



**Technical Report No.: 64.181.23.03008.01 Rev.00**

**Date: 2023-08-09**

Client: Report holder's name: Sonnenwärme Direkt GmbH

Report holder's Address: Dammholmer Str. 3, 24873 Havetoft, Germany

Contact person of report holder: Guido Arntz

Manufacturer: Manufacturer's name: Sonnenwärme Direkt GmbH

Manufacturer's address: Dammholmer Str. 3, 24873 Havetoft, Germany

Test object: Product: DC Inverter Heat Pump  
Model: SWD WP6 R290, SWD WP10 R290 230V

Trade mark: --

Test specification:  EN 14825:2022  
 EN 12102-1:2022  
 EN 14511-3:2022  
 EN 14511-4:2022 Clause 4

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.

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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 :                       | SWD WP6 R290, SWD WP10 R290 230V  |
| Rated Voltage (V) :           | 220-240V~   |
| Rated Frequency (Hz) :        | 50  |
| Rated Power (W) :             | 990W for SWD WP6 R290,<br>1810W for SWD WP10 R290 230V  |
| Rated Current (A) :           | 4.53A for SWD WP6 R290,<br>8.28A for SWD WP10 R290 230V   |
| Protection Class :            | Class I   |
| Protection Against Moisture : | IP X4   |
| Construction :                | Stationary  |
| Supply connection :           | <input type="checkbox"/> Non detachable cord<br><input checked="" type="checkbox"/> Permanent connection to fixed wiring  |
| Operation mode:               | <input checked="" type="checkbox"/> Continuous operation;<br><input type="checkbox"/> Intermittent operation;<br><input type="checkbox"/> Short time operation; |
| Refrigerant/charge (kg) :     | R290 / 0.80kg for SWD WP6 R290,<br>1.15kg for SWD WP10 R290 230V  |
| Declared parameters :         | <input checked="" type="checkbox"/> Average <input type="checkbox"/> Warmer <input type="checkbox"/> Colder   |
| Sound power level dB(A) :     | N/A   |
| Series No :                   | PPAL03022121408 for SWD WP6 R290,<br>PPAL05023041330 for SWD WP10 R290 230V   |

## 2 Order

### 2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2023-01-09, 2023-02-09, 2023-07-27

Customer's Reference: Sonnenwärme Direkt GmbH

### 2.2 Test Sample(s)

- Reception date(s): 2023-04-07, 2023-06-10

- Location(s) of reception:

For Energy test:

Guangzhou Customs District Technology Center

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

For Noise tests:

CVC Testing Technology Co., Ltd.

Address: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, Guangdong, 510663, P.R.China

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

### 2.3 Date(s) of Testing

2023-04-07 to 2023-05-08, 2023-06-10 to 2023-06-12

### 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 115:2021, clause 4.4.3, 4.5.1 Accuracy method 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.

### 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 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.
- 5) This test report 64.181.23.03008.01 Rev.00, dated 2023-08-09 bases on original test report 64.181.23.00497.02 Rev.00, dated 2023-06-20 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.

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

Tested by: William Liang, Project Handler

*printed name, function & signature*

*William Liang*  
*Plum Li*

Approved by: Plum Li, Designated Reviewer

*printed name, function & signature*

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**Appendix I Test results**

|  |   |                       |                                     |              |                                     |                                      |                          |        |
|--|---|-----------------------|-------------------------------------|--------------|-------------------------------------|--------------------------------------|--------------------------|--------|
| <b>Table 1.</b>  | <b>Heating mode(Low temperature application):</b> |                       |                                     |              |                                     |                                      | <b>P</b>                 |        |
| <b>Model</b>   | SWD WP6 R290                                      |                       |                                     |              |                                     |                                      |                          |        |
| <b>Product type</b>  | Air to Water                                      | <b>Heating season</b> | <input checked="" type="checkbox"/> | Average      | <input type="checkbox"/>            | Warmer                               | <input type="checkbox"/> | Colder |
| <b>1. Test conditions:</b>   |   |                       |                                     |              |                                     |                                      |                          |        |
| <b>Condition</b>   | <b>Part Load Ratio in %</b>                       |                       |                                     |              | <b>Outdoor heat exchanger</b>       | <b>Indoor heat exchanger</b>         |                          |        |
|  | 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  | $(T_{bivalent-16})/(T_{designh-16})$              |                       |                                     |              | T <sub>biv</sub>                    | 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 4.988kW, the power is 0.981kW, the COP is 5.08kW/kW. |   |                       |                                     |              |                                     |                                      |                          |        |
| <b>2. Tested data/correction data(Average):</b>  |   |                       |                                     |              |                                     |                                      |                          |        |
| General test conditions/<br>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   | 230.6                 | 230.7                               | 230.3        | 230.2                               | 230.0                                | 230.6                    |        |
| Current input of the unit  | A   | 6.76                  | 3.20                                | 2.44         | 2.18                                | 9.12                                 | 6.76                     |        |
| Power input of the unit  | kW  | 1.554                 | 0.715                               | 0.547        | 0.487                               | 2.067                                | 1.554                    |        |
| <b>Test conditions indoor unit</b>   |   |                       |                                     |              |                                     |                                      |                          |        |
| <b>Inlet Water temperature, DB</b>   | °C  | 28.80                 | 26.80                               | 24.99        | 23.10                               | 29.51                                | 28.80                    |        |
| <b>Outlet Water temperature, DB</b>  | °C  | 33.96                 | 30.02                               | 28.29        | 26.88                               | 35.36                                | 33.96                    |        |

