



Technical Report No.: 64.181.22.04448.02 Rev.00

Date: 2023-04-24

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

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

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

> > Foshan City, Guangdong Province, People's Republic of

China

Product: Test object: Air Source Heat Pump

> Model: BLN-018TC1, BLN-018TC3

Trade name:

Test specification: EN 14825:2022 4

> **4** EN 12102-1:2022 1 EN 14511-3:2022

 $\overline{}$ EN 14511-4:2022 Clause 4

Purpose of

examination:

Test according to the test specification

4 (EU) No 813/2013

EU 2016/2282:2016-11-30 **V**

Test result: The test results show that the presented product is in compliance with the above

listed test specifications.

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1	Description of the test object
1.1	Function Manufacturer's specification for intended use: These appliances are air to water heat pump. Manufacturer's specification for predictive use: According to user manual
1.2	Consideration of the foreseeable use Not applicable Covered through the applied standard Covered by the following comment Covered by attached risk analysis
1.3	Technical Data Model: BLN-018T0

TC1, BLN-018TC3 Rated Voltage (V): 220-240V~ for BLN-018TC1; 380-415V, 3N~ for BLN-018TC3 Rated Frequency (Hz): 50 Rated Power (W): 7500 for BLN-018TC1; 10500 for BLN-018TC3 Rated Current (A): 35.0 for BLN-018TC1; 17.0 for BLN-018TC3 Protection Class: Class I Protection Against Moisture: IPX4 Construction: Stationary Supply connection: □ Non detachable cord Permanent connection to fixed wiring Continuous operation; Operation mode: ☐ Intermittent operation; ☐ Short time operation; Refrigerant/charge (kg): R290 / 1.40kg Declared parameters: ☑ Average □ Warmer □ Colder

Sound power level dB(A): N/A Series No: 8A00221005003010 for BLN-018TC1: 8C00220927003072 for BLN-018TC3

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2 Order

2.1 Date of Purchase Order, Customer's Reference

2022-10-31, 2023-03-21

SolarEast Heat Pump Ltd.

2.2 Test Sample(s)

• Reception date(s): 2022-10-31, 2023-03-24

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

2022-10-31 to 2022-11-27, 2023-03-24 to 2023-04-17

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

- 1) These appliances are Air To Water Heat Pump Unit, each one including a whole compression type refrigerant circuit to heat water in another circuit. These appliances were for cooling and heating water function, this report only for heating capacity test.
- The main power for model BLN-018TC1 is supplied by a 3-pole supply cord connecting to fixed wiring.
- 3) The main power for model BLN-018TC3 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) This test report 64.181.22.04448.02 Rev.00, dated 2023-04-24 supersedes test report 64.181.22.04448.01 Rev.00, dated 2022-12-07 to include the following changes and/or additions, which were considered technical modifications:
 - a) Updating standard EN 14511-3 and EN 14825 in the report. Therefore, related testing for model BLN-018TC1, BLN-018TC3 was updated.
 - b) Adding EN 12102-1:2022 test for models BLN-018TC1, BLN-018TC3.
 - C) Adding EN 14511-4:2022 Clause 4 test for models BLN-018TC1, BLN-018TC3.

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Tested by: William Liang, Project Handler

printed name, function & signature

Approved by: Plum Li, Designated Reviewer

printed name, function & signature

Doc No.: IT

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Table 1.	Heating mod	e(Low temp	erature	applica	ation):			ı)
Model	BLN-018TC1								
Product type	Air to Water	Heating season	7	Averag e		Warme	er 🗆	Colder	
1. Test cond	litions:								
		Part Loa)			or heat		r heat
Condition		in S					anger		anger
ġ.	Form	ıula	Α	W	С		ry (wet)		let water
Ď							ulb	temperat	ures (°C)
							erature 'C		
Α	(-7-16)/(Tdesi	anh-16)	88	N/A	N/A		(-8)	a /	34
В	(+2-16)/ (Tde:		54	N/A	N/A		(1)		30
С	(+7-16)/(Tdes		35	N/A	N/A		(6)	a /	27
D	(+12-16)/(Tde		15	N/A	N/A	12	(11)		24
<u> </u>		TOL-16)/ (To					OL		35.3
F G	†	oivalent-16)/(NI/A		biv 15	1	34
	(-15-16)/(Tde: ith the water flo		N/A	N/A	N/A		15 conditio		/A EN14511-
	ditions, the ca								
2.Tested dat	a/correction	data(Aver	age):						
General test	Unit	A(-7)/W34	A2/	W30	A7/W2	7 A1	2/W24	A(-	A(-7)/
conditions/		(88%)	(54	4%)	(35%)) (15%)	10)/W35.	W34
Part-Load								3 (100%)	(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	10	1.01	101.0	1 1	01.02	101.01	101.02
Voltage	V	229.9	22	29.7	230.0		230.1	229.5	229.9
Current input of the unit	А	21.06	10).89	5.66		4.31	27.13	21.06
Power input of the unit	kW	4.816	1.9	918	0.936	().700	6.197	4.816
Test condition	s indoor unit								
Inlet Water temperature, DB	°C	30.03	27	7.53	25.46	2	23.27	30.88	30.03
Outlet Water temperature, DB	°C	34.01	30).02	27.03	2	24.90	35.33	34.01

