

Warm climate and Medium temperature (55)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i350/ i350F		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	184 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	13	kW	Seasonal space heating energy efficiency	η_s	180	%
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	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	12,8	kW	T _j = +2 °C	<i>COP_d</i>	2,33	-
T _j = +7 °C	<i>P_{dh}</i>	8,2	kW	T _j = +7 °C	<i>COP_d</i>	3,95	-
T _j = +12 °C	<i>P_{dh}</i>	5,8	kW	T _j = +12 °C	<i>COP_d</i>	6,16	-
T _j = bivalent temperature	<i>P_{dh}</i>	12,8	kW	T _j = bivalent temperature	<i>COP_d</i>	2,33	-
T _j = operation limit temperature	<i>P_{dh}</i>	12,8	kW	T _j = operation limit temperature	<i>COP_d</i>	2,33	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	2	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Electric			
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	Type of energy input			
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/61	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	3730	kWh				
For heat pump combination heater:							
Declared load profile	XL	Efficiency class	NA	Water heating energy efficiency	η_{wh}	112	%
Daily electricity consumption	<i>Q_{elec}</i>	6,835	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	1504	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ
						170710	

Contact details

Enertech AB, Box 309, SE-341 26 Ljungby Tel +46 372 88000

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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.

Warm climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i350/ i350F		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	244 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	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 °C	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	13,5	kW	T _j = +2 °C	<i>COP_d</i>	3,32	-
T _j = +7 °C	<i>P_{dh}</i>	8,7	kW	T _j = +7 °C	<i>COP_d</i>	5,67	-
T _j = +12 °C	<i>P_{dh}</i>	5,6	kW	T _j = +12 °C	<i>COP_d</i>	7,55	-
T _j = bivalent temperature	<i>P_{dh}</i>	13,5	kW	T _j = bivalent temperature	<i>COP_d</i>	3,32	-
T _j = operation limit temperature	<i>P_{dh}</i>	13,5	kW	T _j = operation limit temperature	<i>COP_d</i>	3,32	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	2	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-		6200	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/55	dB	-		na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	2968	kWh				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	NA	Water heating energy efficiency	η_{wh}	112	%
Daily electricity consumption	<i>Q_{elec}</i>	6,835	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	1504	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

170710Contact details [Enertech AB, Box 309, SE-341 26 Ljungby Tel +46 372 88000](mailto:ener@enertech.se) www.ctc.se(*) 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.

Average climate and Medium temperature (55)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i350/ i350F		
Air-to-water heat pump:	Yes	Energy efficiency class:	A++ -
Water-to-water heat pump:	No	Controller class:	VI -
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	136 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A++ -
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	9	kW	Seasonal space heating energy efficiency	η_s	132	%
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	<i>P_{dh}</i>	7,6	kW	T _j = -7 °C	<i>COP_d</i>	2,07	-
T _j = +2 °C	<i>P_{dh}</i>	4,6	kW	T _j = +2 °C	<i>COP_d</i>	3,49	-
T _j = +7 °C	<i>P_{dh}</i>	4,8	kW	T _j = +7 °C	<i>COP_d</i>	4,69	-
T _j = +12 °C	<i>P_{dh}</i>	5,8	kW	T _j = +12 °C	<i>COP_d</i>	6,36	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,4	kW	T _j = bivalent temperature	<i>COP_d</i>	1,71	-
T _j = operation limit temperature	<i>P_{dh}</i>	8,4	kW	T _j = operation limit temperature	<i>COP_d</i>	1,71	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-10	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	0,1	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	Other items			
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/61	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	5090	kWh	For heat pump combination heater:			
Declared load profile	XL	Efficiency class	A	Water heating energy efficiency	η_{wh}	98	%
Daily electricity consumption	<i>Q_{elec}</i>	7,816	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1720	kWh	Annual fuel consumption	<i>AFC</i>	NA	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.

