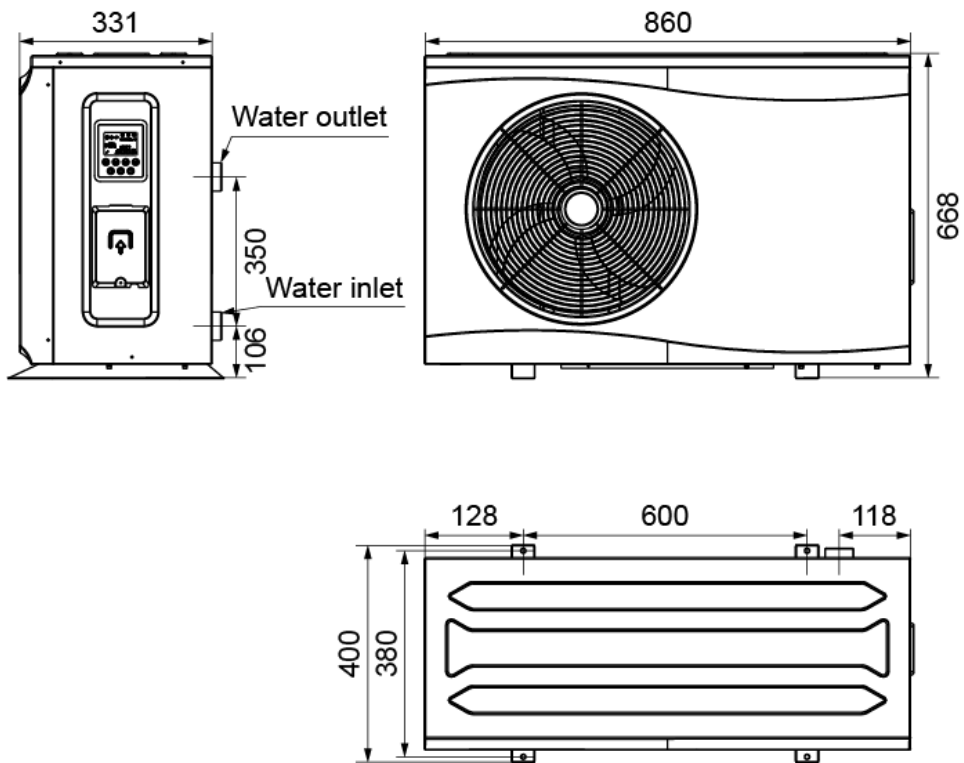
Model			i32
Refrigerant	Type		R22
	Charged	kg	3.3
GWP value			675
Equivalent CO <sub>2</sub>		Ton	2.2275
Compressor	Brand		GMCC
	Model		KTQ420D1UMU
	Type		DC inverter, twin-rotary
	Quantity		1
	Capacity	kW	13.700 (@60rps)
	Input	kW	3.700 (@60rps)
	Current	A	7.02 (@60rps)
	Oil type / charged		Estel oil VG74 / 1,400ml
Air side heat-exchanger	Material		Hydrophilic aluminum & Inner groove copper tube
	Rows		2
	Tube size	mm	Φ9.52
Fan motor	Fan type		Axial
	Fan size	mm	Φ522×140
	Motor type		BLDC
	Motor model		MWS100-8K-PD4
	Motor Brand		Match-well
	Quantity		1
	Speed	rpm	800
Throttling type			Electronic Expansion valve
Water side heat-exchanger			Titanium heat-exchanger with PVC casing
Sound pressure level	@1m	dB(A)	47.2 - 59.7
	@4m	dB(A)	37.9 - 46.9
	@10m	dB(A)	27.3 - 38.2
Water pipe connection	Inlet		G1-1/2
	Outlet		G1-1/2
Controller (Standard: LCD)			LWC04-V01
Anti-UV cover			Yes
Water resistance			IP×4
Dimension (L×W×H)	Unit	mm	1,176×451×822
	Packing	mm	1,261×515×957
Weight	Net	kg	98
	Gross	kg	116

## Notes:

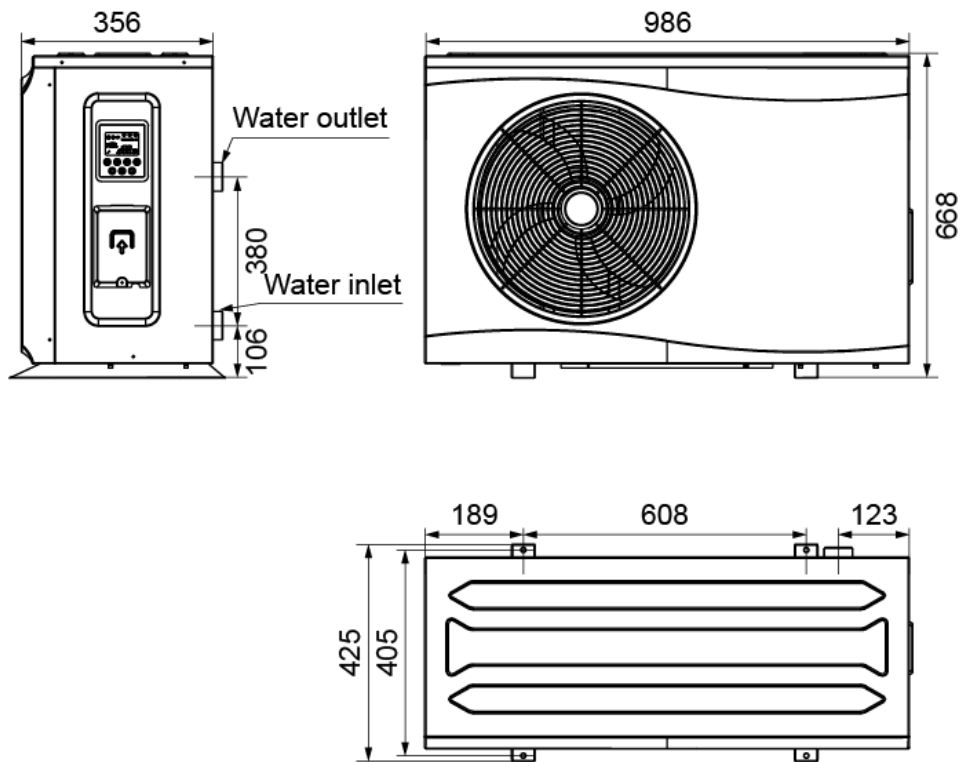
1. Advised swimming pool size is the size of the pool with IOSthermal cover at night and when not in use.
2. The specification may be changed for product improvement, please refer to the nameplate of product.

## 4. Dimensions

i5 / i7 / i9 (Unit: mm)

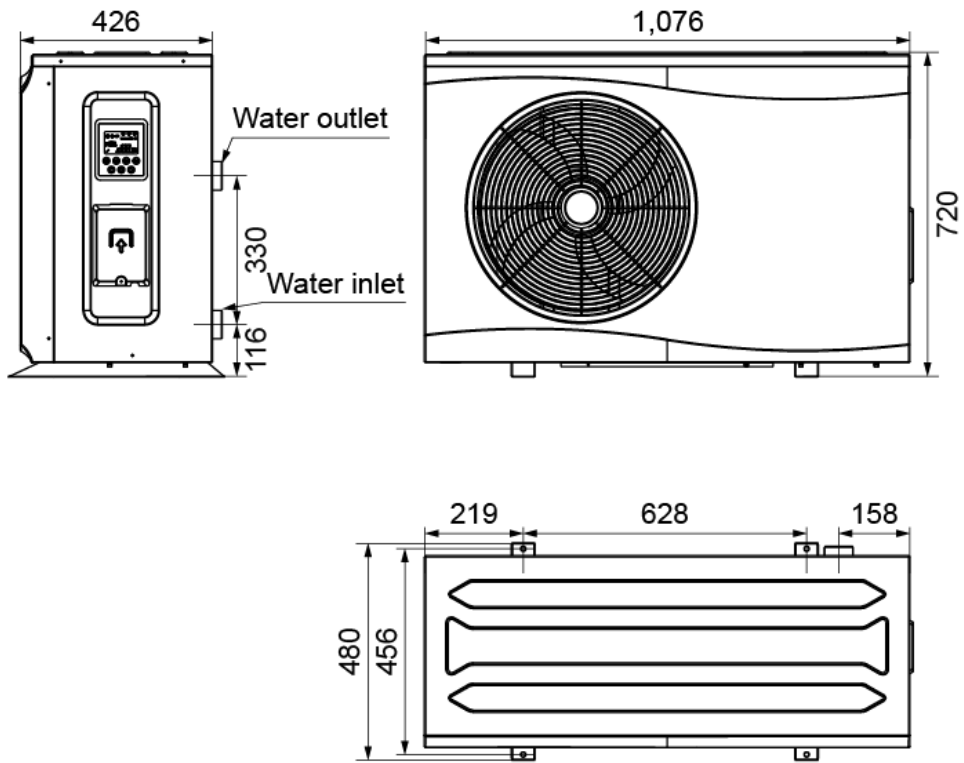


i11 / i14 / i17 (Unit: mm)