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**Appendix I Test results**

| Test conditions outdoor unit                |           |                   |                          |       |       |                  |       |
|---|-----------|-------------------|--------------------------|-------|-------|------------------|-------|
| Air inlet temperature, DB                   | °C        | -6.99             | 2.02                     | 7.01  | 12.03 | -10.00           | -6.99 |
| Air inlet temperature, WB                   | °C        | -8.06             | 1.06                     | 6.00  | 11.03 | -11.07           | -8.06 |
| Summary of the results                      |           |                   |                          |       |       |                  |       |
| Total heating capacity                      | kW        | 5.150             | 3.213                    | 3.290 | 3.770 | 5.841            | 5.150 |
| Effective power input                       | kW        | 1.546             | 0.706                    | 0.539 | 0.478 | 2.058            | 1.546 |
| Coefficient of performance (COP)            | --        | 3.33              | 4.55                     | 6.11  | 7.88  | 2.84             | 3.33  |
| Compressor frequency                        | Hz        | 70                | 35                       | 30    | 30    | 90               | 70    |
| Water flow                                  | m³/h      | 0.86              | 0.86                     | 0.86  | 0.86  | 0.86             | 0.86  |
| Remark: -                                   |           |                   |                          |       |       |                  |       |
| 3.Calculation/conclusion for SCOP(Average): |           |                   |                          |       |       |                  |       |
| Tdesignh(°C)                                | -10       | Tbiv(°C)          |                          | -7    |       |                  |       |
| Pdesignh(kW)                                | 5.821     | 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   | 5.821     | 5.841             | 2.84                     | 0.90  | 1.00  | 2.84             |       |
| F   | 5.150     | 5.150             | 3.33                     | 0.90  | 1.00  | 3.33             |       |
| A   | 5.150     | 5.150             | 3.33                     | 0.90  | 1.00  | 3.33             |       |
| B   | 3.135     | 3.213             | 4.55                     | 0.90  | 0.98  | 4.55             |       |
| C   | 2.015     | 3.290             | 6.11                     | 0.90  | 0.61  | 5.74             |       |
| D   | 0.896     | 3.770             | 7.88                     | 0.90  | 0.24  | 5.97             |       |
| CR: part load divided by capacity;          |           |                   |                          |       |       |                  |       |

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**Appendix I Test results**

| Electric power consumptions            | Unit | Value |
|--|------|-------|
| Thermostat-off mode [P <sub>TO</sub> ] | kW   | 0.020 |
| Standby mode [P <sub>SB</sub> ]        | kW   | 0.006 |
| Crankcase heater [P <sub>CK</sub> ]    | kW   | 0.042 |
| Off mode [P <sub>OFF</sub> ]           | kW   | 0.006 |

| Conclusions:   | Unit     | Value |
|--|----------|-------|
| SCOP <sub>on</sub> :   | kWh/kWh  | 4.66  |
| SCOP:  | kWh/kWh  | 4.64  |
| Q <sub>H</sub> :   | kWh/year | 12027 |
| Q <sub>HE</sub> :  | kWh/year | 2590  |
| η <sub>s,h</sub>   | %        | 182.7 |
| Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2) | --       | A+++  |



**Appendix I Test results**

|  |  |                       |                                     |              |                                     |                                      |                          |        |
|--|--|-----------------------|-------------------------------------|--------------|-------------------------------------|--------------------------------------|--------------------------|--------|
| <b>Table 2.</b>  | <b>Heating mode(Medium temperature application):</b> |                       |                                     |              |                                     |                                      | <b>P</b>                 |        |
| <b>Model</b>   | SWD WP6 R290   |                       |                                     |              |                                     |                                      |                          |        |
| <b>Product type</b>  | Air to Water   | <b>Heating season</b> | <input checked="" type="checkbox"/> | Average      | <input type="checkbox"/>            | Warmer                               | <input type="checkbox"/> | Colder |
| <b>1. Test conditions:</b>   |  |                       |                                     |              |                                     |                                      |                          |        |
| <b>Condition</b>   | <b>Part Load Ratio in %</b>                          |                       |                                     |              | <b>Outdoor heat exchanger</b>       | <b>Indoor heat exchanger</b>         |                          |        |
|  | 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  | $(T_{bivalent-16})/(T_{designh-16})$                 |                       |                                     |              | T <sub>biv</sub>                    | 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 4.984kW, the power is 1.539kW, the COP is 3.24kW/kW. |  |                       |                                     |              |                                     |                                      |                          |        |
| <b>2. Tested data/correction data(Average):</b>  |  |                       |                                     |              |                                     |                                      |                          |        |
| General test conditions/<br>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                 | 230.2                               | 230.3        | 230.2                               | 229.8                                | 229.9                    |        |
| Current input of the unit  | A  | 9.09                  | 4.05                                | 2.90         | 2.59                                | 11.80                                | 9.09                     |        |
| Power input of the unit  | kW   | 2.086                 | 0.913                               | 0.632        | 0.552                               | 2.708                                | 2.086                    |        |
| Test conditions <b>indoor unit</b>   |  |                       |                                     |              |                                     |                                      |                          |        |
| <b>Inlet Water temperature, DB</b>   | °C   | 44.12                 | 37.17                               | 32.89        | 28.64                               | 46.13                                | 44.12                    |        |
| <b>Outlet Water temperature, DB</b>  | °C   | 52.01                 | 42.00                               | 37.57        | 34.47                               | 55.03                                | 52.01                    |        |

