

## Subtype LW 180

Certificate Holder	ait-deutschland GmbH
Address	Industriestr. 3
ZIP	95359
City	Kasendorf
Country	DE
Certification Body	BRE Global Limited
Subtype title	LW 180
Registration number	041-K001-39
Heat Pump Type	Outdoor Air/Water
Refrigerant	R407c
Mass of Refrigerant	6.8 kg
Certification Date	08.10.2019
Testing basis	HP Keymark Scheme Rules Rev 07

Model LW 180 (L)		
Model name	LW 180 (L)	
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	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 12102-1   Average Climate		
	Low temperature	Medium temperature
Sound power level indoor	59 dB(A)	59 dB(A)
EN 14825   Average Climate		
	Low temperature	Medium temperature
ηs	158 %	118 %
Prated	20.03 kW	18.50 kW
SCOP	4.03	3.02
Tbiv	-4 °C	-4 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	14.28 kW	12.78 kW
COP Tj = -7°C	2.94	1.94
Cdh Tj = -7 °C	1.00	1.00
Pdh Tj = +2°C	17.48 kW	16.92 kW
COP Tj = +2°C	3.94	2.93
Cdh Tj = +2 °C	1.00	1.00
Pdh Tj = +7°C	10.09 kW	10.08 kW
COP Tj = +7°C	5.38	4.21
Cdh Tj = +7 °C	1.00	1.00
Pdh Tj = 12°C	12.90 kW	12.86 kW
COP Tj = 12°C	5.96	5.39
Cdh Tj = +12 °C	1.00	1.00
Pdh Tj = Tbiv	15.41 kW	14.23 kW
COP Tj = Tbiv	3.30	2.23
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.17 kW	11.30 kW

COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.65	1.68
WTOL	60 °C	60 °C
Poff	10 W	10 W
PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	6.86 kW	7.20 kW
Annual energy consumption Qhe	10262 kWh	12643 kWh

#### EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	139 %	107 %
Prated	17.39 kW	15.21 kW
SCOP	3.54	2.76
Tbiv	-12 °C	-12 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	14.53 kW	13.45 kW
COP Tj = -7°C	3.18	2.31
Cdh Tj = -7 °C	1.00	1.00
Pdh Tj = +2°C	17.59 kW	17.19 kW
COP Tj = +2°C	4.17	3.35
Cdh Tj = +2 °C	1.00	1.00
Pdh Tj = +7°C	10.09 kW	10.08 kW
COP Tj = +7°C	5.60	4.68
Cdh Tj = +7 °C	0.99	1.00
Pdh Tj = 12°C	12.90 kW	12.88 kW
COP Tj = 12°C	5.83	5.61
Cdh Tj = +12 °C	1.00	1.00
Pdh Tj = Tbiv	12.81 kW	12.21 kW
COP Tj = Tbiv	2.71	1.87
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	9.81 kW	8.36 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.95	1.38
WTOL	60 °C	60 °C
Poff	10 W	10 W
PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	17.39 kW	15.21 kW
Annual energy consumption Qhe	12110 kWh	13578 kWh
Pdh Tj = -15°C (if TOL	11.70	9.81

COP Tj = -15°C (if TOL	2.40	1.62
Cdh Tj = -15 °C	1.00	1.00

#### EN 14825 | Warmer Climate

	Low temperature	Medium temperature
$\eta_s$	200 %	150 %
Prated	17.30 kW	16.23 kW
SCOP	5.08	3.82
Tbiv	4 °C	4 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	17.30 kW	16.23 kW
COP Tj = +2°C	3.56	2.18
Cdh Tj = +2 °C	1.00	1.00
Pdh Tj = +7°C	10.08 kW	10.08 kW
COP Tj = +7°C	4.90	3.34
Cdh Tj = +7 °C	1.00	1.00
Pdh Tj = 12°C	12.88 kW	12.82 kW
COP Tj = 12°C	5.74	4.89
Cdh Tj = +12 °C	1.00	1.00
Pdh Tj = Tbiv	14.46 kW	13.88 kW
COP Tj = Tbiv	3.93	2.51
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	17.30 kW	16.23 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.56	2.18
WTOL	60 °C	60 °C
Poff	10 W	10 W
PTO	10 W	10 W
PSB	10 W	10 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	4546 kWh	5671 kWh

## Model LW 180A

Model name	LW 180A
Application	Heating (medium temp)
Units	Outdoor
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	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 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	59 dB(A)	59 dB(A)
Sound power level outdoor	57 dB(A)	57 dB(A)

