

## Subtype CHA-Monoblock 16

|                     |                                                               |
|---------------------|---------------------------------------------------------------|
| Certificate Holder  | WOLF GmbH                                                     |
| Address             | Industriestr. 1                                               |
| ZIP                 | 84048                                                         |
| City                | Mainburg                                                      |
| Country             | DE                                                            |
| Certification Body  | DIN CERTCO Gesellschaft für Konformitätsbewertung mbH         |
| Subtype title       | CHA-Monoblock 16                                              |
| Registration number | 011-1W0514                                                    |
| Heat Pump Type      | Outdoor Air/Water                                             |
| Refrigerant         | R290                                                          |
| Mass of Refrigerant | 3.8 kg                                                        |
| Certification Date  | 30.11.2021                                                    |
| Testing basis       | European KEYMARK Scheme for Heat Pumps Rev. 9 (as of 2021-03) |

## Model CHA-16/20-400V-M2 CS-e9-C2

|                                     |                                                |
|-------------------------------------|------------------------------------------------|
| Model name                          | CHA-16/20-400V-M2 CS-e9-C2                     |
| Application                         | Heating (medium temp)                          |
| Units                               | Indoor, Outdoor                                |
| Climate zone (for heating)          | Colder, Warmer, Warmer Climate, Colder Climate |
| Reversibility                       | Yes                                            |
| Cooling mode application (optional) | +7°C/12°C, +18°C/+23°C                         |
| 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 |
| Defrost test                               | passed |
| Starting and operating test                | passed |

## EN 14511-2 | Heating

|             | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 20.54 kW        | 20.60 kW           |
| El input    | 4.44 kW         | 7.04 kW            |
| COP         | 4.63            | 2.93               |

## EN 14511-2 | Cooling

|                  | +7°C/+12°C | +18°C/+23°C |
|------------------|------------|-------------|
| El input         | 2.27 kW    | 1.68 kW     |
| Cooling capacity | 8.35       | 9.75        |
| EER              | 3.68       | 5.82        |

## EN 12102-1 | Average Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 34 dB(A)        | 34 dB(A)           |
| Sound power level outdoor | 52 dB(A)        | 52 dB(A)           |

## EN 14825 | Average Climate

|          | Low temperature | Medium temperature |
|----------|-----------------|--------------------|
| $\eta_s$ | 215 %           | 154 %              |
| Prated   | 13.52 kW        | 14.55 kW           |
| SCOP     | 5.46            | 3.92               |
| Tbiv     | -10 °C          | -10 °C             |
| TOL      | -10 °C          | -10 °C             |

|                                                     |             |             |
|-----------------------------------------------------|-------------|-------------|
| Pdh Tj = -7°C                                       | 12.17 kW    | 12.64 kW    |
| COP Tj = -7°C                                       | 3.40        | 2.31        |
| Cdh Tj = -7 °C                                      | 0.900       | 0.900       |
| Pdh Tj = +2°C                                       | 7.30 kW     | 7.73 kW     |
| COP Tj = +2°C                                       | 5.42        | 3.86        |
| Cdh Tj = +2 °C                                      | 0.900       | 0.900       |
| Pdh Tj = +7°C                                       | 6.33 kW     | 5.87 kW     |
| COP Tj = +7°C                                       | 7.09        | 5.21        |
| Cdh Tj = +7 °C                                      | 0.973       | 0.979       |
| Pdh Tj = 12°C                                       | 7.13 kW     | 6.80 kW     |
| COP Tj = 12°C                                       | 8.53        | 6.56        |
| Cdh Tj = +12 °C                                     | 0.972       | 0.977       |
| Pdh Tj = Tbiv                                       | 13.52 kW    | 14.55 kW    |
| COP Tj = Tbiv                                       | 2.61        | 1.92        |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 13.52 kW    | 14.55 kW    |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.61        | 1.92        |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.900       | 0.900       |
| WTOL                                                | 65 °C       | 65 °C       |
| Poff                                                | 20 W        | 20 W        |
| PTO                                                 | 24 W        | 24 W        |
| PSB                                                 | 23 W        | 23 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 Qhe                       | 5118 kWh    | 7675 kWh    |