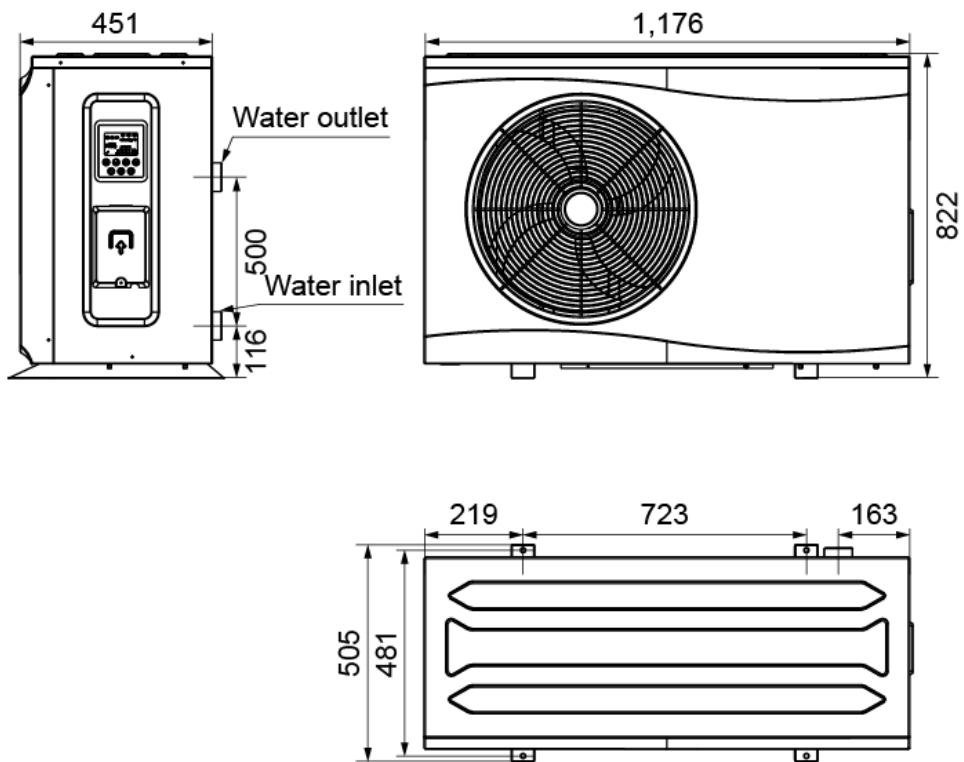




**i21 / i25 (Unit: mm)**

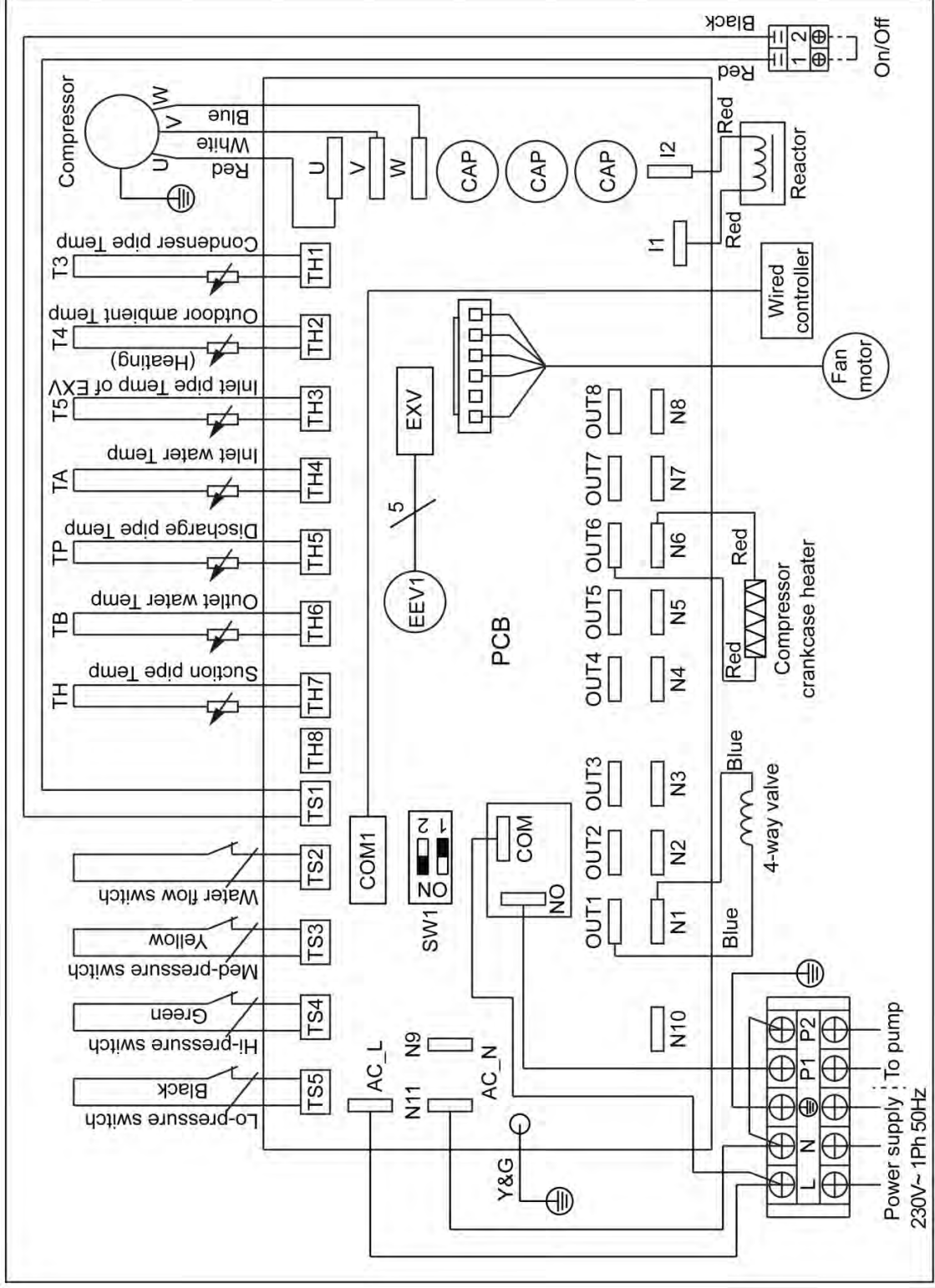


**i29 / i32 (Unit: mm)**

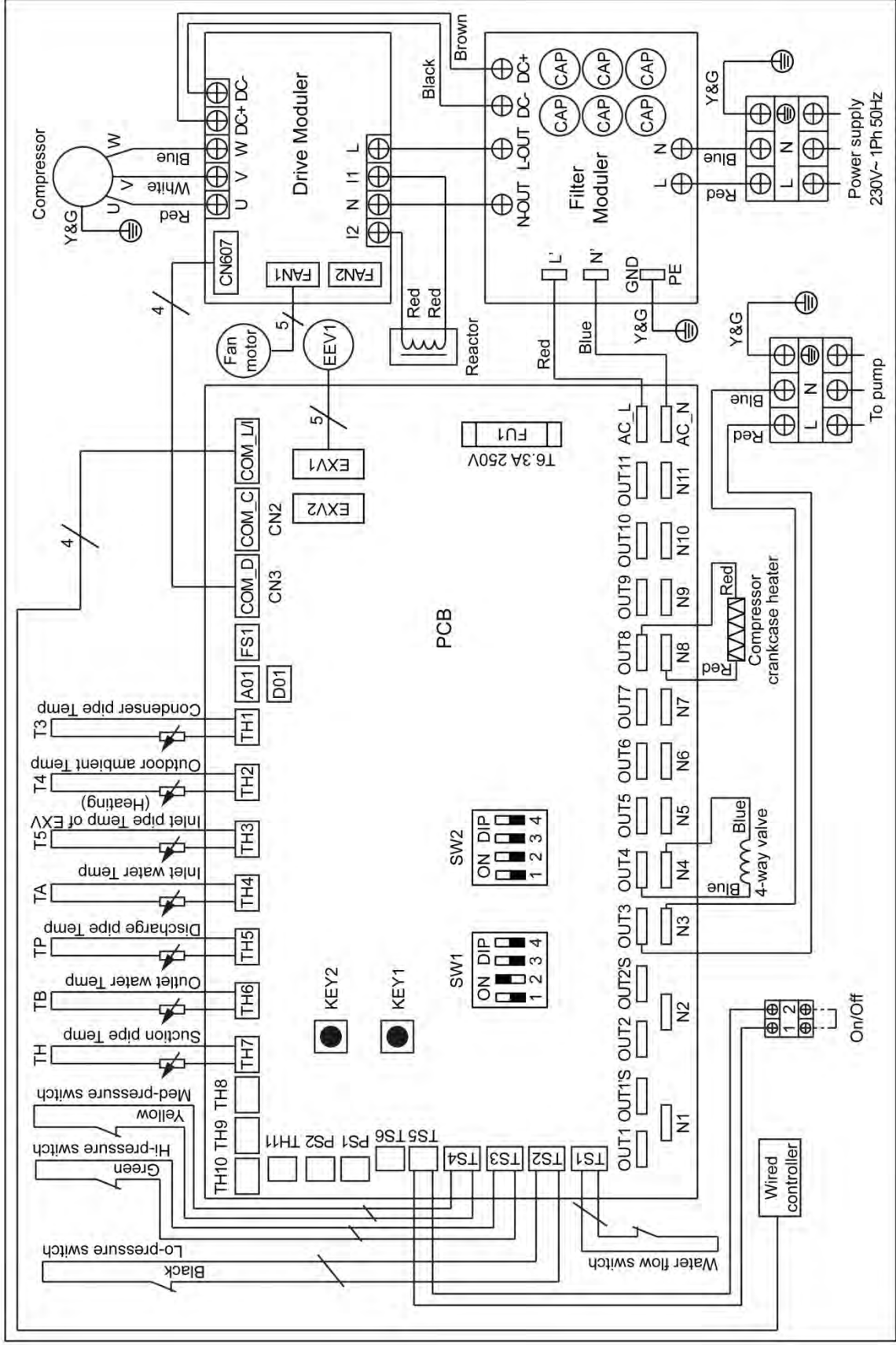


### 5. Wiring diagram

i5 / i7/ i9 / i11 / i14 / i17 / i21 / i25:



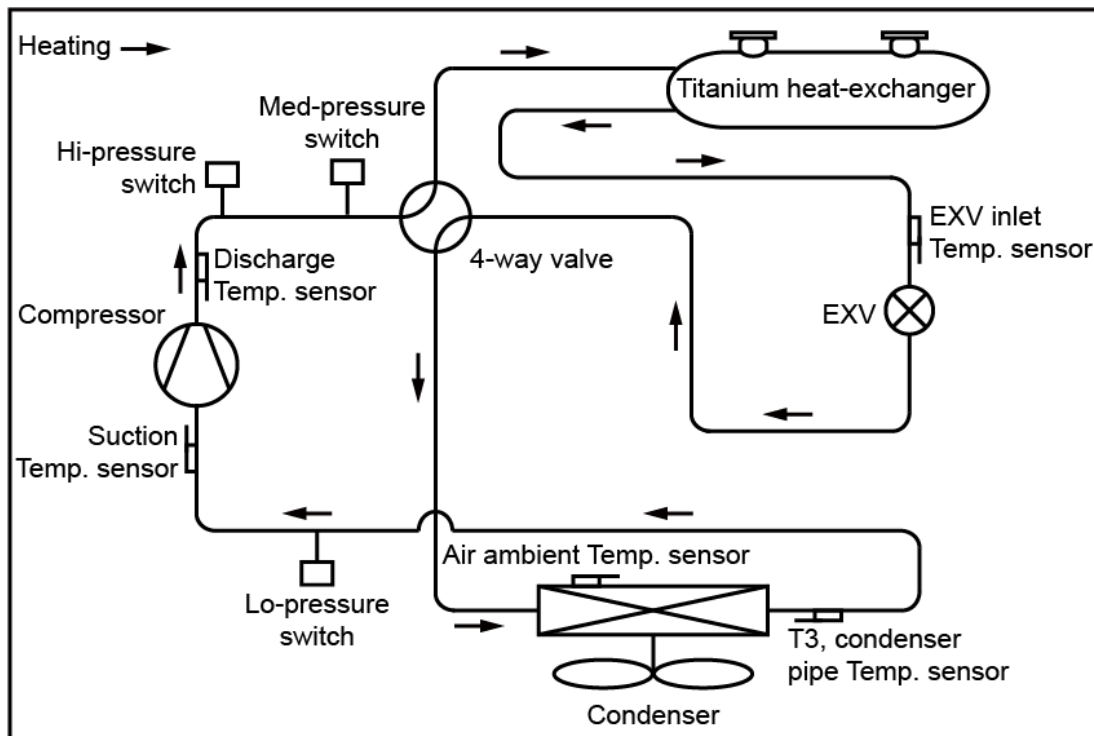
i29 / i32:



## 6. Operation range

Air ambient temperature range	Setting temperature range
-15°C - 43°C	Cooling: 8°C - 25°C; Heating: 15°C - 40°C

## 7. Refrigerant system diagram








Notes:

**Hi-pressure switch:** When the refrigerant pressure in the system is higher than 4.5MPa, the hi-pressure switch will be triggered and the unit will shut down. When the refrigerant pressure in the system is lower than 3.5MPa, the pressure switch will be re-activated and the unit will start again.

**Lo-pressure switch:** When the refrigerant pressure in system is lower than 0.05MPa, the switch will be triggered and the signal of hi-pressure switch will be shutdown. When the refrigerant pressure in system is higher than 0.15MPa, the pressure switch will be recovered.

