



Technical Report No.: 64.181.22.02858.02 Rev.00

Date: 2023-04-24

Client: Report holder's name: SolarEast Heat Pump Ltd.

Report holder's Address:

No.73 Defu Road, Xingtan Town Shunde District 528325 Foshan City, Guangdong Province, People's Republic of

China

Contact person of

applicant:

Lai XiaoPing

Manufacturer's name: SolarEast Heat Pump Ltd.

Manufacturer's

address:

No.73 Defu Road, Xingtan Town Shunde District 528325 Foshan City, Guangdong Province, People's Republic of

China

Factory: Factory's name: SolarEast Heat Pump Ltd.

Factory's address: No.73 Defu Road, Xingtan Town Shunde District 528325

Foshan City, Guangdong Province, People's Republic of

China

Test object: Product: Air Source Heat Pump

Model: BLN-012TC1; BLN-012TC3

Trade name: -

Test specification: ☑ EN 14825:2022

EN 12102-1:2022EN 14511-3:2022

☑ 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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5F&8F East, Communication Building, No.163 Pingyun Road, Huangpu Ave. West, Guangzhou 510656, China





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

12	Consideration	of the foreseeable use	_
1 . Z	Consideration	of the foresteaple us	t

COI	isidefation of the foresecable use
	Not applicable
<u></u>	Covered through the applied standard
Ц	Covered by the following comment
	Covered by attached risk analysis

1.3 Technical Data

reominour Data	
Model:	BLN-012TC1; BLN-012TC3
Rated Voltage (V) :	220-240V~ for BLN-012TC1; 380-415V, 3N~ for BLN-012TC3
Rated Frequency (Hz):	50
Rated Power (W):	5400 for BLN-012TC1; 5850 for BLN-012TC3
Rated Current (A):	25.0 for BLN-012TC1; 10.0 for BLN-012TC3
Protection Class:	Class I
Protection Against Moisture :	IPX4
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 / 1.05kg
Declared parameters :	

N/A

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Sound power level dB(A):

Series No:

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Tel: +86 20 38320668

8D00220725003005 for BLN-012TC1; 8A00220912003001 for BLN-012TC3



2 Order

2.1 Date of Purchase Order, Customer's Reference

2022-09-06, 2023-02-09

SolarEast Heat Pump Ltd.

2.2 Test Sample(s)

• Reception date(s): 2022-09-07, 2023-02-09

• Location(s) of reception:

For Energy test:

Guangzhou Customs District Technology Center

Address: No.3, Desheng East Road, Shunde, Daliang, Foshan, Guangdong, China

For Noise tests:

CVC Testing Technology Co., Ltd.

Address: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, Guangdong, 510663. P.R.China

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

2.3 Date(s) of Testing

2022-09-07 to 2022-09-30, 2023-02-09 to 2023-03-09

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

3.1 Positive Test Results

See Appendix I

4 Remark

N/A

- 4.1 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 par-ticulars 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 re-garding 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

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6 Summary

- 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.
- The main power for model BLN-012TC1 is supplied by a 3-pole supply cord connecting to fixed wiring.
- 3) The main power for model BLN-012TC3 is supplied by a 5-pole supply cord connecting to fixed wiring.
- 4) Water enthalpy method was adopted in this report.
- 5) Standby mode power, off mode power and thermostat-off mode power were tested according to clause 12 of standard EN 14825:2022.
- 6) The model has two appearances, only the front panel is different between the two appearances, the rest is exactly the same.
- 7) This test report 64.181.22.02858.02 Rev.00, dated 2023-04-24 supersedes test report 64.181.22.02858.01 Rev.00, dated 2022-10-24 to include the following changes and/or additions, which were considered technical modifications:
 - a) Changing refrigerant charge and Updating standard EN 14511-3 and EN 14825 in the report. Therefore, related testing for model BLN-012TC1, BLN-012TC3 was updated.
 - b) Adding EN 12102-1:2022 test for models BLN-012TC1, BLN-012TC3.
 - C) Adding EN 14511-4:2022 Clause 4 test for models BLN-012TC1, BLN-012TC3.

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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 Te	est results								
Table 1.	Heating mod	de(Low temp	peratur	e applica	ation):			F	•
Model	BLN-012TC1								
Product type	Air to Water	Heating season	√	Averag e		Warme		Colder	
1. Test condi	tions:								
		Part Loa	d Ratio)		Outdo	or heat	Indoo	r heat
<u>io</u>		in S		1		excha			anger
Condition	Form	nula	A	W	С	C Inlet dry (wet) bulb temperature °C		Inlet/out	let water ures (°C)
Α	(-7-16)/(Tdes	ignh-16)	88	N/A	N/A	-7(-8)	a /	34
В	(+2-16)/ (Tde		54	N/A	N/A	2(a/	30
С	(+7-16)/(Tdes		35	N/A	N/A	7(a /	
D	(+12-16)/(Tde		15	N/A	N/A	12(24
E F		(TOL-16)/ (To bivalent-16)/(T(oiv		35.3 34
G	(-15-16)/(Tde		N/A	N/A	N/A	-1			34 /A
Remark: a) Wit 2 at 30/35 cond	h the water flo litions, the cap	w rate as de pacity is 12.3	termine 77kW, t	d at the	standard	rating c	ondition	s given in l	EN14511-
General test	Unit			M/20	A 7 / A / O	7 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	2000	Δ/	A (7) /
conditions/ Part-Load	Uniii	A(-7)/W34 (88%)		W30 4%)	A7/W2 (35%)		2/W24 5%)	A(- 10)/W35. 3 (100%)	A(-7)/ W34 (88%)
		А		В	С		D	Е	F
Data collection period	hh: min:sec	1:10:00	1:1	0:00	1:10:0	0 1:	10:00	1:10:00	1:10:00
The heat pump defrosts		No	١	No	No		No	No	No
Complete Cycles		0		0	0		0	0	0
Barometric pressure	kPa	101.02		1.01	101.0)1.02	101.01	101.02
Voltage	V	229.5	22	29.9	230.1	2	30.2	229.3	229.5
Current input of the unit	А	12.27	7.	.16	3.88	(3.25	15.94	12.27
Power input of the unit	kW	2.810	1.:	230	0.633	0	.500	3.652	2.810
Test conditions	indoor unit								
Inlet Water temperature, DB	°C	30.34	27	7.76	25.60) 2	3.45	31.16	30.34
Outlet Water temperature, DB	°C	33.99	30).06	27.17	2	5.26	35.31	33.99

