

## Subtype TTF 4.6, TTF 6.6, TTF 8.6

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Country	DE
Certification Body	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH
Subtype title	TTF 4.6, TTF 6.6, TTF 8.6
Registration number	011-1W0396
Heat Pump Type	Brine/Water
Refrigerant	R454C
Mass of Refrigerant	2.2 kg
Certification Date	08.09.2020

## Model TTF 4.6 (cool) / TTC 4.6 (cool)

Model name	TTF 4.6 (cool) / TTC 4.6 (cool)
Application	Heating (medium temp)
Units	Indoor
Climate zone (for heating)	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	No

## Brine/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 indoor	38 dB(A)	38 dB(A)

## EN 14825 | Average Climate

	Low temperature	Medium temperature
$\eta_s$	195 %	153 %
Prated	4.23 kW	3.76 kW
SCOP	5.07	4.02
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	3.73 kW	3.32 kW
COP Tj = -7°C	5.01	3.58
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	2.26 kW	2.02 kW
COP Tj = +2°C	5.38	4.22
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	1.45 kW	1.30 kW
COP Tj = +7°C	5.34	4.47
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	1.13 kW	1.08 kW
COP Tj = 12°C	5.32	4.49
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	4.23 kW	3.76 kW
COP Tj = Tbiv	4.86	3.43

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	4.23 kW	3.76 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.86	3.43
WTOL	75 °C	75 °C
Poff	16 W	16 W
PTO	16 W	16 W
PSB	16 W	16 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	1723 kWh	1934 kWh

#### EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	38 dB(A)	38 dB(A)

#### EN 14825 | Colder Climate

	Low temperature	Medium temperature
$\eta_s$	201 %	157 %
Prated	4.23 kW	3.76 kW
SCOP	5.21	4.12
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	2.55 kW	2.27 kW
COP Tj = -7°C	5.37	4.10
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	1.55 kW	1.38 kW
COP Tj = +2°C	5.45	4.37
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	1.13 kW	1.09 kW
COP Tj = +7°C	5.31	4.51
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	1.12 kW	1.09 kW
COP Tj = 12°C	5.21	4.52
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	4.23 kW	3.76 kW
COP Tj = Tbiv	4.86	3.43
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	4.23 kW	3.76 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.86	3.43
WTOL	75 °C	75 °C
Poff	16 W	16 W
PTO	16 W	16 W
PSB	16 W	16 W

PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Q <sub>he</sub>	2000 kWh	2252 kWh

#### EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	38 dB(A)	38 dB(A)

#### EN 14825 | Warmer Climate

	Low temperature	Medium temperature
$\eta_s$	187 %	147 %
Prated	4.23 kW	3.76 kW
SCOP	4.87	3.87
T <sub>biv</sub>	2 °C	2 °C
TOL	2 °C	2 °C
P <sub>dh</sub> T <sub>j</sub> = +2°C	4.23 kW	3.76 kW
COP T <sub>j</sub> = +2°C	4.86	3.43
C <sub>dh</sub> T <sub>j</sub> = +2 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = +7°C	2.71 kW	2.41 kW
COP T <sub>j</sub> = +7°C	5.24	3.95
C <sub>dh</sub> T <sub>j</sub> = +7 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = 12°C	1.20 kW	1.08 kW
COP T <sub>j</sub> = 12°C	5.31	4.39
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>	4.23 kW	3.76 kW
COP T <sub>j</sub> = T <sub>biv</sub>	4.86	3.43
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>	4.23 kW	3.76 kW
COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>	4.86	3.43
WTOL	75 °C	75 °C
P <sub>off</sub>	16 W	16 W
PTO	16 W	16 W
PSB	16 W	16 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Q <sub>he</sub>	1159 kWh	1300 kWh

## Model TTF 6.6 (cool) / TTC 6.6 (cool)

Model name	TTF 6.6 (cool) / TTC 6.6 (cool)
Application	Heating (medium temp)
Units	Indoor
Climate zone (for heating)	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	No

## Brine/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 indoor	41 dB(A)	41 dB(A)

## EN 14825 | Average Climate

	Low temperature	Medium temperature
$\eta_s$	200 %	160 %
Prated	6.70 kW	6.05 kW
SCOP	5.20	4.18
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	5.91 kW	5.34 kW
COP Tj = -7°C	4.71	3.55
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	3.59 kW	3.25 kW
COP Tj = +2°C	5.39	4.27
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	2.30 kW	2.09 kW
COP Tj = +7°C	5.60	4.76
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	1.14 kW	1.08 kW
COP Tj = 12°C	5.47	4.61
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	6.70 kW	6.05 kW
COP Tj = Tbiv	4.52	3.34

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	6.70 kW	6.05 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.52	3.34
WTOL	75 °C	75 °C
Poff	16 W	16 W
PTO	16 W	16 W
PSB	16 W	16 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2662 kWh	2988 kWh

#### EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	41 dB(A)	41 dB(A)

#### EN 14825 | Colder Climate

	Low temperature	Medium temperature
$\eta_s$	207 %	166 %
Prated	6.70 kW	6.05 kW
SCOP	5.38	4.34
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	4.04 kW	3.65 kW
COP Tj = -7°C	5.36	4.15
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	2.45 kW	2.22 kW
COP Tj = +2°C	5.64	4.68
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	1.57 kW	1.42 kW
COP Tj = +7°C	5.76	4.80
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	1.13 kW	1.10 kW
COP Tj = 12°C	5.32	4.73
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	6.70 kW	6.05 kW
COP Tj = Tbiv	4.52	3.34
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	6.70 kW	6.05 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.52	3.34
WTOL	75 °C	75 °C
Poff	16 W	16 W
PTO	16 W	16 W
PSB	16 W	16 W

PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Q <sub>he</sub>	3069 kWh	3439 kWh

#### EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	41 dB(A)	41 dB(A)

#### EN 14825 | Warmer Climate

	Low temperature	Medium temperature
$\eta_s$	198 %	158 %
Prated	6.70 kW	6.05 kW
SCOP	5.14	4.14
T <sub>biv</sub>	2 °C	2 °C
TOL	2 °C	2 °C
P <sub>dh</sub> T <sub>j</sub> = +2°C	6.70 kW	6.05 kW
COP T <sub>j</sub> = +2°C	4.52	3.34
C <sub>dh</sub> T <sub>j</sub> = +2 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = +7°C	4.29 kW	3.88 kW
COP T <sub>j</sub> = +7°C	5.19	3.97
C <sub>dh</sub> T <sub>j</sub> = +7 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = 12°C	1.90 kW	1.72 kW
COP T <sub>j</sub> = 12°C	5.71	4.81
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>	6.70 kW	6.05 kW
COP T <sub>j</sub> = T <sub>biv</sub>	4.52	3.34
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>	6.70 kW	6.05 kW
COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>	4.52	3.34
WTOL	75 °C	75 °C
P <sub>off</sub>	16 W	16 W
PTO	16 W	16 W
PSB	16 W	16 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Q <sub>he</sub>	1741 kWh	1954 kWh

## Model TTF 8.6 (cool) / TTC 8.6 (cool)

Model name	TTF 8.6 (cool) / TTC 8.6 (cool)
Application	Heating (medium temp)
Units	Indoor
Climate zone (for heating)	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	No

## Brine/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 indoor	40 dB(A)	40 dB(A)

## EN 14825 | Average Climate

	Low temperature	Medium temperature
$\eta_s$	197 %	158 %
Prated	7.66 kW	6.93 kW
SCOP	5.12	4.14
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	6.76 kW	6.12 kW
COP Tj = -7°C	4.53	3.44
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	4.11 kW	3.72 kW
COP Tj = +2°C	5.25	4.21
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	2.64 kW	2.39 kW
COP Tj = +7°C	5.59	4.69
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	1.16 kW	1.08 kW
COP Tj = 12°C	5.52	4.61
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	7.66 kW	6.93 kW
COP Tj = Tbiv	4.29	3.22



Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.66 kW	6.93 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.29	3.22
WTOL	75 °C	75 °C
Poff	16 W	16 W
PTO	16 W	16 W
PSB	16 W	16 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	3094 kWh	3461 kWh

#### EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	40 dB(A)	40 dB(A)

#### EN 14825 | Colder Climate

	Low temperature	Medium temperature
$\eta_s$	204 %	163 %
Prated	7.66 kW	6.93 kW
SCOP	5.29	4.29
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	4.62 kW	4.18 kW
COP Tj = -7°C	5.17	4.07
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	2.81 kW	2.54 kW
COP Tj = +2°C	5.60	4.60
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	1.80 kW	1.63 kW
COP Tj = +7°C	5.76	4.90
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	1.13 kW	1.09 kW
COP Tj = 12°C	5.34	4.75
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	7.66 kW	6.93 kW
COP Tj = Tbiv	4.29	3.22
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.66 kW	6.93 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.29	3.22
WTOL	75 °C	75 °C
Poff	16 W	16 W
PTO	16 W	16 W
PSB	16 W	16 W

PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Q <sub>he</sub>	3570 kWh	3985 kWh

#### EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	40 dB(A)	40 dB(A)

#### EN 14825 | Warmer Climate

	Low temperature	Medium temperature
$\eta_s$	197 %	157 %
Prated	7.66 kW	6.93 kW
SCOP	5.13	4.13
T <sub>biv</sub>	2 °C	2 °C
TOL	2 °C	2 °C
P <sub>dh</sub> T <sub>j</sub> = +2°C	7.66 kW	6.93 kW
COP T <sub>j</sub> = +2°C	4.29	3.22
C <sub>dh</sub> T <sub>j</sub> = +2 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = +7°C	4.91 kW	4.45 kW
COP T <sub>j</sub> = +7°C	5.09	3.88
C <sub>dh</sub> T <sub>j</sub> = +7 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = 12°C	2.17 kW	1.97 kW
COP T <sub>j</sub> = 12°C	5.75	4.85
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>	7.66 kW	6.93 kW
COP T <sub>j</sub> = T <sub>biv</sub>	4.29	3.22
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>	7.66 kW	6.93 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	3.22
WTOL	75 °C	75 °C
P <sub>off</sub>	16 W	16 W
PTO	16 W	16 W
PSB	16 W	16 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Q <sub>he</sub>	1997 kWh	2243 kWh