Subtype TTF\TTC 12.1 comfort	
Certificate Holder	tecalor GmbH
Address	Lüchtringer Weg 3
ZIP	37603
City	Holzminden
Country	DE
Certification Body	RISE CERT
Subtype title	TTF\TTC 12.1 comfort
Registration number	012-C700387
Heat Pump Type	Brine/Water and Water/Water
Refrigerant	R290
Mass of Refrigerant	0.52 kg
Certification Date	20.05.2025
Testing basis	EN 14511:2022, EN 14825:2022, EN 16147:2017+A1:2022, EN 12102:2022
Testing laboratory	Universität Stuttgart, Prüfstelle HLK am Institut für Gebäudeenergetik, Thermotechnik und Energiespeicherung (IGTE), DE

Model TTF 12.1 comfort	
Model name	TTF 12.1 comfort
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	1x230V 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
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	6.20 kW	10.23 kW
El input	1.27 kW	3.49 kW
COP	4.87	2.93

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
ηs	208 %	160 %
Prated	11.34 kW	10.23 kW
SCOP	5.40	4.19
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.03 kW	9.05 kW
COP Tj = -7°C	4.57	3.36
Cdh Tj = -7 °C	0.992	0.994
Pdh Tj = +2°C	6.11 kW	5.51 kW
COP Tj = +2°C	5.53	4.30
Cdh Tj = +2 °C	0.984	0.987
Pdh Tj = +7°C	3.93 kW	3.54 kW
COP Tj = +7°C	6.01	4.71
Cdh Tj = +7 °C	0.976	0.978

Pdh Tj = 12°C	3.15 kW	2.70 kW
COP Tj = 12°C	5.94	4.77
Cdh Tj = +12 °C	0.968	0.970
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.34 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4337 kWh	5046 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
ηs	215 %	163 %
Prated	11.34 kW	10.23 kW
SCOP	5.58	4.28
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	6.87 kW	6.19 kW
COP Tj = -7°C	5.46	4.00
Cdh Tj = -7 °C	0.986	0.989
Pdh Tj = +2°C	4.18 kW	3.77 kW
COP Tj = +2°C	5.96	4.70
Cdh Tj = +2 °C	0.977	0.979
Pdh Tj = +7°C	3.16 kW	2.72 kW
COP Tj = +7°C	6.03	4.85
Cdh Tj = +7 °C	0.968	0.970
Pdh Tj = 12°C	3.13 kW	2.72 kW
COP Tj = 12°C	5.80	4.86
Cdh Tj = +12 °C	0.969	0.970
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.43 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.944	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	5007 kWh	5896 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
ηs	208 %	159 %
Prated	11.34 kW	10.23 kW
SCOP	5.39	4.18
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	11.34 kW	10.23 kW
COP Tj = +2°C	4.19	2.93
Cdh Tj = +2 °C	0.994	0.995
Pdh Tj = +7°C	7.29 kW	6.58 kW
COP Tj = +7°C	5.25	3.82
Cdh Tj = +7 °C	0.988	0.990
Pdh Tj = 12°C	3.24 kW	2.92 kW
COP Tj = 12°C	6.03	4.99
Cdh Tj = +12 °C	0.970	0.972
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.34 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W

PSB	17 W	17 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	2811 kWh	3269 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	13.85 kW	13.46 kW
El input	2.93 kW	3.76 kW
COP	4.73	3.58

EN 14825 | Average Climate

	Low temperature	Medium temperature
ηs	267 %	209 %
Prated	13.85 kW	13.46 kW
SCOP	6.88	5.42
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.25 kW	11.91 kW
COP Tj = -7°C	5.73	4.02
Cdh Tj = -7 °C	0.992	0.996
Pdh Tj = +2°C	7.46 kW	7.25 kW
COP Tj = +2°C	7.28	5.38
Cdh Tj = +2 °C	0.985	0.992
Pdh Tj = +7°C	4.79 kW	4.66 kW
COP Tj = +7°C	7.41	6.57
Cdh Tj = +7 °C	0.974	0.985
Pdh Tj = 12°C	3.52 kW	3.82 kW
COP Tj = 12°C	7.33	6.74
Cdh Tj = +12 °C	0.965	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58

Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4160 kWh	5134 kWh

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	274 %	218 %
Prated	13.85 kW	13.46 kW
SCOP	7.06	5.65
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	8.38 kW	8.15 kW
COP Tj = -7°C	7.20	5.08
Cdh Tj = -7 °C	0.986	0.993
Pdh Tj = +2°C	5.10 kW	4.96 kW
COP Tj = +2°C	7.47	6.36
Cdh Tj = +2 °C	0.976	0.986
Pdh Tj = +7°C	3.45 kW	3.82 kW
COP Tj = +7°C	7.33	6.80
Cdh Tj = +7 °C	0.964	0.979
Pdh Tj = 12°C	3.58 kW	3.82 kW
COP Tj = 12°C	7.34	6.84
Cdh Tj = +12 °C	0.965	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4834 kWh	5868 kWh

EN 14825 | Warmer Climate		
	Low temperature	Medium temperature
ηs	262 %	204 %
Prated	13.85 kW	13.46 kW
SCOP	6.76	5.30
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	13.85 kW	13.46 kW
COP Tj = +2°C	4.73	3.58
Cdh Tj = +2 °C	0.994	0.997
Pdh Tj = +7°C	8.90 kW	8.65 kW
COP Tj = +7°C	6.95	4.71
Cdh Tj = +7 °C	0.987	0.994
Pdh Tj = 12°C	3.96 kW	3.82 kW
COP Tj = 12°C	7.33	6.69
Cdh Tj = +12 °C	0.969	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	2738 kWh	3394 kWh

Model TTF 12.1 230 comfort	
Model name	TTF 12.1 230 comfort
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	n/a

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	6.20 kW	10.23 kW
El input	1.27 kW	3.49 kW
COP	4.87	2.93

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
ηs	208 %	160 %
Prated	11.34 kW	10.23 kW
SCOP	5.40	4.19
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.03 kW	9.05 kW
COP Tj = -7°C	4.57	3.36
Cdh Tj = -7 °C	0.992	0.994
Pdh Tj = +2°C	6.11 kW	5.51 kW
COP Tj = +2°C	5.53	4.30
Cdh Tj = +2 °C	0.984	0.987
Pdh Tj = +7°C	3.93 kW	3.54 kW
COP Tj = +7°C	6.01	4.71
Cdh Tj = +7 °C	0.976	0.978

Pdh Tj = 12°C	3.15 kW	2.70 kW
COP Tj = 12°C	5.94	4.77
Cdh Tj = +12 °C	0.968	0.970
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.34 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4337 kWh	5046 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
ηs	215 %	163 %
Prated	11.34 kW	10.23 kW
SCOP	5.58	4.28
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	6.87 kW	6.19 kW
COP Tj = -7°C	5.46	4.00
Cdh Tj = -7 °C	0.986	0.989
Pdh Tj = +2°C	4.18 kW	3.77 kW
COP Tj = +2°C	5.96	4.70
Cdh Tj = +2 °C	0.977	0.979
Pdh Tj = +7°C	3.16 kW	2.72 kW
COP Tj = +7°C	6.03	4.85
Cdh Tj = +7 °C	0.968	0.970
Pdh Tj = 12°C	3.13 kW	2.72 kW
COP Tj = 12°C	5.80	4.86
Cdh Tj = +12 °C	0.969	0.970
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.43 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.944	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	5007 kWh	5896 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
ηs	208 %	159 %
Prated	11.34 kW	10.23 kW
SCOP	5.39	4.18
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	11.34 kW	10.23 kW
COP Tj = +2°C	4.19	2.93
Cdh Tj = +2 °C	0.994	0.995
Pdh Tj = +7°C	7.29 kW	6.58 kW
COP Tj = +7°C	5.25	3.82
Cdh Tj = +7 °C	0.988	0.990
Pdh Tj = 12°C	3.24 kW	2.92 kW
COP Tj = 12°C	6.03	4.99
Cdh Tj = +12 °C	0.970	0.972
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.34 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W

PSB	17 W	17 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	2811 kWh	3269 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	13.85 kW	13.46 kW
El input	2.93 kW	3.76 kW
COP	4.73	3.58

