

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
	\checkmark	EN 14511-3:2022
	\checkmark	EN 12102-1:2022
	7	EN 14511-4:2022 Clause 4

Purpose of examination:	Test according to the	he test specification
	7	(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

listed test specifications.

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question. It does not imply a general statement regarding the quality of products from regular production. For further details please see Testing, Certification, Validation and Verification Regulations, chapter A-3.3.

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 1 of 59





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
- $\hfill \Box$ 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







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:

 \Box 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.

 \Box 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.

www.tuvsud.com



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

- 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.



Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 4 of 59







	Heating mode (Low temperature application):								Р
Model	CGK020V4P-B								
Product type	Air to Water Heating Season Average U Warmer U						Colder	Colder	
1. Test condit	ions:								
Condition	F	Part Load Ra in %	itio		hea	Outdoo at exchai			or heat hanger
Condition	Form	nula		erage nates		dry (wet)			tlet water tures (°C)
А	(-7-16)/(Tde	esignh-16)		88		-7(-8)		a	/ 34
В	(+2-16)/ (Td	esignh-16)		54		2(1)		a	/ 30
С	(+7-16)/(Td	esignh-16)		35		7(6)		a	/ 27
D	(+12-16)/(To	lesignh-16)		15		12(11)		a	/ 24
E	(TOL	-16)/ (Tdesig	, gnh-16)			TOL		a /	35.3
F	(Tbival	ent-16)/(Tdes	signh-1	6)		Tbiv		a	/ 34
G	(-15-16)/(Td	esignh-16)	1	N/A		-15		Ν	I/A
conditions, the c	capacity is 4.40	6kW, the po	wer is (•	•		1 2 at 00/0
Remark: a) With conditions, the c 2.Tested data General test conditions/ Part-Load	capacity is 4.40	6kW, the po	wer is (ge): A2			is 4.91kV	•	A(-10)/ W35.3 (100%)	
conditions, the c 2.Tested data General test conditions/	capacity is 4.40	6kW, the por data(Averag	wer is (ge): A2	0.897kW,	the COP	is 4.91kV	W/kW.	A(-10)/ W35.3	A(-7)/ W34
conditions, the c 2.Tested data General test conditions/	capacity is 4.40	6kW, the por data(Averag A(-7)/W34 (88%)	wer is (ge): A2 (5	0.897kW, //W30 54%)	the COP A7/W2 (35%	is 4.91kV 27 A	W/kW. 12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection	capacity is 4.40	6kW, the por data(Averag A(-7)/W34 (88%) A	wer is (ge): (5 1:1	D.897kW, /W30 54%) B	the COP A7/W2 (35% C	is 4.91kV 27 A	N/kW. 12/W24 (15%) D	A(-10)/ W35.3 (100%) E	A(-7)/ W34 (88%) F
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts	capacity is 4.40	6kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00	wer is (ge): (5 1:1	D.897kW, 2/W30 54%) B 10:00	the COP A7/W2 (35% C 1:10:0	is 4.91kV 27 A	W/kW. 12/W24 (15%) D :10:00	A(-10)/ W35.3 (100%) E 1:10:00	A(-7)/ W34 (88%) F 1:10:00
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop	capacity is 4.40	6kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00	wer is (ge): (5 1: ²	D.897kW, 2/W30 54%) B 10:00	the COP A7/W2 (35% C 1:10:0	is 4.91kV 27 A) 0 1	W/kW. 12/W24 (15%) D :10:00	A(-10)/ W35.3 (100%) E 1:10:00	A(-7)/ W34 (88%) F 1:10:00
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop Voltage Current input of	<pre>capacity is 4.40 /correction d Unit hh: min:sec erties V</pre>	06kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00 No	wer is (ge): A2 (5 1:1	D.897kW, /W30 54%) B 10:00 No	the COP A7/W2 (35% C 1:10:0	is 4.91kV 27 A) 10 1	N/kW. 12/W24 (15%) D 1:10:00 No	A(-10)/ W35.3 (100%) E 1:10:00 No	A(-7)/ W34 (88%) F 1:10:00 No
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump	Apacity is 4.40	230.4	wer is (ge): A2 (5 1:* 2: 2: 2: 2: 2: 2: 2: 2: 2: 2:	D.897kW, /W30 54%) B 10:00 No 30.5	the COP A7/W2 (35% C 1:10:0 No 231.7	is 4.91kV 27 A) 10 1 ,	W/kW. 12/W24 (15%) D 1:10:00 No 231.6	A(-10)/ W35.3 (100%) E 1:10:00 No 230.8	A(-7)/ W34 (88%) F 1:10:00 No 230.4

www.tuvsud.com





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 condition	s Source Sid	le					-
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 th	e 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

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

www.tuvsud.com





3.Calculation	/conclusion	tor SCOP:				
Tdesignh(°C):	-10		Tbiv(°C) :	-7		
Pdesignh(kW):	4.973		TOL(°C) :	-10		
Test result A,	B, C, D, E, F	conditions	5:			
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
А	4.399	4.399	3.18	0.90	1.00	3.18
В	2.678	2.908	4.69	0.90	0.92	4.69
С	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

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+++

www.tuvsud.com





	Heating mode (Medium temperature application):								Р	
Model	CGK020V4P-	В								
Product type	Air to Water Heating Season Average D Warmer D						Colder			
1. Test condit	ions:									
Condition	F	Part Load Ra in %	tio		hea	Outdoo at excha				or heat anger
Condition	Form	nula		verage mates		dry (wet				tlet water tures (°C)
А	(-7-16)/(Tde	esignh-16)		88		-7(-8)			a	/ 52
В	(+2-16)/ (Td	esignh-16)		54		2(1)			a	/ 42
С	(+7-16)/(Td	esignh-16)		35		7(6)			a	/ 36
D	(+12-16)/(To	lesignh-16)		15		12(11)			a	/ 30
Е	(TOL	16)/ (Tdesig	(nh-16))		TOL			a /	55.3
F	(Tbival	ent-16)/(Tdes	signh-1	16)		Tbiv			a / 52	
G	(-15-16)/(Td	esignh-16)		N/A		-15			N/A	
conditions, the c	capacity is 4.56	64kW, the pov	wer is							1 - 2 at +773
Remark: a) With conditions, the c 2.Tested data General test conditions/ Part-Load	capacity is 4.56	64kW, the pov	wer is ge): A2			is 2.97k\ 36 A		80	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
conditions, the c 2.Tested data General test conditions/	capacity is 4.56	data(Averag	wer is ge): A2	1.535kW, 2/W42	the COP	is 2.97k\ 36 A	N/kW. 12/W3	80	A(-10)/ W55.3	A(-7)/ W52
conditions, the c 2.Tested data General test conditions/	capacity is 4.56	34kW, the por data(Averag A(-7)/W52 (88%)	wer is (1.535kW, 2/W42 54%)	the COP A7/W3 (35%	is 2.97k\ 36 A)	V/kW. 12/W3 (15%)	30	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection	capacity is 4.56	34kW, the por data(Averag A(-7)/W52 (88%) A	wer is ge): A2 (5	1.535kW, 2/W42 54%) B	A7/W3 (35%	is 2.97k\ 36 A)	N/kW. 12/W3 (15%) D	30	A(-10)/ W55.3 (100%) E	A(-7)/ W52 (88%) F
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts	Correction of Unit	34kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00	wer is ge): A2 (5	1.535kW, 2/W42 54%) B 10:00	the COP A7/W3 (35% C 1:10:0	is 2.97k\ 36 A)	W/kW. 12/W3 (15%) D	30	A(-10)/ W55.3 (100%) E 1:10:00	A(-7)/ W52 (88%) F 1:10:00
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop	Correction of Unit	34kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00	wer is ge): A2 ((1.535kW, 2/W42 54%) B 10:00	the COP A7/W3 (35% C 1:10:0	is 2.97k\ 36 A) 10 1	W/kW. 12/W3 (15%) D	60	A(-10)/ W55.3 (100%) E 1:10:00	A(-7)/ W52 (88%) F 1:10:00
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop Voltage Current input of	<pre>capacity is 4.56 /correction (Unit hh: min:sec erties V</pre>	34kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00 No	wer is ge): A2 (! 1:	1.535kW, 2/W42 54%) B 10:00 No	the COP A7/W3 (35% C 1:10:0 No	is 2.97k\ 36 A) 10 1 5	N/kW. 12/W3 (15%) D 1:10:00	60	A(-10)/ W55.3 (100%) E 1:10:00 No	A(-7)/ W52 (88%) F 1:10:00 No
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump	<pre>capacity is 4.56 /correction d Unit hh: min:sec erties V</pre>	34kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00 No 230.2	wer is ge): A2 (5 1: 2	1.535kW, 2/W42 54%) B 10:00 No 230.6	the COP A7/W3 (35% C 1:10:0 No 231.5	is 2.97k\ 36 A) 10 1 5	N/kW. 12/W3 (15%) D 1:10:00 No 231.4	30	A(-10)/ W55.3 (100%) E 1:10:00 No 230.7	A(-7)/ W52 (88%) F 1:10:00 No 230.2

