Heat pump model		Master Therm	BA22Z	
				_
Heat pump type			Air/Water	
Supplementary heater			Yes	
Heat pump combination heater	r		No	
Reference heating season			Average	٦
Reference water temperature	-		LOW, 35°C	7
Full load heating		Prated [kW]	8.35	7
Seasonal efficiency / Energy ef	fficiency class	η <sub>s</sub> [%]	140	A+
Annual electricity consumption	•	Q <sub>HE</sub> [kWh]	4838	
	T			
Average 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
1	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
А	-7	5.20	3.03	0.900
В	2	6.14	3.60	0.985
C	7	7.60	4.47	0.985
D	12	10.36	5.88	0.986
TOL (E)	-10	4.70	2.73	0.900
Tbivalent (F)	-2	5.78	3.46	0.900
I DIVAICITE (1. /		J.//U	0.70	0.000
Reference heating season			Average	7
		+		-
Reference water temperature		Destard FIAM	High, 55°C	4
Full load heating	· .	Prated [kW]	8.15	A.
Seasonal efficiency / Energy ef		η <sub>s</sub> [%]	117	A+
Annual electricity consumption	+	Q <sub>HE</sub> [kWh]	5592	_
Average 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
		, ,		<u> </u>
	Outdoor air	. ,		<u> </u>
	Outdoor air Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	Outdoor air Tj [°C] -7	5.15	2.20	0.900
В	Outdoor air Tj [°C] -7 2			
B C	Outdoor air Tj [°C] -7	5.15	2.20	0.900
В	Outdoor air Tj [°C] -7 2	5.15 6.37	2.20 3.04	0.900 0.988
B C	Outdoor air Tj [°C] -7 2 7	5.15 6.37 8.25	2.20 3.04 4.04	0.900 0.988 0.988
B C D	Outdoor air Tj [°C] -7 2 7 12	5.15 6.37 8.25 9.90	2.20 3.04 4.04 4.94	0.900 0.988 0.988 0.988
B C D TOL (E) Tbivalent (F)	Outdoor air Tj [°C] -7 2 7 12 -10	5.15 6.37 8.25 9.90 4.74	2.20 3.04 4.04 4.94 1.96 2.63	0.900 0.988 0.988 0.988 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season	Outdoor air Tj [°C] -7 2 7 12 -10	5.15 6.37 8.25 9.90 4.74	2.20 3.04 4.04 4.94 1.96 2.63	0.900 0.988 0.988 0.988 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature	Outdoor air Tj [°C] -7 2 7 12 -10	5.15 6.37 8.25 9.90 4.74 5.64	2.20 3.04 4.04 4.94 1.96 2.63 Warmer Low, 35°C	0.900 0.988 0.988 0.988 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating	Outdoor air Tj [°C] -7 2 7 12 -10	5.15 6.37 8.25 9.90 4.74 5.64	2.20 3.04 4.04 4.94 1.96 2.63 Warmer Low, 35°C 6.08	0.900 0.988 0.988 0.988 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating Seasonal efficiency	Outdoor air  Tj [°C]  -7  2  7  12  -10  -2	5.15 6.37 8.25 9.90 4.74 5.64  Prated [kW] η <sub>s</sub> [%]	2.20 3.04 4.04 4.94 1.96 2.63 Warmer Low, 35°C 6.08 188	0.900 0.988 0.988 0.988 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating	Outdoor air  Tj [°C]  -7  2  7  12  -10  -2	5.15 6.37 8.25 9.90 4.74 5.64	2.20 3.04 4.04 4.94 1.96 2.63 Warmer Low, 35°C 6.08	0.900 0.988 0.988 0.988 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating Seasonal efficiency	Outdoor air  Tj [°C]  -7  2  7  12  -10  -2  Outdoor heat exchanger	5.15 6.37 8.25 9.90 4.74 5.64  Prated [kW] η <sub>s</sub> [%]	2.20 3.04 4.04 4.94 1.96 2.63 Warmer Low, 35°C 6.08 188	0.900 0.988 0.988 0.988 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating Seasonal efficiency Annual electricity consumption	Outdoor air  Tj [°C]  -7  2  7  12  -10  -2  Outdoor heat exchanger Outdoor air	5.15 6.37 8.25 9.90 4.74 5.64  Prated [kW] η <sub>s</sub> [%] Q <sub>HE</sub> [kWh]	2.20 3.04 4.04 4.94 1.96 2.63  Warmer Low, 35°C 6.08 188 1697  COP at part load	0.900 0.988 0.988 0.988 0.900 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating Seasonal efficiency Annual electricity consumption Warmer 35°C	Outdoor air  Tj [°C]  -7  2  7  12  -10  -2  Outdoor heat exchanger  Outdoor air  Tj [°C]	5.15 6.37 8.25 9.90 4.74 5.64  Prated [kW] η <sub>s</sub> [%] Q <sub>HE</sub> [kWh]  Declared capacity  Pdh [kW]	2.20 3.04 4.04 4.94 1.96 2.63  Warmer Low, 35°C 6.08 188 1697  COP at part load  COPd (-)	0.900 0.988 0.988 0.988 0.900 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating Seasonal efficiency Annual electricity consumption Warmer 35°C	Outdoor air  Tj [°C]  -7  2  7  12  -10  -2  Outdoor heat exchanger  Outdoor air  Tj [°C]  2	5.15 6.37 8.25 9.90 4.74 5.64  Prated [kW] η <sub>s</sub> [%] Q <sub>HE</sub> [kWh]  Declared capacity  Pdh [kW] 6.08	2.20 3.04 4.04 4.94 1.96 2.63  Warmer Low, 35°C 6.08 188 1697  COP at part load  COPd (-) 3.32	0.900 0.988 0.988 0.988 0.900 0.900  Degradation Coefficient  Cdh (-) 0.900
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating Seasonal efficiency Annual electricity consumption  Warmer 35°C  B C	Outdoor air  Tj [°C]  -7  2  7  12  -10  -2  Outdoor heat exchanger  Outdoor air  Tj [°C]  2  7	5.15 6.37 8.25 9.90 4.74 5.64  Prated [kW] η <sub>s</sub> [%] Q <sub>HE</sub> [kWh]  Declared capacity  Pdh [kW] 6.08 8.50	2.20 3.04 4.04 4.94 1.96 2.63  Warmer Low, 35°C 6.08 188 1697  COP at part load  COPd (-) 3.32 4.68	0.900 0.988 0.988 0.988 0.900 0.900  Degradation Coefficient  Cdh (-) 0.900 0.986
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating Seasonal efficiency Annual electricity consumption  Warmer 35°C  B C D	Outdoor air  Tj [°C]  -7  2  7  12 -10 -2  Outdoor heat exchanger  Outdoor air  Tj [°C]  2  7  12  10  10  10  10  10  10  10  10  10	5.15 6.37 8.25 9.90 4.74 5.64  Prated [kW] η <sub>s</sub> [%] Q <sub>HE</sub> [kWh]  Declared capacity  Pdh [kW] 6.08 8.50 10.26	2.20 3.04 4.04 4.94 1.96 2.63  Warmer Low, 35°C 6.08 188 1697  COP at part load  COPd (-) 3.32 4.68 5.68	0.900 0.988 0.988 0.988 0.900 0.900  Degradation Coefficient  Cdh (-) 0.900 0.986 0.986
B C D TOL (E) Tbivalent (F)  Reference heating season Reference water temperature Full load heating Seasonal efficiency Annual electricity consumption  Warmer 35°C  B C	Outdoor air  Tj [°C]  -7  2  7  12  -10  -2  Outdoor heat exchanger  Outdoor air  Tj [°C]  2  7	5.15 6.37 8.25 9.90 4.74 5.64  Prated [kW] η <sub>s</sub> [%] Q <sub>HE</sub> [kWh]  Declared capacity  Pdh [kW] 6.08 8.50	2.20 3.04 4.04 4.94 1.96 2.63  Warmer Low, 35°C 6.08 188 1697  COP at part load  COPd (-) 3.32 4.68	0.900 0.988 0.988 0.988 0.900 0.900  Degradation Coefficient  Cdh (-) 0.900 0.986