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Appendix I 7							
Air inlet temperature, DB	°C	-7.00	2.00	6.99	12.00	-10.00	-7.00
Air inlet temperature, WB	°C	-8.05	0.99	5.99	10.99	-11.16	-8.05
Summary of the	ne results						
Total heating capacity	kW	14.391	8.894	5.641	5.875	15.975	14.391
Effective power input	kW	4.789	1.891	0.909	0.672	6.169	4.789
Coefficient of performance (COP)		3.01	4.70	6.21	8.74	2.59	3.01
Compressor frequency	Hz	80	39	22	20	95	80
Water flow	m³/h	3.10	3.10	3.10	3.10	3.10	3.10
Remark: -							
		on for SCOP(
Tdesignh(°C)	-10		Tbiv(°C)				
Pdesignh(kW)	16.269		TOL(°C)	-10			

rest result A	I, D, C, D, E,	r conditio	115.			
Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load
Е	16.269	15.975	2.59	0.90	1.00	2.59
F	14.391	14.391	3.01	0.90	1.00	3.01
А	14.391	14.391	3.01	0.90	1.00	3.01
В	8.760	8.894	4.70	0.90	0.98	4.70
С	5.631	5.641	6.21	0.90	1.00	6.21
D	2.503	5.875	8.74	0.90	0.43	7.70
CR: part load of	divided by cap	acity;				

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Electric power	Unit	Value
consumptions		
Thermostat-off mode [P _{TO}]	kW	0.029
Standby mode [P _{SB}]	kW	0.014
Crankcase heater [P _{CK}]	kW	0.042
Off mode [P _{OFF}]	kW	0.014

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.82
SCOP:	kWh/kWh	4.81
Q _H :	kWh/year	33611
Q _{HE} :	kWh/year	6987
$\eta_{s,h}$	%	189.4
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)		A+++

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Table 2.	Heating mod	e(Medium te	empera	ture app	olication):			P
Model	BLN-018TC1								
Product	Air to Water	Heating	V	Averag		Warmer		Colder	
type		season		е					
1. Test cond	litions:								
	I	Part Loa	d Ratio)		Outdoo	r heat	Indo	or heat
u		in 9				excha			anger
Condition	Form	ula	Α	W	С	Inlet dry			tlet water
ouc						bul		tempera	tures (°C)
ၓ						temper	ature		
						°C			
Α	(-7-16)/(Tdesi	gnh-16)	88	N/A	N/A	-7(-	8)	a,	/ 52
В	(+2-16)/ (Tdes	signh-16)	54	N/A	N/A	2(1)	a,	/ 42
С	(+7-16)/(Tdes	ignh-16)	35	N/A	N/A	7(6	5)	a,	/ 36
D	(+12-16)/(Tde	signh-16)	15	N/A	N/A	12(1	1)	a,	/ 30
Е	(TOL-16)/ (To	designh	-16)		TO	L	a/	55.3
F		oivalent-16)/(Tdesig	nh-16)		Tbi	V	a,	/ 52
G	(-15-16)/(Tdes		N/A	N/A	N/A	-15			I/A
	ith the water flo								
2 at 47/55 con	ditions, the cap	pacity is 18.1	160kW,	the pow	er is 6.01	11kW, the	COP i	s 3.02kW/l	kW.
2.Tested dat	a/correction	data(Avera	age):						
	•	,			1	1		1	
General test	Unit	A(-7)/W52		W42	A7/W3		/W30	A(-	A(-7)/W52
conditions/		(88%)	(54	4%)	(35%)) (1:	5%)	10)/W55.	(88%)
Part-Load								3	
								(100%)	
		Α		В	С		D	Е	F
Data	hh: min:sec	1:10:00		0:00	1:10:0		0:00	1:10:00	1:10:00
collection									
period									
The heat		No	N	No	No		No	No	No
pump		110		••	110	'	••		110
defrosts									
Complete		0		0	0		0	0	0
Cycles		O		O	U		O		
	1.5	101.00	4.0	4.04	1010	4 40	4 00	404.04	101.00
Barometric	kPa	101.02	10	1.01	101.0	1 10	1.02	101.01	101.02
pressure		222.2			222				
Voltage	V	229.6	22	29.5	229.9) 23	80.0	229.8	229.6
Current input	Α	25.75	14	.39	7.24	5	.13	34.31	25.75
of the unit									
Power input	kW	5.885	2.1	546	1.202	0 0	824	7.631	E 00E
of the unit	KVV	5.005	۷.:	040	1.202	. 0.	024	7.031	5.885
or the unit									
Test condition	s indoor unit								
Inlet Water	°C	45.10	38	3.01	33.51	28	3.93	47.52	45.10
temperature,									
DB									
Outlet Water	°C	52.02	42	2.14	36.18	3 31	.41	55.02	52.02
temperature,	-	32.02			30.70			33.02	32.02