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 8 of 59 www.tuvsud.com





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	s Source Sid	le					-
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 th	e 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

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

www.tuvsud.com





Tdesignh(°C):	-10		Tbiv(°C) :	-7			
Pdesignh(kW):	4.530		TOL(°C) :	-10			
Test result A,	B, C, D, E, F	conditions	5:				
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	
А	4.007	4.007	2.35	0.90	1.00	2.35	
В	2.439	2.677	3.52	0.90	0.91	3.52	
С	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	

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.61
SCOP:	kWh/kWh	3.59
Q _H :	kWh/year	9359
Q _{HE} :	kWh/year	2605
η _{s,h}	%	140.7
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)		A++



TÜV®





		e (Eow temp	eratur	re applica	tion):				Р
Model	CGK030V4P-	В							
Product type	Air to Water	Heating season	7	Average		Warmer		Colder	
1. Test condit	ions:								
	F	Part Load Ra in %	tio		hea	Outdoor at exchan	aer		or heat anger
Condition	Form	nula		verage mates	Inlet	dry (wet) perature (bulb	Inlet/ou	tlet water tures (°C)
А	(-7-16)/(Tde	esignh-16)		88		-7(-8)		a	/ 34
В	(+2-16)/ (Td	esignh-16)		54		2(1)		a	/ 30
С	(+7-16)/(Td	esignh-16)		35		7(6)		a	/ 27
D	(+12-16)/(To	lesignh-16)		15		12(11)		a	/ 24
Е	(TOL	16)/ (Tdesig	nh-16))		TOL		a /	35.3
F	(Tbival	ent-16)/(Tdes	signh-1	6)		Tbiv		a	/ 34
G	(-15-16)/(Td	esignh-16)		N/A		-15		Ν	I/A
conditions, the c	capacity is 5.83	3kW, the pov	wer is [.]			•	•		
Remark: a) With conditions, the c 2.Tested data General test conditions/ Part-Load	capacity is 5.83	3kW, the pov	wer is ⁻ ge): A2			is 4.78kW	•	A(-10)/ W35.3 (100%)	
conditions, the c 2.Tested data General test conditions/	capacity is 5.83	33kW, the por data(Averag	wer is ⁻ ge): A2	1.219kW,	the COP	is 4.78kW	2/W24	A(-10)/ W35.3	A(-7)/ W34
conditions, the c 2.Tested data General test conditions/	capacity is 5.83	33kW, the por data(Averag A(-7)/W34 (88%)	wer is ۲ ge): A2	1.219kW, 2/W30 54%)	the COP A7/W2 (35%	is 4.78kW 27 A1) (⁻	2/W24 15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection	capacity is 5.83	33kW, the por data(Averag A(-7)/W34 (88%) A	wer is ge): A2 (5 1:	1.219kW, 2/W30 54%) B	the COP A7/W2 (35% C	is 4.78kW 27 A1) (⁻	2/W24 15%) D	A(-10)/ W35.3 (100%) E	A(-7)/ W34 (88%) F
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts	capacity is 5.83 /correction (Unit hh: min:sec	33kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00	wer is ge): A2 (5 1:	1.219kW, 2/W30 54%) B 10:00	the COP A7/W2 (35% C 1:10:0	is 4.78kW 27 A1) (⁻	2/W24 15%) D 10:00	A(-10)/ W35.3 (100%) E 1:10:00	A(-7)/ W34 (88%) F 1:10:00
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop	capacity is 5.83 /correction (Unit hh: min:sec	33kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00	wer is ۲ ge): (۲ 1:	1.219kW, 2/W30 54%) B 10:00	the COP A7/W2 (35% C 1:10:0	is 4.78kW 27 A1) (⁻ 0 1:	2/W24 15%) D 10:00	A(-10)/ W35.3 (100%) E 1:10:00	A(-7)/ W34 (88%) F 1:10:00
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop Voltage Current input of	<pre>capacity is 5.83 /correction (Unit hh: min:sec erties V</pre>	33kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00 No	wer is ge): A2 (5 1: 2	1.219kW, 2/W30 54%) B 10:00 No	the COP A7/W2 (35% C 1:10:0 No	is 4.78kW 27 A1) (1 0 1:	2/W24 15%) D 10:00 No	A(-10)/ W35.3 (100%) E 1:10:00 No	A(-7)/ W34 (88%) F 1:10:00 No
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump	Apacity is 5.83	33kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00 No 230.0	wer is ge): A2 (5 1: 2 2	1.219kW, 2/W30 54%) B 10:00 No 30.4	the COP A7/W2 (35% C 1:10:0 No 230.7	is 4.78kW 27 A1) (' 0 1: 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2/W24 15%) D 10:00 No 30.9	A(-10)/ W35.3 (100%) E 1:10:00 No 229.6	A(-7)/ W34 (88%) F 1:10:00 No 230.0

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 11 of 59 www.tuvsud.com





n³/h	1.00					
	1.00	1.00	1.00	1.00	1.00	1.00
с	28.91	26.90	25.07	23.03	30.21	28.91
с	33.89	30.10	27.89	26.25	35.20	33.89
Source Side						
Pa	101.02	101.01	101.01	101.02	101.01	101.02
с	-7.00	2.07	6.95	12.05	-9.88	-7.00
с	-8.06	1.00	5.96	10.97	-11.14	-8.06
results						
W	5.795	3.698	3.262	3.726	5.802	5.795
W	1.876	0.773	0.515	0.457	2.041	1.876
W/kW	3.09	4.78	6.33	8.15	2.84	3.09
	C Source Side Pa C C results W	C 33.89 Source Side Pa 101.02 C -7.00 C -8.06 results 5.795 W 5.795 W 1.876	C 33.89 30.10 Source Side Pa 101.02 101.01 C -7.00 2.07 C -8.06 1.00 results W 5.795 3.698 W 1.876 0.773	C 33.89 30.10 27.89 Source Side 2000 2000 2000 Pa 101.02 101.01 101.01 C -7.00 2.07 6.95 C -8.06 1.00 5.96 results 9000 9000 9000 W 5.795 3.698 3.262 W 1.876 0.773 0.515	C 33.89 30.10 27.89 26.25 Source Side Pa 101.02 101.01 101.01 101.02 C -7.00 2.07 6.95 12.05 C -8.06 1.00 5.96 10.97 results 9 3.698 3.262 3.726 W 5.795 3.698 3.262 3.726 W 1.876 0.773 0.515 0.457	C 33.89 30.10 27.89 26.25 35.20 Source Side Pa 101.02 101.01 101.01 101.02 101.01 C -7.00 2.07 6.95 12.05 -9.88 C -8.06 1.00 5.96 10.97 -11.14 results V 5.795 3.698 3.262 3.726 5.802 W 1.876 0.773 0.515 0.457 2.041

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

www.tuvsud.com





Tdesignh(°C):	-10		Tbiv(°C) :	-7		
	10			,		
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
А	5.795	5.795	3.09	0.90	1.00	3.09
В	3.528	3.698	4.78	0.90	0.95	4.78
С	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