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**Appendix I Test results**

| Test conditions <b>outdoor</b> unit                |           |                   |                          |       |       |                  |       |
|--|-----------|-------------------|--------------------------|-------|-------|------------------|-------|
| Air inlet temperature, DB                          | °C        | -7.00             | 2.01                     | 7.05  | 12.04 | -10.00           | -7.00 |
| Air inlet temperature, WB                          | °C        | -8.10             | 1.02                     | 6.01  | 11.03 | -11.04           | -8.10 |
| Summary of the results                             |           |                   |                          |       |       |                  |       |
| Total heating capacity                             | kW        | 4.948             | 3.030                    | 2.934 | 3.658 | 5.584            | 4.948 |
| Effective power input                              | kW        | 2.080             | 0.908                    | 0.626 | 0.547 | 2.703            | 2.080 |
| Coefficient of performance (COP)                   | --        | 2.38              | 3.34                     | 4.69  | 6.69  | 2.07             | 2.38  |
| Compressor frequency                               | Hz        | 73                | 35                       | 30    | 30    | 90               | 73    |
| Water flow   | m³/h      | 0.54              | 0.54                     | 0.54  | 0.54  | 0.54             | 0.54  |
| Remark: -  |           |                   |                          |       |       |                  |       |
| <b>3.Calculation/conclusion for SCOP(Average):</b> |           |                   |                          |       |       |                  |       |
| Tdesignh(°C)                                       | -10       | Tbiv(°C)          |                          | -7    |       |                  |       |
| Pdesignh(kW)                                       | 5.593     | TOL(°C)           |                          | -10   |       |                  |       |
| <b>Test result A, B, C, D, E, F conditions:</b>    |           |                   |                          |       |       |                  |       |
| Condition  | Part load | Measured capacity | COP at measured capacity | Cdh   | CR    | COP at part load |       |
| E  | 5.593     | 5.584             | 2.07                     | 0.90  | 1.00  | 2.07             |       |
| F  | 4.948     | 4.948             | 2.38                     | 0.90  | 1.00  | 2.38             |       |
| A  | 4.948     | 4.948             | 2.38                     | 0.90  | 1.00  | 2.38             |       |
| B  | 3.012     | 3.030             | 3.34                     | 0.90  | 0.99  | 3.34             |       |
| C  | 1.936     | 2.934             | 4.69                     | 0.90  | 0.66  | 4.46             |       |
| D  | 0.861     | 3.658             | 6.69                     | 0.90  | 0.24  | 5.05             |       |
| CR: part load divided by capacity;                 |           |                   |                          |       |       |                  |       |

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**Appendix I Test results**

| Electric power consumptions            | Unit | Value |
|--|------|-------|
| Thermostat-off mode [P <sub>TO</sub> ] | kW   | 0.020 |
| Standby mode [P <sub>SB</sub> ]        | kW   | 0.006 |
| Crankcase heater [P <sub>CK</sub> ]    | kW   | 0.042 |
| Off mode [P <sub>OFF</sub> ]           | kW   | 0.006 |

| Conclusions:   | Unit     | Value |
|--|----------|-------|
| SCOP <sub>on</sub> :   | kWh/kWh  | 3.49  |
| SCOP:  | kWh/kWh  | 3.48  |
| Q <sub>H</sub> :   | kWh/year | 11556 |
| Q <sub>HE</sub> :  | kWh/year | 3325  |
| η <sub>s,h</sub>   | %        | 136.0 |
| Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1) | --       | A++   |



**Appendix I Test results**

|  |   |                       |                                     |              |                                     |                                      |                          |        |
|--|---|-----------------------|-------------------------------------|--------------|-------------------------------------|--------------------------------------|--------------------------|--------|
| <b>Table 3.</b>  | <b>Heating mode(Low temperature application):</b> |                       |                                     |              |                                     |                                      | <b>P</b>                 |        |
| <b>Model</b>   | SWD WP10 R290 230V                                |                       |                                     |              |                                     |                                      |                          |        |
| <b>Product type</b>  | Air to Water                                      | <b>Heating season</b> | <input checked="" type="checkbox"/> | Average      | <input type="checkbox"/>            | Warmer                               | <input type="checkbox"/> | Colder |
| <b>1. Test conditions:</b>   |   |                       |                                     |              |                                     |                                      |                          |        |
| <b>Condition</b>   | <b>Part Load Ratio in %</b>                       |                       |                                     |              | <b>Outdoor heat exchanger</b>       | <b>Indoor heat exchanger</b>         |                          |        |
|  | 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  | $(T_{bivalent-16})/(T_{designh-16})$              |                       |                                     |              | T <sub>biv</sub>                    | 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 8.932kW, the power is 1.772kW, the COP is 5.04kW/kW. |   |                       |                                     |              |                                     |                                      |                          |        |
| <b>2. Tested data/correction data(Average):</b>  |   |                       |                                     |              |                                     |                                      |                          |        |
| General test conditions/<br>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                 | 230.6                               | 230.7        | 230.7                               | 229.6                                | 230.4                    |        |
| Current input of the unit  | A   | 12.35                 | 6.12                                | 5.34         | 4.74                                | 17.02                                | 12.35                    |        |
| Power input of the unit  | kW  | 2.647                 | 1.218                               | 0.921        | 0.778                               | 3.622                                | 2.647                    |        |
| <b>Test conditions indoor unit</b>   |   |                       |                                     |              |                                     |                                      |                          |        |
| <b>Inlet Water temperature, DB</b>   | °C  | 29.09                 | 27.00                               | 25.26        | 23.14                               | 29.75                                | 29.09                    |        |
| <b>Outlet Water temperature, DB</b>  | °C  | 33.99                 | 30.03                               | 28.13        | 26.45                               | 35.28                                | 33.99                    |        |

