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| | | | | |
|---------------------|---|---------|----------|----------|
| Summary of | HA 10-5 OS 230V / HA 12-5 OS 230V / HA 10-5 OS / HA 12-5 OS | | Reg. No. | 40049244 |
| Certificate Holder | | | | |
| Name | Saunier Duval Brand Group | | | |
| Address | | Zip | | |
| City | | Country | Germany | |
| Certification Body | VDE Prüf- und Zertifizierungsinstitut GmbH | | | |
| Subtype title | HA 10-5 OS 230V / HA 12-5 OS 230V / HA 10-5 OS / HA 12-5 OS | | | |
| Heat Pump Type | Outdoor Air/Water | | | |
| Refrigerant | R410A | | | |
| Mass of Refrigerant | 3.6 kg | | | |
| Certification Date | 28.04.2021 | | | |
| Testing basis | DIN EN 14511-1:2019-07; EN 14511-1:2018 | | | |

Model: HA 10-5 OS 230V + HA 12-5 WSB

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | HA 10-5 OS 230V + HA 12-5 WSB |
| 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 | 9.70 kW | 10.35 kW |
| El input | 2.12 kW | 3.74 kW |
| COP | 4.57 | 2.77 |

| 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 | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| η_s | 212 % | 158 % |
| Prated | 8.23 kW | 9.30 kW |
| SCOP | 5.37 | 4.03 |
| Tbiv | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| Pdh Tj = +2°C | 8.23 kW | 9.30 kW |
| COP Tj = +2°C | 3.64 | 2.42 |
| Cdh Tj = +2 °C | 1.00 | 1.00 |
| Pdh Tj = +7°C | 5.40 kW | 5.73 kW |
| COP Tj = +7°C | 4.92 | 3.37 |
| Cdh Tj = +7 °C | 0.99 | 0.99 |
| Pdh Tj = 12°C | 5.99 kW | 6.15 kW |
| COP Tj = 12°C | 6.28 | 5.20 |
| Cdh Tj = +12 °C | 0.99 | 0.99 |

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| | | |
|---|-------------|-------------|
| Pdh Tj = Tbiv | 8.23 kW | 9.29 kW |
| COP Tj = Tbiv | 3.64 | 2.42 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.23 kW | 9.30 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.64 | 2.42 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.00 | 1.00 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 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 | 2046 kWh | 3076 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

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| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 152 % | 111 % |
| Prated | 9.49 kW | 9.42 kW |
| SCOP | 3.88 | 2.86 |
| Tbiv | -15 °C | -15 °C |
| TOL | -20 °C | -15 °C |
| Pdh Tj = -7°C | 6.32 kW | 6.14 kW |
| COP Tj = -7°C | 3.41 | 2.56 |
| Cdh Tj = -7 °C | 0.990 | 1.000 |
| Pdh Tj = +2°C | 4.94 kW | 4.48 kW |
| COP Tj = +2°C | 4.53 | 3.45 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.53 kW | 5.31 kW |
| COP Tj = +7°C | 5.86 | 4.59 |
| Cdh Tj = +7 °C | 0.990 | 0.990 |
| Pdh Tj = 12°C | 6.44 kW | 6.21 kW |
| COP Tj = 12°C | 7.27 | 5.99 |
| Cdh Tj = +12 °C | 0.990 | 0.990 |
| Pdh Tj = Tbiv | 7.74 kW | 7.68 kW |
| COP Tj = Tbiv | 2.34 | 1.89 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.41 kW | 7.68 kW |

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| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.22 | 1.89 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 9.49 kW | 9.42 kW |
| Annual energy consumption Qhe | 6025 kWh | 8124 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | 7.74 | 7.68 |
| COP Tj = -15°C (if TOL<-20°C) | 2.34 | 1.89 |
| Cdh Tj = -15 °C | 1.000 | 1.000 |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 180 % | 128 % |
| Prated | 11.50 kW | 9.56 kW |
| SCOP | 4.58 | 3.28 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 10.18 kW | 8.46 kW |
| COP Tj = -7°C | 2.83 | 2.12 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 6.53 kW | 5.05 kW |
| COP Tj = +2°C | 4.57 | 3.14 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.66 kW | 5.18 kW |
| COP Tj = +7°C | 5.78 | 4.27 |
| Cdh Tj = +7 °C | 0.990 | 0.990 |
| Pdh Tj = 12°C | 6.52 kW | 6.11 kW |
| COP Tj = 12°C | 7.35 | 5.79 |
| Cdh Tj = +12 °C | 0.990 | 0.990 |
| Pdh Tj = Tbiv | 10.18 kW | 8.46 kW |
| COP Tj = Tbiv | 2.83 | 2.12 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 10.05 kW | 7.98 kW |

