

Heat pump model	Master Therm	AQ45IP
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Heat pump type	Brine/Water
Supplementary heater	No
Heat pump combination heater	No

Reference heating season	Average		SCOP
Reference water temperature	LOW, 35°C		4,85
Full load heating	Prated [kW]	35,23	
Seasonal efficiency	η_s [%]	186	A+++
Annual electricity consumption	Q_{HE} [kWh]	14996	
Average 35°C	Outdoor heat exchanger	Declared capacity	COP at part load
	Brine		
	T_j [°C]	Pdh [kW]	COPd (-)
A	0	32,03	4,03
B	0	19,78	4,87
C	0	12,40	5,39
D	0	5,79	5,34
TOL (E)	0	35,23	3,87
Tbivalent (F)	0	35,23	3,87

Reference heating season	Average		SCOP
Reference water temperature	High, 55°C		3,79
Full load heating	Prated [kW]	33,93	
Seasonal efficiency	η_s [%]	144	A++
Annual electricity consumption	Q_{HE} [kWh]	18508	
Average 55°C	Outdoor heat exchanger	Declared capacity	COP at part load
	Brine		
	T_j [°C]	Pdh [kW]	COPd (-)
A	0	30,87	2,94
B	0	19,04	3,80
C	0	12,06	4,35
D	0	5,40	4,33
TOL (E)	0	33,93	2,75
Tbivalent (F)	0	33,93	2,75

Reference heating season	Warmer		
Reference water temperature	Low, 35°C		
Full load heating	Prated [kW]	35,23	
Seasonal efficiency	η_s [%]	188	
Annual electricity consumption	Q_{HE} [kWh]	9625	
Warmer 35°C	Outdoor heat exchanger	Declared capacity	COP at part load
	Brine		
	T_j [°C]	Pdh [kW]	COPd (-)
B	0	35,23	3,87
C	0	22,75	4,65
D	0	10,90	5,38
TOL (E)	0	35,23	3,87
Tbivalent (F)	0	35,23	3,87

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Reference heating season		Warmer		
Reference water temperature		High, 55°C		
Full load heating		Prated [kW]	33,93	
Seasonal efficiency		η_s [%]	143	
Annual electricity consumption		Q_{HE} [kWh]	12014	
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Brine			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
B	0	33,93	2,75	0,90
C	0	21,71	3,46	0,90
D	0	10,60	4,32	0,90
TOL (E)	0	33,93	2,75	0,90
Tbivalent (F)	0	33,93	2,75	0,90

Reference heating season		Colder		
Reference water temperature		Low, 35°C		
Full load heating		Prated [kW]	35,23	
Seasonal efficiency		η_s [%]	194	
Annual electricity consumption		Q_{HE} [kWh]	17173	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Brine			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	0	22,78	4,75	0,90
B	0	13,90	5,40	0,90
C	0	8,53	5,66	0,90
D	0	3,95	5,34	0,90
TOL (E)	0	35,23	3,87	0,90
Tbivalent (F)	0	35,23	3,87	0,90
G	0	28,89	4,31	0,90

Reference heating season		Colder		
Reference water temperature		High, 55°C		
Full load heating		Prated [kW]	33,93	
Seasonal efficiency		η_s [%]	150	
Annual electricity consumption		Q_{HE} [kWh]	21225	
Colder 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Brine			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	0	21,90	3,59	0,90
B	0	13,47	4,29	0,90
C	0	8,38	4,68	0,90
D	0	3,88	4,55	0,90
TOL (E)	0	33,93	2,75	0,90
Tbivalent (F)	0	33,93	2,75	0,90
G	0	27,80	3,15	0,90

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Power consumption in modes other than "active mode"		
Off mode	P_{OFF} [kW]	0,019
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]	3,76

Temperature controller		
Type	Carel pCO5+HS/pCOOEM+HS, Master Therm custom SW	
Class	II	
Contribution	%	2,0

Temperature controller + Room Terminal		
Type	Carel pCO5+HS/pCOOEM+HS + pGDx, 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 P _{design} , Average climate	kW	35	34
Space heating seasonal efficiency, Average climate	%	186	144
Space heating annual electricity consumption, Average cl.	kWh	14996	18508
Nominal heating capacity P _{design} , Colder climate	kW	35	34
Space heating seasonal efficiency, Colder climate	%	194	150
Space heating annual electricity consumption, Colder cl.	kWh	17173	21225
Nominal heating capacity P _{design} , Warmer climate	kW	35	34
Space heating seasonal efficiency, Warmer climate	%	188	143
Space heating annual electricity consumption, Warmer cl.	kWh	9625	12014
Sound power level L _{wa}	dBA	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	%	188	146
Set Space heating energy efficiency class, Average climate	-	A+++	A++
Set Space heating seasonal efficiency, Colder climate	%	196	152
Set Space heating seasonal efficiency, Warmer climate	%	190	145

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	%	190	148
Set Space heating energy efficiency class, Average climate	-	A+++	A++
Set Space heating seasonal efficiency, Colder climate	%	198	154
Set Space heating seasonal efficiency, Warmer climate	%	192	147