Product Service

Technical Report No.: 64.181.22.02119.01 Rev.00

Date: 2022-05-19

Client:	Report holder's name:	Guangdong Sunrain Air Source Energy Co., 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 report holder:	Mr. Guo Feixiang
Factory:	Manufacturer's name:	Guangdong Sunrain Air Source Energy Co., Ltd.
	Manufacturer's address:	No.73 Defu Road, Xingtan Town, Shunde District, 528325 Foshan City, Guangdong Province, PEOPLE'S REPUBLIC OF CHINA.
	Factory's name:	Guangdong Sunrain Air Source Energy Co., 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:	DC Inverter Heat Pump
	Model:	BLN-006TB1
	Trade name:	-
Test specification:	☑	EN 14825:2018
	☑	(EU) No 813/2013
Purpose of examination:	Test according to the test specification	
	☑	EU 2016/2282:2016-11-30

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

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1 Description of the test object

1.1 Function

Manufacturer's specification for intended use:
The appliance is 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-006TB1
Rated Voltage (V) :	220-240V~
Rated Frequency (Hz) :	50
Rated Power (W) :	2710
Rated Current (A) :	12.0
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 (g) :	R32 /1250g
Declared parameters :	☑ Average ☐ Warmer ☐ Colder
Sound power level dB(A) :	N/A
Series No :	8A00220512003001

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2 Order

2.1 Date of Purchase Order, Customer's Reference

2022-04-20 , Guangdong Sunrain Air Source Energy Co., Ltd.

2.2 Test Sample(s)

- Reception date(s): 2022-05-05
- Location(s) of reception:

For Energy test:

Foshan Anzheng Testing Technology Service Co., Ltd.

Address: 3rd Floor, 1st Floor, Building 1, No. 6-7, Shunyuan North Road, Daliang Wusha Neighborhood Committee, Shunde District, Foshan City

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

2.3 Date(s) of Testing

2022-05-06 to 2022-05-11

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 Instruc-tions 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) The appliance is Intelligent Inverter Heat Pump, including a whole compression type refrigerant circuit to heat water in another circuit. The appliance was 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 14825:2018.

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TÜV SÜD Group

Tested by: William Liang, Project Handler

printed name, function & signature

Approved by: Plum Li, Designated Reviewer

printed name, function & signature

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Appendix I Test results

Table 1.	Heating mode(Low temperature application):						P
Model	BLN-006TB1						
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer ☐	Colder

1. Test conditions:

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

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/W35.3 (100%)	A(-7)/W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	3:00:00	3:00:00	3:00:00	3:00:00	3:00:00	3:00:00
The heat pump defrosts	--	No	No	No	No	No	No
Complete Cycles	--	0	0	0	0	0	0
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Voltage	V	229.7	229.4	229.4	229.4	229.7	229.7
Current input of the unit	A	6.92	2.92	1.84	1.86	6.88	6.92
Power input of the unit	kW	1.558	0.604	0.325	0.301	1.550	1.558
Test conditions **indoor** unit							
Inlet Water temperature, DB	°C	30.33	27.70	25.43	22.09	31.93	30.33
Outlet Water temperature, DB	°C	33.98	30.00	27.02	24.04	35.30	33.98

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Appendix I Test results

Test conditions **outdoor** unit							
Air **inlet** temperature, DB	°C	-6.96	2.02	7.03	12.02	-9.96	-6.96
Air **inlet** temperature, WB	°C	-7.94	1.00	6.00	10.99	-11.02	-7.94
Summary of the results							
Total heating capacity	kW	4.659	2.948	2.039	2.486	4.199	4.659
Effective power input	kW	1.530	0.575	0.297	0.273	1.522	1.530
Coefficient of performance (COP)	--	3.05	5.12	6.86	9.10	2.76	3.05
Compressor frequency	Hz	0	0	0	0	0	0
Water flow	m³/h	1.12	1.12	1.12	1.12	1.12	1.12
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data.							

