

Heat pump model		Master Therm	BA60I-1	
Heat pump type		Air/Water		
Supplementary heater		Yes		
Heat pump combination heater		No		
Reference heating season		Average		
Reference water temperature		LOW, 35°C		
Full load heating		Prated [kW]	22.57	
Seasonal efficiency		η_s [%]	177	A+++
Annual electricity consumption		Q_{HE} [kWh]	10351	
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	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		
Reference water temperature		High, 55°C		
Full load heating		Prated [kW]	24.94	
Seasonal efficiency		η_s [%]	135	A++
Annual electricity consumption		Q_{HE} [kWh]	14980	
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	21.44	2.05	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)	-7	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			
	T_j [°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

Heat pump model	Master Therm	BA60I-1
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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]	9259	
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pd _h [kW]	COP _d (-)	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]	22051	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pd _h [kW]	COP _d (-)	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			
	T_j [°C]	Pd _h [kW]	COP _d (-)	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
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Power consumption in modes other than "active mode"		
Off mode	P_{OFF} [kW]	0.028
Thermostat off mode	P_{TO} [kW]	0.027
Standby mode	P_{SB} [kW]	0.028
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

Heat pump model	Master Therm	BA60I-1
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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	23	25
Space heating seasonal efficiency, Average climate	%	177	135
Space heating annual electricity consumption, Average cl.	kWh	10351	14980

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	22051	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	9259

Sound power level Lwa Outdoor	dBA	66
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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	%	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

Heat pump model	Master Therm	BA60IS-1
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Heat pump type	Air/Water
Supplementary heater	No
Heat pump combination heater	No

Reference heating season		Average		
Reference water temperature		LOW, 35°C		
Full load heating	Prated [kW]	22.57		
Seasonal efficiency	η_s [%]	177	A+++	
Annual electricity consumption		Q_{HE} [kWh]	10351	
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	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		
Reference water temperature		High, 55°C		
Full load heating	Prated [kW]	24.94		
Seasonal efficiency	η_s [%]	135	A++	
Annual electricity consumption		Q_{HE} [kWh]	14980	
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	21.44	2.05	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)	-7	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			
	T_j [°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

Heat pump model	Master Therm	BA60IS-1
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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]	9259	
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pd _h [kW]	COP _d (-)	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]	22051	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pd _h [kW]	COP _d (-)	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			
	T_j [°C]	Pd _h [kW]	COP _d (-)	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	BA60IS-1
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Power consumption in modes other than "active mode"		
Off mode	P_{OFF} [kW]	0.028
Thermostat off mode	P_{TO} [kW]	0.027
Standby mode	P_{SB} [kW]	0.028
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]	53
Sound power level Outdoor	L_{WA} [dBA]	58
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

Heat pump model	Master Therm	BA60IS-1
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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	23	25
Space heating seasonal efficiency, Average climate	%	177	135
Space heating annual electricity consumption, Average cl.	kWh	10351	14980

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	22051	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	9259

Sound power level Lwa Outdoor	dBA	58	
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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	%	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

Heat pump model	Master Therm	BA75Z
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Heat pump type	Air/Water
Supplementary heater	Yes
Heat pump combination heater	No

Reference heating season		Average		
Reference water temperature		LOW, 35°C		
Full load heating	Prated [kW]	30.76		
Seasonal efficiency	η_s [%]	141	A+	
Annual electricity consumption		Q_{HE} [kWh]	17616	
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	19.26	2.98	0.900
B	2	23.07	3.57	0.996
C	7	30.88	4.77	0.996
D	12	34.75	5.43	0.996
TOL (E)	-10	17.54	2.69	0.900
Tbivalent (F)	-2	21.29	3.36	0.900

Reference heating season		Average		
Reference water temperature		High, 55°C		
Full load heating	Prated [kW]	30.25		
Seasonal efficiency	η_s [%]	114	A+	
Annual electricity consumption		Q_{HE} [kWh]	21429	
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	19.60	2.15	0.900
B	2	23.21	2.90	0.997
C	7	29.69	3.85	0.997
D	12	32.18	4.30	0.997
TOL (E)	-10	18.64	1.92	0.900
Tbivalent (F)	-2	20.95	2.56	0.900

