

Heat pump model	Master Therm	BA90IP-1
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Heat pump type	Air/Water
Supplementary heater	Yes
Heat pump combination heater	No

Reference heating season		Average		SCOP 4,68
Reference water temperature		LOW, 35°C		
Full load heating		Prated [kW]	29,40	
Seasonal efficiency		η_s [%]	184	A+++
Annual electricity consumption		Q_{HE} [kWh]	12979	
Average 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	26,86	2,82	0,900
B	2	16,78	4,61	0,900
C	7	10,18	6,26	0,900
D	12	8,06	7,29	0,983
TOL (E)	-10	29,40	2,52	0,900
Tbivalent (F)	-10	29,40	2,52	0,900

Reference heating season		Average		SCOP 3,55
Reference water temperature		High, 55°C		
Full load heating		Prated [kW]	29,14	
Seasonal efficiency		η_s [%]	139	A++
Annual electricity consumption		Q_{HE} [kWh]	16961	
Average 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	26,02	2,13	0,900
B	2	15,89	3,48	0,900
C	7	11,01	4,75	0,900
D	12	7,67	5,71	0,986
TOL (E)	-10	29,14	1,89	0,900
Tbivalent (F)	-10	29,14	1,89	0,900

Reference heating season		Warmer		
Reference water temperature		Low, 35°C		
Full load heating		Prated [kW]	31,01	
Seasonal efficiency		η_s [%]	237	
Annual electricity consumption		Q_{HE} [kWh]	6892	
Warmer 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pdh [kW]	COPd (-)	Cdh (-)
B	2	31,01	3,54	0,900
C	7	20,99	5,58	0,900
D	12	9,13	7,29	0,900
TOL (E)	2	31,01	3,54	0,900
Tbivalent (F)	2	31,01	3,54	0,900

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Reference heating season		Warmer		
Reference water temperature		High, 55°C		
Full load heating		Prated [kW]	30,46	
Seasonal efficiency		η_s [%]	174	
Annual electricity consumption		Q_{HE} [kWh]	9217	
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
B	2	30,46	2,45	0,900
C	7	19,80	3,88	0,900
D	12	9,15	5,54	0,900
TOL (E)	2	30,46	2,45	0,900
Tbivalent (F)	2	30,46	2,45	0,900

Reference heating season		Colder		
Reference water temperature		Low, 35°C		
Full load heating		Prated [kW]	36,85	
Seasonal efficiency		η_s [%]	156	
Annual electricity consumption		Q_{HE} [kWh]	22784	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	22,49	3,12	0,900
B	2	13,70	5,18	0,900
C	7	9,37	6,63	0,900
D	12	8,06	7,29	0,983
TOL (E)	-20	25,17	2,26	0,900
Tbivalent (F)	-10	25,21	3,05	0,900
G	-15	25,19	2,65	0,900

Reference heating season		Colder		
Reference water temperature		High, 55°C		
Full load heating		Prated [kW]	33,60	
Seasonal efficiency		η_s [%]	125	
Annual electricity consumption		Q_{HE} [kWh]	25820	
Colder 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	21,16	2,51	0,900
B	2	12,39	3,95	0,900
C	7	8,10	5,38	0,900
D	12	7,76	6,08	0,985
TOL (E)	-20	25,95	1,77	0,900
Tbivalent (F)	-10	22,99	2,42	0,900
G	-15	24,47	2,10	0,900

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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		
Supplementary heater capacity	P_{sup} [kW]	15+(15)
Supplementary heater type	[-]	electricity
Capacity control		
Capacity control		Variable
Sound power level Indoor	L_{WA} [dBA]	-
Sound power level Outdoor	L_{WA} [dBA]	62
Rated airflow	[m ³ /h]	max.15000
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	29	29
Space heating seasonal efficiency, Average climate	%	184	139
Space heating annual electricity consumption, Average cl.	kWh	12979	16961

Nominal heating capacity Pdesign, Colder climate	kW	37	34
Space heating seasonal efficiency, Colder climate	%	156	125
Space heating annual electricity consumption, Colder cl.	kWh	22784	25820

Nominal heating capacity Pdesign, Warmer climate	kW	31	30
Space heating seasonal efficiency, Warmer climate	%	237	174
Space heating annual electricity consumption, Warmer cl.	kWh	6892	9217

Sound power level Lwa Outdoor	dBA	62	
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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	%	186	141
Set Space heating energy efficiency class, Average climate	-	A+++	A++
Set Space heating seasonal efficiency, Colder climate	%	158	127
Set Space heating seasonal efficiency, Warmer climate	%	239	176

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	%	188	143
Set Space heating energy efficiency class, Average climate	-	A+++	A++
Set Space heating seasonal efficiency, Colder climate	%	160	129
Set Space heating seasonal efficiency, Warmer climate	%	241	178