

Technical Report No.: 64.181.22.04503.01 Rev.00

Date: 2023-04-14

Client:	Report holder's name:	Guangzhou Green Power Technology Co., Ltd
	Report holder's Address:	Building B2, No. 79, Jingquan 3rd Road, Huangpu District, 511356, Guangzhou, China
	Contact person of applicant:	Mr. Jiang Tianbao
	Manufacturer's name:	Guangzhou Green Power Technology Co., Ltd
	Manufacturer's address:	Building B2, No. 79, Jingquan 3rd Road, Huangpu District, 511356, Guangzhou, China
Factory:	Factory's name:	Guangzhou Green Power Technology Co., Ltd
	Factory's address:	Building B2, No. 79, Jingquan 3rd Road, Huangpu District, 511356, Guangzhou, China
Test object:	Product:	Heat Pump (DC Inverter heat pump)
	Model:	Master plus 60; Master plus 90; Master plus 120; Master plus 160;
	Trade name:	--
Test specification:	☒	EN 14825:2022
	☒	EN 14511-3:2022
Purpose of examination:	Test according to the test specification	
	☒	(EU) No 813/2013
	☒	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.

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 :	Master plus 60; Master plus 90; Master plus 120; Master plus 160;
Rated Voltage (V) :	220-240V~
Rated Frequency (Hz) :	50
Rated Power (W) :	2800W for Master plus 60; 3500W for Master plus 90; 4700W for Master plus 120; 6500W for Master plus 160;
Rated Current (A) :	12.0A for Master plus 60; 15.0A for Master plus 90; 20.0A for Master plus 120; 28.0A for Master plus 160;
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 (kg) :	R290 / 0.55kg for Master plus 60; 0.75kg for Master plus 90; 1.40kg for Master plus 120; 1.70kg for Master plus 160;
Declared parameters :	☒ Average ☐ Warmer ☐ Colder
Sound power level dB(A) :	N/A
Series No :	GPMASSTERPLUS60230215052 for Master plus 60; GPMASSTERPLUS90230216041 for Master plus 90; GPMASSTERPLUS12023021800 for Master plus 120; GPMASSTERPLUS160230218001 for Master plus 160;

2 Order

2.1 Date of Purchase Order, Customer's Reference

2022-12-07 ,

Guangzhou Green Power Technology Co., Ltd

2.2 Test Sample(s)

- Reception date(s): 2023-01-08

- Location(s) of reception:

For Energy test:

Guangzhou Customs District Technology Center

Address: No.3, Desheng East Road, Shunde, Daliang, Foshan, Guangdong, China

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

2.3 Date(s) of Testing

2023-01-08 to 2023-03-08

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 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 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) 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.
- 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 14825:2022.

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

Appendix 1 Test results

Table 1.	Heating mode(Low temperature application):						P	
Model	Master plus 60							
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	$(-7-16)/(T_{designh}-16)$	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 6.273kW, the power is 1.358kW, the COP is 4.62kW/kW.								
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	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	
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	230.4	230.7	230.8	230.8	230.4	230.4	
Current input of the unit	A	8.16	3.17	1.80	1.59	9.41	8.16	
Power input of the unit	kW	1.874	0.716	0.385	0.330	2.163	1.874	
Test conditions indoor unit								
Inlet Water temperature, DB	°C	29.77	27.28	25.46	23.13	30.77	29.77	
Outlet Water temperature, DB	°C	33.97	29.92	27.31	25.29	35.20	33.97	

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.99	2.03	7.03	12.01	-9.98	-6.99
Air inlet temperature, WB	°C	-7.99	1.00	6.01	11.01	-10.98	-7.99
Summary of the results							
Total heating capacity	kW	5.239	3.289	2.301	2.697	5.523	5.239
Effective power input	kW	1.858	0.700	0.369	0.314	2.147	1.858
Coefficient of performance (COP)	--	2.82	4.70	6.24	8.59	2.57	2.82
Compressor frequency	Hz	75	35	20	20	90	75
Water flow	m³/h	1.08	1.08	1.08	1.08	1.08	1.08
Remark: -							
3.Calculation/conclusion for SCOP(Average):							
Tdesignh(°C)	-10	Tbiv(°C)		-7			
Pdesignh(kW)	5.923	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	5.923	5.523	2.57	0.90	1.00	2.57	
F	5.239	5.239	2.82	0.90	1.00	2.82	
A	5.239	5.239	2.82	0.90	1.00	2.82	
B	3.189	3.289	4.70	0.90	0.97	4.70	
C	2.050	2.301	6.24	0.90	0.89	6.17	
D	0.911	2.697	8.59	0.90	0.34	7.18	
CR: part load divided by capacity;							

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.014
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	4.72
SCOP:	kWh/kWh	4.71
Q_H :	kWh/year	12236
Q_{HE} :	kWh/year	2599
$\eta_{s,h}$	%	185.3
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

Appendix I Test results

Appendix 1 Test Results

Table 2.	Heating mode(Medium temperature application):						P	
Model	Master plus 60							
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	$(-7-16)/(T_{designh}-16)$	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 6.064kW, the power is 2.030kW, the COP is 2.99kW/kW.								
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	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	
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	230.5	230.7	230.8	230.8	230.4	230.5	
Current input of the unit	A	10.12	3.75	2.00	1.66	10.23	10.12	
Power input of the unit	kW	2.332	0.859	0.448	0.365	2.358	2.332	
Test conditions indoor unit								
Inlet Water temperature, DB	°C	45.42	37.92	33.27	28.93	49.39	45.42	
Outlet Water temperature, DB	°C	51.99	41.93	36.55	32.08	55.34	51.99	

Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.98	2.03	7.02	12.01	-9.99	-6.98
Air inlet temperature, WB	°C	-7.98	1.00	6.00	11.00	-10.99	-7.98

Summary of the results

Total heating capacity	kW	4.966	3.110	2.146	2.391	4.484	4.966
Effective power input	kW	2.311	0.838	0.427	0.344	2.337	2.311
Coefficient of performance (COP)	--	2.15	3.71	5.02	6.95	1.92	2.15
Compressor frequency	Hz	78	37	21*	20	81	78
Water flow	m³/h	0.66	0.66	0.66	0.66	0.66	0.66

Remark: *In part condition, this compressor frequency is lowest.

3.Calculation/conclusion for SCOP(Average):

Tdesignh(°C)	-10	Tbiv(°C)	-7
Pdesignh(kW)	5.614	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	5.614	4.484	1.92	0.90	1.00	1.92
F	4.966	4.966	2.15	0.90	1.00	2.15
A	4.966	4.966	2.15	0.90	1.00	2.15
B	3.023	3.110	3.71	0.90	0.97	3.71
C	1.943	2.146	5.02	0.90	0.91	4.97
D	0.864	2.391	6.95	0.90	0.36	5.91

CR: part load divided by capacity;

Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.014
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	3.72
SCOP:	kWh/kWh	3.71
Q_H :	kWh/year	11598
Q_{HE} :	kWh/year	3123
$\eta_{s,h}$	%	145.5
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

Appendix I Test results

Appendix 1 Test results

Table 3.	Heating mode(Low temperature application):						P	
Model	Master plus 90							
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	$(-7-16)/(T_{designh}-16)$	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 9.147kW, the power is 1.996kW, the COP is 4.58kW/kW.								
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	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	
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	230.2	230.5	230.3	230.4	230.3	230.2	
Current input of the unit	A	12.01	4.59	3.35	2.91	11.95	12.01	
Power input of the unit	kW	2.761	1.037	0.511	0.442	2.735	2.761	
Test conditions indoor unit								
Inlet Water temperature, DB	°C	29.64	27.18	25.29	23.30	31.47	29.64	
Outlet Water temperature, DB	°C	33.98	29.87	27.20	25.34	35.44	33.98	

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.96	2.02	7.03	12.01	-9.98	-6.96
Air inlet temperature, WB	°C	-7.97	1.00	6.01	11.01	-10.98	-7.97
Summary of the results							
Total heating capacity	kW	7.918	4.912	3.270	3.710	7.235	7.918
Effective power input	kW	2.738	1.014	0.488	0.419	2.711	2.738
Coefficient of performance (COP)	--	2.89	4.85	6.70	8.86	2.67	2.89
Compressor frequency	Hz	83	38	20	20	84	83
Water flow	m³/h	1.58	1.58	1.58	1.58	1.58	1.58
Remark: -							
3.Calculation/conclusion for SCOP(Average):							
Tdesignh(°C)	-10	Tbiv(°C)		-7			
Pdesignh(kW)	8.951	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	8.951	7.235	2.67	0.90	1.00	2.67	
F	7.918	7.918	2.89	0.90	1.00	2.89	
A	7.918	7.918	2.89	0.90	1.00	2.89	
B	4.820	4.912	4.85	0.90	0.98	4.85	
C	3.098	3.270	6.70	0.90	0.95	6.70	
D	1.377	3.710	8.86	0.90	0.37	7.58	
CR: part load divided by capacity;							

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.030
Standby mode [P_{SB}]	kW	0.008
Crankcase heater [P_{CK}]	kW	0.043
Off mode [P_{OFF}]	kW	0.008

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	4.91
SCOP:	kWh/kWh	4.89
Q_H :	kWh/year	18493
Q_{HE} :	kWh/year	3780
$\eta_{s,h}$	%	192.7
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

Appendix I Test results

Appendix 1 Test Results

Table 4.	Heating mode(Medium temperature application):						P	
Model	Master plus 90							
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	$(-7-16)/(T_{designh}-16)$	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 9.118kW, the power is 3.070kW, the COP is 2.97kW/kW.								
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	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	
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	230.2	230.5	230.2	230.3	230.2	230.2	
Current input of the unit	A	14.75	5.76	4.40	3.50	14.65	14.75	
Power input of the unit	kW	3.374	1.315	0.666	0.523	3.365	3.374	
Test conditions indoor unit								
Inlet Water temperature, DB	°C	45.32	37.80	33.60	28.89	49.52	45.32	
Outlet Water temperature, DB	°C	52.00	41.95	36.39	31.95	55.37	52.00	

Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-7.00	2.03	7.13	12.02	-10.00	-7.00
Air inlet temperature, WB	°C	-8.00	1.00	6.00	11.00	-11.00	-8.00

Summary of the results

Total heating capacity	kW	7.581	4.726	3.179	3.482	6.634	7.581
Effective power input	kW	3.355	1.296	0.647	0.504	3.346	3.355
Coefficient of performance (COP)	--	2.26	3.65	4.91	6.91	1.98	2.26
Compressor frequency	Hz	85	39	23*	20	85	85
Water flow	m³/h	0.99	0.99	0.99	0.99	0.99	0.99

Remark: *In part condition, this compressor frequency is lowest.

