

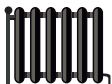


# ENERG

енергия · ενεργεια



I - Klima - Kälte - Wärme || OP 180ed - S/W Art.Nr.: B10875



55 °C

35 °C



**79** dB



--- dB

■ 168  
■ **168**  
■ 168  
kW

■ 181  
■ **181**  
■ 181  
kW



**Package (heat pumps and combination heater with heat pump)**

Seasonal space heating energy efficiency of heat pump ( $\eta_S$ ) ① 129 %

Rated output of the heat pump ( $P_{rated}$  kW) 167.30

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)

$\eta_S$  % (sup) = - ③ %

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

$(\alpha_{WE})$

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

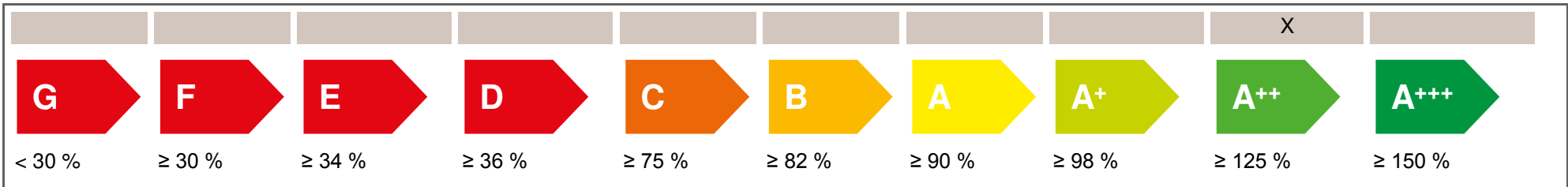
$(V_{Sp} m^3)$   $(standstill\ heat\ loss\ of\ the\ storage\ tank\ in\ W)$

$(\eta_{Sp})$

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

Seasonal space heating energy efficiency of package under average climate ⑤ 133 %  
*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	130 %		colder	⑤	133	-V	-1	=	134 %
warmer	129 %		warmer	⑤	133	+VI	0	=	133 %

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.

<b>Product fiche</b>		 <b>AC Cooling Heating</b>		
<b>Manufacturer</b>	CTA AG			
<b>Model</b>	Optipro 180ed B/W			
<b>Information on energy efficiency class and rated output</b>				
	Average / Low temperature	Average / Medium temperature		
Space heating energy efficiency class	A++	A++	-	
Rated heat output	180.70	167.30	kW	
Seasonal space heating energy efficiency	180	129	%	
Annual final energy consumption space heating	79313	101170	kWh	
Sound power level indoors		79	dB	
<b>Special precautions during assembly, installation or maintenance</b>				
see installation and maintenance instructions				
<b>Additional information</b>				
	Low temperature	Medium temperature		
Rated heat output colder climate	180.70	167.30	kW	
Rated heat output warmer climate	180.70	167.30	kW	
Seasonal space heating energy efficiency colder climate	183	130	%	
Seasonal space heating energy efficiency warmer climate	183	129	%	
Annual final energy consumption colder climate	93405	119543	kWh	
Annual final energy consumption warmer climate	50633	65074	kWh	
Sound power level outdoors		-	dB	
<b>Technical data of the temperature controller</b>				
<b>Manufacturer</b>	Carel			
<b>Model</b>	pCO5+			
Class of the controller		VII	-	
Contribution of the controller to seasonal space heating energy efficiency		3.5	%	
<b>Contact</b>	CTA AG, Hunzigenstrasse 2, CH-3110 Münsingen			