## 8. Accessories

Items	Shapes	Quantity	Remarks
Installation and operation manual		1	For guidance, installation and operation.
Water connectors		2	For water inlet/outlet connection.
Winter cover		1	To protect the unit during winter.
Rubber gasket		4	To reduce vibration.
Drainage joint and drainage pipe		1	Condense water pipe

## 9. Installation

To prevent injury to the installation engineer, users, or other people, or the damage of the unit, please follow the instructions:

- ✧ Install the unit only when it complies with local regulations, by-laws and standards.
- ✧ Check the main voltage and frequency. The unit is only suitable for earthed sockets and connection voltage 220V-240V~, 50Hz, 1Ph.
- ✧ Be sure to read the safety instructions below before installation.

### 9.1 Safety instructions

- ✓ Incorrect installation could cause an injury due to fire, electric shock, leakage of water and other potential issues.
- ✓ The unit must always have an earthed connection.
- ✓ The unit should be installed on a solid base, otherwise it may fall and cause injury to persons to damage to the unit itself. The fixing bolts should be secured properly and strong enough to support the unit.
- ✓ When installing the unit in a small space, please take measures to prevent possibility of asphyxia due to leakage of the refrigerant, and provide the enough space to carry out service and maintenance on the unit.
- ✓ Do not install the unit in a place where there is a risk of flammable gas leaks. If there is a

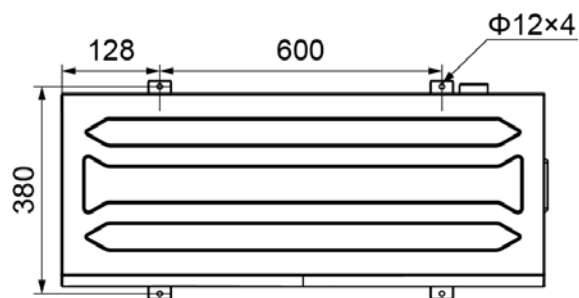
gas leakage and gas accumulation in the area surrounding the unit, it could cause explosions.

- ✓ Please use the specified electrical wires and attached shielded wires to connect the unit's terminal board. Incorrect connection may cause fire.
- ✓ Never use an extension cable to connect the unit to the power supply.
- ✓ Perform the drainage or piping works according to the installation instructions.
- ✓ Do not clean the unit before switching off the power supply. Failure to comply with these instructions could cause injury due to the high-speed running fan or electric shock.
- ✓ Do not continue to run the unit when there is something wrong or if there is a strange smell.
- ✓ Do not put fingers or other things into the fan grille or air side heat-exchanger.

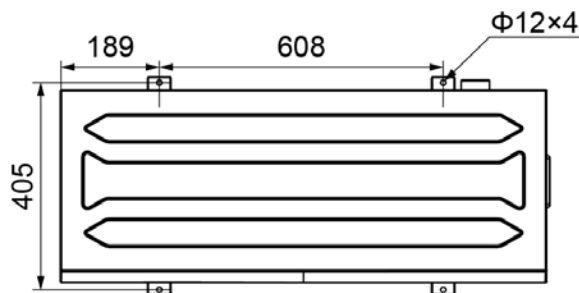
## 9.2 Unit fixing

- ✓ Install the swimming pool heat pump on a flat, horizontal, and stable surface. Make sure there is enough space to use the controller.
- ✓ Make sure that the discharged air will not be breathed in.
- ✓ Avoid directing the flow of the ventilated air towards a sensitive noise zone, such as room windows. Avoid positioning the heat pump on a surface that can transmit vibrations to the dwelling.
- ✓ Avoid placing the unit under a tree or exposed to water or mud, which could affect the operation of the unit and make maintenance and service more complicated.
- ✓ As following figures, please check the unit foot sizes:

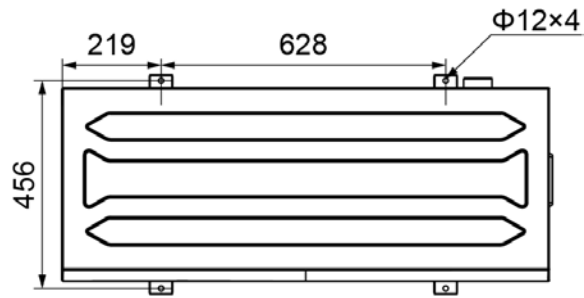
**i5 / i7 / i9:** (Unit: mm)



**i11 / i14 / i17:** (Unit: mm)



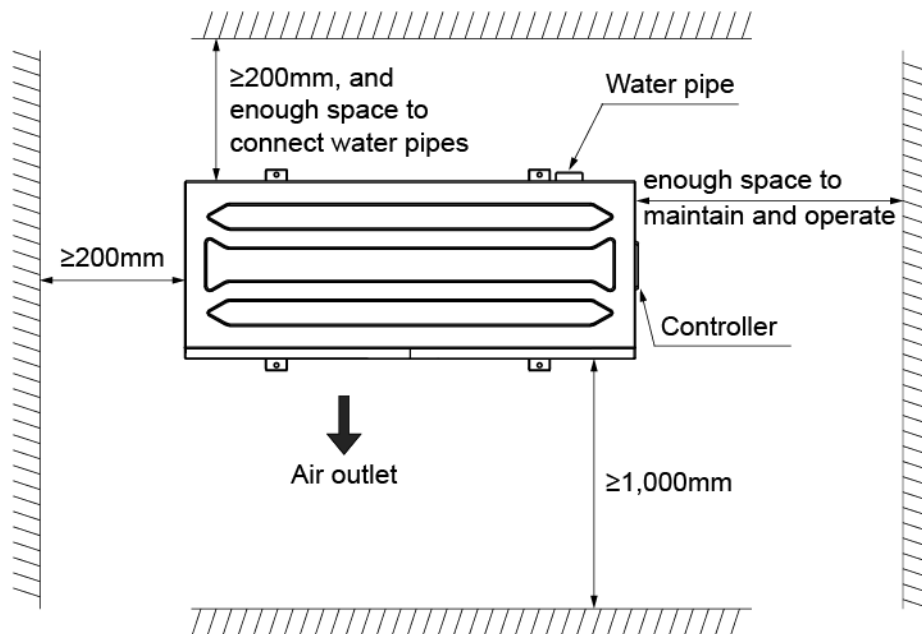
**i21 / i25:** (Unit: mm)



**i29 / i32:** (Unit: mm)

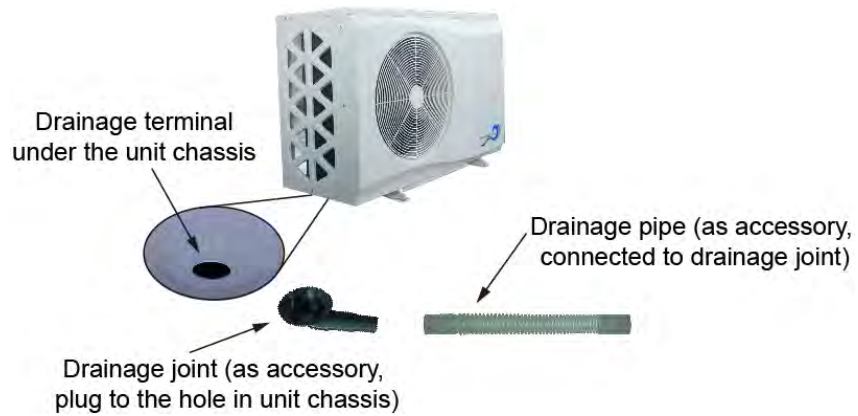


✓ The clearance of the unit (Unit: mm):

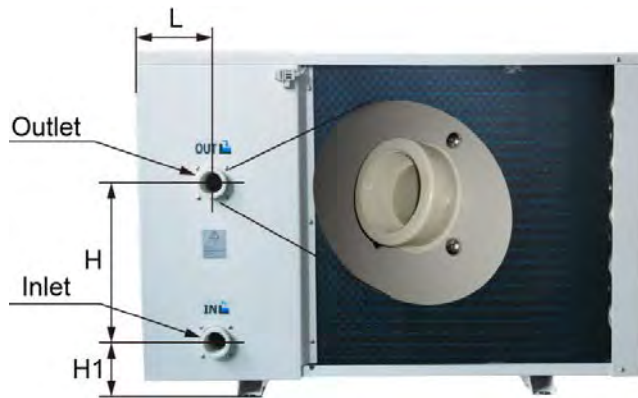


### 9.3 Water pipes connection

- ✓ Drainage pipe connection

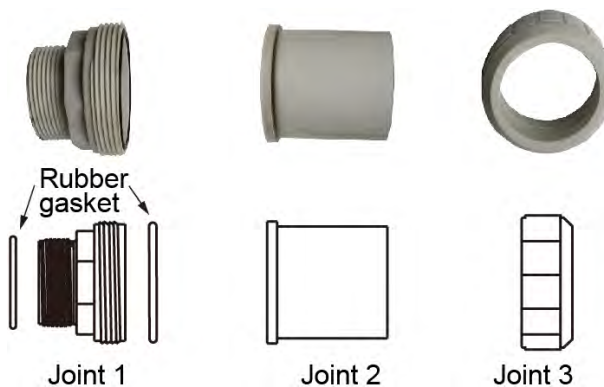


- ✓ Water connections/fitting on unit:



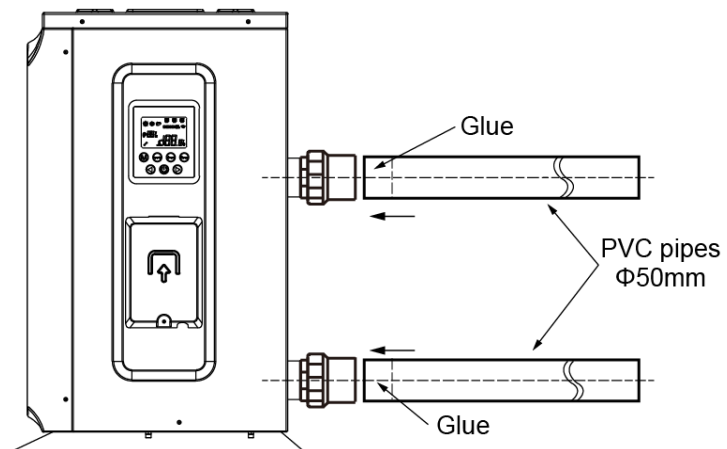
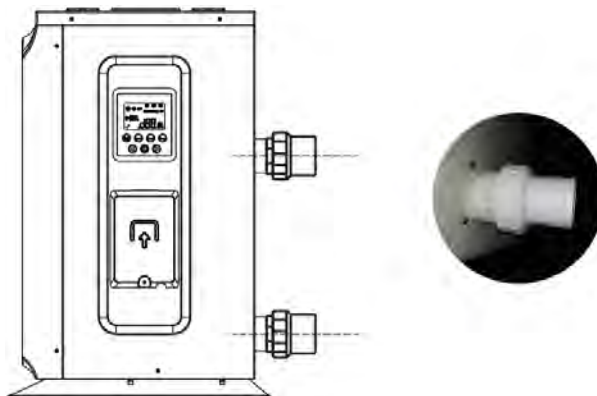
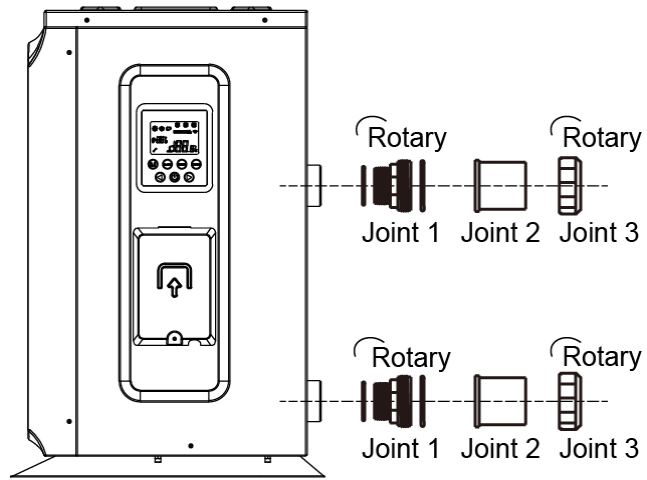
Model	L	H	H1
i5 / i7 / i9	118mm	350mm	106mm
i11 / i14 / i17	123mm	380mm	106mm
i21 / i25	158mm	330mm	116mm
i29 / i32	163mm	500mm	116mm

