

## Subtype LW 121

|                     |                      |
|---------------------|----------------------|
| Certificate Holder  | ait-deutschland GmbH |
| Address             | Industriestr. 3      |
| ZIP                 | 95359                |
| City                | Kasendorf            |
| Country             | DE                   |
| Certification Body  | BRE Global Limited   |
| Subtype title       | LW 121               |
| Registration number | 041-K001-37          |
| Heat Pump Type      | Outdoor Air/Water    |
| Refrigerant         | R407c                |
| Mass of Refrigerant | 5.8 kg               |
| Certification Date  | 08.10.2019           |

## Model LW 121

|                                     |                                |
|-------------------------------------|--------------------------------|
| Model name                          | LW 121                         |
| 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 | 12.80 kW        | 12.60 kW           |
| El input    | 3.00 kW         | 4.50 kW            |
| COP         | 4.20            | 2.80               |

### EN 12102-1 | Average Climate

|                          | Low temperature | Medium temperature |
|--------------------------|-----------------|--------------------|
| Sound power level indoor | 58 dB(A)        | 58 dB(A)           |

### EN 14825 | Average Climate

|                | Low temperature | Medium temperature |
|----------------|-----------------|--------------------|
| $\eta_s$       | 153 %           | 122 %              |
| Prated         | 13.70 kW        | 12.51 kW           |
| SCOP           | 3.90            | 3.13               |
| Tbiv           | -4 °C           | -4 °C              |
| TOL            | -10 °C          | -10 °C             |
| Pdh Tj = -7°C  | 9.22 kW         | 8.70 kW            |
| COP Tj = -7°C  | 3.05            | 2.08               |
| Cdh Tj = -7 °C | 1.00            | 1.00               |
| Pdh Tj = +2°C  | 11.90 kW        | 11.52 kW           |
| COP Tj = +2°C  | 3.94            | 3.11               |
| Cdh Tj = +2 °C | 1.00            | 1.00               |
| Pdh Tj = +7°C  | 12.99 kW        | 12.56 kW           |
| COP Tj = +7°C  | 4.86            | 4.14               |
| Cdh Tj = +7 °C | 1.00            | 1.00               |

|                                                     |             |             |
|-----------------------------------------------------|-------------|-------------|
| Pdh Tj = 12°C                                       | 15.09 kW    | 15.03 kW    |
| COP Tj = 12°C                                       | 5.32        | 5.18        |
| Cdh Tj = +12 °C                                     | 1.00        | 1.00        |
| Pdh Tj = Tbiv                                       | 10.13 kW    | 9.62 kW     |
| COP Tj = Tbiv                                       | 3.40        | 2.39        |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.36 kW     | 7.86 kW     |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.78        | 1.85        |
| WTOL                                                | 65 °C       | 65 °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                          | 5.34 kW     | 4.65 kW     |
| Annual energy consumption Qhe                       | 7258 kWh    | 8264 kWh    |

