

<b>Heat pump model</b>	<b>Master Therm</b>	<b>AQ17I</b>
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Heat pump type	Brine/Water
Supplementary heater	No
Heat pump combination heater	No

Reference heating season		<b>Average</b>		
Reference water temperature		<b>LOW, 35°C</b>		
Full load heating	<b>Prated [kW]</b>	<b>4,73</b>		
Seasonal efficiency	<b><math>\eta_s</math> [%]</b>	<b>179</b>		
Annual electricity consumption	<b><math>Q_{HE}</math> [kWh]</b>	<b>2094</b>		
<b>Average 35°C</b>	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	$T_j$ [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	4,36	4,03	0,900
B	2	2,77	4,58	0,900
C	7	1,71	5,24	0,900
D	12	1,11	5,24	0,915
TOL (E)	-10	4,73	3,97	0,900
Tbivalent (F)	-10	4,73	3,97	0,900

Reference heating season		<b>Average</b>		
Reference water temperature		<b>High, 55°C</b>		
Full load heating	<b>Prated [kW]</b>	<b>4,02</b>		
Seasonal efficiency	<b><math>\eta_s</math> [%]</b>	<b>133</b>		
Annual electricity consumption	<b><math>Q_{HE}</math> [kWh]</b>	<b>2363</b>		
<b>Average 55°C</b>	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	$T_j$ [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	3,71	2,79	0,900
B	2	2,28	3,46	0,900
C	7	1,43	4,08	0,900
D	12	1,03	4,19	0,927
TOL (E)	-10	4,02	2,64	0,900
Tbivalent (F)	-10	4,02	2,64	0,900

Reference heating season		<b>Warmer</b>		
Reference water temperature		<b>Low, 35°C</b>		
Full load heating	<b>Prated [kW]</b>	<b>4,73</b>		
Seasonal efficiency	<b><math>\eta_s</math> [%]</b>	<b>182</b>		
Annual electricity consumption	<b><math>Q_{HE}</math> [kWh]</b>	<b>1333</b>		
<b>Warmer 35°C</b>	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	$T_j$ [°C]	Pdh [kW]	COPd (-)	Cdh (-)
B	2	4,73	3,97	0,900
C	7	3,37	4,34	0,977
D	12	1,50	5,39	0,935
TOL (E)	2	4,73	3,97	0,900
Tbivalent (F)	2	4,73	3,97	0,900

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Reference heating season		<b>Warmer</b>		
Reference water temperature		<b>High, 55°C</b>		
Full load heating		<b>Prated [kW]</b>	<b>4,02</b>	
Seasonal efficiency		<b><math>\eta_s</math> [%]</b>	<b>131</b>	
Annual electricity consumption		<b><math>Q_{HE}</math> [kWh]</b>	<b>1549</b>	
<b>Warmer 55°C</b>	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	<b><math>T_j</math> [°C]</b>	<b>Pdh [kW]</b>	<b>COPd (-)</b>	<b>Cdh (-)</b>
B	2	4,02	2,64	0,900
C	7	2,66	3,07	0,900
D	12	1,23	4,08	0,900
TOL (E)	2	4,02	2,64	0,900
Tbivalent (F)	2	4,02	2,64	0,900

Reference heating season		<b>Colder</b>		
Reference water temperature		<b>Low, 35°C</b>		
Full load heating		<b>Prated [kW]</b>	<b>4,73</b>	
Seasonal efficiency		<b><math>\eta_s</math> [%]</b>	<b>187</b>	
Annual electricity consumption		<b><math>Q_{HE}</math> [kWh]</b>	<b>2396</b>	
<b>Colder 35°C</b>	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	<b><math>T_j</math> [°C]</b>	<b>Pdh [kW]</b>	<b>COPd (-)</b>	<b>Cdh (-)</b>
A	-7	2,89	4,54	0,900
B	2	1,85	5,24	0,900
C	7	1,20	5,39	0,900
D	12	1,11	5,24	0,915
TOL (E)	-22	4,73	3,97	0,900
Tbivalent (F)	-22	4,73	3,97	0,900
G	-15	3,98	4,17	0,900

Reference heating season		<b>Colder</b>		
Reference water temperature		<b>High, 55°C</b>		
Full load heating		<b>Prated [kW]</b>	<b>4,02</b>	
Seasonal efficiency		<b><math>\eta_s</math> [%]</b>	<b>138</b>	
Annual electricity consumption		<b><math>Q_{HE}</math> [kWh]</b>	<b>2721</b>	
<b>Colder 55°C</b>	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	<b><math>T_j</math> [°C]</b>	<b>Pdh [kW]</b>	<b>COPd (-)</b>	<b>Cdh (-)</b>
A	-7	2,57	3,29	0,900
B	2	1,56	3,97	0,900
C	7	1,05	4,43	0,924
D	12	1,05	4,43	0,924
TOL (E)	-22	4,02	2,64	0,900
Tbivalent (F)	-22	4,02	2,64	0,900
G	-15	4,14	2,95	0,987

Heat pump model	Master Therm	AQ17I
Power consumption in modes other than "active mode"		
Off mode	$P_{OFF}$ [kW]	0,018
Thermostat off mode	$P_{TO}$ [kW]	0,018
Standby mode	$P_{SB}$ [kW]	0,018
Crankcaseheater mode	$P_{CK}$ [kW]	-
Supplementary heater capacity		
Supplementary heater capacity	$P_{sup}$ [kW]	-
Supplementary heater type	[-]	electricity
Capacity control		
Capacity control		Variable
Sound power level Indoor	$L_{WA}$ [dBA]	49
Sound power level Outdoor	$L_{WA}$ [dBA]	-
Rated brine flow	[m <sup>3</sup> /h]	0,67
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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<b>Information sheet</b>			
Temperature application		Low, 35°C	High, 55°C
Space heating energy efficiency class, Average climate	-	A++	A++
Nominal heating capacity Pdesign, Average climate	kW	5	4
Space heating seasonal efficiency, Average climate	%	179	133
Space heating annual electricity consumption, Average cl.	kWh	2094	2363
Nominal heating capacity Pdesign, Colder climate	kW	5	4
Space heating seasonal efficiency, Colder climate	%	187	138
Space heating annual electricity consumption, Colder cl.	kWh	2396	2721
Nominal heating capacity Pdesign, Warmer climate	kW	5	4
Space heating seasonal efficiency, Warmer climate	%	182	131
Space heating annual electricity consumption, Warmer cl.	kWh	1333	1549
Sound power level Lwa	dBA	49	

<b>Information sheet for energy efficiency Set with Temperature controller</b>			
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	%	181	135
Set Space heating energy efficiency class, Average climate	-	A++	A++
Set Space heating seasonal efficiency, Colder climate	%	189	140
Set Space heating seasonal efficiency, Warmer climate	%	184	133

<b>Information sheet for energy efficiency Set with Temperature controller + Room Terminal</b>			
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	%	183	137
Set Space heating energy efficiency class, Average climate	-	A++	A++
Set Space heating seasonal efficiency, Colder climate	%	191	142
Set Space heating seasonal efficiency, Warmer climate	%	186	135