

Technical parameters for heat pump space heaters and heat pump combination heaters

Model(s):	HM051MRS UA40	
Air-to-water heat pump:	YES	NO
Water-to-water heat pump:	YES	NO
Brine-to-water heat pump:	YES	NO
Low-temperature heat pump:	YES	NO
Equipped with a supplementary heater:	YES	NO
Heat pump combination heater:	YES	NO

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps.
For low-temperature heat pumps, parameters shall be declared for low-temperature application.
Parameters shall be declared for average climate conditions.

Low temperature application

Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	6	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7\text{ °C}$	P_{dh}	4.9	kW
$T_j = +2\text{ °C}$	P_{dh}	3.0	kW
$T_j = +7\text{ °C}$	P_{dh}	2.6	kW
$T_j = +12\text{ °C}$	P_{dh}	2.9	kW
$T_j = \text{bivalent temperature}$	P_{dh}	5.5	kW
$T_j = \text{operation limit temperature}$	P_{dh}	5.5	kW
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	P_{dh}	x,x	kW
Bivalent temperature	T_{biv}	-10	°C
Cycling interval capacity for heating	P_{cych}	x,x	kW
Degradation co-efficient(**)	C_{dh}	0.9	

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	175%	
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7\text{ °C}$	COPd or PERd	2.90	- or %
$T_j = +2\text{ °C}$	COPd or PERd	4.20	- or %
$T_j = +7\text{ °C}$	COPd or PERd	6.22	- or %
$T_j = +12\text{ °C}$	COPd or PERd	8.90	- or %
$T_j = \text{bivalent temperature}$	COPd or PERd	2.57	- or %
$T_j = \text{operation limit temperature}$	COPd or PERd	2.57	- or %
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd or PERd	x,xx	- or %
Cycling interval efficiency	COPcyc or PERcyc	x,xx	- or %
Heating water operating limit temperature	WTOL	65	°C

Medium temperature application

Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	7	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7\text{ °C}$	P_{dh}	5.9	kW
$T_j = +2\text{ °C}$	P_{dh}	3.6	kW
$T_j = +7\text{ °C}$	P_{dh}	2.9	kW
$T_j = +12\text{ °C}$	P_{dh}	3.3	kW
$T_j = \text{bivalent temperature}$	P_{dh}	6.7	kW
$T_j = \text{operation limit temperature}$	P_{dh}	6.7	kW
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	P_{dh}	x,x	kW
Bivalent temperature	T_{biv}	-10	°C
Cycling interval capacity for heating	P_{cych}	x,x	kW
Degradation co-efficient(**)	C_{dh}	0.9	

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	125%	
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7\text{ °C}$	COPd or PERd	2.07	- or %
$T_j = +2\text{ °C}$	COPd or PERd	3.10	- or %
$T_j = +7\text{ °C}$	COPd or PERd	4.18	- or %
$T_j = +12\text{ °C}$	COPd or PERd	6.26	- or %
$T_j = \text{bivalent temperature}$	COPd or PERd	1.77	- or %
$T_j = \text{operation limit temperature}$	COPd or PERd	1.77	- or %
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd or PERd	x,xx	- or %
For air-to-water heat pumps: Operation limit temperature	TOL	-15	°C
Cycling interval efficiency	COPcyc or PERcyc	x,xx	- or %
Heating water operating limit temperature	WTOL	65	°C

Power consumption in modes other than active mode			
Off mode	P_{OFF}	0.010	kW
Thermostat-off mode	P_{TO}	0.020	kW
Standby mode	P_{SB}	0.010	kW
Crankcase heater mode	P_{CK}	0.000	kW

Supplementary heater			
Rated heat output (*)	P_{sup}	2.2	kW
Type of energy input	Electric		

Other items			
Capacity control	Variable		
Sound power level, indoors/outdoors	$L_{WA,indoor}$		dB
	$L_{WA,Outdoor}$	57	dB
Annual electricity consumption (Low Temp)	Q HE, (Low Temp)	2547	kWh
Annual electricity consumption (Mid Temp)	Q HE (Mid Temp)	4322	kWh

For air-to-water heat pumps: Rated air flow rate, outdoors (Low Temp)	2388	m ³ /h
For air-to-water heat pumps: Rated air flow rate, outdoors (Mid. Temp)	3690	m ³ /h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	x	
Water Pump EEI	≤	0.23

"The benchmark for the most efficient circulators is $EEI \leq 0.20$."

For heat pump combination heater			
Declared load profile	x		
Daily electricity consumption	Q_{elec}	x,xxx	kWh
Annual electricity consumption	AEC	x	kWh

Water heating energy efficiency	η_{wh}	x	%
Daily fuel consumption	Q_{fuel}	x,xxx	kWh
Annual fuel consumption	AFC	x	GJ

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output P_{rated} is equal to the design load for heating $P_{designh}$, and the rated heat output of a supplementary heater P_{sup} is equal to the supplementary capacity for heating $sup(T_j)$.

(**) If C_{dh} is not determined by measurement then the default degradation coefficient is $C_{dh} = 0.9$.