- ✓ Fittings in unit accessories:

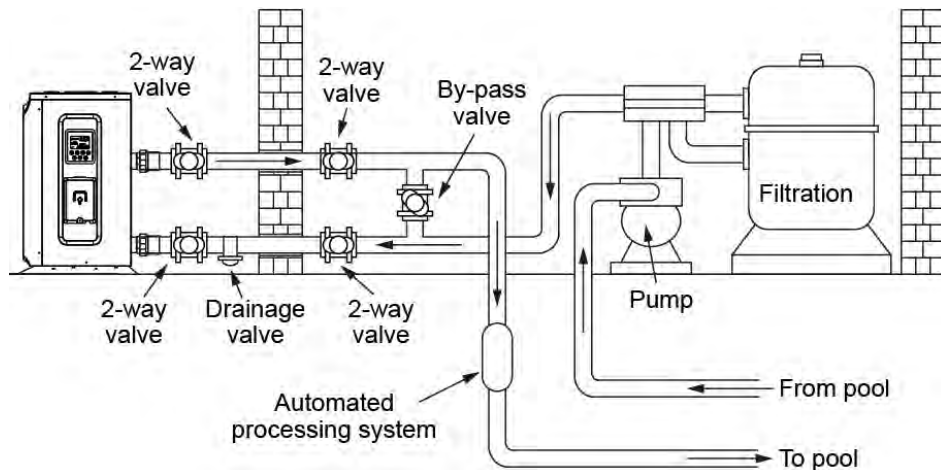




✓ Connection between unit and water pipes



✓ Typical installation



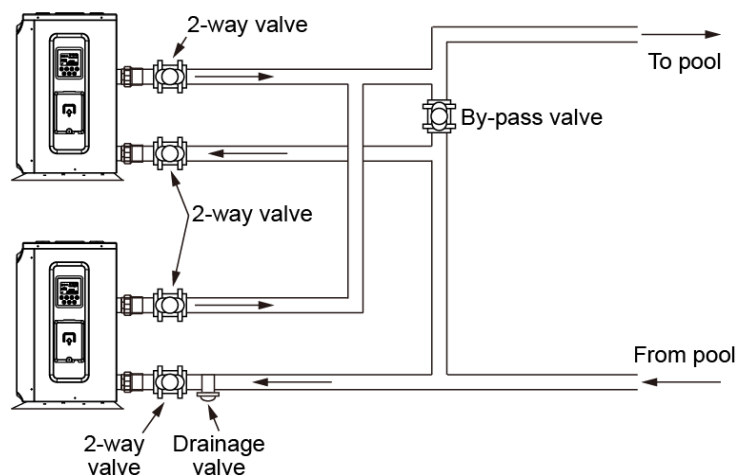
The heat pump is connected to a filtration circuit with a by-pass valve. The by-pass valve only should be half-open (throttled), while all the other valves should be completely open. We recommend to half-open the by-pass valve to avoid excessive pressure on the heat pump.

It is imperative that the by-pass is placed after the water pump and the filtration. The by-pass generally consists of 3 valves. This makes it possible to regulate the water flow which passes through the heat pump and to isolate the heat pump completely for any maintenance work, without affecting the flow of the filtration cycle.

The filter must be cleaned regularly to ensure that the water in the system is clean and to avoid any problems related to clogging of the filter.

It is necessary that the drainage valve is fixed on the lower water pipe. If the unit will not operate during the winter months, disconnect the power supply, and drain water out of the unit through the drainage valve. If using the unit at ambient temperatures below 0°C, please make sure that the water pump is always running.

✓ Parallel installation for 2 units

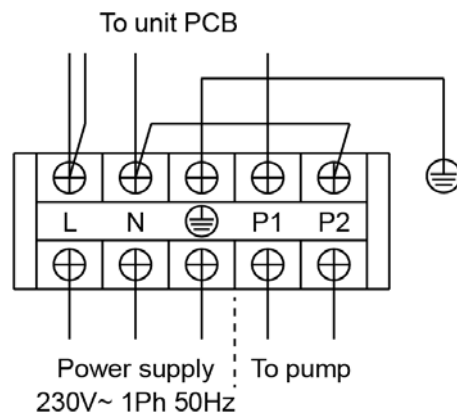


### 9.4 Electrical connection

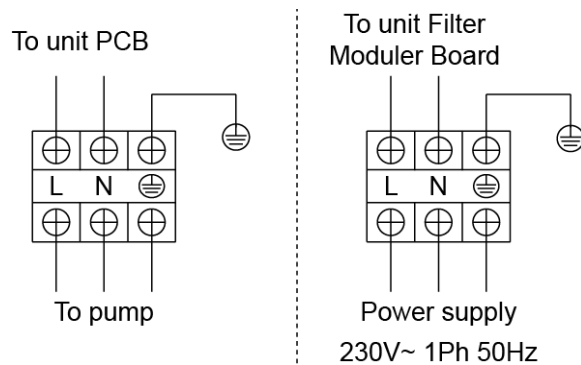
- ✓ Power supply wires size

Model	Power supply wires	
i5	3×2.5mm <sup>2</sup>	AWG 14
i7	3×2.5mm <sup>2</sup>	AWG 14
i9	3×2.5mm <sup>2</sup>	AWG 14
i11	3×2.5mm <sup>2</sup>	AWG 14
i14	3×2.5mm <sup>2</sup>	AWG 14
i17	3×4.0mm <sup>2</sup>	AWG 12
i21	3×4.0mm <sup>2</sup>	AWG 12
i25	3×6.0mm <sup>2</sup>	AWG 10
i29	3×10mm <sup>2</sup>	AWG 8
i32	3×10mm <sup>2</sup>	AWG 8

- ✓ Electrical connection diagrams
- ✓ **i5 / i7/ i9 / i11 / i14 / i17 / i21 / i25:**



**i29 / i32:**



### 9.5 Trial running

- ✓ After water system and electrical wires have been connected, the unit should be ready for a trial run.
- ✓ Before starting the trial run, please double-check the following:
  - a. The unit is horizontal and on a firm base.
  - b. The water circuit is connected properly, without leakage and without any risk of injury due to badly-fitted hydraulic couplings.
  - c. The electrical circuit is connected properly. All cables are tightened correctly at the terminals and at the intermediate circuit breaker. All cables and connections have been insulated and earthed correctly.
  - d. The trial run can start, and the unit can be used, only when there is water flowing in the system.
- ✓ Trial run:
  - a. Open by-pass valve.
  - b. Start water pump in pool water system.
  - c. Turn on the unit.

## 10. Controller

### 10.1 Appearance



### 10.2 Icons

	Heating mode
	Cooling mode
	Auto mode
	Boost mode
	Smart mode
	Silent mode

	Output rate
	Wi-Fi signal
	Inlet water / Outlet water
	Alarm for error
	Temperature or error display

Notes:

If the unit power is off, there will be no temperature showing on the display, and the unit output rate will be 0%.

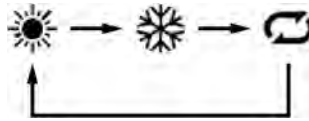
If there is a problem with the unit, the icon will flash, and the icon on the left of the icon will display P (Protection) or E (Error), and the icon on the left of the icon will display the number of the error

### 10.3 Buttons



#### Mode button

When the unit power is on, press this button to change operating mode.



Press this mode button for 3 to 5 seconds, the controller will enter query and configuration mode.



#### Boost mode button

When the unit is running, press this button to enter boost mode.



#### Smart mode button

When the unit is running, press this button to enter smart mode.



#### Silent mode button

When the unit is running, press this button to enter silent mode.



#### Adjustment (arrow) buttons

Press these two buttons to adjust the temperature or parameter settings.



#### On/off button

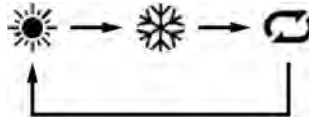
Press this button to power the unit on or switch it off. When in query or configuration mode,

press this to go back to the previous screen. When in query or configuration mode, press and hold this button for 3 to 5 seconds to quit this mode.

## 10.4 Functions

### Mode setting

When the unit is running, press the Mode button to change between the following icons (heating, cooling and auto mode).



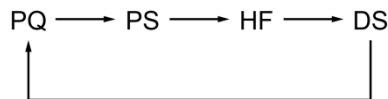
The Boost, Smart and Silent mode buttons can still be used with operation in all 3 modes.

### Setting the water temperature

When the unit is running, press the one of the adjustment/arrow buttons to enter the water temperature setting screen: the value of water temperature setting beside *inlet water icon* will flash. After using the adjustment/arrow buttons to set the desired temperature, press the On/off button to exit the setting interface. If no buttons are pressed for 30 seconds the setting screen will be exited automatically and the new set temperature will be saved.

### Query or configuration function

When the unit is running or on standby, press Mode button for 3 to 5 seconds to enter query or configuration status. At this point, the percent (%) of *output rate icon* will flash with the letters PQ. Press the arrow/adjustment button to change between the following letters on the display:



PQ: Parameter Query interface;

PS: Parameter Setting interface; (Only available for factory)

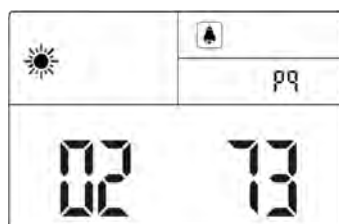
HF: History Fault interface;

DS: Debug Status interface. (Only available for factory)

After selecting one of the 4 interfaces mentioned above, press Mode button to confirm and enter the selected interface.

### In parameter Query interface:

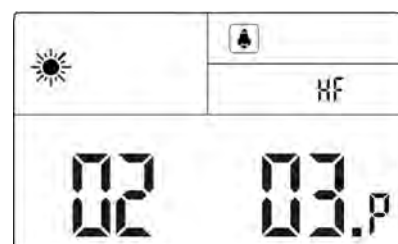
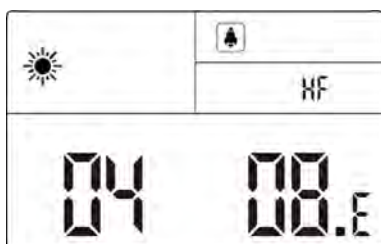
The digits near the *inlet water icon* (left side of screen) will display the item code and the digits near the *outlet water icon* (right side of screen) will display the item value.