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Test conditions	s outdoor u	nit					
Air inlet temperature, DB	°C	-7.00	1.99	6.99	11.99	-10.01	-7.00
Air inlet temperature, WB	°C	-7.92	0.99	5.99	10.99	-11.01	-7.92
Summary of th	e results						
Total heating capacity	kW	8.760	5.495	3.748	4.274	9.939	8.760
Effective power input	kW	2.781	1.201	0.604	0.472	3.624	2.781
Coefficient of performance (COP)		3.15	4.57	6.20	9.06	2.74	3.15
Compressor frequency	Hz	70	34	20	20	88	70
Water flow	m³/h	2.06	2.06	2.06	2.06	2.06	2.06
Remark: -				· ·	I.		

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D	or	ทล	rl.	<i>,</i> .	
-	C1	เเล	ır	١.	-

3	.Ca	lcu	latior	/conc	lusion	tor	SCOP	(Average):
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Tdesignh(°C)	-10	Tbiv(°C)	-7
Pdesignh(kW)	9.903	TOL(°C)	-10

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

1001100att 7(, 5, 0, 5, 1, 1 0011attione)									
Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load			
Е	9.903	9.939	2.74	0.90	1.00	2.74			
F	8.760	8.760	3.15	0.90	1.00	3.15			
А	8.760	8.760	3.15	0.90	1.00	3.15			
В	5.332	5.495	4.57	0.90	0.97	4.57			
С	3.428	3.748	6.20	0.90	0.91	6.20			
D	1.523	4.274	9.06	0.90	0.36	7.67			
CR: part load d	ivided by capa	city;							

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Electric power consumptions	Unit	Value
Thermostat-off mode [P _{TO}]	kW	0.038
Standby mode [P _{SB}]	kW	0.013
Crankcase heater [P _{CK}]	kW	0.083
Off mode [P _{OFF}]	kW	0.013

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.80
SCOP:	kWh/kWh	4.77
Q _H :	kWh/year	20459
Q _{HE} :	kWh/year	4286
$\eta_{s,h}$	%	187.9
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)		A+++

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Table 2.	Heating mod	le(Medium to	empera	ture app	olication):		F	•
Model	BLN-012TC1	3LN-012TC1							
Product type	Air to Water	Heating season	V	Averag e		Warmer		Colder	
1. Test condi	tions:	•		•		•	•	•	
		Part Loa	d Ratio)		Outdoo	r heat	Indoo	r heat
uo		in ⁹	%			excha	nger	excha	anger
Condition	Form	nula	Α	W	С	bul temper	Inlet dry (wet) bulb temperature °C		et water ures (°C)
А	(-7-16)/(Tdes		88	N/A	N/A	-7(-		a/	
В	(+2-16)/ (Tde		54	N/A	N/A	2(1		a /	
С	(+7-16)/(Tdes		35	N/A	N/A	7(6		a /	
D E	(+12-16)/(Tde		15	N/A	N/A	12(1		a /	
F		(TOL-16)/ (To pivalent-16)/(TO Tb		a/5 a/	
G	(-15-16)/(Tde		N/A	N/A	N/A	-1:		N/	
Remark: a) Wit 2 at 47/55 cond	h the water flo ditions, the cap	ow rate as de pacity is 12.4	termine 02kW,	d at the	standard	rating co	ndition	s given in E	EN14511-
2.Tested data	a/correction	data(Avera	ige):						
General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)		W42 4%)	A7/W3 (35%)		2/W30 5%)	A(- 10)/W55. 3 (100%)	A(- 7)/W52 (88%)
		Α		В	С		D	Е	F
Data collection period	hh: min:sec	1:10:00	1:1	0:00	1:10:0	0 1:1	0:00	1:10:00	1:10:00
The heat pump defrosts		No	١	No	No	ı	No	No	No
Complete Cycles		0		0	0		0	0	0
Barometric pressure	kPa	101.02	10	1.01	101.0	1 10	1.02	101.01	101.02
Voltage	V	229.1	22	29.8	230.0	23	30.1	229.9	229.1
Current input of the unit	А	17.42	8.	.89	4.48	3	.83	21.32	17.42
Power input of the unit	kW	3.991	1.	531	0.716	0.	595	4.881	3.991
Test conditions	indoor unit		-			<u> </u>			
Inlet Water temperature, DB	°C	46.14	38	3.50	33.28	3 29	9.09	48.63	46.14
Outlet Water temperature,	°C	52.10	42	2.08	36.09	3′	1.84	55.12	52.10