Warmer climate

Low temperature application

Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	6	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = + 2\text{ °C}$	P_{dh}	6.1	kW
$T_j = + 7\text{ °C}$	P_{dh}	3.9	kW
$T_j = + 12\text{ °C}$	P_{dh}	2.5	kW
$T_j =$ bivalent temperature	P_{dh}	6.1	kW
$T_j =$ operation limit temperature	P_{dh}	6.1	kW
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	P_{dh}	x,x	kW
Bivalent temperature	T_{biv}	2	°C
Cycling interval capacity for heating	P_{cydh}	x,x	kW
Degradation co-efficient(**)	C_{dh}	0.9	

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	256%	
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = + 2\text{ °C}$	COPd or PERd	3.40	- or %
$T_j = + 7\text{ °C}$	COPd or PERd	5.40	- or %
$T_j = + 12\text{ °C}$	COPd or PERd	9.04	- or %
$T_j =$ bivalent temperature	COPd or PERd	3.40	- or %
$T_j =$ operation limit temperature	COPd or PERd	3.40	- or %
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd or PERd	x,xx	- or %
Cycling interval efficiency	COPcyc or PERcyc	x,xx	- or %

Medium temperature application

Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	9	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = + 2\text{ °C}$	P_{dh}	8.5	kW
$T_j = + 7\text{ °C}$	P_{dh}	5.5	kW
$T_j = + 12\text{ °C}$	P_{dh}	2.7	kW
$T_j =$ bivalent temperature	P_{dh}	8.5	kW
$T_j =$ operation limit temperature	P_{dh}	8.5	kW
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	P_{dh}	x,x	kW
Bivalent temperature	T_{biv}	2	°C
Cycling interval capacity for heating	P_{cydh}	x,x	kW
Degradation co-efficient(**)	C_{dh}	0.9	

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	167%	
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = + 2\text{ °C}$	COPd or PERd	2.35	- or %
$T_j = + 7\text{ °C}$	COPd or PERd	3.55	- or %
$T_j = + 12\text{ °C}$	COPd or PERd	5.63	- or %
$T_j =$ bivalent temperature	COPd or PERd	2.35	- or %
$T_j =$ operation limit temperature	COPd or PERd	2.35	- or %
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd or PERd	x,xx	- or %
Cycling interval efficiency	COPcyc or PERcyc	x,xx	- or %

Annual electricity consumption (Low Temp)	Q HE, (Low Temp)	1260	kWh
Annual electricity consumption (Mid Temp)	Q HE (Mid Temp)	2667	kWh

Colder climate

Low temperature application

Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	7	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = - 7\text{ °C}$	P_{dh}	4.1	kW
$T_j = + 2\text{ °C}$	P_{dh}	2.5	kW
$T_j = + 7\text{ °C}$	P_{dh}	2.4	kW
$T_j = + 12\text{ °C}$	P_{dh}	2.6	kW
$T_j =$ bivalent temperature	P_{dh}	4.1	kW
$T_j =$ operation limit temperature	P_{dh}	4.8	kW
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	P_{dh}	x,x	kW
Bivalent temperature	T_{biv}	-7	°C
Cycling interval capacity for heating	P_{cydh}	x,x	kW
Degradation co-efficient(**)	C_{dh}	0.9	

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	127%	
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = - 7\text{ °C}$	COPd or PERd	2.81	- or %
$T_j = + 2\text{ °C}$	COPd or PERd	4.30	- or %
$T_j = + 7\text{ °C}$	COPd or PERd	6.10	- or %
$T_j = + 12\text{ °C}$	COPd or PERd	8.00	- or %
$T_j =$ bivalent temperature	COPd or PERd	2.81	- or %
$T_j =$ operation limit temperature	COPd or PERd	2.15	- or %
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd or PERd	x,xx	- or %
Cycling interval efficiency	COPcyc or PERcyc	x,xx	- or %

Medium temperature application

Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	7	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = - 7\text{ °C}$	P_{dh}	4.4	kW
$T_j = + 2\text{ °C}$	P_{dh}	2.7	kW
$T_j = + 7\text{ °C}$	P_{dh}	1.7	kW
$T_j = + 12\text{ °C}$	P_{dh}	1.7	kW
$T_j =$ bivalent temperature	P_{dh}	4.4	kW
$T_j =$ operation limit temperature	P_{dh}	4.9	kW
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	P_{dh}	x,x	kW
Bivalent temperature	T_{biv}	-7	°C
Cycling interval capacity for heating	P_{cydh}	x,x	kW
Degradation co-efficient(**)	C_{dh}	0.9	

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	97%	
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = - 7\text{ °C}$	COPd or PERd	2.20	- or %
$T_j = + 2\text{ °C}$	COPd or PERd	2.98	- or %
$T_j = + 7\text{ °C}$	COPd or PERd	4.35	- or %
$T_j = + 12\text{ °C}$	COPd or PERd	6.20	- or %
$T_j =$ bivalent temperature	COPd or PERd	2.20	- or %
$T_j =$ operation limit temperature	COPd or PERd	1.65	- or %
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd or PERd	x,xx	- or %
Cycling interval efficiency	COPcyc or PERcyc	x,xx	- or %

Annual electricity consumption (Low Temp)	Q HE, (Low Temp)	5095	kWh
Annual electricity consumption (Mid Temp)	Q HE (Mid Temp)	7133	kWh