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DB

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Appendix I 7							
Test condition		t					
Air inlet temperature, DB	°C	-7.00	2.00	7.00	12.00	-10.01	-7.00
Air inlet temperature, WB	°C	-7.97	0.99	5.99	10.99	-11.05	-7.97
Summary of th	ne results	•				•	
Total heating capacity	kW	14.543	8.909	5.728	5.520	15.335	14.543
Effective power input	kW	5.867	2.528	1.184	0.805	7.613	5.867
Coefficient of performance (COP)		2.48	3.52	4.84	6.85	2.01	2.48
Compressor frequency	Hz	83	43	24	20	95	83
Water flow	m³/h	1.90	1.90	1.90	1.90	1.90	1.90
3.Calculatio Tdesignh(°C)		n for SCOP	(Average): Tbiv(°C)	-7			
Pdesignh(kW	16.440		TOL(°C)	-10			
Test result A	A, B, C, D, E,	F condition	ns:				
Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at	part load
E	16.440	15.335	2.01	0.90	1.00	2.	01
F	14.543	14.543	2.48	0.90	1.00	2.	48
А	14.543	14.543	2.48	0.90	1.00	2.	48
В	8.852	8.909	3.52	0.90	0.99	3.	52
С	5.691	5.728	4.84	0.90	0.99	4.	84
D	2.529	5.520	6.85	0.90	0.46	6.	13
CR: part load	divided by cap	acity;					

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Electric power	Unit	Value
consumptions		
Thermostat-off mode [P _{TO}]	kW	0.029
Standby mode [P _{SB}]	kW	0.014
Crankcase heater [P _{CK}]	kW	0.042
Off mode [P _{OFF}]	kW	0.014

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.72
SCOP:	kWh/kWh	3.72
Q _H :	kWh/year	33965
Q _{HE} :	kWh/year	9142
$\eta_{s,h}$	%	145.6
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)		A++

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Table 3.	Heating mod	e(Low temp	erature	applica	tion):			F)
Model	BLN-018TC3								
Product type	Air to Water	Heating season	7	Averag e		Warmer		Colder	
1. Test cond	litions:							_	
_		Part Loa)		Outdoo			r heat
Condition		in S				excha			anger
ļ ji	Form	nula	Α	W	С	Inlet dry	` ,		let water
S						bul temper		temperat	ures (°C)
						°C			
А	(-7-16)/(Tdesi	gnh-16)	88	N/A	N/A	-7(-		a /	34
В	(+2-16)/ (Tde:		54	N/A	N/A	2(1		1	30
С	(+7-16)/(Tdes		35	N/A	N/A	7(6		a/	27
D	(+12-16)/(Tde		15	N/A	N/A	12(1			24
E		(TOL-16)/ (To				TO		a/3	
F G		oivalent-16)/(N/A	nn-16) N/A	N/A	Tb		a/ N	
	(-15-16)/(Tdeath								
	nditions, the ca								
2.Tested dat	ta/correction	data(Avera	age):						
General test	Unit	A(-7)/W34	A2/	W30	A7/W2	7 A12	/W24	A(-	A(-7)/
conditions/		(88%)	(54	4%)	(35%)) (1	5%)	10)/W35.	W34
Part-Load								3 (100%)	(88%)
		А		В	С		D	Е	F
Data collection period	hh: min:sec	1:10:00	1:1	0:00	1:10:0	0 1:1	0:00	1:10:00	1:10:00
The heat pump defrosts		No	١	90	No	1	No	No	No
Complete Cycles		0		0	0		0	0	0
Barometric pressure	kPa	101.02	10	1.01	101.0		1.02	101.01	101.02
Voltage	V	399.4	39	99.3	398.9	39	99.0	398.0	399.4
Current input of the unit	А	7.71	3.	.71	2.03	1	.65	9.15	7.71
Power input of the unit	kW	4.692	1.9	959	0.971	0.	750	5.898	4.692
Test condition						-			
Inlet Water temperature, DB	°C	29.93	27	7.47	25.50	23	3.22	30.81	29.93
Outlet Water temperature, DB	°C	33.96	30	0.00	27.11	24	1.81	35.38	33.96