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+++



TÜV®





	Heating mod		-		,				Р
Model	CGK030V4P-	В							
Product type	Air to Water	Heating season	7	Average		Warmer		Colder	
1. Test condit	ions:								
Condition	F	Part Load Ra in %	tio		hea	Outdoor at exchan	ger		or heat anger
Condition	Form	nula		verage mates		dry (wet) perature (tlet water tures (°C)
А	(-7-16)/(Tde	esignh-16)		88		-7(-8)		a	/ 52
В	(+2-16)/ (Td	lesignh-16)		54		2(1)		a	/ 42
С	(+7-16)/(Td	esignh-16)		35		7(6)		a	/ 36
D	(+12-16)/(To	designh-16)		15		12(11)		a	/ 30
Е	(TOL	16)/ (Tdesig	nh-16))		TOL		a /	55.3
F	(Tbival	ent-16)/(Tdes	signh-1	16)		Tbiv		a	/ 52
G	(-15-16)/(Td	lesignh-16)		N/A		-15		Ν	I/A
conditions, the c	capacity is 6.39	96kW, the po	wer is 2					en in EN1451	1-2 at 47/55
Remark: a) With conditions, the of 2.Tested data General test conditions/ Part-Load	capacity is 6.39	96kW, the po	wer is : ge): A2			is 3.12kW		A(-10)/ W55.3 (100%)	
conditions, the c 2.Tested data General test conditions/	capacity is 6.39	96kW, the por data(Averag	wer is : ge): A2	2.052kW, 2/W42	the COP	is 3.12kW	/kW. 2/W30	A(-10)/ W55.3	A(-7)/ W52
conditions, the c 2.Tested data General test conditions/	capacity is 6.39	96kW, the por data(Averag A(-7)/W52 (88%)	wer is : ge): A2	2.052kW, 2/W42 54%)	the COP A7/W3 (35%	is 3.12kW 36 A1:) (1	/kW. 2/W30 5%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection	correction of Unit	96kW, the por data(Averag A(-7)/W52 (88%) A	wer is : ge): A2 (5	2.052kW, 2/W42 54%) B	A7/W3 (35%	is 3.12kW 36 A1:) (1 0 1:	/kW. 2/W30 5%) D	A(-10)/ W55.3 (100%) E	A(-7)/ W52 (88%) F
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts	Apacity is 6.39	96kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00	wer is : ge): A2 (5	2.052kW, 2/W42 54%) B 10:00	the COP A7/W3 (35% C 1:10:0	is 3.12kW 36 A1:) (1 0 1:	/kW. 2/W30 5%) D 10:00	A(-10)/ W55.3 (100%) E 1:10:00	A(-7)/ W52 (88%) F 1:10:00
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop	Apacity is 6.39	96kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00	wer is : ge): A2 (\$ 1:	2.052kW, 2/W42 54%) B 10:00	the COP A7/W3 (35% C 1:10:0	is 3.12kW 36 A12) (1 0 1:	/kW. 2/W30 5%) D 10:00	A(-10)/ W55.3 (100%) E 1:10:00	A(-7)/ W52 (88%) F 1:10:00
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop Voltage Current input of	<pre>capacity is 6.39 /correction (Unit hh: min:sec erties V</pre>	96kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00 No	wer is : ge): A2 (5 1: 2	2.052kW, 2/W42 54%) B 10:00 No	the COP A7/W3 (35% C 1:10:0 No	is 3.12kW 36 A12) (1 0 1: , 2	/kW. 2/W30 5%) D 10:00 No	A(-10)/ W55.3 (100%) E 1:10:00 No	A(-7)/ W52 (88%) F 1:10:00 No
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump	<pre>capacity is 6.39 /correction of Unit hh: min:sec erties V</pre>	96kW, the por data(Average A(-7)/W52 (88%) A 1:10:00 No 229.8	wer is : ge): A2 (! 1: 2 2	2.052kW, 2/W42 54%) B 10:00 No 230.1	the COP A7/W3 (35% C 1:10:0 No 230.7	is 3.12kW 36 A12) (1 0 1: 7 2 (2	/kW. 2/W30 5%) D 10:00 No 30.8	A(-10)/ W55.3 (100%) E 1:10:00 No 229.4	A(-7)/ W52 (88%) F 1:10:00 No 229.8

www.tuvsud.com





³/h	0.70	0.70				
		0.70	0.70	0.70	0.70	0.70
;	45.35	37.76	33.46	28.83	48.55	45.35
;	52.01	41.98	37.21	33.24	55.11	52.01
Source Side						
Pa	99.85	99.85	99.85	99.80	99.75	99.85
;	-7.00	2.07	7.01	12.09	-10.11	-7.00
2	-8.07	1.01	5.93	11.10	-10.88	-8.07
esults						
N	5.426	3.416	3.042	3.578	5.343	5.426
N	2.298	0.938	0.607	0.532	2.568	2.298
N/kW	2.36	3.64	5.01	6.73	2.08	2.36
	ource Side	ource Side Pa 99.85 Pa -7.00 Pa -7.00 Pa -8.07 esults -8.22 V 5.426 V 2.298	ource Side Pa 99.85 99.85 : -7.00 2.07 : -8.07 1.01 esults 5.426 3.416 V 5.426 0.938	ource Side Pa 99.85 99.85 99.85 Pa 99.85 99.85 99.85 Pa -7.00 2.07 7.01 Pa -7.00 1.01 5.93 esults 99.85 99.85 99.85 V 5.426 3.416 3.042 V 2.298 0.938 0.607	ource Side 99.85 99.85 99.85 99.80 Pa 99.85 99.85 99.85 99.80 : -7.00 2.07 7.01 12.09 : -8.07 1.01 5.93 11.10 esults 99.80 99.85 99.80 99.80 V 5.426 3.416 3.042 3.578 V 2.298 0.938 0.607 0.532	ource Side Pa 99.85 99.85 99.85 99.80 99.75 Pa 99.85 99.85 99.85 99.80 99.75 Pa -7.00 2.07 7.01 12.09 -10.11 Pa -8.07 1.01 5.93 11.10 -10.88 esults V 5.426 3.416 3.042 3.578 5.343 V 2.298 0.938 0.607 0.532 2.568

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

www.tuvsud.com





conditions Measured capacity	Tbiv(°C) : TOL(°C) : COP	-7 -10 Cdh	CR	COP at part load
Measured capacity	S: Measured		CR	
Measured capacity	Measured	Cdh	CR	
capacity		Cdh	CR	
5.0.40				at part loud
5.343	2.08	0.90	1.00	2.08
5.426	2.36	0.90	1.00	2.36
5.426	2.36	0.90	1.00	2.36
3.416	3.64	0.90	0.97	3.64
3.042	5.01	0.90	0.70	4.80
3.578	6.73	0.90	0.26	5.26
	3.416 3.042	3.416 3.64 3.042 5.01 3.578 6.73	3.416 3.64 0.90 3.042 5.01 0.90	3.416 3.64 0.90 0.97 3.042 5.01 0.90 0.70 3.578 6.73 0.90 0.26

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.70
SCOP:	kWh/kWh	3.69
Q _H :	kWh/year	12672
Q _{HE} :	kWh/year	3435
η _{s,h}	%	144.5
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)		A++

