

## Subtype LW 251

|                     |                      |
|---------------------|----------------------|
| Certificate Holder  | ait-deutschland GmbH |
| Address             | Industriestr. 3      |
| ZIP                 | 95359                |
| City                | Kasendorf            |
| Country             | DE                   |
| Certification Body  | BRE Global Limited   |
| Subtype title       | LW 251               |
| Registration number | 041-K001-40          |
| Heat Pump Type      | Outdoor Air/Water    |
| Refrigerant         | R407c                |
| Mass of Refrigerant | 9.8 kg               |
| Certification Date  | 08.10.2019           |

## Model LW 251 (L)

|                                     |                                |
|-------------------------------------|--------------------------------|
| Model name                          | LW 251 (L)                     |
| Application                         | Heating (medium temp)          |
| Units                               | Indoor                         |
| Climate zone (for heating)          | Warmer Climate, Colder Climate |
| Cooling mode application (optional) | n/a                            |
| Any additional heat sources         | n/a                            |

## General data

|                  |             |
|------------------|-------------|
| Power supply     | 3x400V 50Hz |
| Off-peak product | n/a         |

## Outdoor Air/Water

### EN 14511-4 | Heating

|                                            |        |
|--------------------------------------------|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure              | passed |
| Starting and operating test                | passed |

### EN 14511-2 | Heating

|             | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 15.47 kW        | 15.28 kW           |
| El input    | 3.77 kW         | 5.21 kW            |
| COP         | 4.11            | 2.93               |

### EN 12102-1 | Average Climate

|                          | Low temperature | Medium temperature |
|--------------------------|-----------------|--------------------|
| Sound power level indoor | 63 dB(A)        | 63 dB(A)           |

### EN 14825 | Average Climate

|                | Low temperature | Medium temperature |
|----------------|-----------------|--------------------|
| $\eta_s$       | 155 %           | 122 %              |
| Prated         | 25.31 kW        | 25.01 kW           |
| SCOP           | 3.95            | 3.13               |
| Tbiv           | -5 °C           | -5 °C              |
| TOL            | -10 °C          | -10 °C             |
| Pdh Tj = -7°C  | 19.36 kW        | 19.18 kW           |
| COP Tj = -7°C  | 2.96            | 2.07               |
| Cdh Tj = -7 °C | 1.00            | 1.00               |
| Pdh Tj = +2°C  | 24.23 kW        | 23.93 kW           |
| COP Tj = +2°C  | 3.77            | 3.02               |
| Cdh Tj = +2 °C | 1.00            | 1.00               |
| Pdh Tj = +7°C  | 14.34 kW        | 14.29 kW           |
| COP Tj = +7°C  | 5.06            | 4.13               |
| Cdh Tj = +7 °C | 1.00            | 1.00               |

|                                                     |             |             |
|-----------------------------------------------------|-------------|-------------|
| Pdh Tj = 12°C                                       | 16.85 kW    | 16.82 kW    |
| COP Tj = 12°C                                       | 5.90        | 5.44        |
| Cdh Tj = +12 °C                                     | 1.00        | 1.00        |
| Pdh Tj = Tbiv                                       | 20.44 kW    | 20.20 kW    |
| COP Tj = Tbiv                                       | 3.18        | 2.24        |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 17.75 kW    | 17.70 kW    |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.66        | 1.83        |
| WTOL                                                | 70 °C       | 70 °C       |
| Poff                                                | 10 W        | 10 W        |
| PTO                                                 | 10 W        | 10 W        |
| PSB                                                 | 10 W        | 10 W        |
| PCK                                                 | 0 W         | 0 W         |
| Supplementary Heater: Type of energy input          | Electricity | Electricity |
| Supplementary Heater: PSUP                          | 7.56 kW     | 7.31 kW     |
| Annual energy consumption Qhe                       | 13252 kWh   | 16517 kWh   |