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Test condition	s outdoor unit	t					
Air inlet temperature, DB	°C	-7.00	2.00	6.98	11.99	-10.00	-7.00
Air inlet temperature, WB	°C	-7.98	0.99	5.99	10.98	-11.11	-7.98
Summary of the	ne results						
Total heating capacity	kW	14.455	9.082	5.693	5.700	16.342	14.455
Effective power input	kW	4.662	1.930	0.942	0.721	5.868	4.662
Coefficient of performance (COP)		3.10	4.71	6.04	7.91	2.78	3.10
Compressor frequency	Hz	80	39	22	20	95	80
Water flow	m³/h	3.10	3.10	3.10	3.10	3.10	3.10

Remark: -

		• • •	
Tdesignh(°C)	-10	Tbiv(°C	-7
Pdesignh(kW	16.341	TOL(°C	-10
)			

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

Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load
E	16.341	16.342	2.78	0.90	1.00	2.78
F	14.455	14.455	3.10	0.90	1.00	3.10
А	14.455	14.455	3.10	0.90	1.00	3.10
В	8.799	9.082	4.71	0.90	0.97	4.71
С	5.656	5.693	6.04	0.90	0.99	6.04
D	2.514	5.700	7.91	0.90	0.44	7.02
CR: part load of	divided by cap	acity:	-			_

CR: part load divided by capacity;

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Electric power consumptions	Unit	Value
Thermostat-off mode [P _{TO}]	kW	0.029
Standby mode [P _{SB}]	kW	0.014
Crankcase heater [P _{CK}]	kW	0.043
Off mode [P _{OFF}]	kW	0.014

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.80
SCOP:	kWh/kWh	4.79
Q _H :	kWh/year	33760
Q _{HE} :	kWh/year	7052
$\eta_{s,h}$	%	188.5
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)		A+++

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Table 4.	Heating mod	le(Medium te	empera	ture app	lication)):		l i)
Model	BLN-018TC3							l	
Product	Air to Water	Heating	7	Averag	□ Warmer		r 🔲 Colder		
type		season		е					
1. Test cond	litions:					1	1		
		Part Loa	d Ratio)		Outdo	or heat	Indoo	r heat
ي د		in ^c	%			excha	anger	exch	anger
Condition	Forn	nula	Α	W	С	Inlet dr	y (wet)	Inlet/out	let water
ouo	l omiaia					bulb		temperat	ures (°C)
ပ						tempe			
A (-7-16)/(Tdesignh-16)			88	N/A	N/A	°(-7(3 /	52
В	(+2-16)/ (Tdes		54	N/A	N/A	2(42
C	(+7-16)/(Tdes		35	N/A	N/A	7(36
D	(+12-16)/(Tde	esignh-16)	15	N/A	N/A	12(30
E		(TOL-16)/ (To				TO			55.3
F	· · · · · · · · · · · · · · · · · · ·	bivalent-16)/(NI/A	Tt			52
G Pomork: a) W	(-15-16)/(Tde ith the water fl		N/A	N/A	N/A	-1			/A =N14511
2 at 47/55 cor	nditions, the ca	pacity is 18.3	303kW,						
2.Tested da	ta/correction	data(Avera	age):						
General test	Unit	A(-7)/W52	A2/	W42	A7/W3	36 A1	2/W30	A(-	A(-
conditions/		(88%)	(54	4%)	(35%)) (5%)	10)/W55.	7)/W52
Part-Load								3	(88%)
								(100%)	
		А		В	С		D	Е	F
Data collection	hh: min:sec	1:10:00	1:1	0:00	1:10:0	0 1:	10:00	1:10:00	1:10:00
period									
The heat		No	١	No	No		No	No	No
pump									
defrosts Complete		0		0	0		0	0	0
Cycles				O	U		O		
Barometric	kPa	99.85	99	9.85	99.85	5 9	9.80	99.75	99.85
pressure Voltage	V	398.1	39	99.9	398.7	, 3	98.9	398.9	398.1
Current input	A	8.98	4	.53	2.39	-	1.74	10.88	8.98
of the unit									
Power input of the unit	kW	5.866	2.	596	1.209	0	.811	7.070	5.866
Test condition			-						
Inlet Water	°C	45.53	37	7.80	33.58	3 2	8.90	47.71	45.53
temperature, DB									
Outlet Water	°C	52.11	42	2.02	36.21	3	1.34	55.12	52.11
temperature, DB									

