Technical Report No.: 64.181.24.00339.01 Rev.00

Date: 2024-06-25

Client:	Name:	Guangzhou Sprsun New Energy Technology Development Co., Ltd
	Address:	No.15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng District,Guangzhou,511338, China
	Contact person:	YE XIN
Manufacturer:	Name:	Guangzhou Sprsun New Energy Technology Development Co., Ltd
	Address:	No.15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng District,Guangzhou,511338, China
Factory:	Name:	Guangzhou Sprsun New Energy Technology Development Co., Ltd
	Address:	No.15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng District,Guangzhou,511338, China
Test object:	Product:	DC Inverter Air Source Heat Pumps
	Model:	CGK020V4P-B, CGK030V4P-B, CGK040V4P-B, CGK050V4P-B
	Trade mark:	SPRSUN
Test specification:	☑	EN 14825:2022
	☑	EN 14511-3:2022
	☑	EN 12102-1:2022
	☑	EN 14511-4:2022 Clause 4
Purpose of examination:	Test according to the test specification	
	☑	(EU) No 813/2013
	☑	EU 2016/2282:2016-11-30
Test result:	The test results show that the presented product is in compliance with the above listed test specifications.	

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1 Description of the test object

1.1 Function

Manufacturer's specification for intended use:

These appliances are air to water heat pump.

Manufacturer's specification for predictive use:

According to user manual

1.2 Consideration of the foreseeable use

☐ Not applicable

☑ Covered through the applied standard

☐ Covered by the following comment

☐ Covered by attached risk analysis

1.3 Technical Data

Model :	CGK020V4P-B, CGK030V4P-B, CGK040V4P-B, CGK050V4P-B
Rated Voltage (V) :	220-240V~
Rated Frequency (Hz) :	50
Rated Power (W) :	see the nameplate
Rated Current (A) :	see the nameplate
Protection Class :	Class I
Protection Against Moisture :	IP X4
Construction :	Stationary
Supply connection :	☐ Non detachable cord ☑ Permanent connection to fixed wiring
Operation mode:	☑ Continuous operation; ☐ Intermittent operation; ☐ Short time operation;
Refrigerant/charge (kg) :	R290 / 0.50kg for CGK020V4P-B, 0.75kg for CGK030V4P-B, 0.90kg for CGK040V4P-B, 1.20kg for CGK050V4P-B
Declared parameters :	☑ Average ☐ Warmer ☐ Colder
Sound power level dB(A) :	N/A
Series No :	KAM053211000700012 for CGK020V4P-B, KAM053211000100013 for CGK030V4P-B, KBM053211000200013 for CGK040V4P-B, KAM053211000300015 for CGK050V4P-B

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2 Order

2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2024-01-19

Customer's Reference: Guangzhou Sprsun New Energy Technology Development Co., Ltd

2.2 Test Sample(s)

- Reception date(s): 2024-01-19
- Location(s) of reception:

For Energy test:

Guangzhou Customs District Technology Center
(CNAS accredited laboratory with Registration No.CNAS L2322)
Address: No.3, Desheng East Road, Daliang, Shunde District, Foshan, Guangdong, China

For Noise tests:

CVC Testing Technology Co., Ltd.
(CNAS accredited laboratory with Registration No.CNAS L0095)
Address: No.3, Tiantai Yilu, Kaitai Avenue, Science City, Guangzhou, Guangdong, China

- Condition of test sample(s): completed and can be normal operation

2.3 Date(s) of Testing

2024-01-19 to 2024-06-06

2.4 Location(s) of Testing

Same as 2.2

2.5 Points of Non-compliance or Exceptions of the Test Procedure

N/A

3 Test Results

☒ Decision rule according to ILAC-G8:09/2019 clause 4.2.1 Binary statement for simple acceptance rule or IEC Guide 115:2023, clause 4.3 Simple acceptance was applied.
☐ Decision rule according to customer's requirements was applied. It is:
☐ Decision rule according to ILAC-G8:09/2019 clause 4.2.2 Binary statement with guard band - guard band length = 95 % extended measurement uncertainty, was applied.
☐ Decision rule (based on ILAC-G8:09/2019 clause 4.2.3 Non-binary statement with guard band, guard band length = 95 % extended measurement uncertainty) for an upper specification limit (A lower limit or specification with an up-per and a lower limit is treated similarly.):
• Compliance with the requirement: If a specification limit is not breached by a measurement result plus the expanded uncertainty with a 95% coverage probability, then compliance with the specification will be stated (e. g. Pass).
• Non-compliance with the requirement: If a specification limit is exceeded by the measurement result minus the expanded uncertainty with a 95% coverage probability, then non-compliance with the specification will be stated (e. g. Fail).
• Inconclusive result: If a measurement result plus/minus the expanded uncertainty with a 95 % coverage probability overlaps the limit it will be stated that it is not possible to state compliance or non-compliance.
☐ There are no statements to conformity or no results with measurand stated in this report, no decision rule has been applied.

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3.1 Positive Test Results

See Appendix I

4 Remarks

4.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

4.2 When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance.

5 Documentation

- Appendix I: Test results
- Appendix II: Marking plate
- Appendix III: photo documentation
- Appendix IV: Construction data form
- Appendix V: Test equipment list

6 Test History

1) These appliances are Air To Water Heat Pump Unit, each one including a whole compression type refrigerant circuit to heat water in another circuit. These appliances were for cooling and heating water function, this report only for heating capacity test.
2) The main power is supplied by a 3-pole supply cord connecting to fixed wiring.
3) Water enthalpy method was adopted in this report.
4) Standby mode power, off mode power and thermostat-off mode power were tested according to clause 12 of standard EN 14825:2022.

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TÜV SÜD Group

Tested by: William Liang, Project Handler

printed name, function & signature

Approved by: Plum Li, Designated Reviewer

printed name, function & signature

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Appendix I Test results

Table 1.	Heating mode (Low temperature application):							P
Model	CGK020V4P-B							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 4.406kW, the power is 0.897kW, the COP is 4.91kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	230.4	230.5	231.7	231.6	230.8	230.4
Current input of the unit	A	6.07	2.86	1.79	1.61	6.26	6.07
Power input of the unit	kW	1.383	0.635	0.376	0.336	1.407	1.383
Compressor frequency	Hz	90	47	30	30	90	90

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	0.75	0.75	0.75	0.75	0.75	0.75
Inlet Water temperature	°C	28.88	26.59	24.96	23.10	30.55	28.88
Outlet Water temperature	°C	33.92	29.94	27.72	26.30	35.18	33.92
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-7.00	2.00	6.94	11.88	-9.97	-7.00
Air **inlet** temperature, WB	°C	-8.06	1.00	6.01	10.88	-11.01	-8.06
Summary of the results							
Total heating capacity	kW	4.399	2.908	2.391	2.780	4.037	4.399
Effective power input	kW	1.382	0.621	0.362	0.321	1.406	1.382
Coefficient of performance (COP)	kW/kW	3.18	4.69	6.61	8.65	2.87	3.18
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.028
Standby mode [P_{SB}]	kW	0.012
Crankcase heater [P_{CK}]	kW	0.033
Off mode [P_{OFF}]	kW	0.012

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	4.973	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	4.973	4.037	2.87	0.90	1.00	2.87
F	4.399	4.399	3.18	0.90	1.00	3.18
A	4.399	4.399	3.18	0.90	1.00	3.18
B	2.678	2.908	4.69	0.90	0.92	4.69
C	1.721	2.391	6.61	0.90	0.72	6.36
D	0.765	2.780	8.65	0.90	0.28	6.85