Average climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i350/ i350F		
Air-to-water heat pump:	Yes	Energy efficiency class:	A++ -
Water-to-water heat pump:	No	Controller class:	VI -
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	181 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A+++ -
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	8	kW	Seasonal space heating energy efficiency	η_s	177	%
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	<i>P_{dh}</i>	6,9	kW	T _j = -7 °C	<i>COP_d</i>	3,09	-
T _j = +2 °C	<i>P_{dh}</i>	4,2	kW	T _j = +2 °C	<i>COP_d</i>	4,82	-
T _j = +7 °C	<i>P_{dh}</i>	5,0	kW	T _j = +7 °C	<i>COP_d</i>	6,18	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	7,62	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,0	kW	T _j = bivalent temperature	<i>COP_d</i>	2,72	-
T _j = operation limit temperature	<i>P_{dh}</i>	8,0	kW	T _j = operation limit temperature	<i>COP_d</i>	2,72	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-10	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Electric			
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	Type of energy input			
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/55	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	3526	kWh				
For heat pump combination heater:							
Declared load profile	XL	Efficiency class	A	Water heating energy efficiency	η_{wh}	98	%
Daily electricity consumption	<i>Q_{elec}</i>	7,816	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	1720	kWh	Annual fuel consumption	<i>AFC</i>	na	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.

Cold climate and Medium temperature (55)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i350/ i350F		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	125 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	10	kW	Seasonal space heating energy efficiency	η_s	121	%
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	<i>P_{dh}</i>	6,1	kW	T _j = -7 °C	<i>COP_d</i>	2,49	-
T _j = +2 °C	<i>P_{dh}</i>	4,1	kW	T _j = +2 °C	<i>COP_d</i>	4,12	-
T _j = +7 °C	<i>P_{dh}</i>	5,0	kW	T _j = +7 °C	<i>COP_d</i>	5,40	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	6,84	-
T _j = bivalent temperature	<i>P_{dh}</i>	7,9	kW	T _j = bivalent temperature	<i>COP_d</i>	1,69	-
T _j = operation limit temperature	<i>P_{dh}</i>	5,4	kW	T _j = operation limit temperature	<i>COP_d</i>	1,01	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	7,8	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,60	-
Bivalent temperature	<i>T_{biv}</i>	-14	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	4,6	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/61	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	7956	kWh				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	NA	Water heating energy efficiency	η_{wh}	82	%
Daily electricity consumption	<i>Q_{elec}</i>	9,257	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	2037	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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Cold climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i350/ i350F		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	153 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	11	kW	Seasonal space heating energy efficiency	η_s	149	%
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	<i>P_{dh}</i>	6,7	kW	T _j = -7 °C	<i>COP_d</i>	3,42	-
T _j = +2 °C	<i>P_{dh}</i>	4,1	kW	T _j = +2 °C	<i>COP_d</i>	4,51	-
T _j = +7 °C	<i>P_{dh}</i>	5,0	kW	T _j = +7 °C	<i>COP_d</i>	6,57	-
T _j = +12 °C	<i>P_{dh}</i>	5,6	kW	T _j = +12 °C	<i>COP_d</i>	7,53	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,4	kW	T _j = bivalent temperature	<i>COP_d</i>	2,44	-
T _j = operation limit temperature	<i>P_{dh}</i>	5,6	kW	T _j = operation limit temperature	<i>COP_d</i>	1,70	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	7,9	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	2,26	-
Bivalent temperature	<i>T_{biv}</i>	-13	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	5,4	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Type of energy input Electric			
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-	6200	<i>m³/h</i>	
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/55	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	7156	<i>kWh</i>				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	NA	Water heating energy efficiency	η_{wh}	82	%
Daily electricity consumption	<i>Q_{elec}</i>	9,257	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	AEC	2037	kWh	Annual fuel consumption	AFC	na	GJ

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Model(s):	CTC EcoAir 520M + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI -
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	184 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	13	kW	Seasonal space heating energy efficiency	η_s	180	%
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	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	12,8	kW	T _j = +2 °C	<i>COP_d</i>	2,33	-
T _j = +7 °C	<i>P_{dh}</i>	8,2	kW	T _j = +7 °C	<i>COP_d</i>	3,95	-
T _j = +12 °C	<i>P_{dh}</i>	5,8	kW	T _j = +12 °C	<i>COP_d</i>	6,16	-
T _j = bivalent temperature	<i>P_{dh}</i>	12,8	kW	T _j = bivalent temperature	<i>COP_d</i>	2,33	-
T _j = operation limit temperature	<i>P_{dh}</i>	12,8	kW	T _j = operation limit temperature	<i>COP_d</i>	2,33	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	2	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Electric			
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	Type of energy input			
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/61	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	3730	kWh				

For heat pump combination heater:

Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	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.