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Annondiy I Toet regulte

Tost condition	s outdoor unit						
			0.00	0.00	40.00	1000	7.00
Air inlet temperature, DB	°C	-7.00	2.00	6.99	12.02	-10.00	-7.00
Air inlet temperature, WB	°C	-8.06	0.99	5.99	11.00	-11.11	-8.06
Summary of th	e results					1	
Total heating capacity	kW	14.508	9.013	5.737	5.471	15.199	14.508
Effective power input	kW	5.847	2.577	1.190	0.792	7.051	5.847
Coefficient of performance (COP)		2.48	3.50	4.82	6.91	2.16	2.48
Compressor frequency	Hz	83	43	24	20	95	83
Water flow	m³/h	1.90	1.90	1.90	1.90	1.90	1.90
Remark: -		o for SCOP	Avorago).				
Remark: - 3.Calculation	n/conclusion	n for SCOP(Average): Tbiv(°C)	-7			
Remark: -	n/conclusion	n for SCOP(
Remark: - 3.Calculation Tdesignh(°C) Pdesignh(kW)	n/conclusion -10		Tbiv(°C)				
Remark: - 3.Calculation Tdesignh(°C) Pdesignh(kW)	n/conclusion -10 16.401		Tbiv(°C)		CR	COP at	oart load
Remark: - 3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	n/conclusion -10 16.401 A, B, C, D, E,	F condition Measured	Tbiv(°C) TOL(°C) TOS: COP at measured	-10	CR 1.00		part load
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	n/conclusion -10 16.401 A, B, C, D, E, Part load	F condition Measured capacity	Tbiv(°C) TOL(°C) TS: COP at measured capacity	-10 Cdh		2.	
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A	n/conclusion -10 16.401 A, B, C, D, E, Part load	F condition Measured capacity 15.199	Tbiv(°C) TOL(°C) TOS: COP at measured capacity 2.16	-10 Cdh	1.00	2.	16
Remark: - 3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A option option E F	n/conclusion -10 16.401 A, B, C, D, E, Part load 16.401 14.508	F condition Measured capacity 15.199 14.508	Tbiv(°C) TOL(°C) TOP at measured capacity 2.16 2.48	-10 Cdh 0.90	1.00	2. 2.	16 48
3.Calculation Tdesignh(°C) Pdesignh(kW) Test result A you purply E F A	n/conclusion -10 16.401 A, B, C, D, E, Part load 16.401 14.508	F condition Measured capacity 15.199 14.508	Tbiv(°C) TOL(°C) TOS: COP at measured capacity 2.16 2.48	-10 Cdh 0.90 0.90 0.90	1.00 1.00 1.00	2. 2. 2.	16 48 48

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Electric power consumptions	Unit	Value
Thermostat-off mode [P _{TO}]	kW	0.029
Standby mode [P _{SB}]	kW	0.014
Crankcase heater [P _{CK}]	kW	0.043
Off mode [P _{OFF}]	kW	0.014

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.71
SCOP:	kWh/kWh	3.71
Q _H :	kWh/year	33884
Q _{HE} :	kWh/year	9145
$\eta_{s,h}$	%	145.2
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)		A++

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Table 5a.	Sound power level application)	measurement(Low t	emperature	Р
Model	BLN-018TC1	l		
	Product type :	Air to Water		
	Outdoor heat excha	nger, Air temperature	DB/WB (°C):	7.0 /6.0
	Indoor heat exchange	ger, Water inlet/outlet	temperature (°C):	30.0 /35.0
	Voltage (V):	230 50 Class A		
	Frequency (Hz):			
	Working condition of			
	Acoustical environm	Hemi-anechoic room		
	Windshield type :	Sponge		
	Measured position a	14		
	Water flow (m³/h):	3.10		
Meas	sured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark
Sound pressure level `L _{p(ST)} ****			54	
Spheres rad	ius d *			
Sound powe	er level L _{wA} ****		70	
Setting of co	ontrols: according to us	or manual		<u> </u>

Setting of controls: according to user manual.

Duct connection:--

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

Fan speed: 500 r/min, compressor speed: 70Hz.

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Table 5b.	-	measurement(Mediu	ım temperature	Р		
	application)					
Model	BLN-018TC1					
	Product type :	Air to Water				
	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 50				
	Frequency (Hz):					
	Working condition of	Class A				
	Acoustical environm	Hemi-anechoic				
	Windshield type :	Sponge				
	Measured position a	asured position amount :				
	Water flow (m³/h):	1.90				
Meas	sured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark		
Sound pressure level `L _{p(ST)} ****			56			
Spheres rad	ius d *					
Sound powe	r level L _{wA} ****		72			

Setting of controls: according to user manual.

Duct connection:--

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

Fan speed: 500 r/min, compressor speed: 74Hz.

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Appendix I					
Table 6a.	Sound power level application)	I measurement(Low t	emperature	P	
Model	BLN-018TC3	l			
	Product type :	Air to Water			
	Outdoor heat excha	inger, Air temperature	DB/WB (°C):	7.0 /6.0	
	Indoor heat exchang	30.0 /35.0 400 50 Class A Hemi-anechoic room Sponge 14			
	Voltage (V):				
	Frequency (Hz):				
	Working condition of				
	Acoustical environm				
	Windshield type:				
	Measured position a				
	Water flow (m³/h):	3.10			
Meası	red quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark	
Sound pressure level `L _{p(ST)} ***			55		
Spheres radiu	ıs d *	1.0m			
Sound power	level L _{wA} ****		70		

Setting of controls: according to user manual.

