Product Service

Technical Report No.: 64.181.20.03761.01 Rev.00

Date: 2020-08-13

Client:	Name: Jiangsu Micoe Solar Energy Co., Ltd
	Address: Ninghai Industrial Zone, Lianyungang City, Jiangsu Province, China
	Contact person: Will Zhou
Manufacturing place:	Manufacturer's name: Jiangsu Micoe Solar Energy Co., Ltd
	Address: Ninghai Industrial Zone, Lianyungang City, Jiangsu Province, China
	Factory's name: Guangdong Solareast Air Source Energy Co., Ltd.
	Address: No.73 Defu Road, Xingtan Town, Shunde District, Foshan City, Guangdong Province, China
Test subject:	Product: HEAT PUMP WATER HEATER
	Type: MAHP-150A1, MAHP-150B1, MAHP-150C1, MAHP-150D1
	Trade mark (if any): Micoe
Test specification:	EN 16147:2017
Purpose of examination:	Test according to the test specification(details see page 4, summary of testing)
Test result:	This report is only for test result, without verdict, see item 3 of this report for details.

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave. West,Guangzhou, 510656, P.R.China

1. Description of the test subject

1.1 Function

Manufacturer's specification for intended use:
The appliance is an air/ water heat pumps with electrically driven compressor including a domestic hot water storage tank, for indoor used.

Manufacturer's specification for predictive use:
According to the 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	:	MAHP-150A1, MAHP-150B1, MAHP-150C1, MAHP-150D1
Rated Voltage (V)	:	220-240V~
Rated Frequency (Hz)	:	50
Rated Power (kW)	:	0.61
Rated Current (A)	:	2.7
Auxiliary heater power (kW)	:	2.0
Protection Class	:	☒ Class I; ☐ Class II; ☐ Class III
Degree of Protection	:	IP X1
Construction	:	☒ Stationary ☐ Portable ☐ Hand-held ☐ Open-frame
Supply connection	:	☐ Non detachable cord ☒ Permanent connection to fixed wiring ☐ Appliance inlet
Operation mode	:	☒ Continuous operation; ☐ Intermittent operation; ☐ Short time operation;
Rated capacity (L), if any	:	150
Net Weight (kg)	:	92
Refrigerant	:	R134a, 1.0kg
Noise (dB(A))	:	N/A

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave. West,Guangzhou, 510656, P.R.China

Product Service

Series No : 2020032602045

2. Order

2.1 Date of Purchase Order, Customer's Reference

2020-06-19, 2020-08-10, Will Zhou

2.2 Receipt of Test Sample, Condition, Location

2020-06-19
For Energy test:
GZ-Lans Experimental Technology Co., Ltd. Laboratory
Room F2, No.10, Mubei East Road, Xintang Street, Tianhe District, Guangzhou, Guangdong, China

2.3 Date of Testing

2020-06-19 to 2020-06-26

2.4 Location of Testing

Same as 2.2

3. Test Results

See Appendix No.1: Format of test results.

4. Remark

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 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 No.1: Format of test results
- Appendix No.2: Marking plate
- Appendix No.3: Photo documentations
- Appendix No.4: Construction data form
- Appendix No.5: Test equipment list

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave. West,Guangzhou, 510656, P.R.China

6. Summary

1. The appliance is an air/ water heat pumps with electrically driven compressor including a domestic hot water storage tank, for indoor used.
2. The appliances are supplied by a 3-pole supply cable without plug which not supplied by manufactory.
3. The models MAHP-150A1, MAHP-150B1, MAHP-150C1, MAHP-150D1 are the same except for model names.
4. The test was carried out on the representative of model MAHP-150A1.
5. The test was performed according to test specifications and the standard EN 16147 requirements, the unit were performed on the condition below:

Item	Installation or setting
Air duct	No duct for air outlet and air inlet
Tapping cycle	M
Rated target hot water temperature	56 °C
Inlet cold water temperature	10 °C
Test voltage	230V, 50Hz
Air heat source temperature	Dry bulb/wet bulb: 20°C/15°C
Ambient temperature of storage tank	20 °C
Operating setting	Heat pump only

6. This test report 64.181.20.03761.01 Rev.00, dated 2020-08-13 supersedes original test report 64.181.20.02758.01 Rev.00, dated 2020-07-28 to include the following changes and/or additions, which were considered technical modifications:
   a) Changing trademark and applicant.
   b) After evaluating, no additional test was needed.