#### EN 14825 | Colder Climate

|                                                     | Low temperature | Medium temperature |
|-----------------------------------------------------|-----------------|--------------------|
| ηs                                                  | 137 %           | 112 %              |
| Prated                                              | 10.70 kW        | 10.21 kW           |
| SCOP                                                | 3.50            | 2.87               |
| Tbiv                                                | -12 °C          | -12 °C             |
| TOL                                                 | -20 °C          | -20 °C             |
| Pdh Tj = -7°C                                       | 9.31 kW         | 8.93 kW            |
| COP Tj = -7°C                                       | 3.28            | 2.43               |
| Cdh Tj = -7 °C                                      | 1.00            | 1.00               |
| Pdh Tj = +2°C                                       | 11.96 kW        | 11.71 kW           |
| COP Tj = +2°C                                       | 4.10            | 3.47               |
| Cdh Tj = +2 °C                                      | 1.00            | 1.00               |
| Pdh Tj = +7°C                                       | 13.07 kW        | 12.86 kW           |
| COP Tj = +7°C                                       | 4.99            | 4.59               |
| Cdh Tj = +7 °C                                      | 1.00            | 1.00               |
| Pdh Tj = 12°C                                       | 15.06 kW        | 15.17 kW           |
| COP Tj = 12°C                                       | 5.16            | 5.38               |
| Cdh Tj = +12 °C                                     | 1.00            | 1.00               |
| Pdh Tj = Tbiv                                       | 7.88 kW         | 7.52 kW            |
| COP Tj = Tbiv                                       | 2.86            | 2.02               |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.60 kW         | 5.88 kW            |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.06            | 1.56               |
| WTOL                                                | 65 °C           | 65 °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                      | 10.70 kW    | 10.21 kW    |
| Annual energy consumption Q <sub>he</sub>       | 7537 kWh    | 8774 kWh    |
| P <sub>dh</sub> T <sub>j</sub> = -15 °C (if TOL | 7.02        | 6.69        |
| COP T <sub>j</sub> = -15 °C (if TOL             | 2.56        | 1.78        |
| 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>                                                                                                              | 185 %           | 145 %              |
| Prated                                                                                                                      | 14.24 kW        | 13.15 kW           |
| SCOP                                                                                                                        | 4.70            | 3.71               |
| T <sub>biv</sub>                                                                                                            | 4 °C            | 4 °C               |
| TOL                                                                                                                         | 2 °C            | 2 °C               |
| P <sub>dh</sub> T <sub>j</sub> = +2 °C                                                                                      | 11.78 kW        | 11.04 kW           |
| COP T <sub>j</sub> = +2 °C                                                                                                  | 3.66            | 2.42               |
| C <sub>dh</sub> T <sub>j</sub> = +2 °C                                                                                      | 1.00            | 1.00               |
| P <sub>dh</sub> T <sub>j</sub> = +7 °C                                                                                      | 12.83 kW        | 11.82 kW           |
| COP T <sub>j</sub> = +7 °C                                                                                                  | 4.59            | 3.22               |
| C <sub>dh</sub> T <sub>j</sub> = +7 °C                                                                                      | 1.00            | 1.00               |
| P <sub>dh</sub> T <sub>j</sub> = 12 °C                                                                                      | 15.01 kW        | 14.75 kW           |
| COP T <sub>j</sub> = 12 °C                                                                                                  | 5.21            | 4.69               |
| 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>                                                                           | 12.21 kW        | 11.27 kW           |
| COP T <sub>j</sub> = T <sub>biv</sub>                                                                                       | 4.06            | 2.68               |
| 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> | 11.78 kW        | 11.04 kW           |
| COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>                         | 3.66            | 2.42               |
| WTOL                                                                                                                        | 65 °C           | 65 °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                                                                                                  | 2.46 kW         | 2.11 kW            |
| Annual energy consumption Q <sub>he</sub>                                                                                   | 4044 kWh        | 4736 kWh           |

## Model LW 121A

|                                     |                                |
|-------------------------------------|--------------------------------|
| Model name                          | LW 121A                        |
| 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 | 12.80 kW        | 12.60 kW           |
| El input    | 3.00 kW         | 4.50 kW            |
| COP         | 4.20            | 2.80               |

### EN 12102-1 | Average Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 50 dB(A)        | 50 dB(A)           |
| Sound power level outdoor | 61 dB(A)        | 61 dB(A)           |

### EN 14825 | Average Climate

|                | Low temperature | Medium temperature |
|----------------|-----------------|--------------------|
| $\eta_s$       | 153 %           | 122 %              |
| Prated         | 13.70 kW        | 12.51 kW           |
| SCOP           | 3.90            | 3.13               |
| Tbiv           | -4 °C           | -4 °C              |
| TOL            | -10 °C          | -10 °C             |
| Pdh Tj = -7°C  | 9.22 kW         | 8.70 kW            |
| COP Tj = -7°C  | 3.05            | 2.08               |
| Cdh Tj = -7 °C | 1.00            | 1.00               |
| Pdh Tj = +2°C  | 11.90 kW        | 11.52 kW           |
| COP Tj = +2°C  | 3.94            | 3.11               |
| Cdh Tj = +2 °C | 1.00            | 1.00               |
| Pdh Tj = +7°C  | 12.99 kW        | 12.56 kW           |
| COP Tj = +7°C  | 4.86            | 4.14               |

|                                                     |             |             |
|-----------------------------------------------------|-------------|-------------|
| Cdh Tj = +7 °C                                      | 1.00        | 1.00        |
| Pdh Tj = 12°C                                       | 15.09 kW    | 15.03 kW    |
| COP Tj = 12°C                                       | 5.32        | 5.18        |
| Cdh Tj = +12 °C                                     | 1.00        | 1.00        |
| Pdh Tj = Tbiv                                       | 10.13 kW    | 9.62 kW     |
| COP Tj = Tbiv                                       | 3.40        | 2.39        |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.36 kW     | 7.86 kW     |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.78        | 1.85        |
| WTOL                                                | 65 °C       | 65 °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                          | 5.34 kW     | 4.65 kW     |
| Annual energy consumption Qhe                       | 7258 kWh    | 8264 kWh    |

