Information for heat pump space heaters and heat pump combination heaters Warm climate and Medium temperature

CTC AB Ljungby



Model(s):	CTC CombiAir 1	CTC CombiAir 12M + 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:	189	%				
Equipped with a supplementary heater:	No	Package efficiency class:		-				
Heat pump combination heater:	No							

ltem	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	12	kW	Seasonal space heating energy efficiency	η _s	185	%
Declared capacity for heating fo outdoor temperature T j	r part load at in	door temperati	ure 20 °C and	Declared coefficient of performat part load at indoor temperature 2			
T j = – 7 °C	Pdh	na	kW	T j = – 7 °C	COPd	na] -
T j = + 2 °C	Pdh	9,3	kW	T j = +2 °C	COPd	2,47	-
T j = + 7 °C	Pdh	7,8	kW	T j = +7 °C	COPd	3,77	-
T j = + 12 °C	Pdh	5,1	kW	T j = +12 °C	COPd	6,70	-
T j = bivalent temperature	Pdh	10,4	kW	T j = bivalent temperature	COPd	2,92	-
T j = operation limit temperature	Pdh	9,3	kW	T j = operation limit temperature	COPd	2,47	-
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	T _{biv}	4	°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	СОРсус	na	-
Degradation co-efficient	Cdh	0,97	-	Heating water operating limit temperature	WTOL	58	°C
Power consumption in modes o	ther than active	mode		Supplementary heater			-
Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	2,7	kW
Thermostat-off mode	P _{TO}	0,014	kW				
Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Crankcase heater mode	Р _{СК}	0,035	kW				
Other items							T
Capacity control		Variable		For air-to-water heat pumps: Rated air flow rate, outdoors	-	4380	m3/
Sound power level, indoors/ outdoors	L _{WA}	-/57	dB	For water-/brine-to-water heat pumps: Rated brine or water	-	na	m3/
Annual energy consumption	Q _{HE}	3445	kWh	flow rate, outdoor heat exchanger			1113/1
For heat pump combination hea	iter:						
Declared load profile	na	Efficiency class	na	Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	Qelec	na	kWh	Daily fuel consumption	Qfuel	NA	kWl
Annual electricity consumption	AEC	na	kWh	Annual fuel consumption	AFC	NA	GJ
Specific precautions and end of life information:		end of the produc importance that th	t's life cycle, it mus ne product's refrig	a recycling station or with the installation eng st be sent correctly to a waste station or resell erant, compressor oil and electrical/electronic Id waste is not permitted.	er offering a serv	vice of that type.	It is of g
Contact details C	TC AB, Box 309	SE-341 26 Liun	ohv Tel +46 37	2 88000 www.ctc.se			23121

Information for heat pump space heaters and heat pump combination heaters Warm climate and Low temperature

CTC AB Ljungby



Model(s):	CTC CombiAir 12M + 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:	233	%			
Equipped with a supplementary heater:	No	Package efficiency class:		-			
Heat pump combination heater:	No						

	Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
outdoor temperature T j $T = -7^{\circ}C$ Pdhna $T = -7^{\circ}C$ Pdhna $T = -7^{\circ}C$ Pdh $7,8$ $T = +7^{\circ}C$ Pdh $7,8$ $T = +7^{\circ}C$ Pdh $7,8$ $T = +12^{\circ}C$ Pdh $4,8$ kWKW $T = +7^{\circ}C$ $T = +12^{\circ}C$ Pdh $4,8$ kWT = +7^{\circ}CCOPd $3,76$ $T = bysident temperaturePdh9,2kWT = bysident temperatureCOPd4,17T = bysident temperaturePdh9,2kWT = bysident temperatureCOPd3,76T = -15^{\circ}C (if TOL < -20^{\circ}C)PdhnakWFor air-to-water heat pumps:ToL2T = -15^{\circ}C (if TOL < -20^{\circ}C)Pdhnabivalent temperatureT biv4°COperation limitPoreCOPdnaT = -15^{\circ}C (if TOL < -20^{\circ}C)COPdnaPower consumption in modes other than active modeKWCycling interval efficiencyCOPcycOff modeP air0.002kWThermostat-off modeP air0.002kWOther itemsCapacity controlVariableFor air-to-water heat pumps:Sound power level, indoors/L wa-/57dBOutdoorsL wa-/57dBDaily electricity consumptionQelecnaAnnual energy consumptionQelecnaDaily electricity$	Rated heat output (*)	Prated	12	kW		η _s	229	%
T j = + 2° C T j = + 7° C T j = + 7° CPdh9,2 7,8WW WWT j = + 2° C T j = + 7° C C COPdCOPd3,76 5,13- - - - T j = + 12° C- C COPd3,76 7,48- - - - - - - - - T j = + 12° CC COPd3,76 - - - - - - - - - - - - - 		or part load at in	door temperati	ure 20 °C and		-		
T j = + 7 °CPdhT,BKWT j = + 7 °CCOPd5,13-T j = + 1 °CPdh4,8KWT j = + 1 °CCOPd7,48-T j = bivalent temperaturePdh10,3KWT j = bivalent temperatureCOPd4,17-T j = operation limitPdh9,2KWT j = operation limitCOPd3,76-For air-to-water heat pumps:PdhnaKWT j = -15 °C (if TOL < -20 °C)	T j = – 7 °C	Pdh	na	kW	T j = − 7 °C	COPd	na	- [
T j = + 12 °CPdh4,8kWT j = +12 °CCOPd7,48-T j = bivalent temperaturePdh10,3kWT j = bivalent temperatureCOPd4,17-T j = operation limit temperaturePdh9,2kWT j = operation limit temperatureCOPd3,76-For air-to-water heat pumps: T j = -15 °C (if TOL < - 20 °C)	T j = + 2 °C	Pdh	-	kW	-	COPd		-
Tj = bivalent temperaturePdh10,3kWTj = bivalent temperatureCOPd4,17T j = operation limit temperaturePdh9,2kWT j = operation limit temperatureCOPd3,76For air-to-water heat pumps: T j = -15 °C (if TOL < -20 °C)		Pdh		kW		COPd		-
T j = operation limit temperature Pdh $9,2$ kW T j = operation limit temperature $COPd$ $3,76$ $-$ For air-to-water heat pumps: T j = -15 °C (if TOL < - 20 °C)	T j = + 12 °C	Pdh	4,8	kW	T j = +12 °C	COPd	7,48	
temperaturePdn9,2kWtemperatureCOPd3,76-For air-to-water heat pumps: T j = -15 °C (if TOL < -20 °C)	T j = bivalent temperature	Pdh	10,3	kW	T j = bivalent temperature	COPd	4,17	-
T j = -15 *C (if TOL < - 20 *C)PainnakWT j = -15 *C (if TOL < - 20 *C)COPana-Bivalent temperatureT biv4*CFor air-to-water heat pumps: Operation limit temperatureTOL2*CCycling interval capacity for heatingP cychnakWCycling interval efficiencyCOPcycna-Degradation co-efficientCdh0,97Heating water operating limit temperatureWTOL58*CPower consumption in modes other than active mode0,002kWRated heat output (*)Psup2,8kWThermostat-off modeP cor to 0,0200,002kWType of energy inputElectricCapacity controlVariableFor air-to-water heat pumps: cankcase heater mode-4380m3/hSound power level, indoors/ outdoorsL wA-/57dBdBmamaAnnual energy consumptionQ HE2765kWhFor air-to-water heat pumps: na exchanger-nam3/hFor heat pump combination heater:Declared load profilenakWhDaily fuel consumptionQfuelNAkWhAnnual electricity consumptionQelecnakWhDaily fuel consumptionAFCNAGJDaily electricity consumptionAECnakWhAnnual fuel consumptionAFCNAGJSpecific precautions and end of the information:The packaging must be deposited at a recycing station or with the installa		Pdh	9,2	kW		COPd	3,76	-
Bivalent temperature T biv 4 *C Operation limit temperature TOL 2 *C Cycling interval capacity for heating P cych na kW Operation limit temperature TOL 2 *C Degradation co-efficient Cdh 0,97 - Heating water operating limit temperature COPCyc na - Power consumption in modes other than active mode 0,002 kW Heating water operating limit temperature WTOL 58 *C Power consumption in modes other than active mode 0,002 kW Supplementary heater Rated heat output (*) Psup 2,8 kW Thermostat-off mode P or 0,002 kW Type of energy input Electric Electric Crankcase heater mode P ox 0,035 kW Type of energy input Electric Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors - 4380 m3/h Sound power level, indoors/ L WA -/57 dB Der vater-/brine-to-water heat pumps: Rated brine or water - na m3/h For heat pump combination heater: Declared load profile na KWh Annual fuel consumption Qruel NA KWh <t< td=""><td></td><td>Pdh</td><td>na</td><td>kW</td><td></td><td>COPd</td><td>na</td><td>-</td></t<>		Pdh	na	kW		COPd	na	-
heating P_{cych} nakWCycling interval efficiency $COPcyc$ naDegradation co-efficient Cdh $0,97$ Heating water operating limit temperature $WTOL$ 58°CPower consumption in modes other than active mode $0,002$ kW Supplementary heater Rated heat output (*) $Psup$ $2,8$ kW Off mode P_{orer} $0,002$ kW Supplementary heater Rated heat output (*) $Psup$ $2,8$ kW Thermostat-off mode P_{orer} $0,015$ kW Type of energy input $Electric$ Crankcase heater mode P_{cx} $0,035$ kW Type of energy input $Electric$ Capacity controlVariable $Variable$ For air-to-water heat pumps: Rated air flow rate, outdoors 4380 $m3/h$ Sound power level, indoors/ outdoors L_{WA} $-/57$ dB dB dG $m3/h$ Annual energy consumption Q_{HE} 2765 kWh For water -/brine-to-water heat pumps: Rated brine or water 	Bivalent temperature	T _{biv}	4	°C		TOL	2	°C
Degradation co-efficient Cdh 0,97 temperature WTOL 58 °C Power consumption in modes other than active mode Off mode Porr 0,002 kW Supplementary heater Rated heat output (*) Psup 2,8 kW Thermostat-off mode P ro 0,002 kW Supplementary heater Rated heat output (*) Psup 2,8 kW Standby mode P se 0,015 kW Type of energy input Electric Electric Electric Capacity control Variable Variable For air-to-water heat pumps: Rated air flow rate, outdoors 4380 m3/h Sound power level, indoors/ outdoors L wA -/57 dB pumps: Rated brine or water na m3/h Annual energy consumption Q HE 2765 kWh Paily fuel consumption na m3/h Daily electricity consumption Qelec na kWh Annual fuel consumption Qfuel NA kWh Annual electricity consumption AEC na kWh Annual fuel consumption AFC NA GJ Daily electricity consumptio		P _{cych}	na	kW	Cycling interval efficiency	СОРсус	na	-
Off mode P orf 0,002 kW Thermostat-off mode P ro 0,002 kW Standby mode P sg 0,015 kW Crankcase heater mode P cc 0,035 kW Other items 0,035 kW Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors 4380 m3/h Sound power level, indoors/ outdoors L wA -/57 dB dB m3/h Annual energy consumption Q HE 2765 kWh For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger na m3/h For heat pump combination heater: Declared load profile na Efficiency class na Water heating energy efficiency N_wh na % Daily electricity consumption Qelec na kWh Annual fuel consumption Qfuel NA kWh Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waster management. At the end of the product's life cycle, in must be sent correctly to a waste station or reseller of that type. It's of great importance that the product's life cycle, in the ust be sent correct or foreing a service of that type. It's of great importance that the product's life cycle, in the installation or equipment are properly disposed of. Disposing of	Degradation co-efficient	Cdh	0,97	-	s . s	WTOL	58	°C
Thermostat-off mode P TO 0,020 kW Standby mode P SB 0,015 kW Crankcase heater mode P CK 0,035 kW Other items 0,035 kW Type of energy input Electric Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors - 4380 m3/h Sound power level, indoors/ outdoors L WA -/57 dB dB pumps: Rated brine or water - na m3/h For heat pump combination heater: Efficiency na exchanger - na % Daily electricity consumption Qelec na kWh Annual fuel consumption Qfuel NA kWh Annual electricity consumption AEC na kWh Annual fuel consumption Qfuel NA kWh Annual electricity consumption AEC na kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's ifferycic, it must be sent corre	Power consumption in modes	other than active	mode		Supplementary heater			_
Standby mode P 58 0,015 kW Type of energy input Electric Crankcase heater mode P cx 0,035 kW Type of energy input Electric Other items	Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	2,8	kW
Crankcase heater mode P cx 0,035 kW Other items Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors - 4380 m3/h Sound power level, indoors/ outdoors L wA -/57 dB For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger - na m3/h For heat pump combination heater: 2765 kWh Water heating energy efficiency - na m3/h Declared load profile na Efficiency class na Water heating energy efficiency Nwh na % Daily electricity consumption Qelec na kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption AEC na kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Thermostat-off mode	P _{TO}	0,020	kW				
Other items Capacity control Variable Sound power level, indoors/ outdoors L wa -/57 dB Annual energy consumption Q HE 2765 kWh For heat pump combination heater: Efficiency class na m3/h Daily electricity consumption Qelec na kWh Mater heating energy efficiency na % Daily electricity consumption AEC na kWh Annual fuel consumption Qfuel NA kWh Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the product's refrigerant, compressor oil and electricia/electronic equipment are properly disposed of.	Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors 4380 m3/h Sound power level, indoors/ outdoors L _{WA} -/57 dB For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat - na m3/h Annual energy consumption Q _{HE} 2765 kWh For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat - na m3/h For heat pump combination heater: Efficiency class na Water heating energy efficiency na % Daily electricity consumption Qelec na kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption AEC na kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Crankcase heater mode	Р _{СК}	0,035	kW				
Capacity control Variable Rated air flow rate, outdoors 4380 m3/h Sound power level, indoors/ outdoors L WA -/57 dB For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger na m3/h Annual energy consumption Q HE 2765 kWh For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger na m3/h For heat pump combination heater: Efficiency class na Water heating energy efficiency nwh na % Daily electricity consumption Qelec na kWh Annual fuel consumption Qfuel NA kWh Annual electricity consumption AEC na kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Other items						-	
outdoors L WA -/57 dB pumps: Rated brine or water na m3/h Annual energy consumption Q HE 2765 kWh exchanger na m3/h For heat pump combination heater: Declared load profile na Efficiency class na Water heating energy efficiency exchanger na % Daily electricity consumption Qelec na kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption Qelec na kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Capacity control		Variable			-	4380	m3/h
Annual energy consumption Q _{HE} 2765 kWh flow rate, outdoor neat exchanger For heat pump combination heater:		L _{WA}	-/57	dB		_	na	m3/h
For heat pump combination heater: Declared load profile na Efficiency class na Water heating energy efficiency η_{wh} na % Daily electricity consumption Qelec na kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption AEC na kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Annual energy consumption	Q _{HE}	2765	kWh			iid.	1113/11
Declared load profile na class na efficiency na % Daily electricity consumption Qelec na kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption AEC na kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	For heat pump combination he	ater:	•					•
Annual electricity consumption AEC na kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Declared load profile	na		na		η_{wh}	na	%
AEC na kWh Annual fuel consumption AFC NA GJ consumption Specific precautions and end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted. Disposing of the product as household waste is not permitted.	Daily electricity consumption	Qelec	na	kWh	Daily fuel consumption	Qfuel	NA	kWh
Specific precautions and end end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	•	AEC	na	kWh	Annual fuel consumption	AFC	NA	GJ
Contact details CTC AB, Box 309, SE-341 26 Ljungby Tel +46 372 88000 www.ctc.se 231218			end of the produc importance that the	t's life cycle, it mus he product's refrig	t be sent correctly to a waste station or resell erant, compressor oil and electrical/electronic	er offering a serv	vice of that type.	It is of great
	Contact details	CTC AB, Box 309,	SE-341 26 Ljun	gby Tel +46 37	2 88000 www.ctc.se			231218

Information for heat pump space heaters and heat pump combination heaters Average climate and Medium temperature

CTC AB Ljungby



Model(s):	CTC CombiAir 12M + 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						

