

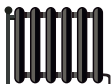


ENERG

енергия · ενεργεια



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



55 °C

35 °C



79 dB



--- dB

■ 192
 ■ **192**
 ■ 192
 kW

■ 216
 ■ **216**
 ■ 216
 kW



Package (heat pumps and combination heater with heat pump)

Seasonal space heating energy efficiency of heat pump (η_S) ❶ 165 %

Rated output of the heat pump (P_{rated} kW) 192.00

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

Supplementary boiler

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

η_S % (sup) = - ❸ %

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

(α_{WE})

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

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

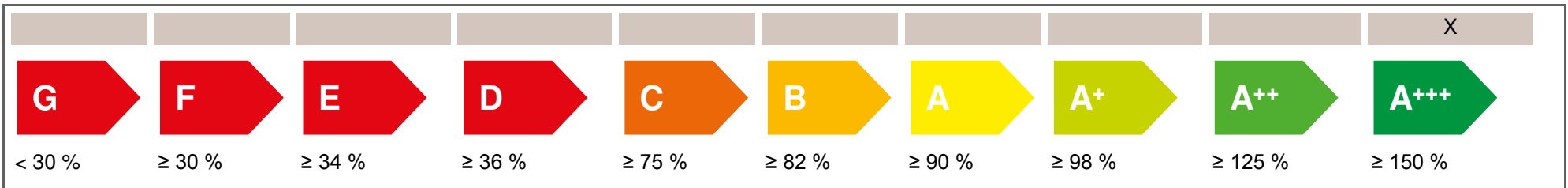
(η_{Sp})

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

Seasonal space heating energy efficiency of package under average climate ❺ 169 %

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	167 %		colder	❺	169	-V	-2	=	171 %
warmer	166 %		warmer	❺	169	+VI	1	=	170 %

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 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	215.30	192.00	kW	
Seasonal space heating energy efficiency	232	165	%	
Annual final energy consumption space heating	74173	91523	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	215.30	192.00	kW	
Rated heat output warmer climate	215.30	192.00	kW	
Seasonal space heating energy efficiency colder climate	235	167	%	
Seasonal space heating energy efficiency warmer climate	235	166	%	
Annual final energy consumption colder climate	87480	108154	kWh	
Annual final energy consumption warmer climate	47377	58948	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 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	192.00	kW	Seasonal space heating energy efficiency	η_S	165	%			
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	195.50	kW	Tj = -7°C	COPd	3.86	-			
Tj = +2°C	Pdh	207.10	kW	Tj = +2°C	COPd	4.87	-			
Tj = +7°C	Pdh	214.10	kW	Tj = +7°C	COPd	5.68	-			
Tj = +12°C	Pdh	221.10	kW	Tj = +12°C	COPd	6.74	-			
Tj = biv	Pdh	192.00	kW	Tj = biv	COPd	3.62	-			
Tj = TOL	Pdh	192.00	kW	Tj = TOL	COPd	3.62	-			
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	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}	79 / -	dB	Rated brine or water flow rate, outdoor heat exchanger	-	43.9	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 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)				Low temperature						
Climate: (Colder/Average/Warmer)				Average						
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit			
Rated heat output	Prated	215.30	kW	Seasonal space heating energy efficiency	η_S	232	%			
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	216.40	kW	Tj = -7°C	COPd	6.00	-			
Tj = +2°C	Pdh	221.10	kW	Tj = +2°C	COPd	6.74	-			
Tj = +7°C	Pdh	224.60	kW	Tj = +7°C	COPd	7.39	-			
Tj = +12°C	Pdh	226.90	kW	Tj = +12°C	COPd	7.89	-			
Tj = biv	Pdh	215.30	kW	Tj = biv	COPd	5.84	-			
Tj = TOL	Pdh	215.30	kW	Tj = TOL	COPd	5.84	-			
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 _{cyc}	-	-			
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}	79 / -	dB	Rated brine or water flow rate, outdoor heat exchanger	-	43.9	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									