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.82
SCOP:	kWh/kWh	4.80
Q_H:	kWh/year	10273
Q_{HE}:	kWh/year	2140
$\eta_{s,h}$	%	189.0
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 2.	Heating mode (Medium temperature application):							P
Model	CGK020V4P-B							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 4.564kW, the power is 1.535kW, the COP is 2.97kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	230.2	230.6	231.5	231.4	230.7	230.2
Current input of the unit	A	7.46	3.44	2.09	1.86	7.83	7.46
Power input of the unit	kW	1.705	0.773	0.452	0.397	1.764	1.705
Compressor frequency	Hz	90	47	30	30	90	90

Appendix I Test results

Test conditions User Side							
Water flow	m³/h	0.50	0.50	0.50	0.50	0.50	0.50
Inlet Water temperature	°C	45.10	37.53	33.35	29.19	50.78	45.10
Outlet Water temperature	°C	51.99	42.16	37.03	32.38	55.21	51.99
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-6.98	2.01	7.00	11.88	-9.89	-6.98
Air **inlet** temperature, WB	°C	-8.04	1.00	6.03	11.04	-11.13	-8.04
Summary of the results							
Total heating capacity	kW	4.007	2.677	2.129	2.596	3.611	4.007
Effective power input	kW	1.704	0.760	0.441	0.386	1.764	1.704
Coefficient of performance (COP)	kW/kW	2.35	3.52	4.83	6.73	2.05	2.35
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.028
Standby mode [P_{SB}]	kW	0.012
Crankcase heater [P_{CK}]	kW	0.033
Off mode [P_{OFF}]	kW	0.012

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	4.530	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	4.530	3.611	2.05	0.90	1.00	2.05
F	4.007	4.007	2.35	0.90	1.00	2.35
A	4.007	4.007	2.35	0.90	1.00	2.35
B	2.439	2.677	3.52	0.90	0.91	3.52
C	1.568	2.129	4.83	0.90	0.74	4.66
D	0.697	2.596	6.73	0.90	0.27	5.29

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.61
SCOP:	kWh/kWh	3.59
Q_H:	kWh/year	9359
Q_{HE}:	kWh/year	2605
$\eta_{s,h}$	%	140.7
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 3.	Heating mode (Low temperature application):							P
Model	CGK030V4P-B							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 5.833kW, the power is 1.219kW, the COP is 4.78kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	230.0	230.4	230.7	230.9	229.6	230.0
Current input of the unit	A	9.14	4.07	2.99	2.67	10.30	9.14
Power input of the unit	kW	1.877	0.794	0.535	0.476	2.042	1.877
Compressor frequency	Hz	85	40	30	30	90	85

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.00	1.00	1.00	1.00	1.00	1.00
Inlet Water temperature	°C	28.91	26.90	25.07	23.03	30.21	28.91
Outlet Water temperature	°C	33.89	30.10	27.89	26.25	35.20	33.89
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-7.00	2.07	6.95	12.05	-9.88	-7.00
Air **inlet** temperature, WB	°C	-8.06	1.00	5.96	10.97	-11.14	-8.06
Summary of the results							
Total heating capacity	kW	5.795	3.698	3.262	3.726	5.802	5.795
Effective power input	kW	1.876	0.773	0.515	0.457	2.041	1.876
Coefficient of performance (COP)	kW/kW	3.09	4.78	6.33	8.15	2.84	3.09
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.034
Standby mode [P_{SB}]	kW	0.012
Crankcase heater [P_{CK}]	kW	0.038
Off mode [P_{OFF}]	kW	0.012

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Appendix I Test results

3.Calculation/conclusion for SCOP:						
Tdesignh(°C):	-10		Tbiv(°C) :	-7		
Pdesignh(kW):	6.551		TOL(°C) :	-10		
Test result A, B, C, D, E, F conditions:						
Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	6.551	5.802	2.84	0.90	1.00	2.84
F	5.795	5.795	3.09	0.90	1.00	3.09
A	5.795	5.795	3.09	0.90	1.00	3.09
B	3.528	3.698	4.78	0.90	0.95	4.78
C	2.268	3.262	6.33	0.90	0.70	6.07
D	1.008	3.726	8.15	0.90	0.27	6.42
CR: part load divided by capacity;						

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.79
SCOP:	kWh/kWh	4.77
Q_H:	kWh/year	13535
Q_{HE}:	kWh/year	2840
$\eta_{s,h}$	%	187.6
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 4.	Heating mode (Medium temperature application):							P
Model	CGK030V4P-B							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 6.396kW, the power is 2.052kW, the COP is 3.12kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	229.8	230.1	230.7	230.8	229.4	229.8
Current input of the unit	A	10.92	4.78	3.51	3.12	12.68	10.92
Power input of the unit	kW	2.299	0.956	0.627	0.551	2.569	2.299
Compressor frequency	Hz	85	40	30	30	90	85

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	0.70	0.70	0.70	0.70	0.70	0.70
Inlet Water temperature	°C	45.35	37.76	33.46	28.83	48.55	45.35
Outlet Water temperature	°C	52.01	41.98	37.21	33.24	55.11	52.01
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.00	2.07	7.01	12.09	-10.11	-7.00
Air **inlet** temperature, WB	°C	-8.07	1.01	5.93	11.10	-10.88	-8.07
Summary of the results							
Total heating capacity	kW	5.426	3.416	3.042	3.578	5.343	5.426
Effective power input	kW	2.298	0.938	0.607	0.532	2.568	2.298
Coefficient of performance (COP)	kW/kW	2.36	3.64	5.01	6.73	2.08	2.36
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.034
Standby mode [P_{SB}]	kW	0.012
Crankcase heater [P_{CK}]	kW	0.038
Off mode [P_{OFF}]	kW	0.012

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	6.134	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	6.134	5.343	2.08	0.90	1.00	2.08
F	5.426	5.426	2.36	0.90	1.00	2.36
A	5.426	5.426	2.36	0.90	1.00	2.36
B	3.303	3.416	3.64	0.90	0.97	3.64
C	2.123	3.042	5.01	0.90	0.70	4.80
D	0.944	3.578	6.73	0.90	0.26	5.26

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.70
SCOP:	kWh/kWh	3.69
Q_H:	kWh/year	12672
Q_{HE}:	kWh/year	3435
$\eta_{s,h}$	%	144.5
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 5.	Heating mode (Low temperature application):							P
Model	CGK040V4P-B							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 7.824kW, the power is 1.582kW, the COP is 4.95kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	230.2	229.7	230.9	230.7	229.1	230.2
Current input of the unit	A	12.78	5.62	3.80	3.38	14.12	12.78
Power input of the unit	kW	2.569	0.991	0.692	0.620	2.771	2.569
Compressor frequency	Hz	85	38	30	30	90	85

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.35	1.35	1.35	1.35	1.35	1.35
Inlet Water temperature	°C	29.01	26.89	24.87	23.16	30.29	29.01
Outlet Water temperature	°C	34.04	29.98	27.77	26.40	35.30	34.04
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-6.99	2.06	7.08	12.06	-9.97	-6.99
Air **inlet** temperature, WB	°C	-7.95	1.00	6.02	10.97	-10.97	-7.95
Summary of the results							
Total heating capacity	kW	7.896	4.825	4.536	5.079	7.867	7.896
Effective power input	kW	2.568	0.966	0.672	0.598	2.769	2.568
Coefficient of performance (COP)	kW/kW	3.07	4.99	6.75	8.49	2.84	3.07
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.037
Standby mode [P_{SB}]	kW	0.012
Crankcase heater [P_{CK}]	kW	0.042
Off mode [P_{OFF}]	kW	0.012