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

Tested by: William Liang, Project Handler

printed name, function & signature

Approved by: Tony Xie, Designated Reviewer

printed name, function & signature

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave. West,Guangzhou, 510656, P.R.China

Appendix No.1: Format of test results

Performance tests data:

Table 1: Filling and heating up [stage C]		
Measured quantity	**Unit**	**Recorded data**
Heat source, Ambient DB/WB	°C	20.00/15.00
Ambient temperature of storage tank	°C	19.98
Voltage	V	230.08
Frequency	Hz	50
Electrical energy W_{eh}	kWh	1.415
Heating up time t_h	s	9420

Table 2: Standby power input [stage D]		
Measured quantity	**Unit**	**Recorded data**
Heat source, Ambient DB/WB	°C	20.00/15.00
Ambient temperature of storage tank	°C	19.97
Voltage	V	230.14
Frequency	Hz	50
Standby power input P_{es}	kW	0.031
Energy input during the last on-off-cycle W_{es}	kWh	0.643
Duration of the last on-off-cycle t_{es}	s	72878

Table 3: Water draw-offs and COP calculation [stage E]			
Items	**Unit**	**Data**	**Description**
Heat source, Ambient DB/WB	°C	19.97/14.98	--
Ambient temperature of storage tank	°C	19.98	--
Voltage	V	232.0	--
Frequency	Hz	50	--
tTTC	H	26.93	Time period of test cycle in hours
QTC	kWh	5.884	Total useful heat energy
QHP-TC	kWh	5.851	Useful heat energy produced by heat pump
QEL-TC	kWh	0.033	Calculated heat energy produced by electricity
WEL-TC	kWh	2.474	Total electrical energy consumption
WEL-HP-TC	kWh	2.532	Total electrical energy consumption of the heat pump
Pes	kW	0.031	Standby power input
COP_{DHW}	--	2.38	Coefficient of performance

Table 4: Reference hot water temperature and volume of mixed water at 40 °C [stage F]		
Measured quantity	**Unit**	**Recorded data**
Heat source, Ambient DB/WB	°C	19.97/14.93
Ambient temperature of storage tank	°C	19.99
Voltage	V	230.28
Frequency	Hz	50
Time from starting the tapping until less than 40 °C t40	s	1206
Reference hot water temperature	°C	51.69
Maximum quantity of hot water	m^3	0.167

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave. West,Guangzhou, 510656, P.R.China

Appendix No.1: Format of test results

Table 5: Water heating energy efficiency (η_{wh})		
Measured quantity	**Result**	**Remark**
Declared load profile:	M	--
Standby heat loss P_{stby}***	0.078 kW	--
Reference energy Q_{ref}***	5.845 kWh	--
Daily electricity consumption Q_{elec}***	2.458 kWh	--
Weekly electricity consumption with smart controls $Q_{elec,week,smart}$***	N/A	No smart control function
Weekly electricity consumption without smart controls $Q_{elec,week}$ ***	N/A	No smart control function
Smart control factor SCF *	N/A	No smart control function
Smart control compliance smart	0	No smart control function
Ambient correction term Q_{cor} ***	-0.4278	--
Water heating energy efficiency (smart=0) η_{wh} *	102.3%	--
Water heating energy efficiency classes:	A+	(According (EU) No 812/2013 ANNEX II Table 1)
Water heating energy efficiency (smart=1) η_{wh} *	N/A	No smart control function
Annual electricity consumption (AEC) ****	502 kWh/annum	--

Supplementary information

Number of brine pump considered: no

Setting of controls: Heating mode, outlet water temperature: 56°C

The AEC calculating according to (EU) NO 812/2013:

4. **Calculation of the annual electricity consumption AEC and the annual fuel consumption AFC**

(a) Conventional water heaters and heat pump water heaters:

The annual electricity consumption *AEC* in kWh in terms of final energy is calculated as follows:

$$AEC = 0{,}6 \cdot 366 \cdot \left(Q_{elec} \cdot (1 - SCF \cdot smart) + \frac{Q_{cor}}{CC} \right)$$

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

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave. West,Guangzhou, 510656, P.R.China

Appendix No.2: Marking plate

Copy of marking plate:
Model: MAHP-150A1

Micoe		
HEAT PUMP WATER HEATER		
Model		MAHP-150A1
Rated voltage		220V-240V~
Rated frequency		50HZ
Electrical shock proof		I
Rated heating capacity		2.4KW
Rated input power		3KW
Rated input current		15.0A
Heat pump	Rated power	0.61KW
	Rated current	2.7A
Electric heater	Rated power	2KW
	Rated current	9.3A
Refrigerant		R134a/1000g
Water tank capacity		150L
Water inlet/outlet pipe		3/4 inch
Waterproof level		IPX1
Operation pressure(low side)		1.3MPa
Operation pressure(high side)		2.1MPa
Water tank water pressure		0.7MPa
Water tank max water pressure		1.0MPa
Rated outlet water temperature		55℃
Noise		48dB(A)
Net weight		92KG
Working ambient temperature		-7℃-43℃
Manufacturing number:see below barcode Manufacturing date:see below barcode		
Jiangsu Micoe Solar Energy Co., Ltd		
Ninghai Industrial Zone， Lianyungang City,Jiangsu Province,China		
CE 		

Remark:
1. The height of CE marking shall be higher than 5mm and the height of WEEE marking shall be higher than 7mm.
2. The models MAHP-150B1, MAHP-150C1, MAHP-150D1 are same as MAHP-150A1 except for model's name.

