Technical Report No.: 64.181.24.00325.01 Rev.00

Date: 2024-03-27

Client:	Name:	Proteam Europa AS
	Address:	Kokstaddalen 31, 5257 Kokstad, NORWAY
	Contact person:	Harald Einevoll
Manufacturer:	Name:	Proteam Europa AS
	Address:	Kokstaddalen 31, 5257 Kokstad, NORWAY
Factory:	Name:	FOSHAN GUANGTENG NEW ENERGY CO.,LTD
	Address:	Section 2,Yongfeng Industrial Zone Lunjiao, Shunde, 528308 Foshan, Guangdong, People's Republic of China
Test object:	Product:	DC INVERTER HEAT PUMP
	Model:	Pro25i, Pro30i
	Trade mark:	--
Test specification:	☑	EN 14825:2022
	☑	EN 14511-3:2022
	☑	EN 14511-4:2022 Clause 4
	☑	EN 12102-1:2022
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.	

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1 Description of the test object

1.1 Function

Manufacturer's specification for intended use:

The appliance is air to water heat pump.

Manufacturer's specification for predictive use:

According to user manual

1.2 Consideration of the foreseeable use

☐ Not applicable

☑ Covered through the applied standard

☐ Covered by the following comment

☐ Covered by attached risk analysis

1.3 Technical Data

Model :	Pro25i, Pro30i
Rated Voltage (V) :	380-415V，3N~
Rated Frequency (Hz) :	50
Rated Power (W) :	5680W for Pro25i, 8500W for Pro30i
Rated Current (A) :	9.5A for Pro25i, 14.0A for Pro30i
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 / 1.30kg for Pro25i, 1.60kg for Pro30i
Declared parameters :	☑ Average ☐ Warmer ☐ Colder
Sound power level dB(A) :	N/A
Series No :	KSN0140Q00201 for Pro25i, KSN0150Q02476 for Pro30i

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2 Order

2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2022-08-15, 2023-06-21, 2024-01-19

Customer's Reference: Proteam Europa AS

2.2 Test Sample(s)

- Reception date(s): 2022-12-30, 2023-07-07
- Location(s) of reception:

For Energy test:

Guangzhou Customs District Technology Center
(CNAS accredited laboratory with Registration No.CNAS L2322)

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

For Noise tests:

China Quality Certification Centre South China Laboratory
(CNAS accredited laboratory with Registration No.CNAS L4903)

Address: No.11, South of Shenghui Road, Nantou, Zhongshan, Guangdong, China

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

2.3 Date(s) of Testing

2022-12-30 to 2023-01-18, 2023-07-07 to 2023-09-10

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

☒ Decision rule according to ILAC-G8:09/2019 clause 4.2.1 Binary statement for simple acceptance rule or IEC Guide 115:2023, clause 4.3 Simple acceptance was applied.

☐ Decision rule according to customer's requirements was applied. It is:

☐ Decision rule according to ILAC-G8:09/2019 clause 4.2.2 Binary statement with guard band - guard band length = 95 % extended measurement uncertainty, was applied.

☐ Decision rule (based on ILAC-G8:09/2019 clause 4.2.3 Non-binary statement with guard band, guard band length = 95 % extended measurement uncertainty) for an upper specification limit (A lower limit or specification with an up-per and a lower limit is treated similarly.):

•Compliance with the requirement: If a specification limit is not breached by a measurement result plus the expanded uncertainty with a 95% coverage probability, then compliance with the specification will be stated (e. g. Pass).

•Non-compliance with the requirement: If a specification limit is exceeded by the measurement result minus the expanded uncertainty with a 95% coverage probability, then non-compliance with the specification will be stated (e. g. Fail).

•Inconclusive result: If a measurement result plus/minus the expanded uncertainty with a 95 % coverage probability overlaps the limit it will be stated that it is not possible to state compliance or non-compliance.

☐ There are no statements to conformity or no results with measurand stated in this report, no decision rule has been applied.

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3.1 Positive Test Results

See Appendix I

4 Remarks

4.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further par-ticulars as well as of the composition and layout.

4.2 When the product is placed on the market, it must be accompanied with safety Instruc-tions written in official language of the country. The instructions shall give information re-garding safe operation, installation and maintenance.

