Heat pump model	**Master Therm**	**BA60IP-1**

Heat pump type	Air/Water
Supplementary heater	Yes
Heat pump combination heater	No

Reference heating season			**Average**	**SCOP**
Reference water temperature			**LOW, 35°C**	**4,89**
Full load heating		**Prated [kW]**	**21,54**	
Seasonal efficiency		**η_s [%]**	**193**	**A+++**
Annual electricity consumption		**Q_{HE} [kWh]**	**9092**	
Average 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	19,49	3,14	0,900
B	2	11,79	4,70	0,900
C	7	7,55	6,49	0,900
D	12	5,21	8,17	0,970
TOL (E)	-10	21,54	2,88	0,900
Tbivalent (F)	-10	21,54	2,88	0,900

Reference heating season			**Average**	**SCOP**
Reference water temperature			**High, 55°C**	**3,73**
Full load heating		**Prated [kW]**	**20,28**	
Seasonal efficiency		**η_s [%]**	**146**	**A++**
Annual electricity consumption		**Q_{HE} [kWh]**	**11237**	
Average 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	18,59	2,38	0,900
B	2	11,08	3,61	0,900
C	7	7,35	4,91	0,900
D	12	5,09	6,07	0,977
TOL (E)	-10	20,28	2,16	0,900
Tbivalent (F)	-10	20,28	2,16	0,900

Reference heating season			**Warmer**	
Reference water temperature			**Low, 35°C**	
Full load heating		**Prated [kW]**	**22,31**	
Seasonal efficiency		**η_s [%]**	**256**	
Annual electricity consumption		**Q_{HE} [kWh]**	**4600**	
Warmer 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
B	2	22,31	3,86	0,900
C	7	14,65	5,73	0,900
D	12	6,60	8,17	0,900
TOL (E)	2	22,31	3,86	0,900
Tbivalent (F)	2	22,31	3,86	0,900

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Heat pump model	**Master Therm**	**BA60IP-1**

Reference heating season			**Warmer**	
Reference water temperature			**High, 55°C**	
Full load heating		**Prated [kW]**	**20,87**	
Seasonal efficiency		**η_s [%]**	**180**	
Annual electricity consumption		**Q_{HE} [kWh]**	**6086**	
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
B	2	20,87	2,68	0,900
C	7	13,85	3,96	0,900
D	12	6,09	5,88	0,900
TOL (E)	2	20,87	2,68	0,900
Tbivalent (F)	2	20,87	2,68	0,900

Reference heating season			**Colder**	
Reference water temperature			**Low, 35°C**	
Full load heating		**Prated [kW]**	**24,62**	
Seasonal efficiency		**η_s [%]**	**160**	
Annual electricity consumption		**Q_{HE} [kWh]**	**14875**	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	15,23	3,44	0,900
B	2	9,19	5,04	0,900
C	7	6,06	6,98	0,900
D	12	5,21	8,17	0,970
TOL (E)	-20	16,71	2,44	0,900
Tbivalent (F)	-10	16,84	3,03	0,900
G	-15	16,78	2,74	0,900

Reference heating season			**Colder**	
Reference water temperature			**High, 55°C**	
Full load heating		**Prated [kW]**	**23,89**	
Seasonal efficiency		**η_s [%]**	**128**	
Annual electricity consumption		**Q_{HE} [kWh]**	**17934**	
Colder 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	14,66	2,75	0,900
B	2	8,96	3,95	0,900
C	7	5,96	5,52	0,900
D	12	5,13	6,49	0,976
TOL (E)	-20	16,24	1,94	0,900
Tbivalent (F)	-10	16,35	2,44	0,900
G	-15	16,29	2,19	0,900

Heat pump model	**Master Therm**	**BA60IP-1**

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]	7,5(+7,5)
Supplementary heater type	[-]	electricity

Capacity control		Variable
Sound power level Indoor	L_{WA} [dBA]	-
Sound power level Outdoor	L_{WA} [dBA]	62
Rated airflow	[m^3/h]	max.10000

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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Heat pump model	**Master Therm**	**BA60IP-1**

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	22	20
Space heating seasonal efficiency, Average climate	%	193	146
Space heating annual electricity consumption, Average cl.	kWh	9092	11237

Nominal heating capacity Pdesign, Colder climate	kW	25	24
Space heating seasonal efficiency, Colder climate	%	160	128
Space heating annual electricity consumption, Colder cl.	kWh	14875	17934

Nominal heating capacity Pdesign, Warmer climate	kW	22	21
Space heating seasonal efficiency, Warmer climate	%	256	180
Space heating annual electricity consumption, Warmer cl.	kWh	4600	6086

Sound power level Lwa Outdoor	dBA	62

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	%	195	148
Set Space heating energy efficiency class, Average climate	-	A+++	A++
Set Space heating seasonal efficiency, Colder climate	%	162	130
Set Space heating seasonal efficiency, Warmer climate	%	258	182

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	%	197	150
Set Space heating energy efficiency class, Average climate	-	A+++	A+++
Set Space heating seasonal efficiency, Colder climate	%	164	132
Set Space heating seasonal efficiency, Warmer climate	%	260	184

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