



Technical Report No.: 64.181.22.03453.01 Rev.00

Date: 2022-10-24

Client: Report holder's name: Zhongshan Amitime Electric Co., LTD

Report holder's Address: 5th Yandong Rd, Dayan Industrial Zone, Huangpu Town, Zhongshan City, Guangdong, PEOPLE'S REPUBLIC OF CHINA

Contact person of report holder: Mr. WangKui Zhou

Manufacturer's name: Zhongshan Amitime Electric Co., LTD

Manufacturer's address: 5th Yandong Rd, Dayan Industrial Zone, Huangpu Town, Zhongshan City, Guangdong, PEOPLE'S REPUBLIC OF CHINA

Factory: Factory's name: Zhongshan Amitime Electric Co., LTD

Factory's address: 5th Yandong Rd, Dayan Industrial Zone, Huangpu Town, Zhongshan City, Guangdong, PEOPLE'S REPUBLIC OF CHINA

Test object: Product: DC Inverter Type Air To Water Unit
 Model: Model A :
 Indoor unit: PEVH-90V4DEA/IA;
 Outdoor unit: PEVH-90V4DEA
 Model B :
 Indoor unit: PEVH-90V4DA/IA;
 Outdoor unit: PEVH-90V4DA
 Trade name: -

Test specification: EN 14825:2018
 (EU) No 813/2013
 EN 14511-3:2018

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.

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.

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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

Factory's address:	Model A : Indoor unit: PEVH-90V4DEA/IA; Outdoor unit: PEVH-90V4DEA Model B : Indoor unit: PEVH-90V4DA/IA; Outdoor unit: PEVH-90V4DA
Rated Voltage (V) :	380-415V, 3N~
Rated Frequency (Hz) :	50
Rated Power (W) :	28610.0 (Heating) 24254.0 (cooling)
Rated Current (A) :	N/A
Protection Class :	Class I
Protection Against Moisture :	IP X4
Construction :	Stationary
Supply connection :	<input type="checkbox"/> Non detachable cord <input checked="" type="checkbox"/> Permanent connection to fixed wiring
Operation mode:	<input checked="" type="checkbox"/> Continuous operation; <input type="checkbox"/> Intermittent operation; <input type="checkbox"/> Short time operation;
Refrigerant/charge (g) :	R410A / 2*8000g
Declared parameters :	<input checked="" type="checkbox"/> Average <input type="checkbox"/> Warmer <input type="checkbox"/> Colder
Sound power level dB(A) :	N/A
Series No :	Indoor unit: WAL0018-ID-2001 Outdoor unit: WAL0018-OD-1001

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2 Order

2.1 Date of Purchase Order, Customer's Reference

2022-09-19, Zhongshan Amitime Electric Co., LTD

2.2 Test Sample(s)

- Reception date(s): 2022-08-25,

- Location(s) of reception:

For Energy test:

Zhongshan Amitime Electric Co., LTD

Address: 5th Yandong Rd, Dayan Industrial Zone, Huangpu Town, Zhongshan City, Guangdong, PEOPLE'S REPUBLIC OF CHINA

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

2.3 Date(s) of Testing

2022-09-07 to 2022-09-15

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

6 Summary

- 1) The appliance is Air to Water Heat Pump Unit, 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 5-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.
- 5) Model A (Indoor unit: PEVH-90V4DEA/IA; Outdoor unit: PEVH-90V4DEA) is same as Model B (Indoor unit: PEVH-90V4DA/IA;Outdoor unit: PEVH-90V4DA) except for the model name. Test is carried out on model A.