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DB

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Test conditions	outuoui unit						
Air inlet emperature, DB	°C	-7.01	2.07	6.99	11.99	-10.01	-7.01
Air inlet temperature, WB	°C	-7.93	0.98	5.99	10.99	-11.04	-7.93
Summary of th	e results						
Total heating capacity	kW	9.042	5.514	3.566	4.092	9.991	9.042
Effective power input	kW	3.972	1.513	0.697	0.577	4.863	3.972
Coefficient of performance (COP)		2.28	3.64	5.11	7.09	2.05	2.28
Compressor frequency	Hz	76	36	20	20	92	76
Water flow	m³/h	1.28	1.28	1.28	1.28	1.28	1.28
Remark: -							
				-7			
Remark: - 3.Calculation	n/conclusion		Average):				
Remark: - 3.Calculation Tdesignh(°C)	n/conclusion -10 10.221	for SCOP(Average): Tbiv(°C) TOL(°C)				
Remark: - 3.Calculation Tdesignh(°C) Pdesignh(kW)	n/conclusion -10 10.221	for SCOP(Average): Tbiv(°C) TOL(°C)		CR	COP at p	part load
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	n/conclusion -10 10.221 , B, C, D, E,	for SCOP(A	Average): Tbiv(°C) TOL(°C) s: COP at measured	-10	CR 1.00	COP at p	
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	n/conclusion -10 10.221 , B, C, D, E,	F condition Measured capacity	Average): Tbiv(°C) TOL(°C) S: COP at measured capacity	-10 Cdh			05
Remark: - 3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	n/conclusion -10 10.221 , B, C, D, E, Part load	F condition Measured capacity 9.991	Average): Tbiv(°C) TOL(°C) s: COP at measured capacity 2.05	-10 Cdh	1.00	2.0	05
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A Option E F	n/conclusion -10 10.221 , B, C, D, E, Part load 10.221 9.042	F condition Measured capacity 9.991 9.042	Average): Tbiv(°C) TOL(°C) S: COP at measured capacity 2.05 2.28	-10 Cdh 0.90 0.90	1.00	2.0	05 28
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	n/conclusion -10 10.221 , B, C, D, E, Part load 10.221 9.042	F condition Measured capacity 9.991 9.042 9.042	Average): Tbiv(°C) TOL(°C) s: COP at measured capacity 2.05 2.28 2.28	-10 Cdh 0.90 0.90 0.90	1.00 1.00 1.00	2.0	05 28 28 64

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Electric power consumptions	Unit	Value
Thermostat-off mode [P _{TO}]	kW	0.038
Standby mode [P _{SB}]	kW	0.013
Crankcase heater [P _{CK}]	kW	0.083
Off mode [P _{OFF}]	kW	0.013

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.78
SCOP:	kWh/kWh	3.77
Q _H :	kWh/year	21116
Q _{HE} :	kWh/year	5608
$\eta_{s,h}$	%	147.6
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	-1	A++

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Appendix i re	isi resulis								
Table 3.	Heating mod	e(Low temper	erature	applicat	tion):			F	,
Model	BLN-012TC3								
Product type	Air to Water	Heating season	V	Averag e		Warmer		Colder	
1. Test condit	ions:								
uc		Part Load in %				Outdoo excha			r heat anger
Condition	Forn	nula	A	W	С	Inlet dry bu temper	lb ature	Inlet/out temperat	let water ures (°C)
Α	(-7-16)/(Tdesi		88	N/A	N/A	-7(-		a/	34
В	(+2-16)/ (Tde		54	N/A	N/A	2(1			30
С	(+7-16)/(Tdes		35	N/A	N/A	7(6		a /	
D	(+12-16)/(Tde		15	N/A	N/A	12(1		a /	
E F		(TOL-16)/ (To				TC Tb		a / 3	35.3
G G	(-15-16)/(Tde	bivalent-16)/(N/A	N/A	N/A	-1:		N/	
Remark: a) With at 30/35 condition	the water flow	w rate as dete	ermined	at the st	andard r	ating con	ditions	given in El	
2.Tested data	correction o	data(Averag	je):						
General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)		W30 4%)	A7/W2 (35%)		2/W24 5%)	A(- 10)/W35. 3 (100%)	A(-7)/ W34 (88%)
		Α		В	С		D	Е	F
Data collection period	hh: min:sec	1:10:00	1:1	0:00	1:10:0	0 1:1	0:00	1:10:00	1:10:00
The heat pump defrosts		No	١	No	No		Vo	No	No
Complete Cycles		0		0	0		0	0	0
Barometric pressure	kPa	101.02		1.01	101.0 ⁻		1.02	101.01	101.02
Voltage	V	398.3	39	9.0	399.2	39	99.2	398.2	398.3
Current input of the unit	А	4.64	2.	.33	1.31	1	.19	5.90	4.64
Power input of the unit	kW	2.778	1.2	240	0.609	0.	536	3.676	2.778
Test conditions	indoor unit								
Inlet Water temperature, DB	°C	30.36	27	7.73	25.73	23	3.35	31.20	30.36
Outlet Water temperature,	°C	33.99	30	0.00	27.14	25	5.07	35.33	33.99

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Test conditions	outdoor ur	nit					
Air inlet temperature, DB	°C	-7.01	1.99	6.99	12.00	-10.00	-7.01
Air inlet temperature, WB	°C	-8.11	0.99	5.99	10.99	-11.03	-8.11
Summary of the	results						
Total heating capacity	kW	8.736	5.542	3.502	4.100	9.826	8.736
Effective power input	kW	2.743	1.205	0.574	0.501	3.641	2.743
Coefficient of performance (COP)		3.18	4.60	6.10	8.18	2.70	3.18
Compressor frequency	Hz	70	34	20	20	88	70
Water flow	m³/h	2.05	2.05	2.05	2.05	2.05	2.05
Romark: -					1		