5 Documentation

- Appendix I: Test results
- Appendix II: Marking plate
- Appendix III: photo documentation
- Appendix IV: Construction data form
- Appendix V: Test equipment list

6 Test History

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 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 14825:2022.
5) This test report 64.181.24.00325.01 Rev.00, dated 2024-03-27 bases on original test report 64.181.22.03425.02 Rev.00, dated 2023-09-21 to include the following changes and/or additions, which were considered technical modifications:

   a) Changing report holder name and address, manufacturer name and address, trademark and model name.

   b) After evaluating, no additional test was needed.

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TÜV SÜD Group

Tested by: William Liang, Project Handler

printed name, function & signature

Approved by: Plum Li, Designated Reviewer

printed name, function & signature

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Appendix I Test results

Table 1.	Heating mode (Low temperature application):							P
Model	Pro25i							
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	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-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 11.814kW, the power is 2.832kW, the COP is 4.17kW/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
Electrical Properties							
Voltage	V	398.6	398.8	398.7	398.7	398.5	398.6
Current input of the unit	A	5.44	2.40	1.93	1.82	5.66	5.44
Power input of the unit	kW	3.218	1.255	0.992	0.931	3.390	3.218
Compressor frequency	Hz	80	36	30	30	85	80

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	2.00	2.00	2.00	2.00	2.00	2.00
Inlet Water temperature	°C	29.53	27.34	25.28**	23.33**	30.95	29.53
Outlet Water temperature	°C	34.00	30.05	28.13**	26.57**	35.25	34.00
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-6.94	2.07	7.00	11.99	-9.99	-6.94
Air **inlet** temperature, WB	°C	-7.84	0.96	6.01	10.95	-11.02	-7.84
Summary of the results							
Total heating capacity	kW	10.444	6.368	6.688	7.609	9.997	10.444
Effective power input	kW	3.322	1.359	1.096	1.035	3.494	3.322
Coefficient of performance (COP)	kW/kW	3.14	4.69	6.10	7.35	2.86	3.14
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.029
Standby mode [P_{SB}]	kW	0.010
Crankcase heater [P_{CK}]	kW	0.040
Off mode [P_{OFF}]	kW	0.010

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	11.806	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	11.806	9.997	2.86	0.90	1.00	2.86
F	10.444	10.444	3.14	0.90	1.00	3.14
A	10.444	10.444	3.14	0.90	1.00	3.14
B	6.357	6.368	4.69	0.90	1.00	4.69
C	4.087	6.688	6.10	0.90	0.61	5.74
D	1.816	7.609	7.35	0.90	0.24	5.57

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.63
SCOP:	kWh/kWh	4.62
Q_H:	kWh/year	24392
Q_{HE}:	kWh/year	5278
$\eta_{s,h}$	%	181.9
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 2.	Heating mode (Medium temperature application):							P
Model	Pro25i							
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	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-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 11.050kW, the power is 3.835kW, the COP is 2.88kW/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
Electrical Properties							
Voltage	V	398.4	398.8	398.7	398.7	398.4	398.4
Current input of the unit	A	6.34	3.07	2.34	1.97	6.93	6.34
Power input of the unit	kW	4.030	1.669	1.222	1.010	4.407	4.030
Compressor frequency	Hz	80	36	30	30	85	80

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.18	1.18	1.18	1.18	1.18	1.18
Inlet Water temperature	°C	44.85	37.56	33.20**	28.81**	48.08	44.85
Outlet Water temperature	°C	51.92	41.99	37.72**	33.91**	55.03*	51.92
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.03	2.09	7.01	12.00	-9.89	-7.03
Air **inlet** temperature, WB	°C	-8.06	1.18	6.01	10.89	-10.91	-8.06
Summary of the results							
Total heating capacity	kW	9.737	6.119	6.192	6.995	9.580	9.737
Effective power input	kW	4.084	1.722	1.276	1.064	4.460	4.084
Coefficient of performance (COP)	kW/kW	2.38	3.55	4.85	6.58	2.15	2.38
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.029
Standby mode [P_{SB}]	kW	0.010
Crankcase heater [P_{CK}]	kW	0.040
Off mode [P_{OFF}]	kW	0.010

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	11.007	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	11.007	9.580	2.15	0.90	1.00	2.15
F	9.737	9.737	2.38	0.90	1.00	2.38
A	9.737	9.737	2.38	0.90	1.00	2.38
B	5.927	6.119	3.55	0.90	0.97	3.55
C	3.810	6.192	4.85	0.90	0.62	4.57
D	1.693	6.995	6.58	0.90	0.24	5.01