3.Calculation/conclusion for SCOP(Average):

Tdesignh(°C)	-10	Tbiv(°C)	-7
Pdesignh(kW)	8.569	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	8.569	6.634	1.98	0.90	1.00	1.98
F	7.581	7.581	2.26	0.90	1.00	2.26
A	7.581	7.581	2.26	0.90	1.00	2.26
B	4.614	4.726	3.65	0.90	0.98	3.65
C	2.966	3.179	4.91	0.90	0.93	4.91
D	1.318	3.482	6.91	0.90	0.38	5.94

CR: part load divided by capacity;

Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.030
Standby mode [P_{SB}]	kW	0.008
Crankcase heater [P_{CK}]	kW	0.043
Off mode [P_{OFF}]	kW	0.008

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	3.71
SCOP:	kWh/kWh	3.70
Q_H :	kWh/year	17704
Q_{HE} :	kWh/year	4781
$\eta_{s,h}$	%	145.1
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

Appendix I Test results

Appendix 1 Test results

Table 5.	Heating mode(Low temperature application):						P	
Model	Master plus 120							
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	$(-7-16)/(T_{designh}-16)$	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 12.149kW, the power is 2.632kW, the COP is 4.62kW/kW.								
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	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	
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	229.8	230.4	230.1	230.3	229.9	229.8	
Current input of the unit	A	17.42	7.16	4.53	3.71	16.37	17.42	
Power input of the unit	kW	3.842	1.468	0.692	0.564	3.599	3.842	
Test conditions indoor unit								
Inlet Water temperature, DB	°C	29.58	27.24	25.21	23.20	31.22	29.58	
Outlet Water temperature, DB	°C	34.04	30.00	27.00	25.20	35.28	34.04	

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix I Test results

Appendix 1 Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.97	2.01	7.04	12.00	-9.99	-6.97
Air inlet temperature, WB	°C	-7.98	1.00	6.01	11.00	-10.99	-7.98
Summary of the results							
Total heating capacity	kW	10.769	6.559	4.287	4.772	9.742	10.769
Effective power input	kW	3.787	1.413	0.637	0.509	3.544	3.787
Coefficient of performance (COP)	--	2.84	4.64	6.73	9.37	2.75	2.84
Compressor frequency	Hz	86	37	20	20	81	86
Water flow	m³/h	2.08	2.08	2.08	2.08	2.08	2.08
Remark: -							
3.Calculation/conclusion for SCOP(Average):							
Tdesignh(°C)	-10	Tbiv(°C)		-7			
Pdesignh(kW)	12.174	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	12.174	9.742	2.75	0.90	1.00	2.75	
F	10.769	10.769	2.84	0.90	1.00	2.84	
A	10.769	10.769	2.84	0.90	1.00	2.84	
B	6.555	6.559	4.64	0.90	1.00	4.64	
C	4.214	4.287	6.73	0.90	0.98	6.73	
D	1.873	4.772	9.37	0.90	0.39	8.12	
CR: part load divided by capacity;							

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.025
Standby mode [P_{SB}]	kW	0.008
Crankcase heater [P_{CK}]	kW	0.032
Off mode [P_{OFF}]	kW	0.008

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	4.81
SCOP:	kWh/kWh	4.81
Q_H :	kWh/year	25150
Q_{HE} :	kWh/year	5234
$\eta_{s,h}$	%	189.2
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

Appendix I Test results

Table 6.	Heating mode(Medium temperature application):						P
Model	Master plus 120						
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	$(-7-16)/(T_{designh}-16)$	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 11.944kW, the power is 4.123kW, the COP is 2.90kW/kW.

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	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
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	229.7	230.2	230.0	230.1	229.6	229.7
Current input of the unit	A	20.05	8.47	5.43	4.53	20.76	20.05
Power input of the unit	kW	4.450	1.736	0.833	0.689	4.619	4.450
Test conditions indoor unit							
Inlet Water temperature, DB	°C	45.16	37.72	33.43	28.88	48.98	45.16
Outlet Water temperature, DB	°C	52.00	41.99	36.21	32.07	55.43	52.00

Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.99	2.13	7.02	12.01	-9.99	-6.99
Air inlet temperature, WB	°C	-7.99	1.00	6.00	11.00	-11.00	-7.99

Summary of the results

Total heating capacity	kW	10.114	6.234	4.116	4.733	9.516	10.114
Effective power input	kW	4.414	1.700	0.797	0.653	4.584	4.414
Coefficient of performance (COP)	--	2.29	3.67	5.16	7.24	2.08	2.29
Compressor frequency	Hz	85	37	21*	20	85	85
Water flow	m³/h	1.29	1.29	1.29	1.29	1.29	1.29

Remark: *In part condition, this compressor frequency is lowest.