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	10	kW	Seasonal space heating energy efficiency	η _s	132	%
Declared capacity for heating fo outdoor temperature T j	or part load at in	door temperati	ure 20 °C and	Declared coefficient of performan part load at indoor temperature 2	-		
T j = – 7 °C	Pdh	8,9	kW	T j = − 7 °C	COPd	1,99	- 1
T j = + 2 °C	Pdh	5,5	kW	T j = +2 °C	COPd	3,22	- 1
T j = + 7 °C	Pdh	3,5	kW	T j = +7 °C	COPd	4,61	-
T j = + 12 °C	Pdh	5,0	kW	T j = +12 °C	COPd	6,25	-
T j = bivalent temperature	Pdh	9,2	kW	T j = bivalent temperature	COPd	1,90	-
T j = operation limit temperature	Pdh	8,1	kW	T j = operation limit temperature	COPd	1,92	-
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	T _{biv}	-7,9	°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	СОРсус	na	-
Degradation co-efficient	Cdh	0,97	-	Heating water operating limit temperature	WTOL	58	°C
Power consumption in modes o	ther than active	e mode		Supplementary heater			-
Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	1,9	kW
Thermostat-off mode	Р _{то}	0,014	kW				
Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Crankcase heater mode	Р _{СК}	0,035	kW				
Other items							
Capacity control		Variable		For air-to-water heat pumps: Rated air flow rate, outdoors	-	4380	m3/h
L Sound power level, indoors/ outdoors	L _{WA}	-/57	dB	For water-/brine-to-water heat pumps: Rated brine or water	-	na	m3/h
Annual energy consumption	Q _{HE}	6137	kWh	flow rate, outdoor heat exchanger			
For heat pump combination hea	ater:						
Declared load profile	na	Efficiency class	na	Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	Qelec	na	kWh	Daily fuel consumption	Qfuel	NA	kWh
Annual electricity consumption	AEC	na	kWh	Annual fuel consumption	AFC	NA	GJ
Specific precautions and end of life information:		end of the produc importance that the	t's life cycle, it mus he product's refrige	a recycling station or with the installation eng st be sent correctly to a waste station or resell erant, compressor oil and electrical/electronic Id waste is not permitted.	er offering a serv	ice of that type.	It is of grea
Contact details (CTC AB, Box 309	, SE-341 26 Ljun	gby Tel +46 37	2 88000 www.ctc.se			231218

Information for heat pump space heaters and heat pump combination heaters Average climate and Low temperature

CTC AB Ljungby



Model(s):	CTC CombiAir 12M + 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:	178	%			
Equipped with a supplementary heater:	No	Package efficiency class:	A+++	-			
Heat pump combination heater:	No						

ltem	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	12	kW	Seasonal space heating energy efficiency	η _s	174	%
Declared capacity for heating fo outdoor temperature T j	r part load at in	door temperatı	ure 20 °C and	Declared coefficient of performat part load at indoor temperature 2			
T j = – 7 °C	Pdh	10,3	kW	T j = – 7 °C	COPd	2,93	- [
T j = + 2 °C	Pdh	6,3	kW	T j = +2 °C	COPd	4,37	-
T j = + 7 °C	Pdh	4,1	kW	T j = +7 °C	COPd	5,53	-
T j = + 12 °C	Pdh	4,8	kW	T j = +12 °C	COPd	7,59	-
T j = bivalent temperature	Pdh	10,2	kW	T j = bivalent temperature	COPd	2,93	-
T j = operation limit temperature	Pdh	9,3	kW	T j = operation limit temperature	COPd	2,68	-
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	T _{biv}	-7	°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	СОРсус	na	-
Degradation co-efficient	Cdh	0,96	-	Heating water operating limit temperature	WTOL	58	°C
Power consumption in modes o	ther than active	mode		Supplementary heater			-
Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	2,2	kW
Thermostat-off mode	P _{TO}	0,020	kW				
Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Crankcase heater mode	Р _{СК}	0,035	kW				
Other items							-
Capacity control		Variable		For air-to-water heat pumps: Rated air flow rate, outdoors	-	4380	m3/
Sound power level, indoors/ outdoors	L _{WA}	-/57	dB	For water-/brine-to-water heat pumps: Rated brine or water	-	na	m3/
Annual energy consumption	Q _{HE}	5361	kWh	flow rate, outdoor heat exchanger			,
For heat pump combination hea	ater:						•
Declared load profile	na	Efficiency class	na	Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	Qelec	na	kWh	Daily fuel consumption	Qfuel	NA	kW
Annual electricity consumption	AEC	na	kWh	Annual fuel consumption	AFC	NA	GJ
Specific precautions and end of life information:		end of the produc importance that th	t's life cycle, it mus ne product's refrige	a recycling station or with the installation eng st be sent correctly to a waste station or resell- erant, compressor oil and electrical/electronic Id waste is not permitted.	er offering a serv	vice of that type.	It is of g
Contact details (TC AB, Box 309	SE-341 26 Liun	gby Tel +46 37	2 88000 www.ctc.se			2312:

Information for heat pump space heaters and heat pump combination heaters **Cold climate and Medium temperature**

CTC AB Ljungby



Model(s):	CTC CombiAir 12	CTC CombiAir 12M + 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:	115	%			
Equipped with a supplementary heater:	No	Package efficiency class:		-			
Heat pump combination heater:	No						

Item	Symbol	Value	Unit	Item	Symbol	Value	Uni
Rated heat output (*)	Prated	13	kW	Seasonal space heating energy efficiency	η _s	111	%
Declared capacity for heating fo outdoor temperature T j	r part load at in	door temperatı	ure 20 °C and	Declared coefficient of performat part load at indoor temperature 2			
T j = – 7 °C	Pdh	7,9	kW	T j = – 7 °C	COPd	2,36	-
T j = + 2 °C	Pdh	4,9	kW	T j = +2 °C	COPd	3,48	-
T j = + 7 °C	Pdh	3,6	kW	T j = +7 °C	COPd	4,93	-
T j = + 12 °C	Pdh	4,9	kW	T j = +12 °C	COPd	7,12	-
T j = bivalent temperature	Pdh	8,9	kW	T j = bivalent temperature	COPd	2,07	-
T j = operation limit temperature	Pdh	5,0	kW	T j = operation limit temperature	COPd	1,63	-
For air-to-water heat pumps: T j = – 15 °C (if TOL < – 20 °C)	Pdh	1,7	kW	For air-to-water heat pumps: T j = – 15 °C (if TOL < – 20 °C)	COPd	3,01	-
Bivalent temperature	T _{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-20	°C
Cycling interval capacity for heating	P _{cych}	-/57	kW	Cycling interval efficiency	СОРсус	na	-
Degradation co-efficient	Cdh	0,96	-	Heating water operating limit temperature	WTOL	58	°C
Power consumption in modes o	ther than active	mode		Supplementary heater			-
Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	13,0	kW
Thermostat-off mode	Р _{то}	0,014	kW				
Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Crankcase heater mode	Р _{СК}	0,035	kW				
Other items						1	1
Capacity control		Variable		For air-to-water heat pumps: Rated air flow rate, outdoors	-	4380	m3/
Sound power level, indoors/ outdoors	L _{WA}	-/57	dB	For water-/brine-to-water heat pumps: Rated brine or water	-	na	m3/
Annual energy consumption	Q _{HE}	11639	kWh	flow rate, outdoor heat exchanger			,
For heat pump combination hea	ater:	· · ·				•	-
Declared load profile	na	Efficiency class	na	Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	Qelec	na	kWh	Daily fuel consumption	Qfuel	NA	kW
Annual electricity consumption	AEC	na	kWh	Annual fuel consumption	AFC	NA	GJ
Specific precautions and end of life information:		end of the produc importance that the	t's life cycle, it mus ne product's refrig	a recycling station or with the installation eng st be sent correctly to a waste station or resell- erant, compressor oil and electrical/electronic Id waste is not permitted.	er offering a serv	vice of that type.	It is of g
Contact details C	TC AB, Box 309	. SE-341 26 Liun	gby Tel +46 37	2 88000 www.ctc.se			2312:

Information for heat pump space heaters and heat pump combination heaters Cold climate and Low temperature

CTC AB
Ljungby



Model(s):	CTC CombiAir 12M + 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:	146	%			
Equipped with a supplementary heater:	No	Package efficiency class:		-			
Heat pump combination heater:	No						

