



Technical Report No.: 64.181.22.01864.01 Rev.00

Date: 2022-07-22

Client: Report holder's name: Hunan Harnitek Technology Co., Ltd.
Report holder's Address: Room 1504, Bldg 13, No. 1006, Renmin Road, Lusong District, Zhuzhou City, Hunan Province, China
Contact person of report holder: Alisa Wu
Manufacturer's name: Hunan Harnitek Technology Co., Ltd.
Manufacturer's address: Room 1504, Bldg 13, No. 1006, Renmin Road, Lusong District, Zhuzhou City, Hunan Province, China

Factory: Factory's name: Hunan Harnitek Technology Co., Ltd.
Factory's address: Room 1504, Bldg 13, No. 1006, Renmin Road, Lusong District, Zhuzhou City, Hunan Province, China

Test object: Product: DC Inverter Air to Water Heat Pump Unit
Model: Outdoor unit: YHPK-09V1TBA, Indoor unit: YHPK-09V1TBA
Trade mark (if any): --

Test specification: EN 16147:2017

Purpose of examination: Test according to the test specification (details see page 4, summary of testing)

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

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question. It does not imply a general statement regarding the quality of products from regular production. For further details please see testing and certification regulation, chapter A-3.4.

1. Description of the test object

1.1 Function

Manufacturer's specification for intended use:

The appliance is an air to 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	:	Outdoor unit: YHPK-09V1TBA, Indoor unit: YHPK-09V1TBA
Rated Voltage (V)	:	220-240V~
Rated Frequency (Hz)	:	50
Rated Power (W)	:	2366
Rated Current (A)	:	25.0
Auxiliary heater power (kW)	:	3*3
Protection Class	:	<input checked="" type="checkbox"/> Class I; <input type="checkbox"/> Class II; <input type="checkbox"/> Class III
Degree of Protection	:	Outdoor unit: IP X4, Indoor unit: IP X1
Construction	:	<input checked="" type="checkbox"/> Stationary <input type="checkbox"/> Portable <input type="checkbox"/> Hand-held <input type="checkbox"/> Open-frame
Supply connection	:	<input type="checkbox"/> Non detachable cord <input checked="" type="checkbox"/> Permanent connection to fixed wiring <input type="checkbox"/> Appliance inlet
Operation mode	:	<input checked="" type="checkbox"/> Continuous operation; <input type="checkbox"/> Intermittent operation; <input type="checkbox"/> Short time operation;
Rated capacity (L), if any	:	250
Net Weight (kg)	:	78kg for Outdoor unit; 25kg for Indoor unit
Refrigerant	:	R32, 1400g
Noise (dB(A))	:	N/A
Series No	:	WAK0008-OD-2001 for Outdoor unit; WAK0008-ID-2001 for Indoor unit

2. Order

2.1 Date of Purchase Order, Customer's Reference

2022-06-07, Hunan Harnitek Technology Co., Ltd.

2.2 Test Sample(s)

- Reception date(s): 2022-06-17
- Location(s) of reception:
For Energy test:
GZ-Lans Experimental Technology Co., Ltd. Laboratory
Address: No.16, Juncheng Road, Huangpu district, Guangzhou, China
- Condition of test sample(s): completed and can be normal operation

2.3 Date(s) of Testing 2022-06-20 to 2022-06-26

2.4 Location(s) 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

6. Summary

1. The appliance is an air to water heat pump with electrically driven compressor including a domestic hot water storage tank, for indoor used.
2. The appliance is supplied by a 3-pole supply cord connecting to fixed wiring.
3. 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	L
Rated target hot water temperature	45 °C
Inlet cold water temperature	10 °C
Test voltage	230V, 50Hz
Air heat source temperature	Dry bulb/wet bulb: 7°C/6°C (Average climate condition)
Ambient temperature of storage tank	20 °C
Operating setting	Heat pump only

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

Tested by:

William Liang, Project Handler

printed name, function & signature

William Liang

Approved by:

Plum Li, Designated Reviewer

printed name, function & signature

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Appendix No.1: Format of test results

Dry bulb/wet bulb: 7°C/6°C (Average climate) (Table 1 to Table 5)

Table 1: Filling and heating up [stage C] (Average climate condition)		
Measured quantity	Unit	Recorded data
Heat source, Ambient (DB/WB)	°C	7.01/5.98
Ambient temperature of storage tank	°C	20.02
Voltage	V	230.12
Frequency	Hz	50
Total electrical energy W_{eh-HP}	kWh	2.015
Heating up time t_h	s	8596