3.Calculation/conclusion for SCOP(Average):

Tdesignh(°C)	-10	Tbiv(°C)	-7
Pdesignh(kW)	11.433	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	11.433	9.516	2.08	0.90	1.00	2.08
F	10.114	10.114	2.29	0.90	1.00	2.29
A	10.114	10.114	2.29	0.90	1.00	2.29
B	6.156	6.234	3.67	0.90	0.99	3.67
C	3.958	4.116	5.16	0.90	0.96	5.16
D	1.759	4.733	7.24	0.90	0.37	6.20

CR: part load divided by capacity;

Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.025
Standby mode [P_{SB}]	kW	0.008
Crankcase heater [P_{CK}]	kW	0.032
Off mode [P_{OFF}]	kW	0.008

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	3.79
SCOP:	kWh/kWh	3.79
Q_H :	kWh/year	23621
Q_{HE} :	kWh/year	6236
$\eta_{s,h}$	%	148.5
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

Appendix I Test results

Appendix 1 Test results

Table 7.	Heating mode(Low temperature application):						P	
Model	Master plus 160							
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	$(-7-16)/(T_{designh}-16)$	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 16.166kW, the power is 3.535kW, the COP is 4.57kW/kW.								
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	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	
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	229.3	230.2	230.0	230.1	229.2	229.3	
Current input of the unit	A	24.37	9.19	5.61	4.93	25.94	24.37	
Power input of the unit	kW	5.372	1.902	0.875	0.765	5.739	5.372	
Test conditions indoor unit								
Inlet Water temperature, DB	°C	29.46	27.15	25.24	23.37	31.09	29.46	
Outlet Water temperature, DB	°C	33.94	29.87	27.04	25.46	35.20	33.94	

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix I Test results

Appendix 1 Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.98	2.04	7.02	12.00	-9.99	-6.98
Air inlet temperature, WB	°C	-7.98	1.00	6.00	11.00	-10.85	-7.98
Summary of the results							
Total heating capacity	kW	14.270	8.702	5.720	6.679	13.124	14.270
Effective power input	kW	5.330	1.861	0.834	0.724	5.698	5.330
Coefficient of performance (COP)	--	2.68	4.68	6.86	9.22	2.30	2.68
Compressor frequency	Hz	88	37	20	20	95	88
Water flow	m³/h	2.76	2.76	2.76	2.76	2.76	2.76
Remark: -							
3.Calculation/conclusion for SCOP(Average):							
Tdesignh(°C)	-10	Tbiv(°C)		-7			
Pdesignh(kW)	16.131	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	16.131	13.124	2.30	0.90	1.00	2.30	
F	14.270	14.270	2.68	0.90	1.00	2.68	
A	14.270	14.270	2.68	0.90	1.00	2.68	
B	8.686	8.702	4.68	0.90	1.00	4.68	
C	5.584	5.720	6.86	0.90	0.98	6.86	
D	2.482	6.679	9.22	0.90	0.37	7.89	
CR: part load divided by capacity;							

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.033
Standby mode [P_{SB}]	kW	0.016
Crankcase heater [P_{CK}]	kW	0.045
Off mode [P_{OFF}]	kW	0.016

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	4.78
SCOP:	kWh/kWh	4.77
Q_H :	kWh/year	33327
Q_{HE} :	kWh/year	6983
$\eta_{s,h}$	%	187.9
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

Appendix I Test results

Appendix 1 Test Results

Table 8.	Heating mode(Medium temperature application):						P	
Model	Master plus 160							
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	$(-7-16)/(T_{designh}-16)$	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 16.169kW, the power is 5.604kW, the COP is 2.89kW/kW.								
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	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	
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	229.9	230.0	230.5	230.1	229.8	229.9	
Current input of the unit	A	29.87	12.41	5.45	5.78	31.23	29.87	
Power input of the unit	kW	6.684	2.492	0.957	0.924	6.995	6.684	
Test conditions indoor unit								
Inlet Water temperature, DB	°C	44.96	37.82	33.53	28.94	49.21	44.96	
Outlet Water temperature, DB	°C	51.92	42.06	36.25	32.15	55.40	51.92	

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.97	2.00	7.00	12.00	-10.00	-6.97
Air inlet temperature, WB	°C	-7.98	1.00	6.00	11.00	-11.01	-7.98

Summary of the results

Total heating capacity	kW	13.972	8.598	5.491	6.458	12.411	13.972
Effective power input	kW	6.635	2.443	0.909	0.875	6.947	6.635
Coefficient of performance (COP)	--	2.11	3.52	6.04	7.38	1.79	2.11
Compressor frequency	Hz	93	40	21*	20	95	93
Water flow	m³/h	1.75	1.75	1.75	1.75	1.75	1.75

Remark: *In part condition, this compressor frequency is lowest.