www.tuvsud.com





	Heating mod	e (Low temp	peratur	e applica	tion):				Р
Model	CGK040V4P-	В							
Product type	Air to Water	Heating season	7	Average		Warmer		Colder	
1. Test condit	ions:								
Condition	F	Part Load Ra in %	itio		hea	Outdoor at exchang	ger		or heat anger
Condition	Form	nula		erage mates		dry (wet) perature (tlet water tures (°C)
А	(-7-16)/(Tde	esignh-16)		88		-7(-8)		a	/ 34
В	(+2-16)/ (Td	esignh-16)		54		2(1)		a	/ 30
С	(+7-16)/(Td	esignh-16)		35		7(6)		a	/ 27
D	(+12-16)/(To	lesignh-16)		15		12(11)		a	/ 24
Е	(TOL	16)/ (Tdesig	, nh-16))		TOL		a /	35.3
F	(Tbival	ent-16)/(Tdes	signh-1	6)		Tbiv		a	/ 34
G	(-15-16)/(Td	esignh-16)		N/A		-15		Ν	J/A
conditions, the c	capacity is 7.82	24kW, the por	wer is <i>'</i>			•	•		
Remark: a) With conditions, the c 2.Tested data General test conditions/ Part-Load	capacity is 7.82	24kW, the por	wer is ^ ge): A2			is 4.95kW	•	A(-10)/ W35.3 (100%)	
conditions, the c 2.Tested data General test conditions/	capacity is 7.82	24kW, the por data(Averag	wer is ^ ge): A2	1.582kW,	the COP	is 4.95kW	/kW. 2/W24	A(-10)/ W35.3	A(-7)/ W34
conditions, the c 2.Tested data General test conditions/	capacity is 7.82	24kW, the por data(Averag A(-7)/W34 (88%)	wer is ^ ge): A2 (5	1.582kW, 2/W30 54%)	the COP A7/W2 (35%	is 4.95kW 27 A1:) (*	/kW. 2/W24 5%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection	correction o	24kW, the por data(Averag A(-7)/W34 (88%) A	wer is ^ ge): (5 1:*	1.582kW, 2/W30 54%) B	the COP A7/W2 (35% C	is 4.95kW 27 A1:) (* 0 1:	/kW. 2/W24 5%) D	A(-10)/ W35.3 (100%) E	A(-7)/ W34 (88%) F
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump	capacity is 7.82	24kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00	wer is ^ ge): (5 1:*	1.582kW, 2/W30 54%) B 10:00	the COP A7/W2 (35% C 1:10:0	is 4.95kW 27 A1:) (* 0 1:	/kW. 2/W24 5%) D 10:00	A(-10)/ W35.3 (100%) E 1:10:00	A(-7)/ W34 (88%) F 1:10:00
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts	capacity is 7.82	24kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00	wer is ² ge): A2 (5	1.582kW, 2/W30 54%) B 10:00	the COP A7/W2 (35% C 1:10:0	is 4.95kW 27 A1:) (* 0 1:	/kW. 2/W24 5%) D 10:00	A(-10)/ W35.3 (100%) E 1:10:00	A(-7)/ W34 (88%) F 1:10:00
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop Voltage Current input of	<pre>capacity is 7.82 /correction d Unit hh: min:sec erties V</pre>	24kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00 No	wer is ² ge): (5 1: ²	1.582kW, 2/W30 54%) B 10:00 No	the COP A7/W2 (35% C 1:10:0	is 4.95kW 27 A1:) (* 0 1:) 2 2	/kW. 2/W24 5%) D 10:00 No	A(-10)/ W35.3 (100%) E 1:10:00 No	A(-7)/ W34 (88%) F 1:10:00 No
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop	Apacity is 7.82	24kW, the por data(Averag A(-7)/W34 (88%) A 1:10:00 No 230.2	wer is ² ge): A2 (5 1: ² 2 5	1.582kW, 2/W30 54%) B 10:00 No 29.7	the COP A7/W2 (35% C 1:10:0 No 230.5	is 4.95kW 27 A1:) (* 0 1:) 2 (*	/kW. 2/W24 5%) D 10:00 No 30.7	A(-10)/ W35.3 (100%) E 1:10:00 No 229.1	A(-7)/ W34 (88%) F 1:10:00 No 230.2

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 17 of 59 www.tuvsud.com





Test conditions	s User Side						
Water flow	m³/h	1.35	1.35	1.35	1.35	1.35	1.35
I nlet 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	s Source Sid	e					
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	e results						
Total heating capacity	kW	7.896	4.825	4.536	5.079	7.867	7.896
Effective power	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

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

www.tuvsud.com





Tdesignh(°C):	-10		Tbiv(°C) :	-7 -10			
Pdesignh(kW):	8.926		TOL(°C) :				
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	
А	7.896	7.896	3.07	0.90	1.00	3.07	
В	4.806	4.825	4.99	0.90	1.00	4.99	
С	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	

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+++



TÜV®





	Heating mode (Medium temperature application):									Р
Model	CGK040V4P-B									
Product type	Air to Water Heating season I Average I Warmer							Colder		
1. Test condit	ions:								•	
Condition	F	Part Load Ra in %	tio		hea	Outdoo at excha				or heat anger
Condition	Form	nula		/erage mates		dry (wet perature)		tlet water tures (°C)
А	(-7-16)/(Tde	esignh-16)		88		-7(-8)			a	/ 52
В	(+2-16)/ (Td	lesignh-16)		54		2(1)			a	/ 42
С	(+7-16)/(Td	esignh-16)		35		7(6)			a	/ 36
D	(+12-16)/(To	designh-16)		15		12(11)			a	/ 30
E	(TOI	16)/ (Tdesig	nh-16)		TOL			a /	55.3
F	(Tbival	lent-16)/(Tdes	signh-1	16)		Tbiv			a	/ 52
G	(-15-16)/(Td	lesignh-16)		N/A		-15			Ν	I/A
conditions, the c	capacity is 9.05	55kW, the pov	wer is							
Remark: a) With conditions, the c 2.Tested data General test conditions/ Part-Load	capacity is 9.05	55kW, the pov	wer is g e): A2			is 3.03k ¹		/.	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
conditions, the c 2.Tested data General test conditions/	capacity is 9.05	55kW, the por data(Averag	wer is g e): A2	2.993kW, 2/W42	the COP	is 3.03k ¹	W/kV	/.	A(-10)/ W55.3	A(-7)/ W52
conditions, the c 2.Tested data General test conditions/	capacity is 9.05	55kW, the por data(Averag A(-7)/W52 (88%)	wer is ge): A2 (!	2.993kW, 2/W42 54%)	the COP A7/W3 (35%	is 3.03k ¹ 36 A	W/kV .12/W (15%	/. /30 >)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection	capacity is 9.05	55kW, the por data(Averag A(-7)/W52 (88%) A	wer is ge): A2 (!	2.993kW, 2/W42 54%) B	A7/W3 (35%	is 3.03k ¹ 36 A	W/kV (12/W (15% D	/. /30 >)	A(-10)/ W55.3 (100%) E	A(-7)/ W52 (88%) F
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts	Apacity is 9.05	55kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00	wer is ge): A2 (!	2.993kW, 2/W42 54%) B 10:00	the COP A7/W3 (35% C 1:10:0	is 3.03k ¹ 36 A	W/kV (12/W (15% D 1:10:0	/. /30 >)	A(-10)/ W55.3 (100%) E 1:10:00	A(-7)/ W52 (88%) F 1:10:00
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop	Apacity is 9.05	55kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00	wer is ge): A2 (!	2.993kW, 2/W42 54%) B 10:00	the COP A7/W3 (35% C 1:10:0	is 3.03k ¹ 36 A) 0 -	W/kV (12/W (15% D 1:10:0	/. /30 5)	A(-10)/ W55.3 (100%) E 1:10:00	A(-7)/ W52 (88%) F 1:10:00
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop Voltage Current input of	Apacity is 9.05	55kW, the por data(Averag A(-7)/W52 (88%) A 1:10:00 No	wer is ge): A2 (! 1: 2	2.993kW, 2/W42 54%) B 10:00 No	the COP A7/W3 (35% C 1:10:0 No	is 3.03k ¹ 36 A) 0 -	W/kV (12/W (15% D 1:10:0	7. 730 5) 50 6	A(-10)/ W55.3 (100%) E 1:10:00 No	A(-7)/ W52 (88%) F 1:10:00 No
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump	Apacity is 9.05	55kW, the por data(Average A(-7)/W52 (88%) A 1:10:00 No 229.8	wer is ge): A2 (! 1: 2 0	2.993kW, 2/W42 54%) B 10:00 No 229.9	the COP A7/W3 (35% C 1:10:0 No 230.5	is 3.03k ¹ 36 A) 0 ·	W/kV (12/W (15%) D 1:10:0 No 230.	7. 730 >) 00 6	A(-10)/ W55.3 (100%) E 1:10:00 No 228.6	A(-7)/ W52 (88%) F 1:10:00 No 229.8

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 20 of 59 www.tuvsud.com





Test conditions User Side											
Water flow	m³/h	1.00	1.00	1.00	1.00	1.00	1.00				
Inlet Water	°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	s Source Sid	е									
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85				
Air inlet emperature, DB	°C	-7.00	1.98	6.89	12.00	-9.87	-7.00				
Air inlet emperature, WB	°C	-7.96	0.99	5.89	11.00	-10.91	-7.96				
Summary of the	e results	•									
Total heating capacity	kW	7.398	4.504	4.342	4.938	7.283	7.398				
Effective power nput	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				