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	12	kW	Seasonal space heating energy efficiency	η _s	142	%
Declared capacity for heating f outdoor temperature T j	or part load at in	door temperati	ure 20 °C and	Declared coefficient of performat part load at indoor temperature :	-		
T j = – 7 °C	Pdh	7,1	kW	T j = – 7 °C	COPd	3,16	- [
T j = + 2 °C	Pdh	4,3	kW	T j = +2 °C	COPd	4,29	-
T j = + 7 °C	Pdh	3,5	kW	T j = +7 °C	COPd	5,59	
T j = + 12 °C	Pdh	4,8	kW	T j = +12 °C	COPd	7,56	-
T j = bivalent temperature	Pdh	8,4	kW	T j = bivalent temperature	COPd	2,70	-
T j = operation limit temperature	Pdh	6,0	kW	T j = operation limit temperature	COPd	2,10	
For air-to-water heat pumps: T j = – 15 °C (if TOL < – 20 °C)	Pdh	1,7	kW	For air-to-water heat pumps: T j = – 15 °C (if TOL < – 20 °C)	COPd	4,02	-
Bivalent temperature	T _{biv}	-12	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-20	°C
Cycling interval capacity for heating	P _{cych}	na	kW	Cycling interval efficiency	СОРсус	na	-
Degradation co-efficient	Cdh	0,95	-	Heating water operating limit temperature	WTOL	58	°C
Power consumption in modes	other than active	mode		Supplementary heater			-
Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	11,5	kW
Thermostat-off mode	P _{TO}	0,020	kW				
Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Crankcase heater mode	Р _{СК}	0,035	kW				
Other items							
Capacity control		Variable		For air-to-water heat pumps: Rated air flow rate, outdoors	-	4380	m3/h
Sound power level, indoors/ outdoors	L _{WA}	-/57	dB	For water-/brine-to-water heat pumps: Rated brine or water	_	na	m3/h
Annual energy consumption	Q _{HE}	8302	kWh	flow rate, outdoor heat exchanger			1113/11
For heat pump combination he	ater:	· · · · ·				·	<u> </u>
Declared load profile	na	Efficiency class	na	Water heating energy efficiency	η_{wh}	na	%
Daily electricity consumption	Q_{elec}	na	kWh	Daily fuel consumption	$\boldsymbol{Q}_{\text{fuel}}$	NA	kWh
Annual electricity consumption	AEC	na	kWh	Annual fuel consumption	AFC	NA	GJ
Specific precautions and end of life information:		end of the produc importance that the	t's life cycle, it mus he product's refrige	a recycling station or with the installation eng st be sent correctly to a waste station or resell erant, compressor oil and electrical/electronic Id waste is not permitted.	er offering a serv	vice of that type.	It is of great
Contact details	CTC AB, Box 309,	SE-341 26 Ljun	gby Tel +46 37	2 88000 www.ctc.se			231218

Information for heat pump space heaters and heat pump combination heaters Warm climate and Medium temperature

CTC AB Ljungby



Model(s):	CTC CombiAir 12	2M + CTC EcoZenith i360/EcoVent i360F			
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:	189	%	
Equipped with a supplementary heater:	Yes	Package efficiency class:		-	
Heat pump combination heater:	Yes				

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	12	kW	Seasonal space heating energy efficiency	η _s	185	%
Declared capacity for heating for outdoor temperature T j	part load at in	door temperatı	ure 20 °C and	Declared coefficient of performat part load at indoor temperature 2			
T j = – 7 °C	Pdh	na	kW	T j = − 7 °C	COPd	na	-
T j = + 2 °C	Pdh	9,3	kW	T j = +2 °C	COPd	2,47	-
T j = + 7 °C	Pdh	7,8	kW	T j = +7 °C	COPd	3,77	-
T j = + 12 °C	Pdh	5,1	kW	T j = +12 °C	COPd	6,70	-
T j = bivalent temperature	Pdh	10,4	kW	T j = bivalent temperature	COPd	2,92	-
T j = operation limit temperature	Pdh	9,3	kW	T j = operation limit temperature	COPd	2,47	-
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	T _{biv}	4	°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	СОРсус	na	-
Degradation co-efficient	Cdh	0,97	-	Heating water operating limit temperature	WTOL	58	°C
Power consumption in modes ot	her than active	mode		Supplementary heater		-	-
Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	2,7	kW
Thermostat-off mode	P _{TO}	0,014	kW				
Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Crankcase heater mode	Р _{СК}	0,035	kW				
Other items							
Capacity control		Variable		For air-to-water heat pumps: Rated air flow rate, outdoors	-	4380	m3/h
Sound power level, indoors/	L _{WA}	-/57	dB	For water-/brine-to-water heat pumps: Rated brine or water	_	na	m3/h
Annual energy consumption	Q _{HE}	3445	kWh	flow rate, outdoor heat exchanger			1110/11
For heat pump combination heat	er:	4					
Declared load profile	XL	Efficiency class	na	Water heating energy efficiency	η_{wh}	104	%
Daily electricity consumption	Qelec	7,890	kWh	Daily fuel consumption	Qfuel	NA	kWh
Annual electricity consumption	AEC	1617	kWh	Annual fuel consumption	AFC	NA	GJ
Specific precautions and end of life information:		end of the product importance that the	t's life cycle, it mus ne product's refrige	a recycling station or with the installation eng is be sent correctly to a waste station or resell- erant, compressor oil and electrical/electronic Id waste is not permitted.	er offering a serv	vice of that type.	It is of grea
Contact details CT	CAP Pox 200	SE-341 26 Ljun	aby Tol ±46 27	2 88000 www.ctc.se			231218

Information for heat pump space heaters and heat pump combination heaters Warm climate and Low temperature

CTC AB Ljungby



Model(s):	CTC CombiAir 1	2M + CTC EcoZenith i360/EcoVent i360F			
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:	233	%	
Equipped with a supplementary heater:	Yes	Package efficiency class:		-	
Heat pump combination heater:	Yes				