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.61
SCOP:	kWh/kWh	3.60
Q_H:	kWh/year	22741
Q_{HE}:	kWh/year	6315
$\eta_{s,h}$	%	141.1
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 3.	Heating mode (Low temperature application):							P
Model	Pro30i							
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	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-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 17.702kW, the power is 3.752kW, the COP is 4.72kW/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
Electrical Properties							
Voltage	V	398.3	398.2	398.0	398.0	398.3	398.3
Current input of the unit	A	7.13	3.08	2.46	2.36	8.04	7.13
Power input of the unit	kW	4.447	1.688	1.323	1.123	5.079	4.447
Compressor frequency	Hz	79	35	30	30	85	79

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	3.02	3.02	3.02	3.02	3.02	3.02
Inlet Water temperature	°C	30.13	27.68	25.53**	23.30**	31.63	30.13
Outlet Water temperature	°C	34.01	30.00	27.81**	26.00**	35.31	34.01
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-7.00	2.00	7.01	12.00	-10.00	-7.00
Air **inlet** temperature, WB	°C	-8.00	1.01	6.01	11.00	-11.00	-8.00
Summary of the results							
Total heating capacity	kW	13.449	8.189	8.078	9.523	12.993	13.449
Effective power input	kW	4.535	1.775	1.411	1.211	5.166	4.535
Coefficient of performance (COP)	kW/kW	2.97	4.61	5.73	7.87	2.51	2.97
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.029
Standby mode [P_{SB}]	kW	0.010
Crankcase heater [P_{CK}]	kW	0.040
Off mode [P_{OFF}]	kW	0.010

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	15.204	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	15.204	12.993	2.51	0.90	1.00	2.51
F	13.449	13.449	2.97	0.90	1.00	2.97
A	13.449	13.449	2.97	0.90	1.00	2.97
B	8.187	8.189	4.61	0.90	1.00	4.61
C	5.263	8.078	5.73	0.90	0.65	5.44
D	2.339	9.523	7.87	0.90	0.25	6.02

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.51
SCOP:	kWh/kWh	4.50
Q_H:	kWh/year	31411
Q_{HE}:	kWh/year	6973
$\eta_{s,h}$	%	177.2
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 4.	Heating mode (Medium temperature application):							P
Model	Pro30i							
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	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-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 12.669kW, the power is 4.944kW, the COP is 2.56kW/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
Electrical Properties							
Voltage	V	398.2	398.2	398.2	398.1	398.3	398.2
Current input of the unit	A	8.42	3.41	2.84	2.51	9.15	8.42
Power input of the unit	kW	5.343	1.870	1.533	1.346	5.842	5.343
Compressor frequency	Hz	76	33	30	30	82	76

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.35	1.35	1.35	1.35	1.35	1.35
Inlet Water temperature	°C	44.57	37.47	33.09	28.70	47.14	44.57
Outlet Water temperature	°C	52.02	42.00	38.30**	34.53**	55.01*	52.02
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.00	2.01	7.02	12.00	-10.00	-7.00
Air **inlet** temperature, WB	°C	-8.00	1.01	6.01	11.00	-11.00	-8.00
Summary of the results							
Total heating capacity	kW	11.770	7.182	8.258	9.228	12.447	11.770
Effective power input	kW	5.433	1.961	1.623	1.437	5.933	5.433
Coefficient of performance (COP)	kW/kW	2.17	3.66	5.09	6.42	2.10	2.17
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.029
Standby mode [P_{SB}]	kW	0.010
Crankcase heater [P_{CK}]	kW	0.040
Off mode [P_{OFF}]	kW	0.010

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	13.305	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	13.305	12.447	2.10	0.90	1.00	2.10
F	11.770	11.770	2.17	0.90	1.00	2.17
A	11.770	11.770	2.17	0.90	1.00	2.17
B	7.164	7.182	3.66	0.90	1.00	3.66
C	4.606	8.258	5.09	0.90	0.56	4.71
D	2.047	9.228	6.42	0.90	0.22	4.76