Reference heating season		Warmer		
Reference water temperature		Low, 35°C		
Full load heating	Prated [kW]	22.65		
Seasonal efficiency	η_s [%]	182		
Annual electricity consumption		Q_{HE} [kWh]	6546	
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	22.65	3.33	0.900
C	7	30.12	4.43	0.996
D	12	34.11	5.20	0.996
TOL (E)	2	22.65	3.33	0.900
Tbivalent (F)	2	22.65	3.33	0.900

Heat pump model	Master Therm	BA75Z
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Reference heating season		Warmer		
Reference water temperature		High, 55°C		
Full load heating		Prated [kW]	23.01	
Seasonal efficiency		η_s [%]	134	
Annual electricity consumption		Q_{HE} [kWh]	8989	
Warmer 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pd _h [kW]	COP _d (-)	Cdh (-)
B	2	23.01	2.32	0.900
C	7	28.48	3.13	0.997
D	12	31.51	4.00	0.997
TOL (E)	2	23.01	2.32	0.900
Tbivalent (F)	2	23.01	2.32	0.900

Reference heating season		Colder		
Reference water temperature		Low, 35°C		
Full load heating		Prated [kW]	32.53	
Seasonal efficiency		η_s [%]	127	
Annual electricity consumption		Q_{HE} [kWh]	24607	
Colder 35°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pd _h [kW]	COP _d (-)	Cdh (-)
A	-7	19.69	3.28	0.900
B	2	23.56	3.84	0.996
C	7	31.44	5.00	0.996
D	12	34.42	5.24	0.996
TOL (E)	-20	13.81	2.35	0.900
Tbivalent (F)	-7	19.69	3.28	0.900
G	-15	15.76	2.67	0.900

Reference heating season		Colder		
Reference water temperature		High, 55°C		
Full load heating		Prated [kW]	32.86	
Seasonal efficiency		η_s [%]	103	
Annual electricity consumption		Q_{HE} [kWh]	30694	
Colder 55°C	Outdoor heat exchanger	Declared capacity	COP at part load	Degradation Coefficient
	Outdoor air			
	T_j [°C]	Pd _h [kW]	COP _d (-)	Cdh (-)
A	-7	19.36	2.50	0.900
B	2	22.79	3.03	0.997
C	7	30.29	4.14	0.997
D	12	33.22	4.73	0.996
TOL (E)	-20	14.64	1.68	0.900
Tbivalent (F)	-7	19.89	2.55	0.900
G	-15	16.34	1.96	0.900

Heat pump model	Master Therm	BA75Z
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Power consumption in modes other than "active mode"		
Off mode	P_{OFF} [kW]	0.025
Thermostat off mode	P_{TO} [kW]	0.025
Standby mode	P_{SB} [kW]	0.025
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]	69
Rated airflow	[m ³ /h]	8000

Temperature controller		
Type	Carel pCO5/pCO5+/uPC, Master Therm custom SW	
Class	III	
Contribution	%	1.5

Temperature controller + Room Terminal		
Type	Carel pCO5/pCO5+/uPC + pAD, Master Therm custom SW	
Class	VII	
Contribution	%	3.5

Heat pump model	Master Therm	BA75Z
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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	31	30
Space heating seasonal efficiency, Average climate	%	141	114
Space heating annual electricity consumption, Average cl.	kWh	17616	21429

Nominal heating capacity Pdesign, Colder climate	kW	33	33
Space heating seasonal efficiency, Colder climate	%	127	103
Space heating annual electricity consumption, Colder cl.	kWh	24607	30694

Nominal heating capacity Pdesign, Warmer climate	kW	23	23
Space heating seasonal efficiency, Warmer climate	%	182	134
Space heating annual electricity consumption, Warmer cl.	kWh	6546	8989

Sound power level Lwa Outdoor	dBA	69	
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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	-	III	III
Controller Carel pCO5/pCO5+/uPC, Contribution	%	1.5	1.5
Set Space heating seasonal efficiency, Average climate	%	143	115
Set Space heating energy efficiency class, Average climate	-	A+	A+
Set Space heating seasonal efficiency, Colder climate	%	129	104
Set Space heating seasonal efficiency, Warmer climate	%	183	135

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	-	VII	VII
Controller Carel pCO5/pCO5+/uPC, +pAD, Contribution	%	3.5	3.5
Set Space heating seasonal efficiency, Average climate	%	145	117
Set Space heating energy efficiency class, Average climate	-	A+	A+
Set Space heating seasonal efficiency, Colder climate	%	131	106
Set Space heating seasonal efficiency, Warmer climate	%	185	137