Remark: -

3.	Ca	lcu	latio	on/c	conc	lus	ion	for	SC	OP	(A)	vera	ıge)):
----	----	-----	-------	------	------	-----	-----	-----	----	----	-----	------	------	----

	•		
Tdesignh(°C)	-10	Tbiv(°C)	-7
Pdesignh(kW)	9.875	TOL(°C)	-10

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

rest result A,	D, C, D, L, I	Conditions	·•			
Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load
E	9.875	9.826	2.70	0.90	1.00	2.70
F	8.736	8.736	3.18	0.90	1.00	3.18
А	8.736	8.736	3.18	0.90	1.00	3.18
В	5.317	5.542	4.60	0.90	0.96	4.60
С	3.418	3.502	6.10	0.90	0.98	6.10
D	1.519	4.100	8.18	0.90	0.37	6.99
CR: part load di	vided by capa	city;				

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Electric power consumptions	Unit	Value
Thermostat-off mode [P _{TO}]	kW	0.038
Standby mode [P _{SB}]	kW	0.013
Crankcase heater [P _{CK}]	kW	0.083
Off mode [P _{OFF}]	kW	0.013

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.77
SCOP:	kWh/kWh	4.74
Q _H :	kWh/year	20402
Q _{HE} :	kWh/year	4300
$\eta_{s,h}$	%	186.8
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)		A+++

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Table 4.	Heating mod	le(Medium t	empera	ture app	olication):		F)
Model	BLN-012TC3								
Product type	Air to Water	Heating season	7	Averag e		Warmer		Colder	
1. Test condit	tions:								
		Part Loa)		Outdoo			r heat
io		in ^c				excha			anger
Condition	Form	nula	Α	W	С	Inlet dry	. ,		let water
l o						bu		temperat	ures (°C)
						tempei °C			
Α	(-7-16)/(Tdes	ianh-16)	88	N/A	N/A	-7(-		a /	52
В	(+2-16)/ (Tde		54	N/A	N/A	2(1		a/	
C	(+7-16)/(Tdes		35	N/A	N/A	7(6		1	36
D	(+12-16)/(Tde		15	N/A	N/A	12(1	11)	a/	30
E	((TOL-16)/ (To	designh	-16)		TC	L	a/5	55.3
F		oivalent-16)/				Tb			52
G	(-15-16)/(Tde		N/A	N/A	N/A	-1: .:		. N	
Remark: a) With									
2 at 47/55 cond	itions, the cap	acity is 12.4	93KVV, t	ne powe	r IS 4.26	ikw, the	COP IS	5 2.93KVV/K	VV.
2.Tested data	/correction	data(Avera	ge):						
General test	Unit	A(-7)/W52	A2/	W42	A7/W3	6 A12	2/W30	A(-	A(-
conditions/		(88%)	(54	4%)	(35%)) (1	5%)	10)/W55.	7)/W52
Part-Load								3	(88%)
								(100%)	
		А		В	С		D	Е	F
Data collection period	hh: min:sec	1:10:00	1:1	0:00	1:10:0	0 1:1	0:00	1:10:00	1:10:00
The heat pump		No	١	No O	No	ı	No	No	No
defrosts									
0 1 (_							
Cycles		0		0	0		0	0	0
Cycles		404.00	4.0		101.0		1 00	404.04	404.00
Barometric	kPa	101.02	10	1.01	101.0	1 10	1.02	101.01	101.02
pressure Voltage	V	398.2	39	8.8	399.1	39	99.2	398.1	398.2
	Ι Δ								
Current input of the unit	Α	6.03	2.	.80	1.54	1	.35	7.69	6.03
Power input of	kW	3.767	1.	518	0.739	0.	625	4.913	3.767
the unit									
Test conditions									_
Inlet Water	°C	46.33	38	3.56	33.84	29	9.02	48.26	46.33
temperature,									
DB									
Outlet Water	°C	52.01	42	2.03	36.05	5 3	1.50	55.03	52.01
temperature,									
DB	1								

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Test conditions	outdoor unit						
Air inlet	°C	-7.01	2.03	7.00	11.99	-10.01	-7.01
temperature, DB							
Air inlet temperature, WB	°C	-7.94	0.99	5.99	10.98	-11.07	-7.94
Summary of the	e results						
Total heating capacity	kW	8.788	5.384	3.448	3.942	9.921	8.788
Effective power input	kW	3.742	1.493	0.713	0.600	4.888	3.742
Coefficient of performance (COP)		2.35	3.61	4.83	6.57	2.03	2.35
Compressor frequency	Hz	76	36	20	20	92	76
	2/1-	4.00	1.26	1.26	1.26	1.26	1.26
Water flow Remark: -	m³/h	1.26		1.20	1.20	1.20	
					1.20	1.20	
Remark: - 3.Calculation	/conclusion		Average):	-7	20	1.20	
Remark: - 3.Calculation Tdesignh(°C)	/conclusion -10 9.934	for SCOP(A	Average): Tbiv(°C) TOL(°C)	-7	20	20	
Remark: - 3.Calculation Tdesignh(°C) Pdesignh(kW)	/conclusion -10 9.934	for SCOP(A	Average): Tbiv(°C) TOL(°C)	-7	CR	COP at	
Remark: - 3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	/conclusion -10 9.934 , B, C, D, E, I	for SCOP(A	Average): Tbiv(°C) TOL(°C) s: COP at measured	-7 -10			part load
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	J/conclusion -10 9.934 , B, C, D, E, I	for SCOP(A F conditions Measured capacity	Average): Tbiv(°C) TOL(°C) s: COP at measured capacity	-7 -10	CR	COP at	part load
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	/conclusion -10 9.934 , B, C, D, E, I Part load	F conditions Measured capacity 9.921	Average): Tbiv(°C) TOL(°C) S: COP at measured capacity 2.03	-7 -10 Cdh	CR 1.00	COP at	part load
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	/conclusion -10 9.934 , B, C, D, E, I Part load 9.934 8.788	F conditions Measured capacity 9.921 8.788	Average): Tbiv(°C) TOL(°C) S: COP at measured capacity 2.03 2.35	-7 -10 Cdh 0.90	CR 1.00 1.00	COP at	03 35 35
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A, ionition E F A	/conclusion -10 9.934 , B, C, D, E, I Part load 9.934 8.788 8.788	F conditions Measured capacity 9.921 8.788 8.788	Average): Tbiv(°C) TOL(°C) S: COP at measured capacity 2.03 2.35 2.35	-7 -10 Cdh 0.90 0.90	1.00 1.00 1.00	2.4 2.5 2.5	Dart load 335 35

