

This information was generated by the HP KEYMARK database on 18 Mar 2022

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|                     |                                                       |          |            |
|---------------------|-------------------------------------------------------|----------|------------|
| Summary of          | TTF 33.5                                              | Reg. No. | 011-1W0457 |
| Certificate Holder  |                                                       |          |            |
| Name                | tecalor GmbH                                          |          |            |
| Address             | Fürstenbergerstr. 77                                  | Zip      | 37603      |
| City                | Holzminden                                            | Country  | Germany    |
| Certification Body  | DIN CERTCO Gesellschaft für Konformitätsbewertung mbH |          |            |
| Subtype title       | TTF 33.5                                              |          |            |
| Heat Pump Type      | Brine/Water                                           |          |            |
| Refrigerant         | R410A                                                 |          |            |
| Mass of Refrigerant | 3.9 kg                                                |          |            |
| Certification Date  | 15.03.2021                                            |          |            |
| Testing basis       | HP KEYMARK certification scheme rules V8              |          |            |

## Model: TTF 33.5

| Configure model                     |                                 |
|-------------------------------------|---------------------------------|
| Model name                          | TTF 33.5                        |
| Application                         | Heating (medium temp)           |
| Units                               | Indoor                          |
| 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 | 20.18 kW        | 18.93 kW           |
| El input    | 4.26 kW         | 6.42 kW            |
| COP         | 4.73            | 2.95               |

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

### Average Climate

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### EN 12102-1

|                          | Low temperature | Medium temperature |
|--------------------------|-----------------|--------------------|
| Sound power level indoor | 47 dB(A)        | 47 dB(A)           |

### EN 14825

|                | Low temperature | Medium temperature |
|----------------|-----------------|--------------------|
| $\eta_s$       | 214 %           | 159 %              |
| Prated         | 33.28 kW        | 31.13 kW           |
| SCOP           | 5.55            | 4.18               |
| Tbiv           | -10 °C          | -10 °C             |
| TOL            | -10 °C          | -10 °C             |
| Pdh Tj = -7°C  | 29.44 kW        | 27.54 kW           |
| COP Tj = -7°C  | 4.63            | 3.14               |
| Cdh Tj = -7 °C | 0.90            | 0.90               |
| Pdh Tj = +2°C  | 17.92 kW        | 16.76 kW           |
| COP Tj = +2°C  | 5.57            | 4.21               |
| Cdh Tj = +2 °C | 0.90            | 0.90               |
| Pdh Tj = +7°C  | 11.52 kW        | 10.78 kW           |
| COP Tj = +7°C  | 6.11            | 4.83               |
| Cdh Tj = +7 °C | 0.90            | 0.90               |
| Pdh Tj = 12°C  | 12.52 kW        | 12.16 kW           |

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|                                                     |           |           |
|-----------------------------------------------------|-----------|-----------|
| COP Tj = 12°C                                       | 6.05      | 5.00      |
| Cdh Tj = +12 °C                                     | 0.90      | 0.90      |
| Pdh Tj = Tbiv                                       | 33.28 kW  | 31.13 kW  |
| COP Tj = Tbiv                                       | 4.26      | 2.86      |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 33.28 kW  | 31.13 kW  |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.26      | 2.86      |
| WTOL                                                | 65 °C     | 65 °C     |
| Poff                                                | 12 W      | 12 W      |
| PTO                                                 | 12 W      | 12 W      |
| PSB                                                 | 12 W      | 12 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                       | 12358 kWh | 15305 kWh |

## Warmer Climate

| <b>EN 14825</b> |                        |                           |
|-----------------|------------------------|---------------------------|
|                 | <b>Low temperature</b> | <b>Medium temperature</b> |
| $\eta_s$        | 214 %                  | 160 %                     |
| Prated          | 33.28 kW               | 31.13 kW                  |
| SCOP            | 5.54                   | 4.19                      |

