

Subtype TTF 17.5

Certificate Holder	tecalor GmbH
Address	Lüchtringer Weg 3
ZIP	37603
City	Holzminden
Country	DE
Certification Body	RISE CERT
Subtype title	TTF 17.5
Registration number	012-C700172
Heat Pump Type	Brine/Water and Water/Water
Refrigerant	R452B
Mass of Refrigerant	1.25 kg
Certification Date	22.02.2023
Testing basis	EN 14511:2018, EN 14825:2018, EN 12102:2017.
Testing laboratory	RISE Research Institutes of Sweden

Model TTF 17.5

Model name	TTF 17.5
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 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	16.69 kW	15.10 kW
El input	3.77 kW	5.29 kW
COP	4.43	2.85

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	184 %	140 %
Prated	18.14 kW	19.84 kW
SCOP	4.79	3.70
Tbiv	-8 °C	-5 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	16.77 kW	15.92 kW
COP Tj = -7°C	4.54	3.16
Cdh Tj = -7 °C	0.997	0.998
Pdh Tj = +2°C	17.06 kW	16.25 kW
COP Tj = +2°C	4.78	3.71
Cdh Tj = +2 °C	0.997	0.998
Pdh Tj = +7°C	17.24 kW	16.46 kW
COP Tj = +7°C	5.01	4.08
Cdh Tj = +7 °C	0.997	0.998

Pdh Tj = 12°C	17.18 kW	16.72 kW
COP Tj = 12°C	5.19	4.50
Cdh Tj = +12 °C	0.997	0.997
Pdh Tj = Tbiv	16.74 kW	16.03 kW
COP Tj = Tbiv	4.50	3.32
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	16.69 kW	15.77 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.43	2.96
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.998	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	1.45 kW	4.07 kW
Annual energy consumption Qhe	7818 kWh	11065 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
ηs	189 %	144 %
Prated	18.86 kW	19.03 kW
SCOP	4.92	3.80
Tbiv	-18 °C	-16 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	17.13 kW	16.18 kW
COP Tj = -7°C	4.84	3.58
Cdh Tj = -7 °C	0.997	0.998
Pdh Tj = +2°C	17.23 kW	16.42 kW
COP Tj = +2°C	5.03	3.99
Cdh Tj = +2 °C	0.997	0.998
Pdh Tj = +7°C	17.19 kW	16.64 kW
COP Tj = +7°C	5.14	4.36
Cdh Tj = +7 °C	0.997	0.998
Pdh Tj = 12°C	17.19 kW	16.82 kW
COP Tj = 12°C	5.17	4.68
Cdh Tj = +12 °C	0.997	0.997
Pdh Tj = Tbiv	16.88 kW	16.02 kW
COP Tj = Tbiv	4.63	3.31

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	16.69 kW	15.77 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.43	2.96
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.998	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	2.17 kW	3.26 kW
Annual energy consumption Qhe	9456 kWh	12345 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
ηs	185 %	141 %
Prated	19.67 kW	18.61 kW
SCOP	4.84	3.73
Tbiv	4 °C	4 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	16.69 kW	15.77 kW
COP Tj = +2°C	4.43	2.96
Cdh Tj = +2 °C	0.998	0.998
Pdh Tj = +7°C	17.03 kW	16.10 kW
COP Tj = +7°C	4.76	3.45
Cdh Tj = +7 °C	0.997	0.998
Pdh Tj = 12°C	17.21 kW	16.53 kW
COP Tj = 12°C	5.08	4.20
Cdh Tj = +12 °C	0.997	0.998
Pdh Tj = Tbiv	16.86 kW	15.95 kW
COP Tj = Tbiv	4.61	3.20
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	16.69 kW	15.77 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.43	2.96
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.998	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	2.98 kW	2.84 kW
Annual energy consumption Q _{he}	5433 kWh	6658 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 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	20.95 kW	20.68 kW
El input	3.95 kW	5.61 kW
COP	5.31	3.68