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Electric power consumptions	Unit	Value
Thermostat-off mode [P _{TO}]	kW	0.038
Standby mode [P _{SB}]	kW	0.013
Crankcase heater [P _{CK}]	kW	0.083
Off mode [P _{OFF}]	kW	0.013

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.71
SCOP:	kWh/kWh	3.70
Q _H :	kWh/year	20524
Q _{HE} :	kWh/year	5547
$\eta_{s,h}$	%	145.0
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)		A++

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Table 5a.	Sound power leve application)	emperature	Р				
Model	BLN-012TC1						
	Product type :	Product type:					
	Outdoor heat excha	inger, Air temperature	DB/WB (°C):	7.0 /6.0			
	Indoor heat exchan	ger, Water inlet/outlet t	emperature (°C):	30.0 /35.0			
	Voltage (V):			230			
	Frequency (Hz):						
	Working condition class :						
	Hemi-anechoic room						
	Windshield type :						
	Measured position a	amount :		14			
	Water flow (m³/h):			2.06			
Meas	ured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark			
Sound pressure level `L _{p(ST)} ****			52				
Spheres radius d *			1.0m				
Sound powe	r level L _{wA} ****		67				

Setting of controls: according to user manual.

Duct connection:--

Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

Fan speed: 400 r/min, compressor speed: 68Hz.

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Sound power level	ım temperature	Р				
application)						
BLN-012TC1						
Product type :	Product type :					
Outdoor heat excha	nger, Air temperature	DB/WB (°C):	7.0 /6.0			
Indoor heat exchang	ger, Water inlet/outlet	emperature (°C):	47.0 /55.0			
Voltage (V):			230			
Frequency (Hz):						
Working condition c	Class A					
Acoustical environment :						
Windshield type :	Sponge					
Measured position a	amount :		14			
Water flow (m³/h):			1.28			
ured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark			
ure level `L _{p(ST)} ****		53				
us d *		1.0m				
level L _{wA} ****		68				
	Sound power level application) BLN-012TC1 Product type: Outdoor heat exchange Voltage (V): Frequency (Hz): Working condition of Acoustical environm Windshield type: Measured position at Water flow (m³/h): ured quantity ure level `L _{p(ST)} ***** us d *	application) BLN-012TC1 Product type: Outdoor heat exchanger, Air temperature Indoor heat exchanger, Water inlet/outlet to voltage (V): Frequency (Hz): Working condition class: Acoustical environment: Windshield type: Measured position amount: Water flow (m³/h): ured quantity LwA,indoors (dB(A)) ure level `Lp(ST)***** us d *	Sound power level measurement (Medium temperature application) BLN-012TC1 Product type: Outdoor heat exchanger, Air temperature DB/WB (°C): Indoor heat exchanger, Water inlet/outlet temperature (°C): Voltage (V): Frequency (Hz): Working condition class: Acoustical environment: Windshield type: Measured position amount: Water flow (m³/h): ured quantity LwA,indoors (dB(A)) LwA,outdoors (dB(A)) June level `Lp(ST)**** 53 Just d* 1.0m			

Setting of controls: according to user manual.

Duct connection:--

Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

Fan speed: 400 r/min, compressor speed: 75Hz.

Doc No.: ITC-TTW0902.02E - Rev.11



Table 6a.	Sound power leve application)	emperature	P				
Model	BLN-012TC3						
	Product type :	Product type :					
	Outdoor heat excha	anger, Air temperature	DB/WB (°C):	7.0 /6.0			
	Indoor heat exchan	ger, Water inlet/outlet t	emperature (°C):	30.0 /35.0			
	Voltage (V):			400			
	Frequency (Hz):						
	Working condition class :						
	Hemi-anechoic room						
	Windshield type :						
		14					
	Water flow (m³/h):			2.05			
Meas	sured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark			
Sound pressure level `L _{p(ST)} ****			53				
Spheres radi	us d *		1.0m				
Sound powe	r level L _{wA} ****		67				

Setting of controls: according to user manual.

Duct connection:--

Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

Fan speed: 400 r/min, compressor speed: 68Hz.

