

Information requirements (heat pump space heaters and heat pump combination heaters)							
Model(s): COPMAX HIGH POWER 14KW SG							
Air-to-water heat pump	Y			Low-temperature heat pump	N		
Water-to-water heat pump	N			Equipped with a supplementary heater	N		
Brine-to-water heat pump	N			Heat pump combination heater	Y		
Parameters declared for	Medium-temperature application						
Parameters declared for	Average climate condition						
Item	symbol	value	unit	Item	symbol	value	unit
Rated heat output (*)	Prated	13	kW	Seasonal space heating energy efficiency	η_s	150	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7$ °C	Pdh	11.8	kW	$T_j = -7$ °C	COPd	2.21	–
Degradation co-efficient (**)	Cdh	1.00	–				
$T_j = 2$ °C	Pdh	6.9	kW	$T_j = 2$ °C	COPd	3.65	–
Degradation co-efficient (**)	Cdh	0.99	–				
$T_j = 7$ °C	Pdh	4.5	kW	$T_j = 7$ °C	COPd	5.51	–
Degradation co-efficient (**)	Cdh	0.98	–				
$T_j = 12$ °C	Pdh	3.5	kW	$T_j = 12$ °C	COPd	7.06	–
Degradation co-efficient (**)	Cdh	0.96	–				
$T_j =$ bivalent temperature	Pdh	11.8	kW	$T_j =$ bivalent temperature	COPd	2.21	–
$T_j =$ operation limit temperature	Pdh	11.5	kW	$T_j =$ operation limit temperature	COPd	2.02	–
For air-to-water heat pumps: $T_j = -15$ °C (if TOL < -20 °C)	Pdh	NA	kW	For air-to-water heat pumps: $T_j = -15$ °C (if TOL < -20 °C)	COPd	NA	–
Bivalent temperature	Tbiv	-7	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Psych	NA	kW	Cycling interval efficiency	COPcyc	NA	–
				Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P _{OFF}	0.025	kW	Rated heat output (*)	P _{sup}	1.4	kW
Thermostat-off mode	P _{TO}	0.025	kW	Type of energy input	Electric		
Standby mode	P _{SB}	0.025	kW				
Crankcase heater mode	P _{CK}	0.025	kW				
Other items							
Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	–	5015	m ³ / h
Sound power level, outdoors	L _{WA}	68	dB	For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	–	NA	m ³ / h
Annual energy consumption	Q _{HE}	7176	kWh				
For heat pump combination heater:							
Declared load profile	XL			Water heating energy efficiency	η_{wh}	110	%
Daily electricity consumption	Q _{elec}	7.243	kWh	Daily fuel consumption	Q _{fuel}	NA	kWh
Annual electricity consumption	AEC	1594	kWh	Annual fuel consumption	AFC	NA	GJ
Contact details: Mimersvej 2 - 8722 Hedensted, Denmark				Name of the supplier: VVS-EKSPERTEN A/S			
(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj). (**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.							

