ENERGY
енергия · ενεργεια

10061502

alpha innotec SWP 451

55 °C	35 °C
A++	A+++

A+++
A++
A+
A
B
C
D

56 dB

- dB

55 °C	35 °C
41	45
41	**45**
41	45
kW	kW

2019

811/2013

ENERGY

10061502

alpha innotec SWP 451

	55 °C	35 °C
A+++		A+++
A++	A++	
A+		
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56 dB

- dB

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kW	kW

2019 811/2013

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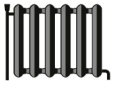
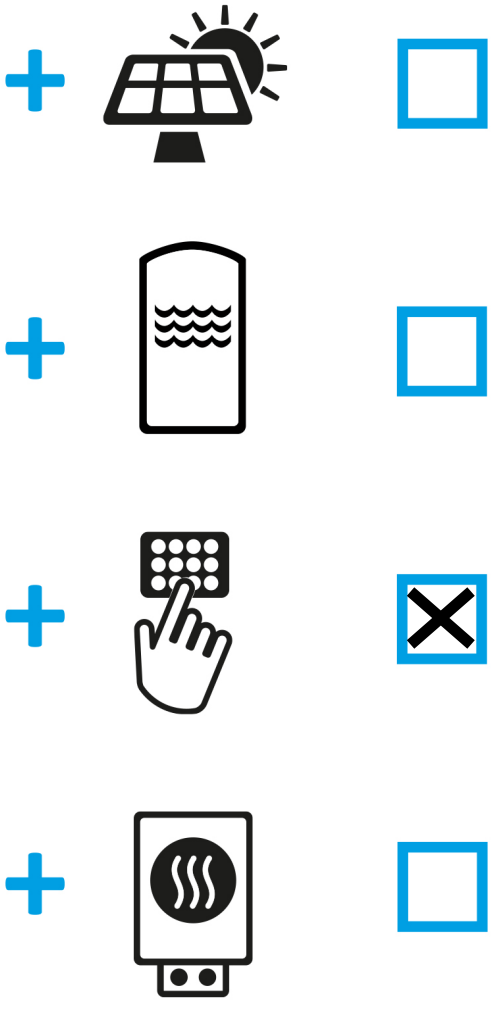
10061502

alpha innotec

SWP 451 + Luxtronik 2.05



A++



A+++

A++

A+

A

B

C

D

E

F

G

A++

2015

811/2013

package (heat pumps and combination heater with heat pump) - SWP 451 + Luxtronik 2.05

Seasonal space heating energy efficiency of heat pump (ηs) ❶ 142 %

Rated heat output of the heat pump (Prated kW) 41

Temperature control — Class VII ***(Table 1)*** + ❷ 3,5 %

Supplementary boiler

package with hot water storage tank: no — *Psup kW (rated heat output of supplementary heater)*

ησ % (συπ)

(ηs % ***(sup)*** - ❶) x (α_{WP}) = - ❸ %

(αWE: see Table 3) ***(α_{WE})***

solar contribution — ***(A_{Koll} m^2)*** ***(ηKoll %)***

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

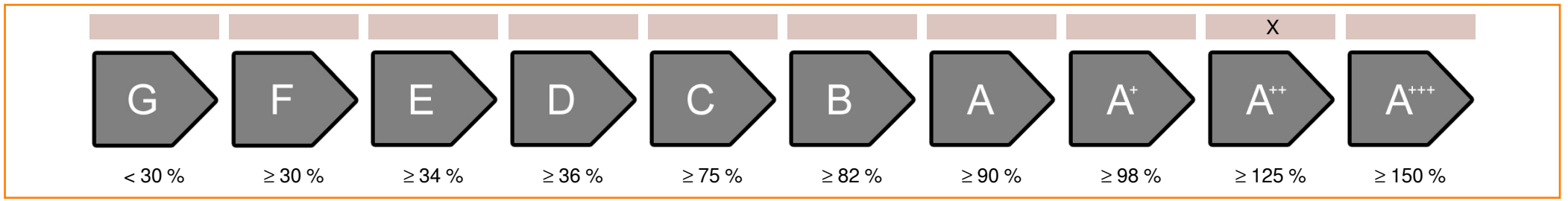
(ηSp: Table 2)

((294/P_{rated} x11) x **(A_{Koll} m^2)** + (115/P_{rated} x11) x **(V_{Sp} m^3)**) x 0,45 x (**η_{Koll} %**) /100) x (**η_{Sp}**) = + ❹ %

Seasonal space heating energy efficiency of package ❺ 146 %

rounded to the nearest integer

Seasonal space heating energy efficiency class of package



Seasonal space heating energy efficiency under colder or warmer climate conditions

Seasonal space heating energy efficiency of the heat pump (ηs) under colder climate conditions 147 %