Item code	Item value
01	Running frequency of compressor (Hz)
02	EEV Open degree (Displayed value/5)
03	Ambient air temperature (°C)
04	Outlet water temperature (°C)
05	Discharge temperature of refrigerant (°C)
06	Suction temperature of refrigerant (°C)
07	Air side heat-exchanger pipe temperature (°C)
08	Outlet refrigerant temperature of EXV (°C)
09	Water pump status (0=Off, 1=On)
10	4-way valve status (0=Off, 1=On)
11 - 15	Reserved
16	Current of compressor (Displayed value /10)
17	Voltage (Displayed value ×10)
18 - 20	Reserved
21	Fan speed (Displayed value ×15)
22	DC link voltage (Displayed value ×5)
23	DC link current (Compressor current display)
24	PFC temperature (°C)
25	IPM temperature (°C)
26	Frequency target of compressor

### History Fault interface:

The digits near the *inlet water icon (left side of screen)* will display the last 5 errors and protection codes that occurred. The digits near the *outlet water (right side of screen) icon* will display the error or protection code associated with the number sequence of these last 5 error codes. E or P will be displayed after the dot on the right side of the screen.



Code	Error or protection
P01	Water flow protection
P02	Refrigerant system high pressure protection
P03	Refrigerant system low pressure protection
P04	Over-heating protection of air side heat-exchanger pipe
P05	Discharge temperature protection
P06	Anti-freeze protection of outlet water
P07	Low temperature protection of air side heat-exchanger pipe
P08	Reserved
P11	DC motor fault
E01	Communication failure between controller and unit
E02	Discharge temperature sensor failure
E03	Temperature sensor failure of air side heat-exchanger pipe
E04	Air ambient temperature sensor failure
E05	Temperature sensor failure of EXV's inlet pipe
E06	Suction temperature sensor failure
E07	Reserved
E08	Inlet water temperature sensor failure
E09	Outlet water temperature sensor failure
E10	Communication failure between PCB and drive modular board
E11 – E14	Reserved
E15	Over-low of DC link voltage
E16	Over-high of DC link voltage
E17	Current protection of AC power supply
E18	IPM failure
E19	PFC modular failure
E20	Compressor start failure
E21	Phase lack of compressor power supply
E22	Drive modular reset
E23	Over-load current protection of compressor
E24	Over-high temperature protection of PFC modular
E25	Electrical circuits failure
E26	Out of control of compressor's motor speed
E27	Temperature sensor failure of PFC modular
E28	Communication failure
E29	Over-high temperature of IPM



E30	Temperature sensor failure of IPM
E31 – E36	Reserved
E37	Limit frequency according to modular current
E38	Limit frequency according to modular voltage
E51	Communication failure of fan motor

## 11. Unit Functions

### Auto restart function

The unit restarts and resumes the set operating conditions in the event of a power supply shutdown without modification of the controller by hand. Operation will resume 3 minutes after the power supply is restored.

### Boost mode, Smart mode and Silent mode

Boost mode	20% - 100% capacity output, Fast heating	Late spring/early autumn in cooler climate
Smart mode	20% - 80% capacity output, Standard	Spring to autumn in warm climate
Silent mode	20% - 50% capacity output Night use	Middle of summer in hot climate

### Compressor start

When you press the On/off button, the unit will run automatically, and the compressor will operate after 3 minutes. Before the compressor starts, the fan of unit should keep running for 10 seconds.

### Compressor auto stopping

When in cooling mode, the PCB of the unit will automatically compare the temperature of the inlet water with the set temperature.

If  $T$  (the temperature of inlet water)  $<$   $T_s$  (set temperature)  $-2^{\circ}\text{C}$  and for approx. 2 minutes, the compressor will stop.

When in heating mode, the PCB will also automatically compare the inlet water temperature with the set temperature.

#### 1. In SILENT mode:

If  $T$  (inlet water temperature)  $<$   $T_s$  (set temperature)  $-1^{\circ}\text{C}$ , the unit will keep running at 50% frequency. If the inlet water temperature ( $T$ ) does not increase to achieve the set temperature ( $T_s$ ) in 60 minutes, the unit will automatically increase the frequency to 75% and run for another 60 minutes. If there is still no increase in the inlet water temperature ( $T$ ) while running at 75% during this time, the unit will automatically increase the frequency to 100%.

If  $T_s$  (set temperature)  $-1^\circ\text{C} < T$  (inlet water temperature)  $< T_s + 0.5^\circ\text{C}$ , the unit will keep running at 35% frequency.

If  $T_s$  (set temperature)  $+0.5^\circ\text{C} < T$  (inlet water temperature)  $< T_s + 1^\circ\text{C}$ , the unit will keep at 25% frequency.

If  $T_s$  (set temperature)  $+1^\circ\text{C} < T$  (inlet water temperature), the unit will go into standby mode.

When  $T$  (inlet water temperature)  $< T_s$  (set temperature)  $-1^\circ\text{C}$ , the unit will start to run again automatically.

When  $T$  (inlet water temperature) reaches the set temperature, then  $T$  (inlet water temperature) could be in the range between  $T_s$  (set temperature)  $-1^\circ\text{C}$  to  $T_s + 1^\circ\text{C}$  to save more energy.

## **2. In SMART mode:**

If  $T$  (inlet water temperature)  $< T_s$  (set temperature)  $-1^\circ\text{C}$ , the unit will run at 100% frequency.

If  $T_s$  (set temperature)  $-1^\circ\text{C} < T$  (inlet water temperature)  $< T_s$ , the unit will run at 50% frequency.

If the inlet water temperature ( $T$ ) does not increase to achieve the set temperature ( $T_s$ ) in 60 minutes, the unit will automatically increase the frequency to 75% and run for another 60 minutes. If there is still no increase in the inlet water temperature ( $T$ ) while running at 75% during this time, the unit will automatically increase the frequency to 100%.

If  $T_s$  (set temperature)  $< T$  (inlet water temperature)  $< T_s + 0.5^\circ\text{C}$ , the unit will run at 35% frequency.

If  $T_s$  (set temperature)  $+0.5^\circ\text{C} < T$  (inlet water temperature)  $< T_s + 1^\circ\text{C}$ , the unit will run at 25% frequency.

If  $T_s$  (set temperature)  $1^\circ\text{C} < T$  (inlet water temperature), the unit will go into standby mode.

When  $T$  (inlet water temperature)  $< T_s$  (set temperature)  $-1^\circ\text{C}$ , the unit will start to run again automatically.

## **3. In BOOST mode:**

If  $T$  (inlet water temperature)  $< T_s$  (set temperature)  $+0.5^\circ\text{C}$ , the unit will keep running at 100% frequency.

If  $T_s$  (set temperature)  $+0.5^\circ\text{C} < T$  (inlet water temperature)  $< T_s + 1^\circ\text{C}$ , the unit will keep running at 50% frequency.

If  $T_s$  (set temperature)  $+1^\circ\text{C} < T$  (inlet water temperature), the unit will go into standby mode.

When  $T$  (inlet water temperature)  $< T_s$  (set temperature)  $-1^\circ\text{C}$ , the unit will start to run again automatically.

### **Defrost function**

When the unit runs continuously in heating mode, it is inevitable that some ice will form on the surface of air side heat-exchanger / evaporator. To achieve high performance, the unit will enter defrost mode according to the way it has been programmed. In defrost mode, the speed of the compressor is reduced, the fan motor stops, and the unit operates in cooling mode.

### **Water flow protection**

When the water/filtration pump (installed at the site as part of the pool filtration system) is

started and runs for 30 seconds, the water flow switch circuit will be activated. If the circuit is broken (no flow), the heat pump will stop running, and P01 will be displayed.

After 3 minutes, the heat pump will begin running automatically. The unit will continue to detect the water flow. When the unit detects that water is flowing, it will start again. But, the unit detects that water flow has stopped for 3 times (flow switch circuit is broken 3 times), the unit will stop, and the controller will display P01.

#### **Lo-pressure protection**

When the compressor is running, if the PCB detects that the lo-pressure switch circuit is broken, the unit will stop and the controller will display P03. After 3 minutes, if it is detected that the lo-pressure switch is short, the unit will start to operate automatically.

If controller display error P03 occurs 3 times in 1 hour, the unit will stop running and the controller will display P03.

#### **Hi-pressure protection**

When the compressor is running, when it is detected that the high-pressure switch circuit is broken, the unit will stop immediately and protection code P02, will be displayed on the controller. The unit cannot restart automatically unless power is disconnected and restored.

When the compressor is running in cooling mode, if the temperature of the condenser pipe exceeds 65°C for 1 minute continuously, the compressor will stop and P04 will be displayed. At the same time, the fan will operate in high speed. When the temperature is lower than 52°C, the unit will restart, the P04 code will disappear, and the compressor will begin to operate after 3 minutes.

#### **Discharge temperature protection**

Once the discharge temperature sensor detects that the temperature of the discharge pipe exceeds 110°C, the compressor will stop and code P05 will be displayed. If the discharge temperature protection is triggered 3 times in 1 hour, the unit will stop, and P05 will be displayed.

## **12. Maintenance**

Maintenance should be carried out once a year by qualified professional technician. It is necessary to disconnect the power supply to the unit before doing any maintenance. Please do not touch any electronic components until all LED lights and the PCB are off.

The evaporator can be cleaned with household detergents or clean water: never use gasoline, thinners or any similar fuel.

- ✓ Check the water supply device and the release often.
- ✓ Check the power supply cable and cable connection.
- ✓ Avoid the condition of no water or air entering the water pipe system.
- ✓ Clear the air side heat-exchanger regularly to maintain good ventilation.
- ✓ The water pipe system and the titanium heat-exchanger must be cleaned by a qualified professional technician.

### 13. Trouble-shooting

Code	Error or protection	Analysis	Diagnosis	Solution
P01	Water flow protection	No water flow	Check if water in valve is closed or no water inlet.	Open the valve.
		Flow switch failure	Check if flow switch is blocked or damaged.	Replace the flow switch.
		Water system block	Check if Y-shape filter is blocked.	Clean or change filter.
P02	Refrigerant system high pressure protection	Too little water flow	Check if water flow through the unit is not enough or if water pump flow is not enough.	Replace with a new pump with larger water flow.
		High pressure switch is damaged/faulty	Check if high pressure switch is short.	Replace with a new high pressure switch.
		Refrigerant system blocked	Check if refrigerant system is blocked.	Change the filter.
		EEV deadlock	When unit is off, turn on the unit and then turn it off to check if the EEV generates the reset sound.	Replace with a new EEV.
		Lack of refrigerant	Check the pressure gauge	Repair the leakage and charge refrigerant.
P03	Refrigerant system low pressure protection	Refrigerant system blocked	Check if filter is blocked.	Replace filter
		Operating range of unit exceeded	Check if ambient temp. and water temperature exceed operating range.	\

**Continued:**

Code	Error or protection	Analysis	Diagnosis	Solution
P04	Over-heat protection of air side heat-exchanger pipe	Fan blowing area is blocked.	Check if the area is open.	Clear the blowing area.
		Coil is blocked.	Check if the coil is too dirty.	Clean the coil.
		Heat-exchanger sensor is damaged/faulty.	Check if the sensor resistance is correct.	Replace with a new sensor.
P05	Discharge temperature protection	Lack of refrigerant	Check if there is a refrigerant leak.	Repair the leak and charge refrigerant.
		Discharge temperature sensor is damaged/faulty.	Check if the sensor resistance is correct.	Replace with a new sensor.
P06	Anti-freeze protection of outlet water	Water flow not enough	Check if there is air in water system.	Remove air from water system.
		Heat-exchanger blocked	Check if plate exchanger is blocked.	Blow the plate heat-exchanger with water or high pressure air from the opposite direction of the normal flow.
		Y-shape filter blocked	Check if Y-shape is blocked.	Clean Y-shape filter.
		Water flow over-load	Check the design of the water system.	Increase bypass in water system.
		Lack of refrigerant	Check if there is a leak in the system.	Repair the leak and charge refrigerant.
P07	Low temperature protection of air side heat-exchanger pipe	Water system blocked	Check if Y-shape filter is blocked.	Clean Y-shape filter.
		Refrigerant system blocked	Check if the refrigerant is blocked.	Clean the filter.