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| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.72 | 1.71 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.45 kW | 1.59 kW |
| Annual energy consumption Qhe | 5189 kWh | 6029 kWh |

Model: HA 10-5 OS 230V + HA 12-5 STB

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | HA 10-5 OS 230V + HA 12-5 STB |
| Application | Heating + DHW + low 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 | 9.70 kW | 10.35 kW |
| El input | 2.12 kW | 3.74 kW |
| COP | 4.57 | 2.77 |

| 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 | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| η_s | 212 % | 158 % |
| Prated | 8.23 kW | 9.30 kW |
| SCOP | 5.37 | 4.03 |
| Tbiv | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| Pdh Tj = +2°C | 8.23 kW | 9.30 kW |
| COP Tj = +2°C | 3.64 | 2.42 |
| Cdh Tj = +2 °C | 1.00 | 1.00 |
| Pdh Tj = +7°C | 5.40 kW | 5.73 kW |
| COP Tj = +7°C | 4.92 | 3.37 |
| Cdh Tj = +7 °C | 0.99 | 0.99 |
| Pdh Tj = 12°C | 5.99 kW | 6.15 kW |
| COP Tj = 12°C | 6.28 | 5.20 |
| Cdh Tj = +12 °C | 0.99 | 0.99 |

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| | | |
|---|-------------|-------------|
| Pdh Tj = Tbiv | 8.23 kW | 9.29 kW |
| COP Tj = Tbiv | 3.64 | 2.42 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.23 kW | 9.30 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.64 | 2.42 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.00 | 1.00 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 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 | 2046 kWh | 3076 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

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| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 152 % | 111 % |
| Prated | 9.49 kW | 9.42 kW |
| SCOP | 3.88 | 2.86 |
| Tbiv | -15 °C | -15 °C |
| TOL | -20 °C | -15 °C |
| Pdh Tj = -7°C | 6.32 kW | 6.14 kW |
| COP Tj = -7°C | 3.41 | 2.56 |
| Cdh Tj = -7 °C | 0.990 | 1.000 |
| Pdh Tj = +2°C | 4.94 kW | 4.48 kW |
| COP Tj = +2°C | 4.53 | 3.45 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.53 kW | 5.31 kW |
| COP Tj = +7°C | 5.86 | 4.59 |
| Cdh Tj = +7 °C | 0.990 | 0.990 |
| Pdh Tj = 12°C | 6.44 kW | 6.21 kW |
| COP Tj = 12°C | 7.27 | 5.99 |
| Cdh Tj = +12 °C | 0.990 | 0.990 |
| Pdh Tj = Tbiv | 7.74 kW | 7.68 kW |
| COP Tj = Tbiv | 2.34 | 1.89 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.41 kW | 7.68 kW |

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| | | |
|---|-------------|-------------|
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.22 | 1.89 |
| $Cdh T_j = TOL$ or $Pdh T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 9.49 kW | 9.42 kW |
| Annual energy consumption Q_{he} | 6025 kWh | 8124 kWh |
| $Pdh T_j = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 7.74 | 7.68 |
| $COP T_j = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 2.34 | 1.89 |
| $Cdh T_j = -15^{\circ}C$ | 1.000 | 1.000 |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 180 % | 128 % |
| Prated | 11.50 kW | 9.56 kW |
| SCOP | 4.58 | 3.28 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 10.18 kW | 8.46 kW |
| COP Tj = -7°C | 2.83 | 2.12 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 6.53 kW | 5.05 kW |
| COP Tj = +2°C | 4.57 | 3.14 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.66 kW | 5.18 kW |
| COP Tj = +7°C | 5.78 | 4.27 |
| Cdh Tj = +7 °C | 0.990 | 0.990 |
| Pdh Tj = 12°C | 6.52 kW | 6.11 kW |
| COP Tj = 12°C | 7.35 | 5.79 |
| Cdh Tj = +12 °C | 0.990 | 0.990 |
| Pdh Tj = Tbiv | 10.18 kW | 8.46 kW |
| COP Tj = Tbiv | 2.83 | 2.12 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 10.05 kW | 7.98 kW |

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| | | |
|---|-------------|-------------|
| COP $T_j = TOL$ or COP $T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.72 | 1.71 |
| C _{dh} $T_j = TOL$ or P _{dh} $T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| P _{off} | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.45 kW | 1.59 kW |
| Annual energy consumption Q _{he} | 5189 kWh | 6029 kWh |

Domestic Hot Water (DHW)

Warmer Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 108 % |
| COP | 2.62 |
| Heating up time | 01:01 h:min |
| Standby power input | 41.3 W |
| Reference hot water temperature | 53.7 °C |
| Mixed water at 40°C | 243 l |