Warm climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	244 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	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 °C	P_{dh}	na	kW	T _j = -7 °C	COP_d	na	-
T _j = +2 °C	P_{dh}	13,5	kW	T _j = +2 °C	COP_d	3,32	-
T _j = +7 °C	P_{dh}	8,7	kW	T _j = +7 °C	COP_d	5,67	-
T _j = +12 °C	P_{dh}	5,6	kW	T _j = +12 °C	COP_d	7,55	-
T _j = bivalent temperature	P_{dh}	13,5	kW	T _j = bivalent temperature	COP_d	3,32	-
T _j = operation limit temperature	P_{dh}	13,5	kW	T _j = operation limit temperature	COP_d	3,32	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	P_{dh}	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	COP_d	na	-
Bivalent temperature	T_{biv}	2	°C	For air-to-water heat pumps: Operation limit temperature	TOL	2	°C
Cycling interval capacity for heating	P_{cych}	na	kW	Cycling interval efficiency	COP_{cyc}	na	-
Degradation co-efficient (**)	C_{dh}	0,99	-	Heating water operating limit temperature	WTOL	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,015	kW	Rated heat output (*)	P_{sup}	0,0	kW
Thermostat-off mode	P_{TO}	0,010	kW	Type of energy input Electric			
Standby mode	P_{SB}	0,000	kW				
Crankcase heater mode	P_{CK}	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-		6200	m ³ /h
Sound power level, indoors/outdoors	L_{WA}	na/55	dB	-		na	m ³ /h
Annual energy consumption	Q_{HE}	2968	kWh				
For heat pump combination heater:				Water heating energy efficiency			
Declared load profile	na			η_{wh}		na	%
Daily electricity consumption	Q_{elec}	na	kWh	Daily fuel consumption	Q_{fuel}	na	kWh
Annual electricity consumption	AEC	na	kWh	Annual fuel consumption	AFC	na	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 $C_{dh} = 0,9$.

Average climate and Medium temperature (55)

Model(s):	CTC EcoAir 520M + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	A++ -
Water-to-water heat pump:	No	Controller class:	VI -
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	136 %
Equipped with a supplementary heater:	No	Package efficiency class:	A++ -
Heat pump combination heater:	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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	P_{rated}	9	kW	Seasonal space heating energy efficiency	η_s	132	%
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	P_{dh}	7,6	kW	T _j = -7 °C	COP_d	2,07	-
T _j = +2 °C	P_{dh}	4,6	kW	T _j = +2 °C	COP_d	3,49	-
T _j = +7 °C	P_{dh}	4,8	kW	T _j = +7 °C	COP_d	4,69	-
T _j = +12 °C	P_{dh}	5,8	kW	T _j = +12 °C	COP_d	6,36	-
T _j = bivalent temperature	P_{dh}	8,4	kW	T _j = bivalent temperature	COP_d	1,71	-
T _j = operation limit temperature	P_{dh}	8,4	kW	T _j = operation limit temperature	COP_d	1,71	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	P_{dh}	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	COP_d	na	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	P_{cych}	na	kW	Cycling interval efficiency	COP_{cyc}	na	-
Degradation co-efficient (**)	C_{dh}	0,99	-	Heating water operating limit temperature	WTOL	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,015	kW	Rated heat output (*)	P_{sup}	0,1	kW
Thermostat-off mode	P_{TO}	0,010	kW	Type of energy input	Electric		
Standby mode	P_{SB}	0,000	kW				
Crankcase heater mode	P_{CK}	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-	6200	na	m ³ /h
Sound power level, indoors/outdoors	L_{WA}	na/61	dB	-	na		m ³ /h
Annual energy consumption	Q_{HE}	5090	kWh				
For heat pump combination heater:				For heat pump combination heater:			
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	Q_{elec}	na	kWh	Daily fuel consumption	Q_{fuel}	NA	kWh
Annual electricity consumption	AEC	na	kWh	Annual fuel consumption	AFC	NA	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_{design} , 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 $C_{dh} = 0,9$.