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	nger, Air temperature ger, Water inlet/outlet t		Air to Water 7.0 /6.0 47.0 /55.0	
Outdoor heat excha			7.0 /6.0	
Indoor heat exchanç				
	ger, Water inlet/outlet t	temperature (°C):	47.0 /55.0	
Voltage (V):				
			400	
Frequency (Hz):				
Working condition class :				
Acoustical environment :				
Windshield type :				
Measured position a	amount :		14	
Water flow (m³/h):			1.26	
red quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark	
e level `L _{p(ST)} ****		54		
s d *		1.0m		
evel L _{wA} ****		68		
	Frequency (Hz): Working condition of Acoustical environm Windshield type: Measured position at Water flow (m³/h): red quantity re level `L _{p(ST)} **** s d * evel L _{wA} ****	Frequency (Hz): Working condition class: Acoustical environment: Windshield type: Measured position amount: Water flow (m³/h): red quantity LwA,indoors (dB(A)) re level `Lp(ST)****	Frequency (Hz): Working condition class: Acoustical environment: Windshield type: Measured position amount: Water flow (m³/h): red quantity LwA,indoors (dB(A)) re level `Lp(ST)**** 54 s d * 1.0m evel LwA**** 68	

Setting of controls: according to user manual.

Duct connection:--

Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

Fan speed: 400 r/min, compressor speed: 75Hz.

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	(I Test resu				1
Table 7.		EN 14511-4:	2022		Р
Model	BLN-012TC	1			
Customer Code	Execution Date [dd- mm-yyyy]	Testing item	Standard Reference	Comment	Test Response
TEST 1	15-02-2023	STARTING TEST	EN14511- 4:2022, § 4.2.1.2 Table 3	The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair=-25.05°C, T out water 10.05°C, Flow rate 1.02m³/h have been set and obtained. At those conditions, the machine was switched on. It started without any problem and worked for 30 minutes without showing any warning or allarm. During the test the machine operated in automode. No damage was recorded on the machine during and after the test.	Passed
TEST 2	15-02-2023	OPERATIN G TEST	EN14511- 4:2022, § 4.2.1.2Tabl e 3	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=-25.07°C, T out water 64.34°C, Flow rate 1.01m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in automode. During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	Passed
TEST 3		SHUTTING OFF WATER FLOW	4:2022, § 4.5	The water flow rate was shutted 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. 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.	Passed
TEST 4	15-02-2023	SHUTTING OFF AIR FLOW	4:2022, § 4.5	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. During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	Passed
TEST 5	15-02-2023	COMPLET E POWER SUPPLY FAILURE	EN14511- 4:2022, § 4.6	The power supply was cut off for about 10 seconds. The unit restarted automatically within about 3 minutes after the power supply was reactivated.	Passed

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

5F&8F East, Communication Building, No.163 Pingyun Road, Huangpu Ave. West, Guangzhou 510656, China



Product Service

	(I Test resu				
Table 8.		EN 14511-4	:2022		Р
Model	BLN-012TC				
Customer Code	Execution Date [dd- mm-yyyy]	Testing item	Standard Reference	Comment	Test Response
TEST 1	16-02-2023	TEST	3	The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair=-25.11°C, T out water 10.09°C, Flow rate 1.00m³/h have been set and obtained. At those conditions, the machine was switched on. It started without any problem and worked for 30 minutes without showing any warning or allarm. During the test the machine operated in automode. No damage was recorded on the machine during and after the test.	Passed
TEST 2	16-02-2023	OPERATIN G TEST	EN14511- 4:2022, § 4.2.1.2Table 3	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=-25.17°C, T out water 65.23°C, Flow rate 1.00m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in automode. During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	Passed
TEST 3	16-02-2023	SHUTTING OFF WATER FLOW	EN14511- 4:2022, § 4.5	The water flow rate was shutted 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. 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.	Passed
TEST 4	16-02-2023	SHUTTING OFF AIR FLOW		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. During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	Passed
TEST 5	16-02-2023	COMPLET E POWER SUPPLY FAILURE	EN14511- 4:2022, § 4.6	The power supply was cut off for about 10 seconds. The unit restarted automatically within about 3 minutes after the power supply was reactivated.	Passed

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Appendix II Marking plate

Nameplate

Model: BLN-012TC1

	Air Source He	at Pump	
Model			BLN-012TC1
Power Supp	oly		220-240V~ / 50Hz
	Capacity	kW	4.30 -15.20
Heating ¹	Input Power	kW	0.87 -3.73
Heating	Input Current	Α	4.02-16.38
	COP	W/W	4.07 - 5.57
	Capacity	kW	4.25-14.55
11	Input Power	kW	1.45-4.28
Heating -	Input Current	Α	6.71-18.80
	COP	W/W	2.83 - 3.45
	Capacity	kW	3.65-11.04
Cooling	Input Power	kW	1.12-3.97
	Input Current	Α	5.18-17.44
Rated Input	Power	kW	5.40
Rated Input		Α	25.0
Refrigerant	Type/Charge/GWP	/kg	R290 / 1.05 /3
CO ₂ Equivalent		/	0.0032t
Operation F	Pressure(Low Side)	MPa	0.8
Operation F	Pressure(High Side)	MPa	3.0
Maximum A	Illowable Pressure	MPa	3.2
Electrical S	hockproof	/	1
IP Class		/	IPX4
Max. Outlet	Water Temp.	°C	75
Operating A	Ambient Temperature	℃	-25 ~ 45
Water Pipin	g Connections	inch	G1
Rated Water	er Flow	m ¾h	2.06
Water Pres	sure Drop	kPa	20
Min/Max wa	ater pressure	MPa	0.1 / 0.3
Sound pres		dB(A)	53
Net Dimens	sions (L×W×H)	mm	1287 ×448 ×904
Net Weight		kg	134
Rated Test Co	onditions: ient Temp 7°C/6°C(DB/WB),Water-	In/Out Town 20	°C/35°C
-	lent Temp 7 C/6 C(DB/WB), Water-		C/55 C

Heating ².Ambient Temp 7°C/6°C(DB/WB),Water-In/Out Temp 47°C/55°C

Cooling:Ambient Temp 35°C/24°C(DB/WB),Water-In/Out Temp 12°C/7°C SolarEast Heat Pump Ltd.