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

www.tuvsud.com





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	
А	7.398	7.398	2.34	0.90	1.00	2.34	
В	4.503	4.504	3.77	0.90	1.00	3.77	
С	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	

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++



TÜV®





	Heating mode (Low temperature application):								Р
Model	CGK050V4P-	В							
Product type	Air to Water Heating season I Average I Warmer I						Colder		
1. Test condit	tions:		-				•		
Condition	Part Load Ra in %		tio		hea	Outdoor at exchan	ger		or heat anger
Condition	Form	nula		erage nates		dry (wet) perature			tlet water tures (°C)
А	(-7-16)/(Tde	esignh-16)		88		-7(-8)		a	/ 34
В	(+2-16)/ (Td	lesignh-16)	:	54		2(1)		a	/ 30
С	(+7-16)/(Td	esignh-16)	:	35		7(6)		a	/ 27
D	(+12-16)/(To	designh-16)		15		12(11)		a	/ 24
Е	(TOL	16)/ (Tdesig	nh-16)			TOL		a /	35.3
F	(Tbival	lent-16)/(Tdes	signh-1	6)		Tbiv		a	/ 34
G	(-15-16)/(Td	lesignh-16)	١	N/A		-15		Ν	I/A
conditions, the c	capacity is 10.1	155kW, the p	ower is						1-2 at 30/3
Remark: a) With conditions, the c 2.Tested data General test conditions/ Part-Load	capacity is 10.1	155kW, the p	ower is ge): A2			P is 4.81k ¹ 27 A1		A(-10)/ W35.3 (100%)	
conditions, the c 2.Tested data General test conditions/	capacity is 10.1	155kW, the po data(Averag	ower is ge): A2/ (5	2.113kW /W30	, the COI A7/W2	P is 4.81k ¹ 27 A1	N/kW. 2/W24	A(-10)/ W35.3	A(-7)/ W34
conditions, the c 2.Tested data General test conditions/	capacity is 10.1	A(-7)/W34 (88%)	ower is ge): A2 (5	2.113kW /W30 (4%)	, the COI A7/W2 (35%	27 A1) (W/kW. 2/W24 15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection	capacity is 10.1 /correction (Unit 	155kW, the po data(Averag A(-7)/W34 (88%) A	ower is ge): A2 (5	2.113kW /W30 i4%) B	, the COI A7/W2 (35% C	27 A1) (W/kW. 2/W24 15%) D	A(-10)/ W35.3 (100%) E	A(-7)/ W34 (88%) F
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts	 hh: min:sec	I55kW, the product of the second state (Average of the second state) A(-7)/W34 (88%) A 1:10:00	ower is ge): A2 (5	2.113kW /W30 i4%) B 10:00	, the COI A7/W2 (35% C 1:10:0	27 A1) (W/kW. 2/W24 15%) D 10:00	A(-10)/ W35.3 (100%) E 1:10:00	A(-7)/ W34 (88%) F 1:10:00
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop	 hh: min:sec	I55kW, the product of the second state (Average of the second state) A(-7)/W34 (88%) A 1:10:00	ower is ge): A2/ (5	2.113kW /W30 i4%) B 10:00	, the COI A7/W2 (35% C 1:10:0	27 A1) (0 1:	W/kW. 2/W24 15%) D 10:00	A(-10)/ W35.3 (100%) E 1:10:00	A(-7)/ W34 (88%) F 1:10:00
conditions, the of 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop Voltage Current input of	capacity is 10.1 /correction (Unit hh: min:sec erties V	155kW, the product of the second state of the second st	ower is ge): (5 1:1	2.113kW /W30 i4%) B 10:00 No	, the COI A7/W2 (35% C 1:10:0 No	27 A1) (0 1:	N/kW. 2/W24 15%) D 10:00 No	A(-10)/ W35.3 (100%) E 1:10:00 No	A(-7)/ W34 (88%) F 1:10:00 No
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump	capacity is 10.1 /correction (Unit hh: min:sec erties V	155kW, the product of the product o	ower is ge): A2, (5 1:1 1:1 6	2.113kW /W30 /4%) B 10:00 No 30.0	, the COI A7/W2 (35% C 1:10:0 No 232.1	P is 4.81k ¹ 27 A1) (0 1:	W/kW. 2/W24 15%) D 10:00 No :32.2	A(-10)/ W35.3 (100%) E 1:10:00 No 229.5	A(-7)/ W34 (88%) F 1:10:00 No 228.9

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 23 of 59 www.tuvsud.com





n³/h			1	Test conditions User Side											
11-/11	1.75	1.75	1.75	1.75	1.75	1.75									
С	28.64	26.70	25.05	23.25	30.12	28.64									
С	33.95	29.95	28.02	26.58	35.32	33.95									
Source Side	!														
Pa	101.02	101.01	101.01	101.02	101.01	101.02									
С	-7.00	2.01	7.01	11.98	-10.02	-7.00									
С	-8.05	1.00	6.12	10.92	-11.06	-8.05									
results															
W	10.804	6.575	6.009	6.743	10.572	10.804									
W	3.532	1.360	0.905	0.807	3.721	3.532									
W/kW	3.06	4.84	6.64	8.35	2.84	3.06									
	C Source Side Pa C C C results W	C 33.95 Source Side Pa 101.02 C -7.00 C -8.05 results W 10.804 W 3.532	C 33.95 29.95 Source Side 101.02 101.01 Pa 101.02 101.01 C -7.00 2.01 C -8.05 1.00 results 10.804 6.575 W 3.532 1.360	C 33.95 29.95 28.02 Source Side -7.00 101.01 101.01 Pa 101.02 101.01 101.01 C -7.00 2.01 7.01 C -8.05 1.00 6.12 results	C 33.95 29.95 28.02 26.58 Source SidePa 101.02 101.01 101.01 101.02 C -7.00 2.01 7.01 11.98 C -8.05 1.00 6.12 10.92 resultsW 10.804 6.575 6.009 6.743 W 3.532 1.360 0.905 0.807	C33.9529.9528.0226.5835.32Source SidePa101.02101.01101.02101.01C-7.002.017.0111.98-10.02C-8.051.006.1210.92-11.06resultsW10.8046.5756.0096.74310.572W3.5321.3600.9050.8073.721									

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

www.tuvsud.com





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	5:			
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
А	10.804	10.804	3.06	0.90	1.00	3.06
В	6.576	6.575	4.84	0.90	1.00	4.84
С	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