Table 2: Standby power input [stage D] (Average climate condition)		
Measured quantity	Unit	Recorded data
Heat source, Ambient (DB/WB)	°C	7.01/5.99
Ambient temperature of storage tank	°C	19.99
Voltage	V	230.4
Frequency	Hz	50
Energy input during the last on-off-cycle W_{es-HP}	kWh	0.6236
Duration of the last on-off-cycle t_{es}	s	108144
Standby power input P_{es}	kW	0.021

Table 3: Water draw-offs and COP calculation [stage E] (Average climate condition)			
Items	Unit	Data	Description
Heat source, Ambient (DB/WB)	°C	7.01/5.99	--
Ambient temperature of storage tank	°C	19.99	--
Voltage	V	230.4	--
Frequency	Hz	50	--
t_{TTC}	H	45.02	load profile time in hours
Q_{LP}	kWh	11.667	Total useful energy
Q_{HP-tap}	kWh	11.389	Useful heat energy produced by heat pump
Q_{EL-LP}	kWh	0.278	Calculated heat energy produced by electricity
$W_{EL-M-LP}$	kWh	3.289	Total measured electrical energy consumption
W_{EL-LP}	kWh	3.452	Total electrical energy consumption of the heat pump
P_{es}	kW	0.021	Standby power input
COP_{DHW}	--	3.548	Coefficient of performance

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Appendix No.1: Format of test results

Table 4: Reference hot water temperature and volume of mixed water at 40 °C [stage F] (Average climate condition)		
Measured quantity	Unit	Recorded data
Heat source, Ambient (DB/WB)	°C	6.99/5.99
Ambient temperature of storage tank	°C	20.01
Voltage	V	230.94
Frequency	Hz	50
Time from starting the tapping until less than 40 °C t ₄₀	s	1136
Reference hot water temperature	°C	44.08
Maximum quantity of hot water	m ³	0.209

Table 5: Water heating energy efficiency (η_{wh}) (Average climate condition)		
Measured quantity	Result	Remark
Declared load profile:	L	--
Total electrical energy consumption for the 'smart period' $Q_{elec}^{smart} ***$	N/A	No smart control function
Total useful energy content of the reference period $Q_{LP}^{smart} ***$	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
Standby heat loss $P_{stby} ***$	0.053 kW	--
Ambient correction term $Q_{cor} ***$	-0.2898	--
Reference energy $Q_{ref} ***$	11.655 kWh	--
Daily electricity consumption $Q_{elec} ***$	3.286 kWh	--
Water heating energy efficiency (smart=0) $\eta_{wh} *$	147.1%	--
Water heating energy efficiency classes:	A+	(According (EU) No 812/2013 ANNEX II Table 1)
Water heating energy efficiency (smart=1) $\eta_{wh} *$	N/A	No smart control function
Annual electricity consumption (AEC) ****	696 kWh/annum	--
Supplementary information		
Number of brine pump considered: no		
Setting of controls: Heating mode, outlet water temperature: 45°C		
The AEC calculating according to (EU) NO 812/2013:		