**Continued:**

Code	Error or protection	Analysis	Diagnosis	Solution
E01	Communication failure between controller and unit	Communication cable broken	Check if the cable is broken.	Connect again or replace with a new one.
E02	Discharge temperature sensor failure	The sensor is damaged/faulty.	Check if the sensor resistance is correct.	Connect again or replace with a new one.
E03	Temperature sensor failure of air side heat-exchanger pipe	The sensor is damaged/faulty.	Check if the sensor resistance is correct.	Connect again or replace with a new one.
E04	Air ambient temperature sensor failure	The sensor is damaged/faulty.	Check if the sensor resistance is correct.	Connect again or replace with a new one.
E05	Temperature sensor failure of EXV's inlet pipe	The sensor is damaged/faulty.	Check if the sensor resistance is correct.	Connect again or replace with a new one.
E06	Suction temperature sensor failure	The sensor is damaged/faulty.	Check if the sensor resistance is correct.	Connect again or replace with a new one.
E08	Inlet water temperature sensor failure	The sensor is damaged/faulty.	Check if the sensor resistance is correct.	Connect again or replace with a new one.
E09	Outlet water temperature sensor failure	The sensor is damaged/faulty.	Check if the sensor resistance is correct.	Connect again or replace with a new one.
E10	Communication failure between PCB and drive modular board	Communication cable broken	Check if the cable is broken.	Connect again or replace with a new one.
E15	Over-low of DC link voltage	Incorrect wire connection or IPM failure.	Check if the wires are connected correctly.	Connect again correctly, or change the IPM.
E16	Over-high of DC link voltage			
E17	Current protection of AC power supply			
E18	IPM failure			

**Continued:**

Code	Error or protection	Analysis	Diagnosis	Solution
E16	Over-high of DC link voltage	Incorrect wire connection or IPM failure.	Check if the wires are connected correctly.	Connect again correctly, or change the IPM.
E17	Current protection of AC power supply			
E18	IPM failure			
E19	PFC modular failure			
E20	Compressor start failure			
E21	Phase lack of compressor power supply			
E22	Drive modular reset			
E23	Over-load current protection of compressor			
E24	Over-high temperature protection of PFC modular			
E25	Electrical circuit failure			
E26	Compressor's motor speed out of control			
E27	Temperature sensor failure of PFC module			
E28	Communication failure			
E29	Over-high temperature of IPM			
E30	Temperature sensor failure of IPM			

**Continued:**

Code	Error or protection	Analysis	Diagnosis	Solution
E30	Temperature sensor failure of IPM	Incorrect wire connection or IPM failure.	Check if the wires are connected correctly.	Connect again correctly, or change the IPM.
E37	Limit frequency according to modular current			
E38	Limit frequency according to modular voltage			
E51	Communication failure of fan motor			



## 14. Wifi function

### Method 1

Android system: Scan the QR code on an Android system browser. Download the APP and install it.

IOS (Apple): Scan the QR code to download the APP and install it.



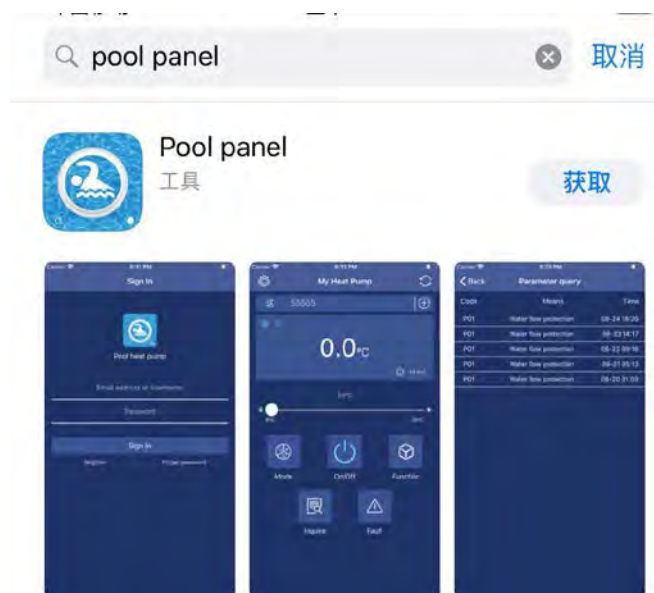
### Method 2

Android system: click on the following link

**<http://47.254.152.109:8080/scadaiot/downFile/execute.do>**

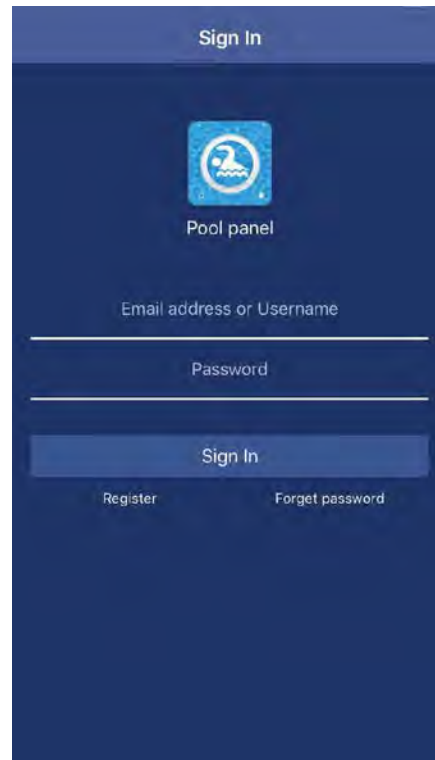
with an Android system browser to download the APP and install it.

IOS system: search for the 'Pool panel' APP in the APP store and install it.

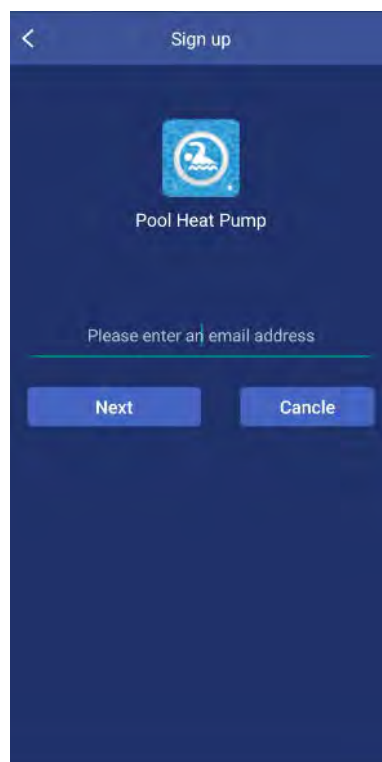


## Register

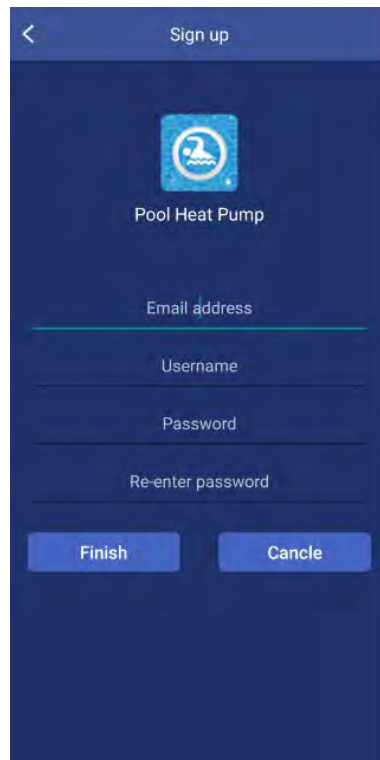
Please ensure that your mobile is already connected to a valid Wi-Fi.  
Open the APP.



Press Register to sign up for the first time.



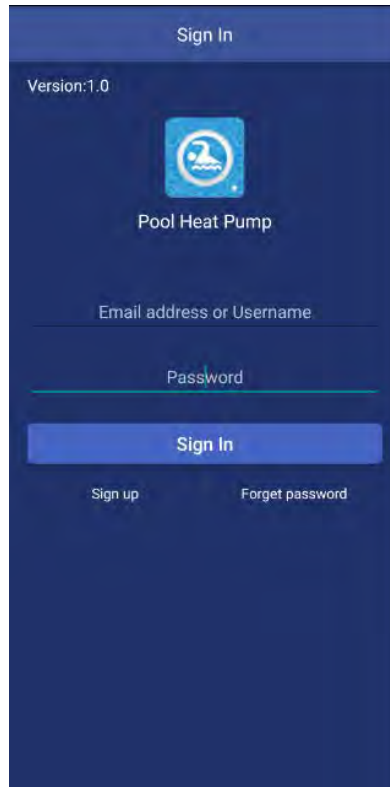
Type your email address and press Next.



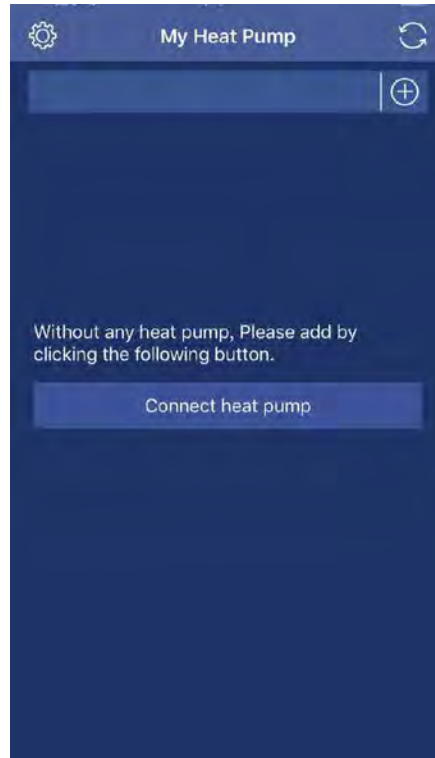
Please complete all fields requested, including Email address, Username, Password and Password confirmation, then press Finish to sign-up. After signing up successfully, the display will automatically change to the Log-in screen.