Duct connection:--

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

Fan speed: 500 r/min, compressor speed: 70Hz.

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Table 6b.	Sound power level application)	measurement(Mediu	ım temperature	Р		
Model	BLN-018TC3					
	Product type :			Air to Water		
	Outdoor heat excha	nger, Air temperature	DB/WB (°C):	7.0 /6.0		
	Indoor heat exchang	47.0 /55.0 400				
	Voltage (V):					
	Frequency (Hz):	50				
	Working condition of	Class A				
	Acoustical environm	Hemi-anechoic				
	Windshield type :	Sponge				
	Measured position a	14				
	Water flow (m³/h):	1.90				
Meas	sured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark		
Sound pressure level `L _{p(ST)} ****			56			
Spheres rad	us d *		1.0m			
Sound powe	r level L _{wA} ****		72			

Setting of controls: according to user manual.

Duct connection:--

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

Fan speed: 500 r/min, compressor speed: 74Hz.

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	(I Test resu				
Table 7.		EN 14511-4	:2022		Р
Model	BLN-018TC		1 -	_	T
Customer Code	Execution Date [dd- mm-yyyy]	Testing item	Standard Reference	Comment	Test Response
TEST 1	10-04-2023	TEST	3	The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair=-24.99°C, T out water 11.03°C, Flow rate 1.50m³/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	10-04-2023	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=-25.09°C, T out water 64.32°C, Flow rate 1.50m³/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	10-04-2023	SHUTTING OFF WATER FLOW		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	10-04-2023	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	10-04-2023	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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	ndix I Test results						
Table 8.		EN 14511-4:	:2022		Р		
Model	BLN-018TC						
Customer Code	Execution Date [dd- mm-yyyy]	Testing item	Standard Reference	Comment	Test Response		
TEST 1		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=-25.00°C, T out water 10.02°C, Flow rate 1.50m³/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	11-04-2023	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=-25.04°C, T out water 65.13°C, Flow rate 1.50m³/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	11-04-2023	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	11-04-2023	SHUTTING OFF AIR FLOW	EN14511- 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	11-04-2023	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-018TC1

Air Source Heat Pump					
Model BLN-018TC1					
Power Supp	oly	220-240V~ / 50Hz			
	Capacity	kW	7.24 - 21.90		
Heating ¹	Input Power	kW	1.50 - 5.88		
Heating	Input Current	Α	6.86 - 30.25		
	COP	W/W	3.82 - 5.59		
	Capacity	kW	6.36 - 19.45		
Heating ²	Input Power	kW	2.15 - 6.85		
rieating	Input Current	Α	9.84 - 30.12		
	COP	W/W	2.84 - 3.57		
	Capacity	kW	4.55 - 17.20		
Cooling	Input Power	kW	1.85 - 7.31		
	Input Current	Α	8.47 - 32.1		
Rated Input		kW	7.5		
Rated Input	Current	Α	35.0		
Refrigerant	Type/Charge/GWP	/ kg	R290 / 1.4 / 3		
CO ₂ Equiva	lent	/	0.0042t		
Operation F	Pressure(Low Side)	MPa	0.8		
	Pressure(High Side)	MPa	3.0		
Maximum A	Illowable Pressure	MPa	3.2		
Electrical S	hockproof	/	1		
IP Class		/	IPX4		
Max. Outlet	: Water Temp.	$^{\circ}$	75		
Operating A	Ambient Temperature	℃	- 25 ~ 45		
Water Pipin	g Connections	inch	G1-1/4		
Rated Water	er Flow	m³/h	3.1		
Water Pres	sure Drop	kPa	55		
	ater pressure	MPa	0.1 / 0.3		
Sound pres	sure level	dB(A)	56		
Net Dimens	sions (L×W×H)	mm	1187×488×1456		
Net Weight		kg	195		
Rated Test Conditions: Heating 'Ambient Temp 7°C/6°C(DB/WB),Water-In/Out Temp 30°C/35°C					