3.Calculation/conclusion for SCOP(Average):

Tdesignh(°C)	-10	Tbiv(°C)	-7
Pdesignh(kW)	15.795	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	15.795	12.411	1.79	0.90	1.00	1.79
F	13.972	13.972	2.11	0.90	1.00	2.11
A	13.972	13.972	2.11	0.90	1.00	2.11
B	8.505	8.598	3.52	0.90	0.99	3.52
C	5.467	5.491	6.04	0.90	1.00	6.04
D	2.430	6.458	7.38	0.90	0.38	6.33

CR: part load divided by capacity;

Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.033
Standby mode [P_{SB}]	kW	0.016
Crankcase heater [P_{CK}]	kW	0.045
Off mode [P_{OFF}]	kW	0.016

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	3.78
SCOP:	kWh/kWh	3.77
Q_H :	kWh/year	32632
Q_{HE} :	kWh/year	8651
$\eta_{s,h}$	%	147.9
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

Appendix II Marking plate

Nameplate

Model: Master plus 60

DC Inverter heat pump		
Model:		Master plus 60
Heating Capacity	kW	6.2
Heating Input	kW	1.36
Heating Current	A	6.0
COP	W/W	4.56
Cooling Capacity	kW	5.9
Cooling Input	kW	1.54
Cooling Current	A	6.9
EER	W/W	3.82
Rated Voltage/Frequency	V/Hz	220-240V~, 50Hz
Rated Input Power	kW	2.8
Rated Input Current	A	12
High/Low cut-off pressure value	MPa	3.2/1.3
Refrigerant type/charge/GWP	 .../kg	R290/0.55/3
CO ₂ equivalent		0.00165t
Waterproof grade		IPX4
Electrical shockproof		I
Noise	dB(A)	35
Max water outlet temperature	°C	75
Use ambient temperature	°C	-25~45
Diameter of water connection		DN25
Rating water flow	m ³ /h	1.07
Internal pressure drop of rating water flow	kPa	30
Min/Max heating water pressure	MPa	0.05/0.3
Net dimensions(L/W/H)	mm	976/450/688
Net weight	kg	70
Rated test conditions: Heating: Ambient temp(DB/WB):7 °C/6 °C Water temp.(In/Out):30 °C/35 °C Cooling: Ambient temp.(DB/WB):35 °C/24 °C, Water temp.(In/Out):23 °C/18 °C		
Guangzhou Green Power Technology Co., Ltd Building B2, No. 79, Jingquan 3rd Road, Huangpu District, 511356, Guangzhou, China		
  		

Appendix II Marking plate

Nameplate

Model: Master plus 90

DC Inverter heat pump		
Model:		Master plus 90
Heating Capacity	kW	9.22
Heating Input	kW	2.02
Heating Current	A	9.0
COP	W/W	4.56
Cooling Capacity	kW	8.9
Cooling Input	kW	2.34
Cooling Current	A	10.4
EER	W/W	3.81
Rated Voltage/Frequency	V/Hz	220-240V~, 50Hz
Rated Input Power	kW	3.5
Rated Input Current	A	15
High/Low cut-off pressure value	MPa	3.2/1.3
Refrigerant type/charge/GWP	 .../kg	R290/0.75/3
CO ₂ equivalent		0.00225t
Waterproof grade		IPX4
Electrical shockproof		I
Noise	dB(A)	36
Max water outlet temperature	°C	75
Use ambient temperature	°C	-25~45
Diameter of water connection		DN25
Rating water flow	m ³ /h	1.59
Internal pressure drop of rating water flow	kPa	30
Min/Max heating water pressure	MPa	0.05/0.3
Net dimensions(L/W/H)	mm	1106/450/835
Net weight	kg	80
Rated test conditions: Heating: Ambient temp(DB/WB):7 °C/6 °C Water temp.(In/Out):30 °C/35 °C Cooling: Ambient temp.(DB/WB):35 °C/24 °C, Water temp.(In/Out):23 °C/18 °C		
Guangzhou Green Power Technology Co., Ltd Building B2, No. 79, Jingquan 3rd Road, Huangpu District, 511356, Guangzhou, China		
  		

Appendix II Marking plate

Nameplate

Model: Master plus 120

DC Inverter heat pump		
Model:		Master plus 120
Heating Capacity	kW	12.1
Heating Input	kW	2.67
Heating Current	A	11.9
COP	W/W	4.53
Cooling Capacity	kW	11.8
Cooling Input	kW	3.09
Cooling Current	A	13.7
EER	W/W	3.82
Rated Voltage/Frequency	V/Hz	220-240V~, 50Hz
Rated Input Power	kW	4.7
Rated Input Current	A	20
High/Low cut-off pressure value	MPa	3.2/1.3
Refrigerant type/charge/GWP	 .../kg	R290/1.4/3
CO ₂ equivalent		0.0042t
Waterproof grade		IPX4
Electrical shockproof		I
Noise	dB(A)	38
Max water outlet temperature	°C	75
Use ambient temperature	°C	-25~45
Diameter of water connection		DN25
Rating water flow	m ³ /h	2.08
Internal pressure drop of rating water flow	kPa	30
Min/Max heating water pressure	MPa	0.05/0.3
Net dimensions(L/W/H)	mm	976/450/688
Net weight	kg	90
Rated test conditions: Heating: Ambient temp(DB/WB):7 °C/6 °C Water temp.(In/Out):30 °C/35 °C Cooling: Ambient temp.(DB/WB):35 °C/24 °C, Water temp.(In/Out):23 °C/18 °C		
Guangzhou Green Power Technology Co., Ltd Building B2, No. 79, Jingquan 3rd Road, Huangpu District, 511356, Guangzhou, China		
  		

