

Subtype TTL 9.5/12.5 AC

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|---------------------|---|
| Certificate Holder | tecalor GmbH |
| Address | Fürstenbergerstr. 77 |
| ZIP | 37603 |
| City | Holzminden |
| Country | DE |
| Certification Body | DIN CERTCO Gesellschaft für Konformitätsbewertung mbH |
| Subtype title | TTL 9.5/12.5 AC |
| Registration number | 011-1W0441 |
| Heat Pump Type | Outdoor Air/Water |
| Refrigerant | R410A |
| Mass of Refrigerant | 5.5 kg |
| Certification Date | 14.10.2021 |
| Testing basis | HP KEYMARK certification scheme rules rev. 8 |

Model TTL 9.5 AC

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|-------------------------------------|--------------------------------|
| Model name | TTL 9.5 AC |
| Application | Heating (medium temp) |
| Units | Outdoor |
| Climate zone (for heating) | Warmer Climate, Colder Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |
| Any additional heat sources | n/a |

General data

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

Outdoor Air/Water

EN 14511-4 | Heating

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

EN 12102-1 | Average Climate

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level outdoor | 55 dB(A) | 55 dB(A) |

EN 14825 | Average Climate

| | Low temperature | Medium temperature |
|-----------------|-----------------|--------------------|
| η_s | 159 % | 125 % |
| Prated | 10.29 kW | 11.45 kW |
| SCOP | 4.04 | 3.21 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 9.10 kW | 10.13 kW |
| COP Tj = -7°C | 3.11 | 2.56 |
| Cdh Tj = -7 °C | 0.900 | 0.900 |
| Pdh Tj = +2°C | 7.30 kW | 7.75 kW |
| COP Tj = +2°C | 3.93 | 3.31 |
| Cdh Tj = +2 °C | 0.990 | 0.900 |
| Pdh Tj = +7°C | 8.92 kW | 8.38 kW |
| COP Tj = +7°C | 5.04 | 4.14 |
| Cdh Tj = +7 °C | 0.980 | 0.900 |
| Pdh Tj = 12°C | 9.10 kW | 9.05 kW |
| COP Tj = 12°C | 5.53 | 4.74 |
| Cdh Tj = +12 °C | 0.980 | 0.900 |
| Pdh Tj = Tbiv | 9.10 kW | 10.13 kW |
| COP Tj = Tbiv | 3.11 | 2.56 |

| | | |
|---|-------------|-------------|
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 8.52 kW | 9.40 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.94 | 2.26 |
| WTOL | 65 °C | 65 °C |
| Poff | 10 W | 10 W |
| PTO | 10 W | 10 W |
| PSB | 10 W | 10 W |
| PCK | 38 W | 38 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 1.77 kW | 2.05 kW |
| Annual energy consumption Qhe | 5265 kWh | 7377 kWh |

EN 12102-1 | Colder Climate

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level outdoor | 55 dB(A) | 55 dB(A) |

EN 14825 | Colder Climate

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| η_s | 133 % | 112 % |
| Prated | 14.53 kW | 15.94 kW |
| SCOP | 3.40 | 2.88 |
| Tbiv | -7 °C | -7 °C |
| TOL | -20 °C | -20 °C |
| Pdh Tj = -7°C | 8.80 kW | 9.65 kW |
| COP Tj = -7°C | 3.27 | 2.82 |
| Cdh Tj = -7 °C | 0.900 | 0.900 |
| Pdh Tj = +2°C | 7.19 kW | 7.58 kW |
| COP Tj = +2°C | 4.08 | 3.55 |
| Cdh Tj = +2 °C | 0.980 | 0.900 |
| Pdh Tj = +7°C | 9.02 kW | 8.57 kW |
| COP Tj = +7°C | 5.21 | 4.46 |
| Cdh Tj = +7 °C | 0.980 | 0.900 |
| Pdh Tj = 12°C | 9.10 kW | 9.06 kW |
| COP Tj = 12°C | 5.53 | 4.88 |
| Cdh Tj = +12 °C | 0.980 | 0.900 |
| Pdh Tj = Tbiv | 8.80 kW | 9.65 kW |
| COP Tj = Tbiv | 3.27 | 2.82 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 7.38 kW | 7.53 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.54 | 1.85 |
| WTOL | 65 °C | 65 °C |
| Poff | 10 W | 10 W |
| PTO | 10 W | 10 W |
| PSB | 10 W | 10 W |

| | | |
|--|-------------|-------------|
| PCK | 38 W | 38 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 14.53 kW | 15.94 kW |
| Annual energy consumption Q _{he} | 10540 kWh | 13625 kWh |