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.62
SCOP:	kWh/kWh	3.62
Q_H:	kWh/year	27489
Q_{HE}:	kWh/year	7603
$\eta_{s,h}$	%	141.6
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 5a.	Sound power level measurement (Low temperature application)		P
Model	Pro25i		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water inlet/outlet temperature (°C):		30.0 / 35.0
	Voltage (V):		400
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14
Measured quantity	**$L_{WA,indoors}$ (dB(A))**	**$L_{WA,outdoors}$ (dB(A))**	**Remark**
Sound pressure level `$L_{p(ST)}$****	--	51	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	65	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			

Appendix I Test results

Table 5b.	Sound power level measurement (Medium temperature application)		P
Model	Pro25i		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water inlet/outlet temperature (°C):		47.0 / 55.0
	Voltage (V):		400
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14
Measured quantity	**$L_{WA,indoors}$ (dB(A))**	**$L_{WA,outdoors}$ (dB(A))**	**Remark**
Sound pressure level `$L_{p(ST)}$****	--	49	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	64	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			

Appendix I Test results

Table 6a.	Sound power level measurement (Low temperature application)		P
Model	Pro30i		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water inlet/outlet temperature (°C):		30.0 / 35.0
	Voltage (V):		400
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14
Measured quantity	**$L_{WA,indoors}$ (dB(A))**	**$L_{WA,outdoors}$ (dB(A))**	**Remark**
Sound pressure level `$L_{p(ST)}$****	--	57	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	71	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			

Appendix I Test results

Table 6b.	Sound power level measurement (Medium temperature application)		P
Model	Pro30i		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water inlet/outlet temperature (°C):		47.0 / 55.0
	Voltage (V):		400
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		14
Measured quantity	**$L_{WA,indoors}$ (dB(A))**	**$L_{WA,outdoors}$ (dB(A))**	**Remark**
Sound pressure level `$L_{p(ST)}$****	--	57	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	72	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			

Appendix I Test results

Table 7.	Clause 4 of EN 14511-4:2022	P
Model:	**Pro25i**	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.01°C, T in water = 9.76°C, Flow rate 1.04m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.06°C, T in water = 70.18 °C, Flow rate 1.04m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix I Test results

Table 8.	Clause 4 of EN 14511-4:2022	P
Model:	Pro30i	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.11°C, T in water = 9.47°C, Flow rate 1.25m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.13°C, T in water = 70.11 °C, Flow rate 1.25m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix II Marking plate

Nameplate

Model: Pro25i

DC INVERTER HEAT PUMP	
Model No.	Pro25i
*Heating Capacity Range	5.25～15.00 kW
*Heating input Range	1.28～3.63 kW
*Heating COP Range	3.00～5.00 kW/kW
**Heating Capacity Range	5.03～14.29 kW
**Heating input Range	1.79～5.09 kW
**Heating COP Range	2.02～3.41 kW/kW
Power supply	380-415V/3N~/50Hz
Rated current	9.5 A
Rated power input	5680 W
Max exhaust pressure	3.1MPa
Max suction pressure	0.9MPa
Maximum allowable pressure	3.1MPa
Refrigerant 	R290/1.30kg
Max water temperature	65℃
Degree of protection	IPX4
Shockproof level	I
Earth requirement	≤0.1Ω
Net weight	99 kg
Dimension	1110*470*1010mm
Water connection	1 Inch
Noise level	≤67dB(A)
Working ambient temperature	-25℃～43℃
*Heating working condition: Inlet water temperature 30°C, Outlet water temperature 35°C Dry bulb temperature 7°C, Wet bulb temperature 6°C. **Heating working condition: Inlet water temperature 47°C, Outlet water temperature 55°C Dry bulb temperature 7°C, Wet bulb temperature 6°C.	
Proteam Europa AS Kokstaddalen 31, 5257 Kokstad, NORWAY   	