### EN 14825 | Average Climate

	Low temperature	Medium temperature
$\eta_s$	158 %	118 %
Prated	20.03 kW	18.50 kW
SCOP	4.03	3.02
Tbiv	-4 °C	-4 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	14.28 kW	12.78 kW
COP Tj = -7°C	2.94	1.94
Cdh Tj = -7 °C	1.00	1.00
Pdh Tj = +2°C	17.48 kW	16.92 kW
COP Tj = +2°C	3.94	2.93
Cdh Tj = +2 °C	1.00	1.00
Pdh Tj = +7°C	10.09 kW	10.08 kW
COP Tj = +7°C	5.38	4.21
Cdh Tj = +7 °C	1.00	1.00
Pdh Tj = 12°C	12.90 kW	12.86 kW
COP Tj = 12°C	5.96	5.39
Cdh Tj = +12 °C	1.00	1.00
Pdh Tj = Tbiv	15.41 kW	14.23 kW
COP Tj = Tbiv	3.30	2.23

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	13.17 kW	11.30 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.65	1.68
WTOL	60 °C	60 °C
Poff	10 W	10 W
PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	6.86 kW	7.20 kW
Annual energy consumption Qhe	10262 kWh	12643 kWh

#### EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	139 %	107 %
Prated	17.39 kW	15.21 kW
SCOP	3.54	2.76
Tbiv	-12 °C	-12 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	14.53 kW	13.45 kW
COP Tj = -7°C	3.18	2.31
Cdh Tj = -7 °C	1.00	1.00
Pdh Tj = +2°C	17.59 kW	17.19 kW
COP Tj = +2°C	4.17	3.35
Cdh Tj = +2 °C	1.00	1.00
Pdh Tj = +7°C	10.09 kW	10.08 kW
COP Tj = +7°C	5.60	4.68
Cdh Tj = +7 °C	0.99	1.00
Pdh Tj = 12°C	12.90 kW	12.88 kW
COP Tj = 12°C	5.83	5.61
Cdh Tj = +12 °C	1.00	1.00
Pdh Tj = Tbiv	12.81 kW	12.21 kW
COP Tj = Tbiv	2.71	1.87
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	9.81 kW	8.36 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	1.95	1.38
WTOL	60 °C	60 °C
Poff	10 W	10 W
PTO	10 W	10 W
PSB	10 W	10 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	17.39 kW	15.21 kW

Annual energy consumption Q <sub>he</sub>	12110 kWh	13578 kWh
P <sub>dh</sub> T <sub>j</sub> = -15 °C (if TOL	11.70	9.81
COP T <sub>j</sub> = -15 °C (if TOL	2.40	1.62
C <sub>dh</sub> T <sub>j</sub> = -15 °C	1.00	1.00

#### EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η <sub>s</sub>	200 %	150 %
Prated	17.30 kW	16.23 kW
SCOP	5.08	3.82
T <sub>biv</sub>	4 °C	4 °C
TOL	2 °C	2 °C
P <sub>dh</sub> T <sub>j</sub> = +2 °C	17.30 kW	16.23 kW
COP T <sub>j</sub> = +2 °C	3.56	2.18
C <sub>dh</sub> T <sub>j</sub> = +2 °C	1.00	1.00
P <sub>dh</sub> T <sub>j</sub> = +7 °C	10.08 kW	10.08 kW
COP T <sub>j</sub> = +7 °C	4.90	3.34
C <sub>dh</sub> T <sub>j</sub> = +7 °C	1.00	1.00
P <sub>dh</sub> T <sub>j</sub> = 12 °C	12.88 kW	12.82 kW
COP T <sub>j</sub> = 12 °C	5.74	4.89
C <sub>dh</sub> T <sub>j</sub> = +12 °C	1.00	1.00
P <sub>dh</sub> T <sub>j</sub> = T <sub>biv</sub>	14.46 kW	13.88 kW
COP T <sub>j</sub> = T <sub>biv</sub>	3.93	2.51
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>	17.30 kW	16.23 kW
COP T <sub>j</sub> = TOL or COP T <sub>j</sub> = T <sub>designh</sub> if TOL < T <sub>designh</sub>	3.56	2.18
WTOL	60 °C	60 °C
P <sub>off</sub>	10 W	10 W
PTO	10 W	10 W
PSB	10 W	10 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>	4546 kWh	5671 kWh