

This information was generated by the HP KEYMARK database on 6 May 2022

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| | | | |
|---------------------|---|----------|------------|
| Summary of | Vitocal x5x-A z4 | Reg. No. | 011-1W0465 |
| Certificate Holder | | | |
| Name | Viessmann Wärmepumpen GmbH | | |
| Address | Viessmannstr. 1 | Zip | 35107 |
| City | Allendorf/Eder | Country | Germany |
| Certification Body | DIN CERTCO Gesellschaft für Konformitätsbewertung mbH | | |
| Subtype title | Vitocal x5x-A z4 | | |
| Heat Pump Type | Outdoor Air/Water | | |
| Refrigerant | R290 | | |
| Mass of Refrigerant | 2 kg | | |
| Certification Date | 15.12.2021 | | |
| Testing basis | HP KEYMARK certification scheme rules rev. 9 | | |

Model: Vitocal 250-A AWO-E-AC 251.A10

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 250-A AWO-E-AC 251.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

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| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
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This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 250-A AWO-E-AC 251.A13

Configure model

| | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 250-A AWO-E-AC 251.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

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| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
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This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 250-A AWO-E-AC-AF 251.A10

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 250-A AWO-E-AC-AF 251.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
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This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 250-A AWO-E-AC-AF 251.A13

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 250-A AWO-E-AC-AF 251.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 252-A AWOT-E-AC 251.A10

Configure model

| | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 252-A AWOT-E-AC 251.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 252-A AWOT-E-AC 251.A13

Configure model

| | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 252-A AWOT-E-AC 251.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 252-A AWO-E-AC-AF 251.A10

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 252-A AWO-E-AC-AF 251.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|----------------------------|-----------------|--------------------|
| $P_{designh}$ | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P_{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T_{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| $P_{dh} T_j = +2^{\circ}C$ | 5.30 kW | 4.70 kW |
| $COP T_j = +2^{\circ}C$ | 4.40 | 2.90 |
| $C_{dh} T_j = +2^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = +7^{\circ}C$ | 5.70 kW | 5.20 kW |
| $COP T_j = +7^{\circ}C$ | 5.60 | 3.80 |
| $C_{dh} T_j = +7^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = 12^{\circ}C$ | 5.80 kW | 5.50 kW |
| $COP T_j = 12^{\circ}C$ | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 252-A AWO-E-AC-AF 251.A13

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 252-A AWO-E-AC-AF 251.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 250-A AWO-E-AC 251.A10 2C

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 250-A AWO-E-AC 251.A10 2C |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 250-A AWO-E-AC 251.A13 2C

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 250-A AWO-E-AC 251.A13 2C |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 250-A AWO-E-AC-AF 251.A10 2C

| Configure model | |
|-------------------------------------|--------------------------------------|
| Model name | Vitocal 250-A AWO-E-AC-AF 251.A10 2C |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 250-A AWO-E-AC-AF 251.A13 2C

| Configure model | |
|-------------------------------------|--------------------------------------|
| Model name | Vitocal 250-A AWO-E-AC-AF 251.A13 2C |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 252-A AWO-E-AC 251.A10 2C

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 252-A AWO-E-AC 251.A10 2C |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|----------------------------|-----------------|--------------------|
| $P_{designh}$ | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P_{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T_{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| $P_{dh} T_j = +2^{\circ}C$ | 5.30 kW | 4.70 kW |
| $COP T_j = +2^{\circ}C$ | 4.40 | 2.90 |
| $C_{dh} T_j = +2^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = +7^{\circ}C$ | 5.70 kW | 5.20 kW |
| $COP T_j = +7^{\circ}C$ | 5.60 | 3.80 |
| $C_{dh} T_j = +7^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = 12^{\circ}C$ | 5.80 kW | 5.50 kW |
| $COP T_j = 12^{\circ}C$ | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 252-A AWO-E-AC 251.A13 2C

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 252-A AWO-E-AC 251.A13 2C |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 252-A AWO-E-AC-AF 251.A10 2C

| Configure model | |
|-------------------------------------|--------------------------------------|
| Model name | Vitocal 252-A AWO-E-AC-AF 251.A10 2C |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|----------------------------|-----------------|--------------------|
| $P_{designh}$ | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P_{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T_{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| $P_{dh} T_j = +2^{\circ}C$ | 5.30 kW | 4.70 kW |
| $COP T_j = +2^{\circ}C$ | 4.40 | 2.90 |
| $C_{dh} T_j = +2^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = +7^{\circ}C$ | 5.70 kW | 5.20 kW |
| $COP T_j = +7^{\circ}C$ | 5.60 | 3.80 |
| $C_{dh} T_j = +7^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = 12^{\circ}C$ | 5.80 kW | 5.50 kW |
| $COP T_j = 12^{\circ}C$ | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 252-A AWO-E-AC-AF 251.A13 2C

| Configure model | |
|-------------------------------------|--------------------------------------|
| Model name | Vitocal 252-A AWO-E-AC-AF 251.A13 2C |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 150-A AWO-E-AC 151.A10

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 150-A AWO-E-AC 151.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.30 kW | 6.75 kW |
| El input | 1.46 kW | 2.53 kW |
| COP | 5.00 | 2.67 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 239 % | 168 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.04 | 4.27 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.20 | 2.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.30 | 3.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.20 | 2.70 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.20 | 2.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1165 kWh | 1454 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 160 % | 127 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.08 | 3.25 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.20 | 2.60 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.00 | 4.00 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.70 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 5126 kWh | 6050 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 190 % | 145 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.83 | 3.70 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.10 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.20 kW |
| COP T _j = +2°C | 4.80 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.70 kW |
| COP T _j = +7°C | 6.00 | 4.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.00 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.10 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.90 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4129 kWh | 5229 kWh |

Model: Vitocal 150-A AWO-E-AC 151.A13

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 150-A AWO-E-AC 151.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.10 kW | 7.56 kW |
| El input | 1.65 kW | 2.47 kW |
| COP | 4.90 | 3.06 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 239 % | 173 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.05 | 4.41 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.40 | 3.70 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 6.90 | 5.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1518 kWh | 2007 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 144 % | 118 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.67 | 3.03 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.20 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.50 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7252 kWh | 8407 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.53 | 3.54 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.70 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.30 kW | 2.30 kW |
| Annual energy consumption Q_{he} | 5672 kWh | 6944 kWh |