Average climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	A++ -
Water-to-water heat pump:	No	Controller class:	VI -
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	181 %
Equipped with a supplementary heater:	No	Package efficiency class:	A+++ -
Heat pump combination heater:	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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	8	kW	Seasonal space heating energy efficiency	η_s	177	%
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	<i>P_{dh}</i>	6,9	kW	T _j = -7 °C	<i>COP_d</i>	3,09	-
T _j = +2 °C	<i>P_{dh}</i>	4,2	kW	T _j = +2 °C	<i>COP_d</i>	4,82	-
T _j = +7 °C	<i>P_{dh}</i>	5,0	kW	T _j = +7 °C	<i>COP_d</i>	6,18	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	7,62	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,0	kW	T _j = bivalent temperature	<i>COP_d</i>	2,72	-
T _j = operation limit temperature	<i>P_{dh}</i>	8,0	kW	T _j = operation limit temperature	<i>COP_d</i>	2,72	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-10	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Type of energy input Electric			
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-	6200	<i>m³/h</i>	
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/55	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	3526	<i>kWh</i>				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	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_{design}*, 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.



Model(s):	CTC EcoAir 520M + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	125 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	10	kW	Seasonal space heating energy efficiency	η_s	121	%
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	<i>P_{dh}</i>	6,1	kW	T _j = -7 °C	<i>COP_d</i>	2,49	-
T _j = +2 °C	<i>P_{dh}</i>	4,1	kW	T _j = +2 °C	<i>COP_d</i>	4,12	-
T _j = +7 °C	<i>P_{dh}</i>	5,0	kW	T _j = +7 °C	<i>COP_d</i>	5,40	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	6,84	-
T _j = bivalent temperature	<i>P_{dh}</i>	7,9	kW	T _j = bivalent temperature	<i>COP_d</i>	1,69	-
T _j = operation limit temperature	<i>P_{dh}</i>	5,4	kW	T _j = operation limit temperature	<i>COP_d</i>	1,01	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	7,8	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,60	-
Bivalent temperature	<i>T_{biv}</i>	-14	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	4,6	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Type of energy input Electric			
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-	6200	<i>m³/h</i>	
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/61	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	7956	<i>kWh</i>				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	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.

Cold climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoLogic		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	153 %
Equipped with a supplementary heater:	No	Package efficiency class:	-
Heat pump combination heater:	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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	11	kW	Seasonal space heating energy efficiency	η_s	149	%
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	<i>P_{dh}</i>	6,7	kW	T _j = -7 °C	<i>COP_d</i>	3,42	-
T _j = +2 °C	<i>P_{dh}</i>	4,1	kW	T _j = +2 °C	<i>COP_d</i>	4,51	-
T _j = +7 °C	<i>P_{dh}</i>	5,0	kW	T _j = +7 °C	<i>COP_d</i>	6,57	-
T _j = +12 °C	<i>P_{dh}</i>	5,6	kW	T _j = +12 °C	<i>COP_d</i>	7,53	-
T _j = bivalent temperature	<i>P_{dh}</i>	8,4	kW	T _j = bivalent temperature	<i>COP_d</i>	2,44	-
T _j = operation limit temperature	<i>P_{dh}</i>	5,6	kW	T _j = operation limit temperature	<i>COP_d</i>	1,70	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	7,9	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	2,26	-
Bivalent temperature	<i>T_{biv}</i>	-13	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	5,4	kW
Thermostat-off mode	<i>P_{TO}</i>	0,010	kW	Type of energy input Electric			
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-	6200	<i>m³/h</i>	
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/55	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	7156	<i>kWh</i>				
For heat pump combination heater:							
Declared load profile	na			Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	<i>Q_{elec}</i>	na	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	na	kWh	Annual fuel consumption	<i>AFC</i>	na	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.



Model(s):	CTC EcoAir 520M + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	145 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	12	kW	Seasonal space heating energy efficiency	η_s	141	%
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	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	12,3	kW	T _j = +2 °C	<i>COP_d</i>	1,54	-
T _j = +7 °C	<i>P_{dh}</i>	8,0	kW	T _j = +7 °C	<i>COP_d</i>	3,05	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	5,28	-
T _j = bivalent temperature	<i>P_{dh}</i>	12,3	kW	T _j = bivalent temperature	<i>COP_d</i>	1,54	-
T _j = operation limit temperature	<i>P_{dh}</i>	12,3	kW	T _j = operation limit temperature	<i>COP_d</i>	1,54	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	2	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,031	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,009	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,031	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	Other items			
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/61	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	4525	kWh	For heat pump combination heater:			

Declared load profile	L	Efficiency class	NA	Water heating energy efficiency	η_{wh}	66	%
Daily electricity consumption	<i>Q_{elec}</i>	7,118	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1566	kWh	Annual fuel consumption	<i>AFC</i>	NA	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.