No.73 Defu Road, Xingtan Town Shunde District 528325 Foshan City, Guangdong Province, People's Republic of China









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Appendix II Marking plate

Nameplate

Model: BLN-012TC3

	Air Source Heat	Pump	
Model			BLN-012TC3
Power Supp	oly	380-4	415V / 3N~ / 50Hz
	Capacity	kW	4.30 -15.20
	Input Current	kW	0.87 -3.73
Heating	Input Current	Α	1.78-6.04
	COP	W/W	4.07 - 5.57
	Capacity	kW	4.25-14.55
11ti 2	Input Current	kW	1.45-4.28
Heating 2	Input Current	Α	2.84-6.78
	COP	W/W	2.83 - 3.45
	Capacity	kW	3.65-11.04
Cooling	Input Power	kW	1.12-3.97
_	Input Current	Α	1.97-6.30
Rated Input	Power	kW	5.85
Rated Input	Current	Α	10.0
Refrigerant	Type/Charge/GWP	/kg	R290 / 1.05 / 3
CO ₂ Equiva	lent	/	0.0032t
Operation F	Pressure(Low Side)	MPa	0.8
Operation F	Pressure(High Side)	MPa	3.0
Maximum A	Illowable Pressure	MPa	3.2
Electrical S	hockproof	/	1
IP Class		/	IPX4
Max. Outlet	Water Temp.	°C	75
Operating A	Ambient Temperature	°C	-25 ~ 45
Water Pipir	g Connections	inch	G1
Rated Water	er Flow	m ¾h	2.06
Water Pres	sure Drop	kPa	20
Min/Max wa	iter pressure	MPa	0.1 / 0.3
Sound pres	sure level	dB(A)	54
	sions (L×W×H)	mm	1287 ×448 ×904
Net Weight		kg	134
Rated Test Co	onditions:		

Heating *: Ambient Temp 7°C/6°C(DB/WB), Water-In/Out Temp 30°C/35°C

Heating ²Ambient Temp 7°C/6°C(DB/WB),Water-In/Out Temp 47°C/55°C

Cooling:Ambient Temp 35°C/24°C(DB/WB),Water-In/Out Temp 12°C/7°C

SolarEast Heat Pump Ltd.

No.73 Defu Road, Xingtan Town Shunde District 528325 Foshan City, Guangdong Province, People's Republic of China











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Appendix III photo documentaiton

Details of:	Overall view for BLN-012TC1
View: General Front Rear Right Left Top	
□ Bottom	

Details of:	Compressor for BLN-012TC1
View: General Front Rear Right Left Top Bottom	HIGHLY WHP13300PSDPC8FQ == 143.5V RoHS 900-6600r/min (at 3300r/min) © 22.02.05a R290 W6PN5H0570N2

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Appendix III photo documentaiton

Details of:	Fan Motor for BLN-012TC1		
View:			
☐ General	Little do the second		
☐ Front	RD200HC 空气调节器用塑封无刷直流电动机 (FAN MOTOR FOR AIR CONDITIONER)		
□ Rear	DC310V 200W O & RD Vm		
□ Right	0.90A EXX(CL) (M ON YE VSD RD200HC1)		
□ Left	移向 (ROT.) 技向 (ROT.) 在11市力丰电机有限公司 (Jiangmen LT Motor Co. Ltd.)		
□ Тор	Q.C.Pass RoHS		
☐ Bottom	000020 20221007		

Details of:	Main Control Board for BLN-012TC1		
View: General Front Rear Right Left Top Bottom			

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Details of:	Water Pump for BLN-012TC1
View: General Front Rear Right Left Top Bottom	High Efficiency Circulation Pump Restat No. 25-9-130 PWM1 TE110 IPA4 Class F 230V 50/60/Hz AND NO. 100 100 100 100 100 100 100 100 100 10

Details of:	Overall view for BLN-012TC1 (optional)
View:	
☐ General	
☐ Front	
□ Rear	
□ Right	
□ Left	
□ Тор	
□ Bottom	

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Appendix III photo documentaiton					
Details of:	Overall view for BLN-012TC3				
View: ☐ General ☐ Front					
☐ Rear					
☐ Right					
☐ Left					
□ Тор					
□ Bottom					
Details of:	Compressor for BLN-012TC3				
View: ☐ General					
☐ Front	HIGHLY SEE				
□ Rear	WHP13300PSDPC8FQ				
□ Right	900-6600r/min (at 3300r/min) R322.02.05a R290				
☐ Left					
□ Тор	W6PN5H0570N2 - 海湾企业等有限公司 SHANSHAI HIGHLY ELECTRICAL APPLIANCES CO., LID.				
☐ Bottom	3.8				

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Ah	ails of:	Fan Motor for BLN-012TC3
Det	alis UI.	Fail Motor for BLIN-012103
Vie		
	General	
	Front	RD200HC 空气调节器用限封无射直流电动机
	Rear	0 90A ESI(CL) BYIP) 850rimn WE RD Vm EI WH Vcc BY VE Vm
	Right	MM (ROT)
	Left	RoHS 000053 20220808
	Тор	
	Bottom	
Det	ails of:	Main Control Board for BLN-012TC3
Vie	w: General	
	Front	
	Rear	
	Right	
	Left	
	Тор	
	Bottom	

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Details of:	Water Pump for BLN-012TC3
View:	
☐ General	
□ Front	SHIMGE
□ Rear	High Efficiency Circulation Pump
□ Right	Model:APM25-9-130 PWM1 Serial No.2204230304001 EEIso.21-Part3
□ Left	TF110 IP44 Class F 230V 50/60Hz
□ Тор	Min. 0.04 4 - 1 Max. 0.75 95 1.0 9
□ Bottom	CE A
	Add: Ruisheng Read 19, Economical development Zone, Shuyang City, Jangau Province, China synator pular HOUSTYCHARASUJOO LEG.