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	8.926	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	8.926	7.867	2.84	0.90	1.00	2.84
F	7.896	7.896	3.07	0.90	1.00	3.07
A	7.896	7.896	3.07	0.90	1.00	3.07
B	4.806	4.825	4.99	0.90	1.00	4.99
C	3.090	4.536	6.75	0.90	0.68	6.45
D	1.373	5.079	8.49	0.90	0.27	6.69

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.97
SCOP:	kWh/kWh	4.95
Q_H:	kWh/year	18440
Q_{HE}:	kWh/year	3725
$\eta_{s,h}$	%	195.0
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 6.	Heating mode (Medium temperature application):							P
Model	CGK040V4P-B							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 9.055kW, the power is 2.993kW, the COP is 3.03kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	229.8	229.9	230.5	230.6	228.6	229.8
Current input of the unit	A	15.36	6.71	4.75	4.14	16.84	15.36
Power input of the unit	kW	3.160	1.215	0.861	0.753	3.420	3.160
Compressor frequency	Hz	85	38	30	30	90	85

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.00	1.00	1.00	1.00	1.00	1.00
Inlet Water temperature	°C	45.67	38.05	33.40	28.86	50.67	45.67
Outlet Water temperature	°C	52.03	41.94	37.14	33.11	55.14	52.03
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.00	1.98	6.89	12.00	-9.87	-7.00
Air **inlet** temperature, WB	°C	-7.96	0.99	5.89	11.00	-10.91	-7.96
Summary of the results							
Total heating capacity	kW	7.398	4.504	4.342	4.938	7.283	7.398
Effective power input	kW	3.160	1.196	0.855	0.745	3.419	3.160
Coefficient of performance (COP)	kW/kW	2.34	3.77	5.08	6.63	2.13	2.34
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.037
Standby mode [P_{SB}]	kW	0.012
Crankcase heater [P_{CK}]	kW	0.042
Off mode [P_{OFF}]	kW	0.012

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	8.363	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	8.363	7.283	2.13	0.90	1.00	2.13
F	7.398	7.398	2.34	0.90	1.00	2.34
A	7.398	7.398	2.34	0.90	1.00	2.34
B	4.503	4.504	3.77	0.90	1.00	3.77
C	2.895	4.342	5.08	0.90	0.67	4.84
D	1.287	4.938	6.63	0.90	0.26	5.16

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.76
SCOP:	kWh/kWh	3.75
Q_H:	kWh/year	17277
Q_{HE}:	kWh/year	4608
$\eta_{s,h}$	%	147.0
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 7.	Heating mode (Low temperature application):							P
Model	CGK050V4P-B							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 10.155kW, the power is 2.113kW, the COP is 4.81kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	228.9	230.0	232.1	232.2	229.5	228.9
Current input of the unit	A	16.16	6.91	5.36	4.93	17.19	16.16
Power input of the unit	kW	3.534	1.407	0.954	0.857	3.723	3.534
Compressor frequency	Hz	85	40	30	30	90	85

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.75	1.75	1.75	1.75	1.75	1.75
Inlet Water temperature	°C	28.64	26.70	25.05	23.25	30.12	28.64
Outlet Water temperature	°C	33.95	29.95	28.02	26.58	35.32	33.95
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-7.00	2.01	7.01	11.98	-10.02	-7.00
Air **inlet** temperature, WB	°C	-8.05	1.00	6.12	10.92	-11.06	-8.05
Summary of the results							
Total heating capacity	kW	10.804	6.575	6.009	6.743	10.572	10.804
Effective power input	kW	3.532	1.360	0.905	0.807	3.721	3.532
Coefficient of performance (COP)	kW/kW	3.06	4.84	6.64	8.35	2.84	3.06
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.074
Standby mode [P_{SB}]	kW	0.013
Crankcase heater [P_{CK}]	kW	0.039
Off mode [P_{OFF}]	kW	0.013

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	12.213	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	12.213	10.572	2.84	0.90	1.00	2.84
F	10.804	10.804	3.06	0.90	1.00	3.06
A	10.804	10.804	3.06	0.90	1.00	3.06
B	6.576	6.575	4.84	0.90	1.00	4.84
C	4.228	6.009	6.64	0.90	0.70	6.37
D	1.879	6.743	8.35	0.90	0.28	6.64

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.87
SCOP:	kWh/kWh	4.85
Q_H:	kWh/year	25232
Q_{HE}:	kWh/year	5204
$\eta_{s,h}$	%	190.9
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 8.	Heating mode (Medium temperature application):							P
Model	CGK050V4P-B							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 11.605kW, the power is 3.852kW, the COP is 3.01kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	228.5	229.8	232.1	232.2	230.0	228.5
Current input of the unit	A	19.64	8.26	5.84	5.17	21.44	19.64
Power input of the unit	kW	4.350	1.727	1.190	1.037	4.720	4.350
Compressor frequency	Hz	85	40	30	30	90	85

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.25	1.25	1.25	1.25	1.25	1.25
Inlet Water temperature	°C	44.90	37.61	33.41	28.92	48.17	44.90
Outlet Water temperature	°C	51.99	41.98	37.40	33.42	55.06	51.99
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.00	2.03	6.93	11.96	-10.08	-7.00
Air **inlet** temperature, WB	°C	-8.05	1.00	5.89	11.12	-11.07	-8.05
Summary of the results							
Total heating capacity	kW	10.298	6.330	5.783	6.520	10.006	10.298
Effective power input	kW	4.349	1.694	1.165	1.012	4.719	4.349
Coefficient of performance (COP)	kW/kW	2.37	3.74	4.96	6.44	2.12	2.37
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.074
Standby mode [P_{SB}]	kW	0.013
Crankcase heater [P_{CK}]	kW	0.039
Off mode [P_{OFF}]	kW	0.013

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	11.641	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	11.641	10.006	2.12	0.90	1.00	2.12
F	10.298	10.298	2.37	0.90	1.00	2.37
A	10.298	10.298	2.37	0.90	1.00	2.37
B	6.268	6.330	3.74	0.90	0.99	3.74
C	4.030	5.783	4.96	0.90	0.70	4.75
D	1.791	6.520	6.44	0.90	0.27	5.10

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.73
SCOP:	kWh/kWh	3.72
Q_H:	kWh/year	24051
Q_{HE}:	kWh/year	6461
$\eta_{s,h}$	%	145.9
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 9a.	Sound power level measurement (Low temperature application)		P
Model	CGK020V4P-B		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		35.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	39	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	53	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 9b.	Sound power level measurement (Medium temperature application)		P
Model	CGK020V4P-B		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		55.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	39	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	53	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 10a.	Sound power level measurement (Low temperature application)		P
Model	CGK030V4P-B		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		35.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	40	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	54	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 10b.	Sound power level measurement (Medium temperature application)		P
Model	CGK030V4P-B		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		55.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	41	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	55	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 11a.	Sound power level measurement (Low temperature application)		P
Model	CGK040V4P-B		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		35.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	44	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	58	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 11b.	Sound power level measurement (Medium temperature application)		P
Model	CGK040V4P-B		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		55.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	41	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	55	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 12a.	Sound power level measurement (Low temperature application)		P
Model	CGK050V4P-B		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		35.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	42	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	57	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 12b.	Sound power level measurement (Medium temperature application)		P
Model	CGK050V4P-B		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		55.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	43	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	58	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 13.	Clause 4 of EN 14511-4:2022	P
Model:	CGK020V4P-B	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.87°C, T in water =10.66°C, Flow rate 0.48m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.88 °C, T in water = 52.30 °C, Flow rate 0.48 m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix I Test results