#### EN 12102-1 | Colder Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 34 dB(A)        | 34 dB(A)           |
| Sound power level outdoor | 52 dB(A)        | 52 dB(A)           |

#### EN 14825 | Colder Climate

|                | Low temperature | Medium temperature |
|----------------|-----------------|--------------------|
| ηs             | 183 %           | 137 %              |
| Prated         | 15.64 kW        | 15.46 kW           |
| SCOP           | 4.65            | 3.50               |
| Tbiv           | -15 °C          | -15 °C             |
| TOL            | -22 °C          | -22 °C             |
| Pdh Tj = -7°C  | 9.73 kW         | 9.84 kW            |
| COP Tj = -7°C  | 3.95            | 2.88               |
| Cdh Tj = -7 °C | 0.900           | 0.900              |
| Pdh Tj = +2°C  | 5.95 kW         | 6.17 kW            |
| COP Tj = +2°C  | 5.84            | 4.49               |

|                                                     |             |             |
|-----------------------------------------------------|-------------|-------------|
| Cdh Tj = +2 °C                                      | 0.900       | 0.900       |
| Pdh Tj = +7°C                                       | 6.38 kW     | 6.02 kW     |
| COP Tj = +7°C                                       | 7.12        | 5.60        |
| Cdh Tj = +7 °C                                      | 0.974       | 0.978       |
| Pdh Tj = 12°C                                       | 6.69 kW     | 6.76 kW     |
| COP Tj = 12°C                                       | 7.96        | 6.60        |
| Cdh Tj = +12 °C                                     | 0.972       | 0.977       |
| Pdh Tj = Tbiv                                       | 12.76 kW    | 12.61 kW    |
| COP Tj = Tbiv                                       | 2.68        | 1.87        |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 9.06 kW     | 10.27 kW    |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.23        | 1.35        |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.900       | 0.900       |
| WTOL                                                | 65 °C       | 65 °C       |
| Poff                                                | 20 W        | 20 W        |
| PTO                                                 | 24 W        | 24 W        |
| PSB                                                 | 23 W        | 23 W        |
| PCK                                                 | 0 W         | 0 W         |
| Supplementary Heater: Type of energy input          | Electricity | Electricity |
| Supplementary Heater: PSUP                          | 6.58 kW     | 5.19 kW     |
| Annual energy consumption Qhe                       | 8292 kWh    | 10876 kWh   |
| Pdh Tj = -15°C (if TOL                              | 12.76       | 12.61       |
| COP Tj = -15°C (if TOL                              | 2.68        | 1.87        |
| Cdh Tj = -15 °C                                     | 0.900       | 0.900       |

#### EN 12102-1 | Warmer Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 34 dB(A)        | 34 dB(A)           |
| Sound power level outdoor | 52 dB(A)        | 52 dB(A)           |

#### EN 14825 | Warmer Climate

|                | Low temperature | Medium temperature |
|----------------|-----------------|--------------------|
| $\eta_s$       | 266 %           | 185 %              |
| Prated         | 15.17 kW        | 15.98 kW           |
| SCOP           | 6.72            | 4.71               |
| Tbiv           | 2 °C            | 2 °C               |
| TOL            | 2 °C            | 2 °C               |
| Pdh Tj = +2°C  | 15.17 kW        | 15.98 kW           |
| COP Tj = +2°C  | 3.35            | 2.30               |
| Cdh Tj = +2 °C | 0.900           | 0.900              |
| Pdh Tj = +7°C  | 10.21 kW        | 9.98 kW            |
| COP Tj = +7°C  | 6.26            | 4.12               |
| Cdh Tj = +7 °C | 0.900           | 0.900              |
| Pdh Tj = 12°C  | 7.12 kW         | 6.62 kW            |

|                                                     |             |             |
|-----------------------------------------------------|-------------|-------------|
| COP Tj = 12°C                                       | 8.15        | 6.03        |
| Cdh Tj = +12 °C                                     | 0.973       | 0.978       |
| Pdh Tj = Tbiv                                       | 15.17 kW    | 15.98 kW    |
| COP Tj = Tbiv                                       | 3.35        | 2.30        |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 15.17 kW    | 15.98 kW    |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.35        | 2.30        |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.900       | 0.900       |
| WTOL                                                | 65 °C       | 65 °C       |
| Poff                                                | 20 W        | 20 W        |
| PTO                                                 | 24 W        | 24 W        |
| PSB                                                 | 23 W        | 23 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 Qhe                       | 3017 kWh    | 4538 kWh    |