Appendix No.1: Format of test results

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

Appendix No.2: Marking plate


Nameplate																																																																					
Model: <u>Outdoor unit: YHPK-09V1TBA, Indoor unit: YHPK-09V1TBA</u>																																																																					
<p style="text-align: center;">DC Inverter Air to Water Heat Pump Unit</p> <p style="text-align: right; margin-right: 20px;">Outdoor unit</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 30%;">Model Number:</td><td>YHPK-09V1TBA</td></tr> <tr><td>Input Voltage:</td><td>220-240V~/50Hz</td></tr> <tr><td>Input Power-Cooling:</td><td>1451-2366 W</td></tr> <tr><td>Input Power-Heating:</td><td>927-2097 W</td></tr> <tr><td>Circuit Breaker:</td><td>20A</td></tr> <tr><td>Cooling Capacity:</td><td>4900-7200 W</td></tr> <tr><td>Heating Capacity:</td><td>4300-9200 W</td></tr> <tr><td>Max Operation pressure of low side:</td><td>1.4MPa</td></tr> <tr><td>Max Operation pressure of high side:</td><td>4.2MPa</td></tr> <tr><td>Rated input power:</td><td>2366W</td></tr> <tr><td>Rated input current:</td><td>25A</td></tr> <tr><td>Refrigerant:</td><td>R32/ 1400g</td></tr> <tr><td>Max EER Cooling:</td><td>3.1 W/W</td></tr> <tr><td>Max COP Heating:</td><td>4.80 W/W</td></tr> <tr><td>Protection Class</td><td>I</td></tr> <tr><td>Degree of Protection</td><td>IPX4</td></tr> <tr><td>Net Weight:</td><td>78kg</td></tr> </table> <p>For outdoor use only. Installation & service by licensed mechanic only.</p> <p>Contains fluorinated greenhouse gases covered by the Kyoto protocol. GWP:675:0.945 tonnes CO2 equivalent. Hermetically sealed.</p> <p style="text-align: center;">Hunan Harnitek Technology Co., Ltd. Room 1504, Bldg 13, No. 1006, Renmin Road, Lusong District, Zhuzhou City, Hunan Province, China</p> <div style="text-align: right;">    </div>	Model Number:	YHPK-09V1TBA	Input Voltage:	220-240V~/50Hz	Input Power-Cooling:	1451-2366 W	Input Power-Heating:	927-2097 W	Circuit Breaker:	20A	Cooling Capacity:	4900-7200 W	Heating Capacity:	4300-9200 W	Max Operation pressure of low side:	1.4MPa	Max Operation pressure of high side:	4.2MPa	Rated input power:	2366W	Rated input current:	25A	Refrigerant:	R32/ 1400g	Max EER Cooling:	3.1 W/W	Max COP Heating:	4.80 W/W	Protection Class	I	Degree of Protection	IPX4	Net Weight:	78kg	<p style="text-align: center;">DC Inverter Air to Water Heat Pump Unit</p> <p style="text-align: right; margin-right: 20px;">Indoor unit</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 30%;">Model Number:</td><td>YHPK-09V1TBA</td></tr> <tr><td>Input Voltage:</td><td>220-240V~/50Hz</td></tr> <tr><td>Cooling Capacity:</td><td>4900-7200 W</td></tr> <tr><td>Heating Capacity:</td><td>4300-9200 W</td></tr> <tr><td>Circuit Breaker:</td><td>25A</td></tr> <tr><td>Input Power-Cooling:</td><td>1451-2366 W</td></tr> <tr><td>Input Power-Heating:</td><td>927-2097 W</td></tr> <tr><td>Rated input power:</td><td>2366W</td></tr> <tr><td>Rated input current:</td><td>25A</td></tr> <tr><td>Refrigerant:</td><td>R32/ 0g</td></tr> <tr><td>PS hydraulic circuit:</td><td>3 bar</td></tr> <tr><td>Electric Heater:</td><td>3*3kW</td></tr> <tr><td>Max EER Cooling:</td><td>3.1W/W</td></tr> <tr><td>Max COP Heating:</td><td>4.8W/W</td></tr> <tr><td>Protection Class</td><td>I</td></tr> <tr><td>Degree of Protection</td><td>IPX1</td></tr> <tr><td>Net Weight:</td><td>25kg</td></tr> </table> <p>For indoor use only. Installation & service by licensed mechanic only.</p> <p style="text-align: center;">Hunan Harnitek Technology Co., Ltd. Room 1504, Bldg 13, No. 1006, Renmin Road, Lusong District, Zhuzhou City, Hunan Province, China</p> <div style="text-align: right;">    </div>	Model Number:	YHPK-09V1TBA	Input Voltage:	220-240V~/50Hz	Cooling Capacity:	4900-7200 W	Heating Capacity:	4300-9200 W	Circuit Breaker:	25A	Input Power-Cooling:	1451-2366 W	Input Power-Heating:	927-2097 W	Rated input power:	2366W	Rated input current:	25A	Refrigerant:	R32/ 0g	PS hydraulic circuit:	3 bar	Electric Heater:	3*3kW	Max EER Cooling:	3.1W/W	Max COP Heating:	4.8W/W	Protection Class	I	Degree of Protection	IPX1	Net Weight:	25kg
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<p>Remark:</p> <p>1. The height of CE marking shall be higher than 5mm and the height of WEEE marking shall be higher than 7mm.</p>																																																																					

