

Subtype TTF 12.5

Certificate Holder	tecalor GmbH
Address	Fürstenbergerstr. 77
ZIP	37603
City	Holzminden
Country	DE
Certification Body	RISE CERT
Subtype title	TTF 12.5
Registration number	012-C700171
Heat Pump Type	Brine/Water and Water/Water
Refrigerant	R452B
Mass of Refrigerant	1 kg
Certification Date	22.02.2023
Testing basis	EN 14511:2018, EN 14825:2018, EN 12102:2017.

Model TTF 12.5

Model name	TTF 12.5
Application	Heating (medium temp)
Units	Indoor
Climate zone (for heating)	Colder, Warmer, Warmer Climate, Colder Climate
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	3x400V 50Hz
Off-peak product	Yes

Brine/Water

EN 14511-4 | Heating

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

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	46 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	190 %	142 %
Prated	13.51 kW	14.79 kW
SCOP	4.94	3.74
Tbiv	-8 °C	-5 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.49 kW	11.90 kW
COP Tj = -7°C	4.64	3.22
Cdh Tj = -7 °C	0.996	0.997
Pdh Tj = +2°C	12.75 kW	12.06 kW
COP Tj = +2°C	4.92	3.76
Cdh Tj = +2 °C	0.996	0.997
Pdh Tj = +7°C	12.94 kW	12.17 kW
COP Tj = +7°C	5.22	4.10
Cdh Tj = +7 °C	0.996	0.997
Pdh Tj = 12°C	13.00 kW	12.40 kW
COP Tj = 12°C	5.46	4.53
Cdh Tj = +12 °C	0.996	0.997
Pdh Tj = Tbiv	12.47 kW	11.94 kW
COP Tj = Tbiv	4.59	3.38
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.42 kW	11.85 kW

COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.52	3.03
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.997	0.998
WTOL	65 °C	65 °C
Poff	6 W	6 W
PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.09 kW	2.94 kW
Annual energy consumption Qhe	5650 kWh	8167 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	46 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	196 %	145 %
Prated	14.56 kW	14.18 kW
SCOP	5.09	3.83
Tbiv	-17 °C	-16 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	12.83 kW	12.02 kW
COP Tj = -7°C	5.02	3.63
Cdh Tj = -7 °C	0.996	0.997
Pdh Tj = +2°C	12.95 kW	12.14 kW
COP Tj = +2°C	5.25	4.02
Cdh Tj = +2 °C	0.996	0.997
Pdh Tj = +7°C	12.98 kW	12.32 kW
COP Tj = +7°C	5.40	4.39
Cdh Tj = +7 °C	0.996	0.997
Pdh Tj = 12°C	12.99 kW	12.49 kW
COP Tj = 12°C	5.44	4.70
Cdh Tj = +12 °C	0.996	0.996
Pdh Tj = Tbiv	12.65 kW	11.94 kW
COP Tj = Tbiv	4.81	3.37
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.42 kW	11.85 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.52	3.03
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.997	0.998
WTOL	65 °C	65 °C
Poff	6 W	6 W

PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.14 kW	2.33 kW
Annual energy consumption Q _{he}	7049 kWh	9120 kWh

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	46 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	192 %	143 %
Prated	14.67 kW	13.90 kW
SCOP	5.00	3.76
T _{biv}	4 °C	4 °C
TOL	2 °C	2 °C
P _{dh} T _j = +2°C	12.42 kW	11.85 kW
COP T _j = +2°C	4.52	3.03
C _{dh} T _j = +2 °C	0.997	0.998
P _{dh} T _j = +7°C	12.73 kW	11.98 kW
COP T _j = +7°C	4.90	3.50
C _{dh} T _j = +7 °C	0.996	0.997
P _{dh} T _j = 12°C	12.96 kW	12.22 kW
COP T _j = 12°C	5.31	4.22
C _{dh} T _j = +12 °C	0.996	0.997
P _{dh} T _j = T _{biv}	12.57 kW	11.91 kW
COP T _j = T _{biv}	4.73	3.26
P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh}	12.42 kW	11.85 kW
COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh}	4.52	3.03
C _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh}	0.996	0.998
WTOL	65 °C	65 °C
P _{off}	6 W	6 W
PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.25 kW	2.05 kW
Annual energy consumption Q _{he}	3922 kWh	4932 kWh