Warm climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	197 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	13	kW	Seasonal space heating energy efficiency	η_s	193	%
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	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	13,3	kW	T _j = +2 °C	<i>COP_d</i>	2,43	-
T _j = +7 °C	<i>P_{dh}</i>	8,6	kW	T _j = +7 °C	<i>COP_d</i>	4,61	-
T _j = +12 °C	<i>P_{dh}</i>	5,6	kW	T _j = +12 °C	<i>COP_d</i>	6,31	-
T _j = bivalent temperature	<i>P_{dh}</i>	13,3	kW	T _j = bivalent temperature	<i>COP_d</i>	2,43	-
T _j = operation limit temperature	<i>P_{dh}</i>	13,3	kW	T _j = operation limit temperature	<i>COP_d</i>	2,43	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	2	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,031	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,005	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,031	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/55	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	3634	kWh				

For heat pump combination heater:

Declared load profile	L	Efficiency class	NA	Water heating energy efficiency	η_{wh}	66	%
Daily electricity consumption	<i>Q_{elec}</i>	7,118	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1566	kWh	Annual fuel consumption	<i>AFC</i>	NA	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.

Average climate and Medium temperature (55)

Model(s):	CTC EcoAir 520M + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	A+ -
Water-to-water heat pump:	No	Controller class:	VI -
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	118 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A+ -
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	7	kW	Seasonal space heating energy efficiency	η_s	114	%
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	<i>P_{dh}</i>	6,6	kW	T _j = -7 °C	<i>COP_d</i>	1,75	-
T _j = +2 °C	<i>P_{dh}</i>	4,1	kW	T _j = +2 °C	<i>COP_d</i>	2,94	-
T _j = +7 °C	<i>P_{dh}</i>	4,6	kW	T _j = +7 °C	<i>COP_d</i>	4,01	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	5,55	-
T _j = bivalent temperature	<i>P_{dh}</i>	6,6	kW	T _j = bivalent temperature	<i>COP_d</i>	1,75	-
T _j = operation limit temperature	<i>P_{dh}</i>	7,2	kW	T _j = operation limit temperature	<i>COP_d</i>	1,47	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-7	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,031	kW	Rated heat output (*)	<i>P_{sup}</i>	0,2	kW
Thermostat-off mode	<i>P_{TO}</i>	0,009	kW	Type of energy input Electric			
Standby mode	<i>P_{SB}</i>	0,031	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-	6200	<i>m³/h</i>	
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/61	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	5246	<i>kWh</i>				
For heat pump combination heater:							
Declared load profile	L	Efficiency class	B	Water heating energy efficiency	η_{wh}	53	%
Daily electricity consumption	<i>Q_{elec}</i>	8,780	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1932	kWh	Annual fuel consumption	<i>AFC</i>	NA	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.

Average climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	A++ -
Water-to-water heat pump:	No	Controller class:	VI -
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	154 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A+++ -
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	8	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	<i>P_{dh}</i>	6,7	kW	T _j = -7 °C	<i>COP_d</i>	2,51	-
T _j = +2 °C	<i>P_{dh}</i>	4,0	kW	T _j = +2 °C	<i>COP_d</i>	3,93	-
T _j = +7 °C	<i>P_{dh}</i>	4,9	kW	T _j = +7 °C	<i>COP_d</i>	5,12	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	6,38	-
T _j = bivalent temperature	<i>P_{dh}</i>	6,7	kW	T _j = bivalent temperature	<i>COP_d</i>	2,51	-
T _j = operation limit temperature	<i>P_{dh}</i>	7,7	kW	T _j = operation limit temperature	<i>COP_d</i>	2,25	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-7	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,031	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,005	kW	Electric			
Standby mode	<i>P_{SB}</i>	0,031	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	Type of energy input			
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/ outdoors	<i>L_{WA}</i>	na/55	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	4047	kWh				

For heat pump combination heater:

Declared load profile	L	Efficiency class	B	Water heating energy efficiency	η_{wh}	53	%
Daily electricity consumption	<i>Q_{elec}</i>	8,780	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1932	kWh	Annual fuel consumption	<i>AFC</i>	NA	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_{design}*, 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.