Seasonal space heating energy efficiency of the heat pump (ηs) under warmer climate conditions 144 %

colder ❺ 146 -V -4 = 150 warmer ❺ 146 +VI 2 = 148

heatpump datasheet:			
manufacturer:	**alpha innotec**		
model:	**SWP 451**		
Information concerning energy efficiency class and rated heat output:			
	average / low	average / medium	
energy efficiency class space heater:	A+++	A++	-
rated heat output:	45	41	kW
energy efficiency space heater:	202	142	%
annual final energy consumption space heater	17701	22619	kWh
sound power level indoors		56	dB
special precautions concerning assembly, installation or maintenance			
All instructional work in this manual may only be carried out by qualified specialist personnel in compliance with local regulations.			
additional information	low	medium	
rated heat output colder climate	45	41	kW
rated heat output warmer climate	45	41	kW
energy effiency space heater colder climate	208	147	%
energy effiency space heater warmer climate	205	144	%
annual energy consumption space heater colder climate	20528	26210	kWh
annual energy consumption space heater warmer climate	11311	14478	kWh
sound power level outdoors		-	dB

technical data of the temperature controller		
manufacturer:	**alpha innotec**	
model:	**Luxtronik 2.05**	
controller class	VII	-
contribution of the controller to the energy efficiency space heater	3,5	%

Model				**SWP 451**			
Air-to-water heat pump: (yes/no)				no			
Brine-to-water heat pump: (yes/no)				yes			
Water-to-water heat pump: (yes/no)				no			
Low-temperature heat pump: (yes/no)				no			
Equipped with supplementary heater: (yes/no)				yes			
combination heater with: (yes/no)				no			
application: (low/medium)				medium			
climate: (colder/average/warmer)				average			
Item	**Symbol**	**Value**	**Unit**	**Item**	**Symbol**	**Value**	**Unit**
Rated heat output	Prated	41	kW	**Seasonal space heating energy efficiency**	ηS	142,2	%
Declared coefficient of performance 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	41,6	kW	Tj = -7°C	COPd	3,05	-
Tj = +2°C	Pdh	43,1	kW	Tj = +2°C	COPd	3,69	-
Tj = +7°C	Pdh	44,1	kW	Tj = +7°C	COPd	4,19	-
Tj = +12°C	Pdh	45,1	kW	Tj = +12°C	COPd	4,79	-
Tj = bivalent temperature	Pdh	41,1	kW	Tj = bivalent temperature	COPd	2,90	-
Tj = operation limit temperature	Pdh	41,1	kW	Tj = operation limit temperature	COPd	2,90	-
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	COPd	-	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych	-	kW	Cycling interval efficiency	COPcyc	-	-
Degradation co-efficient (**)	Cdh	1,0	-	Heating water operating limit temperature	WTOL	60	°C
Power consumption in modes other than active mode				**Supplementary heater**			
Off mode	P_{OFF}	0,015	kW	Rated heat output	Psup	-	kW
Thermostat-off mode	P_{TO}	0,015	kW	Type of energy input	electrical		
Standby mode	P_{SB}	0,015	kW				
Crankcase heater mode	P_{CK}	-	kW				
Other items							
Capacity control	fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m^3/h
sound power level, indoors/outdoors	L_{WA}	56 / -	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	16	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	Qfuel	-	kWh
Contact details	ait deutschland GmbH Industriestr. 3 95359 Kasendorf Germany						

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model				**SWP 451**			
Air-to-water heat pump: (yes/no)				no			
Brine-to-water heat pump: (yes/no)				yes			
Water-to-water heat pump: (yes/no)				no			
Low-temperature heat pump: (yes/no)				no			
Equipped with supplementary heater: (yes/no)				yes			
combination heater with: (yes/no)				no			
application: (low/medium)				low			
climate: (colder/average/warmer)				average			
Item	**Symbol**	**Value**	**Unit**	**Item**	**Symbol**	**Value**	**Unit**
Rated heat output	Prated	45	kW	**Seasonal space heating energy efficiency**	ηS	202,1	%
Declared coefficient of performance 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	45,1	kW	Tj = -7°C	COPd	4,86	-
Tj = +2°C	Pdh	45,5	kW	Tj = +2°C	COPd	5,20	-
Tj = +7°C	Pdh	45,9	kW	Tj = +7°C	COPd	5,53	-
Tj = +12°C	Pdh	46,3	kW	Tj = +12°C	COPd	5,88	-
Tj = bivalent temperature	Pdh	45,0	kW	Tj = bivalent temperature	COPd	4,80	-
Tj = operation limit temperature	Pdh	45,0	kW	Tj = operation limit temperature	COPd	4,80	-
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	COPd	-	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych	-	kW	Cycling interval efficiency	COPcyc	-	-
Degradation co-efficient (**)	Cdh	1,0	-	Heating water operating limit temperature	WTOL	60	°C
Power consumption in modes other than active mode				**Supplementary heater**			
Off mode	P_{OFF}	0,015	kW	Rated heat output	Psup	-	kW
Thermostat-off mode	P_{TO}	0,015	kW	Type of energy input	electrical		
Standby mode	P_{SB}	0,015	kW				
Crankcase heater mode	P_{CK}	-	kW				
Other items							
Capacity control	fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m^3/h
sound power level, indoors/outdoors	L_{WA}	56 / -	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	16	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	Qfuel	-	kWh
Contact details	ait deutschland GmbH Industriestr. 3 95359 Kasendorf Germany						

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.