**Note: The password should be a combination of alphanumeric characters (letters and numbers) only.**

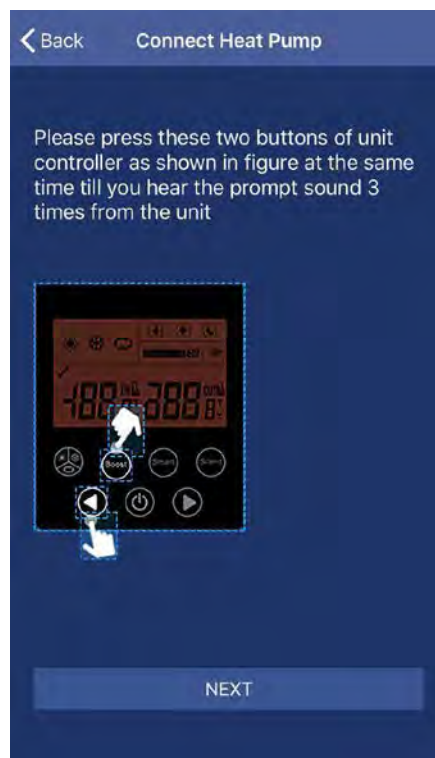
## Configuration of APP



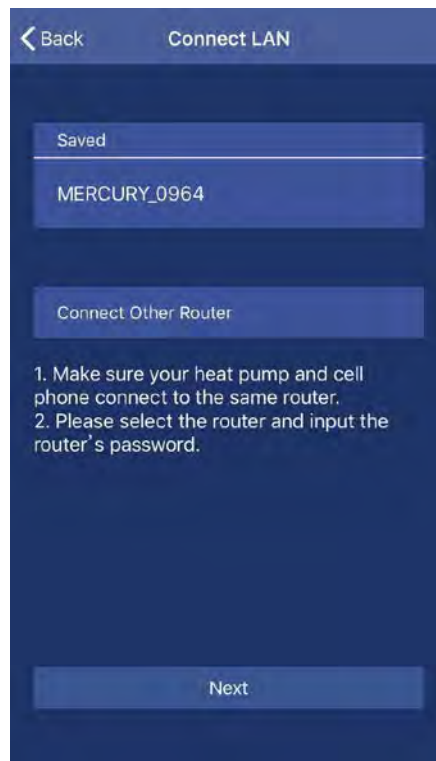
Enter Email address or Username, password and press Sign in button.



Press the button Connect heat pump, and the display will change to next screen.



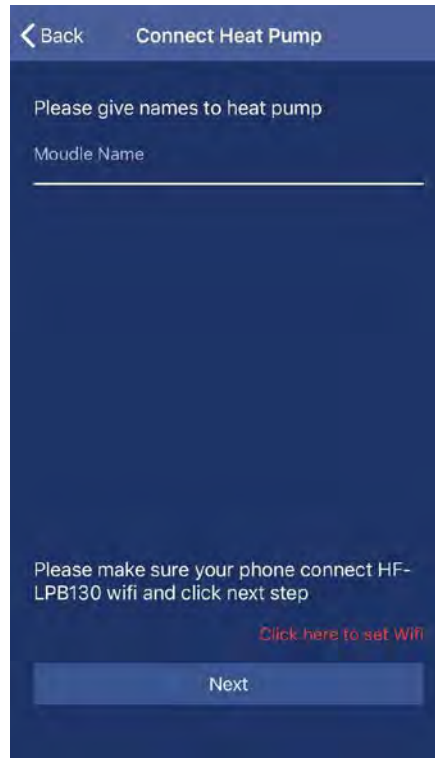
Follow the instructions on the screen to start operation. After setting up the unit, press Next.



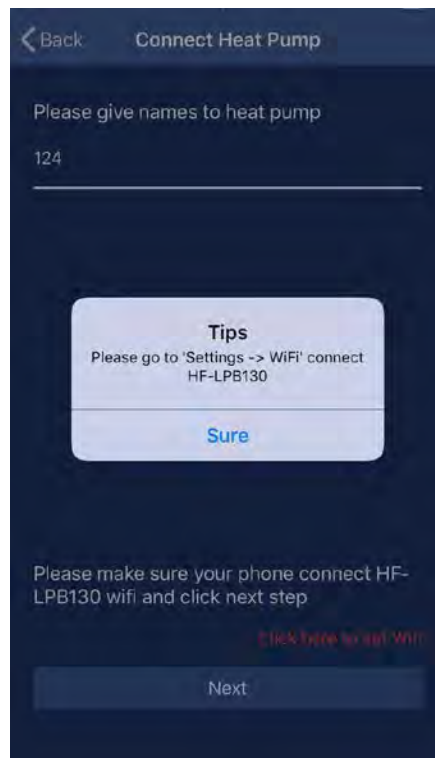
On this screen, select your router in your home LAN.



Enter your router's password, and click Binding and then Next.



On this screen, select a name for your heat pump. Press click here to set Wi-Fi.

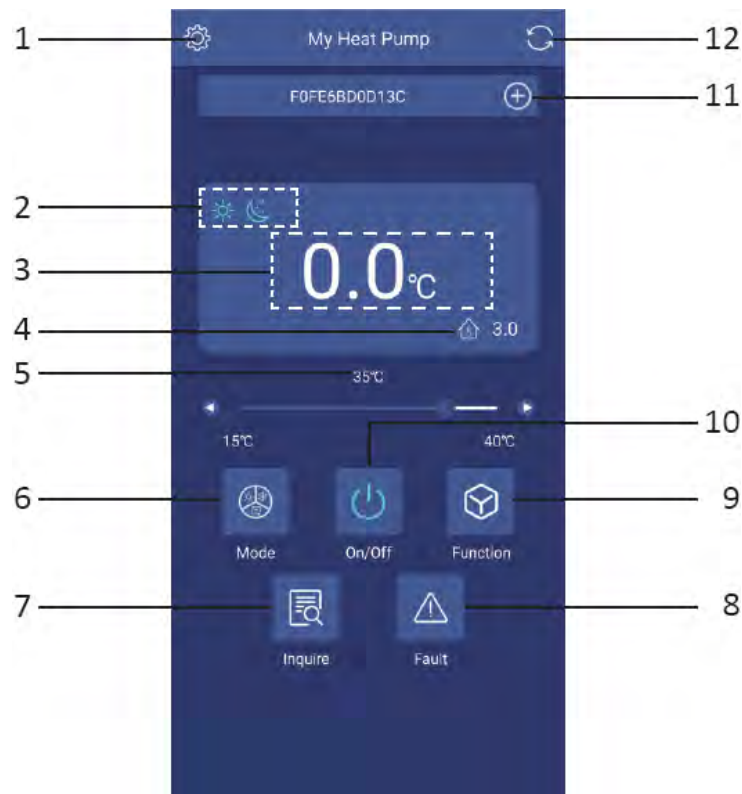


For Android systems, the screen will directly skip to the *settings* menu of your mobile to select HF-LPB130.

For IOS systems, you need to manually enter the settings menu of your mobile to select HF-LPB130. Your mobile and heat pump have now been successfully connected; the display will change to main user screen.

### Operation of APP

#### 1. Main icons and functions



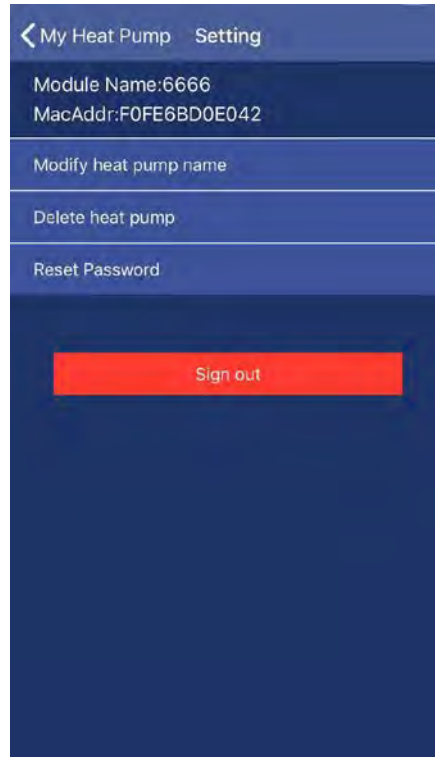
1	Setting icon
2	Operating mode and function icon
3	Temperature setting icon
4	Ambient temperature
5	Temperature setting bar
6	Mode setting icon
7	Inquiry icon
8	Fault icon
9	Function setting icon
10	On/Off icon
11	Add heat pump icon
12	Refresh icon



## II. Icons

### 1. Setting

When you press the Setting icon, the display will be change to the setting screen as shown below.




On this screen:

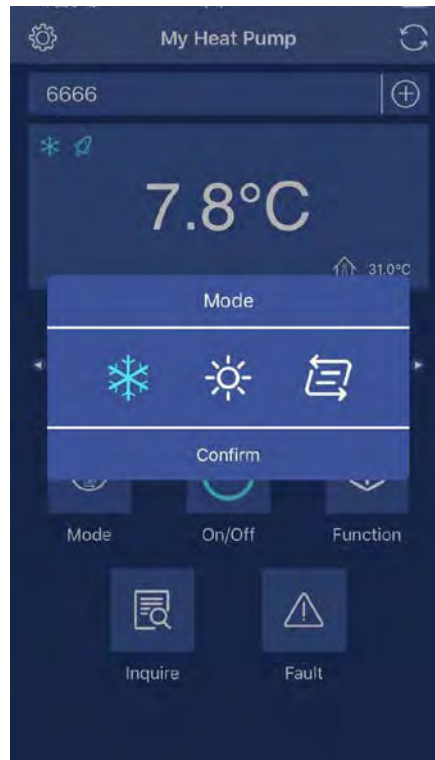
- a. The name of the heat pump connected to your mobile APP can be changed.
- b. You can delete heat pumps that have already been added previously.
- c. You can reset the APP password.
- d. You can sign out of the APP.

### 2. On/Off icon

If you press On/Off when the unit is in stand-by, it will start to run. If you press this when the unit is running, it will stop.

3.  Mode setting icon

This is used to select and switch between the operating modes: Auto, Cooling and Heating. When you press it, the display will enter the mode-selection screen, where you can set cooling mode, heating mode or auto mode. Once the desired mode has been selected, press Confirm to confirm the selection.



Once the operating mode has been set, the selected icon will be displayed on the left side of the screen.




Cooling mode



Heating mode



Auto mode

4.  Function setting icon

This is used to select and switch between the operating functions: boost, smart and silent. When you press it, the display will enter the mode-selection screen, where you can set boost mode, smart mode or silent mode. Once the desired mode has been selected, press Confirm to confirm the selection.



Once the function has been set, the selected icon will be displayed on the left side of the screen.



Silent mode



Smart mode

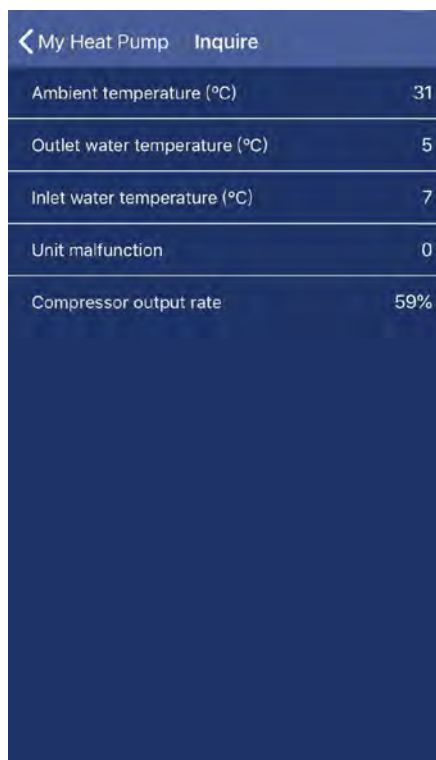


Boost mode

5.  Inquiry icon

When you press this, the inquiry screen will be displayed. From this screen, you can see the the following parameters of the heat pump.

