ENERGY
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103777HSV12141

NOVELAN LAV 12-HSV 12.1

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

A++

XL

A+
A
B
C
D
E
F

A

44 dB

58 dB

7 kW
9 kW
7 kW

2019

811/2013

ENERGY

103777HSV12141

NOVELAN LAV 12-HSV 12.1

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2019 **811/2013**

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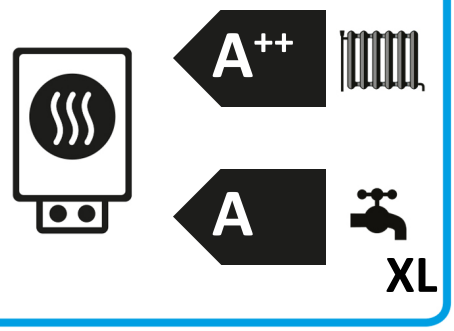
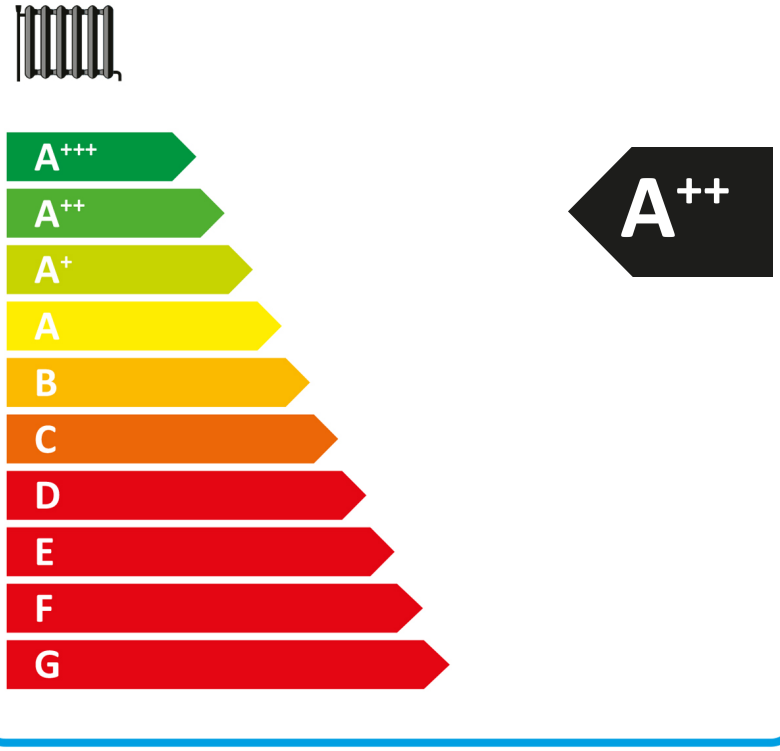
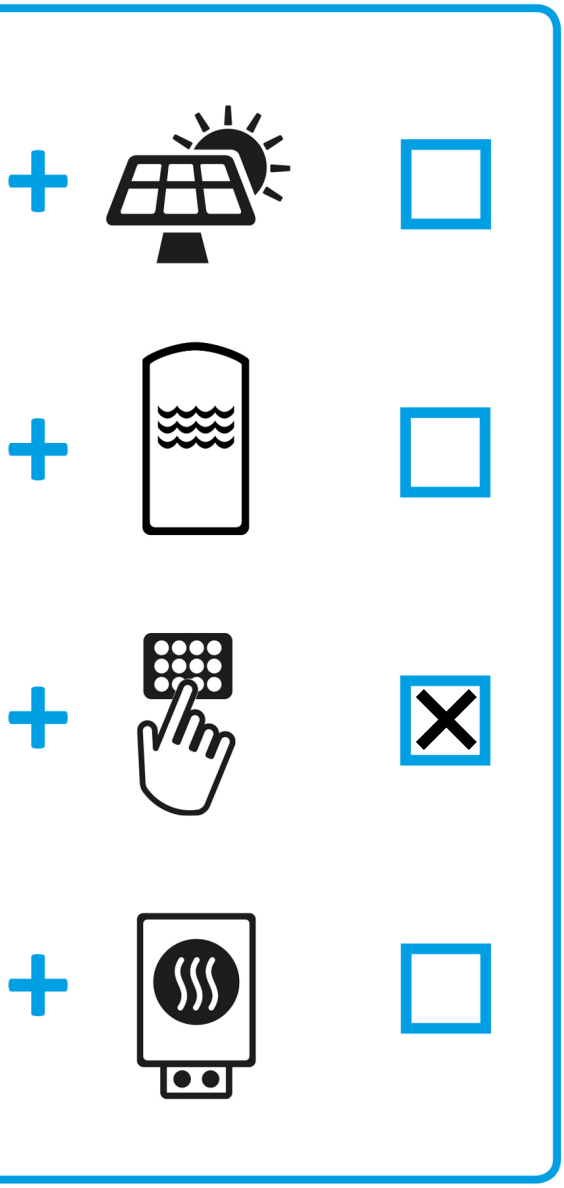
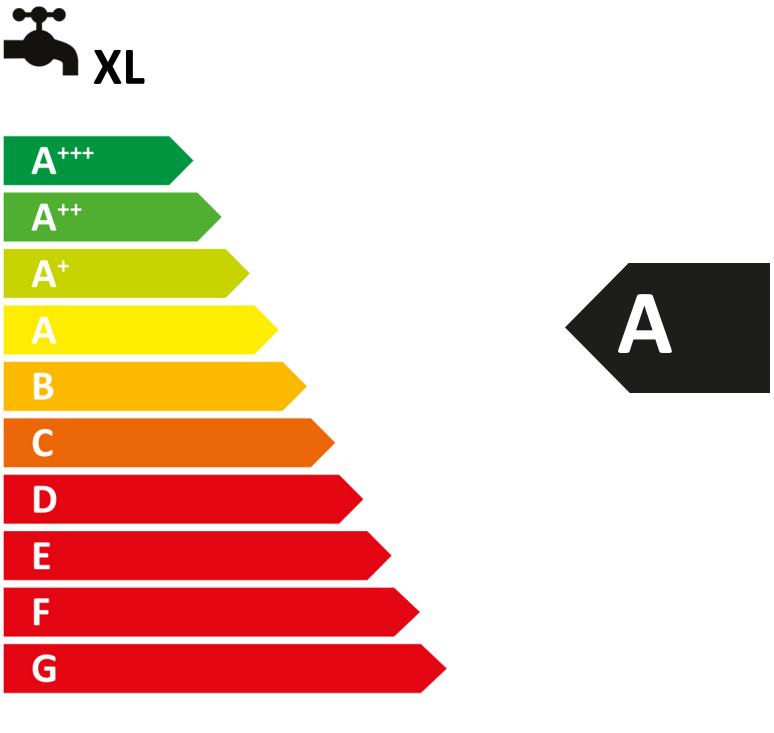
NOVELAN