Colder Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 89 % |
| COP | 2.14 |
| Heating up time | 01:13 h:min |
| Standby power input | 51.6 W |
| Reference hot water temperature | 53.4 °C |
| Mixed water at 40°C | 246 l |

Average Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 97 % |
| COP | 2.36 |
| Heating up time | 01:04 h:min |
| Standby power input | 44.6 W |
| Reference hot water temperature | 53.7 °C |
| Mixed water at 40°C | 244 l |

Model: HA 10-5 OS + HA 12-5 WSB

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | HA 10-5 OS + HA 12-5 WSB |
| 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 | 9.70 kW | 10.35 kW |
| El input | 2.12 kW | 3.74 kW |
| COP | 4.57 | 2.77 |

| 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 | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| η_s | 211 % | 158 % |
| Prated | 8.23 kW | 9.29 kW |
| SCOP | 5.34 | 4.02 |
| Tbiv | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| Pdh Tj = +2°C | 8.23 kW | 9.30 kW |
| COP Tj = +2°C | 3.64 | 2.42 |
| Cdh Tj = +2 °C | 0.99 | 1.00 |
| Pdh Tj = +7°C | 5.40 kW | 5.73 kW |
| COP Tj = +7°C | 4.92 | 3.37 |
| Cdh Tj = +7 °C | 0.99 | 0.99 |
| Pdh Tj = 12°C | 5.99 kW | 6.15 kW |
| COP Tj = 12°C | 6.28 | 5.20 |
| Cdh Tj = +12 °C | 0.98 | 0.99 |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| Pdh Tj = Tbiv | 8.23 kW | 9.29 kW |
| COP Tj = Tbiv | 3.64 | 2.42 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.23 kW | 9.30 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.64 | 2.42 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.99 | 1.00 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 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 | 2059 kWh | 3090 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

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

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 152 % | 111 % |
| Prated | 9.49 kW | 9.42 kW |
| SCOP | 3.87 | 2.85 |
| Tbiv | -15 °C | -15 °C |
| TOL | -20 °C | -15 °C |
| Pdh Tj = -7°C | 6.32 kW | 6.14 kW |
| COP Tj = -7°C | 3.41 | 2.56 |
| Cdh Tj = -7 °C | 0.990 | 0.990 |
| Pdh Tj = +2°C | 4.94 kW | 4.48 kW |
| COP Tj = +2°C | 4.53 | 3.45 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.53 kW | 5.31 kW |
| COP Tj = +7°C | 5.86 | 4.59 |
| Cdh Tj = +7 °C | 0.980 | 0.990 |
| Pdh Tj = 12°C | 6.44 kW | 6.21 kW |
| COP Tj = 12°C | 7.27 | 5.99 |
| Cdh Tj = +12 °C | 0.980 | 0.980 |
| Pdh Tj = Tbiv | 7.74 kW | 7.68 kW |
| COP Tj = Tbiv | 2.34 | 1.89 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.41 kW | 7.68 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.22 | 1.89 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 9.49 kW | 9.42 kW |
| Annual energy consumption Qhe | 6040 kWh | 8138 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | 7.74 | 7.68 |
| COP Tj = -15°C (if TOL<-20°C) | 2.34 | 1.89 |
| Cdh Tj = -15 °C | 1.000 | 1.000 |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 180 % | 128 % |
| Prated | 11.50 kW | 9.56 kW |
| SCOP | 4.57 | 3.27 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 10.18 kW | 8.46 kW |
| COP Tj = -7°C | 2.83 | 2.12 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 6.53 kW | 5.05 kW |
| COP Tj = +2°C | 4.57 | 3.14 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.66 kW | 5.18 kW |
| COP Tj = +7°C | 5.78 | 4.27 |
| Cdh Tj = +7 °C | 0.980 | 0.990 |
| Pdh Tj = 12°C | 6.52 kW | 6.11 kW |
| COP Tj = 12°C | 7.35 | 5.79 |
| Cdh Tj = +12 °C | 0.980 | 0.990 |
| Pdh Tj = Tbiv | 10.18 kW | 8.46 kW |
| COP Tj = Tbiv | 2.83 | 2.12 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 10.05 kW | 7.98 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.72 | 1.71 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.45 kW | 1.59 kW |
| Annual energy consumption Qhe | 5199 kWh | 6040 kWh |

