

## Subtype DC Inverter Air to Water Heat Pump Thermal Plus 12

Certificate Holder	REFSYSTEM Sp. z o.o.
Address	Street Metalowców 5,
ZIP	86-300
City	Grudziądz
Country	PL
Certification Body	BRE Global Limited
Subtype title	DC Inverter Air to Water Heat Pump Thermal Plus 12
Registration number	041-K053-08
Heat Pump Type	Outdoor Air/Water
Refrigerant	R32
Mass of Refrigerant	1.8 kg
Certification Date	12.05.2023
Testing basis	Heat Pump Keymark Scheme Rules Rev 11

## Model Thermal(b) Plus 12 / Thermal(b) Plus 12

Model name	Thermal(b) Plus 12 / Thermal(b) Plus 12
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	n/a
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
Defrost test	passed
Starting and operating test	passed

### EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	46 dB(A)
Sound power level outdoor	52 dB(A)	54 dB(A)

### EN 14825 | Average Climate

	Low temperature	Medium temperature
$\eta_s$	181 %	132 %
Prated	8.79 kW	7.07 kW
SCOP	4.60	3.36
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	7.78 kW	6.26 kW
COP Tj = -7°C	3.25	1.79
Cdh Tj = -7 °C	0.900	0.900
Pdh Tj = +2°C	4.91 kW	3.84 kW
COP Tj = +2°C	4.46	3.46
Cdh Tj = +2 °C	0.900	0.900
Pdh Tj = +7°C	4.19 kW	4.05 kW
COP Tj = +7°C	6.16	4.84
Cdh Tj = +7 °C	0.900	0.900
Pdh Tj = 12°C	5.02 kW	4.87 kW
COP Tj = 12°C	8.24	6.74
Cdh Tj = +12 °C	0.900	0.900
Pdh Tj = Tbiv	7.78 kW	6.26 kW

COP $T_j = T_{biv}$	3.25	1.79
$P_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$	6.36 kW	5.86 kW
COP $T_j = TOL$ or COP $T_j = T_{designh}$ if $TOL < T_{designh}$	2.78	1.78
$C_{dh} T_j = TOL$ or $P_{dh} T_j = T_{designh}$ if $TOL < T_{designh}$	0.900	0.900
WTOL	56 °C	56 °C
P <sub>off</sub>	17 W	9 W
PTO	25 W	25 W
PSB	17 W	9 W
PCK	33 W	39 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.43 kW	1.21 kW
Annual energy consumption Q <sub>he</sub>	3944 kWh	4345 kWh