Appendix II Marking plate

Nameplate

Model: Master plus 160

DC Inverter heat pump		
Model:		Master plus 160
Heating Capacity	kW	16.2
Heating Input	kW	3.58
Heating Current	A	15.9
COP	W/W	4.52
Cooling Capacity	kW	15.1
Cooling Input	kW	3.96
Cooling Current	A	17.6
EER	W/W	3.81
Rated Voltage/Frequency	V/Hz	220-240V~, 50Hz
Rated Input Power	kW	6.5
Rated Input Current	A	28
High/Low cut-off pressure value	MPa	3.2/1.3
Refrigerant type/charge/GWP	 .../kg	R290/1.7/3
CO ₂ equivalent		0.0051t
Waterproof grade		IPX4
Electrical shockproof		I
Noise	dB(A)	40
Max water outlet temperature	°C	75
Use ambient temperature	°C	-25~45
Diameter of water connection		DN25
Rating water flow	m ³ /h	2.79
Internal pressure drop of rating water flow	kPa	30
Min/Max heating water pressure	MPa	0.05/0.3
Net dimensions(L/W/H)	mm	1106/450/1603
Net weight	kg	135
Rated test conditions: Heating: Ambient temp.(DB/WB):7 °C/6 °C Water temp.(In/Out):30 °C/35 °C Cooling: Ambient temp.(DB/WB):35 °C/24 °C, Water temp.(In/Out):23 °C/18 °C		
Guangzhou Green Power Technology Co., Ltd Building B2, No. 79, Jingquan 3rd Road, Huangpu District, 511356, Guangzhou, China		
  		

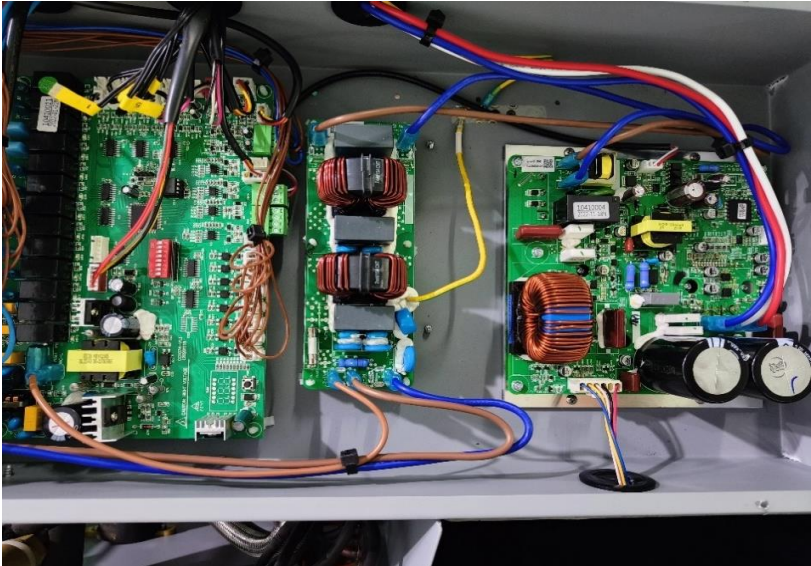
Appendix III photo documentaiton

Details of:	Overall view for Master plus 60
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor for Master plus 60
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentaiton

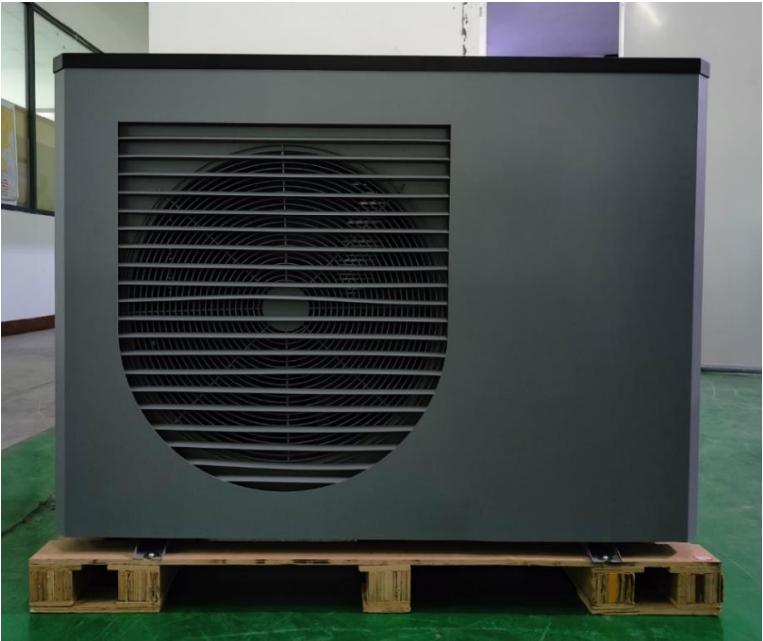
Details of:	Fan Motor for Master plus 60
View:	

Details of:	Main Control Board for Master plus 60
View:	

Doc No.: ITC-TTW0902.02E – Rev.1.1

Appendix III photo documentaiton

Details of:	Water Pump for Master plus 60
View:	

Details of:	Overall view for Master plus 90
View:	

