Subtype TTL 4.5 ICS, TTL 4.5 IKCS

Certificate Holder	tecalor GmbH
Address	Lüchtringer Weg 3
ZIP	37603
City	Holzminden
Country	DE
Certification Body	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH
Subtype title	TTL 4.5 ICS, TTL 4.5 IKCS
Registration number	011-1W0225
Heat Pump Type	Outdoor Air/Water
Refrigerant	R410A
Mass of Refrigerant	2.2 kg
Certification Date	03.04.2018
Testing basis	HP KEYMARK certification scheme rules rev. no. 3

Model TTL 4.5 IKCS

Model name	TTL 4.5 IKCS
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	1x230V 50Hz
Off-peak product	n/a

Outdoor Air/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	2.06 kW	2.09 kW
El input	0.44 kW	0.81 kW
COP	4.68	2.59

EN 12102-1 | Average Climate

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

EN 14825 | Average Climate

	Low temperature	Medium temperature
ηs	175 %	128 %
Prated	4.70 kW	4.50 kW
SCOP	4.46	3.28
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	4.17 kW	3.94 kW
COP Tj = -7°C	3.09	2.22
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	2.86 kW	2.54 kW
COP Tj = +2°C	4.29	3.10
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	2.08 kW	2.04 kW
COP Tj = +7°C	6.24	4.53
Cdh Tj = +7 °C	0.90	0.90

Pdh Tj = 12°C	2.02 kW	1.97 kW
COP Tj = 12°C	8.31	6.44
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	4.17 kW	3.94 kW
COP Tj = Tbiv	3.09	2.22
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	4.06 kW	2.96 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.71	1.94
WTOL	60 °C	60 °C
Poff	56 W	56 W
PTO	21 W	21 W
PSB	56 W	56 W
PCK	26 W	26 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.64 kW	1.54 kW
Annual energy consumption Qhe	2187 kWh	2837 kWh

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	150 %	116 %
Prated	6.80 kW	6.70 kW
SCOP	3.83	2.98
Tbiv	-7 °C	-7 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	4.11 kW	4.05 kW
COP Tj = -7°C	3.37	2.57
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	3.01 kW	2.60 kW
COP Tj = +2°C	5.17	3.55
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	2.09 kW	2.07 kW
COP Tj = +7°C	7.26	5.31
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	2.02 kW	1.99 kW
COP Tj = 12°C	8.96	7.11
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	4.11 kW	4.05 kW
COP Tj = Tbiv	3.37	2.57
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	2.35 kW	6.00 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.99	1.00
WTOL	60 °C	60 °C
Poff	56 W	56 W
PTO	21 W	21 W

PSB	56 W	56 W
PCK	26 W	26 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	3.45 kW	3.50 kW
Annual energy consumption Qhe	4382 kWh	5547 kWh
Pdh Tj = -15°C (if TOL	4.11	4.05
COP Tj = -15°C (if TOL	3.37	2.57
Cdh Tj = -15 °C	0.90	0.90

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	198 %	136 %
Prated	2.62 kW	2.40 kW
SCOP	5.01	3.47
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	2.62 kW	2.37 kW
COP Tj = +2°C	3.76	2.28
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	2.07 kW	1.84 kW
COP Tj = +7°C	5.19	3.35
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	2.00 kW	1.94 kW
COP Tj = 12°C	7.92	5.39
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	2.62 kW	2.37 kW
COP Tj = Tbiv	3.76	2.28
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	2.62 kW	2.37 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.76	2.28
WTOL	60 °C	60 °C
Poff	56 W	56 W
PTO	21 W	21 W
PSB	56 W	56 W
PCK	26 W	26 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.03 kW
Annual energy consumption Qhe	698 kWh	923 kWh

Model TTL 4.5 ICS	
Model name	TTL 4.5 ICS
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	1x230V 50Hz
Off-peak product	n/a

Outdoor Air/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	2.06 kW	2.10 kW
El input	0.44 kW	0.80 kW
COP	4.68	2.64

EN 12102-1 | Average Climate

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

EN 14825 | Average Climate

	Low temperature	Medium temperature
ηs	178 %	130 %
Prated	4.80 kW	4.50 kW
SCOP	4.53	3.32
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	4.22 kW	3.98 kW
COP Tj = -7°C	3.22	2.27
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	2.88 kW	2.55 kW
COP Tj = +2°C	4.33	3.16
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	2.08 kW	2.04 kW
COP Tj = +7°C	6.28	4.53
Cdh Tj = +7 °C	0.90	0.90

Pdh Tj = 12°C	2.02 kW	1.97 kW
COP Tj = 12°C	8.35	6.44
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	4.22 kW	3.98 kW
COP Tj = Tbiv	3.22	2.27
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	4.11 kW	3.79 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.84	1.85
WTOL	60 °C	60 °C
Poff	56 W	56 W
PTO	21 W	21 W
PSB	56 W	56 W
PCK	26 W	26 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.69 kW	0.71 kW
Annual energy consumption Qhe	2187 kWh	2804 kWh

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	155 %	119 %
Prated	6.90 kW	6.80 kW
SCOP	3.94	3.04
Tbiv	-7 °C	-7 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	4.16 kW	4.10 kW
COP Tj = -7°C	3.48	2.63
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	3.03 kW	2.62 kW
COP Tj = +2°C	5.34	3.64
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	2.09 kW	2.07 kW
COP Tj = +7°C	7.26	5.31
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	2.02 kW	1.99 kW
COP Tj = 12°C	8.96	7.11
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	4.16 kW	4.10 kW
COP Tj = Tbiv	3.48	2.63
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	5.00 kW	3.16 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.00	2.50
WTOL	60 °C	60 °C
Poff	56 W	56 W
PTO	21 W	21 W

PSB	56 W	56 W
PCK	26 W	26 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.54 kW	3.28 kW
Annual energy consumption Qhe	4321 kWh	5515 kWh
Pdh Tj = -15°C (if TOL	4.16	4.10
COP Tj = -15°C (if TOL	3.48	2.63
Cdh Tj = -15 °C	0.90	0.90

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	198 %	136 %
Prated	2.64 kW	2.40 kW
SCOP	5.03	3.48
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	2.64 kW	2.39 kW
COP Tj = +2°C	3.83	2.33
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	2.07 kW	1.84 kW
COP Tj = +7°C	5.19	3.35
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	2.00 kW	1.94 kW
COP Tj = 12°C	7.92	5.39
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	2.64 kW	2.39 kW
COP Tj = Tbiv	3.83	2.33
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	2.64 kW	2.39 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.83	2.33
WTOL	60 °C	60 °C
Poff	56 W	56 W
PTO	21 W	21 W
PSB	56 W	56 W
PCK	26 W	26 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.01 kW
Annual energy consumption Qhe	70 kWh	921 kWh