Water/Water

EN 14511-4 | Heating

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

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	240 %	183 %
Prated	16.92 kW	18.30 kW
SCOP	6.20	4.78
Tbiv	-9 °C	-6 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	16.29 kW	15.38 kW
COP Tj = -7°C	5.91	4.02
Cdh Tj = -7 °C	0.997	0.998
Pdh Tj = +2°C	16.40 kW	15.88 kW
COP Tj = +2°C	6.17	4.79
Cdh Tj = +2 °C	0.996	0.997
Pdh Tj = +7°C	16.49 kW	16.11 kW
COP Tj = +7°C	6.47	5.31
Cdh Tj = +7 °C	0.996	0.997
Pdh Tj = 12°C	16.50 kW	16.32 kW
COP Tj = 12°C	6.76	5.90
Cdh Tj = +12 °C	0.996	0.997
Pdh Tj = Tbiv	16.27 kW	15.48 kW
COP Tj = Tbiv	5.82	4.14
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	16.26 kW	15.12 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	5.78	3.73
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.997	0.998
WTOL	65 °C	65 °C
Poff	6 W	6 W
PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.66 kW	3.18 kW
Annual energy consumption Qhe	5640 kWh	7910 kWh

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	246 %	189 %
Prated	18.25 kW	17.85 kW
SCOP	6.35	4.92
Tbiv	-18 °C	-17 °C

TOL	-22 °C	-22 °C
Pdh Tj = -7°C	16.44 kW	15.78 kW
COP Tj = -7°C	6.26	4.61
Cdh Tj = -7 °C	0.996	0.997
Pdh Tj = +2°C	16.49 kW	16.06 kW
COP Tj = +2°C	6.51	5.19
Cdh Tj = +2 °C	0.996	0.997
Pdh Tj = +7°C	16.50 kW	16.26 kW
COP Tj = +7°C	6.69	5.71
Cdh Tj = +7 °C	0.996	0.997
Pdh Tj = 12°C	16.50 kW	16.40 kW
COP Tj = 12°C	6.73	6.14
Cdh Tj = +12 °C	0.996	0.996
Pdh Tj = Tbiv	16.33 kW	15.50 kW
COP Tj = Tbiv	6.02	4.16
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	16.26 kW	15.12 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	5.78	3.73
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.997	0.998
WTOL	65 °C	65 °C
Poff	6 W	6 W
PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.99 kW	2.73 kW
Annual energy consumption Qhe	7088 kWh	8942 kWh

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	242 %	185 %
Prated	17.53 kW	18.01 kW
SCOP	6.25	4.82
Tbiv	3 °C	4 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	16.26 kW	15.12 kW
COP Tj = +2°C	5.78	3.73
Cdh Tj = +2 °C	0.997	0.998
Pdh Tj = +7°C	16.38 kW	15.69 kW
COP Tj = +7°C	6.12	4.44
Cdh Tj = +7 °C	0.996	0.997
Pdh Tj = 12°C	16.50 kW	16.18 kW
COP Tj = 12°C	6.58	5.50
Cdh Tj = +12 °C	0.996	0.997

Pdh Tj = Tbiv	16.28 kW	15.44 kW
COP Tj = Tbiv	5.89	4.08
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	16.26 kW	15.12 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	5.78	3.73
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.997	0.998
WTOL	65 °C	65 °C
Poff	6 W	6 W
PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.27 kW	2.89 kW
Annual energy consumption Qhe	3749 kWh	4991 kWh