Model: HA 10-5 OS + HA 12-5 STB

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | HA 10-5 OS + HA 12-5 STB |
| Application | Heating + DHW + low 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 | 9.70 kW | 10.35 kW |
| El input | 2.12 kW | 3.74 kW |
| COP | 4.57 | 2.77 |

| 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 | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| η_s | 211 % | 158 % |
| Prated | 8.23 kW | 9.29 kW |
| SCOP | 5.34 | 4.02 |
| Tbiv | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| Pdh Tj = +2°C | 8.23 kW | 9.30 kW |
| COP Tj = +2°C | 3.64 | 2.42 |
| Cdh Tj = +2 °C | 0.99 | 1.00 |
| Pdh Tj = +7°C | 5.40 kW | 5.73 kW |
| COP Tj = +7°C | 4.92 | 3.37 |
| Cdh Tj = +7 °C | 0.99 | 0.99 |
| Pdh Tj = 12°C | 5.99 kW | 6.15 kW |
| COP Tj = 12°C | 6.28 | 5.20 |
| Cdh Tj = +12 °C | 0.98 | 0.99 |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| Pdh Tj = Tbiv | 8.23 kW | 9.29 kW |
| COP Tj = Tbiv | 3.64 | 2.42 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.23 kW | 9.30 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.64 | 2.42 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.99 | 1.00 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 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 | 2059 kWh | 3090 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 152 % | 111 % |
| Prated | 9.49 kW | 9.42 kW |
| SCOP | 3.87 | 2.85 |
| Tbiv | -15 °C | -15 °C |
| TOL | -20 °C | -15 °C |
| Pdh Tj = -7°C | 6.32 kW | 6.14 kW |
| COP Tj = -7°C | 3.41 | 2.56 |
| Cdh Tj = -7 °C | 0.990 | 0.990 |
| Pdh Tj = +2°C | 4.94 kW | 4.48 kW |
| COP Tj = +2°C | 4.53 | 3.45 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.53 kW | 5.31 kW |
| COP Tj = +7°C | 5.86 | 4.59 |
| Cdh Tj = +7 °C | 0.980 | 0.990 |
| Pdh Tj = 12°C | 6.44 kW | 6.21 kW |
| COP Tj = 12°C | 7.27 | 5.99 |
| Cdh Tj = +12 °C | 0.980 | 0.980 |
| Pdh Tj = Tbiv | 7.74 kW | 7.68 kW |
| COP Tj = Tbiv | 2.34 | 1.89 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.41 kW | 7.68 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.22 | 1.89 |
| $Cdh T_j = TOL$ or $Pdh T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 9.49 kW | 9.42 kW |
| Annual energy consumption Q_{he} | 6040 kWh | 8138 kWh |
| $Pdh T_j = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 7.74 | 7.68 |
| $COP T_j = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 2.34 | 1.89 |
| $Cdh T_j = -15^{\circ}C$ | 1.000 | 1.000 |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 42 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 180 % | 128 % |
| Prated | 11.50 kW | 9.56 kW |
| SCOP | 4.57 | 3.27 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 10.18 kW | 8.46 kW |
| COP Tj = -7°C | 2.83 | 2.12 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 6.53 kW | 5.05 kW |
| COP Tj = +2°C | 4.57 | 3.14 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.66 kW | 5.18 kW |
| COP Tj = +7°C | 5.78 | 4.27 |
| Cdh Tj = +7 °C | 0.980 | 0.990 |
| Pdh Tj = 12°C | 6.52 kW | 6.11 kW |
| COP Tj = 12°C | 7.35 | 5.79 |
| Cdh Tj = +12 °C | 0.980 | 0.990 |
| Pdh Tj = Tbiv | 10.18 kW | 8.46 kW |
| COP Tj = Tbiv | 2.83 | 2.12 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 10.05 kW | 7.98 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| COP $T_j = TOL$ or COP $T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.72 | 1.71 |
| C _{dh} $T_j = TOL$ or P _{dh} $T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| P _{off} | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.45 kW | 1.59 kW |
| Annual energy consumption Q _{he} | 5199 kWh | 6040 kWh |

Domestic Hot Water (DHW)

Warmer Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 108 % |
| COP | 2.62 |
| Heating up time | 01:01 h:min |
| Standby power input | 41.3 W |
| Reference hot water temperature | 53.7 °C |
| Mixed water at 40°C | 243 l |

Colder Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 89 % |
| COP | 2.14 |
| Heating up time | 01:13 h:min |
| Standby power input | 51.6 W |
| Reference hot water temperature | 53.4 °C |
| Mixed water at 40°C | 246 l |

Average Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 97 % |
| COP | 2.36 |
| Heating up time | 01:04 h:min |
| Standby power input | 44.6 W |
| Reference hot water temperature | 53.7 °C |
| Mixed water at 40°C | 244 l |