Model: Vitocal 150-A AWO-E-AC 151.A16

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 150-A AWO-E-AC 151.A16 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 9.10 kW | 8.49 kW |
| El input | 1.86 kW | 2.53 kW |
| COP | 4.90 | 3.35 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 7.54 kW | 7.56 kW |
| η_s | 239 % | 175 % |
| P _{rated} | 7.54 kW | 7.56 kW |
| SCOP | 6.06 | 4.46 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 7.50 kW | 7.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.60 kW | 6.10 kW |
| COP T _j = +7°C | 5.40 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.60 kW |
| COP T _j = 12°C | 7.30 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 7.50 kW | 7.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.50 kW | 7.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1662 kWh | 2266 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| P _{designh} | 11.83 kW | 11.17 kW |
| η_s | 141 % | 117 % |
| P _{rated} | 11.83 kW | 11.17 kW |
| SCOP | 3.61 | 2.99 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 12.10 kW | 11.70 kW |
| COP T _j = -7°C | 2.80 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.60 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.50 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.60 kW |
| COP T _j = +7°C | 6.10 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.40 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.50 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 9.70 kW | 9.10 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.40 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.40 kW | 7.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.20 | 1.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 11.83 kW | 11.17 kW |
| Annual energy consumption Qhe | 8080 kWh | 10386 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 13.67 kW | 13.37 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 13.67 kW | 13.37 kW |
| SCOP | 4.52 | 3.60 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 12.00 kW | 11.80 kW |
| COP T _j = -7°C | 2.90 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.40 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.50 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.30 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 12.10 kW | 11.80 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 11.10 kW | 10.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.60 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.60 kW | 2.60 kW |
| Annual energy consumption Q_{he} | 6242 kWh | 7670 kWh |

Model: Vitocal 150-A AWO-E-AC-AF 151.A10

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 150-A AWO-E-AC-AF 151.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.30 kW | 6.75 kW |
| El input | 1.46 kW | 2.53 kW |
| COP | 5.00 | 2.67 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|----------------------------|-----------------|--------------------|
| $P_{designh}$ | 5.27 kW | 4.65 kW |
| η_s | 239 % | 168 % |
| P_{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.04 | 4.27 |
| T_{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| $P_{dh} T_j = +2^{\circ}C$ | 5.30 kW | 4.70 kW |
| $COP T_j = +2^{\circ}C$ | 4.20 | 2.70 |
| $C_{dh} T_j = +2^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = +7^{\circ}C$ | 5.70 kW | 5.20 kW |
| $COP T_j = +7^{\circ}C$ | 5.30 | 3.60 |
| $C_{dh} T_j = +7^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = 12^{\circ}C$ | 5.80 kW | 5.50 kW |
| $COP T_j = 12^{\circ}C$ | 7.20 | 5.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.20 | 2.70 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.20 | 2.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1165 kWh | 1454 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 160 % | 127 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.08 | 3.25 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.20 | 2.60 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.00 | 4.00 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.70 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 5126 kWh | 6050 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 190 % | 145 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.83 | 3.70 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.10 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.20 kW |
| COP T _j = +2°C | 4.80 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.70 kW |
| COP T _j = +7°C | 6.00 | 4.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.00 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.10 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.90 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4129 kWh | 5229 kWh |

Model: Vitocal 150-A AWO-E-AC-AF 151.A13

Configure model

| | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 150-A AWO-E-AC-AF 151.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.10 kW | 7.56 kW |
| El input | 1.65 kW | 2.47 kW |
| COP | 4.90 | 3.06 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 239 % | 173 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.05 | 4.41 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.40 | 3.70 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 6.90 | 5.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1518 kWh | 2007 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 144 % | 118 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.67 | 3.03 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.20 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.50 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7252 kWh | 8407 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.53 | 3.54 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.70 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.30 kW | 2.30 kW |
| Annual energy consumption Q_{he} | 5672 kWh | 6944 kWh |

Model: Vitocal 150-A AWO-E-AC-AF 151.A16

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 150-A AWO-E-AC-AF 151.A16 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 9.10 kW | 8.49 kW |
| El input | 1.86 kW | 2.53 kW |
| COP | 4.90 | 3.35 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 7.54 kW | 7.56 kW |
| η_s | 239 % | 175 % |
| P _{rated} | 7.54 kW | 7.56 kW |
| SCOP | 6.06 | 4.46 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 7.50 kW | 7.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.60 kW | 6.10 kW |
| COP T _j = +7°C | 5.40 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.60 kW |
| COP T _j = 12°C | 7.30 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 7.50 kW | 7.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.50 kW | 7.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1662 kWh | 2266 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 11.83 kW | 11.17 kW |
| η_s | 141 % | 117 % |
| P _{rated} | 11.83 kW | 11.17 kW |
| SCOP | 3.61 | 2.99 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 12.10 kW | 11.70 kW |
| COP T _j = -7°C | 2.80 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.60 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.50 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.60 kW |
| COP T _j = +7°C | 6.10 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.40 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.50 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 9.70 kW | 9.10 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.40 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.40 kW | 7.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.20 | 1.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 11.83 kW | 11.17 kW |
| Annual energy consumption Qhe | 8080 kWh | 10386 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 13.67 kW | 13.37 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 13.67 kW | 13.37 kW |
| SCOP | 4.52 | 3.60 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 12.00 kW | 11.80 kW |
| COP T _j = -7°C | 2.90 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.40 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.50 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.30 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 12.10 kW | 11.80 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 11.10 kW | 10.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.60 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.60 kW | 2.60 kW |
| Annual energy consumption Q_{he} | 6242 kWh | 7670 kWh |