<b>Model</b>				<b>Optipro 180ed B/W</b>						
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						
<b>Item</b>	<b>Symbol</b>	<b>Value</b>	<b>Unit</b>	<b>Item</b>	<b>Symbol</b>	<b>Value</b>	<b>Unit</b>			
<b>Rated heat output</b>	Prated	167.30	kW	<b>Seasonal space heating energy efficiency</b>	$\eta_S$	129	%			
<b>Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature Tj</b>				<b>Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj</b>						
Tj = -7°C	Pdh	169.30	kW	Tj = -7°C	COPd	3.04	-			
Tj = +2°C	Pdh	176.00	kW	Tj = +2°C	COPd	3.81	-			
Tj = +7°C	Pdh	180.00	kW	Tj = +7°C	COPd	4.44	-			
Tj = +12°C	Pdh	184.00	kW	Tj = +12°C	COPd	5.27	-			
Tj = biv	Pdh	167.30	kW	Tj = biv	COPd	2.86	-			
Tj = TOL	Pdh	167.30	kW	Tj = TOL	COPd	2.86	-			
Tj = -15°C (if TOL < -20°C)	Pdh	-	kW	Tj = -15°C if TOL < -20°C)	COPd	-	-			
Bivalent temperature	T <sub>biv</sub>	-10	°C	Operation limit temperature	TOL	-10	°C			
Cycling interval capacity for heating	P <sub>cy</sub>	-	kW	Cycling interval efficiency	COP <sub>cy</sub>	-	-			
Degradation co-efficient	Cdh	0.9	-	Heating water operating limit temperature	WTOL	60	°C			
<b>Power consumption in modes other than active mode</b>				<b>Supplementary heater</b>						
Off mode	P <sub>OFF</sub>	0.003	kW	Rated heat output	P <sub>sup</sub>	-	kW			
Thermostat-off mode	P <sub>TO</sub>	0.012	kW	Type of energy input	-					
Standby mode	P <sub>SB</sub>	0.003	kW							
Crankcase heater mode	P <sub>CK</sub>	0.003	kW							
<b>Other items</b>										
Capacity control	staged			Rated air flow rate, outdoors	-	-	m <sup>3</sup> /h			
Sound power level, indoors/outdoors	L <sub>WA</sub>	79 / -	dB	Rated brine or water flow rate, outdoor heat exchanger	-	36.9	m <sup>3</sup> /h			
Emissions of nitrogen oxides	NO <sub>x</sub>	-	mg/kWh							
<b>For heat pump combination heater</b>										
Declared load profile	-			Water heating energy efficiency	$\eta_{wh}$	-	%			
Daily electricity consumption	Q <sub>elec</sub>	-	kWh	Daily fuel consumption	Q <sub>fuel</sub>	-	kWh			
<b>Contact</b>	CTA AG, Hunzigenstrasse 2, CH-3110 Münsingen									

<b>Model</b>				<b>Optipro 180ed B/W</b>						
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)				Low temperature						
Climate: (Colder/Average/Warmer)				Average						
<b>Item</b>	<b>Symbol</b>	<b>Value</b>	<b>Unit</b>	<b>Item</b>	<b>Symbol</b>	<b>Value</b>	<b>Unit</b>			
<b>Rated heat output</b>	Prated	180.70	kW	<b>Seasonal space heating energy efficiency</b>	$\eta_S$	180	%			
<b>Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature Tj</b>				<b>Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj</b>						
Tj = -7°C	Pdh	181.30	kW	Tj = -7°C	COPd	4.69	-			
Tj = +2°C	Pdh	184.00	kW	Tj = +2°C	COPd	5.27	-			
Tj = +7°C	Pdh	186.00	kW	Tj = +7°C	COPd	5.80	-			
Tj = +12°C	Pdh	187.30	kW	Tj = +12°C	COPd	6.20	-			
Tj = biv	Pdh	180.70	kW	Tj = biv	COPd	4.56	-			
Tj = TOL	Pdh	180.70	kW	Tj = TOL	COPd	4.56	-			
Tj = -15°C (if TOL < -20°C)	Pdh	-	kW	Tj = -15°C if TOL < -20°C)	COPd	-	-			
Bivalent temperature	T <sub>biv</sub>	-10	°C	Operation limit temperature	TOL	-10	°C			
Cycling interval capacity for heating	P <sub>psych</sub>	-	kW	Cycling interval efficiency	COP <sub>psych</sub>	-	-			
Degradation co-efficient	Cdh	0.9	-	Heating water operating limit temperature	WTOL	60	°C			
<b>Power consumption in modes other than active mode</b>				<b>Supplementary heater</b>						
Off mode	P <sub>OFF</sub>	0.003	kW	Rated heat output	P <sub>sup</sub>	-	kW			
Thermostat-off mode	P <sub>TO</sub>	0.012	kW	Type of energy input	-					
Standby mode	P <sub>SB</sub>	0.003	kW							
Crankcase heater mode	P <sub>CK</sub>	0.003	kW							
<b>Other items</b>										
Capacity control	staged			Rated air flow rate, outdoors	-	-	m <sup>3</sup> /h			
Sound power level, indoors/outdoors	L <sub>WA</sub>	79 / -	dB	Rated brine or water flow rate, outdoor heat exchanger	-	36.9	m <sup>3</sup> /h			
Emissions of nitrogen oxides	NO <sub>x</sub>	-	mg/kWh							
<b>For heat pump combination heater</b>										
Declared load profile	-			Water heating energy efficiency	$\eta_{wh}$	-	%			
Daily electricity consumption	Q <sub>elec</sub>	-	kWh	Daily fuel consumption	Q <sub>fuel</sub>	-	kWh			
<b>Contact</b>	CTA AG, Hunzigenstrasse 2, CH-3110 Münsingen									