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Water-to-water heat pump	N			Equipped with a supplementary heater	N		
Brine-to-water heat pump	N			Heat pump combination heater	Y		
Parameters declared for	Medium-temperature application						
Parameters declared for	Colder climate condition						
Item	symbol	value	unit	Item	symbol	value	unit
Rated heat output (*)	Prated	13	kW	Seasonal space heating energy efficiency	η_s	118	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7\text{ °C}$	Pdh	7.8	kW	$T_j = -7\text{ °C}$	COPd	2.55	-
Degradation co-efficient (**)	Cdh	0.99	-				
$T_j = 2\text{ °C}$	Pdh	4.4	kW	$T_j = 2\text{ °C}$	COPd	3.71	-
Degradation co-efficient (**)	Cdh	0.98	-				
$T_j = 7\text{ °C}$	Pdh	2.9	kW	$T_j = 7\text{ °C}$	COPd	4.61	-
Degradation co-efficient (**)	Cdh	0.96	-				
$T_j = 12\text{ °C}$	Pdh	3.3	kW	$T_j = 12\text{ °C}$	COPd	5.03	-
Degradation co-efficient (**)	Cdh	0.96	-				
$T_j = \text{bivalent temperature}$	Pdh	10.4	kW	$T_j = \text{bivalent temperature}$	COPd	1.82	-
$T_j = \text{operation limit temperature}$	Pdh	6.7	kW	$T_j = \text{operation limit temperature}$	COPd	1.06	-
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	Pdh	10.4	kW	For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd	1.82	-
Bivalent temperature	Tbiv	-15	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-22	°C
Cycling interval capacity for heating	Psych	NA	kW	Cycling interval efficiency	COPcyc	NA	-
				Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P _{OFF}	0.025	kW	Rated heat output (*)	P _{sup}	6.3	kW
Thermostat-off mode	P _{TO}	0.025	kW	Type of energy input	Electric		
Standby mode	P _{SB}	0.025	kW				
Crankcase heater mode	P _{CK}	0.025	kW				
Other items							
Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	5015	m ³ / h
Sound power level, outdoors	L _{WA}	68	dB	For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	NA	m ³ / h
Annual energy consumption	Q _{HE}	10373	kWh				
For heat pump combination heater:							
Declared load profile	XL			Water heating energy efficiency	η_{wh}	87	%
Daily electricity consumption	Q _{elec}	9.164	kWh	Daily fuel consumption	Q _{fuel}	NA	kWh
Annual electricity consumption	AEC	2016	kWh	Annual fuel consumption	AFC	NA	GJ
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Water-to-water heat pump	N			Equipped with a supplementary heater	N		
Brine-to-water heat pump	N			Heat pump combination heater	Y		
Parameters declared for	Medium-temperature application						
Parameters declared for	Warmer climate condition						
Item	symbol	value	unit	Item	symbol	value	unit
Rated heat output (*)	Prated	15	kW	Seasonal space heating energy efficiency	η_s	159	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7\text{ °C}$	Pdh	NA	kW	$T_j = -7\text{ °C}$	COPd	NA	-
Degradation co-efficient (**)	Cdh	NA	-				
$T_j = 2\text{ °C}$	Pdh	14.6	kW	$T_j = 2\text{ °C}$	COPd	2.31	-
Degradation co-efficient (**)	Cdh	1.00	-				
$T_j = 7\text{ °C}$	Pdh	8.8	kW	$T_j = 7\text{ °C}$	COPd	3.29	-
Degradation co-efficient (**)	Cdh	0.99	-				
$T_j = 12\text{ °C}$	Pdh	3.9	kW	$T_j = 12\text{ °C}$	COPd	5.47	-
Degradation co-efficient (**)	Cdh	0.97	-				
$T_j = \text{bivalent temperature}$	Pdh	14.6	kW	$T_j = \text{bivalent temperature}$	COPd	2.31	-
$T_j = \text{operation limit temperature}$	Pdh	14.6	kW	$T_j = \text{operation limit temperature}$	COPd	2.31	-
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	Pdh	NA	kW	For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	COPd	NA	-
Bivalent temperature	Tbiv	2	°C	For air-to-water heat pumps: Operation limit temperature	TOL	2	°C
Cycling interval capacity for heating	P _{ych}	NA	kW	Cycling interval efficiency	COP _{yc}	NA	-
				Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P _{OFF}	0.025	kW	Rated heat output (*)	P _{sup}	0	kW
Thermostat-off mode	P _{TO}	0.025	kW	Type of energy input	Electric		
Standby mode	P _{SB}	0.025	kW				
Crankcase heater mode	P _{CK}	0.025	kW				
Other items							
Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	5015	m ³ /h
Sound power level, outdoors	L _{WA}	68	dB	For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	NA	m ³ /h
Annual energy consumption	Q _{HE}	4801	kWh				
For heat pump combination heater:							
Declared load profile	XL			Water heating energy efficiency	η_{wh}	113	%
Daily electricity consumption	Q _{elec}	7.036	kWh	Daily fuel consumption	Q _{fuel}	NA	kWh
Annual electricity consumption	AEC	1548	kWh	Annual fuel consumption	AFC	NA	GJ
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Water-to-water heat pump	N			Equipped with a supplementary heater	N		
Brine-to-water heat pump	N			Heat pump combination heater	Y		
Parameters declared for	Low-temperature application						
Parameters declared for	Average climate condition						
Item	symbol	value	unit	Item	symbol	value	unit
Rated heat output (*)	Prated	13	kW	Seasonal space heating energy efficiency	η_s	179	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7$ °C	Pdh	11.6	kW	$T_j = -7$ °C	COPd	2.89	–
Degradation co-efficient (**)	Cdh	0.99	–				
$T_j = 2$ °C	Pdh	6.7	kW	$T_j = 2$ °C	COPd	4.50	–
Degradation co-efficient (**)	Cdh	0.98	–				
$T_j = 7$ °C	Pdh	4.5	kW	$T_j = 7$ °C	COPd	5.82	–
Degradation co-efficient (**)	Cdh	0.97	–				
$T_j = 12$ °C	Pdh	3.4	kW	$T_j = 12$ °C	COPd	7.53	–
Degradation co-efficient (**)	Cdh	0.95	–				
$T_j =$ bivalent temperature	Pdh	11.6	kW	$T_j =$ bivalent temperature	COPd	2.89	–
$T_j =$ operation limit temperature	Pdh	11.1	kW	$T_j =$ operation limit temperature	COPd	2.28	–
For air-to-water heat pumps: $T_j = -15$ °C (if TOL < -20 °C)	Pdh	NA	kW	For air-to-water heat pumps: $T_j = -15$ °C (if TOL < -20 °C)	COPd	NA	–
Bivalent temperature	Tbiv	-7	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Psych	NA	kW	Cycling interval efficiency	COPcyc	NA	–
				Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P _{OFF}	0.025	kW	Rated heat output (*)	P _{sup}	1.9	kW
Thermostat-off mode	P _{TO}	0.025	kW	Type of energy input	Electric		
Standby mode	P _{SB}	0.025	kW				
Crankcase heater mode	P _{CK}	0.025	kW				
Other items							
Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	–	5015	m ³ / h
Sound power level, outdoors	L _{WA}	68	dB	For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	–	NA	m ³ / h
Annual energy consumption	Q _{HE}	5927	kWh				
For heat pump combination heater:							
Declared load profile	XL			Water heating energy efficiency	η_{wh}	110	%
Daily electricity consumption	Q _{elec}	7.243	kWh	Daily fuel consumption	Q _{fuel}	NA	kWh
Annual electricity consumption	AEC	1594	kWh	Annual fuel consumption	AFC	NA	GJ
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Brine-to-water heat pump	N			Heat pump combination heater	Y		
Parameters declared for	Low-temperature application						
Parameters declared for	Colder climate condition						
Item	symbol	value	unit	Item	symbol	value	unit
Rated heat output (*)	Prated	12	kW	Seasonal space heating energy efficiency	η_s	158	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7\text{ °C}$	Pdh	7.0	kW	$T_j = -7\text{ °C}$	COPd	3.40	-
Degradation co-efficient (**)	Cdh	0.99	-				
$T_j = 2\text{ °C}$	Pdh	4.2	kW	$T_j = 2\text{ °C}$	COPd	5.04	-
Degradation co-efficient (**)	Cdh	0.97	-				
$T_j = 7\text{ °C}$	Pdh	3.0	kW	$T_j = 7\text{ °C}$	COPd	6.06	-
Degradation co-efficient (**)	Cdh	0.95	-				
$T_j = 12\text{ °C}$	Pdh	3.2	kW	$T_j = 12\text{ °C}$	COPd	6.17	-