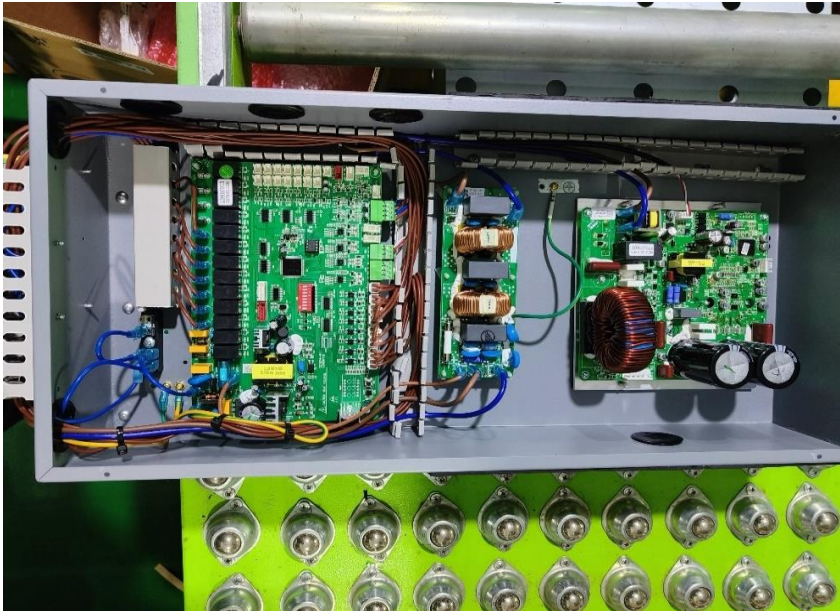
Doc No.: ITC-TTW0902.02E – Rev.1.1

Appendix III photo documentaiton

Details of:	Compressor for Master plus 90
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Fan Motor for Master plus 90
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentaiton

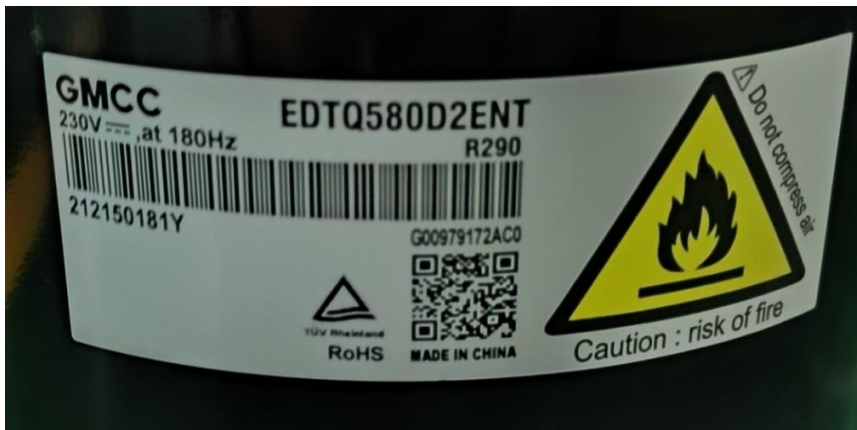
Details of:	Main Control Board for Master plus 90
View:	
☐ General	
☐ Front	
☐ Rear	
☐ Right	
☐ Left	
☐ Top	
☐ Bottom	

Details of:	Water Pump for Master plus 90
View:	
☐ General	
☐ Front	
☐ Rear	
☐ Right	
☐ Left	
☐ Top	
☐ Bottom	

Doc No: ITC-TTW0902.02E – Rev. 11

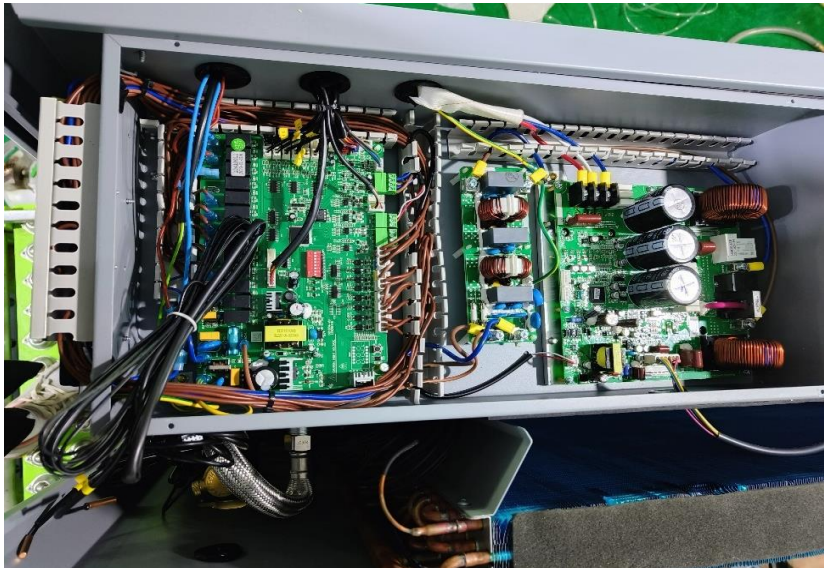
Appendix III photo documentaiton

Details of:	Overall view for Master plus 120
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor for Master plus 120
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentaiton

Details of:	Fan Motor for Master plus 120
View:	
☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board for Master plus 120
View:	
☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentaiton

Details of:	Water Pump for Master plus 120
View:	

Details of:	Overall view for Master plus 160
View:	