Model: HA 12-5 OS 230V + HA 12-5 WSB

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | HA 12-5 OS 230V + HA 12-5 WSB |
| 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 | 10.25 kW | 10.90 kW |
| El input | 2.26 kW | 3.94 kW |
| COP | 4.54 | 2.77 |

| 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 | 45 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| η_s | 212 % | 158 % |
| Prated | 8.23 kW | 9.29 kW |
| SCOP | 5.37 | 4.03 |
| Tbiv | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| Pdh Tj = +2°C | 8.23 kW | 9.30 kW |
| COP Tj = +2°C | 3.64 | 2.42 |
| Cdh Tj = +2 °C | 1.00 | 1.00 |
| Pdh Tj = +7°C | 5.40 kW | 5.73 kW |
| COP Tj = +7°C | 4.92 | 3.37 |
| Cdh Tj = +7 °C | 0.99 | 0.99 |
| Pdh Tj = 12°C | 5.99 kW | 6.15 kW |
| COP Tj = 12°C | 6.28 | 5.20 |
| Cdh Tj = +12 °C | 0.99 | 0.99 |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| Pdh Tj = Tbiv | 8.23 kW | 9.29 kW |
| COP Tj = Tbiv | 3.64 | 2.42 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.23 kW | 9.30 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.64 | 2.42 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.00 | 1.00 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 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 | 2046 kWh | 3076 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 45 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

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

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 153 % | 111 % |
| Prated | 12.31 kW | 10.28 kW |
| SCOP | 3.91 | 2.86 |
| Tbiv | -15 °C | -15 °C |
| TOL | -20 °C | -15 °C |
| Pdh Tj = -7°C | 8.06 kW | 6.50 kW |
| COP Tj = -7°C | 3.40 | 2.57 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 4.95 kW | 4.47 kW |
| COP Tj = +2°C | 4.68 | 3.45 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.74 kW | 5.33 kW |
| COP Tj = +7°C | 5.94 | 4.61 |
| Cdh Tj = +7 °C | 0.990 | 0.990 |
| Pdh Tj = 12°C | 6.48 kW | 6.10 kW |
| COP Tj = 12°C | 7.01 | 6.08 |
| Cdh Tj = +12 °C | 0.990 | 0.990 |
| Pdh Tj = Tbiv | 10.04 kW | 8.38 kW |
| COP Tj = Tbiv | 2.27 | 1.84 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.63 kW | 8.38 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.17 | 1.84 |
| $Cdh T_j = TOL$ or $Pdh T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 12.31 kW | 10.28 kW |
| Annual energy consumption Q_{he} | 7757 kWh | 8863 kWh |
| $Pdh T_j = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 10.04 | 8.38 |
| $COP T_j = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 2.27 | 1.84 |
| $Cdh T_j = -15^{\circ}C$ | 1.000 | 1.000 |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 45 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 175 % | 133 % |
| Prated | 13.57 kW | 10.97 kW |
| SCOP | 4.45 | 3.39 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 12.01 kW | 9.71 kW |
| COP Tj = -7°C | 2.51 | 2.16 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 7.21 kW | 5.81 kW |
| COP Tj = +2°C | 4.47 | 3.25 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.68 kW | 5.22 kW |
| COP Tj = +7°C | 5.83 | 4.47 |
| Cdh Tj = +7 °C | 0.990 | 0.990 |
| Pdh Tj = 12°C | 6.44 kW | 6.06 kW |
| COP Tj = 12°C | 7.38 | 5.85 |
| Cdh Tj = +12 °C | 0.990 | 0.990 |
| Pdh Tj = Tbiv | 12.01 kW | 9.71 kW |
| COP Tj = Tbiv | 2.51 | 2.16 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 12.44 kW | 8.97 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.47 | 1.85 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.13 kW | 2.01 kW |
| Annual energy consumption Qhe | 6303 kWh | 6691 kWh |

Model: HA 12-5 OS 230V + HA 12-5 STB

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | HA 12-5 OS 230V + HA 12-5 STB |
| Application | Heating + DHW + low 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 | 10.25 kW | 10.90 kW |
| El input | 2.26 kW | 3.94 kW |
| COP | 4.54 | 2.77 |

