

Heat pump model		Master Therm		AQ45I-1	
Heat pump type		Water/Water			
Supplementary heater		No			
Heat pump combination heater		No			
Reference heating season		Average			
Reference water temperature		LOW, 35°C			
Full load heating		Prated [kW]	21		
Seasonal efficiency		η_s [%]	196	A+++	
Annual electricity consumption		Q_{HE} [kWh]	8658		
Average 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient	
	Outdoor air				
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)	
A	-7	18.53	4.23	0.900	
B	2	11.28	5.21	0.900	
C	7	7.46	5.45	0.900	
D	12	3.62	5.47	0.971	
TOL (E)	-10	21.37	3.99	0.900	
Tbivalent (F)	-10	21.37	3.99	0.900	
Reference heating season		Average			
Reference water temperature		High, 55°C			
Full load heating		Prated [kW]	19.40		
Seasonal efficiency		η_s [%]	151	A+++	
Annual electricity consumption		Q_{HE} [kWh]	10112		
Average 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient	
	Outdoor air				
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)	
A	-7	16.68	2.95	0.900	
B	2	10.79	4.11	0.900	
C	7	6.96	4.36	0.900	
D	12	3.26	4.47	0.900	
TOL (E)	-10	19.40	2.71	0.900	
Tbivalent (F)	-10	19.40	2.71	0.900	
Reference heating season		Warmer			
Reference water temperature		Low, 35°C			
Full load heating		Prated [kW]	21.37		
Seasonal efficiency		η_s [%]	194		
Annual electricity consumption		Q_{HE} [kWh]	5652		
Warmer 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient	
	Outdoor air				
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)	
B	2	21.37	3.99	0.900	
C	7	13.68	4.66	0.900	
D	12	6.05	5.61	0.900	
TOL (E)	2	21.37	3.99	0.900	
Tbivalent (F)	2	21.37	3.99	0.900	

Heat pump model		Master Therm		AQ45I-1	
Reference heating season				Warmer	
Reference water temperature				High, 55°C	
Full load heating		Prated [kW]		19.40	
Seasonal efficiency		η_s [%]		141	
Annual electricity consumption		Q_{HE} [kWh]		6955	
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient	
	Outdoor air				
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)	
B	2	19.40	2.71	0.900	
C	7	12.63	3.29	0.900	
D	12	5.80	4.36	0.900	
TOL (E)	2	19.40	2.71	0.900	
Tbivalent (F)	2	19.40	2.71	0.900	

Reference heating season				Colder	
Reference water temperature				Low, 35°C	
Full load heating		Prated [kW]		21.37	
Seasonal efficiency		η_s [%]		201	
Annual electricity consumption		Q_{HE} [kWh]		10069	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient	
	Outdoor air				
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)	
A	-7	12.86	4.79	0.900	
B	2	7.90	5.40	0.900	
C	7	5.33	5.61	0.900	
D	12	4.82	5.47	0.979	
TOL (E)	-22	21.37	3.99	0.900	
Tbivalent (F)	-22	21.37	3.99	0.900	
G	-15	17.65	5.89	0.900	

Reference heating season				Colder	
Reference water temperature				High, 55°C	
Full load heating		Prated [kW]		19.40	
Seasonal efficiency		η_s [%]		151	
Annual electricity consumption		Q_{HE} [kWh]		12018	
Colder 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient	
	Outdoor air				
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)	
A	-7	12.02	3.51	0.900	
B	2	7.35	4.23	0.900	
C	7	4.70	4.70	0.900	
D	12	4.70	4.70	0.981	
TOL (E)	-22	19.40	2.71	0.900	
Tbivalent (F)	-22	19.40	2.71	0.900	
G	-15	15.82	3.82	0.900	

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Power consumption in modes other than "active mode"			
Off mode	P_{OFF} [kW]	0.000	
Thermostat off mode	P_{TO} [kW]	0.019	
Standby mode	P_{SB} [kW]	0.019	
Crankcaseheater mode	P_{CK} [kW]	-	
Supplementary heater capacity			
	P_{SUP} [kW]	-	
Supplementary heater type			
	[-]	electricity	
Capacity control			Variable
Sound power level Indoor	L_{WA} [dBA]	48	
Sound power level Outdoor	L_{WA} [dBA]	-	
Rated water flow	[m ³ /h]	7.08	
Temperature controller			
Type	Carel pCO5/pCO5+/uPC, Master Therm custom SW		
Class	II		
Contribution	%	2.0	
Temperature controller + Room Terminal			
Type	Carel pCO5/pCO5+/uPC + pAD, Master Therm custom SW		
Class	VI		
Contribution	%	4.0	

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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	21	19
Space heating seasonal efficiency, Average climate	%	196	151
Space heating annual electricity consumption, Average cl.	kWh	8658	10112
Nominal heating capacity Pdesign, Colder climate	kW	21	19
Space heating seasonal efficiency, Colder climate	%	201	151
Space heating annual electricity consumption, Colder cl.	kWh	10069	12018
Nominal heating capacity Pdesign, Warmer climate	kW	21	19
Space heating seasonal efficiency, Warmer climate	%	194	141
Space heating annual electricity consumption, Warmer cl.	kWh	5652	6955
Sound power level Lwa	dB(A)	48	

Information sheet for energy efficiency Set with Temperature controller			
Temperature application		Low, 35°C	High, 55°C
Controller Carel pCO5/pCO5+/uPC, Class	-	II	II
Controller Carel pCO5/pCO5+/uPC, Contribution	%	2.0	2.0
Set Space heating seasonal efficiency, Average climate	%	198	153
Set Space heating energy efficiency class, Average climate	-	A+++	A+++
Set Space heating seasonal efficiency, Colder climate	%	203	153
Set Space heating seasonal efficiency, Warmer climate	%	196	143

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	-	VI	VI
Controller Carel pCO5/pCO5+/uPC, +pAD, Contribution	%	4.0	4.0
Set Space heating seasonal efficiency, Average climate	%	200	155
Set Space heating energy efficiency class, Average climate	-	A+++	A+++
Set Space heating seasonal efficiency, Colder climate	%	205	155
Set Space heating seasonal efficiency, Warmer climate	%	198	145