**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: Plum Li, Designated Reviewer

printed name, function & signature



Appendix I Test results

Table 1.	Heating mode(Low temperature application):						P
Model	Model A (Indoor unit: PEVH-90V4DEA/IA; Outdoor unit: PEVH-90V4DEA)						
Product type	Air to Water	Heating season	<input checked="" type="checkbox"/> Average	<input type="checkbox"/> Warmer	<input type="checkbox"/> 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	$(-7-16)/(T_{designh-16})$	88	N/A	N/A	-7(-8)	a / 34	
B	$(+2-16)/(T_{designh-16})$	54	N/A	N/A	2(1)	a / 30	
C	$(+7-16)/(T_{designh-16})$	35	N/A	N/A	7(6)	a / 27	
D	$(+12-16)/(T_{designh-16})$	15	N/A	N/A	12(11)	a / 24	
E	$(TOL-16)/(T_{designh-16})$				TOL	a / 35.3	
F	$(T_{bivalent-16})/(T_{designh-16})$				Tbiv	a / 34	
G	$(-15-16)/(T_{designh-16})$	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, the capacity is 70732.97 W, the power is 17521.03W, the COP is 4.04W/W.							
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	2:10:00	4:00:00	2:10:00	2:10:00	2:10:00	2:10:00
The heat pump defrosts	--	No	Yes	No	No	No	No
Complete Cycles	--	0	1	0	0	0	0
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Voltage	V	398.3	398.8	399.9	398.4	398.4	398.3
Current input of the unit	A	27.56	17.49	11.05	8.17	27.40	27.56
Power input of the unit	kW	19.832	8.894	5.652	5.135	19.736	19.832
Test conditions indoor unit							
Inlet Water temperature, DB	°C	29.86	27.11	24.66	21.47	31.54	29.86
Outlet Water temperature, DB	°C	33.98	29.78	26.98	24.00	35.29	33.98

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Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-7.00	2.02	7.01	12.01	-10.00	-7.00
Air inlet temperature, WB	°C	-7.89	1.04	6.00	11.00	-10.84	-7.89
Summary of the results							
Total heating capacity	kW	57.429	37.278	32.543	35.488	52.316	57.429
Effective power input	kW	20.306	9.368	6.126	5.609	20.210	20.306
Coefficient of performance (COP)	--	2.83	3.98	5.31	6.33	2.59	2.83
Compressor frequency	Hz	85	45	30	30	85	85
Water flow	m³/h	12.00	12.00	12.00	12.00	12.00	12.00
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)	64.920	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	64.920	52.316	2.59	0.00	1.00	2.59	
F	57.429	57.429	2.83	0.00	1.00	2.83	
A	57.429	57.429	2.83	0.00	1.00	2.83	
B	34.957	37.278	3.98	0.00	0.94	3.98	
C	22.472	32.543	5.31	0.99	0.69	5.29	
D	9.988	35.488	6.33	0.99	0.28	6.17	
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	0.032
Standby mode [P_{SB}]	kW	0.032
Crankcase heater [P_{CK}]	kW	0.070
Off mode [P_{OFF}]	kW	0.032

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.14
SCOP:	kWh/kWh	4.13
Q_H :	kWh/year	134125
Q_{HE} :	kWh/year	32451
$\eta_{s,h}$	%	162.3
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A++

Appendix I Test results

Table 2.	Heating mode(Medium temperature application):					P	
Model	Model A (Indoor unit: PEVH-90V4DEA/IA; Outdoor unit: PEVH-90V4DEA)						
Product type	Air to Water	Heating season	<input checked="" type="checkbox"/> Average	<input type="checkbox"/> Warmer	<input type="checkbox"/> 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	$(-7-16)/(T_{designh-16})$	88	N/A	N/A	-7(-8)	a / 52	
B	$(+2-16)/(T_{designh-16})$	54	N/A	N/A	2(1)	a / 42	
C	$(+7-16)/(T_{designh-16})$	35	N/A	N/A	7(6)	a / 36	
D	$(+12-16)/(T_{designh-16})$	15	N/A	N/A	12(11)	a / 30	
E	$(TOL-16)/(T_{designh-16})$				TOL	a / 55.3	
F	$(T_{bivalent-16})/(T_{designh-16})$				Tbiv	a / 52	
G	$(-15-16)/(T_{designh-16})$	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, the capacity is 66586.94 W, the power is 23548.10W, the COP is 2.83W/W.							
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	2:10:00	2:10:00	2:10:00	2:10:00	2:10:00	2:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Complete Cycles	--	0	0	0	0	0	0
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Voltage	V	397.1	398.3	398.6	398.7	397.1	397.1
Current input of the unit	A	53.36	21.01	13.21	11.05	54.75	53.36
Power input of the unit	kW	32.389	10.997	6.525	5.316	33.523	32.389
Test conditions indoor unit							
Inlet Water temperature, DB	°C	44.36	37.40	32.10	25.49	47.88	44.36
Outlet Water temperature, DB	°C	52.14	42.07	36.03	29.98	55.24	52.14