#### EN 14825 | Colder Climate

|                                                     | Low temperature | Medium temperature |
|-----------------------------------------------------|-----------------|--------------------|
| ηs                                                  | 134 %           | 110 %              |
| Prated                                              | 22.63 kW        | 22.68 kW           |
| SCOP                                                | 3.43            | 2.83               |
| Tbiv                                                | -12 °C          | -12 °C             |
| TOL                                                 | -20 °C          | -20 °C             |
| Pdh Tj = -7°C                                       | 19.39 kW        | 19.68 kW           |
| COP Tj = -7°C                                       | 3.15            | 2.39               |
| Cdh Tj = -7 °C                                      | 1.00            | 1.00               |
| Pdh Tj = +2°C                                       | 24.28 kW        | 24.09 kW           |
| COP Tj = +2°C                                       | 3.93            | 3.37               |
| Cdh Tj = +2 °C                                      | 1.00            | 1.00               |
| Pdh Tj = +7°C                                       | 14.35 kW        | 14.32 kW           |
| COP Tj = +7°C                                       | 5.22            | 4.56               |
| Cdh Tj = +7 °C                                      | 1.00            | 1.00               |
| Pdh Tj = 12°C                                       | 16.85 kW        | 16.85 kW           |
| COP Tj = 12°C                                       | 5.78            | 5.71               |
| Cdh Tj = +12 °C                                     | 1.00            | 1.00               |
| Pdh Tj = Tbiv                                       | 16.68 kW        | 16.71 kW           |
| COP Tj = Tbiv                                       | 2.71            | 1.96               |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 12.40 kW        | 13.77 kW           |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 1.92            | 1.53               |
| WTOL                                                | 70 °C           | 70 °C              |
| Poff                                                | 10 W            | 10 W               |
| PTO                                                 | 10 W            | 10 W               |

|                                                  |             |             |
|--------------------------------------------------|-------------|-------------|
| PSB                                              | 10 W        | 10 W        |
| PCK                                              | 0 W         | 0 W         |
| Supplementary Heater: Type of energy input       | Electricity | Electricity |
| Supplementary Heater: PSUP                       | 22.63 kW    | 22.68 kW    |
| Annual energy consumption Q <sub>he</sub>        | 16286 kWh   | 19754 kWh   |
| P <sub>d,h</sub> T <sub>j</sub> = -15 °C (if TOL | 15.06       | 15.23       |
| COP T <sub>j</sub> = -15 °C (if TOL              | 2.40        | 1.74        |
| C <sub>d,h</sub> T <sub>j</sub> = -15 °C         | 1.00        | 1.00        |

#### EN 14825 | Warmer Climate

|                                                                                                                               | Low temperature | Medium temperature |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------|
| η <sub>s</sub>                                                                                                                | 198 %           | 152 %              |
| Prated                                                                                                                        | 24.15 kW        | 23.51 kW           |
| SCOP                                                                                                                          | 5.02            | 3.87               |
| T <sub>biv</sub>                                                                                                              | 4 °C            | 4 °C               |
| TOL                                                                                                                           | 2 °C            | 2 °C               |
| P <sub>d,h</sub> T <sub>j</sub> = +2 °C                                                                                       | 24.15 kW        | 23.51 kW           |
| COP T <sub>j</sub> = +2 °C                                                                                                    | 3.55            | 2.35               |
| C <sub>d,h</sub> T <sub>j</sub> = +2 °C                                                                                       | 1.00            | 1.00               |
| P <sub>d,h</sub> T <sub>j</sub> = +7 °C                                                                                       | 14.33 kW        | 14.23 kW           |
| COP T <sub>j</sub> = +7 °C                                                                                                    | 4.74            | 3.33               |
| C <sub>d,h</sub> T <sub>j</sub> = +7 °C                                                                                       | 1.00            | 1.00               |
| P <sub>d,h</sub> T <sub>j</sub> = 12 °C                                                                                       | 16.84 kW        | 16.77 kW           |
| COP T <sub>j</sub> = 12 °C                                                                                                    | 5.71            | 4.90               |
| C <sub>d,h</sub> T <sub>j</sub> = +12 °C                                                                                      | 1.00            | 1.00               |
| P <sub>d,h</sub> T <sub>j</sub> = T <sub>biv</sub>                                                                            | 20.25 kW        | 19.85 kW           |
| COP T <sub>j</sub> = T <sub>biv</sub>                                                                                         | 3.88            | 2.63               |
| P <sub>d,h</sub> T <sub>j</sub> = TOL or P <sub>d,h</sub> T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub> | 24.15 kW        | 23.51 kW           |
| COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>                           | 3.55            | 2.35               |
| WTOL                                                                                                                          | 70 °C           | 70 °C              |
| P <sub>off</sub>                                                                                                              | 10 W            | 10 W               |
| PTO                                                                                                                           | 10 W            | 10 W               |
| PSB                                                                                                                           | 10 W            | 10 W               |
| PCK                                                                                                                           | 0 W             | 0 W                |
| Supplementary Heater: Type of energy input                                                                                    | Electricity     | Electricity        |
| Supplementary Heater: PSUP                                                                                                    | 0.00 kW         | 0.00 kW            |
| Annual energy consumption Q <sub>he</sub>                                                                                     | 6424 kWh        | 8123 kWh           |