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	213 %	178 %
Prated	21.73 kW	24.86 kW
SCOP	5.51	4.64
T _{biv}	-9 °C	-6 °C
TOL	-10 °C	-10 °C
P _{dh} T _j = -7°C	20.82 kW	20.94 kW
COP T _j = -7°C	5.41	3.96
C _{dh} T _j = -7 °C	0.997	0.997
P _{dh} T _j = +2°C	20.59 kW	21.51 kW
COP T _j = +2°C	5.53	4.68
C _{dh} T _j = +2 °C	0.996	0.997
P _{dh} T _j = +7°C	20.31 kW	21.60 kW
COP T _j = +7°C	5.65	5.11
C _{dh} T _j = +7 °C	0.996	0.997
P _{dh} T _j = 12°C	19.97 kW	21.41 kW
COP T _j = 12°C	5.75	5.49
C _{dh} T _j = +12 °C	0.996	0.997
P _{dh} T _j = T _{biv}	20.89 kW	21.03 kW
COP T _j = T _{biv}	5.35	4.07
P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh}	20.95 kW	20.68 kW
COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh}	5.31	3.68

Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.997	0.998
WTOL	65 °C	65 °C
Poff	8 W	8 W
PTO	14 W	14 W
PSB	14 W	14 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.78 kW	4.18 kW
Annual energy consumption Qhe	8141 kWh	11062 kWh

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	215 %	182 %
Prated	22.57 kW	24.24 kW
SCOP	5.58	4.76
Tbiv	-19 °C	-17 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	20.53 kW	21.39 kW
COP Tj = -7°C	5.57	4.51
Cdh Tj = -7 °C	0.996	0.997
Pdh Tj = +2°C	20.28 kW	21.58 kW
COP Tj = +2°C	5.66	5.01
Cdh Tj = +2 °C	0.996	0.997
Pdh Tj = +7°C	20.05 kW	21.49 kW
COP Tj = +7°C	5.72	5.37
Cdh Tj = +7 °C	0.996	0.997
Pdh Tj = 12°C	20.01 kW	21.32 kW
COP Tj = 12°C	5.74	5.63
Cdh Tj = +12 °C	0.996	0.997
Pdh Tj = Tbiv	20.79 kW	21.05 kW
COP Tj = Tbiv	5.43	4.08
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	20.95 kW	20.68 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	5.31	3.68
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.997	0.998
WTOL	65 °C	65 °C
Poff	8 W	8 W
PTO	14 W	14 W
PSB	14 W	14 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.62 kW	3.56 kW

Annual energy consumption Q _{he}	9978 kWh	12556 kWh
EN 14825 Warmer Climate		
	Low temperature	Medium temperature
η_s	213 %	179 %
Prated	22.45 kW	24.49 kW
SCOP	5.53	4.67
T _{biv}	3 °C	4 °C
TOL	2 °C	2 °C
P _{dh} T _j = +2°C	20.95 kW	20.68 kW
COP T _j = +2°C	5.31	3.68
C _{dh} T _j = +2 °C	0.997	0.998
P _{dh} T _j = +7°C	20.64 kW	21.27 kW
COP T _j = +7°C	5.51	4.35
C _{dh} T _j = +7 °C	0.996	0.997
P _{dh} T _j = 12°C	20.18 kW	21.58 kW
COP T _j = 12°C	5.69	5.24
C _{dh} T _j = +12 °C	0.996	0.997
P _{dh} T _j = T _{biv}	20.84 kW	20.99 kW
COP T _j = T _{biv}	5.39	4.01
P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh}	20.95 kW	20.68 kW
COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh}	5.31	3.68
C _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh}	0.997	0.998
WTOL	65 °C	65 °C
P _{off}	8 W	8 W
PTO	14 W	14 W
PSB	14 W	14 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.50 kW	3.81 kW
Annual energy consumption Q _{he}	5427 kWh	7010 kWh