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+++



TÜV®





	Heating mode (Medium temperature application):									Р
Model	CGK050V4P-	В								
Product type	Air to Water Heating season 🛛 Average 🗌 Warmer		C	Colder						
1. Test condit	ions:	•								
Condition	F	Part Load Ra in %	tio		hea	Outdoo at exchai				or heat anger
Condition	Form	nula		verage imates		dry (wet)				tlet water tures (°C)
А	(-7-16)/(Tde	esignh-16)		88		-7(-8)			a	/ 52
В	(+2-16)/ (Td	esignh-16)		54		2(1)			a	/ 42
С	(+7-16)/(Td	esignh-16)		35		7(6)			a	/ 36
D	(+12-16)/(To	lesignh-16)		15		12(11)			a	/ 30
Е	(TOL	-16)/ (Tdesig	nh-16	i)		TOL			a /	55.3
F	(Tbival	ent-16)/(Tdes	signh-	16)		Tbiv			a	/ 52
G	(-15-16)/(Td	esignh-16)		N/A		-15			N/A	
conditions, the c	capacity is 11.6	05kW, the p	ower i							
Remark: a) With conditions, the c 2.Tested data General test conditions/ Part-Load	capacity is 11.6	05kW, the p	ower is ge): A:			P is 3.01k			A(-10)/ W55.3 (100%)	
conditions, the c 2.Tested data General test conditions/	capacity is 11.6	605kW, the po data(Averag	ower is ge): A:	s 3.852kW 2/W42	, the COI	P is 3.01k	W/kW.		A(-10)/ W55.3	A(-7)/ W52
conditions, the c 2.Tested data General test conditions/	capacity is 11.6	05kW, the po data(Averag A(-7)/W52 (88%)	ower is ge): A: (s 3.852kW 2/W42 54%)	, the COI A7/W3 (35%	² is 3.01k 36 A	W/kW. 12/W30 (15%)		A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump	capacity is 11.6	05kW, the po data(Averag A(-7)/W52 (88%) A	ower is ge): A: (s 3.852kW 2/W42 54%) B	, the COI A7/W3 (35% C	² is 3.01k 36 A	12/W30 (15%) D		A(-10)/ W55.3 (100%) E	A(-7)/ W52 (88%) F
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts	Apacity is 11.6	305kW, the po data(Averag A(-7)/W52 (88%) A 1:10:00	ower is ge): A: (s 3.852kW 2/W42 (54%) B :10:00	, the COI A7/W3 (35% C 1:10:0	² is 3.01k 36 A	:W/kW. 12/W30 (15%) D :10:00		A(-10)/ W55.3 (100%) E 1:10:00	A(-7)/ W52 (88%) F 1:10:00
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop	Apacity is 11.6	305kW, the po data(Averag A(-7)/W52 (88%) A 1:10:00	ower is ge): A: (s 3.852kW 2/W42 (54%) B :10:00	, the COI A7/W3 (35% C 1:10:0	P is 3.01k	:W/kW. 12/W30 (15%) D :10:00		A(-10)/ W55.3 (100%) E 1:10:00	A(-7)/ W52 (88%) F 1:10:00
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection period The heat pump defrosts Electrical Prop Voltage Current input of	Apacity is 11.6	605kW, the po data(Averag A(-7)/W52 (88%) A 1:10:00 No	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	s 3.852kW 2/W42 54%) B :10:00 No	, the COI A7/W3 (35% C 1:10:0 No	Dis 3.01k 36 A 36 A 10 1	:W/kW. 12/W30 (15%) D :10:00 No		A(-10)/ W55.3 (100%) E 1:10:00 No	A(-7)/ W52 (88%) F 1:10:00 No
conditions, the c 2.Tested data General test conditions/ Part-Load Data collection	<pre>capacity is 11.6 /correction d Unit hh: min:sec erties V</pre>	228.5	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	s 3.852kW 2/W42 54%) B :10:00 No 229.8	, the COI A7/W3 (35%) C 1:10:0 No 232.1	2 is 3.01k	:W/kW. 12/W30 (15%) D :10:00 No 232.2		A(-10)/ W55.3 (100%) E 1:10:00 No 230.0	A(-7)/ W52 (88%) F 1:10:00 No 228.5

www.tuvsud.com





³/h	1.25	1.25	1.25	4.05		
		1120	1.20	1.25	1.25	1.25
;	44.90	37.61	33.41	28.92	48.17	44.90
;	51.99	41.98	37.40	33.42	55.06	51.99
ource Side						
^v a	99.85	99.85	99.85	99.80	99.75	99.85
;	-7.00	2.03	6.93	11.96	-10.08	-7.00
;	-8.05	1.00	5.89	11.12	-11.07	-8.05
esults						
V	10.298	6.330	5.783	6.520	10.006	10.298
V	4.349	1.694	1.165	1.012	4.719	4.349
V/kW	2.37	3.74	4.96	6.44	2.12	2.37
	ource Side a a esults /	ource Side a 99.85 -7.00 -8.05 esults / 10.298 / 4.349	ource Side a 99.85 99.85 -7.00 2.03 -8.05 1.00 esults 10.298 6.330 / 4.349 1.694	ource Side 99.85 99.85 99.85 a 99.85 99.85 99.85 -7.00 2.03 6.93 -8.05 1.00 5.89 esults 10.298 6.330 5.783 / 4.349 1.694 1.165	ource Side 99.85 99.85 99.85 99.80 a 99.85 99.85 99.85 99.80 -7.00 2.03 6.93 11.96 -8.05 1.00 5.89 11.12 esults 10.298 6.330 5.783 6.520 / 4.349 1.694 1.165 1.012	ource Side 99.85 99.85 99.85 99.80 99.75 a 99.85 99.85 99.85 99.80 99.75 -7.00 2.03 6.93 11.96 -10.08 -8.05 1.00 5.89 11.12 -11.07 esults 99.85 99.85 99.85 99.85 10.298 6.330 5.783 6.520 10.006 1 4.349 1.694 1.165 1.012 4.719

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

www.tuvsud.com





Tdesignh(°C):	-10		Tbiv(°C) :	-7		
Pdesignh(kW):	11.641		TOL(°C) :	-10		
Test result A,	B, C, D, E, F	conditions	:	1		
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
А	10.298	10.298	2.37	0.90	1.00	2.37
В	6.268	6.330	3.74	0.90	0.99	3.74
С	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

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++



TÜV®





Table 9a.	Sound power level	Р				
Model	CGK020V4P-B					
	Product type :			Air to Water		
	Outdoor heat exchar	nger, Air temperature D	B/WB (°C):	7.0 / 6.0		
	Indoor heat exchang	er, Water outlet tempe	rature (°C):	35.0		
	Voltage (V):			230		
	Frequency (Hz):			50		
	Working condition cl	Class A				
	Acoustical environme	tical environment :				
	Windshield type :			Sponge		
	Measured position a	mount :	14			
Mea	sured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark		
Sound pres	ssure level `L _{p(ST)} ****		39			
Measureme	ent distance d *					
Sound pow	er level L _{wA} ****					
Duct conne			**) 3 decimal places; ****) nea	rest integer		







Table 9b.	Sound power level	Р		
Model	CGK020V4P-B			
	Product type :			Air to Water
	Outdoor heat exchar	nger, Air temperature D	B/WB (°C):	7.0 / 6.0
	Indoor heat exchang	er, Water outlet tempe	rature (°C):	55.0
	Voltage (V):			230
	Frequency (Hz):			50
	Working condition cl	Class A		
	Acoustical environme	Hemi-anechoic room		
	Windshield type :			Sponge
	Measured position a	mount :		14
Mea	sured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark
Sound pres	sure level `L _{p(ST)} ****		39	
Measureme	ent distance d *			
Sound pow	er level L _{wA} ****			
Duct conne			**) 3 decimal places; ****) neare	est integer





Ap	pendix	L	Test	results
· • • •				

Table 10a.	Sound power level	Р							
Model	CGK030V4P-B								
	Product type :			Air to Water					
	Outdoor heat exchar	nger, Air temperature D)B/WB (°C):	7.0 / 6.0					
	Indoor heat exchang	er, Water outlet tempe	rature (°C):	35.0					
	Voltage (V):			230					
	Frequency (Hz):			50					
	Working condition cl	Class A							
	Acoustical environm	Hemi-anechoic room							
	Windshield type :			Sponge					
	Measured position a	mount :		14					
Meas	sured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark					
Sound press	sure level `L _{p(ST)} ****		40						
Measureme	nt distance d *								
Sound powe	er level L _{wA} ****								
Duct connect			**) 3 decimal places; ****) nea	rest integer					







Table 10b.	Sound power level	Р		
Model	CGK030V4P-B			
	Product type :			Air to Water
	Outdoor heat exchar	nger, Air temperature D	B/WB (°C):	7.0 / 6.0
	Indoor heat exchang	er, Water outlet tempe	rature (°C):	55.0
	Voltage (V):			230
	Frequency (Hz):			50
	Working condition cl	Class A		
	Acoustical environme	Hemi-anechoic room		
	Windshield type :			Sponge
	Measured position a	mount :		14
Meas	sured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark
Sound press	sure level `L _{p(ST)} ****		41	
Measureme	nt distance d *			
Sound powe	er level L _{wA} ****			
Duct connect			**) 3 decimal places; ****) neare	est integer





Table 11a.	Sound power level	Р			
Model	CGK040V4P-B				
	Product type :	Air to Water			
	Outdoor heat exchar	7.0 / 6.0			
	Indoor heat exchang	35.0			
	Voltage (V):				
	Frequency (Hz):				
	Working condition cl	Class A			
	Acoustical environment :			Hemi-anechoic room	
	Windshield type :			Sponge	
	Measured position a	14			
Measured quantity L _{WA,indoors} (dB(A)) L _{WA,outdoors} (dB(A))			Remark		
Sound pressure level `L _{p(ST)} ****			44		
Measureme	nt distance d *		1.0m		
Sound power level L _{wA} **** 58					
Duct connec			**) 3 decimal places; ****) nea	rest integer	