#### EN 14825 | Colder Climate

|                                                     | Low temperature | Medium temperature |
|-----------------------------------------------------|-----------------|--------------------|
| ηs                                                  | 137 %           | 112 %              |
| Prated                                              | 10.70 kW        | 10.21 kW           |
| SCOP                                                | 3.50            | 2.87               |
| Tbiv                                                | -12 °C          | -12 °C             |
| TOL                                                 | -20 °C          | -20 °C             |
| Pdh Tj = -7°C                                       | 9.31 kW         | 8.93 kW            |
| COP Tj = -7°C                                       | 3.28            | 2.43               |
| Cdh Tj = -7 °C                                      | 1.00            | 1.00               |
| Pdh Tj = +2°C                                       | 11.96 kW        | 11.71 kW           |
| COP Tj = +2°C                                       | 4.10            | 3.47               |
| Cdh Tj = +2 °C                                      | 1.00            | 1.00               |
| Pdh Tj = +7°C                                       | 13.07 kW        | 12.86 kW           |
| COP Tj = +7°C                                       | 4.99            | 4.59               |
| Cdh Tj = +7 °C                                      | 1.00            | 1.00               |
| Pdh Tj = 12°C                                       | 15.06 kW        | 15.17 kW           |
| COP Tj = 12°C                                       | 5.16            | 5.38               |
| Cdh Tj = +12 °C                                     | 1.00            | 1.00               |
| Pdh Tj = Tbiv                                       | 7.88 kW         | 7.52 kW            |
| COP Tj = Tbiv                                       | 2.86            | 2.02               |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.60 kW         | 5.88 kW            |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.06            | 1.56               |
| WTOL                                                | 65 °C           | 65 °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                     | 10.70 kW    | 10.21 kW    |
| Annual energy consumption Q <sub>he</sub>      | 7537 kWh    | 8774 kWh    |
| P <sub>dh</sub> T <sub>j</sub> = -15°C (if TOL | 7.02        | 6.69        |
| COP T <sub>j</sub> = -15°C (if TOL             | 2.56        | 1.78        |
| 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>                                                                                                              | 185 %           | 145 %              |
| Prated                                                                                                                      | 14.24 kW        | 13.15 kW           |
| SCOP                                                                                                                        | 4.70            | 3.71               |
| T <sub>biv</sub>                                                                                                            | 4 °C            | 4 °C               |
| TOL                                                                                                                         | 2 °C            | 2 °C               |
| P <sub>dh</sub> T <sub>j</sub> = +2°C                                                                                       | 11.78 kW        | 11.04 kW           |
| COP T <sub>j</sub> = +2°C                                                                                                   | 3.66            | 2.42               |
| C <sub>dh</sub> T <sub>j</sub> = +2 °C                                                                                      | 1.00            | 1.00               |
| P <sub>dh</sub> T <sub>j</sub> = +7°C                                                                                       | 12.83 kW        | 11.82 kW           |
| COP T <sub>j</sub> = +7°C                                                                                                   | 4.59            | 3.22               |
| C <sub>dh</sub> T <sub>j</sub> = +7 °C                                                                                      | 1.00            | 1.00               |
| P <sub>dh</sub> T <sub>j</sub> = 12°C                                                                                       | 15.01 kW        | 14.75 kW           |
| COP T <sub>j</sub> = 12°C                                                                                                   | 5.21            | 4.69               |
| 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>                                                                           | 12.21 kW        | 11.27 kW           |
| COP T <sub>j</sub> = T <sub>biv</sub>                                                                                       | 4.06            | 2.68               |
| 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> | 11.78 kW        | 11.04 kW           |
| COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>                         | 3.66            | 2.42               |
| WTOL                                                                                                                        | 65 °C           | 65 °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                                                                                                  | 2.46 kW         | 2.11 kW            |
| Annual energy consumption Q <sub>he</sub>                                                                                   | 4044 kWh        | 4736 kWh           |