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Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.99	2.01	7.00	12.00	-10.00	-6.99
Air inlet temperature, WB	°C	-7.82	0.99	6.00	11.00	-10.86	-7.82
Summary of the results							
Total heating capacity	kW	65.619	39.968	33.738	38.601	62.598	65.619
Effective power input	kW	32.680	11.289	6.816	5.607	33.814	32.680
Coefficient of performance (COP)	--	2.01	3.54	4.95	6.88	1.85	2.01
Compressor frequency	Hz	95	41	30	30	95	95
Water flow	m³/h	7.40	7.40	7.40	7.40	7.40	7.40
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)	74.178	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	74.178	62.598	1.85	0.00	1.00	1.85	
F	65.619	65.619	2.01	0.00	1.00	2.01	
A	65.619	65.619	2.01	0.00	1.00	2.01	
B	39.942	39.968	3.54	0.00	1.00	3.54	
C	25.677	33.738	4.95	0.99	0.76	4.93	
D	11.412	38.601	6.88	0.99	0.30	6.72	
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	0.032
Standby mode [P_{SB}]	kW	0.032
Crankcase heater [P_{CK}]	kW	0.070
Off mode [P_{OFF}]	kW	0.032

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	3.62
SCOP:	kWh/kWh	3.61
Q_{H_i} :	kWh/year	153252
Q_{HE} :	kWh/year	42395
$\eta_{s,h}$	%	141.6



Appendix II Marking plate

Nameplate

Model A Indoor unit: PEVH-90V4DEA/IA




DC Inverter Type Air To Water Unit

Model Number:	PEVH-90V4DEA/IA
Source type:	Air - Water
Power supply:	220-240V~/50Hz
Fuse Indoor unit:	10 A/C
Operating range (outdoor):	-25 - 45°C
Max. heat pump water temp:	58°C
Max. system water temp:	75°C
Sound power level LwA:	0 dB(A)
Weight w/o packaging:	10 kg
Rated Input Power-Cooling:	 24254 W
Rated Input Power-Heating:	 28610 W
Electrical Shockproof:	Class I

For indoor use only. Installation & service by licensed mechanic only.

Installation and operation only in according to the manufacturer's instructions.

Serial Nr: WAL0018-ID-2001



Zhongshan Amitime Electric Co.,LTD.
5th Yandong Rd, Dayan Industrial Zone, Huangpu Town, 528429
Zhongshan City,Guangdong, CHINA.


Remark: Select Model A Indoor unit: PEVH-90V4DEA/IA as the nameplate representative, Model B Indoor unit: PEVH-90V4DA/IA is similar to Model A except for the model name

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Appendix II Marking plate

Nameplate

Model A Outdoor unit: PEVH-90V4DEA



DC Inverter Type Air To Water Unit


Model Number:	O:WAL0018
Model Number:	PEVH-90V4DEA
Input Voltage:	380-415V,3N~/50Hz
Input Power-Cooling:	6650-24254 W
Input Power-Heating:	8312-28610 W
Min.Circuit Ampacity:	20 A
Circuit Breaker:	80 A
Cooling Capacity:	22400-61200 W
Heating Capacity:	27400-88600 W
Rated Input Power-Cooling:	24254 W
Rated Input Power-Heating:	28610 W
Operation pressure (low side):	1.2MPa
Operation pressure (high side):	4.2MPa
Max allowable pressure:	4.2MPa
Refrigerant:	R410A / 8000g x 2
Max EER Cooling:	3.4 W/W
Max COP Heating:	4.5 W/W
Water Flow:	15.5 m3/h
Net Weight:	600 kg
Moisture Resistance:	IPX4
Electrical Shockproof:	Class I

For outdoor use only. Installation & service by licensed mechanic only.

Contains fluorinated greenhouse gases covered by the Kyoto protocol.

GWP:2088: 33.40 tonnes CO2 equivalent.