Model: Vitocal 151-A AWOT-E-AC 151.A10

Configure model

| | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 151-A AWOT-E-AC 151.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 7.30 kW | 6.75 kW |
| El input | 1.46 kW | 2.53 kW |
| COP | 5.00 | 2.67 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 239 % | 168 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.04 | 4.27 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.20 | 2.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.30 | 3.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.20 | 2.70 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.20 | 2.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1165 kWh | 1454 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 160 % | 127 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.08 | 3.25 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.20 | 2.60 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.00 | 4.00 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.70 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 5126 kWh | 6050 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 190 % | 145 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.83 | 3.70 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.10 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.20 kW |
| COP T _j = +2°C | 4.80 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.70 kW |
| COP T _j = +7°C | 6.00 | 4.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.00 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.10 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.90 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4129 kWh | 5229 kWh |

Model: Vitocal 151-A AWOT-E-AC 151.A13

Configure model

| | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 151-A AWOT-E-AC 151.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.10 kW | 7.56 kW |
| El input | 1.65 kW | 2.47 kW |
| COP | 4.90 | 3.06 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 239 % | 173 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.05 | 4.41 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.40 | 3.70 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 6.90 | 5.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1518 kWh | 2007 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 144 % | 118 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.67 | 3.03 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.20 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.50 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7252 kWh | 8407 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.53 | 3.54 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.70 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.30 kW | 2.30 kW |
| Annual energy consumption Q_{he} | 5672 kWh | 6944 kWh |

Model: Vitocal 151-A AWOT-E-AC 151.A16

Configure model

| | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 151-A AWOT-E-AC 151.A16 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 9.10 kW | 8.49 kW |
| El input | 1.86 kW | 2.53 kW |
| COP | 4.90 | 3.35 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 7.54 kW | 7.56 kW |
| η_s | 239 % | 175 % |
| P _{rated} | 7.54 kW | 7.56 kW |
| SCOP | 6.06 | 4.46 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 7.50 kW | 7.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.60 kW | 6.10 kW |
| COP T _j = +7°C | 5.40 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.60 kW |
| COP T _j = 12°C | 7.30 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 7.50 kW | 7.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.50 kW | 7.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1662 kWh | 2266 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 11.83 kW | 11.17 kW |
| η_s | 141 % | 117 % |
| P _{rated} | 11.83 kW | 11.17 kW |
| SCOP | 3.61 | 2.99 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 12.10 kW | 11.70 kW |
| COP T _j = -7°C | 2.80 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.60 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.50 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.60 kW |
| COP T _j = +7°C | 6.10 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.40 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.50 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 9.70 kW | 9.10 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.40 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.40 kW | 7.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.20 | 1.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 11.83 kW | 11.17 kW |
| Annual energy consumption Qhe | 8080 kWh | 10386 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 13.67 kW | 13.37 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 13.67 kW | 13.37 kW |
| SCOP | 4.52 | 3.60 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 12.00 kW | 11.80 kW |
| COP T _j = -7°C | 2.90 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.40 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.50 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.30 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 12.10 kW | 11.80 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 11.10 kW | 10.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.60 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.60 kW | 2.60 kW |
| Annual energy consumption Q_{he} | 6242 kWh | 7670 kWh |

Model: Vitocal 151-A AWOT-E-AC-AF 151.A10

| Configure model | |
|-------------------------------------|------------------------------------|
| Model name | Vitocal 151-A AWOT-E-AC-AF 151.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.30 kW | 6.75 kW |
| El input | 1.46 kW | 2.53 kW |
| COP | 5.00 | 2.67 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 239 % | 168 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.04 | 4.27 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.20 | 2.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.30 | 3.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.20 | 2.70 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.20 | 2.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1165 kWh | 1454 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 160 % | 127 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.08 | 3.25 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.20 | 2.60 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.00 | 4.00 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.70 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 5126 kWh | 6050 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 190 % | 145 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.83 | 3.70 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.10 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.20 kW |
| COP T _j = +2°C | 4.80 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.70 kW |
| COP T _j = +7°C | 6.00 | 4.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.00 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.10 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.90 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4129 kWh | 5229 kWh |

Model: Vitocal 151-A AWOT-E-AC-AF 151.A13

| Configure model | |
|-------------------------------------|------------------------------------|
| Model name | Vitocal 151-A AWOT-E-AC-AF 151.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.10 kW | 7.56 kW |
| El input | 1.65 kW | 2.47 kW |
| COP | 4.90 | 3.06 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 239 % | 173 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.05 | 4.41 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.40 | 3.70 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 6.90 | 5.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1518 kWh | 2007 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 144 % | 118 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.67 | 3.03 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.20 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.50 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7252 kWh | 8407 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.53 | 3.54 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.70 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.30 kW | 2.30 kW |
| Annual energy consumption Q_{he} | 5672 kWh | 6944 kWh |

Model: Vitocal 151-A AWOT-E-AC-AF 151.A16

| Configure model | |
|-------------------------------------|------------------------------------|
| Model name | Vitocal 151-A AWOT-E-AC-AF 151.A16 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 9.10 kW | 8.49 kW |
| El input | 1.86 kW | 2.53 kW |
| COP | 4.90 | 3.35 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 7.54 kW | 7.56 kW |
| η_s | 239 % | 175 % |
| P _{rated} | 7.54 kW | 7.56 kW |
| SCOP | 6.06 | 4.46 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 7.50 kW | 7.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.60 kW | 6.10 kW |
| COP T _j = +7°C | 5.40 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.60 kW |
| COP T _j = 12°C | 7.30 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 7.50 kW | 7.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.50 kW | 7.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1662 kWh | 2266 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 11.83 kW | 11.17 kW |
| η_s | 141 % | 117 % |
| P _{rated} | 11.83 kW | 11.17 kW |
| SCOP | 3.61 | 2.99 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 12.10 kW | 11.70 kW |
| COP T _j = -7°C | 2.80 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.60 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.50 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.60 kW |
| COP T _j = +7°C | 6.10 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.40 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.50 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 9.70 kW | 9.10 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.40 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.40 kW | 7.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.20 | 1.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 11.83 kW | 11.17 kW |
| Annual energy consumption Qhe | 8080 kWh | 10386 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 13.67 kW | 13.37 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 13.67 kW | 13.37 kW |
| SCOP | 4.52 | 3.60 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 12.00 kW | 11.80 kW |
| COP T _j = -7°C | 2.90 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.40 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.50 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.30 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 12.10 kW | 11.80 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 11.10 kW | 10.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.60 | 2.10 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.60 kW | 2.60 kW |
| Annual energy consumption Q_{he} | 6242 kWh | 7670 kWh |