EN 14825 | Average Climate

	Low temperature	Medium temperature
ηs	267 %	209 %
Prated	13.85 kW	13.46 kW
SCOP	6.88	5.42
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.25 kW	11.91 kW
COP Tj = -7°C	5.73	4.02
Cdh Tj = -7 °C	0.992	0.996
Pdh Tj = +2°C	7.46 kW	7.25 kW
COP Tj = +2°C	7.28	5.38
Cdh Tj = +2 °C	0.985	0.992
Pdh Tj = +7°C	4.79 kW	4.66 kW
COP Tj = +7°C	7.41	6.57
Cdh Tj = +7 °C	0.974	0.985
Pdh Tj = 12°C	3.52 kW	3.82 kW
COP Tj = 12°C	7.33	6.74
Cdh Tj = +12 °C	0.965	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58

Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4160 kWh	5134 kWh

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	274 %	218 %
Prated	13.85 kW	13.46 kW
SCOP	7.06	5.65
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	8.38 kW	8.15 kW
COP Tj = -7°C	7.20	5.08
Cdh Tj = -7 °C	0.986	0.993
Pdh Tj = +2°C	5.10 kW	4.96 kW
COP Tj = +2°C	7.47	6.36
Cdh Tj = +2 °C	0.976	0.986
Pdh Tj = +7°C	3.45 kW	3.82 kW
COP Tj = +7°C	7.33	6.80
Cdh Tj = +7 °C	0.964	0.979
Pdh Tj = 12°C	3.58 kW	3.82 kW
COP Tj = 12°C	7.34	6.84
Cdh Tj = +12 °C	0.965	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4834 kWh	5868 kWh

EN 14825 | Warmer Climate		
	Low temperature	Medium temperature
ηs	262 %	204 %
Prated	13.85 kW	13.46 kW
SCOP	6.76	5.30
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	13.85 kW	13.46 kW
COP Tj = +2°C	4.73	3.58
Cdh Tj = +2 °C	0.994	0.997
Pdh Tj = +7°C	8.90 kW	8.65 kW
COP Tj = +7°C	6.95	4.71
Cdh Tj = +7 °C	0.987	0.994
Pdh Tj = 12°C	3.96 kW	3.82 kW
COP Tj = 12°C	7.33	6.69
Cdh Tj = +12 °C	0.969	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	2738 kWh	3394 kWh

Model TTC 12.1 comfort	
Model name	TTC 12.1 comfort
Application	Heating + DHW + low 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	n/a

Brine/Water EN 16147 | Average Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

EN 16147 | Colder Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

EN 16147 | Warmer Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

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	6.20 kW	10.23 kW
El input	1.27 kW	3.49 kW
COP	4.87	2.93

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
ηs	208 %	160 %
Prated	11.34 kW	10.23 kW
SCOP	5.40	4.19
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.03 kW	9.05 kW
COP Tj = -7°C	4.57	3.36
Cdh Tj = -7 °C	0.992	0.994
Pdh Tj = +2°C	6.11 kW	5.51 kW
COP Tj = +2°C	5.53	4.30
Cdh Tj = +2 °C	0.984	0.987
Pdh Tj = +7°C	3.93 kW	3.54 kW
COP Tj = +7°C	6.01	4.71
Cdh Tj = +7 °C	0.976	0.978
Pdh Tj = 12°C	3.15 kW	2.70 kW
COP Tj = 12°C	5.94	4.77
Cdh Tj = +12 °C	0.968	0.970
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.34 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4337 kWh	5046 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
ηs	215 %	163 %
Prated	11.34 kW	10.23 kW
SCOP	5.58	4.28
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	6.87 kW	6.19 kW
COP Tj = -7°C	5.46	4.00
Cdh Tj = -7 °C	0.986	0.989
Pdh Tj = +2°C	4.18 kW	3.77 kW
COP Tj = +2°C	5.96	4.70
Cdh Tj = +2 °C	0.977	0.979
Pdh Tj = +7°C	3.16 kW	2.72 kW
COP Tj = +7°C	6.03	4.85
Cdh Tj = +7 °C	0.968	0.970
Pdh Tj = 12°C	3.13 kW	2.72 kW
COP Tj = 12°C	5.80	4.86
Cdh Tj = +12 °C	0.969	0.970
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.43 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.944	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	5007 kWh	5896 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

ηs	208 %	159 %
Prated	11.34 kW	10.23 kW
SCOP	5.39	4.18
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	11.34 kW	10.23 kW
COP Tj = +2°C	4.19	2.93
Cdh Tj = +2 °C	0.994	0.995
Pdh Tj = +7°C	7.29 kW	6.58 kW
COP Tj = +7°C	5.25	3.82
Cdh Tj = +7 °C	0.988	0.990
Pdh Tj = 12°C	3.24 kW	2.92 kW
COP Tj = 12°C	6.03	4.99
Cdh Tj = +12 °C	0.970	0.972
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.34 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	2811 kWh	3269 kWh