Heating *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-018TC3

Air Source Heat Pump					
Model BLN-018TC3					
Power Supp	oly	380-4	15V / 3N~ / 50Hz		
	Capacity	kW	7.24 - 21.90		
Heating ¹	Input Power	kW	1.50 - 5.88		
Heating	Input Current	Α	2.82- 9.16		
	COP	W/W	3.82 - 5.59		
	Capacity	kW	6.36 - 19.45		
Heating ²	Input Power	kW	2.15 - 6.85		
Heating	Input Current	Α	3.71- 10.60		
	COP	W/W	2.84 - 3.57		
	Capacity	kW	4.55 - 17.20		
Cooling	Input Power	kW	1.85 - 7.31		
	Input Current	Α	2.99 - 11.26		
Rated Input	Power	kW	10.5		
Rated Input	t Current	Α	17.0		
Refrigerant Type/Charge/GWP		/ kg	R290 / 1.4 / 3		
CO ₂ Equiva	lent	1	0.0042t		
	Pressure(Low Side)	MPa	0.8		
	Pressure(High Side)	MPa	3.0		
Maximum A	Illowable Pressure	MPa	3.2		
Electrical S	hockproof	1	I		
IP Class		/	IPX4		
	: Water Temp.	°C	75		
Operating A	Ambient Temperature	°C	-25 ~ 45		
Water Pipin	g Connections	inch	G1-1/4		
Rated Water	er Flow	m³/h	3.1		
Water Pres	sure Drop	kPa	55		
Min/Max wa	ater pressure	MPa	0.1 / 0.3		
Sound pres	sure level	dB(A)	56		
Net Dimens	sions (L×W×H)	mm	1187×488×1456		
Net Weight		kg	195		
Rated Test Conditions: Heating 'Ambient Temp 7°C/6°C(DB/WB),Water-In/Out Temp 30°C/35°C					
ricating .Ambient remp 7 C/o C(Db/Wb), Water-in/Out remp 30 C/33 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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Details of:	Overall view for BLN-018TC1
View:	
☐ General	
□ Front	
□ Rear	
□ Right	
□ Left	
□ Тор	
□ Bottom	
	A STATE OF THE STA

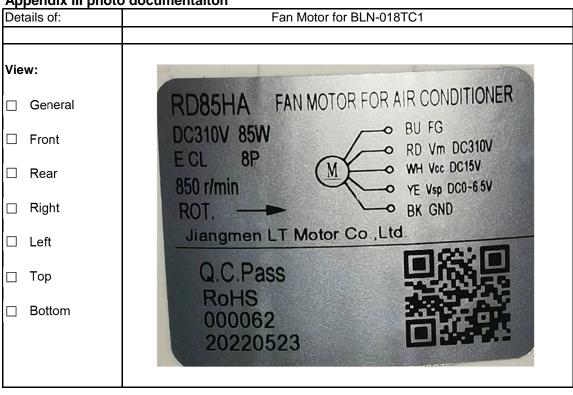
Details of:	Compressor for BLN-018TC1
View: General Rear Right Left Top Bottom	WHP32900VSKTQ9JK WHP32900VSKTQ9JK PROHS SO0-6600r/min(at 3600 r/min) 2022.07.04a R290/R4548/R454C/R134a W82N1E02H3QB W82N1E02H3QB W82N1E02H3QB W84REZEGER ZERI SHAMBHAI HIGHLY ELECTRICAL APPLIANCES CO. LTD.

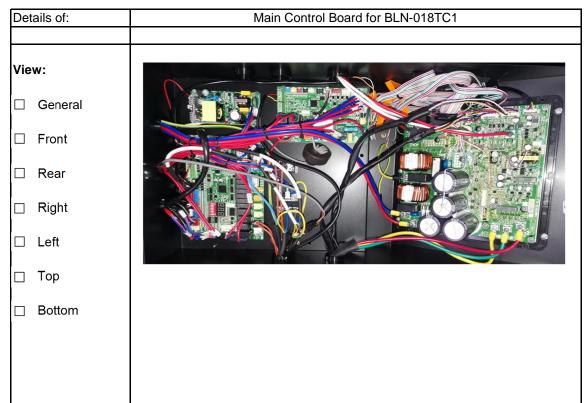
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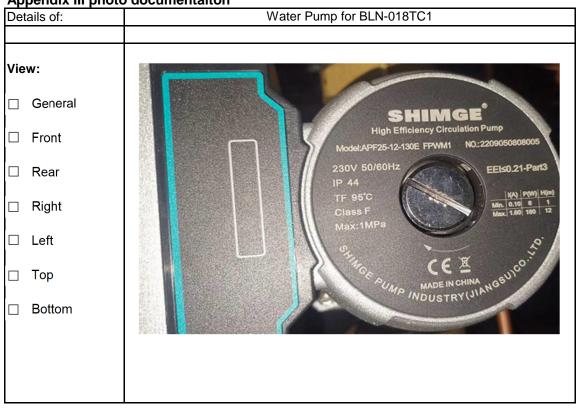


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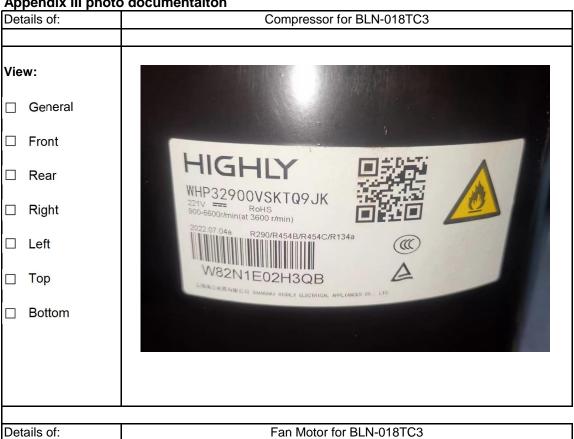
Details of:	Overall view for BLN-018TC3
View:	
☐ General	
□ Front	
□ Rear	
□ Right	
□ Left	
□ Тор	
□ Bottom	