EN 12102-1 | Warmer Climate

| | | |
|---------------------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Sound power level outdoor | 55 dB(A) | 55 dB(A) |

EN 14825 | Warmer Climate

| | | |
|---|-----------------|--------------------|
| | Low temperature | Medium temperature |
| η_s | 187 % | 128 % |
| Prated | 7.90 kW | 8.14 kW |
| SCOP | 4.76 | 3.28 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 7.90 kW | 8.14 kW |
| COP T _j = +2°C | 3.75 | 2.78 |
| C _{dh} T _j = +2 °C | 0.900 | 0.900 |
| P _{dh} T _j = +7°C | 8.76 kW | 8.04 kW |
| COP T _j = +7°C | 4.77 | 3.40 |
| C _{dh} T _j = +7 °C | 0.990 | 0.900 |
| P _{dh} T _j = 12°C | 9.09 kW | 9.03 kW |
| COP T _j = 12°C | 5.41 | 4.48 |
| C _{dh} T _j = +12 °C | 0.980 | 0.900 |
| P _{dh} T _j = T _{biv} | 7.90 kW | 8.14 kW |
| COP T _j = T _{biv} | 3.75 | 2.78 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 7.90 kW | 8.14 kW |
| COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh} | 3.75 | 2.78 |
| WTOL | 65 °C | 65 °C |
| P _{off} | 10 W | 10 W |
| PTO | 10 W | 10 W |
| PSB | 10 W | 10 W |
| PCK | 38 W | 38 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q _{he} | 2218 kWh | 3314 kWh |

Model TTL 12.5 AC

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|-------------------------------------|--------------------------------|
| Model name | TTL 12.5 AC |
| Application | Heating (medium temp) |
| Units | Outdoor |
| Climate zone (for heating) | Warmer Climate, Colder Climate |
| Reversibility | Yes |
| Cooling mode application (optional) | n/a |
| Any additional heat sources | n/a |

General data

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

Outdoor Air/Water

EN 14511-4 | Heating

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

EN 12102-1 | Average Climate

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level outdoor | 55 dB(A) | 55 dB(A) |

EN 14825 | Average Climate

| | Low temperature | Medium temperature |
|-----------------|-----------------|--------------------|
| η_s | 159 % | 130 % |
| Prated | 12.80 kW | 13.42 kW |
| SCOP | 4.05 | 3.32 |
| Tbiv | -7 °C | -7 °C |
| TOL | -10 °C | -10 °C |
| Pdh Tj = -7°C | 11.30 kW | 11.87 kW |
| COP Tj = -7°C | 2.84 | 2.43 |
| Cdh Tj = -7 °C | 0.900 | 0.900 |
| Pdh Tj = +2°C | 7.24 kW | 7.67 kW |
| COP Tj = +2°C | 4.01 | 3.42 |
| Cdh Tj = +2 °C | 0.900 | 0.900 |
| Pdh Tj = +7°C | 8.94 kW | 8.41 kW |
| COP Tj = +7°C | 5.08 | 4.19 |
| Cdh Tj = +7 °C | 0.980 | 0.900 |
| Pdh Tj = 12°C | 9.10 kW | 9.05 kW |
| COP Tj = 12°C | 5.55 | 4.76 |
| Cdh Tj = +12 °C | 0.980 | 0.900 |
| Pdh Tj = Tbiv | 11.32 kW | 11.87 kW |
| COP Tj = Tbiv | 2.84 | 2.43 |

| | | |
|---|-------------|-------------|
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 10.58 kW | 11.10 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.83 | 2.16 |
| WTOL | 65 °C | 65 °C |
| Poff | 10 W | 10 W |
| PTO | 10 W | 10 W |
| PSB | 10 W | 10 W |
| PCK | 38 W | 38 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 2.22 kW | 2.32 kW |
| Annual energy consumption Qhe | 6537 kWh | 8358 kWh |