Model: Vitocal 250-AH HAWO-M-AC 252.A10

| Configure model | |
|-------------------------------------|----------------------------------|
| Model name | Vitocal 250-AH HAWO-M-AC 252.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 250-AH HAWO-M-AC 252.A13

Configure model

| | |
|-------------------------------------|----------------------------------|
| Model name | Vitocal 250-AH HAWO-M-AC 252.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 250-AH HAWO-AC 252.A10

Configure model

| | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 250-AH HAWO-AC 252.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 250-AH HAWO-AC 252.A13

Configure model

| | |
|-------------------------------------|---------------------------------|
| Model name | Vitocal 250-AH HAWO-AC 252.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 250-AH HAWO-M-AC-AF 252.A10

| Configure model | |
|-------------------------------------|-------------------------------------|
| Model name | Vitocal 250-AH HAWO-M-AC-AF 252.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 250-AH HAWO-M-AC-AF 252.A13

| Configure model | |
|-------------------------------------|-------------------------------------|
| Model name | Vitocal 250-AH HAWO-M-AC-AF 252.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 250-AH HAWO-AC-AF 252.A10

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 250-AH HAWO-AC-AF 252.A10 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|----------------------------|-----------------|--------------------|
| $P_{designh}$ | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P_{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T_{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| $P_{dh} T_j = +2^{\circ}C$ | 5.30 kW | 4.70 kW |
| $COP T_j = +2^{\circ}C$ | 4.40 | 2.90 |
| $C_{dh} T_j = +2^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = +7^{\circ}C$ | 5.70 kW | 5.20 kW |
| $COP T_j = +7^{\circ}C$ | 5.60 | 3.80 |
| $C_{dh} T_j = +7^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = 12^{\circ}C$ | 5.80 kW | 5.50 kW |
| $COP T_j = 12^{\circ}C$ | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.90 kW | 7.50 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 250-AH HAWO-AC-AF 252.A13

| Configure model | |
|-------------------------------------|-----------------------------------|
| Model name | Vitocal 250-AH HAWO-AC-AF 252.A13 |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 3x400V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | | |
| COP Tj = -15°C (if TOL<-20°C) | | |
| Cdh Tj = -15 °C | | |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

This information was generated by the HP KEYMARK database on 6 May 2022

EN 14825

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 10.10 kW | 9.70 kW |
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.80 | 2.20 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | n/a | n/a |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q_{he} | 5573 kWh | 6662 kWh |

Model: Vitocal 250-A AWO-M-E-AC 251.A10 (SP)

| Configure model | |
|-------------------------------------|---------------------------------------|
| Model name | Vitocal 250-A AWO-M-E-AC 251.A10 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.00 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4055 kWh | 4943 kWh |

Model: Vitocal 250-A AWO-M-E-AC 251.A13 (SP)

| Configure model | |
|-------------------------------------|---------------------------------------|
| Model name | Vitocal 250-A AWO-M-E-AC 251.A13 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.80 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Qhe | 5573 kWh | 6662 kWh |

Model: Vitocal 250-A AWO-M-E-AC-AF 251.A10 (SP)

| Configure model | |
|-------------------------------------|--|
| Model name | Vitocal 250-A AWO-M-E-AC-AF 251.A10 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP $T_j = TOL$ or COP $T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| Cdh $T_j = TOL$ or Pdh $T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Q_{he} | 4055 kWh | 4943 kWh |

Model: Vitocal 250-A AWO-M-E-AC-AF 251.A13 (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 250-A AWO-M-E-AC-AF 251.A13 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| Prated | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.80 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Qhe | 5573 kWh | 6662 kWh |

Model: Vitocal 252-A AWOT-M-E-AC 251.A10 (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 252-A AWOT-M-E-AC 251.A10 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|----------------------------|-----------------|--------------------|
| $P_{designh}$ | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P_{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T_{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| $P_{dh} T_j = +2^{\circ}C$ | 5.30 kW | 4.70 kW |
| $COP T_j = +2^{\circ}C$ | 4.40 | 2.90 |
| $C_{dh} T_j = +2^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = +7^{\circ}C$ | 5.70 kW | 5.20 kW |
| $COP T_j = +7^{\circ}C$ | 5.60 | 3.80 |
| $C_{dh} T_j = +7^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = 12^{\circ}C$ | 5.80 kW | 5.50 kW |
| $COP T_j = 12^{\circ}C$ | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.00 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4055 kWh | 4943 kWh |

Model: Vitocal 252-A AWOT-M-E-AC 251.A13 (SP)

| Configure model | |
|-------------------------------------|--|
| Model name | Vitocal 252-A AWOT-M-E-AC 251.A13 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| Prated | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.80 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Qhe | 5573 kWh | 6662 kWh |

Model: Vitocal 252-A AWO-M-E-AC-AF 251.A10 (SP)

| Configure model | |
|-------------------------------------|--|
| Model name | Vitocal 252-A AWO-M-E-AC-AF 251.A10 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.00 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4055 kWh | 4943 kWh |

Model: Vitocal 252-A AWO-M-E-AC-AF 251.A13 (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 252-A AWO-M-E-AC-AF 251.A13 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.80 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Qhe | 5573 kWh | 6662 kWh |

Model: Vitocal 250-A AWO-M-E-AC 251.A10 2C (SP)

| Configure model | |
|-------------------------------------|--|
| Model name | Vitocal 250-A AWO-M-E-AC 251.A10 2C (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|----------------------------|-----------------|--------------------|
| $P_{designh}$ | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P_{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T_{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| $P_{dh} T_j = +2^{\circ}C$ | 5.30 kW | 4.70 kW |
| $COP T_j = +2^{\circ}C$ | 4.40 | 2.90 |
| $C_{dh} T_j = +2^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = +7^{\circ}C$ | 5.70 kW | 5.20 kW |
| $COP T_j = +7^{\circ}C$ | 5.60 | 3.80 |
| $C_{dh} T_j = +7^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = 12^{\circ}C$ | 5.80 kW | 5.50 kW |
| $COP T_j = 12^{\circ}C$ | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.00 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4055 kWh | 4943 kWh |