LAV 12-HSV 12.1 + WPR-Net 2.1









2015

811/2013

package (heat pumps and combination heater with heat pump) LAV 12-HSV 12.1 + WPR-Net 2.1

Seasonal space heating energy efficiency of heat pump (ηs) ❶ 132 %

Rated heat output of the heat pump (Prated kW) 9

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} m²) ***(ηKoll %)***

(V_{Sp} m³) ***(standstill heat loss of the hot water storage tank in W)***

(ηSp: Table 2)

((294/P_{rated} x11) x **(A_{Koll} m²)** + (115/P_{rated} x11) x **(V_{Sp} m³)**) x 0,45 x (**ηKoll %**) /100) x (**ηSp**) = + ❹ %

Seasonal space heating energy efficiency of package ❺ 135 %

rounded to the nearest integer

Seasonal space heating energy efficiency class of package

G	F	E	D	C	B	A	A⁺	A⁺⁺	A⁺⁺⁺
								X	
< 30 %	≥ 30 %	≥ 34 %	≥ 36 %	≥ 75 %	≥ 82 %	≥ 90 %	≥ 98 %	≥ 125 %	≥ 150 %

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 112 %

Seasonal space heating energy efficiency of the heat pump (ηs) under warmer climate conditions 150 %

colder ❺ 135 -V 19 = 116 warmer ❺ 135 +VI 18 = 153

heatpump datasheet:			
manufacturer:	**NOVELAN**		
model:	**LAV 12-HSV 12.1**		
Information concerning energy efficiency class and rated heat output:			
load profile water heating	XL		-
	average / low	average / medium	
energy efficiency class space heater:	A++	A++	-
energy efficiency class waterheating	A		-
rated heat output:	10	9	kW
annual final energy consumption space heater	4681	5398	kWh
annual electricity consumption waterheating	1767		kWh
energy efficiency space heater:	174	132	%
energy efficiency waterheating	95		%
sound power level indoors		44	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	9	7	kW
rated heat output warmer climate	7	7	kW
annual energy consumption space heater colder climate	6290	5984	kWh
annual energy consumption space heater warmer climate	1887	2268	kWh
ann. Electricity consumption waterheating colder climate	1940		kWh
ann. Electricity consumption waterheating warmer climate	1525		kWh
energy effiency space heater colder climate	132	112	%
energy effiency space heater warmer climate	181	150	%
energy efficiency waterheating colder climate	86		%
energy efficiency DHWwarmer climate	110		%
sound power level outdoors		58	dB

technical data of the temperature controller		
manufacturer:	**NOVELAN**	
model:	**WPR-Net 2.1**	
controller class	VII	-
contribution of the controller to the energy efficiency space heater	3,5	%

Model				**LAV 12-HSV 12.1**			
Air-to-water heat pump: (yes/no)				yes			
Brine-to-water heat pump: (yes/no)				no			
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)				yes			
application: (low/medium)				medium			
climate: (colder/average/warmer)				average			
Item	**Symbol**	**Value**	**Unit**	**Item**	**Symbol**	**Value**	**Unit**
Rated heat output	Prated	9	kW	**Seasonal space heating energy efficiency**	ηS	131,7	%
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	8,3	kW	Tj = -7°C	COPd	2,18	-
Tj = +2°C	Pdh	4,8	kW	Tj = +2°C	COPd	3,28	-
Tj = +7°C	Pdh	5,2	kW	Tj = +7°C	COPd	4,54	-
Tj = +12°C	Pdh	6,0	kW	Tj = +12°C	COPd	6,15	-
Tj = bivalent temperature	Pdh	8,3	kW	Tj = bivalent temperature	COPd	2,18	-
Tj = operation limit temperature	Pdh	6,7	kW	Tj = operation limit temperature	COPd	1,94	-
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}	-7	°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}	0,020	kW	Rated heat output	Psup	2,1	kW
Thermostat-off mode	P_{TO}	0,020	kW	Type of energy input	electrical		
Standby mode	P_{SB}	0,020	kW				
Crankcase heater mode	P_{CK}	-	kW				
Other items							
Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	2.900	m^3/h
sound power level, indoors/outdoors	L_{WA}	44 / 58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	-	m^3/h
Emissions of nitrogen oxides	NO_X	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	XL			Water heating energy efficiency	η_{wh}	95	%
Daily electricity consumption	Q_{elec}	8,341	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				**LAV 12-HSV 12.1**			
Air-to-water heat pump: (yes/no)				yes			
Brine-to-water heat pump: (yes/no)				no			
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)				yes			
application: (low/medium)				low			
climate: (colder/average/warmer)				average			
Item	**Symbol**	**Value**	**Unit**	**Item**	**Symbol**	**Value**	**Unit**
Rated heat output	Prated	10	kW	**Seasonal space heating energy efficiency**	ηS	173,5	%
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	8,5	kW	Tj = -7°C	COPd	2,60	-
Tj = +2°C	Pdh	5,3	kW	Tj = +2°C	COPd	4,52	-
Tj = +7°C	Pdh	6,3	kW	Tj = +7°C	COPd	6,04	-
Tj = +12°C	Pdh	6,7	kW	Tj = +12°C	COPd	7,34	-
Tj = bivalent temperature	Pdh	8,5	kW	Tj = bivalent temperature	COPd	2,60	-
Tj = operation limit temperature	Pdh	7,5	kW	Tj = operation limit temperature	COPd	2,58	-
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}	-7	°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}	0,020	kW	Rated heat output	Psup	2,5	kW
Thermostat-off mode	P_{TO}	0,020	kW	Type of energy input	electrical		
Standby mode	P_{SB}	0,020	kW				
Crankcase heater mode	P_{CK}	-	kW				
Other items							
Capacity control	variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	2.900	m^3/h
sound power level, indoors/outdoors	L_{WA}	44 / 58	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	-	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.