Model(s):	CTC EcoAir 520M + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	108 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	8	kW	Seasonal space heating energy efficiency	η_s	104	%
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	<i>P_{dh}</i>	5,0	kW	T _j = -7 °C	<i>COP_d</i>	2,16	-
T _j = +2 °C	<i>P_{dh}</i>	3,4	kW	T _j = +2 °C	<i>COP_d</i>	3,57	-
T _j = +7 °C	<i>P_{dh}</i>	4,7	kW	T _j = +7 °C	<i>COP_d</i>	4,72	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	6,03	-
T _j = bivalent temperature	<i>P_{dh}</i>	5,9	kW	T _j = bivalent temperature	<i>COP_d</i>	1,79	-
T _j = operation limit temperature	<i>P_{dh}</i>	4,4	kW	T _j = operation limit temperature	<i>COP_d</i>	1,14	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	6,3	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,49	-
Bivalent temperature	<i>T_{biv}</i>	-11	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,026	kW	Rated heat output (*)	<i>P_{sup}</i>	8,2	kW
Thermostat-off mode	<i>P_{TO}</i>	0,028	kW	Type of energy input Electric			
Standby mode	<i>P_{SB}</i>	0,000	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-	6200	<i>m³/h</i>	
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/61	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	7524	<i>kWh</i>				

For heat pump combination heater:							
Declared load profile	L	Efficiency class	NA	Water heating energy efficiency	η_{wh}	46	%
Daily electricity consumption	<i>Q_{elec}</i>	10,113	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	2225	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ

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(*) 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.

Cold climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoZenith 250		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	126 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	11	kW	Seasonal space heating energy efficiency	η_s	122	%
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	<i>P_{dh}</i>	6,4	kW	T _j = -7 °C	<i>COP_d</i>	2,85	-
T _j = +2 °C	<i>P_{dh}</i>	3,9	kW	T _j = +2 °C	<i>COP_d</i>	3,62	-
T _j = +7 °C	<i>P_{dh}</i>	4,9	kW	T _j = +7 °C	<i>COP_d</i>	5,51	-
T _j = +12 °C	<i>P_{dh}</i>	5,6	kW	T _j = +12 °C	<i>COP_d</i>	6,29	-
T _j = bivalent temperature	<i>P_{dh}</i>	7,2	kW	T _j = bivalent temperature	<i>COP_d</i>	2,56	-
T _j = operation limit temperature	<i>P_{dh}</i>	5,9	kW	T _j = operation limit temperature	<i>COP_d</i>	1,84	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	7,6	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,96	-
Bivalent temperature	<i>T_{biv}</i>	-10	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,031	kW	Rated heat output (*)	<i>P_{sup}</i>	10,5	kW
Thermostat-off mode	<i>P_{TO}</i>	0,005	kW	Type of energy input Electric			
Standby mode	<i>P_{SB}</i>	0,031	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/55	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	8260	kWh				

For heat pump combination heater:

Declared load profile	L	Efficiency class	NA	Water heating energy efficiency	η_{wh}	46	%
Daily electricity consumption	<i>Q_{elec}</i>	10,113	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	AEC	2225	kWh	Annual fuel consumption	AFC	NA	GJ

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(*) 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.

Warm climate and Medium temperature (55)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i550 230/400V		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	147 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	12	kW	Seasonal space heating energy efficiency	η_s	143	%
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	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	12,3	kW	T _j = +2 °C	<i>COP_d</i>	1,54	-
T _j = +7 °C	<i>P_{dh}</i>	8,0	kW	T _j = +7 °C	<i>COP_d</i>	3,05	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	5,28	-
T _j = bivalent temperature	<i>P_{dh}</i>	12,3	kW	T _j = bivalent temperature	<i>COP_d</i>	1,54	-
T _j = operation limit temperature	<i>P_{dh}</i>	12,3	kW	T _j = operation limit temperature	<i>COP_d</i>	1,54	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	2	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,024	kW	Electric			
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	Type of energy input			
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors			
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/61	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Annual energy consumption	<i>Q_{HE}</i>	4479	kWh				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	NA	Water heating energy efficiency	η_{wh}	112	%
Daily electricity consumption	<i>Q_{elec}</i>	6,835	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	1504	kWh	Annual fuel consumption	<i>AFC</i>	na	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.

