

## Subtype TTL 8.5 ICS, TTL 8.5 IKCS

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Country	DE
Certification Body	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH
Subtype title	TTL 8.5 ICS, TTL 8.5 IKCS
Registration number	011-1W0226
Heat Pump Type	Outdoor Air/Water
Refrigerant	R410A
Mass of Refrigerant	2.6 kg
Certification Date	03.04.2018
Testing basis	HP KEYMARK certification scheme rules rev. no. 3

## Model TTL 8.5 IKCS

Model name	TTL 8.5 IKCS
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	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	4.22 kW	3.75 kW
El input	0.92 kW	1.49 kW
COP	4.60	2.51

### EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	40 dB(A)	44 dB(A)

### EN 14825 | Average Climate

	Low temperature	Medium temperature
$\eta_s$	161 %	126 %
Prated	9.20 kW	7.10 kW
SCOP	4.11	3.21
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	7.93 kW	6.28 kW
COP Tj = -7°C	2.61	2.13
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.16 kW	4.73 kW
COP Tj = +2°C	4.03	3.04
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	4.20 kW	4.20 kW
COP Tj = +7°C	5.25	4.44

Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.39 kW	3.14 kW
COP Tj = 12°C	8.03	6.21
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	7.93 kW	6.28 kW
COP Tj = Tbiv	2.61	2.13
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.29 kW	2.77 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.55	1.83
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	1.91 kW	4.43 kW
Annual energy consumption Qhe	4621 kWh	4564 kWh

#### EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	126 %	105 %
Prated	13.20 kW	12.70 kW
SCOP	3.23	2.69
Tbiv	-7 °C	-7 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	7.96 kW	7.69 kW
COP Tj = -7°C	2.73	2.26
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.29 kW	4.89 kW
COP Tj = +2°C	4.24	3.49
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	4.19 kW	4.21 kW
COP Tj = +7°C	5.45	4.82
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.39 kW	3.23 kW
COP Tj = 12°C	8.03	6.75
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	7.96 kW	7.69 kW
COP Tj = Tbiv	2.73	2.26
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	5.13 kW	5.24 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.27	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	7.38 kW	6.79 kW
Annual energy consumption Q <sub>he</sub>	10074 kWh	11651 kWh
P <sub>dh</sub> T <sub>j</sub> = -15 °C (if TOL	6.21	6.18
COP T <sub>j</sub> = -15 °C (if TOL	2.43	1.48
C <sub>dh</sub> T <sub>j</sub> = -15 °C	0.90	0.90

#### EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η <sub>s</sub>	207 %	142 %
Prated	4.95 kW	4.30 kW
SCOP	5.24	3.63
T <sub>biv</sub>	2 °C	2 °C
TOL	2 °C	2 °C
P <sub>dh</sub> T <sub>j</sub> = +2 °C	4.95 kW	4.34 kW
COP T <sub>j</sub> = +2 °C	3.70	2.21
C <sub>dh</sub> T <sub>j</sub> = +2 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = +7 °C	4.21 kW	3.96 kW
COP T <sub>j</sub> = +7 °C	4.90	3.21
C <sub>dh</sub> T <sub>j</sub> = +7 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = 12 °C	3.31 kW	2.98 kW
COP T <sub>j</sub> = 12 °C	7.35	5.30
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>	4.95 kW	4.34 kW
COP T <sub>j</sub> = T <sub>biv</sub>	3.70	2.21
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>	4.95 kW	4.34 kW
COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>	3.70	2.21
WTOL	60 °C	60 °C
P <sub>off</sub>	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	0.00 kW
Annual energy consumption Q <sub>he</sub>	1262 kWh	1584 kWh

## Model TTL 8.5 ICS

Model name	TTL 8.5 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	4.27 kW	3.81 kW
El input	0.90 kW	1.48 kW
COP	4.74	2.58

### EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	48 dB(A)

### EN 14825 | Average Climate

	Low temperature	Medium temperature
$\eta_s$	167 %	129 %
Prated	9.00 kW	7.20 kW
SCOP	4.24	3.30
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	7.98 kW	6.39 kW
COP Tj = -7°C	2.65	2.17
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.25 kW	4.81 kW
COP Tj = +2°C	4.19	3.14
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	4.26 kW	4.25 kW
COP Tj = +7°C	5.44	4.56
Cdh Tj = +7 °C	0.90	0.90

Pdh Tj = 12°C	3.43 kW	3.18 kW
COP Tj = 12°C	8.21	6.33
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	7.98 kW	6.39 kW
COP Tj = Tbiv	2.65	2.17
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.35 kW	2.77 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.59	1.83
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	1.65 kW	4.43 kW
Annual energy consumption Qhe	4387 kWh	4506 kWh

#### EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	130 %	112 %
Prated	13.40 kW	13.00 kW
SCOP	3.33	2.86
Tbiv	-7 °C	-7 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	8.13 kW	7.84 kW
COP Tj = -7°C	2.81	2.31
Cdh Tj = -7 °C	0.90	0.90
Pdh Tj = +2°C	5.39 kW	4.96 kW
COP Tj = +2°C	4.42	3.61
Cdh Tj = +2 °C	0.90	0.90
Pdh Tj = +7°C	4.26 kW	4.27 kW
COP Tj = +7°C	5.65	4.98
Cdh Tj = +7 °C	0.90	0.90
Pdh Tj = 12°C	3.43 kW	3.26 kW
COP Tj = 12°C	8.21	6.88
Cdh Tj = +12 °C	0.90	0.90
Pdh Tj = Tbiv	8.13 kW	7.84 kW
COP Tj = Tbiv	2.81	2.31
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	5.24 kW	5.24 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.33	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	7.45 kW	7.08 kW
Annual energy consumption Q <sub>he</sub>	9919 kWh	11197 kWh
P <sub>dh</sub> T <sub>j</sub> = -15 °C (if TOL	6.29	6.24
COP T <sub>j</sub> = -15 °C (if TOL	2.47	2.32
C <sub>dh</sub> T <sub>j</sub> = -15 °C	0.90	0.90

#### EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η <sub>s</sub>	212 %	145 %
Prated	5.02 kW	4.40 kW
SCOP	5.38	3.69
T <sub>biv</sub>	2 °C	2 °C
TOL	2 °C	2 °C
P <sub>dh</sub> T <sub>j</sub> = +2 °C	5.02 kW	4.42 kW
COP T <sub>j</sub> = +2 °C	3.83	2.27
C <sub>dh</sub> T <sub>j</sub> = +2 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = +7 °C	4.27 kW	4.02 kW
COP T <sub>j</sub> = +7 °C	5.06	3.30
C <sub>dh</sub> T <sub>j</sub> = +7 °C	0.90	0.90
P <sub>dh</sub> T <sub>j</sub> = 12 °C	3.35 kW	3.01 kW
COP T <sub>j</sub> = 12 °C	7.50	5.35
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>	5.02 kW	4.42 kW
COP T <sub>j</sub> = T <sub>biv</sub>	3.83	2.27
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>	5.02 kW	4.42 kW
COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>	3.83	2.27
WTOL	60 °C	60 °C
P <sub>off</sub>	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	0.00 kW
Annual energy consumption Q <sub>he</sub>	1247 kWh	1592 kWh