3.Calculation/conclusion for SCOP(Average):

Tdesignh(°C)	-10	Tbiv(°C)	-7
Pdesignh(kW)	5.266	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	5.266	4.199	2.76	0.00	1.00	2.76
F	4.659	4.659	3.05	0.00	1.00	3.05
A	4.659	4.659	3.05	0.00	1.00	3.05
B	2.836	2.948	5.12	0.00	0.96	5.12
C	1.823	2.039	6.86	0.99	0.89	6.86
D	0.810	2.486	9.10	0.99	0.33	8.92
CR: part load divided by capacity;						

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Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.016
Standby mode [P_{SB}]	kW	0.008
Crankcase heater [P_{CK}]	kW	0.063
Off mode [P_{OFF}]	kW	0.008

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	5.18
SCOP:	kWh/kWh	5.14
Q_H:	kWh/year	10880
Q_{HE}:	kWh/year	2115
$\eta_{s,h}$	%	202.7
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 2.	Heating mode (Medium temperature application):							P
Model	BLN-006TB1							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

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

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/W55.3 (100%)	A(-7)/W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	2:00:00	2:00:00	2:00:00	2:00:00	2:00:00	2:00:00
The heat pump defrosts	--	No	No	No	No	No	No
Complete Cycles	--	0	0	0	0	0	0
Barometric pressure	kPa	101.76	101.32	101.36	101.37	101.49	101.76
Voltage	V	229.5	229.9	230.0	230.0	229.5	229.5
Current input of the unit	A	9.35	4.12	2.33	1.98	9.68	9.35
Power input of the unit	kW	2.122	0.891	0.438	0.351	2.200	2.122
Test conditions **indoor** unit							
Inlet Water temperature, DB	°C	46.07	38.38	33.46	26.80	49.69	46.07
Outlet Water temperature, DB	°C	51.99	42.01	35.99	30.00	55.05	51.99

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Appendix I Test results

Test conditions **outdoor** unit							
Air **inlet** temperature, DB	°C	-6.86	2.11	7.02	12.02	-9.96	-6.86
Air **inlet** temperature, WB	°C	-7.92	1.01	6.00	11.00	-10.97	-7.92
Summary of the results							
Total heating capacity	kW	4.485	2.839	1.863	2.430	4.109	4.485
Effective power input	kW	2.114	0.883	0.430	0.343	2.192	2.114
Coefficient of performance (COP)	--	2.12	3.22	4.33	7.09	1.87	2.12
Compressor frequency	Hz	0	0	0	0	0	0
Water flow	m³/h	0.66	0.66	0.66	0.66	0.66	0.66
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data.							

3.Calculation/conclusion for SCOP(Average):			
Tdesignh(°C)	-10	Tbiv(°C)	-7
Pdesignh(kW)	5.071	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	5.071	4.109	1.87	0.00	1.00	1.87
F	4.485	4.485	2.12	0.00	1.00	2.12
A	4.485	4.485	2.12	0.00	1.00	2.12
B	2.730	2.839	3.22	0.00	0.96	3.22
C	1.755	1.863	4.33	0.00	0.94	4.33
D	0.780	2.430	7.09	0.99	0.32	6.94
CR: part load divided by capacity;						

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Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.016
Standby mode [P_{SB}]	kW	0.008
Crankcase heater [P_{CK}]	kW	0.063
Off mode [P_{OFF}]	kW	0.008

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.38
SCOP:	kWh/kWh	3.37
Q_H:	kWh/year	10476
Q_{HE}:	kWh/year	3112
$\eta_{s,h}$	%	131.7
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix II Marking plate

Nameplate

Model: BLN-006TB1

Air Source Heat Pump			
Model			BLN-006TB1
Power Supply			220-240V~/50Hz
Heating ¹	Capacity	kW	2.50-8.30
	Input Power	kW	0.57-1.92
	Input Current	A	2.53-8.52
Heating ²	Capacity	kW	2.30-7.62
	Input Power	kW	0.75-2.61
	Input Current	A	3.32-11.58
Cooling	Capacity	kW	1.80-7.10
	Input Power	kW	0.61-2.43
	Input Current	A	2.71-10.78
SCOP (Water Temp. At 35℃)			5.14
SCOP (Water Temp. At 55℃)			3.37
Rated Input Power		kW	2.71
Rated Input Current		A	12
Refrigerant Type/Charge/GWP		.../kg	R32/1.25/675
CO_2 Equivalent		/	0.84t
Operation Pressure(Low Side)		MPa	1.5
Operation Pressure(High Side)		MPa	4.4
Maximum Allowable Pressure		MPa	4.4
Electrical Shockproof		/	I
IP Class		/	IPX4
Max. Outlet Water Temp.		℃	60
Operating Ambient Temperature		℃	-25 ~ 45
Water Piping Connections		inch	G1
Rated Water Flow		m³/h	1.1
Water Pressure Drop		kPa	25
Min/Max water pressure		MPa	0.1/0.3
Noise Level		dB(A)	50
Net Dimensions (L×W×H)		mm	1100×445×850
Net Weight		kg	102