Rated heat output (*)Proted12kWSeasonal space heating energ efficiencyDeclared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T jDeclared coefficient of perform part load at indoor temperatureT j = -7 °CPdhnakWT j = +2 °CPdh7,8T j = +12 °CPdh4,8KWT j = operation limit temperaturePdh9,2kWT j = operation limit temperaturePdh9,2kWT j = operation limit temperaturePdh9,2kWT j = operation limit temperaturePdh9,2kWFor air-to-water heat pumps: T j = -15 °C (if TOL < -20 °C)PdhnaBivalent temperatureT biv4°CFor air-to-water heat pumps: T j = -15 °C (if TOL < -20 °C)Bivalent temperatureT biv4°CFor air-to-water heat pumps: T j = -15 °C (if TOL < -20 °C)Bivalent temperatureT biv4°CFor air-to-water heat pumps: T j = -15 °C (if TOL < -20 °C)Bivalent temperatureT biv4°CSupplementary heater Rated pumps: T j = -15 °C (if TOL < -20 °C)Bivalent temperatureT biv4°CFor air-to-water heat pumps: Supplementary heaterCycling interval capacity for heatingP cychnakWSupplementary heaterOff modeP orr0,002kWSupplementary heaterGradity controlVariableFor air-to-water heat pumps: Rated brino or water flow rate, outdoo	۲ _s nance or prima		
outdoor temperature T jpart load at indoor temperatureT j = - 7 °CPdhnakWT j = -7 °CT j = + 2 °CPdh9,2kWT j = +2 °CT j = + 12 °CPdh4,8kWT j = +12 °CT j = bivalent temperaturePdh10,3kWT j = bivalent temperatureT j = operation limit temperaturePdh9,2kWT j = operation limit temperatureFor air-to-water heat pumps: T j = -15 °C (if TOL < - 20 °C)PdhnakWFor air-to-water heat pumps: 	re 20 °C and ou COPd COPd COPd COPd	itdoor tempe	
T j = + 2 °CPdh9,2kWT j = +2 °CT j = +7 °CPdh7,8kWT j = +7 °CT j = +12 °CPdh4,8kWT j = +12 °CT j = bivalent temperaturePdh10,3kWT j = bivalent temperatureT j = operation limit temperaturePdh9,2kWT j = operation limit temperatureFor air-to-water heat pumps: T j = -15 °C (if TOL < - 20 °C)	COPd COPd COPd	na	
T j = + 7 °CPdh7,8kWT j = +7 °CT j = 12 °CPdh4,8kWT j = +12 °CT j = bivalent temperaturePdh10,3kWT j = bivalent temperatureT j = operation limitPdh9,2kWT j = operation limitFor air-to-water heat pumps:PdhnakWFor air-to-water heat pumps:T j = -15 °C (if TOL < -20 °C)	COPd COPd		- [
T j = + 12 °CPdh4,8KWT j = +12 °CT j = bivalent temperaturePdh10,3kWT j = bivalent temperatureT j = operation limit temperaturePdh9,2kWT j = operation limit temperatureFor air-to-water heat pumps: T j = -15 °C (if TOL < - 20 °C)	COPd	3,76	-
T j = bivalent temperaturePdh10,3kWT j = bivalent temperatureT j = operation limit temperaturePdh9,2kWT j = operation limit temperatureFor air-to-water heat pumps: T j = - 15 °C (if TOL < - 20 °C)		5,13	-
T j = operation limit temperature Pdh $9,2$ kW T j = operation limit temperatureFor air-to-water heat pumps: T j = -15 °C (if TOL < - 20 °C)	CODY	7,48	
temperaturePdh9,2kWtemperatureFor air-to-water heat pumps: T j = -15 °C (if TOL < - 20 °C)	COPU	4,17	-
T j = -15 °C (if TOL < -20 °C)PdhnakWT j = -15 °C (if TOL < -20 °C)Bivalent temperature T_{biv} 4°CFor air-to-water heat pumps: Operation limit temperatureCycling interval capacity for heating P_{cych} nakWCycling interval efficiencyDegradation co-efficient Cdh $0,97$ -Heating water operating limit temperaturePower consumption in modes other than active mode $0,002$ kW Supplementary heaterOff mode P_{orF} $0,002$ kW Type of energy inputThermostat-off mode P_{cx} $0,015$ kW Type of energy inputCrankcase heater mode P_{cx} $0,035$ kW For air-to-water heat pumps: Rated air flow rate, outdoorsCapacity controlVariableFor air-to-water heat pumps: Rated air flow rate, outdoorsFor water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchangerFor heat pump combination heater: 2765 kWh For air-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	COPd	3,76	
Bivalent temperature T_{biv} 4 C Operation limit temperature Cycling interval capacity for heating P_{cych} na kW Cycling interval efficiency Heating water operating limit temperature Cycling interval efficiency Heating water operating limit temperature Cycling interval efficiency Heating water operating limit temperature Supplementary heater Rated heat output (*) Thermostat-off mode P_{orF} 0,002 kW Standby mode P_{SB} 0,015 kW Type of energy input Crankcase heater mode P_{cK} 0,035 kW Other items Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors Sound power level, indoors/ L_{WA} $-/57$ dB Annual energy consumption Q_{HE} 2765 kW For heat pump combination heater:	COPd	na	-
heating P_{cych} nakWCycling interval efficiencyDegradation co-efficient Cdh $0,97$ -Heating water operating limit temperaturePower consumption in modes other than active modeSupplementary heaterSupplementary heaterOff mode P_{OFF} $0,002$ kW Rated heat output (*)Thermostat-off mode P_{TO} $0,020$ kW Type of energy inputStandby mode P_{SB} $0,015$ kW Type of energy inputCrankcase heater mode P_{CK} $0,035$ kW For air-to-water heat pumps: Rated air flow rate, outdoorsCapacity controlVariableFor air-to-water heat pumps: Rated air flow rate, outdoorsFor water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchangerFor heat pump combination heater: Q_{HE} 2765 kWh $exchanger$	TOL	2	°C
Degradation co-efficient Cdh 0,97 - temperature Power consumption in modes other than active mode Supplementary heater Supplementary heater Rated heat output (*) Off mode P OFF 0,002 kW Rated heat output (*) Thermostat-off mode P TO 0,020 kW Type of energy input Standby mode P SB 0,015 kW Type of energy input Crankcase heater mode P CK 0,035 kW For air-to-water heat pumps: Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors Sound power level, indoors/ L WA -/57 dB pumps: Rated brine or water heat pumps: Annual energy consumption Q HE 2765 kWh flow rate, outdoor heat exchanger	СОРсус	na	-
Off mode P_{OFF} $0,002$ kW Rated heat output (*)Thermostat-off mode P_{TO} $0,020$ kW Type of energy inputStandby mode P_{5B} $0,015$ kW Type of energy inputCrankcase heater mode P_{CK} $0,035$ kW Type of energy inputOther items $Variable$ For air-to-water heat pumps: Rated air flow rate, outdoorsFor water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchangerSound power level, indoors/ outdoors L_{WA} $-/57$ dB kWhFor water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchangerFor heat pump combination heater: $Z765$ kWh $exchanger$	WTOL	58	°C
Thermostat-off mode P_{TO} $0,020$ kW Type of energy inputStandby mode P_{SB} $0,015$ kW Type of energy inputCrankcase heater mode P_{CK} $0,035$ kW Type of energy inputOther items Q_{HE} $Variable$ For air-to-water heat pumps: Rated air flow rate, outdoorsSound power level, indoors/ outdoors L_{WA} $-/57$ dB Annual energy consumption Q_{HE} 2765 kWh For heat pump combination heater: Wa Wa			
Standby mode P 5B 0,015 kW Type of energy input Crankcase heater mode P CK 0,035 kW Type of energy input Other items 0,035 kW For air-to-water heat pumps: Rated air flow rate, outdoors Capacity control Variable For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat Sound power level, indoors/ outdoors L WA -/57 dB Annual energy consumption Q HE 2765 kWh For water-/brine-to-water heat pumps: Rated brine or water For heat pump combination heater: Example Example Example Example	Psup	2,8	kW
Crankcase heater mode P cx 0,035 kW Other items Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors Sound power level, indoors/ outdoors L WA -/57 dB Annual energy consumption Q HE 2765 kWh For heat pump combination heater: KWh Example of the second			
Other items Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors Sound power level, indoors/ outdoors L WA -/57 dB For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger For heat pump combination heater: Example of the section		Electric	
Other items Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors Sound power level, indoors/ outdoors L WA -/57 dB For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger For heat pump combination heater: Example of the section			
Capacity control Variable Rated air flow rate, outdoors Sound power level, indoors/ outdoors L WA -/57 dB Annual energy consumption Q HE 2765 kWh For heat pump combination heater: For water -/brine-to-water heat exchanger			
outdoorsL-/57dBpumps: Rated brine or waterAnnual energy consumptionQ2765kWhflow rate, outdoor heatFor heat pump combination heater:EEEE	-	4380	m3/h
Annual energy consumption Q _{HE} 2765 kWh exchanger For heat pump combination heater:	t -	na	m3/h
For heat pump combination heater:			
Declared load profile XL Efficiency na efficiency efficiency efficiency	η_{wh}	104	%
Daily electricity consumption Qelec 7,890 kWh Daily fuel consumption	Qfuel	NA	kWh
Annual electricity AEC 1617 kWh Annual fuel consumption	AFC	NA	GJ
Specific precautions and end The packaging must be deposited at a recycling station or with the installation of life information: end of the product's life cycle, it must be sent correctly to a waste station or re importance that the product's refrigerant, compressor oil and electrical/electrod Disposing of the product as household waste is not permitted.	seller offering a ser	rvice of that type	. It is of great
Contact details CTC AB, Box 309, SE-341 26 Ljungby Tel +46 372 88000 www.ctc.se			231218

Information for heat pump space heaters and heat pump combination heaters Average climate and Medium temperature

CTC AB Ljungby



Model(s):	CTC CombiAir 12M + CTC EcoZenith i360/EcoVent i360F						
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						

Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T jDeclared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and part load at indoor temperature 20 °C and outdoor temperature 20 °C part load at indoor temperature 20 °C and outdoor temperature 20 °C part load at indoor temperature 20 °C and outdoor temperature 20 °C part load at indoor temperature 2	Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
outdoor temperature T jT j = -7 °CPdh8.9KWT j = -7 °CPdh5.5KWT j = -7 °CPdh5.5KWT j = +7 °CPdh5.5KWT j = +7 °CPdh5.5KWT j = +7 °CPdh5.0KWT j = +7 °CPdh9.2KWT j = +12 °CCOPd6.25J = bialent temperaturePdh8.1KWT j = operation limitPdh8.1kWT j = operation limitCOPd1.90For air-to-water heat pumps:PdhnakWT j = -15 °C (if TOL < -20 °C)	Rated heat output (*)	Prated	10	kW		η _s	132	%
T j = + 2 °C T j = + 7 °CPdh5,5 3,5kW kWT j = + 7 °C T j = + 7 °CCOPd3,22 4,61- - - - T j = + 12 °C- COPd- 4,61- - - - - - - - T j = bivalent temperatureCOPd3,22 4,61- - - - - - - - T j = -15 °CCOPd3,22 4,61- - - - - - - - T j = -15 °CCOPd3,22 - <b< td=""><td></td><td>or part load at ir</td><td>ndoor temperati</td><td>ure 20 °C and</td><td>-</td><td>-</td><td></td><td></td></b<>		or part load at ir	ndoor temperati	ure 20 °C and	-	-		
T j = + 7 °CPdh3,5KWT j = + 7 °CCOPd4,61T j = + 12 °CPdh5,0KWT j = + 12 °CCOPd6,25-T j = bivalent temperaturePdh9,2KWT j = operation limitCOPd1,90-T j = operation limitPdh8,1KWT j = operation limitCOPd1,92-For air-to-water heat pumps:PdhnaKWT j = operation limitCOPd1,92-For air-to-water heat pumps:PdhnaKWFor air-to-water heat pumps:COPdna-Bivalent temperatureT bw-7,9°CFor air-to-water heat pumps:COL-10°CCycling interval capacity for heatingP cychnakWCycling interval efficiencyCOPcycna-Degradation co-efficientCdh0,97Heating water operating limitWTOL58°CPower consumption in modes other than active mode0,002kWKWType of energy inputElectricSupplementary heaterCapacity controlVariable6137kWhFor air-to-water heat pumps: Rated air flow rate, outdoors-4380m3/hSound power level, indoors/ contdoorsL wid-/577dB chanual electricityAGiGiDaily electricity consumptionQelec9,250kWhDaily fuel consumptionQruelNAkWhSpeclared load profileXLEfficien	T j = – 7 °C	Pdh	8,9	kW	T j = – 7 °C	COPd	1,99	- 1
T j = + 12 °CPdh5,0KWT j = +12 °CCOPd6,25-T j = bivalent temperaturePdh9,2KWT j = operation limitCOPd1,90-T j = operation limitPdh8,1KWT j = operation limitCOPd1,92-For air-to-water heat pumps:PdhnaKWFor air-to-water heat pumps:COPd1,92-T j = -15 °C (if TOL < -20 °C)	T j = + 2 °C	Pdh	5,5	kW	T j = +2 °C	COPd	3,22	-
TJDivident temperaturePdh9,2KWTJDivident temperatureCOPd1,90-TJpoperation limitPdh8,1KWTJpoperation limitCOPd1,92-For air-to-water heat pumps:PdhnakWFor air-to-water heat pumps:COPdna-For air-to-water heat pumps:PdhnakWFor air-to-water heat pumps:COPdna-Bivalent temperatureTFor,-7,9*CFor air-to-water heat pumps:TOL-10*CCycling interval capacity for heatingPnakWCycling interval efficiencyCOPcycna-Degradation co-efficientCdh0,97Heating water operating limit kWWTOL58*CPower consumption in modes other than active mode0,015kWSupplementary heater Rated heat output (*)PSup1,9kWThermostat-off modeP <ore </ore or 0,0020,015kWType of energy inputElectricM3/hCapacity controlVariable6137kWhFor air-to-water heat pumps: Rated air flow rate, outdoors - na4380m3/hFor heat pump combination heater:Efficiency classAWater heating energy mpuss: Rated brine or water fer incervater heat pumps-naFor heat pump combination heater:Efficiency classAWater heating energy mpuss: Rated brine or water fer incervater	T j = + 7 °C	Pdh	3,5	kW	T j = +7 °C	COPd	4,61	-
T j = operation limit temperature Pdh $B,1$ kW T j = operation limit temperature $COPd$ $1,92$ $-$ For air-to-water heat pumps: T j = -15 °C (if TOL < -20 °C)	T j = + 12 °C	Pdh	5,0	kW	T j = +12 °C	COPd	6,25	-
temperaturePan8,1kWtemperatureCOPa1,92-For air-to-water heat pumps: T j = -15 °C (if TOL < -20 °C)	T j = bivalent temperature	Pdh	9,2	kW	T j = bivalent temperature	COPd	1,90	-
T j = -15 °C (if TOL < - 20 °C)PdnItalKWT j = -15 °C (if TOL < - 20 °C)CDPaItal-Bivalent temperatureT biv-7,9°CFor air-to-water heat pumps: Operation limit temperatureTOL-10°CCycling interval capacity for heatingP cychnakWCycling interval efficiencyCOPcycna-Degradation co-efficientCdh0,97Heating water operating limit temperatureWTOL58°CPower consumption in modes other than active modeNWNWRated heat output (*)Psup1,9kWThermosta-off modeP orr 0,0140,015kWType of energy inputElectricCrankcase heater modeP cx0,035kWType of energy inputElectricCapacity controlVariableFor air-to-water heat pumps: row rate, outdoors4380m3/hSound power level, indoors/ outdoorsL wA-/57dBdBAnnual energy consumptionQ HE6137kWhPor water index outdoorsnam3/hFor heat pump combination heater:Efficiency classAWater heating energy efficiencyNa87%Daily electricity consumptionQelec9,250kWhDaily fuel consumptionQfuelNAkWhAnnual electricity consumptionAEC1919KWhAnnual fuel consumptionAFCNAGJSpecific precautions and end of the information:Disposing of the		Pdh	8,1	kW		COPd	1,92	-
Bivalent temperature I_{biv} $-7,9$ $^{\circ}$ C Operation limit temperature IOL -10 $^{\circ}$ C C Cycling interval capacity for heating P_{cych} na kW Cycling interval efficiency $COPcyc$ na $-$ Heating water operating limit $WTOL$ 58 $^{\circ}$ C Power consumption in modes other than active mode Off mode P_{orr} 0,002 kW Chermostat-off mode P_{ro} 0,014 kW Crankcase heater mode P_{ro} 0,014 kW Crankcase heater mode P_{cx} 0,035 kW Cher items Off for air-to-water heat pumps: $-$ 4380 $m3/h$ Crankcase heater mode P_{cx} 0,035 kW Cher items Off for air-to-water heat pumps: $-$ 4380 $m3/h$ Rated air flow rate, outdoors $-$ 4380 $m3/h$ Sound power level, indoors/ L_{WA} $-/57$ dB for air-to-water heat pumps: Rated brine or water flow rate, outdoors $-$ Rated prime $-$ na $m3/h$ Sound power level, indoors/ L_{WA} $-/57$ dB Capacity consumption Q_{HE} 6137 kW Cher heating energy Π_{wh} 87 % efficiency Acchanger $-$ na $m3/h$ Sound power level, indoors/ L_{WA} $-/57$ dB Daily electricity consumption Q_{elec} 9,250 kW Daily fuel consumption Q_{fuel} NA Annual electricity AEC 1919 kW Annual fuel consumption AFC NA GJ Daily fuel consumptio		Pdh	na	kW		COPd	na	-
heating P_{cych} nakwCycling interval efficiency $COPcyc$ na-Degradation co-efficient Cdh $0,97$ -Heating water operating limit temperature $WTOL$ 58*CPower consumption in modes other than active mode $O,002$ kW Supplementary heater Rated heat output (*) $Psup$ $1,9$ kW Off mode P_{orr} $0,014$ kW $Variable$ Type of energy input $Electric$ Crankcase heater mode P_{cx} $0,035$ kW Type of energy input $Electric$ Capacity controlVariable $Variable$ For air-to-water heat pumps: Rated air flow rate, outdoors $A380$ $m3/h$ Sound power level, indoors/ L_{WA} $-/57$ dB dB $March or waterpumps: Rated brine or waterflow rate, outdoor heatexchangernam3/hFor heat pump combination heater:March or kWhAAefficiencyADelared load profileXLEfficiencyAAefficiencyN_{A}kWhAnnual electricityconsumptionAEC1919kWhAnnual fuel consumptionAFCNAkWhSpecific precautions and endof life information:The packaging must be deposited at a recycling station or wate station or reseller offering a service of that type. It is of greatimportance that the product's informatic, compressor of and electrical/electronic equipment are properly disposed of.Disposing of the product as household waste is not permitted.$	Bivalent temperature	T _{biv}	-7,9	°C		TOL	-10	°C
Degradation co-efficient Cah 0,97 - temperature WIOL S8 C Power consumption in modes other than active mode Off mode P orF 0,002 kW Supplementary heater Rated heat output (*) P sup 1,9 kW Thermostat-off mode P orF 0,014 kW Supplementary heater Rated heat output (*) P sup 1,9 kW Standby mode P sa 0,015 kW Type of energy input Electric Electric Crankcase heater mode P cx 0,035 kW Type of energy input Electric For air-to-water heat pumps: Rated air flow rate, outdoors - 4380 m3/h Capacity control Variable Variable For water-/brine-to-water heat pumps: Rated brine or water - na m3/h Sound power level, indoors/ L wA -/57 dB pumps: Rated brine or water - na m3/h Annual energy consumption Q HE 6137 kWh Pauly electricity consumption Q HE Nuh 87 % Daily electricity consumption Qelec <t< td=""><td></td><td>P _{cych}</td><td>na</td><td>kW</td><td>Cycling interval efficiency</td><td>СОРсус</td><td>na</td><td>-</td></t<>		P _{cych}	na	kW	Cycling interval efficiency	СОРсус	na	-