Table 14.	Clause 4 of EN 14511-4:2022	P
Model:	**CGK030V4P-B**	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.98°C, T in water =9.87°C, Flow rate 0.63m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.97 °C, T in water = 51.71 °C, Flow rate 0.63 m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix I Test results

Table 15.	Clause 4 of EN 14511-4:2022	P
Model:	**CGK040V4P-B**	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.88°C, T in water =10.01°C, Flow rate 0.90m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.88 °C, T in water = 51.10 °C, Flow rate 0.90 m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix I Test results

Table 16.	Clause 4 of EN 14511-4:2022	P
Model:	CGK050V4P-B	

TEST 1	STARTING TEST (§4.2.1.2 Table 3)
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.01°C, T in water =9.88°C, Flow rate 1.13m³/h have been set and obtained. At those conditions, the machine was switched on.	
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.00 °C, T in water = 51.50 °C, Flow rate 1.13 m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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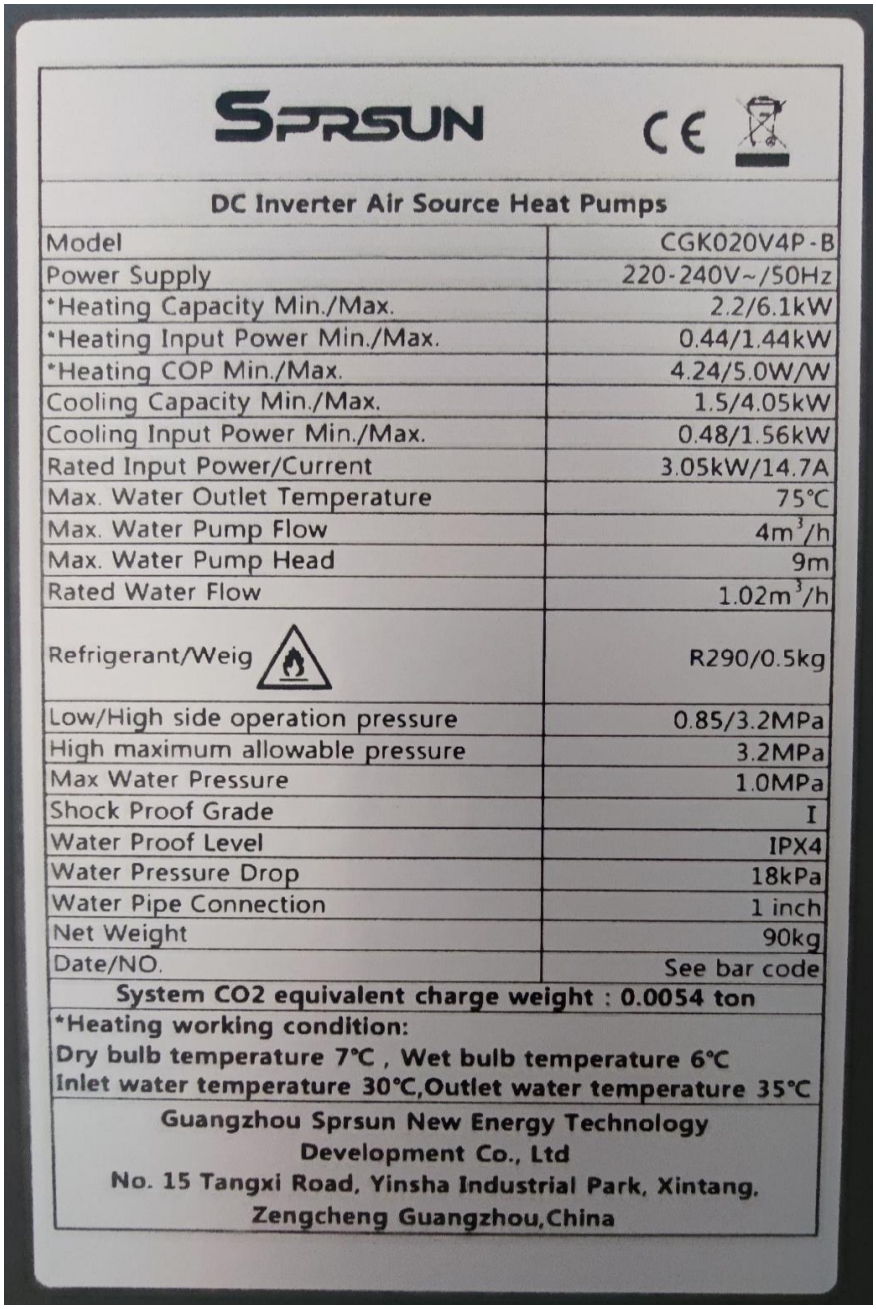
Appendix II Marking plate

