

## Subtype TTF 44.5

Certificate Holder	tecalor GmbH
Address	Fürstenbergerstr. 77
ZIP	37603
City	Holzminden
Country	DE
Certification Body	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH
Subtype title	TTF 44.5
Registration number	011-1W0458
Heat Pump Type	Brine/Water
Refrigerant	R410A
Mass of Refrigerant	4.4 kg
Certification Date	15.03.2021
Testing basis	HP KEYMARK certification scheme rules V8

## Model TTF 44.5

Model name	TTF 44.5
Application	Heating (medium temp)
Units	Indoor
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

## Brine/Water

### EN 14511-4 | Heating

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

### EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	48 dB(A)	50 dB(A)

### EN 14825 | Average Climate

	Low temperature	Medium temperature
$\eta_s$	218 %	168 %
Prated	38.06 kW	35.62 kW
SCOP	5.65	4.39
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	33.67 kW	31.51 kW
COP Tj = -7°C	4.56	3.21
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	20.49 kW	19.18 kW
COP Tj = +2°C	5.68	4.39
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	13.18 kW	12.33 kW
COP Tj = +7°C	6.28	5.16
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	12.70 kW	12.57 kW
COP Tj = 12°C	6.31	5.34
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	38.06 kW	35.62 kW
COP Tj = Tbiv	4.29	2.95

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	38.06 kW	35.62 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.29	2.95
WTOL	65 °C	65 °C
Poff	7 W	7 W
PTO	7 W	7 W
PSB	7 W	7 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	13917 kWh	16768 kWh

#### EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	48 dB(A)	50 dB(A)

#### EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	226 %	174 %
Prated	38.06 kW	35.62 kW
SCOP	5.86	4.55
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	23.04 kW	21.56 kW
COP Tj = -7°C	5.57	4.12
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	14.02 kW	13.12 kW
COP Tj = +2°C	6.27	5.02
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	12.71 kW	12.56 kW
COP Tj = +7°C	6.35	5.32
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	12.70 kW	12.65 kW
COP Tj = 12°C	6.19	5.49
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	38.06 kW	35.62 kW
COP Tj = Tbiv	4.29	2.95
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	38.06 kW	35.62 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.29	2.95
WTOL	65 °C	65 °C
Poff	7 W	7 W
PTO	7 W	7 W
PSB	7 W	7 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 Q <sub>he</sub>	16014 kWh	19290 kWh
P <sub>dh</sub> T <sub>j</sub> = -15 °C (if TOL	38.06	35.62
COP T <sub>j</sub> = -15 °C (if TOL	4.29	2.95
C <sub>dh</sub> T <sub>j</sub> = -15 °C	0.90	0.90

#### EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	48 dB(A)	50 dB(A)

#### EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η <sub>s</sub>	220 %	167 %
Prated	38.06 kW	35.62 kW
SCOP	5.70	4.38
T <sub>biv</sub>	2 °C	2 °C
TOL	2 °C	2 °C
P <sub>dh</sub> T <sub>j</sub> = +2 °C	38.06 kW	35.62 kW
COP T <sub>j</sub> = +2 °C	4.29	2.95
C <sub>dh</sub> T <sub>j</sub> = +2 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = +7 °C	24.47 kW	22.90 kW
COP T <sub>j</sub> = +7 °C	5.35	3.89
C <sub>dh</sub> T <sub>j</sub> = +7 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = 12 °C	12.71 kW	12.48 kW
COP T <sub>j</sub> = 12 °C	6.31	5.17
C <sub>dh</sub> T <sub>j</sub> = +12 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = T <sub>biv</sub>	38.06 kW	35.62 kW
COP T <sub>j</sub> = T <sub>biv</sub>	4.29	2.95
P <sub>dh</sub> T <sub>j</sub> = TOL or P <sub>dh</sub> T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>	38.06 kW	35.62 kW
COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>	4.29	2.95
WTOL	65 °C	65 °C
P <sub>off</sub>	7 W	7 W
PTO	7 W	7 W
PSB	7 W	7 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 Q <sub>he</sub>	8920 kWh	10862 kWh