Hermetically sealed. **WAL0018-OD-1001**



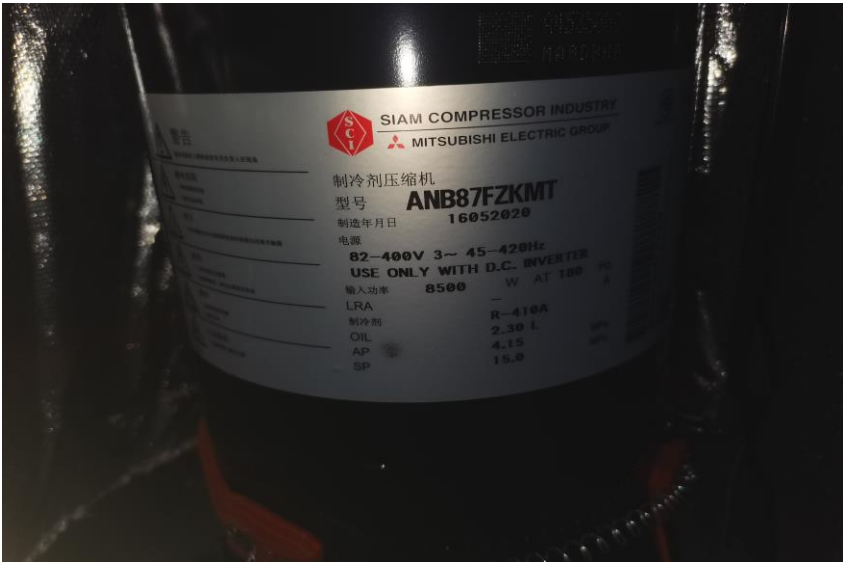
Zhongshan Amitime Electric Co.,LTD.
5th Yandong Rd, Dayan Industrial Zone, Huangpu Town, 528429
Zhongshan City,Guangdong, CHINA.

Remark: Select Model A Outdoor unit: PEVH-90V4DA as the nameplate representative, Model B Outdoor unit: PEVH-90V4DA is similar to Model A except for the model name

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Appendix III photo documentaiton

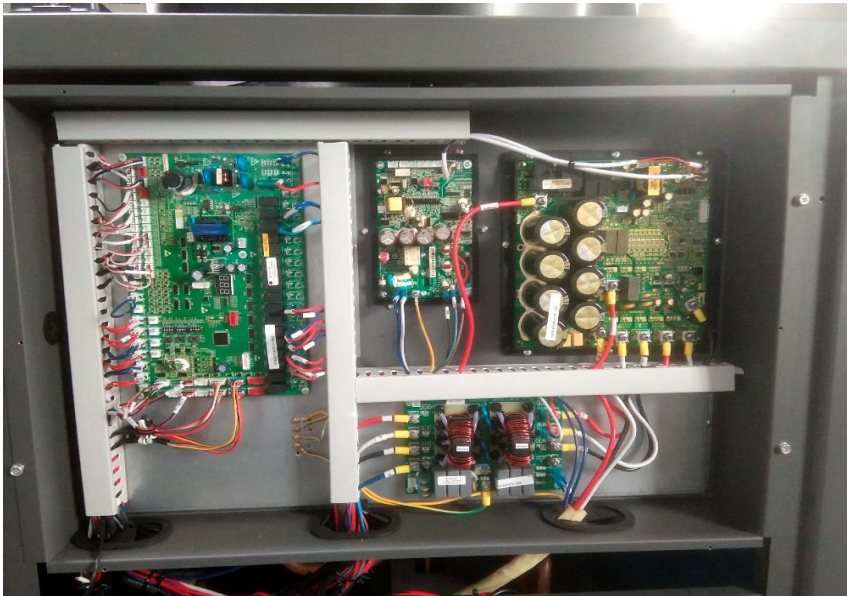
Details of:	Outdoor unit: PEVH-90V4DEA
View:	
<input type="checkbox"/> General	
<input type="checkbox"/> Front	
<input type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Factory's address:	
<input type="checkbox"/> Bottom	

Details of:	Compressor
View:	
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<input checked="" type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Top	
<input type="checkbox"/> Bottom	

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Appendix III photo documentaiton