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**Appendix I Test results**

| Test conditions outdoor unit                |           |                   |                          |       |       |                  |       |
|---|-----------|-------------------|--------------------------|-------|-------|------------------|-------|
| Air inlet temperature, DB                   | °C        | -7.07             | 2.00                     | 7.02  | 12.03 | -10.00           | -7.07 |
| Air inlet temperature, WB                   | °C        | -8.06             | 1.05                     | 6.01  | 11.04 | -11.04           | -8.06 |
| Summary of the results                      |           |                   |                          |       |       |                  |       |
| Total heating capacity                      | kW        | 8.799             | 5.440                    | 5.152 | 5.939 | 9.934            | 8.799 |
| Effective power input                       | kW        | 2.614             | 1.185                    | 0.888 | 0.745 | 3.589            | 2.614 |
| Coefficient of performance (COP)            | --        | 3.37              | 4.59                     | 5.80  | 7.97  | 2.77             | 3.37  |
| Compressor frequency                        | Hz        | 70                | 35                       | 30    | 30    | 90               | 70    |
| Water flow                                  | m³/h      | 1.55              | 1.55                     | 1.55  | 1.55  | 1.55             | 1.55  |
| Remark: -                                   |           |                   |                          |       |       |                  |       |
| 3.Calculation/conclusion for SCOP(Average): |           |                   |                          |       |       |                  |       |
| Tdesignh(°C)                                | -10       | Tbiv(°C)          |                          | -7    |       |                  |       |
| Pdesignh(kW)                                | 9.946     | 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   | 9.946     | 9.934             | 2.77                     | 0.90  | 1.00  | 2.77             |       |
| F   | 8.799     | 8.799             | 3.37                     | 0.90  | 1.00  | 3.37             |       |
| A   | 8.799     | 8.799             | 3.37                     | 0.90  | 1.00  | 3.37             |       |
| B   | 5.356     | 5.440             | 4.59                     | 0.90  | 0.98  | 4.59             |       |
| C   | 3.443     | 5.152             | 5.80                     | 0.90  | 0.67  | 5.53             |       |
| D   | 1.530     | 5.939             | 7.97                     | 0.90  | 0.26  | 6.19             |       |
| CR: part load divided by capacity;          |           |                   |                          |       |       |                  |       |

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**Appendix I Test results**

| Electric power consumptions            | Unit | Value |
|--|------|-------|
| Thermostat-off mode [P <sub>TO</sub> ] | kW   | 0.024 |
| Standby mode [P <sub>SB</sub> ]        | kW   | 0.007 |
| Crankcase heater [P <sub>CK</sub> ]    | kW   | 0.042 |
| Off mode [P <sub>OFF</sub> ]           | kW   | 0.007 |

| Conclusions:   | Unit     | Value |
|--|----------|-------|
| SCOP <sub>on</sub> :   | kWh/kWh  | 4.66  |
| SCOP:  | kWh/kWh  | 4.65  |
| Q <sub>H</sub> :   | kWh/year | 20549 |
| Q <sub>HE</sub> :  | kWh/year | 4421  |
| η <sub>s,h</sub>   | %        | 182.9 |
| Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2) | --       | A+++  |



**Appendix I Test results**

| <b>Table 4.</b>  | <b>Heating mode(Medium temperature application):</b> |                       |                                     |              |                                     |                                      | <b>P</b>                 |        |
|--|--|-----------------------|-------------------------------------|--------------|-------------------------------------|--------------------------------------|--------------------------|--------|
| <b>Model</b>   | SWD WP10 R290 230V                                   |                       |                                     |              |                                     |                                      |                          |        |
| <b>Product type</b>  | Air to Water   | <b>Heating season</b> | <input checked="" type="checkbox"/> | Average      | <input type="checkbox"/>            | Warmer                               | <input type="checkbox"/> | Colder |
| <b>1. Test conditions:</b>   |  |                       |                                     |              |                                     |                                      |                          |        |
| <b>Condition</b>   | <b>Part Load Ratio in %</b>                          |                       |                                     |              | <b>Outdoor heat exchanger</b>       | <b>Indoor heat exchanger</b>         |                          |        |
|  | 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  | $(T_{bivalent-16})/(T_{designh-16})$                 |                       |                                     |              | T <sub>biv</sub>                    | 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 9.041kW, the power is 3.017kW, the COP is 3.00kW/kW. |  |                       |                                     |              |                                     |                                      |                          |        |
| <b>2. Tested data/correction data(Average):</b>  |  |                       |                                     |              |                                     |                                      |                          |        |
| 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                 | 230.6                               | 230.1        | 230.2                               | 229.5                                | 230.2                    |        |
| Current input of the unit  | A  | 17.32                 | 7.41                                | 5.95         | 5.21                                | 21.42                                | 17.32                    |        |
| Power input of the unit  | kW   | 3.699                 | 1.554                               | 1.171        | 1.003                               | 4.684                                | 3.699                    |        |
| <b>Test conditions indoor unit</b>   |  |                       |                                     |              |                                     |                                      |                          |        |
| <b>Inlet Water temperature, DB</b>   | °C   | 44.84                 | 37.50                               | 33.14        | 28.73                               | 46.66                                | 44.84                    |        |
| <b>Outlet Water temperature, DB</b>  | °C   | 52.09                 | 41.93                               | 38.09        | 34.44                               | 55.00                                | 52.09                    |        |