#### EN 14825 | Cooling

|                               | +7°C/+12°C | +18°C/+23°C |
|-------------------------------|------------|-------------|
| Pdesignc                      | 14.53 kW   | 15.80 kW    |
| SEER                          | 3.39       | 5.09        |
| Pdc Tj = 35°C                 | 14.53 kW   | 15.80 kW    |
| EER Tj = 35°C                 | 2.74       | 4.59        |
| Cdc Tj = 35 °C                | 0.900      | 0.900       |
| Pdc Tj = 30°C                 | 10.45 kW   | 11.82 kW    |
| EER Tj = 30°C                 | 4.10       | 6.12        |
| Cdc Tj = 30 °C                | 0.900      | 0.900       |
| Pdc Tj = 25°C                 | 6.63 kW    | 7.01 kW     |
| EER Tj = 25°C                 | 3.97       | 5.49        |
| Cdc Tj = 25 °C                | 0.250      | 0.250       |
| Pdc Tj = 20°C                 | 4.94 kW    | 6.42 kW     |
| EER Tj = 20°C                 | 3.49       | 4.87        |
| Cdc Tj = 20 °C                | 0.983      | 0.982       |
| Poff                          | 20 W       | 20 W        |
| PTO                           | 24 W       | 24 W        |
| PSB                           | 23 W       | 23 W        |
| PCK                           | 0 W        | 0 W         |
| Annual energy consumption Qce | 1499 kWh   | 1088 kWh    |

## Model CHA-16/20-400V-M2 CS-C2

|                                     |                         |
|-------------------------------------|-------------------------|
| Model name                          | CHA-16/20-400V-M2 CS-C2 |
| Application                         | Heating (medium temp)   |
| Units                               | Indoor, Outdoor         |
| Climate zone (for heating)          | Warmer, Warmer Climate  |
| Reversibility                       | Yes                     |
| Cooling mode application (optional) | +7°C/12°C, +18°C/+23°C  |
| 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 |
| Defrost test                               | passed |
| Starting and operating test                | passed |

## EN 14511-2 | Heating

|             | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 20.54 kW        | 20.60 kW           |
| El input    | 4.44 kW         | 7.04 kW            |
| COP         | 4.63            | 2.93               |

## EN 14511-2 | Cooling

|                  | +7°C/+12°C | +18°C/+23°C |
|------------------|------------|-------------|
| El input         | 2.27 kW    | 1.68 kW     |
| Cooling capacity | 8.35       | 9.75        |
| EER              | 3.68       | 5.82        |

## EN 12102-1 | Average Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 34 dB(A)        | 34 dB(A)           |
| Sound power level outdoor | 52 dB(A)        | 52 dB(A)           |

## EN 14825 | Average Climate

|          | Low temperature | Medium temperature |
|----------|-----------------|--------------------|
| $\eta_s$ | 215 %           | 154 %              |
| Prated   | 13.52 kW        | 14.55 kW           |
| SCOP     | 5.46            | 3.92               |
| Tbiv     | -10 °C          | -10 °C             |
| TOL      | -10 °C          | -10 °C             |