Degradation co-efficient (**)	Cdh	0.95	-				
$T_j = \text{bivalent temperature}$	Pdh	9.7	kW	$T_j = \text{bivalent temperature}$	COPd	2.38	-
$T_j = \text{operation limit temperature}$	Pdh	7.6	kW	$T_j = \text{operation limit temperature}$	COPd	1.79	-
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	Pdh	9.7	kW	For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20°C)	COPd	2.38	-
Bivalent temperature	Tbiv	-15	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-22	°C
Cycling interval capacity for heating	Psych	NA	kW	Cycling interval efficiency	COPcyc	NA	-
				Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P _{OFF}	0.025	kW	Rated heat output (*)	P _{sup}	4.4	kW
Thermostat-off mode	P _{TO}	0.025	kW	Type of energy input	Electric		
Standby mode	P _{SB}	0.025	kW				
Crankcase heater mode	P _{CK}	0.025	kW				
Other items							
Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	5015	m ³ /h
Sound power level, outdoors	L _{WA}	68	dB	For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	NA	m ³ /h
Annual energy consumption	Q _{HE}	7293	kWh				
For heat pump combination heater:							
Declared load profile	XL			Water heating energy efficiency	η_{wh}	87	%
Daily electricity consumption	Q _{elec}	9.164	kWh	Daily fuel consumption	Q _{fuel}	NA	kWh
Annual electricity consumption	AEC	2016	kWh	Annual fuel consumption	AFC	NA	GJ
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Water-to-water heat pump	N			Equipped with a supplementary heater	N		
Brine-to-water heat pump	N			Heat pump combination heater	Y		
Parameters declared for	Low-temperature application						
Parameters declared for	Warmer climate condition						
Item	symbol	value	unit	Item	symbol	value	unit
Rated heat output (*)	Prated	14	kW	Seasonal space heating energy efficiency	η_s	240	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T_j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j			
$T_j = -7\text{ °C}$	Pdh	NA	kW	$T_j = -7\text{ °C}$	COPd	NA	-
Degradation co-efficient (**)	Cdh	NA	-				
$T_j = 2\text{ °C}$	Pdh	13.7	kW	$T_j = 2\text{ °C}$	COPd	2.90	-
Degradation co-efficient (**)	Cdh	0.99	-				
$T_j = 7\text{ °C}$	Pdh	8.5	kW	$T_j = 7\text{ °C}$	COPd	5.36	-
Degradation co-efficient (**)	Cdh	0.98	-				
$T_j = 12\text{ °C}$	Pdh	3.7	kW	$T_j = 12\text{ °C}$	COPd	7.86	-
Degradation co-efficient (**)	Cdh	0.95	-				
$T_j = \text{bivalent temperature}$	Pdh	13.7	kW	$T_j = \text{bivalent temperature}$	COPd	2.90	-
$T_j = \text{operation limit temperature}$	Pdh	13.7	kW	$T_j = \text{operation limit temperature}$	COPd	2.90	-
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	Pdh	NA	kW	For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	COPd	NA	-
Bivalent temperature	Tbiv	2	°C	For air-to-water heat pumps: Operation limit temperature	TOL	2	°C
Cycling interval capacity for heating	Psych	NA	kW	Cycling interval efficiency	COPcyc	NA	-
				Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P _{OFF}	0.025	kW	Rated heat output (*)	P _{sup}	0.3	kW
Thermostat-off mode	P _{TO}	0.025	kW	Type of energy input	Electric		
Standby mode	P _{SB}	0.025	kW				
Crankcase heater mode	P _{CK}	0.025	kW				
Other items							
Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	5015	m ³ / h
Sound power level, outdoors	L _{WA}	68	dB	For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	NA	m ³ / h
Annual energy consumption	Q _{HE}	2995	kWh				
For heat pump combination heater:							
Declared load profile	XL			Water heating energy efficiency	η_{wh}	113	%
Daily electricity consumption	Q _{elec}	7.036	kWh	Daily fuel consumption	Q _{fuel}	NA	kWh
Annual electricity consumption	AEC	1548	kWh	Annual fuel consumption	AFC	NA	GJ
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