- a. Ambient temperature;
- b. Outlet water temperature;
- c. Inlet water temperature;
- d. Unit malfunction state;
- e. Compressor output rate.




My Heat Pump Inquire	
Ambient temperature (°C)	31
Outlet water temperature (°C)	5
Inlet water temperature (°C)	7
Unit malfunction	0
Compressor output rate	59%

6.  Fault icon

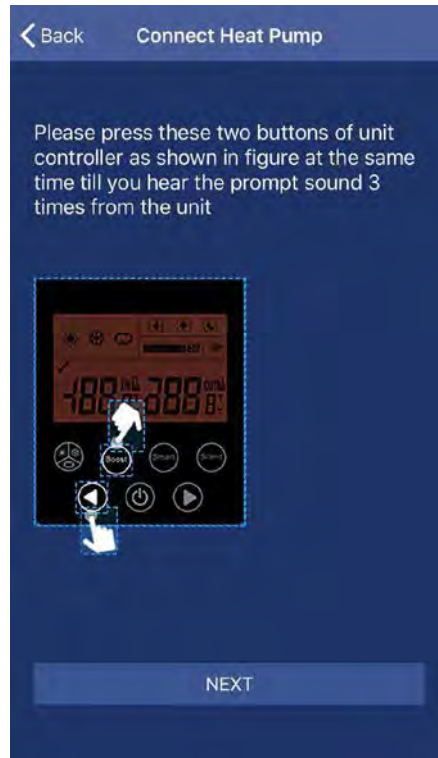
Press Fault to show the history of error codes, as well as current errors or protection codes.



Fault		
Code	Means	Time

7.  Add heat pump icon


Press this to add another heat pump as shown below.



Repeat steps mentioned previously to add another unit.

8.  Refresh icon

Press this to refresh the current set temperature and ambient temperature on the screen.

9.  Temperature setting bar

Slide your finger along the temperature bar to set the desired temperature. The temperature value above the temperature bar will change according to the movement along the slider bar.

#### Tips:

1. If the heat pump has already been set-up on an Android or IOS system, and you want to change to a different operating system (mobile phone), please follow these steps:
  - a. Press and hold the adjustment/arrows buttons (◀ and ▶) on the heat pump controller simultaneously until you hear the prompt sound.
  - b. Set up the APP and heat pump again according to the steps mentioned above.

**Appendix****R-T table (Discharge temperature sensor, B25/50 = 3,950 ± 3%, R90°C = 5kΩ ± 3%)**

Temperature (°C)	Resistance (kΩ)	Temperature (°C)	Resistance (kΩ)
8.0	122.343	42.0	27.373
9.0	116.582	43.0	26.306
10.0	111.120	44.0	25.286
11.0	105.942	45.0	24.311
12.0	101.031	46.0	23.378
13.0	96.372	47.0	22.487
14.0	91.952	48.0	21.633
15.0	87.758	49.0	20.817
16.0	83.776	50.0	20.036
17.0	79.996	51.0	19.288
18.0	76.406	52.0	18.571
19.0	72.996	53.0	17.885
20.0	69.756	54.0	17.227
21.0	66.677	55.0	16.597
22.0	63.750	56.0	15.993
23.0	60.967	57.0	15.414
24.0	58.321	58.0	14.859
25.0	55.803	59.0	14.326
26.0	53.408	60.0	13.815
27.0	51.129	61.0	13.324
28.0	48.959	62.0	12.854
29.0	46.893	63.0	12.401
30.0	44.926	64.0	11.967
31.0	43.051	65.0	11.550
32.0	41.265	66.0	11.150
33.0	39.563	67.0	10.765
34.0	37.941	68.0	10.395
35.0	36.393	69.0	10.039
36.0	34.918	70.0	9.697
37.0	33.510	71.0	9.368
38.0	32.166	72.0	9.052
39.0	30.884	73.0	8.748
40.0	29.659	74.0	8.455
41.0	28.490	75.0	8.173

Continued:

Temperature (°C)	Resistance (kΩ)	Temperature (°C)	Resistance (kΩ)
76.0	7.902	111.0	2.649
77.0	7.641	112.0	2.574
78.0	7.389	113.0	2.502
79.0	7.147	119.0	2.115
80.0	6.914	120.0	2.058
81.0	6.689	121.0	2.002
82.0	6.473	122.0	1.949
83.0	6.264	123.0	1.897
84.0	6.063	124.0	1.846
85.0	5.869	125.0	1.797
86.0	5.683	126.0	1.750
87.0	5.503	127.0	1.704
88.0	5.329	128.0	1.660
89.0	5.162	129.0	1.617
90.0	5.000	130.0	1.575
91.0	4.844	131.0	1.535
92.0	4.694	132.0	1.496
93.0	4.549	133.0	1.458
94.0	4.409	134.0	1.421
95.0	4.274	135.0	1.385
96.0	4.144	136.0	1.350
97.0	4.018	137.0	1.316
98.0	3.896	138.0	1.283
99.0	3.779	139.0	1.251
100.0	3.666	140.0	1.220
101.0	3.557	141.0	1.190
102.0	3.451	142.0	1.160
103.0	3.349	143.0	1.131
104.0	3.251	144.0	1.103
105.0	3.156	145.0	1.076
106.0	3.064	146.0	1.049
107.0	2.975	147.0	1.023
108.0	2.889	148.0	0.997
109.0	2.806	149.0	0.972
110.0	2.726	150.0	0.948

**R-T table (Other temperature sensors, B25/50 = 4,100 ± 3%, R25°C =10kΩ ± 3%)**

Temperature (°C)	Resistance (kΩ)			Resistance TOL.		Temp. TOL. (°C)	
	Rmax	R	Rmin	Max (+)	Min (-)	Max (+)	Min (-)
-12.0	72.632	66.943	61.574	8.500	8.020	1.450	1.450
-11.0	68.523	63.252	58.274	8.330	7.870	1.440	1.430
-10.0	64.668	59.784	55.169	8.170	7.720	1.420	1.410
-9.0	61.048	56.524	52.246	8.000	7.570	1.400	1.390
-8.0	57.649	53.458	49.492	7.840	7.420	1.380	1.370
-7.0	54.456	50.575	46.899	7.670	7.270	1.350	1.350
-6.0	51.456	47.862	44.455	7.510	7.120	1.330	1.320
-5.0	48.636	45.308	42.150	7.350	6.970	1.310	1.300
-4.0	45.984	42.903	39.977	7.180	6.820	1.290	1.280
-3.0	43.490	40.638	37.927	7.020	6.670	1.270	1.260
-2.0	41.144	38.504	35.992	6.860	6.520	1.250	1.240
-1.0	38.935	36.492	34.165	6.700	6.380	1.230	1.210
0.0	36.857	34.596	32.440	6.530	6.230	1.210	1.190
1.0	34.898	32.807	30.810	6.380	6.090	1.180	1.170
2.0	33.055	31.120	29.271	6.220	5.940	1.160	1.150
3.0	31.317	29.528	27.815	6.060	5.800	1.140	1.120
4.0	29.681	28.026	26.440	5.900	5.660	1.120	1.100
5.0	28.138	26.608	25.140	5.750	5.520	1.100	1.080
6.0	26.682	25.268	23.909	5.600	5.380	1.070	1.060
7.0	25.310	24.003	22.745	5.450	5.240	1.050	1.030
8.0	24.016	22.808	21.644	5.300	5.100	1.030	1.010
9.0	22.794	21.678	20.601	5.150	4.970	1.010	0.990
10.0	21.641	20.610	19.614	5.000	4.830	0.990	0.970
11.0	20.553	19.601	18.680	4.860	4.700	0.960	0.940
12.0	19.525	18.646	17.794	4.710	4.570	0.940	0.920
13.0	18.554	17.743	16.955	4.570	4.440	0.920	0.900
14.0	17.636	16.888	16.160	4.430	4.310	0.900	0.880
15.0	16.769	16.079	15.406	4.290	4.190	0.880	0.850
16.0	15.949	15.313	14.691	4.150	4.060	0.860	0.830
17.0	15.174	14.588	14.014	4.020	3.940	0.840	0.810
18.0	14.442	13.902	13.372	3.890	3.810	0.810	0.790
19.0	13.748	13.251	12.762	3.750	3.690	0.790	0.760
20.0	13.093	12.635	12.183	3.620	3.570	0.770	0.740
21.0	12.471	12.050	11.634	3.500	3.460	0.750	0.720



Continued:

Temperature (°C)	Resistance (kΩ)			Resistance TOL.		Temp. TOL. (°C)	
	Rmax	R	Rmin	Max (+)	Min (-)	Max (+)	Min (-)
22.0	11.883	11.496	11.112	3.370	3.340	0.730	0.700
23.0	11.327	10.971	10.617	3.250	3.230	0.710	0.680
24.0	10.800	10.473	10.147	3.120	3.110	0.690	0.660
25.0	10.300	10.000	9.700	3.000	3.000	0.670	0.630
26.0	9.848	9.551	9.255	3.110	3.100	0.690	0.660
27.0	9.418	9.125	8.834	3.210	3.190	0.720	0.690
28.0	9.010	8.721	8.434	3.310	3.290	0.750	0.710
29.0	8.621	8.337	8.055	3.410	3.380	0.770	0.740
30.0	8.252	7.972	7.695	3.510	3.470	0.800	0.770
31.0	7.900	7.625	7.353	3.610	3.570	0.830	0.790
32.0	7.566	7.296	7.029	3.700	3.660	0.850	0.820
33.0	7.247	6.982	6.721	3.800	3.740	0.880	0.840
34.0	6.944	6.684	6.428	3.890	3.830	0.910	0.870
35.0	6.656	6.401	6.150	3.980	3.920	0.930	0.900
36.0	6.381	6.131	5.886	4.080	4.000	0.960	0.930
37.0	6.119	5.874	5.634	4.170	4.090	0.980	0.950
38.0	5.870	5.630	5.395	4.260	4.170	1.010	0.980
39.0	5.631	5.397	5.167	4.340	4.260	1.030	1.010
40.0	5.404	5.175	4.951	4.430	4.340	1.060	1.030
41.0	5.188	4.964	4.745	4.520	4.420	1.090	1.060
42.0	4.982	4.763	4.549	4.600	4.500	1.120	1.090
43.0	4.785	4.571	4.362	4.690	4.580	1.140	1.120
44.0	4.596	4.387	4.183	4.770	4.660	1.170	1.140
45.0	4.417	4.213	4.014	4.850	4.740	1.190	1.170
46.0	4.246	4.046	3.851	4.930	4.810	1.220	1.200
47.0	4.082	3.887	3.697	5.020	4.890	1.250	1.230
48.0	3.925	3.735	3.550	5.100	4.970	1.280	1.250
49.0	3.776	3.590	3.409	5.180	5.040	1.300	1.280
50.0	3.632	3.451	3.274	5.250	5.120	1.330	1.300
51.0	3.495	3.318	3.146	5.330	5.190	1.350	1.330
52.0	3.363	3.191	3.023	5.410	5.260	1.410	1.360
53.0	3.237	3.069	2.905	5.490	5.340	1.430	1.380
54.0	3.116	2.952	2.793	5.560	5.410	1.460	1.410
55.0	3.001	2.841	2.685	5.640	5.480	1.480	1.440