Table 11b.	Sound power level	Р				
Model	CGK040V4P-B					
	Product type :	Air to Water				
	Outdoor heat exchanger, Air temperature DB/WB (°C): Indoor heat exchanger, Water outlet temperature (°C):					
	Voltage (V): Frequency (Hz): Working condition class :					
	Acoustical environment :			Hemi-anechoic room		
	Windshield type :		Sponge			
	Measured position a	14				
Measured quantity L _{WA,indoors} (dB(A)) L _{WA,outdoors} (dB(A))			Remark			
Sound pres	sure level `L _{p(ST)} ****		41			
Measurement distance d *		1.0m				
Sound power level L _{wA} **** 55						
Duct connect			**) 3 decimal places; ****) neare	est integer		





Ap	pendix	L	Test	results
· • • •				

Table 12a.	Sound power level	Р				
Model	CGK050V4P-B					
	Product type :	Air to Water				
	Outdoor heat exchar	7.0 / 6.0				
	Indoor heat exchanger, Water outlet temperature (°C):					
	Voltage (V): Frequency (Hz):					
	Working condition class :					
	Acoustical environme	Hemi-anechoic room				
	Windshield type :			Sponge		
	Measured position a	14				
Meas	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						
Duct connect			**) 3 decimal places; ****) nea	rest integer		







Table 12b.	Sound power level	Р			
Model	CGK050V4P-B				
	Product type :	Air to Water			
	Outdoor heat exchar	7.0 / 6.0			
	Indoor heat exchang	55.0			
	Voltage (V): Frequency (Hz):				
	Working condition class : Acoustical environment :				
	Windshield type :			Sponge	
	Measured position a	14			
Measured quantity L _{WA,indoors} (dB(A)) L _{WA,outdoors} (dB(A))			Remark		
Sound press	sure level `L _{p(ST)} ****		43		
Measurement distance d *			1.0m		
Sound powe	Sound power level L _{wA} **** 58				
Duct connect			**) 3 decimal places; ****) neare	est integer	





Table 13.	Clause 4 of EN 14511-4:2022	Р
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 0.48m ³ /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

www.tuvsud.com



Table 14.	Clause 4 of EN 14511-4:2022	Р
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 0.63m ³ /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

www.tuvsud.com



Table 15.	Clause 4 of EN 14511-4:2022	Р
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 0.90m ³ /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

www.tuvsud.com



Table 16.	Clause 4 of EN 14511-4:2022	Р
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 1.13m ³ /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

www.tuvsud.com



SPRSUN	CE
DC Inverter Air Source H	leat Pumps
Model	CGK020V4P-
Power Supply	220-240V~/50H
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/V
Cooling Capacity Min./Max.	1.5/4.05kV
Cooling Input Power Min./Max.	0.48/1.56kV
Rated Input Power/Current	3.05kW/14.7/
Max. Water Outlet Temperature	75°C
Max. Water Pump Flow	4m ³ /1
Max. Water Pump Head	9m
Rated Water Flow	1.02m ³ /ł
Refrigerant/Weig	R290/0.5kg
Low/High side operation pressure	0.85/3.2MP
High maximum allowable pressure	3.2MP
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 w	reight : 0.0054 ton
*Heating working condition: Dry bulb temperature 7°C , Wet bulb Inlet water temperature 30°C,Outlet w	temperature 6°C vater temperature 35°C
Guangzhou Sprsun New Ener Development Co., No. 15 Tangxi Road, Yinsha Indus Zengcheng Guangzho	gy Technology Ltd strial Park, Xintang,

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 41 of 59 www.tuvsud.com





SPRSUN	د د 🛣
DC Inverter Air Source H	eat 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	4m ³ /h
Max. Water Pump Head	9m
Rated Water Flow	1.55m ³ /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 weigh	t : 0.0024 ton
*Heating working condition: Dry bulb temperature 7°C , Wet bulb temperatu Inlet water temperature 30°C,Outlet water temp Guangzhou Sprsun New Energy Te	perature 35°C
Development Co., Ltd No. 15 Tangxi Road, Yinsha Industrial Park, Guangzhou, China	Xintang, Zengcheng

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 42 of 59







SPRSUN	CE
DC Inverter Air Source H	eat Pumps
Model	CGK040V4P-E
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°C
Max. Water Pump Flow	4m³/t
Max. Water Pump Head	9m
Rated Water Flow	2.06m ³ /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 weigh	nt : 0.003 ton
*Heating working condition: Dry bulb temperature 7°C , Wet bulb temperatu Inlet water temperature 30°C,Outlet water temp Guangzhou Sprsun New Energy Te	erature 35°C
Development Co., Ltd No. 15 Tangxi Road, Yinsha Industrial Park, S Guangzhou,China	

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 43 of 59







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	6.2m ³ /h
Max. Water Pump Head	10.5m
Rated Water Flow	2.6m ³ /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 wei	ght : 0.0036 ton
*Heating working condition: Dry bulb temperature 7°C , Wet bulb temperat Inlet water temperature 30°C,Outlet water tem	nperature 35°C
Guangzhou Sprsun New Energy Development Co., Lt No. 15 Tangxi Road, Yinsha Industrial Par Guangzhou,China	d

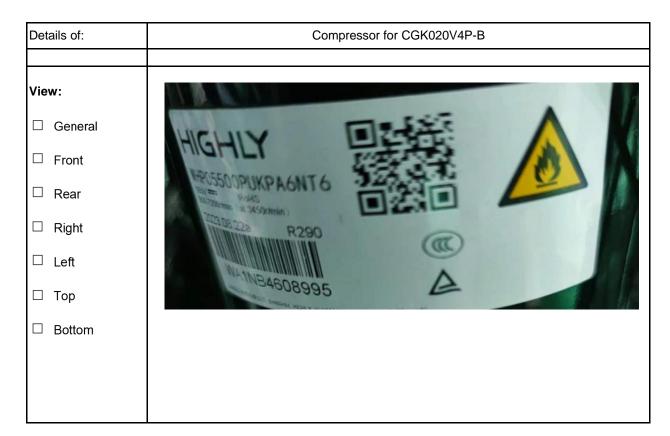
www.tuvsud.com





Details of: Overall view for CGK020V4P-B





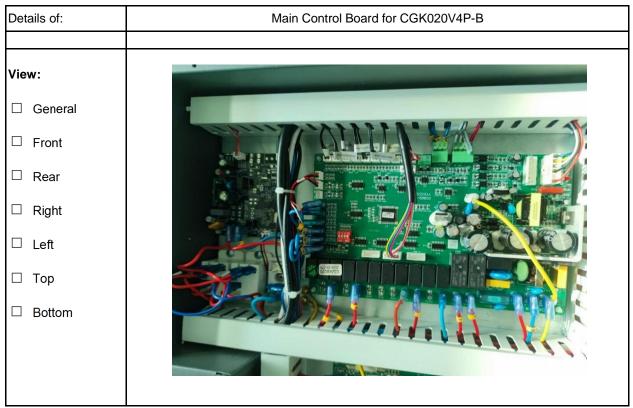
Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 45 of 59











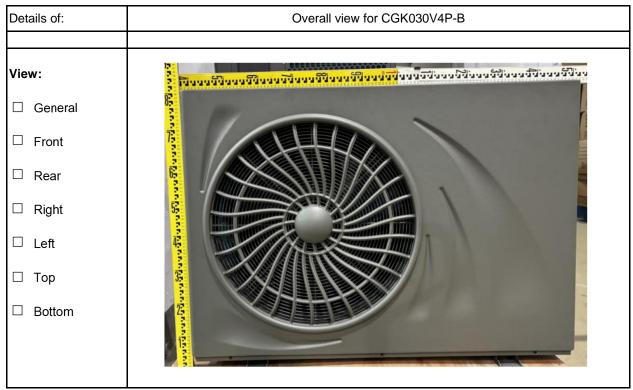
Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 46 of 59











Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 47 of 59

www.tuvsud.com







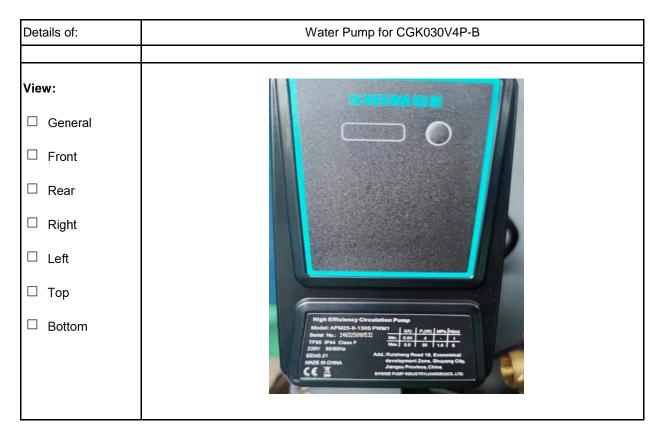
Details of:	Fan Motor for CGK030V4P-B
View: General Front Rear Right Left Top Bottom	水磁无刷直流电动机 (BLDC Motor) NOV 永磁无刷直流电动机 (BLDC Motor) NOV MWS116-8K-PD1 DC310V 116W SOOr/min B CL. 8P 五苏曼淇威电气产品有限公司 Jiangsu Match-Well Electrical Products Co.,Ltd.

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 48 of 59 www.tuvsud.com





Details of:	Main Control Board for CGK030V4P-B
View:	
□ Front	
□ Rear	
□ Right	
□ Left	
🗆 Тор	
□ Bottom	



Doc No.: ITC-TTW0902.02E - Rev.15

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 49 of 59







Details of: Overall view for CGK040V4P-B



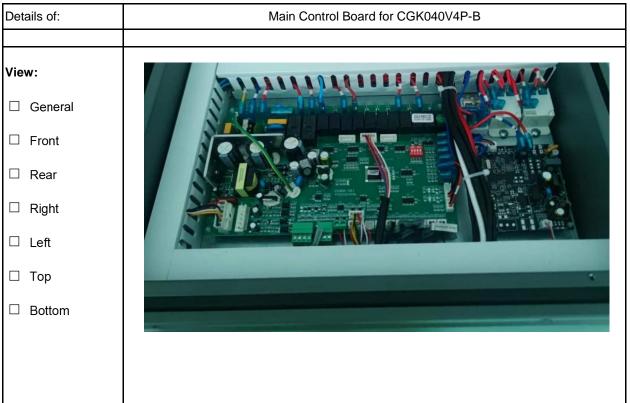


Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 50 of 59 www.tuvsud.com









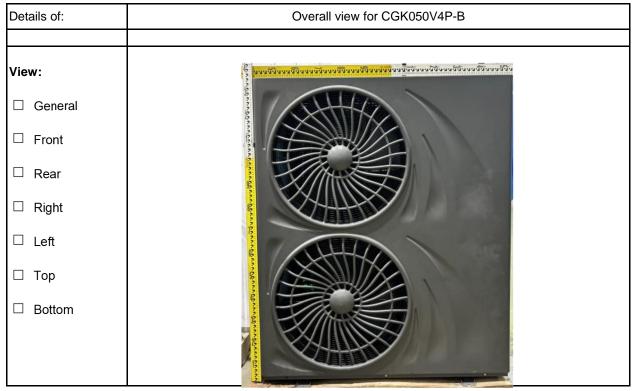
Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 51 of 59











Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 52 of 59

www.tuvsud.com





Details of:	Compressor for CGK050V4P-B
View: General Front Rear Right Left	HIGHLY WHP13300PSDPC8FQ 143.5V 900-6600r/min (at 3300r/min) 2023.08.03 R290
□ Top □ Bottom	20231H0002839 上海涛立电器有限公司 SHANGHAI HIGHLY ELECTRICAL APPLIANCES CC., LTC.

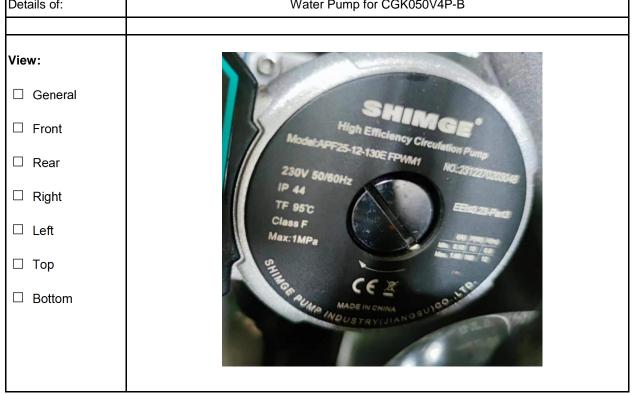
Details of:	Fan Motor for CGK050V4P-B
View: General Front Rear Right Left Top Bottom	水磁无刷直流电动机 (BLDC Motor)

Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 53 of 59 <u>www.tuvsud.com</u>





Details of:	Main Control Board for CGK050V4P-B
View:	
□ Front	
□ Rear	
□ Right	
□ Left	
TopBottom	
Details of:	Water Pump for CGK050V4P-B



Project No: 64.181.24.00339.01 Rev.: 00 Date: 2024-06-25 Page: 54 of 59

www.tuvsud.com





Model: <u>CGK020V4P-I</u>	-	
Part		Technical data
1. Compressor		
	Manufacture:	Shanghai Highly Electrical Appliance Co., Ltd.
	Туре:	WHP05500PUKPA6NT6
	Serial-number:	WA1NB4608995
	Specification:	R290
2. Condenser		
	Manufacture:	Jiangsu Yuanzhuo Equipment Manfactur Co.,Ltd
	Туре:	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.
	Туре:	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.
	Туре:	MWS116-8K-PD1
	Fan type:	3 blade
	Specification:	DC310V; 116W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic Inc.
	Туре:	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
	Туре:	GPA25-9HW
	Specification:	230V~; 50Hz
Domark: * maana tha t	•	zouv~, sunz

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

www.tuvsud.com

TÜV®



Model: <u>CGK030V4P-I</u>	-	
Part		Technical data
1. Compressor		
	Manufacture:	Shanghai Highly Electrical Appliance Co., Ltd.
	Туре:	WHP07600PSDPC9KQ
	Serial-number:	20231H0001572
	Specification:	R290
2. Condenser		
	Manufacture:	Jiangsu Yuanzhuo Equipment Manfactur Co.,Ltd
	Туре:	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.
	Туре:	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.
	Туре:	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		· · · · · · · · · · · · · · · · · · ·
FF	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APM25-9-130S PWM1
	Specification:	230V~; 50/60Hz
*(Alternative)		
	Manufacture:	Shinhoo
	Туре:	GPA25-9HW
	Specification:	230V~; 50Hz
Domark: * maana tha ta		230V~, SURZ

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

www.tuvsud.com

TÜV®



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

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

www.tuvsud.com

TÜV®



Model: <u>CGK050V4P-I</u>	<u> </u>	
Part		Technical data
1. Compressor		
	Manufacture:	Shanghai Highly Electrical Appliance Co., Ltd.
	Туре:	WHP13300PSDPC8FQ
	Serial-number:	20231H0002839
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	Jiangsu Yuanzhuo Equipment Manfactur Co.,Ltd
	Туре:	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.
	Туре:	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.
	Туре:	MWS116-8K-PD1
	Fan type:	3 blade
	Specification:	DC310V; 116W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic Inc.
	Туре:	CG248075
	Specification:	220-240V~; 50Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Туре:	APF25-12-130E FPWM1
	Specification:	230V~; 50/60Hz
*(Alternative)		
	Manufacture:	Shinhoo
	Type:	GPA25-11H
	Specification:	230V~; 50Hz
		250V~, 50HZ

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

www.tuvsud.com

ß

TÜV

 Guangzhou Branch
 5F&8F East, Communication Building, No.163 Pingyun Road, Huangpu Ave. West, Guangzhou 510656, China Tel: +86 20 38320668

TÜV SÜD Certification and Testing (China) Co., Ltd.



Appendix V Equipment List

No.	Туре	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 --



TÜV®