Nameplate

Model: CGK020V4P-B

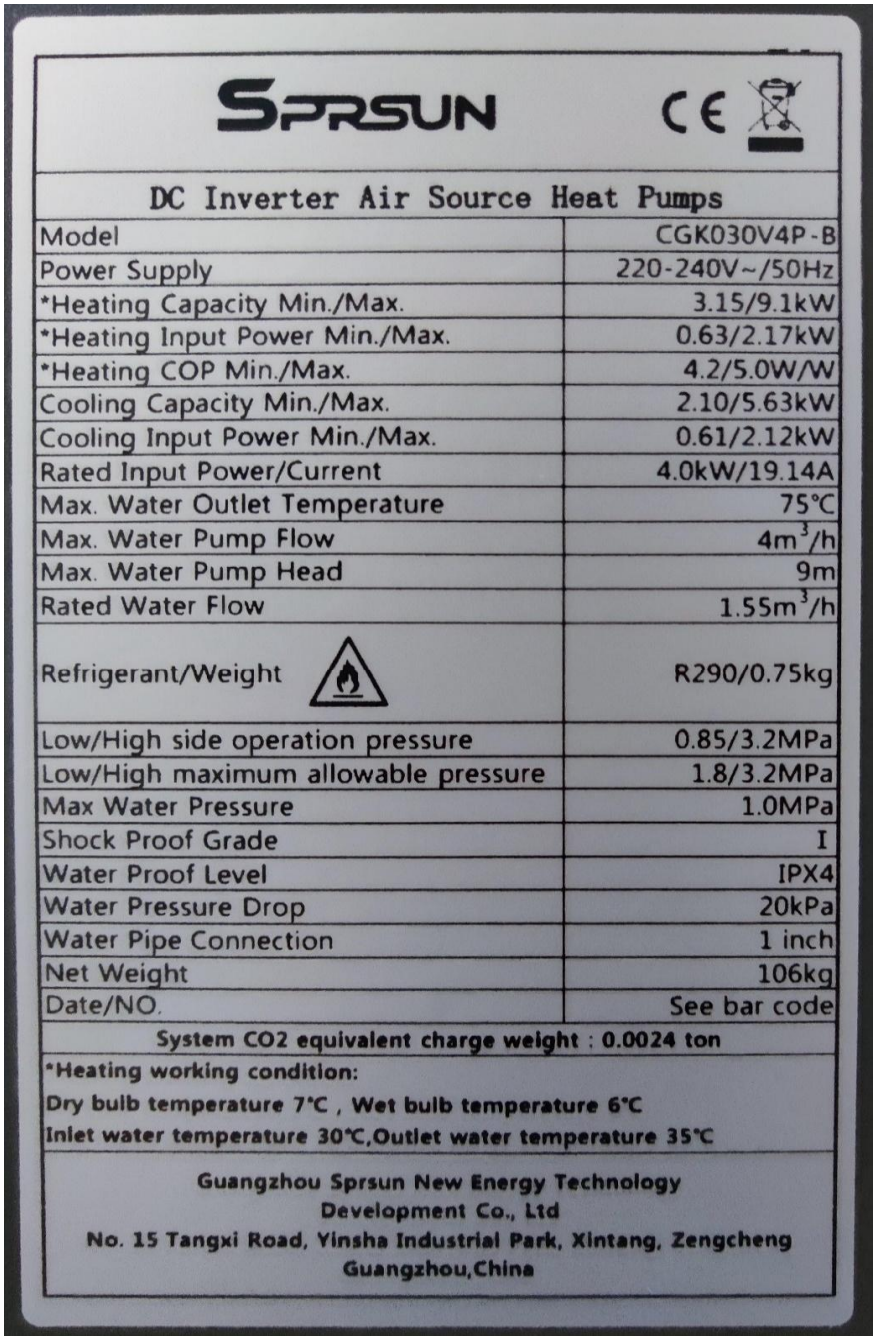


SPRSUN CE	
DC Inverter Air Source Heat Pumps	
Model	CGK020V4P-B
Power Supply	220-240V~/50Hz
*Heating Capacity Min./Max.	2.2/6.1kW
*Heating Input Power Min./Max.	0.44/1.44kW
*Heating COP Min./Max.	4.24/5.0W/W
Cooling Capacity Min./Max.	1.5/4.05kW
Cooling Input Power Min./Max.	0.48/1.56kW
Rated Input Power/Current	3.05kW/14.7A
Max. Water Outlet Temperature	75℃
Max. Water Pump Flow	4m³/h
Max. Water Pump Head	9m
Rated Water Flow	1.02m³/h
Refrigerant/Weig	R290/0.5kg
Low/High side operation pressure	0.85/3.2MPa
High maximum allowable pressure	3.2MPa
Max Water Pressure	1.0MPa
Shock Proof Grade	I
Water Proof Level	IPX4
Water Pressure Drop	18kPa
Water Pipe Connection	1 inch
Net Weight	90kg
Date/NO.	See bar code
System CO2 equivalent charge weight : 0.0054 ton	
***Heating working condition: Dry bulb temperature 7℃ , Wet bulb temperature 6℃ Inlet water temperature 30℃,Outlet water temperature 35℃**	
Guangzhou Sprsun New Energy Technology Development Co., Ltd No. 15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng Guangzhou,China	

Appendix II Marking plate

Nameplate

Model: CGK030V4P-B



SPRSUN CE

DC Inverter Air Source Heat Pumps

Model	CGK030V4P-B
Power Supply	220-240V~/50Hz
*Heating Capacity Min./Max.	3.15/9.1kW
*Heating Input Power Min./Max.	0.63/2.17kW
*Heating COP Min./Max.	4.2/5.0W/W
Cooling Capacity Min./Max.	2.10/5.63kW
Cooling Input Power Min./Max.	0.61/2.12kW
Rated Input Power/Current	4.0kW/19.14A
Max. Water Outlet Temperature	75℃
Max. Water Pump Flow	4m³/h
Max. Water Pump Head	9m
Rated Water Flow	1.55m³/h
Refrigerant/Weight	R290/0.75kg
Low/High side operation pressure	0.85/3.2MPa
Low/High maximum allowable pressure	1.8/3.2MPa
Max Water Pressure	1.0MPa
Shock Proof Grade	I
Water Proof Level	IPX4
Water Pressure Drop	20kPa
Water Pipe Connection	1 inch
Net Weight	106kg
Date/NO.	See bar code

System CO2 equivalent charge weight : 0.0024 ton

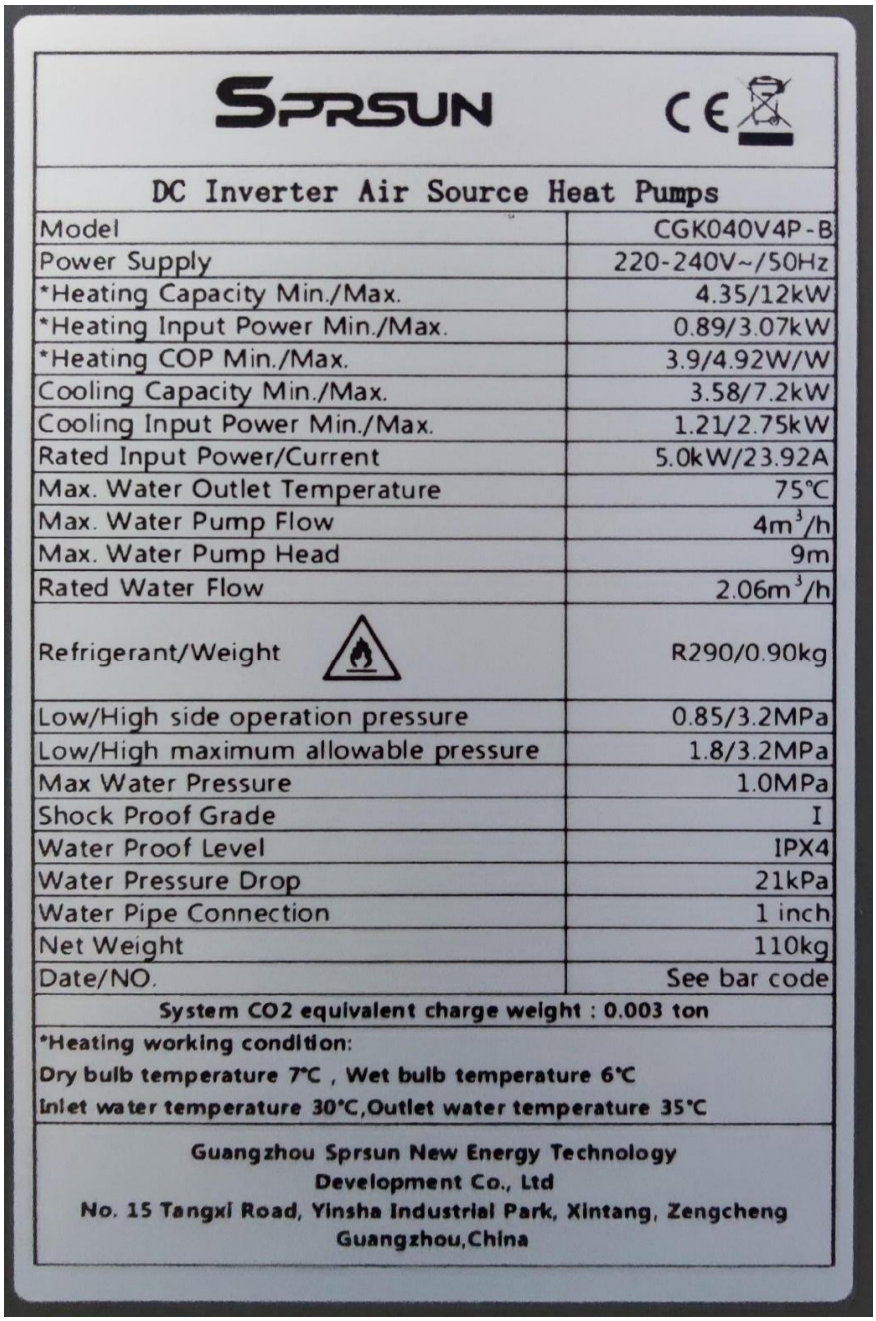
***Heating working condition:**
Dry bulb temperature 7℃ , Wet bulb temperature 6℃
Inlet water temperature 30℃,Outlet water temperature 35℃