Doc No.: ITC-TTW0902.02E – Rev.11

Appendix III photo documentaiton

Details of:	Compressor for Master plus 160
View:	
☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Fan Motor for Master plus 160
View:	
☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentaiton

Details of:	Main Control Board for Master plus 160
View:	
☐ General	
☐ Front	
☐ Rear	
☐ Right	
☐ Left	
☐ Top	
☐ Bottom	

Details of:	Water Pump for Master plus 160
View:	
☐ General	
☐ Front	
☐ Rear	
☐ Right	
☐ Left	
☐ Top	
☐ Bottom	

Doc No: ITC-TTW0902.02E – Rev. 11

Appendix IV Construction data form

Model: Master plus 60		
Part		Technical data
1. Compressor		
	Manufacture:	Guangdong Meizhi Compressor Ltd
	Type:	EDTM310D85EMT
	Rated capacity:	-
	Serial-number:	212173923S
	Specification:	DC161V; at 180Hz; R290
2. Condenser		
	Manufacture:	Danfoss
	Type:	C39L-EZ-28
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	331(L)mm×117(W)mm×45(H)mm
3. Evaporator		
	Manufacture:	Guangdong Wolong Technology Co., Ltd.
	Type:	10220007
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	600(L)mm×260(W)mm×651(H)mm
4. Fan motor		
	Manufacture:	GUANGDONG WELLING MOTOR MANUFACTURING CO., LTD.
	Type:	ZKFP-40-8-126
	Fan type:	3 blade
	Specification:	DC310V; 40W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic INC
	Type:	CC1074
	Specification:	220-240V~; 50/60Hz
6. Water pump		
	Manufacture:	Wilo
	Type:	Para 15/7-50/IPWM1
	Specification:	1-230V; 50/60Hz; 1-50W

Appendix IV Construction data form

Model: Master plus 90		
Part		Technical data
1. Compressor		
	Manufacture:	Guangdong Meizhi Compressor Ltd
	Type:	EDTF420D62EMT
	Rated capacity:	-
	Serial-number:	212203729S
	Specification:	DC230V; at 180Hz; R290
2. Condenser		
	Manufacture:	Danfoss
	Type:	C39L-EZ-42
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	331(L)mm×117(W)mm×62(H)mm
3. Evaporator		
	Manufacture:	Guangdong Wolong Technology Co., Ltd.
	Type:	10220005
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	769.1(L)mm×304.1(W)mm×798(H)mm
4. Fan motor		
	Manufacture:	GUANGDONG WELLING MOTOR MANUFACTURING CO., LTD.
	Type:	ZKSP-100-8-1-1
	Fan type:	3 blade
	Specification:	DC380V; 100W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic INC
	Type:	CC1074
	Specification:	220-240V~; 50/60Hz
6. Water pump		
	Manufacture:	Wilo
	Type:	Para 15/7-50/IPWM1
	Specification:	1-230V; 50/60Hz; 1-50W

Appendix IV Construction data form

Model: Master plus 120		
Part		Technical data
1. Compressor		
	Manufacture:	Guangdong Meizhi Compressor Ltd
	Type:	EDTQ580D2ENT
	Rated capacity:	-
	Serial-number:	212150181Y
	Specification:	DC230V; at 180Hz; R290
2. Condenser		
	Manufacture:	Danfoss
	Type:	C39L-EZ-54
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	332(L)mm×118(W)mm×77(H)mm
3. Evaporator		
	Manufacture:	Guangdong Wolong Technology Co., Ltd.
	Type:	10220004
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	788.7(L)mm×308.7(W)mm×798(H)mm
4. Fan motor		
	Manufacture:	GUANGDONG WELLING MOTOR MANUFACTURING CO., LTD.
	Type:	ZKSP-100-8-1-1
	Fan type:	3 blade
	Specification:	DC380V; 100W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic INC
	Type:	CC1074
	Specification:	220-240V~; 50/60Hz
6. Water pump		
	Manufacture:	Wilo
	Type:	Para 25/9-87/IPWM1
	Specification:	1-230V; 50/60Hz; 3-87W

Appendix IV Construction data form

Model: Master plus 160		
Part		Technical data
1. Compressor		
	Manufacture:	Guangdong Meizhi Compressor Ltd
	Type:	EDTQ750D66ENT
	Rated capacity:	-
	Serial-number:	210507003K
	Specification:	DC230V; at 180Hz; R290
2. Condenser		
	Manufacture:	Danfoss
	Type:	C39L-EZ-68
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	331(L)mm×117(W)mm×94(H)mm
3. Evaporator		
	Manufacture:	Guangdong Wolong Technology Co., Ltd.
	Type:	10220006
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	769.1(L)mm×284.1(W)mm×1554(H)mm
4. Fan motor		
	Manufacture:	GUANGDONG WELLING MOTOR MANUFACTURING CO., LTD.
	Type:	ZKSP-100-8-1-1
	Fan type:	3 blade
	Specification:	DC380V; 100W
5. Main control board		
	Manufacture:	Guangdong Chico Electronic INC
	Type:	CC1074
	Specification:	220-240V~; 50/60Hz
6. Water pump		
	Manufacture:	Wilo
	Type:	Para 25/9-87/IPWM1
	Specification:	1-230V; 50/60Hz; 3-87W



Appendix V Equipment List

No.	Type	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

-- End of Report --