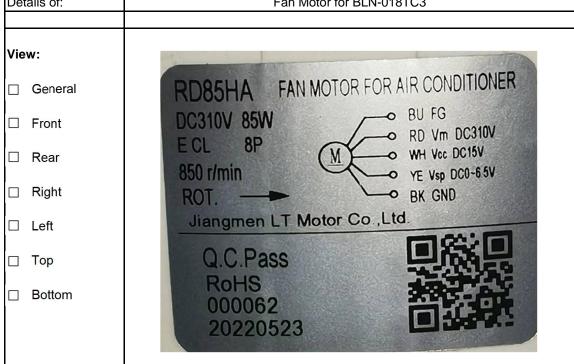
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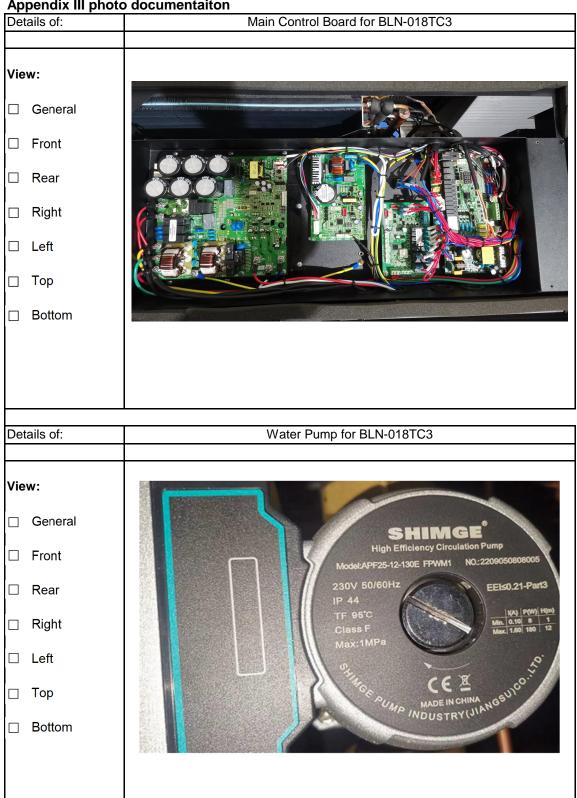


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Appendix IV Construction data form

Model: BLN-018TC1		
Part		Technical data
1. Compressor		
	Manufacture:	SHANGHAI HIGHLY ELECTRICAL
		APPLIANCES CO., LTD.
	Type:	WHP32900VSKTQ9JK
	Rated capacity:	4330W
	Serial-number:	W82N1E02H3QB
	Specification:	DC221V; R290
2. Condenser		
	Manufacture:	Danfoss (Hangzhou) Plate Heat Exchanger Co. , Ltd.
	Type:	C62L-EZ-J-50
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	524mm*117mm*102mm
3. Evaporator		
	Manufacture:	Guangzhou AOTAI Refrigeration Equipment Co., LTD.
	Type:	DKLNSC-018PN9A1-LQ-1
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	820mm*347mm*1400mm
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co.,Ltd.
	Type:	RD85HA
	Fan type:	3 blade
	Specification:	DC310V; 85W; 850r/min
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:	APF25-12-130E FPWM1
	Specification:	input power: 180W; L=130mm; G1.5"

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Appendix IV Construction data form

Model: <u>BLN-018TC3</u> Part		Technical data
1. Compressor		Technical data
1. Compressor	Manufacture:	SHANGHAI HIGHLY ELECTRICAL
	Mariaractare.	APPLIANCES CO., LTD.
	Type:	WHP32900VSKTQ9JK
	Rated capacity:	4330W
	Serial-number:	W82N1E02H3QB
	Specification:	DC221V; R290
2. Condenser		
z. Condenser		
	Manufacture:	Danfoss (Hangzhou) Plate Heat Exchanger Co. Ltd.
	Type:	C62L-EZ-J-50
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	524mm*117mm*102mm
3. Evaporator	, ,	
	Manufacture:	Guangzhou AOTAI Refrigeration Equipment Co. LTD.
	Туре:	DKLNSC-018PN9A1-LQ-1
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	820mm*347mm*1400mm
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co.,Ltd.
	Type:	RD85HA
	Fan type:	3 blade
	Specification:	DC310V; 85W
5. 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:	APF25-12-130E FPWM1
	Specification:	input power: 180W; 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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