Guangzhou Sprsun New Energy Technology Development Co., Ltd
No. 15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng Guangzhou,China

Appendix II Marking plate

Nameplate

Model: CGK040V4P-B



SPRSUN

DC Inverter Air Source Heat Pumps

Model	CGK040V4P-B
Power Supply	220-240V~/50Hz
*Heating Capacity Min./Max.	4.35/12kW
*Heating Input Power Min./Max.	0.89/3.07kW
*Heating COP Min./Max.	3.9/4.92W/W
Cooling Capacity Min./Max.	3.58/7.2kW
Cooling Input Power Min./Max.	1.21/2.75kW
Rated Input Power/Current	5.0kW/23.92A
Max. Water Outlet Temperature	75℃
Max. Water Pump Flow	4m³/h
Max. Water Pump Head	9m
Rated Water Flow	2.06m³/h
Refrigerant/Weight	R290/0.90kg
Low/High side operation pressure	0.85/3.2MPa
Low/High maximum allowable pressure	1.8/3.2MPa
Max Water Pressure	1.0MPa
Shock Proof Grade	I
Water Proof Level	IPX4
Water Pressure Drop	21kPa
Water Pipe Connection	1 inch
Net Weight	110kg
Date/NO.	See bar code

System CO2 equivalent charge weight : 0.003 ton

*Heating working condition:
Dry bulb temperature 7℃ , Wet bulb temperature 6℃
Inlet water temperature 30℃,Outlet water temperature 35℃

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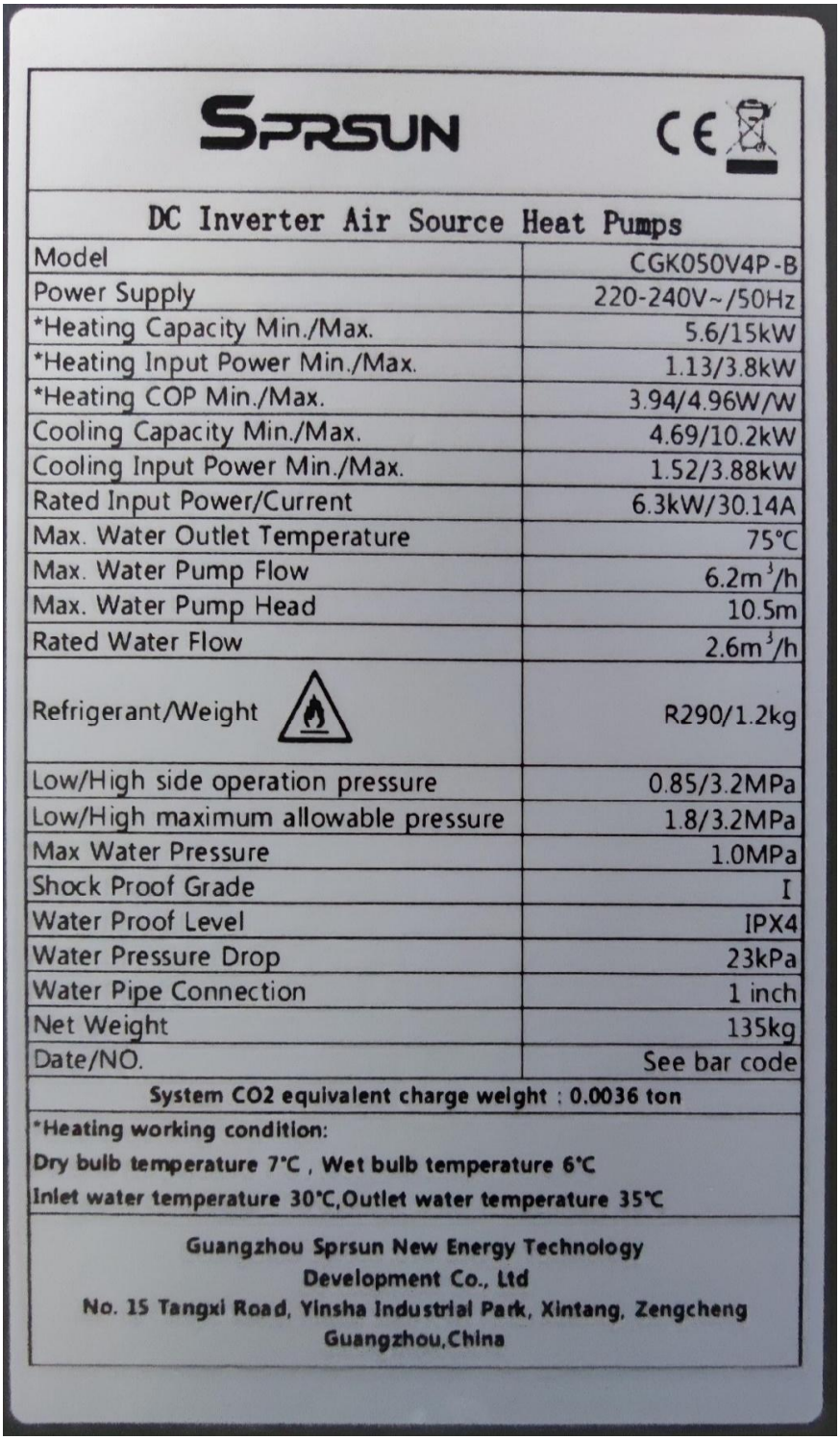
Appendix II Marking plate

Nameplate

Model: CGK050V4P-B



SPRSUN	CE
DC Inverter Air Source Heat Pumps	
Model	CGK050V4P-B
Power Supply	220-240V~/50Hz
*Heating Capacity Min./Max.	5.6/15kW
*Heating Input Power Min./Max.	1.13/3.8kW
*Heating COP Min./Max.	3.94/4.96W/W
Cooling Capacity Min./Max.	4.69/10.2kW
Cooling Input Power Min./Max.	1.52/3.88kW
Rated Input Power/Current	6.3kW/30.14A
Max. Water Outlet Temperature	75°C
Max. Water Pump Flow	6.2m³/h
Max. Water Pump Head	10.5m
Rated Water Flow	2.6m³/h
Refrigerant/Weight	R290/1.2kg
Low/High side operation pressure	0.85/3.2MPa
Low/High maximum allowable pressure	1.8/3.2MPa
Max Water Pressure	1.0MPa
Shock Proof Grade	I
Water Proof Level	IPX4
Water Pressure Drop	23kPa
Water Pipe Connection	1 inch
Net Weight	135kg
Date/NO.	See bar code
System CO2 equivalent charge weight : 0.0036 ton	
*Heating working condition: Dry bulb temperature 7°C , Wet bulb temperature 6°C Inlet water temperature 30°C,Outlet water temperature 35°C	
Guangzhou Sprsun New Energy Technology Development Co., Ltd No. 15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng Guangzhou,China	