Rated Test Conditions:
Heating¹:Ambient Temp 7℃/6℃(DB/WB),Water-In/Out Temp 30℃/35℃
Heating²:Ambient Temp 7℃/6℃(DB/WB),Water-In/Out Temp 47℃/55℃
Cooling:Ambient Temp 35℃/24℃(DB/WB),Water-In/Out Temp 12℃/7℃
Guangdong Sunrain Air Source Energy Co.,Ltd.
No.73 Defu Auvenue, Xingtan Town, Shunde District, Foshan City,Guangdong Province,China

Remark: -

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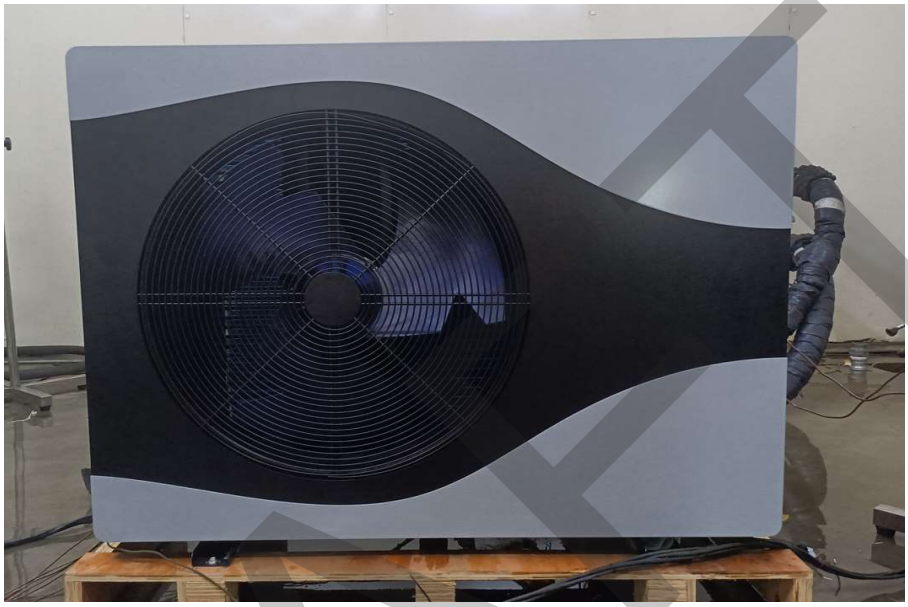
Appendix III photo documentaiton

Details of:	Overall view
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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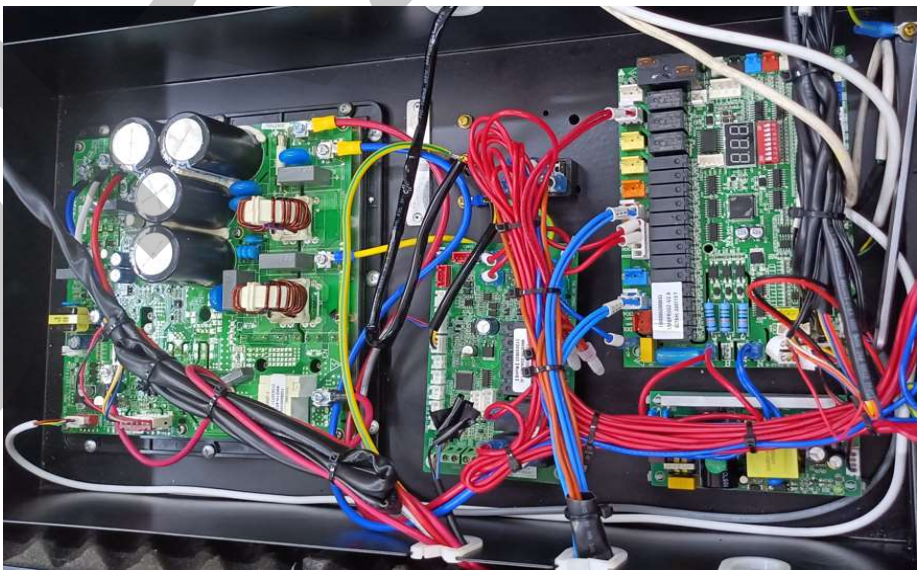
Appendix III photo documentaiton