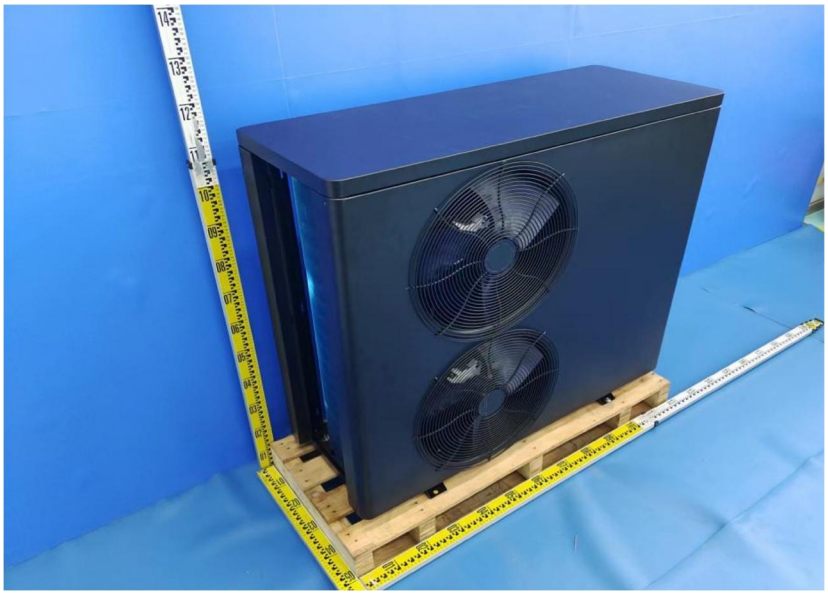
Appendix II Marking plate

Nameplate

Model: Pro30i

DC INVERTER HEAT PUMP	
Model No.	Pro30i
*Heating Capacity Range	8.80～21.20 kW
*Heating input Range	1.99～4.80 kW
*Heating COP Range	3.10～5.30 kW/kW
**Heating Capacity Range	7.94～19.13 kW
**Heating input Range	2.71～6.53 kW
**Heating COP Range	2.05～3.52 kW/kW
Power supply	380-415V/3N~/50Hz
Rated current	14 A
Rated power input	8.5 kW
Max exhaust pressure	3.1MPa
Max suction pressure	0.9MPa
Maximum allowable pressure	3.1MPa
Refrigerant 	R290/1.60kg
Max water temperature	65℃
Degree of protection	IPX4
Shockproof level	I
Earth requirement	≤0.1Ω
Net weight	135 kg
Dimension	1160*470*1280mm
Water connection	1 Inch
Noise level	≤73dB(A)
Working ambient temperature	-25℃～43℃
*Heating working condition: Inlet water temperature 30°C, Outlet water temperature 35°C Dry bulb temperature 7°C, Wet bulb temperature 6°C. **Heating working condition: Inlet water temperature 47°C, Outlet water temperature 55°C Dry bulb temperature 7°C, Wet bulb temperature 6°C.	
Proteam Europa AS Kokstaddalen 31, 5257 Kokstad, NORWAY 	