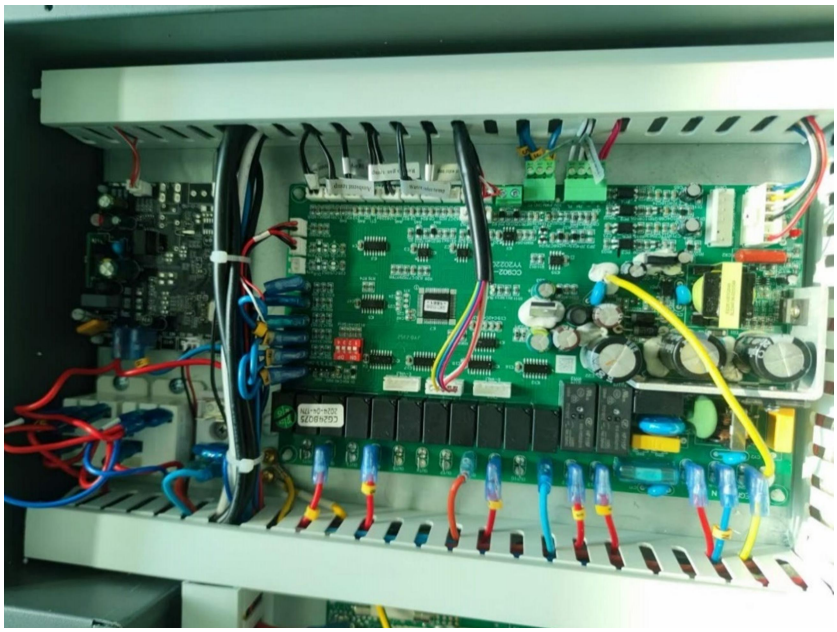
Appendix III photo documentation

Details of:	Overall view for CGK020V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor for CGK020V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Fan Motor for CGK020V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board for CGK020V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix III photo documentation

Details of:	Water Pump for CGK020V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

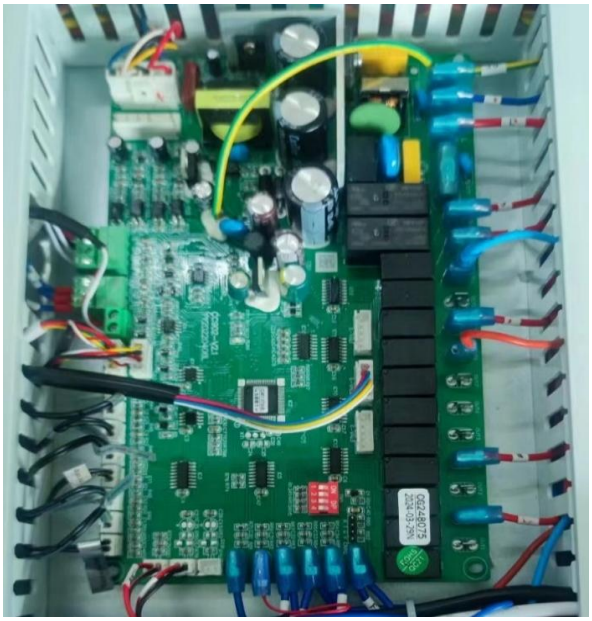
Details of:	Overall view for CGK030V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Compressor for CGK030V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Fan Motor for CGK030V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Main Control Board for CGK030V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Water Pump for CGK030V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix III photo documentation

Details of:	Overall view for CGK040V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor for CGK040V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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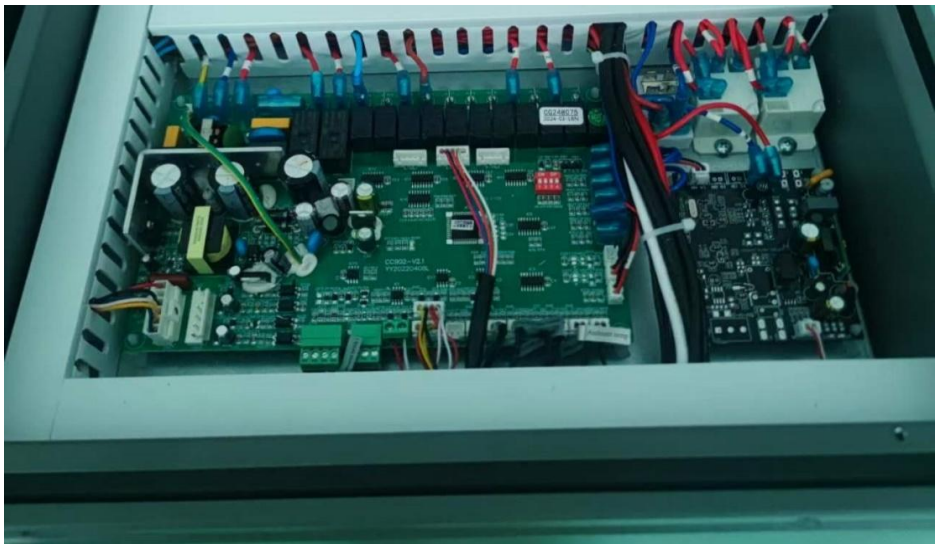
Appendix III photo documentation

Details of:	Fan Motor for CGK040V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board for CGK040V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix III photo documentation

Details of:	Water Pump for CGK040V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Overall view for CGK050V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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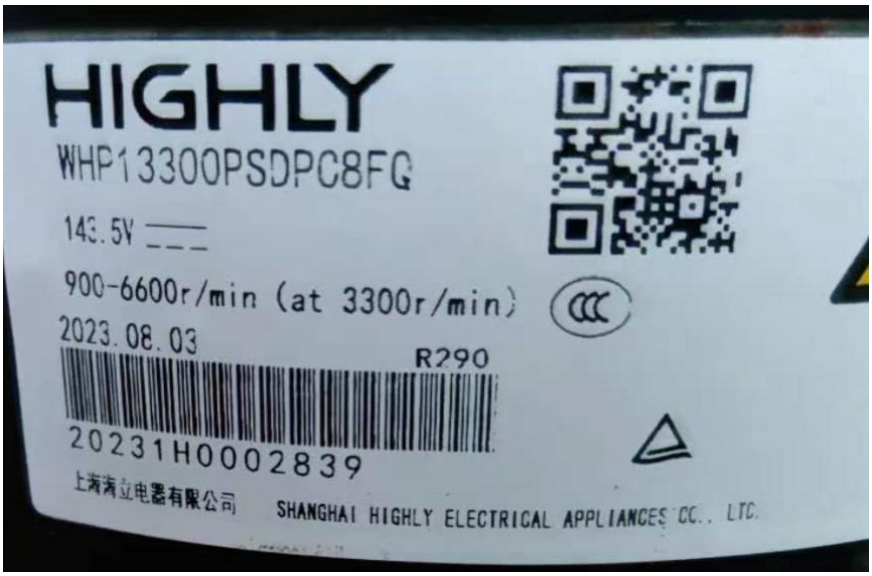
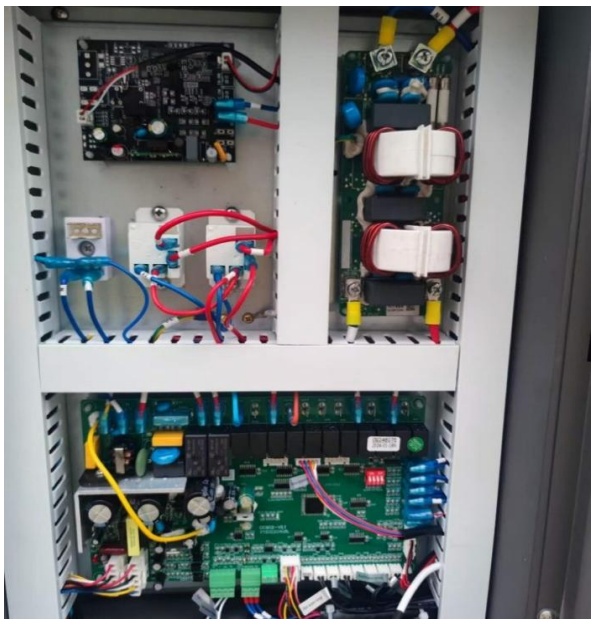
Appendix III photo documentation

