



ENERG

енергия · ενεργεια



I - Klima - Kälte - Wärme || OP 110ed - W/W Art.Nr.: B10871



55 °C

35 °C



75 dB



--- dB

■ 133
 ■ **133**
 ■ 133
 kW

■ 150
 ■ **150**
 ■ 150
 kW



Package (heat pumps and combination heater with heat pump)

Seasonal space heating energy efficiency of heat pump (η_S) ① 164 %

Rated output of the heat pump (P_{rated} kW) 132.80

Temperature control Class VII (Table 1) + ② 3.5 %

Supplementary boiler
 Package with hot water storage tank no P_{sup} kW (rated output of supplementary heater)

η_S % (sup) = - ③ %

$(\eta_S \% (sup) - ①) \times (\alpha_{WE})$

(α_{WE})

Solar contribution $(A_{Koll} m^2)$ $(\eta_{Koll} \%)$

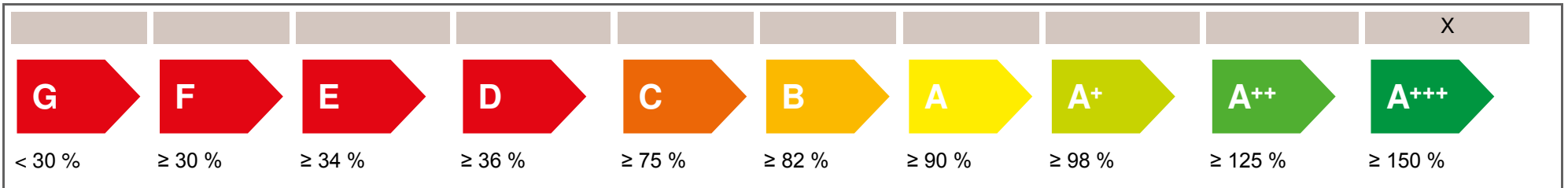
$(V_{Sp} m^3)$ $(standstill\ heat\ loss\ of\ the\ storage\ tank\ in\ W)$

(η_{Sp})

$((294/(P_{rated} \times 11)) \times (A_{Koll} m^2) + (115/(P_{rated} \times 11)) \times (V_{Sp} m^3)) \times 0.45 \times ((\eta_{Koll} \%) / 100) \times (\eta_{Sp})$ = + ④ %

Seasonal space heating energy efficiency of package under average climate ⑤ 168 %
rounded to the nearest integer


Seasonal space heating energy efficiency class of package under average climate





Seasonal space heating energy efficiency under colder and warmer climate conditions

colder	166 %		colder	⑤	168	-V	-2	=	170 %
warmer	165 %		warmer	⑤	168	+VI	1	=	169 %

The energy efficiency of the package of products provided for in this fiche may not correspond to its actual energy efficiency once installed in a building, as the efficiency is influenced by further factors such as heat loss in the distribution system and the dimensioning of the products in relation to building size and characteristics.

Product fiche				
Manufacturer	CTA AG			
Model	Optipro 110ed W/W			
Information on energy efficiency class and rated output				
	Average / Low temperature	Average / Medium temperature		
Space heating energy efficiency class	A++	A++	-	
Rated heat output	149.20	132.80	kW	
Seasonal space heating energy efficiency	229	164	%	
Annual final energy consumption space heating	51893	63715	kWh	
Sound power level indoors		75	dB	
Special precautions during assembly, installation or maintenance				
see installation and maintenance instructions				
Additional information				
	Low temperature	Medium temperature		
Rated heat output colder climate	149.20	132.80	kW	
Rated heat output warmer climate	149.20	132.80	kW	
Seasonal space heating energy efficiency colder climate	232	166	%	
Seasonal space heating energy efficiency warmer climate	231	165	%	
Annual final energy consumption colder climate	61248	75246	kWh	
Annual final energy consumption warmer climate	33278	41013	kWh	
Sound power level outdoors		-	dB	
Technical data of the temperature controller				
Manufacturer	Carel			
Model	pCO5+			
Class of the controller		VII	-	
Contribution of the controller to seasonal space heating energy efficiency		3.5	%	
Contact	CTA AG, Hunzigenstrasse 2, CH-3110 Münsingen			