Warm climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i550 230/400V		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	197 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	13	kW	Seasonal space heating energy efficiency	η_s	193	%
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	<i>P_{dh}</i>	na	kW	T _j = -7 °C	<i>COP_d</i>	na	-
T _j = +2 °C	<i>P_{dh}</i>	13,3	kW	T _j = +2 °C	<i>COP_d</i>	2,43	-
T _j = +7 °C	<i>P_{dh}</i>	8,6	kW	T _j = +7 °C	<i>COP_d</i>	4,61	-
T _j = +12 °C	<i>P_{dh}</i>	5,6	kW	T _j = +12 °C	<i>COP_d</i>	6,31	-
T _j = bivalent temperature	<i>P_{dh}</i>	13,3	kW	T _j = bivalent temperature	<i>COP_d</i>	2,43	-
T _j = operation limit temperature	<i>P_{dh}</i>	13,3	kW	T _j = operation limit temperature	<i>COP_d</i>	2,43	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	2	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	2	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,99	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,073	kW	Type of energy input Electric			
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/55	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	3628	kWh				
For heat pump combination heater:							
Declared load profile	XL	Efficiency class	NA	Water heating energy efficiency	η_{wh}	112	%
Daily electricity consumption	<i>Q_{elec}</i>	6,835	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	1504	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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**Average climate and Medium temperature (55)**

Model(s):	CTC EcoAir 520M + CTC EcoZenith i550 230/400V		
Air-to-water heat pump:	Yes	Energy efficiency class:	A+ -
Water-to-water heat pump:	No	Controller class:	VI -
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	119 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A+ -
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	7	kW	Seasonal space heating energy efficiency	η_s	115	%
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	<i>P_{dh}</i>	7,6	kW	T _j = -7 °C	<i>COP_d</i>	1,75	-
T _j = +2 °C	<i>P_{dh}</i>	4,1	kW	T _j = +2 °C	<i>COP_d</i>	2,94	-
T _j = +7 °C	<i>P_{dh}</i>	4,6	kW	T _j = +7 °C	<i>COP_d</i>	4,01	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	5,55	-
T _j = bivalent temperature	<i>P_{dh}</i>	6,6	kW	T _j = bivalent temperature	<i>COP_d</i>	1,75	-
T _j = operation limit temperature	<i>P_{dh}</i>	7,2	kW	T _j = operation limit temperature	<i>COP_d</i>	1,47	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-7	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,015	kW	Rated heat output (*)	<i>P_{sup}</i>	0,2	kW
Thermostat-off mode	<i>P_{TO}</i>	0,024	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/61	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	5201	kWh				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	A	Water heating energy efficiency	η_{wh}	98	%
Daily electricity consumption	<i>Q_{elec}</i>	7,816	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	NA	kWh
Annual electricity consumption	<i>AEC</i>	1719	kWh	Annual fuel consumption	<i>AFC</i>	NA	GJ

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Average climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i550 230/400V		
Air-to-water heat pump:	Yes	Energy efficiency class:	A++ -
Water-to-water heat pump:	No	Controller class:	VI -
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	156 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	A++ -
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	8	kW	Seasonal space heating energy efficiency	η_s	152	%
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	<i>P_{dh}</i>	6,7	kW	T _j = -7 °C	<i>COP_d</i>	2,51	-
T _j = +2 °C	<i>P_{dh}</i>	4,0	kW	T _j = +2 °C	<i>COP_d</i>	3,93	-
T _j = +7 °C	<i>P_{dh}</i>	4,3	kW	T _j = +7 °C	<i>COP_d</i>	5,12	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	6,37	-
T _j = bivalent temperature	<i>P_{dh}</i>	6,7	kW	T _j = bivalent temperature	<i>COP_d</i>	2,51	-
T _j = operation limit temperature	<i>P_{dh}</i>	7,7	kW	T _j = operation limit temperature	<i>COP_d</i>	2,25	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	na	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	na	-
Bivalent temperature	<i>T_{biv}</i>	-7	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-10	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	0,0	kW
Thermostat-off mode	<i>P_{TO}</i>	0,073	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/55	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	4011	kWh				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	A	Water heating energy efficiency	η_{wh}	98	%
Daily electricity consumption	<i>Q_{elec}</i>	7,816	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	1719	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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Model(s):	CTC EcoAir 520M + CTC EcoZenith i550 230/400V		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	109 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>Prated</i>	8	kW	Seasonal space heating energy efficiency	η_s	105	%
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	<i>P_{dh}</i>	6,1	kW	T _j = -7 °C	<i>COP_d</i>	2,16	-
T _j = +2 °C	<i>P_{dh}</i>	3,4	kW	T _j = +2 °C	<i>COP_d</i>	3,57	-
T _j = +7 °C	<i>P_{dh}</i>	4,7	kW	T _j = +7 °C	<i>COP_d</i>	4,72	-
T _j = +12 °C	<i>P_{dh}</i>	5,7	kW	T _j = +12 °C	<i>COP_d</i>	6,03	-
T _j = bivalent temperature	<i>P_{dh}</i>	5,9	kW	T _j = bivalent temperature	<i>COP_d</i>	1,79	-
T _j = operation limit temperature	<i>P_{dh}</i>	4,4	kW	T _j = operation limit temperature	<i>COP_d</i>	1,14	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	6,3	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,49	-
Bivalent temperature	<i>T_{biv}</i>	-11	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	8,2	kW
Thermostat-off mode	<i>P_{TO}</i>	0,024	kW	Type of energy input Electric			
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors			
Other items				For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			
Capacity control	Variable			-	6200	<i>m³/h</i>	
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/61	<i>dB</i>	-	na	<i>m³/h</i>	
Annual energy consumption	<i>Q_{HE}</i>	7497	<i>kWh</i>				