Model: Vitocal 250-A AWO-M-E-AC 251.A13 2C (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 250-A AWO-M-E-AC 251.A13 2C (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.80 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Qhe | 5573 kWh | 6662 kWh |

Model: Vitocal 250-A AWO-M-E-AC-AF 251.A10 2C (SP)

| Configure model | |
|-------------------------------------|---|
| Model name | Vitocal 250-A AWO-M-E-AC-AF 251.A10 2C (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.00 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4055 kWh | 4943 kWh |

Model: Vitocal 250-A AWO-M-E-AC-AF 251.A13 2C (SP)

Configure model

| | |
|-------------------------------------|---|
| Model name | Vitocal 250-A AWO-M-E-AC-AF 251.A13 2C (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| Prated | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.80 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Qhe | 5573 kWh | 6662 kWh |

Model: Vitocal 252-A AWO-M-E-AC 251.A10 2C (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 252-A AWO-M-E-AC 251.A10 2C (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.00 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4055 kWh | 4943 kWh |

Model: Vitocal 252-A AWO-M-E-AC 251.A13 2C (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 252-A AWO-M-E-AC 251.A13 2C (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| Prated | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.80 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Qhe | 5573 kWh | 6662 kWh |

Model: Vitocal 252-A AWO-M-E-AC-AF 251.A10 2C (SP)

Configure model

| | |
|-------------------------------------|---|
| Model name | Vitocal 252-A AWO-M-E-AC-AF 251.A10 2C (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 7.31 kW | 6.75 kW |
| El input | 1.38 kW | 2.27 kW |
| COP | 5.31 | 2.97 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 243 % | 172 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.14 | 4.37 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.40 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.50 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.40 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.40 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1145 kWh | 1419 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 165 % | 131 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.19 | 3.35 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.40 | 2.70 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.30 | 4.10 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.20 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.70 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.80 | 2.20 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.40 | 1.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 4988 kWh | 5868 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 197 % | 154 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.99 | 3.91 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.30 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.10 kW |
| COP T _j = +2°C | 5.00 | 3.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 4.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.60 kW |
| COP T _j = 12°C | 7.60 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.30 | 2.50 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP $T_j = TOL$ or COP $T_j = T_{designh}$ if $TOL < T_{designh}$ | 3.00 | 2.20 |
| Cdh $T_j = TOL$ or Pdh $T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4055 kWh | 4943 kWh |

Model: Vitocal 252-A AWO-M-E-AC-AF 251.A13 2C (SP)

Configure model

| | |
|-------------------------------------|---|
| Model name | Vitocal 252-A AWO-M-E-AC-AF 251.A13 2C (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.13 kW | 7.56 kW |
| El input | 1.56 kW | 2.23 kW |
| COP | 5.21 | 3.40 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 238 % | 179 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.03 | 4.55 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 4.00 | 2.90 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.60 | 3.90 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.80 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 4.00 | 2.90 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.00 | 2.90 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1478 kWh | 1942 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 148 % | 122 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.79 | 3.14 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.50 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.50 | 5.30 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.80 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.60 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7028 kWh | 8129 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 54 dB(A) | 54 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 181 % | 147 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.60 | 3.75 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.60 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.50 | 6.60 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 3.00 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.80 | 2.20 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.40 kW | 2.40 kW |
| Annual energy consumption Qhe | 5573 kWh | 6662 kWh |

Model: Vitocal 150-A AWO-M-E-AC 151.A10 (SP)

| Configure model | |
|-------------------------------------|---------------------------------------|
| Model name | Vitocal 150-A AWO-M-E-AC 151.A10 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 7.30 kW | 6.75 kW |
| El input | 1.46 kW | 2.53 kW |
| COP | 5.00 | 2.67 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|----------------------------|-----------------|--------------------|
| $P_{designh}$ | 5.27 kW | 4.65 kW |
| η_s | 239 % | 168 % |
| P_{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.04 | 4.27 |
| T_{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| $P_{dh} T_j = +2^{\circ}C$ | 5.30 kW | 4.70 kW |
| $COP T_j = +2^{\circ}C$ | 4.20 | 2.70 |
| $C_{dh} T_j = +2^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = +7^{\circ}C$ | 5.70 kW | 5.20 kW |
| $COP T_j = +7^{\circ}C$ | 5.30 | 3.60 |
| $C_{dh} T_j = +7^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = 12^{\circ}C$ | 5.80 kW | 5.50 kW |
| $COP T_j = 12^{\circ}C$ | 7.20 | 5.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.20 | 2.70 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.20 | 2.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1165 kWh | 1454 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 160 % | 127 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.08 | 3.25 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.20 | 2.60 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.00 | 4.00 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.70 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 5126 kWh | 6050 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 190 % | 145 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.83 | 3.70 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.10 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.20 kW |
| COP T _j = +2°C | 4.80 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.70 kW |
| COP T _j = +7°C | 6.00 | 4.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.00 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.10 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.90 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4129 kWh | 5229 kWh |

Model: Vitocal 150-A AWO-M-E-AC 151.A13 (SP)

| Configure model | |
|-------------------------------------|---------------------------------------|
| Model name | Vitocal 150-A AWO-M-E-AC 151.A13 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.10 kW | 7.56 kW |
| El input | 1.65 kW | 2.47 kW |
| COP | 4.90 | 3.06 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 239 % | 173 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.05 | 4.41 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.40 | 3.70 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 6.90 | 5.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1518 kWh | 2007 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 144 % | 118 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.67 | 3.03 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.20 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.50 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7252 kWh | 8407 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 178 % | 141 % |
| Prated | 12.42 kW | 12.10 kW |
| SCOP | 4.53 | 3.54 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.70 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.30 kW | 2.30 kW |
| Annual energy consumption Qhe | 5672 kWh | 6944 kWh |