EN 12102-1 | Colder Climate

| | Low temperature | Medium temperature |
|---------------------------|-----------------|--------------------|
| Sound power level outdoor | 55 dB(A) | 55 dB(A) |

EN 14825 | Colder Climate

| | Low temperature | Medium temperature |
|---|-----------------|--------------------|
| η_s | 133 % | 115 % |
| Prated | 18.44 kW | 19.19 kW |
| SCOP | 3.39 | 2.94 |
| Tbiv | -7 °C | -7 °C |
| TOL | -20 °C | -20 °C |
| Pdh Tj = -7°C | 11.16 kW | 11.61 kW |
| COP Tj = -7°C | 3.15 | 2.69 |
| Cdh Tj = -7 °C | 0.900 | 0.900 |
| Pdh Tj = +2°C | 7.13 kW | 7.49 kW |
| COP Tj = +2°C | 4.16 | 3.66 |
| Cdh Tj = +2 °C | 0.900 | 0.900 |
| Pdh Tj = +7°C | 9.05 kW | 8.61 kW |
| COP Tj = +7°C | 5.25 | 4.53 |
| Cdh Tj = +7 °C | 0.980 | 0.900 |
| Pdh Tj = 12°C | 9.10 kW | 9.06 kW |
| COP Tj = 12°C | 5.55 | 4.91 |
| Cdh Tj = +12 °C | 0.980 | 0.900 |
| Pdh Tj = Tbiv | 11.16 kW | 11.61 kW |
| COP Tj = Tbiv | 3.15 | 2.69 |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 9.29 kW | 9.65 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 2.47 | 1.85 |
| WTOL | 65 °C | 65 °C |
| Poff | 10 W | 10 W |
| PTO | 10 W | 10 W |
| PSB | 10 W | 10 W |

| | | |
|--|-------------|-------------|
| PCK | 38 W | 38 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 18.44 kW | 19.19 kW |
| Annual energy consumption Q _{he} | 13397 kWh | 16099 kWh |

EN 12102-1 | Warmer Climate

| | | |
|---------------------------|-----------------|--------------------|
| | Low temperature | Medium temperature |
| Sound power level outdoor | 55 dB(A) | 55 dB(A) |

EN 14825 | Warmer Climate

| | | |
|---|-----------------|--------------------|
| | Low temperature | Medium temperature |
| η_s | 188 % | 128 % |
| Prated | 8.10 kW | 8.14 kW |
| SCOP | 4.77 | 3.28 |
| T _{biv} | 2 °C | 2 °C |
| TOL | 2 °C | 2 °C |
| P _{dh} T _j = +2°C | 8.10 kW | 8.14 kW |
| COP T _j = +2°C | 3.74 | 2.78 |
| C _{dh} T _j = +2 °C | 0.900 | 0.900 |
| P _{dh} T _j = +7°C | 8.76 kW | 8.04 kW |
| COP T _j = +7°C | 4.77 | 3.40 |
| C _{dh} T _j = +7 °C | 0.990 | 0.900 |
| P _{dh} T _j = 12°C | 9.09 kW | 9.03 kW |
| COP T _j = 12°C | 5.41 | 4.48 |
| C _{dh} T _j = +12 °C | 0.980 | 0.900 |
| P _{dh} T _j = T _{biv} | 8.10 kW | 8.41 kW |
| COP T _j = T _{biv} | 3.74 | 2.78 |
| P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh} | 8.10 kW | 8.14 kW |
| COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh} | 3.74 | 2.78 |
| WTOL | 65 °C | 65 °C |
| P _{off} | 10 W | 10 W |
| PTO | 10 W | 10 W |
| PSB | 10 W | 10 W |
| PCK | 38 W | 38 W |
| Supplementary Heater: Type of energy input | Electricity | Electricity |
| Supplementary Heater: PSUP | 0.00 kW | 0.00 kW |
| Annual energy consumption Q _{he} | 2271 kWh | 3314 kWh |