Details of:	Compressor for CGK050V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Fan Motor for CGK050V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Main Control Board for CGK050V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Water Pump for CGK050V4P-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix IV Construction data form

Model：CGK020V4P-B		
Part		**Technical data**
1. Compressor		
	Manufacture:	Shanghai Highly Electrical Appliance Co., Ltd.
	Type:	WHP05500PUKPA6NT6
	Serial-number:	WA1NB4608995
	Specification:	R290
2. Condenser		
	Manufacture:	Jiangsu Yuanzhuo Equipment Manfactur Co.,Ltd
	Type:	ZL62FA-22AD-CG
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	526(L)mmX119(H)mmX56(D)mm
3. Evaporator		
	Manufacture:	Guangzhou Aotai Refrigeration EquipmentCo.,Ltd.
	Type:	02KK-CP-01
	Heat exchanger:	Finned-coil heat exchanger
	Dimension(mm):	610.4(L)mmX714(H)mmX356.8(D)mm
4. Fan motor		
	Manufacture:	Jiangsu Match-Well Electrical Products Co., Ltd.
	Type:	MWS116-8K-PD1
	Fan type:	3 blade
	Specification:	DC310V; 116W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic Inc.
	Type:	CG248075
	Specification:	220-240V~; 50Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APM25-9-130S PWM1
	Specification:	230V~; 50/60Hz
*(Alternative)		
	Manufacture:	Shinhoo
	Type:	GPA25-9HW
	Specification:	230V~; 50Hz

Remark: * means the test results were not performed on the alternative components.

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Appendix IV Construction data form

Model：CGK030V4P-B		
Part		**Technical data**
1. Compressor		
	Manufacture:	Shanghai Highly Electrical Appliance Co., Ltd.
	Type:	WHP07600PSDPC9KQ
	Serial-number:	20231H0001572
	Specification:	R290
2. Condenser		
	Manufacture:	Jiangsu Yuanzhuo Equipment Manfactur Co.,Ltd
	Type:	ZL62FA-26AD-CG
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	526(L)mmX119(H)mmX63(D)mm
3. Evaporator		
	Manufacture:	Guangzhou Aotai Refrigeration EquipmentCo.,Ltd.
	Type:	03KK-CP-01
	Heat exchanger:	Finned-coil heat exchanger
	Dimension(mm):	660.4(L)mmX764(H)mmX356.8(D)mm
4. Fan motor		
	Manufacture:	Jiangsu Match-Well Electrical Products Co., Ltd.
	Type:	MWS116-8K-PD1
	Fan type:	3 blade
	Specification:	DC310V; 116W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic Inc.
	Type:	CG248075
	Specification:	220-240V~; 50Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APM25-9-130S PWM1
	Specification:	230V~; 50/60Hz
*(Alternative)		
	Manufacture:	Shinhoo
	Type:	GPA25-9HW
	Specification:	230V~; 50Hz

Remark: * means the test results were not performed on the alternative components.

Appendix IV Construction data form

Model：CGK040V4P-B		
Part		**Technical data**
1. Compressor		
	Manufacture:	Shanghai Highly Electrical Appliance Co., Ltd.
	Type:	WHP10200PSDPC9KQ
	Serial-number:	W7XN5H08KB6J
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	Jiangsu Yuanzhuo Equipment Manfactur Co.,Ltd
	Type:	ZL62FA-30AD-CG
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	526(L)mmX119(H)mmX71(D)mm
3. Evaporator		
	Manufacture:	Guangzhou Aotai Refrigeration EquipmentCo.,Ltd.
	Type:	04KK-CP-01
	Heat exchanger:	Finned-coil heat exchanger
	Dimension(mm):	675.4(L)mmX914(H)mmX356.8(D)mm
4. Fan motor		
	Manufacture:	Jiangsu Match-Well Electrical Products Co., Ltd.
	Type:	MWS116-8K-PD1
	Fan type:	3 blade
	Specification:	DC310V; 116W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic Inc.
	Type:	CG248075
	Specification:	220-240V~; 50Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APM25-9-130S PWM1
	Specification:	230V~; 50/60Hz
*(Alternative)		
	Manufacture:	Shinhoo
	Type:	GPA25-9HW
	Specification:	230V~; 50Hz

Remark: * means the test results were not performed on the alternative components.

Appendix IV Construction data form

Model：CGK050V4P-B		
Part		**Technical data**
1. Compressor		
	Manufacture:	Shanghai Highly Electrical Appliance Co., Ltd.
	Type:	WHP13300PSDPC8FQ
	Serial-number:	20231H0002839
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	Jiangsu Yuanzhuo Equipment Manfactur Co.,Ltd
	Type:	ZL62FA-40AD-CG
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	526(L)mmX119(H)mmX91(D)mm
3. Evaporator		
	Manufacture:	Guangzhou Aotai Refrigeration EquipmentCo.,Ltd.
	Type:	05KK-CP-01
	Heat exchanger:	Finned-coil heat exchanger
	Dimension(mm):	660.4(L)mmX1318.5(H)mmX356.8(D)mm
4. Fan motor		
	Manufacture:	Jiangsu Match-Well Electrical Products Co., Ltd.
	Type:	MWS116-8K-PD1
	Fan type:	3 blade
	Specification:	DC310V; 116W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic Inc.
	Type:	CG248075
	Specification:	220-240V~; 50Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APF25-12-130E FPWM1
	Specification:	230V~; 50/60Hz
*(Alternative)		
	Manufacture:	Shinhoo
	Type:	GPA25-11H
	Specification:	230V~; 50Hz

Remark: * means the test results were not performed on the alternative components.

Appendix V Equipment List

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	Heat pump energy efficiency testing system	PINXIN	10HP	2017J00001	2024-11-15
2	Electromagnetic flowmeter	KROHNE	OPTIFLUX4100C	H17221264	2024-11-19
3	Hemi-anechoic room(B)	Guangzhou Kinte	5.2m×4.4m×4.6m	NC-036-3	2028-10-06
4	Dynamic signal analysis system	—	HAHI2022	VGDY-2137	2025-01-08
5	Calibrator	B & K	4231	HJ-000095	2024-07-06
6	AC source Supply	YANGHONG	AFC-33030TS	VGDS-0637	2024-11-02
7	Long steel tape	—	5m	HJ-000062	2024-09-11
8	Temperature measurement system	—	Special	NC-036-1	2025-06-03
9	Atmospheric pressure meter	—	—	HJ-000165	2024-11-21
10	Constant temperature water system	B & K	Special	VGDS-0448	2025-04-12
11	Windscreen	B & K	WS002-5	—	—

-- End of Report --

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