Model: Vitocal 150-A AWO-M-E-AC 151.A16 (SP)

| Configure model | |
|-------------------------------------|---------------------------------------|
| Model name | Vitocal 150-A AWO-M-E-AC 151.A16 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 9.10 kW | 8.49 kW |
| El input | 1.86 kW | 2.53 kW |
| COP | 4.90 | 3.35 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 7.54 kW | 7.56 kW |
| η_s | 239 % | 175 % |
| P _{rated} | 7.54 kW | 7.56 kW |
| SCOP | 6.06 | 4.46 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 7.50 kW | 7.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.60 kW | 6.10 kW |
| COP T _j = +7°C | 5.40 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.60 kW |
| COP T _j = 12°C | 7.30 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 7.50 kW | 7.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.50 kW | 7.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1662 kWh | 2266 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 11.83 kW | 11.17 kW |
| η_s | 141 % | 117 % |
| P _{rated} | 11.83 kW | 11.17 kW |
| SCOP | 3.61 | 2.99 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 12.10 kW | 11.70 kW |
| COP T _j = -7°C | 2.80 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.60 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.50 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.60 kW |
| COP T _j = +7°C | 6.10 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.40 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.50 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 9.70 kW | 9.10 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.40 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.40 kW | 7.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.20 | 1.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 11.83 kW | 11.17 kW |
| Annual energy consumption Qhe | 8080 kWh | 10386 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 13.67 kW | 13.37 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 13.67 kW | 13.37 kW |
| SCOP | 4.52 | 3.60 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 12.00 kW | 11.80 kW |
| COP T _j = -7°C | 2.90 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.40 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.50 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.30 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 12.10 kW | 11.80 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 11.10 kW | 10.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.60 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.60 kW | 2.60 kW |
| Annual energy consumption Qhe | 6242 kWh | 7670 kWh |

Model: Vitocal 150-A AWO-M-E-AC-AF 151.A10 (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 150-A AWO-M-E-AC-AF 151.A10 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 7.30 kW | 6.75 kW |
| El input | 1.46 kW | 2.53 kW |
| COP | 5.00 | 2.67 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 239 % | 168 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.04 | 4.27 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.20 | 2.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.30 | 3.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.20 | 2.70 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.20 | 2.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1165 kWh | 1454 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 160 % | 127 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.08 | 3.25 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.20 | 2.60 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.00 | 4.00 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.70 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 5126 kWh | 6050 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 190 % | 145 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.83 | 3.70 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.10 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.20 kW |
| COP T _j = +2°C | 4.80 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.70 kW |
| COP T _j = +7°C | 6.00 | 4.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.00 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.10 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP $T_j = TOL$ or COP $T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.90 | 2.10 |
| Cdh $T_j = TOL$ or Pdh $T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4129 kWh | 5229 kWh |

Model: Vitocal 150-A AWO-M-E-AC-AF 151.A13 (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 150-A AWO-M-E-AC-AF 151.A13 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.10 kW | 7.56 kW |
| El input | 1.65 kW | 2.47 kW |
| COP | 4.90 | 3.06 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 239 % | 173 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.05 | 4.41 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.40 | 3.70 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 6.90 | 5.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1518 kWh | 2007 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 144 % | 118 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.67 | 3.03 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.20 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP $T_j = T_{biv}$ | 2.50 | 2.00 |
| $P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 7.70 kW | 7.20 kW |
| COP $T_j = TOL$ or COP $T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.30 | 1.80 |
| $C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Q_{he} | 7252 kWh | 8407 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 12.42 kW | 12.10 kW |
| SCOP | 4.53 | 3.54 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.70 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.30 kW | 2.30 kW |
| Annual energy consumption Qhe | 5672 kWh | 6944 kWh |

Model: Vitocal 150-A AWO-M-E-AC-AF 151.A16 (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 150-A AWO-M-E-AC-AF 151.A16 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 9.10 kW | 8.49 kW |
| El input | 1.86 kW | 2.53 kW |
| COP | 4.90 | 3.35 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 7.54 kW | 7.56 kW |
| η_s | 239 % | 175 % |
| P _{rated} | 7.54 kW | 7.56 kW |
| SCOP | 6.06 | 4.46 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 7.50 kW | 7.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.60 kW | 6.10 kW |
| COP T _j = +7°C | 5.40 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.60 kW |
| COP T _j = 12°C | 7.30 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 7.50 kW | 7.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.50 kW | 7.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1662 kWh | 2266 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 11.83 kW | 11.17 kW |
| η_s | 141 % | 117 % |
| P _{rated} | 11.83 kW | 11.17 kW |
| SCOP | 3.61 | 2.99 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 12.10 kW | 11.70 kW |
| COP T _j = -7°C | 2.80 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.60 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.50 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.60 kW |
| COP T _j = +7°C | 6.10 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.40 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.50 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 9.70 kW | 9.10 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.40 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.40 kW | 7.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.20 | 1.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 11.83 kW | 11.17 kW |
| Annual energy consumption Qhe | 8080 kWh | 10386 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 13.67 kW | 13.37 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 13.67 kW | 13.37 kW |
| SCOP | 4.52 | 3.60 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 12.00 kW | 11.80 kW |
| COP T _j = -7°C | 2.90 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.40 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.50 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.30 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 12.10 kW | 11.80 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 11.10 kW | 10.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.60 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.60 kW | 2.60 kW |
| Annual energy consumption Qhe | 6242 kWh | 7670 kWh |

Model: Vitocal 151-A AWOT-M-E-AC 151.A10 (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 151-A AWOT-M-E-AC 151.A10 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 7.30 kW | 6.75 kW |
| El input | 1.46 kW | 2.53 kW |
| COP | 5.00 | 2.67 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 5.27 kW | 4.65 kW |
| η_s | 239 % | 168 % |
| P _{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.04 | 4.27 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 5.30 kW | 4.70 kW |
| COP T _j = +2°C | 4.20 | 2.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.30 | 3.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.80 kW | 5.50 kW |
| COP T _j = 12°C | 7.20 | 5.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.20 | 2.70 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.20 | 2.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1165 kWh | 1454 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 160 % | 127 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.08 | 3.25 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.20 | 2.60 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.00 | 4.00 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.70 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 5126 kWh | 6050 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 190 % | 145 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.83 | 3.70 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.10 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.20 kW |
| COP T _j = +2°C | 4.80 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.70 kW |
| COP T _j = +7°C | 6.00 | 4.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.00 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.10 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.90 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4129 kWh | 5229 kWh |