Water/Water	
EN 16147 | Average Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l
EN 16147 | Colder Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06

Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

EN 16147 | Warmer Climate

Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

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	13.85 kW	13.46 kW
El input	2.93 kW	3.76 kW
COP	4.73	3.58

EN 14825 | Average Climate

	Low temperature	Medium temperature
ηs	267 %	209 %
Prated	13.85 kW	13.46 kW
SCOP	6.88	5.42
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.25 kW	11.91 kW
COP Tj = -7°C	5.73	4.02
Cdh Tj = -7 °C	0.992	0.996
Pdh Tj = +2°C	7.46 kW	7.25 kW
COP Tj = +2°C	7.28	5.38
Cdh Tj = +2 °C	0.985	0.992
Pdh Tj = +7°C	4.79 kW	4.66 kW
COP Tj = +7°C	7.41	6.57
Cdh Tj = +7 °C	0.974	0.985
Pdh Tj = 12°C	3.52 kW	3.82 kW
COP Tj = 12°C	7.33	6.74
Cdh Tj = +12 °C	0.965	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW

COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4160 kWh	5134 kWh

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	274 %	218 %
Prated	13.85 kW	13.46 kW
SCOP	7.06	5.65
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	8.38 kW	8.15 kW
COP Tj = -7°C	7.20	5.08
Cdh Tj = -7 °C	0.986	0.993
Pdh Tj = +2°C	5.10 kW	4.96 kW
COP Tj = +2°C	7.47	6.36
Cdh Tj = +2 °C	0.976	0.986
Pdh Tj = +7°C	3.45 kW	3.82 kW
COP Tj = +7°C	7.33	6.80
Cdh Tj = +7 °C	0.964	0.979
Pdh Tj = 12°C	3.58 kW	3.82 kW
COP Tj = 12°C	7.34	6.84
Cdh Tj = +12 °C	0.965	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W

PSB	17 W	17 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	4834 kWh	5868 kWh

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	262 %	204 %
Prated	13.85 kW	13.46 kW
SCOP	6.76	5.30
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	13.85 kW	13.46 kW
COP Tj = +2°C	4.73	3.58
Cdh Tj = +2 °C	0.994	0.997
Pdh Tj = +7°C	8.90 kW	8.65 kW
COP Tj = +7°C	6.95	4.71
Cdh Tj = +7 °C	0.987	0.994
Pdh Tj = 12°C	3.96 kW	3.82 kW
COP Tj = 12°C	7.33	6.69
Cdh Tj = +12 °C	0.969	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	2738 kWh	3394 kWh

Model TTC 12.1 230 comfort	
Model name	TTC 12.1 230 comfort
Application	Heating + DHW + low 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	1x230V 50Hz
Off-peak product	n/a

Brine/Water EN 16147 | Average Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

EN 16147 | Colder Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

EN 16147 | Warmer Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

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	6.20 kW	10.23 kW
El input	1.27 kW	3.49 kW
COP	4.87	2.93

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
ηs	208 %	160 %
Prated	11.34 kW	10.23 kW
SCOP	5.40	4.19
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.03 kW	9.05 kW
COP Tj = -7°C	4.57	3.36
Cdh Tj = -7 °C	0.992	0.994
Pdh Tj = +2°C	6.11 kW	5.51 kW
COP Tj = +2°C	5.53	4.30
Cdh Tj = +2 °C	0.984	0.987
Pdh Tj = +7°C	3.93 kW	3.54 kW
COP Tj = +7°C	6.01	4.71
Cdh Tj = +7 °C	0.976	0.978
Pdh Tj = 12°C	3.15 kW	2.70 kW
COP Tj = 12°C	5.94	4.77
Cdh Tj = +12 °C	0.968	0.970
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.34 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4337 kWh	5046 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
ηs	215 %	163 %
Prated	11.34 kW	10.23 kW
SCOP	5.58	4.28
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	6.87 kW	6.19 kW
COP Tj = -7°C	5.46	4.00
Cdh Tj = -7 °C	0.986	0.989
Pdh Tj = +2°C	4.18 kW	3.77 kW
COP Tj = +2°C	5.96	4.70
Cdh Tj = +2 °C	0.977	0.979
Pdh Tj = +7°C	3.16 kW	2.72 kW
COP Tj = +7°C	6.03	4.85
Cdh Tj = +7 °C	0.968	0.970
Pdh Tj = 12°C	3.13 kW	2.72 kW
COP Tj = 12°C	5.80	4.86
Cdh Tj = +12 °C	0.969	0.970
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.43 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.944	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	5007 kWh	5896 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