| 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 | 43 dB(A) | 44 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| η_s | 212 % | 158 % |
| Prated | 8.23 kW | 9.29 kW |
| SCOP | 5.37 | 4.03 |
| Tbiv | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| Pdh Tj = +2°C | 8.23 kW | 9.30 kW |
| COP Tj = +2°C | 3.64 | 2.42 |
| Cdh Tj = +2 °C | 1.00 | 1.00 |
| Pdh Tj = +7°C | 5.40 kW | 5.73 kW |
| COP Tj = +7°C | 4.92 | 3.37 |
| Cdh Tj = +7 °C | 0.99 | 0.99 |
| Pdh Tj = 12°C | 5.99 kW | 6.15 kW |
| COP Tj = 12°C | 6.28 | 5.20 |
| Cdh Tj = +12 °C | 0.99 | 0.99 |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| Pdh Tj = Tbiv | 8.23 kW | 9.29 kW |
| COP Tj = Tbiv | 3.64 | 2.42 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.23 kW | 9.30 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.64 | 2.42 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.00 | 1.00 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 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 | 2046 kWh | 3076 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 43 dB(A) | 44 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 153 % | 111 % |
| Prated | 12.31 kW | 10.28 kW |
| SCOP | 3.91 | 2.86 |
| Tbiv | -15 °C | -15 °C |
| TOL | -20 °C | -15 °C |
| Pdh Tj = -7°C | 8.06 kW | 6.50 kW |
| COP Tj = -7°C | 3.40 | 2.57 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 4.95 kW | 4.47 kW |
| COP Tj = +2°C | 4.68 | 3.45 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.74 kW | 5.33 kW |
| COP Tj = +7°C | 5.94 | 4.61 |
| Cdh Tj = +7 °C | 0.990 | 0.990 |
| Pdh Tj = 12°C | 6.48 kW | 6.10 kW |
| COP Tj = 12°C | 7.01 | 6.08 |
| Cdh Tj = +12 °C | 0.990 | 0.990 |
| Pdh Tj = Tbiv | 10.04 kW | 8.38 kW |
| COP Tj = Tbiv | 2.27 | 1.84 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.63 kW | 8.38 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| $COP_{Tj} = TOL$ or $COP_{Tj} = T_{designh}$ if $TOL < T_{designh}$ | 2.17 | 1.84 |
| $Cdh_{Tj} = TOL$ or $Pdh_{Tj} = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 12.31 kW | 10.28 kW |
| Annual energy consumption Q_{he} | 7757 kWh | 8863 kWh |
| $Pdh_{Tj} = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 10.04 | 8.38 |
| $COP_{Tj} = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 2.27 | 1.84 |
| $Cdh_{Tj} = -15^{\circ}C$ | 1.000 | 1.000 |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 43 dB(A) | 44 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 175 % | 133 % |
| Prated | 13.57 kW | 10.97 kW |
| SCOP | 4.45 | 3.39 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 12.01 kW | 9.71 kW |
| COP Tj = -7°C | 2.51 | 2.16 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 7.21 kW | 5.81 kW |
| COP Tj = +2°C | 4.47 | 3.25 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.68 kW | 5.22 kW |
| COP Tj = +7°C | 5.83 | 4.47 |
| Cdh Tj = +7 °C | 0.990 | 0.990 |
| Pdh Tj = 12°C | 6.44 kW | 6.06 kW |
| COP Tj = 12°C | 7.38 | 5.85 |
| Cdh Tj = +12 °C | 0.990 | 0.990 |
| Pdh Tj = Tbiv | 12.01 kW | 9.71 kW |
| COP Tj = Tbiv | 2.51 | 2.16 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 12.44 kW | 8.97 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| COP $T_j = TOL$ or COP $T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.47 | 1.85 |
| C _{dh} $T_j = TOL$ or P _{dh} $T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| P _{off} | 11 W | 11 W |
| PTO | 11 W | 11 W |
| PSB | 11 W | 11 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.13 kW | 2.01 kW |
| Annual energy consumption Q _{he} | 6303 kWh | 6691 kWh |

Domestic Hot Water (DHW)

Warmer Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 108 % |
| COP | 2.62 |
| Heating up time | 01:01 h:min |
| Standby power input | 41.3 W |
| Reference hot water temperature | 53.7 °C |
| Mixed water at 40°C | 243 l |

Colder Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 89 % |
| COP | 2.14 |
| Heating up time | 01:13 h:min |
| Standby power input | 51.6 W |
| Reference hot water temperature | 53.4 °C |
| Mixed water at 40°C | 246 l |

Average Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 97 % |
| COP | 2.36 |
| Heating up time | 01:04 h:min |
| Standby power input | 44.6 W |
| Reference hot water temperature | 53.7 °C |
| Mixed water at 40°C | 244 l |

Model: HA 12-5 OS + HA 12-5 WSB

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | HA 12-5 OS + HA 12-5 WSB |
| 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 | 10.25 kW | 10.90 kW |
| El input | 2.26 kW | 3.94 kW |
| COP | 4.54 | 2.77 |