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**Appendix I Test results**

| Test conditions <b>outdoor</b> unit                |           |                   |                          |       |       |                  |       |
|--|-----------|-------------------|--------------------------|-------|-------|------------------|-------|
| Air inlet temperature, DB                          | °C        | -6.98             | 2.01                     | 7.01  | 12.03 | -10.01           | -6.98 |
| Air inlet temperature, WB                          | °C        | -8.11             | 1.06                     | 6.00  | 11.03 | -11.07           | -8.11 |
| Summary of the results                             |           |                   |                          |       |       |                  |       |
| Total heating capacity                             | kW        | 8.164             | 4.990                    | 5.576 | 6.438 | 9.389            | 8.164 |
| Effective power input                              | kW        | 3.688             | 1.543                    | 1.160 | 0.992 | 4.673            | 3.688 |
| Coefficient of performance (COP)                   | --        | 2.21              | 3.24                     | 4.81  | 6.49  | 2.01             | 2.21  |
| Compressor frequency                               | Hz        | 74                | 35                       | 30    | 30    | 90               | 74    |
| Water flow   | m³/h      | 0.97              | 0.97                     | 0.97  | 0.97  | 0.97             | 0.97  |
| Remark: -  |           |                   |                          |       |       |                  |       |
| <b>3.Calculation/conclusion for SCOP(Average):</b> |           |                   |                          |       |       |                  |       |
| Tdesignh(°C)                                       | -10       | Tbiv(°C)          |                          | -7    |       |                  |       |
| Pdesignh(kW)                                       | 9.229     | TOL(°C)           |                          | -10   |       |                  |       |
| <b>Test result A, B, C, D, E, F conditions:</b>    |           |                   |                          |       |       |                  |       |
| Condition  | Part load | Measured capacity | COP at measured capacity | Cdh   | CR    | COP at part load |       |
| E  | 9.229     | 9.389             | 2.01                     | 0.90  | 0.98  | 2.01             |       |
| F  | 8.164     | 8.164             | 2.21                     | 0.90  | 1.00  | 2.21             |       |
| A  | 8.164     | 8.164             | 2.21                     | 0.90  | 1.00  | 2.21             |       |
| B  | 4.970     | 4.990             | 3.24                     | 0.90  | 1.00  | 3.24             |       |
| C  | 3.195     | 5.576             | 4.81                     | 0.90  | 0.57  | 4.47             |       |
| D  | 1.420     | 6.438             | 6.49                     | 0.90  | 0.22  | 4.80             |       |
| CR: part load divided by capacity;                 |           |                   |                          |       |       |                  |       |

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**Appendix I Test results**

| <b>Electric power consumptions</b>     | <b>Unit</b> | <b>Value</b> |
|--|-------------|--------------|
| Thermostat-off mode [P <sub>TO</sub> ] | kW          | 0.024        |
| Standby mode [P <sub>SB</sub> ]        | kW          | 0.007        |
| Crankcase heater [P <sub>CK</sub> ]    | kW          | 0.042        |
| Off mode [P <sub>OFF</sub> ]           | kW          | 0.007        |

| <b>Conclusions:</b>  | <b>Unit</b> | <b>Value</b> |
|--|-------------|--------------|
| SCOP <sub>on</sub> :   | kWh/kWh     | 3.38         |
| SCOP:  | kWh/kWh     | 3.37         |
| Q <sub>H</sub> :   | kWh/year    | 19068        |
| Q <sub>HE</sub> :  | kWh/year    | 5655         |
| η <sub>s,h</sub>   | %           | 131.9        |
| Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1) | --          | A++          |





**Appendix I Test results**

|   |   |                                       |  |
|---|---|---------------------------------------|--|
| <b>Table 5a.</b>  | <b>Sound power level measurement(Low temperature application)</b> |                                       | <b>P</b>                               |
| <b>Model</b>  | SWD WP6 R290  |                                       |  |
|   | 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):  | 230                                   |  |
|   | Frequency (Hz):   | 50                                    |  |
|   | Working condition class :   | Class A                               |  |
|   | Acoustical environment :  | Hemi-anechoic room                    |  |
|   | Windshield type :   | Sponge                                |  |
|   | Measured position amount :  | 14                                    |  |
|   | Water flow (m³/h):  | 0.86                                  |  |
|   | <b>Measured quantity</b>  | <b>L<sub>WA,indoors</sub> (dB(A))</b> | <b>L<sub>WA,outdoors</sub> (dB(A))</b> |
|   | Sound pressure level $\bar{L}_{p(ST)}$ ****                       | --                                    | 44                                     |
|   | Measurement distance d *  | --                                    | 1.0m                                   |
|   | Sound power level L <sub>WA</sub> ****                            | --                                    | 58                                     |
| Setting of controls: according to user manual.<br>Duct connection:--<br>Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer<br>Fan speed: 400 r/min, compressor speed: 48Hz. |   |                                       |  |



**Appendix I Test results**

|   |  |                                       |  |
|---|--|---------------------------------------|--|
| <b>Table 5b.</b>  | <b>Sound power level measurement(Medium temperature application)</b> |                                       | <b>P</b>                               |
| <b>Model</b>  | SWD WP6 R290   |                                       |  |
|   | 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):   | 230                                   |  |
|   | Frequency (Hz):  | 50                                    |  |
|   | Working condition class :  | Class A                               |  |
|   | Acoustical environment :   | Hemi-anechoic room                    |  |
|   | Windshield type :  | Sponge                                |  |
|   | Measured position amount :   | 14                                    |  |
|   | Water flow (m³/h):   | 0.54                                  |  |
|   | <b>Measured quantity</b>   | <b>L<sub>WA,indoors</sub> (dB(A))</b> | <b>L<sub>WA,outdoors</sub> (dB(A))</b> |
|   | Sound pressure level $\bar{L}_{p(ST)}$ ****                          | --                                    | 44                                     |
|   | Measurement distance d *   | --                                    | 1.0m                                   |
|   | Sound power level L <sub>WA</sub> ****                               | --                                    | 58                                     |
| Setting of controls: according to user manual.<br>Duct connection:--<br>Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer<br>Fan speed: 400 r/min, compressor speed: 52Hz. |  |                                       |  |