|                                                     |          |          |
|-----------------------------------------------------|----------|----------|
| Pdh Tj = -7°C                                       | 12.17 kW | 12.64 kW |
| COP Tj = -7°C                                       | 3.40     | 2.31     |
| Cdh Tj = -7 °C                                      | 0.900    | 0.900    |
| Pdh Tj = +2°C                                       | 7.30 kW  | 7.73 kW  |
| COP Tj = +2°C                                       | 5.42     | 3.86     |
| Cdh Tj = +2 °C                                      | 0.900    | 0.900    |
| Pdh Tj = +7°C                                       | 6.33 kW  | 5.87 kW  |
| COP Tj = +7°C                                       | 7.09     | 5.21     |
| Cdh Tj = +7 °C                                      | 0.973    | 0.979    |
| Pdh Tj = 12°C                                       | 7.13 kW  | 6.80 kW  |
| COP Tj = 12°C                                       | 8.53     | 6.56     |
| Cdh Tj = +12 °C                                     | 0.972    | 0.977    |
| Pdh Tj = Tbiv                                       | 13.52 kW | 14.55 kW |
| COP Tj = Tbiv                                       | 2.61     | 1.92     |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 13.52 kW | 14.55 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.61     | 1.92     |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.900    | 0.900    |
| WTOL                                                | 65 °C    | 65 °C    |
| Poff                                                | 20 W     | 10876 W  |
| PTO                                                 | 24 W     | 20 W     |
| PSB                                                 | 23 W     | 24 W     |
| PCK                                                 | 0 W      | 23 W     |
| Supplementary Heater: Type of energy input          | n/a      | n/a      |
| Supplementary Heater: PSUP                          | 0.00 kW  | 0.00 kW  |
| Annual energy consumption Qhe                       | 5118 kWh | 7675 kWh |

#### EN 12102-1 | Warmer Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 34 dB(A)        | 34 dB(A)           |
| Sound power level outdoor | 52 dB(A)        | 52 dB(A)           |

#### EN 14825 | Warmer Climate

|                | Low temperature | Medium temperature |
|----------------|-----------------|--------------------|
| $\eta_s$       | 266 %           | 185 %              |
| Prated         | 15.17 kW        | 15.98 kW           |
| SCOP           | 6.72            | 4.71               |
| Tbiv           | 2 °C            | 2 °C               |
| TOL            | 2 °C            | 2 °C               |
| Pdh Tj = +2°C  | 15.17 kW        | 15.98 kW           |
| COP Tj = +2°C  | 3.35            | 2.30               |
| Cdh Tj = +2 °C | 0.900           | 0.900              |
| Pdh Tj = +7°C  | 10.21 kW        | 9.98 kW            |
| COP Tj = +7°C  | 6.26            | 4.12               |

|                                                     |          |          |
|-----------------------------------------------------|----------|----------|
| Cdh Tj = +7 °C                                      | 0.900    | 0.900    |
| Pdh Tj = 12°C                                       | 7.12 kW  | 6.62 kW  |
| COP Tj = 12°C                                       | 8.15     | 6.03     |
| Cdh Tj = +12 °C                                     | 0.973    | 0.978    |
| Pdh Tj = Tbiv                                       | 15.17 kW | 15.98 kW |
| COP Tj = Tbiv                                       | 3.35     | 2.30     |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 15.17 kW | 15.98 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.35     | 2.30     |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.900    | 0.900    |
| WTOL                                                | 65 °C    | 65 °C    |
| Poff                                                | 20 W     | 10876 W  |
| PTO                                                 | 24 W     | 20 W     |
| PSB                                                 | 23 W     | 24 W     |
| PCK                                                 | 0 W      | 23 W     |
| Supplementary Heater: Type of energy input          | n/a      | n/a      |
| Supplementary Heater: PSUP                          | 0.00 kW  | 0.00 kW  |
| Annual energy consumption Qhe                       | 3017 kWh | 4538 kWh |

#### EN 14825 | Cooling

|                               | +7°C/+12°C | +18°C/+23°C |
|-------------------------------|------------|-------------|
| Pdesignc                      | 14.53 kW   | 15.80 kW    |
| SEER                          | 3.39       | 5.09        |
| Pdc Tj = 35°C                 | 14.53 kW   | 15.80 kW    |
| EER Tj = 35°C                 | 2.74       | 4.59        |
| Cdc Tj = 35 °C                | 0.900      | 0.900       |
| Pdc Tj = 30°C                 | 10.45 kW   | 11.82 kW    |
| EER Tj = 30°C                 | 4.10       | 6.12        |
| Cdc Tj = 30 °C                | 0.900      | 0.900       |
| Pdc Tj = 25°C                 | 6.63 kW    | 7.01 kW     |
| EER Tj = 25°C                 | 3.97       | 5.49        |
| Cdc Tj = 25 °C                | 0.250      | 0.250       |
| Pdc Tj = 20°C                 | 4.94 kW    | 6.42 kW     |
| EER Tj = 20°C                 | 3.49       | 4.87        |
| Cdc Tj = 20 °C                | 0.983      | 0.982       |
| Poff                          | 20 W       | 20 W        |
| PTO                           | 24 W       | 24 W        |
| PSB                           | 23 W       | 23 W        |
| PCK                           | 0 W        | 0 W         |
| Annual energy consumption Qce | 1499 kWh   | 1088 kWh    |



