



ENERG

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I - Klima - Kälte - Wärme || OP 160ed - S/W Art.Nr.: B10874



55 °C

35 °C



79 dB



--- dB

■ 149
■ **149**
■ 149
kW

■ 162
■ **162**
■ 162
kW



Package (heat pumps and combination heater with heat pump)

Seasonal space heating energy efficiency of heat pump (η_S) ① 130 %

Rated output of the heat pump (P_{rated} kW) 148.80

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)**

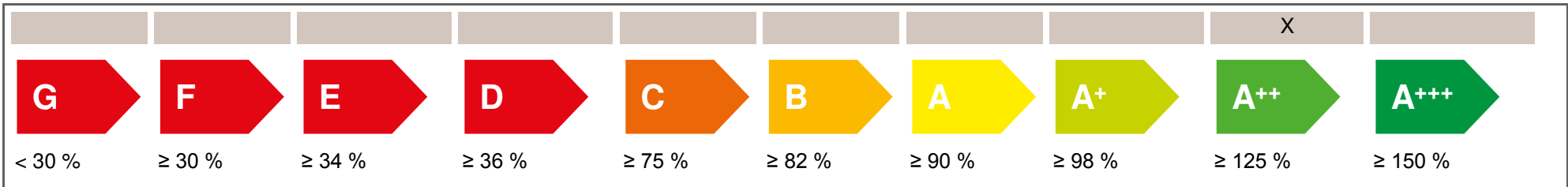
(η_{Sp})

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

Seasonal space heating energy efficiency of package under average climate ⑤ 134 %

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	131 %		colder	⑤	134	-V	-1	=	135 %
warmer	131 %		warmer	⑤	134	+VI	1	=	135 %

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		 AC Cooling Heating	
Manufacturer	CTA AG		
Model	Optipro 160ed B/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	161.50	148.80	kW
Seasonal space heating energy efficiency	183	130	%
Annual final energy consumption space heating	69857	89133	kWh
Sound power level indoors	79		dB
Special precautions during assembly, installation or maintenance			
see installation and maintenance instructions			
Additional information			
	Low temperature	Medium temperature	
Rated heat output colder climate	161.50	148.80	kW
Rated heat output warmer climate	161.50	148.80	kW
Seasonal space heating energy efficiency colder climate	186	131	%
Seasonal space heating energy efficiency warmer climate	184	131	%
Annual final energy consumption colder climate	82235	105200	kWh
Annual final energy consumption warmer climate	44885	57330	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 160ed B/W						
Brine-to-water heat pump: (Yes/No)				Yes						
Water-to-water heat pump: (Yes/No)				No						
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	148.80	kW	Seasonal space heating energy efficiency	η_S	130	%			
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	150.70	kW	Tj = -7°C	COPd	3.06	-			
Tj = +2°C	Pdh	157.10	kW	Tj = +2°C	COPd	3.85	-			
Tj = +7°C	Pdh	160.90	kW	Tj = +7°C	COPd	4.49	-			
Tj = +12°C	Pdh	164.70	kW	Tj = +12°C	COPd	5.35	-			
Tj = biv	Pdh	148.80	kW	Tj = biv	COPd	2.88	-			
Tj = TOL	Pdh	148.80	kW	Tj = TOL	COPd	2.88	-			
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	60	°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}	79 / -	dB	Rated brine or water flow rate, outdoor heat exchanger	-	33.0	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									

Model				Optipro 160ed B/W						
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Water-to-water heat pump: (Yes/No)				No						
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)				Low temperature						
Climate: (Colder/Average/Warmer)				Average						
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit			
Rated heat output	Prated	161.50	kW	Seasonal space heating energy efficiency	η_S	183	%			
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	162.20	kW	Tj = -7°C	COPd	4.75	-			
Tj = +2°C	Pdh	164.70	kW	Tj = +2°C	COPd	5.35	-			
Tj = +7°C	Pdh	166.60	kW	Tj = +7°C	COPd	5.89	-			
Tj = +12°C	Pdh	167.90	kW	Tj = +12°C	COPd	6.31	-			
Tj = biv	Pdh	161.50	kW	Tj = biv	COPd	4.62	-			
Tj = TOL	Pdh	161.50	kW	Tj = TOL	COPd	4.62	-			
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	60	°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}	79 / -	dB	Rated brine or water flow rate, outdoor heat exchanger	-	33.0	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									