Heat pump model	**Master Therm**	**BA60I-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**	**4.50**
Full load heating		**Prated [kW]**	**22.57**	
Seasonal efficiency		**η_s [%]**	**177**	**A+++**
Annual electricity consumption		**Q_{HE} [kWh]**	**10350**	
Average 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	20.64	2.64	0.900
B	2	12.68	4.21	0.900
C	7	8.04	6.61	0.900
D	12	9.26	8.02	0.977
TOL (E)	-10	22.57	2.35	0.900
Tbivalent (F)	-10	22.57	2.35	0.900

Reference heating season			**Average**	**SCOP**
Reference water temperature			**High, 55°C**	**3.45**
Full load heating		**Prated [kW]**	**22.06**	
Seasonal efficiency		**η_s [%]**	**135**	**A++**
Annual electricity consumption		**Q_{HE} [kWh]**	**13226**	
Average 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	20.77	2.04	0.900
B	2	12.27	3.22	0.900
C	7	7.80	5.06	0.900
D	12	9.00	6.13	0.982
TOL (E)	-10	22.06	1.55	0.900
Tbivalent (F)	-10	22.06	1.55	0.900

Reference heating season			**Warmer**
Reference water temperature			**Low, 35°C**
Full load heating		**Prated [kW]**	**30.53**
Seasonal efficiency		**η_s [%]**	**248**
Annual electricity consumption		**Q_{HE} [kWh]**	**6503**
Warmer 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
B	2	30.53	3.18	0.900
C	7	20.32	5.22	0.900
D	12	9.29	8.30	0.900
TOL (E)	2	30.53	3.18	0.900
Tbivalent (F)	2	30.53	3.18	0.900

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Heat pump model	**Master Therm**	**BA60I-1**

Reference heating season			**Warmer**	
Reference water temperature			**High, 55°C**	
Full load heating		**Prated [kW]**	**30.47**	
Seasonal efficiency		**η_s [%]**	**173**	
Annual electricity consumption		**Q_{HE} [kWh]**	**9258**	
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
B	2	30.47	2.27	0.900
C	7	20.53	3.57	0.900
D	12	8.97	5.93	0.900
TOL (E)	2	30.47	2.27	0.900
Tbivalent (F)	2	30.47	2.27	0.900

Reference heating season			**Colder**	
Reference water temperature			**Low, 35°C**	
Full load heating		**Prated [kW]**	**32.27**	
Seasonal efficiency		**η_s [%]**	**141**	
Annual electricity consumption		**Q_{HE} [kWh]**	**22050**	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	19.53	2.79	0.900
B	2	12.78	4.49	0.900
C	7	8.07	6.82	0.900
D	12	9.26	8.02	0.977
TOL (E)	-22	20.47	2.24	0.900
Tbivalent (F)	-7	19.53	2.79	0.900
G	-15	22.66	2.41	0.900

Reference heating season			**Colder**	
Reference water temperature			**High, 55°C**	
Full load heating		**Prated [kW]**	**31.21**	
Seasonal efficiency		**η_s [%]**	**116**	
Annual electricity consumption		**Q_{HE} [kWh]**	**25783**	
Colder 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	Tj [°C]	Pdh [kW]	COPd (-)	Cdh (-)
A	-7	18.89	2.28	0.900
B	2	12.43	3.60	0.900
C	7	7.89	5.52	0.900
D	12	9.07	6.54	0.981
TOL (E)	-22	21.78	1.86	0.900
Tbivalent (F)	-7	18.89	2.28	0.900
G	-15	22.84	1.98	0.900

Heat pump model	**Master Therm**	**BA60I-1**

Power consumption in modes other than "active mode"		
Off mode	P_{OFF} [kW]	0.027
Thermostat off mode	P_{TO} [kW]	0.026
Standby mode	P_{SB} [kW]	0.027
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]	66
Rated airflow	[m^3/h]	max.8000

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	BA60I-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	23	22
Space heating seasonal efficiency, Average climate	%	177	135
Space heating annual electricity consumption, Average cl.	kWh	10350	13226
Nominal heating capacity Pdesign, Colder climate	kW	32	31
Space heating seasonal efficiency, Colder climate	%	141	116
Space heating annual electricity consumption, Colder cl.	kWh	22050	25783
Nominal heating capacity Pdesign, Warmer climate	kW	31	30
Space heating seasonal efficiency, Warmer climate	%	248	173
Space heating annual electricity consumption, Warmer cl.	kWh	6503	9258
Sound power level Lwa Outdoor	dBA	66	

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	%	179	137
Set Space heating energy efficiency class, Average climate	-	A+++	A++
Set Space heating seasonal efficiency, Colder climate	%	143	118
Set Space heating seasonal efficiency, Warmer climate	%	250	175

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	%	181	139
Set Space heating energy efficiency class, Average climate	-	A+++	A++
Set Space heating seasonal efficiency, Colder climate	%	145	120
Set Space heating seasonal efficiency, Warmer climate	%	252	177

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