Model: Vitocal 151-A AWOT-M-E-AC 151.A13 (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 151-A AWOT-M-E-AC 151.A13 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 8.10 kW | 7.56 kW |
| El input | 1.65 kW | 2.47 kW |
| COP | 4.90 | 3.06 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 239 % | 173 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.05 | 4.41 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.40 | 3.70 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 6.90 | 5.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1518 kWh | 2007 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 144 % | 118 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.67 | 3.03 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.20 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.50 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7252 kWh | 8407 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 178 % | 141 % |
| Prated | 12.42 kW | 12.10 kW |
| SCOP | 4.53 | 3.54 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.70 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.30 kW | 2.30 kW |
| Annual energy consumption Qhe | 5672 kWh | 6944 kWh |

Model: Vitocal 151-A AWOT-M-E-AC 151.A16 (SP)

Configure model

| | |
|-------------------------------------|--|
| Model name | Vitocal 151-A AWOT-M-E-AC 151.A16 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 9.10 kW | 8.49 kW |
| El input | 1.86 kW | 2.53 kW |
| COP | 4.90 | 3.35 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 7.54 kW | 7.56 kW |
| η_s | 239 % | 175 % |
| P _{rated} | 7.54 kW | 7.56 kW |
| SCOP | 6.06 | 4.46 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 7.50 kW | 7.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.60 kW | 6.10 kW |
| COP T _j = +7°C | 5.40 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.60 kW |
| COP T _j = 12°C | 7.30 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 7.50 kW | 7.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.50 kW | 7.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1662 kWh | 2266 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 11.83 kW | 11.17 kW |
| η_s | 141 % | 117 % |
| P _{rated} | 11.83 kW | 11.17 kW |
| SCOP | 3.61 | 2.99 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 12.10 kW | 11.70 kW |
| COP T _j = -7°C | 2.80 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.60 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.50 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.60 kW |
| COP T _j = +7°C | 6.10 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.40 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.50 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 9.70 kW | 9.10 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.40 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.40 kW | 7.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.20 | 1.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 11.83 kW | 11.17 kW |
| Annual energy consumption Qhe | 8080 kWh | 10386 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 13.67 kW | 13.37 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 13.67 kW | 13.37 kW |
| SCOP | 4.52 | 3.60 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 12.00 kW | 11.80 kW |
| COP T _j = -7°C | 2.90 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.40 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.50 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.30 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 12.10 kW | 11.80 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 11.10 kW | 10.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.60 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.60 kW | 2.60 kW |
| Annual energy consumption Qhe | 6242 kWh | 7670 kWh |

Model: Vitocal 151-A AWOT-M-E-AC-AF 151.A10 (SP)

Configure model

| | |
|-------------------------------------|---|
| Model name | Vitocal 151-A AWOT-M-E-AC-AF 151.A10 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 7.30 kW | 6.75 kW |
| El input | 1.46 kW | 2.53 kW |
| COP | 5.00 | 2.67 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|----------------------------|-----------------|--------------------|
| $P_{designh}$ | 5.27 kW | 4.65 kW |
| η_s | 239 % | 168 % |
| P_{rated} | 5.27 kW | 4.65 kW |
| SCOP | 6.04 | 4.27 |
| T_{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| $P_{dh} T_j = +2^{\circ}C$ | 5.30 kW | 4.70 kW |
| $COP T_j = +2^{\circ}C$ | 4.20 | 2.70 |
| $C_{dh} T_j = +2^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = +7^{\circ}C$ | 5.70 kW | 5.20 kW |
| $COP T_j = +7^{\circ}C$ | 5.30 | 3.60 |
| $C_{dh} T_j = +7^{\circ}C$ | 1.000 | 1.000 |
| $P_{dh} T_j = 12^{\circ}C$ | 5.80 kW | 5.50 kW |
| $COP T_j = 12^{\circ}C$ | 7.20 | 5.40 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 5.30 kW | 4.70 kW |
| COP Tj = Tbiv | 4.20 | 2.70 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 5.30 kW | 4.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.20 | 2.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1165 kWh | 1454 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 8.48 kW | 7.98 kW |
| η_s | 160 % | 127 % |
| P _{rated} | 8.48 kW | 7.98 kW |
| SCOP | 4.08 | 3.25 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.40 kW |
| COP T _j = -7°C | 3.20 | 2.60 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.50 kW | 5.20 kW |
| COP T _j = +2°C | 5.00 | 4.00 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 6.90 kW | 6.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.70 | 2.10 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.00 kW | 5.50 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 8.48 kW | 7.98 kW |
| Annual energy consumption Qhe | 5126 kWh | 6050 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|---------|---------|
| P _{designh} | 9.80 kW | 9.37 kW |
| η_s | 190 % | 145 % |
| P _{rated} | 9.80 kW | 9.37 kW |
| SCOP | 4.83 | 3.70 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 8.70 kW | 8.30 kW |
| COP T _j = -7°C | 3.10 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 5.40 kW | 5.20 kW |
| COP T _j = +2°C | 4.80 | 3.70 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.80 kW | 5.70 kW |
| COP T _j = +7°C | 6.00 | 4.60 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.00 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.70 kW | 8.30 kW |
| COP T _j = T _{biv} | 3.10 | 2.40 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 7.50 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.90 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.90 kW | 1.90 kW |
| Annual energy consumption Qhe | 4129 kWh | 5229 kWh |

Model: Vitocal 151-A AWOT-M-E-AC-AF 151.A13 (SP)

| Configure model | |
|-------------------------------------|---|
| Model name | Vitocal 151-A AWOT-M-E-AC-AF 151.A13 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

| General Data | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |

Heating

| EN 14511-2 | | |
|-------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Heat output | 8.10 kW | 7.56 kW |
| El input | 1.65 kW | 2.47 kW |
| COP | 4.90 | 3.06 |

| EN 14511-4 | |
|--|--------|
| Shutting off the heat transfer medium flow | passed |
| Complete power supply failure | passed |
| Defrost test | passed |
| Starting and operating test | passed |