For heat pump combination heater:							
Declared load profile	XL	Efficiency class	NA	Water heating energy efficiency	η_{wh}	82	%
Daily electricity consumption	<i>Q_{elec}</i>	9,257	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	<i>AEC</i>	2037	kWh	Annual fuel consumption	<i>AFC</i>	na	GJ

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Cold climate and Low temperature (35)

Model(s):	CTC EcoAir 520M + CTC EcoZenith i550 230/400V		
Air-to-water heat pump:	Yes	Energy efficiency class:	-
Water-to-water heat pump:	No	Controller class:	VI
Brine-to-water heat pump:	No	Controller contribution:	4 %
Low-temperature heat pump:	No	Package efficiency:	127 %
Equipped with a supplementary heater:	Yes	Package efficiency class:	-
Heat pump combination heater:	Yes		

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.

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	<i>P_{rated}</i>	11	kW	Seasonal space heating energy efficiency	η_s	123	%
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	<i>P_{dh}</i>	6,7	kW	T _j = -7 °C	<i>COP_d</i>	2,85	-
T _j = +2 °C	<i>P_{dh}</i>	3,9	kW	T _j = +2 °C	<i>COP_d</i>	3,62	-
T _j = +7 °C	<i>P_{dh}</i>	4,9	kW	T _j = +7 °C	<i>COP_d</i>	5,51	-
T _j = +12 °C	<i>P_{dh}</i>	5,6	kW	T _j = +12 °C	<i>COP_d</i>	6,29	-
T _j = bivalent temperature	<i>P_{dh}</i>	7,2	kW	T _j = bivalent temperature	<i>COP_d</i>	2,56	-
T _j = operation limit temperature	<i>P_{dh}</i>	5,9	kW	T _j = operation limit temperature	<i>COP_d</i>	1,84	-
For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>P_{dh}</i>	7,6	kW	For air-to-water heat pumps: T _j = -15 °C (if TOL < -20 °C)	<i>COP_d</i>	1,96	-
Bivalent temperature	<i>T_{biv}</i>	-10	°C	For air-to-water heat pumps: Operation limit temperature	<i>TOL</i>	-22	°C
Cycling interval capacity for heating	<i>P_{cych}</i>	na	kW	Cycling interval efficiency	<i>COP_{cyc}</i>	na	-
Degradation co-efficient (**)	<i>C_{dh}</i>	0,98	-	Heating water operating limit temperature	<i>WTOL</i>	55	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	<i>P_{OFF}</i>	0,018	kW	Rated heat output (*)	<i>P_{sup}</i>	10,5	kW
Thermostat-off mode	<i>P_{TO}</i>	0,073	kW	Type of energy input	Electric		
Standby mode	<i>P_{SB}</i>	0,018	kW				
Crankcase heater mode	<i>P_{CK}</i>	0,000	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	6200	m ³ /h
Sound power level, indoors/outdoors	<i>L_{WA}</i>	na/55	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	na	m ³ /h
Annual energy consumption	<i>Q_{HE}</i>	8238	kWh				

For heat pump combination heater:

Declared load profile	XL	Efficiency class	NA	Water heating energy efficiency	η_{wh}	82	%
Daily electricity consumption	<i>Q_{elec}</i>	9,257	kWh	Daily fuel consumption	<i>Q_{fuel}</i>	na	kWh
Annual electricity consumption	AEC	2037	kWh	Annual fuel consumption	AFC	na	GJ

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