## Model CHA-16/20-400V-M2 CS-e9-C2 + SEW-2-300 (CHA-16/20-400V-M2 CC-300-S50-e9-C2)

|                                     |                                                                                |
|-------------------------------------|--------------------------------------------------------------------------------|
| Model name                          | CHA-16/20-400V-M2 CS-e9-C2 + SEW-2-300<br>(CHA-16/20-400V-M2 CC-300-S50-e9-C2) |
| Application                         | Heating + DHW + low temp                                                       |
| Units                               | Indoor, Outdoor                                                                |
| Climate zone (for heating)          | Colder, Warmer, Warmer Climate, Colder Climate                                 |
| Reversibility                       | Yes                                                                            |
| Cooling mode application (optional) | +7°C/12°C, +18°C/+23°C                                                         |
| Any additional heat sources         | n/a                                                                            |

### General data

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

### Outdoor Air/Water

#### EN 16147 | Average Climate

|                                 |            |
|---------------------------------|------------|
| Declared load profile           | XXL        |
| Efficiency $\eta_{DHW}$         | 118 %      |
| COP                             | 2.94       |
| Heating up time                 | 1:58 h:min |
| Standby power input             | 62.5 W     |
| Reference hot water temperature | 49.5 °C    |
| Mixed water at 40°C             | 313 l      |

#### EN 16147 | Colder Climate

|                                 |            |
|---------------------------------|------------|
| Declared load profile           | XXL        |
| Efficiency $\eta_{DHW}$         | 102 %      |
| COP                             | 2.54       |
| Heating up time                 | 1:59 h:min |
| Standby power input             | 79.1 W     |
| Reference hot water temperature | 49.8 °C    |
| Mixed water at 40°C             | 316 l      |

#### EN 16147 | Warmer Climate

|                                 |            |
|---------------------------------|------------|
| Declared load profile           | XXL        |
| Efficiency $\eta_{DHW}$         | 138 %      |
| COP                             | 3.46       |
| Heating up time                 | 2:03 h:min |
| Standby power input             | 61.3 W     |
| Reference hot water temperature | 49.6 °C    |
| Mixed water at 40°C             | 313 l      |

### EN 14511-4 | Heating

|                                            |        |
|--------------------------------------------|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure              | passed |

|                             |        |
|-----------------------------|--------|
| Defrost test                | passed |
| Starting and operating test | passed |

#### EN 14511-2 | Heating

|             | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 20.54 kW        | 20.60 kW           |
| El input    | 4.44 kW         | 7.04 kW            |
| COP         | 4.63            | 2.93               |

#### EN 14511-2 | Cooling

|                  | +7°C/+12°C | +18°C/+23°C |
|------------------|------------|-------------|
| El input         | 2.27 kW    | 1.68 kW     |
| Cooling capacity | 8.35       | 9.75        |
| EER              | 3.68       | 5.82        |

#### EN 12102-1 | Average Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 34 dB(A)        | 34 dB(A)           |
| Sound power level outdoor | 52 dB(A)        | 52 dB(A)           |