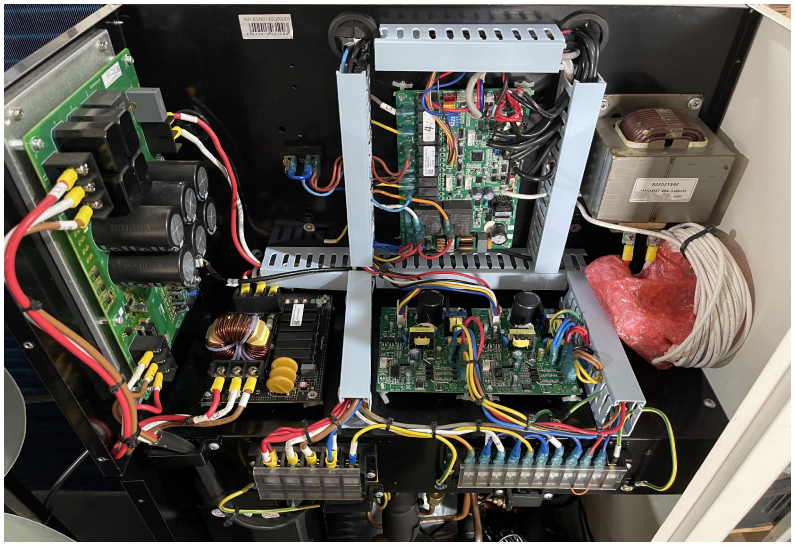
Appendix III photo documentation

Details of:	Overall view for Pro25i
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor for Pro25i
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Fan Motor for Pro25i
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board for Pro25i
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Overall view for Pro30i
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor for Pro30i
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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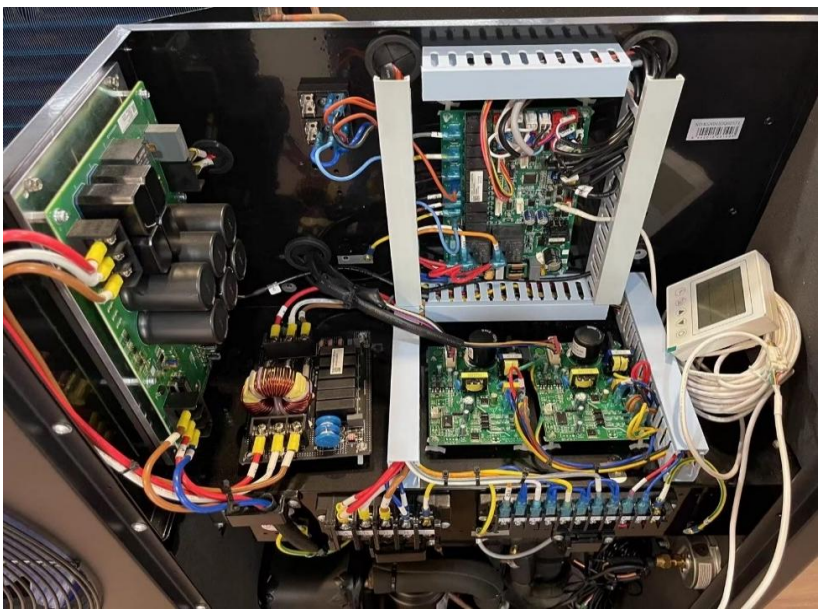
Appendix III photo documentation

Details of:	Fan Motor for Pro30i
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board for Pro30i
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix IV Construction data form

Model：Pro25i		
Part		**Technical data**
1. Compressor		
	Manufacture:	SHANGHAI HIGHLY ELECTRICAL APPLIANCES CO., LTD.
	Type:	WHP13300PSDPC8FQ
	Rated capacity:	13300W
	Serial-number:	W6PN5H06376X
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	SWEP TECHNOLOGY (SUZHOU) CO., LTD
	Type:	F85H×30/1P-NSC-M
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	526×40.8×119
3. Evaporator		
	Manufacture:	Foshan Huize Heat Exchange Equipment Co., Ltd.
	Type:	Hydrophilic aluminum
	Heat exchanger:	Finned-coil heat exchanger
	Dimension(mm):	352*715*950
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co., LTD
	Type:	RD34HE1
	Fan type:	3 blade
	Specification:	DC310V; 34W
5. Main control board		
	Manufacture:	SHENZHEN MEGMEET ELECTRICAL CO., LTD.
	Type:	HiPlus12000FC-GT35A
	Specification:	AC380-415V; 50Hz

Appendix IV Construction data form

Model：Pro30i		
Part		**Technical data**
1. Compressor		
	Manufacture:	SHANGHAI HIGHLY ELECTRICAL APPLIANCES CO., LTD.
	Type:	WHP32900VSKTQ9JK
	Rated capacity:	18160W
	Serial-number:	W82N1E02NMNJ
	Specification:	DC221V; R290
2. Condenser		
	Manufacture:	SWEP TECHNOLOGY (SUZHOU) CO., LTD
	Type:	F85Hx50/1P-NSC-M
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	526×40.8×119
3. Evaporator		
	Manufacture:	Foshan Huize Heat Exchange Equipment Co., Ltd.
	Type:	Hydrophilic aluminum
	Heat exchanger:	Finned-coil heat exchanger
	Dimension(mm):	400*717*1200
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co., LTD
	Type:	RD50HK1
	Fan type:	3 blade
	Specification:	DC310V; 50W
5. Main control board		
	Manufacture:	SHENZHEN MEGMEET ELECTRICAL CO., LTD.
	Type:	HiPlus12000FC-GT35A
	Specification:	AC380-415V; 50Hz

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	OPTIFLUX4100C	H17221264	2023-12-21
3	20 Channel noise and vibration testing system	RION	SA-02M	CQCSC-BE-0026	2024-01-11
4	Nosie Testing Lab	Beijing Zhongjia Zhirui Technology Co., LTD	ZR-02	CQCSC-BE-0026	2023-11-22
5	Nosie Testing Lab (environmental control system)	Beijing Zhongjia Zhirui Technology Co., LTD	ZR-02	CQCSC-BE-0026	2023-11-22

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