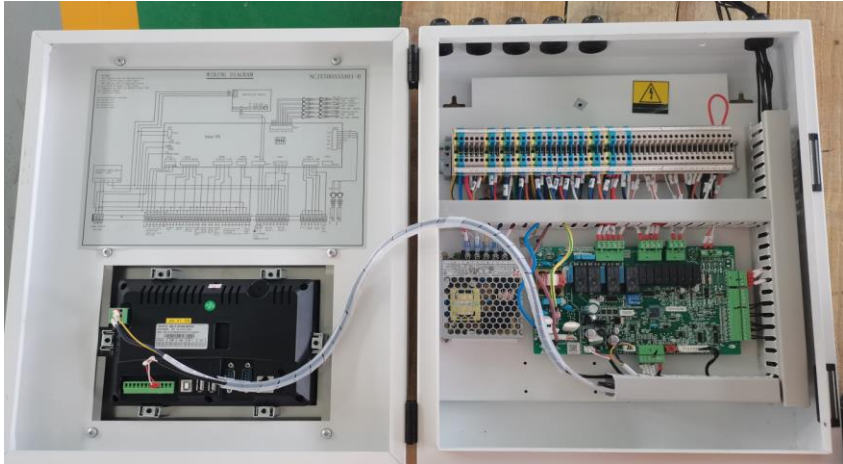
Details of:	Fan Motor
View:	
<input type="checkbox"/> General	
<input type="checkbox"/> Front	
<input type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Top	
<input type="checkbox"/> Bottom	

Details of:	Main Control Board for PEVH-90V4DEA
View:	
<input type="checkbox"/> General	
<input type="checkbox"/> Front	
<input type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Top	
<input type="checkbox"/> Bottom	

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Appendix III photo documentaiton

Details of:	Indoor unit: PEVH-90V4DEA/IA
<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:	Main Board for PEVH-90V4DEA/IA
<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>	

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Appendix IV Construction data form

Part		Technical data
1. Compressor		
	Manufacture:	SIAM COMPRESS OR INDUSTRY CO. LTD.
	Type:	ANB87FZKMT*2
	Rated capacity:	8500W*2
	Serial-number:	ANB87FZKMT_0002454_0-Y-M230
	Specification:	82-400V; 3N~; 45-420Hz; R410A
2. Condenser		
	Manufacture:	Gimleo Heat Exchanger Co..Ltd.
	Type:	GAS30-CMF
	Heat exchanger:	Efficient tank
	Dimension (mm):	577.5(W)mm*430(D)mm*606.7(H)mm
3. Evaporator		
	Manufacture:	Foshan Huize Heat Exchanger Equipment Co., LTD
	Type:	PEVH-90V4DA
	Heat exchanger:	Finned heat exchanger
	Dimension (mm):	(325(W)mm*794(D)mm*1396(H)mm) *2
4. Fan motor		
	Manufacture:	Zhejiang Kemaio Intelligent Electromechanical Inc.
	Type:	ODS760C-190B4.EC.V-01B(ME100S-1.1)*2
	Fan type:	4 blades
	Specification:	DC 310V; 950 r/min; 1.1kw; 8P; 50Hz
5. Main control board		
	Manufacture:	Hangzhou Leaderway Electronics Co., Ltd.
	Type:	HMM4W-11A01
	Specification:	220-240V; 50Hz;

Appendix V Equipment List

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	Electromagnetic flowmeter	YOKOGAWA	AXF050G	S5U705933826	2023-04-01
2	Platinum resistance--dry-bulb temperature	CHINO	PT100	P03-23	2023-04-01
3	Platinum resistance--wet-bulb temperature	CHINO	PT100	P04-23	2023-04-01
4	Pressure transmitter	—	(0~6) MPa	5445069	2023-04-01
5	Platinum resistance--water inlet temperature	CHINO	PT100	P02-23	2023-04-01
6	Platinum resistance--water outlet temperature	CHINO	PT100	P01-23	2023-04-01
7	Electrical parameter measuring instrument	YOKOGAWA	WT333E	C3TK06062E	2023-04-01
8	Three-phase regulated power supply	Jiangsu Diye Instrument Technology Co. LTD	DYA-3300	20180011183	2023-04-01

-- End of Report --