#### EN 14825 | Average Climate

|                                                     | Low temperature | Medium temperature |
|-----------------------------------------------------|-----------------|--------------------|
| $\eta_s$                                            | 215 %           | 154 %              |
| Prated                                              | 13.52 kW        | 14.55 kW           |
| SCOP                                                | 5.46            | 3.92               |
| Tbiv                                                | -10 °C          | -10 °C             |
| TOL                                                 | -10 °C          | -10 °C             |
| Pdh Tj = -7°C                                       | 12.17 kW        | 12.64 kW           |
| COP Tj = -7°C                                       | 3.40            | 2.31               |
| Cdh Tj = -7 °C                                      | 0.900           | 0.900              |
| Pdh Tj = +2°C                                       | 7.30 kW         | 7.73 kW            |
| COP Tj = +2°C                                       | 5.42            | 3.86               |
| Cdh Tj = +2 °C                                      | 0.900           | 0.900              |
| Pdh Tj = +7°C                                       | 6.33 kW         | 5.87 kW            |
| COP Tj = +7°C                                       | 7.09            | 5.21               |
| Cdh Tj = +7 °C                                      | 0.973           | 0.979              |
| Pdh Tj = 12°C                                       | 7.13 kW         | 6.80 kW            |
| COP Tj = 12°C                                       | 8.53            | 6.56               |
| Cdh Tj = +12 °C                                     | 0.972           | 0.977              |
| Pdh Tj = Tbiv                                       | 13.52 kW        | 14.55 kW           |
| COP Tj = Tbiv                                       | 2.61            | 1.92               |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 13.52 kW        | 14.55 kW           |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.61            | 1.92               |

|                                                     |             |             |
|-----------------------------------------------------|-------------|-------------|
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.900       | 0.900       |
| WTOL                                                | 65 °C       | 65 °C       |
| Poff                                                | 20 W        | 20 W        |
| PTO                                                 | 24 W        | 24 W        |
| PSB                                                 | 23 W        | 23 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 Qhe                       | 5118 kWh    | 7675 kWh    |

#### EN 12102-1 | Colder Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 34 dB(A)        | 34 dB(A)           |
| Sound power level outdoor | 52 dB(A)        | 52 dB(A)           |

#### EN 14825 | Colder Climate

|                                                     | Low temperature | Medium temperature |
|-----------------------------------------------------|-----------------|--------------------|
| $\eta_s$                                            | 183 %           | 137 %              |
| Prated                                              | 15.64 kW        | 15.46 kW           |
| SCOP                                                | 4.65            | 3.50               |
| Tbiv                                                | -15 °C          | -15 °C             |
| TOL                                                 | -22 °C          | -22 °C             |
| Pdh Tj = -7°C                                       | 9.73 kW         | 9.84 kW            |
| COP Tj = -7°C                                       | 3.95            | 2.88               |
| Cdh Tj = -7 °C                                      | 0.900           | 0.900              |
| Pdh Tj = +2°C                                       | 5.95 kW         | 6.17 kW            |
| COP Tj = +2°C                                       | 5.84            | 4.49               |
| Cdh Tj = +2 °C                                      | 0.900           | 0.900              |
| Pdh Tj = +7°C                                       | 6.38 kW         | 6.02 kW            |
| COP Tj = +7°C                                       | 7.12            | 5.60               |
| Cdh Tj = +7 °C                                      | 0.974           | 0.978              |
| Pdh Tj = 12°C                                       | 6.69 kW         | 6.76 kW            |
| COP Tj = 12°C                                       | 7.96            | 6.60               |
| Cdh Tj = +12 °C                                     | 0.972           | 0.977              |
| Pdh Tj = Tbiv                                       | 12.76 kW        | 12.61 kW           |
| COP Tj = Tbiv                                       | 2.68            | 1.87               |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 9.06 kW         | 10.27 kW           |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.23            | 1.35               |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.900           | 0.900              |
| WTOL                                                | 65 °C           | 65 °C              |
| Poff                                                | 20 W            | 20 W               |
| PTO                                                 | 24 W            | 24 W               |

|                                                |          |           |
|------------------------------------------------|----------|-----------|
| PSB                                            | 23 W     | 23 W      |
| PCK                                            | 0 W      | 0 W       |
| Supplementary Heater: Type of energy input     | n/a      | n/a       |
| Supplementary Heater: PSUP                     | 6.58 kW  | 5.19 kW   |
| Annual energy consumption Q <sub>he</sub>      | 8292 kWh | 10876 kWh |
| P <sub>dh</sub> T <sub>j</sub> = -15°C (if TOL | 12.76    | 12.61     |
| COP T <sub>j</sub> = -15°C (if TOL             | 2.68     | 1.87      |
| C <sub>dh</sub> T <sub>j</sub> = -15 °C        | 0.900    | 0.900     |

#### EN 12102-1 | Warmer Climate

|                           | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor  | 34 dB(A)        | 34 dB(A)           |
| Sound power level outdoor | 52 dB(A)        | 52 dB(A)           |