| 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 | 45 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| η_s | 211 % | 158 % |
| Prated | 8.23 kW | 9.29 kW |
| SCOP | 5.34 | 4.02 |
| Tbiv | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| Pdh Tj = +2°C | 8.23 kW | 9.30 kW |
| COP Tj = +2°C | 3.64 | 2.42 |
| Cdh Tj = +2 °C | 0.99 | 1.00 |
| Pdh Tj = +7°C | 5.40 kW | 5.73 kW |
| COP Tj = +7°C | 4.92 | 3.37 |
| Cdh Tj = +7 °C | 0.99 | 0.99 |
| Pdh Tj = 12°C | 5.99 kW | 6.15 kW |
| COP Tj = 12°C | 6.28 | 5.20 |
| Cdh Tj = +12 °C | 0.98 | 0.99 |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| Pdh Tj = Tbiv | 8.23 kW | 9.29 kW |
| COP Tj = Tbiv | 3.64 | 2.42 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.23 kW | 9.30 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.64 | 2.42 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.99 | 1.00 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 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 | 2059 kWh | 3090 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 45 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 153 % | 111 % |
| Prated | 12.31 kW | 10.28 kW |
| SCOP | 3.91 | 2.85 |
| Tbiv | -15 °C | -15 °C |
| TOL | -20 °C | -15 °C |
| Pdh Tj = -7°C | 8.06 kW | 6.50 kW |
| COP Tj = -7°C | 3.40 | 2.57 |
| Cdh Tj = -7 °C | 0.990 | 0.990 |
| Pdh Tj = +2°C | 4.95 kW | 4.47 kW |
| COP Tj = +2°C | 4.68 | 3.45 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.74 kW | 5.33 kW |
| COP Tj = +7°C | 5.94 | 4.61 |
| Cdh Tj = +7 °C | 0.980 | 0.990 |
| Pdh Tj = 12°C | 6.48 kW | 6.10 kW |
| COP Tj = 12°C | 7.01 | 6.08 |
| Cdh Tj = +12 °C | 0.980 | 0.980 |
| Pdh Tj = Tbiv | 10.04 kW | 8.38 kW |
| COP Tj = Tbiv | 2.27 | 1.84 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.63 kW | 8.38 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| $COP T_j = TOL$ or $COP T_j = T_{designh}$ if $TOL < T_{designh}$ | 2.17 | 1.84 |
| $Cdh T_j = TOL$ or $Pdh T_j = T_{designh}$ if $TOL < T_{designh}$ | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 12.31 kW | 10.28 kW |
| Annual energy consumption Q_{he} | 7766 kWh | 8875 kWh |
| $Pdh T_j = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 10.04 | 8.38 |
| $COP T_j = -15^{\circ}C$ (if $TOL < -20^{\circ}C$) | 2.27 | 1.84 |
| $Cdh T_j = -15^{\circ}C$ | 1.000 | 1.000 |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 45 dB(A) | 45 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 175 % | 132 % |
| Prated | 13.57 kW | 10.97 kW |
| SCOP | 4.44 | 3.38 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 12.01 kW | 9.71 kW |
| COP Tj = -7°C | 2.51 | 2.16 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 7.21 kW | 5.81 kW |
| COP Tj = +2°C | 4.47 | 3.25 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.68 kW | 5.22 kW |
| COP Tj = +7°C | 5.83 | 4.47 |
| Cdh Tj = +7 °C | 0.980 | 0.990 |
| Pdh Tj = 12°C | 6.44 kW | 6.06 kW |
| COP Tj = 12°C | 7.38 | 5.85 |
| Cdh Tj = +12 °C | 0.980 | 0.980 |
| Pdh Tj = Tbiv | 12.01 kW | 9.71 kW |
| COP Tj = Tbiv | 2.51 | 2.16 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 12.44 kW | 8.97 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.47 | 1.85 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.13 kW | 2.01 kW |
| Annual energy consumption Qhe | 6311 kWh | 6700 kWh |

Model: HA 12-5 OS + HA 12-5 STB

| Configure model | |
|-------------------------------------|---------------------------------|
| Model name | HA 12-5 OS + HA 12-5 STB |
| Application | Heating + DHW + low 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 | 10.25 kW | 10.90 kW |
| El input | 2.26 kW | 3.94 kW |
| COP | 4.54 | 2.77 |

| 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 | 43 dB(A) | 44 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

| EN 14825 | | |
|-----------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| η_s | 211 % | 158 % |
| Prated | 8.23 kW | 9.29 kW |
| SCOP | 5.34 | 4.02 |
| Tbiv | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| Pdh Tj = +2°C | 8.23 kW | 9.30 kW |
| COP Tj = +2°C | 3.64 | 2.42 |
| Cdh Tj = +2 °C | 0.99 | 1.00 |
| Pdh Tj = +7°C | 5.40 kW | 5.73 kW |
| COP Tj = +7°C | 4.92 | 3.37 |
| Cdh Tj = +7 °C | 0.99 | 0.99 |
| Pdh Tj = 12°C | 5.99 kW | 6.15 kW |
| COP Tj = 12°C | 6.28 | 5.20 |
| Cdh Tj = +12 °C | 0.98 | 0.99 |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| Pdh Tj = Tbiv | 8.23 kW | 9.29 kW |
| COP Tj = Tbiv | 3.64 | 2.42 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.23 kW | 9.30 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 3.64 | 2.42 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 0.99 | 1.00 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 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 | 2059 kWh | 3090 kWh |