ηs	208 %	159 %
Prated	11.34 kW	10.23 kW
SCOP	5.39	4.18
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	11.34 kW	10.23 kW
COP Tj = +2°C	4.19	2.93
Cdh Tj = +2 °C	0.994	0.995
Pdh Tj = +7°C	7.29 kW	6.58 kW
COP Tj = +7°C	5.25	3.82
Cdh Tj = +7 °C	0.988	0.990
Pdh Tj = 12°C	3.24 kW	2.92 kW
COP Tj = 12°C	6.03	4.99
Cdh Tj = +12 °C	0.970	0.972
Pdh Tj = Tbiv	11.34 kW	10.23 kW
COP Tj = Tbiv	4.19	2.93
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.34 kW	10.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.19	2.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.995
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	2811 kWh	3269 kWh

Water/Water	
EN 16147 | Average Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l
EN 16147 | Colder Climate	
Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06

Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

EN 16147 | Warmer Climate

Declared load profile	XL
Efficiency ηDHW	123 %
COP	3.06
Heating up time	1:55 h:min
Standby power input	34.0 W
Reference hot water temperature	50.9 °C
Mixed water at 40°C	227 l

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	13.85 kW	13.46 kW
El input	2.93 kW	3.76 kW
COP	4.73	3.58

EN 14825 | Average Climate

	Low temperature	Medium temperature
ηs	267 %	209 %
Prated	13.85 kW	13.46 kW
SCOP	6.88	5.42
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.25 kW	11.91 kW
COP Tj = -7°C	5.73	4.02
Cdh Tj = -7 °C	0.992	0.996
Pdh Tj = +2°C	7.46 kW	7.25 kW
COP Tj = +2°C	7.28	5.38
Cdh Tj = +2 °C	0.985	0.992
Pdh Tj = +7°C	4.79 kW	4.66 kW
COP Tj = +7°C	7.41	6.57
Cdh Tj = +7 °C	0.974	0.985
Pdh Tj = 12°C	3.52 kW	3.82 kW
COP Tj = 12°C	7.33	6.74
Cdh Tj = +12 °C	0.965	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW

COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	4160 kWh	5134 kWh

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	274 %	218 %
Prated	13.85 kW	13.46 kW
SCOP	7.06	5.65
Tbiv	-22 °C	-22 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	8.38 kW	8.15 kW
COP Tj = -7°C	7.20	5.08
Cdh Tj = -7 °C	0.986	0.993
Pdh Tj = +2°C	5.10 kW	4.96 kW
COP Tj = +2°C	7.47	6.36
Cdh Tj = +2 °C	0.976	0.986
Pdh Tj = +7°C	3.45 kW	3.82 kW
COP Tj = +7°C	7.33	6.80
Cdh Tj = +7 °C	0.964	0.979
Pdh Tj = 12°C	3.58 kW	3.82 kW
COP Tj = 12°C	7.34	6.84
Cdh Tj = +12 °C	0.965	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W

PSB	17 W	17 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	4834 kWh	5868 kWh

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	262 %	204 %
Prated	13.85 kW	13.46 kW
SCOP	6.76	5.30
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	13.85 kW	13.46 kW
COP Tj = +2°C	4.73	3.58
Cdh Tj = +2 °C	0.994	0.997
Pdh Tj = +7°C	8.90 kW	8.65 kW
COP Tj = +7°C	6.95	4.71
Cdh Tj = +7 °C	0.987	0.994
Pdh Tj = 12°C	3.96 kW	3.82 kW
COP Tj = 12°C	7.33	6.69
Cdh Tj = +12 °C	0.969	0.979
Pdh Tj = Tbiv	13.85 kW	13.46 kW
COP Tj = Tbiv	4.73	3.58
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.85 kW	13.46 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	4.73	3.58
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.994	0.997
WTOL	70 °C	70 °C
Poff	17 W	17 W
PTO	19 W	19 W
PSB	17 W	17 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	2738 kWh	3394 kWh