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|                                                     |          |          |
|-----------------------------------------------------|----------|----------|
| Tbiv                                                | 2 °C     | 2 °C     |
| TOL                                                 | 2 °C     | 2 °C     |
| Pdh Tj = +2°C                                       | 33.28 kW | 31.13 kW |
| COP Tj = +2°C                                       | 4.26     | 2.86     |
| Cdh Tj = +2 °C                                      | 0.90     | 0.90     |
| Pdh Tj = +7°C                                       | 21.39 kW | 20.01 kW |
| COP Tj = +7°C                                       | 5.30     | 3.78     |
| Cdh Tj = +7 °C                                      | 0.90     | 0.90     |
| Pdh Tj = 12°C                                       | 12.51 kW | 12.08 kW |
| COP Tj = 12°C                                       | 6.06     | 4.85     |
| Cdh Tj = +12 °C                                     | 0.90     | 0.90     |
| Pdh Tj = Tbiv                                       | 33.28 kW | 31.13 kW |
| COP Tj = Tbiv                                       | 4.26     | 2.86     |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 33.28 kW | 31.13 kW |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.26     | 2.86     |
| WTOL                                                | 65 °C    | 65 °C    |
| Poff                                                | 12 W     | 12 W     |
| PTO                                                 | 12 W     | 12 W     |
| PSB                                                 | 12 W     | 12 W     |
| PCK                                                 | 0 W      | 0 W      |
| Supplementary Heater: Type of energy input          | n/a      | n/a      |

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|                                           |          |          |
|-------------------------------------------|----------|----------|
| Supplementary Heater: PSUP                | 0.00 kW  | 0.00 kW  |
| Annual energy consumption Q <sub>he</sub> | 7963 kWh | 9906 kWh |

| <b>EN 12102-1</b>        |                        |                           |
|--------------------------|------------------------|---------------------------|
|                          | <b>Low temperature</b> | <b>Medium temperature</b> |
| Sound power level indoor | 47 dB(A)               | 47 dB(A)                  |

## Colder Climate

| <b>EN 14825</b>                        |                        |                           |
|----------------------------------------|------------------------|---------------------------|
|                                        | <b>Low temperature</b> | <b>Medium temperature</b> |
| $\eta_s$                               | 221 %                  | 165 %                     |
| Prated                                 | 33.28 kW               | 31.13 kW                  |
| SCOP                                   | 5.72                   | 4.33                      |
| T <sub>biv</sub>                       | -22 °C                 | -22 °C                    |
| TOL                                    | -22 °C                 | -22 °C                    |
| P <sub>dh</sub> T <sub>j</sub> = -7°C  | 20.14 kW               | 18.84 kW                  |
| COP T <sub>j</sub> = -7°C              | 5.49                   | 3.99                      |
| C <sub>dh</sub> T <sub>j</sub> = -7 °C | 0.90                   | 0.90                      |
| P <sub>dh</sub> T <sub>j</sub> = +2°C  | 12.26 kW               | 11.47 kW                  |
| COP T <sub>j</sub> = +2°C              | 6.11                   | 4.73                      |
| C <sub>dh</sub> T <sub>j</sub> = +2 °C | 0.90                   | 0.90                      |

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|                                                     |           |           |
|-----------------------------------------------------|-----------|-----------|
| Pdh Tj = +7°C                                       | 12.53 kW  | 12.14 kW  |
| COP Tj = +7°C                                       | 6.10      | 4.98      |
| Cdh Tj = +7 °C                                      | 0.90      | 0.90      |
| Pdh Tj = 12°C                                       | 12.49 kW  | 12.22 kW  |
| COP Tj = 12°C                                       | 5.91      | 5.12      |
| Cdh Tj = +12 °C                                     | 0.90      | 0.90      |
| Pdh Tj = Tbiv                                       | 33.28 kW  | 31.13 kW  |
| COP Tj = Tbiv                                       | 4.26      | 2.86      |
| Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh | 33.28 kW  | 31.13 kW  |
| COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh | 4.26      | 2.86      |
| WTOL                                                | 65 °C     | 65 °C     |
| Poff                                                | 12 W      | 12 W      |
| PTO                                                 | 12 W      | 12 W      |
| PSB                                                 | 12 W      | 12 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                       | 14325 kWh | 17698 kWh |
| Pdh Tj = -15°C (if TOL<-20°C)                       | 33.28     | 31.13     |
| COP Tj = -15°C (if TOL<-20°C)                       | 4.26      | 2.86      |
| Cdh Tj = -15 °C                                     | 0.90      | 0.90      |

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| EN 12102-1               |                 |                    |
|--------------------------|-----------------|--------------------|
|                          | Low temperature | Medium temperature |
| Sound power level indoor | 47 dB(A)        | 47 dB(A)           |