**Appendix I Test results**

|   |   |                                       |  |
|---|---|---------------------------------------|--|
| <b>Table 6a.</b>  | <b>Sound power level measurement(Low temperature application)</b> |                                       | <b>P</b>                               |
| <b>Model</b>  | SWD WP10 R290 230V  |                                       |  |
|   | 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):  | 230                                   |  |
|   | Frequency (Hz):   | 50                                    |  |
|   | Working condition class :   | Class A                               |  |
|   | Acoustical environment :  | Hemi-anechoic room                    |  |
|   | Windshield type :   | Sponge                                |  |
|   | Measured position amount :  | 14                                    |  |
|   | Water flow (m³/h):  | 1.55                                  |  |
|   | <b>Measured quantity</b>  | <b>L<sub>WA,indoors</sub> (dB(A))</b> | <b>L<sub>WA,outdoors</sub> (dB(A))</b> |
|   | Sound pressure level $\bar{L}_{p(ST)}$ ****                       | --                                    | 45                                     |
|   | Measurement distance d *  | --                                    | 1.0m                                   |
|   | Sound power level L <sub>WA</sub> ****                            | --                                    | 60                                     |
| Setting of controls: according to user manual.<br>Duct connection:--<br>Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer<br>Fan speed: 400 r/min, compressor speed: 50Hz. |   |                                       |  |



**Appendix I Test results**

|   |  |                                       |  |
|---|--|---------------------------------------|--|
| <b>Table 6b.</b>  | <b>Sound power level measurement(Medium temperature application)</b> |                                       | <b>P</b>                               |
| <b>Model</b>  | SWD WP10 R290 230V   |                                       |  |
|   | 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):   | 230                                   |  |
|   | Frequency (Hz):  | 50                                    |  |
|   | Working condition class :  | Class A                               |  |
|   | Acoustical environment :   | Hemi-anechoic room                    |  |
|   | Windshield type :  | Sponge                                |  |
|   | Measured position amount :   | 14                                    |  |
|   | Water flow (m³/h):   | 0.97                                  |  |
|   | <b>Measured quantity</b>   | <b>L<sub>WA,indoors</sub> (dB(A))</b> | <b>L<sub>WA,outdoors</sub> (dB(A))</b> |
|   | Sound pressure level $\bar{L}_{p(ST)}$ ****                          | --                                    | 46                                     |
|   | Measurement distance d *   | --                                    | 1.0m                                   |
|   | Sound power level L <sub>WA</sub> ****                               | --                                    | 60                                     |
| Setting of controls: according to user manual.<br>Duct connection:--<br>Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer<br>Fan speed: 400 r/min, compressor speed: 56Hz. |  |                                       |  |

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**Appendix I Test results**

| Table 7.      |                             | Clause 4 of EN 14511-4:2022   |                                   |   | P             |
|---------------|-----------------------------|-------------------------------|-----------------------------------|---|---------------|
| Model         |                             | SWD WP6 R290                  |                                   |   |               |
| Customer Code | Execution Date [dd-mm-yyyy] | Testing item                  | Standard Reference                | Comment   | Test Response |
| TEST 1        | 10-06-2023                  | STARTING TEST                 | EN14511-4:2022, § 4.2.1.2 Table 3 | The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair=-25.06°C, T out water 9.05°C, Flow rate 0.53m <sup>3</sup> /h have been set and obtained. At those conditions, the machine was switched on. It started without any problem and worked for 30 minutes without showing any warning or allarm. During the test the machine operated in automode. No damage was recorded on the machine during and after the test. | Passed        |
| TEST 2        | 10-06-2023                  | OPERATING TEST                | EN14511-4:2022, § 4.2.1.2 Table 3 | 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=-25.19°C, T out water 60.11°C, Flow rate 0.53m <sup>3</sup> /h. Once these conditions were obtained, the machine was let operate for over 1 hour in automode. During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.          | Passed        |
| TEST 3        | 10-06-2023                  | SHUTTING OFF WATER FLOW       | EN14511-4:2022, § 4.5             | The water flow rate was shutted 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. 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.  | Passed        |
| TEST 4        | 10-06-2023                  | SHUTTING OFF AIR FLOW         | EN14511-4:2022, § 4.5             | 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. During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.  | Passed        |
| TEST 5        | 10-06-2023                  | COMPLETE POWER SUPPLY FAILURE | EN14511-4:2022, § 4.6             | The power supply was cut off for about 10 seconds.The unit restarted automatically within about 3 minutes after the power supply was reactivated.   | Passed        |

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**Appendix I Test results**

| Table 8.      |                             | Clause 4 of EN 14511-4:2022   |                                   |  | P             |
|---------------|-----------------------------|-------------------------------|-----------------------------------|--|---------------|
| Model         |                             | SWD WP10 R290 230V            |                                   |  |               |
| Customer Code | Execution Date [dd-mm-yyyy] | Testing item                  | Standard Reference                | Comment  | Test Response |
| TEST 1        | 11-06-2023                  | STARTING TEST                 | EN14511-4:2022, § 4.2.1.2 Table 3 | The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair=-25.14°C, T out water 9.21°C, Flow rate 0.96m <sup>3</sup> /h have been set and obtained. At those conditions, the machine was switched on. It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in automode. No damage was recorded on the machine during and after the test. | Passed        |
| TEST 2        | 11-06-2023                  | OPERATING TEST                | EN14511-4:2022, § 4.2.1.2 Table 3 | 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=-25.02°C, T out water 60.06°C, Flow rate 0.96m <sup>3</sup> /h. Once these conditions were obtained, the machine was let operate for over 1 hour in automode. During the test, no warning or alarm were showed. No damage was recorded on the machine during and after the test.        | Passed        |
| TEST 3        | 11-06-2023                  | SHUTTING OFF WATER FLOW       | EN14511-4:2022, § 4.5             | The water flow rate was shutted 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. 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.   | Passed        |
| TEST 4        | 11-06-2023                  | SHUTTING OFF AIR FLOW         | EN14511-4:2022, § 4.5             | 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. During the test, no warning or alarm were showed. No damage was recorded on the machine during and after the test.  | Passed        |
| TEST 5        | 11-06-2023                  | COMPLETE POWER SUPPLY FAILURE | EN14511-4:2022, § 4.6             | The power supply was cut off for about 10 seconds. The unit restarted automatically within about 3 minutes after the power supply was reactivated.   | Passed        |