#### EN 14825 | Warmer Climate

|                                                                                                                             | Low temperature | Medium temperature |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------|
| η <sub>s</sub>                                                                                                              | 266 %           | 185 %              |
| Prated                                                                                                                      | 15.17 kW        | 15.98 kW           |
| SCOP                                                                                                                        | 6.72            | 4.71               |
| T <sub>biv</sub>                                                                                                            | 2 °C            | 2 °C               |
| TOL                                                                                                                         | 2 °C            | 2 °C               |
| P <sub>dh</sub> T <sub>j</sub> = +2°C                                                                                       | 15.17 kW        | 15.98 kW           |
| COP T <sub>j</sub> = +2°C                                                                                                   | 3.35            | 2.30               |
| C <sub>dh</sub> T <sub>j</sub> = +2 °C                                                                                      | 0.900           | 0.900              |
| P <sub>dh</sub> T <sub>j</sub> = +7°C                                                                                       | 10.21 kW        | 9.98 kW            |
| COP T <sub>j</sub> = +7°C                                                                                                   | 6.26            | 4.12               |
| C <sub>dh</sub> T <sub>j</sub> = +7 °C                                                                                      | 0.900           | 0.900              |
| P <sub>dh</sub> T <sub>j</sub> = 12°C                                                                                       | 7.12 kW         | 6.62 kW            |
| COP T <sub>j</sub> = 12°C                                                                                                   | 8.15            | 6.03               |
| C <sub>dh</sub> T <sub>j</sub> = +12 °C                                                                                     | 0.973           | 0.978              |
| P <sub>dh</sub> T <sub>j</sub> = T <sub>biv</sub>                                                                           | 15.17 kW        | 15.98 kW           |
| COP T <sub>j</sub> = T <sub>biv</sub>                                                                                       | 3.35            | 2.30               |
| 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> | 15.17 kW        | 15.98 kW           |
| COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>                         | 3.35            | 2.30               |
| C <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> | 0.900           | 0.900              |
| WTOL                                                                                                                        | 65 °C           | 65 °C              |
| P <sub>off</sub>                                                                                                            | 20 W            | 20 W               |
| PTO                                                                                                                         | 24 W            | 24 W               |
| PSB                                                                                                                         | 23 W            | 23 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> | 3017 kWh   | 4538 kWh    |
| EN 14825   Cooling                        |            |             |
|                                           | +7°C/+12°C | +18°C/+23°C |
| P <sub>designc</sub>                      | 14.53 kW   | 15.80 kW    |
| SEER                                      | 3.39       | 5.09        |
| P <sub>dc</sub> T <sub>j</sub> = 35°C     | 14.53 kW   | 15.80 kW    |
| EER T <sub>j</sub> = 35°C                 | 2.74       | 4.59        |
| C <sub>dc</sub> T <sub>j</sub> = 35 °C    | 0.900      | 0.900       |
| P <sub>dc</sub> T <sub>j</sub> = 30°C     | 10.45 kW   | 11.82 kW    |
| EER T <sub>j</sub> = 30°C                 | 4.10       | 6.12        |
| C <sub>dc</sub> T <sub>j</sub> = 30 °C    | 0.900      | 0.900       |
| P <sub>dc</sub> T <sub>j</sub> = 25°C     | 6.63 kW    | 7.01 kW     |
| EER T <sub>j</sub> = 25°C                 | 3.97       | 5.49        |
| C <sub>dc</sub> T <sub>j</sub> = 25 °C    | 0.250      | 0.250       |
| P <sub>dc</sub> T <sub>j</sub> = 20°C     | 4.94 kW    | 6.42 kW     |
| EER T <sub>j</sub> = 20°C                 | 3.49       | 4.87        |
| C <sub>dc</sub> T <sub>j</sub> = 20 °C    | 0.983      | 0.982       |
| P <sub>off</sub>                          | 20 W       | 20 W        |
| PTO                                       | 24 W       | 24 W        |
| PSB                                       | 23 W       | 23 W        |
| PCK                                       | 0 W        | 0 W         |
| Annual energy consumption Q <sub>ce</sub> | 1499 kWh   | 1088 kWh    |