6.08

Tbivalent (F)

0.900

3.32

Heat pump model		Master Therm	BA22Z	
Reference heating season			Warmer	
Reference water temperature			High, 55°C	
Full load heating		Prated [kW]	6.08	7
Seasonal efficiency		η <sub>s</sub> [%]	140	7
Annual electricity consumption		Q <sub>HE</sub> [kWh]	2274	7
·				
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air		<u> </u>	
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
В	2	6.08	2.32	0.900
С	7	7.94	3.24	0.990
D	12	9.68	4.47	0.988
TOL (E)	2	6.08	2.32	0.900
Tbivalent (F)	2	6.08	2.32	0.900
Deference beating access		1	Colder	¬
Reference heating season Reference water temperature		-	Low, 35°C	-
Full load heating		Prated [kW]	8.36	╡
Seasonal efficiency		η <sub>s</sub> [%]	122	┥
Annual electricity consumption	+	Q <sub>HE</sub> [kWh]	6594	=
Allitual electricity consumption	+	AHE [VALU]	0004	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	1] [*C] -7	5.06	3.18	0.900
В				
	2	6.18	3.75	0.985
C D	7	7.63	4.54	0.985
	12	10.35	5.86	0.986
TOL (E)	-20 -7	3.40	2.10	0.900
Tbivalent (F)		5.06	3.18	0.900
G	-15	3.99	2.50	0.900
Reference heating season			Colder	٦
Reference water temperature			High, 55°C	7
Full load heating		Prated [kW]	8.00	7
Seasonal efficiency		η <sub>s</sub> [%]	101	7
Annual electricity consumption		Q <sub>HE</sub> [kWh]	7570	<u> </u>
Colder 55°C	Outdoor heat exchanger Outdoor air	Declared capacity	COP at part load	Degradation Coefficient
	Ti [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	5.15	2.51	0.988
В	2	6.01	3.00	0.988
C	7	8.32	4.23	0.987
D	12	9.93	5.00	0.987
	12	0.00	3.00	0:507

3.55

4.84

4.06

1.61

2.38

1.90

TOL (E)

Tbivalent (F)

G

-20

-15

0.900

0.900

0.900

Heat pump model	Master Therm	BA22Z		
Power consumption in modes other than "active mo	ode"			
Off mode	P <sub>OFF</sub> [kW]	0.025		
Thermostat off mode	P <sub>TO</sub> [kW]	0.025		
Standby mode	P <sub>SB</sub> [kW]	0.025		
Crankcaseheater mode	P <sub>CK</sub> [kW]	-		
Supplementary heater capacity	P <sub>sup</sub> [kW]	4,5(+4,5)		
Supplementary heater type	[-]	electricity		
Capacity control		Fixed		
Sound power level Indoor	L <sub>WA</sub> [dBA]	-		
Sound power level Outdoor	L <sub>WA</sub> [dBA]	65		
Rated airflow	[m <sup>3</sup> /h]	2500		
Temperature controller				
Туре	Carel pCO5/pCO5+/uPC, M	Carel pCO5/pCO5+/uPC, Master Therm custom SW		
Class	li li			
Contribution	%	2.0		
Temperature controller + Room Terminal				
Type	Carel pCO5/pCO5+/uPC + pAD	Carel pCO5/pCO5+/uPC + pAD, Master Therm custom SW		
Class	VII			

%

3.5

Contribution

Heat pump model	Master Therm	BA22Z

Information sheet			
Temperature application		Low, 35°C	High, 55°C
Space heating energy efficiency class, Average climate	=	A+	A+
Nominal heating capacity Pdesign, Average climate	kW	8	8
Space heating seasonal efficiency, Average climate	%	140	117
Space heating annual electricity consumption, Average cl.	kWh	4838	5592
Nominal heating capacity Pdesign, Colder climate	kW	8	8
Space heating seasonal efficiency, Colder climate	%	122	101
Space heating annual electricity consumption, Colder cl.	kWh	6594	7570
Nominal heating capacity Pdesign, Warmer climate	kW	6	6
Space heating seasonal efficiency, Warmer climate	%	188	140
Space heating annual electricity consumption, Warmer cl.	kWh	1697	2274

Temperature application		Low, 35°C	High, 55°C
		LOW, 00 G	riigii, oo o
Controller Carel pCO5/pCO5+/uPC, Class	-	II	II
Controller Carel pCO5/pCO5+/uPC, Contribution	%	2.0	2
Set Space heating seasonal efficiency, Average climate	%	142	119
Set Space heating energy efficiency class, Average climate	-	A+	A+
Set Space heating seasonal efficiency, Colder climate	%	124	103
Set Space heating seasonal efficiency, Warmer climate	%	190	142

Information sheet for energy efficiency Set with Temperature controller + Room Terminal				
Temperature application		Low, 35°C	High, 55°C	
Controller Carel pCO5/pCO5+/uPC + pAD, Class	-	VII	VII	
Controller Carel pCO5/pCO5+/uPC, +pAD, Contribution	%	3.5	3.5	
Set Space heating seasonal efficiency, Average climate	%	143	121	
Set Space heating energy efficiency class, Average climate	-	A+	A+	
Set Space heating seasonal efficiency, Colder climate	%	125	105	
Set Space heating seasonal efficiency, Warmer climate	%	192	143	