Details of:	Fan Motor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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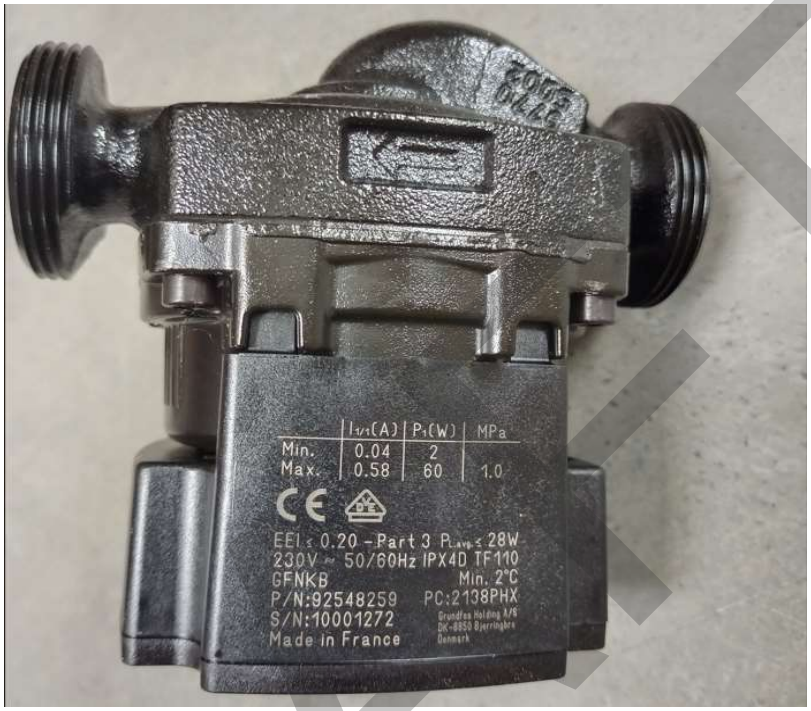
Appendix III photo documentaiton

Details of:	Water Pump
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix IV Construction data form

Model: BLN-006TB1		
Part		**Technical data**
1. Compressor		
	Manufacture:	Panasonic Wanbao Appliances Compressor (Guangzhou) Co.,Ltd.
	Type:	9RD138ZBA2J
	Rated capacity:	1400W
	Specification:	DC280V; R32
2. Condenser		
	Manufacture:	Weyee Heat Exchanger Corporation Limited
	Type:	8400159
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	333mm*121mm*65mm
3. Evaporator		
	Manufacture:	Guangzhou AOTAI Refrigeration Equipment Co., LTD
	Type:	DKLNSC-006PN8A1-LQ-1
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	748mm*368mm*798mm
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co.,Ltd.
	Type:	RD85HA
	Specification:	DC310V; 85W
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:	Grundfos Golding A/S,Poul Due Jensens Vej7,8850 BJERRINGBRO,DENMARK
	Type:	UPM3K-25-75
	Specification:	inputpower: 60W; L=130mm; G1.5

Appendix V Equipment List

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	R&A performance measuring system	GEI	20kW	-	2022-08-02
2	Temperature and humidity meter	VAISALA	HMD42	H5110021	2022-08-02
3	Platinum resistance	YINUO	Pt100	7430F	2022-05-20
4	Platinum resistance	YINUO	Pt100	7434F	2022-05-20
5	Flowmeter	YOKOGAWA	AXF015G	S5M201965	2022-05-20
6	Flowmeter	YOKOGAWA	AXF040G	S5M805005	2022-05-20
7	Pressure transmitter	MICRO	MPM489	240502	2022-08-02
8	Pressure transmitter	MICRO	MPM489	240503	2022-08-02
9	Water pressure difference transmitter	MICRO	MDM3051	291459	2022-08-02
10	AC source Supply	YANGHONG	YF-3600	-	2023-01-01
11	Water pressure difference transmitter	MICRO	MDM3051	291459	2022-08-02
12	AC source Supply	YANGHONG	YF-3600	-	2023-01-01
13	Temperature and humidity meter	H5110021	HMD42	VAISALA	2022-08-02

-- End of Report --

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