Colder Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 43 dB(A) | 44 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

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

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 153 % | 111 % |
| Prated | 12.31 kW | 10.28 kW |
| SCOP | 3.91 | 2.85 |
| Tbiv | -15 °C | -15 °C |
| TOL | -20 °C | -15 °C |
| Pdh Tj = -7°C | 8.06 kW | 6.50 kW |
| COP Tj = -7°C | 3.40 | 2.57 |
| Cdh Tj = -7 °C | 0.990 | 0.990 |
| Pdh Tj = +2°C | 4.95 kW | 4.47 kW |
| COP Tj = +2°C | 4.68 | 3.45 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.74 kW | 5.33 kW |
| COP Tj = +7°C | 5.94 | 4.61 |
| Cdh Tj = +7 °C | 0.980 | 0.990 |
| Pdh Tj = 12°C | 6.48 kW | 6.10 kW |
| COP Tj = 12°C | 7.01 | 6.08 |
| Cdh Tj = +12 °C | 0.980 | 0.980 |
| Pdh Tj = Tbiv | 10.04 kW | 8.38 kW |
| COP Tj = Tbiv | 2.27 | 1.84 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.63 kW | 8.38 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.17 | 1.84 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 12.31 kW | 10.28 kW |
| Annual energy consumption Qhe | 7766 kWh | 8875 kWh |
| Pdh Tj = -15°C (if TOL<-20°C) | 10.04 | 8.38 |
| COP Tj = -15°C (if TOL<-20°C) | 2.27 | 1.84 |
| Cdh Tj = -15 °C | 1.000 | 1.000 |

Average Climate

| EN 12102-1 | | |
|---------------------------|------------------------|---------------------------|
| | Low temperature | Medium temperature |
| Sound power level indoor | 43 dB(A) | 44 dB(A) |
| Sound power level outdoor | 58 dB(A) | 60 dB(A) |

EN 14825

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | Low temperature | Medium temperature |
|---|------------------------|---------------------------|
| η_s | 175 % | 132 % |
| Prated | 13.57 kW | 10.97 kW |
| SCOP | 4.44 | 3.38 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 12.01 kW | 9.71 kW |
| COP Tj = -7°C | 2.51 | 2.16 |
| Cdh Tj = -7 °C | 1.000 | 1.000 |
| Pdh Tj = +2°C | 7.21 kW | 5.81 kW |
| COP Tj = +2°C | 4.47 | 3.25 |
| Cdh Tj = +2 °C | 0.990 | 0.990 |
| Pdh Tj = +7°C | 5.68 kW | 5.22 kW |
| COP Tj = +7°C | 5.83 | 4.47 |
| Cdh Tj = +7 °C | 0.980 | 0.990 |
| Pdh Tj = 12°C | 6.44 kW | 6.06 kW |
| COP Tj = 12°C | 7.38 | 5.85 |
| Cdh Tj = +12 °C | 0.980 | 0.980 |
| Pdh Tj = Tbiv | 12.01 kW | 9.71 kW |
| COP Tj = Tbiv | 2.51 | 2.16 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 12.44 kW | 8.97 kW |

This information was generated by the HP KEYMARK database on 21 Jun 2022

| | | |
|---|-------------|-------------|
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.47 | 1.85 |
| Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 1.000 | 1.000 |
| WTOL | 55 °C | 55 °C |
| Poff | 17 W | 17 W |
| PTO | 17 W | 17 W |
| PSB | 17 W | 17 W |
| PCK | 0 W | 0 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.13 kW | 2.01 kW |
| Annual energy consumption Qhe | 6311 kWh | 6700 kWh |

Domestic Hot Water (DHW)

Warmer Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 108 % |
| COP | 2.62 |
| Heating up time | 01:01 h:min |
| Standby power input | 41.3 W |
| Reference hot water temperature | 53.7 °C |
| Mixed water at 40°C | 243 l |

Colder Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 89 % |
| COP | 2.14 |
| Heating up time | 01:13 h:min |
| Standby power input | 51.6 W |
| Reference hot water temperature | 53.4 °C |
| Mixed water at 40°C | 246 l |

Average Climate

| EN 16147 | |
|---------------------------------|-------------|
| Declared load profile | XL |
| Efficiency η_{DHW} | 97 % |
| COP | 2.36 |
| Heating up time | 01:04 h:min |
| Standby power input | 44.6 W |
| Reference hot water temperature | 53.7 °C |
| Mixed water at 40°C | 244 l |