

Heat pump model	Master Therm	BA22ISC-1
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Heat pump type	Air/Water
Supplementary heater	Yes
Heat pump combination heater	Yes

Reference heating season			Average	SCOP 4.38
Reference water temperature			LOW, 35°C	
Full load heating	Prated [kW]		4.51	
Seasonal efficiency	ηs [%]		172	A++
Annual electricity consumption	QHE [kWh]		2128	
Average 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	3.99	2.74	0.900
B	2	2.58	4.16	0.900
C	7	1.64	6.22	0.900
D	12	2.08	7.50	0.938
TOL (E)	-10	3.64	2.61	0.900
Tbivalent (F)	-7	3.99	2.74	0.900

Reference heating season			Average	SCOP 3.33
Reference water temperature			High, 55°C	
Full load heating		Prated [kW]	4.44	
Seasonal efficiency		ηs [%]	130	A++
Annual electricity consumption		QHE [kWh]	2759	
Average 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]			
A	-7	Pdh [kW]	COPd (-)	Cdh (-)
B	2	3.93	2.03	0.900
C	7	2.45	3.15	0.900
D	12	1.69	4.74	0.900
TOL (E)	-10	1.96	5.73	0.950
Tbivalent (F)	-7	3.68	1.90	0.900
		3.93	2.03	0.900

Reference heating season			Warmer		
Reference water temperature			Low, 35°C		
Full load heating		Prated [kW]	5.32		
Seasonal efficiency		ηs [%]	239		
Annual electricity consumption		QHE [kWh]	1176		
Warmer 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient	
	Outdoor air				
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)	
B	2	5.32	3.34	0.900	
C	7	3.78	5.20	0.976	
D	12	1.58	7.76	0.900	
TOL (E)	2	5.32	3.34	0.900	
Tbivalent (F)	2	5.32	3.34	0.900	

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Reference heating season			Warmer	
Reference water temperature			High, 55°C	
Full load heating		Prated [kW]	5.08	
Seasonal efficiency		η_s [%]	164	
Annual electricity consumption		Q_{HE} [kWh]	1626	
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]			
B	2	Pdh [kW]	COPd (-)	Cdh (-)
C	7	5.08	2.25	0.900
D	12	3.54	3.52	0.900
TOL (E)	2	1.95	5.56	0.951
Tbivalent (F)	2	5.08	2.25	0.900
		5.08	2.25	0.900

Reference heating season			Colder	
Reference water temperature			Low, 35°C	
Full load heating		Prated [kW]	6.55	
Seasonal efficiency		η_s [%]	134	
Annual electricity consumption		Q_{HE} [kWh]	4717	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]			
A	-7	Pdh [kW]	COPd (-)	Cdh (-)
B	2	3.97	2.91	0.900
C	7	2.61	4.47	0.900
D	12	1.56	6.42	0.900
TOL (E)	12	2.08	7.50	0.938
Tbivalent (F)	-22	2.64	2.34	0.900
G	-7	3.97	2.91	0.900
	-15	3.15	2.56	0.900

Reference heating season			Colder	
Reference water temperature			High, 55°C	
Full load heating		Prated [kW]	6.49	
Seasonal efficiency		η_s [%]	110	
Annual electricity consumption		Q_{HE} [kWh]	5643	
Colder 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]			
A	-7	Pdh [kW]	COPd (-)	Cdh (-)
B	2	3.93	2.33	0.900
C	7	2.50	3.53	0.900
D	12	1.73	5.18	0.948
TOL (E)	12	1.99	6.12	0.947
Tbivalent (F)	-22	2.84	1.88	0.900
G	-7	3.93	2.33	0.900
	-15	3.26	2.05	0.900

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Power consumption in modes other than "active mode"		
Off mode	P_{OFF} [kW]	0.018
Thermostat off mode	P_{TO} [kW]	0.017
Standby mode	P_{SB} [kW]	0.018
Crankcaseheater mode	P_{CK} [kW]	-

Supplementary heater capacity	P_{sup} [kW]	4.5
Supplementary heater type	[-]	electricity

Capacity control		Variable
Sound power level Indoor	L_{WA} [dBA]	48
Sound power level Outdoor	L_{WA} [dBA]	55
Rated airflow	[m ³ /h]	max.3000

Declared load profile / Tapping cycle		L
Daily electricity consumption	Q_{elec} [kWh]	3.129
Water heating energy efficiency	η_{wh} [%]	90

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	5	4
Space heating seasonal efficiency, Average climate	%	172	130
Space heating annual electricity consumption, Average cl.	kWh	2128	2759
Nominal heating capacity Pdesign, Colder climate	kW	7	6
Space heating seasonal efficiency, Colder climate	%	134	110
Space heating annual electricity consumption, Colder cl.	kWh	4717	5643
Nominal heating capacity Pdesign, Warmer climate	kW	5	5
Space heating seasonal efficiency, Warmer climate	%	239	164
Space heating annual electricity consumption, Warmer cl.	kWh	1176	1626
Sound power level Lwa Outdoor	dBA	55	

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	%	174	132
Set Space heating energy efficiency class, Average climate	-	A++	A++
Set Space heating seasonal efficiency, Colder climate	%	136	112
Set Space heating seasonal efficiency, Warmer climate	%	241	166

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	%	176	134
Set Space heating energy efficiency class, Average climate	-	A+++	A++
Set Space heating seasonal efficiency, Colder climate	%	138	114
Set Space heating seasonal efficiency, Warmer climate	%	243	168