Off mode P orf 0,002 kW Thermostat-off mode P ro 0,014 kW Standby mode P se 0,015 kW Crankcase heater mode P cc 0,035 kW Other items 0,035 kW Type of energy input Electric Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors - 4380 m3/h Sound power level, indoors/ outdoors L WA -/57 dB G137 kWh For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger na m3/h For heat pump combination heater: Declared load profile XL Efficiency class A Water heating energy efficiency N_wn 87 % Daily electricity consumption Qelec 9,250 kWh Annual fuel consumption AFC NA KW Specific precautions and end of life information: The packaging must be deposited at a recycling station or water installation engineer offering a service of that type. It is of great importance that the product's fier cycle, It is of great importance that the product's fier cycle, It is of great importance that the product's fier cycle, It is on pressor oil and electrical/electronic equipment are prop	Degradation co-efficient	Cdh	0,97	-		WTOL	58	°C
Thermostat-off mode P_{TO} $0,014$ kW Standby mode P_{SB} $0,015$ kW Crankcase heater mode P_{CX} $0,035$ kW Other items Image: transmitted of the second	Power consumption in modes of	other than active	e mode		Supplementary heater			_
Standby mode P sg 0,015 kW Type of energy input Electric Crankcase heater mode P cx 0,035 kW Type of energy input Electric Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors - 4380 m3/h Sound power level, indoors/ outdoors L wA -/57 dB Glass - na m3/h Annual energy consumption Q HE 6137 kWh For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger - na m3/h For heat pump combination heater: Efficiency class A Water heating energy efficiency Twh 877 % Daily electricity consumption Qelec 9,250 kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption AEC 1919 kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct water management. At the emportance that the product's firgerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of th	Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	1,9	kW
Crankcase heater mode P ck 0,035 kW Other items Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors - 4380 m3/h Sound power level, indoors/ outdoors L wA -/57 dB For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger - na m3/h Annual energy consumption Q HE 6137 kWh Retered brine or water flow rate, outdoor heat exchanger - na m3/h Declared load profile XL Efficiency class A Vare heating energy efficiency nwh 87 % Daily electricity consumption Qelec 9,250 kWh Annual fuel consumption Qfuel NA kWh Annual electricity consumption AEC 1919 kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. <td>Thermostat-off mode</td> <td>Р _{то}</td> <td>0,014</td> <td>kW</td> <td></td> <td></td> <td></td> <td></td>	Thermostat-off mode	Р _{то}	0,014	kW				
Other items Capacity control Sound power level, indoors/ outdoors L wA -/57 dB Annual energy consumption Q HE 6137 kWh For water-/brine-to-water heat pumps: Rated air flow rate, outdoors - na m3/h For heat pump combination heater: -/57 dB wh m3/h Declared load profile XL Efficiency class A Water heating energy efficiency na m3/h Daily electricity consumption Qelec 9,250 kWh Wh Annual fuel consumption Qfuel NA kWh Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors - 4380 m3/h Sound power level, indoors/ outdoors L _{WA} -/57 dB For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat - na m3/h Annual energy consumption Q _{HE} 6137 kWh For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat - na m3/h For heat pump combination heater: Efficiency class A Water heating energy efficiency nwh 87 % Daily electricity consumption Qelec 9,250 kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption AEC 1919 kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Crankcase heater mode	Р _{СК}	0,035	kW				
Capacity control Variable Rated air flow rate, outdoors 4380 m3/h Sound power level, indoors/ outdoors L _{WA} -/57 dB For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger na m3/h Annual energy consumption Q _{HE} 6137 kWh Water heating energy na m3/h For heat pump combination heater: Efficiency class A Water heating energy nwh 87 % Daily electricity consumption Qelec 9,250 kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption AEC 1919 kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Other items		<u> </u>					
outdoors L wA -/57 dB pumps: Rated brine or water na m3/h Annual energy consumption Q HE 6137 kWh gumps: Rated brine or water na m3/h For heat pump combination heater: Declared load profile XL Efficiency class A Water heating energy ficiency nwh 87 % Daily electricity consumption Qelec 9,250 kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption Qelec 1919 kWh Annual fuel consumption AFC NA GJ Specific precautions and end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Capacity control		Variable			-	4380	m3/h
Annual energy consumption Q HE 6137 kWh How rate, outdoor heat exchanger For heat pump combination heater: Efficiency A Water heating energy η_{wh} 87 % Declared load profile XL Efficiency A efficiency η_{wh} 87 % Daily electricity consumption Qelec 9,250 kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption AEC 1919 kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.		L _{WA}	-/57	dB	pumps: Rated brine or water	-	na	m3/h
For heat pump combination heater: Efficiency class A Water heating energy efficiency officiency officiency officiency N_wh 87 % Daily electricity consumption Qelec 9,250 kWh Daily fuel consumption Qfuel NA kWh Annual electricity consumption AEC 1919 kWh Annual fuel consumption AFC NA GJ Specific precautions and end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Annual energy consumption	Q _{HE}	6137	kWh				
Declared load profile XL class A efficiency I lwh 87 % Daily electricity consumption Qelec 9,250 kWh Daily fuel consumption Qfuel NA kWh Annual electricity AEC 1919 kWh Annual fuel consumption AFC NA GJ Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of.	For heat pump combination he	ater:						
Annual electricity consumption AEC 1919 kWh Annual fuel consumption AFC NA GJ The packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. Disposing of the product as household waste is not permitted.	Declared load profile	XL		Α		η_{wh}	87	%
AEC1919KWnAnnual fuel consumptionAFCNAGJconsumptionFile packaging must be deposited at a recycling station or with the installation engineer for correct waste management. At the end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of.Disposing of the product as household waste is not permitted.	Daily electricity consumption	Qelec	9,250	kWh	Daily fuel consumption	Qfuel	NA	kWh
Specific precautions and end end of the product's life cycle, it must be sent correctly to a waste station or reseller offering a service of that type. It is of great importance that the product's refrigerant, compressor oil and electrical/electronic equipment are properly disposed of. of life information: Disposing of the product as household waste is not permitted.		AEC						
Contact details CTC AB. Box 309. SE-341 26 Liungby Tel +46 372 88000 www.ctc.se 231218	Specific precautions and end		end of the produc importance that the	t's life cycle, it mus he product's refrig	st be sent correctly to a waste station or reselle erant, compressor oil and electrical/electronic	er offering a serv	vice of that type.	It is of great
	Contact details	CTC AB, Box 309	. SE-341 26 Liun	gby Tel +46 37	2 88000 www.ctc.se			231218