## Model LW 251A

|                                     |                                |
|-------------------------------------|--------------------------------|
| Model name                          | LW 251A                        |
| Application                         | Heating (medium temp)          |
| Units                               | Outdoor                        |
| Climate zone (for heating)          | Warmer Climate, Colder Climate |
| Cooling mode application (optional) | n/a                            |
| Any additional heat sources         | n/a                            |

## General data

|                  |             |
|------------------|-------------|
| Power supply     | 3x400V 50Hz |
| Off-peak product | n/a         |

## Outdoor Air/Water

### EN 14511-4 | Heating

|                                            |        |
|--------------------------------------------|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure              | passed |
| Starting and operating test                | passed |

### EN 14511-2 | Heating

|             | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 15.47 kW        | 15.28 kW           |
| El input    | 3.77 kW         | 5.21 kW            |
| COP         | 4.11            | 2.93               |

### EN 12102-1 | Average Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 63 dB(A)        | 63 dB(A)           |
| Sound power level outdoor | 62 dB(A)        | 62 dB(A)           |

### EN 14825 | Average Climate

|                | Low temperature | Medium temperature |
|----------------|-----------------|--------------------|
| $\eta_s$       | 155 %           | 122 %              |
| Prated         | 25.31 kW        | 25.01 kW           |
| SCOP           | 3.95            | 3.13               |
| Tbiv           | -5 °C           | -5 °C              |
| TOL            | -10 °C          | -10 °C             |
| Pdh Tj = -7°C  | 19.36 kW        | 19.18 kW           |
| COP Tj = -7°C  | 2.96            | 2.07               |
| Cdh Tj = -7 °C | 1.00            | 1.00               |
| Pdh Tj = +2°C  | 24.23 kW        | 23.93 kW           |
| COP Tj = +2°C  | 3.77            | 3.02               |
| Cdh Tj = +2 °C | 1.00            | 1.00               |
| Pdh Tj = +7°C  | 14.34 kW        | 14.29 kW           |
| COP Tj = +7°C  | 5.06            | 4.13               |

|                                                     |             |             |
|-----------------------------------------------------|-------------|-------------|
| Cdh Tj = +7 °C                                      | 1.00        | 1.00        |
| Pdh Tj = 12°C                                       | 16.85 kW    | 16.82 kW    |
| COP Tj = 12°C                                       | 5.90        | 5.44        |
| Cdh Tj = +12 °C                                     | 1.00        | 1.00        |
| Pdh Tj = Tbiv                                       | 20.44 kW    | 20.20 kW    |
| COP Tj = Tbiv                                       | 3.18        | 2.24        |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 17.75 kW    | 17.70 kW    |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.66        | 1.83        |
| WTOL                                                | 70 °C       | 70 °C       |
| Poff                                                | 10 W        | 10 W        |
| PTO                                                 | 10 W        | 10 W        |
| PSB                                                 | 10 W        | 10 W        |
| PCK                                                 | 0 W         | 0 W         |
| Supplementary Heater: Type of energy input          | Electricity | Electricity |
| Supplementary Heater: PSUP                          | 7.56 kW     | 7.31 kW     |
| Annual energy consumption Qhe                       | 13252 kWh   | 16517 kWh   |