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Appendix II Marking plate

| Nameplate   |   |
|---|---|
| <b>Model: <u>SWD WP6 R290</u></b>   |   |
| <b>DC Inverter Heat Pump</b>  |   |
| Model   | SWD WP6 R290  |
| Power supply  | 220-240V~/50Hz  |
| *Heating Capacity Range   | 3.3~8.3 kW  |
| *Heating input Range  | 0.64~2.18 kW  |
| **Cooling capacity Range  | 2.4~5.8 kW  |
| **Cooling input power   | 0.79~2.19 kW  |
| ***Heating capacity Range (DWH)   | 3.7~7.4 kW  |
| ***Heating input Range (DWH)  | 0.79~2.10 kW  |
| Rated Current   | 4.53 A  |
| Rated Power Input   | 0.99 kW   |
| Refrigerant   | R290/800 g  |
|   |  |
| Max operating pressure (High side)  | 3.2 MPa   |
| Max operating pressure (Low side)   | 0.8 MPa   |
| Maximum allowable pressure  | 3.2 MPa   |
| Climate type  | Low Temperature   |
| Operating range   | -25~43°C  |
| Water Flow  | 1.43m <sup>3</sup> /h   |
| Diameter of pipe  | DN25  |
| IP Grade  | IPX4  |
| Electric shock rating   | I   |
| Body size (W×D×H)   | 1080×460×820 mm   |
| Net weight/Gross weight   | 112/125 kg  |
| Production date and code  | See unit barcode  |
| Sonnenwärme Direkt GmbH<br>Dammholmer Str. 3, 24873 Havetoft, Germany   |   |
| Remark:<br>*Heating working condition: Inlet water temperature 30°C, Outlet water temperature 35°C<br>Dry bulb temperature 7°C, Wet bulb temperature 6°C.<br>**Cooling working condition: Inlet water temperature 12°C, Outlet water temperature 7°C<br>Dry bulb temperature 35°C, Wet bulb temperature 24°C.<br>***DHW working condition: Inlet water temperature 15°C, Outlet water temperature 55°C<br>Dry bulb temperature 7°C, Wet bulb temperature 6°C. |   |
|    |   |

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Appendix II Marking plate

| Nameplate   |   |
|---|---|
| <b>Model: <u>SWD WP10 R290 230V</u></b>   |   |
| <b>DC Inverter Heat Pump</b>  |   |
| Model   | SWD WP10 R290 230V  |
| Power supply  | 220-240V~/50Hz  |
| *Heating Capacity Range   | 5.9~14.8 kW   |
| *Heating input Range  | 1.13~3.83 kW  |
| **Cooling capacity Range  | 4.3~10.8 kW   |
| **Cooling input power   | 1.39~3.99 kW  |
| ***Heating capacity Range (DWH)   | 6.6~13.2 kW   |
| ***Heating input Range (DWH)  | 1.41~3.73 kW  |
| Rated Current   | 8.28 A  |
| Rated Power Input   | 1.81 kW   |
| Refrigerant   | R290/1150 g   |
|   |  |
| Max operating pressure (High side)  | 3.2 MPa   |
| Max operating pressure (Low side)   | 0.8 MPa   |
| Maximum allowable pressure  | 3.2 MPa   |
| Climate type  | Low Temperature   |
| Operating range   | -25~43°C  |
| Water Flow  | 2.55m <sup>3</sup> /h   |
| Diameter of pipe  | DN25  |
| IP Grade  | IPX4  |
| Electric shock rating   | I   |
| Body size (W×D×H)   | 1080×480×1060 mm  |
| Net weight/Gross weight   | 138/150 kg  |
| Production date and code  | See unit barcode  |
| Sonnenwärme Direkt GmbH<br>Dammholmer Str. 3, 24873 Havetoft, Germany   |   |
| Remark:<br>*Heating working condition: Inlet water temperature 30°C, Outlet water temperature 35°C<br>Dry bulb temperature 7°C, Wet bulb temperature 6°C.<br>**Cooling working condition: Inlet water temperature 12°C, Outlet water temperature 7°C<br>Dry bulb temperature 35°C, Wet bulb temperature 24°C.<br>***DHW working condition: Inlet water temperature 15°C, Outlet water temperature 55°C<br>Dry bulb temperature 7°C, Wet bulb temperature 6°C. |   |
|    |   |

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**Appendix III photo documentaiton**


|                                  |   |
|----------------------------------|---|
| Details of:                      | Overall view for SWD WP6 R290   |
| 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:                      | Compressor for SWD WP6 R290  |
| 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:  | Fan Motor for SWD WP6 R290  |
| <p><b>View:</b></p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p> |  <p>The image shows a white label for a fan motor. The text on the label includes 'RD80HB', '空气调节器用单相无刷直流电动机' (Single-phase brushless DC motor for air conditioning), '(FAN MOTOR FOR AIR CONDITIONER)', '220V 50Hz', '1.5A (1.5A)', '150W', and 'Langmen LT Motor Co. Ltd.'. There is a wiring diagram with terminals labeled FG, Vm, Vw, Yw, and GND. A QR code is located at the bottom right of the label.</p> |

|  |  |
|--|--|
| Details of:  | Main Control Board for SWD WP6 R290  |
| <p><b>View:</b></p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p> |  <p>The image shows the internal main control board of the device. It features a green printed circuit board (PCB) populated with various electronic components, including integrated circuits, capacitors, and resistors. A complex network of multi-colored wires (red, yellow, blue, black) is connected to the board. The board is housed within a dark metal enclosure.</p> |