Information for heat pump space heaters and heat pump combination heaters Average climate and Low temperature

CTC AB Ljungby



Model(s):	CTC CombiAir 12	M + CTC EcoZenith i360/EcoVent i360F		
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:	178	%
Equipped with a supplementary heater:	Yes	Package efficiency class:	A+++	-
Heat pump combination heater:	Yes			

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	12	kW	Seasonal space heating energy efficiency	η _s	174	%
Declared capacity for heating f outdoor temperature T j	or part load at ind	door temperat	ure 20 °C and	Declared coefficient of performat part load at indoor temperature :	-		
T j = – 7 °C	Pdh	10,3	kW	T j = − 7 °C	COPd	2,93] -
T j = + 2 °C	Pdh	6,3	kW	T j = +2 °C	COPd	4,37	-
T j = + 7 °C	Pdh	4,1	kW	T j = +7 °C	COPd	5,53	
T j = + 12 °C	Pdh	4,8	kW	T j = +12 °C	COPd	7,59	-
T j = bivalent temperature	Pdh	10,2	kW	T j = bivalent temperature	COPd	2,93	-
T j = operation limit temperature	Pdh	9,3	kW	T j = operation limit temperature	COPd	2,68	-
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	T _{biv}	-7	°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	СОРсус	na] -
Degradation co-efficient	Cdh	0,96	-	Heating water operating limit temperature	WTOL	58	°C
Power consumption in modes	other than active	mode		Supplementary heater			-
Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	2,2	kW
Thermostat-off mode	Р _{то}	0,020	kW				
Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Crankcase heater mode	Р _{СК}	0,035	kW				
Other items		-					
Capacity control		Variable		For air-to-water heat pumps: Rated air flow rate, outdoors	-	4380	m3/h
Sound power level, indoors/ outdoors	L _{WA}	-/57	dB	For water-/brine-to-water heat pumps: Rated brine or water	_	na	m3/h
Annual energy consumption	Q _{HE}	5361	kWh	flow rate, outdoor heat exchanger			1110/11
For heat pump combination he	ater:	• • • • • • • • • • • • • • • • • • •		· · ·			<u> </u>
Declared load profile	XL	Efficiency class	Α	Water heating energy efficiency	η_{wh}	87	%
Daily electricity consumption	Qelec	9,250	kWh	Daily fuel consumption	Qfuel	NA	kWh
Annual electricity consumption	AEC	1919	kWh	Annual fuel consumption	AFC	NA	GJ
Specific precautions and end of life information:		end of the produc importance that t	t's life cycle, it mus he product's refrig	a recycling station or with the installation eng st be sent correctly to a waste station or resell erant, compressor oil and electrical/electronic Id waste is not permitted.	er offering a serv	vice of that type.	It is of grea
Contact details	CTC AB, Box 309,	SE-341 26 Ljun	gby Tel +46 37	2 88000 www.ctc.se			231218
		-					

Information for heat pump space heaters and heat pump combination heaters **Cold climate and Medium temperature**

CTC AB Ljungby



Model(s):	CTC CombiAir 12	2M + CTC EcoZenith i360/EcoVent i360F			
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:	115	%	
Equipped with a supplementary heater:	Yes	Package efficiency class:		-	
Heat pump combination heater:	Yes				

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	13	kW	Seasonal space heating energy efficiency	η _s	111	%
Declared capacity for heating f outdoor temperature T j	or part load at in	door temperat	ure 20 °C and	Declared coefficient of performa part load at indoor temperature	-		
T j = – 7 °C	Pdh	7,9	kW	T j = − 7 °C	COPd	2,36	- [
T j = + 2 °C	Pdh	4,9	kW	T j = +2 °C	COPd	3,48	-
T j = + 7 °C	Pdh	3,6	kW	T j = +7 °C	COPd	4,93	
T j = + 12 °C	Pdh	4,9	kW	T j = +12 °C	COPd	7,12	-
T j = bivalent temperature	Pdh	8,9	kW	T j = bivalent temperature	COPd	2,07	-
T j = operation limit temperature	Pdh	5,0	kW	T j = operation limit temperature	COPd	1,63	-
For air-to-water heat pumps: T j = -15 °C (if TOL < -20 °C)	Pdh	1,7	kW	For air-to-water heat pumps: T j = – 15 °C (if TOL < – 20 °C)	COPd	3,01	-
Bivalent temperature	T _{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-20	°C
Cycling interval capacity for heating	P _{cych}	-/57	kW	Cycling interval efficiency	СОРсус	na	-
Degradation co-efficient	Cdh	0,96	-	Heating water operating limit temperature	WTOL	58	°C
Power consumption in modes	other than active	mode		Supplementary heater			_
Off mode	P _{OFF}	0,002	kW	Rated heat output (*)	Psup	13,0	kW
Thermostat-off mode	Р _{то}	0,014	kW				
Standby mode	P _{SB}	0,015	kW	Type of energy input		Electric	
Crankcase heater mode	Р _{СК}	0,035	kW				
Other items	-	. ·					
Capacity control		Variable		For air-to-water heat pumps: Rated air flow rate, outdoors	-	4380	m3/h
Sound power level, indoors/ outdoors	L _{WA}	-/57	dB	For water-/brine-to-water heat pumps: Rated brine or water	_	na	m3/h
Annual energy consumption	Q _{HE}	11639	kWh	flow rate, outdoor heat exchanger			
For heat pump combination he	eater:	•				•	-
Declared load profile	XL	Efficiency class	na	Water heating energy efficiency	η_{wh}	73	%
Daily electricity consumption	Qelec	11,110	kWh	Daily fuel consumption	Qfuel	NA	kWh
Annual electricity consumption	AEC	2302	kWh	Annual fuel consumption	AFC	NA	GJ
Specific precautions and end of life information:		end of the produc importance that t	t's life cycle, it mus he product's refrige	a recycling station or with the installation eng at be sent correctly to a waste station or resell erant, compressor oil and electrical/electronic Id waste is not permitted.	er offering a serv	vice of that type.	It is of great
Contact details	CTC AB, Box 309,	SE-341 26 Ljun	gby Tel +46 37	2 88000 www.ctc.se			231218

Information for heat pump space heaters and heat pump combination heaters Cold climate and Low temperature

CTC AB Ljungby



Model(s):	CTC CombiAir 12	M + CTC EcoZenith i360/EcoVent i360F		
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:	146	%
Equipped with a supplementary heater:	Yes	Package efficiency class:		-
Heat pump combination heater:	Yes			

Thermostat-off mode P ro 0,020 kW Standby mode P sa 0,015 kW Crankcase heater mode P cx 0,035 kW Other items Capacity control Variable For air-to-water heat pumps: Rated air flow rate, outdoors - 4380 m3/. Sound power level, indoors/ outdoors L wA -/57 dB For water-/brine-to-water heat pumps: Rated air flow rate, outdoors - na m3/. Annual energy consumption Q HE 8302 kWh Efficiency exchanger - na m3/. Declared load profile XL Efficiency class na m3/. Mater heating energy efficiency NA kWH Annual electricity consumption AEEC 2302 kWh Annual fuel consumption Q_{fuel NA kWH Annual electricity consumption AEEC 2302 kWh Annual fuel consumption AFC NA KWH Specific precautions and end of life information: The packaging must be deposited at a recycling station or with the installation engineer of correct waste management. At It is of gr importance that the product's refrigerant, compressor oil and electrical/electronic equipment are prope	Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
outdoor temperature T jT j = -7 °CPdh7,1kWT j = -7 °CPdh4,3T j = -7 °CPdh4,3T j = +7 °CC OPd4,29T j = +7 °CPdh4,8KWT j = +7 °CC OPdT j = +12 °CPdh4,8KWT j = +2 °CC OPdT j = opration limitPdht = opration limitPdht = opration limitPdht = opration limitPdhf = opration limitPdhf = opration limitC OPdt = opration limitPdhf = opration limitPdhf = opration limitC OPdf = opration limitC OPdf = opration limitPdhf = opration limitC OPdf = opration limitC OPd <td< th=""><th>Rated heat output (*)</th><th>Prated</th><th>12</th><th>kW</th><th></th><th>η_s</th><th>142</th><th>%</th></td<>	Rated heat output (*)	Prated	12	kW		η _s	142	%
Tj = + 2 °C T j = + 7 °C T j = + 7 °C P dhPdh4,3 4,3 5,5kW KV T j = + 7 °C T j = + 12 °C C COPd4,29 5,59 5,59 7,56-T j = bivalent temperature temperaturePdh8,4 8,4kW KVT j = +12 °C T j = +12 °C C COPdCOPd2,70 7,56 7,56T j = operation limit temperaturePdh6,0 6,0kWT j = operation limit temperatureCOPd2,10 7,56For air-to-water heat pumps: T j = -15 °C (if TOL < - 20 °C)		or part load at ind	door temperati	ure 20 °C and		-		
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Contact details CTC AB. Box 309. SE-341 26 Liungby Tel +46 372 88000 www.ctc.se 23121			end of the productimportance that t	t's life cycle, it mus he product's refrige	t be sent correctly to a waste station or resell erant, compressor oil and electrical/electronic	er offering a serv	vice of that type.	It is of great
	Contact details	CTC AB, Box 309,	SE-341 26 Ljun	gby Tel +46 37	2 88000 www.ctc.se			231218