Details of:	Overall view for BLN-012TC3 (optional)
View:	
☐ General	
☐ Front	
□ Rear	
□ Right	
□ Left	
□ Тор	
☐ Bottom	

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Appendix IV Construction data form

Model: BLN-012TC1			
Part		Technical data	
1. Compressor	Manufactura	SHANGHAI HIGHLY ELECTRICAL	
	Manufacture:	APPLIANCES CO., LTD.	
	Type:	WHP13300PSDPC8FQ	
	Rated capacity:	2860W W6PN5H0570N2	
	Serial-number: Specification:	DC143.5V; R290	
	эреспісаціон.	DC143.3V, K290	
2. Condenser			
	Manufacture:	danfoss (Hangzhou) Plate Heat Exchanger Co., Ltd.	
	Type:	C39L-EZ-54	
	Heat exchanger:	Plate heat exchanger	
	Dimension(mm):	332mm*118mm*77mm	
3. Evaporator			
	Manufacture:	Guangzhou AOTAI Refrigeration Equipment Co. LTD.	
	Type:	DKLNSC-010PN9A1-LQ-1	
	Heat exchanger:	Finned heat exchanger	
	Dimension(mm):	900mm*307mm*850mm	
4. Fan motor			
	Manufacture:	Jiangmen LT Motor Co., Ltd.	
	Type:	RD200HC	
	Fan type:	3 blade	
	Specification:	DC310V; 200W	
5. Main control board			
	Manufacture:	GUANGDONG REAL-DESIGN INTELLIGENCE TECHNOLOGY CO., LTD.	
	Type:	R-SY001-M-V2.0	
	Specification:	220-240V; 50Hz	
6. Water pump			
	Manufacture:	SHIMGE PUMP INDUSTRY (JIANGSU) CO., LTD.	
	Type:	APM25-9-130 PWM1	
	Specification:	inputpower: 95W; L=130mm; G1.5"	

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Appendix IV Construction data form

Model: BLN-012TC3			
Part		Technical data	
1. Compressor	Manufactura	CHANCHAL HIGHLY ELECTRICAL	
	Manufacture:	SHANGHAI HIGHLY ELECTRICAL APPLIANCES CO., LTD.	
	T		
	Type:	WHP13300PSDPC8FQ	
	Rated capacity:	2860W	
	Serial-number:	W6PN5H0570N2	
	Specification:	DC143.5V; R290	
2. Condenser			
	Manufacture:	Weyee Heat Exchanger Corporation Limited	
	Type:	C39L-EZ-54	
	Heat exchanger:	Plate heat exchanger	
	Dimension(mm):	332mm*118mm*77mm	
3. Evaporator			
	Manufacture:	Guangzhou AOTAI Refrigeration Equipment Co. LTD.	
	Type:	DKLNSC-010PN9A1-LQ-1	
	Heat exchanger:	Finned heat exchanger	
	Dimension(mm):	900mm*307mm*850mm	
4. Fan motor			
	Manufacture:	Jiangmen LT Motor Co., Ltd.	
	Type:	RD200HC	
	Fan type:	3 blade	
	Specification:	DC310V; 200W	
Main control board			
	Manufacture:	GUANGDONG REAL-DESIGN INTELLIGENCE TECHNOLOGY CO., LTD.	
	Type:	R-SY001-M-V2.0	
	Specification:	380-415V; 50Hz	
6. Water pump			
	Manufacture:	SHIMGE PUMP INDUSTRY (JIANGSU) CO., LTD.	
	Type:	APM25-9-130 PWM1	
	Specification:	inputpower: 95W; L=130mm; G1.5"	

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Appendix V Equipment List

No.	Туре	Manufacture	Model	Equipment ID	Calibration Due Date
1	Heat pump energy efficiency testing system	PINXIN	10HP	2017J00001	2023-11-24
2	Electromagnetic flowmeter	KROHNE	OPTIFLUX4100 C	H17221264	2023-12-21
3	Anechoic rooms (hemi-anechoic rooms)	Guangzhou Kinte	-	NC-036-2	2023-10-07
4	AC source Supply	YANGHONG	YF-3600	VGDS-0637	2023-11-07
5	6 channel data logger	_	PXI-1033	VGDY-0257	2023-05-20
6	PULSE system	B & K	3660C	VGDY-0184	2023-04-12
7	Calibrator	B & K	4231	HJ-000095	2023-06-30
8	Long steel tape	_	5m	HJ-000150	2024-01-01
9	Temperature measurement system	_	_	NC-036-1	2023-06-07
10	Atmospheric pressure meter	_	_	HJ-000165	2023-11-22
11	Constant temperature water system	B & K	_	VGDS-0448	2023-04-18
12	Windscreen	B & K	WS002-5	_	_

-- End of Report --

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