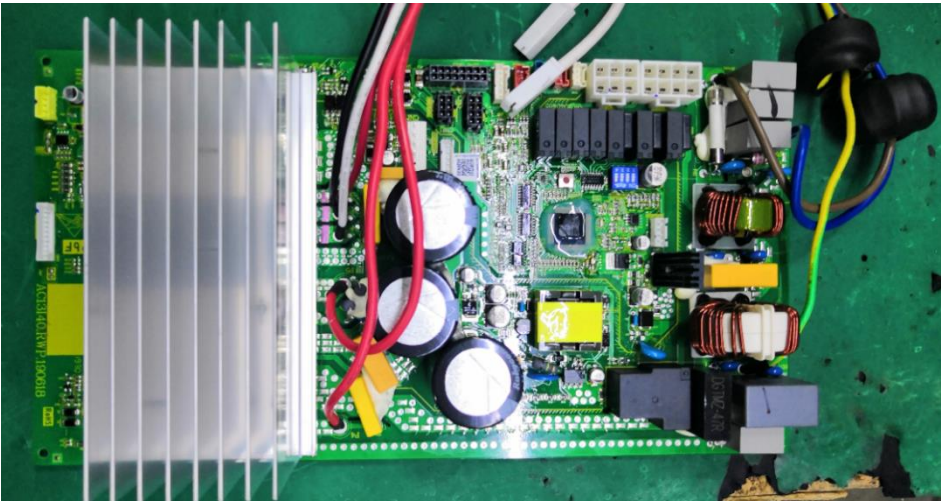
Appendix No.3: Photo documentations

Details of:	General view of Outdoor unit
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

Details of:	Compressor of Outdoor unit
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	


Appendix No.3: Photo documentations

Details of:	Fan motor of Outdoor unit
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	 <p>The photograph shows a white brushless DC motor with a label. The label contains the following text: '直流无刷电动机 LD-004DC062-1', 'SIC-65FV-F162-1', 'DC310V 8P 62W', '900r/min E级', 'G C Lot No. 13', and 'Nidec 日本电产芝浦(浙江)有限公司'. A wiring diagram on the label shows connections for Vm (red), GND (black), Vcc (blue), Ysp (yellow), and PG (green). A rotation arrow points to the right with the text '转向'.</p>


Details of:	Main controller of Outdoor unit
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	 <p>The photograph shows a green PCB populated with various electronic components, including capacitors, resistors, integrated circuits, and connectors. A white heat sink is visible on the left side of the board.</p>


Appendix No.3: Photo documentations

Details of:	Water pump
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

Details of:	General view of Indoor unit
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

Appendix No.3: Photo documentations

Details of:	Main controller of Indoor unit
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

Details of:	General view of Water tank
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

Appendix No.4: Construction data form

Part		Technical data
1. Compressor		
	Manufacture	Mitsubishi Electric (Guangzhou) Compressor Co., Ltd.
	Type	SVB172FNPMC
	Rated capacity	1735W
	Serial-number	7005197282
	Specification	43-200V; 30-390Hz
2. Condenser		
	Manufacture	SWEP
	Type	B26Hx34/1P-SC-M
	Water tank	Plate heat exchanger
	Pipe specification	376*119*36,6mm
3. Evaporator		
	Manufacture	Foshan huize heat exchange equipment Co., LTD
	Type	PAVH-09V1FBA
	Bauart Construction	Finned-coil heat exchanger
	Dimension	860x800xΦ7x25 x1,8
4. Fan motor of evaporator		
	Manufacture	NIDEC SHIBAURA (ZHEJIANG) CORP.
	Type	SIC-65FV-F162-1
	Specification	DC310V; 50Hz
	Serial-number	-
5. Controller		
	Manufacture	Ruking Emerson Climate Technologies (Shanghai) Co., Ltd
	Type	AC13I40
6. Water pump		
	Manufacture	GRUNDFOS
	Type	UPM3LK 25-75 130
	Specification	230V; 50/60Hz; 2-75W
7. Water tank		
	Manufacture	Guangzhou SST Heating Energy Co., Ltd.
	Type	PAVH-12V1FS-250L/IA
	Volume	250L
6. Heater		
	Manufacture	Nanjing Bokesi Electric Appliance Factory
	Type	BKR E341
	Specification	230V; 9000W(3*3000W)



Appendix No.5: Test equipment list

Equipment	Brand/Manufacturer	Model	ID No.	Calibration due date
R&A performance measuring system	GEI	20kW	-	2023-05-23
Platinum resistance	YINUO	Pt100	TS124A032	2023-05-23
Platinum resistance	YINUO	Pt100	TS124A031	2023-05-23
Platinum resistance	YINUO	Pt100	7430F	2023-05-23
Platinum resistance	YINUO	Pt100	7434F	2023-05-23
Flowmeter	YOKOGAWA	AXF015G	S5M201965	2023-05-23
AC source Supply	YANGHONG	WT230	YANGHONG	2023-05-23
Temperature and humidity meter	VAISALA	HMD42	H5110021	2023-05-23
Water pressure difference transmitter	MICRO	MDM3051	291459	2022-08-02
Pressure transmitter	MICRO	MPM489	240503	2022-08-02

--- End of Report ---