Model				Optipro 110ed W/W						
Brine-to-water heat pump: (Yes/No)				No						
Water-to-water heat pump: (Yes/No)				Yes						
Air-to-water heat pump: (Yes/No)				No						
Low temperature heat pump: (Yes/No)				No						
Equipped with supplementary heater: (Yes/No)				No						
Heat pump combination heater: (Yes/No)				No						
Application: (Low temperature/Medium temperature)				Medium temperature						
Climate: (Colder/Average/Warmer)				Average						
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit			
Rated heat output	Prated	132.80	kW	Seasonal space heating energy efficiency	η_S	164	%			
Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj						
Tj = -7°C	Pdh	135.30	kW	Tj = -7°C	COPd	3.85	-			
Tj = +2°C	Pdh	143.50	kW	Tj = +2°C	COPd	4.84	-			
Tj = +7°C	Pdh	148.40	kW	Tj = +7°C	COPd	5.64	-			
Tj = +12°C	Pdh	153.30	kW	Tj = +12°C	COPd	6.68	-			
Tj = biv	Pdh	132.80	kW	Tj = biv	COPd	3.61	-			
Tj = TOL	Pdh	132.80	kW	Tj = TOL	COPd	3.61	-			
Tj = -15°C (if TOL < -20°C)	Pdh	-	kW	Tj = -15°C if TOL < -20°C)	COPd	-	-			
Bivalent temperature	T _{biv}	-10	°C	Operation limit temperature	TOL	-10	°C			
Cycling interval capacity for heating	P _{psych}	-	kW	Cycling interval efficiency	COP _{psych}	-	-			
Degradation co-efficient	Cdh	0.9	-	Heating water operating limit temperature	WTOL	63	°C			
Power consumption in modes other than active mode				Supplementary heater						
Off mode	P _{OFF}	0.003	kW	Rated heat output	P _{sup}	-	kW			
Thermostat-off mode	P _{TO}	0.012	kW	Type of energy input	-					
Standby mode	P _{SB}	0.003	kW							
Crankcase heater mode	P _{CK}	0.003	kW							
Other items										
Capacity control	staged			Rated air flow rate, outdoors	-	-	m ³ /h			
Sound power level, indoors/outdoors	L _{WA}	75 / -	dB	Rated brine or water flow rate, outdoor heat exchanger	-	30.4	m ³ /h			
Emissions of nitrogen oxides	NO _x	-	mg/kWh							
For heat pump combination heater										
Declared load profile	-			Water heating energy efficiency	η_{wh}	-	%			
Daily electricity consumption	Q _{elec}	-	kWh	Daily fuel consumption	Q _{fuel}	-	kWh			
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Climate: (Colder/Average/Warmer)				Average					
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Tj = -7°C	Pdh	150.00	kW	Tj = -7°C	COPd	5.96	-		
Tj = +2°C	Pdh	153.30	kW	Tj = +2°C	COPd	6.68	-		
Tj = +7°C	Pdh	155.80	kW	Tj = +7°C	COPd	7.31	-		
Tj = +12°C	Pdh	157.40	kW	Tj = +12°C	COPd	7.80	-		
Tj = biv	Pdh	149.20	kW	Tj = biv	COPd	5.80	-		
Tj = TOL	Pdh	149.20	kW	Tj = TOL	COPd	5.80	-		
Tj = -15°C (if TOL < -20°C)	Pdh	-	kW	Tj = -15°C if TOL < -20°C)	COPd	-	-		
Bivalent temperature	T _{biv}	-10	°C	Operation limit temperature	TOL	-10	°C		
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Degradation co-efficient	Cdh	0.9	-	Heating water operating limit temperature	WTOL	63	°C		
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Thermostat-off mode	P _{TO}	0.012	kW	Type of energy input	-				
Standby mode	P _{SB}	0.003	kW						
Crankcase heater mode	P _{CK}	0.003	kW						
Other items									
Capacity control	staged			Rated air flow rate, outdoors	-	-	m ³ /h		
Sound power level, indoors/outdoors	L _{WA}	75 / -	dB	Rated brine or water flow rate, outdoor heat exchanger	-	30.4	m ³ /h		
Emissions of nitrogen oxides	NO _x	-	mg/kWh						
For heat pump combination heater									
Declared load profile	-			Water heating energy efficiency	η_{wh}	-	%		
Daily electricity consumption	Q _{elec}	-	kWh	Daily fuel consumption	Q _{fuel}	-	kWh		
Contact	CTA AG, Hunzigenstrasse 2, CH-3110 Münsingen								