#### EN 14825 | Colder Climate

|                                                     | Low temperature | Medium temperature |
|-----------------------------------------------------|-----------------|--------------------|
| ηs                                                  | 134 %           | 110 %              |
| Prated                                              | 22.63 kW        | 22.68 kW           |
| SCOP                                                | 3.43            | 2.83               |
| Tbiv                                                | -12 °C          | -12 °C             |
| TOL                                                 | -20 °C          | -20 °C             |
| Pdh Tj = -7°C                                       | 19.39 kW        | 19.68 kW           |
| COP Tj = -7°C                                       | 3.15            | 2.39               |
| Cdh Tj = -7 °C                                      | 1.00            | 1.00               |
| Pdh Tj = +2°C                                       | 24.28 kW        | 24.09 kW           |
| COP Tj = +2°C                                       | 3.93            | 3.37               |
| Cdh Tj = +2 °C                                      | 1.00            | 1.00               |
| Pdh Tj = +7°C                                       | 14.35 kW        | 14.32 kW           |
| COP Tj = +7°C                                       | 5.22            | 4.56               |
| Cdh Tj = +7 °C                                      | 1.00            | 1.00               |
| Pdh Tj = 12°C                                       | 16.85 kW        | 16.85 kW           |
| COP Tj = 12°C                                       | 5.78            | 5.71               |
| Cdh Tj = +12 °C                                     | 1.00            | 1.00               |
| Pdh Tj = Tbiv                                       | 16.68 kW        | 16.71 kW           |
| COP Tj = Tbiv                                       | 2.71            | 1.96               |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 12.40 kW        | 13.77 kW           |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 1.92            | 1.53               |
| WTOL                                                | 70 °C           | 70 °C              |
| Poff                                                | 10 W            | 10 W               |

|                                                |             |             |
|------------------------------------------------|-------------|-------------|
| PTO                                            | 10 W        | 10 W        |
| PSB                                            | 10 W        | 10 W        |
| PCK                                            | 0 W         | 0 W         |
| Supplementary Heater: Type of energy input     | Electricity | Electricity |
| Supplementary Heater: PSUP                     | 22.63 kW    | 22.68 kW    |
| Annual energy consumption Q <sub>he</sub>      | 16286 kWh   | 19754 kWh   |
| P <sub>dh</sub> T <sub>j</sub> = -15°C (if TOL | 15.06       | 15.23       |
| COP T <sub>j</sub> = -15°C (if TOL             | 2.40        | 1.74        |
| C <sub>dh</sub> T <sub>j</sub> = -15 °C        | 1.00        | 1.00        |

#### EN 14825 | Warmer Climate

|                                                                                                                             | Low temperature | Medium temperature |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------|
| η <sub>s</sub>                                                                                                              | 198 %           | 152 %              |
| Prated                                                                                                                      | 24.15 kW        | 23.51 kW           |
| SCOP                                                                                                                        | 5.02            | 3.87               |
| T <sub>biv</sub>                                                                                                            | 4 °C            | 4 °C               |
| TOL                                                                                                                         | 2 °C            | 2 °C               |
| P <sub>dh</sub> T <sub>j</sub> = +2°C                                                                                       | 24.15 kW        | 23.51 kW           |
| COP T <sub>j</sub> = +2°C                                                                                                   | 3.55            | 2.35               |
| C <sub>dh</sub> T <sub>j</sub> = +2 °C                                                                                      | 1.00            | 1.00               |
| P <sub>dh</sub> T <sub>j</sub> = +7°C                                                                                       | 14.33 kW        | 14.23 kW           |
| COP T <sub>j</sub> = +7°C                                                                                                   | 4.74            | 3.33               |
| C <sub>dh</sub> T <sub>j</sub> = +7 °C                                                                                      | 1.00            | 1.00               |
| P <sub>dh</sub> T <sub>j</sub> = 12°C                                                                                       | 16.84 kW        | 16.77 kW           |
| COP T <sub>j</sub> = 12°C                                                                                                   | 5.71            | 4.90               |
| C <sub>dh</sub> T <sub>j</sub> = +12 °C                                                                                     | 1.00            | 1.00               |
| P <sub>dh</sub> T <sub>j</sub> = T <sub>biv</sub>                                                                           | 20.25 kW        | 19.85 kW           |
| COP T <sub>j</sub> = T <sub>biv</sub>                                                                                       | 3.88            | 2.63               |
| P <sub>dh</sub> T <sub>j</sub> = TOL or P <sub>dh</sub> T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub> | 24.15 kW        | 23.51 kW           |
| COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>                         | 3.55            | 2.35               |
| WTOL                                                                                                                        | 70 °C           | 70 °C              |
| P <sub>off</sub>                                                                                                            | 10 W            | 10 W               |
| PTO                                                                                                                         | 10 W            | 10 W               |
| PSB                                                                                                                         | 10 W            | 10 W               |
| PCK                                                                                                                         | 0 W             | 0 W                |
| Supplementary Heater: Type of energy input                                                                                  | Electricity     | Electricity        |
| Supplementary Heater: PSUP                                                                                                  | 0.00 kW         | 0.00 kW            |
| Annual energy consumption Q <sub>he</sub>                                                                                   | 6424 kWh        | 8123 kWh           |