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 6.68 kW | 6.62 kW |
| η_s | 239 % | 173 % |
| P _{rated} | 6.68 kW | 6.62 kW |
| SCOP | 6.05 | 4.41 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 6.70 kW | 6.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.70 kW | 5.20 kW |
| COP T _j = +7°C | 5.40 | 3.70 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.70 kW | 5.50 kW |
| COP T _j = 12°C | 6.90 | 5.50 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 6.70 kW | 6.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 6.70 kW | 6.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1518 kWh | 2007 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| P _{designh} | 10.80 kW | 10.35 kW |
| η_s | 144 % | 118 % |
| P _{rated} | 10.80 kW | 10.35 kW |
| SCOP | 3.67 | 3.03 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.80 kW |
| COP T _j = -7°C | 3.00 | 2.50 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.40 | 3.60 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.20 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.70 kW |
| COP T _j = 12°C | 7.20 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 8.80 kW | 8.40 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.50 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.70 kW | 7.20 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.30 | 1.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 10.80 kW | 10.35 kW |
| Annual energy consumption Qhe | 7252 kWh | 8407 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 12.42 kW | 12.10 kW |
| η_s | 178 % | 141 % |
| Prated | 12.42 kW | 12.10 kW |
| SCOP | 4.53 | 3.54 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 11.00 kW | 10.70 kW |
| COP T _j = -7°C | 3.00 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 6.80 kW | 6.60 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 5.90 kW | 5.70 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.50 kW | 5.70 kW |
| COP T _j = 12°C | 7.40 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 11.00 kW | 10.70 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 10.10 kW | 9.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.70 | 2.10 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.30 kW | 2.30 kW |
| Annual energy consumption Qhe | 5672 kWh | 6944 kWh |

Model: Vitocal 151-A AWOT-M-E-AC-AF 151.A16 (SP)

Configure model

| | |
|-------------------------------------|---|
| Model name | Vitocal 151-A AWOT-M-E-AC-AF 151.A16 (SP) |
| Application | Heating (medium temp) |
| Units | Indoor + Outdoor |
| Climate Zone | Colder Climate + Warmer Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |

General Data

| | |
|--------------|-------------|
| Power supply | 1x230V 50Hz |
|--------------|-------------|

Heating

EN 14511-2

| | Low temperature | Medium temperature |
|-------------|-----------------|--------------------|
| Heat output | 9.10 kW | 8.49 kW |
| El input | 1.86 kW | 2.53 kW |
| COP | 4.90 | 3.35 |

EN 14511-4

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

Warmer Climate

EN 12102-1

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

EN 14825

| | Low temperature | Medium temperature |
|--|-----------------|--------------------|
| P _{designh} | 7.54 kW | 7.56 kW |
| η_s | 239 % | 175 % |
| P _{rated} | 7.54 kW | 7.56 kW |
| SCOP | 6.06 | 4.46 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 7.50 kW | 7.60 kW |
| COP T _j = +2°C | 3.80 | 2.80 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.60 kW | 6.10 kW |
| COP T _j = +7°C | 5.40 | 3.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.60 kW | 5.60 kW |
| COP T _j = 12°C | 7.30 | 5.60 |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| Cdh Tj = +12 °C | 1.000 | 1.000 |
| Pdh Tj = Tbiv | 7.50 kW | 7.60 kW |
| COP Tj = Tbiv | 3.80 | 2.80 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.50 kW | 7.60 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.80 | 2.80 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 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 | 1662 kWh | 2266 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 |
|-----------------|
|-----------------|

This information was generated by the HP KEYMARK database on 6 May 2022

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| P _{designh} | 11.83 kW | 11.17 kW |
| η_s | 141 % | 117 % |
| P _{rated} | 11.83 kW | 11.17 kW |
| SCOP | 3.61 | 2.99 |
| T _{biv} | -15 °C | -15 °C |
| TOL | -20 °C | -20 °C |
| P _{dh} T _j = -7°C | 12.10 kW | 11.70 kW |
| COP T _j = -7°C | 2.80 | 2.40 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.60 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.50 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.60 kW |
| COP T _j = +7°C | 6.10 | 5.00 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.40 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.50 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 9.70 kW | 9.10 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP Tj = Tbiv | 2.40 | 2.00 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.40 kW | 7.70 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.20 | 1.70 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 11.83 kW | 11.17 kW |
| Annual energy consumption Qhe | 8080 kWh | 10386 kWh |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 40 dB(A) | 40 dB(A) |
| Sound power level outdoor | 56 dB(A) | 56 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| | | |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|----------|----------|
| P _{designh} | 13.67 kW | 13.37 kW |
| η_s | 178 % | 141 % |
| P _{rated} | 13.67 kW | 13.37 kW |
| SCOP | 4.52 | 3.60 |
| T _{biv} | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| P _{dh} T _j = -7°C | 12.00 kW | 11.80 kW |
| COP T _j = -7°C | 2.90 | 2.30 |
| C _{dh} T _j = -7 °C | 1.000 | 1.000 |
| P _{dh} T _j = +2°C | 7.40 kW | 7.50 kW |
| COP T _j = +2°C | 4.30 | 3.40 |
| C _{dh} T _j = +2 °C | 1.000 | 1.000 |
| P _{dh} T _j = +7°C | 6.70 kW | 6.50 kW |
| COP T _j = +7°C | 6.10 | 4.80 |
| C _{dh} T _j = +7 °C | 1.000 | 1.000 |
| P _{dh} T _j = 12°C | 5.30 kW | 5.70 kW |
| COP T _j = 12°C | 7.30 | 6.30 |
| C _{dh} T _j = +12 °C | 1.000 | 1.000 |
| P _{dh} T _j = T _{biv} | 12.10 kW | 11.80 kW |
| COP T _j = T _{biv} | 2.90 | 2.30 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 11.10 kW | 10.70 kW |

This information was generated by the HP KEYMARK database on 6 May 2022

| | | |
|---|-------------|-------------|
| COP $T_j = TOL$ or COP $T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.60 | 2.10 |
| Cdh $T_j = TOL$ or Pdh $T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 70 °C | 70 °C |
| Poff | 0 W | 0 W |
| PTO | 14 W | 14 W |
| PSB | 16 W | 16 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.60 kW | 2.60 kW |
| Annual energy consumption Q_{he} | 6242 kWh | 7670 kWh |