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave. West,Guangzhou, 510656, P.R.China

Appendix No.3: Photo documentations

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

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

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave.
West,Guangzhou, 510656, P.R.China

Appendix No.3: Photo documentations

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

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

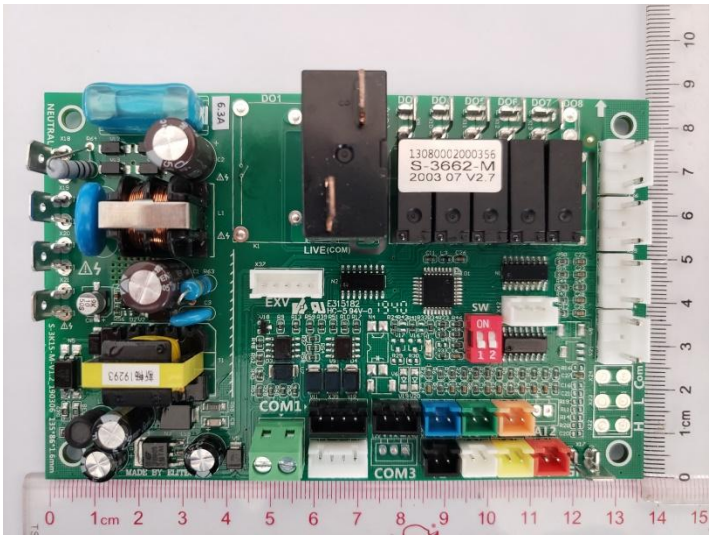
Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave.
West,Guangzhou, 510656, P.R.China

Appendix No.3: Photo documentations

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

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave.
West,Guangzhou, 510656, P.R.China

Appendix No.4: Construction data form

Part		Technical data
1. Compressor		
	Manufacture	GMCC
	Type	PJ160G1C-4DZ
	Rated capacity	2610W
	Serial-number	-
	Rated input	220-240V~; 50Hz; 635W
2.Condenser		
	Manufacture	Zhejiang New Jinchen Machinery Co., Ltd
	Type	-
	Water tank	Enamel
	Pipe specification	1150mmx16mmx21 rows
	Max. permissible pressure	4,3MPa
3. Evaporator		
	Manufacture	Guangzhou AoTai Refrigeration Equipment Co., Ltd
	Type	KDC40-300A1-LQ
	Fan type	Centrifugal
	Bauart Construction	Finned heat exchanger
	Fin type	Hydrophilic aluminum
	Fin spacing	1,6 mm
	Tube pitch x row pitch	21mm X18mm
	Pipe specification	Φ 9,52mm
	Max. permissible pressure	-
	Dimension	420(L)mmX350(H)mmX93(D)mm
4. Fan motor of evaporator		
	Manufacture	Fans-tech Electric Co., Ltd
	Type	YDK12-4H
	Specification	220-240V~; 50/60Hz; 30W
	Serial-number	-
5. Controller		
	Manufacture	Elitech Technology Co., Ltd
	Type	S-3662-M
6. Heater		
	Manufacture	Foshan Dongnike Appliance Co., Ltd
	Type	2kW
	Specification	2kw; 230V~; 50Hz

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave.
West,Guangzhou, 510656, P.R.China

Product Service

Appendix No.5: Test equipment list

Equipment	Brand/Manufacturer	Model	ID No.	Calibration due date
R&A performance measuring system	GEI	20kW	-	2021-05-24
Platinum resistance	YINUO	Pt100	TS124A032	2021-05-24
Platinum resistance	YINUO	Pt100	TS124A031	2021-05-24
Platinum resistance	YINUO	Pt100	7430F	2021-05-24
Platinum resistance	YINUO	Pt100	7434F	2021-05-24
Flowmeter	YOKOGAWA	AXF015G	S5M201965	2021-05-24
AC source Supply	YANGHONG	WT230	YANGHONG	2021-05-24
Temperature and humidity meter	VAISALA	HMD42	H5110021	2021-05-24
Water pressure difference transmitter	MICRO	MDM3051	291459	2020-08-04
Pressure transmitter	MICRO	MPM489	240503	2020-08-04
Water pressure difference transmitter	MICRO	MDM3051	291459	2020-08-04
AC source Supply	YANGHONG	YF-3600	--	2021-01-02
Temperature and humidity meter	VAISAL	HMD42	H511021	2020-08-04

--- End of Report ---

Telephone : +86 20 38320668
Telefax : +86 20 38320478

http://www.tuv-sud.cn

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

5F, Communication Building, 163 Pingyun Rd, Huangpu Ave.
West,Guangzhou, 510656, P.R.China