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**Appendix III photo documentaiton**

|                                  |   |
|----------------------------------|---|
| Details of:                      | Water Pump for SWD WP6 R290   |
| 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:                      | Overall view for SWD WP10 R290 230V  |
| 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:                      | Compressor for SWD WP10 R290 230V  |
| 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:                      | Fan Motor for SWD WP10 R290 230V   |
| 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:                      | Main Control Board for SWD WP10 R290 230V  |
| 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:                      | Water Pump for SWD WP10 R290 230V  |
| 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 IV Construction data form**

| <b>Model: SWD WP6 R290</b> |                 |   |
|----------------------------|-----------------|---|
| <b>Part</b>                |                 | <b>Technical data</b>                           |
| 1. Compressor              |                 |   |
|                            | Manufacture:    | Shanghai Highly Electrical Appliance Co., Ltd.  |
|                            | Type:           | WHP07600PSDPC9KQ                                |
|                            | Rated capacity: | 1580W   |
|                            | Serial-number:  | W5WN5H066UW2                                    |
|                            | Specification:  | DC143.5V; 900-7200r/min; R290                   |
| 2. Condenser               |                 |   |
|                            | Manufacture:    | Ningbo Hrale Plate Heat Exchanger Co., Ltd.     |
|                            | Type:           | B3-68-24-4.5                                    |
|                            | Heat exchanger: | Plate heat exchanger                            |
|                            | Dimension(mm):  | 119(L)mmX526(H)mmX66.4(D)mm                     |
| 3. Evaporator              |                 |   |
|                            | Manufacture:    | Guangzhou AOTAI Refrigeration Equipment Co.,LTD |
|                            | Type:           | 801002-0851                                     |
|                            | Heat exchanger: | Finned heat exchanger                           |
|                            | Dimension(mm):  | 640*355*748*Φ7.94*2.5                           |
| 4. Fan motor               |                 |   |
|                            | Manufacture:    | Jiangmen LT Motor Co., Ltd                      |
|                            | Type:           | RD80HB  |
|                            | Fan type:       | 3 blade   |
|                            | Specification:  | DC310V; 80W                                     |
| 5. Main control board      |                 |   |
|                            | Manufacture:    | Guangdong Chico Electronic Inc.                 |
|                            | Type:           | PW58383   |
|                            | Specification:  | 380V; 50Hz                                      |
| 6. Water pump              |                 |   |
|                            | Manufacture:    | SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.           |
|                            | Type:           | APM25-9-130 PWM1                                |
|                            | Specification:  | 230V; 50/60Hz; 4-95W                            |

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**Appendix IV Construction data form**

**Model: SWD WP10 R290 230V**

| Part                  |                 | Technical data                                  |
|-----------------------|-----------------|---|
| 1. Compressor         |                 |   |
|                       | Manufacture:    | Shanghai Highly Electrical Appliance Co., Ltd.  |
|                       | Type:           | WHP13300PSDPC8FQ                                |
|                       | Rated capacity: | 2860W   |
|                       | Serial-number:  | W6PN5H06376X                                    |
|                       | Specification:  | DC143.5V; 900-6600r/min; R290                   |
| 2. Condenser          |                 |   |
|                       | Manufacture:    | Ningbo Hrale Plate Heat Exchanger Co., Ltd.     |
|                       | Type:           | B3-68-34-4.5                                    |
|                       | Heat exchanger: | Plate heat exchanger                            |
|                       | Dimension(mm):  | 119(L)mmX526(H)mmX89.5(D)mm                     |
| 3. Evaporator         |                 |   |
|                       | Manufacture:    | Guangzhou AOTAI Refrigeration Equipment Co.,LTD |
|                       | Type:           | 801002-1154                                     |
|                       | Heat exchanger: | Finned heat exchanger                           |
|                       | Dimension(mm):  | 764*345*990*Φ7.94*3                             |
| 4. Fan motor          |                 |   |
|                       | Manufacture:    | Jiangmen LT Motor Co., Ltd                      |
|                       | Type:           | RD200HC   |
|                       | Fan type:       | 3 blade   |
|                       | Specification:  | DC310V; 200W                                    |
| 5. Main control board |                 |   |
|                       | Manufacture:    | Guangdong Chico Electronic Inc.                 |
|                       | Type:           | PW58342   |
|                       | Specification:  | 380V; 50Hz                                      |
| 6. Water pump         |                 |   |
|                       | Manufacture:    | SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.           |
|                       | Type:           | APM25-9-130 PWM1                                |
|                       | Specification:  | 230V; 50/60Hz; 4-95W                            |

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**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           |
| 3   | Anechoic rooms (hemi-anechoic rooms)       | Guangzhou Kinte | -              | NC-036-2     | 2023-10-07           |
| 4   | AC source Supply                           | YANGHONG        | YF-3600        | VGDS-0637    | 2023-11-07           |
| 5   | 6 channel data logger                      | —               | PXI-1033       | VGDY-0257    | 2024-05-20           |
| 6   | PULSE system                               | B & K           | 3660C          | VGDY-0184    | 2024-04-12           |
| 7   | Calibrator                                 | B & K           | 4231           | HJ-000095    | 2023-06-30           |
| 8   | Long steel tape                            | —               | 5m             | HJ-000150    | 2024-01-01           |
| 9   | Temperature measurement system             | —               | —              | NC-036-1     | 2024-06-07           |
| 10  | Atmospheric pressure meter                 | —               | —              | HJ-000165    | 2023-11-22           |
| 11  | Constant temperature water system          | B & K           | —              | VGDS-0448    | 2024-04-18           |
| 12  | Windscreen                                 | B & K           | WS002-5        | —            | —                    |

-- End of Report --